

# Endangered Species UPDATE

*Including a Reprint of the latest USFWS  
Endangered Species Technical Bulletin*

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School of Natural Resources and Environment  
THE UNIVERSITY OF MICHIGAN



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# Unorthodox Alliances and the Louisiana Black Bear

by

Paul L. Davidson and David N. Pashley

There is a great deal of controversy concerning endangered species issues and the Endangered Species Act. Adversarial situations arise that not only polarize entire communities, but can result in more energy being spent in battling the opposing view than in resolving the issue. It seems prudent, as the planet gets more complex and competition for available resources becomes more intense, that resource managers and policy-makers attempt to avoid these non-productive situations and work to develop strategies that are more proactive, promoting cooperation rather than confrontation.

A good deal of frustration is potentially inherent in any attempt to reach accord among all the parties affected by a complex land and resource issue. The desired outcome of such an effort, actual conservation achievement, is so important, however, that attempts must be made wherever a chance for success exists. Bad faith and irreconcilable differences will stymie some efforts; patience, persistence, understanding, and flexibility can keep others going. The following is an example of the latter type of project, involving the Louisiana black bear.

## Background

The American black bear, (*Ursus americanus*), an intelligent, shy and secretive animal, was once found throughout North America from Alaska and northern Canada south to northern Mexico. Black bears range over large areas in search of basic needs such as

food, escape cover, den sites, and mates. Of the 16 currently recognized subspecies of black bear, those animals found in East Texas, the lower two-thirds of Mississippi, and all of Louisiana are considered to belong to the subspecies *Ursus americanus luteolus*, the Louisiana black bear.

There are few accurate data on the historical status and distribution of the Louisiana black bear. Numerous historic accounts refer to the animals as being "common" and "widespread". Although black bears once occupied habitat throughout the region, they probably



Louisiana black bear (*Ursus americanus luteolus*). Photo by Nancy Webb.

reached their greatest densities in the expansive bottomlands of the Mississippi and Atchafalaya River drainages. Extensive habitat loss and human exploitation are blamed for the decline in bear populations throughout their range. Presently, black bears are found in core areas in the Tensas and Atchafalaya basins in Louisiana, with minor populations in southeast Louisiana and western Mississippi. It is estimated that the current population is about 300 animals.

In June 1990, the U.S. Fish and Wildlife Service (USFWS) proposed to list the Louisiana black bear as threatened under the Endangered Species Act (ESA). Habitat loss and illegal killing were cited as threats to the bear. On December 30, 1991, the USFWS made public its decision to list the Louisiana black bear as a threatened subspecies. Endangered status was not chosen since the bear was not believed to be in imminent danger of extinction.

As part of the listing procedure, USFWS promulgated a special rule exempting normal forest management activities from the take provisions of Section 9 of the ESA. Based on recent Tensas River basin studies in Louisiana, USFWS takes the position that habitat needs of the Louisiana black bear are compatible with normal forest management as practiced in its range. Specific restrictions in the special rule state that actual or potential den trees in occupied habitat are to be maintained. More or fewer restrictions in the special rule may become appropriate as results of ongoing research and recovery planning are assessed.

## The Black Bear Conservation Committee

The listing proposal generated considerable controversy. Some groups thought protection under the ESA was the bear's salvation. Others felt that listing was going to place a heavy burden on private landowners, notably timber companies. Still others perceived

listing as detrimental to the animal's well-being, denying private landowners and wildlife experts both the latitude and incentive necessary to protect and manage for the bear.

Unlike the American Northwest where 80% of the forested habitat is publicly owned, 90% of the forested habitat in the Southeast is privately owned. Therefore, any action to restrict activities on private properties had the potential to create adversarial positions regarding bear restoration efforts. It was clear that if bears were considered liabilities to the private landowners then the prognosis for increasing the population of the animal was questionable at best.

In July of 1990, the Louisiana Forestry Association (LFA) hosted a meeting to discuss black bear ecology, management, and the implications of the USFWS listing proposal. At that meeting, Dr. Michael Pelton of the University of Tennessee, a nationally recognized authority on black bear, stated: "The primary responsibility for insuring the future survival and viability of present black bear numbers in the Southeast Coastal Plain, and Louisiana specifically, shall fall on a number of public and private agencies that control the lands containing black bear habitat or potential habitat. [Survival of the bear] will take a concerted and coordinated effort among these groups". This regional approach was adopted by LFA's Wildlife and Recreation Committee when it formed the Black Bear Conservation Committee (BBCC).

The BBCC has evolved to be an independent and diverse coalition of landowners, state and federal agencies, private conservation groups, forest industries, agricultural interests, and members of the academic community working together to address the management and restoration of the Louisiana black bear (see box, *UPDATE* page 3). Virtually all major parties involved with some aspect of the bear or bear habitat are positive and contributing members of the BBCC. The broad objectives of the BBCC are to stabilize and manage existing bear populations and to restore black bear to suitable habitat within Louisiana, Mississippi, and Texas. The involved parties recognize that the sure

way to avoid further regulatory burden is to actually restore bear populations to a point where they are no longer threatened.

The BBCC has created, funded and staffed a coordinator position to serve the Committee's needs. Presently the coordinator serves in a public relations, extension, and educational capacity, giving talks and slide presentations at forums throughout the region. Subcommittees have been formed within the BBCC to deal with four areas of focus: information/education, research, funding, and habitat/management.

### Information and Education

As with most other wildlife populations, the objectives and attitudes of landowners, land managers, and the general public will determine if a healthy black bear population is considered a positive or negative phenomenon. The Information and Education Subcommittee works to promote the philosophy that a healthy bear population is an asset rather than a liability and that with protection and responsible management, the black bear can co-exist with other land use objectives.

A BBCC slide presentation is being duplicated and a volunteer network is being organized to present programs on black bears. A poster and brochure designed to address the hunting community are currently being printed to give the "bear facts", regulations involving listed species, the penalties associated with "takings" under the ESA, and information on a reward program that provides up to \$5,000 for tips leading to a conviction or plea bargain involving a bear poaching. Articles in sporting magazines, newspapers, and other media are being generated as hunting seasons open in an effort to educate sportsmen and to solicit their cooperation in restoration. Two television stations have produced and aired spots on the Louisiana black bear.

### Research

Research objectives have been identified and the BBCC serves to coordinate ongoing efforts. The primary areas of interest are: habitat assessment; bear

## Endangered Species UPDATE

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### Instructions for Authors:

The Endangered Species UPDATE welcomes articles related to species protection in a wide range of areas including but not limited to: research and management activities and policy analyses for endangered species, theoretical approaches to species conservation, and habitat protection. Book reviews, editorial comments, and announcements of current events and publications are also welcome.

Readers include a broad range of professionals in both scientific and policy fields. Articles should be written in an easily understandable style for a knowledgeable audience. For further information, contact the editor.

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*Cover:* The logo and motto of the Black Bear Conservation Committee (BBCC), a coalition formed to save the Louisiana black bear in Louisiana, Mississippi, and east Texas.

The views expressed in the Endangered Species UPDATE are those of the author and may not necessarily reflect those of the US Fish and Wildlife Service or The University of Michigan.

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ecology data; population data; taxonomy/genetics; and restoration to suitable habitat.

Approximately 24 scientists are in-

#### **Black Bear Conservation Committee**

American Forest Resource Alliance  
Anderson-Tully Company  
Arkansas Game and Fish Commission  
Audubon Institute  
Boise Cascade  
Champion International  
Crawford and Bourland, Inc.  
Delta Council, Mississippi  
Deltic Farm and Timber Company  
Georgia-Pacific Corporation  
International Paper Company  
James River Corporation  
Louisiana Cooperative Fish and Wildlife Research Unit (LSU)  
Louisiana Department of Wildlife and Fisheries  
Louisiana Farm Bureau  
Louisiana Forestry Association  
Louisiana Office of Forestry  
Louisiana State Univ. School of Forestry, Wildlife and Fisheries  
Louisiana Tech University  
Louisiana Wildlife Federation  
Mississippi Department of Wildlife, Fisheries and Parks  
Mississippi Forestry Association  
Mississippi Forestry Commission  
Mississippi State Univ. Dept. of Wildlife and Fisheries  
Mississippi Wildlife Federation  
National Council for Air and Stream Improvement, Inc.  
The Nature Conservancy of Louisiana  
The Nature Conservancy of Mississippi  
Safari Club International, Louisiana Chapter  
Sierra Club, Louisiana  
Temple-Inland Corporation  
Texas Department of Parks and Wildlife  
Texas Forest Service  
Texas Forestry Association  
U.S. Army Corps of Engineers, Lower Mississippi Valley Division  
U.S.D.A./A.P.H.I.S. (Animal & Plant Health Insp. Service) Animal Damage Control  
U.S. Fish and Wildlife Service  
U.S. Forest Service  
U.S. Forest Service, Southern Hardwoods Laboratory  
U.S. Soil Conservation Service  
Univ. of Tennessee Dept. of Forestry, Wildlife and Fisheries  
Virginia Tech University, Dept. of Fisheries and Wildlife Sciences  
Wildlife Technical Services, Inc.

involved in projects studying the Louisiana black bear and over \$600,000 of the \$1.3 million needed to fully fund this research has been secured. Involved in ongoing research projects are USFWS,

Louisiana Department of Wildlife & Fisheries, Mississippi Department of Wildlife, Fisheries & Parks, Louisiana State University, Mississippi State University, The University of Tennessee, and Virginia Tech University.

Habitat assessment base maps have been compiled for each state in the Southeast showing occupied bear habitat, areas with occasional sightings, potential habitat, and possible corridors. This information is presently being converted to a Geographic Information System to assist in the development of long range bear management strategies.

In 1988, with little prior research having been done on the Louisiana black bear, the USFWS began a telemetric study of bears on the Tensas River National Wildlife Refuge in Northeast Louisiana. This study has been continued and the first year of a study in the Atchafalaya Basin has been completed. Thirty-five bears are currently radiocollared in Louisiana and are being monitored to learn more about their natural history, including aspects of habitat use. It is estimated that it will take about five years to accurately determine the size of the bear population in the region.

Funding has been secured for a three year study of black bear taxonomy that will take a comprehensive look at both genetics and morphometrics. Eighteen bear populations throughout the Southeast (including samples from the subspecies *U. a. luteolus*, *U. a. floridanus*, and *U. a. americanus*) as well as populations outside the Southeast will be sampled.

The restoration of bear to suitable habitat in the region is a long term objective and information is being gathered from other regions of the country to develop a systematic approach modeled after other successful programs.

#### **Funding**

Thus far the activities of the BBCC have been supported financially by its member organizations. Each organization is responsible for transportation and lodging associated with BBCC meetings. Printing costs for a newsletter and other publications have been donated by various groups involved and a limited edition print has been donated for fund-

raising activities. The largest support has been \$50,000 from the state of Louisiana through the Louisiana Department of Wildlife and Fisheries. A contract between that agency and the Louisiana Field Office of The Nature Conservancy helped establish the BBCC Coordinator position. That contract expires in December 1992, but negotiations are ongoing with the USFWS to continue to fund that position.

#### **Habitat And Management**

The Habitat/Management subcommittee has been concentrating on the *Black Bear Management Handbook* and a comprehensive restoration plan for the Louisiana black bear.

#### **Excerpt from the *Black Bear Management Handbook***

"One objective of bottomland hardwood management is to maintain a diverse, productive forest of high vigor. From a bear habitat standpoint, a productive forest simulates yield from hard mast-producing trees (oaks, pecan, hickories, etc.) and maintains a diversity of foods. Black bears depend largely on fall and early winter mast crops to provide enough fat reserves to survive the period of winter dormancy. Management of a timber stand for oaks and other mast-producing species is good for production of high quality hardwood timber and good black bear foraging habitat. Maximizing tree vigor and hard mast production will benefit bears and all other wildlife species.... Maintaining a diversity of age classes, stand types and vegetative composition within the forest will provide excellent conditions for black bears.

"Rotation length for crop trees should be a minimum of 50 years, with 70 to 100 years being preferred for hard mast production. Stand thinning (intermediate cuts) should be made when economically feasible, with 5 to 15 year intervals being preferred."

The *Black Bear Management Handbook* is a tool to educate landowners and land managers about black bear ecology and management of habitat for black bear. The publication provides recommendations on management of different habitat types, from bottomland hardwood to upland pine. It discusses agricultural considerations, the positives and negatives associated with certain crops in bear habitat and the state and federal

programs affecting habitat.

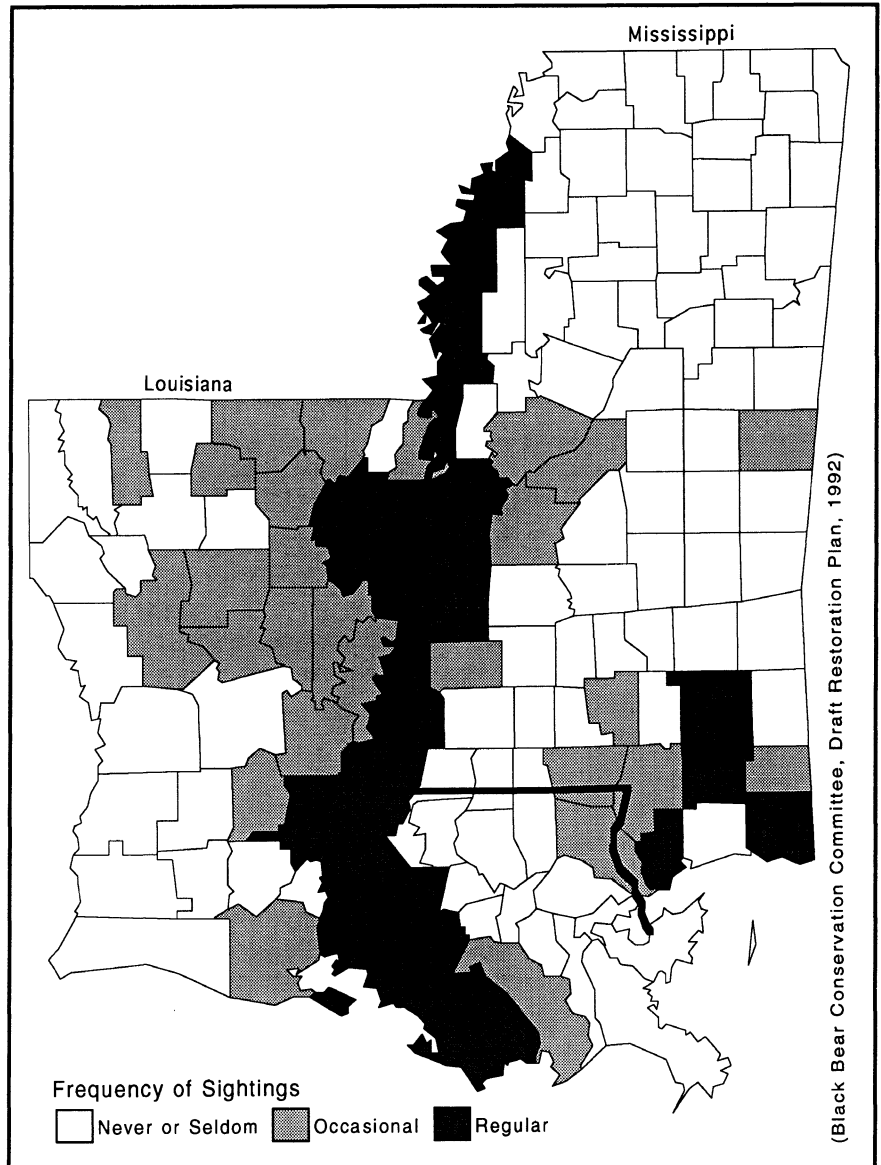
The handbook contains sections on resolution of human/bear conflicts and an introduction to the concept of landscape management, a coordinated approach in which various landowners and user groups work together to promote bear management over a large area.

Objectives of this approach in management for black bears include: 1) preventing further habitat fragmentation; 2) establishing corridors between existing fragmented habitat; 3) integrating management among tracts to effectively use fragmented resources; and 4) focusing efforts of a diverse user group toward common management objectives that benefit the bear.

Compilation of a comprehensive restoration plan for the Louisiana black bear is no small endeavor. The BBCC views the plan as the mechanism to define objectives, outline strategies, and identify those responsible for actions. The difficulty of setting goals for restoration of the Louisiana black bear is raised not only by the biology of this large, far-ranging, shy and secretive omnivore, but by virtue of controversy surrounding the listing of the bear under the ESA. Since most bear habitat, both occupied and unoccupied, is privately owned, any goals established for bear restoration must include landowner participation throughout the entire process from conception to implementation.

Many of the details outlined in the plan will be determined as ongoing research data are assimilated and analyzed. Initial restoration activities will focus on known occupied habitat. Management units within occupied habitat will be designated and landowners within each management unit will be identified and encouraged to participate. The BBCC will continue to help educate the landowners about existing programs and help develop new incentives.

Another area requiring attention is that of coordination of activities of various federal and state agencies relevant to the bear. A coordinated enforcement program is being addressed as well as procedures for handling orphaned cubs, injured bears, and nuisance animals. It is desirable that these animals be handled in such a way that release into the wild is the end result.



**Relative frequency of sightings of the Louisiana black bear in Louisiana and Mississippi. Note the majority occurrence of black bear sightings along the Mississippi River basin.**

## Conclusion

Since its founding, the BBCC has had the primary objective of reversal of those factors that have brought about the steady decline of the Louisiana black bear. The membership of the BBCC believes that it is possible to secure a place for the continued existence of the bear within its historic range.

The BBCC continues to actively solicit input from all parties that may be affected by a larger bear population (e.g. beekeepers) and work with them to resolve potential conflicts. Without the support of the general public, and the landowner in particular, the goals of the BBCC can never be achieved and the Louisiana black bear will likely remain listed under the ESA.

The BBCC serves as a model, a means of resolving a resource management issue by encouraging input from all interested stakeholders. Priorities have been to put the resource first, to find common ground, to build coalitions while avoiding confrontations, to replace emotion with credible science throughout the management process and to have a strong commitment to the achievement of the objectives of the BBCC. By working together, the BBCC will result in a positive impact on everybody involved and will help restore a truly unique and magnificent component of our wildlife heritage.

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# Book Reviews

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## **Ecotones: The Role of Landscape Boundaries in the Management of Changing Environments**

Edited by Marjorie M. Holland, Paul G. Risser, and Robert J. Nalman. 1991. Chapman and Hall. New York, NY. \$35.00. 142 pp.

This book is a compilation of eight papers presented at a symposium of the same title held at the annual meeting of the Ecological Society of America in Toronto, Canada on 8 August 1989. It describes and provides a research foundation for the rising interest among the scientific community regarding landscape boundaries.

Topics addressed include: the fundamental characteristics of ecotones; climatic constraints and issues of scale controlling regional biomes; responses of landscape boundaries to global change; simulation of scale-dependent effects of landscape boundaries on species persistence and dispersal; human impacts on the functioning of landscape boundaries; restoration of human-impacted land-water ecotones; and the role of landscape boundaries in the management and restoration of changing envi-

ronments.

Throughout the text, the terms "ecotone", "transition zone", and "landscape boundary" are used interchangeably. While this in itself is not confusing, the application of these terms to units that differ in inclusiveness can be. One group of authors cites "heterogeneous landscapes" as providing suitable or unsuitable habitat for plant dispersal, while the only landscape component they include in their simulations is vegetation. "Vegetative cover types" or "plant communities" might be more accurate descriptors for these units.

In contrast, two other authors acknowledge the relationships among atmosphere, topography, soils, and vegetation and the frequent correspondence of their boundaries. The riparian ecosystems in these papers are more substantive "landscape" units.

Reviewed by Douglas R. Pearsall

Global change and human impacts, with regard to landscape boundaries, are recurring themes of this book. An important distinction between the responses of human-caused and natural boundaries to climatic change is emphasized, as is the tendency for human activities to sharpen natural boundaries. The idea that boundaries can be temporal as well as spatial, especially in response to climatic fluctuations, is also well articulated. In summary, the inconsistent terminology among these papers is a reflection of the formative stage of the science, but does not detract from the breadth and relevance of the questions and ideas put forth.

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## **Rainforest in Your Kitchen: The Hidden Connection Between Extinction and Your Supermarket**

By Martin Teitel. 1992. Island Press. Washington, DC. \$10.95. 112 pp.

*Rainforest in Your Kitchen* is a short book about "biodiversity" issues within the agriculture industry. Mr. Teitel examines ways in which average shoppers can influence the biodiversity spectrum of the plant and animal kingdoms available to consumers. He encourages the average person to examine what he calls biodiversity issues, to look anew at the selections (i.e., monoculture produce) presented to them in the supermarket.

The readers are encouraged to ask for "variety" and if the major markets are unwilling to accommodate their new and educated palates, they are encouraged to seek out alternative markets such as the local farmer's market and food cooperatives. This book is a "feel good" book, in other words, instead of feeling depressed and disempowered by the vanishing biodiversity available to the consumer, the reader instead will

feel as if he/she can "make a difference".

This notion of being able to affect businesses and the world markets by asking for Nappa cabbage or Kiwi fruit at your local supermarket falls short of an academic argument. Mr. Teitel argues that by asking for brown eggs instead of white eggs we will keep at least another breed of chicken alive. However, this argument does not satisfy the actual problem of the vanishing rainforest, the lack of biodiversity, the extinction of species, be it from natural causes or from man made causes such as development, pollution, overpopulation etc.

The problem of extinction is not an easy one, and is not always human caused. The book's arguments are good only to motivate someone into an awareness of the problem, but not to an understanding of the complexity of why spe-

Reviewed by Natasha Raymond

cies are extinct nor how our business and agricultural system works.

Teitel's book, although fun and easy to read, is not meant for critical academic readers. The book itself is a great gift to neighbors and friends who may be interested in "doing something" to help the environment. I also recommend the book to elementary and other school teachers because its message is simple and easy to grasp for young children. Further, it will provide a teacher with interesting ideas on the importance of biodiversity within agribusiness in our world and what can be done while shopping to encourage large corporations to change their policies.

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# Endangered Species Programs in the 50 States and Puerto Rico

by

J. Yonat Swimmer, Laurie Manor, and R. Lynn Gooch

In the spring of 1991, a survey was initiated of the primary department in each of the 50 states and Puerto Rico dealing with the regulation and management of wildlife. The purpose of this survey was to investigate the role of state governments in the protection, management and monitoring of the nation's endangered and threatened species.

This information was compiled to provide state wildlife managers with a means to compare programs across the country and to share potentially valuable information. Information obtained and presented from the states is a result of both mailed and telephoned responses which spanned more than a year. The survey table (pages 7-10) shows the name and telephone number of the state office contacted dealing with endangered species protection, management and monitoring, the full time equivalent number of professional staff in nongame species and particularly in endangered species, and the sources of funding for endangered species programs. Most of the offices contacted were nongame divisions or sections of their respective departments.

In addition, we have included in our survey table the numbers of threatened and endangered species for each state, categorized by major taxa or group. Below are more detailed descriptions and observations of the data presented.

## Staffing: Nongame and Endangered Species

Numbers are given for staff working in the nongame division or section, and for those designated to work particularly with endangered species. In most cases, the number working on endangered species is a subset of the nongame number. The numbers given in the survey represent the best available estimate of the number of full time

administrators, biologists and field technicians working in nongame and endangered species. Part-time and seasonal personnel were combined to equal full time employees. It is clear that in some states the nongame division is not involved in endangered species programs. In these cases, the Natural Heritage Division, or equivalent, has oversight.

It is not unusual for endangered species to fall under the jurisdiction of more than one department. The separation of endangered species programs along division lines is reflected in the numbers reported for the survey. The Fish and Wildlife Division may be responsible for endangered fish, the Nongame Division may be responsible for endangered mammals and the Natural Heritage Division may be responsible for endangered plants. One respondent noted that this separation, and the resulting problems, had caused the state to expand its programs to include endangered habitat. Since the survey targeted Nongame Divisions, the numbers reported may not represent all of the individuals working on endangered species programs in a state.

An issue raised by many respondents was the overlap of job responsibilities within the Nongame Division. While a state may have reported that there were three full time personnel working on endangered species, the part-time equivalent may have been seven people. In many cases the number of individuals working on endangered species included one coordinator and one biologist, with the biologist assigned to a specific project.

## Funding

Survey responses indicate that federal funds contribute 72.5% of the nation's state (including Puerto Rico) endangered species programs (related to nongame divisions). Federal funds to the states are supplied under Section 6 of the Endangered Species Act, and the Pittman-Robertson and Dingell-Johnson acts (ab-

breviated as Sec. 6, PR and DJ respectively in the survey table). The amount of federal financial support varies greatly among the states, yet no state is funded solely upon these monies. State tax check-off programs are the second most common sources of state program funds. Sixty-three percent of the agencies reported earnings by tax check-off programs.

Other funding sources for state programs include hunting and fishing licenses (25.5% of responses), license plate revenues (11%), plus other means such as bonds, sales and gifts.

## Listing of Species

Using the latest U.S. Fish and Wildlife Service list of "Endangered and Threatened Wildlife and Plants" (50 CFR 17.11 & 17.12; August 29, 1992), numbers of federally listed species were estimated for each state (and Puerto Rico).

On the federal list, a "historic range" is noted for each species, listing the state or region of the country where the species was or still is found. Numbers of species for each state were tallied using the number of occurrences of that state under "historic range". When a region was noted for a species, for example "Eastern United States", the species was tallied for the appropriate states.

The state species counts for animals were categorized taxonomically (i.e. mammals, birds, etc.) as they were on the federal list except for snails, clams, crustaceans, insects and arachnids, which have been combined under "invertebrates". Although plants are categorized by family on the federal list, they were all combined under the heading "Plants" in this article.

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# Table of Survey Responses and (for the 50 States)

| <u>STATE</u>  | <u>NAME OF STATE OFFICE</u>                               | <u>PHONE #</u> | <u>NON-<br/>GAME<br/>STAFF</u> | <u>END. SPP.<br/>STAFF</u> | <u>FUNDING SOURCES (Nongame/End. Spp.)</u>  |
|---------------|---|----------------|--------------------------------|----------------------------|---|
| ALABAMA       | DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES          | (205) 242-3469 | 3                              | 0.5                        | FEDERAL (SEC. 6, PR), INCOME TAX CHECK-OFF  |
| ALASKA        | DEPARTMENT OF FISH AND GAME                               | (907) 465-4100 | not applicable                 | 1.3                        | GENERAL FUND, FEDERAL (SEC. 6)  |
| ARIZONA       | DEPARTMENT OF GAME AND FISH                               | (602) 942-3000 | 50                             | 30                         | FEDERAL (SEC. 6), INCOME TAX CHECK-OFF, HERITAGE FUND-LOTTERY REVENUES                                      |
| ARKANSAS      | DEPARTMENT OF PARKS AND TOURISM                           | (501) 223-6313 | 2                              | 2                          | FEDERAL (SEC. 6, DJ, PR), STATE LICENSE SALES, TAX CHECK-OFF, DONATIONS                                     |
| CALIFORNIA    | DEPARTMENT OF FISH AND GAME                               | (916) 322-5574 | 20                             | 8                          | FEDERAL (SEC. 6), TAX CHECK-OFF, LICENSE PLATE SALES, BONDS   |
| COLORADO      | DEPARTMENT OF NATURAL RESOURCES                           | (303) 291-7273 | 6                              | 5                          | FEDERAL (SEC. 6, DJ, PR), INCOME TAX CHECK-OFF, DONATIONS, HUNTING/FISHING LICENSE REVENUES                 |
| CONNECTICUT   | DEPARTMENT OF ENVIRONMENTAL PROTECTION                    | (203) 584-9830 | 2                              | 2.5                        | GENERAL FUND REVENUES   |
| DELAWARE      | DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL | (302) 739-4782 | 2                              | 0.6                        | INCOME TAX CHECK-OFF, FEDERAL (SEC. 6)  |
| FLORIDA       | GAME AND FRESH WATER FISH COMMISSION                      | (904) 488-3831 | 27                             | 0.1                        | FEDERAL (SEC. 6), STATE REVENUES, LICENSE PLATE TAX, NONGAME TRUST FUND                                     |
| GEORGIA       | DEPARTMENT OF NATURAL RESOURCES                           | (912) 994-1438 | 15                             | 4                          | FEDERAL (SEC. 6), TAX CHECK-OFF, GAME AND FISH DIVISION FUNDS   |
| HAWAII        | DEPARTMENT OF LAND AND NATURAL RESOURCES                  | (808) 548-8850 | 27                             | 22                         | GENERAL REVENUE, FEDERAL (SEC. 6, PR)   |
| IDAHO         | FISH AND GAME DEPARTMENT                                  | (208) 334-2676 | 15                             | 4                          | INCOME TAX CHECK-OFF, HUNTING/FISHING LICENSE REVENUES, GRANTS, DONATIONS, SALES OF ITEMS                   |
| ILLINOIS      | ILLINOIS DEPARTMENT OF CONSERVATION                       | (217) 785-8290 | 37                             | 4                          | GENERAL FUND REVENUES   |
| INDIANA       | DEPARTMENT OF NATURAL RESOURCES                           | (317) 232-8160 | 5.5                            | 5.5                        | INCOME TAX CHECK-OFF  |
| IOWA          | DEPARTMENT OF NATURAL RESOURCES                           | (515) 281-8524 | 4                              | 5                          | FEDERAL (SEC. 6), GENERAL FUND REVENUES   |
| KANSAS        | DEPARTMENT OF WILDLIFE AND PARKS                          | (316) 342-0658 | 3                              | 1.5                        | INCOME TAX, HUNTING/FISHING LICENSE REVENUES  |
| KENTUCKY      | DEPARTMENT OF FISH AND WILDLIFE RESOURCES                 | (502) 564-5448 | 5                              | 1.3                        | FEDERAL (SEC. 6, PR), TAX CHECK-OFF, HUNTING/FISHING LICENSE SALES REVENUES                                 |
| LOUISIANA     | DEPARTMENT OF WILDLIFE AND FISHERIES                      | (504) 765-2821 | 5                              | 5                          | INCOME TAX CHECK-OFF, STATE BUDGET  |
| MAINE         | DEPARTMENT OF INLAND FISHERIES AND WILDLIFE               | (207) 941-4474 | 20                             | 4                          | INCOME TAX CHECK-OFF, GENERAL FUNDS, FEDERAL (SEC. 6)   |
| MARYLAND      | DEPARTMENT OF NATURAL RESOURCES                           | (301) 974-3195 | 12                             | 1                          | TAX CHECK-OFF, GENERAL TAX FUNDS, HUNTING REVENUES, FEDERAL (SEC. 6)  |
| MASSACHUSETTS | EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS                 | (617) 727-3151 | 11                             | 11                         | INCOME AND CORPORATE TAX CHECK-OFF, HUNTING/FISHING LICENSES  |
| MICHIGAN      | DEPARTMENT OF NATURAL RESOURCES                           | (517) 373-1263 | 3                              | 1                          | INCOME TAX CHECK-OFF, FEDERAL (SEC. 6)  |
| MINNESOTA     | DEPARTMENT OF NATURAL RESOURCES                           | (612) 296-3344 | 26                             | 11                         | INCOME TAX CHECK-OFF, GENERAL FUNDS, NATURAL HERITAGE, STATE TAXES  |
| MISSISSIPPI   | DEPARTMENT OF WILDLIFE FISHERIES AND PARKS                | (601) 364-2004 | 44                             | 22                         | GENERAL FUND, TAX CHECK-OFF, FEDERAL (SEC. 6, U.S. FOREST SERVICE), NSF, NATURAL SCIENCE MUSEUMS FOUNDATION |
| MISSOURI      | DEPARTMENT OF CONSERVATION                                | (314) 751-4115 | not applicable                 | 50                         | SALES TAX   |



# Tallies of Federally Listed Species and Puerto Rico)

| MAMMALS | BIRDS | REPTILES | AMPHIBIANS | FISH | INVERTEBRATES | TOTAL ANIMAL | PLANTS | TOTAL |
|---------|-------|----------|------------|------|---------------|--------------|--------|-------|
| 8       | 8     | 4        | 1          | 11   | 24            | 56           | 17     | 73    |
| 3       | 5     | 0        | 0          | 1    | 0             | 9            | 1      | 10    |
| 9       | 9     | 1        | 0          | 17   | 1             | 37           | 15     | 52    |
| 6       | 8     | 0        | 0          | 3    | 7             | 24           | 4      | 28    |
| 14      | 18    | 5        | 2          | 16   | 14            | 69           | 43     | 112   |
| 3       | 4     | 0        | 0          | 5    | 2             | 14           | 12     | 26    |
| 4       | 5     | 0        | 0          | 1    | 4             | 14           | 3      | 17    |
| 4       | 5     | 0        | 0          | 1    | 2             | 12           | 6      | 18    |
| 17      | 15    | 8        | 0          | 3    | 4             | 47           | 39     | 86    |
| 6       | 10    | 3        | 0          | 8    | 1             | 28           | 21     | 49    |
| 3       | 31    | 0        | 0          | 0    | 1             | 35           | 90     | 125   |
| 4       | 3     | 0        | 0          | 0    | 0             | 7            | 1      | 8     |
| 4       | 6     | 0        | 0          | 1    | 9             | 20           | 10     | 30    |
| 3       | 3     | 0        | 0          | 0    | 14            | 20           | 4      | 24    |
| 4       | 6     | 0        | 0          | 1    | 5             | 16           | 5      | 21    |
| 3       | 5     | 0        | 0          | 2    | 1             | 11           | 3      | 14    |
| 5       | 6     | 0        | 0          | 2    | 14            | 27           | 7      | 34    |
| 6       | 10    | 2        | 0          | 2    | 3             | 23           | 1      | 24    |
| 4       | 4     | 0        | 0          | 1    | 1             | 10           | 3      | 13    |
| 5       | 5     | 0        | 0          | 2    | 4             | 16           | 8      | 24    |
| 4       | 5     | 1        | 0          | 1    | 4             | 15           | 4      | 19    |
| 5       | 6     | 0        | 0          | 0    | 3             | 14           | 7      | 21    |
| 4       | 5     | 0        | 0          | 0    | 3             | 12           | 4      | 16    |
| 7       | 9     | 4        | 0          | 3    | 7             | 30           | 3      | 33    |
| 4       | 6     | 0        | 0          | 4    | 6             | 20           | 9      | 29    |

# Table of Survey Responses and (for the 50 States)

| <u>STATE</u>   | <u>NAME OF STATE OFFICE</u>              | <u>PHONE #</u> | <u>NON-GAME STAFF</u> | <u>END. SPP. STAFF</u> | <u>FUNDING SOURCES (Nongame/End. Spp.)</u>   |
|----------------|--|----------------|-----------------------|------------------------|--|
| MONTANA        | DEPARTMENT OF FISH, WILDLIFE AND PARKS   | (406) 994-6433 | 2.4                   | 9                      | HUNTING LICENSE REVENUES, FEDERAL (SEC. 6)   |
| NEBRASKA       | GAME AND PARKS COMMISSION                | (402) 471-5438 | 7                     | 1                      | GENERAL FUND, INCOME TAX CHECK-OFF   |
| NEVADA         | DEPARTMENT OF WILDLIFE                   | (702) 688-1525 | 6                     | 0                      | GENERAL FUNDS, STATE WILDLIFE FUND, FEDERAL (SEC. 6, PR)                                 |
| NEW HAMPSHIRE  | FISH AND GAME DEPARTMENT                 | (603) 271-3421 | 1                     | 8                      | PRIVATE DONATIONS, STATE FUNDS, FEDERAL (SEC. 6)   |
| NEW JERSEY     | DEPARTMENT OF ENVIRONMENTAL PROTECTION   | (609) 292-9400 | 9                     | 0                      | TAX CHECK-OFF, PERMIT FEES   |
| NEW MEXICO     | GAME AND FISH DEPARTMENT                 | (505) 827-9904 | not applicable        | 7                      | GENERAL FUND, FEDERAL (SEC. 6, PR, DJ)   |
| NEW YORK       | DEPARTMENT OF ENVIRONMENTAL CONSERVATION | (518) 457-5690 | 3                     | 9                      | TAX CHECK-OFF, FEDERAL (PR)  |
| NORTH CAROLINA | WILDLIFE RESOURCES COMMISSION            | (919) 628-0100 | 3                     | 8                      | INCOME TAX CHECK-OFF, FEDERAL (SEC. 6)   |
| NORTH DAKOTA   | GAME AND FISH DEPARTMENT                 | (701) 221-6321 | 1                     | 0.5                    | FEDERAL (SEC. 6), TAX CHECK-OFF, COOPERATIVE GRANTS                                      |
| OHIO           | DEPARTMENT OF NATURAL RESOURCES          | (614) 265-6338 | 350                   | 8                      | INCOME TAX CHECK-OFF   |
| OKLAHOMA       | DEPARTMENT OF WILDLIFE CONSERVATION      | (405) 521-3851 | 2                     | 0                      | TAX CHECK-OFF, FEDERAL (SEC. 6), SALES OF ITEMS  |
| OREGON         | DEPARTMENT OF FISH AND WILDLIFE          | (503) 229-5400 | 12                    | 4                      | TAX CHECK-OFF, GENERAL FUNDS, FEDERAL (SEC. 6), HUNTING/FISHING LICENSE REVENUES         |
| PENNSYLVANIA   | PENNSYLVANIA GAME COMMISSION             | (717) 787-4250 | 3                     | 0                      | FEDERAL (SEC. 6), TAX CHECK-OFF, GRANTS, GAME FUND, SALES OF ART PRINTS                  |
| PUERTO RICO    | DEPARTMENT OF NATURAL RESOURCES          | (809) 722-7517 | 28                    | 28                     | SPECIAL FUND (LEGISLATURE), FEDERAL (SEC. 6)   |
| RHODE ISLAND   | DEPARTMENT OF ENVIRONMENTAL MANAGEMENT   | (401) 277-2776 | 1                     | 0                      | FEDERAL (SEC. 6), TAX CHECK-OFF, NATURAL HERITAGE PROGRAM                                |
| SOUTH CAROLINA | WILDLIFE AND MARINE RESOURCES DEPARTMENT | (803) 734-3893 | 11                    | 7                      | STATE APPROPRIATIONS, TAX REVENUES, FEDERAL (SEC. 6), TAX CHECK-OFFS                     |
| SOUTH DAKOTA   | DEPARTMENT OF GAME, FISH AND PARKS       | (605) 773-4229 | 1                     | 0                      | FEDERAL (SEC. 6, PR, USFS), THE NATURE CONSERVANCY                                       |
| TENNESSEE      | WILDLIFE RESOURCES DIVISION              | (615) 781-6619 | 1                     | 0.5                    | GENERAL FUND, FEDERAL (SEC. 6), SPORTSMAN LICENSES, DONATIONS                            |
| TEXAS          | PARKS AND WILDLIFE DEPARTMENT            | (512) 448-4311 | 3                     | 14                     | HUNTING/FISHING LICENSE REVENUES, FEDERAL (SEC. 6, PR, DJ), SALES OF STAMPS AND PRINTS   |
| UTAH           | STATE DEPARTMENT OF NATURAL RESOURCES    | (801) 538-4760 | 18                    | 1                      | GENERAL REVENUE, INCOME TAX CHECK-OFF, HUNTING/FISHING LICENSE REVENUE, FEDERAL (SEC. 6) |
| VERMONT        | FISH AND WILDLIFE DEPARTMENT             | (802) 244-7331 | 4                     | 0                      | TAX CHECK-OFF, GENERAL FUND REVENUES, FEDERAL (SEC. 6)                                   |
| VIRGINIA       | DEPARTMENT OF GAME AND INLAND FISHERIES  | (804) 367-6913 | 4                     | 2                      | TAX CHECK-OFF, DONATIONS   |
| WASHINGTON     | DEPARTMENT OF WILDLIFE                   | (206) 753-5728 | 38                    | 10                     | PERSONALIZED LICENSE PLATE SALES   |
| WEST VIRGINIA  | DIVISION OF NATURAL RESOURCES            | (304) 637-0245 | 4                     | 2                      | FEDERAL (SEC. 6), SALES OF CALENDARS AND PRINTS  |
| WISCONSIN      | DEPARTMENT OF NATURAL RESOURCES          | (608) 266-2625 | 4                     | 0                      | TAX CHECK-OFF, DONATIONS, FEDERAL (SEC. 6, PR, DJ)                                       |
| WYOMING        | GAME AND FISH DEPARTMENT                 | (307) 332-2688 | 5                     | 1                      | FEDERAL (SEC. 6), STATE FUNDS, HUNTING/FISHING LICENSE REVENUES                          |

# Tallies of Federally Listed Species and Puerto Rico)

| MAMMALS | BIRDS | REPTILES | AMPHIBIANS | FISH | INVERTEBRATES | TOTAL ANIMAL | PLANTS | TOTAL |
|---------|-------|----------|------------|------|---------------|--------------|--------|-------|
| 6       | 3     | 0        | 0          | 1    | 0             | 10           | 0      | 10    |
| 3       | 5     | 0        | 0          | 1    | 3             | 12           | 3      | 15    |
| 2       | 3     | 1        | 0          | 22   | 1             | 29           | 4      | 33    |
| 4       | 4     | 0        | 0          | 1    | 3             | 12           | 3      | 15    |
| 4       | 6     | 0        | 0          | 1    | 4             | 15           | 6      | 21    |
| 5       | 6     | 1        | 0          | 10   | 3             | 25           | 12     | 37    |
| 4       | 5     | 0        | 0          | 1    | 3             | 13           | 9      | 22    |
| 8       | 10    | 1        | 0          | 4    | 5             | 28           | 22     | 50    |
| 5       | 5     | 0        | 0          | 1    | 0             | 11           | 1      | 12    |
| 3       | 4     | 0        | 0          | 1    | 11            | 19           | 4      | 23    |
| 5       | 8     | 0        | 0          | 3    | 3             | 19           | 2      | 21    |
| 6       | 7     | 0        | 0          | 8    | 1             | 22           | 3      | 25    |
| 4       | 3     | 0        | 0          | 0    | 7             | 14           | 5      | 19    |
| 0       | 6     | 3        | 2          | 0    | 0             | 11           | 26     | 37    |
| 2       | 5     | 0        | 0          | 1    | 2             | 10           | 2      | 12    |
| 7       | 10    | 3        | 0          | 1    | 1             | 22           | 17     | 39    |
| 4       | 4     | 0        | 0          | 1    | 1             | 10           | 1      | 11    |
| 7       | 8     | 0        | 0          | 12   | 27            | 54           | 17     | 71    |
| 10      | 14    | 1        | 3          | 6    | 6             | 40           | 25     | 65    |
| 4       | 4     | 1        | 0          | 8    | 1             | 18           | 19     | 37    |
| 5       | 3     | 0        | 0          | 0    | 3             | 11           | 4      | 15    |
| 8       | 5     | 0        | 1          | 5    | 19            | 38           | 10     | 48    |
| 7       | 6     | 0        | 0          | 1    | 1             | 15           | 0      | 15    |
| 6       | 3     | 0        | 1          | 0    | 6             | 16           | 5      | 21    |
| 5       | 5     | 0        | 0          | 0    | 3             | 13           | 7      | 20    |
| 4       | 3     | 0        | 1          | 5    | 0             | 13           | 0      | 13    |

# Bulletin Board

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## Call for Papers and Posters

The 20th Annual Natural Areas Conference, "Conservation in Working Landscapes" will be held June 22-25, 1993, at the University of Maine, Orono, ME. The Conference will focus on these topics: biological diversity and endangered species conservation in working landscapes, marine ecosystem conservation, inventory and monitoring, and managing natural areas. Abstracts should be submitted by January 15, 1993 to Hank Tyler, Maine State Planning Office, Station 38, Augusta, ME 04333. For more information, or to register for the conference, write to the address above of call (207) 624-6041.

## Midwest Oak Savanna Conference

The Midwest Oak Savanna Conference will be held at Northeastern University in Chicago, IL on February 20, 1993. The conference will be a participatory exchange among those concerned with fire dependent oak communities. Oak grasslands and woodlands with prairie affinities were a widespread component of the pre-settlement landscape and are among our rarest and most threatened natural systems today. The conference fee is \$16. For more information call: The Nature Conservancy, (312) 346-8166.

## USFWS Steps Up Rare Species Listing Decisions

On December 15, USFWS announced that it reached an out of court settlement of a case involving the agency's procedures to reduce the backlog of plants and animals awaiting listing decisions under the Endangered Species Act. Under the agreement, over the next four years, USFWS will decide whether to propose for listing approximately 400 "Category 1" candidate plants and animals. Category 1 species are those for which the best scientific information supports listing but, due to other demands, USFWS has been unable to develop a listing proposal.

The agreement also formalizes a commitment to emphasize, where possible, multiple species listings or proposals that address entire ecosystems, instead of a species-by-species approach. Look for more on this and other ecosystem management approaches for endangered species conservation in the next issue of the *UPDATE*, our Special Issue.

## USFWS Coop Research Director Visits SNRE

Edward T. LaRoe, Director of the Cooperative Research Units Center, USFWS, visited the School of Natural Resources and Environment at the Uni-

versity of Michigan in December 1992. His several presentations and informal discussions with students and faculty on varied topics included the talk "USFWS role in the Endangered Species Act". Dr. LaRoe highlighted the need to move beyond a purely species approach for endangered species conservation.

## Erratum

Please note the following correction for the feature story "Remote Sensing, Geographic Data and the Conservation of Biological Resources" by Richard Podolsky, in the October 1992 issue (Vol. 9 No. 12). Dr. Podolsky's FAX number, given at the end of the article should have been as follows: (212) 246-6074.

## UPDATE Schedule and USFWS Technical Bulletin

The printing of this issue of the *Endangered Species UPDATE* was held, and published later than usual, so that we could include in it the latest USFWS Endangered Species Technical Bulletin.

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*Announcements for the Bulletin Board are welcomed.*

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# Endangered Species UPDATE

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