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REVIEW OF THE PREDACEOUS WATER BEETLES OF
GENUS *ANODOCHEILUS* (COLEOPTERA:
DYTISCIDAE: HYDROPORINAE)¹

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INTRODUCTION

The genus *Anodocheilus* comprises a number of small dytiscids distributed from South Carolina to Argentina. All of the species are remarkably similar on superficial examination, and most can be only tentatively identified without reference to the male genitalia. Fortunately, these structures are very distinctive and allow ready determination of species and species-groups. Only a few species (especially *sarae*, *elizabethae*, and *florencae* spp. nov.) are sufficiently distinct on the basis of vestiture and other external characters to allow the recognition of the females without the presence of males in the same series.

Anodocheilus is readily distinguished from other American Bidessini by the presence of a cervical stria behind the eyes, pronotal plicae apparently extending onto elytra as carinae, and the very coarse, setigerous punctation of the elytra and venter (Young, 1967). Each major puncture on the elytra and venter contains a short seta, articulated at the anterior margin of the puncture and extended caudad over it. These setae usually lie parallel to the surface, but they may possibly be erectile. It is also possible that the setae and their punctures may be con-

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nected to some kinds of poison or repugnatorial glands. If so, the usually bright colors and sharply marked patterns may serve as warning coloration, and some of the confusing resemblances of the species may be the result of Mullerian mimicry. The characteristic habitat of those species which are well-known is the sandy or silty margins of streams or lakes where the beetles are found burrowing in the margin during the day and foraging near the shore at night. In Florida, however, *Anodocheilus exiguus* (Aubé) is sometimes found in numbers in drying-up pools in streams, swimming among small fish and apparently unharmed.

The locations of types and principal series of specimens of the species of *Anodocheilus* described here are indicated in the text by the following abbreviations: BMNH, British Museum (Natural History), London; LIS, Leningrad Institute of Science, Leningrad; MNd'HN, Museum National d'Histoire Naturelle, Paris; UMMZ, University of Michigan, Museum of Zoology, Ann Arbor, Michigan; USNM, United States National Museum, Washington, D.C.; CAS, California Academy of Science, San Francisco, California. Paratypes of the new species will be distributed to museums in North and South America and Europe.

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KEY TO THE SPECIES OF *ANODOCHEILUS*

A satisfactory key based entirely on external characters cannot be constructed at present.

1. Color uniformly brownish without darker maculations or fasciations on elytra 2
- 1'. Color not uniformly brownish, elytra maculate with darker spots, or fascia 3
- 2(1). Elytral punctation coarse and dense, with some smaller punctures between larger punctures; punctures of pronotum and elytra sometimes confluent; dorsal outline more parallel sided with pronotum and elytra less discontinuous than in *maculatus* (Pl. III, Fig. 21); size smaller, 1.6-1.8 mm long; aedeagus short falcate, parameres short (Pl. III, Fig. 16) *elizabethae* sp. n.
- 2'. Elytral punctation coarser, less frequently confluent; body form much as in *elizabethae*; size larger, 1.8-1.9 mm long; aedeagus long falcate, parameres short (Pl. III, Fig. 17) *florencae* sp. n.
- 3(1). Dorsum finely, densely, irregularly punctate; elytra with diffuse, dark markings; size small, 1.3-1.5 mm long (Pl. III, Fig. 18); male unknown *sarae* sp. n.
- 3'. Dorsal punctation fine and sparse on head and pronotum, much coarser and regular on elytra particularly between the carinae; size larger, usually more than 1.5 mm long 4
- 4(3'). Body form elongate, ovate, attenuate behind; elytra and pronotum usually not markedly discontinuous in dorsal outline, dark pattern of elytra usually fasciate 5
- 4'. Body form more parallel sided, not much attenuate behind; elytra and pronotum markedly discontinuous in dorsal outline, dark pattern of elytra often maculate or only partly fasciate 8
- 5(4). Venter usually darker than disc of pronotum, often dark brown 6
- 5'. Venter about same color as pronotum and head 7

- 6(5). Body form more elongate, and more regularly ovate and attenuate behind; male genitalia unique (Pl. III, Fig. 13)
 *guatemalensis* Zaitzev
- 6'. Body form less regularly ovate, pronotal-elytral angle more pronounced, less attenuate behind (Pl. III, Fig. 19); male genitalia distinctive (Pl. II, Fig. 12).....
 *germanus* (Sharp)
- 7(5'). Elytral carina distinctly curved inward from about middle (Pl. III, Fig. 23); male genitalia distinctive (Pl. III, Fig. 15)..... *virginiae* sp. n.
- 7'. Elytral carina not distinctly curving inward, more or less straight for its entire length; male genitalia distinctive (Pl. III, Fig. 14)..... *phyllisae* sp. n.
- 8(4'). Body robust, usually thickened; punctuation between elytral carinae coarse and conspicuous 9
- 8'. Body less robust, often appearing flattened; punctuation between elytral carinae finer, sparser..... 17
- 9(8). Punctuation of elytra between carinae very coarse, distinctly coarser than punctures outside carinae; punctures in more or less regular rows 10
- 9'. Punctuation of elytra between carinae coarse, but not distinctly coarser than punctures outside carinae; punctures denser, rows very irregular..... 15
- 10(9). Male genitalia as in Pl. III, Fig. 11..... *lenorae* sp. n.
- 10'. Male genitalia with aedeagus more elongate, longer and larger in proportion to body size..... 11
- 11(10'). Aedeagus with lateral projections..... 12
- 11'. Lateral projections of aedeagus reduced or apparently lacking 14
- 12(11). Lateral projections on aedeagus distinctly elongate, narrowed at their bases; tip of aedeagus broad, rounded (Pl. I, Fig. 1) *maculatus* Babington
- 12'. Lateral projections of aedeagus shorter, not narrowed at their bases..... 13
- 13(12'). Aedeagus narrower at apex; lateral projections more triangular (Pl. I, Fig. 2) *villae* sp. n.
- 13'. Aedeagus not markedly narrower at tip, slightly broader, rounded; lateral projections less triangular (Pl. I, Fig. 3)
 *elenauerae* sp. n.

- 14(11'). Aedeagus viewed laterally more strongly recurved apically with convex side sinuate and apex more acute (Pl. I, Fig. 4). *oramae* sp. n.
- 14'. Aedeagus viewed laterally regularly curved on convex side with apex less acute (Pl. I, Fig. 5) *janae* sp. n.
- 15(9'). Elytral carinae not or very slightly curved; male genitalia as in Pl. I, Fig. 6; southeastern U.S. to eastern Texas, Cuba *exiguus* (Aubé)
- 15'. Elytral carinae curving inward 16
- 16(15'). Male genitalia as in Pl. II, Fig. 8; body somewhat more robust; western Mexico *ruthae* sp. n.
- 16'. Male genitalia as in Pl. II, Fig. 7; body somewhat less robust, more depressed; eastern Mexico, Texas
. *francescae* sp. n.
- 17(8'). Size somewhat larger; parameres of male genitalia short, outer segment short, rounded; aedeagus distinctive (Pl. II, Fig. 11). *lenorae* sp. n.
- 17'. Size smaller; parameres of genitalia; not greatly shortened, outer segment proportionately longer 18
- 18(17'). Dorsal outline more elongate oval; male genitalia distinctive (Pl. II, Fig. 9). *silvestrii* Régimbart
- 18'. Dorsal outline more regularly ovate; pronotal-elytral angle more distinct; male genitalia distinctive (Pl. II, Fig. 10) *bellitae* sp. n.

Since all of the species of this genus are very similar in external appearance, I have tried to compare each described and new species with *maculatus* as well as with those to which I believe they are most clearly related.

Anodocheilus maculatus Group

Anodocheilus maculatus and four undescribed species represent a group readily distinguishable from other members of the genus by the distinctive male genitalia, the generally larger size, coarser punctation, and general facies. *A. maculatus* appears to be the commonest and most widely distributed species. It is not yet known whether the species show distinctive habitat correlations, but *villae* and *elenauerae* appear to be characteristic of slightly higher areas compared to *maculatus*, which is characteristic of the Amazonian lowlands.

The punctuation in all these species is very coarse, particularly on the dorsum between the elevated elytral plicae. The body form is generally ovate with the pronotum and elytra discontinuous in dorsal outline; moderately convex above, flattened below in lateral outline. The dark color pattern of the elytra is similar in all five species, with a basal, medial, and preapical fascia, the latter containing a minute but distinct eye spot or eye-like spot.

The four species described here may represent subspecies of a superspecies widely distributed over South America. They are probably not subspecies of *maculatus*, however, despite the remarkable superficial resemblance.

All of the species of this group are superficially so similar to each other and to *maculatus* that I believe diagnoses will be more useful than detailed descriptions.

Anodocheilus maculatus Babington (1841-16)

Size: Length about 1.5-2.0+ mm; greatest width about 0.8-0.9+ mm.

Body form: Broadly ovate with elytral and pronotal outline discontinuous (base of pronotum distinctly narrower than base of elytra); side margins of pronotum nearly straight in posterior portion when viewed from above; body somewhat depressed (dorso-ventrally flattened), ventral profile nearly straight from prosternal process to abdominal apex and dorsal profile distinctly flattened.

Head: Finely and somewhat irregularly punctate without evident microsculpture between punctures (shining); clypeus with irregular but distinct upturned margin and distinct tubercles above antennae.

Pronotum: Slightly more coarsely punctate on disc than on head, with setose punctures and with some larger, irregular punctures near sides; lateral margin fine but distinct, not rendered irregular by punctuation; sublateral foveae or plicae deep, curving inward on disc and connected by a distinct transverse groove just before pronotal base; a few coarser punctures in transverse groove toward the sides.

Elytron: Discal carina distinct, apparently continuing the pronotal plica, and extending posteriorly to apical third of elytron; epipleura distinctly margined from base to apex (near

apical eighth of elytron it is inflexed to elytral tip and epipleura disappears but margin remains distinct); epipleural margin with a stria of large setose punctures; epipleura simple at base with an irregular row of large setose punctures from base to apex; elytral disc with five or six irregular striae of large punctures between carina and epipleural row of punctures; the first and second row of punctures outside the carina impressed, suggesting another carina almost as long as discal carina; elytral disc between carina and suture with five or six irregular striae of coarse or very coarse setose punctures often separated by less than their own diameter and interspersed with a few irregular, much finer setose punctures (about same size as those on pronotum); elytron without evident microsculpture (shining), but punctures often irregular or confluent, particularly at base and apex; elytra between the carina jointly depressed (concave) from near base to about apical third, behind which they are normally convex; punctures within the concavity of the elytra very coarse, irregular, and sometimes confluent; elytral apices pointed, with minute upper and lower teeth (spines).

Venter: Punctation, especially of coxal plates, very coarse; coarse punctures also on thoracic sterna and connate basal segments of abdomen at the sides; last three segments of abdomen with finer setose punctures (similar to those of pronotum); last visible sternite almost triangular, the sides feebly arcuate, the tip obtusely acute (with a tiny oval impression before apex in female); prosternal process and other ventral characters much as described for genus; metasternal platform and inner lamina of metacoxae with two striae of coarse setose punctures and a medial elongate depression or groove at junction of coxae and metasternum.

Color: Head, pronotum, appendages, and venter usually almost uniform light brownish yellow (sometimes reddish); elytra with dark pigment overlaying the light brownish yellow and forming an irregular but usually distinct maculate-fasciate pattern consisting of dark basal, median, and preapical transverse fasciae; preapical fascia usually interrupted forming distinct areoles or spots (eye spots on apices of elytra); sometimes color darker with darkening of the striae of punctures; rarely very dark with light basal color almost concealed. (Specimens from Argentina are generally larger, more distinctly marked than those from Brazil, and rarely the dark elytral pattern is maculate rather than fasciate.)

Variation: Over the entire range of this species, variation seems to be extreme in punctuation, size, and coloration. Females are similar to males but tend to be more robust and larger with the discal depression less evident.

Male genitalia: Male genitalia are diagnostic (Pl. I, Fig. 1). The aedeagus resembles a leg with a pointed shoe on the foot. Viewed end on, the aedeagus can be seen to have laterally projecting (ear-like) processes which are about half the length of the apical shoe-like process. The tip of the apical portion of the aedeagus is moderately to sharply pointed. Parameres are also distinctive (Pl. I, Fig. 1).

The unique type, unfortunately a female, is in the British Museum (Natural History) and labelled "Rio de Janeiro, C. Darwin." In order to fix the name, I here designate as ALLO-TYPE, a male, labelled "Brazil (Sahlberg) Aug. 1850" placed with the female type either by Babington or David Sharp. Plate I, Figure 1 and the preceding description are based largely on the Sahlberg specimen.

As here defined, *A. maculatus* is the commonest and most widespread of the species of the genus. It apparently occurs throughout the Orinoco-Amazon basins from Colombia, Venezuela, through Brazil, to Paraguay, and Argentina. It is particularly common in the Mato Grosso, from which I have seen literally thousands of specimens from several localities, particularly Jacaré, in the Parque Nacional Xingú, collected by Lt. Col. Moacir Alvarenga and Werner Carlos Augusto Bokermann at light.

Anodocheilus villae sp. nov.

Size: Length about 1.5-2.1 mm; greatest width about 0.8-1.2 mm.

Diagnosis: Extremely similar to *A. maculatus* but readily separated by the distinctive male genitalia (Pl. I, Fig. 2) which although of the same general type as *maculatus* differ greatly in the shape and size of the aedeagus. Size possibly slightly larger on the average than *maculatus*. Dorsal punctuation slightly less coarse in discal area than in *maculatus*. Ventral punctuation sparser, and in part, less coarse than in *maculatus*. Color pattern similar to *maculatus*.

Specimens Examined: Holotype male, allotype female, and 13 paratypes from: **Venezuela:** Bolivar, Medio Orinoco, Isla Cuba or Playa de Medio (selva humida), Feb. 12, 1962, Carlos Bordon (UMMZ). Other paratypes from: **Venezuela:** Guarico, Esteros de Camaguan, Jan. 21, 1962 (3), Feb. 12, 1962 (1), Mar. 19, 1960 (3), Carlos Bordon (UMMZ); Guarico, San Fernando, Feb. 12, 1969 (729); 15 km S of Calabozo, Feb. 9-13, 1960 (4); 32 km SW of Calabozo, Feb. 11, 1969 (3), Paul and Phyllis Spangler (USNM).

This is truly a pseudosibling of *A. maculatus*, which is doubtfully separable on external characters alone. It seems to occur ordinarily in different habitats from *maculatus*, but in the Lago de los Patos, 15 km S of Calabozo, one male *maculatus* was found associated with 4 males of *villae*.

Anodocheilus janae sp. nov.

Size: Length about 1.9-2.1 mm; greatest width about 1.0-1.2 mm.

Diagnosis: Superficially very similar to *A. maculatus* and *villae* but with body somewhat less convex below, the epipleura more horizontal, and the punctation relatively somewhat finer both above and below. Color pattern less extended than in *maculatus* or *villae*, but all specimens examined are somewhat teneral. The little eye spots are distinct in all (Pl. III, Fig. 20). The male genitalia are diagnostic (Pl. I, Fig. 5). The ear-like processes of the aedeagus characteristic of *maculatus* are lacking and the parameres differ in structure.

Specimens Examined: Holotype male, allotype female, and 26 paratypes from: **Brazil:** Rio Gurupi, Maranhoe, ex small, filthy, leaf-filled pool, Dec. 7, 1964, Borys Malkin (UMMZ). A single female from Rio Gurupi, stream near Caninde, Oct. 30, 1964, Borys Malkin, probably also represents this species (UMMZ).

Anodocheilus oramae sp. nov.

Size: Length about 1.6-1.8+ mm; width 0.8-0.9+ mm.

Diagnosis: Superficially very similar to *maculatus*, *villae*, and *janae*, but readily separated on basis of male genitalia (Pl. I, Fig. 4). Dark color pattern of elytra is more extended in holotype and allotype than in *maculatus* but less so in some paratypes. The

type series is variable, but the species may be smaller and darker than *maculatus*.

Specimens Examined: Holotype, allotype, and 1 paratype: **Suriname:** 25 km S of Paramaribo, July 12, 1969, Paul and Phyllis Spangler (USNM). Other paratypes from **Suriname:** Langaman Kondre, Marowijne district, Oct. 25, 1963 (8), Borys Malkin (UMMZ); Leiding 19, near Uitkijk, Feb. 23, 1967 (1), J. van der Land (Rijks Museum, Leyden); Welgedacht A, near Paramaribo, Mar. 9, 1967 (4), J. van der Land (Rijks Museum, Leyden).

Anodocheilus elenauerae sp. nov.

Size: Length about 1.6+-1.9+ mm; width about 0.8-1.0+ mm.

Diagnosis: Superficially very similar to *maculatus*, *villae*, *janae*, and *oramae* but separable on the basis of the male genitalia (Pl. I, Fig. 3). Probably smaller in average size and with dark pattern more extended than usual in *maculatus* (Pl. III, Fig. 22).

Specimens Examined: Holotype, allotype, and 66 paratypes: **Brazil:** Bahia, 15 km E of Itabuna, July 4, 1969, Paul and Phyllis Spangler (USNM). Other paratypes from **Brazil:** Bahia, 5 km E of Ilheus, July 3, 1969 (8), Paul and Phyllis Spangler (USNM); Bahia, Encruzilhada, Nov. 1972 (70), M. Alvarenga (UMMZ).

Anodocheilus exiguus Group

Anodocheilus exiguus (Aubé) and two undescribed species from Texas and Mexico, *francescae* and *ruthae*, resemble each other in being less coarsely punctate than *maculatus* and in having similar male genitalia of a different type. The three species appear to be allopatric although *exiguus* and *francescae* may overlap in Texas.

Anodocheilus exiguus (Aubé 1838-490)

Size: Length about 1.4-1.7 mm; width about 0.7-0.9 mm.

Diagnosis: Similar to *maculatus* but in comparison usually smaller, more finely punctate, and less brightly marked; elytral carinae not as sharp; clypeal margin more strongly upturned but less strongly tuberculate; disc of elytra less depressed between

carinae with punctures not conspicuously coarser than those outside the carinae; color pattern rarely fasciate, usually maculate with distinct basal and medial transverse rows of dark spots which rarely are confluent; preapical markings forming little eye spots much as in *maculatus*; male genitalia diagnostic (Pl. I, Fig. 6), aedeagus without lateral lobes, parameres only moderately complex.

This species is extremely common in Florida and extends west into Louisiana and eastern Texas. I have also seen a few specimens from Cuba. The habitat is generally in the sandy or silty margins of streams or lakes, but it occurs widely in many other open freshwater habitats in Florida. Its abundance in shallow sand-bottomed streams, where they are open to the sun, and the high vagility of the adults probably account for the apparent ubiquity of the species.

Anodocheilus francescae sp. nov.

Size: Length about 1.7-2.0 mm; width about 0.7-1.0 mm.

Diagnosis: Larger and more elongate than *exiguus*; much like *maculatus* but more finely punctate; elytral carina curving inward toward apex; male genitalia diagnostic (Pl. II, Fig. 7).

Holotype male: Length 1.9+ mm; greatest width 0.9+ mm.

Body form: Much like *maculatus* in both dorsal outline and profile.

Head: Finely, sparsely punctate, the punctures finer and sparser than in *maculatus*.

Pronotum: Pronotal punctation, basal plicae, and margins much as in *maculatus*, somewhat less coarsely and densely punctate toward the sides.

Elytra: Punctation throughout finer and denser than in *maculatus*, so that there appear to be more than five irregular rows of punctures between suture and elevated carina; impressed rows of punctures outside carina also finer; plicae much as in *maculatus*, sharper than in *exiguus*, curving inward toward apex.

Venter: Punctation generally finer but distributed much as in *maculatus*; last visible sternite more coarsely punctate than in *maculatus*.

Color: Pronotum usually darkened along base; dark pattern of elytra reduced but similar to that of *maculatus*, the little eye spots distinct (teneral specimens may be maculate rather than fasciate).

Specimens Examined: Holotype, allotype, and 9 paratypes from Mexico: Tamaulipas, Rio Guayalejo near Magiscatzin, June 11, 1960, Frank and Frances Young (UMMZ). Other paratypes: Mexico: Nuevo Leon, canals near Juarez, Dec. 19, 1940 (3), FNYoung (UMMZ); San Luis Potosi, 16 mi W of Valles, July 28, 1969 (2), FNYoung (UMMZ); Tamaulipas, Rio Frio at El Limon, Dec. 18, 1940 (2), June 11, 1960 (3), FNYoung (UMMZ); Ditch N of Mante, June 12, 1960 (1), FNYoung (UMMZ); near San Antonio, July 27, 1969 (51), FNYoung (UMMZ); Veracruz, 1 mi SE Punta Jula, Dec. 19, 1946 (4), HBLeech (CAS); pond near Alamos, July 23, 1969 (2), FNYoung (UMMZ); pools 9 mi W of Tampico, July 24, 1954 (2), FNYoung (UMMZ); 15 mi SE of Tantoyuca, July 28, 1965 (6), Paul and Phyllis Spangler (USNM); Lake Catemaco near Catemaco, July 7-9, 1963 (6), REWoodruff (Florida State Collection of Arthropods). Texas: Nueces County, Lake in Corpus Christi State Park, Jan. 2, 1941 (4), FNYoung (UMMZ); Victoria County, Coletto Creek near Rasin, July 28, 1969 (4), FNYoung (UMMZ).

Anodocheilus ruthae sp. nov.

Size: Length about 1.6-1.9 mm; width about 0.75-1.0+ mm.

Diagnosis: Similar to *A. maculatus* but somewhat broader and more depressed, the greatest width of the elytra behind the middle; elytral carina curving inward toward apex; punctation throughout finer than in *maculatus*, about as in *francescae*; male genitalia diagnostic (Pl. II, Fig. 8).

Holotype male: Length 1.8+ mm; width 1.0+ mm.

Body form: Much as in *maculatus* but somewhat broader, more depressed or flattened and with greatest width of elytra behind the middle.

Head: Punctation much as in *maculatus*; clypeal margin and tubercles distinct but not as pronounced as in *maculatus*.

Pronotum: Much as in *maculatus*, but side margins are not pronouncedly parallel posteriorly.

Elytra: Punctuation throughout finer than in *maculatus* particularly on disc between elytral carinae; elytral carina curving inward toward apex; punctures not clearly in rows on disc and denser than in *maculatus*.

Venter: Much as in *maculatus*, but punctuation finer.

Color pattern: Dark pattern less extended than in most *maculatus*, but all specimens seen are somewhat teneral and fully mature individuals are probably fasciate as in *maculatus*. Little eye spot at tip of elytra not very distinct in holotype, more so in paratype series.

Male genitalia: Similar to *exiguus-francescae* type but distinct in several features (Pl. II, Fig. 8).

Allotype female: Very similar to holotype. Length 1.8+ mm; width 1.0+ mm. Body form somewhat narrower than in male and dark color pattern more extended; anterior tarsi just perceptibly narrower than in male.

Specimens Examined: Holotype, allotype, and 17 paratypes: **Mexico:** Nayarit, Tepic (at light), Sept. 15-17, 1953, Borys Malkin (CAS). Other paratypes: **Mexico:** Nayarit, flood pools of Rio de Las Canyas, 8 mi NW of Acaponeta, Nov. 25, 1948 (29), Hugh B. Leech (CAS); Nayarit, Acaponeta, Aug. 15, 1960 (3), P. H. Arnaud, Jr., E. S. Ross, and D. C. Rentz (CAS).

Anodocheilus germanus Group

Anodocheilus germanus (Sharp), *guatemalensis* Zaitzev, and two undescribed species from Venezuela-Colombia and Ecuador, *virginiae* and *phyllisae*, resemble each other in the less disjunct dorsal outline of pronotum and elytra and in being more attenuate behind. The male genitalia are similar to those of the *exiguus* group except for *guatemalensis* in which the aedeagus is uniquely contorted and compressed. The species appear to be allopatric except for *germanus* and *guatemalensis* which overlap in Central America, but I have not seen them both from any one locality.

Anodocheilus germanus (Sharp 1882-20)

Size: Variable, but probably always smaller than *maculatus*. Length about 1.5-1.9+ mm; width about 0.75-0.9+ mm.

Diagnosis: Superficially very similar to *maculatus*, but with male genitalia of the *exiguus* type with the lateral profile of the aedeagus showing a sharp point at tip (Pl. II, Fig. 12). Also very similar to *silvestrii* in punctation and male genitalia, but more regularly ovate; dark color pattern usually intense and venter often very dark brown (Pl. III, Fig. 19).

The body form, particularly the dorsal outline, is very difficult to evaluate in *germanus*. I believe that the dorsal outline is normally much more oval than in *maculatus*, the pronotal-elytral angle sometimes not evident, and the elytra more attenuate behind as indicated in the figure accompanying Sharp's original description (Pl. I, Fig. 6, 1882). However, all specimens do not correspond in this respect. I have not recognized *silvestrii* in material from northwestern South America, but it is possible that that species extends into Central America. If so, the less regularly oval form may be a true sibling, genetically distinct but indistinguishable on morphological characters.

Specimens Examined: To fix the name of *germanus*, I designate as LECTOHOLOTYPE, a male COTYPE (dissected) from GUATEMALA: Paso Antonio, 400', Champion (BMNH). In addition to the types, I have seen specimens from Guatemala: 1 mi N Morales, Aug. 16-18, 1965 (14), Paul J. Spangler (USNM); and 17 mi E Escuintla, July 8, 1965 (1), Paul J. Spangler (USNM). Costa Rica: 16 mi S La Cruz, Aug. 13, 1965 (31), Paul J. Spangler (USNM). Panama Canal Zone: Rio Grande, Mar. 11, 1911 (1), A. Busck (USNM).

Anodocheilus guatemalensis Zaitzev (1910-223)

Size: Length about 1.5-2.0 mm; width about 0.8-0.9+ mm.

Diagnosis: Superficially similar to *maculatus*, but more uniformly ovate in dorsal outline, more elongate, and more attenuate behind; distinctly more oblong-ovate than *germanus* and more attenuate behind; often with dark color pattern extended and intense with the venter dark brown; unique in the lateral outline of the male aedeagus (Pl. III, Fig. 13).

I have not seen Zaitzev's type of this species, presumably in the Leningrad Institute of Science ("Mus. Zool. de l'Acad. Imp."), but from the description this species is more ovate and attenuate behind than either *germanus* or *maculatus*. The type is apparently much darker in color than any specimen I have seen, but a tendency to extension and intensification of the dark

pattern is evident in both *germanus* and the species I identify with *guatemalensis*.

Specimens Examined: To fix this name, I designate as ALLOTYPE a dissected male from GUATEMALA: 20 mi SW Puerto Barrios, 1 mi N Morales, Aug. 16, 1965, Paul J. Spangler (USNM). Ten other specimens from this locality are in USNM, and UMMZ. Other specimens seen are: **Guatemala:** 1 mi N Morales, Aug. 16-18, 1965 (41), Paul J. Spangler (USNM). **Costa Rica:** Port Limon, May 9, 1929 (1), P. J. Darlington, Jr. (Museum of Comparative Zoology). **Panama:** La Chorrera, Aug. 23, 1944 (5), (F. N. Young UMMZ).

Anodocheilus virginiae sp. nov.

Size: Length about 1.7-1.8 mm; width 0.8-1.0+ mm.

Diagnosis: Very similar to *maculatus* but with pronotal-elytral angle less conspicuous, the dorsal outline much more regular, and the elytral plica curved inward from about the middle (Pl. III, Fig. 23); male genitalia diagnostic (Pl. III, Fig. 15).

Holotype male: Length 1.7+ mm; greatest width 1+ mm.

Body form: Very similar to *maculatus* but dorsal outline more regular, the pronotal margins curved evenly from apex to base, not nearly parallel posteriorly and pronotal base only slightly narrower than bases of elytra; elytra evenly curved on outer margin so that greatest width is about at their basal third rather than farther back as is usual in *maculatus*; lateral profile much as in *maculatus* (Pl. III, Fig. 23).

Head: Punctuation much as in *maculatus*, but clypeus with anterior margin more narrowly and strongly upturned, the tubercles prominent.

Pronotum: Punctuation, plicae, and transverse groove much as in *maculatus*, but lateral margins more evenly curved.

Elytra: Somewhat more coarsely and irregularly punctate than in most *maculatus*; basic structure much the same, but 2nd discal row of punctures from suture more deeply impressed than in *maculatus*, suggesting a sulcus within the shallow depression typical of *maculatus*; elytral plicae distinct, curving gently toward suture from about middle; rows of coarser punctures outside the carinae also curved.

Venter: Much as in *maculatus*, last ventral sternite more coarsely punctate, the interspaces suggesting tiny, shining tubercles near apex.

Color: Head, pronotum, appendages, and venter light brownish-yellow, much as in *maculatus*; dark markings of elytra forming a basal, an incomplete median, and a preapical fascia, with tip also darkened, the marking connecting with the preapical fascia to form a distinct eye spot; a lateral median blotch not connected with median fascia but narrowly connected to preapical fascia; basic color of elytra slightly darker than that of pronotum. Genitalia of the *germanus-exiguus* type but distinctive (Pl. III, Fig. 15).

Allotype female: Almost identical with holotype, slightly smaller, 1.7 mm long by 0.9+ mm wide; last visible sternite with small elongate depression at middle; dark elements of color pattern less extensive than in holotype.

Variation: The color pattern shows minor differences in the series of paratypes but all appear fasciate rather than maculate. All specimens seen are somewhat teneral.

Specimens Examined: Holotype, allotype, and 56 paratypes from **Venezuela:** Guarico, San Fernando, Feb. 12, 1969, Paul and Phyllis Spangler (USNM). Other paratypes from **Venezuela:** Guarico, 12 km S Calabozo, Feb. 6-12, 1969 (1), Paul and Phyllis Spangler (USNM); **Brazil:** Para, Belem, July 9, 1969 (3), Paul and Phyllis Spangler (USNM); **Colombia:** Meta, 10 km S Villavicencio, Mar. 3-4, 1969 (1), Paul and Phyllis Spangler (USNM).

Anodocheilus phyllisae sp. nov.

Size: Length about 1.6-1.8 mm; greatest width about 0.9-0.9+ mm.

Diagnosis: Distinctly more attenuate behind and with pronotal elytral outline less discontinuous than in *maculatus*; similar in body form to *virginiae*, but with elytral carina less curved, and more darkly marked; male genitalia distinctive (Pl. III, Fig. 14).

Holotype male: Length 1.7+ mm; greatest width 0.9+ mm.

Body form: Similar to *maculatus* but more attenuate behind and with dorsal outline of elytra and pronotum less discontinuous.

Head: Finely, sparsely punctate; clypeus distinctly margined with distinct tubercles, much as in *maculatus*.

Pronotum: Punctate much as in *maculatus*; lateral margins distinct, but irregular; pronotal plicae much as in *maculatus*, but transverse groove somewhat less impressed; base of pronotum about as wide as elytral base, but latter curved outward from base, giving the impression of discontinuity.

Elytra: Punctuation and structure much as in *maculatus*, but elytral carinae more curved inward posteriorly; concavities of elytra between carinae shallower than in most *maculatus*; punctuation finer than in most *maculatus*, less strongly impressed.

Venter: Structure and punctuation much as in *maculatus*; setigerous punctures very coarse on metasternum, coxal laminae, and sides of basal abdominal sternites.

Color: Head, pronotum, venter, and appendages yellowish-brown, somewhat darkened on base of head and apex of pronotum; elytra basically light reddish-brown with heavy melanic pattern overlain as connected fasciae; little eye-like spots not conspicuous.

Allotype female: Length 1.6+ mm; greatest width 0.9+ mm. Very similar to male. Anterior tarsi slightly less dilated.

Variation: All specimens seen seem to be quite uniform compared to *maculatus* from different localities.

Specimens Examined: Holotype, allotype, and 13 paratypes from: Ecuador: Santa Cecilia, Mar. 25-31, 1969, Paul and Phyllis Spangler (USNM).

Anodocheilus silvestrii Group

Anodocheilus silvestrii Régimbart and *bellitae*, sp. nov., are similar in being rather delicately built compared to *maculatus*, somewhat more depressed, and in having the elytra delicately maculate. The male genitalia of *silvestrii* are similar to those of *germanus*, but those of *bellitae* have the aedeagus shortened and uniquely tipped. *Silvestrii* and *bellitae* are sympatric with each other and with *maculatus*. *Anodocheilus lenorae*, sp. nov., from Colombia, Venezuela, and Brazil probably belongs in this group, but the male genitalia are distinctive.

Anodocheilus silvestrii Régimbart (1903-49)

Size: Length about 1.5-1.7+ mm; greatest width 0.8-0.9+ mm.

Diagnosis: Very similar to *germanus*, but more parallel sided and with similar but characteristic male genitalia (Pl. II, Fig. 9); equally similar to *maculatus* but relatively more finely punctate on elytra and venter; probably indistinguishable except by male genitalia from small specimens of *maculatus*.

Body form: Elongate oval, distinctly flattened above and below in profile; dorsal outline narrower than in *maculatus* with sides of elytra straighter.

Head: Finely, sparsely punctate with microsculpture greatly reduced; clypeal margin broadly but distinctly raised, the tubercles less prominent than in *maculatus*.

Pronotum: Proportionately somewhat broader than in *maculatus*; margin distinct, but irregular; punctation slightly coarser than on head, very sparse on disc; pronotal plicae and transverse groove proportionately less impressed than in *maculatus*.

Elytra: Punctation finer than in *maculatus* although gross compared to that of pronotum and head; punctures somewhat less impressed than in *maculatus*, thus appearing sparser; carina distinct, elevated from base to apical third of elytron; bordering striae of punctures relatively finer than in *maculatus*, the second lateral row laterad of carina coarser than bordering row and more deeply impressed.

Venter: Punctation distributed much as in *maculatus*, but relatively finer and appearing sparser especially on metasternum and coxal laminae; last sternite with some large, elongate, irregular punctures; other sternites finely, sparsely punctate except at sides at base.

Color: Head, pronotum, venter, and appendages light brownish-yellow to light reddish-brown; elytral maculations much as in *maculatus*; small eye-like spots at elytral apices often conspicuous.

Variation: Specimens before me differ in the intensity of the darker maculations. I suspect that the variation will be found to be extensive when large series are available. As noted under

germanus, this species may extend into northwestern South America and Central America.

Specimens Examined: LECTOHOLOTYPE female: **Argentina:** Rio Tala, Buenos Ayres, F. Silvestri (label specimen in Régimbart collection(Paris). **Brazil:** Mato Grosso, Corumba (5), Zimmermann collection (Zoologische Sammlung des Bayerischen Staates, Munich). Mato Grosso, Cuiabá (Cuyabá), Apr. 5, 1972 (3), black light trap, W. H. Whitcomb (Florida State Collection of Arthropods).

Anodocheilus bellitae sp. nov.

Size: Length about 1.5-1.8 mm; greatest width about 0.8-1.0 mm.

Diagnosis: Smaller and distinctly less convex than *maculatus* or *silvestrii*. Dorsum appearing more flattened than in other species; elytral carinae distinct, but fine and not conspicuously elevated; elytral punctation distinctly finer, denser, and less regular than in *maculatus* or *silvestrii*; male genitalia diagnostic (Pl. II, Fig. 10).

Holotype male: Length 1.6+ mm; greatest width 0.9+ mm.

Body form: Broadly ovate, more acuminate behind than *maculatus*; dorsum flattened; elytra concave between carinae. Pronotal margin and sides of elytra when viewed from side less discontinuous than in other species; pronotum with sides more curved posteriorly than in *maculatus*.

Head: Finely, sparsely punctate; shining without evident microsculpture between punctures. Clypeus not as heavily margined as in *maculatus*, the tubercles small but distinct.

Pronotum: Somewhat more coarsely, but about as densely, punctate as head; some larger punctures in the distinct transverse groove.

Elytra: More coarsely, densely, and regularly punctate than head or pronotum, but less coarsely, densely, and regularly punctate than in *maculatus*; rows of punctures outside the carinae coarser than those of the disc, in part confluent, and thus suggesting a tiny carina laterad to discal carina.

Venter: Punctation relatively finer, but distributed much as in *maculatus*.

Color: Dark color pattern reduced in all specimens seen, maculate rather than fasciate; apical eye spots vague; generally yellowish with irregular brown maculations on elytra.

Allotype female: Very similar to male; somewhat broader and larger; length about 1.75 mm; greatest width near middle of elytra about 1.0 mm.

Specimens Examined: Holotype, allotype, and 1 paratype from: **Brazil:** Mato Grosso, Jacaré, Parque Nacional Xingú, Nov. 1961, at light, Alvarenga and Bokermann (UMMZ). 78 paratypes, same locality as holotype, but Nov. 1965.

Anodocheilus lenorae sp. nov.

Size: Length about 1.5-1.9 mm; greatest width about 0.8-0.9+ mm.

Diagnosis: Very similar to *maculatus* but somewhat less robust, more depressed; somewhat more attenuate behind, the elytral carinae slightly curved; head somewhat more coarsely punctate, clypeal tubercles more elongate, oblique; elytra more coarsely but about as densely punctate as in *silvestrii*, male genitalia diagnostic, both aedeagus and parameres distinctive (Pl. II, Fig. 11).

Holotype male: Length 1.8+ mm; greatest width 0.9+ mm.

Body form: Much as in *maculatus*; dorsal outline very similar.

Head: Finely, sparsely punctate, somewhat more coarsely so than in *maculatus* or *silvestrii*; clypeal tubercles distinctly more elongate, oblique, compared with those of *maculatus* or *silvestrii*.

Pronotum: Punctate much as in *maculatus* and with very similar basal plicae and transverse groove; margins and outline of sides much as in *maculatus*.

Elytra: Much like *maculatus*; punctuation especially between suture and lateral carinae coarser than in *silvestrii*, much as in *maculatus* with about five irregular rows of punctures; elytral carinae slightly less prominent, especially apically, than in *maculatus*.

Venter: Much as in *maculatus* and *silvestrii*; coxal punctures large and irregularly distributed.

Color: Basically light brownish-yellow, with elytra with vague, irregularly dark spots about as in *silvestrii* and *bellitae*; little eye spots not evident in holotype and allotype, but better developed in some paratypes.

Allotype female: Length 1.7+ mm; greatest width 0.9+ mm. Very similar to holotype.

Specimens Examined: Holotype, allotype, and 8 paratypes: **Colombia:** Meta, 10 km S Villavicencio, Mar. 3-4, 1969, Paul and Phyllis Spangler (USNM). Paratypes: **Venezuela:** Guarico, 32 km SW Calabozo, Feb. 11, 1969 (28), Paul and Phyllis Spangler (USNM). **Brazil:** Goias, Santa Isabel, Ilha do Bananal, Rio Araguaia, July 28, 1957 (4), Borys Malkin (CAS). Mato Grosso, Jacaré, Parque Nacional Xingú, Nov. 1961 and 1965 (30), Alvarenga and Bokermann (UMMZ); Mato Grosso, Tapirape, July 26, 1963 (24), Borys Malkin (UMMZ); Mato Grosso, Rio Araguaia, Santa Isabel, July 21-22, 1957 (5), Borys Malkin (CAS). Pará, Stream near Aldeia Coraci, Dec. 3, 1964 (1), Borys Malkin (UMMZ).

Anodocheilus elizabethae Group

Anodocheilus elizabethae and *florencae*, spp. nov., are similar in the uniformly dark coloration, lack of maculation or fasciation on elytra, and in the falcate aedeagus. Both species occur in Brazil but do not appear to be sympatric. Females from Cuiabá in the Mato Grosso may represent a third related species. *Anodocheilus sarae* sp. nov. from Brazil probably belongs in this group but differs in the unique elytral punctation and coloration.

Anodocheilus elizabethae sp. nov.

Size: Length about 1.6-1.8 mm; width 0.8-0.9+ mm.

Diagnosis: Similar to *sarae* but larger, more coarsely punctate, and with dorsal outline much more parallel-sided; very similar to *florencae* but male genitalia diagnostic (Pl. III, Fig. 16).

Holotype male: Length 1.7+ mm; greatest width 0.9+ mm.

Body form: More elongate than *maculatus*; sides of elytra more parallel; moderately convex below but almost flat above in lateral profile (Pl. III, Fig. 21).

Head: Finely punctate without microsculpture, much as in other species.

Pronotum and Elytra: More densely punctate than in *maculatus*; punctures coarser, sometimes confluent with smaller punctures interspersed so that, although the surface has no evident microsculpture and is strongly shining in any one spot, the whole surface is crinkled and gives a matte appearance; pronotal plicae, transverse groove and elytral carinae much as in *florencae*; elytral carina distinct, thick, nearly straight with usual coarser punctures along outer side; elytral punctation finer than in other species except *florencae* and *sarae*, rows of punctures between carinae irregularly placed; elytron with a shallow sulcus between suture and carina, giving the appearance of two low carinae on elytral disc.

Venter: Coxal plates punctate much as in other species but basal abdominal sternites roughly and irregularly punctate with punctures sometimes confluent; epipleurae with irregular punctures sometimes confluent.

Color: Dorsum, venter, and appendages nearly uniformly light yellowish-brown without indication of darker spots on elytra.

Allotype female: Length about 1.6+ mm; greatest width 0.8+ mm. Very similar to male; abdominal sternites all rather densely punctate, with smaller punctures on free sternites. Last sternite with a small depression toward tip; color much as in male.

Specimens Examined: Holotype, allotype, and 1 paratype from: **Brazil:** Mato Grosso, Jacaré, Parque Nacional Xingú, Nov. 1961, M. Alvarenga and Bokermann (UMMZ). Plus 37 paratypes, same data, except Nov. 1965.

Anodocheilus florencae sp. nov.

Size: Length about 1.8-1.9 mm; greatest width 0.8+-1.0+ mm.

Diagnosis: Similar to *elizabethae* but larger, more coarsely punctate, and with punctures not so frequently confluent; male genitalia diagnostic (Pl. III, Fig. 17). Similar to *maculatus* but elytra and pronotum less discontinuous in dorsal outline, punctation finer, and color almost uniformly dark brown.

Holotype male: Length 1.8+ mm; greatest width 1.0+ mm.

Body form: Much as in *elizabethae*, elytra more parallel-sided; pronotum and elytra less distinctly discontinuous in dorsal outline than in *maculatus*; lateral profile much as in *maculatus*, somewhat stouter.

Head: Punctuation fine and sparse, much as in *maculatus*; thickening of clypeal margin less distinctly limited, extending onto the front in middle, not sharply limited; tubercles reduced, not distinct.

Pronotum: Lateral margins somewhat more curved posteriorly than in *maculatus*; punctuation coarser and denser throughout but plicae and transverse groove much as in *maculatus*.

Elytra: Punctuation much finer and denser throughout than in *maculatus*; coarser than in *elizabethae* and less frequently confluent; about 8 irregular rows of punctures between suture and elytral carina; rows of punctures outside carinae not conspicuously large or impressed; carinae much as in *maculatus*; impressed punctures suggest a vague carina inside principal carina as in some *maculatus*.

Venter: Structure and punctuation much as in *maculatus*; setigerous punctures of coxae conspicuous; last sternite somewhat more coarsely punctate.

Color: Almost uniformly dark brown without darker markings evident; darker brown than in *elizabethae*.

Specimens Examined: Holotype from **Brazil:** Pará, Cachimbo, May 1969, M. Alvarenga (UMMZ); allotype and 18 paratypes, same data except June 1968 (UMMZ).

Anodocheilus sarae sp. nov.

Size: Length about 1.3-1.5 mm; greatest width 0.7-0.9 mm.

Diagnosis: Distinct from all the species known to me by the smaller size, body form, and fine, dense, irregular punctuation of the dorsum, especially on the elytra; punctuation approximated in *elizabethae* sp. nov., but that species is larger, distinctly different in body shape, and shows differences in several other features.

Holotype female: Length 1.4+ mm; greatest width near middle of elytra about 0.8 mm.

Body form: Elongate-ovate with elytral and pronotal outline feebly discontinuous; base of pronotum only slightly narrower than bases of elytra; side margins of pronotum nearly straight posteriorly when viewed from above (Pl. III, Fig. 18); body somewhat depressed but dorsum feebly convex; ventral profile nearly straight from prosternal process to abdominal apex.

Head: More coarsely and densely punctate than in *maculatus*, particularly on vertex; most of surface between punctures shining; clypeal margin distinct, but tubercles reduced in comparison to *maculatus*.

Pronotum: Disc about as coarsely and densely punctate as vertex, with irregular transversely-ridged microsculpture, but part of surface between punctures shining; lateral margin irregular due to coarse punctation; sides with some irregular ridges and tubercles intricately intermixed with somewhat coarser setigerous punctures; pronotal plicae distinct, connected by a distinct transverse groove in which the punctures are larger.

Elytra: Punctation throughout finer, denser, and more irregular than in *maculatus*; carina elevated from about apical third to near base, where it becomes a groove apparently continuing the pronotal plica (not too dissimilar to *maculatus*, except that in the latter the carina is distinctly elevated at base so that the grooved appearance is lessened); carina paralleled in apical half by two rows of coarser punctures externally, giving the appearance of two short lateral carinae; elytral punctation throughout somewhat coarser, more deeply impressed, and uniformly denser than that of vertex; punctures often irregularly confluent; punctures between carinae not evidently enlarged, roughly in about 12 irregular rows; microsculpture not conspicuous; area between carinae nearly flat, the suture only feebly elevated at elytral base; elytral apices pointed with minute upper and lower teeth as in *maculatus*; epipleural margin much as in *maculatus* but sides of elytra more distinctly expanded above it; series of punctures on epipleura somewhat coarser than those on elytral disc, but not conspicuously large.

Venter: Ventral punctation throughout conspicuously coarse but not as coarse as in *maculatus*; metasternal platform and coxal laminae more finely punctate, with some coarse punctures toward apices; last four abdominal sternites densely punctate, with punctures finer than on head and pronotum; last sternite

triangular, fringed with short setae and with an irregular oval depression before apex; prosternal process and general ventral structure much as in *maculatus*.

Color: Generally dark brown with front of head, disc of pronotum, and venter lighter; elytra vaguely patterned with black at base, just behind middle of carina, along outer edge of elytra above epipleura and toward apex where three spots and irregular dark markings suggest an eye spot (Pl. III, Fig. 18).

Variation: Specimens from Pará are much like the holotype from the Mato Grosso except that the head and elytra are darker.

Specimens Examined: Holotype female and 1 paratype: **Brazil:** Mato Grosso, Jacaré, Parque Nacional Xingú, at light, Nov. 1961, Alvarenga and Bokermann (UMMZ). Other paratypes: **Brazil:** same locality as holotype but Nov. 1965 (37), Alvarenga and Bokermann (UMMZ, USNM). Pará, Cachimbo, Oct. 1959 (3), Moacir Alvarenga (UMMZ), and same data except June 1962 (2), at light (UMMZ). No males were found among the 28 specimens dissected.

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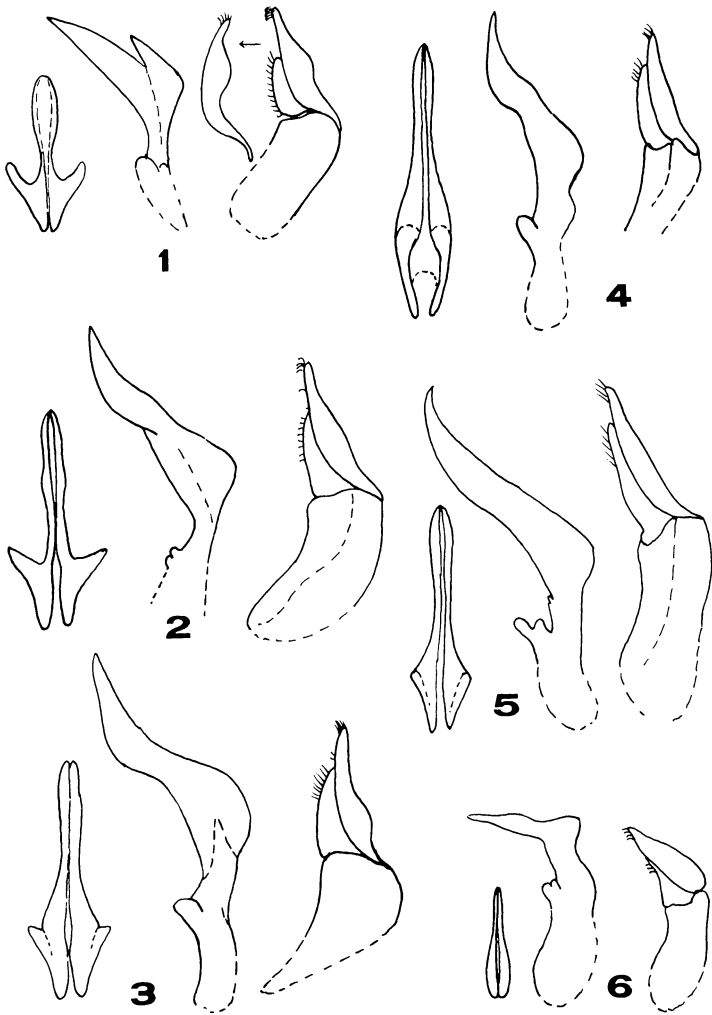


PLATE I

Male genitalia of species of *Anodocheilus*. Fig. 1. Left to right: aedeagus viewed end-on, aedeagus viewed from right side, tip of right paramere rotated 90°, and right paramere viewed from outer side. *Anodocheilus maculatus* Babington (allotype, BMNH). Figs. 2-6. Same structures as in Fig. 1 but with rotated tip of right paramere omitted. Fig. 2. *A. villae* sp. n. (holotype). Fig. 3. *A. elenauerae* sp. n. (holotype). Fig. 4. *A. oramae* sp. n. (holotype). Fig. 5. *A. janae* sp. n. (holotype). Fig. 6. *A. exiguus* (Aubé). Florida, Glades Co., May 10, 1971, FNYoung in UMMZ. Scale: 40 mm on figure = 0.5 mm.

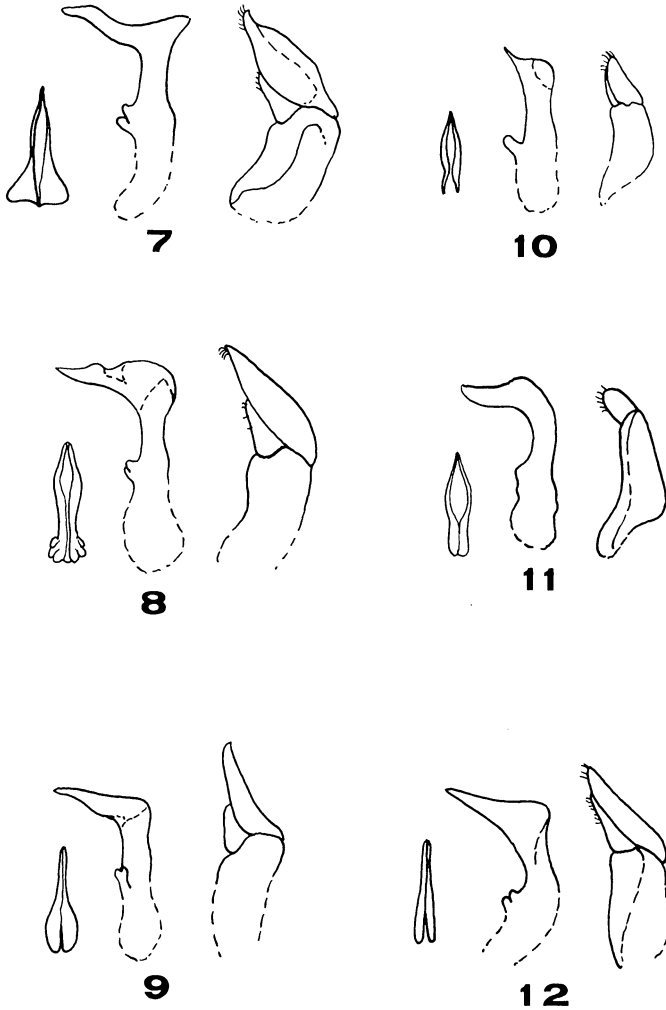


PLATE II

Male genitalia of species of *Anodocheilus* (continued from Pl. I). Figs. 7-12. Left to right: aedeagus viewed end-on, aedeagus viewed from right side, right paramere viewed from outer side. Fig. 7. *A. francescae* sp. n. (holotype). Fig. 8. *A. ruthae* sp. n. (holotype). Fig. 9. *A. silvestrii* Rég., Brazil, Mato Grosso, Corumba, ex. A. Zimmerman Collection, in UMMZ. Fig. 10. *A. bellitae* sp. n. (holotype). Fig. 11. *A. lenorae* sp. n. (holotype). Fig. 12. *A. germanus* (Sharp) (lectoholotype). Scale: 40 mm on figure = 0.5 mm.

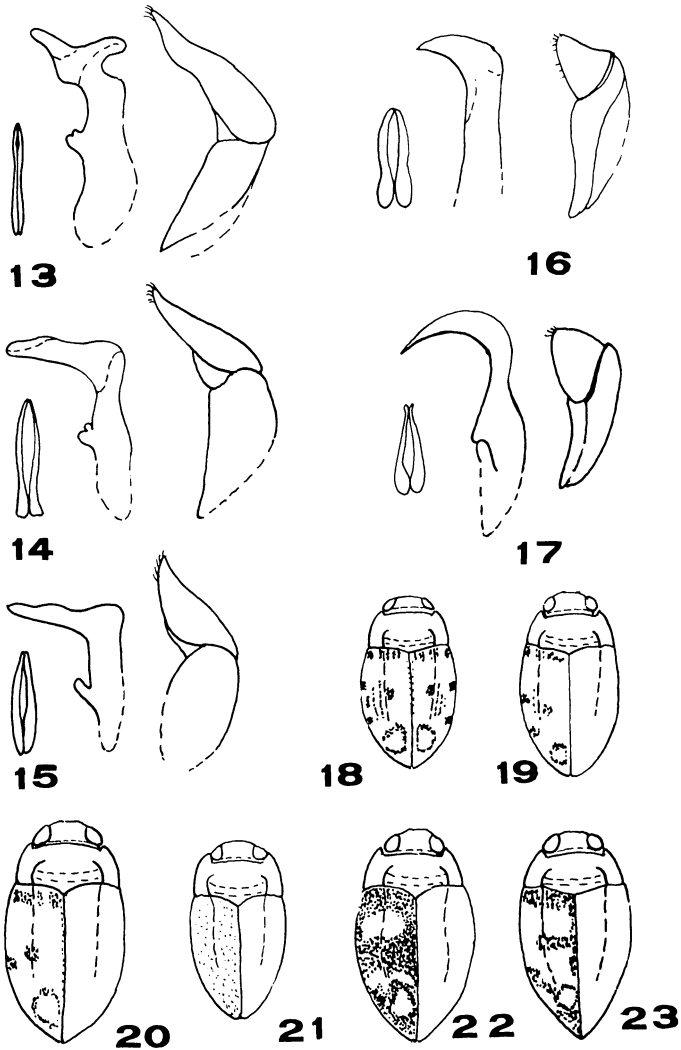


PLATE III

Male genitalia (continued from Pls. I, II), dorsal outlines, and diagrammatic color patterns of species of *Anodocheilus*. Figs. 13-17. Left to right: aedeagus viewed end-on, aedeagus viewed from right side, right paramere viewed from outer side. Fig. 13. *A. guatemalensis* Zait. (allotype). Fig. 14. *A. phyllisae* sp. n. (holotype). Fig. 15. *A. virginiae* sp. n. (holotype). Fig. 16. *A. elizabethae* sp. n. (paratype), same date and locality as holotype in UMMZ. Fig. 17. *A. florencae* sp. n. (holotype). Figs. 18-23. Dorsal outlines and color patterns. Fig. 18. *A. sarae* sp. n. (holotype). Fig. 19. *A. germanus* (Sharp) (lectoholotype). Fig. 20. *A. janae* sp. n. (holotype). Fig. 21. *A. elizabethae* sp. n. (holotype). Fig. 22. *A. elenauerae* sp. n. (holotype). Fig. 23. *A. virginiae* sp. n. (holotype). Scale: for genitalia, 40 mm on figure = approximately 0.5 mm; for dorsal outlines, 16 mm on figure = approximately 1.0 mm.