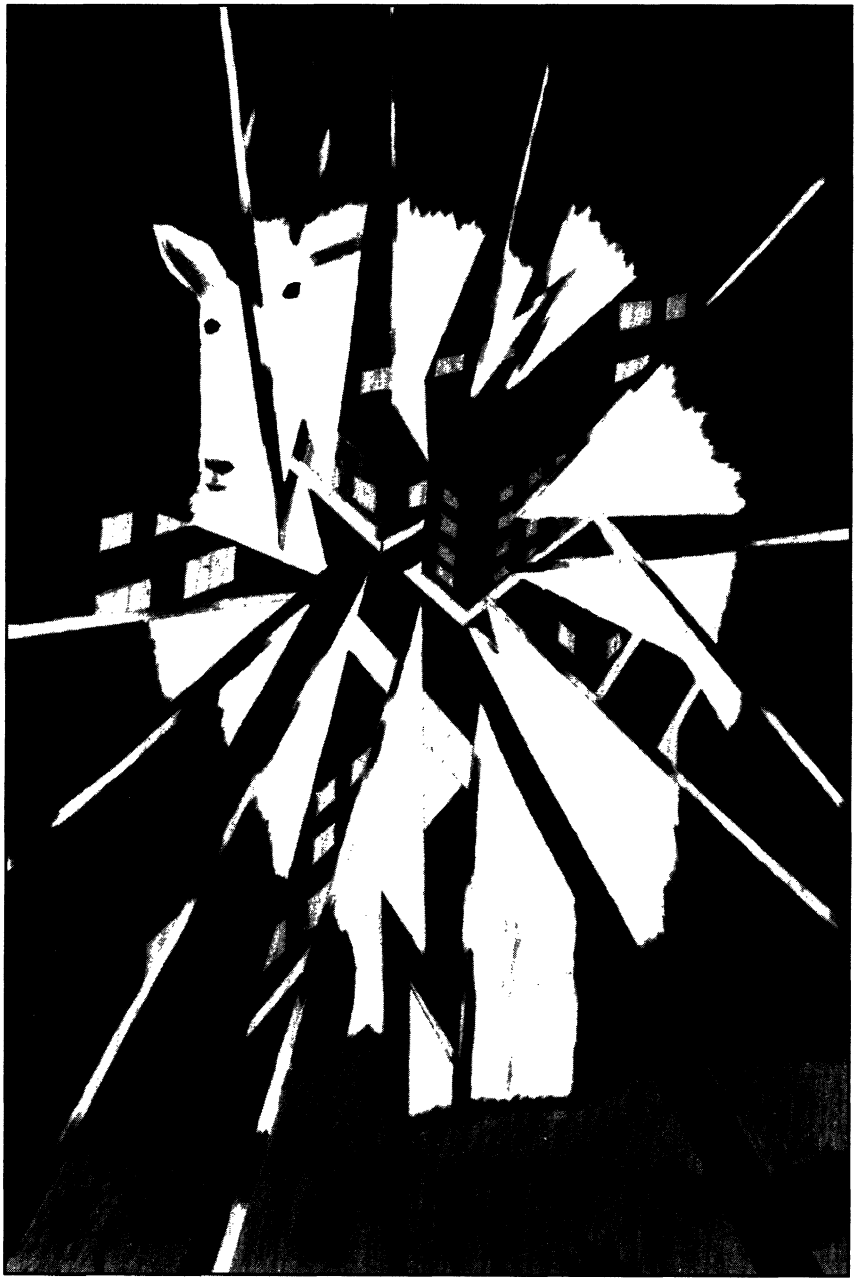
Endangered Species UPDATE

Including a Reprint of the latest USFWS Endangered Species Technical Bulletin

July/August 1993 Vol. 10 Nos. 9 & 10

School of Natural Resources and Environment
THE UNIVERSITY OF MICHIGAN



In this Issue

Reauthorization of the Endangered Species Act in the 103rd Congress: The Battle Begins in Earnest

by

Suzanne R. Jones

This year the Endangered Species Act (ESA) celebrates its 20th anniversary. This milestone year also marks the gravest attack yet by big business and development interests to weaken the ESA, as Congress begins reauthorization of this landmark law. During its relatively short history, the Act has been revised and expanded in three previous reauthorizations, resulting in the successful statute that we know today. This reauthorization, however, will take place within one of the most hostile environments yet: amidst a renewed attack by industry groups against federal environmental regulations, and an unwarranted but growing public concern over private property rights. The reauthorization also will occur against the backdrop of the ancient forest controversy of the Pacific Northwest, the first major conflict between an endangered species and a regional industry (precipitated by decades of illegal and unsustainable national forest management by our federal agencies).

The Reauthorization Process

For those unfamiliar with the strange workings of Capitol Hill, reauthorization is the process undertaken periodically by Congress to evaluate and, if necessary, amend a law, and to decide how much money to spend to implement it each year until it is up again for reauthorization. Although the authorization of funding to implement the ESA actually expired last year, Congress succumbed to election-year politics and, in order to put off addressing this increasingly controversial issue, merely appropriated ESA funding for another year. However, now that the new 103rd Congress is well underway, our legislators are finally turning their attention to what is shaping up to be one of the most contentious environmental fights of the decade. With the recent introduction of bills in Congress to both strengthen and weaken the ESA, the battle lines have been drawn, and the fight to renew the ESA has begun in earnest. This article will briefly describe these legislative proposals and discuss the timing and political outlook for ESA reauthorization in the 103rd Congress.

Strengthening Bills

In early May, leaders of the House and Senate committees with jurisdiction over the ESA jointly introduced companion bills to strengthen and reauthorize the ESA for another five years. Representative Gerry Studds (D-MA), Chairman of the House Merchant Marine and Fisheries Committee, along with Representatives John Dingell (D-MI, and principal sponsor of the 1973 Endangered Species Act), Jim Saxton (R-NJ), and 51 other members introduced H.R. 2043 in the House. In doing so, these representatives were building upon the framework of their reauthorization bill H.R. 4045, which had garnered over 100 cosponsors in the previous Congressional Session. Senators Max Baucus (D-MT) and John Chafee (R-RI), Chairman and Ranking Minority Member of the Senate Environment and Public Works Committee respectively, introduced S. 921 with 13 other Senate cosponsors. Named the "Endangered Species Act Amendments of 1993," both of these bills would maintain the Act's strong protections for species and improve ESA implementation, while also attempting to address constructively some of the criticisms of the Act made by ESA opponents. Aimed at making species conservation efforts more pro-active, more ecosystem-oriented, and more incentive-based, H.R. 2043 and S. 921 contain measures to:

- improve the conservation of candidate species by requiring federal agencies to inventory their lands for such species, and take pro-active measures to conserve them on public lands;
- move from the current species-by-species focus towards a more fiscally- and ecologically-sound ecosystem approach by giving priority to developing integrated multi-species recovery plans for a given area, and by allowing the Secretary of the Interior to consolidate federal agency actions affecting an ecosystem when conducting Section 7 consultations;
- revive the recovery process by setting an 18 month deadline for completion of recovery plans, expanding the required content of plans, increasing participation by state and other federal agencies in developing plans, and (only in the House bill) requiring agencies to implement recovery plans as part of their conservation duties;
- provide financial incentives and technical assistance to private landowners who go beyond the requirements of the law to use their land to recover species;
- improve the Habitat Conservation Plan-

This milestone year...marks the gravest attack yet by big business and development interests to weaken the Endangered Species Act

ning (HCP) process by establishing a federal revolving fund to provide loans to state and local governments to develop HCPs (in order to encourage larger, more inclusive plans), and by authorizing the inclusion of candidate species in HCPs;

• in the House bill, ensure that citizens can file suit immediately to enforce the ESA in emergencies posing a significant and immediate risk to a listed species (rather than having to wait 60 days as is now required);

• improve the implementation of U.S. duties under international conservation agreements, and (in the Senate bill) clarify that federal agencies must consult with the U.S. Fish and Wildlife Service (FWS) regarding actions which may affect listed species abroad as well as in the U.S.; and

• significantly increase authorized funding levels to implement the ESA.

In addition to these strengthening amendments, the authors of H.R. 2043 and S. 921 have also included several provisions in the bills to address some criticisms of the Act by ESA opponents. For example, H.R. 2043 and S. 921 require the Interior Secretary to authorize independent scientific peer review of listing decisions upon receiving a written request justifying the need for a review. The bills also clarify that in achieving the recovery goal of the ESA—i.e., the timely conservation of species and their habitats—adverse economic and social impacts should be minimized. Although not necessarily opposing the intent of these provisions, many in the environmental community feel these measures are unnecessary given existing provisions within the Act which provide for rigorous scientific analysis and considerations of socioeconomic impacts. There also is concern that without better clarification, these new provisions might be purposefully misconstrued by a less supportive Administration to justify weakening the strong species protection provided by the Act. Nonetheless, despite these few concerns, the National Wildlife Federation and members of the Endangered Species Coalition (made up of 77 environmental groups) strongly support H.R. 2043 and S. 921 as opening bids to reauthorize the Act, and are working diligently for their passage.

Additional Amendments

As the process proceeds, environmental groups will be pushing for some additional ESA amendments not contained in H.R. 2043 and S. 921 to strengthen the Act and improve its implementation. Among other provisions, this larger agenda includes measures to: increase protection of listed plants on federal lands to the same standard accorded to animal species under the ESA; require mandatory compliance with "reasonable and prudent measures" established as conditions of incidental take permits issued by the FWS, as well as full mitigation of all incidental taking of listed species; and establish a review mechanism to ensure that the goals of Habitat Conservation Plans for candidate species are being met before an incidental take permit is issued if the species is later listed. In addition, the environmental community hopes to see the strengthening provisions (discussed previously) currently found in only one or the other of the two bills, adopted in both bills.

It is worth noting that other groups such as the Western Governor's Association and the International Association of Fish and Wildlife Agencies—not generally considered radical environmental groups—have endorsed the concepts present in H.R. 2043 and S. 921. It speaks well of the performance of the Act itself and the thoughtful crafting of H.R. 2043 and S. 921 that such a wide range of interests support these genuine efforts to reauthorize and fine-tune this important law.

Weakening Bills

On the other side, ESA opponents have thus far introduced a handful of bills in the House to weaken and dismantle the ESA. This legislative salvo includes such outrageous bills as: H.R. 1414, Rep. Hansen's (R-UT) "Human Protection Act," which would disallow any action under the Act if "the potential economic benefits to society of the action do not outweigh the potential eco-

Endangered Species UPDATE

A forum for information exchange on endangered species issues
July/August 1993
Vol. 10 No. 9 & 10

R. Lynn Gooch.....Editor
Terry Root.....Faculty Advisor

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.

Subscription Information:
The *Endangered Species UPDATE* is published approximately ten times per year by the School of Natural Resources and Environment at The University of Michigan. Annual rates are $23 for regular subscriptions, and $18 for students and senior citizens (add $5 for postage outside the US). Students please enclose advisor's signature on university letterhead. Send check or money order (payable to The University of Michigan) to:

Endangered Species UPDATE
School of Natural Resources
and Environment
The University of Michigan
Ann Arbor, MI 48109-1115
(313) 763-3243

Cover:
Eco Collision by Shawn Streeter, age 18, Wyoming. For more information, please refer to the Bulletin Board, page 11.

Production of this issue was made possible in part by support from the Chevron Corporation and the International Association of Fish and Wildlife Agencies.

nomic costs"; H.R. 1992, Rep. Smith's (R-OR) "Endangered Species Improvement Act," which would, among other things, ensure that listing of species is in the "public interest"; H.R. 2207, Reps. Brewster (D-OK) and Young's (R-AK) "Common Sense Amendments," designed to remove from the definition of "taking" the alteration/destruction of habitat under certain circumstances; and H.R. 888, Rep. Field's (R-TX) bill to exempt "sole source aquifers" from the Act in order to avoid federally mandated water planning for the Edwards Aquifer in Texas.

By far the most dangerous bill of this unseemly lot, however, is H.R. 1490, the "Endangered Species Act Procedural Reform Amendments of 1993," introduced by Reps. Tauzin (D-LA) and Fields (R-TX), and 23 other cosponsors. (No Senate companion has been introduced yet, although rumors of its pending arrival abound.) H.R. 1490 was crafted in concert with the members of the ESA Reform Coalition—the leading industry-backed ESA opposition group, made up of agriculture, oil, utility, and irrigation interests—and is being actively promoted by them. Although its sponsors have done their best to portray this bill as "moderate" and "balanced," and have even likened it to the Studds-Dingell-Saxton bill, H.R. 1490 would cripple virtually every major provision of the ESA. Some of its more egregious highlights include measures to:

- require the Interior Secretary to approve "Cooperative Management Agreements" with any non-federal person who owns or controls an area affected by a listed species, after which normal operation of the ESA—including the authority to list additional species, designate critical habitat, or enforce the ESA's normal protections—would be suspended in that area;
- authorize the issuance of general permits, exempting entire categories of activities and entire regions from the ESA (similar to the general permitting allowed under Section 404 of the Clean Water Act which has led to the relentless destruction of our Nation's wetlands);
- eliminate habitat protection by (1) removing special protection for designated critical habitat by federal agencies, and (2) requiring a showing of actual injury to or death of an individual of a listed species to prove an illegal "taking" under the ESA, thereby allowing widespread destruction of habitat, particularly breeding or migratory habitat where the species is not always present;
- eliminate the ability of citizens to bring suit to enforce the ESA against anyone other than the federal government, while on the other hand allowing for more litigation under the ESA by anyone claiming an "actual or imminent" economic injury due to the ESA; and
- unconstitutionally override the courts by legislatively deciding that any "substantial" deprivation of "economically viable use" of private property is a "taking" of private property which requires financial compensation by the federal government under the Fifth Amendment to the Constitution.

In addition, H.R. 1490 would impose numerous bureaucratic roadblocks to species conservation efforts. For example, although H.R. 1490's proponents maintain that they favor keeping economics out of the listing process, this bill would require that, during critical habitat designation (which is required by law to take place at the time of listing), the economic impacts of a species' critical habitat designation and listing decision must be reviewed by the Bureau of Labor Statistics. H.R. 1490 also provides for peer review of listing decisions, but provides it upon demand without requiring any show of need for such a review, thus opening the door for hundreds of unnecessary, time-consuming, and expensive reviews. Additionally, under the guise of increasing public participation, H.R. 1490 would require potentially hundreds of public hearings for each species' draft and final recovery plan. This would quickly overwhelm the FWS's limited resources and personnel, thus bringing the recovery process to a standstill.

Needless to say, the environmental community strongly opposes H.R. 1490 and similar attempts by big business interests to dismantle the ESA. Unfortunately, opponents of the Act are getting a lot of mileage out of mischaracterizing the content and ramifications of H.R. 1490—purporting to support the cause of endangered species protection while simultaneously proposing to eviscerate the Act. Consequently, the number of cosponsors of H.R. 1490 had increased to 65 at last count. However, an analysis of the League of Conservation Voter's (LCV) rating of the environmental performance of members who support H.R. 1490 reveals the true character of the bill: the average LCV rating (on a scale ranging from a low of 0 to a high of 100) for H.R. 1490 cosponsors is 10.7 (median = 6), compared to 79.0 and 78.6 (median = 81 and 83) for cosponsors of H.R. 2043 and S. 921, respectively. [These figures do not include newly-elected members, who have no LCV rating.] This discrepancy between rhetoric and reality clearly indicates that the key to our success in the current race to line up cosponsors for these competing bills lies in revealing the true intent and consequence of H.R. 1490, as well as the disingenuousness of its proponents. We do have our work cut out for us: at present we enjoy only a small lead in this race, with 81 cosponsors for H.R. 2043 and 15 cosponsors for S. 921 (with no ESA-weakening bill introduced yet in the Senate).

Legislative Timing

For the time being, the House is taking the lead on this issue. Thus far this year, the House Merchant Marine & Fisheries Committee and its Environment & Natural Resources Subcommittee have held several ESA hearings: a general biodiversity hearing in April, an "ESA 101" introductory hearing in May, a June hearing on Habitat Conservation Planning, and two field hearings on local species issues in Sacramento and San Antonio/San Marcos in July. More hearings are tentatively slated for the fall. The Senate has not held any ESA hearings as of yet, and none are currently planned. Given the complexity and controversial nature of this issue though, we can expect several more congressional hearings during this year in both the House and Senate before any committees vote on ESA legislation. Because authorized ESA funding will expire again in September with the end of the fiscal year (before the

reauthorization process is complete), Congress will have to pass another year-long extension of appropriations to implement the ESA as part of the annual Department of Interior appropriations bill.

Fortunately, however, because each congress lasts for two years, we will not have to start the legislative process to reauthorize the ESA all over again come January. Instead, the bills that have been introduced, the hearings being held, and the possible committee votes that we may see this year are all necessary steps leading up to a grand finale on the House and Senate floor (likely to occur next summer or early fall). If this legislative process seems particularly lengthy and arduous, it is. However, the process was established for the purpose of ensuring the full airing and thorough consideration of an issue, and it is important that ESA supporters become active and continue to participate in the process until it is completed. While ESA resolution may seem deceptively far away, the better we lay our groundwork now—through proper framing of the issues, education of Congress and the public, and activism on the part of concerned citizens—the stronger an ESA we will see when all the dust has settled.

Outlook

The results of last November's election significantly improve the outlook for reauthorizing a strengthened ESA. Interior Secretary Babbitt has stated his commitment to aggressively implement the ESA as it was meant to be. This should go a long way in illustrating to Congress and the public that a healthy environment and economy go hand-in-hand, and that any perceived shortcomings of the ESA are due largely to inadequate funding, poor implementation, and failed Administration leadership rather than to the Act itself. As the Secretary stated in a recent press release, "... the Endangered Species Act is a fundamentally sound approach: it is neither broken, nor in need of fixing. The problem with the Endangered Species Act is that it has not yet been implemented in a constructive or positive way." Secretary Babbitt has seized upon a handful of the more visible species conflicts around the country to demonstrate that existing flexibilities within the Act allow for creative and win-win solutions to reconcile endangered species recovery and economic development. His success in addressing these specific cases, as well as the success and timing of the pending resolution to the Pacific Northwest ancient forest controversy (which, unfortunately, the public and Congress continue to see as an endangered species rather than a forest management problem), will significantly affect the pace and tone of the ESA reauthorization process.

We must not let industry rhetoric, which insists on the false choice between species protection and a rigorous economy, go unchallenged

Despite this important change in political climate, industry interest groups and the misnamed "wise-use" movement continue to be a force that must not be underestimated; these groups are more vocal, more organized and sophisticated, and better financed than ever before. They are intent on using misinformation about the ESA's impacts on jobs and private property rights to sour the public's continuing strong support for endangered species conservation. [Many of the untruths being disseminated regarding the performance and impacts of the ESA were eloquently discussed by Michael Bean in the November/December 1991 *Endangered Species UPDATE* (Volume 9, Nos. 1 & 2).]

Of all the myths surrounding the ESA, one of the most contentious and least understood is the Act's impact on private property. Although the protections of the ESA apply to both federal and private lands, no federal court has ever found there to be a taking of private property under the ESA. Nonetheless, groups such as the ESA Reform Coalition are successfully whipping certain segments of the public into a frenzy of fear that the federal government is intent on taking away their property rights through the ESA and other environmental statutes. These groups also are insisting that the government compensate landowners whenever economic use of property is restricted. Although this "takings" dispute cuts across a broad array of issues—including environmental, worker safety, and health regulations—the outcome is especially relevant to the ESA given that two-thirds of all endangered species are found on private lands. It is therefore essential to the ESA reauthorization debate that we reclaim and properly frame this issue, not as a species protection vs. private landowner issue as ESA opponents would have us believe, but in the larger context of property rights and responsibilities, and individual privileges vs. public good.

Conclusion

Twenty years ago a commitment was made to pass on to future generations a world as rich in plants and animals as the one we now enjoy. As we stand on the threshold of the 21st century we must not back away from that stance. Our quality of life and the long-term vigor of our economy are irrevocably tied to the health of the environment, including the conservation of our planet's rich diversity of species and ecosystems. We must not let industry rhetoric, which insists on the false choice between species protection and a rigorous economy, go unchallenged. Our ability to maintain and enhance the Endangered Species Act on its 20th anniversary will hinge on the success of our efforts to demonstrate to Congress and the public the essential value of species, and the effectiveness of the ESA to adequately conserve them.

Suzanne R. Jones is the Legislative Representative for reauthorization of the ESA for the National Wildlife Federation, 1400 16th St., Washington, DC 20036-2266. For more information on ESA reauthorization, please feel free to contact the author.

Conservation of Endangered Wildlife and Wildlife Diversity in Ohio

by

David F. Ross

Background

The settlement of Ohio country by people of European descent began in earnest during the late eighteenth century. Settlers introduced European values and technology to an area little affected by the Native Americans whom they displaced. Forests, which once occupied 95 percent of Ohio, were cut to make space for homesteads. Villages and towns soon followed. Streams, dammed to operate mills, also proved to be a convenient and inexpensive means to move domestic and industrial wastes away from their sources. With much difficulty, wetlands were drained for agriculture.

Government formed and laws were enacted to meet the needs of settlement. Wildlife was the subject of several early pieces of legislation. A 1799 law encouraged the killing of wolves to promote the raising of sheep. Apparently, that was not sufficient, for the following year a bounty was placed on both wolves and panthers. Gray squirrels became a major nuisance to Ohio's struggling farmers, and from 1807 to 1809 Ohio taxpayers were required to submit squirrel scalps with their township taxes or be fined.

The changes accompanying settlement, then, had many adverse affects, both direct and indirect, on the native wildlife. Elk and bison were extirpated around 1800, and wolves, panthers, martens, beavers, and other species followed. However, as settlement continued to change the landscape, attitudes about wildlife also began to change. Perhaps this was because Ohioans were seeing familiar species becoming less abundant, and were feeling their personal or economic interests being threatened. The first Ohio law to protect wildlife was enacted in 1824. It established a closed season on muskrats for the stated purpose of protecting the fur trade. Other laws followed, including in 1857 the first to protect commercially valuable fishes.

These early laws reflect the fact that for early nineteenth century Ohioans, wildlife held subsistence, commercial, and recreational value (the latter being primarily hunting and fishing). Later, other values emerged.

The first law to embody these nontraditional values was passed in 1857. It made unlawful—on public lands or the lands of another person—killing or injuring any sparrow, robin, bluebird, martin, thrush, mockingbird, swallow, cardinal, or catbird. An 1876 law which prohibited the taking of nesting or roosting passenger pigeons was the first to protect a species threatened with extinction. These laws in a sense laid the groundwork for the state to broaden its protections and even initiate management of wildlife species that to that time generally had been ignored. However, this did not happen—not for one hundred years.

Endangered Species Law

In 1973, the Ohio General Assembly passed Senate Bill 35, commonly known as Ohio's Endangered Species Act. Impetus for the legislation came not only from within Ohio, but also from the attention environmental and endangered species legislation had been receiving at the national level for the previous six years. Ohio's law, which has been amended twice, presently:

- restricts possession of "native wildlife...threatened with statewide extinction";
- provides for a listing of endangered species, including federally listed species native to the state;
- allows the issuance of permits to take species for "zoological, education, and scientific purposes, and for propagation in captivity"; and
- establishes penalties for illegally taking endangered species. These penalties include a $1000 fine, up to 6 months imprisonment, and restitution of $750 for each individual taken.

Conspicuously absent from the Ohio Endangered Species Act is any measure to protect endangered species habitat.

Organization

In 1974, following passage of the state endangered species law, the Division of Wildlife initiated programs for endangered wildlife and the many other species of wildlife collectively known as *nongame*. The first list of endangered animals was adopted, and soon after a biologist was hired to develop and ultimately coordinate the Division's endangered species/nongame wildlife initiatives. No new monies were made available to the Division to carry out its new responsibilities, and as a consequence, the endangered species/nongame wildlife effort evolved slowly.

The Division recognized early on that there was little fundamental difference between project planning, research, and management for endangered species/nongame wildlife and for species with which the agency had traditionally dealt. As a result, the Division decided to integrate endangered species/nongame wildlife conservation into its existing structure rather than create a distinct unit for that purpose.

Integration has proven to be very efficient both in terms of dollars and staff. There have been other important, though less tangible, benefits as well. Many biologists and field staff members have expressed great satisfaction with working on endangered species/nongame wildlife projects. Integration also allows the Division to project a

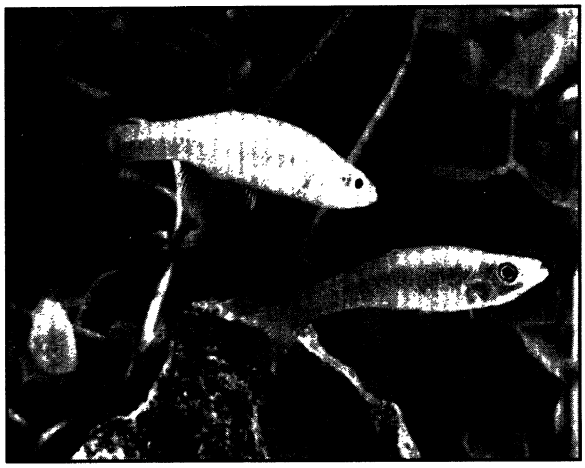
single image to the public as conservator of all wildlife, as opposed to multiple images often construed to represent contradictory values (e.g. managing game species versus protecting endangered species).

Today, endangered species/wildlife diversity (formerly nongame) management is fully integrated with other wildlife programs. There is no endangered species/wildlife diversity unit, and there continues to be one endangered species/wildlife diversity coordinator. Any of the Division's professional staff might be involved at one time or another in projects involving endangered species or wildlife diversity.

Decision-making about endangered species/wildlife diversity is guided by the Division's strategic plan, *Ohio Fish and Wildlife Plan, 1990-1995*. This plan, adopted in 1989, is organized into species and species-group programs. Twelve of the thirty-seven programs are for endangered species and wildlife diversity. Projects dealing with management, public awareness, enforcement, and others are planned annually under the guidance of the strategic plan.

Funding

For ten years following 1974, the Division of Wildlife's endangered species/wildlife diversity efforts were supported with revenues from the sale of various licenses and permits. Neither state general revenue (income tax) funds, nor funds dedicated to endangered species/wildlife diversity were available. In 1983, the Ohio General Assembly followed the example of other states by enacting a law creating an income tax checkoff. In fact, the law created two income tax checkoffs: one providing for tax checkoff donations to be made to the Division of Wildlife for nongame and endangered species, and the other for donations to the Division of Natural Areas and Preserves for scenic rivers, natural areas, and endangered species. Both Divisions are agencies within the Ohio Department of Natural Resources.



The Western banded killifish (*Fundulus diaphanus menona*) is the focus of one of the Ohio Division of Wildlife's many endangered species/wildlife diversity projects. Photo by the Ohio Division of Wildlife.

During the 1992 fiscal year, the Division received $5,040,000 in donations via the tax checkoff. In Ohio, only tax payers who are due a refund are eligible to contribute to either tax checkoff. Approximately 3-4 percent of those eligible contribute to the nongame and endangered species checkoff. All donations are deposited into an account dedicated to nongame and endangered species. Other income to the account is small in comparison to checkoff donations. Table 1 summarizes income data for the last five years of record.

Total dollars contributed each year, as well as number of contributors, has varied. This is due primarily to the position of the Division's checkoff box on the Ohio tax form. With few exceptions, significantly more money is received by the Division when it appears first on the tax form's list of donation checkoffs than when it appears second. For example, 33 percent more money was received in 1989 when the Division appeared first, than in 1990 when it appeared second.

The checkoff has been promoted in each of the ten years of its existence, but promotion has been cost limited. Because of this, the electronic media have never been an integral part of the promotion, due to expense. Most recently, promotion has focused on tax preparers, as approximately half of all state tax returns in Ohio are prepared professionally. This promotion has been done jointly with the Division of Natural Areas and Preserves. Analysis of tax checkoff statistics reveals no effects of promotion on number of contributors or average contribution. If there have been effects, they have been masked by other variation.

Programs

Ohio's native fauna was a rich one. However, the changes brought about by industrial and agricultural development and the need for living space by the

Table 1. Income to Division of Wildlife for endangered species and wildlife diversity for fiscal years 1988-1992.

	Fiscal Year					
	1988	1989	1990	1991	1992	TOTAL
Tax Checkoff Contributions	$655,508	$661,835	$497,737	$609,253	$518,188	$2,942,521
Other Income	—	69,479	12,196	56,364	12,940	150,979
Interest	99,848	134,698	159,605	126,678	74,678	595,507
TOTAL	$755,356	$866,012	$669,538	$792,295	$605,806	$3,689,007

state's citizens (presently approximately 10.4 million), have greatly affected wildlife. Thirty-eight species have disappeared from Ohio, and 139 are endangered or threatened (see Table 2). Most of the problems experienced by these species are the result of habitat degradation and destruction. Tackling these problems, then, requires strategies for creating, improving, or protecting habitat. This is an immense task considering that only 5 percent of Ohio's land is publicly owned. Land values are also very high, making habitat expensive to acquire. Because of this, approaches have been sought that rely on means other than land acquisition to benefit Ohio's troubled wildlife.

The following paragraphs describe eight projects undertaken by the Division of Wildlife that illustrate its involvement in endangered species and wildlife diversity conservation. Table 3 (see *UPDATE* page 8) lists expenditures for certain programs and groups of projects for fiscal years 1988-1992.

White Catspaw Pearly Mussel

The white catspaw pearly mussel (*Epioblasma obliquata perobliqua*) was listed as an endangered species in Ohio in 1974, and as a federally endangered species in 1979. This species is native to the Wabash River drainage in Indiana, and the Maumee River drainage in Indiana and Ohio.

Since 1970, living specimens of the white catspaw have been found only in Fish Creek, a tributary of the St. Joseph River in northwest Ohio. It is not known whether this species still survives in other locations. Decline of the white catspaw throughout much of its range is attributed to habitat destruction and agricultural pollution. In 1990, a cooperative recovery effort was established involving the wildlife agencies of Ohio and Indiana, the U.S. Fish and Wildlife Service, the Soil Conservation Service, and state and county soil and water conservation agencies from Ohio and Indiana. The goals of this undertaking are (1) to improve and sustain good water quality in Fish Creek through improving land use practices, especially agricultural, throughout the watershed, and (2) to inform and educate the public about the special character of Fish Creek.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was listed as an endangered species in Ohio in 1974. The first long-term observations of bald eagle nesting in Ohio began in 1959. They were conducted by the Ottawa County Game Protector, Mr. Laurel VanCamp. VanCamp was one of the first in the country to notice and document a serious decline in the bird's nesting success. At that time, there were 15 nesting pairs scattered throughout Erie, Lucas, Ottawa, and Sandusky counties. That number declined steadily over a 20-year period until only 4 pairs could be documented in 1975, and again in 1979. Habitat destruction and contamination of its food by pesticides were responsible for the bald eagle's decline.

Significant improvements have been made since then, however, due to stronger environmental protection laws and an intensive management program by the Division that involved fostering captive-bred young in the nests of wild, breeding pairs. The Division's goal when bald eagle management began 15 years ago was to have at least 20 breeding pairs of eaglets established in the state by the year 2000. This year (1993) was a record-tying year for bald eagle reproduction, with 31 eaglets fledging from 18 nests.

Western Banded Killifish

Milton Trautman, a noted Ohio biologist, spent his life in the field observing the state's fish and bird populations. Between 1920 and 1980 he noted a significant decline of the Western banded killifish (*Fundulus diaphanus menona*), and today only one healthy population is known to exist in Ohio. Habitat destruction, likely the result of agricultural practices in northwest Ohio, is undoubtedly the principal cause of this species' decline. Increased siltation has done much to destroy stream habitat. The enrichment of Lake Erie by agricultural fertilizers and the resulting proliferation of phytoplankton and green algae, have contributed to a great reduction of rooted aquatic vegetation in bays where the killifish was abundant during the first half of this century.

This small fish has been the focus of a joint recovery effort between the Division of Wildlife and the Columbus Zoo. To date, the fish has been successfully spawned in captivity, producing enough offspring to justify two experimental transplantations into the wild. The Division's goal is to establish three self-sustaining populations in the wild by the

Table 2. Number of species in major taxa designated as endangered, threatened, special interest, extirpated, or extinct in Ohio as of December, 1992.

Taxon	Endangered	Threatened	Special Interest	Extirpated	Extinct
Mammals	4	0	7	10	0
Birds	25	1	18	5	2
Reptiles	3	2	8	0	0
Amphibians	5	0	2	0	0
Fishes	25	8	13	5	2
Crayfishes	0	1	2	0	0
Isopods	0	0	2	0	0
Butterflies	7	1	3	2	0
Moths	14	4	23	0	0
Beetles	3	0	6	0	0
Mollusks	30	6	6	6	6
Total	116	23	90	28	10

year 2000.

Critical Habitat Protection

Wetlands are unique habitats that are necessary for the survival of a number of species. These include the King rail (*Rallus elegans*), American bittern (*Botarus lentiginosus*), and copperbelly water snake (*Nerodia erythrogaster neglecta*), all listed as endangered in Ohio. It is estimated that 90 percent of the wetlands that existed in Ohio at the time of European settlement have been destroyed though agricultural, residential, and industrial development. In response to this loss of habitat, the Division broadened its wetland protection program five years ago by initiating a program of wetland acquisition using tax checkoff revenues. To date, $910,431 have been spent to acquire 919 acres at five sites.

Law Enforcement

Law enforcement is important for the protection of endangered wildlife as well as sport fish and game. The most significant enforcement action undertaken by the Division involving endangered species occurred late in 1991.

On October 1, four residents of Tennessee were arrested by Ohio wildlife officers near the quiet Muskingum River town of Beverly, about 25 miles upstream of Marietta. In their possession were 4,529 living mussels that included 29 individuals of three endangered species. These poachers violated a number of wildlife regulations including the taking of endangered species. The four were found guilty in court, and were fined and sentenced to 25 days in jail.

Wildlife Surveys

Surveys conducted by wildlife biologists can reveal whether or not species are in decline and should be designated as *endangered* or otherwise given special attention. In the past few years, the Division has conducted or contracted for surveys of the American burying beetle (*Nicrophorus americanus*), hellbender (*Cryptobranchus alleganiensis*), timber rattlesnake (*Crotalus horridus*), butterflies and moths, dragon and damsel-flies, stream fishes, freshwater bivalve mollusks, and many others. Recently the Division supported research for and publication of *Salamanders of Ohio*, *The Butterflies and Skippers of Ohio*, and *The Owlet Moths of Ohio*.

Table 3. Total expenditures by the Division of Wildlife on selected programs for fiscal years 1988-1992.

Program	Expenditures
Bald Eagle	$ 117,789
Barn Owl	184,520
Birds, General	185,078
Bluebirds	99,867
Endangered Fishes	7,683
Endangered Mollusks	40,749
Moths & Butterflies	92,053
Reptiles	38,455
River Otter	67,108
Aquatic Wildlife Diversity	238,498
Terrestrial Wildlife Diversity	91,445
Wildlife Diversity General	1,176,079

Wildlife Diversity Grants

Each year, $40,000 to $50,000 in grants are awarded to groups, individuals, and organizations to fund projects dealing with some aspect of wildlife diversity, endangered wildlife, or wildlife recreation. Most involve management, research, education, or surveys, but projects are not limited to these activities in order to be considered for funding.

Grants are awarded on a competitive basis, with applications evaluated using criteria provided to the applicant along with other application materials. Individual awards are for amounts up to a maximum of $5,000. One hundred thirty-six projects have been funded since the program began in 1984.

Wildlife Viewing

Wildlife-related recreation is becoming more and more important to Americans. From the standpoint of the Division of Wildlife, participation of Ohioans in activities such as wildlife viewing, photography, and art is as important as the more traditional hunting and fishing. Through recreation of either kind, Ohioans learn more about wildlife and its needs, and soon develop an understanding of the significance of pollution, wetland draining, land clearing, dam building, stream channelization, and other abuses of the landscape. To encourage this broader appreciation of wildlife, the Division began constructing wildlife viewing facilities on its wildlife areas in 1989. At present, three facilities have been constructed, and two others are planned.

Conclusion

The future of endangered species/wildlife diversity conservation in Ohio, as elsewhere, is uncertain. Ohio's tax checkoff revenues, among the highest of all states with similar programs, are not sufficient to protect or recover species and habitats requiring attention. Furthermore, much of the mindset brought to the Ohio country by early settlers is evidenced today, as habitat is destroyed, and resource conservation often becomes the victim of resource exploitation.

However, the public might now be more supportive of wildlife conservation, especially endangered species protection, than ever before. If this is so, the challenge to wildlife conservationists will be to translate that interest into political and financial support.

David F. Ross is the Endangered Species and Wildlife Diversity Coordinator for the Division of Wildlife, Ohio Department of Natural Resources. He can be contacted at 1840 Belcher Drive, Columbus, OH 43224.

Report From the Field

Reintroducing Black-Footed Ferrets to Arizona

by David Belitsky

Introduction

Arizona is one of the most diverse states in the country in terms of wildlife habitat types and number of species. In habitats ranging from desert at less than 1,000 feet above sea level to montane at 10,000 feet, one can find over 500 bird and 136 mammal species. However, several species are conspicuously absent and are therefore a priority concern of the Arizona Game and Fish Department's Nongame and Endangered Wildlife Program (NGEWP). The black-footed ferret (*Mustela nigripes*) is one of these priority species.

Historical Occurrence

Museum specimens of black-footed ferrets collected between 1917 and 1931 in northern Arizona confirm that ferrets once lived in the state. Factors contributing to their extirpation include widespread eradication efforts directed at prairie dogs in the name of range improvement. In southeastern Arizona, the black-tailed prairie dog (*Cynomys ludovicianus*) was completely eliminated by this control effort. A habitat evaluation for potential reintroduction of this species is also underway.

Habitat Surveys

The NGEWP has been surveying potential black-footed ferret habitat since 1985. These surveys have resulted in identification of a particularly exceptional complex of Gunnison's prairie dog (*C. gunnisoni*) towns in northwestern Arizona covering nearly 7,000 hectares. The complex is located in Aubrey Valley, and for the past three years has been the subject of intensive sampling. Standardized methods for mapping and estimating occupancy rates of prairie dog towns have been applied, and the data collected has resulted in an estimate of Aubrey Valley's carrying capacity at 35 black-footed ferret families.

While engaged in these surveys, the NGEWP has also been participating in the U.S. Fish and Wildlife Service Black-Footed Ferret Interstate Coordinating Committee. The committee meets annually to review the status of potential habitat in the 11 western states within the ferret's historical range and to evaluate reintroduction proposals. The committee has recommended the Aubrey Valley site for black-footed ferret reintroduction.

Unique Features of the Aubrey Valley Site

When compared to other potential black-footed ferret reintroduction sites, Aubrey Valley includes several unique features. It is the only proposed site involving the Gunnison's prairie dog, which is morphologically and behaviorally similar to the white-tailed prairie dog (*C. leucurus*) of Wyoming's reintroduction sites. Burrow counts conducted in Aubrey Valley indicate that the number of prairie dogs per hectare range from 6.42 to 14.26. Activity levels, which also index prairie dog numbers, average 24 burrows per hectare. These figures compare favorably to those reported from Wyoming's Shirley Basin site.

Aubrey Valley has a significant history in disease monitoring, a concern when evaluating black-footed ferret habitat. Arizona's Department of Health Services selected this complex of prairie dog towns as a sample site for a statewide plague monitoring program in 1978. Long before the potential of a black-footed ferret reintroduction was even recognized for any site, epidemiologists were annually collecting fleas from prairie dog burrows in Aubrey Valley and testing them for sylvatic plague. Sylvatic plague is a severe infectious disease caused by the bacterium *Yersinia pestia*, which may cause a rapid decline and even disappearance of entire prairie dog colonies. None of the samples have tested positive. This 15 year monitoring effort is the longest stretch of plague monitoring data for any black-footed ferret reintroduction site!

Land ownership of the Aubrey Valley is also unique. Sites in other states involve substantial federal tracts, but Aubrey Valley is comprised solely of state trust and private land. The private land owner, The Navajo Nation, and the Arizona State Land Department are working with the Arizona Game and Fish Department, the U.S. Fish and Wildlife Service, and the Phoenix Zoo to further the black-footed ferret reintroduction proposal.

Aubrey Valley is similar to other black-footed ferret reintroduction sites in that the reintroduced animals will be designated an "experimental nonessential" population under Section 10(j) of the Endangered Species Act. The U.S. Fish and Wildlife Service's Region 2 Office began this "request for ruling" process in January of this year.

The effort to establish a reintroduced population of black-footed ferrets in Arizona has nearly completed the Game and Fish Department's twelve-step procedure for endangered wildlife reintroduction. A draft reintroduction plan authored jointly by the Department, the Navajo Nation, the Phoenix Zoo, and the U.S. Fish and Wildlife Service is currently being finalized. Pending the final ruling concerning the non-essential experimental designation, implementation is planned for 1994.

David Belitsky is the Nongame Mammals Program Manager with the Arizona Game and Fish Department, 2221 West Greenway Rd., Phoenix, AZ 85023-4312.

Book Review

Biology, Status, and Management of the Timber Rattlesnake (*Crotalus horridus*): A Guide for Conservation

By William S. Brown. 1993. Society for the Study of Amphibians and Reptiles. Herpetological Circular No. 22. $5. vi+78 pp.

Reviewed by Joel T. Heinen

The timber rattlesnake, whose scientific name conjures visions of fear and loathing (horrible rattlesnake), is the only primarily forest-dwelling species in the genus *Crotalus*. This snake historically had a wide geographic range covering all or part of 32 states (over one-third of the continental United States) and part of one Canadian province, making it an important and comparatively well-known species. Now, however, there is much evidence that timber rattlesnake numbers are declining over broad regions.

Brown begins this monograph with general descriptions of the species, its distribution, and its geographic variations in color. Fifteen color plates of specimens from different locales are included at the end of the work. These plates highlight the variability of coloration and pattern of this beautiful pit viper. Brown also mentions that the type of habitat in which the species is found varies geographically as well. Based on descriptions in other accounts, the snake's habitat ranges from mountainous terrain with steep ledges and rocky outcrops in the northeast, to hardwood river bottom forests in the south. The author cautions, however, that habitat comparisons are difficult to interpret, as many descriptions do not differentiate between winter denning sites and summer ranges.

Brown then proceeds to discuss the ecology of the timber rattlesnake. While this section is quite interesting, it raises perhaps more questions than can be answered at this time, due to our ignorance of the species' biology. A description of the snake's migratory behavior is undertaken, but this is based in part on older studies, of which only two involved radio-tracked individuals. There are also a great many unknowns with respect to the timber rattlesnake's reproductive biology and demography, though some generalities can be made. Brown describes the species as having: a long (25 year) life span, low reproductive rate, stochastic reproductive events, high juvenile mortality, and low adult mortality. With respect to population biology, there have been no long-term mark/recapture studies to date to assess trends with any accuracy, though one is underway by the author in New York.

The rest of the monograph is devoted to aspects of conservation, and it is a fascinating account both in terms of what is known as well as what is unknown. Of the estimated 144 species of pit vipers world-wide, over half are considered threatened in some way (although there is disagreement about the status of some species). The reasons range from widespread and local habitat destruction (the result of such practices as blasting and filling-in den sites, mining, logging, and gas well drilling), to commercial exploitation, to deliberate killing of individuals of this much maligned taxon.

The major threats to this species in the United States include real estate development, and bounty and commercial hunting. The descriptions of bounty hunters in various states are particularly telling. Brown gives several examples of single individuals who decimated populations over broad regions. Fortunately these practices have been stopped in most states, but there is now a growing market for snakes for the live pet trade. Brown also describes cases of organized "sport" hunting (roundups) of this species in Pennsylvania. While these hunts are not very large in scale (as opposed to those organized in the southwest for other rattlesnake species), they are equally questionable from an ethical and educational standpoint. Particularly disturbing is the fact that gravid females are the most susceptible; thus, these hunts selectively remove from a population the most important individuals from a reproductive standpoint.

Despite these acute and chronic threats, Brown suggests the species has good recovery potential, and he makes many workable suggestions to help bring this about. He describes and/or lists monitoring procedures and programs, research programs, and research needs. He then describes in some detail management procedures to help conserve the species including: legal protection measures, maintenance of security about den sites, patrolling, disturbance reduction, translocation potential, logging restrictions, and, perhaps most important, education programs.

Much of the work written thus far on conservation of reptiles in general has been focused on the commercially important species of sea turtles and crocodilians. Brown's monograph is among a small but growing body of literature devoted to the conservation of snakes, and as such it represents an important contribution to the field. However, though his ideas are good, there is little thought given to translating them into active conservation programs through public policy channels. Perhaps this is the next major issue to address for species with bad public images, such as rattlesnakes.

My conclusion from reading this excellent monograph is that our horrible rattler should be listed as a candidate species for federal protection, allowing the full force of the Endangered Species Act or its next incarnation to provide blanket protection. Given that Brown discusses the patchwork of state laws that grant complete, some, or no protection to the timber rattlesnake, I am surprised that he failed to mention this option.

Joel T. Heinen, PhD, is a lecturer at the University of Michigan in Ann Arbor, a research associate with the Foundation for Research in Economics and the Environment in Seattle, and an assistant professor in environmental studies at Florida International University in Miami.

Bulletin Board

Notes from the Editor

USFWS Endangered Species Technical Bulletin

The Endangered Species UPDATE is thinner than usual this month because it does not contain the USFWS Endangered Species Technical Bulletin. As always, the UPDATE includes the latest Technical Bulletin as soon as it is produced and forwarded to us. Please be assured that we will include the Technical Bulletin with the UPDATE as soon as it becomes available. Thank you for your patience.

About the Cover

The cover of the Endangered Species UPDATE this month features a piece of art entitled "Eco Collision" by Shawn Streeter, an 18 year old student from Wyoming. Ms. Streeter was one of a number of students grades 5 through 12 who submitted their artwork to the annual iMAGiNE**YELLOWSTONE** Art Exhibit, an education outreach program sponsored by the National Park Service, the Greater Yellowstone Coalition, and other organizations nationwide. For more information, please write iMAGiNE**YELLOWSTONE**, P.O. Box 168, Yellowstone National Park, Wyoming 82190.

ESU Wants Your Opinion

Within the coming months you will begin to see Opinion articles cropping up where the Report From the Field/ Technical Notes column has been. The Opinion column is being resurrected (it was last featured in the March/April 1992 issue of the UPDATE) to be published on a rotating basis with the Reports/Notes. Articles published in the Opinion column are to be well constructed arguments dealing with endangered species conservation and/or management issues. Opinion articles also can be written in response to previously published UPDATE articles. If you are interested in writing for the Opinion column, please contact me at (313) 763-3243, or at the address below.

Changing of the Editors

After a year of hard work and dedication, Judy Tasse and Otto Gonzalez are leaving the Endangered Species UPDATE. As editor and associate editor respectively, they have made many important contributions to the UPDATE, including Judy's especially timely Special Issue entitled "Exploring an Ecosystem Approach to Endangered Species Conservation." Their high standards of excellence resulted in the publication of articles month after month on some of the most current and important topics in endangered species conservation. I wish to thank them both for their guidance in preparing me for the position as new editor of the UPDATE. Judy and Otto, you are a hard act to follow, and you will be sorely missed.

My name is Lynn Gooch, and I am a master's student in the Resource Ecology and Management Program at the University of Michigan School of Natural Resources and Environment. As new editor of the UPDATE, I plan to continue providing the public with up to date information on endangered species science, management, and policy issues. Please let me know if you have any suggestions or comments. I look forward to serving you as new editor!

Announcements for the Bulletin Board are welcomed.

Endangered Species UPDATE

School of Natural Resources and Environment
The University of Michigan
Ann Arbor, MI 48109-1115

Non-Profit
Organization
U.S. POSTAGE
PAID
Ann Arbor, MI
Permit No. 144