FISHES OF THE GREATER MEKONG ECOSYSTEM WITH SPECIES LIST AND PHOTOGRAPHIC ATLAS

WALTER J. RAINBOTH, CHAVALIT VIDTHAYANON, AND MAI DINH YEN

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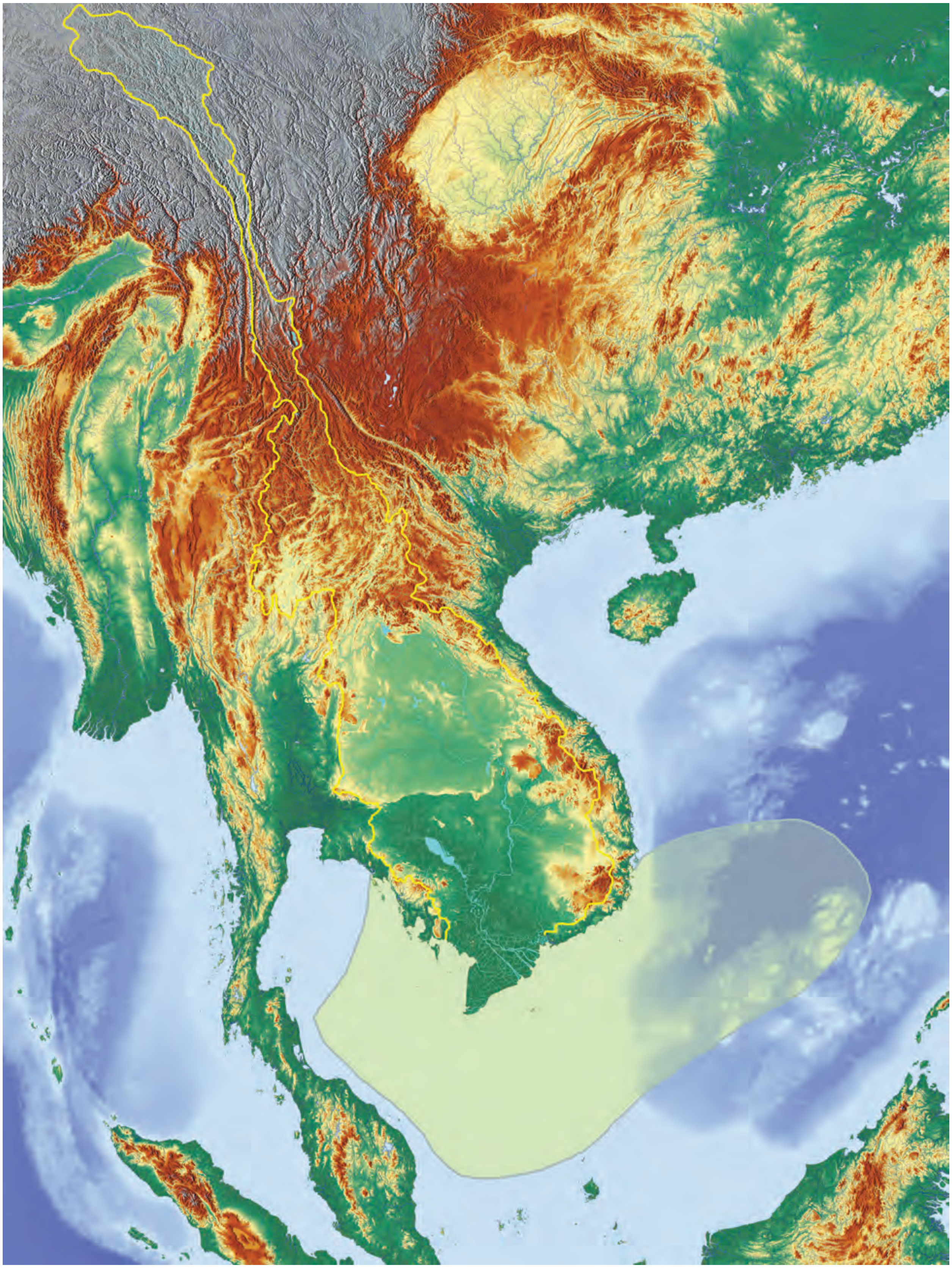

The Greater Mekong Ecosystem, including its entire watershed and the marine region it supports.

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PREFACE

This project began in the late 1990's after the publication of what became known as the "red book" on the freshwater fishes of Cambodia (Rainboth, 1996a). The agriculture and fisheries unit of the Mekong River Commission (MRC) decided to continue with the study that began in Cambodia while expanding to cover the entire lower basin. With the added collaboration of two of well known ichthyologists from the Mekong countries we set out to accomplish this. However, without the publishing capabilities of the fisheries unit of the United Nations Food and Agriculture Organization (FAO) it proved difficult to duplicate the Cambodia book on a larger scale. After re-evaluating priorities, we chose to produce a photographic atlas supplemented by a list of species. It was decided to put off the addition of identification keys and natural history and fisheries information until subsequent volumes. The important information to begin with was to list and illustrate the species in the basin.

The plan flew in the face of the types of publications that fishery projects often produce by attempting to include every species in the basin, inasmuch as that was possible. This was a requirement that I had also placed on the earlier Cambodia book, when at the request of the MRC, Dr. Kent Carpenter of FAO contacted me to write a quick book on the 100 most important species of Cambodia. My response was that "100 most important" would not be acceptable, and Kent agreed. We would either do it all or not do it at all. The same applies for this book.

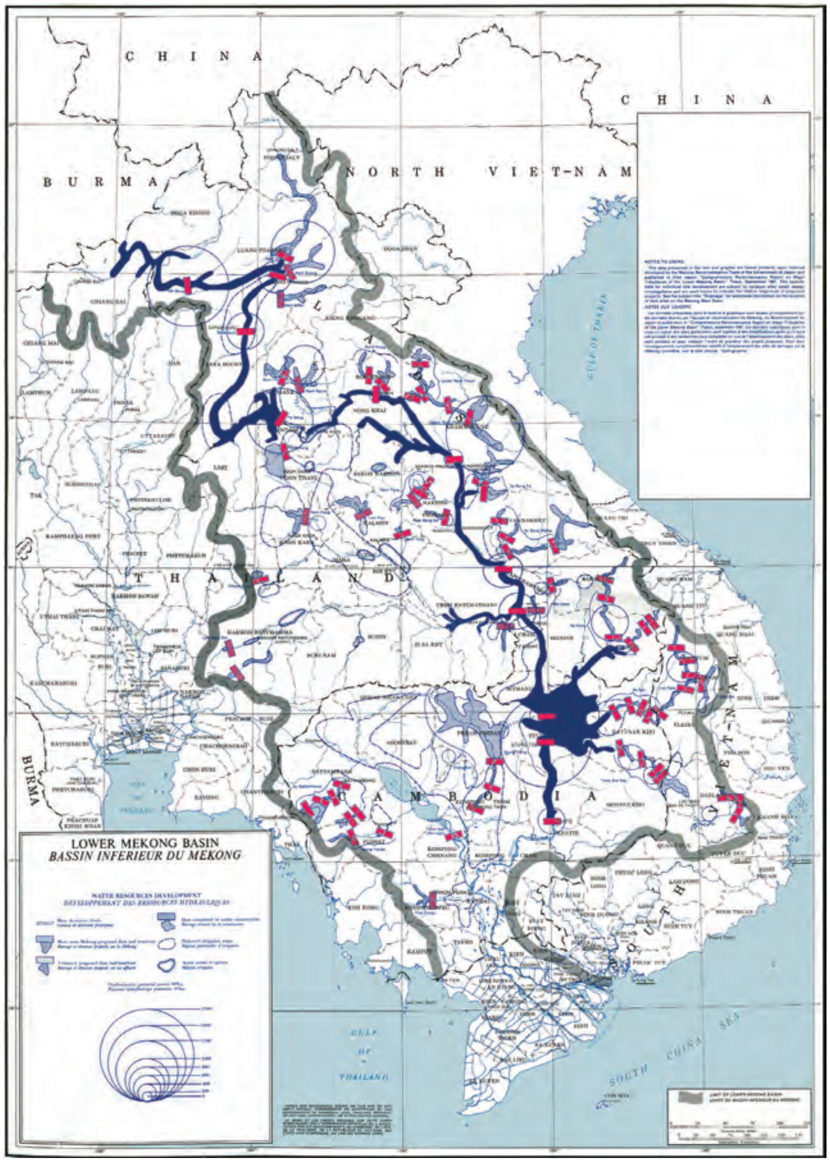
Part of original purpose of this atlas was to help build a scientific foundation for present and future research in fisheries and ecology of fishes in Mekong region. Although comparing photos to specimens can often help people identify species, illustrated keys improve our accuracy and also can help us decide if new specimens represent species that are new to science. Providing keys for identification of species would not have been possible for this book, and therefore must wait. Only the scientific names have been used in this book, although nearly all of these species have local names, with some species having several.

The books we write will help not only those who follow us, but they serve as a tribute to those who taught us. In my own case, introduction to this area and its fish and fisheries came through participation on the Mekong Basinwide Fishery Studies (1974-76), directed by Prof. Karl F. Lagler of The University of Michigan and sponsored by the Committee for Coordination of Investigations of the Lower Mekong Basin, the precursor to the Mekong River Commission Secretariat (MRC). Although the project was terminated due to major political changes in the region, some results of that project's activities contribute to the information here and add perspective on its significance. A point of emphasis in the Mekong Basinwide Fishery Studies was to sample the fish fauna found within the Mekong plume in the South China Sea. At the time, it seemed unusual to include coastal marine sampling in a study of the river fish and fisheries. However, the importance was clear to Dr. Lagler, and the inclusion of fishes from these marine systems is a tribute to his vision. It is obvious that changes in the Mekong will have an effect on the estuary and coastal region, as well as any area in the South China Sea that receives nutrients or biomass produced by the river's discharge. Reducing peak flows or altering flow patterns will not just cause greater saltwater intrusion in the delta, it will have multiple effects on marine ecosystems and their fisheries.

In earlier publications, discussions of the geology of the Mekong Basin and Southeast Asia were offered (Rainboth, 1996a,b), but in recent years considerably more information has appeared and the over-all picture, while not complete, is clearer. In this book, the whole section on geological history has been enhanced considerably. Although I had planned only to enhance the presentation about the Great Lake and the river floodplain of Cambodia and Viet Nam, the result became much more than that. As I searched the internet for information about certain areas, I encountered geological history information that seemed strangely familiar on pages of some international organizations. When I checked, it turned out that major parts of the discussions in the books I wrote a decade and a half ago (Rainboth 1996a,b) had been picked up and used wholesale, without citing their source. At that point the idea of minor enhancements was forgotten and the wholesale overhaul with much greater detail began.

Upstream, much of the recently published geological research has been conducted by Chinese, Thai, Vietnamese and Japanese scientists along with continuing studies by Europeans and Americans. However, much of the new information deals with the Tibetan plateau, the collision of India and Eurasia, and the resulting movements of the Indochinese Peninsula.

Although information about northern Thailand, Viet Nam and southwestern China have increased greatly, there has been relatively little new information about areas within Lao P.D.R., Cambodia and the Khorat Plateau of northeast Thailand. These areas comprise most of the lower Mekong basin, and as the discussion expanded northward, it became increasingly apparent that only a



Map from Mekong Atlas (ECAFE, 1968) showing possible dam sites in the Mekong basin, including eleven mainstream dams which would turn most of the river into a series of pools that would end at the base of the next dam. The three uppermost mainstream dams fall within Lao territory and would not be shared with Thailand. Fortunately, there would be a few free-flowing kilometers at Vientiane so that people in the city could watch the “river” flow. However the highly adapted migratory riverine fish fauna would be destroyed. All dams are represented in red and the pools of mainstream dams are in dark blue. Pools on tributary streams are represented in light blue.

detailed discussion of the most recent information enhances our understanding of possible or likely past river drainage configurations within the lower basin. Further, some of the older soft literature is difficult to nearly impossible to obtain, especially the study on the geological features of the Khorat Plateau, published by the Mekong Committee in 1978 and possibly authored by Cruijs (Cruÿs ?) although the author is rarely cited. Clearly, a new treatment is necessary, and the one here has been done to act as groundwork for studies of aquatic biogeography.

Presentation of possible drainage history could be significant with respect to isolation of subgroups of the fauna within various parts of the basin, but the discussion of geological history will not help our understanding of aquatic faunal distributions much beyond what has already been published. The shortcoming rests entirely on the lack of biological data. Extensive areas still remain to be studied, including entire provinces of some countries, and regions that have been “studied” have often had a mere handful of collections made and their specimens identified. Therefore, it was decided to omit most of the section and save it for future studies of aquatic biogeography. However, the information on the geological history and past river connections will give scientists a chance to find out if faunal evidence of those past connections still exists.

The path to publication of this atlas has been long and complicated. It was originally planned to be the first of a three part study on the fishes of the Greater Mekong Ecosystem. It would have been followed with publication of an illustrated key to the all the species within the system, and finally a guide to the fishes that would include information about natural history, local names, and fisheries. The original field support and the publication outlet was expected to be the MRC, which could make the atlas, and the following identification keys and guide to fishes available to scientists and students across all the Mekong countries. However, bureaucratic changes enacted to centralize control of the funding process at the MRC, made a decade ago, ultimately had the effect of hindering conservation and biodiversity studies and promoting applied technology and construction projects. I suspect that this was not accidental.

Dams do produce higher funding levels and that income supports bureaucracies better than projects with scientists studying natural history. Not only that, scientists studying natural history can become too expensive if the results of their studies impacts potential funding for major projects. In a world where ecological impacts of unwise decisions are a concern, it can be important to limit the range of potential liabilities being discussed. As an example, it is better from a bureaucratic standpoint to hire a person or group that will find nothing negative on an environmental impact study than chance someone who might. The Pak Mun Dam impact assessment and resulting controversy is a prime example from the Mekong during the 1990's.

What we are now witnessing is a resurrection of some old ideas from a new generation that did not learn the old lessons. As an example, Lao P.D.R. is attempting to dust off the old Mekong Committee dreams for as many as a dozen dams, including dams on the mainstream, to the consternation of Cambodia, and Viet Nam (ECAFE, 1968, page 86, with additional colors added to highlight important aspects of that map on the opposite page). China, of course, fully backs those plans now that they have finished four of seven planned dams on the upper Mekong and have been hearing complaints from people and countries downstream. If Lao P.D.R. can be aided in building main-stream dams, then China can deflect their own well-earned criticisms at others. The prospect of taking on debt for loans to use outdated solutions to energy problems is particularly troubling at a time when new sources of energy are on the near horizon.

The latest attempt to game the review process with a sub-standard environmental impact study on the dam at Xayaburi merely reminds us that when it comes to negative impacts, "absence of evidence is not evidence of absence." The Xayaburi dam is the third from the top on the main stem of the Mekong on the map on the opposite page. Thankfully, no attempt other than the Xayaburi dam has been made to imitate bad ideas being implemented upstream in China. This is not meant to assert that the MRC supports building the dam at Xayaburi, but merely that the possibility was originally proposed in an atlas produced by the original Mekong Committee.

For this publication, inclusion of all Mekong freshwater species is the bare minimum, and inclusion of the estuarine and brackish water species is also required. However, when we examine the relation of the Mekong to coastal and marine ecosystems that it nourishes, the result can make this publication much too expensive, and not just in terms of paper and ink. Indeed, there are those who profit by an absence of evidence.

The problems with this fish fauna for would-be "developers" and for all who rely on fishes, relate to ecology and migration. In the published literature on Mekong fishes, there are many statements about the fact that "some" Mekong fishes migrate (Pantulu, 1986). What is rarely indicated is comprehension about the truly transitory nature of fish distribution within the Mekong, although French scientists who lived in this region for many years were aware of this (Fily and Aubenton, 1966). At the time when I first sampled fishes in the Mekong and until the last couple of decades, fish migrations were thought to be long distance movements for reproduction. Adults would spend their gametes and then die or return to their origin, leaving the young to develop. This view was largely due to the abundance of literature about the North American fauna. For the Mekong, this understanding of fish movements is problematic (Rainboth, 1991, 1996a) and a growing literature base indicates that it is inadequate elsewhere as well (Goulding, 1981; Goulding, *et al.*, 1988; Rodríguez and Lewis, 1997; Pouilly and Rodríguez, 2004).

The Mekong has a migratory fish fauna with movements that may be unsurpassed in the tropics. The species are highly adapted to extreme cyclic changes in the river's physico-chemical characteristics. Many of these river changes are due to the enormous annual change in flow giving a discharge ratio of 53.6 max/min (Welcomme, 1979). The ecology of seasonal fish faunas are predictable (Lowe-McConnell, 1987) but are little studied.

The seasonal cycle of the Mekong exerts a profound effect on the fish movement patterns (Rainboth, 1996a). The complexity of fish movements is difficult to understand because the Mekong is one of the three most diverse riverine fish faunas in the world along with the Amazon and the Zaire (Welcomme, 1979). The Mekong system has high detrital energy input in the flood season, which contrasts with high autotrophic production (*e.g.*, photosynthesis) in flood-plains and also much of the upland main stem during the dry season.

Fish communities that assemble in the upland main channel during the low water period disperse as physical changes alter nutrient cycles, apparently migrating up tributaries or into flooded forest toward better seasonal habitat. It is not known if the species go to the same places together or if each species goes independently to an appropriate place to spend the rainy season. It is likely that predatory fishes follow the moving food supply. As the dry season fauna disappears, those species are replaced by an influx of different species that are common in more turbid waters of the lowlands, with some of the species moving up to and beyond the Mun River of Northeast Thailand from as far away as the Great Lake of Cambodia.

For fish communities, these seasonal movements represent a shift from vision-oriented carnivores and

The Mekong just upstream from the Mun River mouth in April 1975 had clear water with small fish visually identifiable from above the surface to greater than 1m depth. The Mun River also had exceptional clarity at the same time with macrophytes and filamentous algae taken in bottom trawls at less than 10m depth. Aquatic macrophytes are also visible in this photo near the canoe at the bottom. During the rainy season the water level rose considerably, the current became swift and treacherous, and the clarity decreased to less than one inch visibility. Higher dry season flow due to impoundment discharges may have already had impacts on water clarity and fish communities. Photo by Walter Rainboth.

grazers of periphyton and algae to chemosensory-oriented species and filter feeders. In the 1970's, members of the Mekong Basinwide Fishery Studies (MBFS), including myself as a graduate student, studied parts of the Mekong on the Khorat Plateau of northeast Thailand. The main stem of the Mekong was found to have a complete change in fish species between the dry season and wet season. As physical conditions changed, the entire dry season fauna of the main channel and Mun River mouth area, dispersed to other parts of the basin, and a completely different wet season fauna appeared. The effect was so stunning and unexpected that we did not comprehend what we had observed, nor did we have any good ideas about ways to report it. This means that a distribution map for a species could change with the season, so finding something somewhere would not mean that it was always there. The "snapshot" method of information gathering works best in places that have relatively uniform conditions, but in a system as complex as the Mekong would require a huge number of snapshots and a vast amount of data.

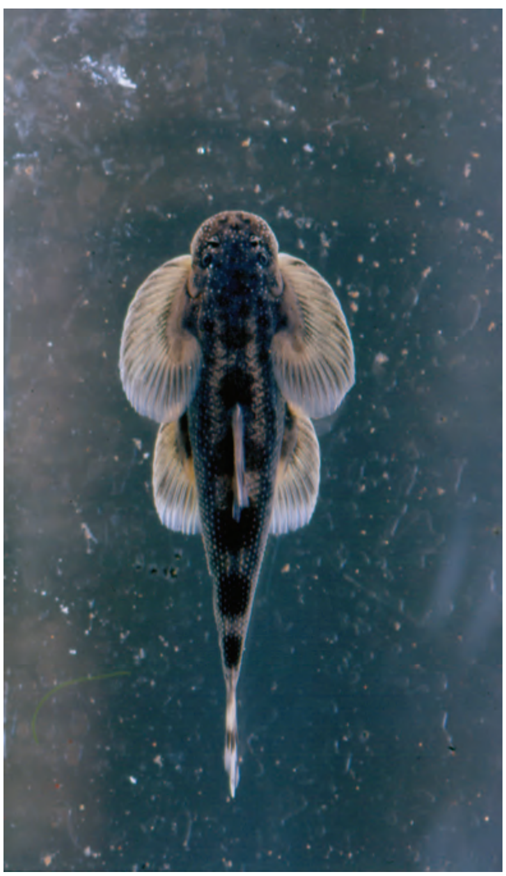
At that time, for fish species in general, migrations were known but poorly understood, and the possibility of long-term multi-species trophic migrations (as in the Mekong) were beyond the conceptual framework of most researchers. Only scattered anecdotal references to these migrations had been made previously in the literature. Most notable were Hugh Smith's comments in *The Fishes of Siam or Thailand* (1945) about multi-species migrations of small carps. Although we discovered these seasonal changes as part of a fishery project, the goal of studying "important fishery species" took priority, but the general result was that all of them had patterns of seasonal abundance followed by seasonal absence or near-absence.

It was not until the middle 1980's that I began to examine project data on the Mekong and Mun Rivers, based on some 500 collections over two years. I started assembling large data matrices, and those species × locality matrices for the confluence of the Mun and Mekong at Khong Chiam showed large blank areas in species presence-abundance at different stages in the annual flood cycle. The change was breathtaking, but publication potential was doubtful because the data were inadequate, with time series data (collected daily) at only one locality and for only a few months of a single year. That particular survey started almost accidentally when MBFS found a fisherman willing to randomly scoop out and preserve a few gallons of fishes daily from the large commercial haul-seine operation that he owned. The data ended when the 4 month fishing season ended.

Our project probably should have made arrangements to pay him and his crew to continue fishing just for the purpose of producing data. Unfortunately, we had not yet realized that those collections would provide the most valuable ecological information of the project. Instead, we continued to invest effort in studying productivity of impoundments to compare with riverine productivity. Certainly that could be used to justify the construction of more impoundments. However, the standing crop of a mobile fauna is based on the productivity of the source localities as well as the locality where the fishes reside in at the moment of capture. Not only that, but the main stem of the river may be merely a refuge for some species because their wet season habitat has dried out. Above all else, this migratory fauna requires cycles of inundation, desiccation and pathways for free movement. Reservoirs will not provide these needs, nor will they provide the flooding variation between years to maintain predator populations without major changes in management practices.

The collections we made indicated that at least two, and better yet, several years of time-series collections were needed from arrays of sites all the way up selected tributaries in each habitat that connected to flowing water, even if ephemerally contiguous. Stochastic null hypotheses notwithstanding, we needed to sample organisms from lower trophic levels to determine what was supporting the fishes in the new places as the seasons changed. That would be the only way to understand which species were moving, where they went, and what energy sources were available there. That brief glimpse of the Mekong fauna in the mid-1970's indicated only that a fish community was at a certain place for a while and then it was gone, being immediately replaced by distinctly different community. The MRC did support a migration study in the late 1990's, but it relied on fishermen interviews rather than structured biological sampling protocols and produced results as soft as the method of "we think it was there because some guy said so." Of course, this type of study cannot detect community level changes or any trends beyond those found for "important commercial fish."

Habitat of *Hemimyzon khonensis* at Khoné Falls. The arrow points at a local fisherman catching them barehanded as they cling to the sheer rock face. The falls are traversed by precarious bamboo bridges as in the foreground. This fisherman had nets suspended above the water to catch fish that were attempting to leap up the falls.



One of the specimens of *Hemimyzon khonensis* caught by the fisherman in the photo above, at Khoné Falls.

I must confess that the "some guy said so" protocol is what led to *Sewellia lineata* being listed from Khoné Falls in the Cambodia book (Rainboth 1996a), although we now know that the flat little fish with big pectoral and pelvic fins was *Hemimyzon khonensis*, which was undescribed at that time. I also made the decision to include the only species of *Oreoglanis* catfish for which I had a photograph that the FAO artist could draw. I knew that at least one very similar species, now known to be a member of that genus, occurred in torrential Mekong basin streams of mountains to the north. If something similar was found in Cambodia, I didn't want its occurrence to be overlooked, even if it turned out to be a different species. That book was an attempt to include all species occurring in Cambodia, whether or not I was able to turn them up in the two months of field work that was available to me.

However, if areas cannot be sampled because of time constraints, the resulting reports will have limited value. There were serious time constraints for producing the Cambodia book, and those restraints required a trade-off between timeliness and precision. Both are important. There is nothing like a having a sound basis for decisions that will have long-lasting effects. Sacrificing quality of content to meet deadlines may be expected but it may not be desirable. In producing this book I have resisted the inclination to consider only the freshwater fishes of the basin as one might find in standard studies. At first it meant that I had to insist on at least one survey trip through the delta in Viet Nam. The fauna of the estuary and tidal zone was distinctive and considerably different than upstream. Then I began to compare the Mekong delta fish fauna with the estuarine, coastal, and inshore collections made by myself and others who participated in The University of Michigan Mekong Basinwide Fishery Studies of the 1970's. It was not possible to escape or ignore my understanding of what effects might come, not only to the freshwater reaches, but to the coastal marine environment that the river nourishes. I have tried to deal with that as best I can at this time. Future studies may be able to refine this by producing probability estimates for the extent of nutrient enhancement, or even chart the movements of the Mekong plume as storms, changes in wind patterns and surface currents occur. For this book we can only list the species that we know to occur in the area for which there is published evidence of Mekong influence over the course of a single year.

Although we were able to include an extensive summary of the geology of the river basin here, it was not possible to include a section on ecology. In early 1997, I submitted a substantial proposal to the NSF “Career Program” for funding to study this unusual fish fauna and the regular and repeated physical changes upon which these species thrive. It would have included the sampling approach mentioned on the previous page with regard to lower trophic levels as well as extensive abiotic information. Interestingly, the seminal paper on the piscivory-transparency-morphometry model (Rodríguez and Lewis, 1997) for the Orinoco appeared later the same year, providing a serendipitous platform for understanding fish migration cycles among a battery of rivers and various kinds of floodplains. Unfortunately, the faunal survey proposal went to the ecology program, which was likely an oversight on my part. I was in remote part of Lao P.D.R. when the NSF, to their credit, at least tried, albeit unsuccessfully, to contact me about its routing. The ecology panel decided that I should be testing more hypotheses. Certainly a structured faunal survey can provide a substantial amount of ecological understanding, but perhaps the proposal would have been successful if it had promised less and delivered more. However, by the following year I was too many years post-graduation for a Career Program grant, and within a few years the bureaucratic changes at the MRC had succeeded in making money scarce for conservation, biological surveys and ecology. To include a presentation on ecology in this book would have been appropriate and timely. I hope that, by the time such research occurs, the Mekong will be more of a seasonal river than a non-seasonal river, or even worse, a series of stepped pools. Opportunities missed may not appear again.

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ACKNOWLEDGMENTS

Many people have participated in helping this study. It began soon after publication of *The Fishes of the Cambodian Mekong* (Rainboth, 1996a) and the intent was to include the entire lower Mekong and provide good photographs of the fish species. The photos in the early book were not good and some had serious color problems that occurred during the publication process. Procuring fresh specimens and photographing them has been a major goal.

Earliest supporters of the project were Mr. Jorgen Jensen, Chief of Agriculture, Irrigation, Forestry and Fisheries Unit of the MRC and Dr. Nicholaas van Zalinge, Chief Technical Advisor of the Project for Management of the Freshwater Capture Fisheries of Cambodia and later Chief Technical Advisor for the Project for the Management of Reservoir Fisheries in the Mekong Basin, both of the MRC. They were also instrumental in helping me initiate work on the Cambodia book (Rainboth, 1996a). Following the Cambodia book, this study received support printing from Dr. Chris Barlow, Fisheries Programme

Manager of the MRC. Dr. Tim Burnhill, consultant to the MRC provided editorial suggestions and drafted the excellent map of the Holocene high-stand used as Figure 31, Part 1.

In Lao P.D.R., assistance was provided by Fisheries Division of the Ministry of Agriculture and Forestry, Mr. Phonvisay Singhkam, Director General, and Mr. Sirimanotham Chanthaboun, Director of Fisheries Division, Department of Livestock - Fisheries. Support for field work in Laos was expedited by Mr. Duangkham Singhanouvong, Mr. Khongpheng Bouakhamvongsa and Mr. Sinthavong Viravong from the Fisheries Division national office in Vientiane, with the assistance of many provincial and district fishery personnel.

In addition, field studies in Lao P.D.R., received logistical support from Dr. Max Anderson, Chief Technical Advisor, and Mr. Nicklas Mattson, Fisheries Scientist Advisor, of the Reservoir Fisheries Management Project of the MRC and Dr. David Coates, Chief Technical Advisor, and Mr. Anders Poulsen. Senior Fisheries Biologist of the Assessment of Mekong Fisheries Project of the MRC.

In Vietnam, help was received from the Ministry of Fisheries Research Institute for Aquaculture No. 2 of Ho Chi Minh City, Dr. Nguyen Van Hao, Director. Mr. Nguyen Thanh Tung and Mr. Tran Quoc Bao of the Assessment of Mekong Fisheries Project helped in Ho Chi Minh City and My Tho. Dr. Nguyen Thanh Phoung of the Institute for Marine Aquaculture of Can Tho University was particularly helpful. Field studies Assistance was provided in the field by Mr. Nguyen Van Kiem, Lecturer, from the Department of Freshwater Aquaculture of Can Tho University.

Recent field studies in Cambodia were aided by Mr. Chhouk Borin, Dean, Faculty of Fisheries at the Royal University of Agriculture in Phnom Penh as well as Mr. Jake Brunner, Senior Director, Indo-Burma Region, of Conservation International and Dr. Michael Smith of Conservation International. Also, Jake Brunner was able to make copies of several books on Viet Nam fishes that happen to be particularly difficult to find in the U.S.A., and Michael Smith helped in editing the species list.

More than half the fish photographs in the book were supplied by the authors. However for coastal and marine species we needed considerable help in illustrating the fish diversity encountered in the marine areas affected by the Mekong. Many photographs used in this publication were first discovered in the personal computer version of FishBase 2000 and others were later found in the online version of FishBase (Froese and Pauly, 2011). Permissions for use were obtained from all original photographers for their use here. One of the most important contributors to FishBase has been Dr. John E. Randall of the Bernice P. Bishop Museum, who donated over 10,000 photos to FishBase, also kindly gave permission to use his photos in this book. His photographs of reef fishes made it possible to do more than provide long sterile lists of scientific names of species that occur in this area. Mr. Thomas Gloerfelt-Tarp allowed us access to his library of electronically scanned photos taken by himself and others during the JETINDOFISH survey cruises along the Indian Ocean coastline of Indonesia and NW Australia, as reported in Gloerfelt-Tarp and Kailola (1984). Dr. Richard Winterbottom of the Royal Ontario Museum provided numerous photos of fishes known from Central Vietnam coastal waters. Many of those pictures were from small fishes, particularly gobies, that are usually overlooked in fishery studies. Dr. Peter Last of the Australian National Museum in Hobart, Tasmania gave permission to use the CSIRO photos in Sainsbury, *et al.* (1985). Dr. Hiroshi Senou of the Kanagawa Prefectural Museum of Natural History allowed us to use several photos of coastal fishes from the Gulf of Thailand. Mr. Dave Catania of the California Academy of Sciences Ichthyology Section gave permission to use several of his photos from the Primary Types Imagebase project. Dr. Ian Baird of the University of Wisconsin Madison and Mr. Terry Warren of the Indigenous Fishery Development Project/IRDC Canada both supplied several photographs of Lao fishes and provided specimens to examine. Dr. Ed Murdy of the U.S. National Science Foundation gave us permission to use several photos of estuarine and coastal species that he and Dr. Carl Ferraris Jr. donated to FishBase. Mr. Clay Archambault of Longview, WA gave permission to use photos of several marine game fishes that he donated to FishBase. Photos of several elasmobranch species were provided by Dr. Fahmi of the Research Centre for Oceanography of Indonesia, Dr. Bernadette Mabel Manjaji-Matsumoto of the Borneo Marine Research Institute of Sabah, Dr. Samuel Iglesias of Museum National d'Histoire Naturelle of Paris, France, and nature photographer Baramee Temboonkiat of Thailand. Two photos taken by Mr. Don Flescher of the National Marine Fisheries Service were provided courtesy of the Woods Hole Marine Biological Laboratory. Dr. Tyson Roberts of the California Academy of Sciences kindly provided two nice photos that were used in the original description of *Aaptosyax grypus* (Rainboth, 1991) and these photos were used again here. Additional photos were donated by Dr. William Anderson of the Grice Marine Laboratory, Mr. Peter Cunningham of the Lao Community Fisheries and Dolphin Protection Project, Dr. Patricia Kailola of the Australian Museum in Sydney, Dr. Maurice Kottelat of

Cornol, Switzerland, Dr. Rick Mayden of Saint Louis University, Dr, Shao Kwang-Tsao of Academia Sinica in Taiwan, Mr. Lieng Sopha of the Cambodia Department of Fisheries, Mr. Sinthavong Viravong of the Lao Department of Livestock-Fisheries, and Mr. Ron Weidenbach of the original Mekong Basinwide Fishery Studies. Additional photos were received from Dr. Pasaorn Saenjundaeng of Khonkaen University Nongkhai Campus, Ms. Siriwan Suksri of the Department of Fisheries, Mr. Somsak Rungthongbaisuree, Mr. Pirot Siramontnaporn, Mr. Anupong Sanitchon of the Nongkhai Inland Fisheries Center, Mr. Ukkrit Satpoomin of the Phuket Marine Biological Center and Mr. Kamphol Udomritthiruj, a tropical fish photographer and exporter, all from Thailand. All photo donors are cited on the figure legend of the photo they provided.

We would also like to thank William L. Fink and Gerald R. Smith the University of Michigan Museum of Zoology Fish Division (UMMZ) for making space available for research and for curation of specimens from this study. I (WJR) am also very grateful to Reeve M. Bailey for helping me get started in the taxonomy of what has to be the most fascinating fish fauna in the world. He spent a great deal of time with southeast Asian fish collections at the UMMZ and I profited immensely from his knowledge. We would also like to thank Douglas Nelson (UMMZ) for his help in retrieving data and identification of marine specimens. We would also like to thank the William Eschmeyer and David Catania of the California Academy of Sciences for providing space for identification and photographic work. Also, Peter Ng and Kelvin Lim of the Raffles Museum of Biodiversity Research provided space and made specimens available for photography.

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Maps used in this monograph came from multiple sources and several sources deserve mention and a debt of gratitude. The shaded relief map with natural coloration is from the Natural Earth II series produced by cartographer Tom Patterson of the U.S. National Park Service. He has kindly given us permission to use it in this monograph. The large Mekong Basin map with shaded relief and color coded elevations used in the discussion of geology is a bicubic spline expansion of the file that accompanied the "Sea-Basins" model (Richey, *et al.*, 2000) available on the internet. I thank Professor Richey for his permission to use that excellent map. The map of the Mekong River placed on that map as an overlay was originally produced from the Mekong Atlas (ECAFE, 1968) and has been previously been used by the senior author in the Atlas of Fish Distributions in the Mekong River (Rainboth, *et al.*, 1976). The frontispiece map was assembled from the relief and water bodies components of Maps-For-Free which were produced by Hans Braxmeier. These can be easily integrated into existing Google map projects, but for this particular map, no Google maps or information were necessary. The website includes a "snapshot" capability for saving any screen and are available at http://www.maps-for-free. Maps of South China Sea surface currents from the Naga Expedition (Wyrtki., 1961) were made available on the internet for free public download as e-files by the Scripps Institution of Oceanography, and permission was obtained from the Scripps Institution for their use. We would also like to thank the Inter-Research Science Center, Hamburg, Germany and especially senior author Dan-Ling Tang for permission to use Figure 3 of his 2004 paper in Marine Ecology Progress Series illustrating the extent of the phytoplankton bloom produced the nutrient plume of the Mekong River in the South China Sea. We thank the European Space Agency for permission to use their copyrighted satellite photo taken by Envisat (Figure 3, page 6) on 8 April 2004. The remaining satellite photos are public domain and come from the NASA Land Atmosphere Near real-time Capability for EOS (Earth Observing System) and are all available from http://lance.nasa.gov/imagery/.

Financial support for field and lab activities was provided by the Mekong River Commission. Recently, Conservation International provided money for field expenses. We would like to thank the Faculty Development Program of the University of Wisconsin Oshkosh for research funding and sabbatical support for Walter Rainboth, which really helped get this study into the final phase of preparation. Finally, we would like to thank the library staff at the University of Wisconsin Oshkosh for their rapid acquisition of interlibrary loans that seemed to appear almost as fast as the requests were being written. Without their help, production of this monograph would have been impossible.

ABSTRACT

The Mekong River is one of the great rivers of the world and has a fish fauna of exceptional diversity surpassed only by the Amazon and possibly the Congo (Zaïre), both of which have much larger watersheds. We have recorded 890 freshwater fish species and expect 200 more from the extensive estuary in the Mekong delta. Many factors contribute to the unusual diversity of the Mekong including the range of climate zones, local habitat variation due to seasonal precipitation cycles that create a flood pulse, and changes in watershed connections to nearby regions. The first two factors are ecological and the third is due to both geology and to long-term climate regimes. The geology and long term climate history of the watershed relates to long-term distribution patterns of aquatic organisms. Both are pertinent to the Mekong, which was not a major river prior to the Pleistocene, and during same period shared repeated connection to and separation from other rivers through extended basins due to sea-level changes. The geology and climate history are explored in detail here. Included in the history of the river is the comet strike on the Khorat Plateau approximately 0.78 million years ago.

An aspect of fish diversity that is often overlooked is the effect of the river discharge cycles on coastal and marine areas. Marine ecosystems, particularly those of oligotrophic marginal seas like the South China Sea, can be fertilized like the freshwater reaches through annual flood pulses. The results can be mapped by examination of plankton blooms as the Mekong plume spreads through the South China Sea and Gulf of Thailand. The entire region directly affected by the Mekong is herein termed the Greater Mekong Ecosystem. Its boundaries are the drainage divides that separate it from other river systems that independently reach the sea, and somewhat variable extent of nutrient enhancement in the in the sea. The total number of freshwater, estuarine, coastal and marine fish species it supports number 3,275 at the minimum, based on material indicated in the species list included here. We have also provided photographs of over 2,500 of the combined freshwater and marine species.

PUBLICATIONS OF THE
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The publications of the Museum of Zoology, The University of Michigan, consist primarily of two series—the *Miscellaneous Publications* and the *Occasional Papers*. Both series were founded by Dr. Bryant Walker, Mr. Bradshaw H. Swales, and Dr. W. W. Newcomb. Occasionally the Museum publishes contributions outside of these series; beginning in 1990 these are titled Special Publications and are numbered. All submitted manuscripts to any of the Museum's publications receive external review.

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RECENT *MISCELLANEOUS PUBLICATIONS*

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Klimov, P.B. & B.M. OConner. 2008. Morphology, evolution, and host associations of bee-associated mites of the family Chaetodactylidae (Acari: Astigmata) with a monographic revision of North American taxa. *Misc. Publ. Mus. Zool., Univ. Michigan*, No. 199, pp. *i-vi*, 1-243, 95 figs., 27 tables, 9 appendices.

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COVER ILLUSTRATION—Fishes of the Greater Mekong

PART 1.

THE MEKONG:

ITS REGIONAL INFLUENCE,

HISTORY

AND

FISH DIVERSITY

INTRODUCTION

The fishes of the Mekong River have been described to science mostly over the last century and a half. However, faunal studies of broad geographic scope have been limited by political boundaries. In this publication, the authors have assembled information to document the presence of species from sources ranging from historical records to recent collections by the authors themselves.

This atlas will be useful to investigators in a variety of disciplines. Correct species identification is the basic starting point for any type of biological study, particularly if it involves wild populations. For research on ecology and applied ecology, as well as for fishery science, it is important that each name applies to only a single species, and that each species is known by a single name. This guide should help achieve the goal of taxonomic uniformity, by using the most recent available information. Further, it will help fishery scientists estimate the total fish use in areas where extensive import of marine fishes is used to augment overtaxed natural production systems. It will also aid in studies of market niche for aquaculture, and the effect of population growth and economic development to simultaneous decline of natural resources.

During the first author's (WJR) introduction to the fauna as part of the University of Michigan Mekong Basinwide Fishery Studies, an effort was made to obtain data on fishes of the plume of the Mekong in the South China Sea. For this, we treated the near-shore marine fishes that occurred off the mouths of the Mekong as part of the Mekong fauna. It was obvious that the Mekong provided the nutrients that supported the entire near-shore marine food web from the primary producers upwards through all trophic levels. Therefore approaching the Mekong as a simple freshwater system would overlook much of its importance to fisheries of the region. Although defining fish species as being fresh-water, marine, or estuarine can simplify our work, it will create gaps in knowledge as excluded species become invisible during market or catch surveys. Several hundred species of marine fishes use mangroves for reproduction and many more use bays and estuaries. Overlooking these species because they do not live permanently within the confines of land or fresh water creates a large blind spot as we try to understand the importance of the Mekong and the results of its continuing modification by natural and human activities.

The waters of the Mekong ecosystem exhibit a range of salinity from fresh water to marine, and support an array of habitats well beyond those found in fresh water. Changes in volume and quality of water passing through the delta have big effects on fish distributions, just as those same changes have effects on agriculture. Until the last decade, few publications have provided hard data to indicate the full extent of the Mekong's influence.

Expanding the scope of this book to include species of the coast and continental shelf within the region affected by the Mekong, accomplishes several things: 1) this work can help fishery biologists as well as other scientists and researchers recognize and identify nearly any fish that appears in markets or catches within the basin; 2) it eliminates the need for subjective habitat distinctions to determine if a species is appropriate for inclusion, because all species known to occur within the area affected by the river are listed; 3) it helps people to understand the great regional contribution of the Mekong to ecosystems that sustain human populations.

Finally, there is the problem of the headlong rush to western-style economic development, including the construction of at least eleven hydroelectric dams along the lower Mekong main stream and the resulting destruction of freshwater and marine fisheries. However, before these problems can be dealt with, it is necessary to know what species are present and where they occur.

THE PRESENT-DAY MEKONG

The Indochinese Peninsula, and indeed all of mainland Southeast Asia, has a fascinating and complex geological and climatic history that has contributed to the fish diversity that we see today. Many changes in the river configuration have happened in relatively recent times, and this has allowed different local fish faunas of formerly separate drainage basins to occur together in a single continuous system (Kottelat, 1989; Rainboth, 1991, 1996a,b). From its origin in Tibet to its mouth in the South China Sea, waters of the Mekong system have ecological characteristics that reflect changes in regional topography and climate. The result is a variety of different localized fish distributions, that likely reflect differences in present physical conditions superimposed upon changes from ancient to modern river configurations.

As one of the great rivers of the world, the Mekong is 4,909km in length, with the upper 2,198km passing through China and the lower 2,711km passing through Myanmar, Laos, Thailand, Cambodia and Vietnam (Liu, 2002). Recent studies using satellite data estimate the area at approximately 810,000km^2 (Saito, 2001; Liu, 2002). Its discharge is 470km^3/yr, and its sediment discharge is 160 × 10^6 tonnes/yr, respectively ranking tenth and ninth in the world (Millman, *et al.*, 1995).

The source of the Mekong is located in the Jifu Mountains in Zaduo County, Yushu Tibet Autonomous Prefecture in northwestern Qinghai Province of China at an elevation of 5,200m. The climate is extreme, with long, harsh winters and chilly summers with 0º to 10ºC mean

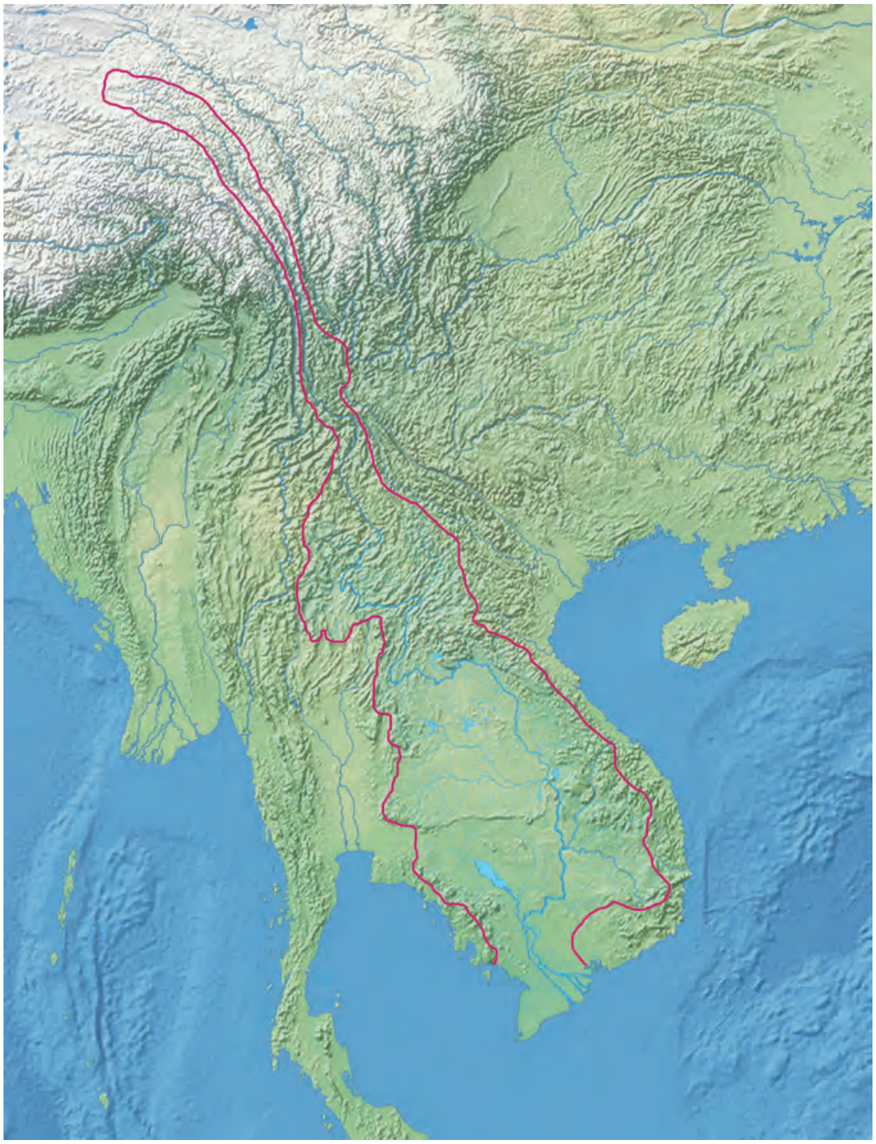

Figure 1. The Mekong basin (outlined in red) from its origin in Tibet at the upper left to its mouth at the South China Sea. The narrow upper basin flows for 2,198 km through China, and the lower basin passes through Myanmar, Laos, Thailand, Cambodia and Viet Nam for 2,711 km. Map taken from Natural Earth II, created by Tom Patterson.

July temperature. Precipitation is low, with annual rainfall of 250 to 500mm (10 to 20 inches). The vegetation is upland pasture or semi-tundra (Fig 1).

The Mekong descends from Tibet where it comes in close proximity with other great rivers of southern and eastern Asia, in an extraordinary hydrographic feature. In southeastern Tibet, a circle of a 60km radius includes land within the Yangtze (China), Mekong (Southeast Asia), Salween (Myanmar), Irrawaddy (Myanmar) and Brahmaputra (India) watersheds.

The steep, forested, parallel river gorges of the Salween, Mekong, and Yangtze have valley floors at elevations between 1,000 and 1,500m and are separated by mountain ranges of over 5,000m. These compressed basins of the Mekong and Salween, receive no major tributary streams for great distances (380km for the Mekong and 480km for the Salween). The area has a more moderate climate than is found at the rivers' sources. As the Mekong (Lancang Jiang) descends through Yunnan Province of China, the climate becomes warmer and wetter with 1,700+ mm annual rainfall coming between the months of May and October in southern Yunnan. This and more southern parts of the Mekong basin are nearly frost-free. Southern Yunnan has a tropical lowland evergreen rain forest similar to that found in Malaysia even though the rainfall is seasonal and the climate is cooler (Whitmore, 1985). There are also scattered patches of tropical evergreen rain forest southward in Lao P.D.R., Cambodia, and Viet Nam, although the drier monsoon (deciduous) forest is the predominant vegetation type.

As the Mekong leaves Yunnan it becomes the border between Myanmar and Lao P.D.R (Fig. 2). As the river continues, it forms the border of Thailand and Lao P.D.R. There, its path crosses a series of parallel valleys that continue southward to the Chao Phraya watershed. The river then enters Lao P.D.R. and takes a generally eastward path before making a nearly 180^{o} turn and bearing generally southward parallel to the four valleys in Thailand.

As the Mekong passes 18^{o}N latitude, it veers sharply eastward and enters the Khorat Plateau, which is actually an elevated sedimentary basin (Hutchinson, 1989). The Mekong flows along the northeastern edge of the Khorat Plateau and southwards to exit near the southeastern corner. There are some bends in the river, but no meanders or oxbows. Most of the water that enters the Mekong in this area comes from rivers originating along the highlands that form the border between Viet Nam and Lao P.D.R., although the Songkhram River enters from Thailand. Most of the Khorat Plateau drainage of Thailand is carried by

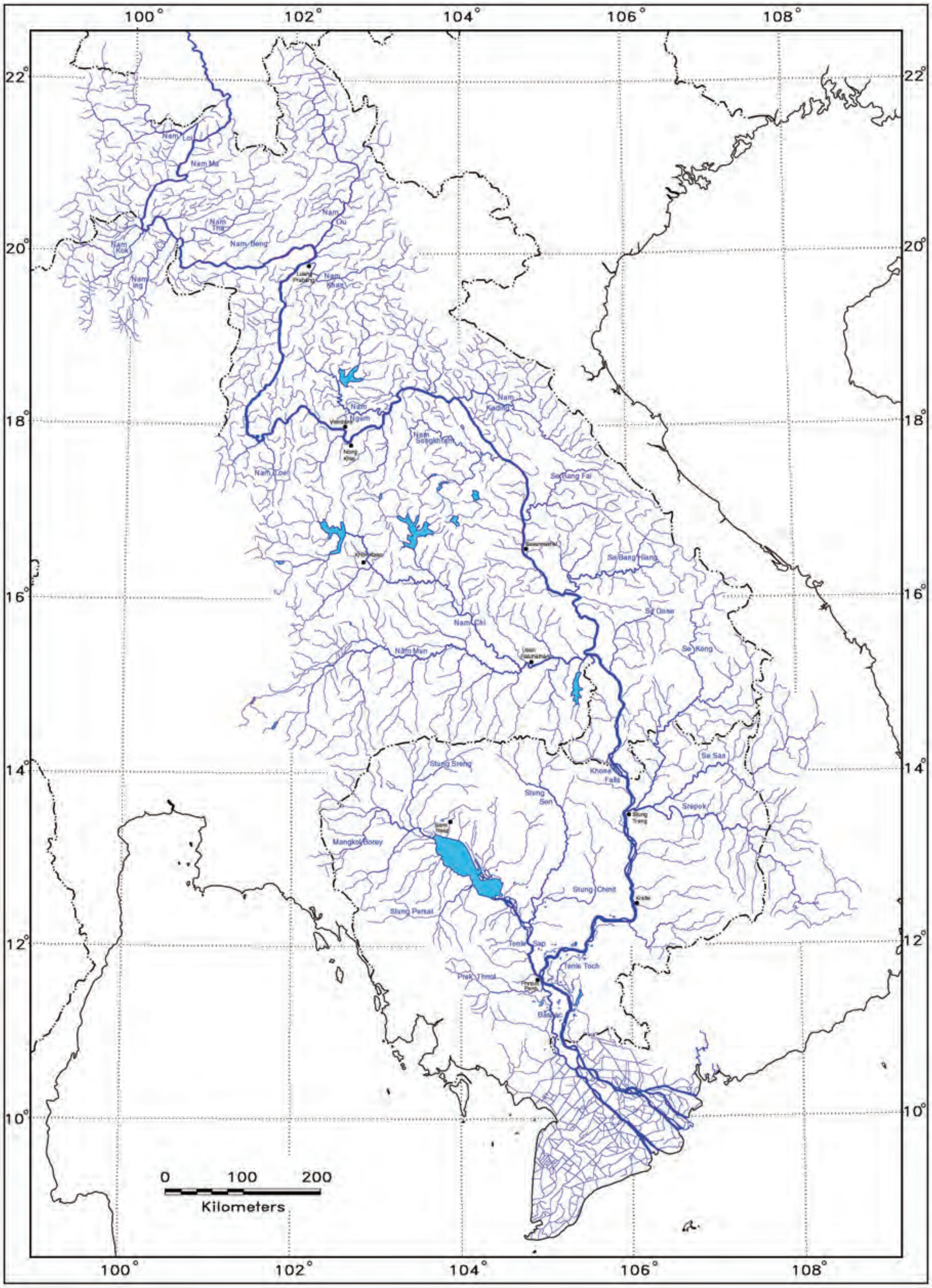

Figure 2. The lower Mekong basin with major rivers and cities mentioned in the discussion. Standing bodies of water in light blue, flowing waters in dark blue. Cities and national borders in black, except when a border follows the path of a river.

the Mun and Chi rivers, which join and then flow into the Mekong near the Mekong's exit from the plateau. Nearly all of the river basins of Lao P.D.R. belong to the Mekong.

A seasonal monsoon rainfall pattern predominates throughout the lower Mekong Basin, causing the river to undergo great cyclical changes in flow. These flow changes are predictable and have major effects on the river's physical characteristics. Unlike many smaller rivers of the perhumid tropics that have fluctuating discharge depending on unpredictable local rainfall patterns, the Mekong experiences a predictable annual onset of flood regime. With the commencement of flood season, water clarity decreases as higher velocity results in greater suspended particulate matter. The depth increases nearly 15 meters at places along the Thai-Lao border, and the current becomes treacherous. There is relatively little floodplain, as the deeply cut channel rarely allows peak flows to top its steep banks. As the water level increases during the wet season, flow from tributary streams may slow as their mouths deepen, and fishermen often gather to fish at tributary mouths rather than chance the dangerous current of the main stream. The powerful flow has cut several long underwater canyons over a hundred meters deep on the Khorat Plateau. Sedimentary processes on this part of the Mekong are primarily erosional rather than depositional.

As the Mekong passes into Cambodia it flows over Khoné Falls, experiencing an elevation drop of 21m. Within Cambodia, the Mekong has a variety of characteristic forms. It enters Cambodia from Laos as a large river with alternating rapids, deep pools and sections of braided channel with obstructing rocks, gravel and sand creating islands. Downstream from the falls, even during periods of reduced flow, the swirling currents can be treacherous in places. In some places the channel crosses exposed bedrock. At Stung Treng, the Mekong meets with Sekong, sometimes called the Tonlé San or Sesan, which carries water from as far away as southern Laos and the central highlands of Viet Nam. Most of the streams in this area flow through relatively intact forest ecosystems and have low silt load, resulting in transparent blue water. The Mekong stays within its banks during peak flows, with relatively limited areas of riparian flooding, through extensive braided and anastomosing channels until it reaches Kratié. At Kratié, river flow records indicate that the seasonal discharge of the Mekong has a ratio of 53.6 (rainy season maximum / dry season minimum). This seasonal flow change is much more pronounced in the Mekong than in any other great river in the world (Welcomme, 1979).

Downstream from Kratié the Mekong makes a 90^{o} westward turn and reaches Kompong Cham Province in central Cambodia where it changes to become a meandering lowland river. As the river approaches Kompong Cham Province, floodplain appears along both sides and become extensive as the river flows west. Continuing, the Mekong develops a broad meandering channel and numerous oxbows. Although the oxbows and swamps are indicated on maps, the full impact of the meandering nature of the lowland Mekong only becomes apparent from well above the land surface.

When flying over the lowland Mekong floodplain, the prior channels can easily be recognized, because they form sharply outlined property lines, tree rows, footpaths, and roads, all indicating former river banks. Due to the rapid seasonal changes in the Mekong flow, the current slows greatly or even reverses in some small tributary streams, called preks, in Cambodia, and water from the Mekong spreads through floodplain forest. As water levels begin to decline, discharge flow increases in the prek and water levels recede in the forest.

In south central Cambodia, the Mekong joins with the Tonlé Sap. The Tonlé Sap is the outlet of the Great Lake, which is situated at the upper end of the huge floodplain (70,000km^2) of the lower Mekong. During the dry season, the lake has a maximum depth of about 3.6 meters whereas during the flood season the maximum depth increases by more than 10 meters and the Great Lake expands from 2,520km^2 to 15,780km^2, inundating a vastly larger area than it covers during the dry season.

During the flood, thousands of square kilometers of floodplain forests are submerged in one of the most productive seasonal aquatic habitats in the world. In some areas these forests are rapidly being cleared for agriculture, in others it is virtually pristine. For most of the year, the Mekong and the Tonlé Sap flow directly to the sea, but during the period of rapidly rising water the Mekong rises faster than the Great Lake and Tonlé Sap, causing the flow in the Tonlé Sap to reverse direction and flow towards the Great Lake. Thus the normal outlet of the Great Lake becomes the entry point for the Mekong flow causing the formation of an inland delta as water enters the lake and particulate matter settles out. Even during the dry season when less water is coming into the Great Lake, it always has turbid water, largely because of wave action over the shallow bottom of fine-grained sediments. As the Mekong flood crests and water levels begin to decline the direction of flow in the Tonlé Sap reverses and the combined Mekong and Tonlé Sap flow out to the South China Sea.

The Mekong meets the Tonlé Sap at Quatre Bras and is immediately separated again into two channels, the Mekong and the Bassac. Downstream from Quatre Bras, much of the area between the Mekong and Bassac was formerly floodplain forest, but has been converted to farmland during the last few decades. As the Mekong and Bassac flow to the Viet Nam border they experience tidal influence. Under tidal fluctuations they begin to take on

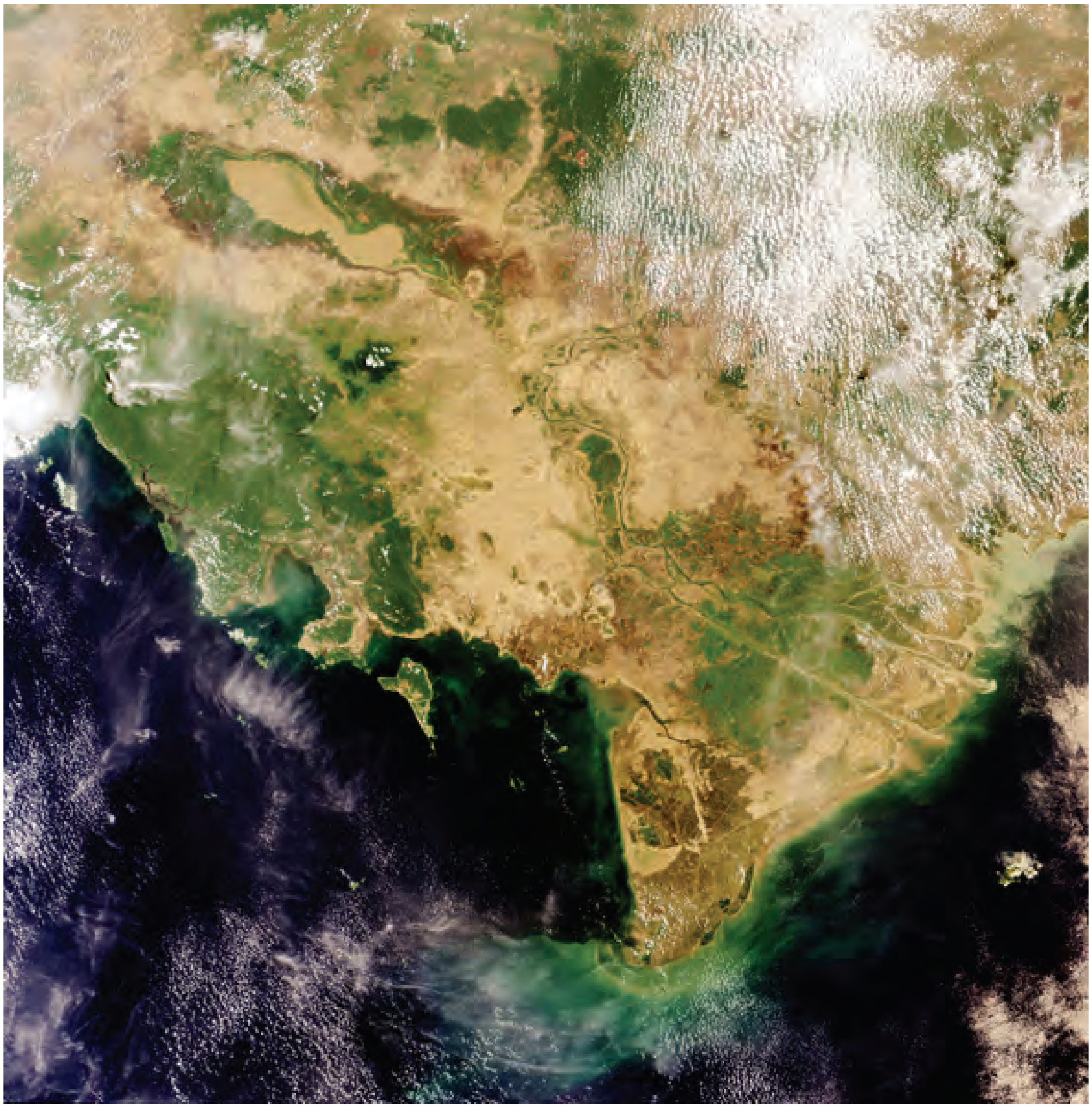

Figure 3. The lower Mekong as viewed from space. Image taken at the end of the dry season on 8 April 2004, covering an area of 672km by 672km. Much of the region is dry and river flow is near the yearly minimum. Discharge plumes at the Mekong mouths vary daily with the tide. In this photograph, the tide is low and the river mouths are flushing straight jets into the South China Sea. Minimal suspended matter is washing past the tip of the Ca Mau Peninsula during the late and weakening northeast monsoon. (ESA - European Space Agency, 2005)

the characteristics of high estuaries with purely fresh water, but current velocity and direction changes due to the changing tides at the river's mouth. The Mekong and Bassac also connect in Viet Nam and this connection assures high flow through all the channels. At the end of the river, the tropical wetlands of the Mekong Delta are supplied with rich alluvial deposits from the 470-475km^3 of water that the river discharges annually. Beyond the delta, the Mekong is the major contributor of sediment to the South China Sea, and has been for at least the last 190,000 years (Liu, et al., 2004) with an annual sediment discharge of 160 × 10^6 t/yr (Millman & Meade, 1983)

THE MEKONG DELTA

The delta of the Mekong is a textbook example of a mixed energy, tide-dominated delta characterized by multiple large channels and shallow sand bars in the mouths of the large distributary rivers at the delta front (Prothero and Schwab, 1996). The expanse of the delta as viewed by geologists is far greater than the way it is would be defined by biologists. Including the prodelta and delta front, it covers 93,781km^2, with the delta plain above sea level being a far smaller 13,470km^2. As this type of delta grows, distribution mouth bars, usually of coarse sediment, are either scoured by the current during the next high discharge or build up high enough that the bars can ultimately cause further separation of channels and subdivision of the flow. These become islands and many of these are found in the mouths of the Mekong.

The effects of the Mekong on the surrounding coastal waters are easily visible even during periods of minimum flow (Fig. 3). The flushing of extensive sediment and accompanying nutrient load has important effects on coastal waters, and this discharge can easily be seen even during the period of the lowest flows of the year. The mean tidal range is 2.5 ± 0.1 meters with the maximum range of 3 to 4 meters (Saito, 2001). During periods of minimum flow in the dry season, rising tides can stop and even reverse the direction of flow through the river channels. Daily during the dry season, one can see mats of floating water hyacinth reversing direction to travel upstream with the incoming tide.

Due to the mixing of salty and fresh water in the river channels during the low flow periods, the brackish water discharged into the ocean is denser and the lens of low density water is less persistent at the sea surface. Not only are rather small plumes of sediment visible during the period of minimal flow, but the results of wave and tidal action indicate water movement around the tip of the Ca Mau Peninsula and into the Gulf of Thailand which is typical for the northeast monsoon.

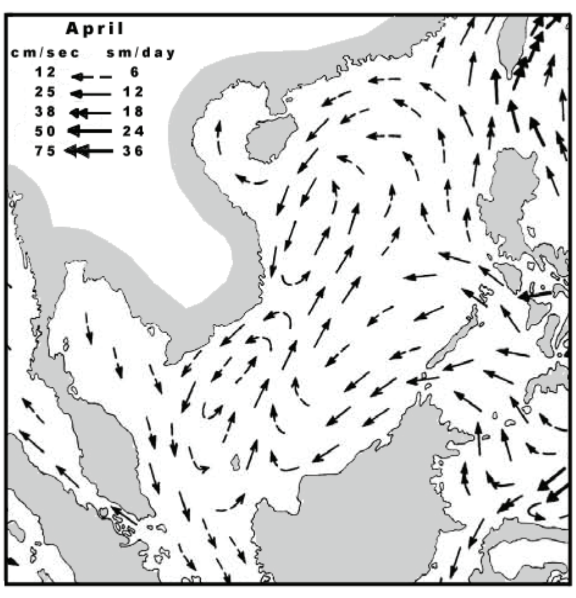

Figure 4. Surface currents in the South China Sea during April (modified from Wyrtki, 1961). The currents are generally weak and the Mekong discharge is low (see Figure 3).

During the last century, the Ca Mau Peninsula has been undergoing erosion on the eastern coast and at the same time there has been progradation on the western coast. The result along the eastern coast has had serious consequences for agriculture due to salt water intrusion (Nguyen, *et al.*, 1999). The combination of ocean circulation and prevailing winds, both coming from the northeast from mid-October until the beginning of the southwest summer monsoon, produce strong currents that parallel the delta shoreline. This is especially true at the beginning of the northeast monsoon, but as the season progresses, the current towards the southwest weakens as northeast winds decline late in the dry season. A more complete discussion of the effects of the monsoons in Southeast Asia, and their effects on the annual discharge of the Mekong into the South China Sea is appropriate at this point.

MONSOONS AND SEA CURRENTS

The deposition and nutrient transport to the coastal environment greatly enhances the productivity of the area and the diverse habitats found there. To understand how the Mekong influences the coastal marine environment, we must know what is being discharged and where it is going. Unlike rivers that are confined to their channels, once the water passes the coastline, the path it will take is determined by the seasonal prevailing winds of the monsoons and the currents of the South China Sea and the Gulf of Thailand. The most significant effects occur during both summer and winter monsoons during high and low periods of precipitation.

The monsoon system of the eastern hemisphere extends from Africa and the Arabian Sea across southern Asia to northern Australia and northwards through East Asia and Japan (Black, 2002). The Asian Monsoon System is divided into two subsystems, the Indian (or South Asian) Monsoon and the East Asian Monsoon, which join at ~105ºE, which is located in the Ca Mau Peninsula of the Mekong delta. The Indian Monsoon is characterized by a northern landmass and an ocean to the south. The East Asian Monsoon is characterized by a western landmass, mostly with maritime climate, and an open ocean to the East. The seasonal pattern of this system of atmospheric circulation results in cool, dry winters and warm, wet summers over the land. These same changes in atmospheric circulation and precipitation also affect the ocean, producing seasonal patterns in current strength and direction, sea-surface temperature and salinity. The East Asian monsoon over the South China Sea produces stronger winds from the northeast during winter which cause predictable coastal currents (Fig. 4).

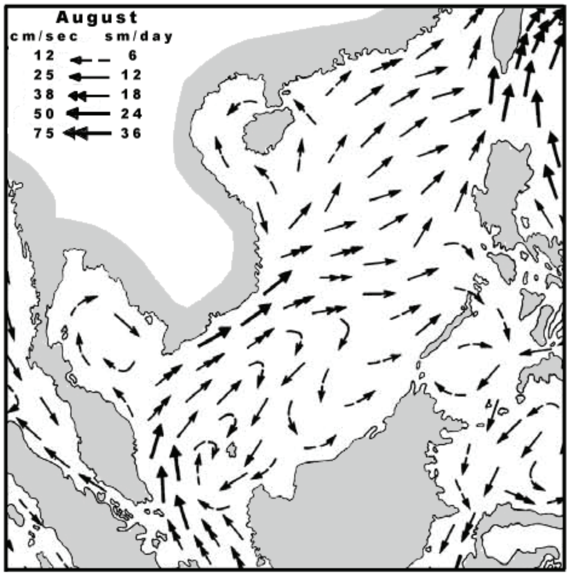

Figure 5. Currents along the coast of southern Viet Nam during the southwest (summer) monsoon (modified from Wyrtki, 1961).

Winds are subject to the interactions of high and low pressure systems on the landmass and during times of change from one seasonal pattern to another, the directions and strengths may vary. As spring turns into summer, the northeast winds decline on the South China Sea and begin to curl around into the Gulf of Thailand and northward onto land. Gradually the southern wind currents expand eastward to include the whole Indochinese Peninsula and the South China Sea. This change brings warm moist southern air masses to the land, triggering the summer rains. Over the South China Sea, the southern winds reverse the flow of surface water along the coastline producing a strong current flowing northwards (Fig. 5).

During the late rainy season and immediately following it, the discharge is highest, with the plume of fresh water floating on top of the salt water extending far out into the South China Sea (Fig. 6). The high discharge has its peak reduced and its duration prolonged, due to the modulating effect of an enormous amount of water stored in the Great Lake and associated wetlands. This reservoir of stored water comes flushing through the Mekong delta long after the rains have ceased.

The discharge carries fine sediment as well as mineral and organic matter that nourish food webs of marine organisms of the South China Sea and the Gulf of Thailand. The early rainy season flow is transported northeast and it has been found by water sampling beyond 11ºN (Voss, *et al.*, 2006) and by satellite remote sensing

Figure 6. Rainy season discharge of the Mekong with surface current of the South China Sea carrying effluent northwards up the coast of Viet Nam. Long plumes of sediment extend over 100km offshore. Nutrients that support marine food webs extend much farther. NASA Earth Observing System photo taken 24 August 2003.

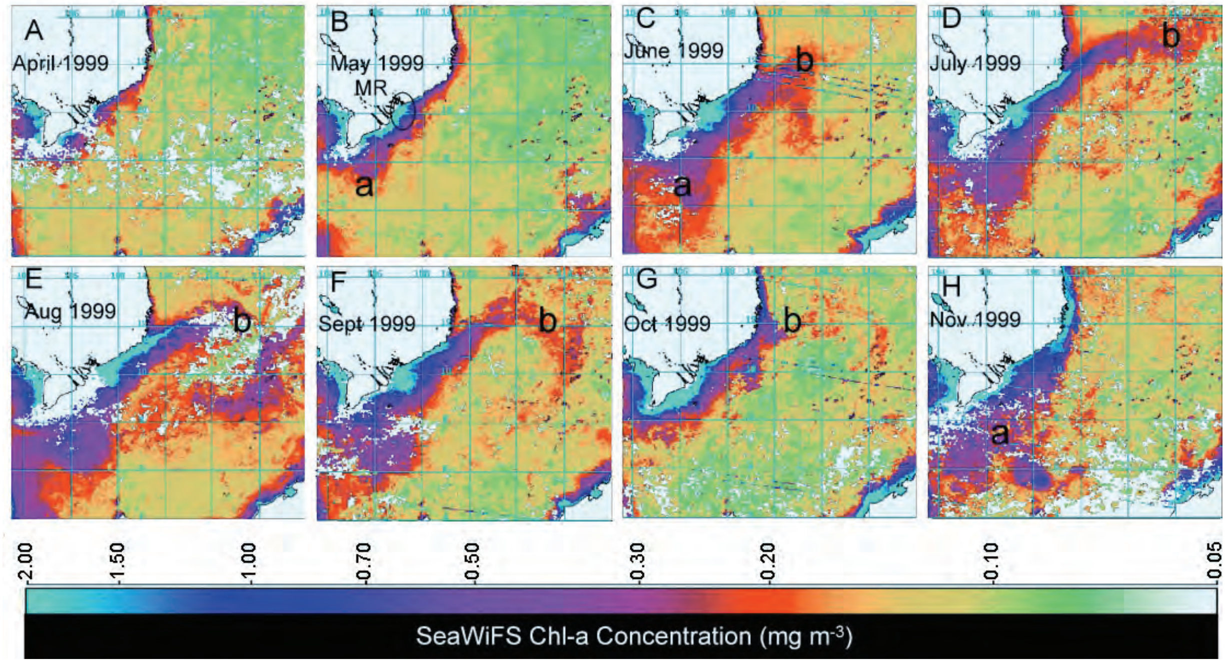

Figure 7. Mekong annual nutrient plume cycle in the South China Sea during 1999 based on chlorophyll-a concentrations. Each map extends from latitude 4°N to 14°15'N and longitude 103°45'E to 116°E. Areas in white are locations with no data (land, high turbidity, or clouds). Indochinese Peninsula at upper left with Mekong mouth at middle left. Lower right is coast of Sabah and Brunei. The Spratly Islands are visible the right side of each map, mostly between 112°E and 116°E and between 7°N and 12°N (modified from Tang, *et al.*, 2004b).

well beyond 12ºN (Tang, *et al.*, 2004a). Remote sensing of this jet of water shows enhanced levels of phytoplankton from the Mekong plume extending far to the northeast of the Mekong mouth (Fig. 7). This feature intensified as it followed a gyre 400km in diameter from July to September and decayed in October (Tang, *et al.*, 2004b). During the spring inter-monsoon period (March to June), the area is oligotrophic, and during the southwest monsoon, the rate of nitrogen fixation becomes 10× higher. There is also a 40 - 50km long monsoon induced upwelling area between the coast and the Mekong plume (Dippner, *et al.*, 2007).

Both the Mekong plume and the upwelling provide nitrogen to marine food webs of the area, by nourishing nitrogen fixing organisms. Nitrate in the Mekong plume does not tend to travel this far north and is confined to more southern and shallower areas. Nitrogen fixation rates are much higher in the Mekong river plume than in the coastal upwelling area (Voss, *et al.*, 2006). This may be attributed to lack of mixing of the relatively low density water which provides a stable water column that allows the buoyant phytoplankton to stay in strong sunlight. It has also been suggested that river water containing dissolved silicates may support the growth of diatoms (Voss, *et al.*, 2006). Certain diatoms have been found to have symbiotic associations with nitrogen fixing cyanobacteria living inside them (Carpenter, *et al.*, 1999). Although the Mekong has a Si:N ratio of about 3, which is favorable to diatom growth, it is still low compared to global estimates of dissolved silicate concentrations in rivers (Conley, 1997). Nevertheless, the Mekong discharge is of great importance to the mostly oligotrophic South China Sea.

The late discharge water reaches the ocean during the period of change to the northeast monsoon and is transported by wind-blown current southward past the tip of the Ca Mau Peninsula and into the Gulf of Thailand (Fig. 8). There it forms a large lens of low salinity water that can travel along the delta coast and far into the center of the Gulf (Robinson, 1974).

The physical oceanography of the Gulf of Thailand was studied extensively by researchers of the Naga Expedition, sponsored by Thailand, South Viet Nam and the United States of America (Wyrtki, 1961; Robinson, 1974). The Gulf of Thailand was found to be a two-layer shallow estuary. The surface water has lower salinity and is diluted by rain and the freshwater runoff that flows out of the Gulf at the surface.

On the Mekong side of the Gulf, reduced salinity water comes directly out of Cambodia and from the southern coast of the Mekong delta first, and then as the monsoon shifts to the northeast monsoon in November, low salinity water begins to wash southward from the Mekong mouths and may extend as a mass halfway across the Gulf.

During the northeast monsoon, surface water from the

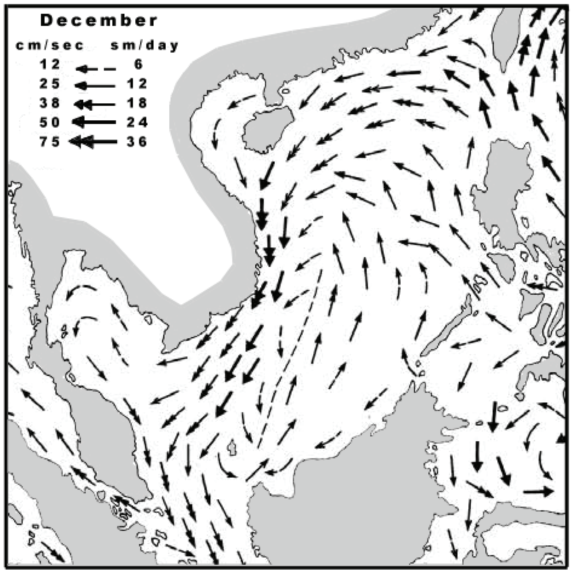

Figure 8. Strong coastal currents along the coast of central and southern Viet Nam during the northeast (winter) monsoon (modified from Wyrtki, 1961).

South China Sea flows southward across the path of the deeper waters of the mouth of the Gulf. Monsoons, tidal currents and precipitation create circulation of those waters, which influences the salinity and turbidity of the Gulf. During much of the year, the currents of the Gulf tend to circulate in a clockwise rotation (anticyclonic), with relatively little up-welling of deep Gulf water. Mekong nutrients serve to fertilize a considerable area. Recent studies of seasonal currents in the Gulf of Thailand have shown the additional possibilities. However, few studies have produced the equivalent of the nearly simultaneous data for the entire Gulf of Thailand provided by the Naga Expedition, and so some of these results need further study.

A relatively recent publication by Singhruck (2001) provided photographic evidence from SeaWiFS readings that during the southwest monsoon (in late July) there was considerable flow of nutrients that fueled a phytoplankton bloom extending from the tip of the Ca Mau Peninsula into the Gulf of Thailand. This bloom extended north along the western shore of the Mekong delta and continued up along the Cambodia coast, reaching nearly to Trat Province of Thailand. Along the west coast of the Mekong delta, chlorophyll *a* gave a dense signature that extended across nearly 1/3 of the Gulf of Thailand. This occurred during the southwest (summer) monsoon, not the winter monsoon as portrayed in Figure 8.

In middle October, the winds begin to shift at the onset of the winter monsoon. By December the northeast (winter) monsoon is in full force. The result of the high discharge that continues into the winter monsoon can be seen in photos from satellite orbit as suspended matter drifting south over the Gulf of Thailand (Fig. 9).

Algal blooms of Mekong origin have been documented as reaching to the Malay Peninsula from the months of December through February in early 2001 and 2002 and late 2001 (Tang, *et al.*, 2006). Therefore the plankton bloom occurs in the South China Sea during the summer monsoon and in the Gulf of Thailand during the winter monsoon. The Mekong River discharge contributes to algal blooms on both sides of the river mouth depending on the monsoon winds. Widespread and harmful algal blooms have been recorded frequently in recent years. Therefore results have not always been positive, particularly in places where nutrient concentrations reached their highest levels.

Figure 9. Mouths of the Mekong from satellite photo taken 17 January 2003. Northeast monsoon takes surface current towards the Gulf of Thailand. Discharge declining but substantial due to water storage in Great Lake of Cambodia. Original from photo of Indochinese Peninsula so full extent of this plume was not available. From NASA EOS (Earth Observing System).

The South China Sea results in Tang, *et al.* (2004b) are those from data taken during the year 1999. Although the extent of the nutrient plume and phytoplankton activity followed a predictable path, such events may vary in intensity and exact location as a result of tracks of recent storms, particularly the tracks of large cyclonic storms. Any individual storm may have produce less predictable effects. An interesting example of this is the July 2001 SeaWiFS chlorophyll *a* photo that shows an algal bloom extending from the Mekong to approximately 300km SSE of the Ca Mau Peninsula (Tang, *et al.*, 2006). This occurred during the part of the monsoon cycle in which most of the Mekong plume predictably moves to the northeast along the Viet Nam coast, or to the west and circulates in the Gulf of Thailand off the coasts of peninsular Thailand and along the coast of the coast of Cambodia.

The contribution of the Mekong discharge to the ecosystems in the South China Sea and the Gulf of Thailand is not only enormous, but widespread and to some extent unpredictable. Yet despite the unpredictable aspects of its extent, location and timing, the importance of the Mekong to the ecosystems of the South China Sea is profound. It is this importance that defines the linkage of the Mekong to the South China Sea in what we refer to as *The Greater Mekong Ecosystem*.

THE GREATER MEKONG ECOSYSTEM

In order to completely understand the contribution of the Mekong to the living systems of the Indochinese region, we must first document the extent of the Mekong's measurable effects. Information on the effects of the discharge of the Mekong into the South China Sea and Gulf of Thailand over the course of a few years indicates that the Mekong affects a far greater array of ecosystems of the region than will be encountered within the watershed itself. When supplemented by additional data that indicate the regional variability of its contribution, the significance of the river to large region beyond its freshwater reaches becomes much greater (Fig. 10).

Information from many scientists reported here shows that during the summer monsoon, the Mekong exerts an influence on waters from Nha Trang, on the coast of central Viet Nam, to the Gulf of Thailand, extending along the Cambodian coast, reaching nearly to Thailand. During the winter monsoon the Mekong influences productivity in the Gulf of Thailand reaching nearly to the coast of Peninsular Malaysia. If the 400km wide nutrient gyre in the South China Sea found by Tang, *et al.* (2004b) is included, the area influenced by the Mekong becomes quite extensive. Besides coastal areas and open shallow and deep seas, it includes the Spratly Islands, parts of which are currently claimed by six nations in the region. So, beyond merely sampling the visible plume of the river as the Mekong Basinwide Fishery Studies did back in the 1970's, the actual region affected is substantially larger and more important to a much wider array of interested parties.

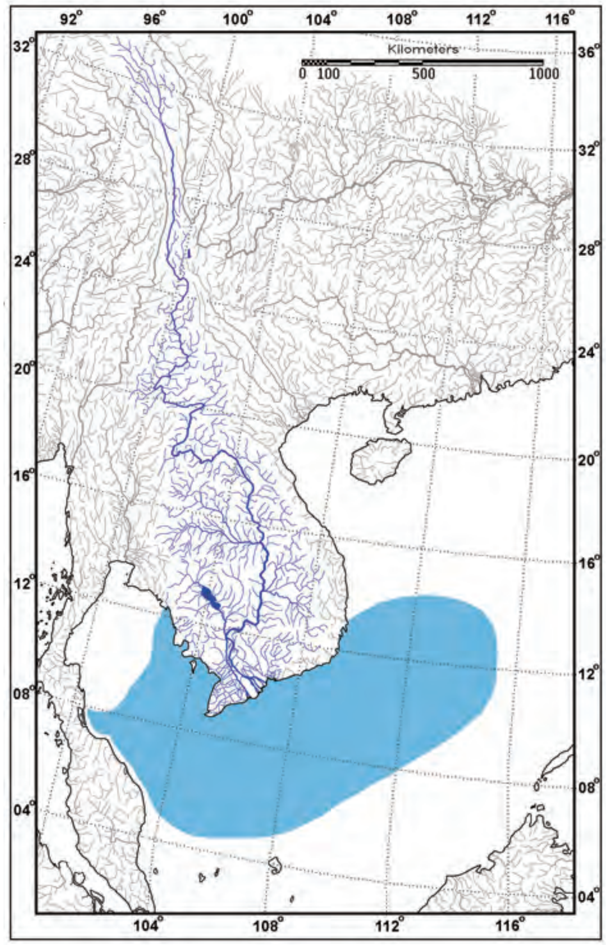

Figure 10. The Greater Mekong Ecosystem with the freshwater catchment as well as coastal and marine waters affected by the discharge of nutrients and sediment. Different parts of the discharge region are affected during different phases of the annual flow cycle.

The area included within the Greater Mekong Ecosystem remains somewhat tentative, and much depends on the annual weather patterns. Some areas may be affected with certainty each year, whereas other areas may be affected less regularly. There may be substantial variation in currents over a number of years. The current diagrams used here have been modified from Wyrtki (1961) and they adequately summarize the current along the Viet Nam coast. However, numerous subsequent studies have found the South China Sea currents to be much more complex system of gyres and eddies. These recent findings have been summarized in Fang, *et al.* (1998) and in Hu, *et al.* (2000). How the new information will affect our understanding of the Mekong's role in supporting the living systems of the South China Sea remains to be seen. Eventually, the extent of the Mekong influence may even be enlarged if it is found to extend farther southeastward.

In coastal waters of Viet Nam and Cambodia and inshore areas around the delta, there are a diverse variety of habitats, including coral reefs, sea-grass beds, sandy beaches, mangroves, tidal mud flats, tidal lakes such as Ha Tien lake, rocky coast, lagoons and muddy bays. Under the plume of the Mekong, a trawling survey conducted by the University of Michigan Mekong Basinwide Fishery Studies also encountered extensive areas of coral rubble directly under the discharge plume of the Mekong. The time when these former reefs flourished was unknown to us. However coral reefs are never found at the mouths of great rivers of the world today, and this alone indicates major change in the Mekong ecosystem.

MEKONG FISHERIES

The lowland floodplain of the Mekong, including the Great Lake, produces a major part of the Mekong fishery harvest and was estimated in early studies to be a **minimum** of 500,000mt/year (Lagler, 1976). More recent data from the MRC Fisheries Programme indicate that about 3,000,000mt/yr of aquatic organisms are consumed in the basin each year. Of this total about 2.7mmt come from natural water bodies and 240,000mt come from aquaculture. As the population increases, we can expect the amount coming from aquaculture and marine sources to increase. However aquaculture cannot replace the naturally produced sources and ambitious plans for dams may eliminate inexpensive protein from the diets of those not affluent enough to have their own fish ponds.

The extent of the contribution of marine fisheries to the food resources of the basin is somewhat difficult to determine. Marine fishes are seen in markets everywhere, and predominate in markets of the Mekong delta. Demand for fish is high enough that marine fishes can be transported considerable distances to sell inland and still make a profit. This includes large markets in remote areas such as Stung Treng which had marine fishes that had been transported over central highlands of Viet Nam and into Cambodia.

Most fish species in the river are exploited in one way or another, except for some of the most diminutive which could easily be exploited for the international aquarium trade. Any species large enough to be caught by standard types of fishing gear are used for food for humans, domesticated animals or cultured fish.

No estimate has been made on the contribution to coastal fisheries by the flow of the Mekong, but it has an annual discharge of ten times the volume of the Chao Phraya. Much of the sediment and nutrients are transported to the Gulf of Thailand by wave, tidal, and current action. This means that the Mekong is a major contributor to that ecosystem and the fishery it supports. In fact, with up-welling playing such a minor role in the Gulf of Thailand, it means that surface runoff is the main external source of nutrients.

The same holds may be true for the South China Sea, for which the southern half does have areas of upwelling as a source of nutrients. However, nutrients transported up from the bottom contribute only a fraction of the productivity that is produced by the Mekong plume. If upwelling nutrients only play a minor role, then the primary productivity is due to nutrients coming from the land, and the rivers are of critical importance to the coastal marine ecosystems. The largest contributor of river nutrients to the western half of South China Sea is the Mekong. The remainder comes from small rivers along the length of Viet Nam, and a large part comes from the Red River of northern Viet Nam. The area supported by the Red River is not included in the Greater Mekong Ecosystem.

BIODIVERSITY

A great variety of river, lake and estuary habitats support a rich fish diversity, the true scope of which has only recently begun to be understood. As groups of fishes are taxonomically revised, each group nearly always comprises twice as many recognized species as before, and sometimes even more. Estimates of species in the basin are constantly increasing as researchers find more and more kinds of narrowly distributed species. Early estimates were typically based on wide-ranging species. But simply tallying the species that anybody can find anywhere does not convey the full picture. The WWF Mekong page dated at 2001 on the internet listed 240 species from the Mekong. Kottelat (2001) gave a projection of about 700 species, including estimated undescribed species. This annotated checklist of species and photographic atlas has 890 fresh-water species, not including those marine species that are found temporarily in fresh water, or those found only in brackish water. Beyond the species that have already been studied and named, this list includes over one hundred undescribed species from fresh waters and several more from coastal waters. The atlas illustrates these undescribed species, eliminating guesswork. Yet, when recent field travel is totaled, this list represents between 5 and 6 months of sampling time in the field for the senior author, plus photos of specimens collected by others in but a few months of actual field study. Appropriate choice of locations for future studies could be similarly productive, as large gaps exist between areas that have been sampled. Further, most of the areas surveyed have been examined only superficially. Certainly it is possible to collect and identify the common species in an area, but a great many rarer species remain to be found. Much remains to be done.

Most species-lists for fresh waters omit estuarine species, but a thorough examination of literature and minimal collecting (a few weeks) indicates about 200 species of gobies can be expected from the Mekong delta. The total number of species expected from the Mekong, as inferred from the known zoogeography of Southeast Asia, includes 1,100 to 1,200 species. This estimate will undoubtedly increase over time as additional taxonomic studies and fish surveys are completed. When the coastal and marine fishes from ecosystems that rely on nutrients provided by the river are included, the total for the Greater Mekong Ecosystem will include well over 3,274 species included in this work. Given the listing of 3,365 species of marine fishes from South China Sea (Randall and Lim, 2000), one should expect the estimate of species occurring within the Greater Mekong Ecosystem to increase over time. Indeed the Indo-West Pacific region has about 3,000 shallow water marine fish species with no more than 1,200 anywhere else. It has a peak of marine diversity in the central Philippines and a secondary peak between the Malay Peninsula and Sumatra (Carpenter and Springer, 2005).

It is impossible to include all the species that occur in the Mekong in a work such as this. There is not time and money enough to thoroughly survey it for this study. Indeed, many rivers and other water bodies have never been visited by an ichthyologist. The degree of endemism is unknown, but is expected to be high in the upland areas of the basin as well as in the mountains that border Thailand and the Gulf of Thailand. By contrast, much of the Great Lake floodplain is expected to lack localized endemism, although the headwaters of tributary streams in central Cambodia will almost certainly have distinctive isolated species. Although doing an exhaustive study on the entire fish fauna would not be possible without fielding several research teams on a multi-year survey, it is possible to cover 99% of the species a fishery scientist might be expected to encounter. This satisfies the main intent for this atlas or any field guide, and that is to provide fishery scientists and other researchers with a reliable foundation for their studies.

BIOGEOGRAPHY

For more than a hundred years, Southeast Asia has been a focus of great biogeographic interest. Although a similar phenomenon of expansion and compression of ranges of plants and animals occurred on the North Sea shelf of Europe, the great diversity of the tropical Asian fauna makes Sundaland the classic example of continental shelf dispersal of terrestrial forms during sea level retreat. In essence, freshwater aquatic faunas also require exposed land.

The extended Pleistocene river basins have been a major source of aquatic faunal exchange in only a few places around the world. This presence of a vast submarine bank encompassing three of the greater islands in the Malay Archipelago was commented on repeatedly by the great naturalist Alfred Russell Wallace (1869, 1880) who compared their biota and concluded that the islands must have been connected to each other and to the Asian mainland in recent times. Although the mechanism Wallace proposed for subsidence of these shallow seas was erroneous (he thought the seas sank because of volcanic activity along the outer Sunda arc), the conclusion that islands had been connected to each other and to the mainland is as correct today as it was when he offered it. Further, Wallace was so impressed with the striking patterns of animal distribution in this area that he considered the process of evolution to provide an explanation. The region contains the classic biogeographic boundary known to this day as Wallace's line. The original line of Wallace was based on biogeographic as well as geographic information and was drawn along the easternmost margin of the Sunda shelf (George, 1981). Later studies by Wallace moved the line eastward to include the Celebes (Wallace, 1910). However, Wallace's first line (Wallace, 1863) is the boundary which has the greatest utility for defining the distribution of primary freshwater fishes in general.

Biogeography of Freshwater Fishes

The first zoogeographic study to examine freshwater fish faunas in relation to the submerged rivers of Sundaland demonstrated the faunal similarity of rivers belonging to the same Pleistocene basins (Weber, in Molengraaff and Weber, 1921). Weber also noted the faunal differences between the Mahakkam River of the eastern side of Borneo, and the Kapuas River of the western side of Borneo, noting the similarity of the fish faunas of the Kapuas River and the Moesi River of

Sumatra. Other authors, such as Krempf and Chevey (1934) examined the distributions of fishes from the Indochinese Peninsula, which were compared to the fish distributions of Sundaland. An important discussion of fish distribution in Sundaland was given by De Beaufort (1951) in a book that reached a broad audience, and provided many students with their first exposure to the drowned river basins of Southeast Asia. Inger and Chin (1962) provided a biogeographic discussion of the freshwater fishes of North Borneo and of Borneo in general. Banarescu (1972) pointed out the pronounced differences between the East Asian fauna and the Southeast Asian fauna, and mentioned that the fish fauna of the small coastal drainages of Annam Cordillera resembled the fish fauna of East Asia rather than of Southeast Asia.

Taki's (1975, 1978) studies of biogeography of the Mekong River fishes produced some important generalizations about the fish faunas of the middle and lower Mekong, the Chao Phraya and the Greater Sunda Islands. Taki found that the non-ostariophysan fauna of the Mekong was comprised of widespread species of Southeast Asia, and that almost all genera were shared between all four areas. The siluroids and cyprinoids demonstrated two different patterns of distribution, upland and lowland patterns, which were attributed to habitat preferences. The lowland species were found in large rivers and were distributed in the lower Chao Phraya and often in the Greater Sunda Islands. The upland species were found in smaller streams of the middle Mekong and their congeners were more likely to be found in the upper Chao Phraya than in the lower Mekong. Thus, an adjacent river system had greater faunal similarity to both the lower and middle Mekong than each had to the other.

More recently, Mohsin and Ambak (1983) compiled a comparative listing of species found on mainland peninsular Malaysia and the islands surrounding it. Interestingly, Mohsin and Ambak used the same number of fish distribution zones, but divided peninsular Malaysia into different faunal regions than were proposed by Johnson (1967). Chu (1986) summarized the zoogeography of China's Yunnan Province, which probably has the greatest fish diversity of any province in China. Chu's diagram of river system relationships among the six major drainages of Yunnan was based on numbers of shared genera. The dendrogram indicated that there were two major units, comprised of three drainages each. One unit was formed by the upper reaches of the Xi Jiang (Nampan Jiang) which was most similar to the upper Song Hong (Yuan Jiang). This pair of drainages associated most closely with the upper Yangtze (Jinsha Jiang). The second group was comprised of the upper Irrawaddy and upper Salween (Nu Jiang) pair, which paired next with the upper Mekong (Lancang Jiang) of China.

Kottelat (1989) examined the freshwater fish composition of Southeast Asia and adjacent regions, coming to the conclusion that there was no single center of origin for ostariophysan fishes in South, Southeast or East Asia. He included the species of India, the Irrawaddy and Salween in as Indian fauna. In the Southeast Asian fauna were the fishes of the Chao Phraya, Mekong and Sunda Islands. The Chinese fauna included fishes of China and the Red River of the Tonkin Gulf.

A quantitative study on the relationships of Asian river basin faunas by Rainboth (1991) used a cluster analysis of faunal similarity coefficients based entirely on cyprinid genera. The study included all the faunas adjacent to Southeast Asia, the East Asian fauna of China and northern Viet Nam, the High Asian fauna of the Qinghai-Xizang Plateau, and the South Asian fauna of the Indian Subcontinent, in an effort to determine how the various parts of the Southeast Asian fauna resembled each other and the adjacent faunas. For that study, it turned out that the faunas of the Sittang and Irrawaddy of Myanmar resembled the greater Gangetic fauna most closely. The faunas of the Salween and the state of Tenasserim were most similar to the Lancang Jiang (upper Mekong of Yunnan) and belonged, in general, to the Southeast Asian fauna rather than South Asian fauna. The results paralleled Taki's (1975, 1978) assessments that the middle Mekong had a fauna that most closely resembled the Chao Phraya and Meklong of central Thailand. The fauna of the lower Mekong and the eastern Malay Peninsula were also part of this group, although less similar to the middle Mekong and central Thailand than those two were to each other. The fauna of the Perak River of the western Malay Peninsula was most closely related to the fauna of north Sumatra. Central Sumatra was most similar to the Kapuas River of Kalimantan (Rainboth, 1991). A recent study of the distribution patterns and evolution of the Badidae (regarded as a subfamily of the Nandidae in Nelson, 2006), included some discussion to the geology of river basins west of the Mekong (Rüber, *et al.*, 2004).

The rich diversity of the Mekong is striking, not only for fishes but also in other groups of aquatic organisms such as mollusks. Studying the distribution patterns of organisms that make up this diversity falls into the discipline of biogeography. Biogeography has two components, an ecological component of limiting factors in the environment that we can observe in action over a relatively short period of time, and a long term historical component of evolutionary relationships that link a species distribution to the geographical area where it evolved. In recent years, the study of phylogenetic relationships (evolutionary branching patterns) has led to a re-thinking of biogeographical research. In order to produce more careful experimental procedures that yield results with predictive power, procedures have become more formalized with great reliance placed on evolutionary patterns of the constituent organisms. In Southeast Asia, very few groups of organisms have had their evolutionary patterns studied and so it is not possible to use some of the recent biogeographical methods. However, it is possible to study current geological information for processes and events that influence the configuration of river basins and ultimately the fish distributions.

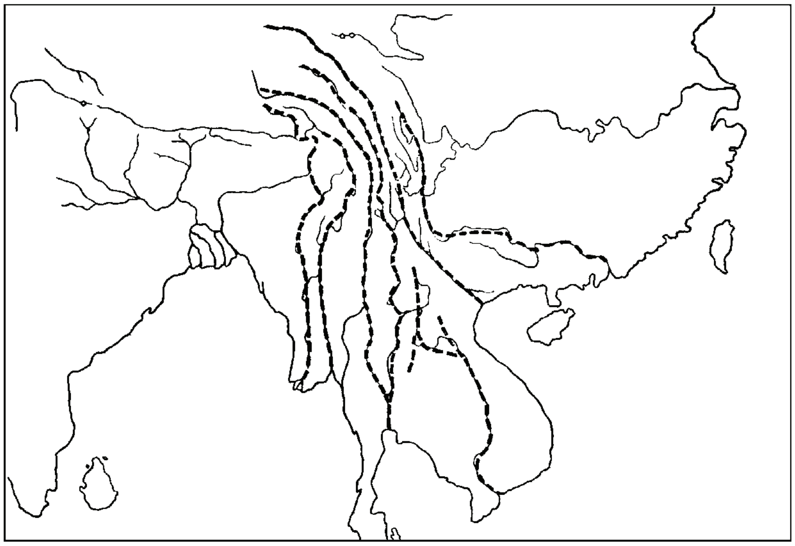

Figure 11. Ancient headwater configurations of Southeast Asian rivers (after Gregory, 1925). Although the illustration is speculative, note the short Mekong, with the upper Mekong and upper Salween connected to the modern Chao Phraya.

Processes That Influence Fish Distribution Patterns

The history of river systems as it relates to the history of aquatic faunas in one of the most important aspects in an account of geology. The history of the Mekong provides basic background information about the river's faunal history. Although normal hydrological processes affect river systems in similar ways all over the world, there are two other general classes of processes that have caused localized effects on the configuration of river systems in Southeast Asia.

These are climatic processes that result in sea-level change, and tectonic processes that result in shifting, tilting, and other relative movements of parts of the earth's crust. Both types of process operate in along with erosion and deposition processes, and are included in the discussion.

The development of extended Pleistocene river basins during periods of sea-level retreat has been important in changing river configurations. The cyclical changing of sea levels during the Pleistocene was the local manifestation of global climatic changes. Hydrographic effects of these changes in sea levels have been strongest on the Sunda Shelf, and biogeographic effects have been strongest on rivers that formerly flowed long distances across the currently submerged shelf. These changes have had a profound effect on fish distributions. Several known events would have caused continuous species ranges to become disconnected. Some events would have produced new habitat. All would have affected the Mekong fauna.

The geological record, particularly the changes that occurred in Southeast Asia during the late Tertiary and the Quaternary, indicates locations where currently disconnected rivers were formerly contiguous. Although information relevant to the history of the drainage systems that make up the modern Mekong can be found in the geological literature, no complete treatment exists in the modern studies, most likely because of the amount of information still required for a complete synthesis. Reconstruction of previous drainage basins does not receive high emphasis in the geological literature other than for potential relationships to petroleum and mineral deposits. Early studies of river configurations concluded that modern drainages differ considerably from prehistoric drainage patterns (Gordon, 1882; Gregory and Gregory, 1923). Scientific interest in drainage configurations focused on the courses of Tibetan rivers for which Gregory (1925) offered the comprehensive synthesis of possible and probable stream captures, based on his field observations made with the Percy Sladen Memorial Expedition in northern Burma and Yunnan (Fig. 11). Some of these stream captures been investigated in recent years and are now regarded as certain, whereas and others still require investigation and confirmation.

Both the history of climate-induced sea-level changes and the geological history will be discussed in the following pages.

Geological History

Information about previous river configurations of the Mekong and adjacent basins has been published during the last decade. Most of the studies relate to the history of river basins and the uplift of the Tibetan Plateau. The information comes from erosion patterns (Brookfield, 1998; Clark, *et al.*, 2004) and marine sediment deposition (Clift, 2006; Clift, *et al.*, 2006a, 2006b). This information about marine sediments is still at a relatively early stage of analysis and remains to be examined in terms of their

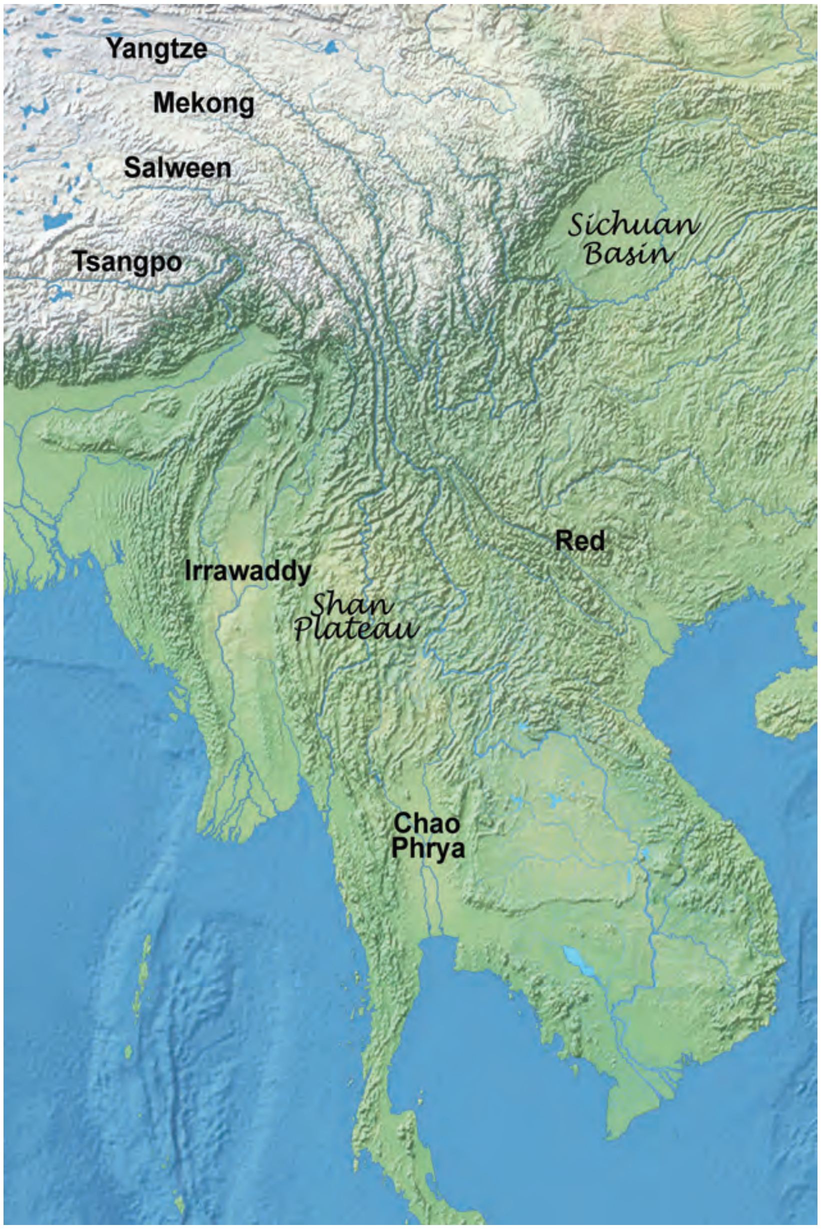

Figure 12. Major rivers of Southeast Asia. Sibumasu, a part of Gondwana, is composed of terranes found in the Tsangpo and upper parts of the Mekong and Salween basins. The collision of the India with Eurasia caused Sibumasu to form a 90° southward arc where it became the Shan Plateau and the western part of northern Thailand.

potential significance to biogeography.

Southeast Asia has a complex and fascinating geological history that must be understood before biogeographers can successfully decipher the interplay of historical and ecological components of species distributions. Recent research indicates that changes in drainage configuration have been extensive during the Quaternary alone. Stream captures of various magnitudes have changed river alignments as a result of local tectonic and erosional processes. These events have been very important in Southeast Asia, an area of high tectonic activity during the Cenozoic Era.

To understand how various drainages were captured by a growing Mekong during the Pleistocene, a discussion of geological processes from the eastern end of the Himalayas to the Indochinese Peninsula is required. These processes have contributed to the great diversity in the aquatic fauna, including fishes. Parts of this discussion have been offered before (Rainboth, 1996a,b), but in recent years considerably more information has appeared and the over-all picture, while not complete, is much clearer. This geological information provides context to the presence of known localized faunas in different parts of the present Mekong Basin, and information about others to be expected. The discussion will begin with the general tectonic history for the region, and then will focus on the Mekong, progressing from Tibet to the delta.

General Tectonic History

The upper Mekong is located in the collision zone of continental plates that closed the Palaeo-Tethys ocean system during the Paleozoic and early Mesozoic. The convergence of the plates has been occurring at about 70 mm/yr (McCaffery, 1996). Throughout the Paleozoic, these plates were widely separated. The Indo-Australian plate is mostly ocean, however India and Australia were part of Gondwana, the great southern continent of the Paleozoic. The Eurasian plate was part of the great northern plate, Laurasia that formed by the end of the Permian (Torsvik and Cocks, 2004). During the Triassic, two terranes of Gondwana origin joined Indosinia (Indochina plus East Malaysia, along with the northern component Qamdo-Simao terrane). The first was Sibumasu (of eastern Burma, western Malay Peninsula and northern Sumatra) and its northern component Qiangtang terrane of Tibet. The second was West Burma and its northern component the Lhasa terrane. The northern terranes follow mostly an E-W direction through high Asia, but West Burma and Sibumasu are mostly N-S. Today the Qiangtang terrane is situated at the origin of the

Mekong River, and the border of the Lhasa and Qiangtang terranes is at the origin of Salween River (Fig. 12). The modern Tsangpo flows along the southern border of the Lhasa terrane. The southern part of Sibumasu arcs sharply southwards, now forming the strip of land between the Mekong and Salween, and becomes the Shan Plateau and part of northern Thailand (Brookfield, 1998; Metcalfe, 2002). The Irrawaddy River flows along the western boundary of the southern part of Sibumasu, just as the Tsangpo flows along the southern edge of the Lhasa terrane.

The origin of continental blocks that formed the Indochinese Peninsula and the rest of Sundaland have been studied in detail and and resolved during the last two decades (Ferrari, *et al.*, 2008; Sone and Metcalfe, 2008; Metcalfe, 2010). The Palaeo-Tethys was a poly-islandic oceanic system and may even have been archipelagic (Yin, *et al.*, 2004). Therefore, the closing of older ocean branches may be represented by several structures, of which the Nan suture on the eastern margin of the Sukhotai fold belt is the oldest (Fig. 13). The Sukhotai Island-arc System suture with the Simao subterrane extends northward through Yunnan along the bank of the Lancang Jiang (Mekong). The narrow upper end of the island-arc system is the Lincang terrane. The southernmost part of the island-arc system is the Chantaburi terrane, which is joined to Indosinia at the Sra Keo Suture (Sone and Metcalfe, 2008).

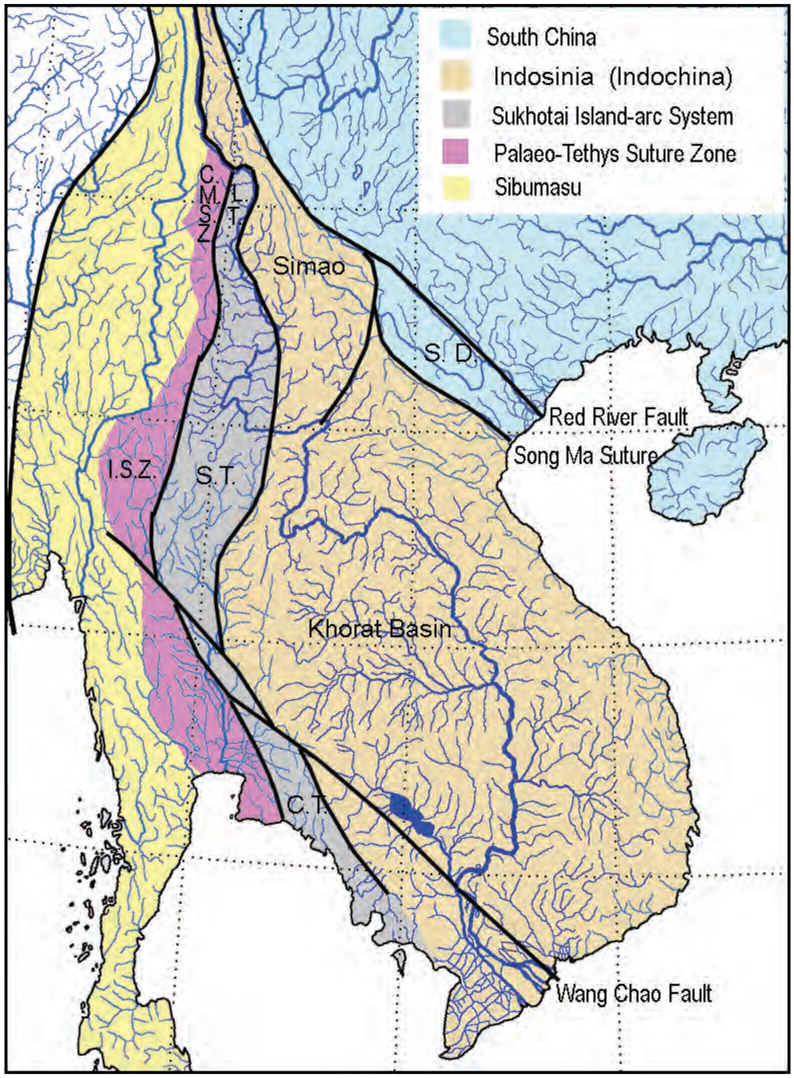

Figure 13. Tectonic map of the lower Mekong basin in Southeast Asia. Solid lines indicate important faults and terrane boundaries at suture zones along former plate margins. Major components are variously colored. The Indosinia Terrame may be a composite terrane of many subunits. The Sukhotai Island -arc System including the Sukhotai Terrane (S.T.), Lincang Terrane (L.T.) and Chantaburi Terrane (C.T.) collapsed into Indosinia with the approach of Sibumasu. The Palaeo-Tethys Suture Zone is comprised of the narrow Changning-Menglian Suture Zone (C.M.S.Z) to the North and the wide Inthanon Suture Zone (I.S.Z.) to the South.

West of the Sukhotai system is the Sibumasu terrane with the Palaeo-Tethys Suture Zone along its eastern margin. The Lancang metamorphic-magmatic belt that the river skirts through lower Yunnan (Wang, *et al.*, 1997, Lacassin, *et al.*, 1997; Hirsch, *et al.*, 2006) has a paired structure straddling the suture suggesting an east-dipping subduction zone (Sone and Metcalfe, 2008). The northern end of the belt is north of the confluence of the Lancang Jiang and the Yangpai coming from Erhai Lake. Along the Lao-Myanmar border the Mekong approaches this belt again and flows along it until the reaching Thailand. At that point the Mekong takes an easterly path and the metamorphic belt follows a western direction along the Myanmar-Thai border, through the Chiang Mai-Doi Inthanon area. From there the belt extends southward past Tak, crossing the Wang Chao (Mae Ping - Tonlé Sap) fault zone, ultimately terminating at the Three Pagodas fault zone just west of the Gulf of Thailand (Lacassin, *et al.*, 1997). The entire structure has been called the Inthanon-Lincang unit (Chonglakmani, *et al.*, 2001), the Inthanon terrane (Feng, *et al.*, 2005) and the Inthanon zone (Hirsch, *et al.*, 2006). The Nan-Uttaradit Suture previously has been thought to separate northern Laos and southern Yunnan from Indosinia by its connection to the Ailaoshan Suture (Red River Fault) through the Dien Bien Phu Fault which has no pre-Cenozoic activity. Based on Permian floral provinces, southern Yunnan (Simao) and Indosinia are Cathaysian along with North and South China and much of Sundaland (Metcalfe, 2010). Cratonic units west of the Nan-Uttaradit suture have origins at different latitudes based on marine fossils. The Sukhotai terrane and the Chiang Mai-Lincang metamorphic belt were subtropical during the Lower Permian. By contrast, the Sibumasu had a cold marine climate in the Lower Permian (Min, *et al.*, 2001). Such would be expected from Gondwana at a time when the East Antarctic Plate was centered over the south pole and both India and Australia were still attached at high latitude (Torsvik, *et al.*, 2008). Thus the Permian geology of most of northern Thailand and all of Laos is subtropical and distant from Gondwana, as was indicated by research on marine invertebrate faunas (Shi and Archbold, 1998).

The Shan Massif east of the Sagaing Fault in eastern Myanmar, dating to the Cretaceous, were formed by the effects of the continuing movement of microplates that reached Eurasia prior to the arrival of India (Hutchinson, 1989). The India-Eurasia collision began in the early Eocene at the western part of the Himalayas and continued progressively eastward across modern Tibet. During the Cenozoic, forces from the uplift of the Himalayas caused movement along these ancient faults and sutures, with mountain building and block faulting throughout northern Myanmar, Thailand, Laos and Vietnam, as well as central and southern China.

The India-Eurasia collision began at over 50 Ma, and continued over the Cenozoic, producing approximately 2500 km of post-collision convergence (Molnar and Tapponier, 1975). Some 700 km of Greater Indian lower crust was inserted under Gondwanan elements, and as the underthust progressed, the Tibetan Plateau and nearby regions were uplifted. The movement of India to the north extruded Southeast Asia to the east about 700±200 km (Leloup *et al.*, 1995) or as much as 1300km (Sato *et al.*, 1999). Much of the eastward movement has been accommodated by the extensive deep strike-slip movement along the Red River shear zone (Leloup *et al.*, 2001; Anczkiewicz, *et al.*, 2007). The total length of the Ailaoshan-Red River shear zone is approximately 1100 km, and it follows the course of the modern Red River. The earliest movement was a left-lateral strike-slip that forced Indosinia, including the mountains that form the central highlands of Viet Nam today, towards the South China Sea. The movements caused crustal melting along the fault and the strike-slip movement was spread across a wide strip of land mostly between the Song Hong (Red River) and the Song Chay. Onset of left-lateral movement occurred prior to 36 Ma, continuing until 16 Ma, with strike-slip movement between ~28 Ma and 17 Ma of ~5 cm/yr (Leloup, *et al.*, 2001). However a more recent study by Searle (2006) indicated that left-lateral movement began after 21Ma. This movement contributed to the opening of the South China Sea. In the late Miocene, the most recent phase of movement began, as a right-lateral/normal motion, reversing the original left-lateral motion, and began 5 Ma to 13 Ma (Leloup, *et al.*, 2001). Right-lateral offset has been ~ 25 km (Replumaz *et al.*, 2001), only a small fraction of the original left-lateral displacement. These movements have also rotated the Indosinia craton of northeast Thailand, Cambodia and Vietnam clockwise. The effects on northern Thailand and Laos and northeast Myanmar have been complex (Fenton, *et al.*, 2003; Rhodes, *et al.*, 2004).

The Upper Mekong

Changes in the upper Mekong have been associated with these tectonic movements. These movements have caused widespread and major stream captures and flow reversals from the Yangtze southwards through the Red, Mekong, Salween, Irrawaddy and Tsangpo rivers (Clark, *et al.*, 2004). In the early Tertiary, the Red River drainage was much more extensive (Fig. 14). It included the Yangtze River upstream from the 3 gorges region east of the Sichuan Basin, the upper Mekong, and upper Salween River based on topographic features, sediment volume and composition (Clark, *et al.*, 2004; Clift, *et al.*, 2006). It has also been suggested that the Tsangpo possibly may have been part of the same great Red River watershed, and was certainly part of the ancient Irrawaddy prior to capture by the Brahmaputra possibly in two localities (Clark, *et al.*, 2004). The Tsangpo, north of the Himalayas, follows the southern border of the Lhasa terrane which makes up the modern Irrawaddy Basin. The upper Salween is found along the border of the Lhasa and Qiangtang terranes, and the upper Mekong is confined to the Qiangtang terrane north of the Salween basin.

The early rivers would have flowed in an eastward direction and as India pushed into Eurasia, their headwaters rose in elevation. At the eastern Himalayan syntaxis their lower reaches experienced a clockwise rotation.

Modern digital topographic data makes it possible to estimate the volume missing from the gorges, and Nd isotope techniques make it possible to quantify the composition of sediment from the various source terrains. In the Tertiary, far more sediment reached the Tonkin Gulf than can be attributed to modern drainage configurations.

Increase in rates of sedimentation after 33 Ma indicate strong surface uplift and possible summer monsoon intensification (Clift, 2006). Uplift in Tibet ultimately tilted the western Yangtze craton eastward and reversed the direction of flow in the middle Yangtze This event reduced the size of the Red River watershed at 24 Ma (Clift, *et al.*, 2006). Even so, the discharge of the Red River was only slightly reduced, indicating that heavy erosion activity continued and increased during the uplift of central Asia (Clift, 2006). The capture sequence by the Yangtze proceeded from east to west, ultimately becoming complete as the Red River headwaters were taken (Clark, *et al.*, 2004) (Fig. 14).

After the capture of the upper Red River by the Yangtze, the Yangpai River and Erhai Lake were taken by the Mekong. The early upper Mekong and Yangtze head-waters had connected to the Red River through the modern path of the Yangpai (Clark, *et al.*, 2004). The upper course of the Red River joined the Yangtze drainage, at a sharp modern bend of the river just west of Lijiang. When that flow was captured, a short stretch of the Red River followed the path of the modern Yangpai west of Erh Hai Lake. The Yangpai joins the Erhai Lake outflow and was captured by the Mekong. The Mekong, which does not flow through the area today, may have flowed through these river paths also as indicated by sediments in the linearly aligned valley of the Madeng River (Clark, *et al.*, 2004). So the ancient Red River was broken into three sections with the large upper reaches becoming part of the Yangtze, a short middle reach becoming part of the Mekong, and the lower basin remaining intact (Fig. 14). The upper

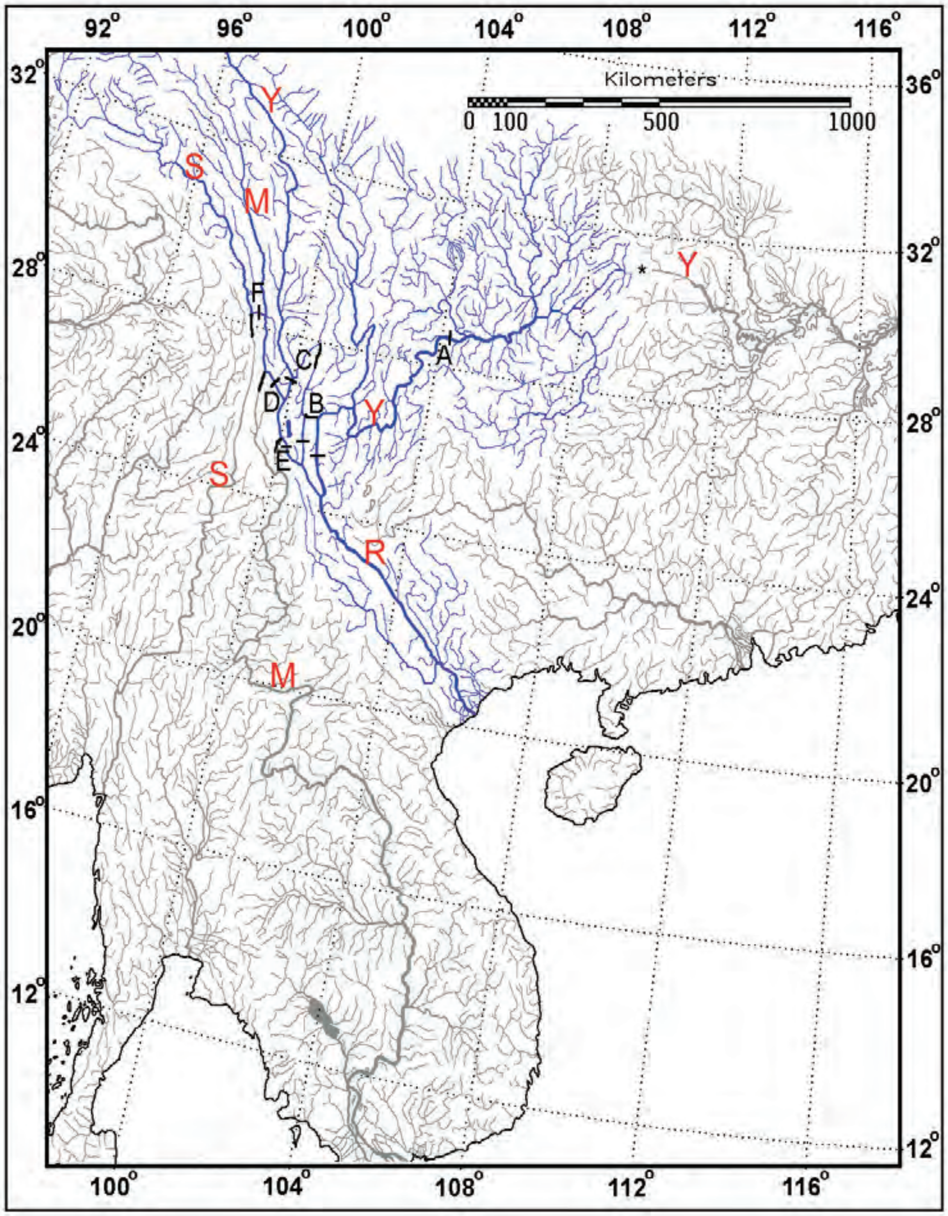

Figure 14. Ancient Red River drainage composed of part of the modern Yangtze (Y), Mekong (M), Salween (S) and Red (R) rivers. Marks (in black) across the rivers indicate where basins were severed, and marks along the rivers show new connections leading to today's configuration. The asterisk (*) marks the point of the Three Gorges Dam area where today's middle Yangtze joined the lower Yangtze as the Sichuan basin tilted eastward with the rise of the Tibetan Plateau. The section east of mark "A" reversed flow direction and became part of the Yangtze. At mark "B" rising elevation caused the next section of the river to turn eastward and two channels flowing into the Red River were severed, with the south flowing part of today's Yangtze "loop" being captured by the growing Yangtze. At mark "C" the western half of the Yangtze loop was captured and its flow reversed, severing the connection to the Yangpai which remained part of the Red River system. At mark "D" the lower Mekong captured its modern headwaters leaving a wind-gap in a valley that formerly connected the Red and upper Mekong basins through the Yangpai river. At mark "E" the Yangpai and Erhai Lake were captured by the Mekong. At mark "F" the upper Salween was captured from the Mekong to become the headwaters of the modern Salween, thus completing the modern configuration (Clarke, *et al.*, 2004).

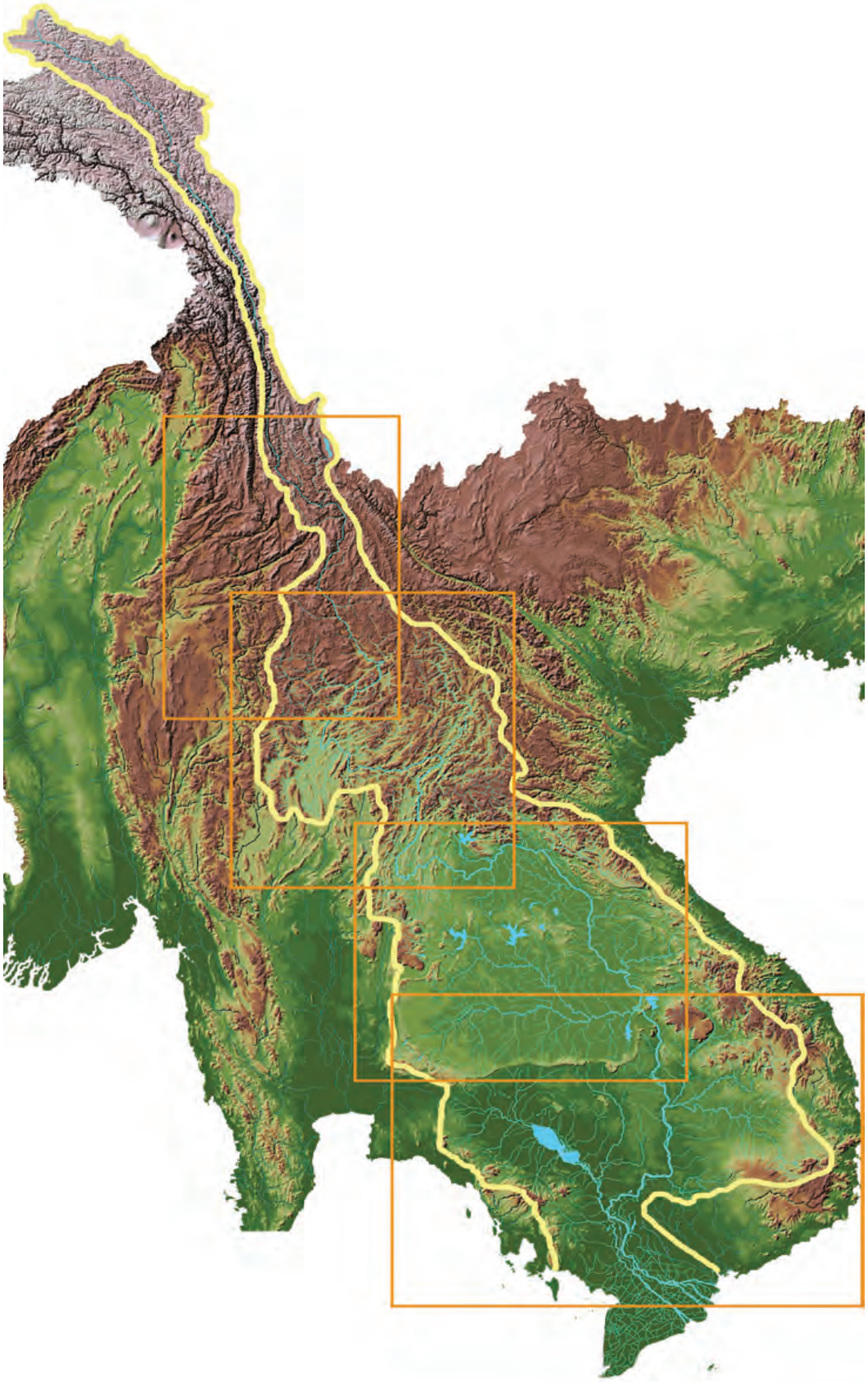

Figure 15. The Mekong Basin (outlined in yellow) topography and hydrography, with sections to be illustrated as enlarged figures in the subsequent discussion, beginning at the top: 1) upper rectangle of Myanmar and China parts of the basin; 2) eastern Myanmar, northern Thailand and Laos; 3) Khorat Plateau Basin; 4) southern Khorat Plateau with Cambodia and Viet Nam. Topographic map from Richey, *et al.* (2000).

Mekong and upper Salween also have a point of possible ancient confluence north of 28°N. However, this area has been so heavily affected by deformation and uplift in the region that the original course of the river can not be recognized (Clark, *et al.*, 2004).

These major changes would be the fewest that might have happened, but there are other complexities that could be investigated. For instance, studies on detrital zircon geochemistry indicate that the Qinling Orogenic Belt of the modern upper Yangtze may be the original source of early Khorat Basin sediments (Carter and Bristow, 2003). However, this occurred prior to modern drainage configurations, and certainly when the Khorat Basin was in a different location relative to South China.

With the history of headwater drainage configurations complete, the discussion will now shift to changes progressively downstream through the upper, middle and lower basin. All maps will display topographic information along with the modern river configurations (Fig. 15).

Potential locations for additional past or future drainage captures between the Mekong and Salween are found near the Wanding and Nanting faults, based on topographic maps (Fig. 16). Both the Mekong and Salween cross active strike-slip faults in the Golden Triangle region, resulting in stream offsets at those faults (Lacassin, *et al.*, 1998). In areas of deeply incised river courses, offsets serve as markers of movement along faults.

Deeply incised canyons are considered ideal places for hydropower dams and reservoirs. However the possibility for earthquake swarms in these areas causing new motion along old faults where the Mekong and Salween have exchanged reaches before could serve to accidentally divert drainage catchments. The history of the Salween and Mekong near the Wanding and Nanting faults should be thoroughly explored before initiation of construction activities that might inadvertently cause large-scale changes. A study of the relation of earthquakes to reservoirs in Thailand found that, even though Thailand is in a mainly aseismic zone, Reservoir-Induced Seismicity (RIS) was responsible for several quakes with epicenters in Thailand since 1980, even along faults that seem presently inactive (Charusiri, *et al.*, 2007). The same study postulated seismic risk zones ranging from 1 (greatest risk) to 5 (least risk) plus 6 (no risk). The highest risk in Thailand was for north Thailand at levels 4 and 5, with much higher risk in Myanmar and Yunnan, ranging from a minimum of level 3 and up to level 1 at the Wanding fault and another area south of the Nanting fault apparently in the vicinity of the Lincang fault (Charusiri, *et al.*, 2007). At the present time, China has plans for eight dams on the main stem of the Mekong, with four of them already completed and the largest, the Xiaowan taking over ten years to fill.

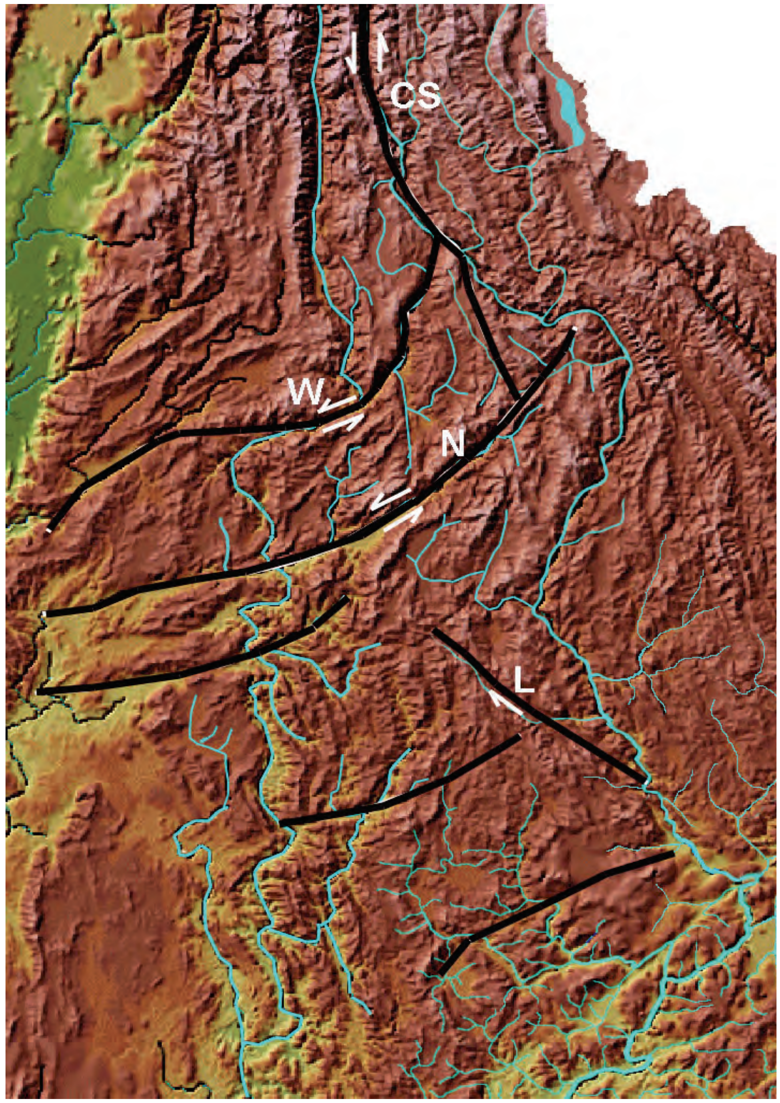

Figure 16. Position of the Wanding (W) and Nanting (N) faults, which extend from the Mekong basin near the Mekong main channel across the Salween Basin and into the Irrawaddy basin at the left. The left-lateral slip on both is related to rotation around the eastern Himalayan syntaxis northwest of the mapped area. The Chong Shan shear zone (CS) extends down the Lancang gorge along an old suture zone. The Chiangmai-Lincang-metamorphic zone begins near the eastern tip of the Nanting fault and is found along the western side of the Lancang (Mekong) River. The Lincang (L) fault crosses the metamorphic zone. Interpretation follows Morley (2007).

The Middle Mekong

The Lao - Myanmar border

The Mekong emerges from China and flows along the border shared by Myanmar and Lao PDR (Fig. 17). Along this reach, evidence of fault movements can be seen in the hairpin loops found in the Nam Loi of Myanmar (Mengxing fault) and the main channel of the Mekong at Ban Xiengkok of Luang Namtha Province (Nam Ma fault). The Mengxing fault has about 24 km of active left-lateral offset and the Nam Ma fault has about 12 km of active left-lateral offset. However, both of these faults show evidence of more ancient activity during the early to middle Cenozoic when the movement along the faults was right-lateral slip. The Mengxing fault had right-lateral slip of approximately 12 km, but possibly as much as 50 km, if a nearby valley turns out to be an abandoned river course. Along the Nam Ma fault the right-lateral slip was approximately 30 km, with simultaneous rotation that gives the Mekong its peculiar hairpin loop at Xiengkok (Lacassin, *et al.*, 1998).

North Thai - Lao border

As the Mekong enters the reach along the Thai - Lao border, tributaries enter from both sides with those of the

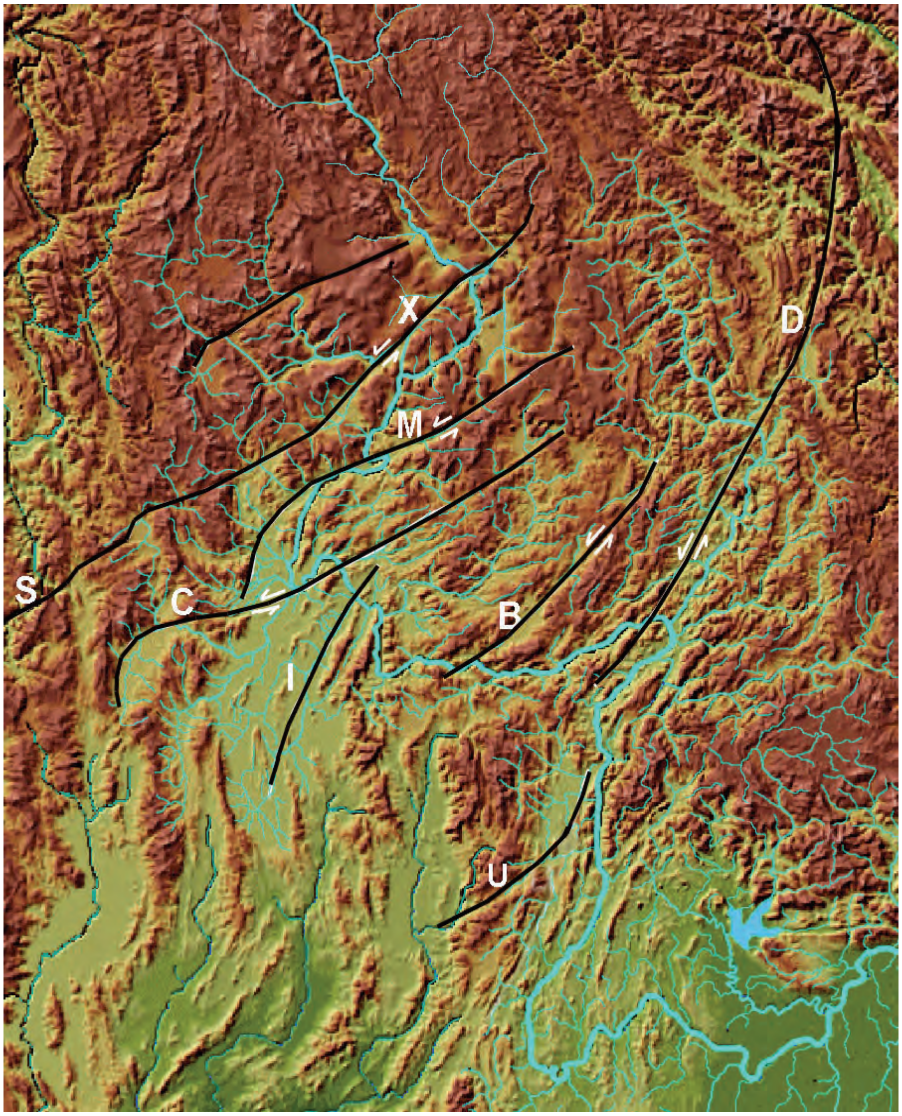

Figure 17. Major strike-slip faults of northern Thailand and Laos. The uppermost fault (non-labeled) is the southernmost fault of the previous figure. Proceeding southwards, the next fault is known as the Mengxian fault (X) at the eastern end and the Salween (S) fault at its western end. The next fault is the Nam Ma (M) fault which has caused a large hairpin loop in the Mekong along the Lao - Myanmar border. The Mae Chan (C) fault also crosses the Mekong River border of Thailand and Laos. The Mae Ing (I) fault is one of the many thrust faults in northern Thailand. The Nam Beng (B) fault crosses the Mekong but is mostly located in Laos. The Uttaradit (U) fault and the southern part of the Dien Bien Phu (D) fault follow an old suture zone with the northern end of the Dien Bien Phu fault terminating near the Red River. Fault motion arrows indicate motion from Pliocene to present, reversing the motion that occurred during the Oligocene and Miocene.

Thai side being larger. South of the Thai tributaries are a series of low mountains that separate the Mekong watershed from the Chao Phraya watershed. The mountains follow a north-south axis, and the valleys separating them are drained in the north by the Mekong and in the south by four large rivers that converge to form the Chao Phraya in central Thailand. These four major tributaries, Mae Ping, Mae Wang, Mae Yom, Mae Nan (from west to east) form the Chao Phraya after flowing southward through nearly parallel valleys. Another river, Mae Pa Sak, also running parallel to these is found to the east and follows the Loei fold belt. The course of the Mekong in Laos has taken a path the to the east of these parallel valleys, flowing southward towards the Mae Pa Sak before turning abruptly eastward to cross the Khorat Plateau.

The rivers of northern Thailand pass through several Tertiary-Quaternary pull-apart sedimentary basins, some of which have sediments of up to 3 km in depth. There has been considerable movement in this complex network of faults (Fenton, *et al.*, 2003; Uttamo, *et al.*, 2003) during the Quaternary. Similar basins are found in northern Laos, however they are less numerous and are less researched. Earth movements have resulted in the tilting of many of the Thai basins to sedimentary horizons at angles of 10° to 25° from horizontal (Gibling and Ratanasthien, 1980). This region has been active in relatively recent times, including a 6.1 magnitude quake along the Mae Chan fault on May 16, 2007 at 20.48°N and 100.82°E (near Houay Sai, Lao PDR) that was widely felt as far away as Bangkok. The upper Mekong probably flowed through one or both of the center two of these valleys (Mae Wang, Mae Yom), which could have been a continuation of its present path along the Myanmar - Lao PDR border. Of these Brookfield (1998) suggested the Mae Yom, however, his map has the "Mae Yom" labeling the river called the Chao Phraya today, so he may have been referring to the Chao Phraya via the Mae Yom. Hutchinson (1989) also indicated that the Mekong once took a path from Chiang Rai southwards through a continuous series of sedimentary basins along the courses of the modern Nam Kok and Nam Yom into the Chao Phraya (Hutchinson, *op.cit.*, figure 3.3).

The general surface movement trend during the Pliocene-Quaternary in northern Thailand and northern Laos has been left-lateral slip on many faults and normal movement on others. In some of the larger and better known faults the early Cenozoic right-lateral slip reversed after the Oligocene-Miocene to become the more recent left-lateral slip. This resulted from the collision of India with Eurasia during the early Tertiary which elevated to the west and pushed the entire area eastward, rotating it clockwise, as India collided with Eurasia. As the India pushed farther north into Eurasia, elevating Tibet and northern parts of China, the Red River fault of Viet Nam reversed its movement to right-lateral slip as northern Viet Nam was pushed eastward with respect to the Indochinese Peninsula. Just as the Red River fault slip reversed, many of the lateral movement faults in northern Thailand and Lao PDR have reversed and are now left-lateral.

Whether or not the Mekong or parts of it passed through any of the N–S directed valleys, other than the Yom, before taking its current path past Luang Prabang and Sayaboury has not been discussed in the literature. Also any possible connection of Lao rivers such as the Nam Tha and Nam Beng to drainages of central Thailand has not been researched, although the Nam Ing would afford more than a single possibility and has extensive Quaternary sediments along its course (Geological Map of Thailand, 1999). Indeed, the sediment budget for the Gulf of Thailand indicates that about 2½ times as much sediment was reaching the Gulf prior to about Middle Miocene of 11 Ma (Clift, 2006). At the time of sediment decline in the Chao Phraya, the increase should have been seen in the Mekong. However, the increase in sediment was not seen in the Mekong sediment basin of the South China sea until approximately 2 Ma, but part of the Mekong sediment may have gone into the Malay basin in the southern Gulf of Thailand without passing through the Chao Phraya (Métivier and Gaudemer, 1999). Possibilities for how this happened will be discussed later in this work.

The Mekong of northern Laos

In northern Lao PDR the Mekong leaves the Thai border, and immediately passes the mouth of the Nam Tha, which, like most rivers in northern Laos, has a generally NE-SW alignment. This differs from the rivers of northern Thailand which have a primarily N-S alignment, except for the Nam Kok and Nam Ing, which are tributaries of the Mekong. The latter two rivers have the NE-SW alignment typical of rivers on the Lao side of the Mekong. After the Nam Tha, the Mekong passes the Nam Beng on the left bank and then the Nam Ngeun, a smaller river on the right bank. Then the Mekong begins to take a progressively northeastward path until reaching the next large tributary, the Nam Ou, which is the largest tributary to the Mekong in northern Laos. The southern part of the Nam Ou basin and the Mekong in Sayaboury and Luang Prabang provinces flows though Mesozoic sedimentary rocks of fine granularity indicating little topography at the time of their formation along the margin of the Indosinian plate. Current topography is due to uplift in the late Pliocene though the Pleistocene with Pliocene deposits in the Nam Beng valley, tilting at angles of up to 45° from horizontal (Workman, 1972, 1977).

The lower course of the Nam Ou follows a SW alignment parallel to the nearby Dien Bien Phu fault zone, and its upper course flows down a more SE path. The Dien Bien Phu fault zone follows a gently arching path with left-lateral slip along the southern part of the Nam Ou and then crosses the Mekong. The fault zone becomes more N-S as it passes Dien Bien Phu and farther north it takes a NW-SE alignment with right-lateral slip as it becomes more parallel to the Red River fault zone. In this region, faults aligned NW-SE typically have right-lateral slip, whereas NE-SW faults have left-lateral slip (Lacassin, *et al.*, 1997).

The point at which the Nam Ou enters the Mekong is centered approximately halfway along a 180° bend as the river changes from a NE path to a SW path when it reaches the Dien Bien Phu fault zone. This fault zone consists of a series of faults, some of which may also extend upstream along the Mekong from the mouth of the Nam Ou. The Dien Bien Phu fault zone has a general linear alignment with the Uttaradit fault system which extends from central Thailand northeast through Sayaboury Province of Lao PDR and continues up the Mekong towards Luang Prabang. These are not known to form a single large fault, but at the very least are a series of smaller faults forming a line well over 700km long. Large fault systems like this have serious implications for dam construction and impoundments. The combination of the Uttaradit fault zone and the Dien Bien Phu fault zone is possibly twice length of the Mae Chan fault which, as mentioned before, proved to be capable of delivering a 6.1 magnitude quake a few years ago. The advisability of impoundments here must be considered questionable.

As the Mekong takes a southward path between Sayaboury and Vientiane provinces, it enters the a shallow depression that separates the Loei - Luang Prabang fold belt and mountain range of Sayaboury, all of this part of the Paleozoic Indosinia craton. (Fig. 13).

Directly to south in Thailand, the Loei and Pa Sak rivers are linearly aligned with the valley of the Mekong in Lao PDR. The northward flowing Loei River is a tributary of the Mekong whereas the southward flowing Pasak River is a tributary of the Chao Phraya. The headwaters of the Loei and Pasak rivers presently come in close conjunction and are separated by hills of relatively recent (Cainozoic) igneous origin (Fig. 3.3 in Hutchinson, 1989). It has been proposed that an early course of the Pre-Mekong drainage may have passed through the present Pasak River valley as recently as 50,000 years ago based on genetic evidence from snails (Attwood and Johnston, 2001). Whether the path was as direct as suggested or slightly more circuitous, it is clear from this evidence that a water passage of some kind existed. Uplift in the region currently separating the two watersheds may be related to the Quaternary uplift and tilting of the Khorat Basin to produce its modern appearance as a plateau, as well as the subsidence and subduction of the Chao Phraya valley under the margin of the Khorat Basin. The Chao Phraya of central Thailand crosses Tertiary-Quaternary sedimentary basins of 3.5 km to 7 km in depth.

The Khorat Plateau and southern Lao rivers

As the Mekong approaches the Khorat Plateau, it moves onto the center of the tectonic unit known as Indosinia (Hutchinson, 1989) instead of taking a path near the western margin. The northern part of this Precambrian cratonic block includes Simao in Yunnan and much of northern Laos. To the south, it extends from the continental shelf off the coast of Viet Nam westward across Cambodia through the uplifted area along the western margin of the Khorat Plateau including the Loei and Phetchabun fold belts. The western boundary is the suture joining it to the Sukhotai Island-arc system which includes the Cardamom Range along the western coast of Cambodia to the south (Fig. 13).

Simao and the Khorat Basin were at one time in close proximity and the Khorat Basin may have been situated well west of the modern location prior to the rotation and extrusion of Indosinia (Carter and Bristow, 2003).

The northeast boundary of the Mekong watershed as it passes the Khorat Plateau is located in the mountains of the Annam Cordillera which form the highlands of Laos and Viet Nam. The western margin of these mountains is drained by the Mekong and the southern end by the Song Dong Nai, which enters the South China Sea through a delta shared with the Mekong.

The geology of the southern part of Indosinia has been summarized several times (Fromaget, 1941; Workman, 1977; Fontaine and Workman, 1978), and the history of the Indochinese Peninsula has been included in the larger context of Southeast Asia and adjoining regions by Hutchinson (1989, 2005). However, a historical summary of river configurations has not been offered, most likely because of the mosaic nature of available geological information. Recent discoveries have added to the knowledge of the region, and all indications show that the history of the Indochinese Peninsula has been complex and it remains fascinating.

The Khorat Basin was originally a shallow continental sea as the Sukhotai Island-arc system began to compress along the Nan Suture. During the Upper Triassic it gradually became a freshwater continental ecosystem that ultimately became red beds. From the Upper Triassic through the Cretaceous the fluvial and lacustrine deposits accumulated to become more than 4,000 m depth. During the Upper Cretaceous and Lower Tertiary great salt deposits and sandstones built up in a largely evaporitic arid environment. The Khorat Basin contains three sub-basins that formed during the Upper Mesozoic, two of them (Sakhon Nakhon basin and Savannakhet basin) north of the Phu Phan anticline and the much larger Maha Sarakham basin on the southern side. Sometimes the southern basin is called the Khorat basin which can cause confusion between a single sub-basin and the entire group of basins - therefore the use of Maha Sarakham basin here (Fig. 18).

Mesozoic drainage patterns of the Khorat Basin were much different than those of today (Heggemann, 1994; Heggemann, *et al.*, 1994; Carter and Bristow, 2003). Non-marine sedimentation of the Nam Phong formation during the Upper Triassic indicates meandering streams coming from the northern and eastern margins of the basin (Heggemann, 1994). The river produced by these streams flowed down past eastward facing alluvial fans from the Phetchabun Range ultimately taking a path similar to but reversed from the modern upper Lam Chi. Where or how it would have reached the ocean to the west was not discussed (Heggemann, 1994). Directions here are modern directions but prior to the $37 \pm 7^\circ$clockwise rotation since the Middle Cretaceous (Maranate and Vella, 1986) or $14^\circ \pm 7^\circ$clockwise rotation relative to South China (Yang & Besse, 1993) the actual direction called "west" here would have been would have been much more like southwest.

By the time of Early Cretaceous deposition of the Phu Kradung formation a river comprised of many streams crossed the region known as the Sakhon Nakhon basin in the northern half of today's Khorat Plateau. It flowed into a shallow marine environment near Phitsanulok. A second smaller and more southern river flowed from the southern basin to the west, reaching the sea midway between the locations of Bangkok and Phitsanulok (Heggemann, 1994). Similar palaeocurrent patterns existed during deposition of the Early Cretaceous Phra Wihan formation (Heggemann, 1994). Interestingly, a combined map of palaeocurrents (Heggemann *et al.*, 1994) illustrates both the Phra Wihan formation and the subsequent Sao Khua formation (Early Cretaceous) and adds a large palaeocurrent arrow facing directly south near the present mouth of the Mun River. From the Late Cretaceous to the Lower Tertiary a palaeocurrent arrow there is again facing westwards near the mouth of today's Mun River. By that time much of the northern half of the Khorat Plateau had become very dry and was forming evaporite deposits (Heggemann, *et al.*, 1994). Deposit ages have been revised recently by Racey (2009).

This discussion of the Khorat Basin palaeocurrents during the Mesozoic indicates the long term flow across this gently sloped region. In the absence of Mesozoic data it is expected that palaeocurrent flows across Cambodia acted similarly. The slow meandering rivers produced between 4,000 and 5,000 meters of Mesozoic deposits across the Khorat Basin (Maranate and Vella, 1986; Bunopas and Khositanont, 2008). At the same time, the basin was subsiding, although the mechanism or combination of mechanisms are not known with certainty. Also, even with some uplift in the Phetchabun area, the general trend in palaeocurrents indicated a slope downward to the west, in modern reference. Ultimately the water was flowing west separately from both the Sakhon Nakhon basin and from the Maha Sarakham basin. Water gaps produced by this flow pattern may still be present and may have allowed passage in either direction depending on the tilt of the basin. By Upper Cretaceous to Lower Tertiary times, the water flowed into evaporite basins which today retain large potash deposits (Warren, 2010). However, much of flow along the western margin of the basin was still to the west and not to the evaporite basins (Heggemann, *et al.*, 1994).

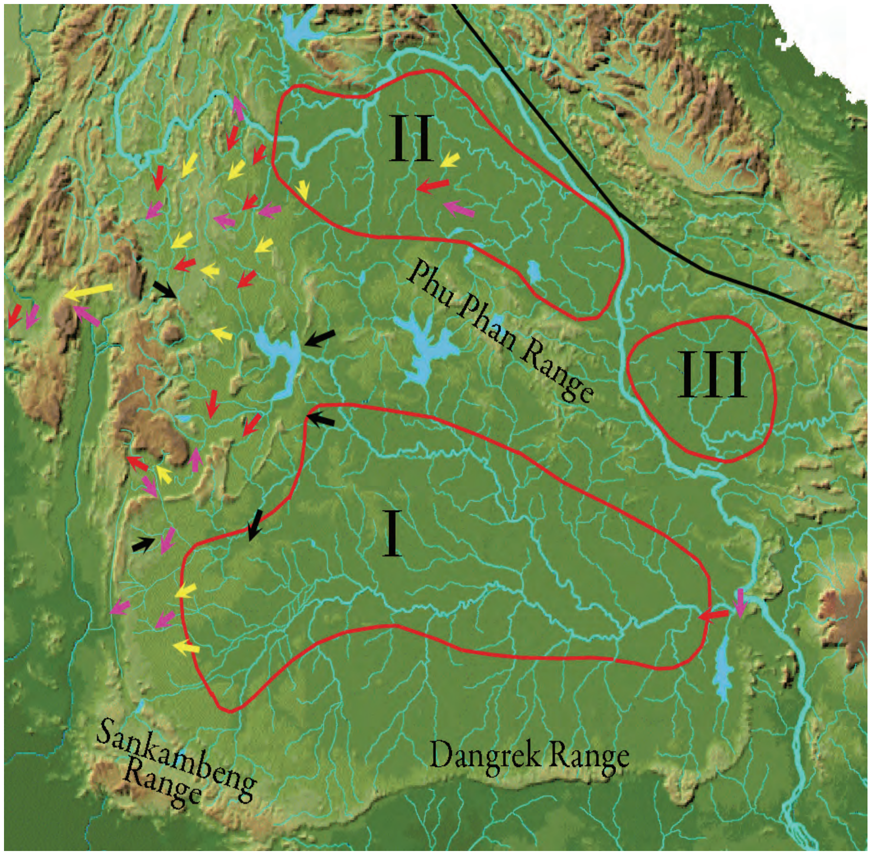

Figure 18. The Khorat Basin Plateau consists of three depositional basins, outlined in red, floored by Mesozoic formations. They are: I. Maha Sarakham Basin; II. Sakhon Nakhon Basin; and III. Savannakhet Basin. The northern basins (II, III) are separated from the southern (I) basin by the Phu Phan anticline. Part of the eastern margin follows the Thakkhek fault zone, an ancient thrust fault. Arrows indicate directions of Mesozoic palaeocurrents as illustrated in Heggemann (1994) and Heggemann, *et al.*, (1994). Black arrows represent fluvial deposition of the Upper Triassic - Lower Jurassic Nam Phong formation. Yellow arrows represent the Early Cretaceous Phu Kradung formation. Magenta arrows represent the Phra Wihan formation of the Early Cretaceous. Red arrows indicate deposition in several formations spanning the Lower Cretaceous to the Lower Tertiary. Widths of reservoirs and rivers enlarged to make them visible at this resolution.

Although there were changes in drainage patterns in the Tertiary, the greatest amount of change Khorat Basin drainage patterns occurred during the Quaternary and is related to the rapid uplift of Tibet from a thousand meters to over five thousand meters in elevation. This changed not only elevation of the western margin of the Khorat Basin but the climate patterns, particularly rainfall. There was even a major astronomical event, a comet impact, that contributed to the changes.

The early stages of the collision of India and Eurasia caused mostly lateral movements such as the 1000km (1500 ± 800km for Indochina in Yang and Besse, 1993) displacement along the Ailanshao-Red River fault zone. During the Pliocene the Qinghai-Tibetan Plateau, the site of today's origins of the Yangtze, Mekong and Salween rivers, still had a gently undulating surface at an elevation of ~1000m. By the end of the Pliocene and beginning of the early Pleistocene the average elevation of the Qinghai-Tibetan Plateau was ~2000m with some mountains reaching ~3000m. By the middle Pleistocene the average elevation was ~3000m and climate on the plateau was becoming drier. By the late Pleistocene the average elevation was ~4000m and the climate had dried even more and many landlocked drainage basins had become salty. The uplift of the plateau continued through the Holocene reaching an altitude of 4000m to 5200m, averaging over 4500m with 300 -700m during the last 10,000 yrs (Zhang *et al.*, 2000; Bingyuan and Baofu, 1983).

The change from lateral displacement to vertical uplift has caused elevation changes in Southeast Asia with the most rapid changes in elevation across Thailand occurring in the early Pleistocene and diminishing by the late Pleistocene (Bunopas and Khositanont, 2008). Western Thailand experienced rifting in the Pliocene based on the age of basalts (Barr and McDonald, 1981). During the Pliocene, movement along the Ailanshao-Red River fault zone reversed as the continuing collision of India with Eurasia caused extrusion to the north. Many of the lateral faults in the Mekong basin reversed their movements at that time, and in northern Thailand thrust faults formed the margins of pull-apart basins. This is a generalization and simplification, but most of northern Thailand is outside of the Mekong basin.

There may have also been western displacement along faults within Laos. Parallel and south of the Red River Fault is the Song Ma Suture, which follows the Song Ma river in Houaphan Province. Farther southwards, another parallel fault is the Song Ca Fault which follows the Song Ca valley up to Xiengkhuang Province. The next parallel fault is a pre-Triassic thrust fault that extends along the left bank of the Mekong from the mouth of the Nam Kading to Thakhek, from there trending southeastwards towards Hue and Da Nang. (Fromaget, 1941; Rangin, *et al.*, 1995; Lepriver, *et al.*, 2008). This fault may extend beyond the Nam Kading to the northwest, perhaps as far as the Dien Bien Phu Fault left-lateral strike-slip fault (Rangin, *et al.*, 1995).

At the end of the Pliocene and beginning of the Pleistocene, the Khorat Plateau was uplifted along its western margin. The flow of westward facing rivers would have slowed across the basins at first although any water gaps along the edge would have continued to flow westward particularly through any highly erodible sediments on the downstream side of the gaps which can seen today as hogbacks of the Phra Wihan Formation (Parry, 1996). For the water to reverse its flow the uplift has to be faster than the river can erode. This had occurred by the middle of the Pleistocene (Bunopas, *et al.*, 2003) and was related to the Inthanon Epeirogenesis (Bunopas, *et al.*, 2005).

Parts of the Khorat Plateau extend into Laos mostly under Cretaceous basins. The flat plain near Vientiane sits at the top of the Sakhon Nakhon basin, and a large plain under and to the east of Savannakhet is found above the Savannakhet basin.

Although the Khorat Plateau is mostly flat with wide, broad valleys today, this was not always the case. Along the current path of the Menam Mun, a low gradient river (1:10,000) in the Maha Sarakham basin, flows across a wide plain over an ancestral valley that has been filled in with Quaternary sediments to a depth of 155m, or 35m below the current sea level (Loeffler, *et al.*, 1984). These Quaternary sediments cover the Mahasarakham Formation of shales and sandstones and salt. Below this are the Khok Kruat and Phu Phan formations which are seen as cuestas around the rim of the plateau. Further, a transect from Tha Tum, on the right bank of the Mun, to Kasat Wisai on the left bank but on a small stream tributary to the Mun some distance away (~35km), crossed two valleys separated by Mahasarakham Formation with the lesser of the two valleys near Kasat Wisai reaching a depth of ~120m. Another transect from Tha Tum to Suwannaphum (downstream from Kasat Wisai) had only a single deep valley reaching of 155m depth. Dating with ^{14}C in an organic sand layer 31,000 to 40,000BP at 30-40m depth and 20,200 to 38,000 at the top of the organic sand layer. Other unpublished drilling reports displaying the same types of incision into the bedrock have also been cited (Löffler, *et al.*, 1984). Another study of a relatively minor and now intermittent stream in Khon Kaen Province found an incised valley cut 140m below the present surface down to a depth of 18m above sea level (Dheeradilok, *et al.*, 1983). Therefore, this is not a local phenomenon. With respect to the sites studied along the Mun River, bedrock sandstone rapids at near the mouth of the Mun (Kaeng Tana, 15°18'N, 105°28'E) as well as even greater rapids at Khone Falls in the Mekong of southern Laos would preclude the incision of these valleys today.

An astronomical event also happened on the Khorat Plateau region during the Pleistocene when a comet impact had a catastrophic effect on the landscape and biota (Bunopas, *et al.*, 2003, 2005, 2007; Bunopas and Kositanont, 2008; Haines, *et al.*, 2004; Fiske, *et al.*, 1996; Howard, *et al.*, 2000; Kositanont, *et al.*, 2008). The comet or comet fragments, dated to 0.77 ± 0.02 Ma, (~0.8 Ma), came from a northwesterly direction and had three general impact areas, Kazakstan, the Indochinese Peninsula and finally Mount Darwin in Tasmania. No impact crater has been found in Indochina, however the extensive spread of tektites from Hainan, Viet Nam, Laos, Cambodia and Thailand indicates that an impact occurred (Bunopas, *et al.*, 2007). The tektites found are of two origins, one from quartz rich sand or sandstone typical of the Khorat Plateau and the other from a silica depleted granitic source unlike the Khorat Plateau, indicating the possibility of multiple impacts (Howard, *et al.*, 2000).

Catastroloess (unmelted ejecta - muddy sand) is much more widespread and sometimes contains microtektites and quartz spherules. The catastroloess spread over a large part of Asia from the Gobi Desert to places farther east in northern China (Bunopas, *et al.*, 2007).

The Khorat Plateau impact was thought to have been in eastern Ubon Ratchathani Province near the border with Lao PDR near Buntharik, ~80km SE of the city of Ubon Ratchathani. However no impact crater has been discovered in southeastern Thailand or Laos (Schnetzler and McHone, 1996). The possible impact site at 15°33'N, 105°30'E was discovered by the senior author while examining Landsat photographs of locations of potential or likely river captures (Fig. 19). The strike appears to have been in Ubon Ratchathani Province of Thailand, along the southern flank of the Phu Phan anticline. The shallow crater's ~20 km long major elliptic axis extends in a general NW – SE direction.

How exactly the event transpired is not yet known. Whether it was a poorly or partially consolidated ice or dust-ball or some mixture of both, land impact or air blast or both, is not yet understood. However, a comet is much less dense than a meteorite and the force of the explosion is directed upward, rather than downward. The impact leaves either a shallow crater or even a mound if it is primarily a dustball (O'Keefe and Ahrens, 1982). There is little in the way of a crater rim but there may have been a huge amount of hot ejecta traveling at supersonic speeds. We have not seen any publications indicating the presence of ejecta across adjacent and to the north in Thailand or across the river in Lao PDR.

The event caused huge forest fires, uprooted and shattered tree trunks of up to 2m in diameter, and felled trees from gravel terraces along the Mun River with their roots facing eastward in the direction of Ubon Ratchathani (Bunopas and Kositanont, 2008). This was rapidly followed by high magnitude floods possibly made worse by catastrophic deforestation. Catastroloess flows containing tektites covered burnt trees and other organic matter. Besides vegetation, large killing fields of mammals, fishes and mollusks have been found. In some instances, mammals thought to have gone extinct in the Miocene or Pliocene were encountered in the aftermath debris (Bunopas, *et al.*, 2007). Interestingly, this comet impact was nearly contemporaneous with the planet's most recent long term geomagnetic reversal, the Brunhes-Matuyama reversal.

Much of southern Laos shares the history of northeast Thailand with sedimentary components equivalent to the Khorat Group (Workman, 1997). For the most part these sedimentary formations are found on the western side of the highlands. However, some Jurassic formations as far east as central Viet Nam are continental red beds that extend westward to the Khorat Plateau. In fact, in one instance this formation extends to the recent sediments of the coast between Da Nang and Tam Ky (see Fig. 3 in Rangin, *et al.*, 1995). However the Nakai Plateau (Nam Theun basin) of central Lao PDR has sedimentary deposits from the Lower Jurassic that appear to be marine (Ban, *et al.*, 2002). Formations similar to the Khorat Group are found under the Bolovens Plateau and extend southward towards the Cambodian border, which in Laos is not elevated like the Dangrek Range that separates Thailand and Cambodia. This southern region of Lao PDR may be

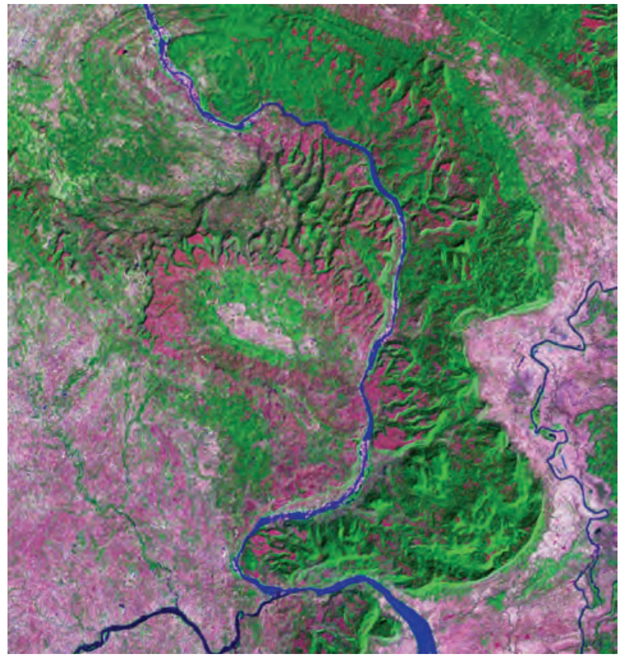

Figure 19. Site of possible impact of comet fragment on the Khorat Plateau of Thailand. The Mekong River in the center of the photo forms the border of Thailand and Laos. The river at the lower right is the Xe Done of Laos and at the lower left is the Mun River of Thailand. The Landsat 7 photo rendered in Geocover 1990 pseudocolor converts band 7 (mid-infrared) to red, band 4 (near-infrared) as green and band 3 (visible green) as blue. The photo was produced by NASA World Wind version 1.4, an open source GIS system (Bell, *et al.*, 2007) which does not provide dates for original photos. However the real color image appeared to have been taken during the dry season.

tilted in the more ancient direction than the present Khorat Plateau. The Dangrek Range along the southern margin where the Khorat Plateau margin appears at first glance to be an overthrust over the Cambodian plain during Plio-Pleistocene movement. However that is not certain. Any significance of the timing of igneous activity needs study.

Igneous activity on the Khorat Plateau was a small but significant part of the relatively recent and widespread volcanic activity that has taken place across the southern part of the Indochinese Peninsula (Fig. 20). On the Khorat Plateau there may have some localization based on age and chemical composition. Two general groups of basalts were found across the southern part of the Khorat Plateau (Zhou and Mukasa, 1997) Group I basalts have Indian Ocean middle ocean ridge characteristics and are derived from the asthenosphere. They are likely related to the opening of the Gulf of Thailand. They were found at Nakon Ratchasima (NR) in Nakon Ratchasima Province and Phu Ngoan (PNG) in Sisaket Province. None of the Group I basalts from the Khorat Plateau have been dated. Group II basalts from the Khorat Plateau are lavas originating from an asthenopheric source but contain

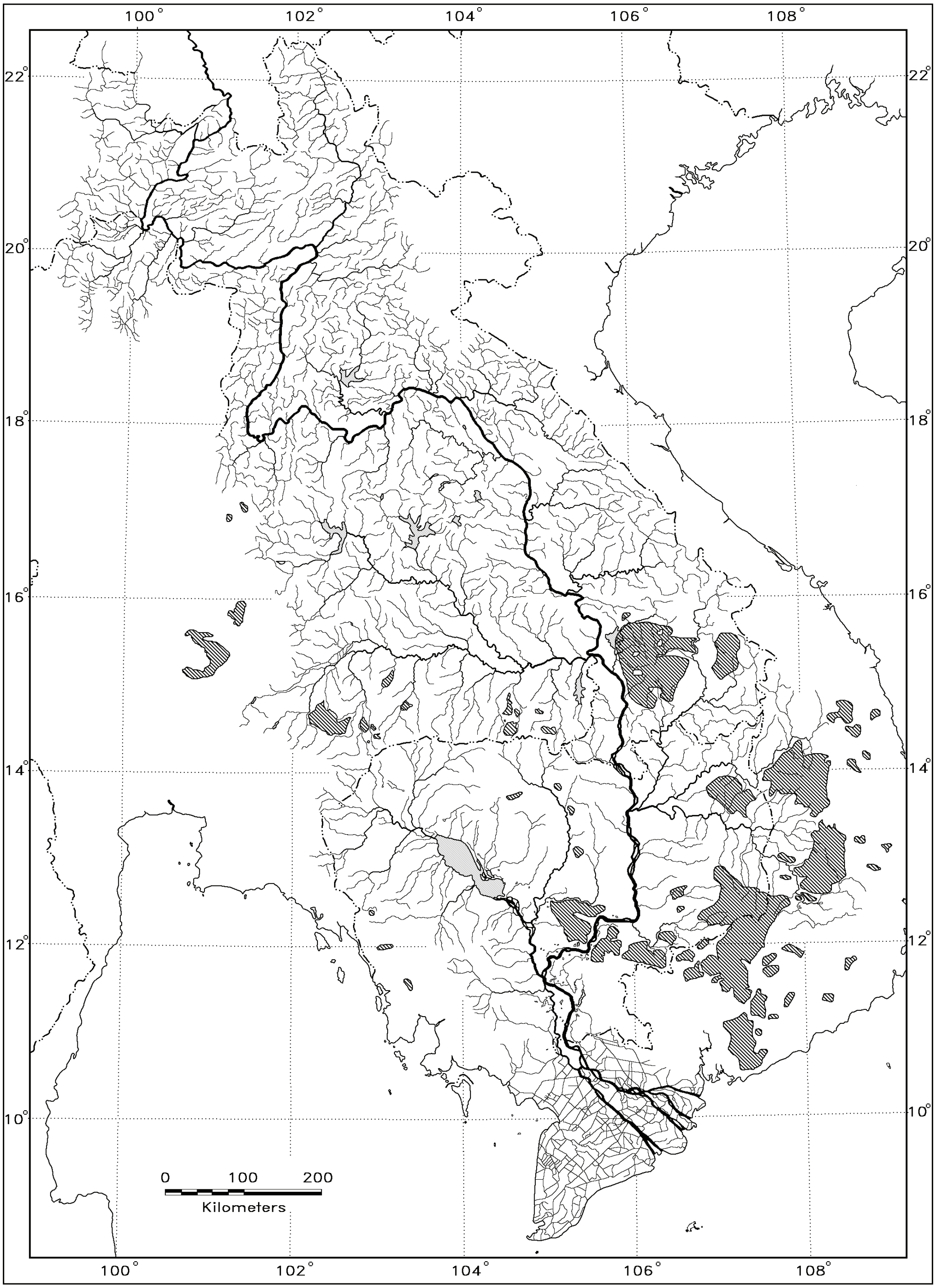

Figure 20. Pliocene-Pleistocene basalt outcrops in the lower Mekong basin. Miocene outcrops are found west of the Mekong basin.

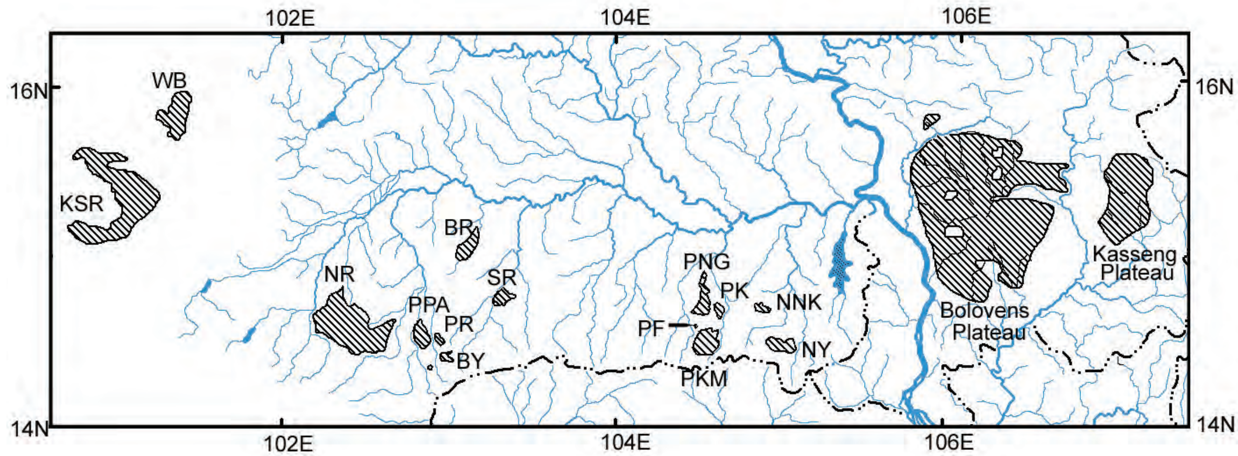

Figure 21. Cenozoic basalt outcrops from the Khorat Plateau and nearby areas. Locality abbreviations in text below.

contamination from the deep lithosphere as might be produced during accretion or subduction (Mukasa, *et al.*, 1966). These were found at Khao Kradong (BR), Phu Phra Angkhan (PPA), Ban Yai Yam (BY) and Khao Pha Nom Rong (PR), all in Buriram Province, and Surin (SR) in Surin Province.

Dating of basalt deposits on the Khorat Plateau has indicated two general periods of activity – an older group of greater than 3Ma and a younger group of less than 1Ma. The older group includes a nepheline mugearite from a locality near Pu Fai (PF) in Sisaket Province were found to be from 3.28 ± 0.48 Ma (Barr and Macdonald, 1981 – K-Ar). It has not been classified by group. A nepheline hawaiite from Ubon Province SE of Kantharalak near Nam Yuen (NY), that also has not been classified with respect to the two groups, turned out to be 3.28 ± 0.03 Ma (Chualaowanich, *et al.*, 2008 – ^{40}Ar/^{39}Ar). The age of the Ubon sample was obtained long after the paper by Barr and Macdonald (1981) and seems to be a near-perfect match in age. A nepheline hawaiite that seems most similar to the Sisaket sample came from Kanchanaburi Province near Bo Phloi (14°17'N, 99°32'E) which was dated at 3.14 ± 0.17 Ma (Barr and Macdonald, 1981 – K-Ar). No age dating on any Khorat Plateau Group I basalts is available.

As with the Group I basalt deposits, relatively few of the Thai Group II basalt from the Khorat Plateau have been dated. There is a date available for one Group II basalt from Khao Kradong near Buriram (BR) of 0.92 ± 0.3 Ma (Barr and Macdonald, 1981 – K-Ar). A more recent study using a new procedure yielded 0.43 ± 0.02 Ma using ^{40}Ar/^{39}Ar (Chualaowanich, *et al.*, 2008). It has also been noted that this basalt sits on top of the tektite deposits of 0.77Ma (Bunopas and Khositanont, 2008). This indicates that the older date could be problematic although the range of dates by Barr and Macdonald would allow a post-tectite origin. There is also the possibility that these lava fields had more than one period of activity. Among the Khorat Plateau basalts there are two general groups by age and two groups based on chemical composition, but the Group I basalts have not been aged and the 3+ Ma aged basalts have not had isotope studies performed on them.

Associated with, but not part of, the Khorat Plateau is a large basalt outcrop (hawaiite) just west of the Pasak River at Kok Samrong (KSR). This extensive area has had several lava flows over an extended period of time. The age of 11.29 ± 0.64 Ma greatly pre-dates anything from the plateau itself (Barr and Macdonald, 1981– K-Ar). Older lavas are also associated with this area of 18.1 ± 0.7 Ma and 24.1 ± 1.0 Ma (Intasopa, 1993). It may represent an earlier phase of movements that later elevated the western margin of the Khorat Plateau and tilted the plateau towards the east. The movements may also be related to the opening of the Gulf of Thailand. Directly north of this is another lava flow at Wichianburi (WB) that has several dates associated with it. The oldest date is 11.03 ± 0.03 Ma by Intasopa (1993) and younger dates of 9.08 ± 0.29 Ma and 8.82 ± 0.09 Ma (Sutthirat, *et al.*, 1994, 2005).

From these Khorat Plateau data it appears that the earliest movement produced lava flows along eastern end of the Dangrek Range and later flows occurred to the west. However these age data are extremely limited and the study of isotope signatures is incomplete, so that the origin of the lavas is not known. Much more needs to be done to get a clearer picture. If the large Nakon Ratchasima outcrop is younger than those in Sisaket Province (as well as the one in Ubon Province), then the uplift may have occurred from east to west, but this is speculation at present. Certainly the Pliocene inception of movement along the Khorat Plateau southern margin predated the final eastward tilting of the plateau.

In Laos, directly east of the mouth of the Mun River is the Bolovens Plateau, which reaches a height of over

1.2km and a maximum elevation of over 1.7km. The plateau has dimensions of 100 km in least diameter by 125 km in greatest diameter and is characterized by extensive basalt flows down several valleys. Directly to the east of the Bolovens Plateau is the Kasseng Plateau, another Cenozoic basalt formation that has similar elevation but is considerably smaller in area. Basalt in the Bolovens Plateau has been dated at 1.36 ± 0.09 Ma (Carbonnel, *et al.*, 1972 - fission track). There may even be Holocene basalt according to an engineering firm studying bauxite potential. The Kasseng Plateau is thought to have a similar origin to the Bolovens Plateau (Hoffet, 1933).

Stream captures have happened around the Khorat Plateau, some recent and with minor significance and other older and more significant captures. Besides the capture of the Upper Yom and possible capture of the upper Ing in northern Thailand discussed previously, stream captures associated with the Khorat Plateau have been known for some time in the areas of Chiang Khan (Fromaget, 1941) and Muang Vapi (Hoffet, 1933). The suggestion of the Chiang Khan stream capture by Fromaget followed Hoffett's observation that the ancient Mekong possibly flowed into the Menam (Chao Phraya) by way of the Pasak as illustrated in Hoffett (1933, Fig. 5).

Along the western and southwestern margin of the Khorat Plateau there are 15 wind or water gaps through the Phra Wihan formation from the northernmost, and most spectacular at Pa Mong gorge, to the last one southwest of Surin (Parry, 1996). Any river entering or leaving the Khorat Plateau through the western or southwestern margins would have passed through one of these. There is also the possibility that rivers may have flowed both directions in some of these gaps as relative elevations changed. Parry (1996) indicated the presence of at least six stream captures west of the extended Phu Phan range, a remnant of the Phra Wihan formation north of Nam Phong, among rivers which flow into the Mekong to the north and through the Phu Phan water gaps into the Khorat Plateau Basin to the east. It has been suggested that the Mekong may have flowed SE across the Khorat Plateau from a point upstream from Vientiane to near Pakse (Workman, 1997). To do this, the river would most likely flow through the Nam Phong water gap and take the course of the modern Lam Chi. Any water or wind gap to farther north would direct the flow into the northern Sakhon Nakhon basin north of the Phu Phan Range (Fig. 18). The Loei River enters the Mekong just upstream from Chiang Khan and the much of it takes meandering course with numerous oxbows across plains of Quaternary alluvium and may have formed an ancient connection with the Lam Chi of the Khorat Plateau Basin. It is also possible the "point upstream from Vientiane" mentioned by Workman (1997) might be found much closer to the Pa Mong gorge and would consist of a river flowing along the western face of the Phu Phan range. However, exact alignments of past connections have not been previously discussed. They are important enough to the history of the river and its fauna that they deserve attention.

To explore the possibilities, Landsat maps available through the NASA World Wind (1.4) were used with the Geocom 1990 pseudocolor conversion described in Figure 22. A series of maps were stitched together to make a single map that covers the entire affected region. Google Earth was used to find potential low points in elevation between basins that are separate today. The latitude and longitude coordinates were then used to get precise elevations from NASA World Wind.

Between the Nam Loei and the Nam Phong watersheds two areas that were similar in elevation and may have linked them, although one is more likely to have been involved than the other. The northern connection passes through the localities indicated by the numbers 11, 12, 13 and 14, and the southern connection passes through the numbers 15 through 24 on Figure 22. The southern route appears to be the most likely connection between the basins. Prior to the opening of the present Mekong downstream between Chiang Khan, the river might have flowed across the relatively flat center of the Loei highlands before debouching into the uniformly flat area to the east. East of Chiang Khan, the river passes through two N-S trending mountain ranges before reaching the margin of Phu Phan Range of Thailand. Note here that the Phu Phan anticline, as it diagonally crosses the middle of the Khorat Plateau Basin, is not the same structure as the upturned margin of the Khorat Plateau Basin, although they do share geological components. However, both share the name "Phu Phan" on topographic maps by appearing to be a continuous stretch of high terrain that cuts across the basin. South of the Nam Phong, other names are used for the highlands formed by the margin of the Phra Wihan formation that encloses the three basins within the Khorat Basin Plateau (*e.g.*, the Dangrek Range).

The Nam Loei is found in one of a series on N-S oriented valleys in the Loei fold belt. On the opposite bank of the Mekong that valley is occupied by the Nam which flows down a valley that is somewhat narrower but smoothly descending with elevation between 300m and 400m. Today the Mekong upstream from Chiang Khan flows through a reach found in this valley between 18°30'N and 18°40'N before turning west and following a parallel valley to the south. This valley is readily visible in Figure 22. Prior to the development of the modern Mekong, this watershed could possibly have flowed through today's Nam Loei valley to the south.

The Nam Loei (Fig. 22, numbers 1 - 9) extends from the Mekong to Phu Ho which it skirts and then begins to climb rapidly in elevation as it travels to the south and later turns to the northwest. Elevations for the main branch

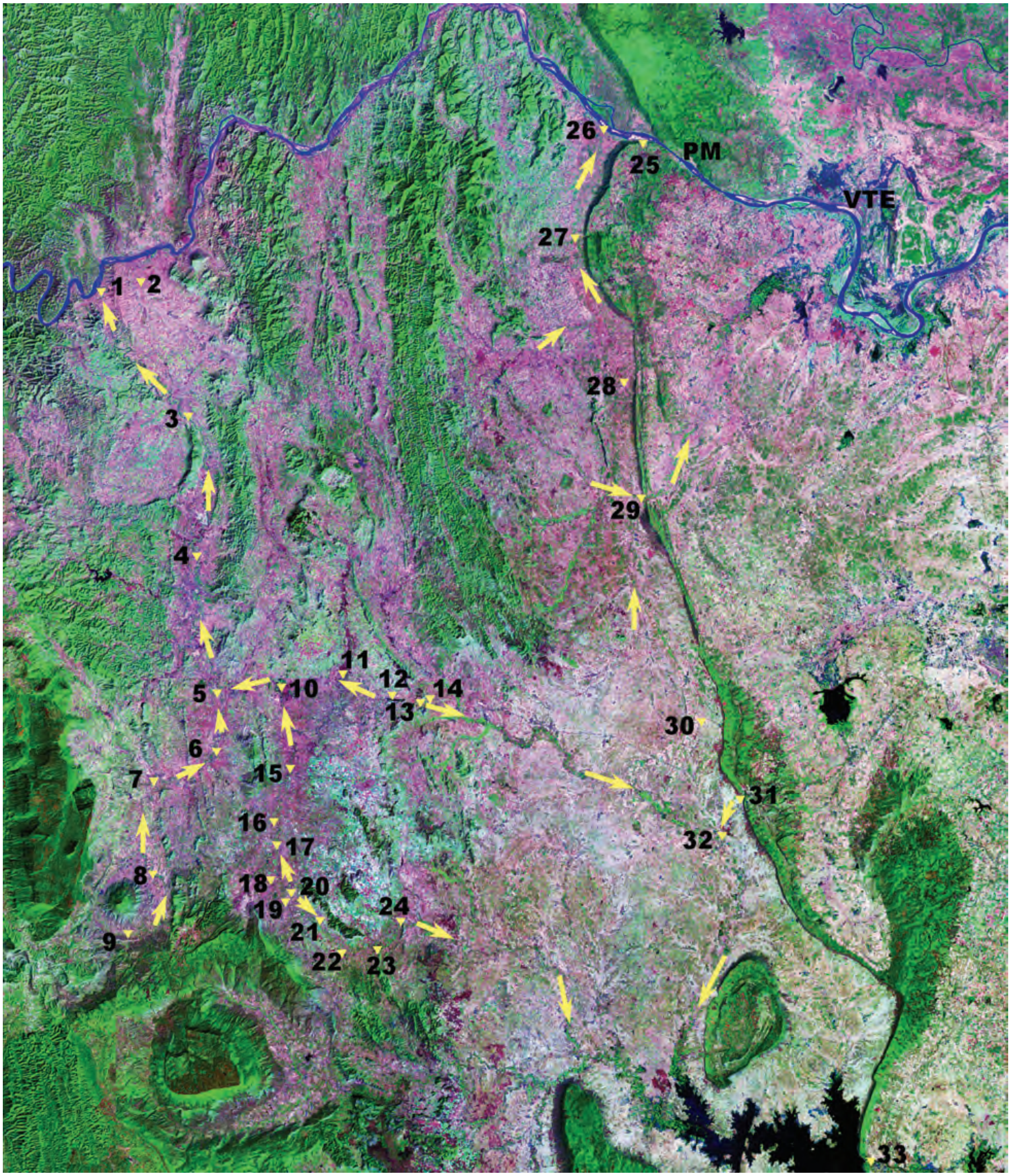

Figure 22. Three possible paths previously taken by the Mekong east of, and across the ridge of the Phra Wihan formation. Arrows indicate modern drainage patterns. Modern elevations are provided for each of the numbered triangles. Localities with latitude and longitude coordinates are provided in Appendix 1, page 129. Elevations are; 1 - 216m, 2 - 219m, 3 - 236m, 4 - 243m, 5 - 248m, 6 - 256m, 7 - 262m, 8 - 271m, 9 - 282m, 10 - 274m, 11- 285m, 12 - 332m, 13 - 324m, 14 - 291m, 15 - 281m, 16 - 296m, 17 - 306m, 18 - 317m, 19 - 327m, 20 - 317m, 21 - 295m, 22 - 285m, 23 - 277m, 24 - 253m, 25 - 401m, 26 - 174m, 27 - 188m, 28 - 228m, 29 - 195m, 30 - 254m, 31- 244m, 32 - 212m, 33 - 181m. All elevations are listed as given by NASA World Wind software, which consistently differs from Google Earth. Elevation of Nam Phong reservoir is 188m. PM is Pa Mong gorge and VTE is Vientiane city.

of the Nam Loei are somewhat lower than for the Nam Puan of the eastern margin of the Loei highlands. The Nam Puan flows north through an adjacent valley to the east of the Nam Loei which also flows north. As the Nam Loei flowed north to the Mekong, erosion of the Nam Puan has become a gentle gradient north and finally west to its mouth into the Nam Loei. The gradient is so slight that one reach is illustrated on older topographic maps as mostly marsh with a group of disconnected flows through it. Nowadays the actual river is easily visible by satellite photos. The two potential places of interaction with the Nam Phong come from branches of the Nam Puan.

The northern location is also least likely place for large amounts of water (Fig. 22, numbers 11 - 14). The area has a large, straight, E-W aligned ridge that reaches well over 500m in elevation. The northern side of the ridge drains into the Nam Puan through Huai Nam Suai and the southern side of it is mostly part of Huai Phaniang of the Nam Phong basin. This margin of the Loei highland is fairly steep and a large river cascading down such a slope would have been able to erode a substantial valley that does not seem evident today, from satellite photos or topographic maps. The lowest elevation is at least ten meters higher than for the southern location which also seems more likely. (See Appendix 1 for precise locations.)

The southern route (Fig. 22, numbers 15 - 24) passes through a wide valley in which the lowest point is found along the northern margin. The height of drainage divide today is greater from the southern and middle parts of the valley than at the northern part (note the differences between locations 19 and 20). Location 20 of the possible southern route has an elevation 15 meters below the minimum elevation of the Huai Nam Suai - Huai Phaniang drainage divide of the potential northern route. However, either would have spilled water into the Nam Phong and ultimately into today's Lam Chi.

No large river connections between an early Mekong of the modern Nam Loei valley and the rivers of central Thailand are obvious in anything other than catastrophic circumstances that produce truly enormous floods. However, west of the Nam Loei there are a series of valleys with small rivers that may have had headwater captures. Some of these could have had faunal exchanges of aquatic organisms between the Mekong and the rivers of central Thailand in the past.

Other than the connection through the Nam Loei, there is an unlikely possible route for the Mekong to pass through the Lam Chi. Prior to the opening of the Pa Mong water gap, the area to the west of the Phra Wihan formation (known also as the Phu Phan Range) could have allowed a water passage southwards. The area west of the ridge forms gently inclined plains with from the present Mekong (Fig. 22, locality 26) southward to the wind and water gaps that would have allowed water to pass into the Lam Chi. The uplifted Phra Wihan formation extends northward through Laos from the Pa Mong gorge to the most northern water gap through the ridge. That gap allows passage of the modern Nam Lik which joins the Nam Ngum near the outlet of Nam Ngum reservoir. The plain west of the Phra Wihan formation is much narrower in Laos, and that may indicate that the area south of today's Mekong in Thailand may have been subjected to greater erosion at sometime in the past.

The height of the Phu Phan Range at Pa Mong Gorge is 401m just south of the gorge (Fig. 22, locality 25) and the height increases to greater than 500m in places. The plain at the mouth of the Nam Som on the right bank of the Mekong (Fig. 22, locality 26) is 174m. The watershed divide between the Nam Som and the Nam Mong to the south is 228m at least height (Fig. 22, locality 28). The eastward flowing Nam Mong crosses the first water gap south of the Mekong at a height of 195m (locality 29) and enters the Mekong downstream from Vientiane. The next drainage divide to the south separates the Nam Mong from the Nam Phong (tributary to the Lam Chi) at an elevation of at least 254m (locality 30). Although it is possible that a river flowing southward along the western side of the Phu Phan Range could have reached the Lam Chi, the elevation of the water gap for the Nam Mong makes the possibility seem unlikely for anything but a catastrophic flood.

The Mekong may possibly have passed through the Lam Chi, although that particular version of the Mekong may have been more of a regional river from limited parts of central and northern Laos rather than the great river it is today. Determining the exact changes in its course will still require considerable research.

The northern basin of the Khorat Plateau may have been independent of the Lam Chi and upper Mekong prior to the opening of the Pa Mong gorge. As the Mekong began to flow through either the Pa Mong gorge or the Nam Mong, in the first water gap south of Pa Mong, the increased flow and flooding would have altered the drainage patterns on the Sakhon Nakhon basin. Parry (1996) referred to the Sakhon Nakhon basin today as having poorly integrated drainage networks, especially along the margin of the Mekong where they are short and apparently recently developed. Streams of all sizes tend to meander across the Sakhon Nakhon basin, and numerous abandoned channels and oxbows seem to bear little relationship to active modern rivers. In some instances modern alignments are suggestive of past relationships between rivers that do not connect today. One example is the Nam Ngum which has a course linearly aligned with the Songkhram of the Sakhon Nakhon basin of Thailand. (Fig. 23). Today both of these rivers meander across a gently sloping landscape, and in the past this may have been a single river flowing southeastward. Also the Nam

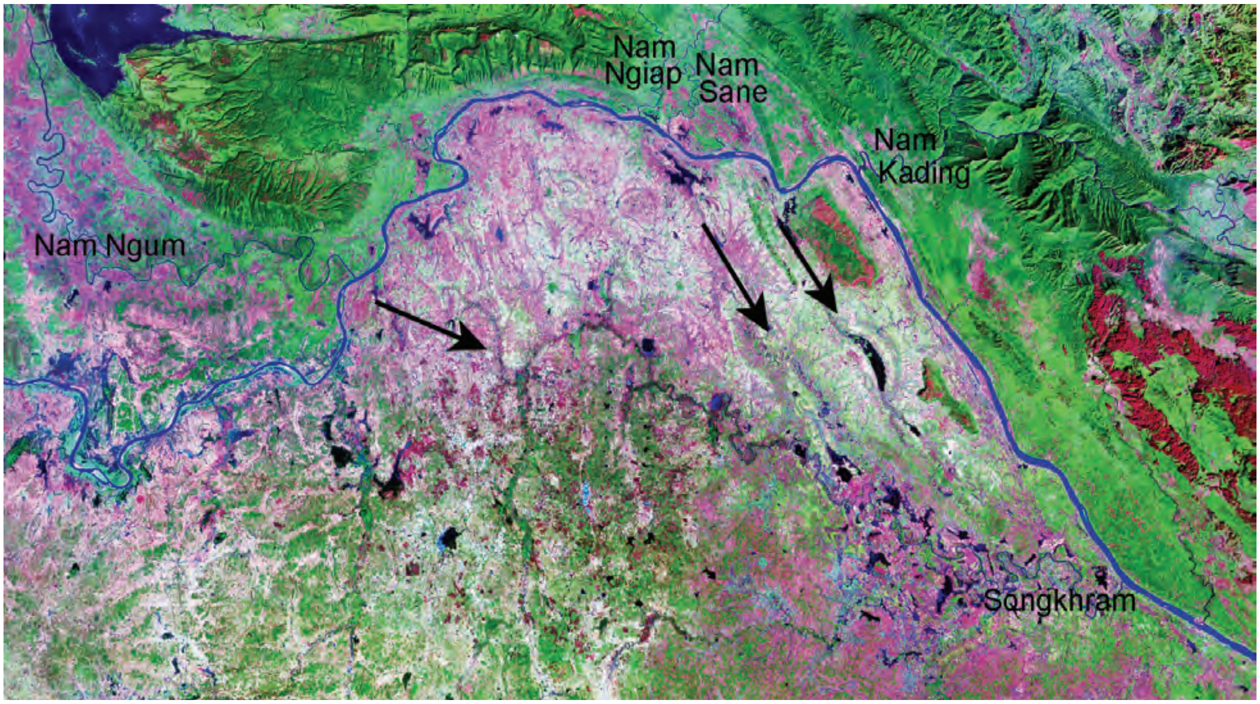

Figure 23. Northern Khorat Plateau with drainage basin relationships prior to the development of the modern Mekong. The arrows indicate likely past drainage connections. The Nam Ngum is aligned with the Songkhram and may have once been connected to it. The Nam Ngiap and Nam Sane probably joined near the present Mekong and flowed SSE towards the Songkhram. The Nam Kading may have flowed down the path of the modern Mekong or it may have followed a path to the west which still has a remnant oxbow and joins the Songkhram downstream. (From NASA World Wind 1.4)

Ngiap and the Nam Sane enter the Mekong across from shallow valleys that cross the upper Sakhon Nakhon basin. Finally, the Nam Kading took a parallel path to the southeast, possibly in the along the course of the present Mekong, or possibly to the west of it.

Another interesting aspect of the suggestion by Workman (1997) that the Lam Chi might have carried much of the Mekong flow diagonally across the Khorat Plateau Basin is that it may have exited the plateau near Pakse. Based on modern topography, this location was possibly at the point indicated by the arrow on Figure 24. This local low point in elevation is found on the Thai-Lao border directly east of the northern end of Lam Dam Noi Reservoir, at an elevation of 167m. The border crossing at Chong Mek several kilometers to the south is about 13m higher at the drainage divide. After crossing the divide, the elevation falls rapidly to a little over 100m. The present point where the Nam Mun joins the Mekong is has an elevation of 103m which is similar in elevation to much of the lowlands between Pakse and the possible alternate Lam Chi path. This drainage divide along the Thai-Lao border is approximately 45km north of Buntharik and about 45km south of the elliptical low trajectory crater illustrated in Figure 19. The three localities can be connected by a line that is nearly straight. The comet or comet fragment impact event is called the "Buntharik Astrogeological Event." Buntharik is one of the rare places where layered tektites are found, in contrast to other tektite localities on the Khorat Plateau that have splashed forms of layered tektites at Buriram, or the same mixed with splash tektites Nakon Ratchasima, or only splash tektites at Khon Kaen, each of these progressively farther away from Ubon (Bunopas, *et al.*, 2007).

As mentioned earlier, much about the impact is still not known. What is known is that it produced enormous floods with large amounts of entrained organic matter that were buried before aerobic decay. Flood pulses were closely spaced in time and rapidly in-filled pre-existing channels or valleys with debris induced damming (Haines *et al.*, 2004). The catastroloess and debris could have blocked the mouth of the Mun-Chi until it found another route off the Khorat Plateau. It certainly may have altered the course of the river near the impact zone and possibly in more distant places. Ultimately, it may be discovered that the impact event contributed to significant changes in lower basin configuration.

In southern Lao PDR, there is a stream capture point near Vapi at the northern edge of the Bolovens Plateau. This may have changed the former course of the Mekong (Hoffett, 1933). The headwaters of the modern Xe Done (Se Done) may have been part of the Xe Kong (Se Kong) drainage and possibly the Mekong may have once flowed

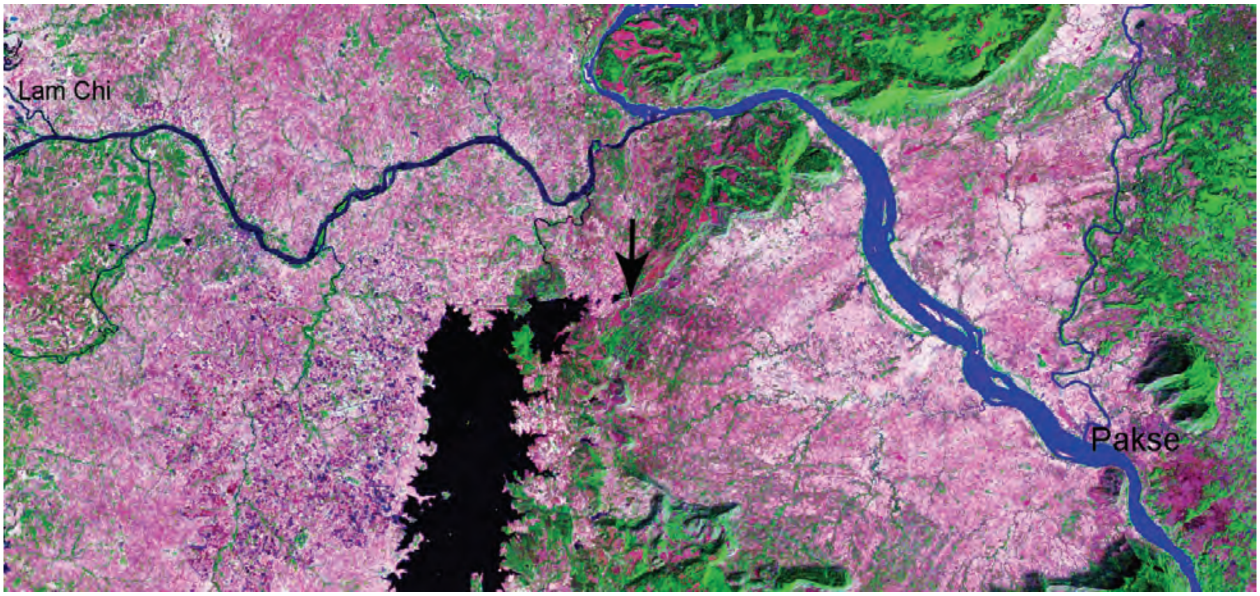

Figure 24. Possible alternate path of the Mun-Chi system from the Khorat Plateau. The arrow marks the low point along the drainage divide at 167m based on NASA data. Lam Chi at the upper left and Pakse to the lower right at the confluence of the Mekong and Xe Done. The present Mun River mouth is at 103m. Upstream and at the mouth of the Nam Mun, the Mekong flows through a narrow gorge with underwater canyons that may have a depth greater than 100m based on navigational charts. (From NASA World Wind 1.4)

to the area near Vapi and continued through the Xe Kong around the eastern side of the Bolovens Plateau (Figure 25). This possibility has also been mentioned by Workman (1997). The modern Xe Done was formed when a large part of the Xe Kong basin was captured by a rapidly eroding stream that flowed along the northwestern side of the Bolovens Plateau in the area of Vapi. This stream would have flowed into the Mekong upstream from Pakse of today (Figs. 24, 25).

At one time the much of the drainage from the Savannakhet and Sakhon Nakon basins may have flowed through the Xe Kong around the northern margin of the Bolovens Plateau. At that time the southern Khorat Plateau Mun-Chi left the plateau south of the present Mun mouth. This southern river may have been larger, particularly if the Mekong of northern Laos passed through the Lam Chi at that time. Besides the flow from the northern part of the Khorat Plateau, all of the upper tributary streams to the Xe Done could have flowed through the Xe Kong.

From Pakse the Mekong flows southward through an alluvial plain constrained by mountains and hills until it reaches an E-W ridge that passes through the middle of Don Khong (don = island) and forms the highest elevation found on any of the islands leading to Khoné Falls (Figure 26). The ridge is an ancient, north-dipping igneous outcrop of Indosinian age (Lower to Middle Triassic). Originally an anticline with volcanics to the north and sandstones, that extend into Cambodia, to the south. Multiple mirror-

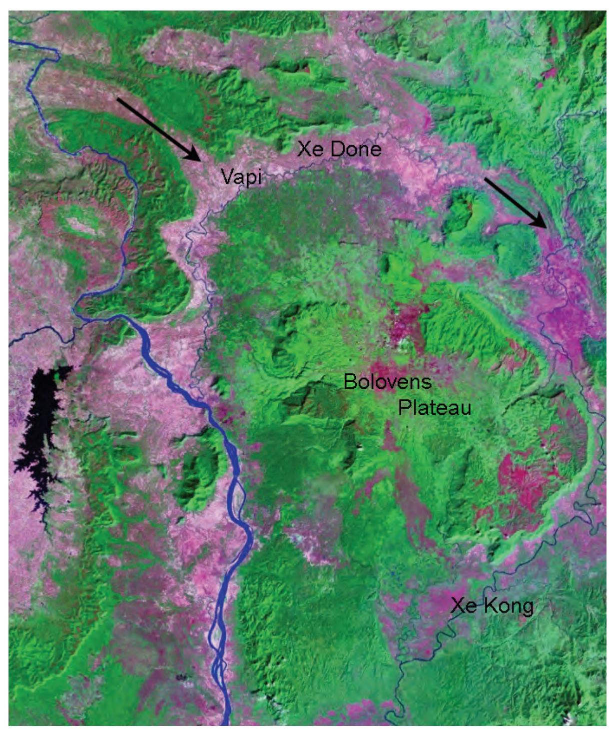

Figure 25. The Xe Done captures the Mekong. A former course of the Mekong through the Xe Kong was possibly diverted through the upper Xe Done which originally flowed eastward but reversed direction when captured by a smaller river that offered a steeper gradient downhill towards today's Mekong. (NASA World Wind)

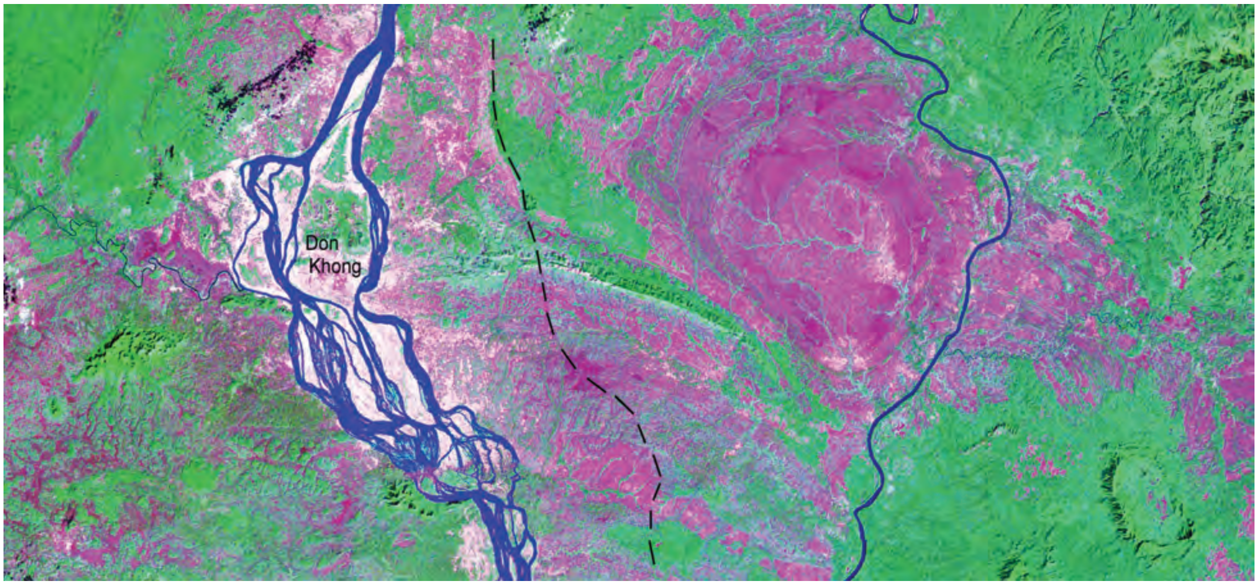

Figure 26. The relatively young Mekong passes a series of E-W trending faults that produce a series of channels and cataracts that make Khoné Falls not only one of the largest, but one of the most spectacular waterfalls in the world. The Xekong, to the right has a more extensive watershed in this area as indicated by the dashed lines that mark the drainage divide. The large red area is Mesozoic quartz sandstone. The large red area west of the Xe Kong is a Mesozic quartz sandstone, and at the upper right is the Kontum massif, the Precambrian basement complex for Indosinia, along with Mesozoic volcanics. (From NASA World Wind 1.4)

image faults have allowed the area to form a graben, dropping more recent quartz sandstones to a depth below the volcanics. The passage of the Mekong through these erosion resistant volcanic rocks is controlled by a series of relatively recent NNW-SSE faults (Brambati and Carulli, 2001).

Even today, the Xe Kong has a more extensive drainage network in this area. At 15°N, NASA World-Wind indicates elevation of the Mekong is higher at 88m than the Xe Kong at 76m. At the same place, Google maps indicates an even greater difference between the Mekong (86m) and Xe Kong (70m), however these elevations are less certain. At that latitude, 80% or more of the area between the basins is part of the Xe Kong watershed. The differences slowly decline until the Xe Kong meets the Mekong at Stung Treng. Indeed it would be interesting to examine the area between the watersheds upstream from Don Khong for indications of a connection between the early Mekong and Xe Kong. Based on what is already known from a river that has experienced great changes during the Quaternary, this would not be surprising.

The Lower Mekong

Eastern Cambodia terraces and volcanism

As the Mekong passes into Cambodia, it passes some of the oldest exposed parts of Indosinia. These are found on the Annam Cordillera, extending from upper Cochin China, along the Laos-Viet Nam border, and into upper Laos. A large part of the mountain range is a formation known as the Kontum Massif, a Precambrian granite, and one of the first parts of the southeast Asian continental crust to form. The Kontum Massif has been dated as Early Proterozoic and possibly Archean, dating back 2,300 Ma. This mountain range, known as the Annam Cordillera, has grown by the subsequent uplift of additional formations to the north and south of the original uplift. To the south, underlying the heavy Quaternary sediments of the Mekong and Dong Nai deltas may be Precambrian basement, as indicated by small exposed inliers projecting through the sediments in Cambodia (Saurin, 1959).

The Mekong channel between Khoné Falls and Kratié is thought to be very young (Carbonnel, 1972). His section summarizing the “Evolution de la Vallée du Mékong” (*op.cit*., p 44) is fascinating. It is also similar to information published in an earlier paper (Carbonnel, 1965) but with slight differences. Three paragraphs are reproduced here in translation:

> *“Until here, the Dangrek cliffs have been considered a break like the edge of a fault. A geological reconnaissance, made in 1963 with E. Saurin in the region of Choeum Kson, proved to us that there exists no discontinuity between the cliffs and the Cambodian plain. The Dangreks represent a limit of erosion and we will remark that one can liken this relief to the rim of a large river valley. In effect, in the region of the ancient Cambodian “mole” including everything between the Mekong to the east, the south to Kompong Thom and to the Dangrek chain, the cutting effected in the terrace deposits of*

+40 m was displayed to us, on an eroded substratum, by a constant level of fluvial pebbles of very large size. This level proves that with the flow of the lower Quaternary, and possibly in the Pliocene, this region possessed a very important hydrographic network, of the importance of the present Mekong.

Now the Mekong flows through from its entrance to Cambodia (the falls of Khoné and Phapheng) in a relatively young valley, since this one is cut through, between Kratié and Kompong Cham, outflow of Quaternary basalt of Mimot-Chamcar Loeu. One could go so far then as the idea that the Mekong has, before the onset of eruptions of the Quaternary, run not towards the south but towards the west. And thus is explained the release by erosion of the 400 to 500m of "Grès Supérieurs" (sandstone) that covered over the Cambodian basin at the end of the Mesozoic. The absence of sedimentation over the course of the Tertiary in this region, whereas this time is represented in the remainder of Indo-China by lake deposits, proves moreover that, during this period, the phenomena of erosion have prevailed.

The absence of a current detailed geological map for Thailand prevents us from knowing if the Mekong running towards the west was going to flow directly into the Gulf of Siam or if it had already borrowed the center of the Great Lake-Tonlé Sap. However that may be, the basin can be interpreted as an old loop of Mekong that was later abandoned during the anticlinal uplift of Kompong Chhnang-Phnom Penh."

Note that, in the first paragraph, Carbonnel was using the term "mole" in the sense of a jetty or platform, which describes the ancient upland east of the present Mekong and extending from the Dangreks to Kompong Thom at the southern end. This area has also been called the Siem Reap – Stung Treng Volcano – Sedimentary Fold Belt (ESCAP, 1993). The part west of the Mekong has been outlined on the map (Fig. 27). The concept of an ancient platform implies stability of ancient basement extending from the Kontum Massif. However, extensive folding is present under the younger sedimentary layers above it, some of which are also folded (Workman, 1975). The entire group of Mesozoic sedimentary layers extends east of the Mekong and in some places is covered by Cenozoic basalt. The area surrounding the Great Lake is unevenly covered by a relatively thin layer of Quaternary sediments with bedrock exposed in a number of places.

In the first paragraph quoted, Carbonnel mentioned a locality now known as Choan Ksan (14°13'N, 104°57'E) and found at the base of the Dangrek Range within the outlined area. He also noted that there is no discontinuity at the base of the cliffs, meaning that they were the result of erosion rather than relative movement. Further, he stated that much of the ancient platform had experienced considerable erosion (+40m) and that, near Choan Ksan there was a constant level of very large pebbles left by river deposit. Carbonnel did not state specifically that those very large pebbles were not colluvial deposits from the Dangreks, however he did mention iron bearing white silica gravel, tectites and black carbon concretions (*op.cit.*, p 142). It is possible that this material may be related to the Buntharik Event and probable subsequent flooding.

A few kilometers upstream from Stung Treng in the Se San today, there are areas of fast water that have extensive beds of large fluvial granitic gravels and other hard stones that would not be expected from sandstone beds. The eastern highlands of the Indochinese Peninsula have always had water flowing down western slope across Cambodia in much the same way that the ancient currents flowed across the Khorat Basin Plateau.

The Khorat Basin Plateau differs from the old Cambodian platform by the presence of the erosion resistant Phra Wihan formation in NE Thailand. That formation has a fresh water origin and the Mesozoic sedimentary rocks of northern and eastern Cambodia (as well as southern Lao PDR) have marine lagoonal origin. The erosion resistance of the Phra Wihan formation coupled with its inclination change, as it formed bowl-shaped deposition basins, elevated its outer margin and produced the rim of the Khorat Plateau Basin.

Whether or not the eastern central highlands of Indosinia had rivers joining near the present city of Stung Treng does not matter. Even without the contribution that comes from the modern Mekong, there would still be a great deal of water to erode the softer rocks of the Cambodia platform regardless of the location of the rivers.

In the second quoted paragraph, Carbonnel described how the modern channel of the Mekong is related to major changes occurring between Kratié and Kompong Cham. A large region south of Kratié has been the site of extensive lava flows during the Quaternary as a result of faulting, fracturing and tilting. Prior to these events the regional drainage would have been westward. The estimate of erosion of some 400 to 500m of Mesozoic sandstone given may seem high, but these were domed upward during the Tertiary and can be quickly eroded (Carbonnel, 1965).

The area of eastern Cambodia near Kratié has experienced major changes during the Quaternary that have altered the path of the Mekong. These are indicated by two sets of terraces that identify areas of fluvial deposition in Cambodia and Viet Nam. The older one, known as the "100m terrace" is rises 80m above the Mekong at Phnom Pou, south of Prek Té, in Kratié Province. It shows that the flow of a river near the present path of the Mekong was once depositing gravel at elevations well above those found in that area today. Small cobble on that terrace is found 1 to 2m below the top of

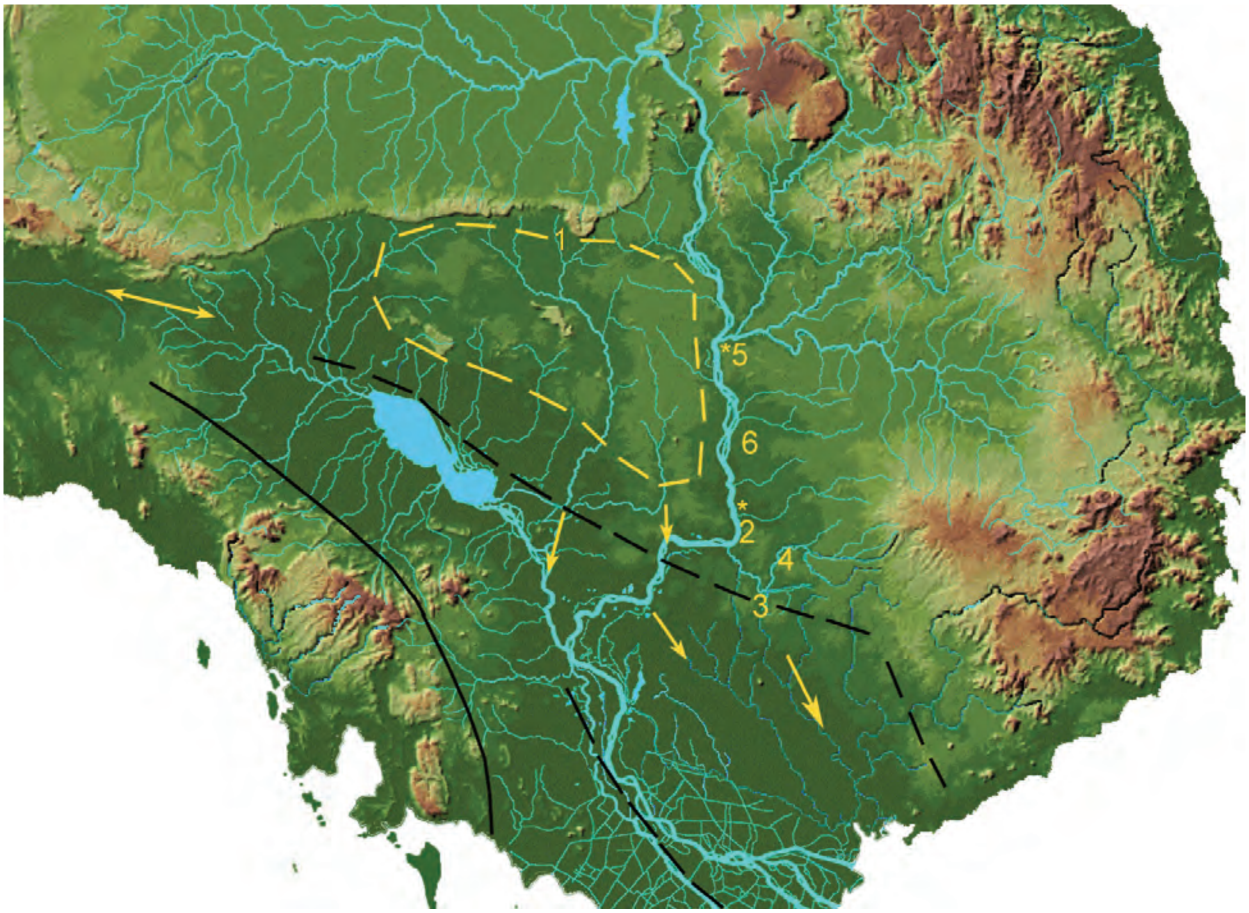

Figure 27. Geology of the Cambodian Mekong. The outline of the ancient Cambodian platform is outlined in a yellow dashed line. Choan Ksan (1) at the foot of the Dangreks has fluvial deposits of very large pebbles indicating the presence of a major river. Phnom Pou (2) just south of Kratié city (marked with a star), Memot (3) and Snuol (4) mark some of the locations of 100m terrace. Locations of the 40m terrace are at Snuol (4), Stung Treng city (5 with a star) and Sré Sbau. Yellow arrows indicate the approximate former paths of rivers and the direction of flow. The continuous black line represents a known fault and dashed black lines represent inferred faults. Other faults certainly exist but are covered by ancient and modern alluvial deposits.

the terrace and consists of quartz, quartzite, "grès superieurs" and rhyolite. Above this terrace is basalt that dates to at least 0.65Ma (Carbonnel, 1972). This "100m terrace" extends southward towards Viet Nam and includes several hills such as Kroch, Kbak Ok and Thma Kor. These terraces pass Memot and Snuol and pass from there into Viet Nam in an area that is part of the Sông Bé basin today. The "old Mekong terrace" starts at a low level just north of today's Ho Chi Minh City and gradually increases in elevation to reach a maximum of about 100m toward the Cambodian border (Anonymous, 1966). This older alluvium found near Bien Hoa has tektites on its exposed surface, indicating that it was already present at ~ 0.8 Ma based on the most recent information about the Australasian Impact Event. The age of the terrace probably dates to Early Pleistocene or Pliocene (Fontaine and Workman, 1978). Other than this most recent part of the Tertiary, there is little evidence of sedimentation in Cambodia during a period when erosion predominated.

There is also a more recent system of terraces on the left bank of the Mekong which are referred to as the "40m terrace" (Carbonnel, 1972). This appears to be the average height above the river for this terrace system. Near Stung Treng, this terrace is about 60m, at Sré Sbau (downstream towards Kratié) it is 40m and at Snuol (near the Viet Nam border) it is 30m. This terrace likely predates the right angle westward turn and may indicate a path through the Saigon River basin of today. Both this terrace system and the "100m" terrace system are found along the left bank of the modern Mekong until it reaches the 90° bend south of Kratié, at which point both continue southward into Viet Nam and the Song Be drainage. These indicate that a large river previously flowed through this area, and that the Mekong of eastern Cambodia and southern Laos may have used this route prior to the spectacular lava flows that covered much of southeastern Cambodia during the

Pleistocene.

Eastern Cambodia and southern Viet Nam have had extensive lava flows during the Pliocene and Pleistocene covering some 10,000 km^2 in Cambodia alone (Fig. 28). In Cambodia this volcanic activity seems related to extensional tectonics and some of the flows are aligned in ways that suggest fault or fracture lines. The relationship of these flows to present and former paths of the Mekong is striking. The volcanic episodes have occurred as early as the Miocene (Djiring Plateau, Viet Nam), but most date from the Pliocene and Pleistocene. Other eruptions in Viet Nam also tend to pre-date those of Cambodia, although some localities may have had multiple episodes (Barr and McDonald, 1981). For instance, basalt from the Darlac Plateau dates to 3.4 ± 0.2 Ma (K-Ar), the Pleiku Plateau to 2.1 ± 0.1 Ma (K-Ar) and the Xuan Lôc Plateau to 2.6 ± 0.2 Ma (K-Ar) (Darbyshire in Barr and McDonald, 1981). However four zircon crystals from Xuan Lôc basalt analyzed by fission-track ranged from 0.59 ± 0.1 to 0.70 ± 0.15 Ma, with two crystals being done twice, indicating that these are reliable and repeatable results (Carbonnel, *et al.*, 1972). Therefore, it is likely that Xuan Lôc had at least two periods of volcanic activity.

From Cambodian deposits, fission track analysis of a zircon crystal from Bokeo in Ratanakiri Province produced an estimate of 1.27 ± 0.24 after six repetitions, which is similar in age to a sample from the Bolovens Plateau analyzed by the same method to be 1.36 ± 0.09 Ma (Barr and McDonald, 1981). The Bokeo sample overlapped in some instances with the Bolovens sample (Carbonnel, *et al.*, 1972). This area was studied thoroughly by Lacombe (1969-70), who found multiple periods of activity through the Quaternary with the older basalts dating from 0.7 to 2.3 Ma and the younger ones of less than 0.7 Ma. However, when using presence of tektites of the Australasian Impact Event, the cutoff date becomes nearly 0.8 Ma. The plateau has simple cones, crater cones, horseshoe cones, explosion craters, rift valleys and crater lakes. The maximum extent of the lava flows covered up to 3200 km^2, and they now cover approximately 1500 km^2 after erosion (Whitford-Stark, 1987).

The Haut Chhlong Plateau (Haut Sông Bé of Whitford-Stark, *op.cit.*) is a high plateau of 800 - 1000m (maximum over 1500m), with extensive area in both Cambodia and Viet Nam. It is similar to the plateaus of Pleiku, Darlac and Djiring, all of Viet Nam. No dates are available for volcanic activity and most seems to be old compared to what is found on lower plateaus of eastern Cambodia. The basaltic lavas of Haut Chhlong are deeply weathered to produce a thick layer of lateritic soil. In some areas there

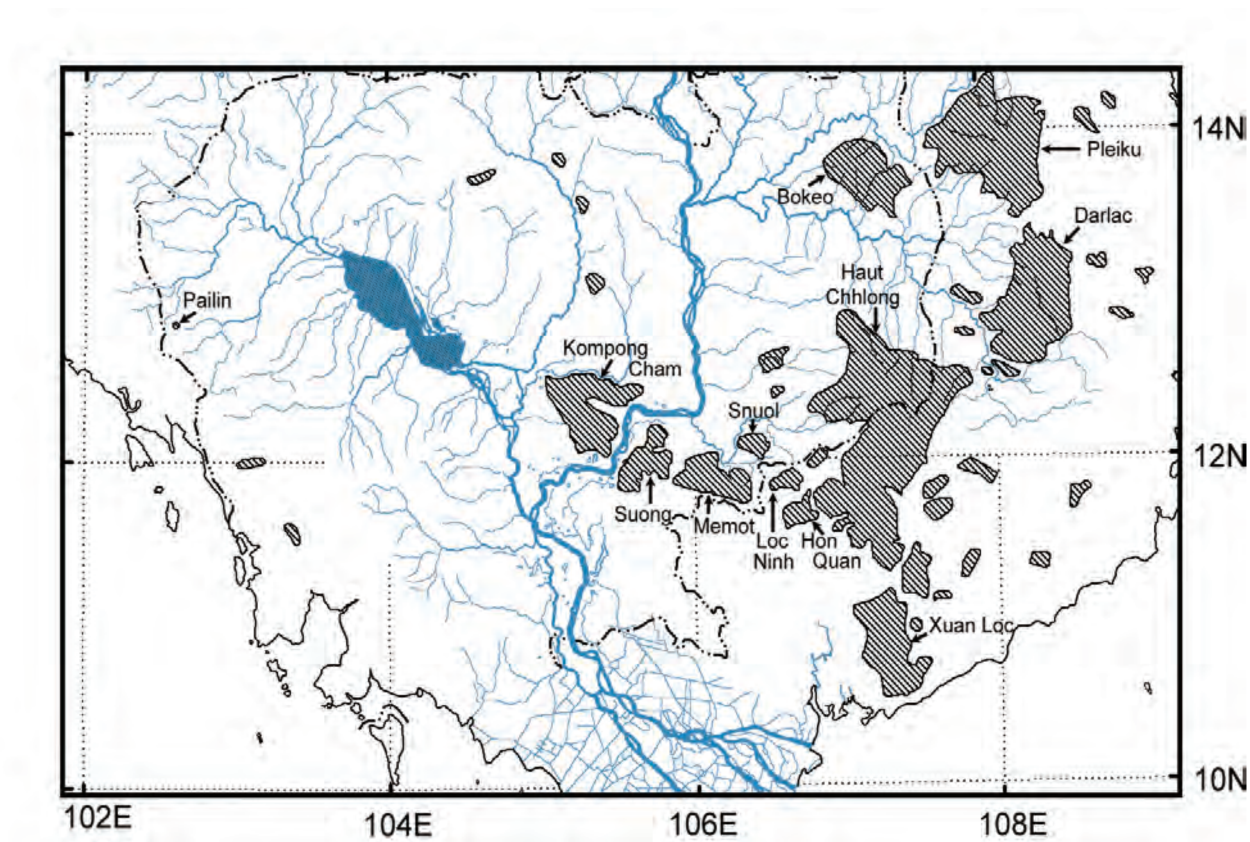

Figure 28. Location and names of major Neogene basalt outcrops in Cambodia and southern Viet Nam.

are more recent flows that have dammed rivers and are used today as fords, or have formed waterfalls such as Bou Sra Falls, a spectacular double waterfall in Mondulkiri Province of eastern Cambodia.

The series of lava flows that have had the greatest impact on the path taken by the Mekong begin at Kompong Cham and extend in a line to the southeast, including flows at Suong, Memot, Hon Quan and possibly Xuan Lôc. The large flows at Snuol and Lôc Ninh and other small flows may have been involved also. In Cambodia, dates for these flows do not exist, although Carbonnel (1972) thought that the Kompong Cham flow is a young basalt possibly of the same age as the young basalt at Xuan Lôc of approximately 0.65 Ma. However, date estimates from experimental studies are unavailable. In this area the Mekong was diverted directly west, and it passed between the Kompong Cham and the Suong lava fields, where it approached and merged with the Tonlé Sap of western Cambodia.

Lava fields are not as common in western and central Cambodia, nor are they anywhere near as extensive. However, basalt samples from Pailin have been dated, as have many samples from southeastern Thailand. In southeastern Thailand basalt at Chantaburi has been dated at and 3.0 ± 0.19 Ma (Sutthirat, *et al.*, 1994 - ^{40}Ar/^{39}Ar), 2.57 ± 0.2 Ma (Barr and Macdonald, 1981 - K/Ar) and finally 0.44 ± 0.11 Ma (Carbonnel, *et al.*, 1972 - fission track) and 1.94 ± 0.02 Ma (Chualaowanich *et al.*, 2008 - ^{40}Ar/^{39}Ar). Also in southeastern Thailand basalt in Trat Province has been dated at 2.38 ± 0.16 Ma (Sutthirat, *et al.*, 1994 - ^{40}Ar/^{39}Ar), 1.13 ± 0.17 Ma (Carbonnel, *et al.*, 1972 - fission track), and 0.69 ± 0.01 Ma and 1.60 ± 0.05 Ma (Chualaowanich *et al.*, 2008 - ^{40}Ar/^{39}Ar). These dates indicate multiple periods of activity. One set of frequently mentioned dates that do not apply here relate to a Thai sample from Kra, which is in peninsular Thailand. The dates are probably accurate, but far older at 23.6 ± 1.2 and 29.0 ± 1.7 Ma, and the area has a much different history.

Across the border from southeastern Thailand, in Cambodia, basalt from Pailin has been dated at 2.46 ± 0.19 Ma (Carbonnel, *et al.*, 1972 - fission track). This area has been an important source of gem quality rubies, sapphires and zircons.

In the third paragraph of his summary, Carbonnel stated his uncertainty about the ultimate pathways used by the rivers flowing westward across the ancient central platform. The Mekong could have reached the Gulf of Thailand directly, or it may have flowed through the center of the Great Lake - Tonlé Sap. The fact that Carbonnel mentioned the need for current geological maps from Thailand sheds light on this paragraph. In this he is suggesting the possibility that the Mekong may have left Cambodia at its northwestern border and flowed into the Gulf of Thailand after crossing northern Cambodia. Alternatively, it may have come through the axis of the Great Lake - Tonlé Sap. Of course, this would have been prior to the formation of the lake as it is today, which was due to a recent subsidence event of 5720 ± 130 BP (Carbonnel, 1963). This recent event does not seem to have had enough fracturing to allow lava to reach the surface.

Recent studies of Thailand's eastern provinces of Prachinburi and Chachoengsao using airborne geophysical data indicate extensive Quaternary fluvial deposits and terraces (Sangsomphong, *et al.*, 2008). That particular area is underlain by Mesozoic clastic rocks and is not controlled by the regional NW-SE trending fault. Although NW-SE trending faults are inferred from the general area, the known faults are at the southern edge of, and farther south than, the Quaternary deposits. This area has allowed water to pass between Cambodia and the Bangpakong River basin of Thailand. The Bangpakong enters the Gulf of Thailand independently of the Chao Phraya at the present time. The extensive terraces indicate substantial flow and at this time the divide in Thailand between the Gulf of Thailand rivers and the Mekong basin is a combination of terrace and colluvium from higher land along the southern margin of the valley. The relation of this border area to drainage from the Khorat Plateau Basin prior to its uplift and eastward tilt is not known, but prior to movements in the Early Pleistocene, erosion may have carried sediment from the southwestern corner of the Khorat Plateau directly into the Gulf of Thailand or southward along the axis of the Great Lake. The Khorat Plateau appears to have contributed relatively little to the 7,000m deep Phitsanulok Basin in Thailand (Morley and Westaway, 2006), so if it flowed west, it may have reached the Gulf of Thailand directly or through the Lower Chao Phraya valley, which is known to have 3300m of sediment south of Bangkok (CCOP-IOC, 1974).

Other changes in river configurations are recognizable in Stung Chinit and Stung Sen of central Cambodia. Directly west of Kratié, Stung Chinit, a small river running southwards parallel to the Mekong of western Cambodia, makes a sharp turn to the west (Fig. 27). Examination of lava flows (Fig. 28) indicates that the Kompong Cham basalt blocks its path to the Mekong. The river flows along the northern margin of this great lava outcrop before again turning south and entering the Tonlé Sap. There are at lest two possible paths previously taken by Stung Chinit: 1) It may have flowed southeast to the Mekong as that river flowed to the South China Sea through the Saigon River basin as mentioned earlier or; 2) It may have flowed directly south through a modern segment of the Mekong that passes between the Kompong Cham and Suong lava flows (Figs. 27, 28).

Directly west of Stung Chinit is Stung Sen, a much larger river with meanders and oxbows extending over much of its length. As it approaches the Tonlé Sap it makes connection with a network of lowland streams including the Stung Chinit. However the major course flows towards the Great Lake (Fig. 27). Th Stung Sen is likely to have taken the route followed by the present Stung Chinit, with the modern course being recent and possibly related to the minor subsidence event of the Great Lake some 5 Ka.

West of the Tonlé Sap the base rocks are shallower than on the eastern side where Quaternary deposits may reach >130m, which suggests the presence of a structural basin (Kubo, 2008) that has been represented as an inferred fault along the Bassac River (Fig. 27). The fault has an eastward dip into the deep Cuu Long sedimentary basin of the northeastern delta (Nguyen, *et al.*, 2000). That fault may extend much farther to the northwest and be part of the Wang Chao Fault (Ferrari, *et al.,* 2008). This fault was illustrated in its approximate location earlier (Fig. 13). Therefore, during the Pleistocene, and possibly even more recently, three separate rivers flowed southeastward from Cambodia to the South China Sea, their watersheds being; the western Tonlé Sap – Stung Sen, the central Stung Chinit, and the eastern Mekong (Fig. 27).

Lower Mekong floodplain and delta

The present mouths of the Mekong-Bassac into the South China Sea have been active during the Holocene and earlier. During the sea-level regressions of the last glacial maximum, the channels of lower Mekong formed an incised valley system caused by down-cutting due the high gradient slope of the river bed. These incised valleys are found at -60 to -70 meters around the present distributary channels. The Late Pleistocene deposits that constitute the basement strata sit at about +5 meters along the Cambodian border north of the Plain of Reeds, and are found at about -2 to -4 meters in the Plain of Reeds. From this level, they tilt downwards to about -10 to -35 meters at the present coast in Bien Tre Province, and about -10 to -15 meters in the Ca Mau peninsula. The only deeper Holocene sediments are found in the incised valleys (Nguyen, *et al.*, 2005; Ta, *et al.*, 2002). The modern Mekong delta plain formed during the last 5,000 to 6,000 years, with progradation at about 40 - 45m/yr early on, slowing to about 10 - 20m/yr as the delta changed from being tide-dominated to mixed (tide- and wave-dominated) over the last 3,000 years.

There is evidence of a large abandoned channel that passed through a course northwest of the city of Rach Gia, near Hon Dat. This channel is found in western Long Xuyen Province, and exits Cambodia just west of the modern channel of the Bassac River (Nguyen, *et al.*, 2000, 2005). If active during the periods of lower sea-levels, this river would have followed a path just east of Phu Quoc Island into the North Sunda River in the current Gulf of Thailand. Gravel deposits are known from near Phu Quoc today (Emery and Niino, 1963). It is possible that the large abandoned channel in Viet Nam was the extended Tonlé Sap – Bassac, and it may have been independent from the Lower Mekong, as mentioned earlier. Although one part of this gravel bed could have carried flow from the now abandoned channel, another part extends towards Ha Tien. This may represent the Ha Tien River and tributaries including Prek Kampong Svay, which flows through Takeo Province of Cambodia. Lower sea levels would have produced a much steeper gradient in this relatively short river.

A second abandoned channel, of relatively large size, enters Viet Nam just east of the present Mekong and then joins the Mekong upstream from Hong Ngu in Dong Thap Province. On the Cambodian side of the border, a river named the Tonlé Prasat follows a similar path parallel to the Mekong. It is part of a large area in Cambodia extending upstream past Prey Veng that is only a few meters above sea level. One source of water that reaches Prey Veng is through the Tonlé Toch, which branches away from the Mekong just downstream from Kompong Cham to take a separate and shorter course to Prey Veng than the Mekong (Fig. 29). The Tonlé Toch continues past Prey Veng and connects ultimately to the Tonlé Prasat. The Tonlé Toch bypasses Quatre Bras with a large volume of floodwater to reach Prey Veng. It is regarded by the Cambodian government to be one of the most dangerous flooding rivers in the country. In this area, abandoned channels of the Mekong in the lowland floodplain are represented today by small rivers, natural levees and back marshes (Kubo, 2008). These are easily visible to anyone traveling by air into or out of Phnom Penh. Whether or not the Tonlé Toch is an abandoned channel of the Mekong is not certain, but it would not be surprising. This part of Cambodia has a deep basement which dips towards the Cuu Long basin under the eastern part of the Mekong Delta at a depth of several thousand meters by the time it reaches the South China Sea. The western margin of the deep Cuu Long basin is found near the Song Hau Giang (Bassac) which follows an east dipping fault (Nguyen, *et al.*, 2000). The northern and eastern margins (Fig. 27) indicate Pleistocene and possibly more recent movements in the extensive basalt flows of Cambodia and Viet Nam (Fig. 28), and many still await dating. Mass accumulation at the northern end of the Cuu Long basin continues today. During heavy floods much of the area between Kompong Cham and the Cuu Long of Viet Nam becomes submerged with water carrying considerable suspended sediment. This is indicated by satellite photos (Fig. 29).

A third abandoned channel is indicated on maps as entering Viet Nam and then disappearing into the Plain of Reeds in Long An Province upstream from Moc Hoa, and near Song Vam Co Tay of the Saigon River system. This

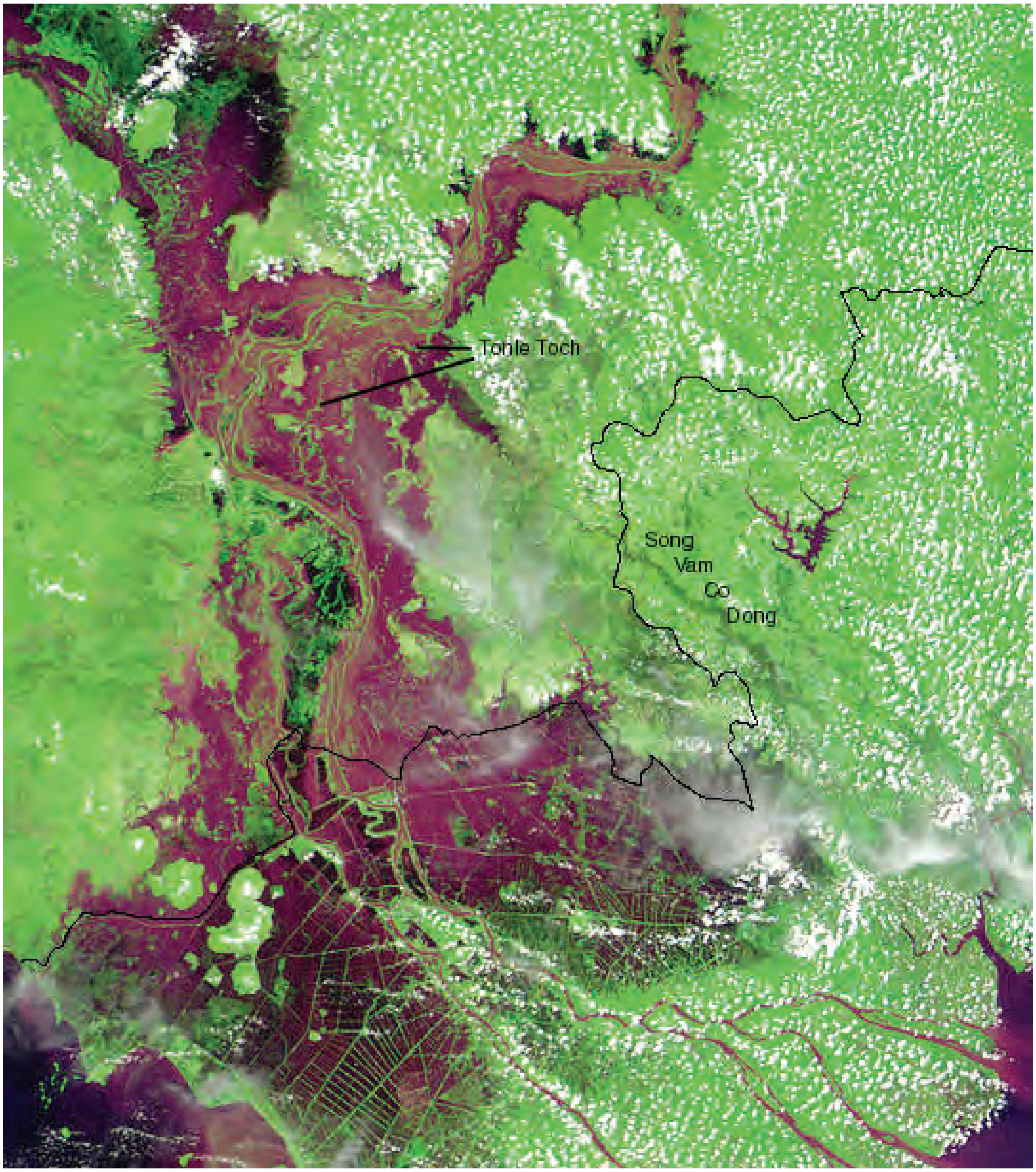

Figure 29. MODIS false color photograph of the floodplain of the lower Mekong during a heavy flood. The Great Lake is at the upper left and the delta is at the bottom. The colors enhance the contrast between vegetation and water. The darker the water, the less suspended matter it contains. In many places the water follows the courses of small rivers, preks or boengs. Water also reaches the South China Sea through tributaries of the Saigon River, with some of the water leaving the course of the Tonlé Toch near Kompong Cham to pass through the Song Vam Co Dong of Tay Ninh Province of Viet Nam. Photo taken by NASA Earth Observing System (EOS) on 9 September 2001.

channel has been represented as being quite large (Nguyen, *et al.*, 2000, 2005). The area upstream from this abandoned channel is lowland floodplain. If this represents one of the ancient paths of the Mekong, then it would not be surprising, given close proximity of the Saigon and the Mekong deltas, that these rivers may have shared courses in the past. The Song Vam Co Dong may still connect with the Mekong during floods (Fig. 29). Today, with the canals connecting the delta, their faunas will be very similar, if not nearly identical.

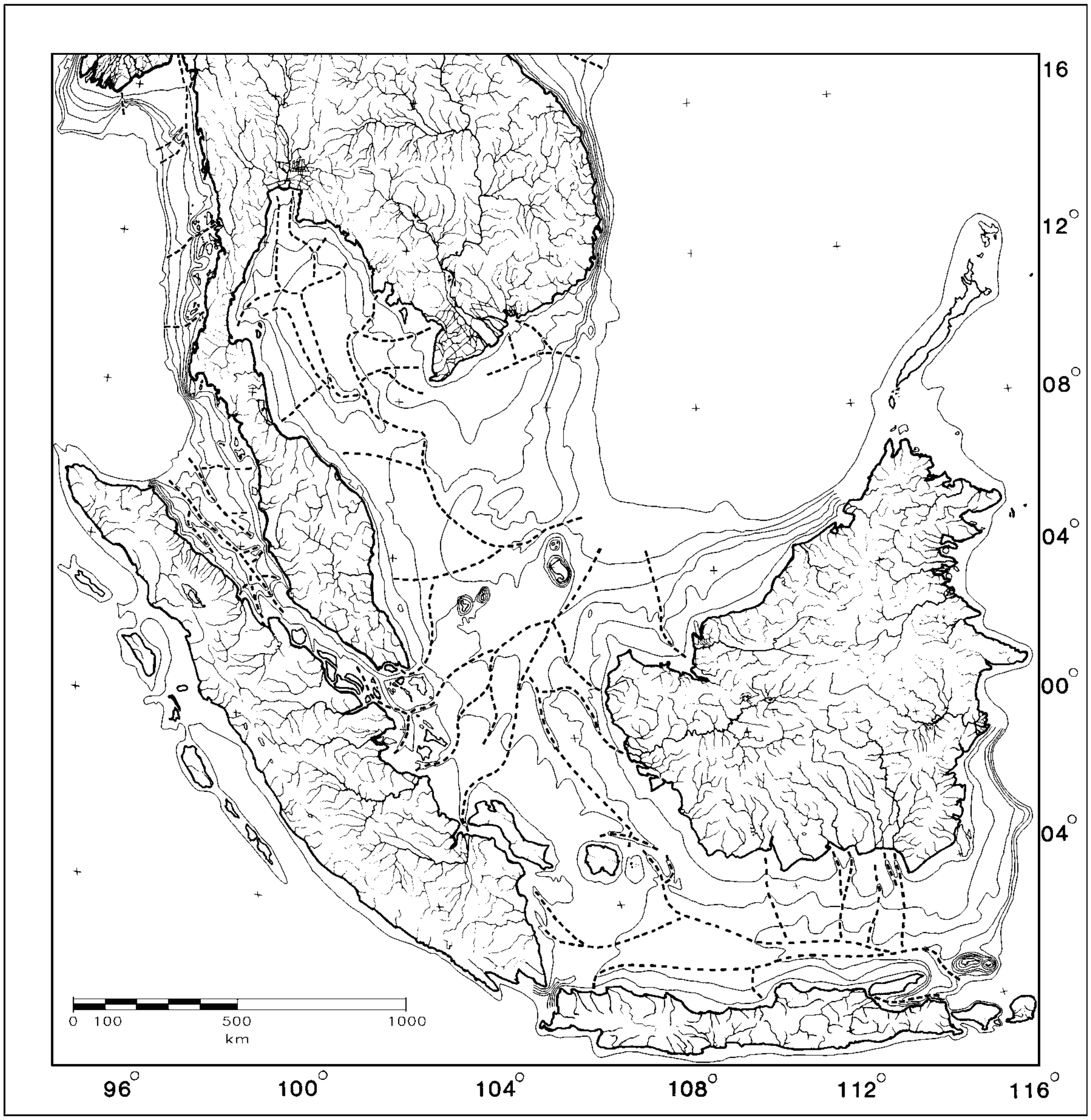

Figure 30. Extended Pleistocene river basins. Isobaths at 20, 40, 60, 80, 100 and 200 meters. Heavy dashed lines follow approximate routes of rivers that became exposed by sea level retreat during glacial periods. Dashed lines extend out to the 120 meter isobath, or the depth just below the most recent regression. Where shelf margins are abrupt, as in North Borneo, Palawan, western Sumatra, southern Java and eastern Kalimantan, only the 200 meter isobath is plotted.

Influence of Sea-Level Changes

Extended River Basins

An extraordinary feature of southeastern Asia is the presence of an extended continental shelf, known as the Sunda Shelf, part of which is currently exposed as a series of large islands, the Greater Sunda Islands, Java (Jawa, Indonesia), Sumatra (Sumatera, Indonesia), and Borneo (Kalimantan, Indonesia; Sarawak and Sabah, Malaysia; Brunei). Molengraaff and Weber (1921) first noted that the entire shelf might have become exposed during Pleistocene glacial periods. Later, Molengraaff (1922) offered a more complete treatise. The extent of continental surface exposure has varied greatly during the Pleistocene, and the shallow sea floor which connects the islands is actually a system of drowned river valleys (Kuenen, 1950; DeBeaufort, 1951) as illustrated below (Fig. 30). The most recent studies of sea levels and their relation to the Sunda

Shelf in Southeast Asia have been by Voris (2000) and Sathiamurthy and Voris (2006) who have provided a series of maps of coastlines and elevations through the sequence of sea level change.

The process of sea advance and retreat has happened several times in the Quaternary alone. The most recent rise in sea-levels began at about 21 ka BP immediately following the last glacial maximum and amounts to 116 meters (Hanebuth, *et al.*, 2000). The extent of change in drainage configurations of Southeast Asia can be demonstrated by examining the present sea-bed topography of the submerged part of the continental shelf, nearly all of which would have been exposed when sea levels approach 120m below the present level (Fig. 30). The most recent cycle of regression and transgression was only one of several, the magnitudes of which have been summarized in detail (Batchelor, 1979). If varying sea levels were the only variable in the shape of the exposed land masses, then attempted reconstructions of past drainage configuration would be fairly simple. However, for Sundaland, much more has occurred. The islands at the outer margin of the Sunda Arc are actively changing in elevation with localized movements such that reconstruction of the exposed surface of Sundaland for increasing lengths of time becomes complicated although attempts have been made (Sibinga, 1947, 1949). This discussion will be confined to the most recent sea-level regression.

The paths of the drowned river basins during the most recent sea regression indicate that rivers on modern islands connected with rivers on other islands. River basins that are discontinuous today were united, not once, but several times, most recently in the Late Pleistocene. The southern side of Borneo and the northern side of Java were drained by the East Sunda River during the Late Pleistocene. The effect of this is very important in terms of distribution of aquatic organisms. The southern tip of Sumatra was part of a watershed that included some of the northern Javanese rivers at the easternmost end of the island. This river flowed through the Sunda Strait, which separates Sumatra and Java (Tjia, 1980). The rivers from the western side of Borneo, central Sumatra and the western tip of the Malay Peninsula formed the West Sunda River. In the northern Strait of Malacca, rivers of northern Sumatra and western Malaya took a northwesterly path to debouch into the Indian Ocean.

East of the Malay Peninsula, a great river flowed in the present Gulf of Thailand and South China Sea. This northern river, here called the extended Chao Phraya, would have drained both the Malay and Indochinese peninsulas (Sawamura and Laming, 1974). During glacial sea-level regressions, the extended Chao Phraya flowed over areas with sedimentary deposits of over 12,000 m in depth in the present Gulf of Thailand. Studies of the sedimentation during the glacial sea-regressions, have been made (Emery and Niino, 1963; Biswas, 1973; Sawamura and Laming, 1974). These and other studies (Tjia, 1970; Batchelor, 1979; Tjia, *et al.*, 1983) generally relate to Quaternary sea levels in the Gulf of Thailand along the Malay Peninsula.

As mentioned earlier, the mouth of the Bassac may have shifted to its present position recently from just east of Phu Quoc Island in the Gulf of Thailand (Fontaine and Workman, 1978; Nguyen, *et al.*, 2000, 2005). This event possibly occurred during the warm period known as the "climatic optimum" which occurred after the most recent glaciation. During that period, sea levels rose to their highest levels since the Miocene and would have inundated the entire Mekong delta and much of the lower Mekong downstream from Quatre Bras allowing the river to find a quicker route to the sea. The new route would have been maintained as the river cut new channels and periodic floods deposited sediment to fill in the old channel.

Holocene Climatic Optimum

At the present time, sea-levels are 20 to 25 meters below their highest levels during the middle Pliocene (about 3 m and about 5 meters below their highest levels in the Holocene, between 6 and 4.2 ka BP (Geyh, *et al.*, 1979; Hesp, *et al.*, 1998; Tjia, *et al.*, 1983).

High sea-levels reached at ~5 ka BP have played an important part in development of the Mekong delta and the Great Lake of Cambodia. A sea-level rise of 5 meters today would advance to cover most of the Mekong delta, and penetrate well into Cambodia in several places. During the highest sea-levels of the Holocene, the entire delta was submerged, except for a few small mountains in western An Giang Province of Viet Nam, and a few upland areas along the Cambodian border. Today, the floodplain around Prey Veng has elevations between 4 and 6 meters, and these low elevations coupled with tidal ranges would allow considerable penetration of salt water up the Tonlé Sap. There certainly would have been tidal fluctuations in flow of the Tonlé Sap, and possibly in the Great Lake itself. Even today, conservative estimates of tidal influence place the extent at 228km inland (Wolanski, *et al.*, 1996), and more recent observations give a daily tidal variation of 0.2 - 0.25m at Prek Dam on the Tonlé Sap, ~60km upstream from Phnom Penh and ~70km downstream from the Great Lake (Penny, 2006). A sea-level rise of +5 meters, along with tides of 2.5 to 3m, added to the rise in ground level due to sediment accumulation over the last 6,000 years, yields a picture of the extent of marine water penetration at the Holocene high stand (Fig. 31).

In the Great Lake, a sediment core from middle of the

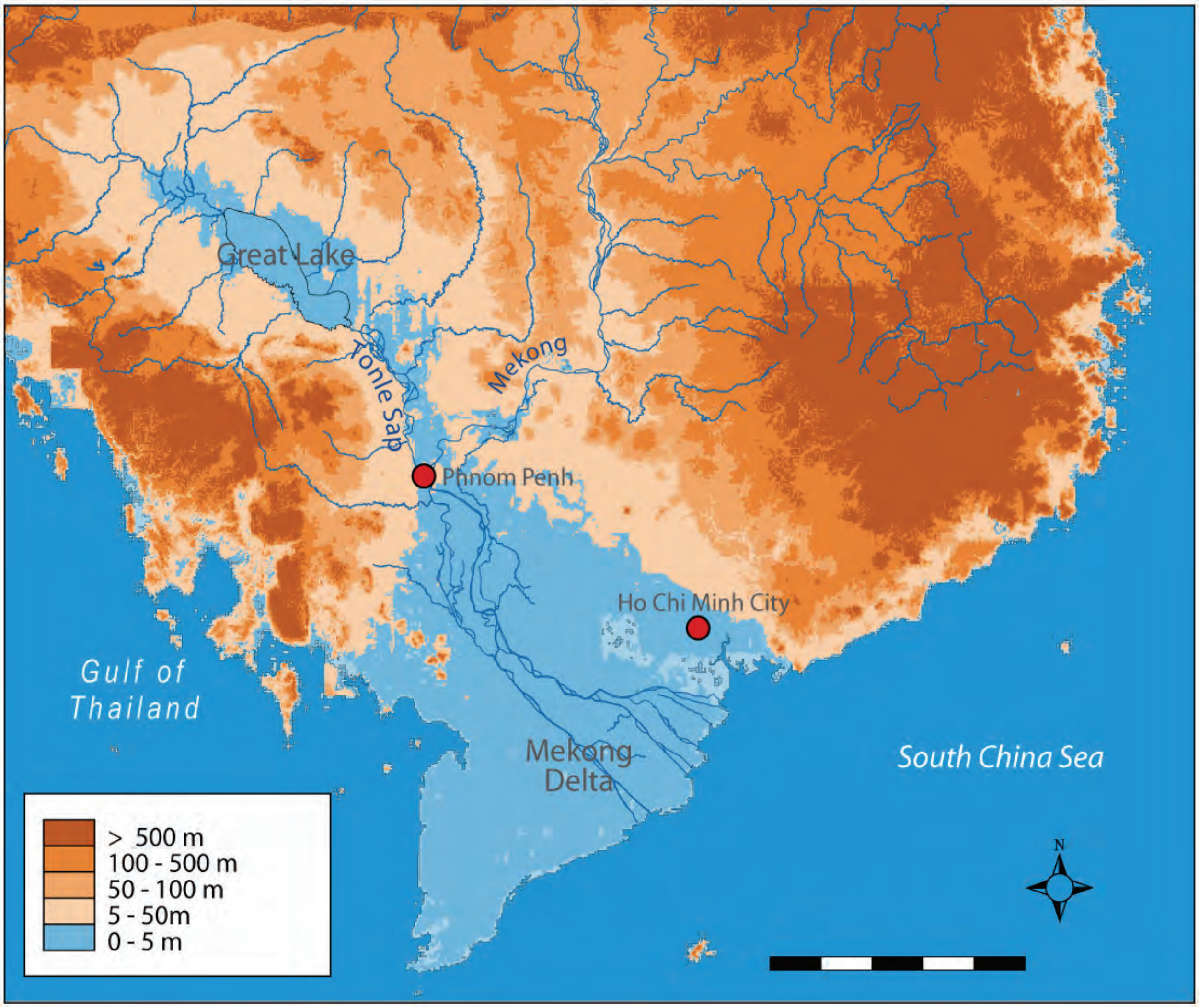

Figure 31. Lower Mekong floodplain during high sea levels of the Holocene. Penetration to modern elevations based on sea levels of +5 meters. This is a conservative estimate of inundation, which would be enhanced further by tidal fluctuations of 2.5 to 3 meters. Also, rising sea levels would have slowed river discharge and caused erosional tendencies found through much of the Pleistocene to switch into a Holocene deposition regime from the central part of modern Cambodia to the Mekong delta of modern Viet Nam.

southeast basin was examined in detail by Penny (2006)and found to cover the time span of 7090 ± 40 years. For that sample of 370cm, this is a rather low average sedimentation rate of 0.5mm/yr, with much higher rates of deposition in earlier times. In the Great Lake, open water areas subject to wave action and currents tend to have less sediment deposition than the riparian floodplains and sheltered areas in the flooded forest. A cluster analysis of pollen samples indicated three pollen zones. The oldest zone, spanning the period of ~7090 BP to ~5600 BP, had abundant mangroves (*Rhizophora*) and other associates (such as *Nypa*) which is suggestive of salinity, and was confirmed by the presence of a brackish (or estuarine) diatom (Penny, 2006). The *Rhizophora* pollen began to decline in abundance at ~5600 BP and by ~3500 BP becomes rare and sporadic. Downstream on the Bassac River, study of Angkor Borei revealed mangroves present in the 1st and 2nd millennia BC. Those mangroves declined throughout the 1st millennium AD, and finally disappeared at ~1200 BP (Bishop, *et al.*, 2003).

At least partially coincident with the rise in sea-levels during the Holocene Climatic Optimum was an increase in rainfall (Maxwell, 2001, 2004), although the rainfall seems to have increased earlier from ~8.4 ka BP to ~5.3 ka BP (Maxwell & Liu, 2002). If this regional increase in monsoon rainfall extends across the Mekong basin, then flow in the Mekong River and tributaries would have been at maximum levels for the Holocene. The largest sediment volumes in the Great Lake were seen from ~7 ka BP to ~6.3 ka BP, at about 25× the historic rate, and they declined only slightly through ~5.5 ka BP (Penny *et al.*, 2005, Penny, 2006). Since then, the rate of sedimentation has decreased to known historic levels.

It has been proposed that the Great Lake changed from being a series of small lakes to a large fluvial lake when the Mekong moved westward to join with the Tonlé Sap during the Holocene Climatic Optimum (Tsukawaki, 1997). A change in rates of sediment deposition coupled with the presence of illite and chlorite in sediments of ~5 ka BP or younger indicate that the first influx of Mekong water occurred in the Tonlé Sap at that time (Okawara and Tsukawaki, 2002). Not only do the sediment contents differ, the appearance does also, as pointed out by Carbonnel and Guiscafré (1965) who distinguished the upper "*vase actuelle*" from the lower "*vase anciennne*" dating the change in form at 5720±300 yrs BP. Carbonnel (1972) referred to the field observations during 1963, along the base of the Dangreks, that led him to think that the Great Lake could be a deserted meander of the Mekong based on fluvial sediments found between Khone Falls and the Great Lake along the base of the Dangreks. The extent of the fluvial deposits appeared to represent a hydrographic network of importance similar to the present day Mekong (Carbonnel, 1972, p. 44). The abrupt change in lake sediment, and its relation to archaeological sites, led him to conclude that a single subsidence event had occurred at the time of the change (Carbonnel, 1963, 1965).

Recently, Penny (2006) concluded that the Great Lake was a single large brackish water estuary based on pollen and diatoms in the sediment. He noted three zones based on pollen data. The oldest, zone 1, ran from ~7 ka BP to ~5.5 ka BP. Zone 2 extended from ~5.5 ka BP to ~3.6 ka BP, and Zone 3 from ~3.6 ka BP to present. Thus the differences in clay minerals occurred simultaneously with changes in flora from Zone 1 to Zone 2. Although Penney (2006) did not think the Mekong had a separate course from the Tonlé Sap, that question is still unresolved. We know that the rivers had separate courses during the early Pleistocene, but what we don't know is how recently they came into contact. Thus the timing of merging of the rivers is a separate issue that requires further study.

River System Changes and Biodiversity

This extensive changes in alignment of drainage patterns, much of which has occurred relatively recently, in terms of geology, has mixed formerly isolated assemblages of species repeatedly. This scenario is certain to produce a high biodiversity. For purposes of comparison, the Mekong is expected to have about 1,200 species of fishes compared to the Amazon's reputed 3,000 or so. The Amazon is a much larger river, more than an order of magnitude greater in both in watershed area and annual discharge. The complicated basin history of the Mekong would certainly contribute to a similarity in sizes of fish faunas in drainages vastly different in area. An unusual aspect of the history of the Mekong and other rivers of Southeast Asia it that they have had the opportunity to repeatedly incorporate diversity that has evolved in distant areas. Further, it is almost certain that original distributions and species assemblages may be reflected in modern distribution patterns. Studies of modern distributions may help us understand the ancient faunas that now are found together in a single basin.

BASIC TAXONOMY

The general intent of this publication is document the species that occur in the Greater Mekong Ecosystem, as well as to provide photographic examples of as many of these species as possible. The next step is to provide reliable keys to identification of all species. Particularly important will be groups for which keys are not available. These will help with identification, but doing taxonomy requires much more information from all the previous literature and collected material, wherever these may be. A detailed discussion of taxonomic literature will not be provided with this study, as it would be more appropriate for inclusion with keys to identification expected later. However, for this book, there are taxonomic decisions must be made, and a brief discussion is in order.

A **species** is a **population** or **series of populations** of similar organisms that are able to **interbreed**. Failure to interbreed is the property that keeps species from mixing genetically. The reason there is no inter-breeding may be because the populations that represent potentially distinct species live in separate areas and never meet, or it may be due to genetic isolating mechanisms that cause infertility. In some instances, differences in reproductive behavior may inhibit mating between individuals of populations that may come in contact. In some instances, hybrids may occur in wild populations, but they are sterile or have reduced fertility. Although hybridization between species occurs often in North America, particularly with cyprinid species that share communal multi-species nests, this phenomenon is almost unknown in the Mekong. However, it may be encountered as we learn more about the fish fauna.

At the outset, it is often not possible to determine whether or not individual fishes belong to reproductively isolated populations. In all instances cases when a taxonomist recognizes distinct species among an array of generally similar fishes, the decision is made on the basis of regular observed differences between forms, coupled with a lack of intermediate individuals. Standard procedure is the search for regular predictable **characters** that allow one species to be distinguished from other similar species. The differences may be very slight, but if they are consistent between populations they indicate that members of the populations probably do not interbreed. If the populations are found together and no physically intermediate individuals can be found, they are probably different species.

In the past, researchers have attempted to deal with the problem of potential **subspecies** which might be "not quite" reproductively isolated. If two similar but statistically distinctive populations live in different areas it is possible that they would interbreed if they had the chance to do so, but we can never be certain unless we find them together. Nowadays, the practice is to recognize distinctive looking populations as species, whether they occur together or not. The Mekong is a large continuous body of water that would allow many similar species to come into contact at least occasionally. Thus populations that appear different from other populations will almost certainly turn out to be distinct species unless the differences are due to some sort of local effect of ecology or water quality (*e.g.*, water clarity, hardness, or acidity).

Although the practice may seem simple, it can become complex very easily when the problem involves more than two species and one of them appears to be intermediate to the remaining two. Among the Mekong species there are problems involving various levels of difficulty. Some species distinctions can be made only on preserved specimens with the aid of a magnifying lens or even a microscope. Until more is known about potentially subtle color differences on living individuals, it will not be possible to identify some of them precisely to species level in the field. Hopefully, this publication with the photographs of living or very fresh individuals will help.

Taxonomy and Species Identification

Taxonomy is the practice of scientifically naming things. Taxonomy follows precisely outlined practices of biological nomenclature. Whenever a taxonomist gives a name to something he classifies it so that information about it can be passed on to other people. Many biologists, particularly ecologists, fishery scientists, etc., identify fishes every day as they pursue their studies. This practice of identification differs substantially from the practice of deciding which name, if any, should apply to a known species. Typically, someone who identifies fishes as part of another study is simply using the latest taxonomic information without really attempting to learn and decipher two centuries of sometimes confusing and contradictory literature. Although many people identify species, very few actually practice taxonomy; that is, attempting to fix names to species in such a way that it improves the likelihood of nomenclatural stability.

Mekong Fish Taxonomy

Several problems still exist with the names of Mekong fishes. We have attempted to include the latest taxonomy in the names used here. In a publication that has the breadth of diversity found in this book, numerous taxonomic problems are invariably encountered. Four difficult problems will be discussed here.

Labiobarbus van Hasselt, 1823

An example of the types of difficulties posed in use of generic names occurs with the cyprinid genus *Labiobarbus* van Hasselt, 1823, sometimes called *Dangila* Valenciennes, 1842. In 1945, Smith applied an older name *Labiobarbus* to the genus then known as *Dangila,* a name which had been in use for some 80 years. Since then, various authors have used one or the other of these two. Kottelat (1987) explained his choice to use *Labiobarbus*, but later Roberts (1989) and Rainboth (1996a) chose *Dangila*. After additional research on van Hasselt's collections, Roberts (1993, 1994) chose to use *Labiobarbus*. The taxonomic history is long and convoluted.

When van Hasselt (1823c) described the genus *Labiobarbus* he simply stated that it had 4 barbels and a non-spinous first ray in the dorsal fin, making it intermediate between *Labio* and *Barbus* (see Alfred, 1961 for English translation). Therefore, he chose to name it *Labiobarbus*. The simple description made the generic name available as pointed out by Kottelat (1987). The problem is that van Hasselt clearly misspelled *Labeo* Cuvier, 1816, once while forming the name, and once independently when making the combination between the genera he called *Labio* and *Barbus*. Article 32.5.1 International Code of Zoological Nomenclature (1999), states that an original spelling is an "incorrect original spelling" if "there is in the original publication itself, without recourse to any external source of information, clear evidence of an inadvertent error, such as a "*lapsus calami* or a copyist's or printer's error..." Kottelat (1987) indicated that there was no variation in van Hasselt's spelling of *Labio*, thus there was no inadvertent error. Another important aspect of this is that van Hasselt did not mention that he was attributing the name to Cuvier (1816) although Cuvier's work did figure in many names, and was mentioned elsewhere in the published letters by van Hasselt (1823a, b, c). Therefore, there is no absolute certainty that he was actually referring to *Labeo* of Cuvier (1816) although it is likely that he was. If van Hasselt had mentioned Cuvier as the source of the name, then it would have qualified as an inadvertent error, even though he was consistent in his spelling. Thus, by definition, the original spellings in the original Dutch language publications are correct.

The problem was compounded a year later with the French language translations by de Ferussac. These papers (van Hasselt, 1824a, b) have spellings of some scientific names emended by Valenciennes. In van Hasselt (1824b) the generic epithet *Labiobarbus* was emended to *Labeobarbus* to follow Cuvier's (1816) spellings. This is an unjustified emendation according to the code according to article 33.2.3 which also states: "the name thus emended is available and has its own author and date and is a junior objective synonym of the name in its original spelling; it enters into homonymy and can be used as a substitute name..." In this case, neither Valenciennes or de Ferussac claimed authorship of the paper and instead attribute authorship to van Hasselt. This publication has the first use of the name *Labeobarbus* and is a junior objective synonym of *Labiobarbus*. Other applications of *Labeobarbus* are homonyms, and must not be used.

That has created a problem. The genus *Labeobarbus* Rüppell, 1836, is a well-known genus of large barbels (carps) from Africa. Its homonymy with the corrected version of *Labiobarbus* creates a nomenclatural problem for a diverse group of species on another continent. Although previously treated as a synonym with *Barbus* of Cuvier, 1816, or *Tor* of Gray, 1833, *Labeobarbus* Rüppell has been treated as valid and used by Nagelkerke and Sibbing (1997, 2000).

Taxonomic problems with the generic epithet aside, the major problem confronting us today with *Labiobarbus* is in distinguishing the species. This is a very difficult problem. The most recent revision was by Roberts (1993), who found two species on continental Southeast Asia outside of Malaysia. *Labiobarbus siamensis* (Sauvage, 1881) is represented here on plate 24, figure 486, and is easy to distinguish from the remaining *Labiobarbus spp.* in the Mekong. Roberts (*loc.cit.*) placed a great number of specimens from much of Asia in the single species *Labiobarbus leptocheilus* (Valenciennes, 1842). Yet, it should be noted that the presence of but a single species is always the null hypothesis during the practice of species identification. The null hypothesis is accepted only if the examiner fails to find evidence of distinct species. In this book, most of the illustrated specimens have been identified as *Labiobarbus lineatus* (Sauvage, 1878), one of several names placed in synonymy with *leptocheilus* by Roberts.

The reader should take notice of Plate 23, figures 480 (*Labiobarbus sp.cf. cuvieri*) and 481 (*Labiobarbus lineatus*). The two individuals are almost identical in length. These specimens, both young of the year juveniles, were part of a series of specimens taken out of a single dai net haul on the Tonlé Sap near Phnom Penh during the downstream migration as the Great Lake drained during the early dry season. They were part of a random series of multiple species scooped out with two hands and dropped in preservative.

The differences were not noticed in the field with living specimens. Later that evening, the first author (WJR) was photographing specimens in his room and found the sample to be equally divided between the two species. The specimen in figure 480 represents a species that has a high dorsal fin, large eye, slender body, a black spot at the base of the caudal fin and rows of dots on scales connected to form lines. The specimen in figure 481 represents a stout looking species with a low dorsal fin, small eye, no spot on the base of the caudal fin and dots on the scales not appearing to form continuous lines along the body. There were equal numbers of individuals (6) of each of the species, with very little variation within each species. In fact, each specimen appeared to be virtually identical to others within its group.

So, unless there is sexual dimorphism in juveniles, when it has not even been reported in adults, then there are two species, migrating simultaneously, at least during this period of the annual cycle of seasons. Moreover, it is not certain that both species, which just happened to be moving through the same place, and at that time, began their migrations from the same location. Nor do we know the destination of either species. They were merely moving through the Tonlé Sap at that particular time. One or the other may represent a population breeding in Stung Sen, Stung Chinit, the Great Lake, or rivers that enter the Great Lake.

Other illustrations appear to represent forms, or more likely species, that are different from either of the first two mentioned. The specimen in figure 483 comes from the Pursat River in the Cardamom Mountains. The river flows into the Great Lake. It is not certain that it represents either of the previous species, nor is it certain that this population ever occurs down in the lowlands. Ultimately, it is not possible to decide which, if any, of these is the *Labiobarbus leptocheilus* that is known from Java. All three would be identified as that species based on the revision of Roberts (1993). Other distinctive looking individuals are also illustrated in the plates here. This is ultimately a problem that will require extensive samples throughout the Mekong, and a thorough morphometric analysis utilizing multivariate classification techniques as used for *Hypsibarbus* by Rainboth (1996b).

Gymnostomus Heckel, 1843

The type species of the genus is *Cyprinus ariza* of Buchanan (1807), as subsequently designated by Bleeker (1863). Buchanan changed his surname to Hamilton just prior to 1822 publication of his book on fishes of the Ganges and his name is sometimes cited as Hamilton-Buchanan. *Gymnostomus ariza* (Buchanan, 1807) illustrated on plate 31 of volume 3, is found in Peninsular India and resembles the southeast Asian species of the genus *Henicorhynchus* (Smith, 1945) although it grows much larger. It reaches maturity at 15-30cm and reaches a maximum size of 56cm and a weight of 1.36kg (Talwar & Jhingran, 1992).

Kottelat (2003) discussed the taxonomy of several labeonin species from India and Myanmar. As in this monograph, Kottelat distinguishes the genus *Cirrhinus* (Oken, 1817) from *Henicorhynchus* (Smith, 1945) by dorsal-fin ray counts with the former being long (10-15 branched rays) and the latter being short (8-9 branched rays). However, this criterion may have limited use beyond Southeast Asia. Certainly *Gymnostomus ariza* may resemble members of the genus *Henicorhynchus* even more than the "short-finned" *Cirrhinus inornatus* Roberts, 1997, from Myanmar does. By using the single character of fin rays to identify the genus, *Cirrhinus inornatus* would belong in *Henicorhynchus*. Yet, examination of photographs of type specimens available the California Academy of Sciences posted on the internet indicates that *Cirrhinus inornatus* is has a deep and narrow body typical of *Cirrhinus molitorella* (and *C. prosemion* if distinct), as well as *Cirrhinus jullieni*, all of which are illustrated in this publication. *Cirrhinus inornatus* also has a dark blotch crossing the lateral line a few scales behind the gill opening which is likewise typical of the Southeast Asian species of *Cirrhinus*. That blotch does not occur on fishes of the genus *Henicorhynchus*. So, it has a body shape and color pattern of *Cirrhinus* and the short dorsal fin of *Henicorhynchus*. We think the species belongs in *Cirrhinus*, and the dorsal fin should not be used in the absence of other characters.

The use of the short dorsal fin to place members of the Southeast Asian genus *Henicorhynchus* in *Gymnostomus* as Kottelat (2003) suggested, may have an additional problem. Given the typical cyprinine minimum dorsal-fin ray count of 8 or 9 branched rays, the character probably is plesiomorphic to this very large subfamily of cyprinids. Any species with a count that varies from the basic form tends to have a higher number of rays rather than a lower number. Therefore, higher numbers of rays may be used to indicate relationship, but lower numbers of rays may not be a reliable indicator. Even in species more distantly related to *Henicorhynchus*, from the genera *Garra* and *Epalzeorhynchos*, there may be individual species or even groups of species in a genus that have higher dorsal ray counts. Therefore, we are reluctant to use a character such as a low number of branched dorsal-fin rays to place *Henicorhynchus* and *Gymnostomus* in synonymy, especially given the difference in size of the species in these genera, as well as the distance separating the ranges of the single Indian species from the group of species found in Southeast Asia.

There are yet other problems with the genus *Cirrhinus* as it is presently constituted. Those cannot be solved here. However, we are retaining the name *Cirrhinus mrigala* (Hamilton, 1822) which has been imported into the region for fish culture. There has been a tendency for some authors to regard the name of this Indo-Gangetic species as a subjective synonym of *Cirrhinus cirrhosus* (Bloch, 1795), which is known from Peninsular India only. Although *Cirrhinus mrigala* has been introduced widely throughout Peninsular India the two species are easily distinguished by several characters, according to Talwar and Jhingran (1992).

Pisodonophis Kaup, 1856

A problem with paddy eels deserves mention in the species list and atlas. The genus of fishes given the name paddy eels in most literature is *Pisodonophis* Kaup, 1856, with type species being *Pisodonophis cancrivorus* (Richardson, 1848). There has been some consideration given to expanding the application of the genus *Pisodonophis* in this book, even though it would have violated common practice. Several of the paddy eels similar to *Pisodonophis* are usually placed in the genus *Ophichthus* Ahl, 1789 as in McCosker (1977) and Smith and McCosker (1999) in volume 3 of Carpenter and Niem (1999 - 2001) *Living Marine Resources of the Western Central Pacific*, published by FAO.

The problem with the group of species found in the Mekong is that they are small fishes which are difficult to identify in the field, especially as the main character that allows us to distinguish the genus *Pisodonophis* from the genus *Ophichthus* is that the former has two rows of granular or molariform teeth on the roof of the mouth. However, at least one species found in the Mekong has multiple rows with granular teeth in the middle and conical teeth along each edge of the molariform patch. Typically in this region, even the freshwater species have almost always been identified in the field as *P. boro*, even though *P. boro* is a coastal marine species. This is likely due to limitations in the available literature.

These species are relatively easy to distinguish using multiple characteristics, if all are included simultaneously in the same identification key. So far, the authors have encountered six species from the delta and upstream in the Mekong. In the field, these are often mistakenly identified as either *P. boro* or *P. hypselopterus* (Bleeker, 1851). They all turned out to be species of the genus *Ophichthus* that are found in the coastal, estuarine and even fresh-water habitats around the Gulf of Thailand. Several species will key out easily without the use of a microscope or examination of teeth. The key developed for these species will refer to the teeth as the very last step of the identification process, and this will only be necessary for a few of them.

Included here with the photographs is an additional species of Hamilton (1822), that has been confused with *P. boro* and had its name buried in synonymy with *P. boro* for some time. *Ophichthus hijala* Hamilton, is represented by a specimen from Bangladesh, however, the identification must remain tentative, because of the likelihood that even more species may occur there. Recently, a *"Pisodonophis hijala"* has been included from the Western Central Pacific by Smith and McCosker (*loc. cit.*), although this species is from fresh waters or estuaries and may not be found out beyond the rivers that enter the Indian Ocean. Adding to the confusion with these two species from the Ganges is at least one other South Asian species of paddy eel, also from the Ganges of Bangladesh, which is preserved at the UMMZ, but is not of good enough quality to photograph. It is possibly *Ophichthus harancha* (Hamilton, 1822). Ultimately, the decision was made to use the widely-accepted scientific names, and deal with the problem later in the illustrated key to Mekong fish species.

Thus far, all species of the genus *Pisodonophis*, sometimes called "paddy-eels", come from coastal marine environments and the species actually found in paddies are members of the genus *Ophichthus*.

Cynoglossus Hamilton, 1822

A problem with tongue-soles of the genus *Cynoglossus* Hamilton, 1822, required a somewhat unusual treatment in this book. Species of this genus are found throughout the Indo-Pacific region on continental shelves, estuaries and well upstream in fresh water. Species in the genus seem to have relatively uniform characteristics within populations. One particularly widespread species is *Cynoglossus cynoglossus* (Hamilton, 1822) which has been recorded from rivers and estuaries from Southeast Asia to the Indian Subcontinent. The most recent revision (Menon, 1977) lists a number of species names in synonymy, several of them described by Bleeker in numerous publications. In the Mekong, several species key out to, and fit, the description in Menon's monograph. None of them match specimens from the Ganges. A photo of a Bangladesh specimen of the Gangetic *C. cynoglossus* is included in this atlas. It can be compared with specimens photographed from the Mekong that fit the current diagnosis of *C. cynoglossus*, but which are certainly distinct. To include them in this work, it was necessary to resurrect several names for Southeast Asian species from the writings of Bleeker. Even so, there were at least 3 undescribed species found in the Mekong delta that seemed to fit no name ever published. They will be included in the key to fish species of the Mekong, which is still in preparation.

THE LIST OF SPECIES

The intent of the fish list is to report species present in the waters of the Mekong, the Mekong estuary, and waters that are under direct influence and nutrient support by the Mekong. Many coastal fishes appear in markets throughout the basin, supplementing the local catch. Therefore, any fish that comes out of the basin, or even appears in the markets within the basin, should be included in this list. For the Mekong that will include not only the delta, but the coastal shelf areas along the Viet Nam coast north of the delta as well as the Gulf of Thailand and the brackish to marine waters there. The central Viet Nam coast receives Mekong plume nutrients with the southwest monsoon each year and the Gulf of Thailand is supported by the Mekong with direct runoff during the southwest monsoon as well as from the Mekong plume during the northeast monsoon. For the purposes of reporting, Nha Trang will be the northern limit and the Gulf of Thailand and the northern part of West Malaysia will be the southern limit. Species found along the coasts in this region will be included.

Each species is listed with the full scientific name, including date of original description. These publication dates of names do not indicate that the source will be found in the bibliography. Information on original descriptions can be found in Eschmeyer (1998) and Eschmeyer and Fricke (2011). For species that are undescribed, the genus (if known) is followed by a simple "*sp.*" which may be numbered if the genus has multiple undescribed species. In some instances the genus may be followed by "*sp.cf.*" and a species name with no author. This means the species listed compares closely with the species named but is not the same. It indicates nothing about populations or the most similar species, although the name might actually turn out to be the most similar species. Following the scientific name for each species is the source of information that indicates the species presence in the basin, followed by the plate number and finally the figure number fish photo. The information has been written to be as short and simple as possible, in order to keep the statement short enough to appear on a single line. For many of the species included in the list, numerous citations could be provided, but are basically unnecessary if we have a photo of a specimen taken within the basin.

The list of species found in the Greater Mekong Ecosystem includes species indicated by a variety of sources, from regional or local species lists, taxonomic and systematic revisions as well as by specimens collected and illustrated by the authors. Many of these species listed here are represented by specimens in fish collections. Reference is frequently made to specimens at the University of Michigan Museum of Zoology and the Institute Océanographique de Nha Trang, Viet Nam. Several sources of information were heavily used, especially if they provided sufficient detail on diversity and ranges of species reported. Specimens from the area, seen by the authors take priority over literature reports. The families are listed in the same order found in Nelson (1994, 2006), with a few minor exceptions. Most of the list follows the more recent edition. The classification groupings of cyprinids follow Rainboth (1991), which is also similar to Nelson (1994).

The two main sources of information are fish specimens collected in the area and major literature sources. In the interest of brevity, they are used as abbreviations in the fish list.

1. **Abbreviations** for actual **preserved specimens** maintained as museum reference material:

MBFS - Mekong Basinwide Fishery Studies, conducted by a team from the University of Michigan from 1974 - 1976, led by Prof. Karl F. Lagler, with collections now residing at the Fish Division, University of Michigan Museum of Zoology (UMMZ).

KFL - Collections from the Gulf of Thailand by Karl F. Lagler in the middle 1960s, now at the UMMZ. In some cases these were market specimens from Bangkok that originated from the Gulf of Thailand. These are omitted for species that were found also by the MBFS.

WJR - Collections from Cambodia, Laos and Viet Nam made by Walter J. Rainboth from 1994 - 2005 and now housed at the UMMZ. Most of these were photographed while fresh and the photo is cited as evidence that the species occurs in the Mekong.

CAS - Collections in the Department of Ichthyology at the California Academy of Sciences. These collections have come from many collectors and expeditions. Some material dates back to the time when a large part of the collection was at Stanford University.

ROM - Collections from the Nha Trang area in Viet Nam made by Richard Winterbottom and now housed at the Royal Ontario Museum in Toronto. Many of the specimens were photographed and the photos were made available for this book through the kindness of Dr. Winterbottom.

2. **Abbreviations** for important and repeatedly used **references** are:

FAO - *Living Marine Resources of the Western Central Pacific, FAO Species Identification Guide for Fishery Purposes*. volumes 2 to 6, edited by Kent E. Carpenter and Volker H. Niem. Each fish family account has its own author or authors and these authors have been cited, producing a statement of "Author name (FAO)" with FAO always referring to this particular multi-volume reference. Any other reference to a work published by FAO will have the author's name and date only and the reference will be found in the bibliography section.

Orsi - Orsi, James J., 1974. A check list of the marine and freshwater fishes of Vietnam. *Publ. Seto Mar. Biol. Lab*., 21:153-177. This list includes information contained in previous literature citations of species distribution and also denotes specimens represented at the Oceanographic Institute of Nha Trang.

W&dB - Weber, M. & L. F. deBeaufort. *Fishes of the Indo-Australian Archipelago*, 11 volumes.

All other literature cited can be found in that section immediately following the species list.

FISH PHOTOGRAPHS

An important part of this book is the series of plates with illustrations of species found in the Greater Mekong Ecosystem. Considerable effort must be invested in order to produce high quality photographs of fishes. The photographs come from multiple sources, with a substantial number from the authors. When possible, photos from within the region covered by the book were used. However, for those that were not available from within the area, others had to suffice. Ideally, having all photos from within the area would portray the species exactly as it might be seen locally. For wide-ranging marine species that occur in the area, there can be pronounced differences in color patterns across their ranges and local specimens may appear distinctive. Ultimately a data base of local photos should be collected and made available for researchers in the region.

The photographs were all edited to produce identical background coloration. The range of background colors on the original photos is as broad as can be imagined, ranging from pure white to black and with a wide variety of hues between. Diverse background colors make it difficult to compare specimens in the photos easily, because differences in the fishes themselves are not the only things that will make the photos differ.

After comparing photos produced during each early year of field study, it was decided to use a neutral gray background for photography in the field. This made it possible, once the film was developed and the image scanned into a digital file, that the image could balanced to make the background a neutral gray. This had the effect of eliminating various tints that would show up due to lighting differences. For instance, the paint on walls of the room the photographs were being taken in would often alter the colors in the photo, or photos taken outdoors during the peak of the dry season in northern Laos would appear reddish-orange because of all the soot in the air due to burning for swidden agriculture. Once the neutral gray was achieved for large parts of the background, the background color alone could then be changed to the shade of gray desired. Extremes such as white or black were ruled out. White was too harsh and contrasted too greatly with the fish. Also, since many specimens had been photographed on black or very dark backgrounds, the amount of dark that would show through the fins made it impossible to represent clear fins properly. Black was completely impractical because of the amount of ink it requires from a desktop printer and also the fact that it makes the freshly printed pages too wet. It would not be a problem with final printing, but would be a problem during the original preparation of the document. Ultimately, after some experimentation, a medium-light gray was chosen. To see how it worked, compare photos of sharks which would be expected to be gray themselves, and it becomes obvious that they really are different colors.

Each photograph is twice as wide as it is high. This shape ratio was chosen when working with fresh-water fishes which tend to be slender and more elongate than many marine perciform fishes. Marine fishes are often oval or round, especially when the fins are erect, and they tend to be much deeper bodied than freshwater fishes. Therefore, fishes with high bodies tend to look rather small on the picture. However it was important to use a shape for the pictures that would be easy to work with. Using a variety of rectangular shapes for the figures would mean that parts of some pages would be blank and the numbers of figures per page would be unpredictable.

Ultimately, we decided to use three columns of figures per plate. The difference between three columns of seven figures each, and two columns of five figures each, meant that using the larger pictures would reduce the number of columns and more than double the number of plates, increasing the cost and size of the book. It would also reduce the number of pictures that could be seen at a single glance.

The original photos were taken with a variety of films and cameras. Some of the earliest photos taken in Cambodia had film that was not properly fixed and has now faded almost to transparency over the years. One year's worth of photos shot in Laos were taken on print film, the latest (at the time) super fine grained print film. Unfortunately it was improperly developed and the grainy nature of the negatives was not visible on the original prints. If it had been, a switch back to slides would have been made immediately. The second year of Lao fish photos were taken with slide film. More recently, all photos have been shot with a digital camera.

Photographs were also received from other sources, including individual donors. Many originals were obtained for use with permission of the original photographers from FishBase (Froese and Pauly, 2011) and had backgrounds processed to create uniformity with the other photos in this book. Others were taken from publications, again with permission from the authors. The original photographers, when known, are all cited in the figure legends.

PART 2.

ANNOTATED LIST

OF

FISH SPECIES

HETERODONTIFORMES - bullhead sharks

Heterodontidae - bullhead sharks

1. *Heterodontus zebra* (Gray, 1831) — Nha Trang in Fourmanoir & Nhung (1965), Viet Nam distribution in Compagno & Niem (FAO) . plate 1 : figure 1

ORECTOLOBIFORMES - carpet sharks

Orectolobidae - wobbegongs

2. *Orectolobus japonicus* Regan, 1906 — Nha Trang in Fourmanoir & Nhung (1965), central Viet Nam in Compagno & Niem (FAO).

Hemiscylliidae - bamboo sharks

3. *Chiloscyllium griseum* Müller & Henle, 1838 — MBFS in Mekong plume . . . . 1 : 2
4. *Chiloscyllium hasseltii* Bleeker, 1852 — Cambodia coast and Gulf of Thailand in Compagno & Niem (FAO).
5. *Chiloscyllium indicum* (Gmelin, 1789) — KFL from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand . . . . 1 : 3-4
6. *Chiloscyllium plagiosum* ([Bennett], 1830) — Common Gulf of Thailand, Viet Nam coast in Compagno & Niem (FAO) . . . . 1 : 5
7. *Chiloscyllium punctatum* Müller & Henle, 1838 — WJR in Mekong delta . . . . 1 : 6-7

Stegostomatidae - zebra sharks

8. *Stegostoma fasciatum* (Hermann, 1783) — MBFS from Mekong plume . . . . 1 : 8

Ginglymostomatidae - nurse sharks

9. *Nebrius ferrugineus* (Lesson, 1830) — Poulo Condore in Chevey (1932), throughout area in Compagno & Niem (FAO).

Rhincodontidae - whale sharks

10. *Rhincodon typus* Smith, 1828 — Frequent along Cambodia coast. Migrates along coastlines Compagno & Niem (FAO). . . . . 1 : 9

LAMNIFORMES - mackerel sharks

Odontaspidiidae - sand tiger sharks

11. *Carcharias taurus* Rafinesque, 1810 — Surf zone along coastlines in Compagno & Niem (FAO) . . . . 1 : 10

Alopiidae - thresher sharks

12. *Alopias pelagicus* Nakamura, 1935 — Fourmanoir & Nhung (1965) at Nha Trang.
13. *Alopias vulpinus* (Bonnaterre, 1788) — Orsi (1974) from Viet Nam Coast. Uncommon according to Nguyen & Tran (1994).

Lamnidae - mackerel sharks

14. *Carcharodon carcharias* (Linnaeus, 1758) — Coast of central and southern Viet Nam, also Spratly Islands in Nguyen & Tran (1994).
15. *Isurus oxyrinchus* Rafinesque, 1810 — Open ocean, also in shallow coastal water in Compagno & Niem (FAO). . . . . 1 : 11

CARCHARHINIFORMES - requiem sharks

Scyliorhinidae - cat sharks

16. *Atelomycterus marmoratus* ([Bennett], 1830) — WJR in Mekong delta markets, MBFS from Mekong plume . . . . 1 : 12
17. *Cephaloscyllium fasciatum* Chan, 1966 — Coast of Viet Nam in original description.
18. *Cephaloscyllium isabellum* (Bonnaterre, 1788) — Nha Trang in Fourmanoir & Nhung (1965) *C. sufflans*, Orsi (1974) *C. umbratile*. Compagno (1984).
19. *Cephaloscyllium umbratile* Jordan & Fowler, 1903 — Rocky coastlines of Central Viet Nam in Nguyen & Tran (1994).
20. *Halaelurus boesemani* Springer & D'Aubrey, 1972 — Viet Nam coast in Compagno & Niem (FAO) . . . . 1 : 13
21. *Scyliorhinus garmani* (Fowler, 1934) — Little known shark of Sunda shelf and Gulf of Thailand in Compagno & Niem (FAO).

Proscylliidae - finback cat sharks

22. *Eridacnis radcliffei* Smith, 1931) — Spratly Islands in Nguyen & Tran (1994).
23. *Proscyllium habereri* Hilgendorf, 1904 — Continental shelf from Japan to Java in Compagno & Niem (FAO) . . . . 1 : 14
24. *Proscyllium venustum* (Tanaka, 1912) — Upper continental slope of islands and coastal Viet Nam in Nguyen & Tran (1994).

Triakidae - hound sharks

25. *Mustelus griseus* Pietschmann, 1908 — Central Viet Nam in Compagno & Niem (FAO), illustrated specimen similar but possibly undescribed . 1 : 15
26. *Mustelus manazo* Bleeker, 1854 — E. Asia to southern Viet Nam in Compagno & Niem (FAO) . . . . 1 : 16

Hemigaleidae - weasel sharks

27. *Chaenogaleus macrostoma* Bleeker, 1852 — Viet Nam coast and Gulf of Thailand in Compagno & Niem (FAO).
28. *Hemigaleus microstoma* Bleeker, 1852 — KFL at Bangkok market, Gulf of Thailand in Compagno & Niem (FAO) . . . . 1 : 17
29. *Hemipristis elongata* (Klunzinger, 1871) — CAS specimens from eastern Gulf of Thailand, one obtained from Cambodian fishermen . . . . 1 : 18
30. *Paragaleus tengi* (Chen, 1963) — Inshore species of Gulf of Thailand in Compagno & Niem (FAO).

Carcharhinidae - requiem sharks

31. *Carcharhinus amblyrhynchoides* (Whitley, 1934) — CAS specimens from Trat Bay, eastern Gulf of Thailand.
32. *Carcharhinus amblyrhynchos* (Bleeker, 1856) — Coastal, inshore, Gulf of Thailand, in Compagno & Niem (FAO) . . . . 1 : 19
33. *Carcharhinus amboinensis* (Müller & Henle, 1839) — Widespread, ascends rivers, likely from area in Compagno & Niem (FAO) . . . . 1 : 20
34. *Carcharhinus brevipinna* (Müller & Henle, 1839) — Coastal, Gulf of Thailand and coast of Viet Nam in Compagno & Niem (FAO) . . . . 1 : 21-2
35. *Carcharhinus dussumieri* (Müller & Henle, 1839) — KFL from Gulf of Thailand, CAS specimen from eastern Gulf of Thailand . . . . 2 : 23
36. *Carcharhinus hemiodon* (Müller & Henle, 1839) — Ascends rivers, including Saigon River in Compagno (1984) . . . . 2 : 24
37. *Carcharhinus leucas* (Müller & Henle, 1839) — WJR in Mekong delta markets. . . . . 2 : 25
38. *Carcharhinus limbatus* (Müller & Henle, 1839) — KFL at Bangkok market, CAS specimens from eastern Gulf of Thailand . . . . 2 : 26
39. *Carcharhinus longimanus* (Poey, 1861) — All warm-water oceans, occasionally coastal waters in Compagno & Niem (FAO).
40. *Carcharhinus macloti* (Müller & Henle, 1839) — Frequently inshore, along Viet Nam coast in Compagno & Niem (FAO).
41. *Carcharhinus melanopterus* (Quoy & Gaimard, 1824) — Fourmanoir & Nhung (1965) at Nha Trang . . . . 2 : 27
42. *Carcharhinus obscurus* (Le Sueur, 1818) — Fourmanoir & Nhung (1965) at Nha Trang, Viet Nam coast in Compagno & Niem (FAO) . . . . 2 : 28
43. *Carcharhinus plumbeus* (Nardo, 1827) — Viet Nam coast, often near estuaries in Compagno & Niem (FAO) . . . . 2 : 29
44. *Carcharhinus sealei* (Pietschmann, 1913) — KFL Bangkok market, CAS specimen from Trat Bay in eastern Gulf of Thailand . . . . 2 : 30
45. *Carcharhinus sorrah* (Müller & Henle, 1839) — KFL Bangkok market, CAS specimens from eastern Gulf of Thailand . . . . 2 : 31
46. *Carcharhinus sp.* — Bangkok, Ho Chi Minh City in Compagno (1984). Confused with *Carcharhinus porosus* in photo . . . . 2 : 32
47. *Galeocerdo cuvier* (Péron & Le Sueur, 1822) — KFL Bangkok market, Gulf of Thailand and Viet Nam in Compagno & Niem (FAO) . . . . 2 : 33
48. *Glyphis sp.* — KFL Bangkok market, specimen probably from Gulf of Thailand, Con Son island in South China Sea in Roberts (2007) . . . . 2 : 34
49. *Loxodon macrorhinus* Müller & Henle, 1839 — Clear coastal waters from Taiwan to South Africa in Compagno & Niem (FAO) . . . . 2 : 35
50. *Negaprion acutidens* (Rüppell, 1837) — CAS specimen from northern Gulf of Thailand, also Viet Nam coast in Compagno & Niem (FAO) . . . 2 : 36
51. *Prionace glauca* (Linnaeus, 1758) — Offshore surface waters but sometimes coastal waters in Compagno & Niem (FAO).
52. *Rhizoprionodon acutus* (Rüppell, 1837) — MBFS in Mekong plume . . . . 2 : 37
53. *Rhizoprionodon oligolynx* Springer, 1964 — KFL Bangkok market, Gulf of Thailand and Viet Nam in Compagno & Niem (FAO) . . . . 2 : 38
54. *Scoliodon laticaudus* Müller & Henle, 1838 — WJR in Mekong delta . . . . 2 : 39
55. *Triaenodon obesus* (Rüppell, 1837) — Fourmanoir & Nhung (1965) at Nha Trang, widespread in Compagno & Niem (FAO) . . . . 2 : 40

Sphyrnidae - hammerhead sharks

56. *Eusphyra blochii* (Cuvier, 1816) — CAS specimen from eastern Gulf of Thailand, also Viet Nam coast in Compagno & Niem (FAO) . . . . 2 : 41-2
57. *Sphyrna lewini* (Griffith & Smith, 1834) — KFL Bangkok market; CAS from Gulf of Thailand, Viet Nam in Compagno & Niem (FAO) . . . . . 3 : 43-4
58. *Sphyrna mokarran* (Rüppell, 1837) — Viet Nam coast and Gulf of Thailand in Compagno & Niem (FAO) . . . . 3 : 45-6
59. Sphyrna zygaena (Linnaeus, 1758) — Central Viet Nam in Nguyen & Tran (1994).

HEXANCHIFORMES - six-gill sharks

Hexanchidae - cow sharks

60. *Hexanchus griseus* (Bonnaterre, 1788) — Inshore South China Sea (esp. juveniles) in Compagno & Niem (FAO) . . . . 3 : 47

SQUALIFORMES - dogfish sharks

Squalidae - dogfish sharks

61. *Squalus mitsukurii* Jordan & Snyder, 1903 — Coast of Viet Nam as far south as Nha Trang in Compagno & Niem (FAO).

PRISTIFORMES - sawfishes

Pristidae - sawfishes

62. *Anoxypristis cuspidata* (Latham, 1794) — Close inshore, even intertidal, through region in Compagno & Last (FAO) . . . . 3 : 48-9
63. *Pristis microdon* Latham, 1794 — MBFS at Mekong mouth . . . . 3 : 50-1
64. *Pristis pectinata* Latham, 1794 — Close inshore, even intertidal, in Gulf of Thailand in Compagno & Last (FAO).
65. *Pristis zijsron* Bleeker, 1851 — MBFS at Mekong mouth - match on saw that Rainboth still possesses . . . . 3 : 52

TORPEDINIFORMES - electric rays

Narcinidae - numbfishes

66. *Narcine brunnea* Annandale, 1909 — Inshore, found in Gulf of Thailand in Carvalho, Compagno & Last (FAO) . . . . 3 : 53
67. *Narcine lingula* Richardson, 1846 — MBFS at mouth of Mekong . . . . 3 : 54
68. *Narcine sp.* — Viet Nam and Gulf of Thailand in Carvalho, Compagno & Last (FAO); new species formerly confused with *Narcine maculata*.
69. *Narcine timlei* (Bloch & Schneider, 1801) — Inshore, Gulf of Thailand and Viet Nam coast in Carvalho, Compagno & Last (FAO) . . . . 3 : 55

Narkidae - sleeper rays

70. *Narke dipterygia* (Bloch & Schneider, 1801) — KFL from Gulf of Thailand, Viet Nam coast in Compagno & Last (FAO) . . . . 3 : 56
71. *Narke japonica* (Temminck & Schlegel, 1850) — Coast of central Viet Nam in Nguyen & Tran (1994).
72. *Narke sp.* — Dwarf species from Gulf of Thailand in Compagno & Last (FAO).
73. *Temera hardwickii* Gray, 1831 — Found inshore along coast of Mekong delta in Compagno & Last (FAO) . . . . 3 : 57

RAJIFORMES - skates

Rhinidae - bowmouth guitarfishes

74. *Rhina ancylostoma* Bloch & Schneider, 1801 — MBFS in Mekong Plume . . . . 3 : 58-9

Rhynchobatidae - wedgefishes

75. *Rhynchobatus australiae* Whitley, 1939 — WJR in Mekong delta market, photo of specimen . . . . 3 : 60

76. *Rhynchobatus yentinensis* Wang, 1933 — KFL at Bangkok fish market, probably from Gulf of Thailand; possibly synonym of *Rhynchobatus laevis* according to Compagno & Last (2008) . . . . 3 : 61

Rhinobatidae - guitarfishes

77. *Glaucostegus granulatus* (Cuvier, 1829) — Large inshore guitarfish of Gulf of Thailand in Compagno & Last (FAO) . . . . 3 : 62
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79. *Glaucostegus typus* ([Bennett, 1830]) — Locally common inshore Gulf of Thailand in Compagno & Last (FAO).
80. *Rhinobatos obtusus* Müller & Henle, 1841 — Inshore and offshore in Gulf of Thailand in Compagno & Last (FAO).
81. *Rhinobatos schlegelii* Müller & Henle, 1841 — Viet Nam coast south to Mekong delta in Compagno & Last (FAO) . . . . 4 : 64
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85. *Dasyatis akajei* (Müller & Henle, 1841) — KFL from Gulf of Thailand, Viet Nam coast in Last & Compagno (FAO) . . . . 4 : 68
86. *Dasyatis bennettii* (Müller & Henle, 1841) — KFL in Songkhla Lake, Viet Nam coast in Last & Compagno (FAO) . . . . 4 : 69
87. *Dasyatis laevigata* Chu, 1960 — Nishida & Nakaya (1990) South China, Taiwan, similar to undescribed species below . . . . 4 : 70
88. *Dasyatis laosensis* Roberts & Karnasuta, 1987 — Photo of Mekong freshwater specimen . . . . 4 : 71-2
89. *Dasyatis microps* (Annandale, 1908) — CAS specimen from Gulf of Thailand, Gulf of Thailand in Last & Compagno (FAO).
90. *Dasyatis navarrae* (Steindachner, 1892) — Nishida & Nakaya (1990) South China and Taiwan, also similar to undescribed species below.
91. *Dasyatis sinensis* (Steindachner, 1892) — China coast in Nishida & Nakaya (1990), central Viet Nam possible.
92. *Dasyatis zugei* Müller & Henle, 1841 — MBFS in Mekong plume . . . . 4 : 73
93. *Dasyatis sp.* — Undescribed Sp. #2 of Nishida & Nakaya (1990) . . . . 4 : 74
94. *Himantura fai* Jordan & Seale, 1906 — WJR from Cambodia coastal market, also Viet Nam coast in Last & Compagno (FAO) . . . . 4 : 75
95. *Himantura fava* (Annandale, 1909) — CAS specimens from eastern Gulf of Thailand . . . . 4 : 76
96. *Himantura gerrardi* (Gray, 1851) — MBFS in Mekong plume . . . . 4 : 77
97. *Himantura imbricata* (Bloch & Schneider, 1801) — MBFS in Mekong plume . . . . 4 : 78-79
98. *Himantura jenkinsii* (Annandale, 1909) — CAS specimens from eastern Gulf of Thailand, also Viet Nam coast in Last & Compagno (FAO).
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102. *Himantura uarnacoides* (Bleeker, 1852) — CAS from eastern Gulf of Thailand, southern Viet Nam coast in Last & Compagno (FAO) . . . . . . 4 : 83
103. *Himantura uarnak* (Gmelin, 1789) — MBFS in Mekong plume . . . . 5 : 84-5
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109. *Taeniura lymma* (Forsskål, 1775) — WJR in Gulf of Thailand, Viet Nam coast in Last & Compagno (FAO) . . . . 5 : 91-2
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113. *Gymnura crooki* Fowler, 1934 — Viet Nam and Gulf of Thailand in Compagno & Last (FAO) as *Gymnura sp.cf. micrura*
114. *Gymnura japonica* (Temminck & Schlegel, 1850) — MBFS in Mekong plume.
115. *Gymnura poecilura* (Shaw, 1804) — MBFS in Mekong plume . . . . 5 : 96

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117. *Aetobatus guttatus* (Shaw, 1804) — Poorly known eagle ray from Gulf of Thailand in Compagno & Last (FAO).
118. *Aetobatus narinari* (Euphrasen, 1790) — KFL in Bangkok fish market, Gulf of Thailand in Compagno & Last (FAO) . . . . 5 : 97

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126. *Mobula japanica* (Müller & Henle, 1841) — CAS specimens from eastern Gulf of Thailand, also Viet Nam coast in Compagno & Last (FAO).
127. *Mobula kuhlii* (Müller & Henle, 1841) — KFL Bangkok market, Gulf of Thailand in Compagno & Last (FAO) . . . . 5 : 102
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Osteoglossidae - bony tongues

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Elopidae tenpounders

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Albulidae - bonefishes

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195. *Allips concolor* McCosker, 1972 — Gulf of Thailand in original description . . . . 8 : 163
196. *Apterichtus klazingai* (Weber, 1913) — Clear waters and sand bottoms, throughout S. E. Asia in Allen (1997) . . . . 8 : 164
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198. *Brachysomophis crocodilinus* (Bennett, 1833) — Fourmanoir & Nhung (1965) list genus from Nha Trang, widespread and likely . . . . 8 : 165
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203. *Lamnostoma mindora* (Jordan & Richardson, 1908) — CAS specimens from eastern Gulf of Thailand.
204. *Lamnostoma orientalis* (M'Clelland, 1844) — Indo-Pacific inshore waters and turbid estuaries in Talwar & Jhingran (1992) . . . . 9 : 170
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207. *Muraenichthys thompsoni* Jordan & Richardson, 1908 — Central Viet Nam coastline in Nguyen & Nguyen (1994).
208. *Myrichthys colubrinus* (Boddaert, 1781) — Widespread along shores and reefs, also throughout S. E. Asia in Allen (1997) . . . . 9 : 172
209. *Myrichthys maculosus* (Cuvier, 1816) — Nha Trang specimens at ROM . . . . 9 : 173
210. *Myrophis microchir* (Bleeker, 1864) — Nha Trang specimens at ROM.
211. *Neenchelys buitendijki* Weber & deBeaufort, 1916 — Fourmanoir & Nhung (1965) at Nha Trang, Randall & Lim (2000) list only *N. retropinna*.
212. *Ophichthus apicalis* ([Bennett], 1830) — KFL from Gulf of Thailand, CAS from eastern Gulf of Thailand, Nha Trang specimen at ROM . . . 9 : 174
213. *Ophichthus cephalozona* Bleeker, 1864 — Fourmanoir & Nhung (1965) list *Ophichthys sp.* #1 with color description from Nha Trang . . . . . . 9 : 175
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218. *Ophichthus macclellandi* (Bleeker, 1853) — WJR in Mekong delta, also MBFS in Mekong delta . . . . . 9 : 181-2
219. *Ophichthus macrochir* (Bleeker, 1853) — CAS specimens from northern Gulf of Thailand.
220. *Ophichthus rutidoderma* (Bleeker, 1853) —WJR in Mekong delta, also MBFS in Mekong delta . . . . . 9 : 183
221. *Ophichthus rutidodermatoides* (Bleeker, 1853) — WJR in Mekong delta . . . . . 9 : 184-5
222. *Ophichthus singapurensis* Bleeker, 1864-65 — KFL in South Thailand.
223. *Phyllophichthus xenodontus* Gosline, 1951 — Sand bottoms near reefs, throughout S. E. Asia in Allen (1997) . . . . . 9 : 186
224. *Pisodonophis boro* (Hamilton, 1822) — CAS specimens from eastern Gulf of Thailand . . . . . 9 : 187
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227. *Solecenchelys gymnota* (Bleeker, 1857) — Central Viet Nam coastline in Nguyen & Nguyen (1994).

Muraenesocidae - pike congers

228. *Congresox talabon* (Cuvier, 1829) — Common throughout Indo-Pacific estuaries and coastal waters.
229. *Congresox talabonoides* (Bleeker, 1853) — Common at mouth of Mekong 10: 191
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232. *Muraenesox cinereus* (Forsskål, 1775) — WJR in Mekong delta markets, MBFS at mouth of Mekong 10: 194

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233. *Coloconger scholesi* Chan, 1967 — South China Sea, deeper parts of continental shelf.

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235. *Ariosoma marginatum* (Vaillant & Sauvage, 1875) — Widely distributed, taxonomy confusing.
236. *Ariosoma megalops* Fowler, 1938 — Specimens from Nha Trang at ROM 10: 195
237. *Ariosoma nigrimanum* Norman, 1939 — Near northern limit of this one’s range 10: 196
238. *Ariosoma scheelei* (Strömann, 1896) — Described from Malay Archipelago (Castle, 1969).
239. *Ariosoma sp.* — MBFS at Mekong mouth 10: 197
240. *Bathycongrus parapolyporus* Karmovskaya, 2009 — South China Sea in original description.
241. *Bathymyrus simus* Smith, 1965 — Fourmanoir & Nhung (1965) at Nha Trang, reported and illustrated as *Conger sp.*
242. *Bathyuroconger vicinus* (Vaillant, 1888) — WJR in coastal Cambodian market 10: 198
243. *Conger cinereus* Rüppell, 1830 — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997) 10: 199
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246. *Gnathophis heterognathos* (Bleeker, 1858-59) — South China Sea side of Malay Peninsula (Mohsin & Ambak, 1996) 10: 201
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249. *Uroconger lepturus* (Richardson, 1845) — Fourmanoir & Nhung (1965) at Nha Trang.

Nettastomatidae - duckbill eels

250. *Saurenchelys fierasfer* (Jordan & Snyder, 1901) — Central Viet Nam in Nguyen & Nguyen (1994), photo of a similar (but different) species 10: 203

CLUPEIFORMES - herrings

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252. *Chirocentrus nudus* Swainson, 1839 — KFL from Gulf of Thailand 10: 205

Clupeidae - Dussumieriinae - round herrings

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254. *Dussumieria elopsoides* Bleeker, 1849 — MBFS in Mekong plume 10: 207
255. *Spratelloides delicatulus* (Bennett, 1832) — Photo of specimen from Nha Trang 10: 208
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258. *Amblygaster leiogaster* (Valenciennes, 1847) — MBFS in Mekong plume 10: 210
259. *Amblygaster sirm* (Walbaum, 1792) — MBFS in Mekong plume 11: 211
260. *Escualosa elongata* Wongratana, 1983 — Photo of Mekong delta specimen 11: 212
261. *Escualosa thoracata* (Valenciennes, 1847) — KFL from Gulf of Thailand, also Viet Nam coast in Munroe, et al. (FAO) 11: 213
262. *Herklotsichthys dispilonotus* (Bleeker, 1852) — KFL from Gulf of Thailand, also southern Mekong delta in Munroe, et al. (FAO).
263. *Herklotsichthys quadrimaculatus* (Rüppell, 1837) — MBFS in Mekong plume 11: 214
264. *Sardinella albella* (Valenciennes, 1847) — MBFS in Mekong plume 11: 215
265. *Sardinella atricauda* (Günther, 1868) — Nha Trang specimens in Orsi (1974) - as *Sardinella melanura*.
266. *Sardinella brachysoma* Bleeker, 1852 — Photo of Gulf of Thailand specimen, KFL in upper Gulf of Thailand 11: 216
267. *Sardinella fimbriata* (Valenciennes, 1847) — Photo of Mekong delta specimen 11: 217

268. *Sardinella gibbosa* (Bleeker, 1849) — MBFS in Mekong plume . . . 11: 218
269. *Sardinella lemuru* Bleeker, 1853 — WJR in Mekong delta . . . 11: 219
270. *Sardinella zunasi* (Bleeker, 1854) — KFL from Gulf of Thailand (small specimens, difficult to identify).

Clupeidae - Sundasalanginae - Sundaland noodlefishes

271. *Sundasalanx mekongensis* Britz & Kottelat, 1999 — Described from Savannakhet area.
272. *Sundasalanx praecox* Roberts, 1981 — Large collection from Thai Mekong at UMMZ, Cambodian material lacks melanophores . . . 11: 220

Clupeidae - Pellonulinae - freshwater herrings

273. *Clupeichthys aesarnensis* Wongratana, 1983 — Photo of Mekong specimen . . . 11: 221
274. *Clupeichthys goniognathus* Bleeker, 1855 — WJR in tidal rivers of Mekong delta . . . 11: 222
275. *Clupeichthys perakensis* (Herre, 1936) — Likely in tidal areas, but not yet recorded, see Whitehead (1985).
276. *Clupeoides borneensis* Bleeker, 1851 — Photo of Mekong delta specimen . . . 11: 223
277. *Clupeiodes sp.cf. borneensis* — Reported from Nam Theun by Kottelat (1998).
278. *Corica laciniata* Fowler, 1935 — Photo of Mekong delta specimen . . . 11: 224
279. *Corica soborna* Hamilton, 1822 — Photo of Mekong delta specimen . . . 11: 225
280. *Minyclupeoides dentibranchialus* Roberts, 2008 — Described from the Mekong basin of Cambodia.

Clupeidae - Alosinae - shads

281. *Hilsa kelee* (Cuvier, 1829) — MBFS in Mekong plume . . . 11: 226
282. *Tenualosa reevesii* (Richardson, 1846) — Photo of Bangkok market specimen, probably in area see Munroe, et al. (FAO) . . . 11: 227
283. *Tenualosa thibaudeaui* (Durand, 1940) — Photo of Mekong specimen, endemic to Mekong . . . 11: 228
284. *Tenualosa toli* (Valenciennes, 1847) — KFL Gulf of Thailand, likely in southernmost Mekong delta in Munroe, et al. (FAO) . . . 11: 229

Clupeidae - Dorosomatinae - gizzard shads

285. *Anodontostoma chacunda* (Hamilton, 1822) — MBFS in Mekong plume . . . 11: 230
286. *Anodontostoma thailandae* Wongratana, 1983 — Photo from Gulf of Thailand, also southern Viet Nam coast in Munroe, et al. (FAO) . . . 11: 231
287. *Clupanodon thrissa* (Linnaeus, 1758) — KFL from Gulf of Thailand.
288. *Nematalosa galatheae* Nelson & Rothman, 1973 — CAS from west central Gulf of Thailand, also southern Viet Nam Munroe, et al. (FAO) . 12: 232
289. *Nematalosa japonica* Regan, 1917 — Gulf of Thailand in Munroe, et al. (FAO) . . . 12: 233
290. *Nematalosa nasus* (Bloch, 1795) — KFL from Gulf of Thailand, also Viet Nam coast in Munroe, et al. (FAO) . . . 12: 234

Pristigasteridae - longfin herrings

291. *Ilisha elongata* ([Bennett, 1830]) — MBFS in Mekong plume.
292. *Ilisha filigera* (Valenciennes, 1847) — KFL from Gulf of Thailand.
293. *Ilisha kampeni* (Weber & deBeaufort, 1913) — KFL from Gulf of Thailand . . . 12: 235
294. *Ilisha macrogaster* Bleeker, 1866 — South China Sea coastlines in Munroe, et al. (FAO).
295. *Ilisha megaloptera* (Swainson, 1839) — MBFS in Mekong plume . . . 12: 236
296. *Ilisha melastoma* (Bloch & Schneider, 1801) — MBFS in Mekong plume, photo of specimen from Gulf of Thailand . . . 12: 237
297. *Ilisha pristigasteroides* (Bleeker, 1852) — Nha Trang specimens in Orsi (1974), identified as *Ilisha amblyuroptera*, a synonym.
298. *Ilisha sirishai* Seshagiri Rao, 1975 — WJR In Mekong delta, photo of Gulf of Thailand specimen . . . 12: 238
299. *Ilisha sp.* — MBFS along Viet Nam coast, undescribed, with row of spots on body above base of anal fin.
300. *Opisthopterus tardoore* (Cuvier, 1829) — KFL from Gulf of Thailand . . . 12: 239
301. *Opisthopterus valenciennesi* Bleeker, 1872 — MBFS at mouth of Mekong.
302. *Pellona ditchela* Valenciennes, 1847 — KFL from Gulf of Thailand . . . 12: 240
303. *Raconda russeliana* Gray, 1831 — MBFS at mouth of Song Hau Giang (Bassac River).

Engraulidae - anchovies

304. *Coilia borneensis* Bleeker, 1852 — Nha Trang specimens in Orsi (1974), South China Sea river mouths, Wongratana, et al. (FAO).
305. *Coilia dussumieri* Valenciennes, 1848 — MBFS at mouth of Mekong . . . 12: 241
306. *Coilia grayii* Richardson, 1845 — Nha Trang specimens in Orsi (1974).
307. *Coilia lindmani* Bleeker, 1858 — Photo of specimen from Mekong delta . . . 12: 242
308. *Coilia macrognathos* Bleeker 1852 — Orsi (1974) specimens at Nha Trang . . . 12: 243
309. *Coilia mystus* (Linnaeus, 1758) — Viet Nam in Orsi (1974), often confused with *Coilia neglecta*, therefore both listed.
310. *Coilia neglecta* Whitehead, 1968 — MBFS at Mekong mouth . . . 12: 244
311. *Coilia rebentischii* Bleeker, 1848 — Photo of specimen from Mekong delta . . . 12: 245
312. *Encrasicholina devisi* (Whitley, 1940) — CAS specimens from eastern Gulf of Thailand, from China to Persian Gulf in Wongratana, et al. (FAO).
313. *Encrasicholina heteroloba* (Rüppell, 1837) — MBFS in Mekong plume.
314. *Encrasicholina punctifer* Fowler, 1938 — All coastlines from China to Africa in Wongratana, et al. (FAO) . . . 12: 246
315. *Engraulis japonicus* Temminck & Schlegel, 1846 — Reported from southern Viet Nam in Nguyen & Nguyen (1994).
316. *Lycothrissa crocodilus* (Bleeker, 1851) — Photo of specimen from Cambodian Mekong . . . 12: 247
317. *Setipinna breviceps* (Cantor, 1849) — MBFS from Mekong plume.
318. *Setipinna melanochir* (Bleeker, 1849) — Photo of specimen from Mekong delta and another from Stung Treng . . . 12: 248
319. *Setipinna taty* (Valenciennes, 1848) — Photo of specimen from Mekong delta . . . 12: 249
320. *Setipinna tenuifilis* (Valenciennes, 1848) — MBFS from Mekong plume.
321. *Stolephorus andhraensis* Babu Rao, 1966 — MBFS from Mekong plume.

Cyprinidae - Danioinae - Chedrini

370. *Aaptosyax grypus* Rainboth, 1991 — Mekong endemic 14: 292-3
371. *Opsariichthys bidens* Günther, 1873 — Photo of specimen from Lao Mekong basin 14: 294
372. *Opsarius caudiocellatus* (Chu, 1984) — Described from Mekong of Yunnan.
373. *Opsarius koratensis* (Smith, 1931) — Photo of specimen from Lao Mekong basin 15: 295
374. *Opsarius ornatus* (Sauvage, 1883) — Photo of specimen from southern Laos 15: 296
375. *Opsarius pulchellus* (Smith, 1931) — Photo of specimen from Lao Mekong basin 15: 297

Cyprinidae - Danioinae - Danioini - rasboras and danios

376. *Amblypharyngodon chulabornae* Vidthayanon & Kottelat, 1991 — Photo of specimen from Cambodian Mekong 15: 298
377. *Boraras micros* Kottelat & Vidthayanon, 1993 — Photo of specimen from middle Mekong 15: 299
378. *Boraras urophthalmoides* (Kottelat, 1991) — Photo of specimen from Cambodian Mekong 15: 300
379. *Chela caeruleostigmata* (Smith, 1931) — MBFS in middle Mekong, photo of specimen from Cambodia 15: 301
380. *Chela huae* (Tirant, 1883) — Central highlands of Viet Nam, not yet recorded from Mekong.
381. *Chela laubuca* (Hamilton, 1822) — Photo of specimen from Lao Mekong 15: 302
382. *Danio sp.cf. albolineatus* — Photo of specimen from Cardamom mountains 15: 303-4
383. *Danio pulcher* (Smith, 1931) — Photo of specimen from Cambodian Mekong 15: 305
384. *Danio roseus* (Fang & Kottelat, 2000) — Photo of specimen from Lao Mekong 15: 306
385. *Danio tweediei* (Brittan, 1956) — Described from southern Thailand, likely from Cambodia 15: 307
386. *Devario acrostomus* (Fang & Kottelat, 1999) — Photo of specimen from central Laos 15: 308
387. *Devario apocypris* (Fang & Kottelat, 1999) — Photo of specimen from northern Laos 15: 309
388. *Devario chrysotaeniatus* (Chu, 1981) — Photo of specimen from northern Laos 15: 310
389. *Devario fangfangae* (Kottelat, 2000) — Photo of specimens from Lao and Thai Mekong 15: 311-2
390. *Devario gibber* (Kottelat, 2000) — Photo of specimen from southern Laos 15: 313
391. *Devario laoensis* (Pellegrin & Fang, 1940) — Photo of specimen from northern Laos 15: 314
392. *Devario leptos* (Fang & Kottelat, 1999) — Photos of specimens from northern Laos 15: 315-6
393. *Devario regina* (Fowler, 1934) — Described southern Thailand, possible but not yet found in coastal streams of Cambodia 16: 317
394. *Devario salmonata* (Kottelat, 2000) — Photo of specimen from southern Laos 16: 318
395. *Devario sp.* — Photo of specimen from Mekong basin on Xieng Khuang Plateau 16: 319
396. *Esomus longimanus* (Lunel, 1881) — Photo of specimen from Cambodian Mekong 16: 320
397. *Esomus metallicus* Ahl, 1923 — Photo of specimen from Cambodian Mekong 16: 321
398. *Esomus sp.* — WJR in Stung Kandal, Cambodian Mekong.
399. *Gymnodanio strigatus* Chen & He, 1992 — Described from Mekong basin of Yunnan.
400. *Leptobarbus rubripinna* (Fowler, 1937) — Photo of specimen from Cambodian Mekong 16: 322
401. *Luciosoma bleekeri* Steindachner, 1878 — Photo of specimen from Cambodian Mekong 16: 323
402. *Luciosoma setigerum* (Valenciennes, 1842) — Known from middle and lower Mekong 16: 324
403. *Rasbora amplistriga* Kottelat, 2000 — Photo of specimen from Thai Mekong 16: 325
404. *Rasbora atridorsalis* Kottelat & Chu, 1987 — Photo of specimen from Lao Mekong 16: 326
405. *Rasbora aurotaenia* Tirant, 1885 — Photos of specimens from Cambodian and Viet Namese Mekong 16: 327-8
406. *Rasbora borapetensis* Smith, 1934 — Photo of specimen from Lao Mekong 16: 329
407. *Rasbora daniconius* (Hamilton, 1822) — Photo of specimen from Lao Mekong, probably not *daniconius*, which is from the Ganges 16: 330
408. *Rasbora dorsinotata* Kottelat & Chu, 1987 — Described from Mekong of northern Thailand.
409. *Rasbora sp.cf. dorsinotata* — Photo of specimen from northern Laos 16: 331
410. *Rasbora dusonensis* (Bleeker, 1851) — Photos of specimens from Lao and Viet Namese Mekong 16: 332-3
411. *Rasbora hobelmani* Kottelat, 1984 — Photo of specimen from Nakon Sawan 16: 334
412. *Rasbora sp.cf. lateristriata* — Photo of specimen from Cambodian coastal drainage 16: 335
413. *Rasbora pauciperforata* Weber & deBeaufort, 1916 — Recorded from Cambodia in Kottelat (1985), Phu Quoc Island (Anonymous, 2010) . . 16: 336
414. *Rasbora paviana* Tirant, 1885 — Photos of Mekong specimens 17: 337-8
415. *Rasbora rubrodorsalis* Donoso-Büchner & Schmidt, 1997 — Photo of Mekong specimen 17: 339
416. *Rasbora septentrionalis* Kottelat, 2000 — Photos of Mekong specimens 17: 340-1
417. *Rasbora spilocerca* Rainboth & Kottelat, 1987 — Photo of specimen from Cambodian Mekong 17: 342
418. *Rasbora tornieri* Ahl, 1922 — Photo of specimen from Cambodian Mekong 17: 343
419. *Rasbora trilineata* Steindachner, 1870 — Photo of specimen from Nongkhai 17: 344
420. *Rasbora sp.* — Photo of specimen from Chantaburi, Thailand 17: 345
421. *Rasbora sp.* — Undescribed species from southern Laos resembling Rasbora atridorsalis mentioned in Kottelat (2009).
422. *Thryssocypris tonlesapensis* Roberts & Kottelat, 1984 — Photo of specimen from Mekong delta 17: 346
423. *Trigonostigma espei* (Meinken, 1967) — Recorded from Cambodia in Kottelat (1985) 17: 347

Cyprinidae - Leuciscinae

424. *Ctenopharyngodon idella* (Valenciennes, 1844) — Aquaculture import 17: 348
425. *Hypophthalmichthys molitrix* (Valenciennes, 1844) — Widely cultured in basin, photo of specimen from Vientiane 17: 349
426. *Hypophthalmichthys nobilis* (Richardson, 1845) — Widely cultured in basin, photo of specimen from Nongkhai 17: 350

Cyprinidae - Gobioninae

427. *Abbottina rivularis* (Basilewsky, 1855) — Mekong of northern Thailand and Laos 17: 351
428. *Gobiobotia meridionalis* Chen & Tsao, 1977 — Known from the Mekong basin in Yunnan (Chen, et al. 1998).
429. *Gobiobotia yuanjianensis* Chen & Cao, 1977 — Mekong in Yunnan 17: 352

Cyprinidae - Cyprininae - Systomini - Systomi

552. *Hampala dispar* Smith, 1934 — Photo of specimen from Mekong of central Laos 22: 460
553. *Hampala macrolepidota* (Valenciennes, 1842) — Photo of specimen from Cambodian Mekong 22: 461
554. *Oreichthys parvus* Smith, 1933 — Photo of specimen from Mekong of central Lao 22: 462
555. *Puntius brevis* (Bleeker, 1850) — Photo of specimen from Mekong of central Laos 23: 463
556. *Puntius leiacanthus* (Bleeker, 1860) — Photo of specimen from Mekong of northeastern Thailand 23: 464
557. *Puntius masyai* Smith, 1945 — Photo of specimen from Cambodian Mekong 23: 465
558. *Puntius spilopterus* (Fowler, 1934) — Photo of specimen from Ayutthaya, likely in Cambodian streams west of Great Lake 23: 466
559. *Systomus aurotaeniatus* (Tirant, 1885) — Photo of specimen from Cambodian Mekong 23: 467
560. *Systomus jacobusboehlkei* (Fowler, 1958) — Photo of specimen from Mekong of central Laos 23: 468
561. *Systomus orphoides* (Valenciennes, 1842) — Photo of specimen from Mekong of central Laos 23: 469
562. *Systomus partipentazona* (Fowler, 1934) — Photo of specimen from Cambodian Mekong 23: 470
563. *Systomus rhombeus* (Kottelat, 2000) — Photo of specimen from Cardamom mountains 23: 471
564. *Systomus semifasciolatus* (Günther, 1868) — Chu & Cui (1989) record from Mekong basin in Yunnan, Kottelat (2009) from Nam Ou.
565. *Systomus stoliczkanus* (Day, 1871) — Photos of specimens from Mekong of northern Laos 23: 472-3
566. *Systomus sp.* — Photo of specimen from Mekong of central Laos 23: 474

Cyprinidae - Cyprininae - Catlini

567. *Catlocarpio siamensis* Boulenger, 1898 — Found throughout middle and lower Mekong but becoming rare 23: 475
568. *Thynnichthys thynnoides* (Bleeker, 1852) — Photo of specimen from Cambodian Mekong 23: 476

Cyprinidae - Cyprininae - Labeonini - Labeones

569. *Bangana behri* (Fowler, 1937) — Photo of specimen from Cambodian Mekong 23: 477
570. *Bangana brevirostris* Liu & Zhou, 2009 — Described from upper Mekong basin in Xishuangbanna, Yunnan.
571. *Bangana cirrhinoides* (Wu & Lin, 1977) — Described from Yuan Jiang, species seen in Luang Namtha market by Rainboth.
572. *Bangana elegans* Kottelat, 1998 — Photo of specimen from Mekong of central Laos 23: 478
573. *Bangana laticeps* (Wu & Lin, 1977) — Photo of specimen from northern Laos 23: 479
574. *Bangana lippa* (Fowler, 1936) — Photos of specimens from northern Laos 23: 480-1
575. *Bangana musaei* Kottelat & Steiner, 2010 — Found in caves of Central Laos.
576. *Bangana yunnanensis* (Chu & Wang, 1963) — Chu & Cui (1989) record from Mekong basin in Yunnan.
577. *Bangana zhui* (Zheng & Chen, 1989) — Reported from upper Mekong of Yunnan (Yue, et al., 2000)..
578. *Barbichthys nitidus* Sauvage, 1878 — Photo of specimen from Cambodian Mekong 23: 482
579. *Cirrhinus jullieni* Sauvage, 1878 — Photo of specimen from Cambodian Mekong 23: 483
580. *Cirrhinus microlepis* Sauvage, 1878 — Photo of specimen from Cambodian Mekong 24: 484
581. *Cirrhinus molitorella* (Valenciennes, 1844) — Photo of specimen from Cambodian Mekong 24: 485
582. *Cirrhinus mrigala* (Hamilton, 1822) — Photo of specimen from Mekong basin of northeastern Thailand 24: 486
583. *Cirrhinus prosemion* Fowler, 1934 — Photo of specimen from Mekong of central Laos 24: 487
584. *Cirrhinus spilopleura* (Fowler, 1935) — Described from Mekong basin in northeastern Thailand.
585. *Henicorhynchus caudiguttatus* (Fowler, 1934) — Photo of specimen from Mekong basin in northern Thailand 24: 488
586. *Henicorhynchus caudimaculatus* (Fowler, 1934) — Photo of specimen from Mekong basin in northern Thailand 24: 489
587. *Henicorhynchus cryptopogon* (Fowler, 1935) — Photo of specimen from Cambodian Mekong 24: 490
588. *Henicorhynchus lobatus* Smith, 1945 — Photo of specimen from Cambodian Mekong 24: 491-2
589. *Henicorhynchus ornatipinnis* (Roberts, 1998) — Photo of specimen from Mekong basin of northeastern Thailand 24: 493
590. *Henicorhynchus siamensis* (Sauvage, 1881) — Photo of specimen from Mekong delta 24: 494
591. *Labeo barbatulus* (Sauvage, 1878) — Photo of specimen from Cambodian Mekong 24: 495
592. *Labeo chrysophekadion* (Bleeker, 1850) — Photo of specimen from Mekong of southern Laos 24: 496
593. *Labeo pierrei* (Sauvage, 1880) — Photos of specimens from southern and central Laos 24: 497-8
594. *Labeo rohita* (Hamilton, 1822) — Photo of specimen from central Laos 24: 499
595. *Labiobarbus sp.cf. cuvieri* — Photo of specimen from Cambodian Mekong 24: 500
596. *Labiobarbus lineatus* (Sauvage, 1878) — Photos of specimens from Mekong and Cardamoms - likely multiple species 24: 501-5
597. *Labiobarbus siamensis* (Sauvage, 1881) — Photo of specimen from Cambodian Mekong 25: 506
598. *Labiobarbus sp.* — Specimen with red fins - seen from Nam Youan, northern Laos.
599. *Lobocheilos davisi* (Fowler, 1937) — Described from middle Mekong 25: 507
600. *Lobocheilos delacouri* (Pellegrin & Fang, 1940) — Described from Mekong basin in northern Laos, possible synonym of *L. melanotaenia*.
601. *Lobocheilos melanotaenia* (Fowler, 1935) — Photos of specimens from Cambodian and Lao Mekong 25: 508-9
602. *Lobocheilos quadrilineatus* (Fowler, 1935) — Photos of specimens from northeastern Thailand and Cardamom mountains 25: 510-1
603. *Lobocheilos rhabdoura* (Fowler, 1934) — Described from Chao Phrya basin, Thailand, possible in Mekong.
604. *Osteochilus brachynotopteroides* Chevey, 1934 — Photo of specimen from Mekong basin of northeastern Thailand 25: 512
605. *Osteochilus lini* Fowler, 1935 — Photo of specimen from Mekong basin of central Laos 25: 513
606. *Osteochilus sp.cf. lini* — Photo of specimen from Mekong basin of central Laos 25: 514
607. *Osteochilus melanopleurus* (Bleeker, 1852) — Photo of specimen from Mekong basin of Cambodia 25: 515
608. *Osteochilus microcephalus* (Valenciennes, 1842) — Photos of specimens from Cambodian and Lao Mekong 25: 516-7
609. *Osteochilus schlegelii* (Bleeker, 1851) — Photo of specimen from Mekong basin of Cambodia 25: 518
610. *Osteochilus soplaoensis* (Fowler, 1934) — Photo of specimen from middle Mekong, formerly *O. waandersii* but see Tan & Kottelat (2009) . 25: 519
611. *Osteochilus striatus* Kottelat, 1998 — Photo of specimen from Mekong basin of central Laos 25: 520
612. *Osteochilus vittatus* (Valenciennes, 1842) — Photo of specimen from Mekong basin of central Laos, commonly called *Osteochilus hasseltii* . 25: 521

Cyprinidae - Cyprininae - Labeonini - Garrae

613. *Crossocheilus atrilimes* Kottelat, 2000 — Photo of specimen from Mekong basin of southern Laos . . . 25: 522
614. *Crossocheilus cobitis* (Bleeker, 1853) — Photo of specimen from Chiang Rai, northern Thailand . . . 25: 523
615. *Crossocheilus oblongus* (Valenciennes, 1842) — Photo of specimens from Cardamom mountains and the Bangpakong River . . . 25: 524-5
616. *Crossocheilus reticulatus* (Fowler, 1934) — Photo of specimen from Cambodian Mekong . . . 26: 526
617. *Crossocheilus siamensis* (Smith, 1931) — Photo of aquarium specimen with more melanin than usual for wild-caught specimens . . . 26: 527
618. *Epalzeorhynchos frenatum* (Fowler, 1934) — Photo of specimen from Cambodian Mekong . . . 26: 528
619. *Epalzeorhynchos kalopterum* (Bleeker, 1851) — Photo of specimen from Cardamom mountains . . . 26: 529
620. *Epalzeorhynchos munense* (Smith, 1934) — Photo of specimen from Mekong basin of central Laos and Cambodia . . . 26: 530-1
621. *Garra cambodgiensis* (Tirant, 1883) — Photo of specimen from Cambodian Mekong . . . 26: 532
622. *Garra cyrano* Kottelat, 2000 — Photo of specimen from Mekong basin of central Laos . . . 26: 533
623. *Garra sp.cf. cyrano* — Photo of specimen from Cardamom mountains . . . 26: 534
624. *Garra fasciacauda* Fowler, 1937 — Photos of specimens from Lao and Cambodian Mekong . . . 26: 535-6
625. *Garra fisheri* (Fowler, 1937) — Photo of specimen from Mekong of Yunnan . . . 26: 537
626. *Garra fuliginosa* Fowler, 1934 — Photo of specimen from Mekong basin of Chantaburi Province, Thailand . . . 26: 538-9
627. *Garra imberba* Garman, 1912 — Known from upper Mekong of Yunnan.
628. *Garra mirofrontis* Chu & Cui, 1987 — Known from upper Mekong of Yunnan.
629. *Garra poilanei* Petit & Tchang, 1933 — Photos of specimens from Mekong basin of northern Laos and Yunnan . . . 26: 540-42
630. *Garra theunensis* Kottelat, 1998 — Photo of specimen from Mekong basin of central Laos . . . 26: 543
631. *Garra sp.* — Photos of specimen from Srepok basin of Dak Lak Province, Viet Nam . . . 26: 544
632. *Mekongina erythrospila* Fowler, 1937 — Photo of specimen from Mekong at Stung Treng, Cambodia . . . 26: 545
633. *Mekongina langcangensis* Yang, Chen & Yang, 2008 — Described from the upper Mekong of Yunnan.
634. *Placocheilus cryptonemus* Cui & Li, 1984 — Reported from the upper Mekong of Yunnan (Yue, et al., 2000).

Gyrinocheilidae - algae eaters

635. *Gyrinocheilus aymonieri* (Tirant, 1884) — Photos of specimens from Mekong of Cambodia and Viet Nam . . . 26: 546-7
636. *Gyrinocheilus pennocki* (Fowler, 1937) — Photos of specimens from Cambodian and Lao Mekong . . . 27: 548-9

Botiidae - botias

637. *Serpenticobitis cingulata* Roberts, 1997 — Photo of specimen from Mekong in Thailand . . . 27: 550
638. *Serpenticobitis octozona* Roberts, 1997 — Photo of specimen from Mekong basin in southern Laos . . . 27: 551
639. *Serpenticobitis zonata* Kottelat, 1998 — Photos of specimens from Lao Mekong . . . 27: 552-3
640. *Sinibotia longiventralis* (Yang & Chen, 1992) — Described from Mekong of Yunnan, reported from Thailand and Laos.
641. *Sinibotia sp.cf. longiventralis* — Photo of specimen from Mekong of northern Laos . . . 27: 554
642. *Sinibotia superciliaris* (Günther, 1892) - Known from the upper Mekong of Yunnan.
643. *Syncrossus beauforti* Smith, 1931 — Photos of specimens from Cambodian and Lao Mekong . . . 27: 555-6
644. *Syncrossus helodes* Sauvage, 1876 — Photo of specimen from Cambodian Mekong . . . 27: 557
645. *Syncrossus yunnanensis* (Chen, 1980) — Described from upper Mekong of Yunnan just north of the Lao border.
646. *Yasuhikotakia caudipunctata* (Taki & Doi, 1995) — Photos of specimens from Mekong of central Laos . . . 27: 558-9
647. *Yasuhikotakia eos* (Taki, 1972) — Photos of specimens from southern Laos . . . 27: 560-1
648. *Yasuhikotakia lecontei* (Fowler, 1937) — Photo of specimen from Cambodian Mekong . . . 27: 562
649. *Yasuhikotakia sp.cf. lecontei* — Photo of specimen from Mekong of southern Laos . . . 27: 563
650. *Yasuhikotakia sp.cf. lecontei* — Photo of specimen from Mekong of central Laos . . . 27: 564
651. *Yasuhikotakia sp.cf. lecontei* — Photo of specimen from Mekong of central Laos . . . 27: 565
652. *Yasuhikotakia sp.cf. lecontei* — Photo of specimen from Mekong of northern Laos . . . 27: 566
653. *Yasuhikotakia longidorsalis* (Taki & Doi, 1995) — Photo of specimen from Mekong of central Laos . . . 27: 567
654. *Yasuhikotakia modesta* (Bleeker, 1865) — Photos of specimens from Cambodian and Lao Mekong . . . 28: 568-9
655. *Yasuhikotakia morleti* (Tirant, 1885) — Photo of specimen from Cambodian Mekong . . . 28: 570
656. *Yasuhikotakia nigrolineata* (Kottelat & Chu, 1987) — Photos of specimens from Lao Mekong . . . 28: 571-4
657. *Yasuhikotakia sidthimunki* (Klausewitz, 1959) — Reported from Mekong of northeastern Thailand.
658. *Yasuhikotakia splendida* (Roberts, 1997) — Photo of specimen from southern Laos . . . 28: 575

Cobitidae - Cobitinae - loaches

659. *Acanthopsoides delphax* Siebert, 1991 — Photo of specimen from Cambodian Mekong . . . 28: 576
660. *Acanthopsoides gracilentus* (Smith, 1945) — Photos of specimens from Mekong basin of northern Laos . . . 28: 577-8
661. *Acanthopsoides sp.cf. gracilis* 1 — Photo of specimen from Mekong of Luang Prabang . . . 28: 579
662. *Acanthopsoides sp.cf. gracilis* 2 — Photo of specimen from Mekong basin of Cambodia . . . 28: 580
663. *Acanthopsoides hapalias* Siebert, 1991 — Photos of specimens from Lao Mekong . . . 28: 581-2
664. *Acanthopsoides molobrion* Siebert, 1991 — Photo of specimen from Mekong basin of central Laos . . . 28: 583
665. *Acanthopsoides namromensis* Nguyen, 2005 — Described from Nâm Rôm and Nâm Núa near Dien Bien Phu.
666. *Acanthopsoides sp. 1* — Photo of specimen from northern Laos . . . 28: 584
667. *Acanthopsoides sp. 2* — Photo of specimen from Cambodian Mekong . . . 28: 585
668. *Acantopsis sp. 1* — Photos of specimens from Mekong of central Laos . . . 28: 586-7
669. *Acantopsis sp. 2* — Photos of specimens from southern Laos and Cambodia . . . 28: 588-9
670. *Acantopsis sp. 3* — Photo of specimen from Cambodian Mekong . . . 29: 590
671. *Acantopsis sp. 4* — Photo of specimen from Mekong of northern Laos . . . 29: 591
672. *Acantopsis sp. 5* — Photo of specimen from Mekong of central Laos . . . 29: 592

673. *Acantopsis sp. 6* — Photo of specimen from Mekong basin of central Laos 29: 593
674. *Acantopsis sp. 7* — Photo of specimen from Cambodian Mekong 29: 594
675. *Cobitis laoensis* Sauvage, 1878 — Possible for Laos in Kottelat (2001) 29: 595
676. *Lepidocephalichthys berdmorei* (Blyth, 1860) — Photo of specimen from Mekong basin of northern Laos 29: 596
677. *Lepidocephalichthys furcatus* (de Beaufort, 1933) — Kottelat (2001) reported from Mekong basin in Laos and Thailand.
678. *Lepidocephalichthys hasselti* (Valenciennes, 1846) — Photos of specimens from Cambodian and Thai Mekong 29: 597
679. *Lepidocephalichthys kranos* Havird & Page, 2010 — Described from Mekong basin of northeast Thailand and central Laos.
680. *Lepidocephalichthys zeppelini* Vidthayanon, 2011 — Photo of specimen from the Thai Mekong 29: 598
681. *Lepidocephalichthys sp.* — Photo of specimen from Thailand. 29: 599
682. *Microcobitis misgurnoides* (Rendahl, 1944) — Central highlands of Viet Nam, including the Mekong.
683. *Misgurnus anguillicaudatus* (Cantor, 1842) — Photo of specimen from Lak Lake, Viet Nam 29: 600
684. *Misgurnus mizolepis* Günther, 1888 — Photo of specimen from Srepok basin of Viet Nam 29: 601
685. *Pangio sp.cf. anguillaris 1* — Photo of specimen from Mekong basin of southern Laos 29: 602
686. *Pangio sp.cf. anguillaris 2* — Photo of specimen from Cambodian Mekong 29: 603
687. *Pangio filinaris* Kottelat & Lim, 1993 — WJR near Siem Reap, Cambodia.
688. *Pangio sp.cf. filinaris* — Photo of specimen from Cambodian Mekong 29: 604
689. *Pangio sp.cf. fusca* — Photo of specimen from Mekong basin of southern Laos 29: 605
690. *Pangio sp.cf. fusca* — Photo of specimen from Mekong basin of central Laos 29: 606
691. *Pangio sp.cf. fusca* — Kottelat (2009) indicated at least three undescribed species from Laos.
692. *Pangio longimanus* Britz & Kottelat, 2009; — Described from central Laos.
693. *Pangio myersi* (Harry, 1949) — Photos of specimens from Mekong of southern Laos and southeastern Thailand 29: 607-9
694. *Pangio oblonga* (Valenciennes, 1846) — Photo of specimen from Mekong basin of central Laos 30: 610
695. *Pangio sp.cf. piperata* — Photo of specimen from Mekong basin of central Laos 30: 611
696. *Pangio sp. 1* — Photo of specimen from Cambodian Mekong 30: 612
697. *Pangio sp. 2* — Photo of specimen from Cambodian Mekong 30: 613

Balitoridae - Balitorinae - flat loaches

698. *Balitora annamitica* Kottelat, 1988 — Photos of specimen from Mekong basin of northern Laos 30: 614-5
699. *Balitora sp.cf. annamtica* — Photos of specimen from Mekong basin of northern Laos 30: 616-7
700. *Balitora sp.cf. burmanica* — Photos of specimen from Mekong basin of northern Laos 30: 618-9
701. *Balitora lancangjiangensis* (Zheng, 1980) — Photos of specimen from Mekong basin of northern Laos 30: 620-1
702. *Balitora sp.cf. lancangjiangensis* — Photos of specimen from Mekong basin of northern Laos 30: 622-3
703. *Balitora meridionalis* Kottelat, 1988 — Photos of specimens from Mekong basin of northern and central Laos 30: 624-7
704. *Hemimyzon confluens* Kottelat, 2000 — Photos of specimen from Mekong basin of central Laos 30: 628-9
705. *Hemimyzon ecdyonuroides* Fryhof & Herder, 2002 — Photos of specimen from Mekong basin of southern Laos 30: 630-1
706. *Hemimyzon elongatus* (Chen & Li, 1985) — Photos of specimen from Mekong basin of southern Laos 31: 632-3
707. *Hemimyzon khonensis* Kottelat, 2000 — Photos of specimen from Mekong basin of southern Laos 31: 634-5
708. *Hemimyzon papilio* Kottelat, 1998 — Photos of specimen from Mekong basin of southern Laos 31: 636-7
709. *Hemimyzon pengi* (Huang, 1982) — Photos of specimen from Mekong basin of northern Laos 31: 638-9
710. *Hemimyzon sp.cf. pengi* — Photos of specimen from Mekong basin of northern Laos 31: 640-1
711. *Hemimyzon tchangi* (Zheng, 1982) — Chen in Chu, et al. (1990) from Mekong of Yunnan.
712. *Homaloptera confuzona* Kottelat, 2000 — Photos of specimens from Cambodian Mekong and Cardamom mountains 31: 642-3
713. *Homaloptera indochinensis* Silas, 1953 — Described from Kontum, Viet Nam, possibly in Mekong.
714. *Homaloptera leonardi* Hora, 1941 — Photos of specimens from Cambodian and Lao Mekong 31: 644-5
715. *Homaloptera lineata* Smith, 1945 — Photos of specimens from Mekong of northern Laos 31: 646-8
716. *Homaloptera maxinae* Fowler, 1937 — Described from central Thailand, possible for western Cambodia.
717. *Homaloptera sexmaculata* Fowler, 1934 — Photos of specimen from Mekong of northern Laos 31: 649-0
718. *Homaloptera smithi* Hora, 1932 — Photos of specimens from Mekong of Cambodia and southern Laos 31: 651-4
719. *Homaloptera sp.cf. smithi* (1) — Photo of specimen from Mekong basin of central Laos 32: 655
720. *Homaloptera sp.cf. smithi* (2) — Photo of specimen from Mekong basin of central Laos 32: 656
721. *Homaloptera sp.cf. smithi* (3) — Photo of specimen from Mekong basin of central Laos 32: 657
722. *Homaloptera tweediei* Herre, 1940 — Photo of specimen from Cambodian Mekong 32: 658
723. *Homaloptera vulgaris* Kottelat & Chu, 1988 — Known from the upper Mekong basin of Yunnan.
724. *Homaloptera yunnanensis* (Chen, 1978) — Photos of specimen from Mekong basin of northern Laos 32: 659-60
725. *Homaloptera zollingeri* Bleeker, 1853 — Photo of specimen from Cambodian Mekong 32: 661

Balitoridae - Gastromyzontinae - flat loaches

726. *Annamia normani* (Hora, 1931) — Photos of specimens from Cambodian and Lao Mekong (likely multiple species) 32: 662-7
727. *Sewellia breviventralis* Fryhof & Serov, 2000 — Fryhof & Serov (2000) list from Sesan (Mekong basin) in Viet Nam.
728. *Sewellia diardi* Roberts, 1998 — Photos of specimen from Mekong basin of southern Laos 33: 673-4
729. *Sewellia elongata* Roberts, 1998 — Photos of specimen from Mekong basin of southern Laos 33: 675-6
730. *Sewellia patella* Fryhof & Serov, 2000 — Fryhof & Serov (2000) list from Sesan (Mekong basin).
731. *Sewellia speciosa* Roberts, 1998 — Photos of specimen from Mekong basin in southern Laos 33: 677-8
732. *Vanmanenia serrilineata* (Kottelat, 2000) — Photos of specimens from Mekong basin of northern Laos 32: 668-72
733. *Vanmanenia striata* (Chen, 1990) — Upper Mekong of Yunnan, similar to, but likely distinct from *Vanmanenia tetraloba* (Mai, 1978).

Nemacheilidae - riffle loaches

734. *Acanthocobitis sp.cf. biliturio* — Photo of specimen from Mekong basin of southern Laos 33: 679
735. *Acanthocobitis sp.cf. botia* — Photo of specimen from Cambodian Mekong 33: 680
736. *Barbucca diabolica* Roberts, 1989 — Reported from Phu Quoc Island by Wildlife at Risk of Ho Chi Minh City (Anonymous, 2010).
737. *Claea dabryi* (Sauvage, 1874) — Known from upper Mekong in Yunnan.
738. *Homatula acuticephala* (Zhou & He, 1993)— Found in Lake Haixihai of Mekong basin in Yunnan.
739. *Homatula anguilloides* (Zhu & Wang, 1985) — Found in Mekong of Yunnan.
740. *Homatula erhaiensis* (Zhu & Cao, 1988) — Described from Erhai Lake in Mekong basin of Yunnan.
741. *Homatula potanini* Günther, 1896) — Upper Mekong of Hengduan range by Chen and Zhang in Chen (1998).
742. *Homatula pycnolepis* Hu & Zhang, 2010 — Described from Yangbi River of Mekong basin in Yunnan.
743. *Nemacheilus arenicolus* Kottelat, 1998 — Photos of specimens from Mekong basin of northern and central Laos 33: 681-2
744. *Nemacheilus banar* Fryhof & Serov, 2001 — Fryhof & Serov (2001) list from Sesan (Mekong basin) in Viet Nam.
745. *Nemacheilus sp.cf. binotatus* — Photo of specimen from Cambodian Mekong 33: 683
746. *Nemacheilus longistriatus* Kottelat, 1990 — Photos of specimens from Mekong basin of northern and southern Laos 33: 684-5
747. *Nemacheilus masyae* Smith, 1933 — Known from Chantaburi Province, Thailand, and Cardamom mountains 33: 686
748. *Nemacheilus pallidus* Kottelat, 1990 — Photos of specimens from Cambodian and Lao Mekong 33: 687-8
749. *Nemacheilus platiceps* Kottelat, 1990 — Photo of specimen from Cambodian Mekong 33: 689
750. *Nemacheilus sp.cf. platiceps* — Photo of specimen from Mekong basin of central Laos 33: 690
751. *Nemacheilus sp. 1* — Photo of specimen from Cambodian Mekong 33: 691
752. *Physoschistura meridionalis* Zhu, 1982 — Photos of specimens from Mekong basin of northern Laos 33: 692-3
753. *Physoschistura pseudobrunneana* Kottelat, 1990 — Photo of specimen from Mekong basin of northern Thailand 34: 694
754. *Physoschistura raoi* (Hora, 1929) — Kottelat (1990) reports from Mekong basin of Yunnan.
755. *Physoschistura sp. 1* — Photo of specimen from Mekong basin of northern Laos 34: 695
756. *Physoschistura sp. 2* — Photo of specimen from Mekong basin of northern Laos 34: 696
757. *Schistura amplizona* Kottelat, 2000 — Photos of specimens from Mekong basin of northern Laos 34: 697-8
758. *Schistura aramis* Kottelat, 2000 — Photo of specimen from Lao Mekong 34: 699
759. *Schistura athos* Kottelat, 2000 — Photos of specimens from Lao Mekong 34: 700-1
760. *Schistura atra* Kottelat, 1998 — Photo of specimen from Lao Mekong 34: 702
761. *Schistura bairdi* Kottelat, 2000 — Photo of specimen from Cambodian Mekong 34: 703
762. *Schistura bannaensis* Chen, Yang & Qi, 2005 — Described from Mengla, Yunnan, Mekong basin just north of Lao border.
763. *Schistura bella* Kottelat, 1990 — Photo of specimen from Lao Mekong 34: 704
764. *Schistura bolavenensis* Kottelat — Photos of specimens from Lao Mekong 34: 705-6
765. *Schistura breviceps* (Smith, 1945) — Kottelat (1990) records from Mekong basin of northern Thailand.
766. *Schistura bucculenta* (Smith, 1945) — Photos of specimens from Lao Mekong 34: 707-8
767. *Schistura cataracta* Kottelat, 1998 — Photos of specimens from Lao Mekong 34: 709
768. *Schistura clatrata* Kottelat, 2000 — Photo of specimen from Lao Mekong 34: 710
769. *Schistura conirostris* (Zhu, 1982) — Yang in Chu et al. (1990) reports from Mekong basin in Yunnan.
770. *Schistura coruscans* Kottelat, 2000 — Photo of specimen from Lao Mekong 34: 711
771. *Schistura crabro* Kottelat, 2000 — Photo of specimen from Lao Mekong 34: 712
772. *Schistura daubentoni* Kottelat, 1990 — Kottelat (1990, 1998) reports from Lao and Cambodian Mekong.
773. *Schistura defectiva* Kottelat, 2000 — Photo of specimen from Lao Mekong 34: 713
774. *Schistura diminuta* Ou et al., 2011 — Described from the Sekong of Cambodia.
775. *Schistura dorsizona* Kottelat, 1998 — Photos of specimens from Lao Mekong 34: 714-5
776. *Schistura ephelis* Kottelat, 2000 — Photo of specimen from Lao Mekong 35: 716
777. *Schistura fasciolata* (Nichols & Pope, 1927) — From Hengduan range between Mekong and Salween on Tibetan Plateau (Chen, 1998). Described originally from Hainan. Possibly several similar species from Viet Nam and southern China (Kottelat, 2001).
778. *Schistura finis* Kottelat, 2000 — Photos of specimens from Lao Mekong 35: 717-8
779. *Schistura fusinotata* Kottelat, 2000 — Photo of specimen from Cambodian Mekong 35: 719
780. *Schistura globiceps* Kottelat, 2000 — Photo of specimen from Lao Mekong 35: 720
781. *Schistura hoai* Nguyen, 2005 — Described from Nua Ngam, Dien Bien, Mekong drainage SE of Dien Bien Phu, Viet Nam
782. *Schistura imitator* Kottelat, 2000 — Photos of specimens from Lao and Cambodian Mekong 35: 721-2
783. *Schistura irregularis* Kottelat, 2000 — Photos of specimens from Lao Mekong 35: 723-4
784. *Schistura isostigma* Kottelat, 1998 — Photo of specimen from Lao Mekong 35: 725
785. *Schistura sp.cf. isostigma* — Photo of specimen from Lao Mekong 35: 726
786. *Schistura kaysonei* Vidthayanon & Jaruthanin, 2002 — Photo of specimen from Lao Mekong 35: 727
787. *Schistura kengtungensis* (Fowler, 1936) — Photos of specimens from Mekong basin of northern Thailand and Laos 35: 728-30
788. *Schistura khamtanhi* Kottelat, 2000 — Photo of specimen from Lao Mekong 35: 731
789. *Schistura kloetzliae* Kottelat, 2000 — Photo of specimen from Lao Mekong 35: 732
790. *Schistura kohchangensis* (Smith, 1933) — WJR collection from Cardamom mountains 35: 733
791. *Schistura kongphengi* Kottelat, 1998 — Photo of specimen from Lao Mekong 35: 734
792. *Schistura kontumensis* Fryhof & Serov, 2001 — Described from Mekong of central Viet Nam.
793. *Schistura laterimaculata* Kottelat, 1990 — Photo of specimen from Mekong basin of northeastern Thailand 35: 735
794. *Schistura latidens* Kottelat, 2000 — Photo of specimen from Lao Mekong 36: 736
795. *Schistura latifasciata* (Zhu & Wang, 1985) — Photo of specimen from Lao Mekong 36: 737
796. *Schistura leukensis* Kottelat, 2000 — Photo of specimen from Lao Mekong 36: 738
797. *Schistura lineata* (Nguyen, 2005) — Described from Mekong basin at Nua Ngam, Dien Bien, SE of Dien Bien Phu, Viet Nam.
798. *Schistura sp.cf. longa* — Photo of specimen from Lao Mekong 36: 739

799. *Schistura macrocephalus* Kottelat, 2000 — Photos of specimens from Lao Mekong . . . 36: 740-1
800. *Schistura magnifluvis* Kottelat, 1990 — Photos of specimens from Lao Mekong . . . 36: 742-3
801. *Schistura melarancia* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 36: 744
802. *Schistura sp.cf. melarancia* — Photo of specimen from Lao Mekong . . . 36: 745
803. *Schistura namboensis* Fryhof & Serov, 2001 — Photo of specimens from Cambodian Mekong, called *S. pellegrini* in Rainboth (1996) . . . 36: 746-7
804. *Schistura sp.cf. namboensis* — Photo of specimen from Cambodian Mekong . . . 36: 748
805. *Schistura nicholsi* (Smith, 1933) — Photos of specimens from central Mekong basin of Laos and Thailand . . . 36: 749-50
806. *Schistura nomi* Kottelat, 2000 — Photos of specimens from Lao Mekong . . . 36: 751-1
807. *Schistura novemradiata* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 36: 753
808. *Schistura nudidorsum* Kottelat, 1998 — Photos of specimens from Lao Mekong . . . 36: 754-5
809. *Schistura obeini* Kottelat, 1998 — Photo of specimen from Lao Mekong . . . 36: 756
810. *Schistura personata* Kottelat, 2000 — Photos of specimens from Lao Mekong . . . 37: 757-9
811. *Schistura pertica* Kottelat, 2000 — Photos of specimens from Lao Mekong . . . 37: 760
812. *Schistura poculi* (Smith, 1945) — Photo of specimen from Lao Mekong . . . 37: 761
813. *Schistura sp.cf. poculi* — Photo of specimen from Lao Mekong . . . 37: 762
814. *Schistura porthos* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 37: 763
815. *Schistura procera* Kottelat, 2000 — Photos of specimens from Lao Mekong . . . 37: 764-5
816. *Schistura punctifasciata* Kottelat, 1998 — Photo of specimen from Lao Mekong . . . 37: 766
817. *Schistura quaesita* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 37: 767
818. *Schistura quasimodo* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 37: 768
819. *Schistura sp.cf. quasimodo* — Photo of specimen from Lao Mekong . . . 37: 769
820. *Schistura rikiki* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 37: 770
821. *Schistura russa* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 37: 771
822. *Schistura schultzi* (Smith, 1945) — Photos of specimens from Thai and Lao Mekong . . . 37: 772-3
823. *Schistura sp.cf. schultzi* — Photos of specimens from Lao Mekong . . . 37: 774-5
824. *Schistura sertata* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 37: 776
825. *Schistura shuangjiangensis* (Zhu & Wang, 1985) — Yang in Chu, et al. (1990) list from Mekong in Yunnan.
826. *Schistura sigillata* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 37: 777
827. *Schistura sokolovi* Fryhof & Serov, 2001 — Fryhof & Serov (2001) list from Sesan and Srepok in Viet Nam.
828. *Schistura sombooni* Kottelat, 1998 — Photo of specimen from Lao Mekong . . . 38: 778
829. *Schistura suber* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 38: 779
830. *Schistura tenura* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 38: 780
831. *Schistura tizardi* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 38: 781
832. *Schistura tubulinaris* Kottelat, 1998 — Photo of specimen from Lao Mekong . . . 38: 782
833. *Schistura xhatensis* Kottelat, 2000 — Photo of specimen from Lao Mekong . . . 38: 783
834. *Schistura yersini* Fryhof & Serov, 2001 — Photo of specimen from Cambodian Mekong . . . 38: 784-5
835. *Schistura* n.sp.1 — Photo of specimen from Cambodian Mekong . . . 38: 786
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837. *Schistura* n.sp.3 — Photos of specimens from Mekong in Cambodia and Laos . . . 38: 788-9
838. *Schistura* n.sp.4 — Photo of specimen from Cambodian Mekong . . . 38: 790
839. *Schistura* n.sp.5 — Photo of specimen from Lao Mekong . . . 38: 791
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841. *Schistura* n.sp.7 — Photo of specimen from Cambodian Mekong . . . 38: 793
842. *Schistura* n.sp.8 — Photo of specimen from Cambodian Mekong, called *Schistura laterimaculata* in Rainboth (1996) . . . 38: 794
843. *Schistura* n.sp.9 — Photo of specimen from Lao Mekong . . . 38: 795
844. *Schistura* n.sp.10 — Photo of specimen from Lao Mekong . . . 38: 796
845. *Schistura* n.sp.11 — Photo of specimen from Lao Mekong . . . 38: 797
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847. *Schistura* n.sp.13 — Photo of specimen from Cambodian Mekong . . . 39: 799
848. *Schistura* n.sp.14 — Photo of specimen from Lao Mekong . . . 39: 800
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850. *Schistura* n.sp.16 — Photo of specimen from Lao Mekong . . . 39: 802
851. *Schistura* n.sp.17 — Photo of specimen from Cardamom mountains . . . 39: 803
852. *Schistura* n.sp.18 — Photo of specimen from Cambodian Mekong . . . 39: 804
853. *Sectoria heterognathos* (Chen, 1999) — Described from near Mengla, Yunnan. Kottelat (2001) lists from Nam Youan of Laos and Yunnan.
854. *Triplophysa brevicauda* (Herzenstein, 1888) — Known from the upper Mekong (Peng, 1995; Zheng, et al. 2010).
855. *Triplophysa jianchuanensis* Zheng, et al. 2010 — Described from Jianchuan, Dali prefecture Erhai basin of Yunnan in upper Mekong basin.
856. *Triplophysa leptosoma* (Herzenstein, 1888) — Hengduan range Xizang plateau, between upper Mekong and Salween (Chen & Zhang in Chen, 1998).
857. *Triplophysa microps* (Steindachner, 1866) — Found in upper Mekong (Wu & Wu 1992; Zheng et al 2010; Walker & Yang, 1999).
858. *Triplophysa orientalis* (Herzenstein, 1888) — Known from upper Mekong (Wu & Wu, 1992; Zheng et al 2010; Walker & Yang, 1999).
859. *Triplophysa stenura* (Herzenstein, 1888) — Recorded from upper Mekong of Tibetan Plateau (Zhu, 1989; Walker & Yang, 1999; Zheng et al. 2010).
860. *Triplophysa stoliczkai* (Steindachner, 1866) — Recorded from the upper Mekong of the Tibetan Plateau (Wu & Wu, 1991; Zheng et al., 2010).
861. *Tuberoschistura baenzigeri* Kottelat, 1990 — Photo of specimen from Cambodian Mekong . . . 39: 805
862. *Tuberoschistura cambodgiensis* Kottelat, 1990 — Photo of specimen from Cambodian Mekong . . . 39: 806
863. *Vaillantella maassi* Weber & de Beaufort, 1912 — Known from Cardamom mountains in southeastern Thailand and western Cambodia . . . 39: 807
864. *Yunnanilus pleurotaenia* Regan, 1904 — Upper Mekong of Hengduan range by Chen and Zhang in Chen (1998).
865. *Yunnanilus sp.* — from Erhai Lake in Mekong basin of Yunnan by Kottelat & Chu (1988).

CHARACIFORMES - characins

Characidae - characins

866. *Piaractus sp.* — Aquarium trade introduction in Thailand 39: 808

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Amblycipitidae - torrent catfishes

867. *Amblyceps foratum* Ng & Kottelat, 2000 — Coastal Cambodian rivers and Cardamom mountains.
868. *Amblyceps mucronatum* Ng & Kottelat, 2000 — Photo of specimen from Chantaburi, Thailand 39: 809
869. *Amblyceps serratum* Ng & Kottelat, 2000 — Photos of specimens from Lao and Cambodian Mekong 39: 810-1

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870. *Akysis brachybarbatus* Chen, 1981 — Mekong of Yunnan.
871. *Akysis clinatus* Ng & Rainboth, 2005 — Coastal Cambodian streams 39: 812
872. *Akysis ephippifer* Ng & Kottelat, 1998 — Photos of specimens from Cambodian Mekong 39: 813-4
873. *Akysis filifer* Ng & Rainboth, 2005 — Photo of specimen from Cambodian Mekong 39: 815
874. *Akysis fuliginatus* Ng & Rainboth, 2005 — Photo of specimen from Cambodian Mekong 39: 816
875. *Akysis inermis* Ng & Kottelat, 2000 — Photos of specimens from Lao Mekong 39: 817-8
876. *Akysis maculipinnis* Fowler, 1934 — Southeast Thailand and Cardamom mountains of Cambodia 39: 819-20
877. *Akysis nitidus* Ng & Rainboth, 2005 — Photo of specimen from Lao Mekong 40: 821
878. *Akysis similis* Ng & Kottelat, 1998 — Photos of specimens from Mekong delta 40: 822-3
879. *Akysis sinensis* He, 1981 — Mekong of Yunnan.
880. *Akysis subtilis* Ng & Kottelat, 1998 — Photo of specimen from Thai Mekong 40: 824
881. *Akysis varius* Ng & Kottelat, 1998 — Photos of specimens from Lao and Cambodian Mekong 40: 825-6

Sisoridae - sisorid catfishes

882. *Bagarius bagarius* (Hamilton, 1822) — Photo of specimen from Cambodian Mekong 40: 827
883. *Bagarius suchus* Roberts, 1983 — Photo of specimen from Thai Mekong 42: 828
884. *Bagarius yarrelli* Sykes, 1839 — Photo of specimen from Cambodian Mekong 40: 829
885. *Glyptothorax buchanani* Smith, 1945 — Described from upper Chao Phrya basin, possibly in Mekong.
886. *Glyptothorax coracinus* Ng & Rainboth, 2008 — Photo of specimen from Cardamom mountains 40: 830
887. *Glyptothorax dequinensis* Mo & Chu, 1986 — Photo of specimen from Lao Mekong 40: 831
888. *Glyptothorax filicatus* Ng & Freyhof, 2008 — Described from the Se Sap, Mekong basin of Viet Nam.
889. *Glyptothorax fuscus* Fowler, 1934 — Described from Chantaburi, likely from Cardamom mountains 40: 832
890. *Glyptothorax horai* (Fowler, 1934) — Photos of specimens from Lao Mekong 40: 833-5
891. *Glyptothorax lampris* Fowler, 1934 — Photo of specimen from Lao Mekong 40: 836
892. *Glyptothorax sp.cf. lampris* A — Photos of specimens from Mekong basin of Cambodia and southern Laos 40: 837-8
893. *Glyptothorax sp.cf. lampris* B — Photo of specimen from Thai Mekong 40: 839
894. *Glyptothorax sp.cf. lampris* C — Photos of specimens from Lao Mekong 40: 840-1
895. *Glyptothorax laosensis* Fowler, 1934 — Photo of specimen from Lao Mekong 41: 842
896. *Glyptothorax sp.cf. laosensis* A — Photo of specimen from Lao Mekong 41: 843
897. *Glyptothorax sp.cf. laosensis* B — Photo of specimen from Lao Mekong 41: 844
898. *Glyptothorax macromaculatus* Li, 1984 — Described from the upper Mekong of Yunnan, recorded from Nam Ou by Kottelat (2009).
899. *Glyptothorax zanaensis* (Wu, He & Chu, 1981) — Upper Mekong basin in Yunnan.
900. *Glyptothorax sp.cf. zanaensis* — Photo of specimen from Lao Mekong 41: 845
901. *Oreoglanis delacouri* (Pellegrin, 1936) — Photos of specimen from Lao Mekong 41: 846-8
902. *Oreoglanis hypsiurus* Ng & Kottelat, 1999 — Photos of specimen from Lao Mekong 41: 849-51
903. *Oreoglanis jindongensis* Kong, Chen & Yang, 2006 — Described from upper Mekong of Yunnan.
904. *Oreoglanis lepturus* Ng & Rainboth, 2000 — Photos of specimen from Lao Mekong 41: 852-4
905. *Oreoglanis macronemus* Ng, 2004 — Photos of specimen from Lao Mekong 41: 855-7
906. *Oreoglanis setiger* Ng & Rainboth, 2000 — Photos of specimen from Lao Mekong 41: 858-60
907. *Oreoglanis suraswadi* Vidthayanon, Saenjundaeng & Ng, 2009 — Photo of specimen from Mekong of northern Thailand 41: 861
908. *Pareuchiloglanis abbreviatus* Li, Zhou, Thomson, Zhang & Yang, 2007 — Described from upper Mekong of Yunnan.
909. *Pareuchiloglanis feae* (Vinciguerra, 1890) — Listed from Tibetan plateau of northern Yunnan (Walker & Yang,1999).
910. *Pareuchiloglanis gracilicaudata* Wu & Chen, 1979 — Described from upper Mekong of Yunnan.
911. *Pareuchiloglanis kamengensis* (Jayaram, 1966) — Known from the Upper Mekong of Yunnan, in Wu & Chen (1979) and Li et al. (2007).
912. *Pareuchiloglanis myzostoma* (Norman, 1923) — Upper Mekong of Yunnan in Li et al. (2007).
913. *Pareuchiloglanis prolixdorsalis* Li, Zhou, Thomson, Zhang & Yang, 2007 — Described from upper Mekong of Yunnan.
914. *Pseudecheneis immaculata* Chu, 1982 — Upper Mekong of Yunnan.
915. *Pseudecheneis sulcatoides* Zhou & Chu, 1992 — Photos of specimen from upper Mekong of Yunnan 42: 862-3
916. *Pseudecheneis sympelvicus* Roberts, 1998 — Photos of specimen from Lao Mekong 42: 864-5

SILURIFORMES - Loricarioidea

Loricariidae - suckermouth armored catfishes

917. *Hypostomus plecostomus* (Linnaeus, 1758) — Aquarium trade import established in Thailand.
918. *Pterygoplichthys pardalis* (Castlenau, 1855) — Aquarium trade import established in Thailand 42: 866

SILURIFORMES - Siluroidea

Siluridae - sheatfishes

919. *Belodontichthys truncatus* Kottelat & Ng, 1999 — Photo of specimen from Cambodian Mekong 42: 867
920. *Ceratoglanis pachynema* Ng, 1999 — Described from the Mekong and Chao Phrya basins 42: 868
921. *Hemisilurus mekongensis* Bornbusch & Lundberg, 1989 — Photo of specimen from Cambodian Mekong 42: 869
922. *Kryptopterus bicrrhis* (Valenciennes, 1839) — Known from Mekong and Chao Phrya basins 42: 870-1
923. *Kryptopterus dissitus* Ng, 2001 — Described from Mekong basin.
924. *Kryptopterus geminus* Ng, 2003 — Photo of specimen from Cambodian Mekong 42: 872
925. *Kryptopterus macrocephalus* (Bleeker, 1858) — Reported from Phu Quoc Island by Wildlife At Risk (Anonymous, 2010).
926. *Kryptopterus minor* Roberts, 1989 — Photo of specimen from Ho Chi Minh City 42: 873
927. *Kryptopterus paraschilbeides* Ng, 2003 — Photo of specimen from Cambodian Mekong 42: 874
928. *Micronema cheveyi* (Durand, 1940) — Photo of specimen from Cambodian Mekong 42: 875
929. *Micronema hexapterus* (Bleeker, 1851) — Often listed from Mekong, similar to and possibly confused with *M. moorei*.
930. *Micronema moorei* Smith, 1945 — Photo of specimen from Lao Mekong 42: 876
931. *Ompok bimaculatus* (Bloch, 1794) — Photos of specimens from Cambodian Mekong, perhaps more than one species 42: 877-8
932. *Ompok pinnatus* Ng, 2003 — Photo of specimen from Cambodian Mekong 43: 879
933. *Ompok urbaini* (Fang & Chaux, 1949) — Photo of specimen from Cambodian Mekong 43: 880
934. *Phalacronotus apogon* (Bleeker, 1851) — Photo of specimen from Vientiane, Laos 42: 881
935. *Phalacronotus bleekeri* (Günther, 1864) — Often reported from Mekong 42: 882
936. *Phalacronotus micronemus* (Bleeker, 1846) — Photos of specimens from Lao and Cambodian Mekong 42: 883-4
937. *Pterocryptis bokorensis* (Pellegrin & Chevey, 1937) — Described from Cambodia 43: 885
938. *Pterocryptis inusitata* Ng 1999 — Photo of specimen from Lao Mekong 43: 886
939. *Pterocryptis torrentis* Kobayakawa, 1989 — Described from Chantaburi, likely in Cardamom mountains 43: 887
940. *Silurichthys schneideri* Volz, 1894 — Photo of specimen from Cardamom mountains 43: 888
941. *Wallago attu* (Schneider, 1801) — Photo of specimen from Cambodian Mekong 43: 889
942. *Wallago micropogon* Ng, 2004 — Photo of specimen from Cambodian Mekong 43: 890

Plotosidae - eeltail catfishes

943. *Euristhmus nudiceps* (Günther, 1880) — MBFS from Mekong delta, identification questionable.
944. *Oloplotosus mariae* Weber, 1913 — KFL from Gulf of Thailand, identification questionable.
945. *Paraplotosus albilabris* (Valenciennes, 1840) — MBFS mouth of Mekong 43: 891
946. *Plotosus canius* Hamilton, 1822 — Photo of specimen from Mekong delta 43: 892-3
947. *Plotosus lineatus* (Thunberg, 1787) — MBFS from mouth of Mekong 43: 894
948. *Plotosus nhatrangensis* Prokofiev, 2008 — Described from Nha Trang Bay.

Clariidae - airbreathing catfishes

949. *Clarias batrachus* (Linnaeus, 1758) — Photo of specimen from Cardamom mountains 43: 895
950. *Clarias fuscus* (La Cepède, 1803) — Photos of specimens from Lao Mekong 43: 896-7
951. *Clarias gariepinus* (Burchell, 1822) — Introduced to Thailand, possibly in Mekong.
952. *Clarias macrocephalus* Günther, 1864 — Photos of specimen from Mekong delta 43: 898-900
953. *Clarias meladerma* Bleeker, 1846 — Peat swamps and acidic waters in Mekong basin 43: 901
954. *Clarias nieuhofii* Valenciennes, 1840 — Known from Cardamom mountains 43: 902

Heteropneustidae - airsac catfishes

955. *Heteropneustes kemratensis* (Fowler, 1937) — Described from Mekong basin 43: 903

SILURIFORMES - Bagroidea

Ariidae - sea catfishes

956. *Arius arenarius* Müller & Troschel, 1849 — Central and southern Viet Nam in Kailola (FAO).
957. *Arius arius* (Hamilton, 1822) — Photo of specimen from Mekong delta 44: 904
958. *Arius bicolor* Fowler, 1935 — Described from Bangkok, possibly a synonym of *Arius maculatus*.
959. *Arius gagora* (Hamilton, 1822) — CAS specimen from Trat Bay in eastern Gulf of Thailand.
960. *Arius leptonotacanthus* Bleeker, 1849 — Gulf of Thailand in Kailola (FAO).
961. *Arius maculatus* (Thunberg, 1792) — Photo of specimen from Gulf of Thailand 44: 905
962. *Arius microcephalus* Bleeker, 1855 — Gulf of Thailand and possibly Mekong delta in Kailola (FAO) 44: 906
963. *Arius oetik* Bleeker, 1846 — Gulf of Thailand and Mekong delta in Kailola (FAO), sometimes incorrectly spelled as *utik*.
964. *Arius sciurus* Smith, 1931 — MBFS from Mekong delta, possibly a synonym of *A. microcephalus*.
965. *Arius venosus* Valenciennes, 1840 — KFL from Gulf of Thailand.
966. *Batrachocephalus mino* (Hamilton, 1822) — Photo of specimen from Gulf of Thailand 44: 907
967. *Cephalocassis borneensis* (Bleeker, 1851) — Photo of specimen from Cambodian Mekong 44: 908
968. *Cephalocassis intermedius* (Vinciguerra, 1881) — Photo of specimen from Bangpakong, northern Gulf of Thailand 44: 909
969. *Cryptarius daugeti* (Chevey, 1932) — Photo of specimen from Cambodian Mekong 44: 910
970. *Cryptarius truncatus* (Valenciennes, 1840) — Gulf of Thailand in Kailola (FAO) 44: 911
971. *Hemiarius harmandi* Sauvage, 1880 — Described from Phu Quoc, Gulf of Thailand in Kailola (FAO) 44: 912
972. *Hemiarius sona* (Hamilton, 1822) — Photo of specimen from Gulf of Thailand 44: 913
973. *Hemiarius verrucosus* (Ng, 2003) — Photo of specimen from Cambodian Mekong 44: 914

974. *Hexanematichthys sagor* (Hamilton, 1822) — KFL from Gulf of Thailand, CAS specimen from mangroves in Trat Bay (eastern Gulf of Thailand).
975. *Ketengus typus* Bleeker, 1847 — Photo of specimen from Bangpakong, northern Gulf of Thailand 44: 915
976. *Nemapteryx macronotacantha* (Bleeker, 1846) — Southern Viet Nam and Gulf of Thailand in Kailola (FAO).
977. *Nemapteryx nenga* (Hamilton, 1822) — MBFS from Mekong delta, sometimes identified as *Arius caelatus* 44: 916
978. *Netuma bilineata* (Valenciennes, 1840) — Gulf of Thailand in Kailola (FAO), CAS specimens from eastern Gulf of Thailand 44: 917
979. *Netuma thalassina* (Rüppell, 1837) — MBFS from Mekong plume 44: 918
980. *Osteogeneiosus militaris* (Linnaeus, 1758) — Photo of specimen from Mekong delta 44: 919
981. *Plicofollis argyropleuron* (Valenciennes, 1840) — Southern Viet Nam and Gulf of Thailand in Kailola (FAO).
982. *Plicofollis dussumieri* (Valenciennes, 1840) — Southern Gulf of Thailand on Malay Peninsula in Kailola (FAO), Mekong possible.
983. *Plicofollis nella* (Valenciennes, 1840) — Photo of specimen from Cambodia, MBFS from Mekong delta 44: 920
984. *Plicofollis tonggol* (Bleeker, 1846) — Photo of specimen from Gulf of Thailand 44: 921

Schilbeidae - schilbeid catfishes

985. *Clupisoma longianalis* (Huang, 1981) — Chu & Kuang, in Chu et al. (1990) list from upper Mekong in Yunnan.
986. *Clupisoma sinense* (Huang, 1981) — Photo of specimen from Thai Mekong 44: 922
987. *Laides longibarbis* (Fowler, 1934) — Found in Middle Mekong, often reported as *Laides hexanema*, an Indonesian species 44: 923

Pangasiidae - shark catfishes

988. *Helicophagus leptorhynchus* Ng & Kottelat, 2000 — Photo of specimen from Cambodian Mekong 44: 924
989. *Pangasianodon gigas* Chevey, 1930 — Photo of specimen from Thai Mekong 45: 925
990. *Pangasianodon hypophthalmus* (Sauvage, 1878) — Photos of specimens from Thai and Cambodian Mekong 45: 926-7
991. *Pangasius bocourti* Sauvage, 1880 — Photo of specimen from Cambodian Mekong 45: 928
992. *Pangasius conchophilus* Roberts & Vidthayanon, 1991 — Photo of specimen from Cambodian Mekong 45: 929
993. *Pangasius elongatus* Pouyaud, Gustiano & Teugels, 2002 — Photos of specimens from lower Mekong and Mekong delta 45: 930-1
994. *Pangasius krempfi* Fang & Chaux, 1949 — Photo of specimen from Thai Mekong 45: 932
995. *Pangasius larnaudii* Bocourt, 1866 — Photo of specimen from Cambodian Mekong 45: 933
996. *Pangasius macronema* Bleeker, 1851 — Photos of specimens from Thailand and Cambodia, may be *P. siamensis* in Mekong 45: 934-5
997. *Pangasius mekongensis* Gustiano, Teugels & Pouyaud, 2003 — Photo of specimen from Lao Mekong 45: 936
998. *Pangasius sanitwongsei* Smith, 1931 — Photo of specimen from southern Laos 45: 937-8
999. *Pseudolais micronemus* Bleeker, 1847 — Photo of specimen from Thai Mekong 45: 939
1000. *Pseudolais pleurotaenia* (Sauvage, 1878) — Photo of specimen from Cambodian Mekong 45: 940

Bagridae - bagrid catfishes

1001. *Bagrichthys majusculus* Ng, 2002 — Photo of specimen Mekong of southern Laos 45: 941
1002. *Bagrichthys obscurus* Ng, 1999 — Photo of specimen from Mekong basin of northeastern Thailand 45: 942
1003. *Hemibagrus filamentus* (Fang & Chaux, 1949) — Photo of specimen from Cambodian Mekong 45: 943
1004. *Hemibagrus hoevenii* (Bleeker, 1846) — Possible, but not yet recorded, from Mekong estuary.
1005. *Hemibagrus nemurus* (Valenciennes, 1839) — Often reported from Mekong, but presence uncertain 45: 944
1006. *Hemibagrus sp.cf. nemurus* — Photo of specimen from Mekong basin of central Laos 45: 945
1007. *Hemibagrus spilopterus* Ng & Rainboth, 1999 — Photo of specimen from Cambodian Mekong 46: 946
1008. *Hemibagrus wyckii* (Bleeker, 1858) — Photo of specimen from Cambodian Mekong 46: 947
1009. *Hemibagrus wyckioides* (Fang & Chaux, 1949) — Photos of specimens from Cambodian and Lao Mekong 46: 948-9
1010. *Mystus albolineatus* Roberts, 1994 — Photo of specimen from Cambodian Mekong 46: 950
1011. *Mystus atrifasciatus* Fowler, 1937 — Photo of specimen from Cambodian Mekong 46: 951
1012. *Mystus bocourti* (Bleeker, 1864) — Photo of specimen from Cambodian Mekong 46: 952
1013. *Mystus castaneus* Ng, 2002 — Chantaburi in original description, also likely in Cardamom mountains.
1014. *Mystus gulio* (Hamilton, 1822) — Photo of specimen from Mekong delta in Viet Nam 46: 953
1015. *Mystus multiradiatus* Roberts, 1992 — Photo of specimen from Cambodian Mekong 46: 954
1016. *Mystus mysticetus* Roberts, 1992 — Photo of specimen from Cambodian Mekong 46: 955
1017. *Mystus rhegma* Fowler, 1935 — Known from middle Mekong of Laos and Thailand 46: 956
1018. *Mystus singaringan* (Bleeker, 1846) — Photo of specimen from Mekong basin of southern Laos 46: 957
1019. *Mystus wolffii* (Bleeker, 1851) — Photos of specimens from Cambodian Mekong and southern Thailand 46: 958-9
1020. *Pseudomystus bomboides* Kottelat, 2000 — Photo of specimen from Mekong basin of central Laos 46: 960
1021. *Pseudomystus siamensis* (Regan, 1913) — Photo of specimen from Mekong basin of southern Laos 46: 961
1022. *Pseudomystus stenomus* (Valenciennes, 1840) — Photo of specimen from Chantaburi, Thailand 46: 962
1023. *Pseudomystus sp.* — Photo of specimen from northeastern Thailand 46: 963
1024. *Tachysurus fulvidraco* (Richardson, 1846) — Photo of specimen from Mekong basin of northeastern Thailand 46: 964
1025. *Tachysurus sinensis* La Cepède, 1803 — Central Viet Nam in Nguyen & Nguyen (2006).

ARGENTINIFORMES - marine smelts

Argentinidae - herring smelts

1026. *Glossanodon semifasciatus* (Kishinouye, 1904) — Central Viet Nam in Nguyen & Nguyen (1994), figure is *Glossanodon sp.* 46: 965

Opisthoproctidae - barreleyes or spookfishes

1027. *Opisthoproctus soleatus* Vaillant, 1888 — South China Sea at 14°57' N, 114°58' E, in Yang, et al. (1996).

OSMERIFORMES - freshwater smelts

Salangidae - noodlefishes

1028. *Neosalanx brevirostris* (Pellegrin, 1923) — Photo of specimen from Mekong of Northern Laos 46: 966

STOMIIFORMES - dragonfishes

Gonostomatidae - bristlemouths

1029. *Cyclothone acclinidens* Garman, 1899 — South China Sea at 11°51' N, 114°07' E, in Yang, et al. (1996).
1030. *Cyclothone alba* Brauer, 1906 — South China Sea at 11°51' – 13°30' N, 114°07' – 117°08' E, in Yang, et al. (1996).
1031. *Cyclothone obscura* Brauer, 1902 — South China Sea at 11°51' – 14°57' N, 114°07' – 117°59' E, in Yang, et al. (1996).
1032. *Cyclothone pallida* Brauer, 1902 — South China Sea at 11°51' N, 114°07' E, in Yang, et al. (1996).
1033. *Cyclothone pseudopallida* Mukhacheva, 1964 — South China Sea at 11°51' N, 114°07' E, in Yang, et al. (1996).
1034. *Gonostoma atlanticum* Norman, 1930 — South China Sea at 15°01' N, 114°01' E, in Yang, et al. (1996).
1035. *Gonostoma elongatum* Günther, 1878 — South China Sea at 11°51' N, 114°07' E, in Yang, et al. (1996).

Sternoptychidae - marine hatchetfishes

1036. *Argyropelecus affinis* Garman, 1899 — South China Sea at 15°01' N, 113°02' E, in Yang, et al. (1996).
1037. *Argyropelecus sladeni* Regan, 1908 — South China Sea at 11°51' N, 114°07' E, in Yang, et al. (1996).
1038. *Polyipnus aquavitus* Baird, 1971 — South China Sea in shallow seas at 05°08' N, 111°16' E, in Yang, et al. (1996).
1039. *Polyipnus spinosus* Günther, 1887 — South China Sea off central Viet Nam in Nguyen & Nguyen (1994).
1040. *Sternoptyx diaphana* Hermann, 1781 — South China Sea at 12°13' N, 117°08'E, in Yang, et al. (1996).
1041. *Sternoptyx obscura* Garman, 1899 — South China Sea at 11°51' – 15°01' N, 113°02' – 114°08' E, in Yang, et al. (1996).
1042. *Valenciennellus carlsbergi* Bruun, 1931 — South China Sea in shallow seas at 06°28' N, 113°52' E, in Yang, et al. (1996).
1043. *Valenciennellus tripunctulatus* Esmark, 1871 — South China Sea at 12°05' N, 111°06' E, in Yang, et al. (1996).

Phosichthyidae - lightfishes

1044. *Vinciguerria nimbaria* (Jordan & Williams, 1895) — South China Sea at 11°51' N, 114°07' E in Yang, et al. (1996).

Stomiidae - barbeled dragonfishes

1045. *Astronesthes indicus* Brauer, 1902 — South China Sea at 12°02' N, 114°08' E, in Yang, et al. (1996).
1046. *Chauliodus sloani* Bloch & Schneider, 1801 — South China Sea off central Viet Nam in Nguyen & Nguyen (1994).
1047. *Malacosteus niger* Ayres, 1848 — South China Sea at 09°49' N, 115°27' E, in Yang, et al. (1996).
1048. *Pachystomias microdon* Günther, 1878 — South China Sea at 12°13' N, 117°08' E, in Yang, et al. (1996).
1049. *Photonectes albipennis* (Döderlein, 1882) — South China Sea in shallow seas at 09°49' N, 115°27' E, in Yang, et al. (1996).
1050. *Photostomias atrox* (Alcock, 1890) — Coast of southern Viet Nam, confused taxonomically with *P. liemi* (see Kenaley, 2009).
1051. *Photostomias liemi* Kenaley, 2009 — Coast of southern Viet Nam, confused taxonomically with *P. atrox* (see Kenaley, 2009).

ATELEOPODIFORMES - jellynose fishes

Ateleopodidae - jellynose fishes

1052. *Ateleopus japonicus* Bleeker, 1853 — South China Sea off central Viet Nam in Nguyen & Nguyen (1994). 47: 967

AULOPIFORMES - lizardfishes

Aulopidae - flagfins

1053. *Aulopus diactithrix* Prokofiev, 2008 — Described from Nha Trang Bay.

Synodontidae - Harpadontinae - bombay ducks, lizardfishes

1054. *Harpadon nehereus* (Hamilton, 1822) — Photo of specimen from Mekong delta 47: 968
1055. *Harpadon sp.* — Photo of specimen from Mekong delta 47: 969
1056. *Saurida argentea* Macleay, 1881 — MBFS in Mekong plume of South China Sea 47: 970
1057. *Saurida elongata* (Temminck & Schlegel, 1846) — MBFS, WR in Mekong delta markets 47: 971
1058. *Saurida filamentosa* Ogilby, 1910 — Viet Nam coast in Russell (FAO) 47: 972
1059. *Saurida gracilis* (Quoy & Gaimard, 1824) — Nha Trang specimens at ROM and CAS, also Gulf of Thailand in Russell (FAO) 47: 973
1060. *Saurida isarankurai* Shindo & Yamada, 1972 — CAS specimen from western Gulf of Thailand, also Viet Nam coast in Russell (FAO).
1061. *Saurida macrolepis* Tanaka, 1917 — Gulf of Thailand in Inoue & Nakabo (2006).
1062. *Saurida micropectoralis* Shindo & Yamada, 1972 — Gulf of Thailand in original description 47: 974
1063. *Saurida tumbil* (Bloch, 1795) — Photo of specimen from Mekong delta 47: 975
1064. *Saurida undosquamis* Richardson, 1848 — MBFS in Mekong plume of South China Sea 47: 976

Synodontidae - Synodontinae - lizardfishes

1065. *Synodus binotatus* Schultz, 1953 — Nha Trang specimens at ROM, also Cu Lao Cau in Nguyen & Nguyen (2006).
1066. *Synodus dermatogenys* Fowler, 1912 — Gulf of Thailand and Viet Nam coast in Russell (FAO) 47: 977
1067. *Synodus indicus* (Day, 1873) — Orsi (1974) reports from Viet Nam 47: 978
1068. *Synodus jaculum* Russell & Cressey, 1979 — Nha Trang specimen at ROM, Nha Trang in Nguyen & Nguyen (2006) 47: 979
1069. *Synodus macrops* Tanaka, 1917 — Viet Nam near Nha Trang in Russell (FAO) 47: 980

1070. *Synodus tectus* Cressey, 1981 — South China Sea in Russell (FAO), may be *S. similis* reported from Viet Nam by Orsi (1974).
1071. *Synodus variegatus* (La Cepède, 1803) — Nha Trang specimens at ROM and CAS, widespread in Russell (FAO) 47: 981
1072. *Trachinocephalus myops* (Forster, 1801) — MBFS from Mekong plume, photo of specimen from Gulf of Thailand 47: 982

Chlorophthalmidae - greeneyes

1073. *Chlorophthalmus agassizi* Bonaparte, 1840 — South China Sea off Viet Nam coast in Nguyen & Nguyen (1994).

Scopelarchidae - pearleyes

1074. *Scopelarchoides danae* Johnson, 1974 — Found throughout South China Sea in Johnson (1974), and 06°05' N, 113°36' E, in Yang, et al. (1996).
1075. *Scopelarchus analis* (Brauer, 1902) — Central South China Sea in Johnson (1974), northern South China Sea in Yang, et al. (1996).
1076. *Scopelarchus guentheri* Alcock, 1896 — Central South China Sea in Johnson (1974), found at 12°05' N, 111°06' E, in Yang, et al. (1996).
1077. *Scopelarchus michaelsearsi* Koefoed, 1955 — Central South China Sea in Johnson (1974).

Evermannellidae - sabertooth fishes

1078. *Coccorella atrata* (Alcock, 1894) — South China Sea at 06°05' N, 113°36' E, in Yang, et al. (1996).
1079. *Evermannella indica* Brauer, 1906 — South China Sea at 13°37' N, 115°56' E, in Yang, et al. (1996).

Alepisauridae - lancetfishes

1080. *Alepisaurus ferox* Lowe, 1833 — Islands in South China Sea in Chu, et al. (1979) and Yang, et al. (1996).
1081. *Omosudis lowii* Günther 1887 — South China Sea at 12°13' N, 117°08'E, in Yang, et al. (1996).

MYCTOPHIFORMES - lanternfishes

Neoscopelidae - blackchins

1082. *Scopelengys tristis* Alcock, 1890 — South China Sea at 12°18' N, 114°58' E, in Yang, et al. (1996).

Myctophidae - lanternfishes

1083. *Bolinichthys nanshanensis* Yang & Huang, 1992 — Nansha Island at 06°20' N, 114°05' E, in original description.
1084. *Centrobranchus andreae* (Lütken, 1892) — South China Sea at 12°7.28' N, 113°51.88' E, in Yang, et al. (1996).
1085. *Centrobranchus choerocephalus* Fowler, 1904 — South China Sea at 13°30' N, 112°30' E, in Yang, et al. (1996).
1086. *Ceratoscopelus warmingii* (Lütken, 1892) — South China Sea at 06°04.5' N, 113°35.83' E, in Yang, et al. (1996).
1087. *Diaphus fragilis* Tåning, 1928 — South China Sea at 06°19' N, 112°06' E, in Yang, et al. (1996).
1088. *Diaphus fulgens* (Brauer, 1904) — South China Sea at 12°05' N, 111°06' E, in yang, et al. (1996).
1089. *Diaphus garmani* Gilbert, 1906 — South China Sea at 12°7.28' N, 113°51.88' E, and farther North, in Yang, et al. (1996).
1090. *Diaphus jenseni* Tåning, 1932 — South China Sea at 12°7.28' N, 113°51.88' E, and farther North, in Yang, et al. (1996).
1091. *Diaphus lucidus* (Goode & Bean, 1896) — South China Sea at 06°00' N, 112°17.38' E, and farther North, in Yang, et al. (1996).
1092. *Diaphus malayanus* Weber, 1913 — South China Sea at 10°00' N, 117°45'E, in Yang, et al. (1996).
1093. *Diaphus parri* Tåning, 1932 — South China Sea at 12°02' N, 114°08' E, in Yang, et al. (1996).
1094. *Diaphus perspicillatus* (Ogilby, 1898) — South China Sea at 13°37' N, 117°59'E, in Yang, et al. (1996).
1095. *Diaphus phillipsi* Fowler, 1934 —South China Sea at 12°18' N, 114°58' E, in Yang, et al. (1996).
1096. *Diaphus regani* Tåning, 1932 —South China Sea at 12°7.28' N, 113°51.88' E, and farther North, in Yang, et al. (1996).
1097. *Diaphus suborbitalis* Weber, 1913 — South China Sea at 12°13' N, 117° 08'E, in Yang, et al. (1996).
1098. *Diogenichthys laternatus* (Garman, 1899) — South China Sea at 06°00' N, 112°17.38' E, and in the northern South China Sea in Yang, et al. (1996).
1099. *Diogenichthys panurgus* Bolin, 1946 — South China Sea at 12°7.28' N, 113°51.88' E, in Yang, et al. (1996).
1100. *Hygophum atratum* (Garman, 1899) — South China Sea at 13°31' N, 115°06' E, and 14°57' N, 113°57'1" E, in Yang, et al. (1996).
1101. *Hygophum proximum* Becker, 1965 — South China Sea at 13°31' N, 115°06' E, in Yang, et al. (1996).
1102. *Hygophum reinhardtii* (Lütken, 1892) — South China Sea at 12°36' N, 113°01' E, in Yang, et al. (1996).
1103. *Lampanyctus nobilis* Tåning, 1928 — South China Sea at 06°30' N, 114°30' E, in Yang, et al. (1996).
1104. *Lampanyctus omostigma* Gilbert, 1908 — South China Sea at 13°30' N, 113°07' E, in Yang, et al. (1996).
1105. *Lampanyctus tenuiformis* (Brauer, 1906) — South China Sea at 06°30' N, 114°30' E, in Yang, et al. (1996).
1106. *Myctophum aurolaternatum* Garman, 1899 — South China Sea off central Viet Nam in Nguyen & Nguyen (2006).
1107. *Myctophum brachygnathum* (Bleeker, 1856) — South China Sea in shallow seas at 05°07.9' N, 111°15.78' E, in Yang, et al. (1996).
1108. *Myctophum lychnobium* Bolin, 1946 — South China Sea at 12°33' N, 117°01' E, in Yang, et al. (1996).
1109. *Myctophum spinosum* (Steindachner, 1867) — South China Sea at 08°25' N, 114°25' E, in Yang, et al. (1996).
1110. *Symbolophorus evermanni* (Gilbert, 1905) — South China Sea at 12°7.28' N, 113°51.88' E, in Yang, et al. (1996), off central Viet Nam in Nguyen & Nguyen (2006).
1111. *Triphoturus micropterus* (Brauer, 1906) — South China Sea at 13°30' N – 14°32' N, 111°01' E – 113°07' E, in Yang, et al. (1996).
1112. *Triphoturus nigrescens* (Brauer, 1904) — South China Sea at 08°07' N, 105°55' E, and in northern South China Sea in Yang, et al. (1996).

LAMPRIDIFORMES - opahs

Veliferidae - velifers

1113. *Velifer hypselopterus* Bleeker, 1879 — Viet Nam coast (Fourmanoir & Nhung 1965), central Viet Nam (Nguyen & Nguyen 1994) 47: 983

OPHIDIIFORMES - cusk eels

Ophidiidae - cusk eels

1114. *Acanthonus armatus* Günther, 1878 — South China Sea off central Viet Nam in Nguyen & Nguyen (1994).
1115. *Brotula maculata* Day, 1868 — Orsi (1974) lists from Viet Nam (identification uncertain).
1116. *Brotula multibarbata* Temminck & Schlegel, 1846 — Nha Trang specimens at ROM, coastal throughout area in Nielsen (FAO) 47: 984
1117. *Hoplobrotula armata* (Temminck & Schlegel, 1846) — Reported from Nha Trang Bay in Prokofiev (2008).
1118. *Sirembo imberbis* (Temminck & Schlegel, 1846) — Found in Nha Trang Bay (Prokofiev, 2008) 47: 985
1119. *Sirembo jerdoni* (Day, 1888) — CAS specimen from northern Gulf of Thailand, Nha Trang Bay in Prokofiev (2008) 47: 986
1120. *Sirembo marmoratum* (Goode & Bean, 1885) — Central Vietnam in Nguyen & Nguyen (1994).

Bythitidae - viviparous brotulas

1121. *Alionematichthys riukiuensis* (Aoyagi, 1954) — Nha Trang specimens at ROM, also reported from Nha Trang by Nguyen & Nguyen (2006)..
1122. *Diancistrus fuscus* (Fowler, 1946) — Nha Trang specimens at ROM.
1123. *Dinematichthys iluocoetoides* Bleeker, 1855 — Gulf of Thailand in Suvatti (1981).
1124. *Porocephalichthys dasyrhynchus* (Cohen & Hutchins, 1982) — Spratly Islands in Chen et al. (1997).
1125. Bythitidae *gen. et sp. indet*. — Nha Trang Bay specimen possibly of the genus *Grammonus* (Gill, 1896) reported by Prokofiev (2008).

Carapidae - pearlfishes

1126. *Carapus boraborensis* (Kaup, 1856) — Nha Trang and Spratly Islands in Nguyen & Nguyen (2006).
1127. *Encheliophis gracilis* (Bleeker, 1856) — Orsi (1974) lists from Viet Nam, central Viet Nam in Nguyen & Nguyen (1994) 47: 987
1128. *Encheliophis homei* (Richardson, 1846) — Orsi (1974) lists from Viet Nam, central Viet Nam in Nguyen & Nguyen (1994).
1129. *Encheliophis vermicularis* Müller, 1842 — From this area in Cohen et al. (1990)

GADIFORMES - cods

Bregmacerotidae - codlets

1130. *Bregmaceros japonicus* Tanaka, 1908 — MBFS in Mekong plume 48: 988
1131. *Bregmaceros mcclellandi* Thompson, 1840 — Photo of specimen from Mekong delta 48: 989
1132. *Bregmaceros pseudolanceolatus* Torii, Javonillo & Ozawa, 2004 — Gulf of Thailand north to China in original description.
1133. *Bregmaceros rarisquamosus* Munro, 1950 — From the area in Cohen, et al. (1990).

Macrouridae - grenadiers

1134. *Ventrifossa saznovi* Iwamoto & Williams, 1999 — South China Sea off Viet Nam coast, 15°48' N, 109°47' E, in original description.

Moridae - deepsea cods

1135. *Lotella sp.cf. tosaensis* — Found in Nha Trang Bay (Prokofiev, 2008).
1136. *Physiculus longifilis* Weber, 1913 — Found in Nha Trang Bay (Prokofiev, 2008).

BATRACHOIDIFORMES - toadfishes

Batrachoididae - toadfishes

1137. *Allenbatrachus grunniens* (Linnaeus, 1758) — Photo of specimen from Mekong delta 48: 990
1138. *Allenbatrachus reticulatus* (Steindachner, 1870) — MBFS fresh waters at Long Xuyen 48: 991
1139. *Batrachomoeus trispinosus* (Günther, 1861) — Photo of specimen from Gulf of Thailand 48: 992

LOPHIIFORMES - anglerfishes

Lophiidae - goosefishes

1140. *Lophiomus setigerus* (Vahl, 1797) — Found in relatively shallow waters off Mekong delta in Caruso (FAO) 48: 993

Antennariidae - frogfishes

1141. *Antennarius biocellatus* (Cuvier, 1817) — Southeast Asia. Only species of frogfish found in fresh water.
1142. *Antennarius coccineus* (Lesson, 1831) — Nha Trang specimens at ROM 48: 994
1143. *Antennarius dorehensis* Bleeker, 1859 — Photo of specimen from Nha Trang 48: 995
1144. *Antennarius hispidus* (Bloch & Schneider, 1801) — KFL from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 48: 996
1145. *Antennarius nummifer* (Cuvier, 1817) — Mekong area in Pietsch & Grobecker (1987), CAS specimens from eastern Gulf of Thailand 48: 997
1146. *Histrio histrio* (Linnaeus, 1758) — Photo of specimen from Gulf of Thailand 48: 998

Oneirodidae - dreamers

1147. *Oneirodes eschrichtii* Lütken, 1871 — Nearly cosmopolitan range includes South China Sea in Pietsch (1974).
1148. *Oneirodes flagellifer* Regan & Trewavas, 1932 — South China Sea at 12°10' N, 114°56' E, in Pietsch (1974).
1149. *Oneirodes melanocauda* Bertelsen, 1951 — Central South China Sea in original description discussed by Pietsch (1974).

Ceratiidae - seadevils

1150. *Cryptopsaras couesii* Gill, 1883 — South China Sea at 11°51' N – 12°02' N, 114°07' E – 114°08' E, in Yang, et al. (1996).

MUGILIFORMES - mullets

Mugilidae - mullets

1151. *Chelon macrolepis* (Smith, 1846) — Photos of specimens from Gulf of Thailand 48: 999-00
1152. *Chelon melinopterus* (Valenciennes, 1836) — Viet Nam and Gulf of Thailand in Harrison & Senou (FAO).
1153. *Chelon subviridis* (Valenciennes, 1836) — Photo of specimen from Gulf of Thailand 48: 1001
1154. *Chelon tade* (Forsskål, 1775) — MBFS in Mekong delta.
1155. *Crenimugil crenilabis* (Forsskål, 1775) — Viet Nam and Gulf of Thailand in Harrison & Senou (FAO) 48: 1002
1156. *Crenimugil heterocheilos* (Bleeker, 1855) — Photo of specimen from Thailand 48: 1003
1157. *Ellochelon vaigiensis* (Quoy & Gaimard, 1825) — Photo of specimen from Gulf of Thailand 48: 1004
1158. *Moolgarda cunnesius* (Valenciennes, 1836) — Photos of specimens from Gulf of Thailand 48: 1005-6
1159. *Moolgarda engeli* (Bleeker, 1858) — Viet Nam coast and Gulf of Thailand in Harrison & Senou (FAO) 48: 1007
1160. *Moolgarda pedaraki* (Valenciennes, 1836) — Found throughout area in Harrison & Senou (FAO) as *M. buchanani* 48: 1008
1161. *Moolgarda perusii* (Valenciennes, 1836) — Gulf of Thailand and Viet Nam coast in Harrison & Senou (FAO) 49: 1009
1162. *Moolgarda seheli* (Forsskål, 1775) — Photo of specimen from Gulf of Thailand 49: 1010
1163. *Moolgarda speigleri* (Bleeker, 1858-59) — KFL from Gulf of Thailand.
1164. *Mugil broussonnetii* Valenciennes, 1836 — Photo of specimen from Mekong delta 49: 1011
1165. *Mugil cephalus* Linnaeus, 1758 — Photo of specimen from Gulf of Thailand 49: 1012
1166. *Oedalechilus labiosus* (Valenciennes, 1836) — Gulf of Thailand and Viet Nam coast in Harrison & Senou (FAO) 49: 1013
1167. *Paramugil parmatus* (Cantor, 1849) — Photo of specimen from Gulf of Thailand 49: 1014

ATHERINIFORMES - silversides

Atherionidae - pricklenose silversides

1168. *Atherion elymus* Jordan & Starks, 1901 — CAS specimens from Binh Chang Bay and Gulf of Thailand.

Atherinidae - Old World silversides

1169. *Atherinomorus duodecimalis* (Valenciennes, 1835) — WJR in Mekong delta, also known from central Viet Nam 49: 1015
1170. *Atherinomorus endrachtensis* (Quoy & Gaimard, 1825) — CAS specimens from many localities on eastern coast of Gulf of Thailand.
1171. *Atherinomorus lacunosus* (Forster, 1801) — Nha Trang specimens at ROM, CAS specimens from eastern coast of Gulf of Thailand 49: 1016
1172. *Atherinomorus pinguis* (La Cepède, 1803) — Gulf of Thailand in Kimura *et al.* (2007).
1173. *Hypoatherina barnesi* Schultz, 1953 — Nha Trang specimens at ROM, CAS specimens from west central Gulf of Thailand.
1174. *Hypoatherina ovalaua* (Herre, 1935) — CAS specimens from eastern Gulf of Thailand, and Nha Trang Bay.
1175. *Hypoatherina temminckii* (Bleeker, 1853) — CAS specimens from eastern Gulf of Thailand and Nha Trang Bay 49: 1017
1176. *Hypoatherina valenciennei* (Bleeker, 1853) — Photo of specimen from Mekong delta 49: 1018

Phallostethidae - priapiumfishes

1177. *Neostethus bicornis* Regan, 1916 — Photos of specimens from Mekong delta 49: 1019-20
1178. *Neostethus lankesteri* Regan, 1916 — CAS specimens from northern Gulf of Thailand estuary, probable from Mekong delta.
1179. *Phallostethus sp.* — Photos of specimens from Mekong delta 49: 1021-2
1180. *Phenacostethus posthon* Roberts, 1971 — Photo of specimen from Mekong delta 49: 1023
1181. *Phenacostethus smithi* Myers, 1928 — Photo of specimens from Thailand 49: 1024
1182. *Phenacostethus trewavasae* Parenti, 1986 — Photo of specimen from Cambodian Mekong 49: 1025

BELONIFORMES - needlefishes

Adrianichthyidae - adrianichthyids, ricefishes

1183. *Oryzias haugiangensis* Roberts, 1998 — Photo of specimen from Mekong delta 49: 1026-7
1184. *Oryzias mekongensis* Uwa & Magtoon, 1986 — Photo of specimen from Lao Mekong 49: 1028
1185. *Oryzias minutillus* Smith, 1945 — Photo of specimen from Mekong delta 49: 1029
1186. *Oryzias pectoralis* Roberts, 1998 — Photo of specimens from Thai Mekong 49: 1030
1187. *Oryzias sinensis* Chen, Uwa & Chu, 1989 — Upper Laos and Yunnan in Kottelat (2001).

Belonidae - needlefishes

1188. *Ablennes hians* (Valenciennes, 1846) — MBFS at Mekong mouth 50: 1031
1189. *Platybelone platyura* (Bennett, 1832) — South China Sea and Gulf of Thailand in Collette (FAO) 50: 1032
1190. *Strongylura incisa* (Valenciennes, 1846) — CAS specimens from Gulf of Thailand 50: 1033
1191. *Strongylura leiura* (Bleeker, 1850) — CAS specimens from eastern Gulf of Thailand 50: 1034
1192. *Strongylura strongylura* (van Hasselt, 1823) — Photo of specimen from Mekong delta 50: 1035
1193. *Tylosurus crocodilus* (Peron & Le Sueur, 1821) — CAS specimens from eastern Gulf of Thailand and Nha Trang Bay 50: 1036
1194. *Tylosurus melanotus* (Bleeker, 1850) — Photo of specimen from Gulf of Thailand 50: 1037
1195. *Xenentodon cancila* (Hamilton, 1822) — Photo of specimen from Cambodian Mekong 50: 1038
1196. *Xenentodon canciloides* (Bleeker, 1853) — Photo of specimen from Lao Mekong 50: 1039
1197. *Xenentodon sp. n.* — Photo of specimen from Lao Mekong 50: 1040

Exocoetidae - flyingfishes

1198. *Cheilopogon abei* Parin, 1966 — Viet Nam and Gulf of Thailand in Parin (FAO).

1199. *Cheilopogon arcticeps* (Günther, 1866) — Viet Nam and Gulf of Thailand in Parin (FAO), CAS specimens from eastern Gulf of Thailand.
1200. *Cheilopogon atrisignis* (Jenkins, 1903) — Central and southern Viet Nam in Parin (FAO), also in Nguyen & Nguyen (1994).
1201. *Cheilopogon cyanopterus* (Valenciennes, 1847) — Viet Nam and Gulf of Thailand in Parin (FAO).
1202. *Cheilopogon intermedius* Parin, 1961 — Viet Nam and Gulf of Thailand in Parin (FAO).
1203. *Cheilopogon katoptron* (Bleeker, 1865) — Viet Nam and Gulf of Thailand in Parin (FAO), central Viet Nam in Nguyen & Nguyen (1994).
1204. *Cheilopogon spilonotopterus* (Bleeker, 1866) — Viet Nam and Gulf of Thailand in Parin (FAO) 50: 1041
1205. *Cheilopogon spilopterus* (Valenciennes, 1847) — MBFS near mouth of Mekong.
1206. *Cheilopogon suttoni* (Whitley & Colefax, 1938) — Viet Nam and Gulf of Thailand in Parin (FAO) 50: 1042
1207. *Cypselurus hexazona* (Bleeker, 1853) — Nha Trang specimens at ROM, CAS specimens from Phu Quoc Island, Nha Trang in Nguyen & Nguyen (2006).
1208. *Cypselurus naresii* (Günther, 1889) — Viet Nam and Gulf of Thailand in Parin (FAO).
1209. *Cypselurus oligolepis* (Bleeker, 1865) — MBFS near mouth of Mekong 50: 1043
1210. *Cypselurus opisthopus* (Bleeker, 1865) — Viet Nam and Gulf of Thailand in Parin (FAO), Nha Trang in Nguyen & Nguyen (1994) 50: 1044
1211. *Cypselurus poecilopterus* (Valenciennes, 1847) — Viet Nam and Gulf of Thailand in Parin (FAO) 50: 1045
1212. *Exocoetus monocirrhus* Richardson, 1846 — Viet Nam and Gulf of Thailand in Parin (FAO).
1213. *Exocoetus volitans* Linnaeus, 1758 — Found near coastline of central Viet Nam in Nguyen & Nguyen (1994).
1214. *Hirundichthys oxycephalus* (Bleeker, 1852) — Viet Nam and Gulf of Thailand in Parin (FAO).
1215. *Hirundichthys speculiger* (Valenciennes, 18470 — Central Viet Nam in Nguyen & Nguyen (1994).
1216. *Oxyporhamphus convexus* (Weber & Beaufort, 1922) — Viet Nam and Gulf of Thailand in Collette (FAO).
1217. *Oxyporhamphus micropterus* (Valenciennes, 1847) — MBFS along coast of Mekong delta.
1218. *Parexocoetus brachypterus* (Richardson, 1846) — Neritic surface waters of Viet Nam in Parin (FAO) 50: 1046
1219. *Parexocoetus mento* (Valenciennes, 1847) — MBFS near mouth of Mekong.
1220. *Prognichthys brevipinnis* (Valenciennes, 1846) — Viet Nam and Gulf of Thailand in Parin (FAO).

Hemiramphidae - halfbeaks

1221. *Dermogenys orientalis* (Weber, 1894) — Photos of specimens from Lao and Cambodian Mekong 50: 1047-8
1222. *Dermogenys siamensis* Fowler, 1934 — Photos of specimens from Cambodian Mekong 50: 1049-50
1223. *Euleptorhamphus viridis* (van Hasselt, 1823) — CAS specimen from south central Gulf of Thailand; also Viet Nam in Collette (FAO).
1224. *Hemiramphus archipelagicus* Collette & Parin, 1978 — CAS specimens from eastern Gulf of Thailand 51: 1051
1225. *Hemiramphus far* (Forsskål, 1775) — Photo of specimen from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 51: 1052
1226. *Hemiramphus lutkei* (Valenciennes, 1847) — KFL from Gulf of Thailand 51: 1053
1227. *Hyporhamphus affinis* (Günther, 1866) — CAS specimens from eastern Gulf of Thailand.
1228. *Hyporhamphus dussumieri* (Valenciennes, 1847) — CAS specimens from Gulf of Thailand and Binh Chang Bay 51: 1054
1229. *Hyporhamphus limbatus* (Valenciennes, 1847) — Photo of specimen from Cambodian Mekong 51: 1055
1230. *Hyporhamphus sp.cf. limbatus* — Photo of specimen from Mekong delta 51: 1056
1231. *Hyporhamphus melanopterus* Collette & Parin, 1978 — KFL from Gulf of Thailand.
1232. *Hyporhamphus quoyi* (Valenciennes, 1847) — KFL from Gulf of Thailand, CAS from eastern Gulf of Thailand, Nha Trang and Spratly Islands in Nguyen & Nguyen (2006).
1233. *Rhynchorhamphus georgii* (Valenciennes, 1847) — MBFS near Mekong mouth 51: 1057
1234. *Rhynchorhamphus naga* Collette, 1976 — CAS specimens from eastern Gulf of Thailand and Nha Trang Bay.
1235. *Zenarchopterus buffonis* (Valenciennes, 1847) — Photo of specimen from Mekong delta 51: 1058
1236. *Zenarchopterus caudovittatus* Weber, 1907 — MBFS from Mekong delta, photo of specimen from Thailand 51: 1059
1237. *Zenarchopterus clarus* Mohr, 1926 — Described from Bangkok, photo of specimen from Thailand 51: 1060
1238. *Zenarchopterus dunckeri* Mohr, 1926 — Coastal areas of Gulf of Thailand in Smith (1945).
1239. *Zenarchopterus ectuntio* (Hamilton, 1822) — MBFS in Mekong delta, photo of specimen from Thailand 51: 1061
1240. *Zenarchopterus gilli* Smith, 1945 — Nha Trang specimens at ROM, Gulf of Thailand estuaries in Smith (1945) 51: 1062
1241. *Zenarchopterus pappenheimi* Mohr, 1926 — Described from Bangkok, reported from Song Cuu Long in Mekong Delta by Khoa and Huong (1993).

CYPRINODONTIFORMES - killifishes

Aplocheilidae - Asian rivulines

1242. *Aplocheilus panchax* (Hamilton, 1822) — Throughout lower Mekong, photos of specimens from coastal basin in Cambodia 51: 1063-4

Poeciliidae - livebearers

1243. *Gambusia affinis* (Baird & Girard, 1853) — Introduced into Mekong, photos of specimens from Lao Mekong 51: 1065-6
1244. *Poecilia reticulata* Peters, 1859 — Introduced into Mekong, photo of specimen from Thailand 51: 1067

STEPHANOBERYCIFORMES - pricklefishes

Melamphaidae - bigscale fishes

1245. *Melamphaes simus* Ebeling, 1962 — South China Sea at 13°30' N, 114°04' E, in Yang, et al. (1996).
1246. *Poromitra crassiceps* (Günther, 1878) — South China Sea at 13°39' N, 115°51' E, in Yang, et al. (1996).
1247. *Scopeloberyx robustus* (Günther, 1887) — South China Sea at 13°30' N, 113°07' E, in Yang, et al. (1996).
1248. *Scopelogadus mizolepis* (Günther, 1878) — South China Sea at 12°13' N – 15°14' N, 113°22' E – 117°08'E, in Yang, et al. (1996).

Megalomycteridae - largenosefishes

1249. *Vitiaziella cubiceps* Rass, 1955 — South China Sea at 11°51' N, 114°07' E, in Yang, et al. (1996).

BERYCIFORMES - alfonso squirrelfishes

Diretmidae - spinyfins

1250. *Diretmoides veriginae* Kotylar 1987 — South China Sea near Viet Nam coast in Kotylar (2002).

Monocentridae - pinecone fishes

1251. *Monocentris japonica* (Houttuyn, 1782) — Central Viet Nam in Nguyen & Nguyen (1994) 51:1068

Holocentridae - squirrelfishes

1252. *Myripristis adusta* Bleeker, 1853 — Spratly islands in Nguyen & Nguyen (2006).
1253. *Myripristis amaena* (Castelnau, 1873) — Nha Trang in Nguyen & Nguyen (2006).
1254. *Myripristis astakhovi* Kotlyar, 1997 — Described from Nha Trang Bay.
1255. *Myripristis berndti* Jordan & Evermann, 1903 — Spratly Islands in Chen et al. (1997).
1256. *Myripristis botche* Cuvier, 1829 — KFL from Gulf of Thailand 51: 1069
1257. *Myripristis chryseres* Jordan & Evermann, 1903 — Spratly Islands in Nguyen & Nguyen (2006).
1258. *Myripristis hexagona* (La Cepède, 1802) — Nha Trang specimens at ROM, CAS specimens from eastern Gulf of Thailand 51: 1070
1259. *Myripristis kuntee* Valenciennes, 1831 — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997).
1260. *Myripristis murdjan* (Forsskål, 1775) — KFL from Gulf of Thailand, CAS from Nha Trang Bay, Spratly Islands in Chen et al. (1997) 51: 1071
1261. *Myripristis pralinia* Cuvier, 1829 — Central Viet Nam in Nguyen & Nguyen (1994) 52: 1072
1262. *Myripristis violacea* Bleeker, 1851 — KFL from Gulf of Thailand, Nha Trang specimens at ROM 52: 1073
1263. *Myripristis vittata* Valenciennes, 1831 — Spratly Islands in Chen et al. (1997).
1264. *Neoniphon argenteus* (Valenciennes, 1831) — Spratly Islands in Nguyen & Nguyen (2006), southern Viet Nam in Kotylar (1998).
1265. *Neoniphon opercularis* (Valennciennes, 1831) — Nha Trang specimens at ROM, Gulf of Thailand in Randall & Greenfield (FAO) 52: 1074
1266. *Neoniphon sammara* (Forsskål, 1775) — Nha Trang specimens at ROM, Gulf of Thailand in Randall & Greenfield (FAO).
1267. *Ostichthys japonicus* (Cuvier, 1829) — Fish markets around Gulf of Thailand and Viet Nam in Randall & Greenfield (FAO) 52: 1075
1268. *Ostichthys kaianus* (Günther, 1880) — Coast of southern Viet Nam in Randall & Greenfield (FAO) 52: 1076
1269. *Pristilepis oligolepis* (Whitley, 1941) — Spratly Islands in Nguyen & Nguyen (2006).
1270. *Sargocentron caudimaculatum* (Rüppell, 1838) — Nha Trang specimens at ROM, Gulf of Thailand in Randall & Greenfield (FAO) 52: 1077
1271. *Sargocentron cornutum* (Bleeker, 1853) — Nha Trang specimens at ROM, Central Viet Nam in Nguyen & Nguyen (1994) 52: 1078
1272. *Sargocentron diadema* (La Cepède, 1802) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 52: 1079
1273. *Sargocentron furcatum* Günther, 1859 — Spratly Islands in Nguyen & Nguyen (2006).
1274. *Sargocentron melanospilos* (Bleeker, 1858) — Con Co, off central Viet Nam in Nguyen & Nguyen (2006).
1275. *Sargocentron praslin* (La Cepède, 1802) — Central Viet Nam in Nguyen & Nguyen (1994) 52: 1080
1276. *Sargocentron punctatissimum* (Cuvier, 1829) — Spratly Islands in Chen et al. (1997).
1277. *Sargocentron rubrum* (Forsskål, 1775) — KFL from Gulf of Thailand, CAS from Gulf of Thailand, Nha Trang specimens at ROM 52: 1081
1278. *Sargocentron spiniferum* (Forsskål, 1775) — CAS from eastern Gulf of Thailand, Viet Nam coast in Randall & Greenfield (FAO) 52: 1082
1279. *Sargocentron spinosissimum* (Temminck & Schlegel, 1843) — Spratly Islands in Chen et al. (1997).
1280. *Sargocentron tiere* (Cuvier, 1829) — Spratly Islands in Nguyen & Nguyen (2006).

ZEIFORMES - dories

Zeidae - dories

1281. *Zenion hololepis* (Goode & Bean, 1896) — South China Sea at 12°05' N, 111°06' E, in Yang, et al. (1996).

GASTEROSTEIFORMES - sticklebacks, pipefishes, seahorses

Pegasidae - seamoths

1282. *Eurypegasus draconis* (Linnaeus, 1766) — MBFS from Mekong plume 52: 1083
1283. *Pegasus laternarius* Cuvier, 1816 — MBFS from Mekong plume, photo of specimen from Thailand 52: 1084
1284. *Pegasus volitans* Linnaeus, 1758 — Photo of specimen from Phu Quoc Island 52: 1085

Solenostomidae - ghost pipefishes

1285. *Solenostomus cyanopterus* Bleeker, 1854 — Thailand in W&dB, inshore reefs of SE Asia in Allen (1997) 52: 1086
1286. *Solenostomus paradoxus* (Pallas, 1770) — Viet Nam in Huynh (1998) 52: 1087

Syngnathidae - pipefishes, seahorses

1287. *Acentronura gracilissima* (Temminck & Schlegel, 1850) — Cochin China in Dawson (1985).
1288. *Choeroichthys brachysoma* (Bleeker, 1855) — CAS specimens from eastern Gulf of Thailand 52: 1088
1289. *Corythoichthys amplexus* Dawson & Randall, 1975 — Gulf of Thailand in Dawson (1985) 52: 1089
1290. *Corythoichthys flavofasciatus* (Rüppell, 1838) — Spratly Islands in Chen et al. (1997).
1291. *Corythoichthys haematopterus* (Bleeker, 1851) — Coast of Mekong delta in Dawson (1985), CAS specimens from Nha Trang Bay 52: 1090
1292. *Corythoichthys schultzi* Herald, 1953 — Widespread from central Pacific to Red Sea 52: 1091

1293. *Cosmocampus banneri* (Herald & Randall, 1972) — Nha Trang specimens at ROM.
1294. *Cosmocampus investigatorius* (Hora, 1926) — Gulf of Thailand in Dawson (1985).
1295. *Doryichthys boaja* (Bleeker, 1851) — Common in Lower Mekong 52: 1092
1296. *Doryichthys contiguus* Kottelat, 2000 — Photo of specimen from Lao Mekong 53: 1093
1297. *Doryichthys deokhatoides* (Bleeker, 1853) — WJR specimen from Phnom Penh wetlands.
1298. *Doryichthys martensii* (Peters, 1868) — Photo of specimen from Cambodian Mekong 53: 1094
1299. *Doryrhamphus excisus* Kaup, 1856 — Nha Trang specimens at ROM, CAS specimen from Gulf of Thailand 53: 1095
1300. *Doryrhamphus janssi* (Herald & Randall, 1972) — CAS specimens from Nha Trang Bay, Gulf of Thailand in Dawson (1985) 53: 1096
1301. *Dunckerocampus dactyliophorus* (Bleeker, 1853) — Nha Trang in Nguyen & Nguyen (2006).
1302. *Halicampus grayi* Kaup, 1856 — Gulf of Thailand in Dawson (1985), CAS specimens from eastern Gulf of Thailand.
1303. *Halicampus nitidus* (Günther, 1873) — CAS specimen from Nha Trang Bay, coastal Viet Nam in Dawson (1985) 53: 1097
1304. *Halicampus spinirostris* (Dawson & Allen, 1981) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997).
1305. *Hippichthys cyanospilus* (Bleeker, 1854) — CAS specimen from western Gulf of Thailand, Viet Nam in Dawson (1985) 53: 1098
1306. *Hippichthys heptagonus* Bleeker, 1849 — Fowler (1935, 1937) and Smith (1945) from Bangkok as *Syngnathus djarong*.
1307. *Hippichthys penicillus* (Cantor, 1849) — Photo of specimen from Mekong delta 53: 1099
1308. *Hippichthys spicifer* (Rüppell, 1838) — CAS specimens from eastern Gulf of Thailand, Orsi (1974) lists from Viet Nam.
1309. *Hippocampus borboniensis* Dumeril, 1870 — Fourmanoir & Nhung (1965) from Nha Trang, Viet Nam.
1310. *Hippocampus comes* Cantor, 1849 — Nha Trang in Lourie, et al., 1999.
1311. *Hippocampus histrix* Kaup, 1856 — Orsi (1974) lists from Viet Nam, also Gulf of Thailand in Paulus (FAO) 53: 1100
1312. *Hippocampus kelloggi* Jordan & Snyder, 1901 — Photo of specimen from Gulf of Thailand 53: 1101
1313. *Hippocampus kuda* Bleeker, 1852 — Orsi (1974) lists specimens from Viet Nam.
1314. *Hippocampus mohnikei* Bleeker, 1853 — East Asia south to Viet Nam in Nakabo (2002).
1315. *Hippocampus spinosissimus* Weber, 1913 — MBFS from coast of Mekong delta.
1316. *Hippocampus trimaculatus* Leach, 1814 — MBFS from coast of Mekong delta.
1317. *Ichthyocampus carce* (Hamilton, 1822) — CAS specimen from Chol Buri in eastern Gulf of Thailand 53: 1102
1318. *Microphis brachyurus* (Bleeker, 1853) — Orsi (1974) lists from Viet Nam.
1319. *Phoxocampus belcheri* (Kaup, 1856) — CAS specimens from eastern Gulf of Thailand 53: 1103
1320. *Syngnathoides biaculeatus* (Bloch, 1785) — Photo of specimen from coastal Cambodia 53: 1104
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1322. *Trachyrhamphus longirostris* Kaup, 1856 — Orsi (1974) lists from Viet Nam.
1323. *Trachyrhamphus serratus* (Temminck &Schlegel, 1850) — KFL from Gulf of Thailand.

Indostomidae - armored sticklebacks

1324. *Indostomus spinosus* Britz & Kottelat, 1999 — Photos of specimens from Thai and Lao Mekong 53: 1106-7

Aulostomidae - trumpetfishes

1325. *Aulostomus chinensis* (Linnaeus, 1766) — Gulf of Thailand in Fritzsche & Thiesfeld (FAO) 53: 1108

Fistulariidae - cornetfishes

1326. *Fistularia commersonii* Rüppell, 1838 — MBFS in Mekong plume 53: 1109
1327. *Fistularia petimba* La Cepède, 1803 — Photo of specimen from Mekong delta 53: 1110

Centriscidae - shrimpfishes

1328. *Aeoliscus strigatus* (Günther, 1861) — Southern Viet Nam and Gulf of Thailand (FAO), specimens from Rayong Bay at CAS 53: 1111
1329. *Centriscus scutatus* Linnaeus, 1758 — MBFS in Mekong plume 53: 1112

SYNBRANCHIFORMES - swamp eels

Synbranchidae - swamp eels

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1331. *Macrotrema sp.cf. caligans* — Photo of specimen from Thailand 54: 1114
1332. *Monopterus albus* Zuiew, 1793 — Common in lower and middle Mekong 54: 1115
1333. *Ophisternon bengalense* M'Clelland, 1845 — Common throughout Southeast Asia, photo of Bangkok specimen 54: 1116
1334. *Ophisternon n.sp.* — Photo of specimen from Cambodian Mekong 54: 1117

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1335. *Chaudhuria caudata* Annandale, 1918 — Photo of specimen from Cambodian Mekong 54: 1118
1336. *Chaudhuria fusipinnis* Kottelat & Britz, 2000 — Photo of specimen from Lao Mekong 54: 1119
1337. *Chaudhuria sp.cf. caudata* — Photo of specimen from Mekong delta 54: 1120

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1338. *Macrognathus circumcinctus* (Hora, 1924) — Photo of specimen from Chantaburi, Thailand 54: 1121
1339. *Macrognathus maculatus* (Cuvier, 1832) — Found in rivers entering Gulf of Thailand 54: 1122
1340. *Macrognathus semiocellatus* Roberts, 1986 — Photo of specimen from Cambodian Mekong 54: 1123
1341. *Macrognathus siamensis* (Günther, 1861) — Photo of specimen from Lao Mekong 54: 1124
1342. *Macrognathus sp.* — Photo of specimens from Cambodian Mekong 54: 1125-6

1343. *Mastacembelus armatus* (La Cepède, 1800) — Photos of specimens from Lao Mekong 54: 1127-8
1344. *Mastacembelus dienbienensis* Nguyen & Nguyen, 2005 — Described from Dien Bien Phu City.
1345. *Mastacembelus erythrotaenia* Bleeker, 1850 — MBFS and WJR in Mekong delta 54: 1129
1346. *Mastacembelus favus* Hora, 1924 — Photos of specimens from Lao Mekong 54: 1130-1

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1347. *Dactyloptena gilberti* Snyder, 1909 — Photo of specimen from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 54: 1132
1348. *Dactyloptena macracantha* (Bleeker, 1854) — KFL from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 54: 1133
1349. *Dactyloptena orientalis* (Cuvier, 1829) — MBFS in Mekong plume 54: 1134
1350. *Dactyloptena papilio* Ogilby, 1910 — KFL from Gulf of Thailand 55: 1135
1351. *Dactyloptena peterseni* (Nyström, 1887) — Gulf of Thailand listed by Nakabo (2002).

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1352. *Brachypterois serrulata* (Richardson, 1846) — Fourmanoir & Nhung (1965) from Nha Trang, Gulf of Thailand in Poss (FAO) 55: 1136
1353. *Dendrochirus bellus* (Jordan & Hubbs, 1925) — Photo of specimen from Gulf of Thailand 55: 1137
1354. *Dendrochirus biocellatus* (Fowler, 1938) — Spratly Islands in Chen et al. (1997).
1355. *Dendrochirus brachypterus* (Cuvier, 1829) — Nha Trang and Spratly Islands in Nguyen & Nguyen (2006).
1356. *Dendrochirus zebra* (Cuvier, 1829) — Nha Trang specimens at ROM and CAS, Southern Viet Nam in Poss (FAO) 55: 1138
1357. *Ebosia bleekeri* (Döderlein, 1884) — Southern Viet Nam coast, Vanderbilt Expedition 55: 1139
1358. *Parapterois heterura* (Bleeker, 1856) — South China Sea at 05°22-25' N, 107°36-47' E, in Motomura (2004).
1359. *Parascorpaena armata* (Sauvage, 1873) — Nha Trang specimens in Orsi (1974).
1360. *Parascorpaena aurita* (Rüppell, 1838) — Photo of specimen from Nha Trang, CAS specimens from eastern Gulf of Thailand 55: 1140
1361. *Parascorpaena bandanensis* (Bleeker, 1851) — Nha Trang specimens in Orsi (1974).
1362. *Parascorpaena mcadamsi* (Fowler, 1938) — Photo of specimen from Nha Trang, Spratly Islands in Chen et al. (1997) 55: 1141
1363. *Parascorpaena mossambica* (Peters, 1855) — Nha Trang specimens at ROM, also Nha Trang in Nguyen & Nguyen (2006) 55: 1142
1364. *Parascorpaena picta* (Cuvier, 1829) — Nha Trang specimens at ROM, CAS specimens from eastern Gulf of Thailand 55: 1143
1365. *Pteroidichthys amboinensis* Bleeker, 1856 — Viet Nam in Masuda et al., 1984; lives in weed beds (Kuiter & Tonozuka, 2001) 55: 1144
1366. *Pterois antennata* (Bloch, 1787) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 55: 1145
1367. *Pterois lunulata* Temminck & Schlegel, 1843 — Nha Trang specimens in Orsi (1974), Spratly Islands in Chen et al. (1997).
1368. *Pterois radiata* Cuvier, 1829 — Nha Trang specimens at ROM, also Nha Trang in Nguyen & Nguyen (2006).
1369. *Pterois russelii* Bennett, 1831 — MBFS in Mekong plume 55: 1146
1370. *Pterois volitans* (Linnaeus, 1758) — KFL from Gulf of Thailand, Spratly Islands in Chen et al. (1997) and Nguyen &Nguyen (2006) 55: 1147
1371. *Rhinopias eschmeyeri* Condé, 1977 — Viet Nam in Motomura & Johnson (2006).
1372. *Rhinopias frondosa* (Günther, 1892) — Fourmanoir & Nhung (1965) at Nha Trang, Mekong delta area in Poss (FAO) 55: 1148
1373. *Scorpaena aplodactylus* Bleeker, 1852 — Fourmanoir & Nhung (1965) at Nha Trang.
1374. *Scorpaenodes albaiensis* (Evermann & Seale, 1907) — Nha Trang specimens at ROM, Nha Trang in Nguyen & Nguyen (2006) 55: 1149
1375. *Scorpaenodes guamensis* (Quoy & Gaimard, 1824) — Nha Trang specimens at ROM and CAS, Gulf of Thailand in Poss (FAO) 55: 1150
1376. *Scorpaenodes hirsutus* (Smith, 1957) — Nha Trang specimens at ROM, Nha Trang in Nguyen & Nguyen (2006).
1377. *Scorpaenodes kelloggi* (Jenkins, 1903) — Nha Trang specimens at ROM, Nha Trang in Nguyen & Nguyen (2006).
1378. *Scorpaenodes littoralis* (Tanaka, 1917) — Photo of specimen from Nha Trang, Nha Trang in Nguyen & Nguyen (2006) 55: 1151
1379. *Scorpaenodes parvipinnis* (Garrett, 1864) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997).
1380. *Scorpaenodes scaber* (Ramsey & Ogilby, 1886) — Nha Trang specimen at ROM, Spratly Islands in Nguyen & Nguyen (2006) 55: 1152
1381. *Scorpaenodes varipinnis* Smith, 1957 — Nha Trang specimens at ROM 55: 1153
1382. *Scorpaenopsis cirrosa* (Thunberg, 1793) — MBFS from Mekong plume 55: 1154
1383. *Scorpaenopsis diabolus* (Cuvier, 1829) — Nha Trang specimens at ROM, southern Viet Nam in Poss (FAO), Spratly Islands in Nguyen & Nguyen (2006) 55: 1155
1384. *Scorpaenopsis gibbosa* (Bloch & Schneider, 1801) — Spratly Islands in Nguyen & Nguyen (2006).
1385. *Scorpaenopsis neglecta* Heckel, 1837 — CAS specimen from eastern Gulf of Thailand 56: 1156
1386. *Scorpaenopsis oxycephala* Bleeker, 1849 — Photo of specimen from Nha Trang 56: 1157
1387. *Scorpaenopsis papuensis* (Cuvier, 1829) — Nha Trang specimens at ROM, Nha Trang in Nguyen & Nguyen (2006) 56: 1158
1388. *Scorpaenopsis possi* Randall & Eschmeyer, 2001 — Nha Trang specimens at ROM 56: 1159
1389. *Scorpaenopsis ramaraoi* Randall & Eschmeyer, 2001 — CAS specimens from eastern Gulf of Thailand and Binh Chang Bay.
1390. *Scorpaenopsis venosa* (Cuvier, 1829) — Nha Trang specimens at ROM, Spratly Islands in Nguyen & Nguyen (2006) 56: 1160
1391. *Scorpaenopsis vittapinna* Randall & Eschmeyer, 2001 — Nha Trang specimens at ROM.
1392. *Sebastapistes cyanostigma* (Bleeker, 1856) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997), and Nguyen & Nguyen (2006).
1393. *Sebastapistes fowleri* (Pietschmann, 1934) — Nha Trang specimens at ROM, Nha Trang in Nguyen & Nguyen (2006).
1394. *Sebastapistes strongia* (Cuvier, 1829) — Nha Trang specimen at ROM and CAS, Nha Trang in Nguyen & Nguyen (2006) 56: 1161
1395. *Taenianotus triacanthus* La Cepède, 1802 — Viet Nam and Gulf of Thailand in Poss (FAO) 56: 1162

Scorpaenidae - Apistinae - waspfishes

1396. *Apistus carinatus* (Bloch & Schneider, 1801) — MBFS in Mekong plume 56: 1163

Scorpaenidae - Tetraroginae - sailback scorpionfishes, waspfishes

1397. *Ablabys binotatus* (Peters, 1855) — Fourmanoir & Nhung (1965) from Nha Trang.
1398. *Ablabys macracanthus* (Bleeker, 1852) — Viet Nam in Orsi (1974), Nha Trang Bay in Prokofiev (2008)

1399. *Ablabys taenianotus* (Cuvier, 1829) — Nha Trang specimens at ROM, Nha Trang Bay in Prokofiev (2008) . . . 56: 1164
1400. *Cottapistus cottoides* (Linnaeus, 1758) — Photo of specimen from Mekong mouth . . . 56: 1165
1401. *Neocentropogon aeglefinus* (Weber, 1913) — Southern South China Sea in Chen et al. (2002).
1402. *Neocentropogon profundus* Smith, 1958 — Fourmanoir & Nhung (1965) from Nha Trang.
1403. *Paracentropogon longispinus* (Cuvier, 1829) — CAS from eastern Gulf of Thailand, Fourmanoir & Nhung (1965) from Nha Trang . . . 56: 1166
1404. *Richardsonichthys leucogaster* (Richardson, 1848) — CAS specimens from eastern Gulf of Thailand, Nha Trang Bay in Prokofiev (2008).
1405. *Tetraroge barbata* (Cuvier, 1829) — MBFS from Mekong plume . . . 56: 1167
1406. *Tetraroge niger* (Cuvier, 1829) — MBFS from Mekong plume . . . 56: 1168
1407. *Vespicula depressifrons* (Richardson, 1848) — Widely distributed and little known species from brackish or nearly fresh water . . . 56: 1169
1408. *Vespicula trachinoides* (Cuvier, 1829) — KFL from Gulf of Thailand, CAS specimens from Trat Bay in eastern Gulf of Thailand . . . 56: 1170

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1409. *Choridactylus multibarbus* Richardson, 1848 — MBFS in Mekong plume . . . 56: 1171
1410. *Erosa erosa* (Langsdorf, 1829) — Fourmanoir & Nhung (1965) from Nha Trang . . . 56: 1172
1411. *Inimicus cuvieri* (Gray, 1835) — MBFS from Mekong plume . . . 56: 1173
1412. *Inimicus didactylus* (Pallas, 1769) — MBFS from Mekong plume (in field notes), CAS from eastern Gulf of Thailand and Nha Trang . . . 56: 1174
1413. *Inimicus sinensis* (Valenciennes, 1833) — MBFS from Mekong plume . . . 56: 1175
1414. *Leptosynanceia asteroblepa* (Richardson, 1844) — Photo of specimen from Mekong estuary . . . 56: 1176
1415. *Minous coccineus* Alcock, 1890 — CAS from eastern Gulf of Thailand near Rayong . . . 57: 1177
1416. *Minous monodactylus* (Bloch & Schneider, 1801) — MBFS from Mekong plume . . . 57: 1178
1417. *Minous pictus* Günther, 1880 — Southern Viet Nam, Vanderbilt Expedition . . . 57: 1179
1418. *Minous trachycephalus* (Bleeker, 1854) — CAS specimens from eastern Gulf of Thailand and Nha Trang Bay . . . 57: 1180
1419. *Synanceia horrida* (Linnaeus, 1766) — CAS specimen from eastern Gulf of Thailand, also Viet Nam in Poss (FAO) . . . 57: 1181
1420. *Synanceia verrucosa* Bloch & Schneider, 1801 — Viet Nam and Gulf of Thailand in Poss (FAO) . . . 57: 1182
1421. *Trachicephalus uranoscopus* (Bloch & Schneider, 1801) — Photo of specimen from Mekong mouth . . . 57: 1183

Caracanthidae - orbicular velvetfishes

1422. *Caracanthus maculatus* (Gray, 1831) — On *Acropora* corals (common in Gulf of Thailand), Spratly Islands in Nguyen & Nguyen (2006) 57: 1184
1423. *Caracanthus unipinna* (Gray, 1831) — Widespread in *Acropora* corals . . . 57: 1185

Aploactinidae - velvetfishes

1424. *Acanthosphex leurynnis* (Jordan & Seale, 1906) — From Gulf of Thailand in Vidthayanon & Bettencourt (1988).
1425. *Aploactis aspera* (Richardson, 1845) — From Japan to South China Sea and Indian Ocean, but rare according to Allen (1997).
1426. *Erisphex simplex* Chen, 1981 — Nha Trang in Prokofiev (2008) . . . 57: 1186
1427. *Paraploactis hongkongensis* (Chan, 1966) — Hong Kong south to Singapore.
1428. *Paraploactis obbesi* (Weber, 1913) — Nha Trang Bay in Prokofiev (2008).
1429. *Prosoproctus pataecus* Poss & Eschmeyer, 1979 — Macclesfield Bank in South China Sea, possibly Viet Nam coast.
1430. *Xenaploactis cautes* Poss & Eschmeyer, 1980 — Gulf of Thailand in original description . . . 57: 1187

Triglidae - searobins

1431. *Chelidonichthys spinosus* (M'Clelland, 1844) — Viet Nam and Gulf of Thailand in Richards (FAO).
1432. *Lepidotrigla guentheri* Hilgendorf, 1879 — Fourmanoir & Nhung (1965) at Nha Trang.
1433. *Lepidotrigla microptera* Günther, 1873 — Fourmanoir & Nhung (1965) at Nha Trang.
1434. *Lepidotrigla spiloptera* Günther, 1880 — Viet Nam and Gulf of Thailand in Richards (FAO) . . . 57: 1188
1435. *Pterygotrigla hemisticta* (Temminck & Schlegel, 1843) — Viet Nam and Gulf of Thailand in Richards (FAO) . . . 57: 1189–90
1436. *Satyrichthys clavilapis* Fowler, 1938 — Fourmanoir & Nhung (1965) at Nha Trang.
1437. *Satyrichthys welchi* (Herre, 1925) — Southern South China Sea in Cheng et al. (2002).

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1438. *Cociella crocodilus* (Tilesius, 1812) — South China Sea in Randall & Lim (2000) . . . 57: 1191
1439. *Cociella punctata* (Cuvier, 1829) — Nha Trang specimens at ROM, CAS specimen from eastern Gulf of Thailand . . . 57: 1192
1440. *Cymbacephalus bosschei* (Bleeker, 1860) — KFL from Gulf of Thailand . . . 57: 1193
1441. *Cymbacephalus nematophthalmus* (Günther, 1860) — Southern South China Sea in Knapp (FAO) . . . 57: 1194
1442. *Elates ransonnettii* (Steindachner, 1876) — WJR in Cambodian coastal markets . . . 57: 1195
1443. *Grammoplites knappi* Imamura & Amaoka, 1994 — Viet Nam and Gulf of Thailand in Knapp (FAO).
1444. *Grammoplites scaber* (Linnaeus, 1758) — MBFS in Mekong plume . . . 57: 1196
1445. *Inegocia japonica* (Tilesius, 1812) — MBFS in Mekong plume . . . 57: 1197
1446. *Kumococius rodericensis* (Cuvier, 1829) — KFL from Gulf of Thailand . . . 58: 1198
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1448. *Onigocia pedimacula* (Regan, 1908) — Nha Trang specimens at ROM, Nha Trang in Nguyen & Nguyen (2006).
1449. *Onigocia spinosa* (Temminck & Schlegel, 1843) — Central Viet Nam coast in Knapp (FAO) . . . 58: 1201
1450. *Papilloculiceps longiceps* (Cuvier, 1829) — South China Sea in Randall & Lim (2000) . . . 58: 1202
1451. *Platycephalus indicus* (Linnaeus, 1758) — Photo of specimen from Mekong delta . . . 58: 1203-4
1452. *Rogadius pristiger* (Cuvier, 1829) — Fourmanoir & Nhung (1965) from Nha Trang, CAS specimens from northern Gulf of Thailand . . . 58: 1205-6
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1454. *Rogadius tuberculata* (Cuvier, 1829) — MBFS in Mekong plume . . . 58: 1207-8
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1457. *Thysanophrys celebica* (Bleeker, 1854) — Gulf of Thailand in Knapp (FAO) 58: 1210-1
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1459. Platycephalidae sp. — Photo of specimen from South China Sea off western Malaysia 58: 1213

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1460. *Malacocottus gibber* Sakamoto, 1930 — Southern deep waters of South China Sea in Chen et al. (2002).

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1461. *Lates calcarifer* (Bloch, 1790) — WJR in Mekong delta, photo of specimen from Gulf of Thailand 58: 1214
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1463. *Ambassis ambassis* (La Cepède, 1802) — WJR from Mekong delta, previously known as *Ambassis commersonii*.
1464. *Ambassis buruensis* Bleeker, 1856 — Thailand in Fowler (1937) and Smith (1945).
1465. *Ambassis dussumieri* Cuvier, 1828 — MBFS records from Mekong delta (identification questionable).
1466. *Ambassis gymnocephalus* (La Cepède, 1802) — Photo of specimen from Ranong, Thailand 58: 1216
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1470. *Ambassis nalua* (Hamilton, 1822) — Mangroves in Indo-Pacific region, likely in Mekong delta.
1471. *Ambassis urotaenia* Bleeker, 1852 — KFL in southern Thailand, central and southern Viet Nam in Nguyen et al. (1995).
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1476. *Parambassis thomassi* (Day, 1870) — Orsi (1974) lists from Viet Nam, also Thailand and Malay peninsula in Smith (1945).
1477. *Parambassis wolffii* (Bleeker, 1851) — Photo of specimen from Cambodian Mekong 59: 1221

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1479. *Aethaloperca rogaa* (Forsskål, 1775) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 59: 1223
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1676. *Sillago asiatica* McKay, 1982 — KFL from Gulf of Thailand.
1677. *Sillago boutani* Pellegrin, 1905 — Northwestern Pacific, found as far south as central Viet Nam (Nguyen et al., 1995).
1678. *Sillago chondropus* Bleeker, 1849 — Gulf of Thailand in McKay (FAO).
1679. *Sillago ingenuua* McKay, 1985 — MBFS in Mekong plume 65: 1364
1680. *Sillago intermedius* Wongratana, 1977 — KFL in Mekong plume.
1681. *Sillago lutea* McKay, 1985 — Photo of specimen from Mekong delta 65: 1365
1682. *Sillago sihama* (Forsskål, 1775) — MBFS in Mekong plume 66: 1366

Malacanthidae - tilefishes

1683. *Branchiostegus albus* Dooley, 1978 — Central Viet Nam in Dooley (FAO).
1684. *Branchiostegus argentatus* (Cuvier, 1830) — Central and southern Viet Nam in Dooley (FAO), central Viet Nam in Nguyen et al. (1995).
1685. *Branchiostegus japonicus* (Houttuyn, 1782) — Central Viet Nam in Dooley (FAO), central and southern Viet Nam in Nguyen et al. (1995).
1686. *Hoplolatilus fourmanoiri* Smith, 1964 — Fourmanoir & Nhung (1965) from Nha Trang, Viet Nam., central Viet Nam in Nguyen et al. (1995).
1687. *Hoplolatilus starki* Randall & Dooley, 1974 — Spratly Islands in Chen et al. (1997), Nha Trang and Spratly Islands in Nguyen & Nguyen (2006).
1688. *Malacanthus brevirostris* Guichenot, 1848 — Widespread throughout region in Dooley (FAO), Spratly Islands in Chen et al. (1997) 66: 1367
1689. *Malacanthus latovittatus* (La Cepède, 1801) — Widespread throughout region in Dooley (FAO), Spratly Islands in Chen et al. (1997) 66: 1368

Lactariidae - false trevallies

1690. *Lactarius lactarius* (Bloch & Schneider, 1801) — MBFS in Mekong plume 66: 1369

Echeneidae - remoras

1691. *Echeneis naucrates* Linnaeus, 1758 — Photos of specimen from Mekong delta 66: 1370-1
1692. *Remora remora* (Linnaeus, 1758) — Central Viet Nam in Nguyen et al. (1995).
1693. *Remorina albescens* (Temminck & Schlegel, 1850) — Central Viet Nam and Spratly Islands in Nguyen et al. (1995).
1694. *Phtheirichthys lineatus* (Menzies, 1791) — Worldwide in tropical seas 66: 1372-3

Rachycentridae - cobias

1695. *Rachycentron canadum* (Linnaeus, 1766) — Photo of specimen from Mekong delta 66: 1374

Coryphaenidae - dolphinfishes

1696. *Coryphaena equiselis* Linnaeus, 1758 — Throughout region in Collette (FAO) 66: 1375
1697. *Coryphaena hippurus* Linnaeus, 1758 — KFL from Gulf of Thailand 66: 1376

Carangidae - jacks, pompanos

1698. *Alectis ciliaris* (Bloch, 1787) — MBFS in Mekong plume 66: 1377
1699. *Alectis indica* (Rüppell, 1828) — MBFS in Mekong plume 66: 1378-9
1700. *Alepes djedaba* (Forsskål, 1775) — Photo of specimen from Mekong delta 66: 1380
1701. *Alepes kleinii* (Bloch, 1793) — Photo of specimen from Mekong delta 66: 1381
1702. *Alepes melanoptera* Swainson, 1839 — Photo of specimen from Mekong delta 66: 1382
1703. *Alepes vari* (Cuvier, 1833) — Gulf of Thailand and South China Sea in Smith-Vaniz (FAO) 66: 1383
1704. *Atropus atropos* (Bloch & Schneider, 1801) — MBFS in Mekong plume.
1705. *Atule mate* (Cuvier, 1833) — Photo of specimen from Mekong delta 66: 1384
1706. *Carangoides armatus* (Rüppell, 1830) — MBFS in Mekong plume 66: 1385
1707. *Carangoides bajad* (Forsskål, 1775) — Photo of specimen from Sihanoukville, Cambodia 66: 1386
1708. *Carangoides chrysophrys* (Cuvier, 1833) — MBFS in Mekong plume 67: 1387
1709. *Carangoides coeruleopinnatus* (Rüppell, 1830) — MBFS in Mekong plume 67: 1388
1710. *Carangoides dinema* Bleeker, 1851 — Gulf of Thailand and South China Sea in Smith-Vaniz (FAO) 67: 1389
1711. *Carangoides ferdau* (Forsskål, 1775) — Gulf of Thailand and South China Sea in Smith-Vaniz (FAO) 67: 1390
1712. *Carangoides fulvoguttatus* (Forsskål, 1775) — Photo of specimen from Mekong delta 67: 1391
1713. *Carangoides gymnostethus* (Cuvier, 1833) — Gulf of Thailand and South China Sea in Smith-Vaniz (FAO) 67: 1392
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1715. *Carangoides malabaricus* (Bloch & Schneider, 1801) — MBFS in Mekong plume 67: 1394
1716. *Carangoides oblongus* (Cuvier, 1833) — Gulf of Thailand and South China Sea in Smith-Vaniz (FAO).
1717. *Carangoides orthogrammus* Jordan & Gilbert, 1882 — Gulf of Thailand and South China Sea in Smith-Vaniz (FAO) 67: 1395
1718. *Carangoides praeustus* ([Bennett], 1830) — Photo of specimen from Mekong delta 67: 1396
1719. *Carangoides talamparoides* Bleeker, 1852 — MBFS in Mekong plume 67: 1397
1720. *Caranx ignobilis* (Forsskål, 1775) — MBFS in Mekong plume 67: 1398
1721. *Caranx lugubris* Poey, 1860 — Gulf of Thailand and South China Sea in Smith-Vaniz (FAO) 67: 1399
1722. *Caranx melampygus* Cuvier, 1833 — Gulf of Thailand and South China Sea in Smith-Vaniz (FAO), Spratly Islands in Chen et al. (1997) . 67: 1400
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1728. *Decapterus maruadsi* (Temminck & Schlegel, 1843) — Viet Nam coast, including south, in Nguyen et al. (1995).
1729. *Decapterus russelli* (Rüppell, 1830) — Photo of specimen from Mekong delta 67: 1406
1730. *Elegatis bipinnulata* (Quoy & Gaimard, 1825) — KFL from Gulf of Thailand, Spratly Islands in Chen et al. (1997) 67: 1407
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1734. *Parastromateus niger* (Bloch, 1795) — MBFS in Mekong plume 68: 1410
1735. *Scomberoides commersonianus* (La Cepède, 1802) — MBFS in Mekong plume 68: 1411
1736. *Scomberoides lysan* (Forsskål, 1775) — MBFS in Mekong plume 68: 1412
1737. *Scomberoides tala* (Cuvier, 1832) — KFL from Gulf of Thailand, CAS specimen from eastern Gulf of Thailand 68: 1413
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1743. *Seriola rivoliana* Valenciennes, 1833 — Spratly Islands in Nguyen & Nguyen (2006).
1744. *Seriolina nigrofasciata* (Rüppell, 1829) — MBFS in Mekong plume 68: 1419
1745. *Trachinotus baillonii* (La Cepède, 1801) — CAS specimens from Binh Chang Bay and west central Gulf of Thailand 68: 1420
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1748. *Trachurus japonicus* (Temminck & Schlegel, 1844) — Northwest Pacific, as far south as central Viet Nam in Nguyen et al. (1995).
1749. *Ulua mentalis* (Cuvier, 1833) — MBFS in Mekong plume 68: 1423
1750. *Uraspis helvola* (Forster, 1801) — MBFS in Mekong plume, central and southern Viet Nam in Nguyen et al. (1995).
1751. *Uraspis uraspis* (Günther, 1860) — Photo of specimen from Sihanoukville, Cambodia 68: 1424-5

Menidae - moonfishes

1752. *Mene maculata* (Bloch & Schneider, 1801) — Photo of specimen from Mekong delta 68: 1426

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1753. *Equulites elongatus* (Günther, 1874) — MBFS in Mekong plume, photo of specimen from Gulf of Thailand 69: 1427
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1757. *Gazza minuta* (Bloch, 1797) — Photo of specimen from Sihanoukville, Cambodia 68: 1431
1758. *Gazza rhombea* Kimura, Yamashita & Iwatsuki, 2000 — South China Sea in original description 69: 1432
1759. *Leiognathus aureus* Abe & Haneda, 1972 — Gulf of Thailand in Kimura, et al. (2003) 69: 1433
1760. *Leiognathus berbis* (Valenciennes, 1835) — Gulf of Thailand and South China Sea in Woodland, et al. (FAO) 69: 1434
1761. *Leiognathus bindus* (Valenciennes, 1835) — MBFS in Mekong plume, including *Leiognathus brevirostris* 69: 1435
1762. *Leiognathus blochii* (Valenciennes, 1835) — Photo of specimen from Gulf of Thailand 69: 1436
1763. *Leiognathus daura* (Cuvier, 1829) — MBFS field notes and KFL from Gulf of Thailand 69: 1437
1764. *Leiognathus equulus* (Forsskål, 1775) — MBFS in Mekong plume, photo of specimen from Sihanoukville, Cambodia 69: 1438
1765. *Leiognathus fasciatus* (La Cepède, 1803) — Gulf of Thailand and South China Sea in Woodland, et al. (FAO) 69: 1439
1766. *Leiognathus jonesi* James, 1971 — Photo of specimen from Mekong delta, often misidentified as *Leiognathus splendens* 69: 1440
1767. *Leiognathus longispinis* (Valenciennes, 1835) — Gulf of Thailand in Woodland, et al. (FAO) 69: 1441
1768. *Leiognathus philippinus* Fowler, 1918 — WJR in Mekong delta.
1769. *Leiognathus sp.* — Undescribed species of Gulf of Thailand in Woodland, et al. (FAO).
1770. *Nuchequula gerreoides* (Bleeker, 1851) — MBFS in Mekong plume, formerly *Leiognathus decorus* 69: 1442
1771. *Nuchequula pan* Wongratana, 1988 — Photo of specimen from Mekong delta 69: 1443
1772. *Secutor hanedai* Mochizuki & Hayashi, 1989 — Gulf of Thailand in Woodland, et al. (FAO).
1773. *Secutor indicius* Mongkolprasit, 1973 — MBFS in Mekong plume, photo of specimen from Gulf of Thailand 69: 1444
1774. *Secutor megalolepis* Mochizuki & Hayashi, 1989 — Gulf of Thailand in Woodland et al. (FAO) 69: 1445
1775. *Secutor ruconius* (Hamilton, 1822) — Photo of specimen form Mekong delta 69: 1446

Bramidae - pomfrets

1776. *Brama dussumieri* Cuvier, 1831 — Pelagic from nearby seas in Last & Moteki (FAO), possible in markets.
1777. *Brama orcini* Cuvier, 1831 — Pelagic from nearby seas in Last & Moteki (FAO), possible in markets.
1778. *Pteraclis aesticola* (Jordan & Snyder, 1901) — Pelagic from nearby seas in Last & Moteki (FAO), possible in markets 69: 1447
1779. *Pterycombus petersii* (Hilgendorf, 1878) — Pelagic from nearby seas in Last & Moteki (FAO), possible in markets.
1780. *Taractes rubescens* (Jordan & Jordan, 1887) — Pelagic from nearby seas in Last & Moteki (FAO), possible in markets.
1781. *Taractichthys steindachneri* (Döderlein, 1883) — Pelagic from nearby seas in Last & Moteki (FAO), possible in markets 69: 1448

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1782. *Aphareus furca* (La Cepède, 1801) — Throughout area in Anderson & Allen (FAO), Spratly Islands in Chen et al. (1997) 69: 1449
1783. *Aphareus rutilans* Cuvier, 1830 — Throughout area in Anderson & Allen (FAO), Spratly Islands in Chen et al. (1997) 70: 1450
1784. *Aprion virescens* Valenciennes, 1830 — Throughout area in Anderson & Allen (FAO), Spratly Islands in Chen et al. (1997) 70: 1451
1785. *Etelis carbunculus* Cuvier, 1828 — Throughout area in Anderson & Allen (FAO), central Viet Nam in Nguyen et al. (1995) 70: 1452
1786. *Etelis coruscans* Valenciennes, 1862 — Throughout area in Anderson & Allen (FAO) 70: 1453
1787. *Etelis radiosus* Anderson, 1981 — Eastern South China Sea in Anderson & Allen (FAO) possible in area 70: 1454
1788. *Lipocheilus carnolabrum* (Chan, 1970) — Throughout area in Anderson & Allen (FAO) 70: 1455
1789. *Lutjanus argentimaculatus* (Forsskål, 1775) — Orsi (1974) specimens from Viet Nam, CAS specimens from eastern Gulf of Thailand 70: 1456
1790. *Lutjanus biguttatus* (Valenciennes, 1830) — KFL from Gulf of Thailand, central Viet Nam in Nguyen et al. (1995) 70: 1457
1791. *Lutjanus bitaeniatus* (Valenciennes, 1830) — MBFS in Mekong plume, but identification questionable 70: 1458
1792. *Lutjanus bohar* (Forsskål, 1775) — Throughout area in Anderson & Allen (FAO), Cu Lao Cau, Con Dao and Spratly Islands in Nguyen & Nguyen (2006) 70: 1459
1793. *Lutjanus carponotatus* (Richardson, 1842) — KFL from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 70: 1460
1794. *Lutjanus decussatus* (Cuvier, 1828) — KFL from Gulf of Thailand, Orsi (1974) from Viet Nam, Spratly Islands in Chen et al. (1997) 70: 1461
1795. *Lutjanus ehrenbergii* (Peters, 1869) — Orsi (1974) specimens from Viet Nam, throughout area in Anderson & Allen (FAO) 70: 1462
1796. *Lutjanus erythropterus* Bloch, 1790 — MBFS in Mekong plume 70: 1463-4
1797. *Lutjanus fulviflamma* (Forsskål, 1775) — Photo of specimen from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 70: 1465
1798. *Lutjanus fulvus* (Forster, 1801) — KFL from Gulf of Thailand, central Viet Nam in Nguyen et al. (1995) 70: 1466
1799. *Lutjanus fuscescens* (Valenciennes, 1830) — South China Sea including central Viet Nam coast in Anderson & Allen (FAO).
1800. *Lutjanus gibbus* (Forsskål, 1775) — Orsi (1974) specimens from Viet Nam, throughout area in Anderson & Allen (FAO) 70: 1467
1801. *Lutjanus johnii* (Bloch, 1792) — MBFS in Mekong plume 70: 1468-9
1802. *Lutjanus kasmira* (Forsskål, 1775) — KFL from Gulf of Thailand, Orsi (1974) from Viet Nam, Spratly Islands in Chen et al. (1997) 70: 1470
1803. *Lutjanus lemniscatus* (Valenciennes, 1828) — CAS specimen from eastern Gulf of Thailand 71: 1471
1804. *Lutjanus lunulatus* (Park, 1797) — Eastern South China Sea in Anderson & Allen (FAO), possible in area 71: 1472
1805. *Lutjanus lutjanus* Bloch, 1790 — Photo of specimen from Mekong delta 71: 1473

1806. *Lutjanus madras* (Valenciennes, 1831) — MBFS in Mekong plume . . . 71: 1474
1807. *Lutjanus malabaricus* (Bloch & Schneider, 1801) — MBFS in Mekong plume . . . 71: 1475-6
1808. *Lutjanus monostigma* (Cuvier, 1828) — Orsi (1974) specimens from Viet Nam, throughout area in Anderson & Allen (FAO) . . . 71: 1477
1809. *Lutjanus quinquelineatus* (Bloch, 1790) — Nha Trang specimens at ROM, CAS specimen from west central Gulf of Thailand . . . 71: 1478
1810. *Lutjanus rivulatus* (Cuvier, 1828) — Orsi (1974) specimens from Viet Nam, throughout area in Anderson & Allen (FAO) . . . 71: 1479
1811. *Lutjanus rufolineatus* (Valenciennes, 1830) — Orsi (1974) specimens from Viet Nam, throughout area in Anderson & Allen (FAO) . . . 71: 1480
1812. *Lutjanus russellii* (Bleeker, 1849) — Photo of specimen from Mekong delta . . . 71: 1481-2
1813. *Lutjanus sebae* (Cuvier, 1828) — KFL from Gulf of Thailand, CAS specimen from eastern Gulf of Thailand . . . 71: 1483-4
1814. *Lutjanus semicinctus* (Quoy & Gaimard, 1824) — KFL from Gulf of Thailand, possible misidentification . . . 71: 1485
1815. *Lutjanus timoriensis* (Quoy & Gaimard, 1824) — Gulf of Thailand and South China Sea . . . 71: 1486
1816. *Lutjanus vitta* (Quoy & Gaimard, 1824) — MBFS in Mekong plume . . . 71: 1487
1817. *Macolor macularis* Fowler, 1931 — South China Sea and Gulf of Thailand in Anderson & Allen (FAO), Spratly Islands in Chen et al. (1997).
1818. *Macolor niger* (Forsskål, 1775) — Orsi (1974) specimens from Viet Nam, throughout area in Anderson & Allen (FAO) . . . 71: 1488
1819. *Paracaesio kusakarii* Abe, 1960 — South China Sea, like in our area in Anderson & Allen (FAO) . . . 71: 1489
1820. *Paracaesio xanthura* (Bleeker, 1869) — Orsi (1974) lists from Viet Nam, throughout area in Anderson & Allen (FAO) . . . 71: 1490
1821. *Pinjalo pinjalo* (Bleeker, 1850) — Orsi (1974) specimens from Viet Nam, most of South China Sea in Anderson & Allen (FAO) . . . 71: 1491
1822. *Pristipomoides argyrogrammicus* (Valenciennes, 1832) — Throughout area in Anderson & Allen (FAO) . . . 72: 1492
1823. *Pristipomoides auricilla* (Jordan, Evermann & Tanaka, 1927) — Throughout area in Anderson & Allen (FAO) . . . 72: 1493
1824. *Pristipomoides filamentosus* (Valenciennes, 1830) — Orsi (1974) specimens from Viet Nam, also in Anderson & Allen (FAO) . . . 72: 1494
1825. *Pristipomoides multidens* (Day, 1871) — Gulf of Thailand and Southern Viet Nam coast in Anderson & Allen (FAO) . . . 72: 1495
1826. *Pristipomoides sieboldii* (Bleeker, 1854) — Orsi (1974) lists from Viet Nam, eastern South China Sea in Anderson & Allen (FAO) . . . 72: 1496
1827. *Pristipomoides typus* Bleeker, 1852 — Orsi (1974) specimens from Viet Nam, central South China sea in Anderson & Allen (FAO) . . . 72: 1497
1828. *Pristipomoides zonatus* (Valenciennes, 1830) — Eastern South China Sea and Malay Peninsula in Anderson & Allen (FAO) . . . 72: 1498
1829. *Symphorichthys spilurus* (Günther, 1874) — Throughout area in Anderson & Allen (FAO) . . . 72: 1499
1830. *Symphorus nematophorus* (Bleeker, 1860) — KFL from Gulf of Thailand . . . 72: 1500

Caesionidae - fusiliers

1831. *Caesio caerulaurea* La Cepède, 1801 — KFL from Gulf of Thailand, CAS from Gulf of Thailand, Spratly Islands in Chen et al. (1997) . . . 72: 1501
1832. *Caesio cuning* (Bloch, 1791) — MBFS in Mekong plume . . . 72: 1502
1833. *Caesio lunaris* Cuvier, 1830 — Throughout area in Carpenter (FAO), Spratly Islands in Chen et al. (1997) . . . 72: 1503
1834. *Caesio striata* Rüppell, 1830 — Spratly Islands in Nguyen & Nguyen (2006).
1835. *Caesio teres* Seale, 1906 — Throughout area in Carpenter (FAO), Spratly Islands in Chen et al. (1997) . . . 72: 1504
1836. *Caesio varilineata* Carpenter, 1987 — KFL from Gulf of Thailand (questionable identification).
1837. *Caesio xanthonota* Bleeker, 1853 — KFL from Gulf of Thailand . . . 72: 1505
1838. *Dipterygonotus balteatus* (Valenciennes, 1830) — Orsi (1974) specimens from Viet Nam, throughout area in Carpenter (FAO) . . . 72: 1506
1839. *Gymnocaesio gymnoptera* (Bleeker, 1856) — South China Sea - Malay Peninsula in Carpenter (FAO) . . . 72: 1507
1840. *Pterocaesio chrysozona* (Cuvier, 1830) — Photo of specimen from Mekong delta . . . 72: 1508
1841. *Pterocaesio digramma* (Bleeker, 1864) — Orsi (1974) specimens from Viet Nam, throughout area in Carpenter (FAO) . . . 72: 1509
1842. *Pterocaesio marri* Schultz, 1953 — Throughout area in Carpenter (FAO) . . . 72: 1510
1843. *Pterocaesio pisang* (Bleeker, 1853) — KFL from Gulf of Thailand, Spratly Islands in Chen et al. (1997) . . . 72: 1511
1844. *Pterocaesio randalli* Carpenter, 1987 — Spratly Islands in Chen et al. (1997).
1845. *Pterocaesio tessellata* Carpenter, 1987 — An Thoi (on Phu Quoc Island) in Nguyen & Nguyen (2006).
1846. *Pterocaesio tile* (Cuvier, 1830) — KFL from Gulf of Thailand, Spratly Islands in Chen et al. (1997).
1847. *Pterocaesio trilineata* Carpenter, 1987 — Cu Lao Cau, An Thoi and Spratly Islands in Nguyen & Nguyen (2006).

Datnioididae - tigerperches

1848. *Datnioides polota* (Hamilton, 1822) — Photo of specimen from Gulf of Thailand estuary . . . 72: 1512
1849. *Datnioides pulcher* (Kottelat, 1998) — Photo of specimen from Mekong delta . . . 73: 1513
1850. *Datnioides undecemradiatus* (Roberts & Kottelat, 1994) — Photo of specimen from Lao Mekong . . . 73: 1514

Lobotidae - tripletails

1851. *Lobotes surinamensis* (Bloch, 1790) — Photo of specimen from Gulf of Thailand . . . 73: 1515

Gerreidae - mojarras

1852. *Gerres chrysops* Iwatsuki, Kimura & Yoshino, 1999 — Described from northeastern Gulf of Thailand . . . 73: 1516
1853. *Gerres decacanthus* (Bleeker, 1864) — Central Viet Nam coast in Woodland (FAO).
1854. *Gerres erythrourus* (Bloch, 1791) — Throughout area in Woodland (FAO), formerly called *Gerres abbreviatus* . . . 73: 1517
1855. *Gerres filamentosus* Cuvier, 1829 — Throughout area in Woodland (FAO) . . . 73: 1518
1856. *Gerres infasciatus* Iwatsuki & Kimura, 1998 — photo of specimen from Mekong delta, original description from Gulf of Thailand . . . 73: 1519
1857. *Gerres japonicus* Bleeker, 1854 — Central and southern Viet Nam in Nguyen et al. (1995).
1858. *Gerres limbatus* Cuvier, 1830 — Photo of specimen from Mekong delta, formerly called *Gerres lucidus* . . . 73: 1520
1859. *Gerres longirostris* (La Cepède, 1801) — KFL from Gulf of Thailand, central and southern Viet Nam in Nguyen et al. (1995), includes former *Gerres poieti* and *Gerres acinaces* . . . 73: 1521
1860. *Gerres macracanthus* Bleeker, 1854 — KFL from Gulf of Thailand . . . 73: 1522
1861. *Gerres oblongus* Cuvier, 1830 — Throughout area in Woodland (FAO).
1862. *Gerres oyena* (Forsskål, 1875) — Nha Trang specimens at ROM . . . 73: 1523
1863. *Gerres poeti* Cuvier, 1830 — Photo of specimen from Gulf of Thailand, not *Gerres poieti* Cuvier, 1829 as explained by Woodland (FAO).

1864. *Gerres shima* Iwatsuki, Kimura & Yoshino, 2007 — Gulf of Thailand in original description.
1865. *Pentaprion longimanus* (Cantor, 1850) — MBFS in Mekong plume 73: 1524

Haemulidae - grunts

1866. *Diagramma picta* (Thunberg, 1792) — Photo of specimen from Sihanoukville, Cambodia, MBFS in Mekong plume 73: 1525-7
1867. *Hapalogenys analis* (Richardson, 1845) — MBFS in Mekong plume 73: 1528
1868. *Hapalogenys kishinouyei* Smith & Pope, 1907 — Orsi (1974) from Viet Nam, also Tonkin Gulf in Nguyen et al. (1995), uncertain southward 73: 1529
1869. *Plectorhinchus chaetodonoides* La Cepède, 1801 — Mekong delta coastline in McKay (FAO), Nha Trang specimens at ROM, CAS specimen from eastern Gulf of Thailand 73: 1530-2
1870. *Plectorhinchus chrysotaenia* (Bleeker, 1855) — Mekong delta coastline in McKay (FAO), central Viet Nam in Nguyen et al. (1995) 73: 1533
1871. *Plectorhinchus diagrammus* (Linnaeus, 1758) — Nha Trang and Cu Lao Cau in Nguyen & Nguyen (2006).
1872. *Plectorhinchus flavomaculatus* (Cuvier, 1830) — Mekong delta coastline in McKay (FAO) 74: 1534
1873. *Plectorhinchus gibbosus* (La Cepède, 1802) — KFL from Gulf of Thailand, Mekong delta coastline in McKay (FAO) 74: 1535
1874. *Plectorhinchus lineatus* (Linnaeus, 1758) — Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 74: 1536-7
1875. *Plectorhinchus nigrus* (Cuvier, 1830) — Central Viet Nam in Nguyen et al. (1995).
1876. *Plectorhinchus orientalis* (Bloch, 1793) — Nha Trang in Nguyen & Nguyen (2006).
1877. *Plectorhinchus pictus* (Tortonese, 1936) — MBFS in Mekong plume 74: 1538
1878. *Plectorhinchus picus* (Cuvier, 1828) — Mekong delta coastline in McKay (FAO) 74: 1539
1879. *Plectorhinchus polytaenia* (Bleeker, 1852) — Spratly Islands in Nguyen & Nguyen (2006).
1880. *Plectorhinchus schotaf* (Forsskål, 1775) — Central Viet Nam in Nguyen et al. (1995), Con Dao in Nguyen & Nguyen (2006) 74: 1540
1881. *Plectorhinchus vittatus* (Linnaeus, 1758) — Nha Trang specimens at ROM, southern Gulf of Thailand in McKay (FAO) 74: 1541
1882. *Pomadasys argenteus* (Forsskål, 1775) — Viet Nam and Gulf of Thailand in McKay (FAO) 74: 1542
1883. *Pomadasys argyreus* (Valenciennes, 1833) — MBFS in Mekong plume 74: 1543
1884. *Pomadasys auritus* (Cuvier, 1830) — Viet Nam and Gulf of Thailand in McKay (FAO).
1885. *Pomadasys furcatus* (Bloch & Schneider, 1801) — Viet Nam and Gulf of Thailand in McKay (FAO) 74: 1544
1886. *Pomadasys kaakan* (Cuvier, 1830) — MBFS in Mekong plume 74: 1545
1887. *Pomadasys maculatus* (Bloch, 1793) — Viet Nam and Gulf of Thailand in McKay (FAO) 74: 1546
1888. *Pomadasys trifasciatus* Fowler, 1937 — Described from Gulf of Thailand.

Sparidae - porgies

1889. *Acanthopagrus berda* (Forsskål, 1775) — Photo of specimen from Mekong delta 74: 1547
1890. *Acanthopagrus latus* (Houttuyn, 1782) — Central Viet Nam in Carpenter (FAO) 74: 1548
1891. *Argyrops spinifer* (Forsskål, 1775) — Viet Nam and Gulf of Thailand in Carpenter (FAO) 74: 1549
1892. *Evynnis tumifrons* (Temminck & Schlegel, 1843) — Orsi (1974) specimens from Viet Nam 74: 1550
1893. *Pagrus major* (Temminck & Schlegel, 1843) — Orsi (1974) specimens from Viet Nam, and central Viet Nam in Nguyen et al. (1995) 74: 1551
1894. *Rhabdosargus sarba* (Forsskål, 1775) — Widespread, Japan to S. Africa, Orsi (1974) lists from Viet Nam 74: 1552

Lethrinidae - emperor breams

1895. *Gnathodentex aurolineatus* (La Cepède, 1802) — Viet Nam and Gulf of Thailand in Carpenter (FAO), Spratly Islands in Chen et al. (1997) 74: 1553
1896. *Gymnocranius elongatus* Senta, 1973 — Viet Nam and Gulf of Thailand in Carpenter (FAO) 74: 1554
1897. *Gymnocranius euanus* Günther, 1879 — Viet Nam and Gulf of Thailand in Carpenter (FAO), Spratly Islands in Chen et al. (1997).
1898. *Gymnocranius frenatus* Bleeker, 1873 — Viet Nam and Gulf of Thailand in Carpenter (FAO).
1899. *Gymnocranius grandoculis* (Valenciennes, 1830) — MBFS in Mekong plume 75: 1555
1900. *Gymnocranius griseus* (Schlegel, 1843) — MBFS in Mekong plume 75: 1556
1901. *Gymnocranius microdon* (Bleeker, 1851) — Viet Nam and Gulf of Thailand in Carpenter (FAO) 75: 1557
1902. *Lethrinus atkinsoni* Seale, 1910 — MBFS in Mekong plume 75: 1558
1903. *Lethrinus erythracanthus* Valenciennes, 1830 — KFL from Gulf of Thailand, Spratly Islands in Chen et al. (1997) 75: 1559
1904. *Lethrinus erythropterus* Valenciennes, 1830 — Fowler (1935) from Bangkok, probably Gulf of Thailand 75: 1560
1905. *Lethrinus genivittatus* Valenciennes, 1830 — Photo of specimen from Nha Trang 75: 1561
1906. *Lethrinus haematopterus* Temminck & Schlegel, 1844 — Spratly Islands in Nguyen & Nguyen (2006).
1907. *Lethrinus harak* (Forsskål, 1775) — Spratly Islands in Chen et al. (1997), Con Dao in Nguyen & Nguyen (2006) 75: 1562
1908. *Lethrinus lentjan* (La Cepède, 1802) — Viet Nam and Gulf of Thailand in Carpenter (FAO), Spratly Islands in Chen et al. (1997) 75: 1563
1909. *Lethrinus microdon* Valenciennes, 1830 — Southern Viet Nam and Gulf of Thailand in Carpenter (FAO) 75: 1564
1910. *Lethrinus miniatus* (Forster, 1801) — Nha Trang specimens at ROM, also Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) . . 75: 1565
1911. *Lethrinus nebulosus* (Forsskål, 1775) — MBFS in Mekong plume, also Gulf of Thailand in Carpenter (FAO) 75: 1566
1912. *Lethrinus obsoletus* (Forsskål, 1775) — Nha Trang, Cu Lao Cau, Con Dao and An Thoi in Nguyen & Nguyen (2006) 75: 1567
1913. *Lethrinus olivaceus* Valenciennes, 1830 — MBFS in Mekong plume 75: 1568
1914. *Lethrinus ornatus* Valenciennes, 1830 — Nha Trang specimens at ROM, Con Dao in Nguyen & Nguyen (2006) 75: 1569
1915. *Lethrinus reticulatus* Valenciennes, 1830 — Orsi (1974) lists from Viet Nam; Spratly Islands in Chen et al. (1997).
1916. *Lethrinus rubrioperculatus* Sato, 1978 — Spratly Islands in Nguyen & Nguyen (2006) 75: 1570
1917. *Lethrinus variegatus* Valenciennes, 1830 — KFL from Gulf of Thailand, and Spratly Islands in Nguyen & Nguyen (2006) 75: 1571
1918. *Lethrinus xanthochilus* Klunzinger, 1870 — Nha Trang, Cu Lao Cau and An Thoi in Nguyen & Nguyen (2006).
1919. *Monotaxis grandoculis* (Forsskål, 1775) — CAS specimen from Nha Trang Bay, also Gulf of Thailand in Carpenter (FAO) 75: 1572
1920. *Wattsia mossambica* (Smith, 1957) — Viet Nam and Gulf of Thailand in Carpenter (FAO) 75: 1573

Nemipteridae - threadfin breams

1921. *Nemipterus aurorus* Russell, 1993 — Viet Nam and Gulf of Thailand in Russell (FAO).
1922. *Nemipterus bathybius* Snyder, 1911 — Viet Nam and Gulf of Thailand in Russell (FAO) 75: 1574
1923. *Nemipterus furcosus* (Valenciennes, 1830) — MBFS in Mekong plume 75: 1575
1924. *Nemipterus hexodon* (Quoy & Gaimard, 1824) — Photo of specimen from Sihanoukville, Cambodia 76: 1576
1925. *Nemipterus isacanthus* (Bleeker, 1873) — CAS specimen from eastern Gulf of Thailand, also southern Viet Nam in Russell (FAO) 76: 1577
1926. *Nemipterus japonicus* (Bloch, 1791) — KFL from Gulf of Thailand, CAS specimen from Gulf of Thailand 76: 1578
1927. *Nemipterus marginatus* (Valenciennes, 1830) — MBFS in Mekong plume 76: 1579
1928. *Nemipterus mesoprion* (Bleeker, 1853) — MBFS in Mekong plume 76: 1580
1929. *Nemipterus nematophorus* (Bleeker, 1853) — CAS specimens from Gulf of Thailand, also Viet Nam in Russell (FAO) 76: 1581
1930. *Nemipterus nemurus* (Bleeker, 1857) — MBFS in Mekong plume 76: 1582
1931. *Nemipterus peronii* (Valenciennes, 1830) — MBFS in Mekong plume 76: 1583
1932. *Nemipterus tambuloides* (Bleeker, 1853) — Viet Nam and Gulf of Thailand in Russell (FAO) 76: 1584
1933. *Nemipterus thosaporni* Russell, 1991 — Viet Nam and Gulf of Thailand in Russell (FAO) 76: 1585
1934. *Nemipterus virgatus* (Houttuyn, 1782) — MBFS in Mekong plume 76: 1586
1935. *Nemipterus zysron* (Bleeker, 1856-57) — Widespread in Russell (1990), possibly western side of South China Sea 76: 1587
1936. *Parascolopsis eriomma* (Jordan & Richardson, 1909) — Widespread throughout Philippines, near Spratly islands in Russell (FAO) 76: 1588
1937. *Parascolopsis inermis* (Temminck & Schlegel, 1843) — Orsi (1974) from Viet Nam, Viet Nam and Gulf of Thailand in Russell (FAO) . . . 76: 1589
1938. *Pentapodus caninus* (Cuvier, 1830) — Spratly Islands in Chen et al. (1997), also Nha Trang and Cu Lao Cau in Nguyen & Nguyen (2006) 76: 1590
1939. *Pentapodus emeryii* (Richardson, 1843) — Central Viet Nam in Nguyen et al. (1995), Cu Lao Cau in Nguyen & Nguyen (2006) 76: 1591
1940. *Pentapodus setosus* (Valenciennes, 1830) — MBFS in Mekong plume 76: 1592
1941. *Scolopsis affinis* Peters, 1877 — MBFS in Mekong plume 76: 1593
1942. *Scolopsis bilineata* (Bloch, 1793) — Photo of specimen from Kampot, Cambodia, Spratly Islands in Chen et al. (1997) 76: 1594
1943. *Scolopsis ciliata* (La Cepède, 1802) — Nha Trang specimens at ROM and CAS, CAS specimens from eastern Gulf of Thailand 76: 1595
1944. *Scolopsis frenatus* (Cuvier, 1830) — Nha Trang and Spratly Islands in Nguyen & Nguyen (2006).
1945. *Scolopsis lineata* Quoy & Gaimard, 1824 — CAS from Nha Trang Bay and Binh Chang Bay, also Southern Viet Nam in Russell (FAO) . . 76: 1596
1946. *Scolopsis margaritifera* (Cuvier, 1830) — CAS specimens from eastern Gulf of Thailand, Nha Trang Bay and Binh Chang Bay 77: 1597
1947. *Scolopsis monogramma* (Cuvier, 1830) — MBFS in Mekong plume 77: 1598
1948. *Scolopsis taenioptera* (Cuvier, 1830) — MBFS in Mekong plume 77: 1599
1949. *Scolopsis trilineata* Kner, 1868 — Central Viet Nam in Nguyen et al. (1995) 77: 1600
1950. *Scolopsis vosmeri* (Bloch, 1792) — MBFS in Mekong plume 77: 1601
1951. *Scolopsis xenochrous* Günther, 1872 — Orsi (1974) specimens from Viet Nam, Spratly Islands in Chen et al. (1997) 77: 1602

Polynemidae - threadfins

1952. *Eleutheronema rhadinum* (Jordan & Evermann, 1902) — Coast of Viet Nam in Motomura (2004).
1953. *Eleutheronema tetradactylum* (Shaw, 1804) — WJR in Mekong delta, photo of specimen from Gulf of Thailand 77: 1603
1954. *Eleutheronema tridactylum* (Bleeker, 1849) — CAS specimens from Gulf of Thailand, Gulf of Thailand in Feltes (FAO).
1955. *Filimanus heptadactyla* (Cuvier, 1829) — Gulf of Thailand in Feltes (FAO).
1956. *Filimanus xanthonema* (Valenciennes, 1831) — Malay Peninsula and South China Sea in Feltes (FAO).
1957. *Leptomelanosoma indicum* (Shaw, 1804) — Gulf of Thailand in Motomura & Iwatsuki (2001), southern Viet Nam in Nguyen & Nguyen (1994).
1958. *Polydactylus microstomus* Bleeker, 1851 — From India to China, often confused with *Polynemus sextarius* 77: 1604
1959. *Polydactylus plebeius* (Broussonet, 1782) — Gulf of Thailand and Viet Nam coast in Feltes (FAO) 77: 1605
1960. *Polydactylus sexfilis* (Valenciennes, 1831) — Gulf of Thailand and Viet Nam coast in Feltes (FAO).
1961. *Polydactylus sextarius* (Bloch & Schneider, 1801) — Photo of specimen from Gulf of Thailand 77: 1606
1962. *Polydactylus siamensis* Motomura, Iwatsuki & Yoshino, 2001 — Gulf of Thailand in Motomura, et al. (2001) 77: 1607
1963. *Polynemus aquilonaris* Motomura, 2003 — MBFS in Mekong delta 77: 1608
1964. *Polynemus bidentatus* Motomura & Tsukawaki, 2006 — Described from Mekong delta 77: 1609
1965. *Polynemus melanochir* Valenciennes, 1831 — Photo of specimen from Mekong delta 77: 1610
1966. *Polynemus multifilis* Temminck & Schlegel, 1843 — Gulf of Thailand in Feltes (FAO).
1967. *Polynemus paradiseus* Linnaeus, 1758 — Estuaries and rivers of Gulf of Thailand, photo of specimen from Chao Phrya basin 77: 1611
1968. *Polynemus sp.* — Photo of specimen from Mekong delta at Long Xuyen 77: 1612

Sciaenidae - drums, croakers

1969. *Argyrosomus amoyensis* (Bleeker, 1863) — China to India, not yet recorded from Viet Nam, but likely.
1970. *Aspericorvina jubata* (Bleeker, 1855) — Viet Nam and Gulf of Thailand in Sasaki (FAO) 77: 1613
1971. *Atrobucca nibe* (Jordan & Thompson, 1911) — MBFS in Mekong plume (identification questionable) 77: 1614
1972. *Bahaba polykladiskos* (Bleeker, 1852) — Definite from West Borneo and possible from Mekong in Sasaki (FAO).
1973. *Bahaba sp.* — Mekong region in Sasaki (FAO).
1974. *Boesemania microlepis* (Bleeker, 1858) — Mekong freshwater to estuary, photo of specimen from Gulf of Thailand estuary 77: 1615
1975. *Chrysochir aureus* (Richardson, 1846) — Photo of specimen from Mekong delta 77: 1616
1976. *Collichthys lucidus* (Richardson, 1844) — Central and southern Viet Nam in Nguyen et al. (1995).
1977. *Dendrophysa russelii* (Cuvier, 1829) — Photo of specimen from Mekong delta 77: 1617
1978. *Johnius amblycephalus* (Bleeker, 1855) — MBFS from Mekong plume, photo of specimen from Sihanoukville, Cambodia 78: 1618
1979. *Johnius belangerii* (Cuvier, 1830) — Photo of specimen from Mekong delta 78: 1619
1980. *Johnius borneensis* (Bleeker, 1851) — KFL from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 78: 1620
1981. *Johnius carouna* (Cuvier, 1830) — Photo of specimen from Mekong delta 78: 1621
1982. *Johnius carutta* Bloch, 1793 — KFL from Gulf of Thailand; Sasaki (FAO) records only from west of Malay Peninsula 78: 1622

1983. *Johnius coitor* (Hamilton, 1822) — Shallow estuariesfrom India to Borneo, possibly in Mekong 78: 1623
1984. *Johnius goldmani* (Bleeker, 1854) — Central and southern Viet Nam in Nguyen et al. (1995).
1985. *Johnius latifrons* Sasaki, 1992 — Photo of specimen from Mekong delta 78: 1624-5
1986. *Johnius macrorhynus* (Mohan, 1976) — MBFS from Mekong delta, photo of specimen from Gulf of Thailand 78: 1626
1987. *Johnius plagiostoma* (Bleeker, 1850) — KFL from Gulf of Thailand, also from Viet Nam in Sasaki (FAO).
1988. *Johnius trachycephalus* (Bleeker, 1850) — Photos of specimens from Mekong delta 78: 1627-8
1989. *Johnius trewavasae* Sasaki, 1992 — MBFS from Mekong plume.
1990. *Johnius weberi* Hardenberg, 1936 — Photo of specimen from Gulf of Thailand 78: 1629
1991. *Larimichthys crocea* (Richardson, 1846) — Central Viet Nam in Nguyen et al. (1995).
1992. *Nibea coibor* (Hamilton, 1822) — Widespread, including central and southern Viet Nam in Nguyen et al. (1995).
1993. *Nibea maculata* (Bloch & Schneider, 1801) — Southern Viet Nam in Nguyen et al. (1995), otherwise known from Indian Ocean.
1994. *Nibea semifasciata* Chu, Lo & Wu, 1963 — Gulf of Thailand in Sasaki (FAO).
1995. *Nibea soldado* (La Cepède, 1802) — CAS specimens from eastern Gulf of Thailand 78: 1630-1
1996. *Otolithes ruber* (Bloch & Schneider, 1801) — Photo of specimen from Mekong delta 78: 1632
1997. *Otolithoides biauritus* (Cantor, 1849) — MBFS in Mekong plume.
1998. *Otolithoides pama* (Hamilton, 1822) — Orsi (1974) lists from Viet Nam, central Viet Nam in Nguyen & Nguyen (2006).
1999. *Panna microdon* (Bleeker, 1849) — Photo of specimen from Mekong delta 78: 1633
2000. *Panna perarmatus* (Chabanaud, 1926) — Viet Nam and Gulf of Thailand in Sasaki (FAO).
2001. *Pennahia anea* (Bloch, 1793) — MBFS from Mekong plume, photo of specimen from Sihanoukville, Cambodia 78: 1634
2002. *Pennahia argentata* (Houttuyn, 1782) — MBFS from Mekong plume identified using Trewavas (1977), also listed by Orsi (1974).
2003. *Pennahia macrocephala* (Tang, 1937) — MBFS from Mekong plume.
2004. *Pennahia pawak* (Lin, 1940) — MBFS from Mekong plume 78: 1635
2005. *Protonibea diacanthus* (La Cepède, 1802) — MBFS from Mekong delta, photo of specimen from Gulf of Thailand 78: 1636
2006. *Pterotolithus lateoides* (Bleeker, 1850) — Photo of specimen from Mekong delta 78: 1637
2007. *Pterotolithus maculatus* (Cuvier, 1830) — Orsi (1974) specimens from Viet Nam.

Mullidae - goatfishes

2008. *Mulloidichthys flavolineatus* (La Cepède, 1801) — KFL from Gulf of Thailand, Spratly Islands in Chen et al. (1997) 78: 1638
2009. *Mulloidichthys vanicolensis* (Valenciennes, 1831) — Cu Lao Cau in Nguyen & Nguyen (2006), also Gulf of Thailand in Randall (FAO) . . 79: 1639
2010. *Parupeneus barberinoides* (Bleeker, 1852) — Nha Trang, Cu Lao Cau and An Thoi in Nguyen & Nguyen (2006) 79: 1640
2011. *Parupeneus barberinus* (La Cepède, 1801) — Nha Trang, Cu Lao Cau, Con Dau, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 79: 1641
2012. *Parupeneus biaculeatus* (Richardson, 1846) — A synonym, *Parupeneus aurantius* of Fourmanoir (1966), described from Nha Trang.
2013. *Parupeneus chrysopleuron* (Temminck & Schlegel, 1843) — Orsi (1974) and Fourmanoir & Nhung (1965) from Viet Nam 79: 1642
2014. *Parupeneus ciliatus* (La Cepède, 1802) — Gulf of Thailand in Randall (FAO), Spratly Islands in Chen et al. (1997) 79: 1643
2015. *Parupeneus crassilabris* (Valenciennes, 1831) — Viet Nam in Randall (2004) 79: 1644
2016. *Parupeneus cyclostomus* (La Cepède, 1801) — Viet Nam and Gulf of Thailand in Randall (FAO), Spratly Islands in Chen et al. (1997) . . . 79: 1645
2017. *Parupeneus heptacanthus* (La Cepède, 1802) — Photo of specimen from Sihanoukville, Cambodia, Spratly Islands in Chen et al. (1997) . . 79: 1646
2018. *Parupeneus indicus* (Shaw, 1803) — Photo of specimen from Sihanoukville, Cambodia, also Nha Trang, Cu Lao Cau, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 79: 1647
2019. *Parupeneus macronemus* (La Cepède, 1801) — Viet Nam and Gulf of Thailand in Randall (FAO) 79: 1648
2020. *Parupeneus multifasciatus* (Quoy & Gaimard, 1825) — Nha Trang specimens at ROM and CAS, Gulf of Thailand in Randall (FAO) 79: 1649
2021. *Parupeneus pleurostigma* (Bennett, 1831) — Viet Nam and Gulf of Thailand in Randall (FAO), Spratly Islands in Chen et al. (1997) 79: 1650
2022. *Parupeneus trifasciatus* (La Cepède, 1801) — Nha Trang, Cu Lao Cau, Con Dao and Spratly Islands in Nguyen & Nguyen (2006).
2023. *Upeneus japonicus* (Houttuyn, 1782) — Orsi (1974) lists from Viet Nam as *Upeneus bensasi* 79: 1651
2024. *Upeneus luzonius* Jordan & Seale, 1907 — Central Viet Nam in Nguyen et al. (1995) 79: 1652
2025. *Upeneus moluccensis* (Bleeker, 1855) — MBFS from Mekong plume 79: 1653
2026. *Upeneus sulphureus* Cuvier, 1829 — MBFS from Mekong plume 79: 1654
2027. *Upeneus sundaicus* (Bleeker, 1855) — KFL from Gulf of Thailand, central Viet Nam in Nguyen et al. (1995) 79: 1655
2028. *Upeneus tragula* Richardson, 1846 — Nha Trang specimens at ROM, throughout area in Randall (FAO) 79: 1656
2029. *Upeneus vittatus* (Forsskål, 1775) — KFL from Gulf of Thailand, central Viet Nam in Nguyen et al. (1995) 79: 1657

Pempheridae - sweepers

2030. *Parapriacanthus ransonneti* Steindachner, 1870 — Central and southern Viet Nam in Nguyen et al. (1995) 79: 1658
2031. *Pempheris malabarica* Cuvier, 1831 — KFL from Gulf of Thailand (possibly *Pempheris mangula*).
2032. *Pempheris mangula* Cuvier, 1829 — KFL from Gulf of Thailand 79: 1659
2033. *Pempheris molucca* Cuvier, 1829 — Central and southern Viet Nam in Nguyen et al. (1995), Spratly Islands in Nguyen & Nguyen (2006).
2034. *Pempheris otaitensis* Cuvier, 1831 — WJR in Gulf of Thailand.
2035. *Pempheris oualensis* Cuvier, 1831 — Nha Trang, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 80: 1660
2036. *Pempheris schwenkii* Bleeker, 1855 — Nha Trang specimens at ROM, throughout Indo-West Pacific 80: 1661
2037. *Pempheris vanicolensis* Cuvier, 1831 — Central and southern Viet Nam in Nguyen et al. (1995) 80: 1662

Glaucosomatidae - pearl perches

2038. *Glaucosoma buergeri* Richardson, 1845 — Fourmanoir & Nhung (1965) from Nha Trang, southern Viet Nam coast in McKay (FAO) 80: 1663

Monodactylidae - moonfishes

2039. *Monodactylus argenteus* (Linnaeus, 1758) — Central and southern Viet Nam in Nguyen et al. (1995) 80: 1664
2040. *Monodactylus falciformis* La Cepède, 1801— Central and southern Viet Nam in Nguyen et al. (1995).

Toxotidae - archerfishes

2041. *Toxotes chatareus* (Hamilton, 1822) — Photo of specimen from Cambodian Mekong 80: 1665
2042. *Toxotes jaculatrix* (Pallas, 1767) — CAS specimen from Cambodia 80: 1666
2043. *Toxotes microlepis* Günther, 1860 — WJR in Mekong delta.

Drepaneidae - sicklefishes

2044. *Drepane longimana* (Bloch & Schneider, 1801) — Photo of specimen from Mekong delta 80: 1667
2045. *Drepane punctata* (Linnaeus, 1758) — MBFS in Mekong plume 80: 1668

Chaetodontidae - butterflyfishes

2046. *Chaetodon adiergastos* Seale, 1910 — Viet Nam and Gulf of Thailand in Allen et al. (1998), Spratly Islands in Nguyen & Nguyen (2006) . 80: 1669
2047. *Chaetodon aureofasciatus* Macleay, 1878 — Spratly Islands in Nguyen & Nguyen (2006).
2048. *Chaetodon auriga* Forsskål, 1775 — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997) 80: 1670
2049. *Chaetodon auripes* Jordan & Snyder, 1901 — Photo of specimen from Nha Trang, also Spratly Islands in Nguyen & Nguyen (2006) 80: 1671
2050. *Chaetodon baronessa* Cuvier, 1829 — CAS specimen from Gulf of Thailand, also Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 80: 1672
2051. *Chaetodon bennetti* Cuvier, 1831 — Fourmanoir & Nhung (1965) at Nha Trang, throughout area in Allen et al. (1998) 80: 1673
2052. *Chaetodon citrinellus* Cuvier, 1831 — Fourmanoir & Nhung (1965) at Nha Trang, Spratly Islands in Chen et al. (1997) 80: 1674
2053. *Chaetodon collare* Bloch, 1787 — Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 80: 1675
2054. *Chaetodon decussatus* Cuvier, 1829 — Western Gulf of Thailand in Pyle (FAO) 80: 1676
2055. *Chaetodon ephippium* Cuvier, 1831 — Viet Nam and Gulf of Thailand in Allen et al. (1998), central Viet Nam in Nguyen et al. (1995) . . . 80: 1677
2056. *Chaetodon falcula* Bloch, 1795 — Central Viet Nam in Nguyen et al. (1995), Spratly Islands in Nguyen & Nguyen (2006) 80: 1678
2057. *Chaetodon guentheri* Ahl, 1923 — Spratly Islands in Nguyen & Nguyen (2006).
2058. *Chaetodon kleinii* Bloch, 1790 — Viet Nam and Gulf of Thailand in Allen et al. (1998), Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 80: 1679
2059. *Chaetodon lineolatus* Cuvier, 1831 — CAS specimens from Nha Trang Bay, throughout area in Allen et al. (1998) 80: 1680
2060. *Chaetodon lunula* (La Cepède, 1802) — Viet Nam and Gulf of Thailand in Allen et al. (1998) 81: 1681
2061. *Chaetodon lunulatus* (Quoy & Gaimard, 1825) — KFL Gulf of Thailand, throughout area in Allen et al. (1998) 81: 1682
2062. *Chaetodon madagaskariensis* Ahl, 1923 — Central Viet Nam in Nguyen et al. (1995), Spratly Islands in Nguyen & Nguyen (2006).
2063. *Chaetodon melannotus* Bloch & Schneider, 1801 — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997) 81: 1683
2064. *Chaetodon mertensii* Cuvier, 1831 — Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 81: 1684
2065. *Chaetodon meyeri* Bloch & Schneider, 1801 — Viet Nam and Gulf of Thailand in Allen et al. (1998) 81: 1685
2066. *Chaetodon modestus* Temminck & Schlegel, 1844 — Central Viet Nam in Nguyen et al. (1995) 81: 1686
2067. *Chaetodon ocellicaudus* Cuvier, 1831 — Southern Viet Nam and Gulf of Thailand in Allen et al. (1998) 81: 1687
2068. *Chaetodon octofasciatus* Bloch, 1787 — Nha Trang specimens at ROM and CAS, and CAS specimens from eastern Gulf of Thailand 81: 1688
2069. *Chaetodon ornatissimus* Cuvier, 1831 — Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006). 81: 1689
2070. *Chaetodon oxycephalus* Bleeker, 1853 — Gulf of Thailand and coast of Mekong delta in Allen et al. (1998).
2071. *Chaetodon plebeius* Cuvier, 1831 — Viet Nam and Gulf of Thailand in Allen et al. (1998), Con Dao in Nguyen & Nguyen (2006) 81: 1690
2072. *Chaetodon punctatofasciatus* Cuvier, 1831 — CAS specimens from Nha Trang Bay, Spratly Islands in Chen et al. (1997) 81: 1691
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2256. *Pomacentrus moluccensis* Bleeker, 1853 — Nha Trang at ROM, Spratly Islands in Chen et al. (1997), CAS from eastern Gulf of Thailand 87: 1821
2257. *Pomacentrus nagasakiensis* Tanaka, 1917 — Nha Trang at ROM, Spratly Islands in Chen et al. (1997), Con Dao in Nguyen & Nguyen (2006).
2258. *Pomacentrus nigromanus* Weber, 1913 — CAS from Nha Trang Bay, also Con Dao and Spratly Islands in Nguyen & Nguyen (2006) 87: 1822
2259. *Pomacentrus nigromarginatus* Allen, 1973 — Spratly Islands in Chen et al. (1997), also Con Dao and An Thoi in Nguyen & Nguyen (2006).
2260. *Pomacentrus pavo* (Bloch, 1787) — Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 87: 1823
2261. *Pomacentrus philippinus* Evermann & Seale, 1907 — Spratly Islands in Chen et al. (1997).
2262. *Pomacentrus reidi* Fowler & Bean, 1928 — Con Dao and Spratly Islands in Nguyen & Nguyen (2006).
2263. *Pomacentrus simsiang* Bleeker, 1856 — Nha Trang in Nguyen & Nguyen (2006).

2264. *Pomacentrus smithi* Fowler & Bean, 1928 — Spratly Islands in Nguyen & Nguyen (2006).
2265. *Pomacentrus taeniometapon* Bleeker, 1852 — Con Dao and Spratly Islands in Nguyen & Nguyen (2006).
2266. *Pomacentrus tripunctatus* Cuvier, 1830 — Fourmanoir & Nhung (1965) at Nha Trang, CAS from eastern Gulf of Thailand.
2267. *Pomacentrus vaiuli* Jordan & Seale, 1906 —Central and southern Viet Nam in Nguyen et al. (1995), Spratly Islands in Chen et al. (1997) . 87: 1824
2268. *Pomacentrus wardi* Whitley, 1927 — Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006).
2269. *Pomachromis richardsoni* (Snyder, 1909) — Fourmanoir & Nhung (1965) at Nha Trang, Spratly Islands in Chen et al. (1997), also Con Dao in Nguyen & Nguyen (2006) 87: 1825
2270. *Premnas biaculeatus* (Bloch, 1790) — Central Viet Nam in Nguyen et al. (1995), South China Sea near Viet Nam in Allen (FAO) 87: 1826
2271. *Pristotis obtusirostris* (Günther, 1862) — MBFS from Mekong plume; *Pristotis jerdoni* a synonym in Allen (1997) 87: 1827
2272. *Stegastes albifasciatus* (Schlegel & Müller, 1839) — Spratly Islands in Nguyen & Nguyen (2006).
2273. *Stegastes fasciolatus* (Ogilby, 1889) — CAS specimens from Gulf of Thailand, Spratly Islands in Chen et al. (1997).
2274. *Stegastes lividus* (Forster, 1801) — CAS specimens from Nha Trang Bay, also Cu Lao Cau and Con Dao in Nguyen & Nguyen (2006).
2275. *Stegastes nigricans* (La Cepède, 1802) — CAS specimens from Nha Trang Bay, Spratly Islands in Chen et al. (1997) 88: 1828
2276. *Stegastes obreptus* (Whitley, 1948) — Nha Trang specimens at ROM, widespread, India to Ryukyu Islands 88: 1829
2277. *Teixeirichthys jordani* (Rutter, 1897) — MBFS from Mekong plume.

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2278. *Anampses caeruleopunctatus* Rüppell, 1829 — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 88: 1830
2279. *Anampses elegans* Ogilby, 1889 — Spratly Islands in Nguyen & Nguyen (2006).
2280. *Anampses geographicus* Valenciennes, 1840 — Fourmanoir & Nhung (1965) at Nha Trang, Spratly Islands in Chen et al. (1997) 88: 1831-2
2281. *Anampses melanurus* Bleeker, 1857 — Spratly Islands in Chen et al. (1997).
2282. *Anampses meleagrides* Valenciennes, 1840 — Photo of specimen from Nha Trang, Spratly Islands in Chen et al. (1997) 88: 1833
2283. *Anampses neoguinaicus* Bleeker, 1878 — Gulf of Thailand and coast of Viet Nam in Westneat (FAO) 88: 1834
2284. *Anampses twistii* Bleeker, 1856 — Nha Trang specimens at ROM, also Gulf of Thailand in Westneat (FAO) 88: 1835
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2286. *Bodianus axillaris* (Bennett, 1832) — Nha Trang , Cu Lao Cao, Con Dao and Spratly Islands in Nguyen & Nguyen (2006) 88: 1836
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2290. *Bodianus loxozonus* (Snyder, 1908) —Spratly Islands in Nguyen & Nguyen (2006), throughout area in Westneat (FAO) 88: 1839
2291. *Bodianus mesothorax* (Bloch & Schneider, 1801) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997).
2292. *Bodianus perditio* (Quoy & Gaimard, 1834) — Fourmanoir & Nhung (1965) reported two examples from Nha Trang 88: 1840
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2294. *Cheilinus fasciatus* (Bloch, 1791) — MBFS in Mekong plume 88: 1842
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2297. *Cheilinus trilobatus* La Cepède, 1802 — Nha Trang specimens at ROM, CAS from eastern Gulf of Thailand, also Cu Lao Cau, Con Dao, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 88: 1844
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2305. *Choerodon jordani* (Snyder, 1908) — Spratly Islands in Chen et al. (1997).
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2308. *Choerodon zamboangae* (Seale & Bean, 1907) — Throughout Southeast Asia in Allen (1997), expected but no definite record found 89: 1853
2309. *Cirrhilabrus cyanopleura* (Bleeker, 1851) — Nha Trang specimens at ROM, throughout area in Westneat (FAO) 89: 1854
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2311. *Cirrhilabrus melanomarginatus* Randall & Shen, 1978 — Spratly Islands in Chen et al. (1997).
2312. *Cirrhilabrus rubrimarginatus* Randall, 1992 — Spratly Islands in Chen et al. (1997).
2313. *Cirrhilabrus temminckii* Bleeker, 1853 — Photo of specimen from Nha Trang 89: 1856
2314. *Coris aurilineata* Randall & Kuiter, 1982 — An Thoi in Nguyen & Nguyen (2006).
2315. *Coris aygula* La Cepède, 1801 — Gulf of Thailand and coast of Viet Nam in Westneat (FAO), Spratly Islands in Chen et al. (1997) 89: 1857-8
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2318. *Coris gaimard* (Quoy & Gaimard, 1824) — Nha Trang specimens at ROM, Spratly Islands in Nguyen & Nguyen (2006) 89: 1862
2319. *Coris pictoides* Randall & Kuiter, 1982 — Throughout Southeast Asia in Allen (1997), expected but no definite record found 89: 1863
2320. *Cymolutes lecluse* (Quoy & Gaimard, 1824) — Spratly Islands in Nguyen & Nguyen (2006).
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2324. *Epibulus insidiator* (Pallas, 1770) — KFL from Gulf of Thailand, Nha Trang specimens at ROM and CAS 89: 1866
2325. *Gomphosus varius* La Cepède, 1801 — Nha Trang at ROM, also Cu Lao Cau, Con Dao and Spratly Islands in Nguyen & Nguyen (2006) 89: 1867-8
2326. *Halichoeres argus* (Bloch & Schneider, 1801) — Nha Trang specimens at ROM and CAS, CAS specimen from Koh Samet 89: 1869

2327. *Halichoeres bicolor* (Bloch & Schneider, 1801) — Orsi (1974) specimens from Viet Nam (as *H. hyrtli*) - possibly from northern coast 90: 1870
2328. *Halichoeres bimaculatus* Rüppell, 1835 — Fourmanoir & Nhung (1965) from Nha Trang.
2329. *Halichoeres binotopsis* (Bleeker, 1849) — WJR and KFL from Gulf of Thailand 90: 1871
2330. *Halichoeres biocellatus* Schultz, 1960 — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 90: 1872-3
2331. *Halichoeres chloropterus* (Bloch, 1791) — WJR in Gulf of Thailand, throughout area in Westneat (FAO) 90: 1874
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2334. *Halichoeres hortulanus* (La Cepède, 1801) — Nha Trang specimens at ROM, also Cu Lao Cau, Con Dao, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 90: 1877
2335. *Halichoeres leucurus* (Walbaum, 1792) — WJR in Gulf of Thailand, also An Thoi in Nguyen & Nguyen (2006) 90: 1878
2336. *Halichoeres margaritaceus* (Valenciennes, 1839) — Nha Trang, Con Dao, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 90: 1879
2337. *Halichoeres marginatus* Rüppell, 1835 — WJR in Gulf of Thailand, Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) . 90: 1880
2338. *Halichoeres melanochir* Fowler & Bean, 1928 — Nha Trang specimens at ROM, also Cu Lao Cau and Con Dao in Nguyen & Nguyen (2006).
2339. *Halichoeres melanurus* (Bleeker, 1851) — WJR in Gulf of Thailand, Nha Trang specimens at ROM, also Cu Lao Cau, Con Dao, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 90: 1881
2340. *Halichoeres melasmapomus* Randall, 1981 — Spratly Islands in Nguyen & Nguyen (2006).
2341. *Halichoeres miniatus* (Valenciennes, 1839) — Orsi (1974) lists from Viet Nam, throughout Southeast Asia in Allen (1997) 90: 1882
2342. *Halichoeres nebulosus* (Valenciennes, 1839) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 90: 1883
2343. *Halichoeres nigrescens* (Bloch & Schneider, 1801) — KFL from Gulf of Thailand, Nha Trang specimens at ROM 90: 1884
2344. *Halichoeres ornatissimus* (Garrett, 1863) — Spratly Islands in Chen et al. (1997), also Cu Lao Cau, Con Dao and An Thoi in Nguyen & Nguyen (2006).
2345. *Halichoeres papilionaceus* (Valenciennes, 1839) — Eastern South China Sea, likely in seagrass beds of islands off Mekong delta 90: 1885
2346. *Halichoeres podostigma* (Bleeker, 1854) — Con Dao in Nguyen & Nguyen (2006).
2347. *Halichoeres prosopeion* (Bleeker, 1853) — Fourmanoir & Nhung (1965) specimens from Nha Trang, Spratly Islands in Chen et al. (1997) 90: 1886
2348. *Halichoeres richmondi* Fowler & Bean , 1928 — Nha Trang in Nguyen & Nguyen (2006).
2349. *Halichoeres scapularis* (Bennett, 1832) — Spratly Islands in Chen et al. (1997), Cu Lao Cau in Nguyen & Nguyen (2006) 90: 1887
2350. *Halichoeres timorensis* (Bleeker, 1852) — Spratly Islands in Chen et al. (1997) 90: 1888
2351. *Halichoeres trimaculatus* (Quoy & Gaimard, 1834) — Spratly Islands in Chen et al. (1997), also Nha Trang, Cu Lao Cau and An Thoi in Nguyen & Nguyen (2006) 90: 1889
2352. *Halichoeres vrolikii* (Bleeker, 1855) — CAS specimen from northern Gulf of Thailand, An Thoi in Nguyen & Nguyen (2006).
2353. *Hemigymnus fasciatus* (Bloch, 1792) — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997) 90: 1890
2354. *Hemigymnus melapterus* (Bloch, 1791) — CAS from Nha Trang Bay and eastern Gulf of Thailand, Spratly Islands in Chen et al. (1997) 91: 1891-2
2355. *Hologymnosus annulatus* (La Cepède, 1801) — Spratly Islands in Chen et al. (1997).
2356. *Hologymnosus doliatus* (La Cepède, 1801) — Gulf of Thailand and Viet Nam in Westneat (FAO),Spratly Islands in Chen et al. (1997).
2357. *Iniistius aneitensis* (Günther, 1862) — Wongratana (1968) from Gulf of Thailand, Spratly Islands in Chen et al. (1997).
2358. *Iniistius bimaculatus* (Rüppell, 1829) — KFL from Gulf of Thailand 91: 1893
2359. *Iniistius dea* (Temminck & Schlegel, 1845) — Fourmanoir & Nhung (1965) at Nha Trang 91: 1894-5
2360. *Iniistius evides* (Jordan & Richardson,1909) — Fourmanoir & Nhung (1965) from Nha Trang, Randall & Jonsson (2008) from Vung Tau . 91: 1896
2361. *Iniistius pavo* (Valenciennes, 1840) — Fourmanoir & Nhung (1965) at Nha Trang (Fig. 41), throughout area in Westneat (FAO) 91: 1897
2362. *Iniistius pentadactylus* (Linnaeus, 1758) — Wongratana (1968) from Gulf of Thailand, throughout area in Westneat (FAO) 91: 1898-9
2363. *Iniistius trivittatus* (Randall & Cornish, 2000) — Specimens from Vung Tau, Viet Nam in original description.
2364. *Iniistius verrens* (Jordan & Evermann, 1902) — Fourmanoir & Nhung (1965) at Nha Trang (Fig. 43).
2365. *Labrichthys unilineatus* (Guichenot, 1847) — Gulf of Thailand and Viet Nam in Westneat (FAO), Nha Trang, Cu Lao Cao and Spratly Islands in Nguyen & Nguyen (2006) 91: 1900
2366. *Labroides bicolor* Fowler & Bean, 1928 — CAS specimen from northern Gulf of Thailand, Spratly Islands in Chen et al. (1997) 91: 1901
2367. *Labroides dimidiatus* (Valenciennes, 1839) — Nha Trang specimens at ROM, CAS specimens from eastern Gulf of Thailand 91: 1902
2368. *Labroides pectoralis* Randall & Springer, 1975 — Spratly Islands in Chen et al. (1997).
2369. *Labropsis alleni* Randall, 1981 — Nha Trang in Nguyen & Nguyen (2006) 91: 1903
2370. *Labropsis australis* Randall, 1981 — Cu Lao Cau in Nguyen & Nguyen (2006).
2371. *Labropsis manabei* Schmidt 1931 — Spratly Islands in Chen et al. (1997).
2372. *Labropsis micronesica* Randall, 1981 — Nha Trang in Nguyen & Nguyen (2006).
2373. *Labropsis xanthonota* Randall, 1981 — Spratly Islands in Chen et al. (1997).
2374. *Leptojulis chrysotaenia* Randall & Ferraris, 1981 — Record from Phuket, Thailand, but possibly not in Mekong region 91: 1904
2375. *Leptojulis cyanopleura* (Bleeker, 1853) — Gulf of Thailand and Viet Nam in Westneat (FAO) 91: 1905
2376. *Macropharyngodon meleagris* (Valenciennes, 1839) — Photo of specimen from Nha Trang, Spratly Islands in Chen et al. (1997) 91: 1906
2377. *Macropharyngodon negrosensis* Herre, 1932 — Spratly Islands in Chen et al. (1997).
2378. *Novaculichthys taeniourus* (La Cepède, 1801) — Orsi (1974) specimens from Viet Nam, Spratly Islands in Chen et al. (1997) 91: 1907-8
2379. *Oxycheilinus bimaculatus* (Valenciennes, 1840) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 91: 1909-10
2380. *Oxycheilinus celebicus* (Bleeker, 1853) — Kuronuma (1961) from Viet Nam, Nha Trang in Nguyen & Nguyen (2006) 91: 1911
2381. *Oxycheilinus digramma* (La Cepède, 1801) — Nha Trang specimens at ROM and CAS, throughout area in Westneat (FAO) 92: 1912
2382. *Oxycheilinus orientalis* (Günther, 1862) — Gulf of Thailand and Viet Nam in Westneat (FAO), Spratly Islands in Chen et al. (1997) 92: 1913
2383. *Oxycheilinus rhodochrous* (Günther, (1867) — Spratly Islands in Nguyen & Nguyen (2006).
2384. *Oxycheilinus unifasciatus* (Streets, 1877) — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997) 92: 1914
2385. *Paracheilinus mccoskeri* Randall & Harmelin-Vivien, 1977 — Nha Trang specimens at ROM 92: 1915-6
2386. *Parajulis poecilepterus* (Temminck & Schlegel, 1845) — KFL from Gulf of Thailand.
2387. *Pseudocheilinus evanidus* Jordan & Evermann, 1903 — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997).
2388. *Pseudocheilinus hexataenia* (Bleeker, 1857) — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997).

2389. *Pseudocheilinus octotaenia* (Jenkins, 1901) — Gulf of Thailand and Viet Nam in Westneat (FAO), Spratly Islands in Chen et al. (1997).
2390. *Pseudocoris heteroptera* (Bleeker, 1857) — An Thoi in Nguyen & Nguyen (2006).
2391. *Pseudocoris yamashiroi* (Schmidt, 1931) — Gulf of Thailand and Viet Nam in Westneat (FAO), Spratly Islands in Chen et al. (1997).
2392. *Pseudodax moluccanus* (Valenciennes, 1839) — Gulf of Thailand and Viet Nam in Westneat (FAO), Spratly Islands in Chen et al. (1997) . 92: 1917
2393. *Pseudojuloides cerasinus* (Snyder, 1904) — Widespread from Africa to Taiwan to Hawaii to Eastern Pacific 92: 1918
2394. *Pteragogus aurigarius* (Richardson, 1845) — South China Sea by Westneat in Randall & Lim (2000) 92: 1919-20
2395. *Pteragogus cryptus* Randall, 1981 — Nha Trang specimens at ROM, Gulf of Thailand in Westneat (FAO) 92: 1921
2396. *Pteragogus enneactis* (Bleeker, 1856) — Throughout Southeast Asia in Allen (1997) as *Pteragogus amboinensis*.
2397. *Pteragogus flagellifer* (Valenciennes, 1839) — Spratly Islands in Chen et al. (1997).
2398. *Stethojulis balteata* (Quoy & Gaimard, 1824) — Fourmanoir & Nhung (1965) from Nha Trang (as *S. axillaris*).
2399. *Stethojulis bandanensis* (Bleeker, 1851) — Nha Trang specimens at ROM and CAS, Gulf of Thailand and Viet Nam in Westneat (FAO) . . 92: 1922
2400. *Stethojulis interrupta* (Bleeker, 1851) — Nha Trang specimens at ROM and CAS, CAS specimens from eastern Gulf of Thailand 92: 1923
2401. *Stethojulis strigiventer* (Bennett, 1833) — CAS from Nha Trang Bay, also An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 92: 1924
2402. *Stethojulis terina* Jordan & Snyder, 1902 — CAS specimen from south of Nha Trang.
2403. *Stethojulis trilineata* (Bloch & Schneider, 1801) — CAS specimens from eastern Gulf of Thailand, Spratly Islands in Chen et al. (1997) . . 92: 1925
2404. *Suezichthys gracilis* (Steindachner & Döderlein, 1887) — Fourmanoir & Nhung (1965) from Nha Trang (Fig. 46)
2405. *Thalassoma amblycephalum* (Bleeker, 1856) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 92: 1926-7
2406. *Thalassoma cupido* (Temminck & Schlegel, 1845) — Nha Trang in Nguyen & Nguyen (2006).
2407. *Thalassoma hardwicke* (Bennett, 1830) — Nha Trang specimens at ROM and CAS, Suvatti (1981) from Gulf of Thailand 92: 1928
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2409. *Thalassoma lunare* (Linnaeus, 1758) — WJR and KFL from Gulf of Thailand, Nha Trang specimens at ROM 92: 1930
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2411. *Thalassoma purpureum* (Forsskål, 1775) — Spratly Islands in Chen et al. (1997), also Nha Trang in Nguyen & Nguyen (2006) 92: 1931-2
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2413. *Thalassoma trilobatum* (La Cepède, 1801) — Spratly Islands in Nguyen & Nguyen (2006), throughout Southeast Asia in Allen (1997) . . . 93: 1934
2414. *Wetmorella nigropinnata* (Seale, 1901) — Nha Trang specimens at ROM, Gulf of Thailand and Viet Nam in Westneat (FAO) 93: 1935
2415. *Xiphocheilus typus* (Bleeker, 1857) — KFL from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 93: 1936

Scaridae - parrotfishes

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2418. *Calotomus spinidens* (Quoy & Gaimard, 1824) — Fourmanoir & Nhung (1965) at Nha Trang, Nha Trang specimens at ROM 93: 1941-2
2419. *Cetoscarus bicolor* (Rüppell, 1829) — Spratly Islands in Chen et al. (1997), also Nha Trang and Cu Lao Cau in Nguyen & Nguyen (2006).
2420. *Chlorurus bleekeri* (de Beaufort, 1940) — Con Dao, An Thoi and Spratly Islands in Nugyen & Nguyen (2006).
2421. *Chlorurus bowersi* (Snyder, 1909) — Fourmanoir & Nhung (1965) at Nha Trang, Spratly Islands in Chen et al. (1997) 93: 1943
2422. *Chlorurus capistratoides* (Bleeker, 1847) — Randall at Redang Island eastern side of Malay Peninsula 93: 1944-5
2423. *Chlorurus gibbus* (Rüppell, 1829) — Nha Trang specimens at ROM., Spratly Islands in Chen et al. (1997).
2424. *Chlorurus japanensis* (Bloch, 1789) — Fourmanoir & Nhung (1965) at Nha Trang, Spratly Islands in Chen et al. (1997) 93: 1946-7
2425. *Chlorurus microrhinos* (Bleeker, 1854) — Fourmanoir & Nhung (1965) at Nha Trang, Orsi (1974) specimens from Viet Nam.
2426. *Chlorurus sordidus* (Forsskål, 1775) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 93: 1948-9
2427. *Hipposcarus harid* (Forsskål, 1775) — Spratly Islands in Nguyen & Nguyen (2006).
2428. *Hipposcarus longiceps* (Valenciennes, 1840) — Spratly Islands in Chen et al. (1997), also Nha Trang, Con Dao and An Thoi in Nguyen & Nguyen (2006). 93: 1950-1
2429. *Leptoscarus vaigiensis* (Quoy & Gaimard, 1824) — Fourmanoir & Nhung (1965) at Nha Trang, Spratly Islands in Nguyen & Nguyen (2006) 93: 1952-3
2430. *Scarus altipinnis* (Steindachner, 1879) — Cu Lao Cau, An Thoi and Spratly Islands in Nguyen & Nguyen (2006).
2431. *Scarus chameleon* Choat & Randall, 1986 — Cu Lao Cau, Con Dao and Spratly Islands in Nguyen & Nguyen (2006).
2432. *Scarus dimidiatus* Bleeker, 1859 —Nha Trang, Con Dao, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 94: 1954-5
2433. *Scarus falcipinnis* (Playfair, 1868) — Nha Trang specimens at ROM, also Spratly Islands in Nguyen & Nguyen (2006)
2434. *Scarus festivus* Valenciennes, 1840 — Spratly Islands in Chen et al. (1997), also Nha Trang in Nguyen & nguyen (2006).
2435. *Scarus flavipectoralis* Schultz, 1958 — Cu Lao Cau, Con Dao, An Thoi and Spratly Islands in Nguyen & Nguyen (2006).
2436. *Scarus forsteni* (Bleeker, 1861) — Spratly Islands in Chen et al. (1997), also Nha Trang, Con Dao and An Thoi in Nguyen & Nguyen (2006).
2437. *Scarus frenatus* La Cepède, 1802 — Fourmanoir & Nhung (1965) at Nha Trang, Spratly Islands in Chen et al. (1997) 94: 1956-7
2438. *Scarus ghobban* Forsskål, 1775 — WJR from Gulf of Thailand, also Nha Trang, Cu Lao Cau, Con Dao, An Thoi and Spratly Islands in Nguyen & Nguyen (2006) 94: 1958-9
2439. *Scarus globiceps* Valenciennes, 1840 — Spratly Islands in Chen et al. (1997), and Nha Trang in Nguyen & Nguyen (2006) 94: 1960-1
2440. *Scarus hypselopterus* Bleeker, 1853 — An Thoi in Nguyen & Nguyen (2006) 94: 1962-3
2441. *Scarus niger* Forsskål, 1775 — WJR from Gulf of Thailand, Spratly Islands in Chen et al. (1997), also Con Dao and An Thoi in Nguyen & Nguyen (2006) 94: 1964-5
2442. *Scarus oedema* (Snyder, 1909) — Fourmanoir & Nhung (1965) at Nha Trang, Orsi (1974) specimens from Viet Nam.
2443. *Scarus oviceps* Valenciennes, 1840 — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 94: 1966-7
2444. *Scarus prasiognathos* Valenciennes, 1839 — Photo of specimen from Stung Treng market, Cambodia, also Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 94: 1968-9
2445. *Scarus psittacus* Forsskål, 1775 — KFL from Gulf of Thailand, Spratly Islands in Chen et al. (1997) 94: 1970-1
2446. *Scarus quoyi* Valenciennes, 1840 — Gulf of Thailand in Bellwood (FAO), also Spratly Islands in Nguyen & Nguyen (2006) 94: 1972
2447. *Scarus rivulatus* Valenciennes, 1840 — WJR from Gulf of Thailand, also Cu Lao Cau and Con Dao in Nguyen & Nguyen (2006) 94: 1973-4
2448. *Scarus rubroviolaceus* Bleeker, 1847 — Spratly Islands in Chen et al. (1997), also Nha Trang, Con Dao and An Thoi in Nguyen & Nguyen (2006) 95: 1975-6

2449. *Scarus scaber* Valenciennes, 1840 — Nha Trang, Cu Lao Cau, Con Dao and Spratly Islands in Nguyen & Nguyen (2006).
2450. *Scarus schlegeli* (Bleeker, 1861) — Spratly Islands in Chen et al. (1997), also Nha Trang in Nguyen & Nguyen (2006) 95: 1977-8
2451. *Scarus tricolor* Bleeker, 1847 — Spratly Islands in Nguyen & Nguyen (2006) 95: 1979-80
2452. *Scarus xanthopleura* Bleeker, 1853 — KFL from Gulf of Thailand, An Thoi in Nguyen & Nguyen (2006).

PERCIFORMES – Trachinoidei

Champsodontidae - gapers

2453. *Champsodon atridorsalis* Ochiai & Nakamura, 1964 — Described from northern Viet Nam, also likely along central Viet Nam coastline.
2454. *Champsodon guentheri* Regan, 1908 — MBFS in Mekong plume 95: 1981
2455. *Champsodon vorax* Günther, 1867 — Fourmanoir & Nhung (1965) at Nha Trang, Orsi (1974) specimens from Viet Nam.

Pinguipedidae - sandperches

2456. *Parapercis alboguttata* (Günther, 1872) — Gulf of Thailand and Viet Nam coast in Randall (FAO), Nha Trang Bay in Prokofiev (2008) . . 95: 1982
2457. *Parapercis clathrata* Ogilby, 1910 — Nha Trang specimens at ROM, Gulf of Thailand in Randall (FAO) 95: 1983
2458. *Parapercis cylindrica* (Bloch, 1792) — Nha Trang specimens at ROM, also Gulf of Thailand in Randall (FAO) 95: 1984
2459. *Parapercis diplospilus* Gomon, 1981 — Nha Trang Bay in Prokofiev (2008).
2460. *Parapercis elongata* Fourmanoir, 1967 — Described from Viet Nam, reported from Nha Trang Bay in Prokofiev (2008).
2461. *Parapercis filamentosa* (Steindachner, 1878) — MBFS in Mekong plume, Nha Trang in Prokofiev (2008) 95: 1985
2462. *Parapercis hexophtalma* (Cuvier, 1829) — Gulf of Thailand and Viet Nam coast in Randall (FAO), also from Spratly Islands in Nguyen & Nguyen (2006) 95: 1986
2463. *Parapercis maculata* (Bloch & Schneider, 1801) — Gulf of Thailand and Viet Nam coast in Randall (FAO), Nha Trang in Prokofiev (2008)95: 1987
2464. *Parapercis millepunctata* (Günther, 1860) — Nha Trang specimens at ROM, Gulf of Thailand in Randall (FAO), Spratly Islands in Chen et al. (1997).
2465. *Parapercis nebulosa* (Quoy & Gaimard, 1825) — Cu Lao Cau in Nguyen & Nguyen (2006).
2466. *Parapercis ommatura* Jordan & Snyder, 1902 — Nha Trang Bay in Prokofiev (2008).
2467. *Parapercis quadrispinosa* (Weber, 1913) — Spratly Islands in Nguyen & Nguyen (2006).
2468. *Parapercis schauinslandii* (Steindachner, 1900) — Gulf of Thailand and Viet Nam coast in Randall (FAO) 95: 1988
2469. *Parapercis snyderi* Jordan & Starks, 1905 — Gulf of Thailand and Viet Nam coast in Randall (FAO), Nha Trang Bay in Prokofiev (2008) 95: 1989
2470. *Parapercis tetracantha* (La Cepède, 1801) — Gulf of Thailand and Viet Nam coast in Randall (FAO) 95: 1990
2471. *Parapercis xanthozona* (Bleeker, 1849) — Gulf of Thailand and Viet Nam coast in Randall (FAO), also from Spratly Islands in Nguyen & Nguyen (2006) 95: 1991

Creedidae - sandburrowers

2472. *Limnichthys nitidus* Smith, 1958 — Nha Trang specimens at ROM 95: 1992
2473. *Limnichthys sp.* — Spratly Islands in Chen et al. (1997).

Percophidae - duckbills

2474. *Bembrops platyrhynchus* (Alcock, 1894) — Spratly Islands in Nguyen & Nguyen (2006).
2475. *Matsubaraea fusiforme* (Fowler, 1943) — CAS specimens from northern Gulf of Thailand, Nha Trang in Nguyen & Nguyen (2006).
2476. *Matsubaraea setouchiensis* Taki, 1953 — Photo of specimen from Nha Trang 95: 1993

Uranoscopidae - stargazers

2477. *Ichthyoscopus lebek* (Bloch & Schneider, 1801) — Gulf of Thailand in Wongratana (1968).
2478. *Uranoscopus affinis* Cuvier, 1929 — Gulf of Thailand in Kishimoto (FAO) 95: 1994
2479. *Uranoscopus bicinctus* Temminck & Schlegel, 1843 — Fourmanoir & Nhung (1965) at Nha Trang, Orsi (1974) Viet Nam specimens 95: 1995
2480. *Uranoscopus cognatus* Cantor, 1849 — KFL from Gulf of Thailand 96: 1996
2481. *Uranoscopus japonicus* Houttuyn, 1782 — Fourmanoir & Nhung (1965) at Nha Trang.
2482. *Uranoscopus oligolepis* Bleeker, 1878 — Fourmanoir & Nhung (1965) at Nha Trang 96: 1997

PERCIFORMES – Blennioidei

Tripterygiidae - triplefin blennies

2483. *Ceratobregma helenae* Holleman, 1987 — Nha Trang specimens at ROM, CAS specimen from southern Gulf of Thailand.
2484. *Enneapterygius fasciatus* (Weber, 1909) — CAS specimen from Gulf of Thailand, Gulf of Thailand in Fricke (1997).
2485. *Enneapterygius flavoccipitis* Shen, 1994 — Photo of specimen from Nha Trang 96: 1998
2486. *Enneapterygius pallidoserialis* Fricke, 1997 — Tioman Island, Malaysia in Fricke (1997).
2487. *Enneapterygius philippinus* (Peters, 1868) — Nha Trang specimens at ROM, also Tioman Island, Malaysia in Fricke (1997) 96: 1999
2488. *Enneapterygius rhabdotus* Fricke, 1994 — Gulf of Thailand in Fricke (1997).
2489. *Enneapterygius tutuilae* Jordan & Seale, 1906 — Nha Trang specimens at ROM, CAS specimens from Gulf of Thailand at Koh Tao 96: 2000
2490. *Enneapterygius* sp. undescr. — Islands off Mekong delta in Fricke (1997), an undescribed species also from Spratly Islands in Chen et al. (1997).
2491. *Helcogramma chica* Rosenblatt, 1960 — CAS specimens from eastern Gulf of Thailand, Gulf of Thailand in Fricke (1997).
2492. *Helcogramma desa* Williams & Howe, 2003 — Nha Trang specimens at ROM 96: 2001-2
2493. *Helcogramma fuscipectoris* (Fowler, 1946) — Gulf of Thailand and islands off Mekong delta in Fricke (1997).
2494. *Helcogramma springeri* Hansen, 1986 — Photo of specimen from Tioman Island, Malaysia 96: 2003
2495. *Helcogramma striata* Hansen, 1986 — Photo of specimen from Nha Trang, CAS specimens from west central Gulf of Thailand 96: 2004

2496. *Helcogramma trigloides* (Bleeker, 1858) — Tioman Island, Malaysia in Fricke (1997).
2497. *Norfolkia brachylepis* (Schultz, 1960) — Nha Trang specimens at ROM 96: 2005
2498. *Ucla xenogrammus* Holleman, 1993 — Nha Trang specimens at ROM and CAS, southern Viet Nam in Fricke (1997).

Blenniidae - combtooth blennies

2499. *Andamia heteroptera* (Bleeker, 1857) — Orsi (1974) specimens from Viet Nam 96: 2006
2500. *Aspidontus dussumieri* (Valenciennes, 1836) — Throughout Southeast Asia in Allen (1997) 96: 2007
2501. *Aspidontus taeniatus* Quoy & Gaimard, 1834 — Nha Trang specimens at ROM, also Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 96: 2008
2502. *Atrosalarias fuscus* (Rüppell, 1838) — Nha Trang in Nguyen & Nguyen (2006), Southern Viet Nam in Smith-Vaniz and Springer (1971) . 96: 2009
2503. *Blenniella bilitonensis* (Bleeker, 1858) — CAS specimens from eastern Gulf of Thailand, Orsi (1974) lists from Viet Nam 96: 2010
2504. *Blenniella chrysospilos* (Bleeker, 1857) — CAS from eastern Gulf of Thailand, Southern Viet Nam islands in Springer & Williams (1994) 96: 2011
2505. *Blenniella cyanostigma* (Bleeker, 1849) — Spratly Islands in Chen et al. (1997).
2506. *Blenniella periophthalmus* (Valenciennes, 1836) — Gulf of Thailand in Suvatti (1981), Spratly Islands in Chen et al. (1997) 96: 2012
2507. *Cirripectes castanaeus* (Valenciennes, 1836) — Southern Viet Nam in Williams (1988), Spratly Islands in Chen et al. (1997) 96: 2013
2508. *Cirripectes filamentosus* (Alleyne & Macleay, 1877) — Southern Viet Nam in Williams (1988), CAS specimens from Gulf of Thailand, Nha Trang in Nguyen & Nguyen (2006) 96: 2014
2509. *Cirripectes perustus* Smith, 1959 — Nha Trang specimens at ROM 96: 2015
2510. *Cirripectes polyzona* (Bleeker, 1868) — Southern Viet Nam in Williams (1988), Spratly Islands in Chen et al. (1997), Nha Trang in Nguyen & Nguyen (2006) 96: 2016
2511. *Cirripectes quagga* (Fowler & Ball, 1924) — Nha Trang specimens at ROM.
2512. *Cirripectes variolosus* (Valenciennes, 1836) — Orsi (1974) specimens from Viet Nam 97: 2017
2513. *Crossosalarias macrospilus* Smith-Vaniz & Springer, 1971 — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 97: 2018
2514. *Ecsenius bathi* Springer, 1988 — Spratly Islands in Chen et al. (1997).
2515. *Ecsenius bicolor* (Day, 1888) — Viet Nam coast in Springer (1988), Nha Trang specimens at ROM, An Thoi in Nguyen & Nguyen (2006) 97: 2019
2516. *Ecsenius lineatus* Klausewitz, 1962 — Nha Trang Bay and South China Sea in Springer (1988), CAS specimens from Nha Trang Bay 97: 2020
2517. *Ecsenius melarchus* McKinney & Springer, 1976 — Spratly Islands in Chen et al. (1997).
2518. *Ecsenius monoculus* Springer, 1988 — Southern Viet Nam islands in Springer (1988).
2519. *Ecsenius stictus* Springer, 1988 — Spratly Islands in Chen et al. (1997).
2520. *Ecsenius yaeyamaensis* (Aoyagi, 1954) — Mekong delta region in Springer (1988), CAS specimens from Nha Trang Bay 97: 2021
2521. *Enchelyurus flavipes* Peters, 1868 — Gulf of Thailand in Springer (1972) 97: 2022
2522. *Enchelyurus kraussii* (Klunzinger, 1871) — Gulf of Thailand in Springer (1972), Nha Trang specimens at ROM 97: 2023
2523. *Entomacrodus caudofasciatus* (Regan, 1909) — South China Sea in Springer (1967) 97: 2024
2524. *Entomacrodus decussatus* (Bleeker, 1858) — CAS specimens from eastern Gulf of Thailand, Orsi (1974) lists from Viet Nam 97: 2025
2525. *Entomacrodus longicirrus* Springer, 1967 — Described from Gulf of Thailand, CAS specimens from Gulf of Thailand.
2526. *Entomacrodus stellifer* (Jordan & Snyder, 1902) — Gulf of Thailand in Springer (1967) 97: 2026
2527. *Entomacrodus striatus* (Valenciennes, 1836) — CAS specimens from eastern Gulf of Thailand and Binh Chang Bay 97: 2027
2528. *Entomacrodus thalassinus* (Jordan & Seale, 1906) — Nha Trang specimens at ROM and CAS, CAS from eastern Gulf of Thailand 97: 2028
2529. *Exallias brevis* (Kner, 1868) — Nha Trang specimens at ROM, also Cu Lao Cau in Nguyen & Nguyen (2006) 97: 2029
2530. *Glyptoparus delicatulus* Smith, 1959 — CAS specimens from west central Gulf of Thailand, also Cu Lao Cau in Nguyen & Nguyen (2006).
2531. *Haptogenys bipunctata* (Day, 1876) — Gulf of Thailand in Springer (1972).
2532. *Istiblennius dussumieri* (Valenciennes, 1836) — Photos of specimens from Gulf of Thailand, Orsi (1974) specimens from Viet Nam 97:2030-1
2533. *Istiblennius edentulus* (Forster & Schneider, 1801) — CAS specimens from eastern Gulf of Thailand and Binh Chang Bay 97: 2032
2534. *Istiblennius lineatus* (Valenciennes, 1836) — South China Sea islands in Chu et al. (1979), Gulf of Thailand in Suvatti (1981) 97: 2033
2535. *Laiphognathus multimaculatus* Smith, 1955 — CAS specimens from eastern Gulf of Thailand, Nha Trang specimens at ROM 97: 2034
2536. *Meiacanthus atrodorsalis* (Günther, 1877) — Spratly Islands in Chen et al. (1997).
2537. *Meiacanthus grammistes* (Valenciennes, 1836) — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997) 97: 2035
2538. *Nannosalarias nativitatus* (Regan, 1909) — Nha Trang specimens at ROM.
2539. *Omobranchus elegans* (Steindachner, 1876) — Spratly Islands in Nguyen & Nguyen (2006).
2540. *Omobranchus elongatus* (Peters, 1855) — KFL from Gulf of Thailand, CAS from Gulf of Thailand, Nha Trang specimens at ROM 97: 2036
2541. *Omobranchus ferox* (Herre, 1927) — Nha Trang specimens at ROM, CAS specimens from eastern Gulf of Thailand 97: 2037
2542. *Omobranchus germaini* (Sauvage, 1883) — Nha Trang specimens at ROM 98: 2038
2543. *Omobranchus meniscus* Springer & Gomon, 1975 — Gulf of Thailand by Springer & Gomon (1975).
2544. *Omobranchus punctatus* (Valenciennes, 1836) — CAS specimens from eastern Gulf of Thailand 98: 2039
2545. *Omobranchus rotundiceps* (Macleay, 1881) — Nha Trang specimens at ROM.
2546. *Omobranchus smithi* Rao, 1974 — Nha Trang specimens at ROM.
2547. *Omobranchus zebra* (Bleeker, 1868) — CAS specimens from eastern Gulf of Thailand.
2548. *Omobranchus sp.* — Photo of specimen from Mekong delta (juvenile, unidentified) 98: 2040
2549. *Omox biporos* Springer, 1972 — CAS specimens from Trat Bay in eastern Gulf of Thailand 98: 2041
2550. *Parenchelyurus hepburni* (Snyder, 1908) — Gulf of Thailand in Springer (1972), photo of *Parenchelyurus sp.* 98: 2042
2551. *Petroscirtes breviceps* (Valenciennes, 1836) — CAS specimen from eastern Gulf of Thailand, Viet Nam coast in Smith-Vaniz (1976) 98: 2043
2552. *Petroscirtes mitratus* Rüppell, 1830 — Fourmanoir & Nhung (1965) at Nha Trang, CAS specimens from eastern Gulf of Thailand 98: 2044
2553. *Petroscirtes variabilis* (Cantor, 1849) — Fourmanoir & Nhung (1965) at Nha Trang, CAS specimen form eastern Gulf of Thailand 98: 2045
2554. *Plagiotremus laudandus* (Whitley, 1961) — Spratly Islands in Chen et al. (1997).
2555. *Plagiotremus rhinorhynchos* (Bleeker, 1852) — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997), also Con Dao in Nguyen & Nguyen (2006) 98: 2046
2556. *Plagiotremus spilistius* Gill, 1865 — Fourmanoir & Nhung (1965) at Nha Trang.

2557. *Plagiotremus tapeinosoma* (Bleeker, 1857) — Nha Trang specimens at ROM and CAS, Spratly Islands in Chen et al. (1997) also Cu Lao Cau in Nguyen & Nguyen (2006) 98: 2047
2558. *Salarias fasciatus* (Bloch, 1786) — CAS from eastern Gulf of Thailand and Nha Trang Bay, Spratly Islands in Chen et al. (1997) 98: 2048
2559. *Salarias guttatus* Valenciennes, 1836 — Nha Trang specimens at ROM, CAS specimens from eastern Gulf of Thailand 98: 2049
2560. *Salarias sinuosus* Snyder, 1908 — CAS specimens from eastern Gulf of Thailand.
2561. *Xiphasia setifer* Swainson, 1839 — Photo of specimen from Mekong plume 98: 2050

PERCIFORMES – Gobiesocoidei

Gobiesocidae - clingfishes

2562. *Aspasma minima* (Döderlein, 1887) — Nha Trang specimens at ROM, reported from Nha Trang by Nguyen & Nguyen (2006).
2563. *Diademichthys lineatus* (Sauvage, 1883) — Nha Trang specimens at ROM, also Cu Lao Cao and An Thoi in Nguyen & Nguyen (2006) . . . 98: 2051
2564. *Discotrema crinophilum* Briggs, 1976 — Spratly Islands in Chen et al. (1997).
2565. *Lepadichthys bolini* Briggs, 1962 — Photo of specimen from Nha Trang 98: 2052
2566. *Lepadichthys frenatus* Waite, 1904 — Photo of specimen from Nha Trang 98: 2053

PERCIFORMES – Callionymoidei

Callionymidae - dragonets

2567. *Calliurichthys doryssus* Jordan & Fowler, 1903 — Photo of specimen from Mekong delta 98: 2054
2568. *Calliurichthys filamentosus* (Valenciennes, 1837) — MBFS at Mekong mouth.
2569. *Calliurichthys japonicus* (Houttuyn, 1782) — CAS specimens from eastern Gulf of Thailand, also Nha Trang in Nguyen & Nguyen (2006) 98: 2055
2570. *Calliurichthys recurvispinnis* Li, 1966 — CAS specimens from Phu Quoc Island and other localities in eastern Gulf of Thailand.
2571. *Dactylopus dactylopus* (Valenciennes, 1837) — MBFS in Mekong plume 98: 2056
2572. *Diplogrammus goramensis* (Bleeker, 1858) — Nha Trang Bay in Fricke (1983).
2573. *Paradiplogrammus enneactis* (Bleeker, 1879) — Nha Trang specimens at ROM, CAS specimens from eastern Gulf of Thailand 98: 2057
2574. *Paradiplogrammus parvus* Nakabo, 1984 — Nha Trang specimens at ROM, CAS specimens from west central Gulf of Thailand.
2575. *Pseudocalliurichthys pleurostictus* (Fricke, 1982) — CAS specimens from Nha Trang Bay and eastern Gulf of Thailand.
2576. *Repomucenus fluviatilis* (Day, 1876) — Gulf of Thailand and Viet Nam in Fricke (1983).
2577. *Repomucenus hainanensis* (Li, 1966) — Gulf of Thailand and Viet Nam coast in Fricke (1983).
2578. *Repomucenus hindsii* (Richardson, 1844) — Photo of specimen from Mekong delta 98: 2058
2579. *Repomucenus lunatus* (Temminck & Schlegel, 1845) — MBFS in Mekong plume.
2580. *Repomucenus meridionalis* (Suwardji, 1965) — CAS specimens from near Rayong in eastern Gulf of Thailand 99: 2059
2581. *Repomucenus octostigmatus* (Fricke, 1981) — Gulf of Thailand and Viet Nam in original description.
2582. *Repomucenus planus* (Ochiai, 1955) — MBFS in Mekong plume.
2583. *Repomucenus sagitta* (Pallas, 1770) — Mekong delta in Vidthayanon (2008) 99: 2060
2584. *Repomucenus schaapii* (Bleeker, 1852) — Gulf of Thailand in Fricke (1983).
2585. *Repomucenus valenciennei* (Temminck & Schlegel, 1845) — Japan to South China Sea in Fricke (1983).
2586. *Synchiropus lateralis* (Richardson, 1844) — Photo of specimen from Kampot, Cambodia 99: 2061
2587. *Synchiropus lineolatus* (Valenciennes, 1837) — CAS specimens from eastern Gulf of Thailand 99: 2062
2588. *Synchiropus morrisoni* Schultz, 1960 — Nha Trang specimens at ROM 99: 2063
2589. *Synchiropus ocellatus* (Pallas, 1770) — KFL from Gulf of Thailand, also central Viet Nam coast in Fricke (1983) 99: 2064
2590. *Tonlesapia amnica* Ng & Rainboth, 2011 — Photos of specimen from Mekong delta 99: 2065-6
2591. *Tonlesapia tsukawakii* Motomura & Mukai, 2006 — Described from northwestern part of Great Lake in Cambodia.

PERCIFORMES – Gobioidei

Eleotridae - sleepers

2592. *Bostrychus scalaris* Larson, 2008 — Photo of specimen from Mekong delta, described from Selangor, Malaysia 99: 2067
2593. *Bostrychus sinensis* (La Cepède, 1801) — MBFS in Mekong delta, Orsi (1974) specimens from Viet Nam 99: 2068
2594. *Bunaka gyrinoides* (Bleeker, 1853) — Widespread in Indo-Pacific from Sri Lanka to Philippines in Koumans (1953) 99: 2069
2595. *Butis amboinensis* (Bleeker, 1853) — Photo of specimen from Gulf of Thailand estuary, Orsi (1974) specimens from Viet Nam 99: 2070
2596. *Butis butis* (Hamilton, 1822) — Photo of specimen from Gulf of Thailand estuary, Mekong delta in Vidthayanon (2008) 99: 2071
2597. *Butis gymnopomus* (Bleeker, 1853) — Photo of specimen from Thailand, CAS specimens from Koh Chang 99: 2072
2598. *Butis humeralis* (Valenciennes, 1837) — Photo of specimen from Mekong delta 99: 2073
2599. *Butis koilomatodon* (Bleeker, 1849) — Photo of specimen from Mekong delta 99: 2074
2600. *Calumia godeffroyi* (Günther, 1877) — Spratly Islands in Chen et al. (1997).
2601. *Eleotris fusca* (Forster, 1801) — Mekong delta in Vidthayanon (2008).
2602. *Eleotris melanosoma* Bleeker, 1852 — Photo of specimen from Mekong delta 99: 2075
2603. *Eleotris oxycephala* Temminck & Schlegel, 1845 — Orsi (1974) specimens from Viet Nam.
2604. *Eleotris sp. 1* — Photos of specimen from Mekong delta 99: 2076
2605. *Eleotris sp. 2* — Photo of specimen from Mekong delta 99: 2077
2606. *Giuris margaritacea* (Valenciennes, 1837) — Thailand in Koumans (1953) 100: 2080
2607. *Hypseleotris cyprinoides* (Valenciennes, 1837) — Gulf of Thailand in Fowler (1934).
2608. *Micropercops cinctus* (Dabry de Thiersant, 1872) — Reported as *swinhonis* from upper Mekong of the Hengduan range (Yang in Chen, et al. 1998; Wu & Zhong, et al. 2008).

2609. *Neodontobutis aurarmus* (Vidthayanon, 1995) — Described from Thai Mekong 99: 2078
2610. *Neodontobutis sp.* — Photo of specimen from Srepok basin in central Viet Nam 99: 2079
2611. *Ophiocara porocephala* (Valenciennes, 1837) — Photo of specimen from Gulf of Thailand estuary 100: 2081
2612. *Oxyeleotris marmorata* (Bleeker, 1852) — Photo of specimen from Thai Mekong 100: 2082
2613. *Oxyeleotris siamensis* (Günther, 1861) — Photo of specimen from Thailand 100: 2083
2614. *Oxyeleotris urophthalmoides* (Bleeker, 1853) — MBFS in Mekong delta 100: 2085
2615. *Oxyeleotris urophthalmus* (Bleeker, 1851) — Photo of specimen from Mekong delta 100: 2084
2616. *Terateleotris aspro* (Kottelat, 1998) — Described from Lao Mekong.
2617. *Terateleotris sp.* — Discovered in a tributary to Nam Ngum by Kottelat (2009), who also reported a third species from the Nam Kading basin.

Gobiidae - Gobiinae - gobies

2618. *Acanthogobius flavimanus* (Temminck & Schlegel, 1845) — Widespread, Japan to Australia, Viet Nam coast in Nguyen (1991).
2619. *Acentrogobius caninus* (Valenciennes, 1837) — Photo of specimen from Mekong delta 100: 2086
2620. *Acentrogobius chlorostigmatoides* (Bleeker, 1849) — Mekong delta in Vidthayanon (2008), including photo.
2621. *Acentrogobius gracilis* (Bleeker, 1875) — South China Sea in Randall & Lim (2000), Singapore in original description 100: 2087
2622. *Acentrogobius janthinopterus* (Bleeker, 1852) — Japan to Australia, Natuna Island in Tan & Lim (2004) 100: 2088
2623. *Acentrogobius madraspatensis* (Day, 1868) — Specimens from Rayong, eastern Gulf of Thailand at CAS.
2624. *Acentrogobius masoni* (Day, 1873) — Gulf of Thailand In Fowler (1937).
2625. *Acentrogobius moloanus* (Herre, 1927) — CAS specimens from Trat area, Gulf of Thailand.
2626. *Acentrogobius multifasciatus* (Herre, 1927) — Nha Trang specimens at ROM.
2627. *Acentrogobius nebulosus* (Forsskål, 1775) — Photo of specimen from Mekong delta 100: 2089
2628. *Acentrogobius suluensis* (Herre, 1927) — Specimen from Rayong area, eastern Gulf of Thailand at CAS.
2629. *Acentrogobius viridipunctatus* (Valenciennes, 1837) — Photo of specimen from Mekong delta 100: 2090
2630. *Amblyeleotris diagonalis* Polunin & Lubbock, 1979 — Redang Island, Malaysia in Randall & Lim (2000) 100: 2091
2631. *Amblyeleotris fasciata* (Herre, 1953) — Nha Trang specimens at ROM 100: 2092
2632. *Amblyeleotris fontanesii* (Bleeker, 1852) — Gulf of Thailand in Wongratana (1975), also Fourmanoir & Nhung (1965, figure 54) 100: 2093
2633. *Amblyeleotris guttata* (Fowler, 1938) — South China Sea, over sand and rubble in Allen (1997), Spratly Islands in Chen et al. (1997) . . . 100: 2094
2634. *Amblyeleotris gymnocephala* (Bleeker, 1853) — Gulf of Thailand in Smith (1945) 100: 2095
2635. *Amblyeleotris latifasciata* Polunin & Lubbock, 1979 — Gulf of Thailand in original description 100: 2096
2636. *Amblyeleotris periophthalma* (Bleeker, 1853) — Photo of specimen from Nha Trang 100: 2097
2637. *Amblyeleotris randalli* Hoese & Steene, 1978 — Spratly Islands in Chen et al. (1997).
2638. *Amblyeleotris steinitzi* (Klausewitz, 1974) — CAS from Koh Tao in the western Gulf of Thailand, Spratly Islands in Chen et al. (1997) . . 100: 2098
2639. *Amblyeleotris wheeleri* (Polunin & Lubbock, 1977) — Spratly Islands in Chen et al. (1997).
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2858. *Pseudogobius javanicus* (Bleeker, 1856) — Photo of specimen from Cambodian coastline 107: 2234
2859. *Pseudogobius melanosticta* (Day, 1876) — Formerly confused with *P. javanicus*, with similar range.
2860. *Pseudogobius poicilosoma* (Bleeker, 1849) — Widespread, India to Philippines in brackish water, Viet Nam coast in Nguyen (1991).
2861. *Pseudogobius sp. 1* — Photo of specimens from Mekong delta 107: 2235-6
2862. *Pseudogobius sp. 2* — Photo of specimen from Mekong delta 107:2237
2863. *Redigobius balteatus* (Herre, 1935) — Orsi (1974) lists from Viet Nam, widely distributed, Sri Lanka to Japan.
2864. *Redigobius bikolanus* (Herre, 1927) — Photo of specimen from Mekong delta 107: 2238
2865. *Redigobius chrysosomus* (Bleeker, 1875) — Photo of specimen from Mekong delta 107: 2239
2866. *Redigobius isognathus* (Bleeker, 1878) — MBFS in Mekong estuary (questionable identification).
2867. *Rhinogobius albimaculatus* Chen, Kottelat & Miller, 1999 — Photos of specimens from Lao Mekong 107: 2240-1
2868. *Rhinogobius sp.cf. albimaculatus* — reported from the Nam Ou by Kottelat (2009).
2869. *Rhinogobius giurinus* (Rutter, 1897) — Wide ranging, southwestern range boundary in Hengduan range (Yang in Chen et al., 1998)
2870. *Rhinogobius lineatus* Chen, Kottelat & Miller, 1999 — Described from Mekong fresh water.
2871. *Rhinogobius maculocervix* Chen & Kottelat, 2000 — Photos of specimens from Lao Mekong 107: 2242-3
2872. *Rhinogobius mekongianus* (Pellegrin & Fang, 1940) — Photos of specimens from Lao Mekong 107: 2244-5

2873. *Rhinogobius taenigena* Chen, Kottelat & Miller, 1999 — Described from Mekong fresh water.
2874. *Rhinogobius vexillifer* (Fowler, 1937) — Described from Bangkok (generic name uncertain).
2875. *Rhinogobius sp.* — Photo of specimen from upper Srepok basin of Viet Nam 107: 2246-7
2876. *Rhinogobius sp.* — Photos of specimens from Lao Mekong 108: 2248
2877. *Stenogobius mekongensis* Watson, 1991 — Photos of specimens from Mekong delta 108: 2249-50
2878. *Stenogobius ophthalmoporus* (Bleeker, 1853) — Photo of specimens from Mekong delta 108: 2251
2879. *Stigmatogobius pleurostigma* (Bleeker, 1849) — Photo of specimen from Mekong delta 108: 2252
2880. *Stigmatogobius sadanundio* (Hamilton, 1822) — Photo of specimen from Gulf of Thailand estuary 108: 2253

Gobiidae - Oxudercinae - mudskippers

2881. *Apocryptodon madurensis* (Bleeker, 1849) — Photo of specimen from Gulf of Thailand 108: 2254
2882. *Apocryptodon sp.* — Photos of specimens from Mekong delta (possibly two species) 108: 2255-6
2883. *Boleophthalmus boddarti* (Pallas, 1770) — Photo of specimen from Mekong delta 108: 2257
2884. *Boleophthalmus pectinirostris* (Linnaeus, 1758) — Orsi (1974) lists from Viet Nam, Viet Nam coast in Nguyen (1991).
2885. *Oxuderces dentatus* Valenciennes, 1842 — Photo of specimen from Thailand 108: 2258
2886. *Parapocryptes serperaster* (Richardson, 1846) — Photo of specimen from Mekong delta 108: 2259
2887. *Periophthalmodon schlosseri* (Pallas, 1770) — MBFS from Mekong delta, photo of specimen from Gulf of Thailand estuary 108: 2260
2888. *Periophthalmodon septemradiatus* (Hamilton, 1822) — Photos of specimens from Mekong delta 108: 2261-2
2889. *Periophthalmus argentilineatus* (Valenciennes, 1837) — Gulf of Thailand in Murdy (1989) 108: 2263
2890. *Periophthalmus chrysospilos* Bleeker, 1853 — Photo of specimen from Mekong delta 108: 2264
2891. *Periophthalmus gracilis* Eggert, 1935 — Photo of specimen from Mekong delta 108: 2265
2892. *Periophthalmus kalolo* (Lesson, 1830) — Malaysia and Singapore in South China Sea 108: 2266
2893. *Periophthalmus novemradiatus* (Hamilton, 1822) — Gulf of Thailand in Murdy (1989) and Singapore in Larson et al. (2008) 108: 2267
2894. *Periophthalmus variabilis* Eggert, 1935 — Described subspecies *Periophthalmus variabilis asiaticus* from northern Gulf of Thailand at Paknam.
2895. *Pseudapocryptes borneensis* (Bleeker, 1855) — Gulf of Thailand in Murdy (1989).
2896. *Pseudapocryptes elongatus* (Cuvier, 1816) — Common in Mekong Delta.
2897. *Pseudapocryptes lanceolatus* (Bloch & Schneider, 1801) — Photo of specimen from Mekong delta 108: 2268
2898. *Scartelaos histophorus* (Valenciennes, 1837) — CAS specimens from eastern Gulf of Thailand near Rayong 109: 2269

Gobiidae - Amblyopinae - eel gobies

2899. *Amblyotrypauchen arctocephalus* (Alcock, 1890) — Viet Nam coast in Nguyen (1991).
2900. *Brachyamblyopus brachysoma* (Bleeker, 1853) — Orsi (1974) lists from Viet Nam, also Viet Nam coast in Nguyen (1991).
2901. *Caragobius urolepis* (Bleeker, 1852) — Photos of specimens from Mekong delta 109: 2270-1
2902. *Paratrypauchen microcephalus* (Bleeker, 1860) — Photo of specimen from Mekong delta 109: 2272
2903. *Pseudotrypauchen multiradiatus* (Hardenberg, 1931) — River mouths from India to Indonesia, Mekong likely also.
2904. *Taenioides anguillaris* (Linnaeus, 1758) — Photo of specimen from Mekong delta 109: 2273
2905. *Taenioides buchanani* (Day, 1873) — KFL from Gulf of Thailand (identification questionable).
2906. *Taenioides cirratus* (Blyth, 1860) — Photo of specimen from Mekong delta 109: 2274
2907. *Taenioides gracilis* (Valenciennes, 1837) — Photos of specimen from Mekong delta 109: 2275-6
2908. *Taenioides nigrimarginatus* Hora, 1924 — Photo of specimen from Mekong delta 109: 2277
2909. *Taenioides sp*. — Photo of specimen from Mekong delta 109: 2278
2910. *Trypauchen pelaeos* Murdy, 2006 — WJR in Mekong delta, paratype in original description.
2911. *Trypauchen vagina* (Bloch, in Schneider, 1801) — Photo of specimen from Mekong delta 109: 2279
2912. *Trypauchen sp. cf. vagina* — Photos of specimens from Mekong delta 109: 2280-1
2913. *Trypauchenichthys sumatrensis* Hardenberg, 1931 — Widespread, but uncommon, possible in Mekong.
2914. *Trypauchenichthys typus* Bleeker, 1860 — Widely distributed, but rare everywhere.
2915. *Trypauchenopsis intermedius* Volz, 1903 — MBFS in Mekong delta.
2916. *Trypauchenopsis sp.cf. jacksoni* — MBFS in Mekong delta.

Xenisthmidae - xenisthmids

2917. *Xenisthmus polyzonatus* (Klunzinger, 1871) — Photo of specimen from Nha Trang, Spratly Islands in Chen et al. (1997) 109: 2282
2918. *Xenisthmus sp. 1* — Spratly Islands in Chen et al. (1997).
2919. *Xenisthmus sp. 2* — Spratly Islands in Chen et al. (1997).
2920. Xenisthmidae *gen. et sp. indet*. — MBFS at Mekong mouth, bears slight resemblance to genus *Rotuma*, but possibly not even a xenisthmid.

Microdesmidae - wormfishes

2921. *Gunnellichthys pleurotaenia* Bleeker, 1858 — CAS specimen from near Rayong in eastern Gulf of Thailand 109: 2283

Ptereleotridae - dartfishes

2922. *Nemateleotris decora* Randall & Allen, 1973 — Spratly Islands in Nguyen & Nguyen (2006).
2923. *Nemateleotris magnifica* Fowler, 1938 — Photo of specimen from Nha Trang, Spratly Islands in Chen et al. (1997) 109: 2284
2924. *Oxymetopon filamentosum* Fourmanoir, 1967 — Described from Nha Trang.
2925. *Oxymetopon formosum* Fourmanoir, 1967 — Described from Nha Trang.
2926. *Oxymetopon typus* Bleeker, 1861 — Fourmanoir & Nhung (1965) at Nha Trang.
2927. *Parioglossus formosus* (Smith, 1931) — Described from Gulf of Thailand near mouth of Chantabun River, CAS from northeastern Gulf of Thailand.
2928. *Parioglossus philippinus* (Herre, 1940) — CAS specimens from eastern Gulf of Thailand.

2929. *Ptereleotris evides* (Jordan & Hubbs, 1925) — CAS from eastern Gulf of Thailand, Spratly Islands in Chen et al. (1997), also Nha Trang and Cu Lao Cau in Nguyen & Nguyen (2006) 109:2285
2930. *Ptereleotris heteroptera* (Bleeker, 1855) — Spratly Islands in Chen et al. (1997).
2931. *Ptereleotris microlepis* (Bleeker, 1856) — Chu et al. (1979) islands in South China Sea.
2932. *Ptereleotris zebra* (Fowler, 1938) — Spratly Islands in Chen et al. (1997) 109: 2286

Schindleriidae - infantfishes

2933. *Schindleria praematura* (Schindler, 1930) — Viet Nam on Gulf of Thailand, specimens at Scripps Institute of Oceanography.

PERCIFORMES - Kurtoidei

Kurtidae - nurseryfishes

2934. *Kurtus indicus* Bloch, 1786 — KFL in Gulf of Thailand.

PERCIFORMES – Acanthuroidei

Ephippidae - spadefishes

2935. *Ephippus orbis* (Bloch, 1787) — MBFS in Mekong plume 109: 2287
2936. *Platax batavianus* Cuvier, 1831 — MBFS in Mekong plume 109: 2288-9
2937. *Platax orbicularis* (Forsskål, 1775) — MBFS in Mekong plume 110: 2290
2938. *Platax teira* (Forsskål, 1775) — KFL in Gulf of Thailand 110: 2291
2939. *Proteracanthus sarissophorus* (Cantor, 1849) — Coastal waters and estuaries Gulf of Thailand in Heemstra (FAO).

Scatophagidae - scats

2940. *Scatophagus argus* (Linnaeus, 1766) — Photo of specimen from Mekong delta 110: 2292-3

Siganidae - rabbitfishes

2941. *Siganus argenteus* (Quoy & Gaimard, 1825) — MBFS in Mekong plume 110: 2294
2942. *Siganus canaliculatus* (Park, 1797) — Photo of specimen from Mekong delta 110: 2295
2943. *Siganus chrysospilos* (Bleeker, 1852) — South China Sea in Randall and Lim (2000), formerly placed in synonymy with *S. punctatus*.
2944. *Siganus corallinus* (Valenciennes, 1835) — KFL in Gulf of Thailand, CAS from eastern Gulf of Thailand and Binh Chang Bay 110: 2296
2945. *Siganus doliatus* Guérin-Méneville 1829-38 — Nha Trang and Cu Lao Cau in Nguyen & Nguyen (2006).
2946. *Siganus fuscescens* (Houttuyn, 1782) — MBFS in Mekong plume 110: 2297
2947. *Siganus guttatus* (Bloch, 1787) — Nha Trang specimens at ROM, also Gulf of Thailand in Woodland (FAO) 110: 2298
2948. *Siganus javus* (Linnaeus, 1766) — Photo of specimen from Mekong delta 110: 2299
2949. *Siganus lineatus* (Valenciennes, 1835) — Nha Trang in Nguyen & Nguyen (2006).
2950. *Siganus puellus* (Schlegel, 1852) — An Thoi and Spratly Islands in Nguyen & Nguyen (2006).
2951. *Siganus punctatus* (Schneider & Forster, 1801) — CAS specimens from Gulf of Thailand 110: 2300
2952. *Siganus spinus* (Linnaeus, 1758) — KFL in Gulf of Thailand, Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 110: 2301
2953. *Siganus stellatus* (Forsskål, 1775) — KFL in Gulf of Thailand, also Spratly Islands in Nguyen & Nguyen (2006) 110: 2302
2954. *Siganus vermiculatus* (Valenciennes, 1835) — Malay Peninsula on South China Sea side in Woodland (FAO) 110: 2303
2955. *Siganus virgatus* (Valenciennes, 1835) — Nha Trang specimens at ROM, CAS specimens from eastern Gulf of Thailand 110: 2304
2956. *Siganus vulpinus* (Schlegel & Müller, 1845) — Viet Nam coast and Gulf of Thailand in Woodland (FAO), Spratly Islands in Chen et al. (1997).

Zanclidae - Moorish idols

2957. *Zanclus cornutus* (Linnaeus, 1758) — CAS specimen from Nha Trang Bay, also Gulf of Thailand in Woodland (FAO) 110: 2305

Acanthuridae - surgeonfishes

2958. *Acanthurus albipectoralis* Allen & Ayling, 1987 — Spratly Islands in Nguyen & Nguyen (2006).
2959. *Acanthurus auranticavus* Randall, 1956 — Nha Trang and Spratly Islands in Nguyen & Nguyen (2006).
2960. *Acanthurus blochii* Valenciennes, 1835 — General Indo-Pacific in Randall (FAO), Viet Nam coast in Nguyen & Nguyen (2006) 110: 2306
2961. *Acanthurus dussumieri* Valenciennes, 1835 — Viet Nam and Gulf of Thailand in Randall (FAO), also from Spratly Islands in Nguyen & Nguyen (2006) 110: 2307
2962. *Acanthurus grammoptilus* Richardson, 1843 — Spratly Islands in Nguyen & Nguyen (2006).
2963. *Acanthurus japonicus* (Schmidt, 1931) — Spratly Islands in Chen et al. (1997).
2964. *Acanthurus lineatus* (Linnaeus, 1758) — Viet Nam and Gulf of Thailand in Randall (FAO), also Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 110: 2308
2965. *Acanthurus mata* (Cuvier, 1829) — Photo of specimen from Nha Trang, also Gulf of Thailand in Randall (FAO) 110: 2309
2966. *Acanthurus nigricans* (Linnaeus, 1758) — Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 110: 2310
2967. *Acanthurus nigricauda* Duncker & Mohr, 1929 — Viet Nam and Gulf of Thailand in Randall (FAO), also from Spratly Islands in Nguyen & Nguyen (2006) 111: 2311
2968. *Acanthurus nigrofuscus* (Forsskål, 1775) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997), also Cu Lao Cau and Con Dao in Nguyen & Nguyen (2006) 111: 2312
2969. *Acanthurus nigroris* Valenciennes, 1835 — Spratly Islands in Nguyen & Nguyen (2006).
2970. *Acanthurus olivaceus* Bloch & Schneider, 1801 — Viet Nam and Gulf of Thailand in Randall (FAO), Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 111: 2313

2971. *Acanthurus pyroferus* Kittlitz, 1834 — Viet Nam and Gulf of Thailand in Randall (FAO), Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 111: 2314
2972. *Acanthurus thompsoni* (Fowler, 1923) — Spratly Islands in Chen et al. (1997).
2973. *Acanthurus triostegus* (Linnaeus, 1758) — Viet Nam and Gulf of Thailand in Randall (FAO), Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 111: 2315
2974. *Acanthurus xanthopterus* Valenciennes, 1835 — KFL in Gulf of Thailand, Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) . . 111: 2316
2975. *Ctenochaetus binotatus* Randall, 1955 — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 111: 2317
2976. *Ctenochaetus striatus* (Quoy & Gaimard, 1825) — Photo of specimen from Nha Trang, also Gulf of Thailand in Randall (FAO) 111: 2318
2977. *Ctenochaetus strigosus* (Bennett, 1828) —Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 111: 2319
2978. *Naso annulatus* (Quoy & Gaimard, 1825) —Nha Trang and Cu Lao Cau in Nguyen & Nguyen (2006) 111: 2320
2979. *Naso brachycentron* (Valenciennes, 1835) — General Indo-Pacific in Randall (FAO) 111: 2321
2980. *Naso brevirostris* (Cuvier, 1829) — Orsi (1974) specimens from Viet Nam, Spratly Islands in Chen et al. (1997) 111: 2322
2981. *Naso hexacanthus* (Bleeker, 1855) — Viet Nam and Gulf of Thailand in Randall (FAO), Spratly Islands in Nguyen & Nguyen (2006) . . . 111: 2323
2982. *Naso lituratus* (Forster, 1801) —Nha Trang, Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 111: 2324
2983. *Naso thynnoides* (Cuvier, 1829) — Fourmanoir & Nhung (1965) at Nha Trang 111: 2325
2984. *Naso unicornis* (Forsskål, 1775) — Nha Trang specimens at ROM, Gulf of Thailand in Randall (FAO) 111: 2326
2985. *Naso vlamingii* (Valenciennes, 1835) — General Indo-Pacific in Randall (FAO), Spratly Islands in Chen et al. (1997) 111: 2327
2986. *Paracanthurus hepatus* (Linnaeus, 1766) — Viet Nam and Gulf of Thailand in Randall (FAO), Spratly Islands in Nguyen & Nguyen (2006) 111: 2328
2987. *Zebrasoma flavescens* (Bennett, 1828) — Nha Trang and Spratly Islands in Nguyen & Nguyen (2006).
2988. *Zebrasoma scopas* (Cuvier, 1829) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 111: 2329
2989. *Zebrasoma veliferum* (Bloch, 1795) — Spratly Islands in Chen et al. (1997), Cu Lao Cau and Spratly Islands in Nguyen & Nguyen (2006) 111: 2330
2990. *Zebrasoma xanthurum* (Blyth, 1852) —Spratly Islands in Nguyen & Nguyen (2006).

PERCIFORMES – Scombroidei

Sphyraenidae - barracudas

2991. *Sphyraena acutipinnis* Day, 1876 — Central Viet Nam in Nguyen & Nguyen (1994).
2992. *Sphyraena barracuda* (Edwards, 1771) — MBFS in Mekong plume 111: 2331
2993. *Sphyraena flavicauda* Rüppell, 1838 — MBFS in Mekong plume 112: 2332
2994. *Sphyraena forsteri* Cuvier, 1829 — MBFS in Mekong plume 112: 2333
2995. *Sphyraena jello* Cuvier, 1829 — MBFS in Mekong plume 112: 2334
2996. *Sphyraena obtusata* Cuvier, 1829 — MBFS in Mekong plume 112: 2335
2997. *Sphyraena putnamae* Jordan & Seale, 1905 — Photograph of specimen from Mekong delta 112: 2336
2998. *Sphyraena qenie* Klunzinger, 1870 — KFL in Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 112: 2337

Gempylidae - snake mackerels

2999. *Gempylus serpens* Cuvier, 1829 — Deep water, but caught near surface at night off Viet Nam coast.
3000. *Rexea prometheoides* (Bleeker, 1856) — Central South China Sea in Nakamura & Parin (FAO), deep water but taken in bottom trawls.

Trichiuridae - cutlassfishes

3001. *Aphanopus microphthalmus* Norman, 1939 — Coast of southern Viet Nam in Nakamura & Parin (FAO).
3002. *Benthodesums tenuis* (Günther, 1877) — Coast of southern Viet Nam in Nakamura & Parin (FAO).
3003. *Benthodesmus tuckeri* Parin & Becker, 1970 — Coast of southern Viet Nam in Nakamura & Parin (FAO).
3004. *Eupleurogrammus glossodon* (Bleeker, 1860) — KFL in Gulf of Thailand, also southern Viet Nam in Nakamura & Pain (FAO).
3005. *Eupleurogrammus muticus* (Gray, 1831) — Viet Nam and Gulf of Thailand in Nakamura & Pain (FAO).
3006. *Lepturacanthus savala* (Cuvier, 1829) — MBFS in Mekong plume.
3007. *Trichiurus lepturus* Linnaeus, 1758 — MBFS in Mekong plume 112: 2338

Scombridae - mackerels, tunas

3008. *Acanthocybium solandri* (Cuvier, 1832) — Fourmanoir & Nhung (1965) at Nha Trang 112: 2339
3009. *Auxis rochei* (Risso, 1810) — Viet Nam and Gulf of Thailand in Collette (FAO) 112: 2340
3010. *Auxis thazard* (La Cepède, 1800) — KFL in Gulf of Thailand 112: 2341
3011. *Euthynnus affinis* (Cantor, 1849) — KFL in Gulf of Thailand; CAS specimens from eastern Gulf of Thailand 112: 2342
3012. *Grammatorcynus bilineatus* (Rüppell, 1836) — Orsi (1974) specimens from Viet Nam (as *G. bicarinatus*).
3013. *Gymnosarda unicolor* (Rüppell, 1838) — Orsi (1974) specimens from Viet Nam, Spratly Islands in Chen et al. (1997) 112: 2343
3014. *Katsuwonus pelamis* (Linnaeus, 1758) — CAS specimen from eastern Gulf of Thailand, Viet Nam coast in Collette (FAO) 112: 2344
3015. *Rastrelliger brachysoma* (Bleeker, 1851) — Photo of specimen from Gulf of Thailand 112: 2345
3016. *Rastrelliger faughni* Matsui, 1967 — Gulf of Thailand in Collette (FAO).
3017. *Rastrelliger kanagurta* (Cuvier, 1816) — MBFS in Mekong plume 112: 2346
3018. *Scomber australasicus* Cuvier, 1832 — Nha Trang specimens at ROM 112: 2347
3019. *Scomber japonicus* Houttuyn, 1782 — Orsi (1974) specimens from Viet Nam 112: 2348
3020. *Scomberomorus commerson* (La Cepède, 1800) — MBFS in Mekong plume 112: 2349
3021. *Scomberomorus guttatus* (Bloch & Schneider, 1801) — KFL from Gulf of Thailand 112: 2350
3022. *Scomberomorus koreanus* (Kishinouye, 1915) — Coast of Mekong delta in Collette (FAO).
3023. *Scomberomorus lineolatus* (Cuvier, 1829) — Fourmanoir & Nhung (1965) at Nha Trang, CAS specimen from eastern Gulf of Thailand.
3024. *Scomberomorus sinensis* La Cepède, 1800 — Photo of specimen from Mekong delta 112: 2351

3025. *Thunnus alalunga* (Bonnaterre, 1788) — Occasionally in Viet Nam markets, South China Sea in Collette (FAO) 112: 2352
3026. *Thunnus albacares* (Bonnaterre, 1788) — Spratly Islands in Chen et al. (1997), South China Sea in Collette (FAO) 113: 2353
3027. *Thunnus obesus* (Lowe, 1839) — Orsi (1974) specimens from Viet Nam, South China Sea in Collette (FAO) 113: 2354
3028. *Thunnus tonggol* (Bleeker, 1851) — KFL from Gulf of Thailand, CAS from eastern Gulf of Thailand, also South China Sea in Collette (FAO).

Istiophoridae - billfishes

3029. *Istiophorus platypterus* (Shaw, 1792) — MBFS found young to be common in northern part of Mekong estuary near Vung Tau 113: 2355
3030. *Makaira indica* (Cuvier, 1832) — CAS specimen from southern Gulf of Thailand, also coastal waters of Viet Nam in Nakamura (FAO).
3031. *Makaira mazara* (Jordan & Snyder, 1901) — Fourmanoir & Nhung (1965) at Nha Trang (as *Makaira nigricans*) 113: 2356
3032. *Tetrapturus audax* (Philippi, 1887) — Fourmanoir & Nhung (1965) at Nha Trang (as *Tetrapturus sp.* with T. *audax* most likely) 113: 2357

Xiphiidae - swordfishes

3033. *Xiphias gladius* Linnaeus, 1758 — Pelagic in central South China Sea.

PERCIFORMES – Stromateoidei

Centrolophidae - medusafishes

3034. *Psenopsis anomala* (Temminck & Schlegel, 1844) — MBFS from Mekong plume 113: 2358
3035. *Hyperoglyphe japonica* (Döderlein, 1884) — Spratly Islands in Chen et al. (1997).

Nomeidae - driftfishes

3036. *Cubiceps baxteri* McCulloch, 1923 — Coast of Viet Nam and Gulf of Thailand in Last (FAO) 113: 2359
3037. *Cubiceps capensis* (Smith, 1849) — Coast of Viet Nam and Gulf of Thailand surface at night in Last (FAO).
3038. *Cubiceps pauciradiatus* Günther, 1872 — Coast of Viet Nam and Gulf of Thailand surface at night in Last (FAO).
3039. *Cubiceps whiteleggii* (Waite, 1894) — Coast of Viet Nam and Gulf of Thailand in Last (FAO) 113: 2360
3040. *Nomeus gronovii* (Gmelin, 1788) — Coast of Viet Nam and Gulf of Thailand in Last (FAO).
3041. *Psenes arafurensis* Günther, 1889 — Coast of Viet Nam and Gulf of Thailand in Last (FAO).
3042. *Psenes cyanophrys* Cuvier & Valenciennes, 1833 — Coast of Viet Nam and Gulf of Thailand in Last (FAO).
3043. *Psenes pellucidus* Lutken, 1880 — Coast of Viet Nam and Gulf of Thailand in Last (FAO).

Ariommatidae - ariommatids

3044. *Ariomma indicum* (Day, 1871) — MBFS in Mekong plume 113: 2361

Stromateidae - butterfishes

3045. *Pampus argenteus* (Euphrasen, 1788) — MBFS in Mekong plume 113: 2362
3046. *Pampus chinensis* (Euphrasen, 1788) — MBFS field notes 113: 2363
3047. *Pampus cinereus* (Bloch, 1795) — South China Sea and Gulf of Thailand in Nakabo (2002) 113: 2364

PERCIFORMES – Anabantoidei

Anabantidae - climbing gouramies

3048. *Anabas testudineus* (Bloch, 1792) — Photo of specimen from Lao Mekong, a second species possible in lower Mekong 113: 2365

Helostomatidae - kissing gouramies

3049. *Helostoma temminkii* Cuvier, 1829 — Photo of specimen from Mekong delta, Viet Nam 113: 2366

Osphronemidae - Belontiinae - combtails

3050. *Belontia hasselti* (Cuvier, 1831) — Recorded from Phu Quoc Island by Wildlife at Risk of Ho Chi Minh City (Anonymous, 2010).

Osphronemidae - Macropodinae - fighting fishes, paradisefishes

3051. *Betta prima* Kottelat, 1994 — Photo of specimen from Cambodia 113: 2367
3052. *Betta smaragdina* Ladiges, 1972 — Photo of specimen from Thai Mekong 113: 2368
3053. *Betta splendens* Regan, 1910 — Photo of specimen from Thailand 113: 2369
3054. *Betta sp.* — Photo of specimen from Cambodian Mekong (Siem Reap) 113: 2370
3055. *Betta stiktos* Tan & Ng, 2005 — Photo of specimens from Stung Treng (female) and Mekong delta (male) 113: 2371-2
3056. *Macropodus opercularis* (Linnaeus, 1758) — Photo of specimen from Lao Mekong 113: 2373
3057. *Trichopsis pumila* (Arnold, 1936) — Photos of specimens from Mekong delta and central Thailand 114: 2374-5
3058. *Trichopsis schalleri* Ladiges, 1962 — Photo of specimen from Lao Mekong 114: 2376
3059. *Trichopsis vittata* (Cuvier, 1831) — Photos of specimens from Lao and Cambodian Mekong 114: 2377-8

Osphronemidae - Luciocephalinae - gouramies

3060. *Trichopodus cantoris* (Günther, 1861) — Photo of specimen from Mekong delta 114: 2379-80
3061. *Trichopodus leerii* (Bleeker, 1852) — Photo of specimen from peat swamp in southern Thailand, likely in lower Mekong 114: 2381
3062. *Trichopodus microlepis* (Günther, 1861) — Photo of specimen from Cambodian Mekong 114: 2382
3063. *Trichopodus sp.cf. microlepis* — Found in Great Lake, has mid-lateral stripe like *Trichopodus leerii*.
3064. *Trichopodus trichopterus* (Pallas, 1777) — Photo of specimen from Lao Mekong 114: 2383

Osphronemidae - Osphroneminae - giant gouramies

3065. *Osphronemus exodon* Roberts, 1994 — Photo of specimen from Cambodian Mekong 114: 2384
3066. *Osphronemus gouramy* La Cepède, 1801 — Recorded from Nam Ngum Reservoir, Laos - possibly introduced 114: 2385

PERCIFORMES – Channoidei

Channidae - snakeheads

3067. *Channa sp.cf. aurolineata* — Photo of specimen from Cambodian Mekong 114: 2386
3068. *Channa gachua* (Hamilton, 1822) — Photo of specimen from Lao Mekong 114: 2387
3069. *Channa lucius* (Cuvier, 1831) — Photo of specimen from Lao Mekong 114: 2388
3070. *Channa sp.cf. limbata* — Photo of specimen from upper Srepok basin in Viet Nam 114: 2489
3071. *Channa sp.cf. marulius* — Photo of specimen from Lao Mekong 114: 2390
3072. *Channa melanoptera* (Bleeker, 1855) — Photo of specimen from Lao Mekong 114: 2391
3073. *Channa micropeltes* (Cuvier, 1831) — Photo of specimen from Cambodian Mekong 114: 2392
3074. *Channa striata* (Bloch, 1793) — Photo of specimen from Lao Mekong 114: 2393

PERCIFORMES – Caproidei

Caproidae - boarfishes

3075. *Antigonia rubescens* (Günther, 1860) — Central Viet Nam in Nguyen & Nguyen (1994).

PLEURONECTIFORMES – flatfishes

Psettodidae - spiny turbots

3076. *Psettodes erumei* (Bloch & Schneider, 1801) — Photo of specimen from Mekong delta 114: 2394

Citharidae - largescale flounders

3077. *Brachypleura novaezeelandiae* Günther, 1862 — Viet Nam and Gulf of Thailand in Hensley (FAO), CAS from eastern Gulf of Thailand . 115: 2395

Bothidae - lefteye flounders

3078. *Arnoglossus aspilos* (Bleeker, 1851) — CAS specimens from Nha Trang Bay and from eastern and south central Gulf of Thailand.
3079. *Arnoglossus macrolophus* Alcock, 1889 — Viet Nam coast including area of Mekong delta in Hensley & Amaoka (FAO).
3080. *Arnoglossus tapeinosoma* (Bleeker, 1865) — Viet Nam coast including area of Mekong delta in Hensley & Amaoka (FAO).
3081. *Arnoglossus tenuis* Günther, 1880 — CAS specimens from eastern Gulf of Thailand.
3082. *Asterorhombus cocosensis* (Bleeker, 1855) — Spratly Islands in Chen et al. (1997).
3083. *Asterorhombus intermedius* (Bleeker, 1865) — Central Viet Nam coast, including fish markets in Hensley & Amaoka (FAO) 115: 2396
3084. *Bothus mancus* (Broussonet, 1782) — Indochina in Li & Wang (1995) 115: 2397-8
3085. *Bothus myriaster* (Temminck & Schlegel, 1846) — MBFS from Mekong plume (as *Bothus ovalis*) 115: 2399-400
3086. *Bothus pantherinus* (Rüppell, 1830) — CAS specimen from Nha Trang Bay, Viet Nam 115: 2401
3087. *Chascanopsetta lugubris* Alcock, 1894 — Deep waters of South China Sea and Gulf of Thailand in Hensley & Amaoka (FAO) 115: 2402
3088. *Crossorhombus azureus* (Alcock, 1889) — MBFS from Mekong plume 115: 2403
3089. *Crossorhombus kobensis* (Jordan & Starks, 1906) — Indochina in Li & Wang (1995) as *Crossorhombus valderostratus*.
3090. *Engyprosopon grandisquama* (Temminck & Schlegel, 1846) — MBFS from Mekong plume 115: 2404-5
3091. *Engyprosopon maldivensis* (Regan, 1908) — MBFS from Mekong plume 115: 2406
3092. *Engyprosopon mogkii* (Bleeker, 1854) — Photo of specimen from Mekong delta 115: 2407
3093. *Engyprosopon multisquama* Amaoka, 1963 — CAS specimen from Rayong Bay in eastern Gulf of Thailand.
3094. *Grammatobothus krempfi* Chabanaud, 1929 — Poulo Condore (Con Dao) Island.
3095. *Grammatobothus polyophthalmus* (Bleeker, 1865) — KFL from Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 115: 2408
3096. *Laeops guentheri* Alcock, 1890 — Coastlines around Gulf of Thailand in Hensley & Amaoka (FAO).
3097. *Psettina tosana* Amaoka, 1963 — Spratly Islands in Chen et al. (1997).

Paralichthyidae - sand flounders

3098. *Pseudorhombus arsius* (Hamilton, 1822) — Photo of specimen from Mekong delta 115: 2409
3099. *Pseudorhombus diplospilus* Norman, 1926 — KFL from Gulf of Thailand 115: 2410
3100. *Pseudorhombus dupliciocellatus* Regan, 1905 — KFL from Gulf of Thailand, CAS from eastern Gulf of Thailand 115: 2411
3101. *Pseudorhombus elevatus* Ogilby, 1912 — KFL from Gulf of Thailand, CAS from eastern Gulf of Thailand 115: 2412
3102. *Pseudorhombus javanicus* (Bleeker, 1853) — MBFS in Mekong plume 115: 2413
3103. *Pseudorhombus malayanus* Bleeker, 1865 — KFL from Gulf of Thailand, CAS from eastern Gulf of Thailand 115: 2414
3104. *Pseudorhombus neglectus* Bleeker, 1865 — MBFS in Mekong plume.
3105. *Pseudorhombus oligodon* (Bleeker, 1854) — Estuaries of rivers entering Gulf of Thailand in Suvatti (1981).
3106. *Pseudorhombus pentophthalmus* Günther, 1862 — A synonym, *Pseudorhombus annamensis* Chabanaud (1929) described from Nha Trang Bay.
3107. *Pseudorhombus quinquocellatus* Weber & deBeaufort, 1929 — MBFS in Mekong plume 115: 2415
3108. *Pseudorhombus triocellatus* (Bloch & Schneider, 1801) — Indochina in Li & Wang (1995).

Samaridae - crested flounders

3109. *Samaris cristatus* Gray, 1831 — MBFS in Mekong plume 116: 2416

3110. *Poecilopsetta colorata* Günther, 1880 — Deeper waters of Gulf of Thailand and South China Sea in Hensley (FAO).

Soleidae - soles

3111. *Achiroides leucorhynchos* Bleeker, 1851 — Thailand in Smith (1945).
3112. *Achiroides melanorhynchus* (Bleeker, 1851) — Orsi (1974) specimens from Viet Nam.
3113. *Aesopia cornuta* Kaup, 1858 — MBFS in Mekong plume 116: 2417
3114. *Aseraggodes cyaneus* (Alcock, 1890) — CAS specimen from Koh Chang in eastern Gulf of Thailand 116: 2418
3115. *Aseraggodes dubius* Weber, 1913 — Gulf of Thailand in Punpoka (1964), CAS specimen from eastern Gulf of Thailand.
3116. *Aseraggodes melanostictus* (Peters, 1877) — MBFS in Mekong plume.
3117. *Brachirus aspilos* (Bleeker, 1851) — Bangkok (probably market) in Suvatti (1981).
3118. *Brachirus harmandi* (Sauvage, 1878) — Photo of specimen from Cambodian Mekong 116: 2419
3119. *Brachirus orientalis* (Bloch, 1801) — CAS specimens from eastern Gulf of Thailand; also coastline of Viet Nam in Munroe (FAO) 116: 2420
3120. *Brachirus pan* (Hamilton, 1822) — Recorded from Thailand by Weber & de Beaufort (1929).
3121. *Brachirus panoides* (Bleeker, 1851) — Photos of specimens from lower Mekong 116: 2421-2
3122. *Brachirus siamensis* (Sauvage, 1878) — Photos of specimens from rivers flowing into Gulf of Thailand 116: 2423-4
3123. *Dexillus muelleri* (Steindachner, 1879) — Coastal Viet Nam and Gulf of Thailand in Munroe (FAO) 116: 2425
3124. *Heteromycteris hartzfeldii* (Bleeker, 1853) — Gulf of Thailand in Fowler (1935).
3125. *Heteromycteris oculus* (Alcock, 1889) — CAS specimens from northern Gulf of Thailand, Gulf of Thailand in Punpoka (1964).
3126. *Liachirus melanospilos* (Bleeker, 1854) — MBFS in Mekong plume 116: 2426
3127. *Pardachirus pavoninus* (La Cepède, 1802) — Photo of specimen from Sihanoukville, Cambodia 116: 2427
3128. *Solea ovata* Richardson, 1846 — Photo of specimen from Mekong delta 116: 2428
3129. *Soleichthys heterorhinos* (Bleeker, 1856) — Nha Trang specimens at ROM, tidepools throughout Indo-Pacific.
3130. *Soleichthys siammakuti* Wongratana, 1975 — Bangkok market, Gulf of Thailand.
3131. *Synaptura commersonii* (La Cepède, 1802) — Photo of specimen from Mekong delta 116: 2429
3132. *Typhlachirus caecus* Hardenberg, 1931 — Photo of specimen from Mekong delta 116: 2430
3133. *Typhlachirus elongatus* Pellegrin & Chevey, 1940 — Photo of specimen from Mekong delta 116: 2431
3134. *Zebrias altipinnis* (Alcock, 1890) — CAS specimens from northern Gulf of Thailand.
3135. *Zebrias quagga* (Kaup, 1858) — Photo of specimen from Mekong delta 116: 2432
3136. *Zebrias zebra* (Bloch, 1787) — KFL from Gulf of Thailand.

Cynoglossidae - tonguefishes

3137. *Cynoglossus abbreviatus* (Gray, 1834) — MBFS from Mekong delta.
3138. *Cynoglossus arel* (Bloch & Schneider, 1801) — Coast of Viet Nam in Munroe (FAO), CAS specimens from eastern Gulf of Thailand . . . 116: 2433
3139. *Cynoglossus bilineatus* (La Cepède, 1802) — MBFS in Mekong plume.
3140. *Cynoglossus brachyrhynchos* (Bleeker, 1851) — MBFS in Mekong plume 116: 2434
3141. *Cynoglossus cynoglossus* (Hamilton, 1822) — Gulf of Thailand in Munroe (FAO), photo of *C. cynoglossus* from Bangladesh 116: 2435
3142. *Cynoglossus feldmanni* (Bleeker, 1853) — Photo of specimen from central Thailand, Gulf of Thailand drainage 116: 2436
3143. *Cynoglossus gracilis* Günther, 1873 — Photo of specimen from Mekong delta 117: 2437
3144. *Cynoglossus itinus* (Snyder, 1909) — MBFS in Mekong plume 117: 2438
3145. *Cynoglossus kopsii* (Bleeker, 1851) — MBFS in Mekong plume.
3146. *Cynoglossus lida* (Bleeker, 1851) — Photo of specimen from Mekong delta 117: 2439
3147. *Cynoglossus lingua* Hamilton, 1822 — Photo of specimen from Mekong delta 117: 2440
3148. *Cynoglossus macrolepidotus* (Bleeker, 1851) — MBFS in Mekong plume.
3149. *Cynoglossus microlepis* (Bleeker, 1851) — Photo of specimen from Cambodian Mekong 117: 2441
3150. *Cynoglossus monopus* (Bleeker, 1849) — KFL in Gulf of Thailand, Orsi (1974) specimens from Viet Nam.
3151. *Cynoglossus nigropinnatus* Ochiai, 1963 — Indochina in Li & Wang (1995).
3152. *Cynoglossus oligolepis* (Bleeker, 1854) — KFL in Gulf of Thailand, CAS specimens from southern Gulf of Thailand.
3153. *Cynoglossus oxyrhynchos* (Bleeker, 1851) — MBFS in Mekong plume 117: 2442
3154. *Cynoglossus polytaenia* (Bleeker, 1853) — MBFS in Mekong plume 117: 2443
3155. *Cynoglossus puncticeps* (Richardson, 1846) — Photo of specimen from Gulf of Thailand, MBFS from Mekong delta 117: 2444
3156. *Cynoglossus suyeni* Fowler, 1934 — MBFS in Mekong plume.
3157. *Cynoglossus trigrammus* Günther, 1862 — Orsi (1974) specimens from Viet Nam, Fowler (1935) from Bangkok.
3158. *Cynoglossus trulla* (Cantor, 1849) — Gulf of Thailand in Suvatti (1981), CAS specimens from northern Gulf of Thailand.
3159. *Cynoglossus versicolor* Alcock, 1890 — Gulf of Thailand in Punpoka (1964).
3160. *Cynoglossus sp. 1* — MBFS in Mekong plume 117: 2445
3161. *Cynoglossus sp. 2* — MBFS at Long Xuyen in Mekong delta 117: 2446
3162. *Cynoglossus sp. 3* — MBFS at Long Xuyen in Mekong delta 117: 2447
3163. *Paraplagusia bilineata* (Bloch, 1787) — Photo of specimen from Gulf of Thailand, MBFS in Mekong plume 117: 2448
3164. *Paraplagusia blochii* (Bleeker, 1851) — CAS specimen from eastern Gulf of Thailand, also Indochina in Li & Wang (1995).

TETRAODONTIFORMES - plectognaths

Triacanthidae - triplespines

3165. *Pseudotriacanthus strigillifer* (Cantor, 1849) — MBFS in Mekong plume 117: 2449
3166. *Triacanthus biaculeatus* (Bloch, 1786) — MBFS in Mekong plume 117: 2450
3167. *Triacanthus nieuhofii* Bleeker, 1852 — Gulf of Thailand in Matsuura (FAO) 117: 2451
3168. *Tripodichthys blochii* (Bleeker, 1852) — MBFS in Mekong plume.

3169. *Tripodichthys oxycephalus* (Bleeker, 1851) — Photo of specimen from Mekong delta 117: 2452
3170. *Trixiphichthys weberi* (Chaudhuri, 1910) — MBFS in Mekong plume 117: 2453

Balistidae - triggerfishes

3171. *Abalistes stellaris* (Bloch & Schneider, 1801) — CAS specimens from central Gulf of Thailand, Spratly Islands in Chen et al. (1997).
3172. *Abalistes stellatus* ([La Cepède], 1798) — KFL in Gulf of Thailand, CAS specimens from east central Gulf of Thailand 117: 2454
3173. *Balistapus undulatus* (Park, 1797) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 117: 2455
3174. *Balistoides conspicillum* (Bloch & Schneider, 1801) — Gulf of Thailand in Matsuura (FAO), Nh aTang and Spratly Islands in Nguyen & Nguyen (2006) 117: 2456
3175. *Balistoides viridescens* (Bloch & Schneider, 1801) — Gulf of Thailand in Matsuura (FAO), Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 117: 2467
3176. *Canthidermis maculata* (Bloch, 1786) — Orsi (1974) specimens from Viet Nam, throughout area in Matsuura (FAO) 118: 2458
3177. *Melichthys niger* (Bloch, 1786) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO) 118: 2459
3178. *Melichthys vidua* (Richardson, 1845) — Throughout area in Matsuura (FAO), Spratly Islands in Nguyen & Nguyen (2006) 118: 2460
3179. *Odonus niger* (Rüppell, 1836) — Gulf of Thailand in Matsuura (FAO), Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 118: 2461
3180. *Pseudobalistes flavimarginatus* (Rüppell, 1829) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO) 118: 2462
3181. *Pseudobalistes fuscus* (Bloch & Schneider, 1801) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO) 118: 2463
3182. *Rhinecanthus aculeatus* (Linnaeus, 1758) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO), Nha Trang and Spratly Islands in Nguyen & Nguyen (2006) 118: 2464
3183. *Rhinecanthus rectangulus* (Bloch & Schneider, 1801) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO), Spratly Islands in Nguyen & Nguyen. (2006).
3184. *Rhinecanthus verrucosus* (Linnaeus, 1758) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO).
3185. *Sufflamen bursa* (Bloch & Schneider, 1801) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) also Con Dao in Nguyen & Nguyen (2006) 118: 2465
3186. *Sufflamen chrysopterum* (Bloch & Schneider, 1801) — Nha Trang specimen at ROM, Gulf of Thailand in Matsuura (FAO) 118: 2466
3187. *Sufflamen fraenatum* (Latreille, 1804) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO) 118: 2467
3188. *Xanthichthys auromarginatus* (Bennett, 1832) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO).
3189. *Xanthichthys caeruleolineatus* (Randall, Matsuura & Zama, 1978) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO) 118: 2468
3190. *Xanthichthys lineopunctatus* (Hollard, 1854) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO) 118: 2469

Monacanthidae - filefishes

3191. *Acreichthys tomentosus* (Linnaeus, 1758) — KFL in Gulf of Thailand 118: 2470
3192. *Aluterus monoceros* (Linnaeus, 1758) — MBFS in Mekong plume 118: 2471
3193. *Aluterus scriptus* (Osbeck, 1765) — Viet Nam coast and Gulf of Thailand in Hutchins (FAO) 118: 2472
3194. *Amanses scopas* (Cuvier, 1829) — Viet Nam coast and Gulf of Thailand in Hutchins (FAO) 118: 2473
3195. *Anacanthus barbatus* Gray, 1830 — MBFS in Mekong plume 118: 2474
3196. *Cantherhines dumerilii* (Hollard, 1854) — Viet Nam coast and Gulf of Thailand in Hutchins (FAO) 118: 2475
3197. *Cantherhines fronticinctus* (Günther, 1867) — Viet Nam coast and Gulf of Thailand in Hutchins (FAO) 118: 2476
3198. *Cantherhines pardalis* (Rüppell, 1837) — Viet Nam coast and Gulf of Thailand in Hutchins (FAO), Spratly Islands in Chen et al. (1997) . 118: 2477
3199. *Chaetodermis pencilligerus* (Cuvier, 1816) — KFL in Gulf of Thailand, CAS specimens from eastern Gulf of Thailand 118: 2478
3200. *Monacanthus chinensis* (Osbeck, 1765) — Photo of specimen from Sihanoukville, Cambodia 119: 2479
3201. *Oxymonacanthus longirostris* (Bloch & Schneider, 1801) — Viet Nam coast and Gulf of Thailand in Hutchins (FAO) 119: 2480
3202. *Paraluteres prionurus* (Bleeker, 1851) — Nha Trang specimens at ROM, Gulf of Thailand in Hutchins (FAO) 119: 2481
3203. *Paramonacanthus choirocephalus* (Bleeker, 1852) — Photo of specimen from Mekong delta 119: 2482
3204. *Paramonacanthus japonicus* (Tilesius, 1809) — MBFS in Mekong plume 119: 2483
3205. *Paramonacanthus pusillus* (Rüppell, 1829) — Viet Nam coast and Gulf of Thailand in Hutchins (FAO).
3206. *Paramonacanthus sulcatus* (Hollard, 1854) — Photo of specimen from Mekong delta 119: 2484
3207. *Pervagor aspricaudus* (Hollard, 1854) — South China Sea in Hutchins (1986).
3208. *Pervagor janthinosoma* (Bleeker, 1854) — Nha Trang specimens at ROM, Binh Chang Bay at CAS, Gulf of Thailand in Hutchins (FAO) 119: 2485
3209. *Pervagor melanocephalus* (Bleeker, 1853) — Nha Trang specimens at ROM 119: 2486
3210. *Pervagor nigrolineatus* (Herre, 1927) — Viet Nam coast and Gulf of Thailand in Hutchins (FAO) 119: 2487
3211. *Pseudaluteres nasicornis* (Temminck & Schlegel, 1850) — Fourmanoir & Nhung (1965) at Nha Trang 119: 2488
3212. *Pseudomonacanthus macrurus* (Bleeker, 1857) — KFL in Gulf of Thailand 119: 2489
3213. *Rudarius ercodes* Jordan & Fowler, 1902 — Nha Trang specimens at ROM.
3214. *Stephanolepis cirrhifer* (Temminck & Schlegel, 1850) — KFL in Gulf of Thailand, and Chevey (1929) in Gulf of Thailand as *M. setifer* . 119: 2490
3215. *Thamnaconus modestus* (Günther, 1877) — Common in Viet Nam (Hutchins, personal communication) 119: 2491
3216. *Thamnaconus septentrionalis* (Günther, 1874) — Viet Nam (Hutchins, personal communication).

Ostraciidae - boxfishes, cowfishes, trunkfishes

3217. *Lactoria cornuta* (Linnaeus, 1758) — MBFS in Mekong plume 119: 2492
3218. *Lactoria diaphana* (Bloch & Schneider, 1801) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO) 119: 2493
3219. *Lactoria fornasini* (Bianconi, 1846) — Orsi (1974) specimens from Viet Nam.
3220. *Ostracion cubicus* Linnaeus, 1758 — Nha Trang specimens at ROM, Gulf of Thailand in Matsuura (FAO) 119: 2494
3221. *Ostracion meleagris* Shaw, 1796 — Spratly Islands in Chen et al. (1997) 119: 2495
3222. *Rhynchostracion nasus* (Bloch, 1785) — MBFS in Mekong plume 119: 2496
3223. *Rhynchostracion rhinorhynchos* (Bleeker, 1852) — MBFS in Mekong plume 119: 2497
3224. *Tetrosomus concatenatus* (Bloch, 1785) — Throughout Indo-West Pacific in Allen (1997).

3225. *Tetrosomus gibbosus* (Linnaeus, 1758) — MBFS in Mekong plume 119: 2498
3226. *Tetrosomus reipublicae* (Ogilby, 1913) — Viet Nam coast and Gulf of Thailand in Matsuura (FAO) 119: 2499

Tetraodontidae - puffers

3227. *Arothron firmamentum* (Temminck & Schlegel, 1850) — South China Sea in Matsuura (Masuda, et al. 1984).
3228. *Arothron hispidus* (Linnaeus, 1758) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 120: 2500
3229. *Arothron immaculatus* (Bloch & Schneider, 1801) — MBFS in Mekong plume 120: 2501
3230. *Arothron leopardus* (Day, 1878) — Gulf of Thailand in Suvatti (1981), identification questionable.
3231. *Arothron mappa* (Lesson, 1831) — Thailand in Beaufort & Briggs (1962) 120: 2502
3232. *Arothron meleagris* (La Cepède, 1798) — Widespread in Indo-West Pacific in Masuda, et al. (1984), and Nakabo (2002) 120: 2503
3233. *Arothron nigropunctatus* (Bloch & Schneider, 1801) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 120: 2504
3234. *Arothron reticularis* (Bloch & Schneider, 1801) — Orsi (1974) specimens from Viet Nam 120: 2505
3235. *Arothron stellatus* (Bloch & Schneider, 1801) — MBFS in Mekong plume 120: 2506
3236. *Auriglobus nefastus* (Roberts, 1982) — Photo of specimen from Cambodian Mekong 120: 2507
3237. *Canthigaster amboinensis* (Bleeker, 1864) — South China Sea and Gulf of Thailand in Allen & Randall (1977) 120: 2508
3238. *Canthigaster axiologa* Whitley, 1931 — Spratly Islands in Chen et al. (1997) 120: 2510
3239. *Canthigaster bennetti* (Bleeker, 1854) — CAS specimen from Nha Trang Bay, Gulf of Thailand in Allen & Randall (1977) 120: 2509
3240. *Canthigaster janthinoptera* (Bleeker, 1855) — Nha Trang specimens at ROM, Spratly Islands in Chen et al. (1997) 120: 2511
3241. *Canthigaster solandri* (Richardson, 1845) — Gulf of Thailand-South China Sea in Allen & Randall (1977) 120: 2512
3242. *Canthigaster valentini* (Bleeker, 1853) — Nha Trang specimens at ROM and CAS, also Gulf of Thailand in Allen & Randall (1977) 120: 2513
3243. *Carinotetraodon lorteti* (Tirant, 1885) — Photo of specimen from Cambodian Mekong 120: 2514
3244. *Chelonodon nigroviridis* (Procé, 1823) — CAS specimens from Trat Bay mangroves, eastern Gulf of Thailand 120: 2515
3245. *Chelonodon ocellata* (Steindachner, 1870) — Orsi (1974) lists from Viet Nam as *Arothron biocellatus* (Tirant) 120: 2516
3246. *Chelonodon patoca* (Hamilton, 1822) — Photo of specimen from Gulf of Thailand drainage, also WJR in Mekong delta 120: 2517
3247. *Lagocephalus inermis* (Temminck & Schlegel, 1850) — Orsi (1974) specimens from Viet Nam 120: 2518
3248. *Lagocephalus lagocephalus* (Linnaeus, 1758) — Indo-West Pacific in Nakabo (2002) 120: 2519
3249. *Lagocephalus lunaris* (Bloch & Schneider, 1801) — Photo of specimen from Mekong delta 120: 2520
3250. *Lagocephalus scleratus* (Gmelin, 1789) — MBFS in Mekong plume 121: 2521
3251. *Lagocephalus spadiceus* (Richardson, 1845) — Photo of specimen from Mekong delta 121: 2522
3252. *Monotrete abei* (Roberts, 1998) — Described from Mekong fresh water.
3253. *Monotrete baileyi* (Sontirat, 1989) — Photo of specimen from Lao Mekong 121: 2523
3254. *Monotrete cambodgiensis* (Chabanaud, 1923) — Photos of specimens from Cambodian Mekong 121: 2524-5
3255. *Monotrete cochinchinensis* (Steindachner, 1866) — Photo of specimens from Lao and Cambodian Mekong 121: 2526-7
3256. *Monotrete fangi* (Pellegrin & Chevey, 1940) — Photo of specimen from Mekong delta 121: 2528
3257. *Monotrete palembangensis* (Bleeker, 1852) — Widely reported from Gulf of Thailand estuaries and streams.
3258. *Monotrete suvattii* (Sontirat, 1989) — Photo of specimen from Thai Mekong 121: 2529
3259. *Monotrete turgidus* Kottelat, 2000 — Photos of specimen from Thai Mekong 121: 2530
3260. *Monotrete sp.cf. turgidus* — Photo of specimens from Lao Mekong 121: 2531-3
3261. *Monotrete sp.* — Photo of specimen from Lao Mekong 121: 2534
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3263. *Takifugu oblongus* (Bloch, 1786) — Photo of specimen from Gulf of Thailand 121: 2535
3264. *Takifugu obscurus* (Abe, 1949) — South China Sea in Masuda, et al. (1984), and in Nakabo (2002).
3265. *Torquigener gloerfelti* Hardy, 1984 — CAS specimens from eastern Gulf of Thailand.
3266. *Torquigener hicksi* Hardy, 1983 — KFL in Gulf of Thailand 121: 2536
3267. *Torquigener hypselogeneion* (Bleeker, 1852) — Orsi (1974) and Kuronuma list from Viet Nam.
3268. *Xenopterus naritus* (Richardson, 1848) — Bangkok in Smith, 1945 . . . . . 121: 2537

Triodontidae - threetooth puffers

3269. *Triodon macropterus* Lesson, 1831 — Orsi (1974) lists from Viet Nam (as *T. bursarius*) 121: 2538

Diodontidae - porcupinefishes, burrfishes

3270. *Cyclichthys orbicularis* (Bloch, 1785) — MBFS in Mekong plume 121: 2539
3271. *Diodon eydouxii* Brissout de Barneville, 1846 — Gulf of Thailand in Leis (FAO).
3272. *Diodon holocanthus* Linnaeus, 1758 — KFL in Gulf of Thailand, CAS from eastern Gulf of Thailand, Spratly Islands in Chen et al. (1997)121: 2540
3273. *Diodon hystrix* Linnaeus, 1758 — Orsi (1974) specimens from Viet Nam.
3274. *Diodon liturosus* Shaw, 1804 — CAS specimens from Nha Trang Bay and eastern Gulf of Thailand 121: 2541
3275. *Diodon reticulatus* Linnaeus 1758 — CAS specimens from eastern Gulf of Thailand near Sattahip.

PART 3.

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APPENDIX 1

Modern elevations along possible routes connecting the Loei River and Nam Phong watersheds. Elevations were taken from NASA World Wind 1.4, with latitude and longitude coordinates truncated to six decimal places. The original locations were represented with 15 digits, but six decimal places provided a coordinates that were close enough to produce the correct elevation. Locality and river names came from Series 1501 topographic maps, scale 1:250,000 from the middle 1960's to early 1970's. All localities are marked by number on Figure 22. The NASA map program was chosen over Google because all Google maps are copyrighted and only the NASA software is copyrighted (the maps it produces are not). Further, Google had elevations that were problematical in some cases - for instance, the Nam Puan increased in elevation as it flowed downstream toward the mouth of Huai Nam Sai.

1. Mouth of Loei River	216m	17.853058...N	101.611753...E
2. Large alluvial plain west of Loei mouth	219m	17.870112...N	101.663116...E
3. Tip of bend in Loei River at head of plain	236m	17.706620...N	101.724294...E
4. Just upstream from Amphoe Muang Loei	243m	17.522775...N	101.735408...E
5. Loei River at mouth of Nam Puan	248m	17.348492...N	101.763983...E
6. Loei River south of Nam Puan mouth	256m	17.272390...N	101.760588...E
7. Loei River at mouth of Nam Thop	262m	17.240309...N	101.676167...E
8. Loei River north of Phu Ho	271m	17.128232...N	101.679459...E
9. Loei River south of Phu Ho	282m	17.055805...N	101.647445...E
10. Nam Puan junction with Huai Nam Suai	274m	17.356016...N	101.848259...E
11. Huai Nam Suai confluence with long N branch.	285m	17.374393...N	101.931058...E
12. Drainage divide between Loei and Phong watersheds	332m	17.341415...N	102.004688...E
13. Center of triangle of rocks in Nam Phong drainage	324m	17.332505...N	102.031398...E
14. East of triangle of rocks in Nam Phong drainage	291m	17.332931...N	102.041910...E
15. Nam Puan east of Phu Pa Mak Ho	281m	17.242568...N	101.860268...E
16. Nam Puan upstream from locality 15	296m	17.172886...N	101.845629...E
17. Nam Puan farther upstream	306m	17.133060...N	101.831895...E
18. Upper Nam Puan	317m	17.113061...N	101.808758...E
19. Drainage divide in central valley to Nam Phong	327m	17.087843...N	101.842112...E
20. Drainage divide near northern part of valley	317m	17.095949...N	101.849419...E
21. Upper Nam Phong tributary stream	295m	17.060850...N	101.899193...E
22. Downstream on Nam Phong tributary stream	285m	17.023191...N	101.932761...E
23. Nam Phong tributary near Ban Non Po Daeng	277m	17.031802...N	101.967198...E
24. Nam Phuai near Ban Tha Chang Khlong	253m	17.063269...N	102.009173...E
25. Phra Wihan formation at Pa Mong	401m	18.036862...N	102.331364...E
26. Mekong at Ban Pak Som	174m	18.079391...N	102.262530...E
27. Junction Huai Nam Som and Huai Nam Rang	188m	17.925555...N	102.237549...E
28. Divide Huai Nam Som and Nam Mong	228m	17.733164...N	102.302537...E
29. Nam Mong water gap	195m	17.578273...N	102.333869...E
30. Divide between Nam Mong and Nam Phong	254m	17.281658...N	102.371587...E
31. Water gap near Amphoe Nong Bua Lamphu	244m	17.229373...N	102.459775...E
32. Huai Phaniang	212m	17.184139...N	102.433622...E
33. Nam Phong just downstream from dam	181m	16.774098...N	102.622728...E

PART 4.

INDEX

TO

FISH NAMES

INDEX TO FISH NAMES

This index includes all names mentioned in the list as well as names found in the introductory sections. The names are listed both by genus and by species with some exceptions.

We have omitted double listings for tautonyms; that is, instances in which a species name identical to the genus. This merely created a double entry of adjacent names, such as *chanos, Chanos* followed by *Chanos chanos*, and so on. In all instances, the species-name-first permutation was omitted.

Another type of omission was for species that are undescribed and which are tallied according to the most similar species using the *sp.cf.* (*species confere*) notation. Such species are listed only under the genus-first permutation, because they resemble, but do not really belong to, the species that is supplying the name.

Also omitted from the species-first permutation are those which remain undescribed and are listed only with a number. In one instance, with 17 undescribed species of *Schistura*, even the genus-first listing was omitted. However, with the genus *Acantopsis*, none of the species are described, so the generic entry was included.

In this index, all scientific names are italicized and other names, whether common names or classification categories are not. The names of orders are in all upper case, and the names of families are in boldface.

PART 5.

PHOTOGRAPHIC

ATLAS

OF

FISHES

Fig. 1. *Heterodontus zebra* (Gray, 1831); Northwest Australia, JETINDOFISH survey photo in Sainsbury et al. (1985) 580mm TL

Fig. 2. *Chiloscyllium griseum* Müller & Henle, 1838; Thailand, Prachuab Kiri Khan, photo by Walter Rainboth 110mmTL

Fig. 3. *Chiloscyllium indicum* (Gmelin, 1789); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 4. *Chiloscyllium indicum* (Gmelin, 1789); Vietnam, Ca Mau, An Thach market, photo by Walter Rainboth 317mm TL

Fig. 5. *Chiloscyllium plagiosum* ([Bennett], 1830); Philippines, Cebu City, photo by John Randall 675mm TL

Fig. 6. *Chiloscyllium punctatum* Müller & Henle, 1838; Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 7. *Chiloscyllium punctatum* Müller & Henle, 1838; Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 311mm TL

Fig. 8. *Stegostoma fasciatum* (Herrman, 1837); Malaysia, western Malaysia, South China Sea, photo by Chavalit Vidthayanon

Fig. 9. *Rhincodon typus* Smith, 1828; Andaman Sea, photo provided to Chavalit Vidthayanon by Baramee Tembunkiat ca 10m

Fig. 10. *Carcharias taurus* Rafinesque, 1810; U.S. National Marine Fisheries Service, photo by Don Flescher, courtesy of Woods Hole Marine Biological Laboratory 1002mm TL

Fig. 11. *Isurus oxyrinchus* Rafinesque, 1810; Hawaii (USA), Hawaiian Islands, photo by John Randall 830mm TL

Fig. 12. *Atelomycterus marmoratus* ([Bennett], 1830); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 217mm TL

Fig. 13. *Halaelurus boesemani* Springer & D'Aubrey, 1972; Australia, JETINDOFISH survey photo provided by Thomas Gloerfelt-Tarp

Fig. 14. *Proscyllium habereri* Hilgendorf, 1904; Taiwan, photo by Walter Rainboth 410mm TL

Fig. 15. *Mustelus sp.cf. griseus*; N.W. Australia, JETINDOFISH survey photo in Sainsbury et al. (1985)

Fig. 16. *Mustelus manazo* Bleeker, 1854; Japan, Sea of Japan off Miyazo, photo by Walter Rainboth 340mm TL

Fig. 17. *Hemigaleus microstoma* Bleeker, 1852; Indonesia, JETINDOFISH survey photo in Sainsbury et al. (1985) 710mm TL

Fig. 18. *Hemipristis elongata* (Klunzinger, 1871); Australia, CSIRO photo in Sainsbury et al. (1985) 1290mm TL

Fig. 19. *Carcharhinus amblyrhynchos* (Bleeker, 1856); Australia, CSIRO photo in Sainsbury et al. (1985) 1000mm TL

Fig. 20. *Carcharhinus amboinensis* (Müller & Henle, 1839); Australia, CSIRO photo in Sainsbury et al. (1985) 2200mm TL

Fig. 21. *Carcharhinus brevipinna* (Müller & Henle, 1839); Australia, CSIRO photo in Sainsbury et al. (1985) 1200mm TL

PLATE 1

Fig. 22. *Carcharhinus brevipinna* (Müller & Henle, 1839); Sabah, photo by Chavalit Vidthayanon

Fig. 23. *Carcharhinus dussumieri* (Müller & Henle, 1839); Australia, CSIRO photo in Sainsbury et al. (1985)
380mm TL

Fig. 24. *Carcharhinus hemiodon* (Müller & Henle, 1839); Sabah, photo by Chavalit Vidthayanon

Fig. 25. *Carcharhinus leucas* (Müller & Henle, 1839); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
940mm TL

Fig. 26. *Carcharinus limbatus* (Müller & Henle, 1839); Indonesia, JETINDOFISH Survey photo in Sainsbury et al. (1985
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Fig. 27. *Carcharhinus melanopterus* (Quoy & Gaimard, 1824); Oman, Mutrah, photo by John Randall
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Fig. 28. *Carcharhinus obscurus* (Le Sueur, 1818); Israel, Gulf of Aqaba, Eilat, photo by John Randall

Fig. 29. *Carcharhinus plumbeus* (Nardo, 1827); Australia, CSIRO photo in Sainsbury et al. (1985)
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Fig. 30. *Carcharhinus sealei* (Pietschmann, 1913); Thailand, Bangkok fish market, photo by Walter Rainboth
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Fig. 31. *Carcharhinus sorrah* (Müller & Henle, 1839); Australia, CSIRO photo in Sainsbury et al. (1985)
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Fig. 32. *Carcharhinus sp. "porosus"*; Mexico, Sonora, Golfo de Santa Clara, photo by Walter Rainboth
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Fig. 33. *Galeocerdo cuvier* (Peron & Le Sueur, 1822); Indonesia, JETINDOFISH Survey, photo in Sainsbury et al. (1985)
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Fig. 34. *Glyphis glyphis* (Müller & Henle, 1839); Indonesia, photo by Fahmi
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Fig. 35. *Loxodon macrorhinus* Müller & Henle, 1839; Australia, CSIRO photo in Sainsbury et al., (1985)
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Fig. 36. *Negaprion acutidens* (Rüppell, 1837); Australia, CSIRO photo in Sainsbury et al. (1985)
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Fig. 37. *Rhizoprionodon acutus* (Rüppell, 1837); Australia, CSIRO photo in Sainsbury et al. (1985)
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Fig. 38. *Rhizoprionodon oligolynx* Springer, 1964; Thailand, Bangkok fish market, photo by Walter Rainboth
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Fig. 39. *Scoliodon laticaudus* Müller & Henle, 1838; Vietnam, Kien Giang, market near Rach Gia, photo by Walter Rainboth
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Fig. 40. *Triaenodon obesus* (Rüppell, 1837); Indonesia, Ampenon, Lombok, photo by John Randall
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Fig. 41. *Eusphyra blochii* (Cuvier, 1816); Australia, CSIRO photo in Sainsbury et al. (1985)
1800mm TL

Fig. 42. *Eusphyra blochii* (Cuvier, 1816); Australia, CSIRO photo in Sainsbury et al. (1985)
1800mm TL

PLATE 2


Fig. 43. *Sphyrna lewini* (Griffith & Smith, 1834); Australia, CSIRO photo in Sainsbury et al. (1985)
610mm TL

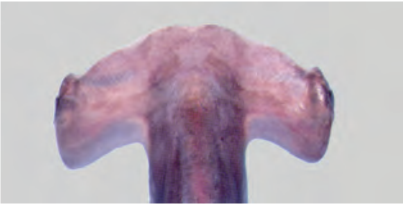
Fig. 44. *Sphyrna lewini* (Griffith & Smith, 1834); Australia, CSIRO photo in Sainsbury et al. (1985)
610mm TL


Fig. 45. *Sphyrna mokarran* (Rüppell, 1837); Australia, CSIRO photo in Sainsbury et al. (1985)
2740mm TL


Fig. 46. *Sphyrna mokarran* (Rüppell, 1837); Australia, CSIRO photo in Sainsbury et al. (1985)
2740mm TL


Fig. 47. *Hexanchus griseus* (Bonnaterre, 1788); living aquarium specimen, photo by Walter Rainboth
~2m TL


Fig. 48. *Anoxypristis cuspidata* (Latham, 1794); Australia, CSIRO photo in Sainsbury et al. (1985)
2520mm TL


Fig. 49. *Anoxypristis cuspidata* (Latham, 1794); dorsal view of saw; Australia, CSIRO photo in Sainsbury et al. (1985)
2520mm TL


Fig. 50. *Pristis microdon* Latham, 1794; Australia, CSIRO photo in Sainsbury et al. (1985)
2600mm TL


Fig. 51. *Pristis microdon* Latham, 1794; dorsal view of saw; Australia, CSIRO photo in Sainsbury et al. (1985)
2600mm TL


Fig. 52. *Pristis zijsron* Bleeker, 1851, dorsal view of saw; Australia, CSIRO photo in Sainsbury et al. (1985)


Fig. 53. *Narcine brunnea* Annandale, 1909; Burma, Yangon Dist., photo by Walter Rainboth
195mm TL


Fig. 54. *Narcine lingula* Richardson, 1846; Vietnam, Mekong plume in South China Sea, photo by Walter Rainboth
156mm DW

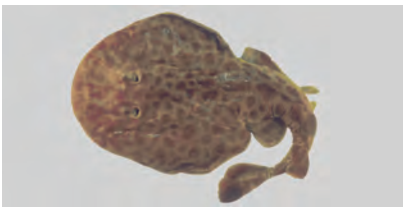
Fig. 55. *Narcine timlei* (Bloch & Schneider, 1801); India, Orissa, photo by Walter Rainboth
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Fig. 56. *Narke dipterygia* (Bloch & Schneider, 1801); Singapore, photo by Walter Rainboth
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Fig. 57. *Temera hardwickii* Gray, 1831; Indian Ocean, Cocos (Keeling) Islands, photo by Walter Rainboth
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Fig. 58. *Rhina ancylostoma* Bloch & Schneider, 1801; Vietnam, Tra Vinh, Mekong mouth, MBFS photo by Ron Weidenbach
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Fig. 59. *Rhina ancylostoma* Bloch & Schneider, 1801; (sub-adult) Sabah, photo by B. M-Matsumoto
750mm TL


Fig. 60. *Rhynchobatus australiae* Whitley, 1939; Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth
490mm TL

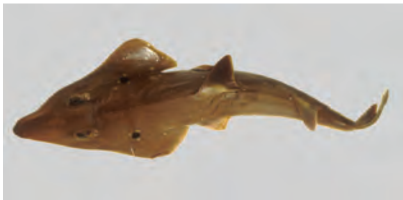
Fig. 61. *Rhynchobatus yentinensis* Wang, 1933; Thailand, Bangkok fish market, photo by Walter Rainboth
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Fig. 62. *Glaucostegus granulatus* (Cuvier, 1829); Kuwait, Kuwait Bay, photo by John Randall
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Fig. 63. *Glaucostegus halavi* (Forsskål, 1775); Philippines, photo by Walter Rainboth
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Fig. 64. *Rhinobatos schlegelii* Müller & Henle, 1841; Indonesia, photo by Samuel Iglésias

750mm TL

Fig. 65. *Rhinobatos thouin* ([La Cepède, 1798]); Indonesia, Java, photo by Walter Rainboth

453mm TL

Fig. 66. *Rhinobatos thouin* ([La Cepède, 1798]); Indonesia, photo by Fahmi

800mm TL

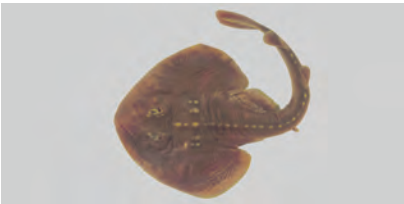

Fig. 67. *Platyrhina sinensis* (Bloch & Schneider, 1801); Taiwan, Formosa Strait, photo by Walter Rainboth

375mm TL

Fig. 68. *Dasyatis akajei* (Müller & Henle, 1841); Thailand, Chumporn, photo by Chavalit Vidthayanon

350mm DL

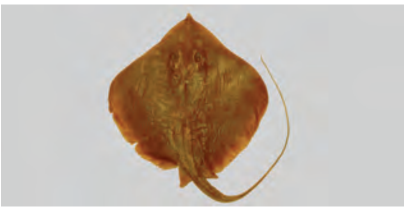

Fig. 69. *Dasyatis bennettii* (Müller & Henle, 1841); Vietnam, Bac Lieu, Mekong plume, photo by Walter Rainboth

169mm DW

Fig. 70. *Dasyatis laevigata* Chu, 1960; Taiwan, photo in FishBase contributed by Shao Kwang-Tsao

Fig. 71. *Dasyatis laosensis* Roberts & Karnasuta, 1987 ♂ ; Laos, Mekong at Hang Khone, photo by Ian Baird

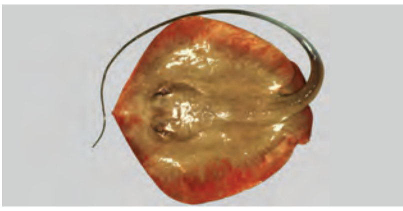

Fig. 72. *Dasyatis laosensis* Roberts & Karnasuta, 1987 ♀ ; Cambodia, Mekong at Stung Treng, photo by Walter Rainboth

480mm DW

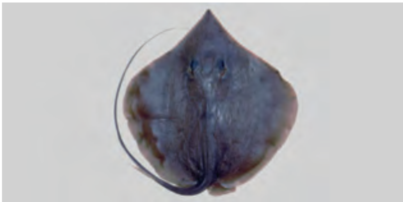

Fig. 73. *Dasyatis zugei* (Müller & Henle, 1841); Vietnam, Bac Lieu, Mekong plume, photo by Walter Rainboth

163mm DW

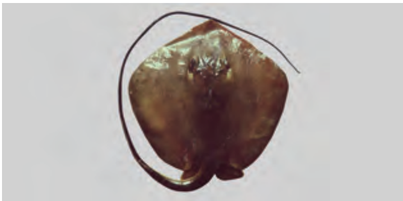

Fig. 74. *Dasyatis sp.*; Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth

320mm DW

Fig. 75. *Himantura fai* Jordan & Seale, 1906; Cambodia, Kampot fish market, photo by Walter Rainboth

110mm DW

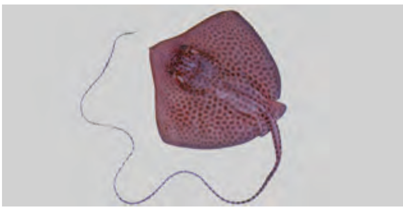

Fig. 76. *Himantura fava* (Annandale, 1909); Indonesia bewteen W. Sumatra and Bali, JETINDOFISH Survey, photo in Gloerfelt-Tarp and Kailola (1984)

Fig. 77. *Himantura gerrardi* (Gray, 1851); Vietnam, Mekong plume, photo by Walter Rainboth

220mm DW

Fig. 78. *Himantura imbricata* (Bloch & Schneider, 1801) ♂ ; Thailand, Andaman Sea, photo by Chavalit Vidthayanon

180mm DL

Fig. 79. *Himantura imbricata* (Bloch & Schneider, 1801) ♀ ; Vietnam, Mekong plume, photo by Walter Rainboth

168mm DW

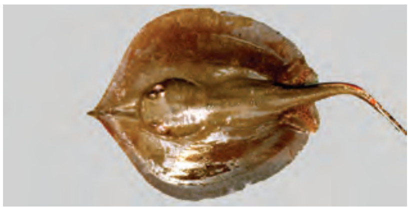

Fig. 80. *Himantura oxyrhyncha* (Sauvage, 1878); Thailand, Bangpakong River, photo by Chavalit Vidthayanon

Fig. 81. *Himantura polylepis* (Bleeker, 1852); Laos, Mekong at Muang Khong, photo by Terry Warren

Fig. 82. *Himantura signifer* Compagno & Roberts, 1982; Thailand, Bangpakong River, photo by Chavalit Vidthayanon

Fig. 83. *Himantura uarnacoides* (Bleeker, 1852); Indonesia, photo by Fahmi

1.5m DL

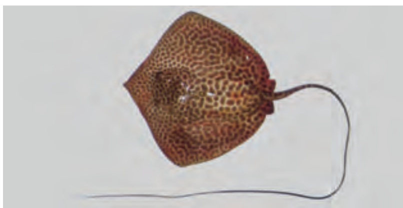

Fig. 84. *Himantura uarnak* (Gmelin, 1789); Australia, CSIRO photo in Sainsbury et al., (1984)

330mm DW

PLATE 4

Fig. 85. *Himantura uarnak* (Gmelin, 1789); Indonesia, Tanjung Luar, Lombok, photo by John Randall
432mm DL

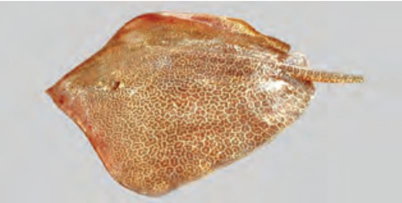

Fig. 86. *Himantura undulata* (Bleeker, 1852); Malay Peninsula, photo by Chavalit Vidthayanon

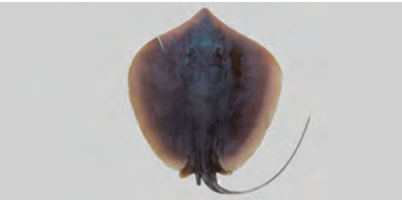

Fig. 87. *Himantura walga* (Müller & Henle, 1841) ♂ ; Thailand, Prachuab Kiri Khan, Ban Khlong Wan, photo by Walter Rainboth
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Fig. 88. *Himantura walga* (Müller & Henle, 1841) ♀ ; Thailand, Chumporn, photo by Chavalit Vidthayanon
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Fig. 89. *Neotrygon kuhlii* (Müller & Henle, 1841); Vietnam, Mekong plume, photo by Walter Rainboth
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Fig. 90. *Pastinachus sephen* (Forsskål, 1775); Sabah, Kota Kinabalu, photo by B. M.-Matsumoto
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Fig. 91. *Taeniura lymma* (Forsskål, 1775); Thailand, Gulf of Thailand, Ko Phai, photo by Walter Rainboth
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Fig. 92. *Taeniura lymma* (Forsskål, 1775); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon
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Fig. 93. *Taeniura meyeni* Müller & Henle, 1841; Marquesas Islands, Ua Huka, photo by Helen Randall
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Fig. 94. *Urogymnus asperrimus* (Bloch & Schneider, 1801); Marshall Islands, Enewetak, photo by John Randall
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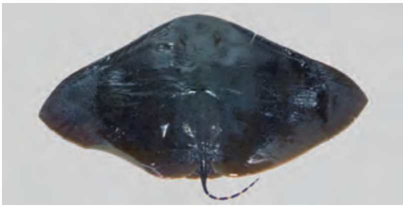

Fig. 95. *Aetoplatea zonura* Bleeker, 1852; Vietnam, Mekong plume, photo by Walter Rainboth
275mm DW

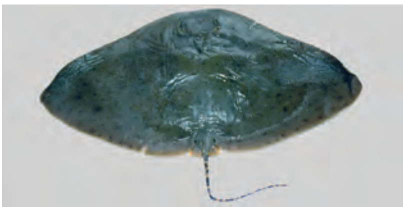

Fig. 96. *Gymnura poecilura* (Shaw, 1804); Vietnam, Mekong plume, photo by Walter Rainboth
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Fig. 97. *Aetobatus narinari* (Euphrasen, 1790); Indonesia, photo by Fahmi
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Fig. 98. *Aetomylaeus maculatus* (Gray, 1834); Thailand, Prachuab Kiri Khan, Ban Khlong Wan, photo by Walter Rainboth
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Fig. 99. *Aetomylaeus nichofii* (Schneider, 1801); Vietnam, Mekong plume, photo by Walter Rainboth
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Fig. 101. *Manta birostris* (Walbaum, 1792); Indonesia, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)
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Fig. 102. *Mobula kuhlii* (Müller & Henle, 1841); Indonesia, photo by Fahmi
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Fig. 103. *Mobula thurstoni* (Lloyd, 1908); Indonesia, photo by Fahmi
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Fig. 104. *Scleropages formosus* (Müller & Schlegel, 1844); Cambodia, Cardamom mountains, photo by Chavalit Vidthayanon

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PLATE 5

Fig. 106. *Chitala blanci* (d'Aubenton, 1965); Cambodia, Mekong River at Stung Treng, photo by Walter Rainboth
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Fig. 107. *Chitala lopis* (Bleeker, 1851); Cambodia, Stung Treng market, photo by Walter Rainboth
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Fig. 108. *Chitala ornata* (Gray, 1831); Cambodia, Phnom Penh market, photo by Walter Rainboth
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Fig. 109. *Notopterus notopterus* (Pallas, 1780); Laos, Vientiane, Nam Ngum Reservoir, photo by Walter Rainboth
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Fig. 110. *Elops hawaiensis* Regan, 1909; Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
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Fig. 111. *Megalops cyprinoides* (Broussonet, 1782); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
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Fig. 112. *Albula forsteri* Valenciennes, 1847; Thailand, Phuket, photo by Chavalit Vidthayanon

Fig. 113. *Albula glossodonta* (Forsskål, 1775); Indonesia, Batu Nampar, Lombok, photo by John Randall
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Fig. 116. *Anguilla marmorata* Quoy & Gaimard, 1824; (head only) Laos, Champasak, Pakse area, photo by Terry Warren

Fig. 117. *Moringua ferruginea* Bliss, 1883; Easter Island, photo by John Randall
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Fig. 118. *Moringua microchir* Bleeker, 1853; Madagascar, Tulear, photo by Walter Rainboth
185mm TL

Fig. 119. *Echidna nebulosa* (Ahl, 1789); Maldives, photo by John Randall
114mm TL

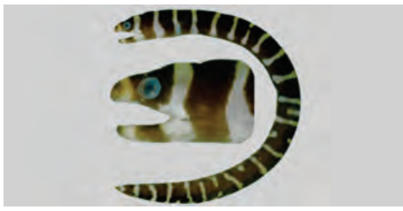

Fig. 120. *Echidna polyzona* (Richardson, 1845); Fiji, photo by Richard Winterbottom
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Fig. 121. *Echidna unicolor* Schultz, 1953; Vietnam, Nha Trang, photo by Richard Winterbottom
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Fig. 122. *Gymnothorax albimarginatus* (Temminck & Schlegel, 1846); Hawaii, Oahu, photo by John Randall
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Fig. 123. *Gymnothorax annulatus* Smith & Böhlke, 1997; Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
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Fig. 124. *Gymnothorax berndti* Snyder, 1904; Maldives, photo by John Randall
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Fig. 125. *Gymnothorax buroensis* (Bleeker, 1857); Indonesia, Padang Bai, Bali, photo by John Randall
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Fig. 126. *Gymnothorax castlei* Böhlke & Randall, 1999; Vietnam, Nha Trang, photo by Richard Winterbottom
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Fig. 127. *Gymnothorax chilospilus* Bleeker, 1864; Japan, Ani-jima, photo by John Randall
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Fig. 128. *Gymnothorax criboris* Whitley, 1932; Australia, CSIRO photo in Gloerfelt-Tarp & Kailola (1984)
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Fig. 129. *Gymnothorax enigmaticus* McCosker & Randall 1982; Indonesia, Bali, photo by John Randall
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Fig. 130. *Gymnothorax eurostus* (Abbott, 1860); Midway Islands, photo by John Randall
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Fig. 131. *Gymnothorax favagineus* Bloch & Schneider, 1801; India, Kovalam, photo by John Randall
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Fig. 132. *Gymnothorax fimbriatus* (Bennett, 1832); Cambodia, Sihanoukville market, photo by Walter Rainboth
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Fig. 134. *Gymnothorax herrei* Beebe & Tee-Van, 1933; Vietnam, Nha Trang, photo by Richard Winterbottom
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Fig. 135. *Gymnothorax isingteena* (Richardson, 1845); Hong Kong, Saikung, market specimen, photo by John Randall
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Fig. 136. *Gymnothorax javanicus* (Bleeker, 1859); Indonesia, Ambon Bay, Poka, photo by John Randall
548mm TL

Fig. 137. *Gymnothorax margaritophorus* Bleeker, 1864; Maldives, Malé Atoll, South, photograph by John Randall
218mm TL

Fig. 138. *Gymnothorax melatremus* Schultz, 1953; Mauritius, photo by John Randall
229mm TL

Fig. 139. *Gymnothorax meleagris* (Shaw, 1795); Johnson Island, photo by John Randall
502mm TL

Fig. 140. *Gymnothorax monochrous* (Bleeker, 1856); Fiji, photo by Walter Rainboth
260mm TL

Fig. 141. *Gymnothorax pictus* (Ahl, 1789); Hawaii, Kapoho, photo by John Randall
503mm TL

Fig. 142. *Gymnothorax pindae* Smith, 1962; Midway Island, photo by John Randall
158mm TL

Fig. 143. *Gymnothorax polyuranodon* (Bleeker, 1853); New Caledonia, photo by John Randall
202mm TL

Fig. 144. *Gymnothorax pseudothyrsoideus* (Bleeker, 1852); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
483mm TL

Fig. 145. *Gymnothorax punctatofasciatus* Bleeker, 1856; Indonesia, Lombok, Soronjukung, photo by John Randall
332mm TL

Fig. 146. *Gymnothorax reevesii* (Richardson, 1845); Marquesas Islands, Hiva Da, photo by John Randall
489mm TL

Fig. 147. *Gymnothorax richardsonii* (Bleeker, 1852); Mariana Islands, Guam, photo by Walter Rainboth
250mm TL

PLATE 7

Fig. 148. *Gymnothorax rueppelliae* (M'Clelland, 1844); Marshall Islands, Enewetak, photo by John Randall
339mm TL

Fig. 149. *Gymnothorax thyrsoideus* (Richardson, 1845); Malaysia, Tioman Island, photograph by John Randall
315mm TL

Fig. 150. *Gymnothorax tile* (Hamilton, 1822); Thailand, Songkhla photo by Chavalit Vidthayanon

Fig. 151. *Gymnothorax undulatus* (La Cepède, 1803); Oman, photo by John Randall
502mm TL

Fig. 152. *Gymnothorax zonipectis* Seale, 1906; Palau, photograph by John Randall
380mm TL

Fig. 153. *Gymnothorax sp. 1* Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
170mm TL

Fig. 154. *Gymnothorax sp. 2*; Cambodia, Sihanoukville market, photo by Walter Rainboth
388mm TL

Fig. 155. *Pseudechidna brummeri* (Bleeker, 1859); Philippines, Mactan Island, photo by John Randall
660mm TL

Fig. 156. *Rhinomuraena quaesita* Garman, 1888, juvenile color pattern; Indonesia, Ambon Bay, photo by John Randall
635mm TL

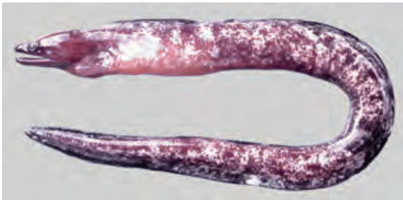

Fig. 157. *Strophiodon sathete* (Hamilton, 1822); Thailand, photo by Chavalit Vidthayanon

Fig. 158. *Uropterygius concolor* Rüppell, 1838; Society Islands, Moorea, photo by Richard Winterbottom
141mm TL

Fig. 159. *Uropterygius macrocephalus* (Bleeker, 1864); Seychelles, Alphonse Atoll, photo by John Randall
320mm TL

Fig. 160. *Uropterygius polyspilus* (Regan, 1909); Johnston Island, photo by John Randall
449mm TL

Fig. 161. *Uropterygius xanthopterus* Bleeker, 1859; Comoros, photo by Richard Winterbottom
188mm TL

Fig. 162. *Dysomma anguillare* Barnard, 1923; Indonesia, Lesser Sunda Islands, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)

Fig. 163. *Allips concolor* McCosker, 1972, holotype; Thailand, Ranong Prov, mouth of Pakchan River, photo by David Catania

Fig. 164. *Apterichtus klazingai* (Weber, 1913); Fiji Islands, photo by Richard Winterbottom
181mm TL

Fig. 165. *Brachysomophis crocodilinus* (Bennett, 1833); Madagascar, Tulear, photo by Walter Rainboth
93mm TL

Fig. 166. *Caecula pterygera* Vahl, 1794; India, Madras, Vizagapatam, photo by Walter Rainboth
267mm TL

Fig. 167. *Callechelys catostoma* (Schneider & Forster, 1801); Marshall Islands, Enewetak, photo by John Randall
540mm TL

Fig. 168. *Callechelys marmorata* (Bleeker, 1853); Indonesia, Bali, photo by John Randall
727mm TL

PLATE 8

Fig. 169. *Ichthyapus vulturis* Weber & de Beaufort, 1916; Hawaiian Islands, Oahu, photo by Walter Rainboth
190mm TL

Fig. 170. *Lamnostoma orientalis* (M'Clelland, 1844); Indonesia, Maumere Bay, Flores, photo by John Randall
210mm TL

Fig. 171. *Leiuranus semicinctus* (Lay & Bennett, 1839); Maldives, photo by John Randall
420mm TL

Fig. 172. *Myrichthys colubrinus* (Boddaert, 1781); Indonesia, Bali, photo by John Randall
737mm TL

Fig. 173. *Myrichthys maculosus* (Cuvier, 1816); Pitcairn, Oeno, photo by John Randall
500mm TL

Fig. 174. *Ophichthus apicalis* ([Bennett], 1830); Malaysia, Penang, photo by Walter Rainboth (line points to vent)
302mm TL

Fig. 175. *Ophichthus cephalozona* Bleeker, 1864; Fiji Islands, photo by John Randall
1120mm TL

Fig. 176. *Ophichthus hijala* (Hamilton, 1822); Bangladesh, Meghna River, photo by Walter Rainboth (line points to vent)
255mm TL

Fig. 177. *Ophichthus hijala* (Hamilton, 1822); Bangladesh, Meghna River, photo by Walter Rainboth (line points to dorsal-fin origin) 255mm TL

Fig. 178. *Ophichthus lithinus* (Jordan & Richardson, 1908); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 875mm TL

Fig. 179. *Ophichthus lithinus* Jordan & Richardson, 1908 435mm TL; Cambodia, Sihanoukville market, photo by Walter Rainboth 435mm TL

Fig. 180. *Ophichthus lumbricoides* (Bleeker, 1854); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth
225mm TL

Fig. 181. *Ophichthus macclellandi* (Bleeker, 1853); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth (line points to vent) 603mm TL

Fig. 182. *Ophichthus macclellandi* (Bleeker, 1853); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth (head only) 603mm TL

Fig. 183. *Ophichthus rutidoderma* (Bleeker, 1853); Vietnam, Vinh Long, photo by Walter Rainboth (line points to vent)
508mm TL

Fig. 184. *Ophichthus rutidodermatoides* (Bleeker, 1853); Vietnam, Kien Giang, Ha Tien Lake and River, photo by Walter Rainboth 591mm TL

Fig. 185. *Ophichthus rutidodermatoides* (Bleeker, 1853); (ventral view of previous specimen), Vietnam, Kien Giang, Ha Tien Lake and River, photo by Walter Rainboth

Fig. 186. *Phyllophichthus xenodontus* Gosline, 1951; Fiji, Viti Levu, photo by Walter Rainboth
172mm TL

Fig. 187. *Pisodonophis boro* (Hamilton, 1822); Thailand, southern Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 188. *Pisodonophis cancrivorus* (Richardson, 1848); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 435mm TL

Fig. 189. *Pisodonophis cancrivorus* (Richardson, 1848); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth (line points to dorsal-fin origin) 435mm TL

PLATE 9

Fig. 190. *Pisodonophis macgregori* Jordan & Richardson, 1908, holotype; photo by David Catania

Fig. 191. *Congresox talabonoides* (Bleeker, 1853); South China Sea off Singapore, photo by Chavalit Vidthayanon

Fig. 192. *Cynoponticus sp.* ; Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth

247mm TL

Fig. 193. *Muraenesox bagio* (Hamilton, 1822);Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth

530mm TL

Fig. 194. *Muraenesox cinereus* (Forsskål, 1775); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth

399mm TL

Fig. 195. *Ariosoma megalops* Fowler, 1938; Vietnam, Cac Ba, photo by Richard Winterbottom

149mm TL

Fig. 196. *Ariosoma nigrimanum* Norman, 1939; Australia, CSIRO photo in Sainsbury et al. (1985)

369mm TL

Fig. 197. *Ariosoma sp.*; Vietnam, Mekong plume, photo by Walter Rainboth

226mm TL

Fig. 198. *Bathyuroconger vicinus* (Vaillant, 1888); Cambodia, Sihanoukville market, photo by Walter Rainboth

264mm TL

Fig. 199. *Conger cinereus* Rüppell, 1828; Sudan, Suakin, photo by John Randall

523mm TL

Fig. 200. *Conger philippinus* Kanazawa, 1958; Vietnam, Mekong plume, photo by Walter Rainboth

325mm TL

Fig. 201. *Gnathophis heterognathos* Bleeker, 1858-59; Japan, Nagasaki, holotype photo by David Catania

230mm TL

Fig. 202. *Heteroconger hassi* (Klausewitz & Eibl-Eibesfeldt, 1959); South Africa, Sodwana Bay, photo by Richard Winterbottom

Fig. 203. *Saurenchelys sp.* ; Indonesia, Lesser Sunda Islands, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)

Fig. 204. *Chirocentrus dorab* (Forsskål, 1775); India, Cochin, photo by John Randall

343mm SL

Fig. 205. *Chirocentrus nudus* Swainson, 1839; Bahrain, photo by John Randall

592mm SL

Fig. 206. *Dussumieria acuta* Valenciennes, 1847; Kuwait, Kuwait Bay, photo by John Randall

107mm SL

Fig. 207. *Dussumieria elopsoides* Bleeker, 1849; India, Cochin, photo by John Randall

131mm SL

Fig. 208. *Spratelloides delicatulus* (1832); Vietnam, Nha Trang, photo by Richard Winterbottom

52mm SL

Fig. 209. *Spratelloides gracilis* (Temminck & Schlegel); Vietnam, Cac Ba, photo by Richard Winterbottom

43.1mm SL

Fig. 210. *Amblygaster leiogaster* (Valenciennes, 1847); Indonesia, betweem W. Sumatra and Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)

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Fig. 211. *Amblygaster sirm* (Walbaum, 1792); Indonesia, Indian Ocean near Sumatra, JETINDOFISH survey, photo by Thomas Gloerfelt-Tarp

Fig. 212. *Escualosa elongata* (Wongratana, 1983); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 68mm SL

Fig. 213. *Escualosa thoracata* (Valenciennes, 1847); Thailand, Inner Gulf of Thailand at Bangpakong River, photo by Chavalit Vidthayanon

Fig. 214. *Herklotsichthys quadrimaculatus* (Rüppell, 1837); photo by John Randall in *Coastal Fishes of Oman* (1995) 120mm TL

Fig. 215. *Sardinella albella* (Valenciennes, 1847); Sudan, Red Sea, photo by John Randall 92mm SL

Fig. 216. *Sardinella brachysoma* Bleeker, 1852; Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 217. *Sardinella fimbriata* (Valenciennes, 1847); Vietnam, Tien Giang, Song My Tho mouth at Cua Dai, photo by Walter Rainboth 102mm SL

Fig. 218. *Sardinella gibbosa* (Bleeker, 1849); photo by John Randall in *Coastal Fishes of Oman* (1995) 135mm SL

Fig. 219. *Sardinella lemuru* Bleeker, 1853; Indonesia, Bali, photo by John Randall 132mm SL

Fig. 220. *Sundasalanx praecox* Roberts, 1981; Laos, Savannakhet, Se Bangfai at Ban Hatkhamhiang, photo by Walter Rainboth 20.5mm SL

Fig. 221. *Clupeichthys aesarnensis* Wongratana, 1983; Laos, Champasak, Mekong River at Hatsalao, photo by Walter Rainboth 41mm SL

Fig. 222. *Clupeichthys goniognathus* Bleeker, 1855; Thailand, Kolok River, photo by Chavalit Vidthayanon

Fig. 223. *Clupeoides borneensis* Bleeker, 1851; Vietnam, An Giang, Song Hau Giang at Long Xuyen, photo by Walter Rainboth 52mm SL

Fig. 224. *Corica laciniata* Fowler, 1935; Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth 43.5mm SL

Fig. 225. *Corica soborna* (Hamilton, 1822); Vietnam, An Giang, Song Hau Giang at Long Xuyen, photo by Walter Rainboth 42mm SL

Fig. 226. *Hilsa kelee* (Cuvier, 1829); Thailand, Prachuab Kiri Khan, photo by Chavalit Vidthayanon

Fig. 227. *Tenualosa reevesi* (Richardson, 1846); Thailand, Bangkok fish market, photo by Hiroshi Senou

Fig. 228. *Tenualosa thibaudeaui* (Durand, 1940); Cambodia, Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 213mm SL

Fig. 229. *Tenualosa toli* (Valenciennes, 1847); Sarawak, Bintula, photo by Chavalit Vidthayanon

Fig. 230. *Anodontostoma chacunda* (Hamilton, 1822); Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 231. *Anodontostoma thailandae* Wongratana, 1983; Thailand, Pattani, photo by Chavalit Vidthayanon

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Fig. 232. *Nematalosa galatheae* Nelson & Rothman, 1973; Thailand, Ranong Prov, Pakchan R., photo by David Catania 127mm SL

Fig. 233. *Nematalosa japonica* Regan, 1917; Ryukyu Islands, Okinawa, photo by John Randall 201mm SL

Fig. 234. *Nematalosa nasus* (Bloch, 1795); Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 235. *Ilisha kampeni* Weber & de Beaufort, 1913; Sarawak, photo by Chavalit Vidthayanon

Fig. 236. *Ilisha megaloptera* (Swainson, 1839); Thailand, Phuket, photo by Chavalit Vidthayanon

Fig. 237. *Ilisha melastoma* (Bloch & Schneider, 1801); Thailand, Surat Thani, Ban Don Bay, photo by Chavalit Vidthayanon 95mm SL

Fig. 238. *Ilisha sirishai* Seshagiri Rao, 1975; Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 239. *Opisthopterus tardoore* (Cuvier, 1829); Australia, JETINDOFISH Survey, photo by Thomas Gloerfelt-Tarp 215mm SL

Fig. 240. *Pellona ditchela* Valenciennes, 1847; Indonesia, Bali, JETINDOFISH survey, photo by Thomas Gloerfelt-Tarp

Fig. 241. *Coilia dussumieri* Valenciennes, 1848; Singapore, Johore Straits, photo by Walter Rainboth 77mm SL

Fig. 242. *Coilia lindmani* Bleeker, 1858; Vietnam, An Giang, Song Hau Giang at Long Xuyen, photo by Walter Rainboth 113mm SL

Fig. 243. *Coilia macrognathos* Bleeker, 1852; Sarawak, Keta Samararahan market, photo by Walter Rainboth 144mm SL

Fig. 244. *Coilia neglecta* Whitehead, 1968; Sarawak, photo by Chavalit Vidthayanon

Fig. 245. *Coilia rebentischii* (Bleeker, 1858); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 151mm SL

Fig. 246. *Encrasicholina punctifer* Fowler, 1938; Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 247. *Lycothrissa crocodilus* Bleeker, 1851; Cambodia, Tonlé Sap at Kompong Chhnang, photo by Walter Rainboth 120mm SL

Fig. 248. *Setipinna melanochir* (Bleeker, 1849); Cambodia, Stung Treng, photo by Chavalit Vidthayanon 150mm SL

Fig. 249. *Setipinna taty* (Valenciennes, 1848); Vietnam, Soc Trang, Hau Giang near Long Phu, photo by Walter Rainboth 89mm SL

Fig. 250. *Stolephorus baganensis* Hardenberg, 1933; Thailand, Bangpakong River at Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 251. *Stolephorus baweanensis* Hardenberg, 1933; South China Sea, photo by Chavalit Vidthayanon

Fig. 252. *Stolephorus chinensis* (Günther, 1880); Vietnam, Cac Ba, photo by Richard Winterbottom 75.2mm SL

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Fig. 253. *Stolephorus commersonnii* (La Cepède, 1803); Thailand, Bangpakong photo by Chavalit Vidthayanon

Fig. 254. *Stolephorus dubiosus* Wongratana, 1983; Vietnam, Tien Giang, mouth of Song My Tho at Cua Dai, photo by Walter Rainboth 67mm SL

Fig. 255. *Stolephorus indicus* (van Hasselt, 1823); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth

Fig. 256. *Stolephorus tri* (Bleeker, 1852); Vietnam, Tra Vinh, Song Co Chien near My Long, photo by Walter Rainboth

Fig. 257. *Stolephorus waitei* Jordan & Seale, 1926; Thailand, mouth of Bangpakong River, photo by Chavalit Vidthayanon

Fig. 258. *Thryssa baelama* (Forsskål, 1775); New Caledonia, Canala Bay, photo by John Randall 98mm SL

Fig. 259. *Thryssa dussumieri* (Valenciennes, 1848); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 260. *Thryssa hamiltonii* (Gray, 1830); Indonesia, Ampenon, Lombok, photo by John Randall 127mm SL

Fig. 261. *Thryssa mystax* (Bloch & Schneider, 1801); Sarawak, photo by Chavalit Vidthayanon

Fig. 262. *Thryssa setirostris* (Broussonet, 1782); Sarawak, photo by Chavalit Vidthayanon

Fig. 263. *Chanos chanos* (Forsskål, 1775); USA, Los Angeles fish market, photo by Walter Rainboth 282mm SL

Fig. 264. *Acheilognathus barbatulus* (Günther, 1873) ♂ ; Laos, Luang Namtha, Nam Dai, photo by Walter Rainboth 36mm SL

Fig. 265. *Acheilognathus barbatulus* (Günther, 1873) ♀ ; Laos, Luang Namtha, Nam Dai, photo by Walter Rainboth 38mm SL

Fig. 266. *Acheilognathus deignani* (Smith, 1945), ♀ ; Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 45mm SL

Fig. 267. *Acheilognathus deignani* (Smith, 1945), juvenile; Laos, Mekong River near Luang Prabang, photo by Walter Rainboth 18mm SL

Fig. 268. *Acheilognathus sp.cf. longibarbatus* ♀ ; Laos, Luang Namtha, Nam Ma Yen, photo by Walter Rainboth 49mm SL

Fig. 269. *Rhodeus laoensis* Kottelat, Doi & Musikasinthorn, 1998; Laos, Khammouane, Nam Theun, photo by Walter Rainboth 47mm SL

Fig. 270. *Toxabramis sp.*; Vietnam, Dak Lak, Krong Ana River, photo by Chavalit Vidthayanon 75mm SL

Fig. 271. *Hemiculterella macrolepis* Chen, 1989; Laos, Luang Namtha, Nam Ha at Ban Nam Ha, photo by Walter Rainboth 66mm SL

Fig. 272. *Metzia lineata* (Pellegrin, 1907); Laos, Luang Namtha, Nam Dai, photo by Walter Rainboth 65mm SL

Fig. 273. *Paralaubuca barroni* (Fowler, 1934); Laos, Mekong River upstream from Ban Houay Sai, photo by Walter Rainboth 57mm SL

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Fig. 274. *Paralaubuca harmandi* Sauvage, 1883; Thailand, Chainat, photo by Chavalit Vidthayanon

Fig. 275. *Paralaubuca riveroi* Fowler, 1935; Vietnam, An Giang, Song Chau Doc at Chau Doc, photo by Walter Rainboth 110mm SL

Fig. 276. *Paralaubuca riveroi* Fowler, 1935; Thailand, Chiang Rai, Mekong at Chiangkong, photo by Chavalit Vidthayanon

Fig. 277. *Paralaubuca typus* Bleeker, 1864; Cambodia, Kompong Chhnang, Tonlé Sap at Kompong Chhnang, photo by Walter Rainboth 73mm SL

Fig. 278. *Pseudohemiculter dispar* (Peters, 1881); Laos, Phongsali, Nam Ngay near mouth at Nam Ou, photo by Walter Rainboth 130mm SL

Fig. 279. *Pseudohemiculter dispar* (Peters, 1881), juvenile; Laos, Luang Prabang, Nam Soeung, photo by Walter Rainboth 45mm SL

Fig. 280. *Pseudohemiculter sp.*; Laos, Luang Prabang, Nam Soeung, photo by Walter Rainboth 50mm SL

Fig. 281. *Macrochirichthys macrochirus* (Valenciennes, 1844); Cambodia, Stung Treng, market at Stung Treng, photo by Walter Rainboth 247mm SL

Fig. 282. *Oxygaster anomalura* van Hasselt, 1823; Thailand, Chantaburi, photo by Chavalit Vidthayanon

Fig. 283. *Oxygaster pointoni* (Fowler, 1934); aquarium specimen, photo by Walter Rainboth 65mm SL

Fig. 284. *Parachela maculicauda* (Smith, 1934); Thailand, Chantaburi, photo by Chavalit Vidthayanon

Fig. 285. *Parachela sp.cf. maculicauda*; Cambodia, Siem Reap River near mouth at Great Lake, photo by Walter Rainboth 30mm SL

Fig. 286. *Parachela oxygastroides* (Bleeker, 1852); Cambodia, Kompong Chhnang, Tonlé Sap at Kompong Chhnang, photo by Walter Rainboth 77mm SL

Fig. 287. *Parachela siamensis* (Günther, 1868); Cambodia, Kompong Chhnang, Tonlé Sap at Kompong Chhnang, photo by Walter Rainboth 87mm SL

Fig. 288. *Parachela williaminae* Fowler, 1934; Cambodia, Kandal, Prek Tapov, photo by Walter Rainboth 45mm SL

Fig. 289. *Parachela n.sp.*; Cambodia, Odong Mean Chey, floodplain lake near Phum Kraom, photo by Walter Rainboth 33mm SL

Fig. 290. *Raiamas guttatus* (Day, 1869); Laos, Oudom Sai, Oudom Sai market, photo by Walter Rainboth 233mm SL

Fig. 291. *Raiamas guttatus* (Day, 1869); Laos, Luang Prabang, Mekong near Ban Muangkham, photo by Walter Rainboth 56mm SL

Fig. 292. *Aaptosyax grypus* Rainboth, 1991; Thailand, Ubon Ratchathani, Khong Chiam, photo by Tyson Roberts 721mm SL

Fig. 293. *Aaptosyax grypus* Rainboth, 1991; Thailand, Ubon Ratchathani, Khong Chiam, photo by Tyson Roberts 721mm SL

Fig. 294. *Opsariichthys bidens* Günther, 1873; Laos, Xieng Khuang, Nam Nyiap (Ngiap), photo by Walter Rainboth 69mm SL

Fig. 295. *Opsarius koratensis* (Smith, 1931); Laos, Luang Prabang, Nam Soeung at Ban Pak Soeung, photo by Walter Rainboth 53mm SL

Fig. 296. *Opsarius ornatus* (Sauvage, 1883); Laos, Champasak, Houay Set at Ban Thongset, photo by Ian Baird

Fig. 297. *Opsarius pulchellus* (Smith, 1931); Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 57mm SL

Fig. 298. *Amblypharyngodon chulabornae* Vidthayanon & Kottelat, 1991; Cambodia, Odong Mean Chey, marsh NW of Phnom Penh, photo by Walter Rainboth 27mm SL

Fig. 299. *Boraras micros* Kottelat & Vidthayanon, 1993; Thailand, Nong Khai, Buengkhan, photo by Chavalit Vidthayanon

Fig. 300. *Boraras urophthalmoides* (Kottelat, 1991); Cambodia, Odong Mean Chey, Pra Yarb, Prek O Khsach marsh, photo by Walter Rainboth 14mm SL

Fig. 301. *Chela caeruleostigmata* (Smith, 1931); Cambodia, Kratie, Koh Rogniuv, photo by Chavalit Vidthayanon 35mm SL

Fig. 302. *Chela laubuca* (Hamilton, 1822); Laos, Savannakhet, photo by Terry Warren

Fig. 303. *Danio sp.cf. albolineatus*; Cambodia, Kampot, O Kaoh Trach, W of Sihanoukville, photo by Walter Rainboth 35mm SL

Fig. 304. *Danio sp.cf. albolineatus*; aquarium trade, similar to specimens from SE Thailand, photo by Walter Rainboth 41mm SL

Fig. 305. *Danio pulcher* (Smith, 1931); Cambodia, Stung Treng, O Pong Moan, photo by Walter Rainboth 21mm SL

Fig. 306. *Danio roseus* (Fang & Kottelat, 2000); Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth 27mm SL

Fig. 307. *Danio tweediei* (Brittan, 1956); holotype; Malaya, Kedah, Sungei Patani, photo by David Catania

Fig. 308. *Devario acrostomus* (Fang & Kottelat, 1999); Laos, Bolikhamsai, Nam Leuk, photo by Walter Rainboth 45mm SL

Fig. 309. *Devario apocypris* (Fang & Kottelat, 1999); Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 27mm SL

Fig. 310. *Devario chrysotaeniatus* (Chu, 1981); Laos, Luang Namtha, Nam Ma Yen, photo by Walter Rainboth 35mm SL

Fig. 311. *Devario fangfangae* (Kottelat, 2000); Laos, Bolikhamsai, Nam Phao, photo by Walter Rainboth 35mm SL

Fig. 312. *Devario fangfangae* (Kottelat, 2000); Thailand, Nong Khai, photo by Chavalit Vidthayanon

Fig. 313. *Devario gibber* (Kottelat, 2000); Laos, Sekong, Sekatam, photo by Walter Rainboth 55mm SL

Fig. 314. *Devario laoensis* (Pellegrin & Fang, 1940); Laos, Oudom Sai, Houay Seua, photo by Walter Rainboth 49mm SL

Fig. 315. *Devario leptos* (Fang & Kottelat, 1999) ♂; Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 54mm SL

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Fig. 316. *Devario leptos* (Fang & Kottelat, 1999) ♀ ;Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth
59mm SL

Fig. 317. *Devario regina* (Fowler, 1934); aquarium trade specimen, photo by Walter Rainboth
61mm SL

Fig. 318. *Devario salmonata* (Kottelat, 2000); Laos, Champasak, Houay Makchan, Se Namnoy basin, photo by Walter Rainboth
39mm SL

Fig. 319. *Devario* sp.; Laos, Xieng Khuang, Nam Ngum, photo by Walter Rainboth
40mm SL

Fig. 320. *Esomus longimanus* (Lunel, 1881); Cambodia, Odong Mean Chey, floodplain lake near Phum Kraom, photo by Walter Rainboth
70mm SL

Fig. 321. *Esomus metallicus* Ahl, 1923; Cambodia, Odong Mean Chey, marsh NW of Phnom Penh, photo by Walter Rainboth
33mm SL

Fig. 322. *Leptobarbus rubripinna* (Fowler, 1937); Cambodia, Kandal, Boeung Veng Canal, photo by Walter Rainboth
174mm SL

Fig. 323. *Luciosoma bleekeri* Steindachner, 1878; Cambodia, Stung Treng market, photo by Walter Rainboth
119mm SL

Fig. 324. *Luciosoma setigerum* (Valenciennes, 1842); aquarium specimen, photo by Walter Rainboth
97mm SL

Fig. 325. *Rasbora amplistriga* Kottelat, 2000; Thailand, Nong Khai, Phu Wua, photo by Chavalit Vidthayanon

Fig. 326. *Rasbora atridorsalis* Kottelat & Chu, 1987; Laos, Vientiane, Nam Tou, photo by Walter Rainboth
52mm SL

Fig. 327. *Rasbora aurotaenia* Tirant, 1885; Cambodia, Kandal, Tonlé Sap near Phnom Penh, photo by Walter Rainboth
80mm SL

Fig. 328. *Rasbora aurotaenia* Tirant, 1885; Vietnam, Can Tho, Bassac River (Song Hau Giang), photo by Walter Rainboth
65mm SL

Fig. 329. *Rasbora borapetensis* Smith, 1934; Laos, Vientiane, Nam Ngum Reservoir, photo by Walter Rainboth
31mm SL

Fig. 330. *Rasbora daniconius* (Hamilton, 1822); Laos, Vientiane, Nam Po at confluence with Nam Sone, photo by Walter Rainboth
37mm SL

Fig. 331. *Rasbora sp.cf. dorsinotata*; Laos, Luang Namtha, Nam Ma Oun, photo by Walter Rainboth
30mm SL

Fig. 332. *Rasbora dusonensis* (Bleeker, 1851); Laos, Bokeo, Nam Ngon, photo by Walter Rainboth
60mm SL

Fig. 333. *Rasbora dusonensis* (Bleeker, 1851); Vietnam, Can Tho, Song Hau Giang, photo by Walter Rainboth
67mm SL

Fig. 334. *Rasbora hobelmani* Kottelat, 1984; Thailand, Nakon Sawan, photo by Chavalit Vidthayanon
55mm SL

Fig. 335. *Rasbora sp.cf. lateristriata*; Cambodia, Kampot, Prek Toek Sap above waterfall, photo by Walter Rainboth
39mm SL

Fig. 336. *Rasbora pauciperforata* Weber & Beaufort, 1916; aquarium specimen, photo by Walter Rainboth
33mm SL

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Fig. 337. *Rasbora paviana* Tirant, 1885; Laos, Vientiane, Nam Ti at confluence with Nam Ngum, photo by Walter Rainboth 42mm SL

Fig. 338. *Rasbora paviana* Tirant, 1885; Vietnam, Minh Hai, U Minh forest, photo by Walter Rainboth 50mm SL

Fig. 339. *Rasbora rubrodorsalis* Donoso-Büchner & Schmidt, 1997; Thailand, Nong Khai, Buengkhan, photo by Chavalit Vidthayanon

Fig. 340. *Rasbora septentrionalis* Kottelat, 2000; Laos, Bokeo, Nam Ngon, photo by Walter Rainboth 65mm SL

Fig. 341. *Rasbora septentrionalis* Kottelat, 2000; Cambodia, Odong Mean Chey, Pra Yarb, photo by Walter Rainboth 57mm SL

Fig. 342. *Rasbora spilocerca* Rainboth & Kottelat, 1987; Cambodia, Odong Mean Chey, marsh NW of Phnom Penh, photo by Walter Rainboth 21mm SL

Fig. 343. *Rasbora tornieri* Ahl, 1922; Cambodia, Kandal, Bassac River at Prek Chrey, photo by Walter Rainboth 62mm SL

Fig. 344. *Rasbora trilineata* Steindachner, 1870; Thailand, Nongkhai, photo by Chavalit Vidthayanon 34mm SL

Fig. 345. *Rasbora* sp.; Thailand, Chantaburi, Khlong Takong, photo by Chavalit Vidthayanon

Fig. 346. *Thryssocypris tonlesapensis* Roberts & Kottelat, 1984; Vietnam, An Giang, Song Hau Giang near Long Xuyen, photo by Walter Rainboth 53mm SL

Fig. 347. *Trigonostigma espei* (Meinken, 1967); aquarium specimen, photo by Walter Rainboth 21mm SL

Fig. 348. *Ctenopharyngodon idella* (Valenciennes, 1844); Singapore, photo by Walter Rainboth 152mm SL

Fig. 349. *Hypophthalmichthys molitrix* (Valenciennes, 1844); Laos, Vientiane, market, photo by Walter Rainboth 380mm SL

Fig. 350. *Hypophthalmichthys nobilis* (Richardson, 1845); Thailand, Nongkhai, photo by Chavalit Vidthayanon 400mm SL

Fig. 351. *Abbottina rivularis* (Basilewsky, 1855); Thailand, Chiang Rai, Chiangkong, Chavalit Vidthayanon

Fig. 352. *Gobiobotia yuanjiangensis* Chen & Cao, 1977; Vietnam, Red River, Cao Bang market, photo by Walter Rainboth 81mm SL

Fig. 353. *Hemibarbus labeo* (Pallas, 1776); Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 118mm SL

Fig. 354. *Hemibarbus macracanthus* Lu, Luo & Chen, 1977; Laos, Phongsali, Nam Houn at confluence with Nam Ou, photo by Walter Rainboth 49mm SL

Fig. 355. *Hemibarbus maculatus* Bleeker, 1871; Laos, Luang Prabang, Nam Soeung, photo by Walter Rainboth 54mm SL

Fig. 356. *Hemibarbus medius* Yue, 1995; Laos, Bokeo, Nam Ngao, photo by Walter Rainboth 159mm SL

Fig. 357. *Pseudorasbora parva* Temminck & Schlegel, 1846, ♂; Laos, Oudom Sai, Nam Mao, photo by Walter Rainboth 71mm SL

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Fig. 358. *Pseudorasbora parva* Temminck & Schlegel, 1846, ♀ ; Laos, Oudom Sai, Nam Mao, photo by Walter Rainboth 60mm SL

Fig. 359. *Carassius auratus* (Linnaeus, 1758); Vietnam, Dak Lak, Srepok basin, photo by Chavalit Vidthayanon 120mm SL

Fig. 360. *Cyprinus carpio rubrofuscus* La Cepède, 1803; Laos, Bokeo, Mekong at Ban Houay Sai, photo by Walter Rainboth 43mm SL

Fig. 361. *Neolissochilus blanci* (Pellegrin & Fang, 1940); Laos, Vientiane, Nam Ngao upstream from Nam Ngum Reservoir, photo by Walter Rainboth 123mm SL

Fig. 362. *Neolissochilus soroides* (Duncker, 1904); Cambodia, Pursat, Stung Ket, photo by Walter Rainboth 79mm SL

Fig. 363. *Neolissochilus stracheyi* (Day, 1871); Laos, Vientiane, Nam Ngum, photo by Walter Rainboth 197mm SL

Fig. 364. *Probarbus jullieni* Sauvage, 1880, breeding ♂ ;Laos, Luang Prabang, Nam Ou, photo by Sinthavong Viravong

Fig. 365. *Probarbus jullieni* Sauvage, 1880; aquarium specimen, photo by Walter Rainboth 136mm SL

Fig. 366. *Probarbus labeamajor* Roberts, 1992; Cambodia, Stung Treng market, photo by Walter Rainboth 280mm SL

Fig. 367. *Probarbus labeamajor* Roberts, 1992; Thailand, Nakhon Phanom, photo by Pasakorn Saenjundaeng 750mm SL

Fig. 368. *Tor ater* Roberts, 1999, holotype; Laos, Khammouane, Nam Theun at Ban Talung, photo by Walter Rainboth 308mm SL

Fig. 369. *Tor laterivittatus* Zhou & Cui, 1996; Laos, Luang Prabang market, photo by Walter Rainboth 280mm SL

Fig. 370. *Tor sinensis* Wu, 1977; Laos, Luang Prabang, Houay Vang in mouth at Nam Ou, photo by Walter Rainboth 35mm SL

Fig. 371. *Tor sinensis* Wu, 1977; Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth 56mm SL

Fig. 372. *Tor sinensis* Wu, 1977; Cambodia, Stung Treng market, photo by Walter Rainboth 400mm SL

Fig. 373. *Tor tambra* (Valenciennes, 1842); Laos, Vientiane, Nam Tou, photo by Walter Rainboth 122mm SL

Fig. 374. *Tor tambroides* Bleeker, 1854; Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 107mm SL

Fig. 375. *Tor tambroides* Bleeker, 1854; Cambodia, Stung Treng market, photo by Walter Rainboth 360mm SL

Fig. 376. *Tor sp.*; Laos, Sekong, Sekong River in Kaleum Dist., photo by Ian Baird

Fig. 377. *Luciocyprinus striolatus* Cui & Chu, 1986; Laos, Vientiane, Nam Ngum Reservoir, photo by Peter Cunningham 1200mm SL

Fig. 378. *Luciocyprinus striolatus* Cui & Chu, 1986; ;Laos, Vientiane, Nam Ngum Reservoir, photo by Peter Cunningham 1200mm SL

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Fig. 379. *Luciocyprinus striolatus* Cui & Chu, 1986; Laos, Phongsali, Nam Long, photo by Walter Rainboth
60mm SL

Fig. 380. *Albulichthys albuloides* (Bleeker, 1855); Cambodia, Siem Reap market, photo by Walter Rainboth
147mm SL

Fig. 381. *Amblyrhynchichthys micracanthus* Ng & Kottelat, 2004; Cambodia, Tonlé Sap near Phnom Penh, photo by Walter Rainboth
110mm SL

Fig. 382. *Balantiocheilos melanopterus* (Bleeker, 1850); aquarium specimen, photo by Chavalit Vidthayanon

Fig. 383. *Cosmochilus harmandi* Sauvage, 1878; Cambodia, Stung Treng market, photo by Walter Rainboth
225mm SL

Fig. 384. *Cyclocheilichthys apogon* (Valenciennes, 1842); Thailand, Khon Kaen, Nam Pong Reservoir, photo by Walter Rainboth
110mm SL

Fig. 385. *Cyclocheilichthys armatus* (Valenciennes, 1842); Laos, Vientiane, Nam Ti at confluence with Nam Ngum, photo by Walter Rainboth
102mm SL

Fig. 386. *Cyclocheilichthys enoplus* (Bleeker, 1850); Laos, Mekong basin, photo from Lao Department of Fisheries poster

Fig. 387. *Cyclocheilichthys furcatus* Sontirat, 1985; Laos, Savannakhet market, photo by Walter Rainboth
350mm SL

Fig. 388. *Cyclocheilichthys heteronema* (Bleeker, 1853); Thailand, Narathiwat, Kolok River, photo by Chavalit Vidthayanon

Fig. 389. *Cyclocheilichthys lagleri Sontirat*, 1989; Cambodia, Odong Mean Chey, Pra Yarb, photo by Walter Rainboth
30mm SL

Fig. 390. *Cyclocheilichthys mekongensis* Fowler, 1937; Cambodia, Kompong Thom , Tonlé Sap at Chhnok Trou, photo by Walter Rainboth
115mm SL

Fig. 391. *Cyclocheilichthys repasson* (Bleeker, 1853); Laos, Vientiane, Nam Ngum Reservoir, photo by Walter Rainboth
59mm SL

Fig. 392. *Cyclocheilichthys tapiensis* Smith 1931; Thailand, Ayutthaya, photo by Chavalit Vidthayanon

Fig. 393. *Discherodontus ashmeadi* (Fowler, 1937); Cambodia, Kratie, photo by Chavalit Vidthayanon
90mm SL

Fig. 394. *Discherodontus parvus* (Wu & Lin, 1977); Laos, Luang Namtha, Nam Dai, photo by Walter Rainboth
40mm SL

Fig. 395. *Folifer brevifilis* (Peters, 1881); Laos, Oudom Sai, Nam Phak, photo by Walter Rainboth
52mm SL

Fig. 396. *Mystacoleucus atridorsalis* Fowler, 1937; Thailand, photo by Chavalit Vidthayanon

Fig. 397. *Mystacoleucus chilopterus* Fowler, 1935; Thailand, photo by Chavalit Vidthayanon

Fig. 398. *Mystacoleucus ectypus* Kottelat, 2000; Thailand, photo by Chavalit Vidthayanon

Fig. 399. *Mystacoleucus greenwayi* Pellegrin & Fang, 1940; Laos, Luang Namtha, Nam Ha at Ban Nam Ha, photo by Walter Rainboth
65mm SL

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Fig. 400. *Mystacoleucus lepturus* Huang, 1979; Thailand, Chiang Rai, Chiangkong, photo by Chavalit Vidthayanon

Fig. 401. *Mystacoleucus marginatus* (Valenciennes, 1842); Cambodia, Pursat; Pursat River at crocodile pool, photo by Walter Rainboth 44mm SL

Fig. 402. *Parasikukia maculata* Doi, 2000; Thailand, Lopburi, photo by Chavalit Vidthayanon

Fig. 403. *Percocypris retrodorsalis* Cui & Chu, 1990; China, Yunnan, Lancangjiang River, photo by Walter Rainboth 127mm SL

Fig. 404. *Puntioplites bulu* (Bleeker, 1851); Thailand, Surat Thani, Tapi River, photo by Chavalit Vidthayanon

Fig. 405. *Puntioplites falcifer* Smith, 1929; Cambodia, Stung Treng , Mekong River, photo by Walter Rainboth 160mm SL

Fig. 406. *Puntioplites proctozysron* (Bleeker, 1865); Thailand, Khon Kaen, Nam Pong Reservoir, photo by Walter Rainboth 135mm SL

Fig. 407. *Puntioplites sp.cf. waandersi* (Bleeker, 1858-1859); Thailand, Ubon Ratchathani, Mun River, photo by Chavalit Vidthayanon

Fig. 408. *Sikukia flavicaudata* Chu & Chen, 1987; Thailand, Chiang Rai, Chiangkong, photo by Chavalit Vidthayanon

Fig. 409. *Sikukia gudgeri* (Smith, 1934); Laos, Champasak, Mekong at Hatsalao, photo by Walter Rainboth 95mm SL

Fig. 410. *Sikukia stejnegeri* Smith, 1931; Cambodia, Odong Mean Chey, Tonlé Sap upstream from Phnom Penh, Chavalit Vidthayanon

Fig. 411. *Barbonymus altus* (Günther, 1868); Cambodia, Stung Treng, photo by Walter Rainboth 118mm SL

Fig. 412. *Barbonymus gonionotus* (Bleeker, 1850); Thailand, photo by Chavalit Vidthayanon

Fig. 413. *Barbonymus schwanefeldii* (Bleeker, 1853); Laos, Vientiane market, photo by Walter Rainboth 150mm SL

Fig. 414. *Hypsibarbus lagleri* Rainboth, 1996; Cambodia, Stung Treng market; Walter Rainboth 188mm SL

Fig. 415. *Hypsibarbus malcolmi* (Smith, 1945); aquarium specimen, photo by Walter Rainboth 125mm SL

Fig. 416. *Hypsibarbus pierrei* (Sauvage, 1880); Laos, Attapeu market, photo by Walter Rainboth 176mm SL

Fig. 417. *Hypsibarbus suvattii* Rainboth, 1996; Thailand, Kanchanaburi, Meklong basin, photo by Pasakorn Saenjundaeng

Fig. 418. *Hypsibarbus vernayi* (Norman, 1925); Laos, Vientiane, market specimen, photo by Walter Rainboth 350mm SL

Fig. 419. *Hypsibarbus vernayi* (Norman, 1925); Laos, Oudom Sai, Houay Seng near Mekong, photo by Walter Rainboth 97mm SL

Fig. 420. *Hypsibarbus wetmorei* (Smith, 1931); Cambodia, Stung Treng, market specimen, photo by Walter Rainboth 209mm SL

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Fig. 421. *Laocypris hispida* Kottelat, 2000, holotype; Laos, Vientiane, Houay Sala Yai, trib to Nam Sen, photo by Walter Rainboth 45mm SL

Fig. 422. *Onychostoma fusiforme* Kottelat, 1998; Laos, Bolikhamsai, Nam Leuk, photo by Walter Rainboth 103mm SL

Fig. 423. *Onychostoma sp.cf. gerlachi*; Laos, Vientiane, Nam Tou, photo by Walter Rainboth 100mm SL

Fig. 424. *Onychostoma meridionale* Kottelat, 1998; Cambodia, Mondulkiri, O Phlai, photo by Walter Rainboth 68mm SL

Fig. 425. *Onychostoma meridionale* Kottelat, 1998; Laos, Luang Prabang, Houay Vang in mouth at Nam Ou, photo by Walter Rainboth 45mm SL

Fig. 426. *Poropuntius angustus* Kottelat, 2000; Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 113mm SL

Fig. 427. *Poropuntius bantamensis* (Rendahl, 1920); Thailand, Chiang Mai, Chiang Dao, photo by Chavalit Vidthayanon

Fig. 428. *Poropuntius bolovenensis* Roberts, 1998; Laos, Attapeu, Xe Namnoy, photo by Walter Rainboth 58mm SL

Fig. 429. *Poropuntius carinatus* (Wu & Lin, 1977); China, Yunnan, Mengha, Mekong basin, photo by Walter Rainboth 130mm SL

Fig. 430. *Poropuntius sp.cf. carinatus*, ♂ ; Laos, Vientiane, Nam Ke, upstream from Nam Ngum Reservoir, photo by Walter Rainboth 115mm SL

Fig. 431. *Poropuntius sp.cf. carinatus*, ♀ ; Laos, Bolikhamsai, Nam Leuk, photo by Walter Rainboth 80mm SL

Fig. 432. *Poropuntius cogginii* (Chaudhuri, 1911); China, Yunnan, Yangbi Xian, Lancangjiang, photo by Walter Rainboth 130mm SL

Fig. 433. *Poropuntius consternans* Kottelat, 2000; Laos, Attapeu, Xe Namnoy, photo by David Catania 124mm SL

Fig. 434. *Poropuntius sp.cf. deauratus*; Cambodia, Mondulkiri, O Romis, photo by Walter Rainboth 81mm SL

Fig. 435. *Poropuntius exigua* (Wu & Lin, 1977); China, Yunnan, Lake Dali, photo by Walter Rainboth 82mm SL

Fig. 436. *Poropuntius huangchuchieni* (Tchang, 1962); China, Yunnan, Mekong basin, photo by Walter Rainboth 196mm SL

Fig. 437. *Poropuntius laoensis* (Günther, 1868); Laos, Phongsali, Nam Long, photo by Walter Rainboth 76mm SL

Fig. 438. *Poropuntius sp.cf. laoensis*; Laos, Phongsali, Nam Ngay, photo by Walter Rainboth 75mm SL

Fig. 439. *Poropuntius sp.cf. laoensis*; Laos, Bokeo, Nam Ngao, photo by Walter Rainboth 115mm SL

Fig. 440. *Poropuntius "laticeps"* Roberts, 1998; Vietnam, Dak Lak, Krong Ana River, Srepok basin, photo by Chavalit Vidthayanon 165mm SL

Fig. 441. *Poropuntius lobocheiloides* Kottelat, 2000; Laos, Attapeu, Xe Namnoy, photo by David Catania 138mm SL

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Fig. 442. *Poropuntius normani* Smith, 1931; Cambodia, Pursat, Pursat River at crocodile pool, photo by Walter Rainboth 54mm SL

Fig. 443. *Poropuntius normani* Smith, 1931; Thailand, Ubon Ratchathani, Houay Hin Taek, photo by Walter Rainboth 70mm SL

Fig. 444. *Poropuntius sp.cf. normani*; Cambodia, Pursat, Stung Ket, photo by Walter Rainboth 78mm SL

Fig. 445. *Poropuntius sp.cf. normani*; Laos, Vientiane, Nam Ngao upstream from Nam Ngum Reservoir, photo by Walter Rainboth 163mm SL

Fig. 446. *Poropuntius "rasorius"* Roberts, 1998; Vietnam, Dak Lak, Krong No River, Srepok basin, photo by Chavalit Vidthayanon 165mm SL

Fig. 447. *Poropuntius solitus* Kottelat, 2000; Laos, Champasak, Se Namnoy, photo by Walter Rainboth 92mm SL

Fig. 448. *Poropuntius speleops* (Roberts, 1991); Thailand, Chaiyaphum, Phu Keo, photo by Chavalit Vidthayanon

Fig. 449. *Poropuntius susanae* (Banister, 1973); China, Yunnan, Lake Tali, Mekong basin, photo by Walter Rainboth 179mm SL

Fig. 450. *Poropuntius sp.1*, ♂ ; Thailand, Chiang Rai, Houay Mae Sot, Chiangkong, photo by Chavalit Vidthayanon 145mm SL

Fig. 451. *Poropuntius sp. 1*, ♀ ;Thailand, Chiang Rai, Houay Mae Sot, Chiangkong, photo by Walter Rainboth 75mm SL

Fig. 452. *Poropuntius sp.2*; Thailand, Loei, Nam Hung at Thai-Lao border, photo by Chavalit Vidthayanon

Fig. 453. *Scaphiodonichthys acanthopterus* (Fowler, 1934); Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 85mm SL

Fig. 454. *Scaphiodonichthys acanthopterus* (Fowler, 1934); Laos, Sekong, Sekatam, photo by Walter Rainboth 110mm SL

Fig. 455. *Scaphiodonichthys acanthopterus* (Fowler, 1934); Laos, Vientiane, Nam Tou, photo by Walter Rainboth 95mm SL

Fig. 456. *Scaphognathops bandanensis* Boonyaratpalin & Srirungroj, 1971; Thailand, Ubon Ratchathani, Menam Mun, photo by Walter Rainboth 81mm SL

Fig. 457. *Scaphognathops mekongensis* Taki, 1974; Laos, Champasak, Khone Falls, photo by Walter Rainboth 47mm SL

Fig. 458. *Scaphognathops stejnegeri* (Smith, 1931); Laos, Champasak, Pakse, photo by Terry Warren

Fig. 459. *Scaphognathops theunensis* Kottelat, 1998, holotype; Laos, Khammouane, Nam Theun at Ban Signo, photo by Walter Rainboth 176mm SL

Fig. 460. *Hampala dispar* Smith, 1934; Laos, Vientiane, Nam Ngum Reservoir, photo by Walter Rainboth 51mm SL

Fig. 461. *Hampala macrolepidota* (Valenciennes, 1842); Cambodia, Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 166mm SL

Fig. 462. *Oreichthys parvus* Smith, 1933; Laos, Bolikhamsai, Nam Ngang near confluence with Nam Leuk, photo by Walter Rainboth 20mm SL

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Fig. 463. *Puntius brevis* (Bleeker, 1850); Laos, Vientiane, Nam Tou, photo by Walter Rainboth
57mm SL

Fig. 464. *Puntius leiacanthus* (Bleeker, 1860); Thailand, Khon Kaen, Nam Pong Reservoir, photo by Walter Rainboth
73mm SL

Fig. 465. *Puntius masyai* Smith, 1945; Cambodia, Odong Mean Chey, marsh NW of Phnom Penh, photo by Walter Rainboth
18mm SL

Fig. 466. *Puntius spilopterus* (Fowler, 1934); Thailand, Ayutthaya, Beng Sai, photo by Chavalit Vidthayanon

Fig. 467. *Systomus aurotaeniatus* (Tirant, 1885); Cambodia, Stung Treng, O Pong Moan, photo by Walter Rainboth
52mm SL

Fig. 468. *Systomus jacobusboehlkei* (Fowler, 1958); Laos, Vientiane, Nam Ti near Nam Ngum Reservoir, photo by Walter Rainboth
49mm SL

Fig. 469. *Systomus orphoides* (Valenciennes, 1842); Laos, Vientiane, Nam Tou, photo by Walter Rainboth
82mm SL

Fig. 470. *Systomus partipentazona* (Fowler, 1934); Cambodia, Odong Mean Chey, marsh NW of Phnom Penh, photo by Walter Rainboth
30mm SL

Fig. 471. *Systomus rhombeus* (Kottelat, 2000); Cambodia, Pursat, Stung Ket, photo by Walter Rainboth
62mm SL

Fig. 472. *Systomus stoliczkanus* (Day, 1871), ♂ ;Laos, Luang Prabang, Nam Khan at Keng Noun rapids, photo by Walter Rainboth
38mm SL

Fig. 473. *Systomus stoliczkanus* (Day, 1871), ♀ ; Laos, Luang Namtha, Nam Ma Yen, photo by Walter Rainboth
36mm SL

Fig. 474. *Systomus n.sp.*; Laos, Xieng Kheung, Nam Nyiap, photo by Walter Rainboth
72mm SL

Fig. 475. *Catlocarpio siamensis* Boulenger, 1898; Bangkok, living aquarium specimen at NIFI, photo by Walter Rainboth

Fig. 476. *Thynnichthys thynnoides* (Bleeker, 1852); Cambodia, Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth
127mm SL

Fig. 477. *Bangana behri* (Fowler, 1937); Cambodia, Stung Treng, market specimen, photo by Walter Rainboth
249mm SL

Fig. 478. *Bangana elegans* Kottelat, 1998; Laos, Khammouane, Nam Theun, photo by Maurice Kottelat
340mm SL

Fig. 479. *Bangana laticeps* (Wu & Lin, 1977); Laos, Luang Prabang, Houay Vang at in Nam Ou, photo by Walter Rainboth
25mm SL

Fig. 480. *Bangana lippa* (Fowler, 1936); Laos, Luang Namtha, Nam Tha market specimen, photo by Walter Rainboth
310mm SL

Fig. 481. *Bangana lippa* (Fowler, 1936); Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth
109mm SL

Fig. 482. *Barbichthys nitidus* Sauvage, 1878; Cambodia, Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth
133mm SL

Fig. 483. *Cirrhinus jullieni* Sauvage, 1878; Cambodia, Kratie, photo by Chavalit Vidthayanon
210mm SL

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Fig. 484. *Cirrhinus microlepis* Sauvage, 1878; Cambodia, Stung Treng, market specimen, photo by Walter Rainboth 172mm SL

Fig. 485. *Cirrhinus molitorella* (Valenciennes, 1844); Cambodia, Stung Treng, Mekong at Stung Treng, photo by Walter Rainboth 156mm SL

Fig. 486. *Cirrhinus mrigala* (Hamilton, 1822); Thailand, Nong Khai, photo by Chavalit Vidthayanon

Fig. 487. *Cirrhinus prosemion* (Fowler, 1934); Laos, Vientiane, Nam Ngao upstream from Nam Ngum Reservoir, photo by Walter Rainboth 62mm SL

Fig. 488. *Henicorhynchus caudiguttatus* (Fowler, 1934); Thailand, Chiang Rai, Chiangkong, photo by Chavalit Vidthayanon

Fig. 489. *Henicorhynchus caudimaculatus* (Fowler, 1934); Thailand, Chiang Rai, Chiangkong, photo by Chavalit Vidthayanon

Fig. 490. *Henicorhynchus cryptopogon* (Fowler, 1935); Cambodia, Mekong at Phnom Penh, photo by Walter Rainboth 61mm SL

Fig. 491. *Henicorhynchus lobatus* Smith, 1945; Cambodia, Pursat, Stung Pursat at crocodile pool, photo by Walter Rainboth 52mm SL

Fig. 492. *Henicorhynchus lobatus* Smith, 1945; Cambodia, Mekong at Phnom Penh, photo by Walter Rainboth 54mm SL

Fig. 493. *Henicorhynchus ornatipinnis* (Roberts, 1998); Thailand, Nakhon Phanom, Songkram River, photo by Chavalit Vidthayanon

Fig. 494. *Henicorhynchus siamensis* (Sauvage, 1881); Vietnam, An Giang, Song Chau Doc at Chau Doc, photo by Walter Rainboth 111mm SL

Fig. 495. *Labeo barbatulus* (Sauvage, 1878); Cambodia, Stung Treng, market specimen, photo by Walter Rainboth 220mm SL

Fig. 496. *Labeo chrysophekadion* (Bleeker, 1850); Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 211mm SL

Fig. 497. Labeo pierrei (Sauvage, 1880); Laos. Sekong, photo by Chavalit Vidthayanon

Fig. 498. *Labeo pierrei* (Sauvage, 1880); Laos, Vientiane, Nam Ngao, upstream from Nam Ngum Reservoir, photo by Walter Rainboth 125mm SL

Fig. 499. *Labeo rohita* (Hamilton, 1822); Laos, Vientiane, market specimen, photo by Walter Rainboth 180mm SL

Fig. 500. *Labiobarbus sp.cf. cuvieri*; Cambodia, Tonlé Sap near Phnom Penh, photo by Walter Rainboth 77mm SL

Fig. 501. *Labiobarbus lineatus* (Sauvage, 1878); Cambodia, Tonlé Sap near Phnom Penh, photo by Walter Rainboth 76mm SL

Fig. 502. *Labiobarbus lineatus* (Sauvage, 1878); Laos, Bokeo, Nam Ngam, photo by Walter Rainboth 72mm SL

Fig. 503. *Labiobarbus lineatus* (Sauvage, 1878); Cambodia, Pursat, Stung Pursat at crocodile pool, photo by Walter Rainboth 85mm SL

Fig. 504. *Labiobarbus lineatus* (Sauvage, 1878); Vietnam, An Giang, Song Chau Doc at Chau Doc, photo by Walter Rainboth 82mm SL

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Fig. 505. *Labiobarbus lineatus* (Sauvage, 1878); Cambodia, Koh Kong, Areng River, photo by Walter Rainboth 136mm SL

Fig. 506. *Labiobarbus siamensis* (Sauvage, 1881); Cambodia, Kandal, Prek Mong Ya, photo by Walter Rainboth 81mm SL

Fig. 507. *Lobocheilos davisi* (Fowler, 1937); aquarium specimen, photo by Walter Rainboth 49mm SL

Fig. 508. *Lobocheilos melanotaenia* (Fowler, 1935); Cambodia, Pursat, Stung Pursat at crocodile pool, photo by Walter Rainboth 114mm SL

Fig. 509. *Lobocheilos melanotaenia* (Fowler, 1935), Laos, Vientiane, Nam Tou, photo by Walter Rainboth 79mm SL

Fig. 510. *Lobocheilos quadrilineatus* (Fowler, 1935); Cambodia, Koh Khong, Areng, River, photo by Walter Rainboth 148mm SL

Fig. 511. *Lobocheilos quadrilineatus* (Fowler, 1935); Thailand, Ubon Ratchathani, Menam Mun, photo by Walter Rainboth 120mm SL

Fig. 512. *Osteochilus brachynotopteroides* Chevey, 1934; Thailand, Chaiyaphum, Pu Keo, photo by Chavalit Vidthayanon

Fig. 513. *Osteochilus lini* Fowler, 1935; Cambodia, Ratanakiri, O Kating, photo by Walter Rainboth 57mm SL

Fig. 514. *Osteochilus sp.cf. lini*; Laos, Vientiane, Nam Tou, photo by Walter Rainboth 104mm SL

Fig. 515. *Osteochilus melanopleurus* (Bleeker, 1852); Cambodia, Kandal, Boeung Veng Canal, photo by Walter Rainboth 159mm SL

Fig. 516. *Osteochilus microcephalus* (Valenciennes, 1842); Laos, Vientiane, Nam Ti at junction with Nam Ngum, photo by Walter Rainboth 69mm SL

Fig. 517. *Osteochilus microcephalus* (Valenciennes, 1842); Cambodia, Tonlé Sap at Phnom Penh, photo by Walter Rainboth 72mm SL

Fig. 518. *Osteochilus schlegelii* (Bleeker, 1851); Cambodia, Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 105mm SL

Fig. 519. *Osteochilus soplaoensis* (Fowler, 1934); Laos, Bolikhamsai, Nam Ngang near confluence with Nam Leuk, photo by Walter Rainboth 60mm SL

Fig. 520. *Osteochilus striatus* Kottelat, 1998; Laos, Bolikhamsai, Nam Ngang near confluence with Nam Leuk, photo by Walter Rainboth 43mm SL

Fig. 521. *Osteochilus vittatus* (Valenciennes, 1842); Laos, Vientiane, Nam Tou, photo by Walter Rainboth 100mm SL

Fig. 522. *Crossocheilus atrilimes* Kottelat, 2000; Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 72mm SL

Fig. 523. *Crossocheilus cobitis* (Bleeker, 1853); Thailand, Chiang Rai, photo by Chavalit Vidthayanon 60mm SL

Fig. 524. *Crossocheilus oblongus* (Valenciennes, 1842); Cambodia, Cardamom mountains, photo by Walter Rainboth 111mm SL

Fig. 525. *Crossocheilus oblongus* (Valenciennes, 1842); Thailand, Bangpakong River, photo by Siriwan Suksri 55mm SL

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Fig. 526. *Crossocheilus reticulatus* (Fowler, 1934); Cambodia, Pursat, Stung Pursat at Anlong Reap, photo by Walter Rainboth 70mm SL

Fig. 527. *Crossocheilus siamensis* (Smith, 1931); Aquarium specimen from Thailand or Malaysia (1970's), photo by Walter Rainboth 85mm SL

Fig. 528. *Epalzeorhynchos frenatum* (Fowler, 1934); Cambodia, Stung Treng, Stung Treng market, photo by Walter Rainboth 82mm SL

Fig. 529. *Epalzeorhynchos kalopterum* (Bleeker, 1851); Cambodia, Koh Khong, Areng River, photo by Walter Rainboth 125mm SL

Fig. 530. *Epalzeorhynchos munense* (Smith, 1934); Laos, Vientiane, Nam Ti at junction with Nam Ngum, photo by Walter Rainboth 82mm SL

Fig. 531. *Epalzeorhynchos munense* (Smith, 1934); Cambodia, Sambor, photo by Chavalit Vidthayanon 64mm SL

Fig. 532. *Garra cambodgiensis* (Tirant, 1883); Cambodia, Pursat, Stung Pursat at Anlong Reap, photo by Walter Rainboth 55mm SL

Fig. 533. *Garra cyrano* Kottelat, 2000; Laos, Bolikhamsai, Nam Leuk, photo by Walter Rainboth 90mm SL

Fig. 534. *Garra sp.cf. cyrano* (Fowler, 1934); Cambodia, Koh Khong, Tatai River, photo by Walter Rainboth 143mm SL

Fig. 535. *Garra fasciacauda* Fowler, 1937; Cambodia, Mekong at Stung Treng, photo by Walter Rainboth 65mm SL

Fig. 536. *Garra fasciacauda* Fowler, 1937; Laos, Bokeo, Nam Ngam, photo by Walter Rainboth 45mm SL

Fig. 537. *Garra fisheri* (Fowler, 1937); China, Yunnan, Simao (Mekong basin), photo by Walter Rainboth 70mm SL

Fig. 538. *Garra fuliginosa* (Fowler, 1934); Thailand, Chantaburi, Khlong Takong (Mekong basin) photo by Chavalit Vidthayanon

Fig. 539. *Garra fuliginosa* (Fowler, 1934); Aquarium specimen, probably from Thailand or Malaysia, photo by Walter Rainboth 77mm SL

Fig. 540. *Garra poilanei* Petit & Tchang, 1933; Laos, Phongsali, Nam Ou at Ban Hat Sa, photo by Walter Rainboth 243mm SL

Fig. 541. *Garra poilanei* Petit & Tchang, 1933; China, Yunnan, Simao (Mekong basin), photo by Walter Rainboth 110mm SL

Fig. 542. *Garra poilanei* Petit & Tchang, 1933; Laos, Luang Namtha, Nam Ha near Ban Nam Ha, photo by Walter Rainboth 88mm SL

Fig. 543. *Garra theunensis* Kottelat, 1998; Laos, Khammouane, Nam Theun, Terry Warren 254mm SL

Fig. 544. *Garra sp.*; Vietnam, Dak Lak, Krong No River, Srepok basin, photo by Chavalit Vidthayanon 260mm SL

Fig. 545. *Mekongina erythrospila* Fowler, 1937; Cambodia, Stung Treng, photo by Chavalit Vidthayanon 200mm SL

Fig. 546. *Gyrinocheilus aymonieri* (Tirant, 1884); Vietnam, Dak Lak, Krong No River, Srepok basin, photo by Chavalit Vidthayanon 220mm SL

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Fig. 547. *Gyrinocheilus aymonieri* (Tirant, 1884); Cambodia, Odong Mean Chey, Tonlé Sap near Phnom Penh, photo by Walter Rainboth 65mm SL

Fig. 548. *Gyrinocheilus pennocki* (Fowler, 1937); Laos, Savannakhet, market specimen, photo by Chavalit Vidthayanon

Fig. 549. *Gyrinocheilus pennocki* (Fowler, 1937); Cambodia, Stung Treng, market specimen, photo by Walter Rainboth 195mm SL

Fig. 550. *Serpenticobitis cingulata* Roberts, 1997; Thailand, Chiang Rai, photo by Chavalit Vidthayanon 35mm SL

Fig. 551. *Serpenticobitis octozona* Roberts, 1997; Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 48mm SL

Fig. 552. *Serpenticobitis zonata* Kottelat, 1998, holotype; Laos, Xe Bangfai, 3km upstream from Ban Pakphanang, photo by Walter Rainboth 39mm SL

Fig. 553. *Serpenticobitis zonata* Kottelat, 1998; Laos, Sekong, Sekong at Keng Louang, photo by Walter Rainboth 37mm SL

Fig. 554. *Sinibotia sp.cf. longiventralis*; Laos, Luang Prabang, Mekong at Ban Pak Lung, photo by Walter Rainboth 92mm SL

Fig. 555. *Syncrossus beauforti* (Smith, 1931); Cambodia, Pursat, Stung Pursat at crocodile pool, photo by Walter Rainboth 95mm SL

Fig. 556. *Syncrossus beauforti* (Smith, 1931); Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 64mm SL

Fig. 557. *Syncrossus helodes* (Sauvage, 1876); Cambodia, Tonlé Sap near Phnom Penh, photo by Walter Rainboth 110mm SL

Fig. 558. *Yasuhikotakia caudipunctata* (Taki & Doi, 1995); Laos, Savannakhet, Mekong at Keng Kabao, photo by Walter Rainboth 78mm SL

Fig. 559. *Yasuhikotakia caudipunctata* (Taki & Doi, 1995); Laos, Savannakhet, Mekong at Keng Kabao, photo by Walter Rainboth 70mm SL

Fig. 560. *Yasuhikotakia eos* (Taki, 1972); Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 70mm SL

Fig. 561. *Yasuhikotakia eos* (Taki, 1972); Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 55mm SL

Fig. 562. *Yasuhikotakia lecontei* (Fowler, 1937); Cambodia, Tonlé Sap near Phnom Penh, photo by Walter Rainboth 121mm SL

Fig. 563. *Yasuhikotakia sp.cf. lecontei*; Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 85mm SL

Fig. 564. *Yasuhikotakia sp.cf. lecontei*; Laos, Savannakhet, Mekong at Keng Kabao, photo by Walter Rainboth 50mm SL

Fig. 565. *Yasuhikotakia sp.cf. lecontei*; Laos, Savannakhet, Mekong at Keng Kabao, photo by Walter Rainboth 55mm SL

Fig. 566. *Yasuhikotakia sp.cf. lecontei*; Laos, Luang Prabang, Mekong at Ban Pak Lung, photo by Walter Rainboth 86mm SL

Fig. 567. *Yasuhikotakia longidorsalis* (Taki & Doi, 1995); Laos, Bolikhamsai, Nam Ngang, photo by Walter Rainboth 44mm SL

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Fig. 568. *Yasuhikotakia modesta* (Bleeker, 1865); Laos, Khammouane, Se Bangfai at Ban Hatkhamhiang, photo by Walter Rainboth 98mm SL

Fig. 569. *Yasuhikotakia modesta* (Bleeker, 1865); Cambodia, Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 80mm SL

Fig. 570. *Yasuhikotakia morleti* (Tirant, 1885); Cambodia, Pursat, Stung Pursat at crocodile pool, photo by Walter Rainboth 34mm SL

Fig. 571. *Yasuhikotakia nigrolineata* (Kottelat & Chu, 1987); Laos, Luang Prabang, Nam Soeung at Ban Pak Soeung, W. Rainboth 25mm SL

Fig. 572. *Yasuhikotakia nigrolineata* (Kottelat & Chu, 1987); Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 53mm SL

Fig. 573. *Yasuhikotakia nigrolineata* (Kottelat & Chu, 1987); Laos, Sekong, Sekong River at Keng Louang, photo by Walter Rainboth 59mm SL

Fig. 574. *Yasuhikotakia nigrolineata* (Kottelat & Chu, 1987); Thailand, Nan River, Chaophraya basin, photo by Chavalit Vidthayanon 110mm SL

Fig. 575. *Yasuhikotakia splendida* (Roberts, 1995); Laos, Sekong, Sekong River at Keng Ngang, photo by Walter Rainboth 61mm SL

Fig. 576. *Acanthopsoides delphax* Siebert, 1991; Cambodia, Stung Treng, Srepok River, photo by Walter Rainboth 66mm SL

Fig. 577. *Acanthopsoides gracilentus* (Smith, 1945); Laos, Oudom Sai, Houay Seua, photo by Walter Rainboth 54mm SL

Fig. 578. *Acanthopsoides gracilentus* (Smith, 1945); Laos, Luang Prabang, Nam Phouan, photo by Walter Rainboth 49mm SL

Fig. 579. *Acanthopsoides sp.cf. gracilis* (1); Laos, Luang Prabang, Mekong near Tha Dua, photo by Walter Rainboth 54mm SL

Fig. 580. *Acanthopsoides sp.cf. gracilis* (2); Cambodia, Ratanakiri, O Kating, photo by Walter Rainboth 44mm SL

Fig. 581. *Acanthopsoides hapalias* Siebert, 1991; Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 30mm SL

Fig. 582. *Acanthopsoides hapalias* Siebert, 1991; Laos, Luang Prabang, Mekong near Tha Dua, photo by Walter Rainboth 34mm SL

Fig. 583. *Acanthopsoides molobrion* Siebert, 1991; Laos, Bolikhamsai, Nam Ngang, photo by Walter Rainboth 49mm SL

Fig. 584. *Acanthopsoides sp.1*; Laos, Luang Prabang, Houay Vang at mouth in Nam Ou, photo by Walter Rainboth 58mm SL

Fig. 585. *Acanthopsoides sp.2*; Cambodia, Stung Treng, Tonlé San rapids at Kaoh Dan Man, photo by Walter Rainboth 46mm SL

Fig. 586. *Acantopsis sp.1*; Laos, Savannakhet, Savannakhet market specimen, photo by Walter Rainboth 90mm SL

Fig. 587. *Acantopsis sp.1*; Laos, Khammouane, Se Bangfai at Ban Hatkhamhiang, photo by Walter Rainboth 105mm SL

Fig. 588. *Acantopsis sp.2*; Laos, Champasak, Mekong at Hatsalao, photo by Walter Rainboth 52mm SL

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Fig. 589.*Acantopsis sp.2*; Cambodia, Tonlé Sap near Phnom Penh, photo by Walter Rainboth
97mm SL

Fig. 590. *Acantopsis sp.3*; Cambodia, Stung Treng, Srepok River, photo by Walter Rainboth
92mm SL

Fig. 591. *Acantopsis sp.4*; Laos, Luang Prabang, Mekong near Tha Dua, photo by Walter Rainboth
82mm SL

Fig. 592.*Acantopsis sp.5*; Laos, Savannakhet, market specimen, photo by Walter Rainboth
147mm SL

Fig. 593. *Acantopsis sp.6*; Laos, Khammouane, Nam Done, photo by Ian Baird

Fig. 594. *Acantopsis sp.7*; Cambodia, Stung Treng, Srepok River, photo by Walter Rainboth
71mm SL

Fig. 595. *Cobitis laoensis* Sauvage, 1878; Vietnam, Quang Binh, Phong Nha, Vuc Tro stream, photo by Walter Rainboth
64mm SL

Fig. 596.*Lepidocephalichthys berdmorei* (Blyth, 1860); Laos, Luang Namtha, Nam Ma Oun, photo by Walter Rainboth
47mm SL

Fig. 597. *Lepidocephalichthys hasselti* (Valenciennes, 1846); Cambodia, Ratanakiri, O Kating, photo by Walter Rainboth
29mm SL

Fig. 598. *Lepidocephalichthys zeppelini* Vidthayanon, 2011; Thailand, Nong Khai, photo by Chavalit Vidthayanon

Fig. 599. *Lepidocephalichthys sp.*; photo by Chavalit Vidthayanon

Fig. 600. *Misgurnus anguillicaudatus* (Cantor, 1842); Vietnam, Dak Lak Prov., Lak Lake, photo by Chavalit Vidthayanon
135mm SL

Fig. 601. *Misgurnus mizolepis* Günther, 1888; Vietnam, Dak Lak, Krong Ana River, Srepok basin, photo by Chavalit Vidthayanon
110mm SL

Fig. 602. *Pangio sp. cf. anguillaris*; Laos, Attapeu, Sekamen at Ban Mai ford; Walter Rainboth
76mm SL

Fig. 603.*Pangio sp.cf. anguillaris*; Cambodia, Stung Treng, Mekong downstream from Stung Treng, photo by Walter Rainboth
45mm SL

Fig. 604. *Pangio sp.cf. filinaris*; Cambodia, Stung Treng, Tonlé San rapids, photo by Walter Rainboth
25mm SL

Fig. 605. *Pangio sp.cf. fusca*; Laos, Sekong, Sekong River at Keng Ngang, photo by Walter Rainboth
57mm SL

Fig. 606. *Pangio sp.cf. fusca*; Laos, Bolikhamsai, Nam Ngang near confluence with Nam Leuk, photo by Walter Rainboth
39mm SL

Fig. 607. *Pangio myersi* (Harry, 1949); Thailand, Chantaburi, photo by Walter Rainboth
58mm SL

Fig. 608. *Pangio myersi* (Harry, 1949); aquarium specimen, photo by Walter Rainboth
61mm SL

Fig. 609. *Pangio myersi* (Harry, 1949); Laos, Champasak, Selamphao at Mounlapamok, photo by Ian Baird
39mm SL

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Fig. 610. *Pangio oblonga* (Valenciennes, 1846); Laos, Savannakhet, Mekong at Keng Kabao, photo by Walter Rainboth 56mm SL

Fig. 611. *Pangio sp.cf. piperata*; Laos, Savannakhet, Mekong at Keng Kahoung, photo by Walter Rainboth 55mm SL

Fig. 612. *Pangio sp.1*; Cambodia, Kompong Speu, Prek Thnot at Kompong Speu, photo by Walter Rainboth 28mm SL

Fig. 613. *Pangio sp.2*; Cambodia, Kandal, floodplain lake near Phnom Penh, photo by Walter Rainboth 40mm SL

Fig. 614. *Balitora annamitica* (Kottelat, 1988), (lateral view); Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 61mm SL

Fig. 615. *Balitora annamitica* (Kottelat, 1988), (dorsal view); Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 61mm SL

Fig. 616. *Balitora sp. cf. annamitica* (lateral view); Laos, Oudom Sai, Nam Phak, photo by Walter Rainboth 51mm SL

Fig. 617. *Balitora sp. cf. annamitica* (dorsal view); Laos, Oudom Sai, Nam Phak, photo by Walter Rainboth 53mm SL

Fig. 618. *Balitora sp. cf. burmanica* (lateral view); Laos, Luang Prabang, Nam Khan, photo by Walter Rainboth 42mm SL

Fig. 619. *Balitora sp. cf. burmanica* (dorsal view); Laos, Luang Prabang, Nam Khan, photo by Walter Rainboth 42mm SL

Fig. 620. *Balitora lancangjiangensis* (Zheng, 1980), (lateral view); Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth 42mm SL

Fig. 621. *Balitora lancangjiangensis* (Zheng, 1980), (dorsal view); Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth 42mm SL

Fig. 622. *Balitora sp.cf. lancangjiangensis* (lateral view); Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth 45mm SL

Fig. 623. *Balitora sp.cf. lancangjiangensis* (dorsal view); Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth 45mm SL

Fig. 624. *Balitora meridionalis* Kottelat, 1988, (lateral view); Laos, Bolikhamsai, Nam Leuk, photo by Walter Rainboth 58mm SL

Fig. 625. *Balitora meridionalis* Kottelat, 1988, (dorsal view); Laos, Bolikhamsai, Nam Leuk, photo by Walter Rainboth 58mm SL

Fig. 626. *Balitora meridionalis* Kottelat, 1988, (lateral view); Laos, Luang Namtha, Nam Tha, photo by Walter Rainboth 61mm SL

Fig. 627. *Balitora meridionalis* Kottelat, 1988, (dorsal view); Laos, Luang Namtha, Nam Tha, photo by Walter Rainboth 61mm SL

Fig. 628. *Hemimyzon confluens* Kottelat, 2000, (lateral view); Laos, Vientiane, Nam Lik at Ban Muangfuang, photo by Walter Rainboth 28mm SL

Fig. 629. *Hemimyzon confluens* Kottelat, 2000, (dorsal view); Laos, Vientiane, Nam Lik at Ban Muangfuang, photo by Walter Rainboth 28mm SL

Fig. 630. *Hemimyzon ecdyonuroides* Fryhof & Herder, 2002, (lateral view); Laos, Attapeu, Sekamen, photo by Walter Rainboth 40mm SL

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Fig. 631. *Hemimyzon ecdyonuroides* Fryhof & Herder, 2002, (dorsal view); Laos, Attapeu, Sekamen, photo by Walter Rainboth 40mm SL

Fig. 632. *Hemimyzon elongatus* (Chen & Li, 1985), (lateral view); Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 42mm SL

Fig. 633. *Hemimyzon elongatus* (Chen & Li, 1985), (dorsal view); Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 42mm SL

Fig. 634. *Hemimyzon khonensis* Kottelat, 2000 (lateral view); Laos, Champasak, Khone Falls, photo by Walter Rainboth 45mm SL

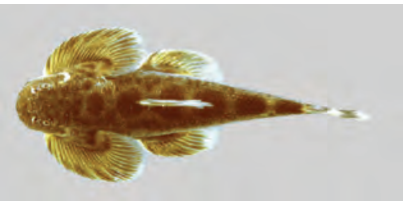

Fig. 635. *Hemimyzon khonensis* Kottelat, 2000 (dorsal view); Laos, Champasak, Khone Falls, photo by Walter Rainboth 45mm SL

Fig. 636. *Hemimyzon papilio* Kottelat, 1998, (lateral view); Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 33mm SL

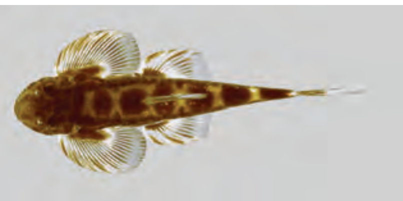

Fig. 637. *Hemimyzon papilio* Kottelat, 1998, (dorsal view); Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 33mm SL

Fig. 638. *Hemimyzon pengi* (Huang, 1982), (lateral view); Laos, Luang Namtha, Nam Ha, photo by Walter Rainboth 52mm SL

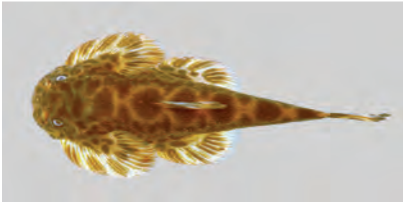

Fig. 639. *Hemimyzon pengi* (Huang, 1982), (dorsal view); Laos, Luang Namtha, Nam Ha, photo by Walter Rainboth 52mm SL

Fig. 640. *Hemimyzon sp.cf. pengi* (lateral view); Laos, Luang Namtha, Nam Ma Yen, photo by Walter Rainboth 45mm SL

Fig. 641. *Hemimyzon sp.cf. pengi* (dorsal view); Laos, Luang Namtha, Nam Ma Yen, photo by Walter Rainboth 45mm SL

Fig. 642. *Homaloptera confuzona* Kottelat, 2000; Cambodia, Stung Treng, Tonlé San rapids, photo by Walter Rainboth 38mm SL

Fig. 643. *Homaloptera confuzona* Kottelat, 2000; Cambodia, Koh Khong, Tatai River, photo by Walter Rainboth 58mm SL

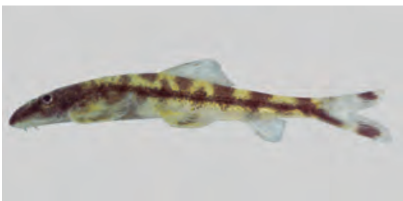

Fig. 644. *Homaloptera leonardi* Hora, 1941; Laos, Bokeo, Mekong River, photo by Walter Rainboth 23mm SL

Fig. 645. *Homaloptera leonardi* Hora, 1941; Cambodia, Kompong Speu, Prek Thnot, photo by Walter Rainboth 25mm SL

Fig. 646. *Homaloptera lineata* Smith, 1945, (lateral view); Laos, Bokeo, Nam Ngon, photo by Walter Rainboth 30mm SL

Fig. 647. *Homaloptera lineata* Smith, 1945, (dorsal view); Laos, Bokeo, Nam Ngon, photo by Walter Rainboth 30mm SL

Fig. 648. *Homaloptera lineata* Smith, 1945; Laos, Bokeo, Nam Ngam, photo by Walter Rainboth 36mm SL

Fig. 649. *Homaloptera sexmaculata* Fowler, 1934, (lateral view); Laos, Bokeo, Nam Ngam, photo by Walter Rainboth 30mm SL

Fig. 650. *Homaloptera sexmaculata* Fowler, 1934, (dorsal view); Laos, Bokeo, Nam Ngam, photo by Walter Rainboth 30mm SL

Fig. 651. *Homaloptera smithi* Hora, 1932, (lateral view); Cambodia, Pursat, Stung Pursat at Anlong Reap, photo by Walter Rainboth 37mm SL

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Fig. 652. *Homaloptera smithi* Hora, 1932, (dorsal view); Cambodia, Pursat, Stung Pursat at Anlong Reap, photo by Walter Rainboth 37mm SL

Fig. 653. *Homaloptera smithi* Hora, 1932, (lateral view); Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 27mm SL

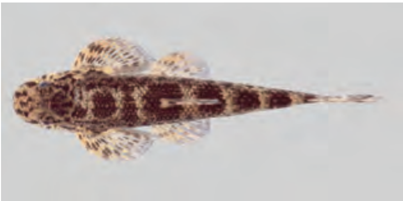

Fig. 654. *Homaloptera smithi* Hora, 1932, (dorsal view); Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 27mm SL

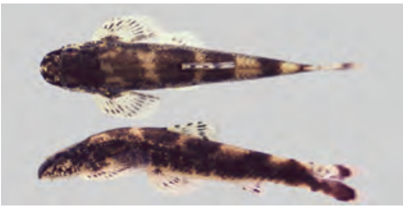

Fig. 655. *Homaloptera sp. cf. smithi* (1); Laos, Vientiane, Nam Lik at Ban Muangfuang, photo by Walter Rainboth 34mm SL

Fig. 656. *Homaloptera sp. cf. smithi* (2); Laos, Vientiane, Nam Po at confluence with Nam Sone, photo by Walter Rainboth 28mm SL

Fig. 657. *Homaloptera sp. cf. smithi* (3); Laos, Vientiane, Nam Po at confluence with Nam Sone, photo by Walter Rainboth 32mm SL

Fig. 658. *Homaloptera tweediei* Herre, 1940; Cambodia, Stung Treng, Mekong rapids downstream from Stung Treng, photo by Walter Rainboth 20mm SL

Fig. 659. *Homaloptera yunnanensis* (Chen, 1978), (lateral view); Laos, Luang Prabang, Nam Khan, photo by Walter Rainboth 53mm SL

Fig. 660. *Homaloptera yunnanensis* (Chen, 1978), (dorsal view); Laos, Luang Prabang, Nam Khan, photo by Walter Rainboth 53mm SL

Fig. 661. *Homaloptera zollingeri* Bleeker, 1853; Cambodia, Stung Treng, O Pong Moan, photo by Walter Rainboth 30mm SL

Fig. 662. *Annamia normani* (Hora, 1931); Cambodia, Ratanakiri, Prek Hop, tributary to Se San, photo by Walter Rainboth

Fig. 663. *Annamia normani* (Hora, 1931); Cambodia, Ratanakiri, O Kating, tributary to Srepok, photo by Walter Rainboth

Fig. 664. *Annamia normani* (Hora, 1931), (lateral view); Laos, Sekong, Sekong River at Keng Louang, photo by Walter Rainboth 62mm SL

Fig. 665. *Annamia normani* (Hora, 1931), (dorsal view); Laos, Sekong, Sekong River at Keng Louang, photo by Walter Rainboth 62mm SL

Fig. 666. *Annamia normani* (Hora, 1931), (lateral view); Laos, Champasak, Se Namnoy, photo by Walter Rainboth 55mm SL

Fig. 667. *Annamia normani* (Hora, 1931) (dorsal view); Laos, Champasak, Se Namnoy, photo by Walter Rainboth 55mm SL

Fig. 668. *Sewellia diardi* Roberts, 1998 (lateral view), paratype; Laos, lower Se Namnoy, photo by Walter Rainboth 59mm SL

Fig. 669. *Sewellia diardi* Roberts, 1998 (dorsal view), paratype; Laos, lower Se Namnoy, photo by Walter Rainboth 59mm SL

Fig. 670. *Sewellia elongata* Roberts, 1998 (lateral view), Laos, Champasak, Se Namnoy, photo by Walter Rainboth 57mm SL

Fig. 671. *Sewellia elongata* Roberts, 1998 (dorsal view), Laos, Champasak, Se Namnoy, photo by Walter Rainboth 57mm SL

Fig. 672. *Sewellia speciosa* Roberts, 1998 (lateral view); Laos, Sekong, Sekong River at Keng Louang, photo by Walter Rainboth 42mm SL

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Fig. 673. *Sewellia speciosa* Roberts, 1998 (dorsal view); Laos, Sekong, Sekong River at Keng Louang, photo by Walter Rainboth 42mm SL

Fig. 674. *Vanmanenia serrilineata* Kottelat, 2000, ♂ (lateral view); Laos, Luang Namtha, Nam Ha near Ban Nam Ha, photo by Walter Rainboth 93mm SL

Fig. 675. *Vanmanenia serrilineata* Kottelat, 2000, ♂ (dorsal view); Laos, Luang Namtha, Nam Ha near Ban Nam Ha, photo by Walter Rainboth 93mm SL

Fig. 676. *Vanmanenia serrilineata* Kottelat, 2000, ♀ (lateral view); Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 64mm SL

Fig. 677. *Vanmanenia serrilineata* Kottelat, 2000, ♀ (dorsal view); Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 64mm SL

Fig. 678. *Vanmanenia serrilineata* Kottelat, 2000; Laos, Luang Namtha, Nam Tha, photo by Walter Rainboth 17mm SL

Fig. 679. *Acanthocobitis sp.cf. biliturio*; Laos, Attapeu, Se Pian, photo by Ian Baird

Fig. 680. *Acanthocobitis sp.cf. botia*; Cambodia, Ratanakiri, Prek Hop, photo by Walter Rainboth 43mm SL

Fig. 681. *Nemacheilus arenicolus* Kottelat, 1998, holotype; Laos, Khammouane, Nam Xot at Ban Nam Xot, photo by Walter Rainboth 53mm SL

Fig. 682. *Nemacheilus arenicolus* Kottelat, 1998, juvenile; Laos, Luang Prabang, Mekong River at Tha Dua, photo by Walter Rainboth 28mm SL

Fig. 683. *Nemacheilus sp.cf. binotatus*; Cambodia, Kompong Speu, Prek Thnot at Kompong Speu, photo by Walter Rainboth 32mm SL

Fig. 684. *Nemacheilus longistriatus* Kottelat, 1990; Laos, Luang Prabang, Nam Khan, photo by Walter Rainboth 74mm SL

Fig. 685. *Nemacheilus longistriatus* Kottelat, 1990; Laos, Sekong, Sekong at Keng Louang, photo by Walter Rainboth 61mm SL

Fig. 686. *Nemacheilus masyae* Smith, 1933; Thailand, Tapi River, photo by Chavalit Vidthayanon

Fig. 687. *Nemacheilus pallidus* Kottelat, 1990; Laos, Vientiane, Nam Tou upstream from Nam Ngum Reservoir, photo by Walter Rainboth 60mm SL

Fig. 688. *Nemacheilus pallidus* Kottelat, 1990; Cambodia, Stung Treng, Mekong near Stung Treng, photo by Walter Rainboth 42mm SL

Fig. 689. *Nemacheilus platiceps* Kottelat, 1990; Cambodia, Stung Treng, Tonlé San rapids, photo by Walter Rainboth 49mm SL

Fig. 690. *Nemacheilus sp. cf. platiceps*; Laos, Vientiane, Nam Po at confluence with Nam Sone, photo by Walter Rainboth 52mm SL

Fig. 691. *Nemacheilus sp. 1* ; Cambodia, Stung Treng, Srepok at bridge between Stung Treng and Ratanakiri, photo by Walter Rainboth 51mm SL

Fig. 692. *Physoschistura meridionalis* Zhu, 1982, ♂ ; Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 52mm SL

Fig. 693. *Physoschistura meridionalis* Zhu, 1982, ♀ ; Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 58mm SL

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Fig. 694. *Physoschistura pseudobrunneana* Kottelat, 1990, holotype; Thailand, Chiang Rai, Nam Mae Lao, photo by Walter Rainboth 28mm SL

Fig. 695. *Physoschistura sp.1*; Laos, Oudom Sai, Nam Mao, photo by Walter Rainboth 55mm SL

Fig. 696. *Physoschistura sp.2*; Laos, Oudom Sai, Nam Beng, photo by Walter Rainboth 36mm SL

Fig. 697. *Schistura amplizona* Kottelat, 2000; Laos, Luang Namtha, Nam Ma Yen, photo by Walter Rainboth 75mm SL

Fig. 698. *Schistura amplizona* Kottelat, 2000; Laos, Luang Namtha, Nam Ha near Ban Nam Ha, photo by Walter Rainboth

Fig. 699. *Schistura aramis* Kottelat, 2000, holotype; Laos, Phongsali, Houay Chik, photo by Walter Rainboth 67mm SL

Fig. 700. *Schistura athos* Kottelat, 2000; Laos, Oudom Sai, Nam Phak at Ban Pakla, photo by Walter Rainboth 62mm SL

Fig. 701. *Schistura athos* Kottelat, 2000; Laos, Phongsali, Nam Houn at confluence with Nam Ou, photo by Walter Rainboth 45mm SL

Fig. 702. *Schistura atra* Kottelat, 1998; Laos, Khammouane, upper Nam Theun, photo by Walter Rainboth 42mm SL

Fig. 703. *Schistura bairdi* Kottelat, 2000; Cambodia, Stung Treng, Mekong at Kaoh Han, photo by Walter Rainboth 31mm SL

Fig. 704. *Schistura bella* Kottelat, 1990; Laos, Bokeo, Nam Ngon, photo by Walter Rainboth 31mm SL

Fig. 705. *Schistura bolavenensis* Kottelat, 2000; Laos, Sekong, Sekatam, photo by Walter Rainboth

Fig. 706. *Schistura bolavenensis* Kottelat, 2000 (juvenile); Laos, Champasak, Se Namnoy, photo by Walter Rainboth 36mm SL

Fig. 707. Schistura bucculenta (Smith, 1945); Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth 87mm SL

Fig. 708. *Schistura bucculenta* (Smith, 1945); Laos, Oudom Sai, Houay Seua, photo by Walter Rainboth 61mm SL

Fig. 709. *Schistura cataracta* Kottelat, 1998; paratype, Laos, Khammouane, Nam Theun waterfall, photo by Walter Rainboth 50mm SL

Fig. 710. *Schistura clatrata* Kottelat, 2000; Laos, Attapeu, Se Namnoy, photo by Walter Rainboth 53mm SL

Fig. 711. *Schistura coruscans* Kottelat, 2000, holotype; Laos; Saisomboun Special Zone, Houay Sala Yai, photo by Walter Rainboth 57mm SL

Fig. 712. *Schistura crabro* Kottelat, 2000, holotype; Laos, Bolikhamsai, Nam Nyiap, photo by Walter Rainboth 30mm SL

Fig. 713. *Schistura defectiva* Kottelat, 2000; Laos, Xieng Khuang, Nam Ngum, photo by Walter Rainboth 42mm SL

Fig. 714. *Schistura dorsizona* Kottelat, 1998; Laos, Vientiane, Nam Tou, photo by Walter Rainboth 40mm SL

Fig. 715. *Schistura dorsizona* Kottelat, 1998; Laos, Bolikhamsai, Nam Phao, photo by Walter Rainboth 42mm SL

Fig. 716. *Schistura ephelis* Kottelat, 2000; Laos, Vientiane, Nam Tou, photo by Walter Rainboth 60mm SL

Fig. 717. *Schistura finis* Kottelat, 2000; Laos, Vientiane, Nam Ngao upstream from Nam Ngum Reservoir, photo by Walter Rainboth 43mm SL

Fig. 718. *Schistura finis* Kottelat, 2000; Laos, Vientiane, Nam Ngao upstream from Nam Ngum Reservoir, photo by Walter Rainboth 32mm SL

Fig. 719. *Schistura fusinotata* Kottelat, 2000; Cambodia, Stung Treng, Se San rapids, photo by Walter Rainboth 34mm SL

Fig. 720. *Schistura globiceps* Kottelat, 2000, holotype; Laos, Luang Namtha, Nam Tha basin, Nam Talan, photo by Walter Rainboth 41mm SL

Fig. 721. *Schistura imitator* Kottelat, 2000; Laos, Sekong, Sekong at Keng Ngang, photo by Walter Rainboth 45mm SL

Fig. 722. *Schistura imitator* Kottelat, 2000; Cambodia, Stung Treng, Se San rapids, photo by Walter Rainboth 23mm SL

Fig. 723. *Schistura irregularis* Kottelat, 2000, holotype; Laos, Xieng Kheung, Nam Khan at Muang Hiam, photo by Walter Rainboth 55mm SL

Fig. 724. *Schistura irregularis* Kottelat, 2000; Laos, Luang Prabang, Nam Khan, photo by Walter Rainboth 29mm SL

Fig. 725. *Schistura isostigma* Kottelat, 1998; Laos, Luang Prabang, Nam Phouan, photo by Walter Rainboth 24mm SL

Fig. 726. *Schistura sp.cf. isostigma*; Laos, Vientiane, Nam Po at confluence with Nam Sone, photo by Walter Rainboth 33mm SL

Fig. 727. *Schistura kaysonei* Vidthayanon & Jaruthanin, 2002; Laos, Khammouane, Phu Tham Nam cave system, photo by Kamphol Udomritthiruj

Fig. 728. *Schistura kengtungensis* (Fowler, 1936); Laos, Luang Namtha, Nam Ma Yen, photo by Walter Rainboth 70mm SL

Fig. 729. *Schistura kengtungensis* (Fowler, 1936); Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 51mm SL

Fig. 730. *Schistura kengtungensis* (Fowler, 1936); Thailand, Chiang Rai, Fang River, photo by Chavalit Vidthayanon

Fig. 731. *Schistura khamtanhi* Kottelat, 2000; Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 47mm SL

Fig. 732. *Schistura kloetzliae* Kottelat, 2000; Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 44mm SL

Fig. 733. *Schistura kohchangensis* (Smith, 1933); Thailand, Chantaburi, Chavalit Vidthayanon

Fig. 734. *Schistura kongphengi* Kottelat, 1998, holotype; Laos, Khammouane, upper Nam Theun, photo by Walter Rainboth 61mm SL

Fig. 735. *Schistura laterimaculata* Kottelat, 1990, holotype; Thailand, Chaiyaphum, Kuan Giewlom, photo by Walter Rainboth 51mm SL

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Fig. 736. *Schistura latidens* Kottelat, 2000, holotype; Laos, Savannakhet, Xe Bang Hiang basin, Xe Pon near Ban Fuang, photo by Walter Rainboth 57mm SL

Fig. 737. *Schistura latifasciata* (Zhu & Wang, 1985); Laos, Luang Prabang, Nam Phouan, photo by Walter Rainboth 91mm SL

Fig. 738. *Schistura leukensis* Kottelat, 2000, paratype; Laos, Vientiane, Nam Leuk at dam site, photo by Walter Rainboth 55mm SL

Fig. 739. *Schistura sp.cf. longa*; Laos, Luang Namtha, Nam Ma Yen, photo by Walter Rainboth 38mm SL

Fig. 740. *Schistura macrocephalus* Kottelat, 2000, holotype; Laos, Luang Namtha, Nam Youan near Ban Muang Mon, photo by Walter Rainboth 62mm SL

Fig. 741. *Schistura macrocephalus* Kottelat, 2000; Laos, Luang Namtha, Nam Youan N. of Ban Muangsing, photo by Walter Rainboth

Fig. 742.*Schistura magnifluvis* Kottelat, 1990; Laos, Luang Prabang, Houay Vang at confluence with Nam Ou, photo by Walter Rainboth 44mm SL

Fig. 743. *Schistura magnifluvis* Kottelat, 1990; Laos, Vientiane, Nam Lik, photo by Walter Rainboth 38mm SL

Fig. 744. *Schistura melarancia* Kottelat, 2000; Laos, Phongsali, Nam Houn near mouth into Nam Ou, photo by Walter Rainboth 56mm SL

Fig. 745. *Schistura sp.cf. melarancia*; Laos, Oudom Sai, Nam Phak at big leopard rapids, photo by Walter Rainboth 74mm SL

Fig. 746. *Schistura namboensis* Fryhof & Serov, 2001; Cambodia, Ratanakiri, Prek Chhnang, photo by Walter Rainboth 55mm SL

Fig. 747. *Schistura namboensis* Fryhof & Serov, 2001; Cambodia, Ratanakiri, O Kating, tributary to Srepok, photo by Walter Rainboth 41mm SL

Fig. 748. *Schistura sp.cf. namboensis*; Cambodia, Stung Treng, Mekong, photo by Walter Rainboth 32mm SL

Fig. 749. *Schistura nicholsi* (Smith, 1933); Thailand, Loei, Hoeung River, photo by Chavalit Vidthayanon

Fig. 750. *Schistura nicholsi* (Smith, 1933); Laos, Vientiane, Nam Lik, photo by Walter Rainboth 40mm SL

Fig. 751. *Schistura nomi* Kottelat, 2000; Laos, Sekong, Sekong at Keng Louang, photo by Walter Rainboth 42mm SL

Fig. 752. *Schistura nomi* Kottelat, 2000; Laos, Sekong, Sekong at Keng Louang, photo by Walter Rainboth 47mm SL

Fig. 753. *Schistura novemradiata* Kottelat, 2000, paratype; Laos, Luang Namtha, Nam Luang near Ban Nam Luang, photo by Walter Rainboth 49mm SL

Fig. 754. *Schistura nudidorsum* Kottelat, 1998, paratype; Laos, Khammouane, Nam Theun basin, Nam Xot at Ban Xot, photo by Walter Rainboth 47mm SL

Fig. 755. *Schistura nudidorsum* Kottelat, 1998; Laos, Khammouane, Nam Phao, photo by Walter Rainboth 57mm SL

Fig. 756. *Schistura obeini* Kottelat, 1998; Laos, Bolikhamsai, Nam Phao, photo by Walter Rainboth 78mm SL

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Fig. 757. *Schistura personata* Kottelat, 2000, paratype; Laos Vientiane, Houay Sala Yai, trib to Nam San, photo by Walter Rainboth 48mm SL


Fig. 758. *Schistura personata* Kottelat, 2000; Laos, Vientiane, Nam Ke upstream from Ngum Reservoir, photo by Walter Rainboth


Fig. 759. *Schistura personata* Kottelat, 2000; Laos, Vientiane, Nam Ngao, photo by Walter Rainboth


Fig. 760. *Schistura pertica* Kottelat, 2000, paratype; Laos Phongsali, Nam Ou at confluence with Houay Nom, photo by Walter Rainboth 51mm SL


Fig. 761. *Schistura poculi* (Smith, 1945); Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 42mm SL


Fig. 762. *Schistura sp.cf. poculi*; Laos, Bokeo, Nam Ngam, photo by Walter Rainboth 24mm SL


Fig. 763. *Schistura porthos* Kottelat, 2000; Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 67mm SL


Fig. 764. *Schistura procera* Kottelat, 2000; Laos, Oudom Sai, Nam Mao, photo by Walter Rainboth 58mm SL


Fig. 765. *Schistura procera* Kottelat, 2000; Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth


Fig. 766. *Schistura punctifasciata* Kottelat, 1998, holotype; Laos, Khammouane, Nam Kathong at Ban Keovilay, photo by Walter Rainboth 33mm SL


Fig. 767. *Schistura quaesita* Kottelat, 2000; Laos, Xieng Khuang, Nam Ngum, photo by Walter Rainboth 62mm SL


Fig. 768. *Schistura quasimodo* Kottelat, 2000, paratype; Laos, Vientiane, Houay Sala Yai, trib to Nam San, photo by Walter Rainboth 44mm SL


Fig. 769. *Schistura sp.cf. quasimodo*; Laos, Luang Prabang, Nam Khan at Keng Noun rapids, photo by Walter Rainboth 47mm SL


Fig. 770. *Schistura rikiki* Kottelat, 2000, holotype; Laos, Attapeu, Sekong near Attapeu, photo by Walter Rainboth 24mm SL


Fig. 771. *Schistura russa* Kottelat, 2000, holotype; Laos, Luang Namtha, Nam Tha at Ban Finho, photo by Walter Rainboth 50mm SL


Fig. 772. *Schistura schultzi* (Smith, 1945); Thailand, Chiang Rai, photo by Chavalit Vidthayanon


Fig. 773. *Schistura schultzi* (Smith, 1945); Laos, Xieng Khuang, Nam Sen at Tat Lang waterfall, photo by Walter Rainboth


Fig. 774. *Schistura sp.cf. schultzi*; Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth


Fig. 775. *Schistura sp.cf. schultzi* (juvenile); Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 28mm SL


Fig. 776. *Schistura sertata* Kottelat, 2000; Laos, Bokeo, Nam Thong, photo by Walter Rainboth 70mm SL


Fig. 777. *Schistura sigillata* Kottelat, 2000, holotype, Laos, Vientiane, Houay Sala Yai, trib to Nam San, photo by Walter Rainboth 41mm SL

Fig. 778. *Schistura sombooni* Kottelat, 1998, paratype; Laos, Khammouane, Nam Phao, near Ban Lak Song, photo by Walter Rainboth 56mm SL

Fig. 779. *Schistura suber* Kottelat, 2000, holotype; Laos, Vientiane, small forest stream near Ban Pak Leuk, photo by Walter Rainboth 30mm SL

Fig. 780. *Schistura tenura* Kottelat, 2000, paratype; Laos Vientiane, Nam Leuk, 1km down from dam site, photo by Walter Rainboth 38mm SL

Fig. 781. *Schistura tizardi* Kottelat, 2000, holotype, Laos, Attapeu, Sekamen at Muang Saisettha, photo by Walter Rainboth 46mm SL

Fig. 782. *Schistura tubulinaris* Kottelat, 1998, paratype; Laos, Khammouane, Nam Xot, photo by Walter Rainboth 40mm SL

Fig. 783. *Schistura xhatensis* Kottelat, 2000; Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 47mm SL

Fig. 784. *Schistura yersini* Fryhof & Serov, 2001; Cambodia, Mondulkiri, O Por at Busara waterfalls, photo by Walter Rainboth 57mm SL

Fig. 785. *Schistura yersini* Fryhof & Serov, 2001; Vietnam, Dak Lak, Krong No River, Srepok basin, photo by Chavalit Vidthayanon 50mm SL

Fig. 786. *Schistura* n.sp.1; Cambodia, Stung Treng, Mekong at Kaoh Han, photo by Walter Rainboth 47mm SL

Fig. 787. *Schistura* n.sp.2; Laos, Vientiane, Nam Tou, photo by Walter Rainboth 53mm SL

Fig. 788. *Schistura* n.sp.3; Cambodia, Stung Treng, Mekong at Kaoh Han, photo by Walter Rainboth 51mm SL

Fig. 789. *Schistura* n.sp.3 ; Laos, Savannakhet, Mekong at Keng Kabao, photo by Walter Rainboth

Fig. 790. *Schistura* n.sp.4; Cambodia, Ratanakiri, Prek Hop, tributary to Srepok, photo by Walter Rainboth

Fig. 791. *Schistura* n.sp.5; Laos, Savannakhet, Mekong at Keng Kahoung, photo by Walter Rainboth

Fig. 792. *Schistura* n.sp.6; Laos, Luang Prabang, Nam Soeung at Ban Pak Soeung, photo by Walter Rainboth 46mm SL

Fig. 793. *Schistura* n.sp.7; Cambodia, Stung Treng, Tonlé San near Stung Treng, photo by Walter Rainboth 30mm SL

Fig. 794. *Schistura* n.sp.8; Cambodia, Stung Treng, Tonlé San rapids, photo by Walter Rainboth 42mm SL

Fig. 795. *Schistura* n.sp.9; Laos, Phongsali, Nam Long, photo by Walter Rainboth

Fig. 796. *Schistura* n.sp.10; Laos, Oudom Sai, Nam Beng, photo by Walter Rainboth 62mm SL

Fig. 797. *Schistura* n.sp.11; Laos, Sekong, Sekong at Keng Louang, photo by Walter Rainboth 42mm SL

Fig. 798. *Schistura* n.sp.12; Cambodia, Pursat, Stung Pursat at Anlong Reap, photo by Walter Rainboth 32mm SL

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Fig. 799. *Schistura* n.sp.13; Cambodia, Pursat, Stung Pursat at Anlong Reap, photo by Walter Rainboth 33mm SL

Fig. 800. *Schistura* n.sp.14; Laos, Luang Prabang, Nam Khan at Keng Khoung, photo by Walter Rainboth 68mm SL

Fig. 801. *Schistura* n.sp.15; Laos, Attapeu, Se Namnoy, photo by Walter Rainboth 37mm SL

Fig. 802. *Schistura* n.sp.16; Laos, Luang Prabang, Houay Vang at confluence with Nam Ou, photo by Walter Rainboth 22mm SL

Fig. 803. Schistura n.sp.17; Cambodia, Pursat, Stung Ket, photo by Walter Rainboth 44mm SL

Fig. 804. *Schistura* n.sp.18;; Cambodia, Stung Treng, Tonlé San rapids at Kaoh Dan Man, photo by Walter Rainboth 20mm SL

Fig. 805. *Tuberoschistura baenzigeri* Kottelat, 1990; Cambodia, Kompong Speu, Prek Thnot at Kan Thout, photo by Walter Rainboth 28mm SL

Fig. 806. *Tuberoschistura cambodgiensis* Kottelat, 1990; Cambodia, Kandal, Stung Kandal, photo by Walter Rainboth

Fig. 807. *Vaillantella maassi* Weber & de Beaufort, 1912; Aquarium specimen probably from Sumatra, photo by Walter Rainboth 68mm SL

Fig. 808. *Piaractus sp.*; Thailand, aquarium trade introduction, photo by Chavalit Vidthayanon

Fig. 809. *Amblyceps mucronatum* Ng & Kottelat, 2000; Thailand, Chantaburi, photo by Chavalit Vidthayanon

Fig. 810. *Amblyceps serratum* Ng & Kottelat, 2000, holotype; Cambodia, Stung Treng, Mekong at Kaoh Han, photo by Walter Rainboth 36mm SL

Fig. 811. *Amblyceps serratum* Ng & Kottelat, 2000; Laos, Attapeu, Sekamen at Ban Mai ford, photo by Walter Rainboth 36mm SL

Fig. 812. *Akysis clinatus* Ng & Rainboth, 2005, paratype; Cambodia, Kampong Seila, Stung Chhay, photo by Walter Rainboth 33mm SL

Fig. 813. *Akysis ephippifer* Ng & Kottelat, 1998; Cambodia, Ratanakiri, O Kating, photo by Walter Rainboth 33mm SL

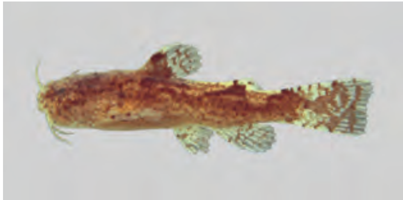

Fig. 814. *Akysis ephippifer* Ng & Kottelat, 1998; Cambodia, Kandal, Stung Kandal, photo by Walter Rainboth 12mm SL

Fig. 815. *Akysis filifer* Ng & Rainboth, 2005, holotype; Cambodia, Odong Mean Chey, Tonlé Sap, 22 km upstream from Phnom Penh, photo by Walter Rainboth 50mm SL

Fig. 816. *Akysis fuliginatus* Ng & Rainboth, 2005, holotype; Cambodia, Stung Treng, Mekong at Kaoh Han, photo by Walter Rainboth 22mm SL

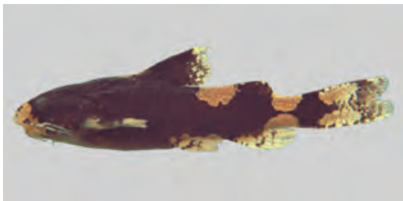

Fig. 817. *Akysis inermis* Ng & Kottelat, 2000; Laos, Luang Prabang, Nam Khan at Keng Khoung, photo by Walter Rainboth 27mm SL

Fig. 818. *Akysis inermis* Ng & Kottelat, 2000; Laos, Luang Prabang, Nam Khan near Ban Keng Khoung by Walter Rainboth 34mm SL

Fig. 819. *Akysis maculipinnis* Fowler, 1934; Thailand, Trat, Khlong Houay Reng, photo by Walter Rainboth 19mm SL

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Fig. 820. *Akysis maculipinnis* Fowler, 1934; Thailand, Chantaburi, photo by Chavalit Vidthayanon
30mm SL

Fig. 821. *Akysis nitidus* Ng & Rainboth, 2005, holotype; Laos, Champasak, Mekong at Ban Hang Khone, photo by Walter Rainboth
41mm SL

Fig. 822. *Akysis similis* Ng & Kottelat, 1998, Vietnam, Soc Trang, Bassac River near Ke Sach, photo by Walter Rainboth
43mm SL

Fig. 823. *Akysis similis* Ng & Kottelat, 1998; Vietnam, Vinh Long, Song Co Chien, photo by Walter Rainboth
30mm SL

Fig. 824. *Akysis subtilis* Ng & Kottelat, 1998, paratype; Thailand, Nakhon Phanom, Mekong River, photo by Walter Rainboth
33mm SL

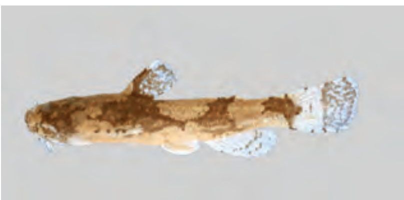

Fig. 825. *Akysis varius* Ng & Kottelat, 1998; Laos, Savannakhet, Se Bangfai at Ban Hatkhamhiang, photo by Walter Rainboth
12mm SL

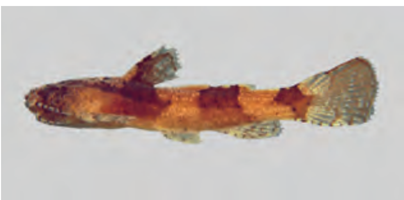

Fig. 826. *Akysis varius* Ng & Kottelat, 1998; Cambodia, Siem Reap, Siem Reap River, photo by Walter Rainboth
10mm SL

Fig. 827. *Bagarius bagarius* (Hamilton, 1822); Cambodia, Stung Treng, Srepok River, photo by Walter Rainboth
75mm SL

Fig. 828. *Bagarius suchus* Roberts, 1983; Thailand, Nakhon Sawan, photo by Chavalit Vidthayanon

Fig. 829. *Bagarius yarrelli* Sykes, 1839; Cambodia, Stung Treng, Tonlé San rapids, photo by Walter Rainboth
87mm SL

Fig. 830. *Glyptothorax coracinus* Ng & Rainboth, 2008; Cambodia, Pursat, Stung Ket, photo by Walter Rainboth
72mm SL

Fig. 831. *Glyptothorax dequinensis* Mo & Chu, 1986; Laos, Oudom Sai, Nam Phak at big leopard rapids, photo by Walter Rainboth
77mm SL

Fig. 832. *Glyptothorax fuscus* Fowler, 1934; Indonesia, Kalimantan Barat, Sanggau, photo by Walter Rainboth
56mm SL

Fig. 833. *Glyptothorax horai* (Fowler, 1934); Laos, Luang Prabang, Nam Soeung near Ban Pak Keng, photo by Walter Rainboth
112mm SL

Fig. 834. *Glyptothorax horai* (Fowler, 1934); Laos, Oudom Sai, Nam Phak at Ban Pakla, photo by Walter Rainboth
60mm SL

Fig. 835. *Glyptothorax horai* (Fowler, 1934); Laos, Vientiane, Nam Po at confluence with Nam Sone, photo by Walter Rainboth
31mm SL

Fig. 836. *Glyptothorax lampris* Fowler, 1934; Laos, Luang Prabang, Nam Khan at Keng Noun, photo by Walter Rainboth
47mm SL

Fig. 837. *Glyptothorax sp.cf. lampris* A; Cambodia, Kompong Speu, Prek Thnot, photo by Walter Rainboth
49mm SL

Fig. 838. *Glyptothorax sp.cf. lampris* A; Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth
57mm SL

Fig. 839. *Glyptothorax sp.cf. lampris* B; Thailand, Ubon Ratchathani, Mun River, photo by Chavalit Vidthayanon

Fig. 840. *Glyptothorax sp.cf. lampris* C; Laos, Luang Prabang, Nam Khan at Keng Noun, photo by Walter Rainboth
50mm SL

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Fig. 841. *Glyptothorax sp.cf. lampris* C; Luang Prabang, Nam Phouan, photo by Walter Rainboth
45mm SL

Fig. 842. *Glyptothorax laosensis* Fowler, 1934; Laos, Luang Prabang, Nam Phouan, photo by Walter Rainboth
48mm SL

Fig. 843. *Glyptothorax sp.cf. laosensis* A; Laos, Champasak, Se Namnoy, photo by Walter Rainboth
60mm SL

Fig. 844. *Glyptothorax sp.cf. laosensis* B; Laos, Luang Prabang, Houay Vang in mouth at Nam Ou, photo by Walter Rainboth
80mm SL

Fig. 845. *Glyptothorax sp.cf. zanaensis*; Laos, Luang Prabang, Nam Khan at Keng Noun, photo by Walter Rainboth
52mm SL

Fig. 846. *Oreoglanis delacouri* (Pellegrin, 1936), lateral view; Laos, Xieng Khuang, Nam Nyiap, photo by Walter Rainboth
106mm SL

Fig. 847. *Oreoglanis delacouri* (Pellegrin, 1936), dorsal view; Laos, Xieng Khuang, Nam Nyiap, photo by Walter Rainboth
106mm SL

Fig. 848. *Oreoglanis delacouri* (Pellegrin, 1936), ventral view; Laos, Xieng Khuang, Nam Nyiap, photo by Walter Rainboth
106mm SL

Fig. 849. *Oreoglanis hypsiurus* Ng & Kottelat, 1999, lateral view; Laos, Khammouane, upper Nam Theun, photo by Walter Rainboth
101mm SL

Fig. 850. *Oreoglanis hypsiurus* Ng & Kottelat, 1999, dorsal view; Laos, Khammouane, upper Nam Theun, photo by Walter Rainboth
101mm SL

Fig. 851. *Oreoglanis lepturus* Ng & Rainboth, 2001, lateral view; Laos, Bolikhamsai, Nam Phao, photo by Walter Rainboth
85mm SL

Fig. 852. *Oreoglanis hypsiurus* Ng & Kottelat, 1999, ventral view; Laos, Khammouane, upper Nam Theun, photo by Walter Rainboth
101mm SL

Fig. 853. *Oreoglanis lepturus* Ng & Rainboth, 2001, dorsal view; Laos, Bolikhamsai, Nam Phao, photo by Walter Rainboth
85mm SL

Fig. 854. *Oreoglanis lepturus* Ng & Rainboth, 2001, ventral view; Laos, Bolikhamsai, Nam Phao, photo by Walter Rainboth
85mm SL

Fig. 855. *Oreoglanis macronemus* Ng, 2004, lateral view; Laos, Xieng Khoung, photo by Walter Rainboth
59mm SL

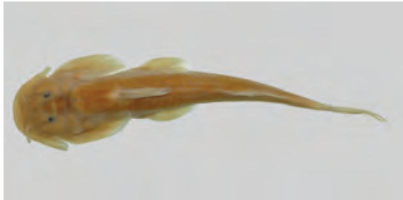

Fig. 856. *Oreoglanis macronemus* Ng, 2004, dorsal view; Laos, Xieng Khoung, photo by Walter Rainboth
59mm SL

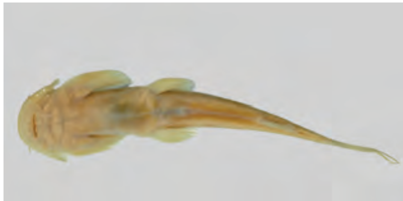

Fig. 857. *Oreoglanis macronemus* Ng, 2004, ventral view; Laos, Xieng Khoung, photo by Walter Rainboth
59mm SL

Fig. 858. *Oreoglanis setiger* Ng & Rainboth, lateral view; Laos, Luang Namtha, Nam Ma Oun, photo by Walter Rainboth
69mm SL

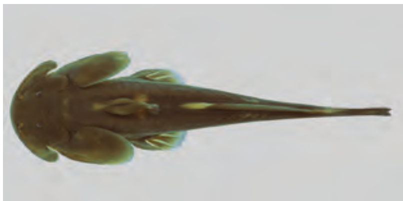

Fig. 859. *Oreoglanis setiger* Ng & Rainboth, dorsal view; Laos, Luang Namtha, Nam Ma Oun, photo by Walter Rainboth
69mm SL

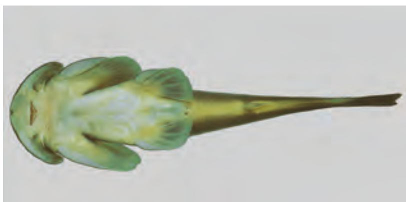

Fig. 860. *Oreoglanis setiger* Ng & Rainboth, ventral view; Laos, Luang Namtha, Nam Ma Oun, photo by Walter Rainboth
69mm SL

Fig. 861. *Oreoglanis suraswadi* Vidthayanon, Saenjundaeng & Ng, 2009; Thailand, Chiang Rai, Doi Tung, photo by Chavalit Vidthayanon

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Fig. 862. *Pseudecheneis sulcatoides* Zhou & Chu, 1992, lateral view; China, Yunnan, Yangbi River, Mekong drainage, photo by Walter Rainboth 86mm SL

Fig. 863. *Pseudecheneis sulcatoides* Zhou & Chu, 1992, ventral view; China, Yunnan, Yangbi River, Mekong drainage, photo by Walter Rainboth 86mm SL

Fig. 864. *Pseudecheneis sympelvicus* Roberts, 1998, lateral view; Laos, Xieng Khoung, Nam Ngum, photo by Walter Rainboth 73mm SL

Fig. 865. *Pseudecheneis sympelvicus* Roberts, 1998, ventral view; Laos, Xieng Khoung, Nam Ngum, photo by Walter Rainboth 73mm SL

Fig. 866. *Pterygoplichthys pardalis* (Castlenau, 1855); Thailand, Bangkok, photo by Chavalit Vidthayanon

Fig. 867. *Belodontichthys truncatus* Kottelat & Ng, 1999; Cambodia, Stung Treng market, photo by Walter Rainboth 243mm SL

Fig. 868. *Ceratoglanis pachynema* Ng, 1999; Thailand, Bangpakong, photo by Chavalit Vidthayanon

Fig. 869. *Hemisilurus mekongensis* Bornbusch & Lundberg, 1989; Cambodia, Stung Treng market, photo by Walter Rainboth 285mm SL

Fig. 870. *Kryptopterus bicirrhis* (Valenciennes, 1840); Thailand, Narithiwat, Kolok River, photo by Chavalit Vidthayanon

Fig. 871. *Kryptopterus bicirrhis* (Valenciennes, 1839); Thailand, Narithiwat, Kolok River, photo by Walter Rainboth 50mm SL

Fig. 872. *Kryptopterus geminus* (Ng, 2003); Cambodia, Kompong Chhnang, photo by Walter Rainboth 87mm SL

Fig. 873. *Kryptopterus minor* Roberts, 1989; Vietnam, Ho Chi Minh City, probably through aquarium trade, photo by Walter Rainboth 52mm SL

Fig. 874. *Kryptopterus paraschilbeides* Ng, 2003; Cambodia, floodplain lake near Phnom Penh, photo by Walter Rainboth 59mm SL

Fig. 875. *Micronema cheveyi* (Durand), 1940; Cambodia, Stung Treng market, photo by Walter Rainboth 187mm SL

Fig. 876. *Micronema moorei* (Smith, 1945); Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 76mm SL

Fig. 877. *Ompok bimaculatus* (Bloch, 1794); Cambodia, Stung Treng, Kaoh Han Island in Mekong, photo by Walter Rainboth 197mm SL

Fig. 878. *Ompok bimaculatus* (Bloch, 1794); Cambodia, Siem Reap River near Great Lake, photo by Walter Rainboth 138mm SL

Fig. 879. *Ompok pinnatus* Ng, 2003; Cambodia, Kratie, Mekong River, photo by Chavalit Vidthayanon 75mm SL

Fig. 880. *Ompok urbaini* (Fang &Chaux, 1949); Cambodia, Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 122mm SL

Fig. 881. *Phalacronotus apogon* (Bleeker, 1851); Laos, Vientiane, market specimen, photo by Walter Rainboth 280mm SL

Fig. 882. *Phalacronotus bleekeri* (Günther, 1864); Thailand, Ayutthaya, photo by Chavalit Vidthayanon

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Fig. 883. *Phalacronotus micronemus* (Bleeker, 1846); Laos, Vientiane, market specimen, photo by Walter Rainboth
300mm. SL

Fig. 884. *Phalacronotus micronemus* (Bleeker, 1846); Cambodia, Stung Treng, market specimen, photo by Walter Rainboth
187mm SL

Fig. 885. *Pterocryptis bokorensis* (Pellegrin & Chevey, 1937); Thailand, Aranyapathet, Srakaew, photo by Richard Mayden
100mm SL

Fig. 886. *Pterocryptis inusitata* Ng, 1999; Laos, Khammouane, Nam Ngoung at Ban Sensi, photo by Walter Rainboth
97mm SL

Fig. 887. *Pterocryptis torrentis* (Kobayakawa, 1989); Thailand, Krabi, photo by Chavalit Vidthayanon

Fig. 888. *Silurichthys schneideri* Volz, 1904; Cambodia, Koh Kong, Tatai River, photo by Walter Rainboth
63mm SL

Fig. 889. *Wallago attu* (Schneider, 1801); Cambodia, Stung Treng, market specimen, photo by Walter Rainboth
350mm SL

Fig. 890. *Wallago micropogon* Ng, 2004, holotype; Cambodia, Stung Treng, market specimen, photo by Walter Rainboth
235mm SL

Fig. 891. *Paraplotosus albilabris* (Valenciennes, 1840); Singapore, Changi Point, photo by Walter Rainboth
81mm SL

Fig. 892. *Plotosus canius* Hamilton, 1822; Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 893. *Plotosus canius* Hamilton, 1822; Vietnam, Soc Trang, Bassac River, photo by Walter Rainboth
125mm SL

Fig. 894. *Plotosus lineatus* (Thunberg, 1787); Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 895. *Clarias batrachus* (Linnaeus, 1758); Cambodia, Koh Kong, Tatai River, photo by Walter Rainboth
132mm SL

Fig. 896. *Clarias fuscus* (La Cepède, 1803); Laos, Champasak, Se Namnoy, photo by Walter Rainboth
79mm SL

Fig. 897. *Clarias fuscus* (La Cepède, 1803); Laos, Oudom Sai, Nam Beng, photo by Walter Rainboth
78mm SL

Fig. 898. *Clarias macrocephalus* Günther, 1864; Vietnam, Can Tho, Bassac River, photo by Walter Rainboth
200mm SL

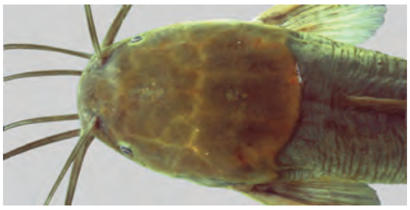

Fig. 899. *Clarias macrocephalus* Günther, 1864; Vietnam, Can Tho, Bassac River, photo by Walter Rainboth
200mm SL

Fig. 900. *Clarias macrocephalus* Günther, 1864 juvenile; Thailand; Bangkok, photo by Chavalit Vidthayanon

Fig. 901. *Clarias meladerma* Bleeker, 1846; Thailand, Narathivat peat swamp, photo by Chavalit Vidthayanon

Fig. 902. *Clarias nieuhofii* Valenciennes, 1840; Thailand, Pailin, photo by Chavalit Vidthayanon

Fig. 903. *Heteropneustes kemratensis* (Fowler, 1937); Thailand, Tapi River, photo by Chavalit Vidthayanon

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Fig. 904. *Arius arius* (Hamilton, 1822); Vietnam, Tra Vinh, Song Co Chien near My Long, photo by Walter Rainboth 135mm SL


Fig. 905. *Arius maculatus* (Thunberg, 1792); Thailand, Bangpakong, photo by Chavalit Vidthayanon


Fig. 906. *Arius microcephalus* Bleeker, 1855; Thailand, Tapi River, photo by Chavalit Vidthayanon


Fig. 907. *Batrachocephalus mino* (Hamilton, 1822); Thailand, Bangpakong, photo by Kampol Udomrittiruj


Fig. 908. *Cephalocassis borneensis* (Bleeker, 1851); Cambodia, Stung Treng, market specimen, photo by Walter Rainboth 140mm SL


Fig. 909. *Cephalocassis intermedius* (Vinciguerra, 1880); Thailand, Bangpakong, photo by Chavalit Vidthayanon


Fig. 910. *Cryptarius daugeti* (Chevey, 1932); Cambodia, Kompong Thom, Tonlé Sap near Chhnok Trou, photo by Walter Rainboth 113mm SL


Fig. 911. *Cryptarius truncatus* (Valenciennes, 1840); Thailand, Bangpakong, photo by Chavalit Vidthayanon


Fig. 912. *Hemiarius harmandi* Sauvage, 1880; Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon


Fig. 913. *Hemiarius sona* (Hamilton, 1822); Thailand, Bangpakong, photo by Chavalit Vidthayanon


Fig. 914. *Hemiarius verrucosus* (Ng, 2003); Cambodia, Stung Treng, market specimen, photo by Walter Rainboth 248mm SL


Fig. 915. *Ketengus typus* Bleeker, 1847; Thailand, Bangpakong, photo by Chavalit Vidthayanon


Fig. 916. *Nemapteryx nenga* (Hamilton, 1822); Sarawak, Kuching, photo by Chavalit Vidthayanon


Fig. 917. *Netuma bilineata* (Valenciennes, 1840); Sarawak, photo by Chavalit Vidthayanon


Fig. 918. *Netuma thalassina* (Rüppell, 1837); locality unknown, photo by John Randall


Fig. 919. *Osteogeneiosus militaris* Linnaeus, 1758; Vietnam, Soc Trang, Bassac River, photo by Walter Rainboth 125mm SL


Fig. 920. *Plicofollis nella* (Valenciennes, 1840); Cambodia, Sihanoukville fish market, photo by Walter Rainboth 135mm SL


Fig. 921. *Plicofollis tonggol* (Bleeker, 1846); Indonesia, Lesser Sunda Islands, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp


Fig. 922. *Clupisoma sinense* (Huang, 1981); Thailand, Mekong at That Phanom, photo by Chavalit Vidthayanon


Fig. 923. *Laides longibarbis* (Fowler, 1934); Thailand, Chainat, photo by Chavalit Vidthayanon


Fig. 924. *Helicophagus leptorhynchus* Ng & Kottelat, 2000; Cambodia, Stung Treng, market specimen, photo by Walter Rainboth 239mm SL

Fig. 925. *Pangasianodon gigas* Chevey, 1930; Thailand, Mekong at Chiangkong, photo by Chavalit Vidthayanon

Fig. 926. *Pangasianodon hypophthalmus* (Sauvage, 1878); Cambodia, Siem Reap, Great Lake, photo by Walter Rainboth 220mm SL

Fig. 927. *Pangasianodon hypophthalmus* (Sauvage, 1878); Thailand, photo by Chavalit Vidthayanon

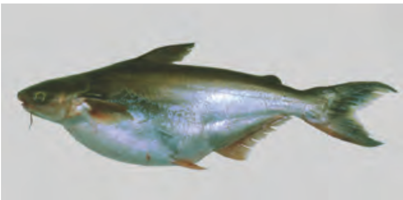

Fig. 928. *Pangasius bocourti* Sauvage, 1880; Cambodia, Phnom Penh market, photo by Walter Rainboth 320mm SL

Fig. 929. *Pangasius conchophilus* Roberts & Vidthayanon, 1991; Cambodia, Stung Treng market, photo by Walter Rainboth 225mm SL

Fig. 930. *Pangasius elongatus* Pouyaud, Gustiano & Teugels, 2002; Cambodia, Stung Treng, market specimen, photo by Walter Rainboth 250mm SL

Fig. 931. *Pangasius elongatus* Pouyaud, Gustiano & Teugels, 2002; Vietnam, An Giang, Song Hau Giang near Long Xuyen, photo by Walter Rainboth 116mm SL

Fig. 932. *Pangasius krempfi* Fang & Chaux, 1949; Thailand, Nong Khai, photo by Chavalit Vidthayanon

Fig. 933. *Pangasius larnaudii* Bocourt, 1866; Cambodia, Tonlé Sap at Kompong Chhnang, photo by Walter Rainboth 250mm SL

Fig. 934. *Pangasius macronema* Bleeker, 1851, ♂ ; Thailand, Ayutthaya, photo by Chavalit Vidthayanon

Fig. 935. *Pangasius macronema* Bleeker, 1851, ♀ ; Cambodia, Phnom Penh market, photo by Walter Rainboth 125mm SL

Fig. 936. *Pangasius mekongensis* Gustiano, Teugels & Pouyaud, 2003; Laos, Bolikhamsai, Mekong at Paksane, photo by Terry Warren

Fig. 937. *Pangasius sanitwongsei* Smith, 1931 (adult); Laos, Champasak, Pakse, photo by Ian Baird

Fig. 938. *Pangasius sanitwongsei* Smith, 1931 (juvenile); aquarium specimen, photo by Walter Rainboth 78mm SL

Fig. 939. *Pangasius micronemus* Bleeker, 1847; Thailand, Nong Khai, Buengkhan, photo by S. Roongthong Baisuree

Fig. 940. *Pangasius pleurotaenia* Sauvage, 1878; Cambodia, Mekong at Stung Treng, photo by Walter Rainboth 157mm SL

Fig. 941. *Bagrichthys majusculus* Ng, 2002; Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 90mm SL

Fig. 942. *Bagrichthys obscurus* Ng, 1999; Thailand, Ubon Ratchathani, Mun River at Pak Mun, photo by Chavalit Vidthayanon

Fig. 943. *Hemibagrus filamentus* (Fang & Chaux, 1949); Cambodia, Siem Reap, Great Lake, photo by Walter Rainboth 155mm SL

Fig. 944. *Hemibagrus nemurus* (Valenciennes, 1839); Malaysia, Pahang, photo by David Catania 185mm SL

Fig. 945. *Hemibagrus sp.cf. nemurus*; Laos, Vientiane, Nam Te at junction with Nam Ngum, photo by Walter Rainboth 102mm SL

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Fig. 946. *Hemibagrus spilopterus* Ng & Rainboth, 1999; Cambodia; Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 134mm SL

Fig. 947. *Hemibagrus wyckii* (Bleeker, 1858); Cambodia, Stung Treng market, photo by Walter Rainboth 267mm SL

Fig. 948. *Hemibagrus wyckioides* (Fang & Chaux, 1949); Cambodia, Stung Treng market, photo by Walter Rainboth 330mm SL

Fig. 949. *Hemibagrus wyckioides* (Fang & Chaux, 1949); Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 159mm SL

Fig. 950. *Mystus albolineatus* Roberts, 1994; Cambodia, Kandal, Prek Mong Ya, photo by Walter Rainboth 110mm SL

Fig. 951. *Mystus atrifasciatus* Fowler, 1937; Cambodia, Kandal, Prek Mong Ya, photo by Walter Rainboth 82mm SL

Fig. 952. *Mystus bocourti* (Bleeker, 1864); Cambodia, Tonlé Sap at Kompong Chhnang, photo by Walter Rainboth

Fig. 953. *Mystus gulio* (Hamilton, 1822); Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth 107mm SL

Fig. 954. *Mystus multiradiatus* Roberts, 1992; Cambodia, Kompong Thom, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 97mm SL

Fig. 955. *Mystus mysticetus* Roberts, 1992; Cambodia, Kandal, Prek Mong Ya, photo by Walter Rainboth 70mm SL

Fig. 956. *Mystus rhegma* Fowler, 1935; Thailand, photo by Chavalit Vidthayanon

Fig. 957. *Mystus singaringan* (Bleeker, 1846); Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 96mm SL

Fig. 958. *Mystus wolffii* (Bleeker, 1851); Thailand, Ranong, Kraburi River, photo by Chavalit Vidthayanon

Fig. 959. *Mystus wolffii* (Bleeker, 1851); Cambodia, Tonlé Sap near Phnom Penh, photo by Walter Rainboth 67mm SL

Fig. 960. *Pseudomystus bomboides* Kottelat, 2000; Laos, Vientiane, Nam Leuk at confluence with Nam Ngong, photo by Walter Rainboth 31mm SL

Fig. 961. *Pseudomystus siamensis* (Regan, 1913); Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth 51mm SL

Fig. 962. *Pseudomystus stenomus* (Valenciennes, 1840); Thailand, Chantaburi, photo by Chavalit Vidthayanon

Fig. 963. *Pseudomystus* sp.; Thailand, Nakhon Phanom, Songkram River, photo by Chavalit Vidthayanon

Fig. 964. *Tachysurus fulvidraco* (Richardson, 1846); Thailand, Ubon Ratchathani, Houay Hin Taek, photo by Walter Rainboth 43mm SL

Fig. 965. *Glossanodon sp.* ; Indonesia, Lesser Sunda Islands, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 966. *Neosalanx brevirostris* (Pellegrin, 1923); Laos, Bokeo, Mekong at Ban Houay Sai, photo by Walter Rainboth 32mm SL

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Fig. 967. *Ateleopus sp.* ; Indonesia, Sumatra, NW of Padang, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 444mm SL


Fig. 968. *Harpadon nehereus* (Hamilton, 1822); Vietnam, Tra Vinh, Song Co Chien near My Long, photo by Walter Rainboth 102mm SL


Fig. 969. *Harpadon sp.* Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth


Fig. 970. *Saurida argentea* Macleay, 1881; Australia, CSIRO photo in Sainsbury et al. (1985) 219mm SL


Fig. 971. *Saurida elongata* (Temminck & Schlegel, 1846); Vietnam, Tien Giang, My Tho market, photo by Walter Rainboth 285mm SL


Fig. 972. *Saurida filamentosa* Ogilby, 1910; Australia, CSIRO photo in Sainsbury et al. (1985) 360mm TL


Fig. 973. *Saurida gracilis* (Quoy & Gaimard, 1824); Thailand, photo by Chavalit Vidthayanon


Fig. 974. *Saurida micropectoralis* Shindo & Yamada, 1972; Indonesia, Lesser Sunda Islands, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 215mm SL


Fig. 975. *Saurida tumbil* (Bloch, 1795); Gulf of Thailand, photo by Chavalit Vidthayanon


Fig. 976. *Saurida undosquamis* Richardson; 1848 Australia, CSIRO photo in Sainsbury et al. (1985) 310mm SL


Fig. 977. *Synodus dermatogenys* Fowler, 1912; Thailand, photo by Chavalit Vidthayanon


Fig. 978. *Synodus indicus* (Day, 1873); Australia, CSIRO photo in Sainsbury et al. (1985) 106mm SL


Fig. 979. *Synodus jaculum* Russell & Cressey, 1979; Australia, CSIRO photo in Sainsbury et al. (1985) 150mm SL


Fig. 980. *Synodus macrops* Tanaka, 1917; Australia, CSIRO photo in Sainsbury et al. (1985) 113mm TL


Fig. 981. *Synodus variegatus* (La Cepède, 1803); Australia, CSIRO photo in Sainsbury et al. (1985) 128mm TL


Fig. 982. *Trachinocephalus myops* (Forster, 1801); Gulf of Thailand, photo by Chavalit Vidthayanon


Fig. 983. *Velifer hypselopterus* Bleeker, 1879; Australia, CSIRO photo in Sainsbury et al. (1985) 158mm TL


Fig. 984. *Brotula multibarbata* Temminck & Schlegel, 1868; Hawaii, Oahu, photo by Walter Rainboth 185mm SL


Fig. 985. *Sirembo imberbis* (Temminck & Schlegel, 1846); Australia, CSIRO photo in Sainsbury et al. (1985) 141mm TL

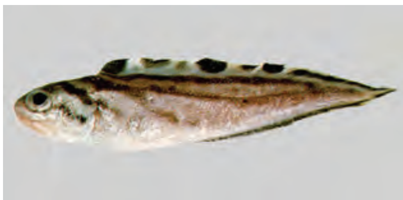
Fig. 986. *Sirembo jerdoni* (Day, 1888); Australia, CSIRO photo in Sainsbury et al. (1985) 130mm TL


Fig. 987. *Encheliophis gracilis* (Bleeker, 1856); Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 172mm SL

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Fig. 988. *Bregmaceros japonicus* Tanaka, 1908; Indonesia, Sumatra, Indian Ocean near Padang, JETINDOFISH survey photo Thomas Gloerfelt-Tarp 73.5mm SL

Fig. 989. *Bregmaceros mcclellandi* Thompson, 1840; Vietnam; Kien Giang, Rach Gia market, photo by Walter Rainboth 64mm SL

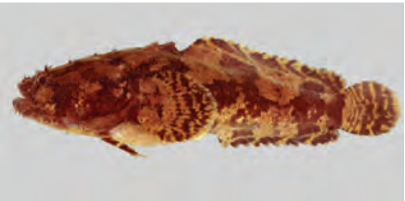

Fig. 990. *Allenbatrachus grunniens* (Linnaeus, 1758); Vietnam; Kien Giang, Ha Tien market, photo by Walter Rainboth 113mm SL

Fig. 991. *Allenbatrachus reticulatus* (Steindachner, 1870); Singapore, photo by Walter Rainboth 82mm SL

Fig. 992. *Batrachomoeus trispinosus* (Günther, 1861); Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 993. *Lophiomus setigerus* (Vahl, 1797); Japan, village of Misaki, photo by Walter Rainboth 125mm SL

Fig. 994. *Antennarius coccineus* (Lesson, 1831); Mauritius, photo by John Randall 50mm SL

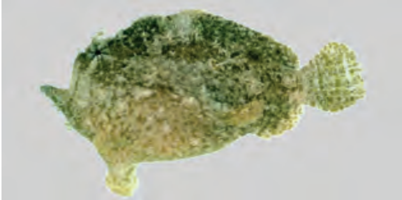

Fig. 995. *Antennarius dorehensis* Bleeker, 1859; Vietnam, Nha Trang, photo by Richard Winterbottom 41mm SL

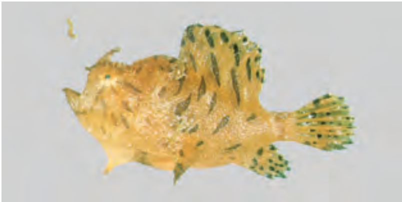

Fig. 996. *Antennarius hispidus* (Bloch & Schneider, 1801); Australia, CSIRO photo in Sainsbury et al. (1985) 59mm TL

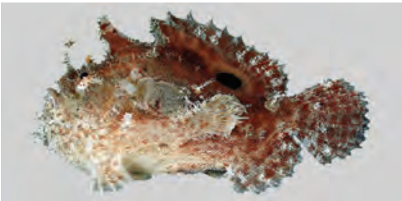

Fig. 997. *Antennarius nummifer* (Cuvier, 1817); Hawaii, Oahu, Lahilahi Pt., photo by John Randall 26mm SL

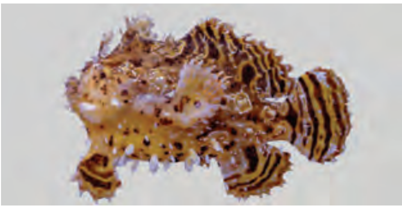

Fig. 998. *Histrio histrio* (Linnaeus, 1758); Thailand, photo by Chavalit Vidthayanon

Fig. 999. *Chelon macrolepis* (Smith, 1846); Thailand, Bangkok, market specimen, photo by Hiroshi Senou

Fig. 1000. *Chelon macrolepis* (Smith, 1846); Cambodia, Kampot, market specimen, photo by Walter Rainboth 122mm SL

Fig. 1001. *Chelon subviridis* (Valenciennes, 1836); Thailand, Songkhla, Hiroshi Senou

Fig. 1002. *Crenimugil crenilabis* (Forsskål, 1775); Indonesia, Ambon market, photo by John Randall 148mm SL

Fig. 1003. *Crenimugil heterocheilos* (Bleeker, 1855); Thailand, photo by Chavalit Vidthayanon

Fig. 1004. *Ellochelon vaigiensis* (Quoy & Gaimard, 1825); Thailand, Songkhla, photo by Hiroshi Senou

Fig. 1005. *Moolgarda cunnesius* (Valenciennes, 1836); Thailand, Trat, photo by Hiroshi Senou

Fig. 1006. *Moolgarda cunnesius* (Valenciennes, 1836); Cambodia, Kampot, market specimen, photo by Walter Rainboth 115mm SL

Fig. 1007. *Moolgarda engeli* (Bleeker, 1858-59); Thailand, Phuket, Kuta Beach, photo by Hiroshi Senou

Fig. 1008. *Moolgarda pedaraki* Valenciennes, 1836; Thailand, Petchaburi, photo by Chavalit Vidthayanon

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Fig. 1009. *Moolgarda perusii* Valenciennes, 1836; Thailand, Petchaburi, photo by Chavalit Vidthayanon

Fig. 1010. *Moolgarda seheli* (Forsskål, 1775); Thailand, Songkhla, photo by Pirot Sirimontnaporn

Fig. 1011. *Mugil broussonnetii* Valenciennes, 1836; Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth 126mm SL

Fig. 1012. *Mugil cephalus* Linnaeus, 1758; Thailand, Songkhla, photo by Hiroshi Senou

Fig. 1013. *Oedalechilus labiosus* (Valenciennes, 1836); Sudan, Red Sea, Sanganeb Atoll, photo by John Randall 177mm SL

Fig. 1014. *Paramugil parmatus* (Cantor, 1849); Thailand, Chao Phrya estuary, photo by Hiroshi Senou

Fig. 1015. *Atherinomorus duodecimalis* (Valenciennes, 1835); Thailand, photo by Chavalit Vidthayanon

Fig. 1016. *Atherinomorus lacunosus* (Forster, 1801; Seychelles, La Digue, photo by John Randall 67mm SL

Fig. 1017. *Hypoatherina temminckii* (Bleeker, 1853); Israel, Eilat, Gulf of Aqaba, photo by John Randall 67mm SL

Fig. 1018. *Hypoatherina valenciennei* (Bleeker, 1853); Vietnam, Kien Giang, Ha Tien Lake, photo by Walter Rainboth 63mm SL

Fig. 1019. *Neostethus bicornis* Regan, 1916, ♂ ; Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 28mm SL

Fig. 1020. *Neostethus bicornis* Regan, 1916, ♀ ; Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 23mm SL

Fig. 1021. *Phallostethus sp.* ♂; Vietnam, Soc Trang, Song Hau Giang near Doi Ngai, photo by Walter Rainboth 21mm SL

Fig. 1022. *Phallostethus sp.* ♀ ; Vietnam, Soc Trang, Song Hau Giang near Doi Ngai, photo by Walter Rainboth 20mm SL

Fig. 1023. *Phenacostethus posthon* Roberts, 1971, ♀ ; Vietnam, Soc Trang, Song Hau Giang near Doi Ngai, photo by Walter Rainboth 13mm SL

Fig. 1024. *Phenacostethus smithi* Myers, 1928; Thailand, Bangkok, photo by Chavalit Vidthayanon

Fig. 1025. *Phenacostethus trewavasae* Parenti, 1986, ♂ ; Cambodia, floodplain lake near Phnom Penh, photo by Walter Rainboth 15mm SL

Fig. 1026. *Oryzias haugiangensis* Roberts, 1998; Cambodia, Sihanoukville, Rean Beach at mouth of O Kaoh Trach, photo by Walter Rainboth 24mm SL

Fig. 1027. *Oryzias haugiangensis* Roberts, 1998; Vietnam, Minh Hai, brackish canal near U Minh, photo by Walter Rainboth 24mm SL

Fig. 1028. *Oryzias mekongensis* Uwa & Magtoon, 1986; Laos, Savannakhet, pond near Seno, photo by Walter Rainboth 14mm SL

Fig. 1029. *Oryzias minutillus* Smith, 1945; Vietnam, Minh Hai, fresh-water canal near U Minh, photo by Walter Rainboth 12mm SL

PLATE 49

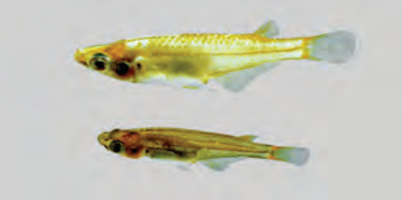

Fig. 1030. *Oryzias pectoralis* Roberts, 1998; Thailand, Nong Khai, photo by Chavalit Vidthayanon

Fig. 1031. *Ablennes hians* (Valenciennes. 1846); US National Marine Fisheries photo from Don Fleischer to Fishbase
530mm FL

Fig. 1032. *Platybelone platyura* (Bennett, 1832); Easter Island, photo by John Randall
545mm SL

Fig. 1033. *Strongylura incisa* (Valenciennes, 1846); Thailand, Prachuab Kiri Khan, Songkhla, photo by Chavalit Vidthayanon

Fig. 1034. *Strongylura leiura* (Bleeker, 1850); Thailand, Prachuab Kiri Khan, Songkhla, photo by Chavalit Vidthayanon

Fig. 1035. *Strongylura strongylura* (van Hasselt, 1823); Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth

Fig. 1036. *Tylosurus crocodilus* (Peron & Leseuer, 1821); India, Cochin, photo by John Randall
317mm SL

Fig. 1037. *Tylosurus melanotus* (Bleeker, 1850);Thailand, Prachuab Kiri Khan, photo by Chavalit Vidthayanon

Fig. 1038. *Xenentodon cancila* (Hamilton, 1822); Cambodia, Kandal, Boeung Veng Canal, photo by Walter Rainboth
195mm SL

Fig. 1039. *Xenentodon canciloides* (Bleeker, 1853); Laos, Phongsali, Nam Houn, photo by Walter Rainboth
90mm SL

Fig. 1040. *Xenentodon n.sp*. Laos, Luang Namtha, Nam Ha near Ban Nam Ha, photo by Walter Rainboth
117mm SL

Fig. 1041. *Cheilopogon spilonotopterus* (Bleeker, 1866); Hawaii, Oahu, Kaena Pt., photo by John Randall
340mm SL

Fig. 1042. *Cheilopogon suttoni* (Whitley & Colefax, 1938); Indonesia, Lombok, Batu Nampar, photo by John Randall
247mm SL

Fig. 1043. *Cypselurus oligolepis* (Bleeker, 1865); Oman, Mutrah market, photo by John Randall
213mm SL

Fig. 1044. *Cypselurus opisthopus* (Bleeker, 1865); Indonesia, Lombok, Batu Nampar, photo by John Randall
204mm SL

Fig. 1045. *Cypselurus poecilopterus* (Valenciennes, 1847); Thailand, photo by Chavalit Vidthayanon

Fig. 1046. *Parexocoetus brachypterus* (Richardson, 1846); Indonesia, Lombok, Ampenon, photo by John Randall
132mm SL

Fig. 1047. *Dermogenys orientalis* (Weber, 1894), ♂ ; Cambodia, Stung Treng, O Pong Moan, photo by Walter Rainboth

Fig. 1048. *Dermogenys orientalis* (Weber, 1894), ♀ ; Laos, Champasak, Se Done near Pakse, photo by Walter Rainboth
41mm SL

Fig. 1049. *Dermogenys siamensis* Fowler, 1934, ♂ ; Cambodia, Odong Mean Chey, marsh NW of Phnom Penh, photo by Walter Rainboth
31mm SL

Fig. 1050. *Dermogenys siamensis* Fowler, 1934, ♀ ; Cambodia, Odong Mean Chey, marsh NW of Phnom Penh, photo by Walter Rainboth
43mm SL

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Fig. 1051. *Hemiramphus archipelagicus* Collette & Parin, 1978; Thailand, Prachuab Kiri Khan, photo by Chavalit Vidthayanon

Fig. 1052. *Hemiramphus far* (Forsskål, 1775); Thailand, Prachuab Kiri Khan, photo by Chavalit Vidthayanon

Fig. 1053. *Hemiramphus lutkei* (Valenciennes, 1846); Indonesia, Flores, Maumere, photo by John Randall

Fig. 1054. *Hyporhamphus dussumieri* (Valenciennes, 1847); Maldives, photo by John Randall
270mm SL

Fig. 1055. *Hyporhamphus limbatus* (Valenciennes, 1847); Cambodia, Stung Treng, Mekong at Stung Treng, photo by Walter Rainboth

Fig. 1056. *Hyporhamphus sp.cf. limbatus* Vietnam, Vinh Long, Song Co Chien near Vinh Long, photo by Walter Rainboth

Fig. 1057. *Rhynchorhamphus georgii* (Valenciennes, 1847); Oman, Mutrah market, photo by John Randall
190mm SL

Fig. 1058. *Zenarchopterus buffonis* (Valenciennes, 1847); Vietnam, Soc Trang, Bassac River near Doi Ngai, photo by Walter Rainboth

Fig. 1059. *Zenarchopterus caudovittatus* Weber, 1907; Thailand, photo by Chavalit Vidthayanon

Fig. 1060. *Zenarchopterus clarus* Mohr, 1926; Thailand, photo by Chavalit Vidthayanon

Fig. 1061. *Zenarchopterus ectuntio* (Hamilton, 1822); Thailand, Chantaburi, photo by Chavalit Vidthayanon

Fig. 1062. *Zenarchopterus gilli* Smith, 1945; Vietnam, Nha Trang, photo by Richard Winterbottom
24mm SL

Fig. 1063. *Aplocheilus panchax* (Hamilton, 1822), ♂ ; Cambodia, Kampot, Prek Toek Sap above waterfall, photo by Walter Rainboth
33mm SL

Fig. 1064. *Aplocheilus panchax* (Hamilton, 1822), ♀ ; Cambodia, Kampot, Prek Toek Sap above waterfall, photo by Walter Rainboth
25mm SL

Fig. 1065. *Gambusia affinis* (Baird & Girard, 1853), ♂ ; Laos, Luang Namtha, Nam Dai, photo by Walter Rainboth
23mm SL

Fig. 1066. *Gambusia affinis* (Baird & Girard, 1853), ♀ ; Laos, Luang Namtha, Nam Dai, photo by Walter Rainboth
32mm SL

Fig. 1067. *Poecilia reticulata* Peters, 1859, ♂ ; Thailand, Chiang Mai, photo by Chavalit Vidthayanon

Fig. 1068. *Monocentris japonica* (Houttuyn, 1782); Japan, Isu Island, Miyake-jima, photo by John Randall
117mm SL

Fig. 1069. *Myripristis botche* Cuvier, 1829; Australia, Indian Ocean, CSIRO photo in Sainsbury et al. (1985)
250mm TL

Fig. 1070. *Myripristis hexazona* (La Cepède, 1802); Papua, New Guinea, Paddock Reef, photo by John Randall
160mm SL

Fig. 1071. *Myripristis murdjan* (Forsskål, 1775); Egypt, Sinai, Ras Muhammad, photo by John Randall
132mm SL

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Fig. 1072. *Myripristis pralinia* Cuvier, 1829; Palau, photo by John Randall
126mm SL


Fig. 1073. *Myripristis violacea* Bleeker, 1851; Marshall Islands, Enewetak, photo by John Randall
149mm SL


Fig. 1074. *Neoniphon opercularis* (Valenciennes, 1831); Marshall Islands, Arno Atoll, photo by John Randall
190mm SL


Fig. 1075. *Ostichthys japonicus* (Cuvier, 1829); Australia, CSIRO photo in Sainsbury et al. (1985)
270mm TL


Fig. 1076. *Ostichthys kaianus* (Günther, 1880); Australia, CSIRO photo in Sainsbury et al. (1985)
145mm SL


Fig. 1077. *Sargocentron caudimaculatum* (Rüppell, 1838); Indonesia, Lesser Sunda Islands, JETINDOFISH SURVEY photo Thomas Gloerfelt-Tarp
160mm SL


Fig. 1078. *Sargocentron cornutum* (Bleeker, 1853); Philippines, Bolinao, photo by Ed Murdy and Carl Ferraris
76mm SL


Fig. 1079. *Sargocentron diadema* (La Cepède, 1802); Reunion, photo by John Randall
112mm SL


Fig. 1080. *Sargocentron praslin* (La Cepède, 1802); Solomon Islands, Savo, photo by John Randall
135mm SL


Fig. 1081. *Sargocentron rubrum* (Forsskål, 1775); Cambodia, Kampot, market specimen, photo by Walter Rainboth
160mm SL


Fig. 1082. *Sargocentron spiniferum* (Forsskål, 1775); Hawaiian Islands, Hawaii, Leeward, photo by John Randall
355mm SL

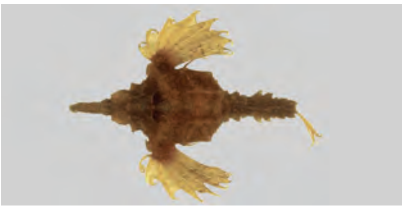
Fig. 1083. *Eurypegasus draconis* (Linnaeus, 1766); Vietnam, near Nha Trang, photo by Walter Rainboth
59mm SL


Fig. 1084. *Pegasus laternarius* Cuvier, 1816; Thailand, photo by Chavalit Vidthayanon


Fig. 1085. *Pegasus volitans* Linnaeus, 1766; Vietnam, Gulf of Thailand, Phu Quoc Island, photo by Walter Rainboth
110mm SL


Fig. 1086. *Solenostomus cyanopterus* Bleeker, 1854; Sri Lanka, Hikkaduwa, photo by John Randall
55mm SL


Fig. 1087. *Solenostomus paradoxus* (Pallas, 1770); Indonesia, Banda, photo by John Randall
64mm SL


Fig. 1088. *Choeroichthys brachysoma* (Bleeker, 1855); Mauritius, photo by John Randall
42mm SL


Fig. 1089. *Corythoichthys amplexus* Dawson & Randall, 1975; Australia, Chesterfield Bank, photo by John Randall
90mm SL


Fig. 1090. *Corythoichthys haematopterus* (Bleeker, 1851); Seychelles, La Digue, photo by John Randall
169mm SL


Fig. 1091. *Corythoichthys schultzi* Herald, 1953; Israel, Eilat, Gulf of Aqaba, photo by John Randall
111mm SL


Fig. 1092. *Doryichthys boaja* (Bleeker, 1851); Thailand, Ayutthaya, photo by Chavalit Vidthayanon

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Fig. 1093. *Doryichthys contiguus* Kottelat, 2000; Laos, Bolikhamsai, Nam Ngang, photo by Walter Rainboth
96mm SL

Fig. 1094. *Doryichthys martensii* (Peters, 1868); Cambodia, Odong Mean Chey, Phum Cham Meas Leu, photo by Walter Rainboth
81mm SL

Fig. 1095. *Doryrhamphus excisus* Kaup, 1856; American Samoa, Tutuila, photo by John Randall
34mm SL

Fig. 1096. *Doryrhamphus janssi* (Herald & Randall, 1972); Palau, photo by John Randall
102mm SL

Fig. 1097. *Halicampus nitidus* (Günther, 1873); Ryukyu Islands, Okinawa, photo by John Randall
69mm SL

Fig. 1098. *Hippichthys cyanospilus* (Bleeker, 1854); Papua New Guinea, New Britain, Blanche Bay, photo by John Randall
86mm SL

Fig. 1099. *Hippichthys penicillus* (Cantor, 1849); Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth
111mm SL

Fig. 1100. *Hippocampus histrix* Kaup, 1856; Seychelles, Bird Island, photo by John Randall
88mm TL

Fig. 1101. *Hippocampus kelloggi* Jordan & Snyder, 1901; Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 1102. *Ichthyocampus carce* (Hamilton, 1822); Thailand, Bangpakong, photo by Chavalit Vidthayanon

Fig. 1103. *Phoxocampus belcheri* (Kaup, 1856); Seychelles, Mahé, photo by John Randall
59mm SL

Fig. 1104. *Syngnathoides biaculeatus* (Bloch, 1785); Cambodia, Kampot, market specimen, photo by Walter Rainboth
142mm SL

Fig. 1105. *Trachyrhamphus bicoarctatus* (Bleeker, 1857); Indonesia, Ambon, Latuhalat, photo by John Randall
348mm SL

Fig. 1106. *Indostomus spinosus* Britz & Kottelat, 1999, ♂ ; Thailand, Nongkhai, photo by Chavalit Vidthayanon
29mm TL

Fig. 1107. *Indostomus spinosus* Britz & Kottelat, 1999; ♀ ; Laos, Bolikhamsai, Nam Ngang, photo by Walter Rainboth
19mm SL

Fig. 1108. *Aulostomus chinensis* (Linnaeus, 1766); Easter Island, photo by John Randall
375mm SL

Fig. 1109. *Fistularia commersonii* Rüppell, 1838; Australia, CSIRO photo in Sainsbury et al. (1985)
810mm TL

Fig. 1110. *Fistularia petimba* La Cepède, 1803; Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
261mm SL

Fig. 1111. *Aeoliscus strigatus* (Günther, 1861); Palau, photo by John Randall
110mm SL

Fig. 1112. *Centriscus scutatus* Linnaeus, 1758; Australia, CSIRO photo in Sainsbury et al. (1985)
105mm TL

Fig. 1113. *Macrotrema caligans* (Cantor, 1849); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth
99mm TL

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Fig. 1114. *Macrotrema sp.cf. caligans*; Thailand, Ayutthaya, photo by Chavalit Vidthayanon

Fig. 1115. *Monopterus albus* Zuiew, 1793; Cambodia, Phnom Penh market specimen, photo by Walter Rainboth 580mm TL

Fig. 1116. *Ophisternon bengalense* M'Clelland, 1844; Thailand, Bangkok, photo by Chavalit Vidthayanon

Fig. 1117. *Ophisternon n.sp.*; Cambodia, Kandal, Prek Muk Kandal, photo by Walter Rainboth 400mm TL

Fig. 1118. *Chaudhuria caudata* Annandale, 1918; Cambodia, Stung Treng, O Pong Moan, photo by Walter Rainboth 32mm SL

Fig. 1119. *Chaudhuria sp.cf. caudata*; Vietnam, Mekong delta, photo by Chavalit Vidthayanon 30mm SL

Fig. 1120. *Chaudhuria fusipinnis* Kottelat & Britz, 2000; Thailand, Nongkhai, photo by Anupong Sanitchon 30mm SL

Fig. 1121. *Macrognathus circumcinctus* (Hora, 1924); Vietnam, Mekong delta, photo by Chavalit Vidthayanon 110mm SL

Fig. 1122. *Macrognathus maculatus* (Cuvier, 1832); Thailand, Narathivat peat swamp, photo by Chavalit Vidthayanon

Fig. 1123. *Macrognathus semiocellatus* Roberts, 1986; Cambodia, Kandal, Prek Chrey, photo by Walter Rainboth 94mm SL

Fig. 1124. *Macrognathus siamensis* (Günther, 1861); Laos, Savannakhet, Mekong at Keng Kebao, photo by Walter Rainboth 90mm SL

Fig. 1125. *Macrognathus* n.sp.; Cambodia, Stung Treng, Mekong rapids near Stung Treng, photo by Walter Rainboth

Fig. 1126. *Macrognathus* n.sp. ; Cambodia, Stung Treng, photo by Chavalit Vidthayanon 180mm TL

Fig. 1127. *Mastacembelus armatus* (La Cepède, 1800); Laos, Savannakhet, Mekong at Keng Kahoung, photo by Walter Rainboth 135mm SL

Fig. 1128. *Mastacembelus armatus* (La Cepède, 1800); Laos, Luang Namtha, Nam Chian at confluence with Nam Tha, photo by Walter Rainboth 122mm SL

Fig. 1129. *Mastacembelus erythrotaenia* Bleeker, 1850; Thailand, Tapi River, photo by Chavalit Vidthayanon

Fig. 1130. *Mastacembelus favus* Hora, 1924; Vietnam, Mekong delta, photo by Chavalit Vidthayanon 260mm SL

Fig. 1131. *Mastacembelus favus* Hora, 1924; Laos, Vientiane, Nam Ngao, photo by Walter Rainboth 125mm SL

Fig. 1132. *Dactyloptena gilberti* Snyder, 1909; Thailand, Gulf of Thailand off Pattani, photo by Walter Rainboth 40mm SL

Fig. 1133. *Dactyloptena macracantha* (Bleeker, 1854); India, Cochin, photo by John Randall 121mm SL

Fig. 1134. *Dactyloptena orientalis* (Cuvier, 1829); Australia, CSIRO photo in Sainsbury et al. (1985) 194mm TL

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Fig. 1135. *Dactyloptena papilio* Ogilby, 1910; Australia, CSIRO photo in Sainsbury et al. (1985)
164mm SL

Fig. 1136. *Brachypterois serrulata* (Richardson, 1846); Indonesia, Sumatra, Indian Ocean, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
73mm SL

Fig. 1137. *Dendrochirus bellus* (Jordan & Hubbs, 1925); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

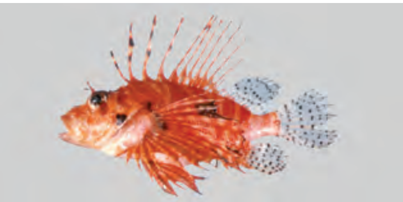

Fig. 1138. *Dendrochirus zebra* (Cuvier, 1829); Australia, CSIRO photo in Sainsbury et al. (1985)
182mm TL

Fig. 1139. *Ebosia bleekeri* (Döderlein, 1884); Indonesia, Lesser Sunda Islands, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
80mm SL

Fig. 1140. *Parascorpaena aurita* (Rüppell, 1838); Vietnam, Cac Ba, photo by Richard Winterbottom
102.5mm SL

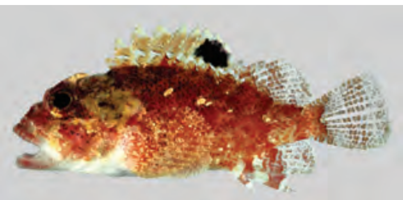

Fig. 1141. *Parascorpaena mcadamsi* (Fowler, 1938); South Africa, Sodwana Bay, photo by Richard Winterbottom

Fig. 1142. *Parascorpaena mossambica* (Peters, 1855); Taiwan, photo by John Randall
64mm SL

Fig. 1143. *Parascorpaena picta* (Cuvier, 1829); Australia, Western Australia, Kendrew Island, photo by John Randall
117mm SL

Fig. 1144. *Pteroidichthys amboinensis* Bleeker, 1856; Indonesia, Flores, Maumere Bay, photo by John Randall
43mm SL

Fig. 1145. *Pterois antennata* (Bloch, 1787); French Polynesia, Moorea, photo by John Randall
103mm SL

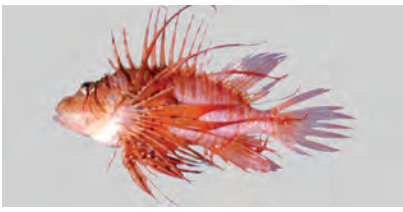

Fig. 1146. *Pterois russelii* Bennett, 1831; Indonesia, CSIRO photo in Sainsbury et al. (1985)
260mm TL

Fig. 1147. *Pterois volitans* (Linnaeus, 1758); Sudan, Port Sudan, photo by John Randall
106mm SL

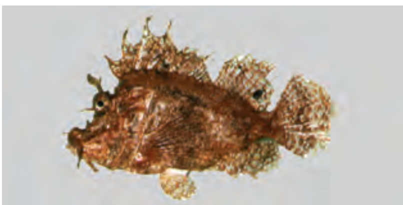

Fig. 1148. *Rhinopias frondosa* (Günther, 1892); Indonesia, Lesser Sunda Islands, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
130mm SL

Fig. 1149. *Scorpaenodes albaiensis* (Evermann & Seale, 1907); Indonesia, Celebes, Manado, photo by John Randall
59mm SL

Fig. 1150. *Scorpaenodes guamensis* (Quoy & Gaimard, 1824); South Africa, Natal, photo by John Randall
72mm SL

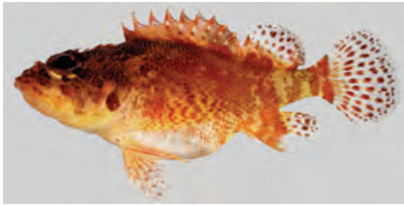

Fig. 1151. *Scorpaenodes littoralis* (Tanaka, 1917); Vietnam, Nha Trang, photo by Richard Winterbottom
48.7mm SL

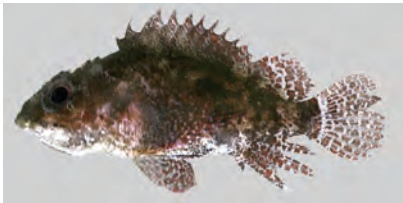

Fig. 1152. *Scorpaenodes scaber* (Ramsey & Ogilby, 1886); Philippines, photo by Edward Murdy and Carl Ferraris

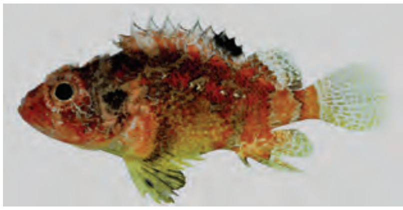

Fig. 1153. *Scorpaenodes varipinnis* Smith, 1957; Palau, Augupelu Reef, photo by Richard Winterbottom
52.5mm SL

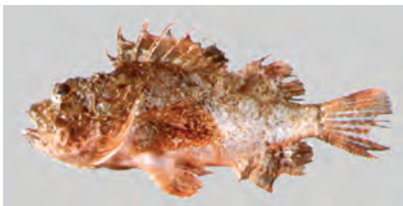

Fig. 1154. *Scorpaenopsis cirrosa* (Thunberg, 1793); Australia, CSIRO photo in Sainsbury et al. (1985)
71mm TL

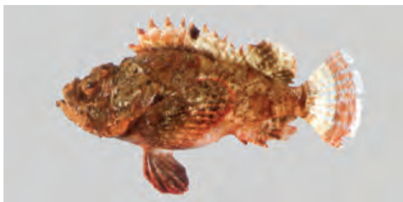

Fig. 1155. *Scorpaenopsis diabolus* (Cuvier, 1829); Australia, CSIRO photo in Sainsbury et al. (1985)
140mm TL

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Fig. 1156. *Scorpaenopsis neglecta* Heckel, 1837; India, Mandapam Camp, photo by John Randall
84mm SL

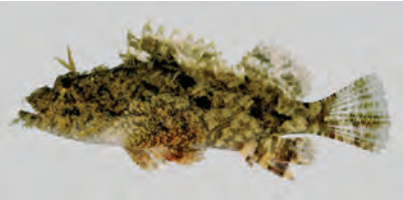

Fig. 1157. *Scorpaenopsis oxycephala* Bleeker, 1849; Vietnam, Nha Trang, photo by Richard Winterbottom
88.2mm SL

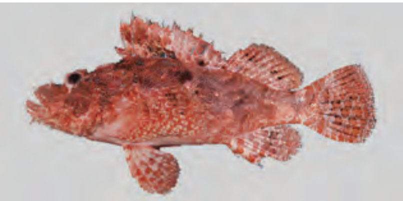

Fig. 1158. *Scorpaenopsis papuensis* (Cuvier, 1829); Palau, photo by John Randall
175mm SL

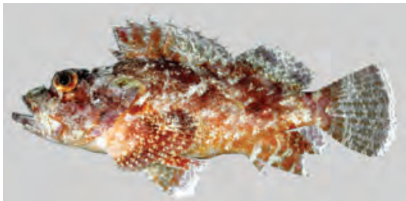

Fig. 1159. *Scorpaenopsis possi* Randall & Eschmeyer, 2001; Chagos, photo by Richard Winterbottom
123mm SL

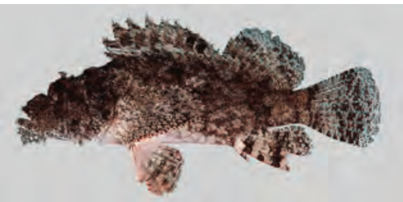

Fig. 1160. *Scorpaenopsis venosa* (Cuvier, 1829); Indonesia, Lombok, Tanjung Luar, photo by John Randall
116mm SL

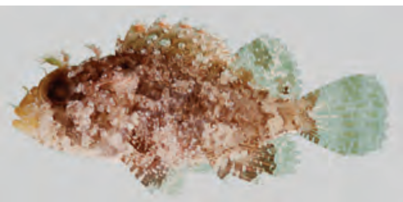

Fig. 1161. *Sebastapistes strongia* (Cuvier, 1829); Indonesia, Mai Island, Pulau Pulau Maisel, photo by John Randall
22mm SL

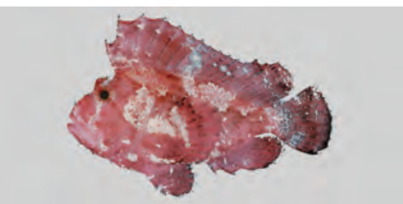

Fig. 1162. *Taenianotus triacanthus* La Cepède, 1802; Hawaii, Oahu, photo by John Randall
40mm SL

Fig. 1163. *Apistus carinatus* (Bloch & Schneider, 1801); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

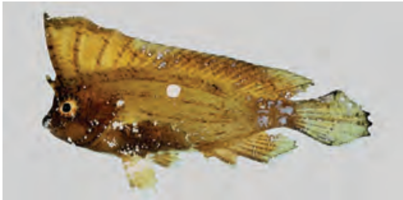

Fig. 1164.*Ablabys taenianotus* (Cuvier, 1829); Palau, Ngeruktabel I., photo by Richard Winterbottom
30.8mm SL

Fig. 1165.*Cottapistus cottoides* (Linnaeus, 1758); Vietnam, Mekong mouth, photo by Walter Rainboth
47mm SL

Fig. 1166. *Paracentropogon longispinis* (Cuvier, 1829); Indonesia, Saparua, Haria Bay, photo by Walter Rainboth
62mm SL

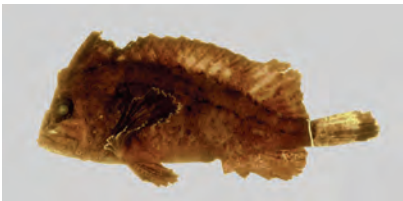

Fig. 1167. *Tetraroge barbata* (Cuvier, 1829); Papua New Guinea, photo by Walter Rainboth
59mm SL

Fig. 1168. *Tetraroge niger* (Cuvier, 1829); Philippines, Negros, Dumaguete, photo by Walter Rainboth
71mm SL

Fig. 1169. *Vespicula depressifrons* (Richardson, 1848); Steinhart Aquarium, no other data, photo by Walter Rainboth
49mm SL

Fig. 1170. *Vespicula trachinoides* (Cuvier, 1829); Malaysia, S of Pu Kendi Isl., photo by Walter Rainboth
60mm SL

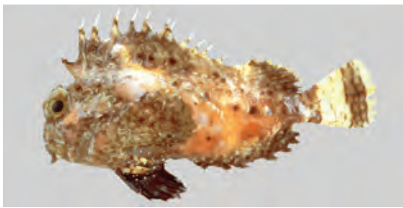

Fig. 1171. *Choridactylus multibarbus* Richardson, 1848; Sabah, photo by Chavalit Vidthayanon

Fig. 1172. *Erosa erosa* (Langsdorf, 1829); Australia, CSIRO photo in Sainsbury et al. (1985)
130mm TL

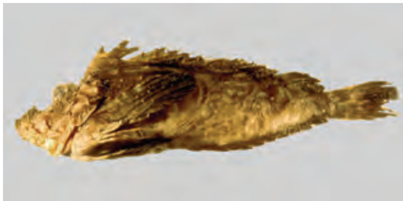

Fig. 1173. *Inimicus cuvieri* (Gray, 1835); Vietnam, mouth of Mekong, photo by Walter Rainboth
134mm SL

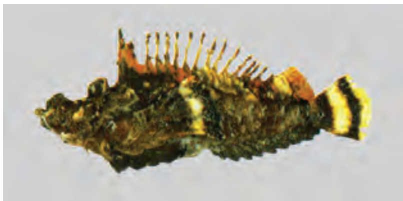

Fig. 1174. *Inimicus didactylus* (Pallas, 1769); Indonesia, Sumatra, Indian Ocean, CSIRO photo in Gloerfelt-Tarp and Kailola (1984)
135mm SL

Fig. 1175. *Inimicus sinensis* (Valenciennes, 1833); Australia, CSIRO photo in Sainsbury et al. (1985)
125mm TL

Fig. 1176. *Leptosynanceia asteroblepa* (Richardson, 1844); Vietnam, Mekong estuary, photo by Walter Rainboth
29mm SL

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Fig. 1177. *Minous coccineus* Alcock, 1890; Australia, CSIRO photo in Sainsbury et al. (1985)
114mm SL

Fig. 1178. *Minous monodactylus* (Bloch & Schneider, 1801); Kuwait, Kuwait Bay, photo by John Randall
52mm SL

Fig. 1179. *Minous pictus* Günther, 1880; Philippines, Samar Sea, photo by Edward Murdy and Carl Ferraris
145mm SL

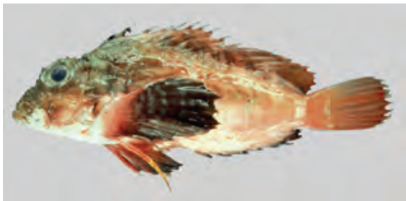

Fig. 1180. *Minous trachycephalus* (Bleeker, 1854); Sarawak, photo by Chavalit Vidthayanon

Fig. 1181. *Synanceia horrida* (Linnaeus, 1766); Indonesia, Java, Seribu Island, photo by John Randall
165mm SL

Fig. 1182. *Synanceia verrucosa* Bloch & Schneider, 1801; Marshall Islands, Kwajalein, photo by John Randall
136mm SL

Fig. 1183. *Trachicephalus uranoscopus* (Bloch & Schneider, 1801); Vietnam, Mekong mouth, South China Sea, photo by Walter Rainboth
65mm SL

Fig. 1184. *Caracanthus maculatus* (Gray, 1831); Christmas Island, photo by John Randall
41mm SL

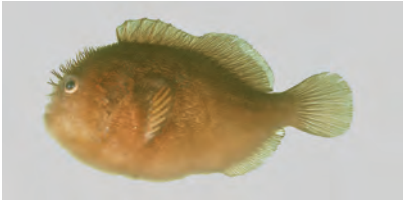

Fig. 1185. *Caracanthus unipinna* (Gray, 1831); Japan, Ani-jima, Ogasawara Island, photo by John Randall
24mm SL

Fig. 1186. *Erisphex simplex* Chen, 1981, holotype; Taiwan, Kaoh Sing, photo by Dave Catania

Fig. 1187. *Xenaploactis cautes* Poss & Eschmeyer, 1980; Thailand, Gulf of Thailand, near Goh Chuang, photo by Dave Catania
30mm SL

Fig. 1188. *Lepidotrigla spiloptera* (Günther, 1880); Australia, CSIRO photo in Sainsbury et al. (1985)
115mm TL

Fig. 1189. *Pterygotrigla hemisticta* (Temminck & Schlegel, 1843); Australia, CSIRO photo in Sainsbury et al.(1985)
195mm SL

Fig. 1190. *Pterygotrigla hemisticta* (Temminck & Schlegel, 1843); Indonesia, Flores JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
92mm SL

Fig. 1191. *Cociella crocodilus* (Tilesius, 1812); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
270mm SL

Fig. 1192. *Cociella punctata* (Cuvier, 1829); Australia, CSIRO photo in Gloerfelt-Tarp & Kailola (1984)
193mm SL

Fig. 1193. *Cymbacephalus bosschei* (Bleeker, 1860); Australia; CSIRO photo in Gloerfelt-Tarp & Kailola (1984)
250mm SL

Fig. 1194. *Cymbacephalus nematophthalmus* (Günther, 1860); Australia, CSIRO photo in Sainsbury et al. (1985)
275mm SL

Fig. 1195. *Elates ransonnettii* (Steindachner, 1876); Indonesia, western Java, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
150mm SL

Fig. 1196. *Grammoplites scaber* (Linnaeus, 1758); Indonesia, eastern Java, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
179mm SL

Fig. 1197. *Inegocia japonica* (Tilesius, 1812): Australia, CSIRO photo in Sainsbury et al. (1985)
172mm SL

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Fig. 1198. *Kumococius rodericensis* (Cuvier, 1829); South China Sea off coast of Western Malaysia, photo by Chavalit Vidthayanon


Fig. 1199. *Onigocia macrolepis* (Bleeker, 1854); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 82mm SL


Fig. 1200. *Onigocia macrolepis* (Bleeker, 1854); Australia, CSIRO photo in Sainsbury et al. (1985) 80mm TL


Fig. 1201. *Onigocia spinosa* (Temminck & Schlegel, 1843); Australia, CSIRO photo in Gloerfelt-Tarp & Kailola (1984) 72mm SL


Fig. 1202. *Papilloculiceps longiceps* (Cuvier, 1829); New Caledonia, photo by John Randall 283mm SL


Fig. 1203. *Platycephalus indicus* (Linnaeus, 1758); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 122mm SL


Fig. 1204. *Platycephalus indicus* (Linnaeus, 1758); Thailand, Ranong, photo by Chavalit Vidthayanon


Fig. 1205. *Rogadius pristiger* (Cuvier, 1829); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 99mm SL


Fig. 1206. *Rogadius pristiger* (Cuvier, 1829); South China Sea off Western Malaysia, photo by Chavalit Vidthayanon


Fig. 1207. *Rogadius tuberculata* (Cuvier, 1829); Australia, CSIRO photo in Sainsbury et al. (1985) 96mm SL


Fig. 1208. *Rogadius tuberculata* (Cuvier, 1829); South China Sea off Western Malaysia, photo by Chavalit Vidthayanon


Fig. 1209. *Suggrundus macracanthus* (Bleeker, 1869); Australia, CSIRO photo in Sainsbury, et al. (1985) 92mm TL


Fig. 1210. *Thysanophrys celebica* (Bleeker, 1854); Bahrain, photo by John Randall 82mm SL

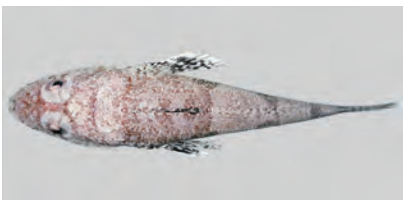
Fig. 1211. *Thysanophrys celebica* (Bleeker, 1854); Bahrain, photo by John Randall 82mm SL


Fig. 1212. *Thysanophrys chiltonae* Schultz, 1966; Seychelles, Bird Island, photo by John Randall 115mm SL


Fig. 1213. Platycephalidae 1; South China Sea off Western Malaysia, photo by Chavalit Vidthayanon


Fig. 1214. *Lates calcarifer* (Bloch, 1790); Thailand, Ranong, Chavalit Vidthayanon


Fig. 1215. *Psammoperca waigiensis* (Cuvier, 1828); Sarawak, Chavalit Vidthayanon


Fig. 1216. *Ambassis gymnocephalus* (La Cepède, 1802); Thailand, Ranong, Chavalit Vidthayanon


Fig. 1217. *Ambassis kopsii* Bleeker, 1858; Vietnam, Kien Giang, Ha Tien lake, photo by Walter Rainboth 36mm SL


Fig. 1218. *Ambassis vachellii* Richardson, 1846; Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 36mm SL

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Fig. 1219. *Parambassis apogonoides* (Bleeker, 1851); Cambodia, Stung Treng, Mekong near Stung Treng, photo by Walter Rainboth 57mm SL

Fig. 1220. *Parambassis siamensis* (Fowler, 1937); Laos, Vientiane, Nam Ngum Reservoir, photo by Walter Rainboth 30mm SL

Fig. 1221. *Parambassis wolffii* (Bleeker, 1851); Cambodia, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 67mm SL

Fig. 1222. *Acropoma japonicum* Günther, 1859; Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 125mm TL

Fig. 1223. *Aethaloperca rogaa* (Forsskål, 1775); Bahrain, photo by John Randall 295mm SL

Fig. 1224. *Anyperodon leucogrammicus* (Valenciennes, 1828); Cambodia, Kampot, Kampot fish market, photo by Walter Rainboth 250mm SL

Fig. 1225. *Aulacocephalus temminckii* Bleeker, 1854; Japan, Shirahama, photo by John Randall 147mm SL

Fig. 1226. *Caprodon schlegelii* (Günther, 1859); Hawaii, photo by John Randall 285mm SL

Fig. 1227. *Cephalopholis argus* Bloch & Schneider, 1801; Tahiti, Teavaraa Pass, photo by John Randall 232mm SL

Fig. 1228. *Cephalopholis boenak* (Bloch, 1790); Malaysia, Pulau Tulai, photo by John Randall 137mm SL

Fig. 1229. *Cephalopholis cyanostigma* (Valenciennes, 1828); Philippines, Cebu, photo by John Randall 140mm SL

Fig. 1230. *Cephalopholis formosa* (Shaw, 1812); Thailand, Phuket, photo by John Randall 108mm SL

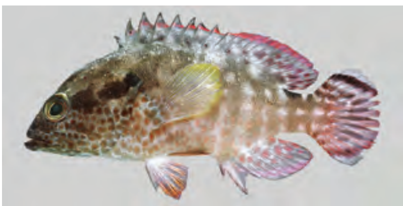

Fig. 1231. *Cephalopholis leopardus* (La Cepède, 1801); Philippines, Bolinao, photo by John Randall 130mm SL

Fig. 1232. *Cephalopholis microprion* (Bleeker, 1852); Cambodia, Kampot, Kampot market, photo by Walter Rainboth 152mm SL

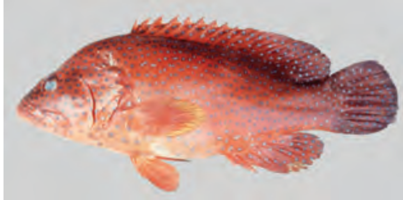

Fig. 1233. *Cephalopholis miniata* (Forsskål, 1775); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 225mm SL

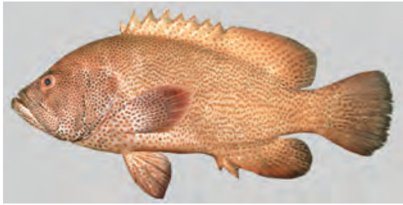

Fig. 1234. *Cephalopholis sonnerati* (Valenciennes, 1828); Marshall Islands, Enewetak, photo by John Randall 233mm SL

Fig. 1235. *Cephalopholis urodeta* (Forster, 1801); Indonesia, Bali,, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 150mm SL

Fig. 1236. *Chelidoperca pleurospilos* (Günther, 1860); Indonesia, Lesser Sunda Islands, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 78mm SL

Fig. 1237. *Chromileptes altivelis* (Valenciennes, 1839); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 241mm SL

Fig. 1238. *Diploprion bifasciatum* Kuhl & van Hasselt, 1828; Cambodia, Kampot, Kampot market, photo by Walter Rainboth 120mm SL

Fig. 1239. *Epinephelus akaara* (Temminck & Schlegel, 1842); China, Hong Kong, photo by John Randall 298mm SL

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Fig. 1240. *Epinephelus amblycephalus* (Bleeker, 1857); Australia, CSIRO photo in Sainsbury et al. (1985)
355mm SL

Fig. 1241. *Epinephelus areolatus* (Forsskål, 1775); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 1242. *Epinephelus awoara* (Temminck & Schlegel, 1842); Taiwan, Keelung market, photo by John Randall
208mm SL

Fig. 1243. *Epinephelus bleekeri* (Vaillant, 1878); Thailand, Songkhla, photo by Chavalit Vidthayanon

Fig. 1244. *Epinephelus bontoides* (Bleeker, 1855); Indonesia, Ambon Bay, photo by John Randall
94mm SL

Fig. 1245. *Epinephelus chlorostigma* (Valenciennes, 1828); Seychelles, photo by John Randall
290mm SL

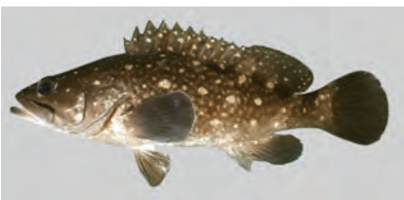

Fig. 1246. *Epinephelus coeruleopunctatus* (Bloch, 1790); Solomon Islands, Alite Reef, photo by John Randall
237mm SL

Fig. 1247. *Epinephelus coioides* (Hamilton, 1822) South China Sea, off Malay Peninsula, photo by Chavalit Vidthayanon

Fig. 1248. *Epinephelus coioides* (Hamilton, 1822); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
131mm SL

Fig. 1249. *Epinephelus corallicola* (Valenciennes, 1828), adult; Palau, Babeldaob I., photo by Richard Winterbottom
149.5mm SL

Fig. 1250. *Epinephelus corallicola* (Valenciennes, 1828), juvenile; Vietnam, Nha Trang, photo by Richard Winterbottom
32.6mm SL

Fig. 1251. *Epinephelus cyanopodus* (Richardson, 1846); Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1252. *Epinephelus epistictus* (Temminck & Schlegel, 1842); Australia, CSIRO photo in Sainsbury et al. (1985)
510mm SL

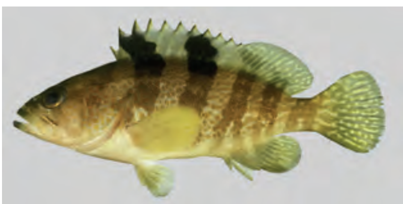

Fig. 1253. *Epinephelus fasciatomaculosus* (Peters, 1865); Taiwan, Yeh-Liu, photo by John Randall
85mm SL

Fig. 1254. *Epinephelus fasciatus* (Forsskål, 1775); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
250mm SL

Fig. 1255. *Epinephelus fuscoguttatus* (Forsskål, 1775); Saudi Arabia, Jeddah, photo by John Randall
551mm SL

Fig. 1256. *Epinephelus heniochus* Fowler, 1934; Australia, CSIRO photo in Sainsbury et al. (1985)
330mm SL

Fig. 1257. *Epinephelus lanceolatus* (Bloch, 1790); Thailand, Bangkok fish market, photo by Hiroshi Senou

Fig. 1258. *Epinephelus latifasciatus* (Temminck & Schlegel, 1842); India, Cochin, photo by John Randall
274mm SL

Fig. 1259. *Epinephelus macrospilos* (Bleeker, 1855); Mauritius, photo by John Randall
186mm SL

Fig. 1260. *Epinephelus malabaricus* (Bloch & Schneider, 1801); India, Cochin, photo by John Randall
317mm SL

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Fig. 1261. *Epinephelus merra* Bloch, 1793; Tahiti, Teavaraa Pass, photo by John Randall
176mm SL

Fig. 1262. *Epinephelus morrhua* (Valenciennes, 1833); Maldives, photo by John Randall
512mm SL

Fig. 1263. *Epinephelus poecilonotus* (Temminck & Schlegel, 1842); Indonesia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

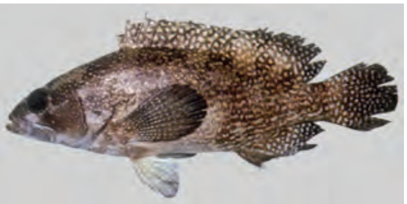

Fig. 1264. *Epinephelus ongus* (Bloch, 1790); Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
165mm SL

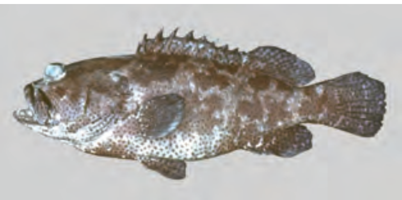

Fig. 1265. *Epinephelus polyphekadion* (Bleeker, 1849); Indonesia Java, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
380mm SL

Fig. 1266. *Epinephelus quoyanus* (Valenciennes, 1830); Australia, CSIRO photo in Sainsbury et al. (1985)
210mm SL

Fig. 1267. *Epinephelus retouti* Bleeker, 1868; Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
310mm SL

Fig. 1268. *Epinephelus rivulatus* (Valenciennes, 1830); Australia, Lord Howe Island, photo by John Randall
153mm SL

Fig. 1269. *Epinephelus sexfasciatus* (Valenciennes, 1828); Thailand, Songkhla, photo by Chavalit Vidthayanon

Fig. 1270. *Epinephelus stictus* Randall & Allen, 1987; Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
380mm SL

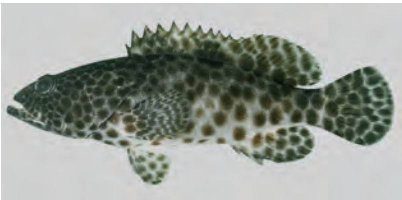

Fig. 1271. *Epinephelus tauvina* (Forsskål, 1775); Réunion, photo by John Randall
134mm SL

Fig. 1272. *Grammistes sexlineatus* (Thunberg, 1792); Guam, photo by John Randall
75mm SL

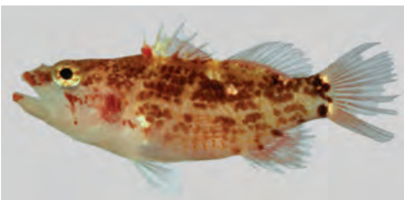

Fig. 1273. *Plectranthias longimanus* (Weber, 1913); New Caledonia, photo by Richard Winterbottom
23.4mm SL

Fig. 1274. *Plectropomus areolatus* Rüppell, 1830; Red Sea, Sudan, Port Sudan market, photo by John Randall
374mm SL

Fig. 1275. *Plectropomus laevis* (La Cepède, 1801); Marshall Islands, Enewetak, photo by John Randall
475mm SL

Fig. 1276. *Plectropomus laevis* (La Cepède, 1801); Marshall Islands, Enewetak, photo by John Randall
597mm SL

Fig. 1277. *Plectropomus leopardus* (La Cepède, 1802); Indonesia, Gili Ayer, Lombok, photo by John Randall
208mm SL

Fig. 1278. *Plectropomus maculatus* (Bloch, 1790); Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
557mm SL

Fig. 1279. *Pogonoperca punctata* (Valenciennes, 1830); Mauritius, Flat Island, photo by John Randall
213mm SL

Fig. 1280. *Pseudogramma polyacantha* (Bleeker, 1856); Society Islands, Moorea, photo by Richard Winterbottom
40.9mm SL

Fig. 1281. *Variola albimarginata* Baissac, 1953; Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
265mm SL

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Fig. 1282. *Variola louti* (Forsskål, 1775); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
220mm SL

Fig. 1283. *Centrogenys vaigiensis* (Quoy & Gaimard); Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
80mm SL

Fig. 1284. *Congrogadus subducens* (Richardson, 1843); Cambodia, Kampot, Kampot fish market, photo by Walter Rainboth
223mm SL

Fig. 1285. *Labracinus cyclophthalmus* (Müller & Troschel, 1849); Ryukyu Islands, Sesoko Island, Okinawa, photo by John Randall
83mm SL

Fig. 1286. *Pseudochromis cyanotaenia* Bleeker, 1847, ♂ ; Marshall Islands, Eniwetok, photo by John Randall
40mm SL

Fig. 1287. *Pseudochromis fuscus* (Müller & Troschel, 1846); Papua New Guinea, Nagada, photo by John Randall
46mm SL

Fig. 1288. *Pseudochromis marshallensis* Schultz, 1953; Vietnam, Nha Trang, photo by Richard Winterbottom
40.7mm SL

Fig. 1289. *Pseudochromis quinquedentatus* McCulloch, 1926; Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
71mm TL

Fig. 1290. *Pseudochromis ransonneti* Steindachner, 1870; Singapore, Salu Island, photo by John Randall
43mm SL

Fig. 1291. *Pseudochromis tapienosoma* (Bleeker, 1853); Indonesia, Ambon Bay, photo by John Randall
43mm SL

Fig. 1292. *Pseudoplesiops immaculatus* Gill & Edwards, 2002; Vietnam, Nha Trang, photo by Richard Winterbottom
33mm SL

Fig. 1293. *Pseudoplesiops immaculatus* Gill & Edwards, 2002; Palau, Ngeruktabel Isl., photo by Richard Winterbottom
28.6mm SL

Fig. 1294. *Calloplesiops altivelis* (Steindachner, 1903); Ryukyu Islands, Sesoko Island, Okinawa, photo by John Randall
47mm SL

Fig. 1295. *Plesiops coeruleolineatus* Rüppell, 1835; Marshall Islands, Eniwetok, photo by John Randall
44mm SL

Fig. 1296. *Plesiops oxycephalus* Bleeker, 1855; Ryukyu Islands, Taketomi, Ishigaki, photo by John Randall
46mm SL

Fig. 1297. *Plesiops verecundus* Mooi, 1995; Fiji, photo by Richard Winterbottom
78mm SL

Fig. 1298. *Opistognathus castelnaui* Bleeker, 1860; Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
180mm SL

Fig. 1299. *Opistognathus nigromarginatus* Rüppell, 1830; India, Vizhingan, photo by John Randall
143mm SL

Fig. 1300. *Opistognathus rosenbergii* (Bleeker, 1857); Thailand, Phuket, photo by Ukkrit Satapoomin
102mm SL

Fig. 1301. *Banjos banjos* (Richardson, 1846); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
133mm SL

Fig. 1302. *Cookeolus japonicus* (Cuvier, 1829); Easter Island, photo by John Randall
276mm SL

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Fig. 1303. *Heteropriacanthus cruentatus* (La Cepède, 1801); Easter Island, photo by John Randall
209mm SL


Fig. 1304. *Priacanthus fitchi* Starnes, 1988; Australia, CSIRO photo in Sainsbury et al. (1985)
162mm SL


Fig. 1305. *Priacanthus hamrur* (Forsskål, 1775); Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
296mm SL


Fig. 1306. *Priacanthus macracanthus* Cuvier, 1829; Australia, CSIRO photo in Sainsbury et al. (1985)
187mm SL


Fig. 1307. *Priacanthus sagittarius* Starnes, 1988; Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
340mm SL


Fig. 1308. *Priacanthus tayenus* Richardson, 1846; Australia, CSIRO photo in Sainsbury et al. (1985)
187mm SL


Fig. 1309. *Pristigenys niphonia* (Cuvier, 1829); Australia, CSIRO photo in Sainsbury et al. (1985)
180mm SL


Fig. 1310. *Apogon apogonoides* (Bleeker, 1856); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
80mm SL


Fig. 1311. *Apogon aureus* (La Cepède, 1802); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
86mm SL


Fig. 1312. *Apogon cavitensis* (Jordan & Seale, 1907); Vietnam, Cac Ba, photo by Richard Winterbottom
63mm SL


Fig. 1313. *Apogon chrysopomus* Bleeker, 1854; Vietnam, Nha Trang, photo by Richard Winterbottom
81mm SL


Fig. 1314. *Apogon coccineus* Rüppell, 1835; Vietnam, Nha Trang, photo by Richard Winterbottom
36.2mm SL


Fig. 1315. *Apogon compressus* (Smith & Radcliffe, 1812); Palau, photo by John Randall
64mm SL


Fig. 1316. *Apogon cookii* Macleay, 1881; Israel, Eilat, Gulf of Aqaba, photo by John Randall
33mm SL


Fig. 1317. *Apogon doederleini* Jordan & Snyder, 1901; Vietnam, Cac Ba, photo by Richard Winterbottom
40mm SL


Fig. 1318. *Apogon ellioti* Day, 1875; Australia, CSIRO photo in Sainsbury et al. (1985)
100mm TL


Fig. 1319. *Apogon endakataenia* Bleeker, 1852; Singapore Biola Island, photo by John Randall
62mm SL


Fig. 1320. *Apogon exostigma* (Jordan & Starks, 1906); Egypt, El Hamira, Gulf of Aqaba, photo by John Randall
59mm SL


Fig. 1321. *Apogon fasciatus* (White, 1790); Indonesia, Lombok, Pemenang, photo by John Randall
50mm SL


Fig. 1322. *Apogon fraenatus* Valenciennes, 1832; Israel, Eilat, Gulf of Aqaba, photo by John Randall
81mm SL


Fig. 1323. *Apogon hartzfeldii* Bleeker, 1852; Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
65mm TL


Fig. 1324. *Apogon hoevenii* Bleeker, 1854; Philippines, Dumaguete city, Negros, photo by John Randall
43mm SL


Fig. 1325. *Apogon hyalosoma* Bleeker, 1852; Indonesia, Ambon in brackish water, photo by John Randall
112mm SL


Fig. 1326. *Apogon kallopterus* Bleeker, 1856; Japan, Ani-jima, photo by John Randall
45mm SL


Fig. 1327. *Apogon lateralis* Valenciennes, 1832; Indonesia, Ambon Bay, photo by John Randall
55mm SL


Fig. 1328. *Apogon melanopus* Weber, 1911; Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
100mm TL


Fig. 1329. *Apogon melas* Bleeker, 1848; Indonesia, Poka, Ambon, photo by John Randall
59mm SL


Fig. 1330. *Apogon multitaeniatus* Cuvier, 1828; Oman, photo by John Randall
74mm SL


Fig. 1331. *Apogon nigripinnis* Cuvier, 1828; Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
61mm SL


Fig. 1332. *Apogon nigrocincta* (Smith & Radcliffe, 1912); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
61mm SL


Fig. 1333. *Apogon nigrofasciatus* Lachner, 1953; Palau, photo by John Randall
63mm SL


Fig. 1334. *Apogon poecilopterus* Cuvier, 1828; Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
110mm SL


Fig. 1335. *Apogon sangiensis* Bleeker, 1857; Indonesia, Jeneponto, Celebes, photo by John Randall
61mm SL


Fig. 1336. *Apogon semilineatus* Temminck & Schlegel, 1842; Australia, CSIRO photo in Sainsbury et al. (1985)
64mm TL


Fig. 1337. *Apogon septemstriatus* Günther, 1880; Australia, CSIRO photo in Sainsbury et al. (1985)
49mm SL


Fig. 1338. *Apogon taeniatus* Cuvier, 1828; Egypt, Nabek, Gulf of Aqaba, photo by John Randall
71mm SL


Fig. 1339. *Apogon taeniophorus* Regan, 1908; Maldives, photo by John Randall
48mm SL


Fig. 1340. *Apogon talboti* Smith, 1961; Vietnam, Nha Trang, photo by Richard Winterbottom
32mm SL


Fig. 1341. *Apogon timorensis* Bleeker, 1854; South Africa, Natal, photo by John Randall
46mm SL


Fig. 1342. *Apogon trimaculatus* Cuvier, 1828; Indonesia, Maumere, Flores, photo by John Randall
48mm SL

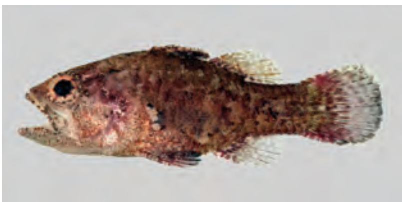
Fig. 1343. *Apogonichthys perdix* Bleeker, 1854; Vietnam, Nha Trang, photo by Richard Winterbottom
32mm SL


Fig. 1344. *Archamia fucata* Cantor, 1849; New Caledonia, photo by Richard Winterbottom
66mm SL

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Fig. 1345. *Archamia lineolata* (Cuvier, 1828); Egypt, Sharm el Sheikh, Red Sea, photo by John Randall
34mm SL


Fig. 1346. *Archamia macroptera* (Cuvier, 1828); Malaysia, Tioman Island, photo by John Randall
75mm SL


Fig. 1347. *Cheilodipterus artus* Smith, 1961; Vietnam, Nha Trang, photo by Richard Winterbottom
92.5mm SL


Fig. 1348. *Cheilodipterus intermedius* Gon, 1993; Ryukyu Islands, Sesoko Island, Okinawa, photo by John Randall
92mm SL


Fig. 1349. *Cheilodipterus isostigma* (Schultz, 1940); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
71mm SL


Fig. 1350. *Cheilodipterus macrodon* (La Cepède, 1802); Tahiti, Teavaraa Pass, photo by John Randall
159mm SL


Fig. 1351. *Cheilodipterus quinquelineatus* Cuvier, 1828; Sudan, Port Sudan, photo by John Randall
70mm SL


Fig. 1352. *Cheilodipterus singapurensis* Bleeker, 1859-60; Palau, photo by John Randall
54mm SL


Fig. 1353. *Fowleria aurita* (Valenciennes, 1831); Oman, Bar al Hikman, photo by John Randall
72mm SL


Fig. 1354. *Fowleria isostigma* (Jordan & Seale, 1906); Society Islands, Moorea, photo by Richard Winterbottom
35mm SL


Fig. 1355. *Fowleria vaiulae* (Jordan & Seale, 1906); Ryukyu Islands, Sesoko Island, Okinawa, photo by John Randall
26mm SL


Fig. 1356. *Fowleria variegata* (Valenciennes, 1832); Israel, Eilat, Gulf of Aqaba, photo by John Randall
43mm SL


Fig. 1357. *Neamia octospina* Smith & Radcliffe, 1912; New Caledonia, photo by Richard Winterbottom
34mm SL


Fig. 1358. *Nectamia savayensis* (Günther, 1872); Malaysia, Tioman Island, photo by John Randall
76mm SL


Fig. 1359. *Rhabdamia gracilis* (Bleeker, 1856); Australis, Chesterfield Bank, photo by John Randall
46mm SL


Fig. 1360. *Sphaeramia nematoptera* (Bleeker, 1856); Palau, photo by John Randall
45mm SL


Fig. 1361. *Sphaeramia orbicularis* (Cuvier, 1828); Palau, photo by John Randall
72mm SL


Fig. 1362. *Zoramia leptacantha* (Bleeker, 1856-57; Sudan, Port Sudan, Red Sea, photo by John Randall
35mm SL


Fig. 1363. *Sillago aeolus* Jordan & Evermann, 1902; Cambodia, Sihanoukville market, photo by Walter Rainboth
119mm SL


Fig. 1364. *Sillago ingenuua* McKay, 1985; Australia, CSIRO photo in Gloerfelt-Tarp & Kailola (1984)
100mm SL


Fig. 1365. *Sillago lutea* McKay, 1985; Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth
70mm SL

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Fig. 1366. *Sillago sihama* (Forsskål, 1775); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 162mm SL

Fig. 1367. *Malacanthus brevirostris* Guichenot, 1848; Philippines, Bolinao, photo by Ed Murdy and Carl Ferraris 175mm SL

Fig. 1368. *Malacanthus latovittatus* (La Cepède, 1801); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 225mm SL

Fig. 1369. *Lactarius lactarius* (Bloch & Schneider, 1801); Australia, CSIRO photo in Sainsbury et al. (1985) 140mm TL

Fig. 1370. *Echeneis naucrates* Linnaeus, 1758; Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 221mm SL

Fig. 1371. *Echeneis naucrates* Linnaeus, 1758, head; Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 221mm SL

Fig. 1372. *Phtheirichthys lineatus* (Menzies, 1791); Mariana Islands, Guam, Ratidian Point, photo by Walter Rainboth 112mm SL

Fig. 1373. *Phtheirichthys lineatus* (Menzies, 1791) head; Mariana Islands, Guam, Ratidian Point, photo by Walter Rainboth 112mm SL

Fig. 1374. *Rachycentron canadum* (Linnaeus, 1766); Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth 251mm SL

Fig. 1375. *Coryphaena equiselis* Linnaeus, 1758; Hawaii, Oahu, photo by John Randall 206mm SL

Fig. 1376. *Coryphaena hippurus* Linnaeus, 1758; Seychelles, photo by Richard Winterbottom 780mm SL

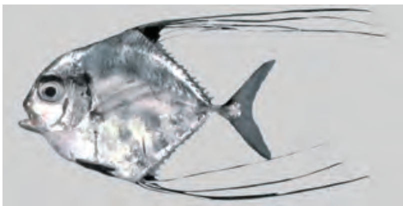

Fig. 1377. *Alectis ciliaris* (Bloch, 1787), juvenile; Australia, CSIRO photo in Sainsbury et al. (1985) 156mm FL

Fig. 1378. *Alectis indica* (Rüppell, 1830), juvenile; Australia, CSIRO photo in Sainsbury et al. (1985) 168mm FL

Fig. 1379. *Alectis indica* (Rüppell, 1830), adult; Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1380. *Alepes djedaba* (Forsskål, 1775); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 170mm SL

Fig. 1381. *Alepes kleinii* (Bloch, 1793); Vietnam; Kien Giang, Ha Tien river, photo by Walter Rainboth 49mm SL

Fig. 1382. *Alepes melanoptera* Swainson, 1839; Vietnam, Ho Chi Minh City, local market, photo by Walter Rainboth 209mm SL

Fig. 1383. *Alepes vari* (Cuvier, 1833); Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 160mm SL

Fig. 1384. *Atule mate* (Cuvier, 1833); Vietnam, Ho Chi Minh City, local market, photo by Walter Rainboth 198mm SL

Fig. 1385. *Carangoides armatus* (Rüppell, 1830); India, Cochin, photo by John Randall 132mm FL

Fig. 1386. *Carangoides bajad* (Forsskål, 1775); Cambodia, Sihanoukville market, photo by Walter Rainboth 260mm SL

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Fig. 1387. *Carangoides chrysophrys* (Cuvier, 1833); Australia, CSIRO photo in Sainsbury et al. (1985)
190mm SL

Fig. 1388. *Carangoides coeruleopinnatus* (Rüppell, 1830); Australia, CSIRO photo in Sainsbury et al. (1985)
210mm SL

Fig. 1389. *Carangoides dinema* Bleeker, 1851; Australia, CSIRO photo in Gloerfelt-Tarp & Kailola (1984)

Fig. 1390. *Gymnostethus ferdau* (Forsskål, 1775); Indonesia, Lombok, Tanjung Luar, photo by John Randall
232mm FL

Fig. 1391. *Carangoides fulvoguttatus* (Forsskål, 1775); Vietnam, My Tho market, photo by Walter Rainboth
262mm FL

Fig. 1392. *Carangoides gymnostethus* (Cuvier, 1833); Australia, CSIRO photo in Sainsbury et al. (1985)
192mm FL

Fig. 1393. *Carangoides hedlandensis* (Whitley, 1934); Vietnam, My Tho market, photo by Walter Rainboth
250mm FL

Fig. 1394. *Carangoides malabaricus* (Bloch & Schneider, 1801); Australia, CSIRO photo in Sainsbury et al. (1985)
152mm FL

Fig. 1395. *Carangoides orthogrammus* Jordan & Gilbert, 1882; Australia, Arafura Sea, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
320mm SL

Fig. 1396. *Carangoides praeustus* ([Bennett], 1830); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth
45mm FL

Fig. 1397. *Carangoides talamparoides* Bleeker, 1852; Australia, CSIRO photo in Sainsbury et al. (1985)
130mm FL

Fig. 1398. *Caranx ignobilis* (Forsskål, 1775); Australia, CSIRO photo in Sainsbury et al. (1985)
210mm FL

Fig. 1399. *Caranx lugubris* Poey, 1860; Australia, CSIRO photo in Sainsbury et al. (1985)
420mm FL

Fig. 1400. *Caranx melampygus* Cuvier, 1833; Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
400mm FL

Fig. 1401. *Caranx sexfasciatus* Quoy & Gaimard, 1825; Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 1402. *Caranx tille* Cuvier, 1833; Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
220mm FL

Fig. 1403. *Decapterus kurroides* Bleeker, 1855; Indonesia, eastern Java, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
170mm SL

Fig. 1404. *Decapterus macarellus* Cuvier, 1833; Australia, CSIRO photo in Sainsbury et al. (1985)
288mm FL

Fig. 1405. *Decapterus macrosoma* Bleeker, 1851; Australia, CSIRO photo in Sainsbury et al. (1985)
170mm FL

Fig. 1406. *Decapterus russelli* (Rüppell, 1830); Vietnam, Ho Chi Minh City, local market, photo by Walter Rainboth
188mm SL

Fig. 1407. *Elegatis bipinnulata* (Quoy & Gaimard, 1825); Australia; JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
307mm FL

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Fig. 1408. *Gnathanodon speciosus* (Forsskål, 1775); Australia, CSIRO photo in Sainsbury et al. (1985)
98mm FL

Fig. 1409. *Megalaspis cordyla* (Linnaeus, 1758); Vietnam, Tra Vinh, Tra Vinh market, photo by Walter Rainboth
205mm SL

Fig. 1410. *Parastromateus niger* (Bloch, 1795); Australia, CSIRO photo in Sainsbury et al. (1985)
210mm TL

Fig. 1411. *Scomberoides commersonianus* (La Cepède, 1801); Sarawak, photo by Chavalit Vidthayanon

Fig. 1412. *Scomberoides lysan* (Forsskål, 1775); Sri Lanka, photo by John Randall
298mm SL

Fig. 1413. *Scomberoides tala* (Cuvier, 1832); Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
235mm SL

Fig. 1414. *Scomberoides tol* (Cuvier, 1832); Vietnam, Tra Vinh, Tra Vinh market, photo by Walter Rainboth
282mm SL

Fig. 1415. *Selar boops* (Cuvier, 1833); Australia, CSIRO photo in Sainsbury et al. (1985)
217mm FL

Fig. 1416. *Selar crumenophthalmus* (Bloch, 1793); Vietnam, Tra Vinh, Tra Vinh market, photo by Walter Rainboth
183mm SL

Fig. 1417. *Selaroides leptolepis* (Cuvier, 1833); Thailand, photo by Chavalit Vidthayanon

Fig. 1418. *Seriola dumerili* (Risso, 1810); Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
430mm SL

Fig. 1419. *Seriolina nigrofasciata* (Rüppell, 1829); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
370mm FL

Fig. 1420. *Trachinotus baillonii* (La Cepède, 1801); Indonesia, Lombok, Batu Layar, photo by John Randall
206mm SL

Fig. 1421. *Trachinotus blochii* (La Cepède, 1801); Bahrain, market, photo by John Randall
327mm FL

Fig. 1422. *Trachinotus mookalee* Cuvier, 1832; India, Cochin, photo by John Randall
92mm SL

Fig. 1423. *Ulua mentalis* (Cuvier, 1833); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
226mm FL

Fig. 1424. *Uraspis uraspis* (Günther, 1860); Australia, CSIRO photo in Sainsbury et al. (1985)
198mm FL

Fig. 1425. *Uraspis uraspis* (Günther, 1860); Cambodia, Sihanoukville market, photo by Walter Rainboth
119mm SL

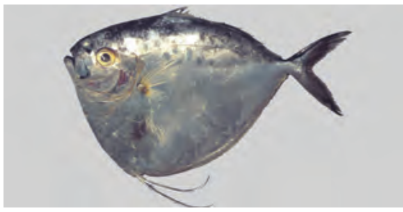

Fig. 1426. *Mene maculata* (Bloch & Schneider, 1801); Vietnam, My Tho market, photo by Walter Rainboth
180mm SL

Fig. 1427. *Equulites elongatus* (Günther, 1874); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 1428. *Equulites leuciscus* (Günther, 1860); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
108mm SL

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Fig. 1429. *Equulites stercorarius* Evermann & Seale, 1907; Cambodia; Sihanoukville market, photo by Walter Rainboth 70mm SL

Fig. 1430. *Gazza dentex* (Valenciennes, 1835); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 1431. *Gazza minuta* (Bloch, 1797);Cambodia, Sihanoukville market, photo by Walter Rainboth 109mm SL

Fig. 1432. *Gazza rhombea* Kimura, Yamashita & Iwatsuki, 2000; Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 133mm SL

Fig. 1433. *Leiognathus aureus* Abe & Haneda, 1972; Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 95mm SL

Fig. 1434. *Leiognathus berbis* (Valenciennes, 1835); Indonesia, Lombok, Ampenon, photo by John Randall 88mm SL

Fig. 1435. *Leiognathus bindus* (Valenciennes, 1835); Kuwait, Kuwait Bay, photo by John Randall 69mm SL

Fig. 1436. *Leiognathus blochii* (Valenciennes, 1835); Thailand, photo by Chavalit Vidthayanon

Fig. 1437. *Leiognathus daura* (Cuvier, 1829); India, Madras, photo by John Randall 106mm SL

Fig. 1438. *Leiognathus equulus* (Forsskål, 1775); Cambodia, Sihanoukville market, photo by Walter Rainboth 110mm SL

Fig. 1439. *Leiognathus fasciatus* (La Cepède, 1803); Indonesia, southern Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 154mm SL

Fig. 1440. *Leiognathus jonesi* James, 1971; Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 43mm SL

Fig. 1441. *Leiognathus longispinis* (Valenciennes, 1835); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 120mm SL

Fig. 1442. *Nuchequula gerreoides* (Bleeker, 1851); Thailand, photo by Chavalit Vidthayanon

Fig. 1443. *Nuchequula pan* (Wongratana, 1988); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 41mm SL

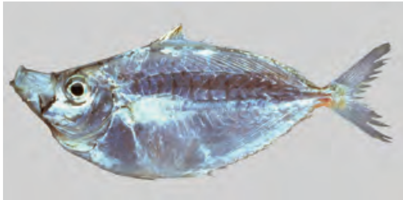

Fig. 1444. *Secutor indicius* Mongkolprasit, 1973; Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 1445. *Secutor megalolepis* Mochizuki & Hayashi, 1989; Thailand, photo by Chavalit Vidthayanon

Fig. 1446. *Secutor ruconius* (Hamilton, 1822); Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 35mm SL

Fig. 1447. *Pteraclis aesticola* (Jordan & Snyder, 1901); Pacific Ocean, photo by NMFS/PIRO Fishery Observer Program

Fig. 1448. *Taractichthys steindachneri* (Döderlein, 1883); Pacific Ocean, 24ºN, 154ºW, photo by Clay Archambault 610mm TL

Fig. 1449. *Aphareus furca* (La Cepède, 1801); Marshall Islands, Enewetak, photo by John Randall 247mm SL

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Fig. 1450. *Aphareus rutilans* Cuvier, 1830; Maldives, photo by John Randall
596mm SL

Fig. 1451. *Aprion virescens* Valenciennes, 1830; Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
540mm SL

Fig. 1452. *Etelis carbunculus* Cuvier, 1828; Australia, CSIRO photo in Sainsbury et al. (1985)
360mm TL

Fig. 1453. *Etelis coruscans* Valenciennes, 1862; Mauritius, Banc Rouge, photo by John Randall
370mm SL

Fig. 1454. *Etelis radiosus* Anderson, 1981; Indonesia, photo by William Anderson in Gloerfelt-Tarp & Kailola (1984)

Fig. 1455. *Lipocheilus carnolabrum* (Chan, 1970); India, Cochin, photo by John Randall
380mm SL

Fig. 1456. *Lutjanus argentimaculatus* (Forsskål, 1775); Australia, CSIRO photo in Sainsbury et al. (1985)
520mm TL

Fig. 1457. *Lutjanus biguttatus* (Valenciennes, 1830); Palau, photo by John Randall
142mm SL

Fig. 1458. *Lutjanus bitaeniatus* (Valenciennes, 1830); Australia, CSIRO photo in Sainsbury et al. (1985)
280mm TL

Fig. 1459. *Lutjanus bohar* (Forsskål, 1775); Australia, CSIRO photo in Sainsbury et al. (1985)
255mm TL

Fig. 1460. *Lutjanus carponotatus* (Richardson, 1842); Australia, CSIRO photo in Sainsbury et al. (1985)
250mm TL

Fig. 1461. *Lutjanus decussatus* (Cuvier, 1828); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1462. *Lutjanus ehrenbergii* (Peters, 1869); Indonesia, Ambon, market, photo by John Randall
182mm SL

Fig. 1463. *Lutjanus erythropterus* Bloch, 1790; Australia, CSIRO photo in Sainsbury et al. (1985)
440mm TL

Fig. 1464. *Lutjanus erythropterus* Bloch, 1790; Australia, CSIRO photo in Sainsbury et al. (1985)
169mm SL

Fig. 1465. *Lutjanus fulviflamma* (Forsskål, 1775); Thailand, Cholburi, photo by Hiroshi Senou

Fig. 1466. *Lutjanus fulvus* (Forster, 1801); Australia, CSIRO photo in Gloerfelt-Tarp & Kailola (1984)
209mm SL

Fig. 1467. *Lutjanus gibbus* (Forsskål, 1775); Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
300mm TL

Fig. 1468. *Lutjanus johnii* (Bloch, 1792); Australia, CSIRO photo in Sainsbury et al. (1985)
390mm TL

Fig. 1469. *Lutjanus johnii* (Bloch, 1792); Sabah, photo by Chavalit Vidthayanon

Fig. 1470. *Lutjanus kasmira* (Forsskål, 1775); Mauritius, photo by John Randall
110mm SL

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Fig. 1471. *Lutjanus lemniscatus* (Valenciennes, 1828); Australia, CSIRO photo in Sainsbury et al. (1985) 370mm TL

Fig. 1472. *Lutjanus lunulatus* (Park, 1797); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 180mm SL

Fig. 1473. *Lutjanus lutjanus* Bloch, 1790; Vietnam, My Tho market, photo by Walter Rainboth 130mm SL

Fig. 1474. *Lutjanus madras* (Valenciennes, 1831); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 160mm SL

Fig. 1475. *Lutjanus malabaricus* (Bloch & Schneider, 1801); Australia, CSIRO photo in Sainsbury et al. (1985) 590mm TL

Fig. 1476. *Lutjanus malabaricus* Schneider, 1801; Australia, CSIRO photo in Sainsbury et al. (1985) 73mm TL

Fig. 1477. *Lutjanus monostigma* (Cuvier, 1828); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 300mm SL

Fig. 1478. *Lutjanus quinquelineatus* (Bloch, 1790); Australia, CSIRO photo in Sainsbury et al. (1985) 195mm SL

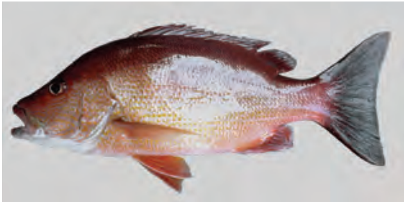

Fig. 1479. *Lutjanus rivulatus* (Cuvier, 1828); Sabah, Labuan Island, photo by Chavalit Vidthayanon

Fig. 1480. *Lutjanus rufolineatus* (Valenciennes, 1830); Indonesia, Ambon, market, photo by John Randall 162mm SL

Fig. 1481. *Lutjanus russellii* (Bleeker, 1849); Sabah, Labuan Island, photo by Chavalit Vidthayanon

Fig. 1482.*Lutjanus russellii* (Bleeker, 1849); Vietnam, Kien Giang, Ha Tien Lake, photo by Walter Rainboth 97mm SL

Fig. 1483. *Lutjanus sebae* (Cuvier, 1816); Australia, CSIRO photo in Sainsbury et al. (1985) 450mm TL

Fig. 1484. *Lutjanus sebae* (Cuvier, 1816); Australia, CSIRO photo in Sainsbury et al. (1985) 127mm TL

Fig. 1485. *Lutjanus semicinctus* (Quoy & Gaimard, 1824); Solomon Islands, Guadalcanal, photo by John Randall 112mm SL

Fig. 1486. *Lutjanus timorensis* (Quoy & Gaimard, 1824); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 280mm SL

Fig. 1487. *Lutjanus vitta* (Quoy & Gaimard, 1824); Australia, CSIRO photo in Sainsbury et al. (1985) 195mm SL

Fig. 1488. *Macolor niger* (Forsskål, 1775); New Guinea, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1489. *Paracaesio kusakarii* Abe, 1960; Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 450mm SL

Fig. 1490. *Paracaesio xanthura* (Bleeker, 1869); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 55mm SL

Fig. 1491. *Pinjalo pinjalo* (Bleeker, 1850); Indonesia, Sumbawa, JETINDOFISH surveyphoto by Thomas Gloerfelt-Tarp 170mm SL

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Fig. 1492. *Pristipomoides argyrogrammicus* (Valenciennes, 1832); Ryukyu Islands, Okinawa, Naha, market, photo by John Randall 269mm SL

Fig. 1493. *Pristipomoides auricilla* (Jordan, Evermann & Tanaka, 1927); Maldives, photo by John Randall 243mm SL

Fig. 1494. *Pristipomoides filamentosus* (Valenciennes, 1830); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 495mm SL

Fig. 1495. *Pristipomoides multidens* (Day, 1871); Australia, CSIRO photo in Sainsbury et al. (1985) 550mm FL

Fig. 1496. *Pristipomoides sieboldii* (Bleeker, 1854); Ryukyu Islands, Naha, Okinawa, photo by John Randall 273mm SL

Fig. 1497. *Pristipomoides typus* Bleeker, 1852; Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 400mm SL

Fig. 1498. *Pristipomoides zonatus* (Valenciennes, 1830); Guam, photo by John Randall 252mm SL

Fig. 1499. *Symphorichthys spilurus* (Günther, 1874); Solomon Islands, Florida Island, photo by John Randall 305mm SL

Fig. 1500. *Symphorus nematophorus* (Bleeker, 1860); Indonesia, Lombok, Tanjung Luar, photo by John Randall 71mm SL

Fig. 1501. *Caesio caerulaurea* La Cepède, 1801; Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 141mm SL

Fig. 1502. *Caesio cuning* (Bloch, 1791); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 100mm SL

Fig. 1503. *Caesio lunaris* Cuvier, 1830; Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 200mm SL

Fig. 1504. *Caesio teres* Seale, 1906; Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 128mm SL

Fig. 1505. *Caesio xanthonota* Bleeker, 1853; Maldives, Villingili, photo by John Randall 139mm SL

Fig. 1506. *Dipterygonotus balteatus* (Valenciennes, 1830); Australia, CSIRO photo in Sainsbury et al. (1985) 110mm TL

Fig. 1507. *Gymnocaesio gymnoptera* (Bleeker, 1860); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 112mm SL

Fig. 1508. *Pterocaesio chrysozona* (Cuvier, 1830); Vietnam, My Tho market, photo by Walter Rainboth 124mm SL

Fig. 1509. *Pterocaesio digramma* (Bleeker, 1864); Australia, CSIRO photo in Sainsbury et al. (1985) 138mm TL

Fig. 1510. *Pterocaesio marri* Schultz, 1953; Marshall Islands, Enewetak, photo by John Randall 192mm SL

Fig. 1511. *Pterocaesio pisang* (Bleeker, 1853); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 65mm SL

Fig. 1512. *Datnioides polota* (Hamilton, 1822); Thailand, Bangpakong, Chavalit Vidthayanon

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Fig. 1513. *Datnioides pulcher* (Kottelat, 1998); Cambodia, Odong Mean Chey, Prek Andhor, 15km NW of Phnom Penh, photo by Walter Rainboth 63mm SL

Fig. 1514. *Datnioides undecemradiatus* (Roberts & Kottelat, 1994); Laos, Khammouane, Mekong, photo by Walter Rainboth 118mm SL

Fig. 1515. *Lobotes surinamensis* (Bloch, 1790); Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 1516. *Gerres chrysops* Iwatsuki, Kimura & Yoshino, 1999; Thailand, Songkhla, photo by Chavalit Vidthayanon

Fig. 1517. *Gerres erythrourus* (Bloch, 1791); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 73mm SL

Fig. 1518. *Gerres filamentosus* Cuvier, 1829; Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 111mm SL

Fig. 1519. *Gerres infasciatus* Iwatsuki & Kimura,, 1998; Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 77mm SL

Fig. 1520. *Gerres limbatus* Cuvier, 1830; Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 45mm SL

Fig. 1521. *Gerres longirostris* (La Cepède, 1801); Seychelles, Poivre, mangroves, photo by John Randall 103mm SL

Fig. 1522. *Gerres macracanthus* Bleeker, 1854; Bahrain, Sitra Island, photo by John Randall 61mm SL

Fig. 1523. *Gerres oyena* (Forsskål, 1775); Bahrain, Muharraq Island, photo by John Randall 90mm SL

Fig. 1524. *Pentaprion longimanus* (Cantor, 1850); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 86mm SL

Fig. 1525. *Diagramma picta* (Thunberg, 1792); Australia, Timor Sea, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 320mm TL

Fig. 1526. *Diagramma picta* (Thunberg, 1792); Cambodia, Sihanoukville market, photo by Walter Rainboth 154mm SL

Fig. 1527. *Diagramma picta* (Thunberg, 1792); Australia, CSIRO photo in Sainsbury et al. (1985) 149mm TL

Fig. 1528. *Hapalogenys mucronatus* (Eydoux & Souleyet, 1850; Hong Kong, Saikung, market, photo by John Randall 142mm SL

Fig. 1529. *Hapalogenys kishinouyei* Smith & Pope, 1907; Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 285mm TL

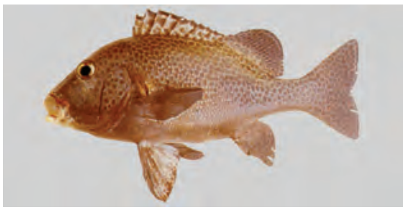

Fig. 1530. *Plectorhinchus chaetodonoides* La Cepède, 1801; Indonesia, Sumatra or Java (data lost) JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

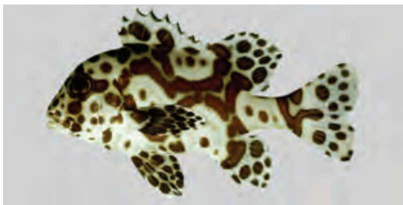

Fig. 1531. *Plectorhinchus chaetodonoides* La Cepède, 1801; Australia, Chesterfield Islands, photo by John Randall 137mm SL

Fig. 1532. *Plectorhinchus chaetodonoides* La Cepède, 1801; Palau, photo by John Randall 37mm SL

Fig. 1533. *Plectorhinchus chrysotaenia* (Bleeker, 1855); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 210mm SL

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Fig. 1534. *Plectorhinchus flavomaculatus* (Cuvier, 1830); Australia, CSIRO photo in Sainsbury et al. (1985) 324mm TL

Fig. 1535. *Plectorhinchus gibbosus* (La Cepède, 1802); Australia, CSIRO photo in Sainsbury et al. (1985) 470mm TL

Fig. 1536. *Plectorhinchus lineatus* (Linnaeus, 1758); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 275mm SL

Fig. 1537. *Plectorhinchus lineatus* (Linnaeus, 1758); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 135mm SL

Fig. 1538. *Plectorhinchus pictus* (Tortonese, 1936); Bahrain, market specimen, photo by John Randall 322mm SL

Fig. 1539. *Plectorhinchus picus* (Cuvier, 1830); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 407mm SL

Fig. 1540. *Plectorhinchus schotaf* (Forsskål, 1775); Sudan, Port Sudan, photo by John Randall 255mm SL

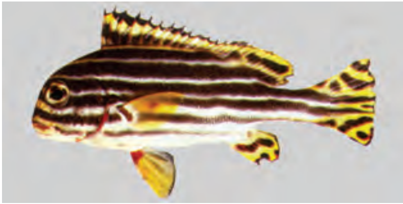

Fig. 1541. *Plectorhinchus vittatus* (Linnaeus, 1758); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 180mm SL

Fig. 1542. *Pomadasys argenteus* (Forsskål, 1775); Australia, CSIRO photo in Sainsbury et al. (1985) 155mm TL

Fig. 1543. *Pomadasys argyreus* (Valenciennes, 1833); Indonesia, western Java, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 190mm SL

Fig. 1544. *Pomadasys furcatus* (Bloch & Schneider, 1801); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 135mm SL

Fig. 1545. *Pomadasys kaakan* (Cuvier, 1830); Australia, CSIRO photo in Sainsbury et al. (1985) 360mm TL

Fig. 1546. *Pomadasys maculatus* (Bloch, 1793); Australia, CSIRO photo in Sainsbury et al. (1985) 149mm TL

Fig. 1547. *Acanthopagrus berda* (Forsskål, 1775); Vietnam, Tien Giang, mouth of Song Cua Dai, photo by Walter Rainboth 65mm SL

Fig. 1548. *Acanthopagrus latus* (Houttuyn, 1782); Saudi Arabia, Persian Gulf, Half Moon Bay, photo by John Randall 113mm SL

Fig. 1549. *Argyrops spinifer* (Forsskål, 1775); Australia, CSIRO photo in Sainsbury et al. (1985) 218mm TL

Fig. 1550. *Evynnis tumifrons* (Temminck & Schlegel, 1843); Australia, CSIRO photo in Sainsbury et al. (1985) 210mm SL

Fig. 1551. *Pagrus major* (Temminck & Schlegel, 1843); Indonesia, Southern Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1552. *Rhabdosargus sarba* (Forsskål, 1775); India, Vizhingan, photo by John Randall 200mm SL

Fig. 1553. *Gnathodentex aurolineatus* (La Cepède, 1802); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 160mm SL

Fig. 1554. *Gymnocranius elongatus* Senta, 1973; Australia, CSIRO photo in Sainsbury et al. (1985) 150mm TL

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Fig. 1555. *Gymnocranius grandoculis* (Valenciennes, 1830); Indonesia, Sumatra JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 420mm SL

Fig. 1556. *Gymnocranius griseus* (Schlegel, 1844); Australia, CSIRO photo in Sainsbury et al. (1985) 300mm TL

Fig. 1557. *Gymnocranius microdon* (Bleeker, 1851); Indonesia, Lombok, Ampenan, market, photo by John Randall 220mm SL

Fig. 1558. *Lethrinus atkinsoni* Seale, 1910; Australia, CSIRO photo in Sainsbury et al. (1985) 410mm TL

Fig. 1559. *Lethrinus erythracanthus* Valenciennes, 1830; Marshall Islands, Enewetak, photo by John Randall 345mm SL

Fig. 1560. *Lethrinus erythropterus* Valenciennes, 1830; Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1561. *Lethrinus genivittatus* Valenciennes, 1830; Vietnam, Nha Trang, photo by Richard Winterbottom 53.3mm SL

Fig. 1562. *Lethrinus harak* (Forsskål, 1775); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1563. *Lethrinus lentjan* (La Cepède, 1802); Australia, CSIRO photo in Sainsbury et al. (1985) 256mm TL

Fig. 1564. *Lethrinus microdon* Valenciennes, 1830; Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1565. *Lethrinus miniatus* (Forster, 1801); Australia, CSIRO photo in Sainsbury et al. (1985) 369mm TL

Fig. 1566. *Lethrinus nebulosus* (Forsskål, 1775); Australia, CSIRO photo in Sainsbury et al. (1985) 520mm FL

Fig. 1567. *Lethrinus obsoletus* (Forsskål, 1775); Marshall Islands, Enewetak, photo by John Randall 295mm SL

Fig. 1568. *Lethrinus olivaceus* Valenciennes, 1830; Australia, CSIRO photo in Sainsbury et al. (1985) 620mm TL

Fig. 1569. *Lethrinus ornatus* Valenciennes, 1830; Indonesia, eastern Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 150mm SL

Fig. 1570. *Lethrinus rubrioperculatus* Sato, 1978; Australia, CSIRO photo in Sainsbury et al. (1985) 354mm TL

Fig. 1571. *Lethrinus variegatus* Valenciennes, 1830; Australia, CSIRO photo in Sainsbury et al. (1985) 225mm SL

Fig. 1572. *Monotaxis grandoculis* (Forsskål, 1775); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 335mm SL

Fig. 1573. *Wattsia mossambica* (Smith, 1957); Indonesia, Sumatra or Java, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1574. *Nemipterus bathybius* Snyder, 1911; Australia, CSIRO photo in Sainsbury et al. (1985) 165mm SL

Fig. 1575. *Nemipterus furcosus* (Valenciennes, 1830); Australia, CSIRO photo in Sainsbury et al. (1985) 196mm SL

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Fig. 1576. *Nemipterus hexodon* (Quoy & Gaimard, 1824); Cambodia, Sihanoukville market, photo by Walter Rainboth
151mm SL

Fig. 1577. *Nemipterus isacanthus* (Bleeker, 1873); Australia, CSIRO photo in Sainsbury et al. (1985)
205mm SL

Fig. 1578. *Nemipterus japonicus* (Bloch, 1791); Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
168mm SL

Fig. 1579. *Nemipterus marginatus* (Valenciennes, 1830); Australia, JETINDOFISH survey photo by Thomas Gloerfrly-Tarp
109mm SL

Fig. 1580. *Nemipterus mesoprion* (Bleeker, 1853); Australia, CSIRO photo in Gloerfelt-Tarp & Kailola (1984)
144mm SL

Fig. 1581. *Nemipterus nematophorus* (Bleeker, 1853); Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1582. *Nemipterus nemurus* (Bleeker, 1857); Indonesia, Lombok, Tanjung Luar, photo by John Randall
174mm SL

Fig. 1583. *Nemipterus peronii* (Valenciennes, 1830); Australia, CSIRO photo in Sainsbury et al. (1985)
176mm SL

Fig. 1584. *Nemipterus tambuloides* (Bleeker, 1853); Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
231mm SL

Fig. 1585. *Nemipterus thosaporni* Russell, 1991; Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1586. *Nemipterus virgatus* (Houttuyn, 1782); Australia, CSIRO photo in Sainsbury et al. (1985)
200mm SL

Fig. 1587. *Nemipterus zysron* (Bleeker, 1856-57); Australia, CSIRO photo in Sainsbury et al. (1985)
195mm SL

Fig. 1588. *Parascolopsis eriomma* (Jordan & Richardson, 1909); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
165mm SL

Fig. 1589. *Parascolopsis inermis* (Teminck & Schlegel, 1843); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
127mm SL

Fig. 1590. *Pentapodus caninus* (Cuvier, 1830); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
60mm SL

Fig. 1591. *Pentapodus emeryii* (Richardson, 1843); Indonesia, Flores, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
136mm SL

Fig. 1592. *Pentapodus setosus* (Valenciennes, 1830); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
63mm SL

Fig. 1593. *Scolopsis affinis* Peters, 1877; Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
107mm SL

Fig. 1594. *Scolopsis bilineata* (Bloch, 1793); Cambodia, Kampot market, photo by Walter Rainboth
140mm SL

Fig. 1595. *Scolopsis ciliata* (La Cepède, 1802); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
108mm SL

Fig. 1596. *Scolopsis lineata* Quoy & Gaimard, 1824; Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
155mm SL

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Fig. 1597. *Scolopsis margaritifera* (Cuvier, 1830); Indonesia, Sumba, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 151mm SL

Fig. 1598. *Scolopsis monogramma* (Cuvier, 1830); Australia, CSIRO photo in Sainsbury et al. (1985) 240mm SL

Fig. 1599. *Scolopsis taeniopterа* (Cuvier, 1830); Australia, CSIRO photo in Sainsbury et al. (1985) 130mm SL

Fig. 1600. *Scolopsis trilineata* Kner, 1868; Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 77mm SL

Fig. 1601. *Scolopsis vosmeri* (Bloch, 1782); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 124mm SL

Fig. 1602. *Scolopsis xenochrous* Günther, 1872; Indonesia, Ambon, market, photo by John Randall 133mm SL

Fig. 1603. *Eleutheronema tetradactylum* (Shaw, 1804); Thailand, Ranong, Chavalit Vidthayanon

Fig. 1604. *Polydactylus microstomus* Bleeker, 1851; Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 158mm SL

Fig. 1605. *Polydactylus plebeius* (Broussonet, 1782); Indonesia, Lombok, Ampenan, photo by John Randall 380mm SL

Fig. 1606. *Polydactylus sextarius* (Bloch, 1801); Thailand, Gulf of Thailand, photo by Chavalit Vidthayanon

Fig. 1607. *Polydactylus siamensis* Motomura, Iwatsuki and Yoshino, 2001; Thailand, Phuket, photo by Chavalit Vidthayanon

Fig. 1608. *Polynemus aquilonaris* Motomura, 2003; Thailand, Ayutthaya, Chavalit Vidthayanon

Fig. 1609. *Polynemus bidentatus* Motomura & Tsukawaki, 2006; Thailand, Bangpakong River, photo by Chavalit Vidthayanon 150mm SL

Fig. 1610. *Polynemus melanochir* Valenciennes, 1831; Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 121mm SL

Fig. 1611. *Polynemus paradiseus* Linnaeus, 1758; Thailand, Phitsanulok, Nam Yom, Chavalit Vidthayanon

Fig. 1612. *Polynemus sp.* Vietnam, Long Xuyen, Hau Giang at Chau Doc, photo by Walter Rainboth 86mm SL

Fig. 1613. *Aspericorvina jubata* (Bleeker, 1855); Thailand, photo by Chavalit Vidthayanon

Fig. 1614. *Atrobucca nibe* (Jordan & Thompson, 1911); Sri Lanka, photo by John Randall 267mm SL

Fig. 1615. *Boesemania microlepis* (Bleeker, 1858); Thailand, Bangpakong River, photo by Hiroshi Senou

Fig. 1616. *Chrysochir aureus* (Richardson, 1846); Vietnam, Ho Chi Minh City, local market, photo by Walter Rainboth 198mm SL

Fig. 1617. *Dendrophysa russelii* (Cuvier, 1830); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 49mm SL

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Fig. 1618. *Johnius amblycephalus* (Bleeker, 1855); Cambodia, Sihanoukville market, photo by Walter Rainboth
127mm SL

Fig. 1619. *Johnius belangerii* (Cuvier, 1830); Vietnam, Tien Giang, mouth of Song Cua Dai, photo by Walter Rainboth
135mm SL

Fig. 1620. *Johnius borneensis* (Bleeker, 1851); Indonesia, Ampenan, Lombok, photo by John Randall
181mm SL

Fig. 1621. *Johnius carouna* (Cuvier, 1830); Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth
102mm SL

Fig. 1622. *Johnius carutta* Bloch, 1792; Kuwait, photo by John Randall
168mm SL

Fig. 1623. *Johnius coitor* (Hamilton, 1822); Thailand, photo by Chavalit Vidthayanon

Fig. 1624. *Johnius latifrons* Sasaki, 1992; Vietnam, Tien Giang, mouth of Song Cua Dai, photo by Walter Rainboth
92mm SL

Fig. 1625. *Johnius latifrons* Sasaki, 1992; Thailand, Chumporn, photo by Chavalit Vidthayanon
130mm SL

Fig. 1626. *Johnius macrorhynus* (Mohan, 1976); Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 1627. *Johnius trachycephalus* (Bleeker, 1850); Vietnam, Tra Vinh, My Long, photo by Walter Rainboth
122mm SL

Fig. 1628. *Johnius trachycephalus* (Bleeker, 1850); Vietnam, Soc Trang, Hau Giang, photo by Walter Rainboth
72mm SL

Fig. 1629. *Johnius weberi* Hardenberg, 1936; Thailand, photo by Chavalit Vidthayanon

Fig. 1630. *Nibea soldado* (La Cepède, 1802); Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 1631. *Nibea soldado* (La Cepède, 1802); Vietnam, Tien Giang, mouth of Song Cua Dai, photo by Walter Rainboth
110mm SL

Fig. 1632. *Otolithes ruber* (Bloch & Schneider, 1801); Vietnam, Minh Hai, Ca Mau market, photo by Walter Rainboth
179mm SL

Fig. 1633. *Panna microdon* (Bleeker, 1849); Vietnam, Long Xuyen, Hau Giang, photo by Walter Rainboth
79mm SL

Fig. 1634. *Pennahia anea* (Bloch, 1793); Cambodia, Sihanoukville market, photo by Walter Rainboth
119mm SL

Fig. 1635. *Pennahia pawak* (Lin, 1940); Indonesia, eastern Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
115mm SL

Fig. 1636. *Protonibea diacanthus* (La Cepède, 1802); Thailand, Songkhla, photo by Hiroshi Senou

Fig. 1637. *Pterotolithus lateoides* (Bleeker, 1850); Vietnam, Tien Giang, My Tho market, photo by Walter Rainboth

Fig. 1638. *Mulloidichthys flavolineatus* (La Cepède, 1801); Mauritius, photo by John Randall
168mm SL

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Fig. 1639. *Mulloidichthys vanicolensis* (Valenciennes, 1831); Hawaii, Honolulu fish market, photo by John Randall
203mm SL

Fig. 1640. *Parupeneus barberinoides* (Bleeker, 1852); Marshall Islands, Kwajalein, photo by John Randall
104mm SL

Fig. 1641. *Parupeneus barberinus* (La Cepède, 1801); Australia, Lord Howe Island, photo by John Randall
264mm SL

Fig. 1642. *Parupeneus chrysopleuron* (Temminck & Schlegel, 1843); Australia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
248mm FL

Fig. 1643. *Parupeneus ciliatus* (La Cepède, 1802); Tonga, Vava'u, photo by John Randall
177mm SL

Fig. 1644. *Parupeneus crassilabris* (Valenciennes, 1831); Solomon Islands, Alite Reef, photo by John Randall
205mm SL

Fig. 1645. *Parupeneus cyclostomus* (La Cepède, 1801); Marshall Islands, Enewetak, photo by John Randall
159mm SL

Fig. 1646. *Parupeneus heptacanthus* (La Cepède, 1801); Cambodia, Sihanoukville market, photo by Walter Rainboth
165mm SL

Fig. 1647. *Parupeneus indicus* (Shaw, 1803); Cambodia, Sihanoukville market, photo by Walter Rainboth
230mm SL

Fig. 1648. *Parupeneus macronemus* (La Cepède, 1801); Oman, Port Qaboos market, photo by John Randall
245mm SL

Fig. 1649. *Parupeneus multifasciatus* (Quoy & Gaimard, 1825); Taiwan, Nan Wan, photo by John Randall
204mm SL

Fig. 1650. *Parupeneus pleurostigma* (Bennett, 1831); Marshall Islands, Enewetak, photo by John Randall
160mm SL

Fig. 1651. *Upeneus japonicus* (Houttuyn, 1782); Australia, CSIRO photo in Sainsbury, et al., 1985
120mm FL

Fig. 1652. *Upeneus luzonius* Jordan & Seale, 1907; Australia, CSIRO photo in Sainsbury, et al., 1985
129mm FL

Fig. 1653. *Upeneus moluccensis* (Bleeker, 1855); Indonesia, Manado, Celebes, photo by John Randall
118mm SL

Fig. 1654. *Upeneus sulphureus* Cuvier, 1829; Indonesia, Ampenan Utara, Lombok, photo by John Randall
119mm SL

Fig. 1655. *Upeneus sundaicus* (Bleeker, 1855);Cambodia, Sihanoukville market, photo by Walter Rainboth
125mm SL

Fig. 1656. *Upeneus tragula* Richardson, 1846; Australia, Dudley Pt., NT, photo by John Randall
90mm SL

Fig. 1657. *Upeneus vittatus* (Forsskål, 1775); Mauritius, photo by John Randall
155mm SL

Fig. 1658. *Parapriacanthus ransonnetii* Steindachner, 1870; Australia, Chesterfield Bank, photo by John Randall
59mm SL

Fig. 1659. *Pempheris mangula* Cuvier, 1829; Mauritius, photo by John Randall
122mm SL

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Fig. 1660. *Pempheris oualensis* Cuvier, 1831; Tahiti, Teavaraa Pass, photo by John Randall
161mm SL

Fig. 1661. *Pempheris schwenkii* Bleeker, 1855; Maldives, Malé, photo by John Randall
103mm SL

Fig. 1662. *Pempheris vanicolensis* Cuvier, 1831; Egypt, Gulf of Aqaba, photo by John Randall
123mm SL

Fig. 1663. *Glaucosoma buergeri* Richardson, 1845; Australia, CSIRO photo in Sainsbury, et al., 1985
250mm TL

Fig. 1664. *Monodactylus argenteus* (Linnaeus, 1758); Sabah, photo by Chavalit Vidthayanon

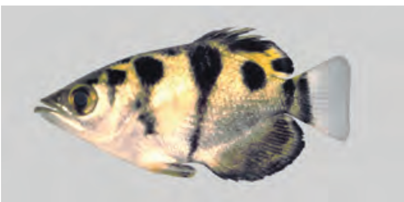

Fig. 1665. *Toxotes chatareus* (Hamilton, 1822);Cambodia, Tonlé Sap at Kompong Chhnang, photo by Walter Rainboth
67mm SL

Fig. 1666. *Toxotes jaculatrix* (Pallas, 1767); Thailand, Bangpakong, photo by Chavalit Vidthayanon

Fig. 1667. *Drepane longimana* (Bloch & Schneider, 1801); Vietnam, My Tho, mouth of Tien Giang, photo by Walter Rainboth
49mm SL

Fig. 1668. *Drepane punctata* (Linnaeus, 1758); India, Cochin, photo by John Randall
159mm SL

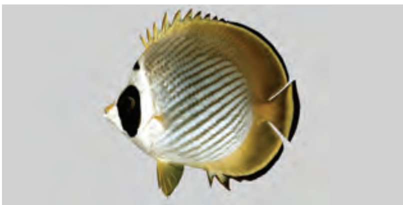

Fig. 1669. *Chaetodon adiergastos* Seale, 1910; Indonesia, Ambon, Latuhalat, photo by John Randall
120mm SL

Fig. 1670. *Chaetodon auriga* Forsskål, 1775; Maldives, Malé, North photo by John Randall
145mm SL

Fig. 1671. *Chaetodon auripes* Jordan & Snyder, 1901; Vietnam, Nha Trang, photo by Richard Winterbottom
91.5mm SL

Fig. 1672. *Chaetodon baronessa* Cuvier, 1829; Malaysia, Pulau Tulai, photo by John Randall
95mm SL

Fig. 1673. *Chaetodon bennetti* Cuvier, 1831; French Polynesia, Tetiaroa Island, photo by John Randall
103mm SL

Fig. 1674. *Chaetodon citrinellus* Cuvier, 1831; Marshall Islands, Enewetak, photo by John Randall
86mm SL

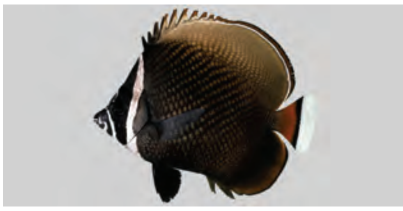

Fig. 1675. *Chaetodon collare* Bloch, 1787; Maldives, Villingili, photo by John Randall
102mm SL

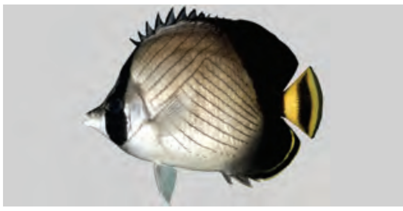

Fig. 1676. *Chaetodon decussatus* Cuvier, 1829; Sri Lanka, Negombo, photo by John Randall
122mm SL

Fig. 1677. *Chaetodon ephippium* Cuvier, 1831; Hawaii, Oahu, Moku Manu, photo by John Randall
146mm SL

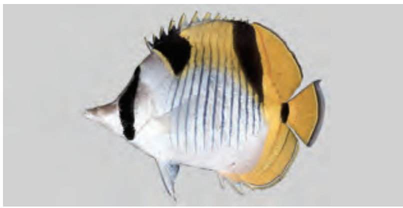

Fig. 1678. *Chaetodon falcula* Bloch, 1795; Tanzania United Republic, Mafia Island, photo by John Randall
125mm SL

Fig. 1679. *Chaetodon kleinii* Bloch, 1790; Palau, photo by John Randall
75mm SL

Fig. 1680. *Chaetodon lineolatus* Cuvier, 1831; Australia, Lord Howe Island, photo by John Randall
107mm SL

Fig. 1681. *Chaetodon lunula* (La Cepède, 1802); Australia, Lord Howe Island, photo by John Randall
130mm SL

Fig. 1682. *Chaetodon lunulatus* (Quoy & Gaimard, 1825); Tahiti, Teavaraa Pass, photo by John Randall
92mm SL

Fig. 1683. *Chaetodon melannotus* Bloch & Schneider, 1801; Australia, Great Barrier Reef, One Tree Island, photo by John Randall
76mm SL

Fig. 1684. *Chaetodon mertensii* Cuvier, 1831; Marshall Islands, Enewetak, photo by John Randall
91mm SL

Fig. 1685. *Chaetodon meyeri* Bloch & Schneider, 1801; Palau, photo by John Randall
98mm SL

Fig. 1686. *Chaetodon modestus* Temminck & Schlegel, 1844; Hawaii, Oahu, photo by John Randall
95mm SL

Fig. 1687. *Chaetodon ocellicaudus* Cuvier, 1831; Philippines, Cebu, Mactan Island, photo by John Randall
78mm SL

Fig. 1688. *Chaetodon octofasciatus* Bloch, 1787; Palau, photo by John Randall
52mm SL

Fig. 1689. *Chaetodon ornatissimus* Cuvier, 1831; Tahiti, Teavaraa Pass, photo by John Randall
118mm SL

Fig. 1690. *Chaetodon plebeius* Cuvier, 1831; Australia, Lord Howe Island, photo by John Randall
103mm SL

Fig. 1691. *Chaetodon punctatofasciatus* Cuvier, 1831; Marshall Islands, Enewetak, photo by John Randall
69mm SL

Fig. 1692. *Chaetodon rafflesii* [Bennett], 1830; Australia, Great Barrier Reef, One Tree Island, photo by John Randall
74mm SL

Fig. 1693. *Chaetodon selene* Bleeker, 1853; Indonesia, Ambon Bay, photo by John Randall
116mm SL

Fig. 1694. *Chaetodon semeion* Bleeker, 1855; French Polynesia, Tetiaroa, photo by John Randall
151mm SL

Fig. 1695. *Chaetodon speculum* Cuvier, 1831; Australia, Great Barrier Reef, One Tree Island, photo by John Randall
94mm SL

Fig. 1696. *Chaetodon trifascialis* Quoy & Gaimard, 1825; Tahiti, Teavaraa Pass, photo by John Randall
108mm SL

Fig. 1697. *Chaetodon ulietensis* Cuvier, 1831; Tahiti, Teavaraa Pass, photo by John Randall
114mm SL

Fig. 1698. *Chaetodon unimaculatus* Bloch, 1787; Hawaii, Oahu, photo by John Randall
104mm SL

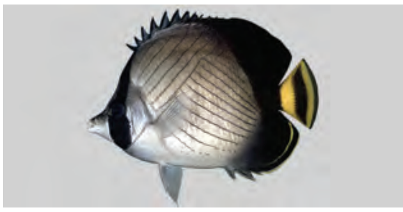

Fig. 1699. *Chaetodon vagabundus* Linnaeus, 1758; Sri Lanka, Negombo, photo by John Randall
122mm SL

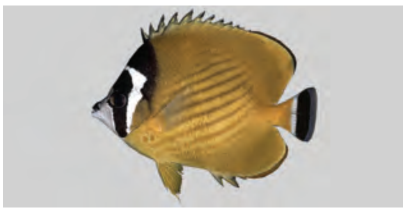

Fig. 1700. *Chaetodon wiebeli* Kaup, 1863; Hong Kong, Saikung, market, photo by John Randall
117mm SL

Fig. 1701. *Chaetodon xanthurus* Bleeker, 1857; Philippines, Luzon, Caban Island, photo by John Randall
93mm SL

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Fig. 1702. *Chelmon rostratus* (Linnaeus, 1758); Singapore, Salu Island, photo by John Randall
72mm SL

Fig. 1703. *Coradion altivelis* McCulloch, 1916; Taiwan, Yeh-Liu, photo by John Randall
79mm SL

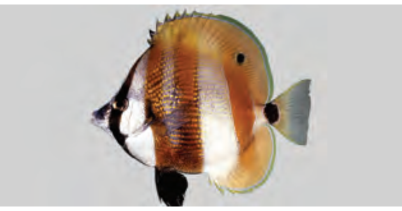

Fig. 1704. *Coradion chrysozonus* (Cuvier, 1831); Indonesia, Celebes, Ujung Padang, photo by John Randall
114mm SL

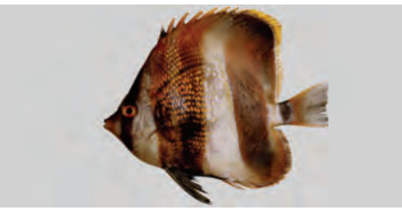

Fig. 1705. *Coradion sp.* ; Cambodia, Kampot, market specimen, photo by Walter Rainboth
117mm SL

Fig. 1706. *Forcipiger flavissimus* Jordan & MacGregor, 1898; Tahiti, Teavaraa Pass, photo by John Randall
111mm SL

Fig. 1707. *Forcipiger longirostris* (Broussonet, 1782); Marshall, Islands, Enewetak, photo by John Randall
143mm SL

Fig. 1708. *Hemitaurichthys polylepis* Bleeker, 1857; Guam, photo by John Randall
113mm SL

Fig. 1709. *Heniochus acuminatus* (Linnaeus, 1758); Marshall Islands, Enewetak, photo by John Randall
259mm SL

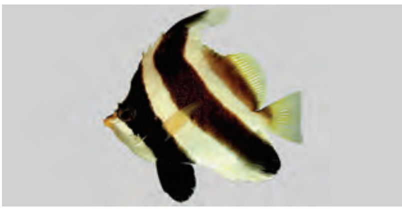

Fig. 1710. *Heniochus chrysostomus* Cuvier, 1831; Marshall Islands, Enewetak, photo by John Randall
136mm SL

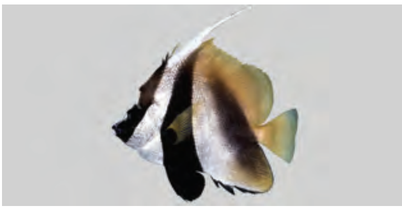

Fig. 1711. *Heniochus monoceros* Cuvier, 1831; New Caledonia, New Caledonia, photo by John Randall
138mm SL

Fig. 1712. *Heniochus singularis* Smith & Radcliffe, 1911; Papua New Guinea, New Guinea Island, Madang, photo by John Randall
154mm SL

Fig. 1713. *Heniochus varius* (Cuvier, 1829); Palau, photo by John Randall
131mm SL

Fig. 1714. *Parachaetodon ocellatus* (Cuvier, 1831); Indonesia, Celebes, Ujang Padang, photo by John Randall
104mm SL

Fig. 1715. *Apolemichthys trimaculatus* (Cuvier, 1831); Australia, CSIRO photo in Sainsbury et al. (1985)
160mm TL

Fig. 1716. *Centropyge bicolor* (Bloch, 1787); Fed. States of Micronesia, Truk, NE Pass, photo by John Randall
51mm SL

Fig. 1717. *Centropyge bispinosa* (Günther, 1860); Marshall Islands, Enewetak, photo by John Randall
64mm SL

Fig. 1718. *Centropyge fisheri* (Snyder, 1904); Solomon Islands, Florida Island, photo by John Randall
57mm SL

Fig. 1719. *Centropyge nox* (Bleeker, 1853); Philippines, Cebu, Sumilon Island, photo by John Randall
63mm SL

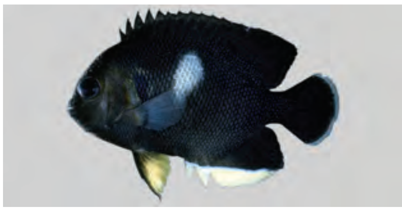

Fig. 1720. *Centropyge tibicen* (Cuvier, 1831); Philippines (via Honolulu pet shop), photo by John Randall
53mm SL

Fig. 1721. *Centropyge vrolikii* (Bleeker, 1853); Palau, Palau, photo by John Randall
68mm SL

Fig. 1722. *Chaetodontoplus chrysocephalus* (Bleeker, 1854), ♀ ; Japan, Shikoku, SW, photo be John Randall
169mm SL

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Fig. 1723. *Chaetodontoplus melanosoma* (Bleeker, 1853); Philippines (via Steinhart Aquarium), photo by John Randall
90mm SL


Fig. 1724. *Chaetodontoplus mesoleucus* (Bloch, 1787); Palau, photo by John Randall
85mm SL


Fig. 1725. *Chaetodontoplus septentrionalis* (Temminck & Schlegel, 1844); Taiwan, NE, photo by John Randall
151mm SL


Fig. 1726. *Genicanthus lamarck* (La Cepède, 1802), ♂ ; Solomon Islands, Guadalcanal, Doma Reef, photo by John Randall
117mm SL


Fig. 1727. *Genicanthus melanospilos* (Bleeker, 1857); Palau, photo by John Randall
63mm SL


Fig. 1728. *Pomacanthus annularis* (Bloch, 1787); Sri Lanka, Negombo, photo by John Randall
130mm SL


Fig. 1729. *Pomacanthus imperator* (Bloch, 1787); Marshall Islands, Enewetak, photo by John Randall
208mm SL


Fig. 1730. *Pomacanthus imperator* (Bloch, 1787); Ryukyu Islands, Ishigaki, photo by John Randall
95mm SL

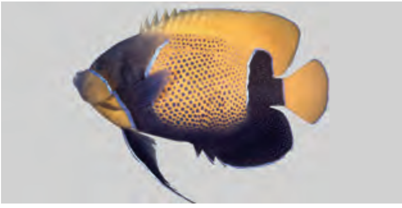
Fig. 1731. *Pomacanthus navarchus* (Cuvier, 1831); Solomon Islands, Guadalcanal, photo by John Randall
164mm SL


Fig. 1732. *Pomacanthus semicirculatus* (Cuvier, 1831); Ryukyu Islands, Ishigaki, photo by John Randall
235mm SL


Fig. 1733. *Pomacanthus semicirculatus* (Cuvier, 1831); Taiwan, San Shien Tai, photo by John Randall
33mm SL


Fig. 1734. *Pomacanthus sextriatus* (Cuvier, 1831); Palau, Palau, photo by John Randall
292mm SL


Fig. 1735. *Pomacanthus xanthometapon* (Bleeker, 1853); Palau, photo by John Randall
237mm SL


Fig. 1736. *Pygoplites diacanthus* (Boddaert, 1772); French Polynesia, Moorea, photo by John Randall
110mm SL


Fig. 1737. *Histiopterus typus* Temminck & Schlegel, 1844; East Timor, Timor Sea, CSIRO photo in Gloerfelt-Tarp & Kailola (1984)
240mm SL


Fig. 1738. *Badis ruber* Schreitmüller, 1923; Laos, Bokeo, Nam Ngon, photo by Walter Rainboth
39mm SL


Fig. 1739. *Badis ruber* Schreitmüller, 1923; Laos, Luang Prabang, Mekong near Ban Sing, photo by Walter Rainboth
24mm SL


Fig. 1740. *Nandus oxyrhynchus* Ng, Vidthayanon & Ng, 1996; Laos, Savannakhet, pond near Seno, photo by Walter Rainboth
38mm SL


Fig. 1741. *Pristolepis fasciata* (Bleeker, 1851); Laos, Vientiane, Nam Ke upstream from Nam Ngum Reservoir, photo by Walter Rainboth
41mm SL


Fig. 1742. *Kyphosus bigibbus* La Cepède, 1801; Hawaii, Honolulu fish market, photo by John Randall
440mm SL


Fig. 1743. *Kyphosus cinerascens* (Forsskål, 1775); Sudan, Suakin, photo by John Randall
203mm SL

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Fig. 1744. *Kyphosus vaigiensis* (Quoy & Gaimard, 1825); Hawaii, Honolulu fish market, photo by John Randall 388mm SL

Fig. 1745. *Mesopristes argenteus* (Cuvier, 1829); Indonesia, Manado, Celebes, photo by John Randall 194mm SL

Fig. 1746. *Pelates quadrilineatus* (Bloch, 1790); Thailand, Prachuab Kiri Khan, photo by Chavalit Vidthayanon

Fig. 1747. *Pelates sexlineatus* (Quoy & Gaimard, 1825); Australia, CSIRO photo in Sainsbury, et al. (1985) 150mm SL

Fig. 1748. *Terapon jarbua* (Forsskål, 1775); Vietnam, Kien Giang, Ha Tien, market specimen, photo by Walter Rainboth 103mm SL

Fig. 1749. *Terapon puta* Cuvier, 1829; Vietnam, Kien Giang, Ha Tien, market specimen, photo by Walter Rainboth 91mm SL

Fig. 1750. *Terapon theraps* Cuvier, 1829; Indonesia, Java, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 152mm SL

Fig. 1751. *Kuhlia mugil* (Forster, 1801); Oman, Ras al Madrakah, photo by John Randall 105mm SL

Fig. 1752. *Amblycirrhitus bimacula* (Jenkins, 1903); Society Is., Moorea, photo by Richard Winterbottom 32.8mm SL

Fig. 1753. *Cirrhitichthys aprinus* (Cuvier, 1829); Australia, Port Hocking, photo by John Randall 82mm SL

Fig. 1754. *Cirrhitichthys falco* Randall, 1963; Vietnam, Nha Trang, photo by Richard Winterbottom 68.8mm SL

Fig. 1755. *Cirrhitus pinnulatus* (Forster, 1801); Johnston Island, photo by John Randall 155mm SL

Fig. 1756. *Paracirrhites arcatus* (Cuvier, 1829); Marshall Islands, Enewetak, photo by John Randall 68mm SL

Fig. 1757. *Paracirrhites forsteri* (Schneider, 1801); Johnston Island, photo by John Randall 67mm SL

Fig. 1758. *Acanthocepola abbreviata* (Valenciennes, 1835); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 144mm SL

Fig. 1759. *Acanthocepola krusensternii* (Temminck & Schlegel, 1845); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 185mm SL

Fig. 1760. *Oreochromis mossambicus* (Peters, 1852); Thailand, Petchaburi, photo by Chavalit Vidthayanon

Fig. 1761. *Oreochromis niloticus* (Linnaeus, 1758); Laos, Luang Prabang, Nam Soeung near Ban Pak Keng, photo by Walter Rainboth 59mm SL

Fig. 1762. *Abudefduf bengalensis* (Bloch, 1787); Australia, Kendrew Island, West Australia, photo by John Randall 102mm SL

Fig. 1763. *Abudefduf notatus* (Day, 1870); Indonesia, Ambon, photo by John Randall 105mm SL

Fig. 1764. *Abudefduf septemfasciatus* (Cuvier, 1830); French Polynesia, Tetiaroa Island, photo by John Randall 135mm SL

PLATE 84

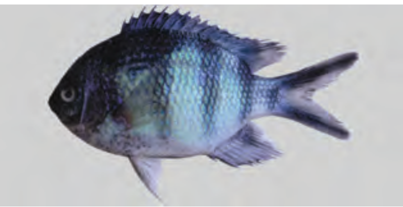

Fig. 1765. *Abudefduf sexfasciatus* (La Cepède, 1801); Cambodia, Kampot, market specimen, photo by Walter Rainboth 102mm SL

Fig. 1766. *Abudefduf sordidus* (Forsskål, 1775); India, Kovalam, photo by John Randall 113mm SL

Fig. 1767. *Abudefduf vaigiensis* (Quoy & Gaimard, 1825); Australia, Lord Howe Island, photo by John Randall 100mm SL

Fig. 1768. *Amblyglyphidodon aureus* (Cuvier, 1830); Indonesia, Ambon Bay, photo by John Randall 94mm SL

Fig. 1769. *Amblyglyphidodon curacao* (Bloch, 1787); Palau, photo by John Randall 60mm SL

Fig. 1770. *Amblyglyphidodon leucogaster* (Bleeker, 1827); Marshall Islands, Enewetak, photo by John Randall 90mm SL

Fig. 1771. *Amblypomacentrus breviceps* (Schlegel & Müller, 1839); Solomon Islands, Guadalcanal, photo by John Randall 43mm SL

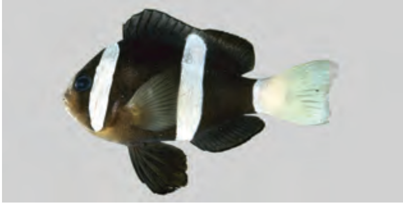

Fig. 1772. *Amphiprion clarkii* (Bennett, 1830); Philippines, purchased at Honolulu pet shop, photo by John Randall 59mm SL

Fig. 1773. *Amphiprion ephippium* (Bloch, 1790); Indonesia, Pulau Putri, photo by John Randall 83mm SL

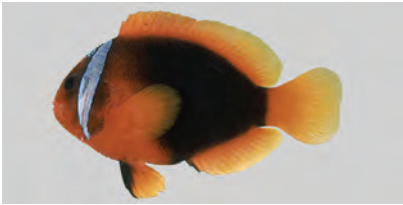

Fig. 1774. *Amphiprion frenatus* Brevoort, 1856; Ryukyu Islands, Sesoko, Okinawa, photo by John Randall 90mm SL

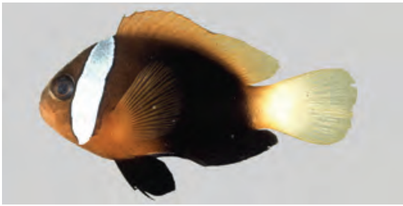

Fig. 1775. *Amphiprion melanopus* Bleeker, 1852; Marshall Islands, Enewetak, photo by John Randall 37mm SL

Fig. 1776. *Amphiprion ocellaris* Cuvier, 1830; Malaysia, Tioman Island, photo by John Randall 59mm SL

Fig. 1777. *Amphiprion perideraion* Bleeker, 1855; Philippines, purchased at Honolulu pet shop, photo by John Randall 44mm SL

Fig. 1778. *Amphiprion polymnus* (Linnaeus, 1758); Philippines, Cebu, photo by John Randall 70mm SL

Fig. 1779. *Cheiloprion labiatus* (Day, 1877); Papua New Guinea, Madang, photo by John Randall 36mm SL

Fig. 1780. *Chromis analis* (Cuvier, 1830); Palau, photo by John Randall 63mm SL

Fig. 1781. *Chromis cinerascens* (Cuvier, 1830); Sri Lanka, Negombo, photo by John Randall 82mm SL

Fig. 1782. *Chromis dimidiata* (Klunzinger, 1871); Mauritius, photo by John Randall 59mm SL

Fig. 1783. *Chromis fumea* (Tanaka, 1917); Taiwan, photo by John Randall 65mm SL

Fig. 1784. *Chromis lepidolepis* Bleeker, 1877; Kiribati, Fanning Island, photo by John Randall 52mm SL

Fig. 1785. *Chromis margaritifer* Fowler, 1946; Vietnam, Nha Trang, photo by Richard Winterbottom 28.5mm SL

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Fig. 1786. *Chromis opercularis* (Günther, 1867); Mauritius, photo by John Randall
88mm SL


Fig. 1787. *Chromis ternatensis* (Bleeker, 1856); Maldives, Villingili, photo by John Randall
47mm SL


Fig. 1788. *Chromis viridis* (Cuvier, 1830); Marshall Islands, Enewetak, photo by John Randall
69mm SL


Fig. 1789. *Chromis weberi* Fowler & Bean, 1928; Mauritius, Flat Island, photo by John Randall
79mm SL


Fig. 1790. *Chromis xanthochira* (Bleeker, 1851); Palau, photo by John Randall
53mm SL


Fig. 1791. *Chromis xanthura* (Bleeker, 1854); Maldives, Villingili, photo by John Randall
95mm SL


Fig. 1792. *Chrysiptera biocellata* (Quoy & Gaimard, 1825); Marshall Islands, Enewetak, photo by John Randall
46mm SL


Fig. 1793. *Chrysiptera cyanea* (Quoy & Gaimard, 1825); American Samoa, Tutuila, photo by John Randall
44mm SL


Fig. 1794. *Chrysiptera glauca* (Cuvier, 1830); Marshall Islands, Kwajalein, photo by John Randall
27mm SL


Fig. 1795. *Chrysiptera parasema* (Fowler, 1918); Papua New Guinea, Kranket, photo by John Randall
37mm SL


Fig. 1796. *Dascyllus aruanus* (Linnaeus, 1758); Philippines, pet shop specimen, photo by John Randall
36mm SL


Fig. 1797. *Dascyllus melanurus* Bleeker, 1854; Philippines, pet shop specimen, photo by John Randall
32mm SL


Fig. 1798. *Dascyllus reticulatus* (Richardson, 1846); Marshall Islands, Enewetak, photo by John Randall
56mm SL


Fig. 1799. *Dascyllus trimaculatus* (Rüppell, 1829); Kiribati, Fanning Island, photo by John Randall
106mm SL


Fig. 1800. *Dischistodus chrysopoecilus* (Schlegel & Müller, 1839); Palau, photo by John Randall
72mm SL


Fig. 1801. *Dischistodus fasciatus* (Cuvier, 1830); Australia, Bathurst Island, Northern Territories, photo by John Randall
95mm SL


Fig. 1802. *Dischistodus fasciatus* (Cuvier, 1830); Indonesia, Ambon Bay, photo by John Randall
49mm SL


Fig. 1803. *Dischistodus perspicillatus* (Cuvier, 1830); Palau, photo by John Randall
128mm SL


Fig. 1804. *Dischistodus prosopotaenia* (Bleeker, 1852); Singapore, Salu Island, photo by John Randall
112mm SL


Fig. 1805. *Hemiglyphidodon plagiometapon* (Bleeker, 1852); Papua New Guinea, Madang, photo by John Randall
115mm SL


Fig. 1806. *Lepidozygus tapeinosoma* (Bleeker, 1856); Kenya, Shimoni, photo by John Randall
72mm SL

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Fig. 1807. *Neoglyphidodon melas* (Cuvier, 1830); Taiwan, photo by John Randall
44mm SL

Fig. 1808. *Neoglyphidodon nigroris* (Cuvier, 1830); Malaysia, Tioman Island, photo by John Randall
68mm SL

Fig. 1809. *Neoglyphidodon nigroris* (Cuvier, 1830); Ryuku Islands, Taketomi, Ishigaki, photo by John Randall
47mm SL

Fig. 1810. *Neoglyphidodon nigroris* (Cuvier, 1830); Malaysia, Tioman Island, photo by John Randall
26mm SL

Fig. 1811. *Neopomacentrus anabantoides* (Cuvier, 1830); Malaysia, Tioman Island, photo by John Randall
26mm SL

Fig. 1812. *Neopomacentrus bankieri* (Richardson, 1846); Singapore, Salu Island, photo by John Randall
45mm SL

Fig. 1813. *Neopomacentrus cyanomos* (Bleeker, 1856); Taiwan, Yeh-Liu, photo by John Randall
64mm SL

Fig. 1814. *Neopomacentrus taeniurus* (Bleeker, 1856); Papua New Guinea, Madang, photo by John Randall
42mm SL

Fig. 1815. *Plectroglyphidodon dickii* (Liénard, 1839); Tahiti, Teavaraa Pass, photo by John Randall
82mm SL

Fig. 1816. *Plectroglyphidodon lachrymatus* (Quoy & Gaimard, 1825); Indonesia, Uluwatu, Bali, photo by John Randall
39mm SL

Fig. 1817. *Pomacentrus amboinensis* Bleeker, 1868; Ryuku Islands, Ishigaki, photo by John Randall
70mm SL

Fig. 1818. *Pomacentrus amboinensis* Bleeker, 1868; Solomon Islands, Alite Reef, photo by John Randall
33mm SL

Fig. 1819. *Pomacentrus brachialis* Cuvier, 1830; Indonesia, Ambon, photo by John Randall
61mm SL

Fig. 1820. *Pomacentrus coelestis* Jordan & Starks, 1901; Vietnam, Nha Trang, photo by Richard Winterbottom
22mm SL

Fig. 1821. *Pomacentrus moluccensis* Bleeker, 1853; New Caledonia, photo by John Randall
40mm SL

Fig. 1822. *Pomacentrus nigromanus* Weber, 1913; Palau, photo by John Randall
42mm SL

Fig. 1823. *Pomacentrus pavo* (Bloch, 1787); Marshall Islands, Enewetak, photo by John Randall
67mm SL

Fig. 1824. *Pomacentrus vaiuli* Jordan & Seale, 1906; Marshall Islands, Enewetak, photo by John Randall
40mm SL

Fig. 1825. *Pomachromis richardsoni* (Snyder, 1909); Ryuku Islands, Okinawa, photo by John Randall
73mm SL

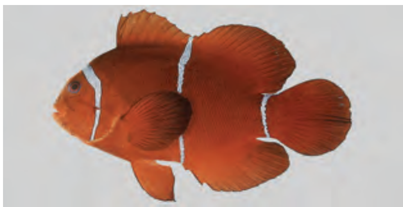

Fig. 1826. *Premnas biaculeatus* (Bloch, 1790); Papua New Guinea, Madang, photo by John Randall
70mm SL

Fig. 1827. *Pristotis obtusirostris* (Günther, 1862); Australia, CSIRO photo from Sainsbury, et al. (1985)
143mm TL

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Fig. 1828. *Stegastes nigricans* (La Cepède, 1802); Sudan, Towartit Reef, photo by John Randall
36mm SL

Fig. 1829. *Stegastes obreptus* (Whitley, 1948); Malaysia, Tioman Island, photo by John Randall
34mm SL

Fig. 1830. *Anampses caeruleopunctatus* Rüppell, 1829; Marshall Islands, Enewetak, photo by John Randall
190mm SL

Fig. 1831. *Anampses geographicus* Valenciennes, 1840; Philippines, Sumilon Island, photo by John Randall
163mm SL

Fig. 1832. *Anampses geographicus* Valenciennes, 1840; Philippines, Sumilon Island, photo by John Randall
139mm SL

Fig. 1833. *Anampses meleagrides* Valenciennes, 1840; Vietnam, Nha Trang, photo by Richard Winterbottom
30.7mm SL

Fig. 1834. *Anampses neoguinaicus* Bleeker, 1878, ♂ ; New Caledonia, photo by John Randall
123mm SL

Fig. 1835. *Anampses twistii* Bleeker, 1856; Japan, Anijima, Ogasawara Island, photo by John Randall
137mm SL

Fig. 1836. *Bodianus axillaris* (Bennett, 1832); Guam, photo by John Randall
116mm SL

Fig. 1837. *Bodianus bilunulatus* (La Cepède, 1801); Indonesia, Ambon Bay, photo by John Randall
104mm SL

Fig. 1838. *Bodianus diana* (La Cepède, 1801); Palau, photo by John Randall
92mm SL

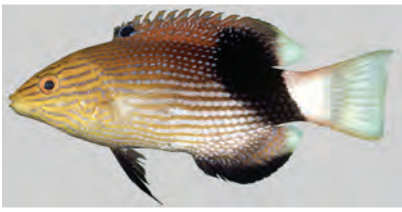

Fig. 1839. *Bodianus loxozonus* (Snyder, 1908); Marshall Islands, Enewetak, photo by John Randall
211mm SL

Fig. 1840. *Bodianus perditio* (Quoy & Gaimard, 1834); Australia, CSIRO photo in Gloerfelt-Tarp & Kailola, (1984)
180mm SL

Fig. 1841. *Cheilinus chlorourus* (Bloch, 1791), ♂ ; Mauritius, photo by John Randall
163mm SL

Fig. 1842. *Cheilinus fasciatus* (Bloch, 1791); Marshall Islands, Enewetak, photo by John Randall
250mm SL

Fig. 1843. *Cheilinus oxycephalus* Bleeker, 1853; Palau, photo by John Randall
65mm SL

Fig. 1844. *Cheilinus trilobatus* (La Cepède, 1802), ♀ ; Marshall Islands, Enewetak, photo by John Randall
130mm SL

Fig. 1845. *Cheilinus undulatus* Rüppell, 1835; Marshall Islands, Enewetak, photo by John Randall
915mm SL

Fig. 1846. *Cheilio inermis* (Forsskål, 1775); Philippines, Mactan Island, Cebu, photo by John Randall
195mm SL

Fig. 1847. *Choerodon anchorago* (Bloch, 1791); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
211mm SL

Fig. 1848. *Choerodon azurio* (Jordan & Snyder, 1901); Japan, Sukumo Bay, Shikoku, photo by John Randall
256mm SL

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Fig. 1849. *Choerodon cephalotes* (Castlenau, 1875); Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984)
250mm SL

Fig. 1850. *Choerodon fasciatus* (Günther, 1867); Australia, Lizard Island, photo by John Randall
140mm SL

Fig. 1851. *Choerodon oligacanthus* (Bleeker, 1851); Singapore, Salu Island, photo by John Randall
160mm SL

Fig. 1852. *Choerodon schoenleinii* (Valenciennes, 1839); Vietnam, South China Sea, Mekong plume, photo by Ron Weidenbach
550mm SL

Fig. 1853. *Choerodon schoenleinii* (Valenciennes, 1839); Vietnam, Cac Ba, photo by Richard Winterbottom
42.8mm SL

Fig. 1854. *Cirrhilabrus cyanopleura* (Bleeker, 1851); Philippines, Mactan Island, Cebu, photo by John Randall
78mm SL

Fig. 1855. *Cirrhilabrus exquisitus* Smith, 1957; Taiwan, photo by John Randall
84mm SL

Fig. 1856. *Cirrhilabrus temminckii* Bleeker, 1853; Vietnam, Nha Trang, photo by Richard Winterbottom
47.3mm SL

Fig. 1857. *Coris aygula* La Cepède, 1801; Japan, Marcus Island, photo by John Randall
222mm SL

Fig. 1858. *Coris aygula* La Cepède, 1801; Guam, photo by John Randall
43mm SL

Fig. 1859. *Coris batuensis* (Bleeker, 1856-57), ♂ ; Tonga, Tongatapu, photo by John Randall
134mm SL

Fig. 1860. *Coris dorsomaculata* Fowler, 1908, ♂ ; Taiwan, San Shien Tai, photo by John Randall
158mm SL

Fig. 1861. *Coris dorsomaculata* Fowler, 1908, ♀ ; Ryuku Islands, Sesoko Island, Okinawa, photo by John Randall
87mm SL

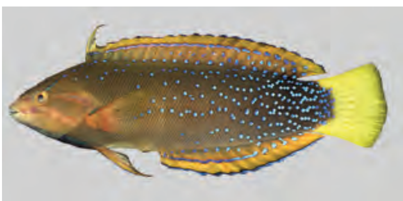

Fig. 1862. *Coris gaimard* (Quoy & Gaimard, 1824); Hawaii, Oahu, photo by John Randall
130mm SL

Fig. 1863. *Coris pictoides* Randall & Kuiter, 1982, ♀ ; Malaysia, Tioman Island, photo by John Randall
59mm SL

Fig. 1864. *Cymolutes praetextatus* (Quoy & Gaimard, 1824); Indonesia, Sanur, Bali, photo by John Randall
130mm SL

Fig. 1865. *Cymolutes torquatus* (Valenciennes, 1840); Philippines, Dumaguete, Negros, photo by John Randall
68mm SL

Fig. 1866. *Epibulus insidiator* (Pallas, 1770); Marshall Islands, Enewetak, photo by John Randall
185mm SL

Fig. 1867. *Gomphosus varius* La Cepède, 1801, ♂ ; Japan, Marcus Island, photo by John Randall
198mm SL

Fig. 1868. *Gomphosus varius* La Cepède, 1801, ♀ ; Hawaii, Kahe Point, Oahu, photo by John Randall
88mm SL

Fig. 1869. *Halichoeres argus* (Bloch & Schneider, 1801); Indonesia, Tanjung Luar, Lombok, photo by John Randall
68mm SL

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Fig. 1870. *Halichoeres bicolor* (Bloch & Schneider, 1801); Indonesia, Ambon Bay, photo by John Randall
75mm SL

Fig. 1871. *Halichoeres binotopsis* (Bleeker, 1849); Singapore, photo by John Randall
84mm SL

Fig. 1872. *Halichoeres biocellatus* Schultz, 1960, ♂ ; Marshall Islands, Enewetak, photo by John Randall
90mm SL

Fig. 1873. *Halichoeres biocellatus* Schultz, 1960, ♀ ; Marshall Islands, Enewetak, photo by John Randall
72mm SL

Fig. 1874. *Halichoeres chloropterus* (Bloch, 1791); Indonesia, Pulau Putri, photo by John Randall
114mm SL

Fig. 1875. *Halichoeres chrysus* Randall, 1981; Palau, photo by John Randall
59mm SL

Fig. 1876. *Halichoeres hartzfeldii* (Bleeker, 1852); Philippines, Dumaguete, Negros, photo by John Randall
68mm SL

Fig. 1877. *Halichoeres hortulanus* (La Cepède, 1801); Marshall Islands, Enewetak, photo by John Randall
84mm SL

Fig. 1878. *Halichoeres leucurus* (Walbaum, 1792), ♂ ; Singapore, Salu Island, photo by John Randall
78mm SL

Fig. 1879. *Halichoeres margaritaceus* (Valenciennes, 1839); Marshall Islands, Enewetak, photo by John Randall
57mm SL

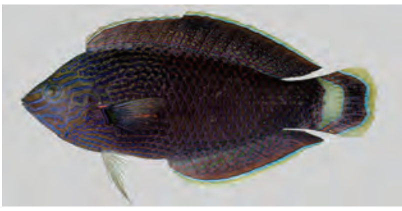

Fig. 1880. *Halichoeres marginatus* Rüppell, 1835; Marshall Islands, Enewetak, photo by John Randall
93mm SL

Fig. 1881. *Halichoeres melanurus* (Bleeker, 1851), ♂ ; Marshall Islands, Enewetak, photo by John Randall
67mm SL

Fig. 1882. *Halichoeres miniatus* (Valenciennes, 1839); Indonesia, Biak, Irian Jaya, photo by John Randall
55mm SL

Fig. 1883. *Halichoeres nebulosus* (Valenciennes, 1839), ♂ ; Philippines, Mactan Island, Cebu, photo by John Randall
50mm SL

Fig. 1884. *Halichoeres nigrescens* (Bloch & Schneider, 1801); Singapore, Salu Island, photo by John Randall
91mm SL

Fig. 1885. *Halichoeres papilionaceus* (Valenciennes, 1839); Indonesia, Tanjung Luar, Lombok, photo by John Randall
74mm SL

Fig. 1886. *Halichoeres prosopeion* (Bleeker, 1853); Palau, photo by John Randall
98mm SL

Fig. 1887. *Halichoeres scapularis* (Bennett, 1832), ♂ ; Malaysia, Tioman Island, photo by John Randall
156mm SL

Fig. 1888. *Halichoeres timorensis* (Bleeker, 1852), ♂ ; Sri Lanka, Negombo, photo by John Randall
105mm SL

Fig. 1889. *Halichoeres trimaculatus* (Quoy & Gaimard, 1834); Marshall Islands, Enewetak, photo by John Randall
137mm SL

Fig. 1890. *Hemigymnus fasciatus* (Bloch, 1792), ♂ ; Japan, Marcus Island, photo by John Randall
270mm SL

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Fig. 1891. *Hemigymnus melapterus* (Bloch, 1791), ♀ ; Marshall Islands, Enewetak, photo by John Randall
230mm SL

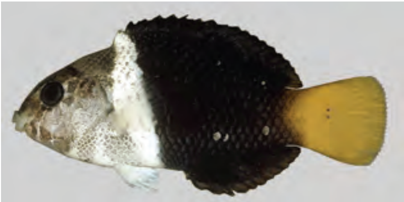

Fig. 1892. *Hemigymnus melapterus* (Bloch, 1791); Marshall Islands, Enewetak, photo by John Randall
51mm SL

Fig. 1893. *Iniistius bimaculatus* (Rüppell, 1829); Papua New Guinea, Discovery Bay, photo by John Randall
132mm SL

Fig. 1894. *Iniistius dea* (Temminck & Schlegel, 1845), ♂ ; Hong Kong, Aberdeen, photo by John Randall
181mm SL

Fig. 1895. *Iniistius dea* (Temminck & Schlegel), 1845, ♀ ; Hong Kong, Aberdeen, photo by John Randall
169mm SL

Fig. 1896. *Iniistius evides* (Jordan & Richardson); Tawian, photo provided by K-T. Shao

Fig. 1897. *Iniistius pavo* (Valenciennes, 1840); Australia, Lord Howe Island, photo by John Randall
243mm SL

Fig. 1898. *Iniistius pentadactylus* (Linnaeus, 1758), ♂ ; Japan, Chichi-jima, photo by John Randall
180mm SL

Fig. 1899. *Iniistius pentadactylus* (Linnaeus, 1758), ♀ ; Indonesia, Poka, Ambon, photo by John Randall
123mm SL

Fig. 1900. *Labrichthys unilineatus* (Guichenot, 1847); American Samoa, Tutuila, photo by John Randall
67mm SL

Fig. 1901. *Labroides bicolor* Fowler & Bean, 1928; French Polynesia, Moorea, photo by John Randall
67mm SL

Fig. 1902. *Labroides dimidiatus* (Valenciennes, 1839); Marshall Islands, Enewetak, photo by John Randall
72mm SL

Fig. 1903. *Labropsis alleni* Randall, 1981, ♀ ; Palau, photo by John Randall
64mm SL

Fig. 1904. *Leptojulis chrysotaenia* Randall & Ferraris, 1981; Indonesia, Ampenon, Lombok, photo by John Randall
94mm SL

Fig. 1905. *Leptojulis cyanopleura* (Bleeker, 1853); Malaysia, Pulau Chebeh, photo by John Randall
73mm SL

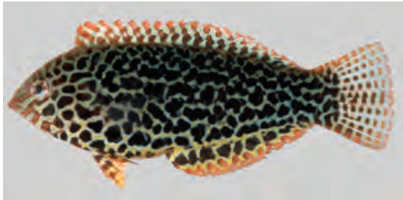

Fig. 1906. *Macropharyngodon meleagris* (Valenciennes, 1839); Vietnam, Nha Trang, photo by Richard Winterbottom
76.8mm SL

Fig. 1907. *Novaculichthys taeniourus* (La Cepède, 1801); Maldives, photo by John Randall
168mm SL

Fig. 1908. *Novaculichthys taeniourus* (La Cepède, 1801); Marshall Islands, Enewetak, photo by John Randall
61mm SL

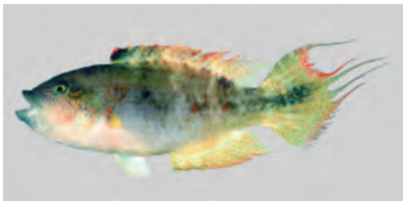

Fig. 1909. *Oxycheilinus bimaculatus* (Valenciennes, 1840); Fiji, Great Astrolabe Reef, photo by Richard Winterbottom
76.5mm SL

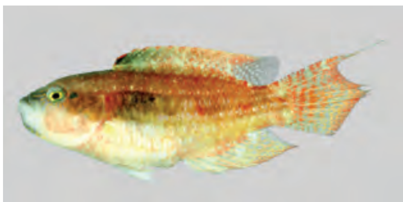

Fig. 1910. *Oxycheilinus bimaculatus* (Valenciennes, 1840); New Caledonia, photo by Richard Winterbottom
62mm SL

Fig. 1911. *Oxycheilinus celebicus* (Bleeker, 1853), ♂ ; Marshall Islands, Kwajalein, photo by John Randall
99mm SL

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Fig. 1912. *Oxycheilinus digramma* (La Cepède, 1801); Taiwan, Nan Wan, photo by John Randall
42mm SL

Fig. 1913. *Oxycheilinus orientalis* (Günther, 1862); Marshall Islands, Kwajalein, photo by John Randall
57mm SL

Fig. 1914. *Oxycheilinus unifasciatus* (Streets, 1877); Guam, photo by John Randall
202mm SL

Fig. 1915. *Paracheilinus mccoskeri* Randall & Harmelin-Vivien, 1977 ♂ ; Comores, photo by Richard Winterbottom
36.8mm SL

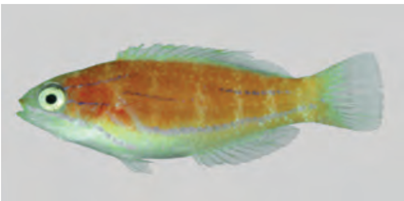

Fig. 1916. *Paracheilinus mccoskeri* Randall & Harmelin-Vivien, 1977; Comores, photo by Richard Winterbottom
32.7mm SL

Fig. 1917. *Pseudodax moluccanus* (Valenciennes, 1840); Indonesia, Sumatra, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp
125mm SL

Fig. 1918. *Pseudojuloides cerasinus* (Snyder, 1904); Marshall Islands, Enewetak, photo by John Randall
60mm SL

Fig. 1919. *Pteragogus aurigarius* (Richardson, 1845), ♂ ; Japan, Miyake-jima, Izu Island, photo by John Randall
117mm SL

Fig. 1920. *Pteragogus aurigarius* (Richardson, 1845), ♀ ; Indonesia, Lombok, Tanjung Luar, photo by John Randall
70mm SL

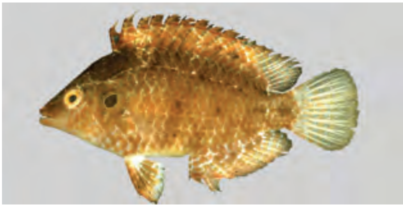

Fig. 1921. *Pteragogus cryptus* Randall, 1981; Australia, Chesterfield Bank, photo by John Randall
62mm SL

Fig. 1922. *Stethojulis bandanensis* (Bleeker, 1851), ♂ ; Papua New Guinea, Port Moresby, photo by John Randall
100mm SL

Fig. 1923. *Stethojulis interrupta* (Bleeker, 1851); Taiwan, photo by John Randall
99mm SL

Fig. 1924. *Stethojulis strigiventer* (Bennett, 1833), ♂ ; Maldives, Ari Atoll, photo by John Randall
75mm SL

Fig. 1925. *Stethojulis trilineata* (Bloch & Schneider, 1801), ♂ ; Malaysia, Tioman Island, photo by John Randall
111mm SL

Fig. 1926. *Thalassoma amblycephalum* (Bleeker, 1856), ♂ ; Marshall Islands, Enewetak, photo by John Randall
115mm SL

Fig. 1927. *Thalassoma amblycephalum* (Bleeker, 1856), ♀ ; Marshall Islands, Enewetak, photo by John Randall
50mm SL

Fig. 1928. *Thalassoma hardwicke* (Bennett, 1830), ♂ ; Tahiti, photo by John Randall
138mm SL

Fig. 1929. *Thalassoma jansenii* (Bleeker, 1856); Thailand, Similan Island, photo by John Randall
74mm SL

Fig. 1930. *Thalassoma lunare* (Linnaeus, 1758); Malaysia, Pulau Tulai, photo by John Randall
177mm SL

Fig. 1931. *Thalassoma purpureum* (Forsskål, 1775), ♂ ; Marshall Islands, Enewetak, photo by John Randall
207mm SL

Fig. 1932. *Thalassoma purpureum* (Forsskål, 1775), ♀ ; Marshall Islands, Enewetak, photo by John Randall
179mm SL

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Fig. 1933. *Thalassoma quinquevittatum* (Lay & Bennett, 1839), ♂ ; Marshall Islands, Enewetak, photo by John Randall 95mm SL


Fig. 1934. *Thalassoma trilobatum* (La Cepède, 1801); Australia, Lord Howe Island, photo by John Randall 119mm SL


Fig. 1935. *Wetmorella nigropinnata* (Seale, 1901); Tahiti, Teavaraa Pass, photo by John Randall 55mm SL


Fig. 1936. *Xiphocheilus typus* (Bleeker, 1857), ♂ ; India, Madras, photo by John Randall 100mm SL


Fig. 1937. *Bolbometopon muricatum* (Valenciennes, 1840), ♂ ; Kiribati, Fanning Island, photo by John Randall 510mm SL


Fig. 1938. *Bolbometopon muricatum* (Valenciennes, 1840); Indonesia, Seribu Island, Java, photo by John Randall 105mm SL


Fig. 1939. *Calotomus carolinus* (Valenciennes, 1840), terminal phase; Hawaii, Honolulu fish market, photo by John Randall 318mm SL


Fig. 1940. *Calotomus carolinus* (Valenciennes, 1840), initial phase; Marshall Islands, Enewetak, photo by John Randall 51mm SL


Fig. 1941. *Calotomus spinidens* (Quoy & Gaimard, 1824), terminal phase; Philippines, Cebu market, photo by John Randall 117mm SL


Fig. 1942. *Calotomus spinidens* (Quoy & Gaimard, 1824), initial phase; Marshall Islands, Enewetak, photo by John Randall 88mm SL


Fig. 1943. *Chlorurus bowersi* (Snyder, 1909), terminal phase; Indonesia, Seribu Island, Java, photo by John Randall 199mm SL


Fig. 1944. *Chlorurus capistratoides* (Bleeker, 1847), terminal phase; Indonesia, Padang Bai, Bali, photo by John Randall 198mm SL


Fig. 1945. *Chlorurus capistratoides* (Bleeker, 1847), initial phase; Seychelles, La Digue, photo by John Randall 202mm SL


Fig. 1946. *Chlorurus japanensis* (Bloch, 1789), terminal phase; Solomon Islands, Guadalcanal, photo by John Randall 220mm SL


Fig. 1947. *Chlorurus japanensis* (Bloch, 1789), initial phase; Indonesia, Padang Bai, Bali, photo by John Randall 205mm SL


Fig. 1948. *Chlorurus sordidus* (Forsskål, 1775), terminal phase; Australia, Lizard Island, photo by John Randall 227mm SL


Fig. 1949. *Chlorurus sordidus* (Forsskål, 1775), initial phase; Tahiti, photo by John Randall 164mm SL


Fig. 1950. *Hipposcarus longiceps* (Valenciennes, 1840), terminal phase; Australia, Half-mile pass, Great Barrier Reef, photo by John Randall 303mm SL


Fig. 1951. *Hipposcarus longiceps* (Valenciennes, 1840), initial phase; French Polynesia, Rangiroa, photo by John Randall 282mm SL


Fig. 1952. *Leptoscarus vaigiensis* (Quoy & Gaimard, 1824), terminal phase; Mauritius, photo by John Randall 159mm SL


Fig. 1953. *Leptoscarus vaigiensis* (Quoy & Gaimard, 1824), initial phase; Philippines, Dumaguete, Negros, photo by John Randall 172mm SL

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Fig. 1954. *Scarus dimidiatus* Bleeker, 1859, terminal phase; Solomon Islands, Alite Reef, photo by John Randall
187mm SL

Fig. 1955. *Scarus dimidiatus* Bleeker, 1859, initial phase; Solomon Islands, Alite Reef, photo by John Randall
172mm SL

Fig. 1956. *Scarus frenatus* (La Cepède, 1802), terminal phase; Marshall Islands, Enewetak, photo by John Randall
325mm SL

Fig. 1957. *Scarus frenatus* (La Cepède, 1802), initial phase; Marshall Islands, Enewetak, photo by John Randall
189mm SL

Fig. 1958. *Scarus ghobban* Forsskål, 1775, terminal phase; Marshall Islands, Enewetak, photo by John Randall
382mm SL

Fig. 1959. *Scarus ghobban* Forsskål, 1775, initial phase; Cambodia, Kampot, market specimen, photo by Walter Rainboth
211mm SL

Fig. 1960. *Scarus globiceps* Valenciennes, 1840, terminal phase; U.S. Minor Islands, Palmyra, photo by John Randall
222mm SL

Fig. 1961. *Scarus globiceps* Valenciennes, 1840, initial phase; Australia, Wistaria Reef, photo by John Randall
151mm SL

Fig. 1962. *Scarus hypselopterus* Bleeker, 1853, terminal phase; Philippines, Cebu market, photo by John Randall
194mm SL

Fig. 1963. *Scarus hypselopterus* Bleeker, 1853, initial phase; Malaysia, Pulau Tulai, photo by John Randall
171mm SL

Fig. 1964. *Scarus niger* Forsskål, 1775, terminal phase; Seychelles, Mahé, photo by John Randall
245mm SL

Fig. 1965. *Scarus niger* Forsskål, 1775, initial phase; Marshall Islands, Enewetak, photo by John Randall
198mm SL

Fig. 1966. *Scarus oviceps* Valenciennes, 1840, terminal phase; Solomon Islands, Alite Reef, photo by John Randall
218mm SL

Fig. 1967. *Scarus oviceps* Valenciennes, 1840, initial phase; Tahiti, Teavaraa Pass, photo by John Randall
198mm SL

Fig. 1968. *Scarus prasiognathos* Valenciennes, 1840, terminal phase; Cambodia, Stung Treng market, photo by Lieng Sopha

Fig. 1969. *Scarus prasiognathos* Valenciennes, 1840, initial phase; Maldives, Villingili, photo by John Randall
225mm SL

Fig. 1970. *Scarus psittacus* Forsskål, 1775, terminal phase; Marquesas Islands, Nuku Hiva, photo by John Randall
215mm SL

Fig. 1971. *Scarus psittacus* Forsskål, 1775, initial phase; Australia, Lizard Island, photo by John Randall
171mm SL

Fig. 1972. *Scarus quoyi* Valenciennes, 1840, terminal phase; Philippines, Cebu market, photo by John Randall
169mm SL

Fig. 1973. *Scarus rivulatus* Valenciennes, 1840, terminal phase; Malaysia, Pulau Tulai, photo by John Randall
209mm SL

Fig. 1974. *Scarus rivulatus* Valenciennes, 1840, initial phase; Australia, One Tree Island, photo by John Randall
212mm SL

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Fig. 1975. *Scarus rubroviolaceus* Bleeker, 1847, terminal phase; Hawaii, Kona, photo by John Randall
460mm SL

Fig. 1976. *Scarus rubroviolaceus* Bleeker, 1847, initial phase; Hawaii, Kona, photo by John Randall
425mm SL

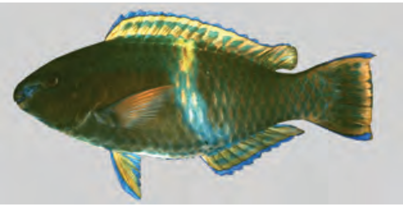

Fig. 1977. *Scarus schlegeli* (Bleeker, 1861), terminal phase; Australia, Great Barrier Reef, photo by John Randall
199mm SL

Fig. 1978. *Scarus schlegeli* (Bleeker, 1861), initial phase; Marshall Islands, Enewetak, photo by John Randall
157mm SL

Fig. 1979. *Scarus tricolor* Bleeker, 1847, terminal phase; Seychelles, La Digue, photo by John Randall
283mm SL

Fig. 1980. *Scarus tricolor* Bleeker, 1847, initial phase; Seychelles, La Digue, photo by John Randall
206mm SL

Fig. 1981. *Champsodon guentheri* Regan, 1908; Indonesia, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 1982. *Parapercis alboguttata* (Günther, 1872); Australia, CSIRO photo in Sainsbury et al. (1985)
199mm TL

Fig. 1983. *Parapercis clathrata* Ogilby, 1910; Indonesia, Bali, photo by John Randall
84mm SL

Fig. 1984. *Parapercis cylindrica* (Bloch, 1792); Philippines, Mactan Island, Cebu, photo by John Randall
55mm SL

Fig. 1985. *Parapercis filamentosa* (Steindachner, 1878); Vietnam, Mekong River mouth, photo by Walter Rainboth
105mm SL

Fig. 1986. *Parapercis hexophtalma* (Cuvier, 1829); Tonga, Tongatapu, photo by John Randall
178mm SL

Fig. 1987. *Parapercis maculata* (Bloch & Schneider, 1801); Indonesia, Nusa Dua, photo by John Randall
60mm SL

Fig. 1988. *Parapercis schauinslandii* (Steindachner, 1900); Philippines, Dumaguete, Negros, photo by John Randall
93mm SL

Fig. 1989. *Parapercis snyderi* Jordan & Starks, 1905; Malaysia, Pulau Chebeh, photo by John Randall
56mm SL

Fig. 1990. *Parapercis tetracantha* (La Cepède, 1801); Thailand, Similan Island, photo by John Randall
68mm SL

Fig. 1991. *Parapercis xanthozona* (Bleeker, 1849); Taiwan, photo by John Randall
99mm SL

Fig. 1992. *Limnichthys nitidus* Smith, 1958; Comoros, photo by Richard Winterbottom
22mm SL

Fig. 1993. *Matsubaraea setouchiensis* Taki, 1953; Vietnam, Nha Trang, photo by Richard Winterbottom
37.2mm SL

Fig. 1994. *Uranoscopus affinis* Cuvier, 1829; Australia, CSIRO photo in Sainsbury et al. (1985)
68mm TL

Fig. 1995. *Uranoscopus bicinctus* Temminck & Schlegel, 1843; Australia, CSIRO photo in Sainsbury et al. (1985)
130mm TL

Fig. 1996. *Uranoscopus cognatus* Cantor, 1849; Australia, CSIRO photo in Sainsbury et al. (1985)
165mm SL

Fig. 1997. *Uranoscopus oligolepis* Bleeker, 1878; Philippines, Samar Sea, photo by Edward Murdy
113mm SL

Fig. 1998. *Enneapterygius flavoccipitis* Shen, 1994 ♂ ; Vietnam, Nha Trang, photo by Richard Winterbottom
24.5mm SL

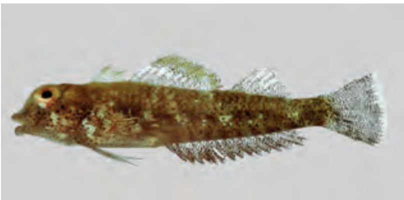

Fig. 1999. *Enneapterygius philippinus* (Peters, 1868) ♂ ; Palau, Babeldaob I., photo by Richard Winterbottom
18.3mm SL

Fig. 2000. *Enneapterygius tutuilae* Jordan & Seale, 1906; Japan, Ototo-jima, Ogasawara, photo by John Randall
19mm SL

Fig. 2001. *Helcogramma desa* Williams & Howe, 2003 ♂ paratype; Vietnam, Nha Trang, photo by Richard Winterbottom
40mm SL

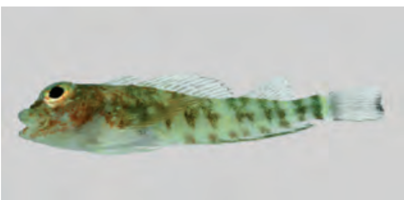

Fig. 2002. *Helcogramma desa* Williams & Howe, 2003 ♀ paratype; Vietnam, Nha Trang, photo by Richard Winterbottom
32.5mm SL

Fig. 2003. *Helcogramma springeri* Hansen, 1986; Malaysia, Tioman Island, photo by John Randall
29mm SL

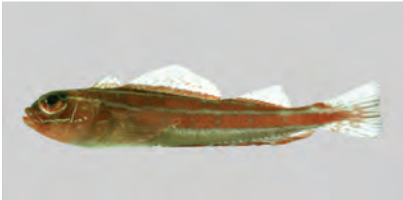

Fig. 2004. *Helcogramma striatum* Hansen, 1986 ♂ ; Vietnam, Nha Trang, photo by Richard Winterbottom
27.3mm SL

Fig. 2005. *Norfolkia brachylepis* (Schultz, 1960); Australia, Chesterfield Bank, photo by John Randall
38mm SL

Fig. 2006. *Andamia heteroptera* (Bleeker, 1857); Indonesia, Ambon Bay, photo by John Randall
64mm SL

Fig. 2007. *Aspidontus dussumieri* (Valenciennes, 1836); American Samoa, Tutuila, photo by John Randall
51mm SL

Fig. 2008. *Aspidontus taeniatus* Quoy & Gaimard, 1834; French Polynesia, Moorea, photo by John Randall
75mm SL

Fig. 2009. *Atrosalarias fuscus* (Rüppell, 1838); Malaysia, Tioman Island, photo by John Randall
74mm SL

Fig. 2010. *Blenniella bilitonensis* (Bleeker, 1858); Malaysia, Tioman Island, photo by John Randall
48mm SL

Fig. 2011. *Blenniella chrysospilos* (Bleeker, 1857); Australia, Kendrew Island, photo by John Randall
67mm SL

Fig. 2012. *Blenniella periophthalmus* (Valenciennes, 1836); Madagascar, Tulear, photo by Walter Rainboth
84mm SL

Fig. 2013. *Cirripectes castanaeus* (Valenciennes, 1836); Madagascar, Tulear, photo by Walter Rainboth
53mm SL

Fig. 2014. *Cirripectes filamentosus* (Alleyne & Macleay, 1877); Malaysia, Tioman Island, photo by John Randall
43mm SL

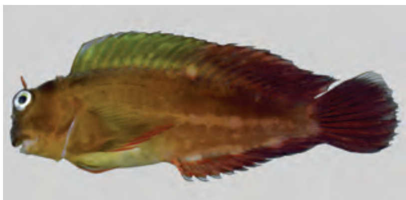

Fig. 2015. *Cirripectes perustus* Smith, 1959; Chagos, photo by Richard Winterbottom
60mm SL

Fig. 2016. *Cirripectes polyzona* (Bleeker, 1868); Marshall Islands, Enewetak, photo by John Randall
60mm SL

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Fig. 2017. *Cirripectes variolosus* (Valenciennes, 1836); Marshall Islands, Eniwetok, photo by John Randall
58mm SL

Fig. 2018. *Crossosalarias macrospilus* Smith-Vaniz & Springer, 1971; New Caledonia, photo by Richard Winterbottom
53.5mm SL

Fig. 2019. *Ecsenius bicolor* (Day, 1888); Guam, photo by John Randall
36mm SL

Fig. 2020. *Ecsenius lineatus* Klausewitz, 1962; Malaysia, Pulau Tulai, photo by John Randall
47mm SL

Fig. 2021. *Ecsenius yaeyamaensis* (Aoyagi, 1954); Malaysia, Tioman Island, photo by John Randall
36mm SL

Fig. 2022. *Enchelyurus flavipes* Peters, 1868; Indonesia, Batavia Bay, Java, photo by Walter Rainboth
47mm SL

Fig. 2023. *Enchelyurus kraussii* (Klunzinger, 1871); Australia, Chesterfield Bank, photo by John Randall
31mm SL

Fig. 2024. *Entomacrodus caudofasciatus* (Regan, 1909); Solomon Islands, Savo, photo by John Randall
34mm SL

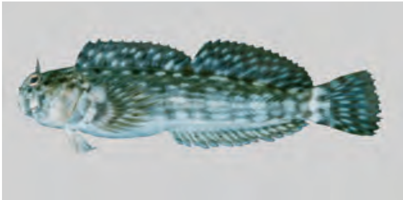

Fig. 2025. *Entomacrodus decussatus* (Bleeker, 1858); Malaysia, Tioman Island, photo by John Randall
61mm SL

Fig. 2026. *Entomacrodus stellifer* (Jordan & Snyder, 1902); Japan, Sea of Japan tidepools, photo by Walter Rainboth
62mm SL

Fig. 2027. *Entomacrodus striatus* (Valencienes, 1836); Japan, Marcus Island, photo by John Randall
78mm SL

Fig. 2028. *Entomacrodus thalassinus* (Jordan & Seale, 1906); Japan, Ani-jima, Ogasawara, photo by John Randall
30mm SL

Fig. 2029. *Exallias brevis* (Kner, 1868); French Polynesia, Moorea, Society Islands, photo by Richard Winterbottom
82mm SL

Fig. 2030. *Istiblennius dussumieri* (Valenciennes, 1836), ♂ ; Thailand, Koh Lon shore, Pattaya Bay, photo by Walter Rainboth
74mm SL

Fig. 2031. *Istiblennius dussumieri* (Valenciennes, 1836), ♀ ; Philippines, Mactan, photo by Richard Winterbottom
61.8mm SL

Fig. 2032. *Istiblennius edentulus* (Forster & Schneider, 1801); Madagascar, Tulear, photo by Walter Rainboth
79mm SL

Fig. 2033. *Istiblennius lineatus* (Valenciennes, 1836); Taiwan, San Shien Tai, photo by John Randall
69mm SL

Fig. 2034. *Laiphognathus multimaculatus* Smith, 1955; Thailand, Phuket, photo by Richard Winterbottom
27mm SL

Fig. 2035. *Meiacanthus grammistes* (Valenciennes, 1836); Singapore, Salu Island, photo by John Randall
46mm SL

Fig. 2036. *Omobranchus elongatus* (Peters, 1855); Vietnam, Cac Ba, photo by Richard Winterbottom
52.6mm SL

Fig. 2037. *Omobranchus ferox* (Herre, 1927); Thailand, Phuket, photo by Richard Winterbottom
51mm SL

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Fig. 2038. *Omobranchus germaini* (Sauvage, 1883); Australia, Lizard Island, Great Barrier Reef, photo by Richard Winterbottom 31mm SL


Fig. 2039. *Omobranchus punctatus* (Valenciennes, 1836); Saudi Arabia, Manifa, photo by John Randall 53mm SL


Fig. 2040. *Omobranchus sp.*; Vietnam, Soc Trang, Song Hau Giang, photo by Walter Rainboth 15mm SL


Fig. 2041. *Omox biporos* Springer, 1972; New Caledonia, Canala Bay, photo by John Randall 38mm SL


Fig. 2042. *Parenchelyurus sp.* ; Madagascar, Tulear, (*Parenchylurus hepburni* is black with light blue spots) photo by Walter Rainboth 33mm SL


Fig. 2043. *Petroscirtes breviceps* (Valenciennes, 1836); Malaysia, Tioman Island, photo by John Randall 66mm SL


Fig. 2044. *Petroscirtes mitratus* Rüppell, 1830; Madagascar, Tulear, photo by Walter Rainboth 41mm SL


Fig. 2045. *Petroscirtes variabilis* (Cantor, 1849); Indonesia, Tanjung Luar, Lombok, photo by John Randall 53mm SL


Fig. 2046. *Plagiotremus rhinorhynchos* (Bleeker, 1852); Guam, photo by John Randall 55mm SL


Fig. 2047. *Plagiotremus tapeinosoma* (Bleeker, 1857); Chagos, photo by Richard Winterbottom 46.1mm SL


Fig. 2048. *Salarias fasciatus* (Bloch, 1786); Indonesia, Java, reefs at Batavia, photo by Walter Rainboth 52mm SL

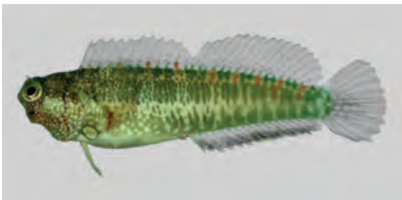
Fig. 2049. *Salarias guttatus* Valenciennes, 1836; Thailand, Phuket, photo by Richard Winterbottom 31.4mm SL


Fig. 2050. *Xiphasia setifer* Swainson, 1839; Vietnam, South China Sea, Mekong plume, photo by Walter Rainboth 360mm SL


Fig. 2051. *Diademichthys lineatus* (Sauvage, 1883); Malaysia, Tioman Island, photo by John Randall 40mm SL


Fig. 2052. *Lepadichthys bolini* Briggs, 1962; Vietnam, Nha Trang, photo by Richard Winterbottom 13mm SL


Fig. 2053. *Lepadichthys frenatus* Waite, 1904; Vietnam, Nha Trang, photo by Richard Winterbottom 32mm SL


Fig. 2054. *Calliurichthys doryssus* Jordan & Fowler, 1903; Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 123mm SL


Fig. 2055. *Calliurichthys japonicus* (Houttuyn, 1782); Indonesia, Bali, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 155mm SL


Fig. 2056. *Dactylopus dactylopus* (Valenciennes, 1837); Australia, CSIRO photo in Sainsbury et al. (1985) 106mm SL


Fig. 2057. *Paradiplogrammus enneactis* (Bleeker, 1879); Vietnam, Cac Ba, photo by Richard Winterbottom 32.4mm SL


Fig. 2058. *Repomucenus hindsii* (Richardson, 1844); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 62mm SL

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Fig. 2059. *Repomucenus meridionalis* (Suwardji, 1965); Indonesia, Lombok, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp 108mm SL

Fig. 2060. *Repomucenus sagitta* (Pallas, 1770); Thailand, photo by Chavalit Vidthayanon

Fig. 2061. *Synchiropus lateralis* (Richardson, 1844), ♂; Cambodia, Kampot, market specimen, photo by Walter Rainboth 91mm SL

Fig. 2062. *Synchiropus lineolatus* (Valenciennes, 1837); India, Mandapam Camp, photo by John Randall 53mm SL

Fig. 2063. *Synchiropus morrisoni* Schultz, 1960; Philippines, Negros, photo by Richard Winterbottom 56mm SL

Fig. 2064. *Synchiropus ocellatus* (Pallas, 1770); Indonesia, Gunung Api, Banda Sea, photo by John Randall 59mm SL

Fig. 2065. *Tonlesapia sp.* (lateral view); Vietnam, Vinh Long, Song Co Chien, photo by Walter Rainboth 43mm SL

Fig. 2066. *Tonlesapia sp.* (Dorsal view); Vietnam, Vinh Long, Song Co Chien, photo by Walter Rainboth 43mm SL

Fig. 2067. *Bostrychus scalaris* Larson, 2008; Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 120mm SL

Fig. 2068. *Bostrychus sinensis* (La Cepède, 1801); China, Fujian Province, photo by Walter Rainboth 151mm SL

Fig. 2069. *Bunaka gyrinoides* (Bleeker, 1853); Borneo, Sabah, photo by Walter Rainboth 60mm SL

Fig. 2070. *Butis amboinensis* (Bleeker, 1853); Thailand, Bangpakong River, photo by Chavalit Vidthayanon

Fig. 2071. *Butis butis* (Hamilton, 1822); Thailand, Chantaburi, photo by Chavalit Vidthayanon

Fig. 2072. *Butis gymnopomus* (Bleeker, 1853); Thailand, photo by Chavalit Vidthayanon

Fig. 2073. *Butis humeralis* (Valenciennes, 1837); Vietnam, Soc Trang, Song Hau Giang, photo by Walter Rainboth 59mm SL

Fig. 2074. *Butis koilomatodon* (Bleeker, 1849); Vietnam, Soc Trang, Song Hau Giang, photo by Walter Rainboth 53mm SL

Fig. 2075. *Eleotris melanosoma* Bleeker, 1852; Vietnam, Can Tho, Song Hau Giang, photo by Walter Rainboth 42mm SL

Fig. 2076. *Eleotris sp. 1*; Vietnam, Long Xuyen, Song Hau Giang at Chau Doc, photo by Walter Rainboth 100mm SL

Fig. 2077. *Eleotris sp. 2* ♂; Vietnam, Mekong delta, photo by Chavalit Vidthayanon 60mm SL

Fig. 2078. *Giuris margaritacea* (Valenciennes, 1837); Philippines, Mactan, Cebu, photo by Edward Murdy & Carl Ferraris 21mm SL

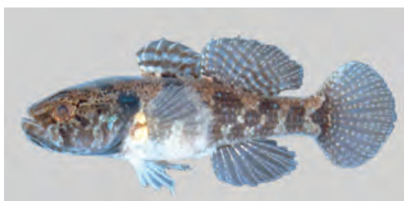

Fig. 2079. *Neodontobutis aurarmus* (Vidthayanon, 1995), holotype; Thailand, Nong Khai, photo by Chavalit Vidthayanon

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Fig. 2080. *Neodontobutis sp*.; Vietnam, Dak Lak, Lak Lake, photo by Chavalit Vidthayanon
35mm SL

Fig. 2081. *Ophiocara porocephala* (Valenciennes, 1837); Thailand, Chantaburi, photo by Chavalit Vidthayanon

Fig. 2082. *Oxyeleotris marmorata* (Bleeker, 1852); Thailand, Songkram River, photo by Chavalit Vidthayanon

Fig. 2083. *Oxyeleotris siamensis* (Günther, 1861); Thailand, photo by Chavalit Vidthayanon

Fig. 2084. *Oxyeleotris urophthalmoides* (Bleeker, 1853); Indonesia, Kalimantan, Banjarmassin, photo by Walter Rainboth
121mm SL

Fig. 2085. *Oxyeleotris urophthalmus* (Bleeker, 1851); Vietnam, Soc Trang, Song Hau Giang, photo by Walter Rainboth
82mm SL

Fig. 2086. *Acentrogobius caninus* (Valenciennes, 1837); Vietnam, Kien Giang, Ha Tien Lake, photo by Walter Rainboth
54mm SL

Fig. 2087. *Acentrogobius gracilis* (Bleeker, 1875); Singapore, photo by Walter Rainboth
51mm SL

Fig. 2088. *Acentrogobius janthinopterus* (Bleeker, 1852); Palau, Babeldaob Island, photo by Richard Winterbottom
81mm SL

Fig. 2089. Acentrogobius nebulosus (Forsskål, 1775); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
66mm SL

Fig. 2090. *Acentrogobius viridipunctatus* (Valenciennes, 1837); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
92mm SL

Fig. 2091. *Amblyeleotris diagonalis* Polunin & Lubbock, 1979; Australia, One Tree Island, photo by John Randall
63mm SL

Fig. 2092. *Amblyeleotris fasciata* (Herre, 1953); Thailand, Phuket, photo by Richard Winterbottom
41.2mm SL

Fig. 2093. *Amblyeleotris fontanesii* (Bleeker, 1852); Indonesia, Maumere Bay, Flores, photo by John Randall
25mm SL

Fig. 2094. *Amblyeleotris guttata* (Fowler, 1938) ♀ ; Palau, Ngeruktabel I., photo by Richard Winterbottom
48.5mm SL

Fig. 2095. *Amblyeleotris gymnocephala* (Bleeker, 1853); Papua New Guinea, New Britain, photo by John Randall
55mm SL

Fig. 2096. *Amblyeleotris latifasciata* Polunin & Lubbock, 1979; Indonesia, Ujung Pandang, Celebes, photo by John Randall
62mm SL

Fig. 2097. *Amblyeleotris periophthalma* (Bleeker, 1853); Vietnam, Nha Trang, photo by Richard Winterbottom
42mm SL

Fig. 2098. *Amblyeleotris steinitzi* (Klausewitz, 1974); Palau, Augulpelu Reef, photo by Richard Winterbottom
36.5mm SL

Fig. 2099. *Amblygobius bynoensis* (Richardson, 1844); Singapore, Salu Island, photo by John Randall
69mm SL

Fig. 2100. *Amblygobius phalaena* (Valenciennes, 1837); Northern Vietnam, photo by Richard Winterbottom
61.4mm SL

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Fig. 2101. *Amblygobius sphynx* (Valenciennes, 1837); Australia, Lizard Island, photo by John Randall
78mm SL

Fig. 2102. *Asterropteryx semipunctata* Rüppell, 1830; Tuamoto Island, Mangareva, photo by John Randall
39mm SL

Fig. 2103. *Aulopareia cyanomos* (Bleeker, 1849); Vietnam, My Tho, mouth of Tien Giang, photo by Walter Rainboth
95mm SL

Fig. 2104. *Aulopareia koumansi* (Herre, 1927); Vietnam, My Tho, mouth of Tien Giang, photo by Walter Rainboth
46mm SL

Fig. 2105. *Aulopareia unicolor* (Valenciennes, 1837); Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth
51mm SL

Fig. 2106. *Bathygobius coalitus* (Bennett, 1832); Thailand, Chol Buri, Pattaya Bay, photo by Walter Rainboth
44mm SL

Fig. 2107. *Bathygobius cocosensis* Bleeker, 1854; Seychelles, Aride, photo by John Randall
31mm SL

Fig. 2108. *Bathygobius cotticeps* (Steindachner, 1879); Japan, Ani-jima, Ogasawara Island, photo by John Randall
55mm SL

Fig. 2109. *Bathygobius cyclopterus* (Valenciennes, 1837); ♂ ; Fiji, Great Astrolabe Reef, photo by Richard Winterbottom
41.7mm SL

Fig. 2110. *Bathygobius fuscus* (Rüppell, 1830); Vietnam, Nha Trang, photo by Richard Winterbottom
15.9mm SL

Fig. 2111. *Bathygobius hongkongensis* Lam, 1986; Vietnam, Nha Trang, photo by Richard Winterbottom
32.4mm SL

Fig. 2112. *Bathygobius meggitti* (Hora & Mukerji, 1936); Oman, Masirah Island, photo by John Randall
44mm SL

Fig. 2113. *Bathygobius panayensis* (Jordan & Seale, 1907); Thailand Chol Buri, Pattaya Bay, photo by Walter Rainboth
29mm SL

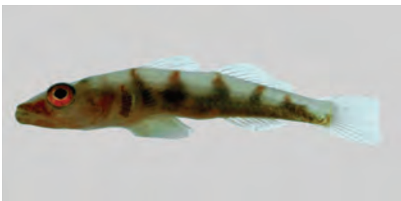

Fig. 2114. *Bryaninops amplus* Larson, 1985; Vietnam, Nha Trang, photo by Richard Winterbottom
20mm SL

Fig. 2115. *Callogobius hasseltii* (Bleeker, 1851); Malaysia, Tioman Island, photo by Walter Rainboth
51mm SL

Fig. 2116. *Callogobius sclateri* (Steindachner, 1880); Taiwan, Nixon Rock, photo by John Randall
31mm SL

Fig. 2117. *Cryptocentroides insignis* (Seale, 1910), ♂; Thailand, Chantaburi, Ban Phe fishery station, photo by Walter Rainboth
58mm SL

Fig. 2118. *Cryptocentroides insignis* (Seale, 1910), ♀; Thailand, Chantaburi, Ban Phe fishery station, photo by Walter Rainboth
56mm SL

Fig. 2119. *Cryptocentrus caeruleomaculatus* (Herre, 1933); Thailand, photo by Chavalit Vidthayanon

Fig. 2120. *Cryptocentrus callopterus* Smith, 1945; Thailand, photo by Chavalit Vidthayanon

Fig. 2121. *Cryptocentrus cinctus* (Herre, 1936); Singapore, Salu Island, photo by John Randall
48mm SL

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Fig. 2122. *Cryptocentrus cyanotaenia* (Bleeker, 1853); Thailand, photo by Chavalit Vidthayanon

Fig. 2123. *Cryptocentrus leptocephalus* Bleeker, 1876; Vietnam, Nha Trang, photo by Richard Winterbottom
49mm SL

Fig. 2124. *Cryptocentrus maudae* Fowler, 1937; Singapore, Salu Island, photo by John Randall
75mm SL

Fig. 2125. *Cryptocentrus pavoninoides* (Bleeker, 1849); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
87mm SL

Fig. 2126. *Cryptocentrus strigilliceps* (Jordan & Seale, 1906); Vietnam, Nha Trang, photo by Richard Winterbottom
40.4mm SL

Fig. 2127. *Ctenogobiops crocineus* Smith, 1959; Vietnam, Nha Trang, photo by Richard Winterbottom
42mm SL

Fig. 2128. *Ctenogobiops pomastictus* Lubbock & Polunin, 1977; Vietnam, Nha Trang, photo by Richard Winterbottom
30.5mm SL

Fig. 2129. *Discordipinna griessingeri* Hoese & Fourmanoir, 1978; Vietnam, Nha Trang, photo by Richard Winterbottom
19mm SL

Fig. 2130. *Drombus bontii* (Bleeker, 1849); Thailand, Chol Buri, Ban Sri Racha, photo by Walter Rainboth
50mm SL

Fig. 2131. *Drombus kranjiensis* (Herre, 1940); Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth
28mm SL

Fig. 2132. *Drombus ocyurus* (Jordan & Seale, 1907); Thailand, Chantaburi, Ban Phe fishery station, photo by Walter Rainboth
23mm SL

Fig. 2133. *Drombus triangularis* (Weber, 1909); Northern Vietnam, photo by Richard Winterbottom
26mm SL

Fig. 2134. *Eviota abax* (Jordan & Snyder, 1901); Japan, Ani-jima, Ogasawara Island, photo by John Randall
21mm SL

Fig. 2135. *Eviota albolineata* Jewett & Lachner, 1983; Vietnam, Nha Trang, photo by Richard Winterbottom
18mm SL

Fig. 2136. *Eviota melasma* Lachner & Karnella, 1980; Palau, Augulpelu Reef, photo by Richard Winterbottom
17.2mm SL

Fig. 2137. *Eviota nebulosa* Smith, 1958; Palau, Ngeruktabl I., photo by Richard Winterbottom
12.1mm SL

Fig. 2138. *Eviota prasina* (Klunzinger, 1871); Chagos, photo by Richard Winterbottom
15.9mm SL

Fig. 2139. *Eviota sebreei* Jordan & Seale, 1906; Vietnam, Nha Trang, photo by Richard Winterbottom
16mm SL

Fig. 2140. *Eviota spilota* Lachner & Karnella, 1980; Vietnam, Nha Trang, photo by Richard Winterbottom
16mm SL

Fig. 2141. *Exyrias belissimus* (Smith, 1959); Vietnam, Nha Trang, photo by Richard Winterbottom
116.4mm SL

Fig. 2142. *Exyrias puntang* (Bleeker, 1851) ♂ ; Sabah, photo by Chavalit Vidthayanon

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Fig. 2143. *Exyrias puntang* (Bleeker, 1851) ♂ ; Palau, Babeldaob I., photo by Richard Winterbottom
41.4mm SL

Fig. 2144. *Favonigobius reichei* (Bleeker, 1853); South Africa, Kosi Bay, Natal, photo by John Randall
47mm SL

Fig. 2145. *Feia ranta* Winterbottom, 2003, ♂ holotype; Vietnam, Nha Trang, photo by Richard Winterbottom
14mm SL

Fig. 2146. *Fusigobius duospilus* Hoese & Reader, 1985; Japan, Chichi-jima, photo by John Randall
25mm SL

Fig. 2147. *Fusigobius humeralis* (Randall, 2001); Vietnam, Nha Trang, photo by Richard Winterbottom
23.2mm SL

Fig. 2148. *Fusigobius neophytus* (Günther, 1877); Marshall Islands, Enewetak, photo by John Randall
43mm SL

Fig. 2149. *Gladiogobius ensifer* Herre, 1933, ♀ ; Palau, Babeldaob I., photo by Richard Winterbottom
25.9mm SL

Fig. 2150. *Glossogobius aureus* Akihito & Meguro, 1975, ♂ ; Vietnam, Kien Giang, Rach Gia market, photo Walter Rainboth
166mm SL

Fig. 2151. *Glossogobius aureus* Akihito & Meguro, 1975, ♀ ; Thailand, Ranong, photo by Chavalit Vidthayanon

Fig. 2152. *Glossogobius biocellatus* (Valenciennes, 1837); Vietnam, Ha Tien Lake, photo by Walter Rainboth
68mm SL

Fig. 2153. *Glossogobius celebius* (Valenciennes, 1837); Malaysia, Tioman Island, photo by Walter Rainboth
84mm SL

Fig. 2154. *Glossogobius giuris* (Hamilton, 1822), adult; Vietnam, Soc Trang, Song Hau Giang near Ke Sach, photo by Walter Rainboth
121mm SL

Fig. 2155. *Glossogobius giuris* (Hamilton, 1822), subadult; Vietnam, Soc Trang, Song Hau Giang near Long Phu, photo by Walter Rainboth
70mm SL

Fig. 2156. *Glossogobius sparsipapillus* Akihito & Meguro, 1976; Singapore, photo by Walter Rainboth
85mm SL

Fig. 2157. *Gobiodon brochus* Harold & Winterbottom, 1999; Vietnam, Nha Trang, photo by Richard Winterbottom
23mm SL

Fig. 2158. *Gobiodon citrinus* (Rüppell, 1838); Egypt, Gulf of Aqaba, photo by John Randall
51mm SL

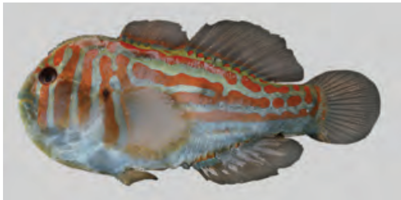

Fig. 2159. *Gobiodon histrio* (Valenciennes, 1837); New Caledonia, photo by John Randall
28mm SL

Fig. 2160. *Gobiodon prolixus* Winterbottom & Harold, 2005, ♂, holotype; Vietnam, Nha Trang, photo by Richard Winterbottom
26mm SL

Fig. 2161. *Gobiodon quinquestrigatus* (Valenciennes, 1837); Vietnam, Nha Trang, photo by Richard Winterbottom
30mm SL

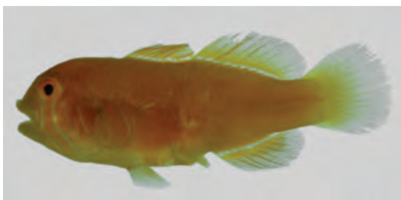

Fig. 2162. *Gobiodon rivulatus* (Rüppell, 1830); Vietnam, Nha Trang, photo by Richard Winterbottom
20.6mm SL

Fig. 2163. *Gobiopsis aporia* Lachner & McKinney, 1978; Vietnam, Nha Trang, photo by Richard Winterbottom
41mm SL

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Fig. 2164. *Gobiopsis arenaria* (Snyder, 1908); Vietnam, Nha Trang, photo by Richard Winterbottom
21.2mm SL

Fig. 2165. *Gobiopsis macrostoma* Steindachner, 1861; Thailand, photo by Chavalit Vidthayanon

Fig. 2166. *Gobiopsis quinquecincta* (Smith, 1931); Ryukyu Islands, Yomitan, Okinawa, photo by John Randall
24mm SL

Fig. 2167. *Istigobius campbelli* (Jordan & Snyder, 1901); Vietnam, Nha Trang, photo by Richard Winterbottom
52.6mm SL

Fig. 2168. *Istigobius decoratus* (Herre, 1927); Vietnam, Nha Trang, photo by Richard Winterbottom
64.1mm SL

Fig. 2169. *Istigobius nigroocellatus* (Günther, 1873); Australia, Maumere, Flores, photo by John Randall
41mm SL

Fig. 2170. *Istigobius ornatus* (Rüppell, 1830); Taiwan, photo by John Randall
67mm SL

Fig. 2171. *Istigobius spence* (Smith, 1947); Vietnam, Cac Ba, photo by Richard Winterbottom
32.9mm SL

Fig. 2172. *Macrodontogobius wilburi* Herre, 1936; New Caledonia, photo by John Randall
46mm SL

Fig. 2173. *Mahidolia mystacina* (Valenciennes, 1837); Philippines, Negros, Dumaguete City pier, photo by John Randall
43mm SL

Fig. 2174. *Myersina crocata* (Wongratana, 1975) ♂ ; Vietnam, Cac Ba, photo by Richard Winterbottom
60mm SL

Fig. 2175. *Myersina crocata* (Wongratana, 1975) ♀ ; Vietnam, Cac Ba, photo by Richard Winterbottom
57.5mm SL

Fig. 2176. *Myersina filifer* (Valenciennes, 1837); Taiwan, Keelung, photo by Walter Rainboth
96mm SL

Fig. 2177. *Oplopomus oplopomus* (Valenciennes, 1837); ♂ ; Palau, Babeldaob I., photo by Richard Winterbottom
62.2mm SL

Fig. 2178. *Parachaeturichthys polynema* (Bleeker, 1853); Kuwait, photo by John Randall
61mm SL

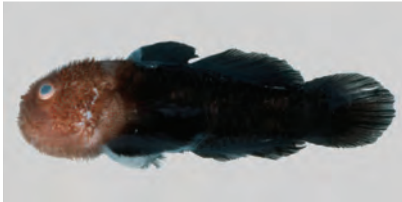

Fig. 2179. *Paragobiodon echinocephalus* (Rüppell, 1830); Vietnam, Nha Trang, photo by Richard Winterbottom
22.7mm SL

Fig. 2180. *Paragobiodon lacunicolus* (Kendall & Goldsborough, 1911); Vietnam, Nha Trang, photo by Richard Winterbottom
19mm SL

Fig. 2181. *Pleurosicya micheli* Fourmanoir, 1971; Vietnam, Nha Trang, photo by Richard Winterbottom
13mm SL

Fig. 2182. *Pleurosicya mossambica* Smith, 1959; Vietnam, Nha Trang, photo by Richard Winterbottom
18mm SL

Fig. 2183. *Priolepis cincta* (Regan, 1909); Vietnam, Nha Trang, photo by Richard Winterbottom
15mm SL

Fig. 2184. *Priolepis eugenius* (Jordan & Evermann, 1903); Hawaii, Oahu, photo by John Randall
44mm SL

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Fig. 2185. *Priolepis nuchifasciata* (Günther, 1873); Vietnam, Nha Trang, photo by Richard Winterbottom
15.9mm SL

Fig. 2186. *Priolepis semidoliata* (Valenciennes, 1837); Vietnam, Nha Trang, photo by Richard Winterbottom
20.2mm SL

Fig. 2187. *Silhouettea nuchipunctatus* (Herre, 1934) ; Vietnam, Go Cong, Tien Giang mouth, photo by Walter Rainboth
35mm SL

Fig. 2188. *Trimma annosum* Winterbottom, 2003, ♂ ; Vietnam, Nha Trang, photo by Richard Winterbottom
20mm SL

Fig. 2189. *Trimma benjamini* Winterbottom, 1996, ♂ ; Palau, Ulong Pass, photo by Richard Winterbottom
19.7mm SL

Fig. 2190. *Trimma halonevum* Winterbottom, 2000; Vietnam, Nha Trang, photo by Richard Winterbottom
12mm SL

Fig. 2191. *Trimma naudei* Smith, 1957; Vietnam, Nha Trang, photo by Richard Winterbottom
22.1mm SL

Fig. 2192. *Trimma okinawae* (Aoyagi, 1949); Japan, Ani-jima, photo by John Randall
25mm SL

Fig. 2193. *Trimma stobbsi* Winterbottom, 2001; Palau, Augulpelu Reef, photo by Richard Winterbottom
19mm SL

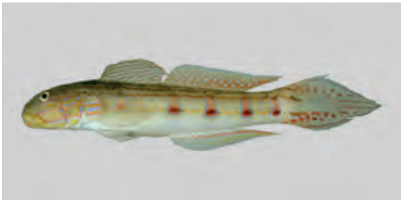

Fig. 2194. *Valenciennea longipinnis* (Lay & Bennett, 1839); Fiji, Great Astrolabe Reef, photo by Richard Winterbottom
97.1mm SL

Fig. 2195. *Valenciennea muralis* (Valenciennes, 1837); Palau, Babeldaob I., photo by Richard Winterbottom
47mm SL

Fig. 2196. *Valenciennea puellaris* (Tomiyana, 1956); Palau, Ngeruktabel I., photo by Richard Winterbottom
41.1mm SL

Fig. 2197. *Valenciennea randalli* Hoese & Larson, 1994; Palau, Koror I., photo by Richard Winterbottom
52.7mm SL

Fig. 2198. *Valenciennea sexguttata* (Valenciennes, 1837); Thailand, Phuket, photo by Richard Winterbottom
44.4mm SL

Fig. 2199. *Valenciennea strigata* (Broussonet, 1782); Vietnam, Nha Trang, photo by Richard Winterbottom
54.5mm SL

Fig. 2200. *Valenciennea wardii* (Playfair, 1867); Sudan, Suakin, photo by John Randall
64mm SL

Fig. 2201. *Vanderhorstia ambanoro* (Fourmanoir, 1957) ♀ ; Palau, Babeldaob I., photo by Richard Winterbottom
68.7mm SL

Fig. 2202. *Awaous grammepomus* (Bleeker, 1849); Thailand, photo by Chavalit Vidthayanon

Fig. 2203. *Awaous melanocephalus* (Bleeker, 1849); Hong Kong Island, photo by Walter Rainboth
64mm SL

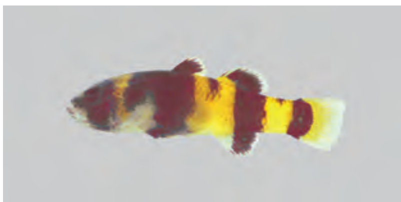

Fig. 2204. *Brachygobius doriae* (Günther, 1868); Aquarium trade import, photo by Walter Rainboth
22mm SL

Fig. 2205. *Brachygobius mekongensis* Larson & Vidthayanon, 2000; Cambodia, Odong Mean Chey, Beng Samraoh, photo by Walter Rainboth
12mm SL

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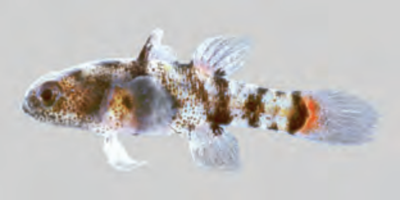

Fig. 2206. *Brachygobius mekongensis* Larson & Vidthayanon, 2000; Thailand, Nong Khai, Khud Ting, photo by Chavalit Vidthayanon

Fig. 2207. *Brachygobius sabanus* Inger, 1958; Vietnam, Phong Dinh Province, Can Tho, photo by Walter Rainboth 21mm SL

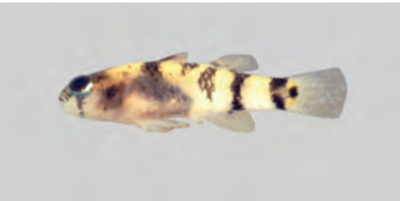

Fig. 2208. *Brachygobius sp.cf. nunus* Cambodia, Odong Mean Chey, marsh north of Phnom Penh, photo by Walter Rainboth 12mm SL

Fig. 2209. *Eugnathogobius microps* Smith, 1931; Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth 25mm SL

Fig. 2210. *Eugnathogobius siamensis* (Fowler, 1932); Vietnam, Minh Hai, brackish canal at U Minh, photo by Walter Rainboth 23mm SL

Fig. 2211. *Eugnathogobius sp. 1*; Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth 21mm SL

Fig. 2212. *Eugnathogobius sp. 2* ♂ ; Thailand, Ubon Ratchathani, Menam Mun, Chavalit Vidthayanon

Fig. 2213. *Gnatholepis cauerensis* (Bleeker, 1853); Vietnam, Nha Trang, photo by Richard Winterbottom 30mm SL

Fig. 2214. *Gobiopterus brachypterus* (Bleeker, 1855); Cambodia, Odong Mean Chey, Beng Samraoh, photo by Walter Rainboth 21mm SL

Fig. 2215. *Gobiopterus chuno* (Hamilton, 1822); Vietnam, Soc Trang, Hau Giang at Long Phu, photo by Walter Rainboth 16mm SL

Fig. 2216. *Hemigobius hoevenii* (Bleeker, 1851); Singapore, photo by Walter Rainboth 28mm SL

Fig. 2217. *Hemigobius mingi* (Herre, 1936); Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 38mm SL

Fig. 2218. *Mugilogobius abei* (Jordan & Snyder, 1901); Japan, Kyushu, photo by Walter Rainboth 26mm SL

Fig. 2219. *Mugilogobius chulae* (Smith, 1932), ♂ ; Cambodia, Rean beach, S. of Sihanoukville, photo by Walter Rainboth 25mm SL

Fig. 2220. *Mugilogobius chulae* (Smith, 1932), ♀ ; Cambodia, Rean beach, S. of Sihanoukville, photo by Walter Rainboth 24mm SL

Fig. 2221. *Mugilogobius tigrinus* (Larson, 2001); Thailand, photo by Chavalit Vidthayanon

Fig. 2222. *Mugilogobius tigrinus* (Larson, 2001); Cambodia, Rean beach, S. of Sihanoukville, photo by Walter Rainboth 13mm SL

Fig. 2223. *Oligolepis acutipennis* (Valenciennes, 1837); Vietnam, Can Tho, Bassac River, photo by Walter Rainboth 55mm SL

Fig. 2224. *Oxyurichthys microlepis* (Bleeker, 1849); Thailand, Phuket, photo by Chavalit Vidthayanon

Fig. 2225. *Oxyurichthys ophthalmonema* (Bleeker, 1856); Philippines, Bolinao, photo by Ed Murdy and Carl Ferraris 74mm SL

Fig. 2226. *Oxyurichthys papuensis* (Valenciennes, 1837); Thailand, photo by Chavalit Vidthayanon

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Fig. 2227. *Oxyurichthys tentacularis* (Valenciennes, 1837); Indonesia, Lombok, Teluk Sira, photo by John Randall 78mm SL

Fig. 2228. *Pandaka lidwilli* (McCulloch, 1917); Vietnam, Nha Trang, photo by Richard Winterbottom 9mm SL

Fig. 2229. *Papuligobius ocellatus* (Fowler, 1937), ♂ ; Laos, Bolikhamsai, Nam Ngang, photo by Walter Rainboth 65mm SL

Fig. 2230. *Papuligobius ocellatus* (Fowler, 1937), ♀ ; Laos, Savannakhet, Mekong at Keng Kabao, photo by Walter Rainboth

Fig. 2231. *Pseudogobiopsis oligactis* (Bleeker, 1875); Malaysia, Penang, photo by Walter Rainboth 29mm SL

Fig. 2232. *Pseudogobiopsis paludosus* (Fowler, 1934), ♀ ; Vietnam, Can Tho, Bassac River, photo by Walter Rainboth 21mm SL

Fig. 2233. *Pseudogobius avicennia* (Herre, 1940); Vietnam, Soc Trang, Hau Giang, photo by Walter Rainboth 21mm SL

Fig. 2234. *Pseudogobius javanicus* (Bleeker, 1856); Cambodia, Rean Beach, S. of Sihanoukville, photo by Walter Rainboth 26mm SL

Fig. 2235. *Pseudogobius sp.* ; Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth 24mm SL

Fig. 2236. *Pseudogobius sp.* ; Vietnam, Soc Trang, Hau Giang, photo by Walter Rainboth 20mm SL

Fig. 2237. *Pseudogobius sp.* ; Vietnam, Phong Dinh Province, Can Tho, photo by Walter Rainboth 20mm SL

Fig. 2238. *Redigobius bikolanus* (Herre, 1927); Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 24mm SL

Fig. 2239. *Redigobius chrysosomus* (Bleeker, 1875); Vietnam, An Giang, Hau Giang at Chau Doc, photo by Walter Rainboth 29mm SL

Fig. 2240. *Rhinogobius albimaculatus* Chen, Kottelat & Miller, 1999, ♂ ; Laos, Vientiane, Nam Lik, photo by Walter Rainboth 33mm SL

Fig. 2241. *Rhinogobius albimaculatus* Chen, Kottelat & Miller, 1999, ♀ ; Laos, Vientiane, Nam Lik at Ban Muangfuang, photo by Walter Rainboth 18mm SL

Fig. 2242. *Rhinogobius maculocervix* Kottelat, 2000, ♂ ; Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 58mm SL

Fig. 2243. *Rhinogobius maculocervix* Kottelat, 2000, ♀ ; Laos, Luang Namtha, Nam Sing, photo by Walter Rainboth 32mm SL

Fig. 2244. *Rhinogobius mekongianus* (Pellegrin & Fang, 1940), ♂ ; Laos, Luang Prabang, Nam Ming, photo by Walter Rainboth 42mm SL

Fig. 2245. *Rhinogobius mekongianus* (Pellegrin & Fang, 1940), ♀ ; Laos, Luang Prabang, Nam Ou, photo by Walter Rainboth 35mm SL

Fig. 2246. *Rhinogobius sp.* ♂ ; Vietnam, Dak Lak, Lak Lake, photo by Chavalit Vidthayanon 40mm SL

Fig. 2247. *Rhinogobius sp.* ♀ ; Vietnam, Dak Lak, Krong Ana River, Srepok basin, photo by Chavalit Vidthayanon 40mm SL

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Fig. 2248. *Rhinogobius sp.* ; Laos, Savannakhet, Mekong River at Keng Kahoung, photo by Chavalit Vidthayanon

Fig. 2249. *Stenogobius mekongensis* Watson, 1991, ♂ ; Vietnam, Long Xuyen, Song Hau Giang, photo by Walter Rainboth 101mm SL

Fig. 2250. *Stenogobius mekongensis* Watson, 1991, ♀ ; Vietnam, Vinh Long, Song Co Chien, photo by Walter Rainboth 61mm SL

Fig. 2251. *Stenogobius ophthalmoporus* (Bleeker, 1853); Vietnam, Mekong delta, Tram Chim, photo by Chavalit Vidthayanon 110mm SL

Fig. 2252. *Stigmatogobius pleurostigma* (Bleeker, 1849); Vietnam, Soc Trang, Song Hau Giang, photo by Walter Rainboth 39mm SL

Fig. 2253. *Stigmatogobius sadanundio* (Hamilton, 1822); Thailand, Bangpakong River, photo by Chavalit Vidthayanon

Fig. 2254. *Apocryptodon madurensis* (Bleeker, 1849); Thailand, photo by Chavalit Vidthayanon

Fig. 2255. *Apocryptodon sp.* ; Vietnam, Tien Giang, mouth of Song Cua Dai, photo by Walter Rainboth 52mm SL

Fig. 2256. *Apocryptodon sp.* ; Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth 34mm SL

Fig. 2257. *Boleophthalmus boddarti* (Pallas, 1770); Vietnam, Soc Trang, Lich Hoi Thoung, photo by Walter Rainboth 102mm SL

Fig. 2258. *Oxuderces dentatus* Valenciennes, 1842; Thailand, photo by Chavalit Vidthayanon

Fig. 2259. *Parapocryptes serperaster* (Richardson, 1846); Vietnam, Soc Trang, Song Hau Giang, photo by Walter Rainboth 85mm SL

Fig. 2260. *Periophthalmodon schlosseri* (Pallas, 1770); Thailand, Chao Phrya estuary, photo by Chavalit Vidthayanon

Fig. 2261. *Periophthalmodon septemradiatus* (Hamilton, 1822), ♂; Vietnam, Soc Trang, Lich Hoi Thoung, photo by Walter Rainboth 82mm SL

Fig. 2262. *Periophthalmodon septemradiatus* (Hamilton, 1822), ♀; Vietnam, Soc Trang, Lich Hoi Thoung, photo by Walter Rainboth 79mm SL

Fig. 2263. *Periophthalmus argentilineatus* (Valenciennes, 1837); Fiji, photo by John Randall 51mm SL

Fig. 2264. *Periophthalmus chrysospilos* Bleeker, 1853; Vietnam, Soc Trang, Lich Hoi Thoung, photo by Walter Rainboth 63mm SL

Fig. 2265. *Periophthalmus gracilis* Eggert, 1935; Vietnam, Soc Trang, Lich Hoi Thoung, photo by Walter Rainboth 32mm SL

Fig. 2266. *Periophthalmus kalolo* (Lesson, 1830); Djibouti, Khor Angor, photo by John Randall 95mm SL

Fig. 2267. *Periophthalmus novemradiatus* (Hamilton, 1822); Singapore, photo by Walter Rainboth 48mm SL

Fig. 2268. *Pseudapocryptes elongatus* (Cuvier, 1816); Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth 139mm SL

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Fig. 2269. *Scartelaos histophorus* (Valenciennes, 1837); Thailand, photo by Chavalit Vidthayanon

Fig. 2270. *Caragobius urolepis* (Bleeker, 1852); Vietnam, Minh Hai, Song Ganh Hao, photo by Walter Rainboth 36mm SL

Fig. 2271. *Caragobius urolepis* (Bleeker, 1852); Vietnam, Soc Trang, Song Hau Giang at Khe Sach, photo by Walter Rainboth 43mm SL

Fig. 2272. *Paratrypauchen microcephalus* (Bleeker, 1860); Vietnam, Tien Giang, mouth of Song Cua Dai, photo by Walter Rainboth 89mm SL

Fig. 2273. *Taenioides anguillaris* (Linnaeus, 1758); Vietnam, Can Tho, Hau Giang, photo by Walter Rainboth 81mm SL

Fig. 2274. *Taenioides cirratus* (Blyth, 1860); Vietnam, Long Xuyen, Hau Giang at Chau Doc, photo by Walter Rainboth 69mm SL

Fig. 2275. *Taenioides gracilis* (Valenciennes, 1837); Vietnam, Can Tho, Song Hau Giang, photo by Walter Rainboth 205mm SL

Fig. 2276. *Taenioides gracilis* (Valenciennes, 1837), head; Vietnam, Can Tho, Song Hau Giang, photo by Walter Rainboth 205mm SL

Fig. 2277. *Taenioides nigrimarginatus* Hora, 1924; Vietnam, Tra Vinh, Song Co Chien, photo by Walter Rainboth 182mm SL

Fig. 2278. *Taenioides sp.* ; Vietnam, Can Tho, Hau Giang, photo by Walter Rainboth 108mm SL

Fig. 2279. *Trypauchen vagina* (Bloch & Schneider, 1801); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth 150mm SL

Fig. 2280. *Trypauchen sp.cf. vagina* Vietnam, Tra Vinh, Tra Vinh market, photo by Walter Rainboth 115mm SL

Fig. 2281. *Trypauchen sp.cf. vagina* Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth 106mm SL

Fig. 2282. *Xenisthmus polyzonatus* (Klunzinger, 1871); Vietnam, Nha Trang, photo by Richard Winterbottom 18.6mm SL

Fig. 2283. *Gunnelichthys pleurotaenia* Bleeker, 1858; Palau, Babeldoab Island, photo by Richard Winterbottom 46.8mm SL

Fig. 2284. *Nemateleotris magnifica* Fowler, 1938; Vietnam, Nha Trang, photo by Richard Winterbottom 31.8mm SL

Fig. 2285. *Ptereleotris evides* (Jordan & Hubbs, 1925); Marshall Islands, Eniwetok, photo by John Randall 43mm SL

Fig. 2286. *Ptereleotris zebra* (Fowler, 1938); Guam, photo by John Randall 79mm SL

Fig. 2287. *Ephippus orbis* (Bloch, 1787); Kuwait, fish market, photo by John Randall 134mm SL

Fig. 2288. *Platax batavianus* Cuvier, 1831, adult; Australia, CSIRO photo in Sainsbury, et al. (1985) 490mm TL

Fig. 2289. *Platax batavianus* Cuvier, 1831, subadult; Australia, CSIRO photo in Sainsbury, et al. (1985) 196mm TL

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Fig. 2290. *Platax orbicularis* (Forsskål, 1775); Sudan, Port Sudan, photo by John Randall
322mm SL

Fig. 2291. *Platax teira* (Forsskål, 1775); Australia, CSIRO photo in Sainsbury, et al. (1985)
203mm TL

Fig. 2292. *Scatophagus argus* (Linnaeus, 1766) adult; Sabah, Chavalit Vidthayanon

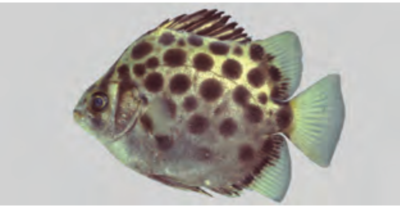

Fig. 2293. *Scatophagus argus* (Linnaeus, 1766); Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth
58mm SL

Fig. 2294. *Siganus argenteus* (Quoy & Gaimard, 1825); Marshall Islands, Enewetak, photo by John Randall
248mm SL

Fig. 2295. *Siganus canaliculatus* (Park, 1797); Vietnam, Soc Trang, Song Hau Giang, photo by Walter Rainboth
31mm SL

Fig. 2296. *Siganus corallinus* (Valenciennes, 1835); Palau, photo by John Randall
174mm SL

Fig. 2297. *Siganus fuscescens* (Houttuyn, 1782); Australia, CSIRO photo in Sainsbury, et al. (1985)
208mm FL

Fig. 2298. *Siganus guttatus* (Bloch, 1787); Indonesia, Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)
90mm SL

Fig. 2299. *Siganus javus* (Linnaeus, 1766); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
86mm SL

Fig. 2300. *Siganus punctatus* (Schneider & Forster, 1801); Indonesia, Lombok, JETINDOFISH survey photo Gloerfelt-Tarp and Kailola (1984)
248mm SL

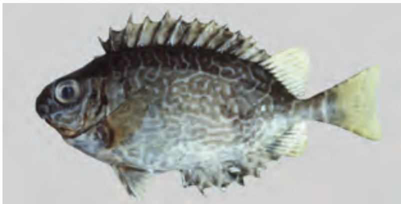

Fig. 2301. *Siganus spinus* (Linnaeus, 1758); Indonesia, Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)
85mm SL

Fig. 2302. *Siganus stellatus* (Forsskål, 1775);Seychelles, Caiman Rock, photo by John Randall
214mm SL

Fig. 2303. *Siganus vermiculatus* (Valenciennes, 1835); Indonesia, Celebes, Manado, market, photo by John Randall
179mm SL

Fig. 2304. *Siganus virgatus* (Valenciennes, 1835);Sri Lanka, Trincomalee, photo by John Randall
155mm SL

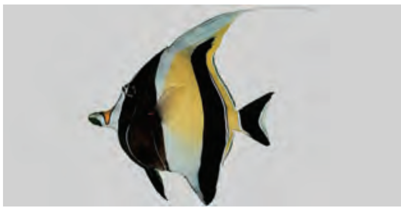

Fig. 2305. *Zanclus cornutus* (Linnaeus, 1758); Marshall Islands, Enewetak, photo by John Randall
142mm SL

Fig. 2306. *Acanthurus blochii* Valenciennes, 1835; Hawaii, Oahu, Kaneohe Bay, photo by John Randall
168mm SL

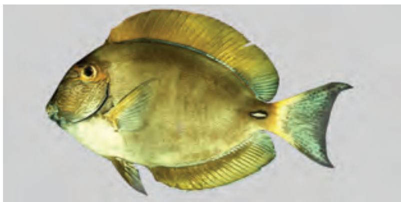

Fig. 2307. *Acanthurus dussumieri* Valenciennes, 1835; Hawaii, Oahu, Moku Manu, photo by John Randall
225mm SL

Fig. 2308. *Acanthurus lineatus* (Linnaeus, 1758); Solomon Islands, Savo, photo by John Randall
164mm SL

Fig. 2309. *Acanthurus mata* (Cuvier, 1829); Vietnam, Nha Trang, photo by Richard Winterbottom
42.4mm SL

Fig. 2310. *Acanthurus nigricans* (Linnaeus, 1758); Japan, Marcus Island, photo by John Randall
167mm SL

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Fig. 2311. *Acanthurus nigricauda* Duncker & Mohr, 1929; Marshall Islands, Enewetak, photo by John Randall
220mm SL


Fig. 2312. *Acanthurus nigrofuscus* (Forsskål, 1775); Marshall Islands, Enewetak, photo by John Randall
90mm SL


Fig. 2313. *Acanthurus olivaceus* Forster, 1801; Marshall Islands, Enewetak, photo by John Randall
132mm SL


Fig. 2314. *Acanthurus pyroferus* Kittlitz, 1834; Tahiti, Teavaraa Pass, photo by John Randall
130mm SL


Fig. 2315. *Acanthurus triostegus* (Linnaeus, 1758); Japan, Marcus Island, photo by John Randall
177mm SL


Fig. 2316. *Acanthurus xanthopterus* Valenciennes, 1835; Marshall Islands, Enewetak, photo by John Randall
400mm SL


Fig. 2317. *Ctenochaetus binotatus* Randall, 1955; Marshall Islands, Enewetak, photo by John Randall
64mm SL

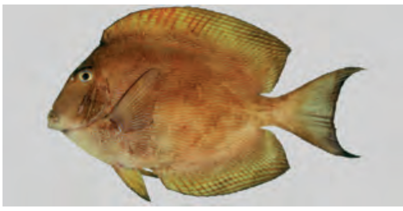
Fig. 2318. *Ctenochaetus striatus* (Quoy & Gaimard, 1825); Thailand, Phuket, photo by Richard Winterbottom
124mm SL


Fig. 2319. *Ctenochaetus strigosus* (Bennett, 1828); Hawaii, Oahu, Waimea Bay, photo by John Randall
84mm SL


Fig. 2320. *Naso annulatus* (Quoy & Gaimard, 1825); Taiwan, San Shien Tai, photo by John Randall
168mm SL


Fig. 2321. *Naso brachycentron* (Valenciennes, 1835), ♂ ; Indonesia, Lombok, JETINDOFISH survey photo Gloerfelt-Tarp and Kailola (1984)
460mm SL


Fig. 2322. *Naso brevirostris* (Cuvier, 1829); Marshall Islands, Enewetak, photo by John Randall
322mm SL


Fig. 2323. *Naso hexacanthus* (Bleeker, 1855); Hawaii, Kona, Honaunau, photo by John Randall
270mm SL


Fig. 2324. *Naso lituratus* (Forster, 1801); Indonesia, between W. Sumatra and Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)


Fig. 2325. *Naso thynnoides* (Cuvier, 1829); Maldives, photo by John Randall
175mm SL


Fig. 2326. *Naso unicornis* (Forsskål, 1775); Australia, Lord Howe Island, photo by John Randall
287mm SL


Fig. 2327. *Naso vlamingii* (Valenciennes, 1835); Marshall Islands, Enewetak, photo by John Randall
425mm SL

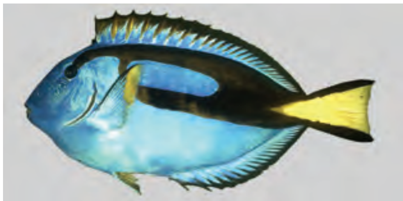
Fig. 2328. *Paracanthurus hepatus* (Linnaeus, 1766); Kiribati, Fanning Islands, photo by John Randall
178mm SL


Fig. 2329. *Zebrasoma scopas* (Cuvier, 1829); Australia, Lord Howe Island, photo by John Randall
101mm SL


Fig. 2330. *Zebrasoma veliferum* (Bloch, 1797); Mauritius, photo by John Randall
73mm SL


Fig. 2331. *Sphyraena barracuda* (Edwards, 1771); Mauritius, photo by John Randall
406mm SL

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Fig. 2332. *Sphyraena flavicauda* (Rüppell, 1838); Egypt, Gulf of Aqaba, photo by John Randall
360mm SL

Fig. 2333. *Sphyraena forsteri* Cuvier, 1829; Indonesia, Lombok, Ampenan, market, photo by John Randall
308mm SL

Fig. 2334. *Sphyraena jello* Cuvier, 1829; Bahrain, market, photo by John Randall
284mm SL

Fig. 2335. *Sphyraena obtusata* Cuvier, 1829; Bahrain, market, photo by John Randall
192mm SL

Fig. 2336. *Sphyraena putnamae* Jordan & Seale, 1905; Vietnam, My Tho, My Tho market, photo by Walter Rainboth
357mm SL

Fig. 2337. *Sphyraena qenie* Klunzinger, 1870; Sudan, Port Sudan, market, photo by John Randall
337mm SL

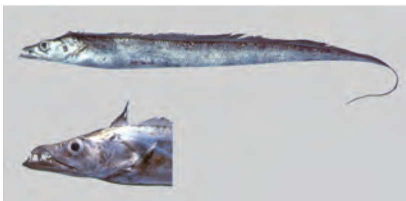

Fig. 2338. *Trichiurus lepturus* Linnaeus, 1758; Australia, CSIRO photo in Sainsbury, et al. (1985)
710mm TL

Fig. 2339. *Acanthocybium solandri* (Cuvier, 1832); Hawaii, photo by Clay Archambault
137cm TL

Fig. 2340. *Auxis rochei* (Risso, 1810); Indonesia, Bali, Padang Bai, photo by John Randall
282mm FL

Fig. 2341. *Auxis thazard* (La Cepède, 1800); Indonesia, Lombok, Labuhan Lombok, photo by John Randall
420mm FL

Fig. 2342. *Euthynnus affinis* (Cantor, 1849); Malaysia, Pulau Tulai, photo by John Randall
495mm FL

Fig. 2343. *Gymnosarda unicolor* (Rüppell, 1838); Indonesia, between Sumatra and Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)

Fig. 2344. *Katsuwonus pelamis* (Linnaeus, 1878); Easter Island, photo by John Randall
490mm FL

Fig. 2345. *Rastrelliger brachysoma* (Bleeker, 1851); Thailand, Chumporn, photo by Chavalit Vidthayanon
165mm FL

Fig. 2346. *Rastrelliger kanagurta* (Cuvier, 1816); Australia; CSIRO photo in Sainsbury, et al. (1985)
223mm FL

Fig. 2347. *Scomber australasicus* Cuvier, 1832; Indonesia, Sumba, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)
215mm SL

Fig. 2348. *Scomber japonicus* Houttuyn, 1782; USA, Los Angeles fish market, photo by Walter Rainboth
337mm FL

Fig. 2349. *Scomberomorus commerson* (La Cepède, 1800); Australia, photo courtesy of CSIRO in Gloerfelt-Tarp and Kailola (1984)

Fig. 2350. *Scomberomorus guttatus* (Bloch & Schneider, 1801); Indonesia, Lombok, Ampenan, photo by John Randall
425mm FL

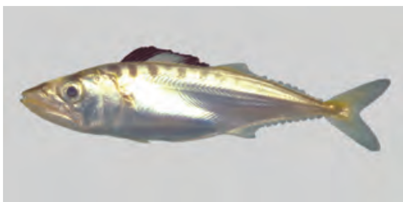

Fig. 2351. *Scomberomorus sinensis* (La Cepède, 1800), juvenile; Vietnam, Soc Trang, Song Hau Giang, photo by Walter Rainboth
54mm SL

Fig. 2352. *Thunnus alalunga* (Bonnaterre, 1788); Hawaii, photo by Clay Archambault
117cm TL

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Fig. 2353. *Thunnus albacares* (Bonnaterre, 1788); Hawaii, photo by John Randall
240mm FL

Fig. 2354. *Thunnus obesus* (Lowe, 1839); Hawaii, photo by Clay Archambault
151cm TL

Fig. 2355. *Istiophorus platypterus* (Shaw, 1792); Bahrain, market, photo by John Randall
125cm FL

Fig. 2356. *Makaira mazara* (Jordan & Snyder, 1901); Hawaii, photo by Clay Archambault
181cm TL

Fig. 2357. *Tetrapturus audax* (Philippi, 1887); Hawaii, photo by Clay Archambault
167cm TL

Fig. 2358. *Psenopsis anomala* (Temminck & Schlegel,1844); Australia, Timor Sea, photo courtesy of CSIRO in Gloerfelt-Tarp and Kailola (1984)

Fig. 2359. *Cubiceps baxteri* McCulloch, 1923; Indonesia, Sumbawa, JETINDOFISH survey photo by Thomas Gloerfelt-Tarp

Fig. 2360. *Cubiceps whiteleggii* (Waite, 1894); Indonesia, Pulau Pagai Selatau, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 116mm SL

Fig. 2361. *Ariomma indicum* (Day, 1870); Indonesia, Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 145mm SL

Fig. 2362. *Pampus argenteus* (Euphrasen, 1788); Indonesia, Java, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 127mm SL

Fig. 2363. *Pampus chinensis* (Euphrasen, 1788); Indonesia, eastern Sumatra, JETINDOFISH survey photo Gloerfelt-Tarp and Kailola (1984) 223mm SL

Fig. 2364. *Pampus cinereus* (Bloch, 1795); USA, Los Angeles fish market (gray scales intentionally rubbed off), photo by Walter Rainboth 191mm SL

Fig. 2365. *Anabas testudineus* (Bloch, 1792); Laos, Vientiane, Nam Sone near Vang Vieng, photo by Walter Rainboth
54mm SL

Fig. 2366. *Helostoma temminkii* Cuvier, 1829; Vietnam, Mekong delta, photo by Chavalit Vidthayanon
175mm SL

Fig. 2367. *Betta prima* Kottelat, 1994; Cambodia, Prek Toek Sap, photo by Walter Rainboth
40mm SL

Fig. 2368. *Betta smaragdina* Ladiges, 1972; Thailand, photo by Chavalit Vidthayanon

Fig. 2369. *Betta splendens* Regan, 1909; Thailand, Pathum Thani, Chavalit Vidthayanon

Fig. 2370. *Betta sp.* Cambodia, Siem Reap, moat around Angkor Wat, photo by Walter Rainboth

Fig. 2371. *Betta stiktos* Tan & Ng, 2005, ♂ ;Vietnam, Mekong delta, photo by Chavalit Vidthayanon
40mm SL

Fig. 2372. *Betta stiktos* Tan & Ng, 2005, ♀ ; Cambodia, Stung Treng, O Pong Moan, photo by Walter Rainboth
28mm SL

Fig. 2373. *Macropodus opercularis* (Linnaeus, 1788); Laos, Xieng Kheung, Nam Ngum, photo by Walter Rainboth
37mm SL

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Fig. 2374. *Trichopsis pumila* (Arnold, 1936); Vietnam, Minh Hai, U Minh freshwater canal, photo by Walter Rainboth

Fig. 2375. *Trichopsis pumila* (Arnold, 1936); Thailand, Ayutthaya, photo by Chavalit Vidthayanon

Fig. 2376. *Trichopsis schalleri* Ladiges, 1962; Laos, Savannakhet, pond near Seno, photo by Walter Rainboth 29mm SL

Fig. 2377. *Trichopsis vittata* (Cuvier, 1831), ♂ ; Cambodia, Siem Reap, Angkor Wat, photo by Walter Rainboth 43mm SL

Fig. 2378. *Trichopsis vittata* (Cuvier, 1831), ♀ ; Laos, Savannakhet, marsh on road to Seno, photo by Walter Rainboth 30mm SL

Fig. 2379. *Trichopodus cantoris* (Günther, 1861); Vietnam, Minh Hai, U Minh freshwater canal, photo by Walter Rainboth 116mm SL

Fig. 2380. *Trichopodus cantoris* (Günther, 1861); aquarium specimen, photo by Walter Rainboth 84mm SL

Fig. 2381. *Trichopodus leerii* (Bleeker, 1852); Thailand, Narithiwat, Toh Daeng peat swamp, photo by Chavalit Vidthayanon

Fig. 2382. *Trichopodus microlepis* (Günther, 1861); Cambodia, Tonlé Sap at Chhnok Trou, photo by Walter Rainboth 85mm SL

Fig. 2383. *Trichopodus trichopterus* (Pallas, 1770); Laos, Luang Prabang, Nam Nga near Nam Ou, photo by Walter Rainboth 61mm SL

Fig. 2384. *Osphronemus exodon* Roberts, 1994; Cambodia, Stung Treng, market specimen, photo by Walter Rainboth

Fig. 2385. *Osphronemus gouramy* La Cepède, 1801; Thailand, Bung Borapet, photo by Chavalit Vidthayanon

Fig. 2386. *Channa sp.cf. aurolineata*; Cambodia, Stung Treng, photo by Chavalit Vidthayanon 550mm SL

Fig. 2387. *Channa gachua* (Hamilton, 1822); Vietnam, Dak Lak, Krong No River (Srepok), photo by Chavalit Vidthayanon 148mm SL

Fig. 2388. *Channa sp.cf. limbata*; Vietnam, Dak Lak, Krong Ana River, Srepok basin, photo by Chavalit Vidthayanon 155mm SL

Fig. 2389. *Channa lucius* (Cuvier, 1831); Laos, Savannakhet, market specimen, photo by Walter Rainboth 208mm SL

Fig. 2390. *Channa sp.cf. marulius* Laos, Champasak, Khong Island, photo by Ian Baird

Fig. 2391. *Channa melasoma* (Bleeker, 1851); Thailand, Narathivat, photo by Chavalit Vidthayanon

Fig. 2392. *Channa micropeltes* (Cuvier, 1831); Cambodia, Sambor, photo by Chavalit Vidthayanon 410mm SL

Fig. 2393. *Channa striata* (Bloch, 1795); Cambodia, Stung Treng, photo by Chavalit Vidthayanon 232mm SL

Fig. 2394. *Psettodes erumei* (Bloch & Schneider, 1801); Vietnam, Kien Giang, Rach Gia market, photo by Walter Rainboth

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Fig. 2395. *Brachypleura novaezeelandiae* Günther, 1862, ♂ ; Australia, CSIRO photo in Sainsbury, et al. (1985) 90mm TL

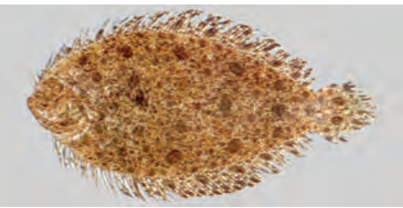

Fig. 2396. *Asterorhombus intermedius* (Bleeker, 1865); Indian Ocean near NW Australia, JETINDOFISH survey photo in Gloerelt-Tarp and Kailola (1984) 110mm SL

Fig. 2397. *Bothus mancus* (Broussonet, 1782), ♂ ; Easter Island, photo by John Randall 243mm SL

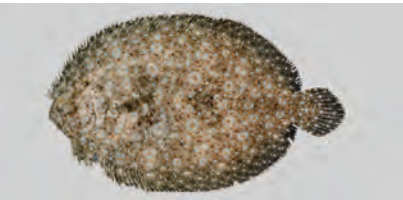

Fig. 2398. *Bothus mancus* (Broussonet, 1782), ♀ ; Australia, Lord Howe Island, photo by John Randall 147mm SL

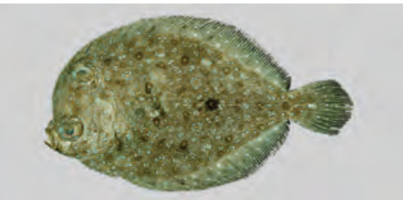

Fig. 2399. *Bothus myriaster* (Temminck & Schlegel, 1846), ♂ ; Hawaii (USA), Oahu, photo by John Randall 115mm SL

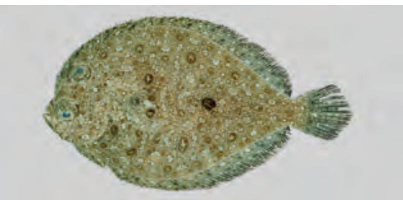

Fig. 2400. *Bothus myriaster* (Temminck & Schlegel, 1846), ♀ ; Hawaii (USA), Oahu, photo by John Randall 107mm SL

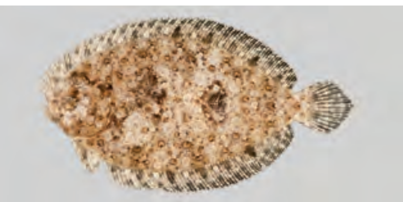

Fig. 2401. *Bothus pantherinus* (Rüppell, 1828); Australia, Lord Howe Island, photo by John Randall 109mm SL

Fig. 2402. *Chascanopsetta lugubris* Alcock, 1894; Indonesia, Indian Ocean between Sumatra and Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 210mm SL

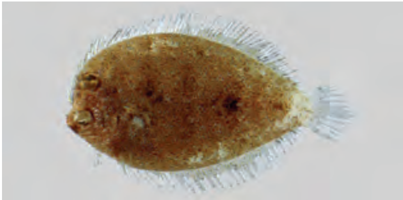

Fig. 2403. *Crossorhombus azureus* (Alcock, 1889), ♂ ; Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 112mm SL

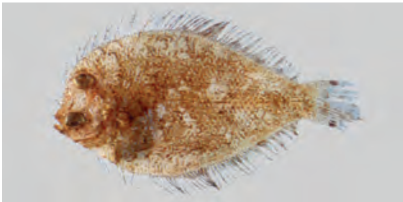

Fig. 2404. *Engyprosopon grandisquama* (Temminck & Schlegel, 1846), ♂ ; Australia, CSIRO photo in Sainsbury, et al. (1985) 89mm SL

Fig. 2405. *Engyprosopon grandisquama* (Temminck & Schlegel, 1846), ♀ ; Australia, CSIRO photo in Sainsbury, et al. (1985) 63mm SL

Fig. 2406. *Engyprosopon maldivensis* (Regan, 1908), ♂ ; Australia, CSIRO photo in Sainsbury, et al. (1985) 121mm SL

Fig. 2407. *Engyprosopon mogkii* (Bleeker, 1854); Vietnam, My Tho, My Tho market, photo by Walter Rainboth 126mm SL

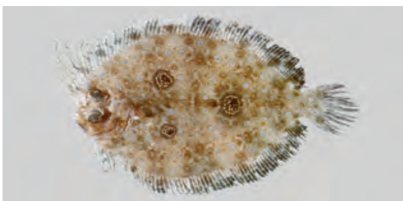

Fig. 2408. *Grammatobothus polyophthalmus* (Bleeker, 1865); Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 219mm SL

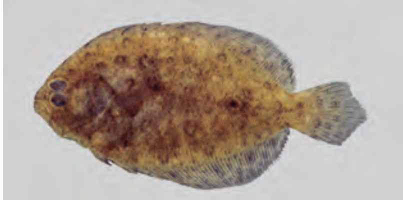

Fig. 2409. *Pseudorhombus arsius* (Hamilton, 1822); Vietnam, Ca Mau, Song Ganh Hao, photo by Walter Rainboth 88mm SL

Fig. 2410. *Pseudorhombus diplospilus* Norman, 1926; Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 231mm SL

Fig. 2411. *Pseudorhombus dupliciocellatus* Regan, 1905; Indonesia, Lombok, JETINDOFISH survey photo Gloerfelt-Tarp and Kailola (1984) 230mm SL

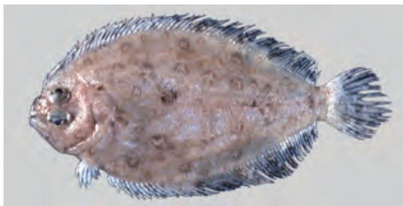

Fig. 2412. *Pseudorhombus elevatus* Ogilby, 1912; Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 115mm SL

Fig. 2413. *Pseudorhombus javanicus* (Bleeker, 1853); Indonesia, Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 108mm SL

Fig. 2414. *Pseudorhombus malayanus* Bleeker, 1865; Indonesia, Java, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 180mm SL

Fig. 2415. *Pseudorhombus quinquocellatus* Weber & deBeaufort, 1929; Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 140mm SL

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Fig. 2416. *Samaris cristatus* Gray, 1831; Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984)

Fig. 2417. *Aesopia cornuta Aesopia cornuta* Kaup, 1858; Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 150mm SL

Fig. 2418. *Aseraggodes cyaneus* (Alcock, 1890); Indonesia, Sumbawa, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 83mm SL

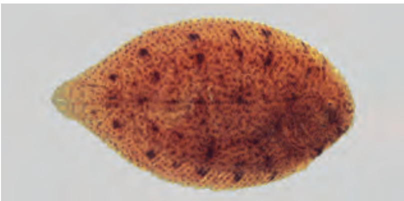

Fig. 2419. *Brachirus harmandi* (Sauvage, 1878);Cambodia, Siem Reap, Siem Reap River, photo by Walter Rainboth

Fig. 2420. *Brachirus orientalis* (Bloch & Schneider, 1801); India, Cochin, photo by John Randall 170mm SL

Fig. 2421. *Brachirus panoides* (Bleeker, 1851); Cambodia, Tonlé Sap at Phnom Penh, photo by Walter Rainboth 121mm SL

Fig. 2422. *Brachirus panoides* (Bleeker, 1851); Vietnam, An Giang, Song Hau Giang, photo by Walter Rainboth 59mm SL

Fig. 2423. *Brachirus siamensis* (Sauvage, 1878), adult; Thailand, Bangpakong, Chavalit Vidthayanon

Fig. 2424. *Brachirus siamensis* (Sauvage, 1878), subadult; Thailand, Nontaburi, Chavalit Vidthayanon

Fig. 2425. *Dexillus muelleri* (Steindachner, 1879); Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 230mm SL

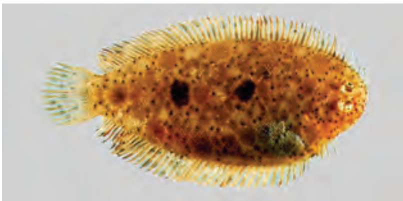

Fig. 2426. *Liachirus melanospilos* Bleeker, 1854; Australia, CSIRO photo in Sainsbury, et al. (1985) 120mm SL

Fig. 2427. *Pardachirus pavoninus* (La Cepède, 1802); Cambodia, Sihanoukville, market specimen, photo by Walter Rainboth 161mm TL

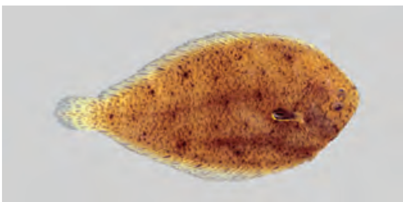

Fig. 2428. *Solea ovata* Richardson, 1846; Vietnam, Kien Giang, Ha Tien Lake, photo by Walter Rainboth 45mm SL

Fig. 2429. *Synaptura commersonii* (La Cepède, 1802); Vietnam; Tra Vinh, Song Co Chien near My Long, photo by Walter Rainboth

Fig. 2430. *Typhlachirus caecus* Hardenberg, 1931; Vietnam, Go Cong, Tien Giang mouth, photo by Walter Rainboth 83mm SL

Fig. 2431. *Typhlachirus elongatus* Pellegrin & Chevey, 1940; Vietnam, Can Tho, Hau Giang, photo by Walter Rainboth 40mm SL

Fig. 2432. *Zebrias quagga* (Kaup, 1858); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth

Fig. 2433. *Cynoglossus arel* (Bloch & Schneider, 1801); Indonesia, Java, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 280mm SL

Fig. 2434. *Cynoglossus brachyrhynchos* (Bleeker, 1851); Vietnam, Bac Lieu, Mekong plume, photo by Walter Rainboth 129mm SL

Fig. 2435. *Cynoglossus cynoglossus* (Hamilton, 1822); Bangladesh, Chittagong, Ichamati River, photo by Walter Rainboth 70mm SL

Fig. 2436. *Cynoglossus feldmanni* (Bleeker, 1853); Thailand, Phitsanulok, Chavalit Vidthayanon

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Fig. 2437. *Cynoglossus gracilis* Günther, 1873; Vietnam, An Giang, Hau Giang at Long Xuyen, photo by Walter Rainboth 93mm SL

Fig. 2438. *Cynoglossus itinus* (Snyder, 1909); Vietnam, Kien Hoa, Mekong plume, photo by Walter Rainboth 116mm SL

Fig. 2439. *Cynoglossus lida* (Bleeker, 1851); Vietnam, Ca Mau, Song Ganh Hao, photo by Walter Rainboth 85mm SL

Fig. 2440. *Cynoglossus lingua* Hamilton, 1822; Vietnam, Kien Giang, Song Cai Lon, photo by Walter Rainboth 215mm SL

Fig. 2441. *Cynoglossus microlepis* (Bleeker, 1851); Cambodia, Phnom Penh market, photo by Walter Rainboth 220mm SL

Fig. 2442. *Cynoglossus oxyrhynchos* (Bleeker, 1851); Thailand, Gulf of Thailand, photo by Walter Rainboth 73mm SL

Fig. 2443. *Cynoglossus polytaenia* (Bleeker, 1853); Vietnam, mouth of Song Hau Giang, 3km SE of Troung Binh, photo by Walter Rainboth 89mm SL

Fig. 2444. *Cynoglossus puncticeps* (Richardson, 1846); Thailand, Ranong, Chavalit Vidthayanon

Fig. 2445. *Cynoglossus sp.1* Vietnam, plume of Mekong River, photo by Walter Rainboth 125mm SL

Fig. 2446. *Cynoglossus sp.2* Vietnam, An Giang, Long Xuyen, photo by Walter Rainboth 130mm SL

Fig. 2447. *Cynoglossus sp.3* Vietnam, An Giang, Long Xuyen, photo by Walter Rainboth 180mm SL

Fig. 2448. *Paraplagusia bilineata* (Bloch, 1787); Thailand, Ranong, photo by Chavalit Vidthayanon

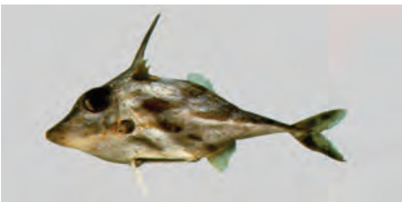

Fig. 2449. *Pseudotriacanthus strigillifer* (Cantor, 1849); Indonesia, Sumba, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 105mm SL

Fig. 2450. *Triacanthus biaculeatus* (Bloch, 1786); Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 290mm SL

Fig. 2451. *Triacanthus nieuhofii* Bleeker, 1852; Indonesia, Sumatra, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 205mm SL

Fig. 2452. *Tripodichthys oxycephalus* (Bleeker, 1851); Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth 35mm SL

Fig. 2453. *Trixiphichthys weberi* (Chaudhuri, 1910); Indonesia, Pulau Pagai Selatau, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 120mm SL

Fig. 2454. *Abalistes stellatus* ([La Cepède], 1798); Indonesia, Sunda Strait, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 275mm SL

Fig. 2455. *Balistapus undulatus* (Park, 1797); Indonesia, Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 175mm SL

Fig. 2456. *Balistes conspicillum* (Bloch & Schneider, 1801); Indonesia, Lombok Strait, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)

Fig. 2457. *Balistoides viridescens* (Bloch & Schneider, 1801); Indonesia, eastern Sumatra, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 305mm SL

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Fig. 2458. *Canthidermis maculata* (Bloch, 1786) juv.; Indonesia, Lombok, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 130mm SL

Fig. 2459. *Melichthys niger* (Bloch, 1786); Mauritius, Flat Island, photo by John Randall 127mm SL

Fig. 2460. *Melichthys vidua* (Richardson, 1845); Palau, photo by John Randall 177mm SL

Fig. 2461. *Odonus niger* (Rüppell, 1836); Maldives, Malé, South, photo by John Randall 71mm SL

Fig. 2462. *Pseudobalistes flavimarginatus* (Rüppell, 1829); Indonesia, Savu Sea near Savu, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)

Fig. 2463. *Pseudobalistes fuscus* (Bloch & Schneider, 1801); Indonesia, Lombok, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 310mm SL

Fig. 2464. *Rhinecanthus aculeatus* (Linnaeus, 1758); Indonesia, Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 205mm SL

Fig. 2465. *Sufflamen bursa* (Bloch & Schneider, 1801); Society Islands, Moorea, photo by Richard Winterbottom 71.3mm SL

Fig. 2466. *Sufflamen chrysopterum* (Bloch & Schneider, 1801); Maldives, Ari Atoll, photo by John Randall 128mm SL

Fig. 2467. *Sufflamen fraenatum* (Latreille, 1804); Indonesia, Pulau Nias, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 210mm SL

Fig. 2468. *Xanthichthys caeruleolineatus* Randall, Matsuura & Zama, 1978; Indonesia, southeastern Sumatra, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984) 199mm SL

Fig. 2469. *Xanthichthys lineopunctatus* (Hollard, 1854); Australia, CSIRO photo in Sainsbury, et al. (1985) 210mm SL

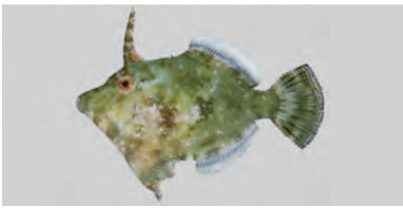

Fig. 2470. *Acreichthys tomentosus* (Linnaeus, 1758); Indonesia, Bali, photo by John Randall 74mm SL

Fig. 2471. *Aluterus monoceros* (Linnaeus, 1758); Australia, CSIRO photo in Sainsbury, et al. (1985) 145mm TL

Fig. 2472. *Aluterus scriptus* (Osbeck, 1765); Thailand, Phuket, photo by Chavalit Vidthayanon 300mm SL

Fig. 2473. *Amanses scopas* (Cuvier, 1829); Israel, Gulf of Aqaba, Eilat, photo by John Randall 150mm SL

Fig. 2474. *Anacanthus barbatus* Gray, 1830; Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984)

Fig. 2475. *Cantherhines dumerilii* (Hollard, 1854); Johnston Island, photo by John Randall 236mm SL

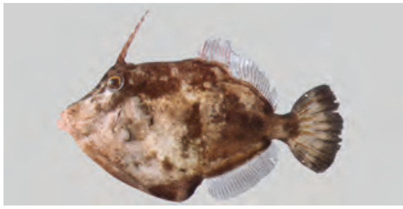

Fig. 2476. *Cantherhines fronticinctus* (Günther, 1867); Australia, CSIRO photo in Sainsbury, et al. (1985) 204mm SL

Fig. 2477. *Cantherhines pardalis* (Rüppell, 1837); Australia, Lord Howe Island, photo by John Randall 151mm SL

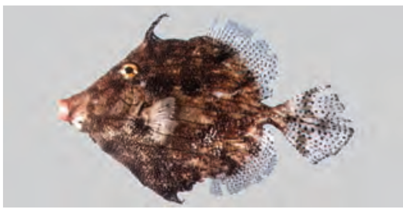

Fig. 2478. *Chaetodermis pencilligerus* (Cuvier, 1816); Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984) 245mm SL

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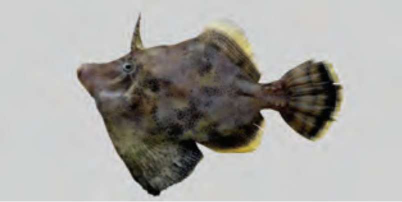

Fig. 2479. *Monacanthus chinensis* (Osbeck, 1785); Cambodia, Sihanoukville, market specimen, photo by Walter Rainboth
151mm TL

Fig. 2480. *Oxymonacanthus longirostris* (Bloch & Schneider, 1801); Seychelles, La Digue, photo by John Randall
57mm SL

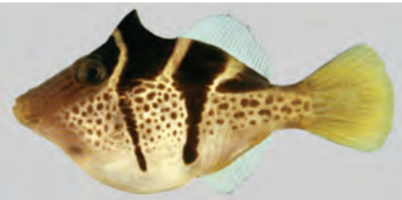

Fig. 2481. *Paraluteres prionurus* (Bleeker, 1851); Philippines, Siquijor I., photo by Richard Winterbottom
45.7mm SL

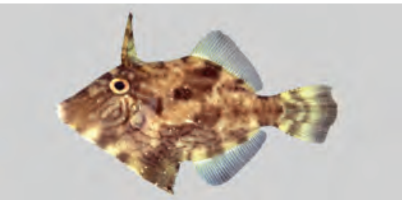

Fig. 2482. *Paramonacanthus choirocephalus* (Bleeker, 1852); Vietnam, Kien Giang, Ha Tien River, photo by Walter Rainboth
65mm SL

Fig. 2483. *Paramonacanthus japonicus* (Tilesius, 1809); Australia, CSIRO photo in Sainsbury, et al. (1985)
76mm SL

Fig. 2484. *Paramonacanthus sulcatus* (Hollard, 1854); Vietnam, My Tho, My Tho market, photo by Walter Rainboth
102mm SL

Fig. 2485. *Pervagor janthinosoma* (Bleeker, 1854); Maldives, photo by John Randall
67mm SL

Fig. 2486. *Pervagor melanocephalus* (Bleeker, 1853); Tonga, Vava'u, photo by John Randall
70mm SL

Fig. 2487. *Pervagor nigrolineatus* (Herre, 1927); Indonesia, Seribu Island, Pulau Putri, photo by John Randall
72mm SL

Fig. 2488. *Pseudaluteres nasicornis* (Temminck & Schlegel, 1850); Philippines, Negros, Dumaguete, photo by John Randall
106mm SL

Fig. 2489. *Pseudomonacanthus macrurus* (Bleeker, 1857); Indonesia, Lombok, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)
145mm SL

Fig. 2490. *Stephanolepis cirrhifer* (Temminck & Schlegel, 1850); Taiwan, Yeh-Liu, photo by John Randall
74mm SL

Fig. 2491. *Thamnaconus modestus* (Günther, 1877); Ryukyu Islands, Okinawa, Itoman, market, photo by John Randall
298mm SL

Fig. 2492. *Lactoria cornuta* (Linnaeus, 1758); Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984)
307mm SL

Fig. 2493. *Lactoria diaphana* (Bloch & Schneider, 1801); Australia, CSIRO photo in Sainsbury, et al. (1985)
109mm SL

Fig. 2494. *Ostracion cubicus* Linnaeus, 1758; Australia, CSIRO photo in Sainsbury, et al. (1985)
194mm TL

Fig. 2495. *Ostracion meleagris* Shaw, 1796; Hawaii, Maui, photo by John Randall
63mm SL

Fig. 2496. *Rhynchostracion nasus* (Bloch, 1785); Australia, CSIRO photo in Sainsbury, et al. (1985)
135mm TL

Fig. 2497. *Rhynchostracion rhinorhynchus* (Bleeker, 1852); Australia, CSIRO photo in Sainsbury, et al. (1985)
272mm TL

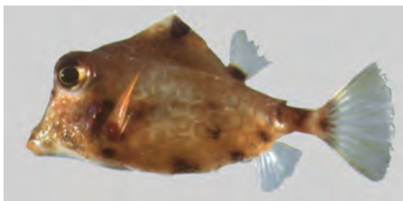

Fig. 2498. *Tetrosomus gibbosus* (Linnaeus, 1758); Australia, CSIRO photo in Sainsbury, et al. (1985)
67mm SL

Fig. 2499. *Tetrosomus reipublicae* (Ogilby, 1913); Indonesia, Bali, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)
150mm SL

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Fig. 2500. *Arothron hispidus* (Linnaeus, 1758); Indonesia, Ambon Bay, photo by John Randall
387mm SL


Fig. 2501. *Arothron immaculatus* (Bloch & Schneider, 1801), Mauritius, photo by John Randall
104mm SL


Fig. 2502. *Arothron mappa* (Lesson, 1830); Thailand, Similan Island, photo by John Randall
342mm SL


Fig. 2503. *Arothron meleagris* (La Cepède, 1798); Hawaii, Kona Island, photo by John Randall
200mm SL


Fig. 2504. *Arothron nigropunctatus* (Bloch & Schneider, 1801); Thailand, Phuket, photo by John Randall
73mm SL


Fig. 2505. *Arothron reticularis* (Bloch & Schneider, 1801); Australia, CSIRO photo in Sainsbury, et al. (1985)
274mm TL


Fig. 2506. *Arothron stellatus* (Bloch & Schneider, 1801), adult; South China Sea off Singapore, photo by Chavalit Vidthayanon


Fig. 2507. *Auriglobus nefastus* (Roberts, 1982); Cambodia, Kandal, Mekong at Phnom Penh, photo by Walter Rainboth
33mm SL


Fig. 2508. *Canthigaster amboinensis* (Bleeker, 1865); Hawaii, Oahu, photo by John Randall
77mm SL


Fig. 2509. *Canthigaster axiologa* Whitley, 1931); Indonesia, Sumba, JETINDOFISH survey photo in Gloerfelt-Tarp and Kailola (1984)
104mm SL


Fig. 2510. *Canthigaster bennetti* (Bleeker, 1854); Solomon Islands, Guadalcanal, photo by John Randall
40mm SL


Fig. 2511. *Canthigaster janthinoptera* (Bleeker, 1855); Society Islands, Moorea, photo by Richard Winterbottom
52.6mm SL


Fig. 2512. *Canthigaster solandri* (Richardson, 1844); Marshall Islands, Enewetak, photo by John Randall
74mm SL


Fig. 2513. *Canthigaster valentini* (Bleeker, 1853); Australia, One Tree Island, photo by John Randall
55mm SL


Fig. 2514. *Carinotetraodon lorteti* (Tirant, 1885); Cambodia, Kompong Chhnang, Tonlé Sap, photo by Walter Rainboth


Fig. 2515. *Chelonodon nigroviridis* (Procé, 1822); Thailand, Bangpakong, photo by Chavalit Vidthayanon


Fig. 2516. *Chelonodon ocellatus* (Steindachner, 1870); aquarium specimen, photo by Walter Rainboth
36mm SL


Fig. 2517. *Chelonodon patoca* (Hamilton, 1822); Thailand, Bangpakong, photo by Chavalit Vidthayanon


Fig. 2518. *Lagocephalus inermis* (Temminck & Schlegel, 1850); Australia, CSIRO photo in Sainsbury, et al. (1985)
155mm TL


Fig. 2519. *Lagocephalus lagocephalus* (Linnaeus, 1758); Indonesia, Lombok, photo by Thomas Gloerfelt-Tarp
192mm SL


Fig. 2520. *Lagocephalus lunaris* (Bloch & Schneider, 1801); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
90mm SL

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Fig. 2521. *Lagocephalus scleratus* (Gmelin, 1789); Australia, CSIRO photo in Sainsbury, et al. (1985)
154mm TL


Fig. 2522. *Lagocephalus spadiceus* (Richardson, 1865); Vietnam, Kien Giang, Ha Tien market, photo by Walter Rainboth
134mm SL


Fig. 2523. *Monotrete baileyi* (Sontirat, 1989); Laos, Luang Prabang, Nam Soeung at Ban Pak Soeung, photo by Walter Rainboth
78mm SL


Fig. 2524. *Monotrete cambodgiensis* (Chabanaud, 1923); Cambodia, Siem Reap River at Great Lake, photo by Walter Rainboth
98mm SL


Fig. 2525. *Monotrete cambodgiensis* (Chabanaud, 1923); Cambodia, Stung Treng, Tonlé San rapids, photo by Walter Rainboth
36mm SL


Fig. 2526. *Monotrete cochinchinensis* (Steindachner, 1866); Cambodia, Stung Treng, photo by Chavalit Vidthayanon
145mm SL


Fig. 2527. *Monotrete cochinchinensis* (Steindachner, 1866); Laos, Savannakhet, marsh near Seno, photo by Walter Rainboth
39mm SL


Fig. 2528. *Monotrete fangi* (Pellegrin & Chevey, 1940); Vietnam, Mekong delta, photo by Chavalit Vidthayanon
65mm SL


Fig. 2529. *Monotrete suvattii* (Sontirat, 1989); Thailand, Nongkhai, photo by Chavalit Vidthayanon
125mm SL


Fig. 2530. *Monotrete turgidus* Kottelat, 2000; Thailand, Nongkhai, photo by Chavalit Vidthayanon
90mm SL


Fig. 2531. *Monotrete sp.cf. turgidus*; Laos, Champasak, Se Done, photo by Walter Rainboth
160mm SL


Fig. 2532. *Monotrete sp.cf. turgidus*; Laos, Champasak, Se Done, photo by Walter Rainboth
70mm SL

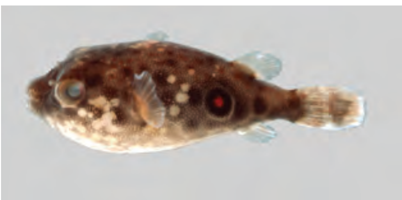
Fig. 2533. *Monotrete sp.cf. turgidus*; Laos, Champasak, Se Done, photo by Walter Rainboth
15mm SL


Fig. 2534. *Monotrete sp.*; Laos, Luang Prabang, Nam Ou at Ban Hat Ko, photo by Walter Rainboth
64mm SL


Fig. 2535. *Takifugu oblongus* (Bloch, 1786); Thailand, Prachuab Kiri Khan, Ban Khlong Wan fish market, photo by Walter Rainboth


Fig. 2536. *Torquigener hicksi* Hardy, 1983; Australia, CSIRO photo in Sainsbury, et al. (1985)
117mm SL


Fig. 2537. *Xenopterus naritus* (Richardson, 1848); Sarawak, Rajang River, photo by Chavalit Vidthayanon


Fig. 2538. *Triodon macropterus* Lesson, 1831; Australia, CSIRO photo in Gloerfelt-Tarp and Kailola (1984)
550mm SL

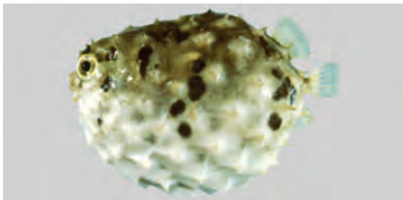
Fig. 2539. *Cyclichthys orbicularis* (Bloch, 1785); Australia, CSIRO photo in Sainsbury, et al. (1985)
69mm SL


Fig. 2540. *Diodon holocanthus* Linnaeus, 1758; Australia, CSIRO photo in Sainsbury, et al. (1985)
130mm TL


Fig. 2541. *Diodon liturosus* Shaw, 1804; Seychelles, Praslin, photo by John Randall
210mm SL

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