Endangered Species Act in Jeopardy

Industries are thronging to Congress to gut the law, but scientists are getting more active in its defense

The United States is in a far better position than most of the world to protect the diversity of life within its borders. But the most important symbol of that protection, the Endangered Species Act of 1973, is now under attack from many sides as Congress gears up to consider reauthorization of the legislation, which is due to expire at the end of September. The budget for enforcing the act has also been targeted for dramatic shrinkage by the Reagan Administration.

In the past, the act has garnered more notoriety than it probably deserves, mainly thanks to the Tellico dam controversy in Tennessee which made the snail darter the most famous obscure fish in the land. Now, although there have been no more conflicts of that scale, utility, mining, and other interests have submitted proposals that would seriously weaken the act. Basically, they want to compel the government to give much more weight to the anticipated economic values of a new project as opposed to the potential and thus essentially indefinable values of the plant or animal being threatened.

The Endangered Species Act outlines procedures for listing species as endangered or threatened, for forging cooperative agreements with state conservation agencies, and for designing recovery plans for endangered species. But the heart of the act is Section 7, which states that any action that involves a federal agency must not "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species. . . ."

Amendments to the act passed in 1978 have added various procedural requirements that have slowed the listing process. They also stipulated a 2-year time limit for listing, which means that any species that has not reached the final stage within 2 years after it was first proposed has to be dropped from consideration and the process has to start all over again. The 1978 amendments also created an exemption process that was tailored specifically for the Tellico dam situation.*

For over 2 years, the listing process has been virtually frozen. The only new listings in 1981 (prepared under the last Administration) were of three plants and one genus (41 species) of Hawaiian tree snails. There were no new listings under the Reagan Administration until February when a shrimp whose habitat is within the National Zoo in Washington, D.C., was listed. When the 2-year time limit came into effect in 1979, the Office of Endangered Species (OES), the Interior Department agency that administers the act, had to withdraw about 1500 plants proposed for listing and start the review process all over again. Listings have been further slowed by the requirement that in most cases the critical habitat of a species must be described at the time of listing, and by executive orders from Carter and later from Reagan requiring economic analyses of the impacts of federal regulations.

The OES, already undermanned and underfunded, is now suffering further in the prodevelopment environment of the Interior Department. For fiscal 1982 the Administration reduced its budget from the 1981 figure of $25 million to $20 million, eliminating all the money for cooperative federal-state programs. The 1982 request calls for only $16.5 million, which would entail reduction of surveillance and enforcement.

Strong disagreement with Interior's attitude was reflected in a memorandum sent in December by OES chief John Spinks to his superiors in which he complained that the solicitor's office was arbitrarily rejecting analyses ("determinations of effect") that must accompany candidates for listing. Spinks suggested that the solicitor's actions "raise serious questions of legitimate policy decisions being precluded, circumvented, or subordinated by pseudo-legalistic ploys being used as excuses for delay."

Questioned by *Science*, Spinks put the best face on things. He acknowledged that activities did grind to a halt for a while, "but I think we're turning the corner now." He said the office still plans to list about 50 animal and plant species this fiscal year.

Spinks's apparent optimism notwithstanding, actions within the Interior Department do not portend much support for endangered species. Last summer, the assistant secretary for fish, wildlife and parks, G. Ray Arnett, notified the OES that priority attention for listing would no longer go to species in most immediate jeopardy. Rather, he stated the following order: mammals, birds, fishes, reptiles, amphibians, vascular plants, insects, mollusks, and other invertebrates. Since this reordering makes no sense scientifically, it can only be supposed that it was in response to the public's perceived preference for furry fluffy things.

Interior Secretary James Watt is not expected to leap to the defense of the act. In a letter to the chairmen of the House and Senate committees that oversee the act, he asserted that there was "universal agreement" that Section 7 needs changing, particularly with regard to "the need to streamline" the exemption process. He added that the "real payoff" in the act would be in recovery plans, an indication that, considering the state of the budget, work on new listings will get low priority. Watt refrained from further recommendations, and called for a 1-year reauthorization—an indication to environmentalists that he doesn't want to do anything politically unpopular until after the fall elections.

Luther C. Goldman/USFWS

Black-footed ferret

According to Michael Bean of the Environmental Defense Fund, the three main ways industry groups are attempting to alter the act are: weakening the provisions of Section 7, removing invertebrates from the act's protection, and injecting economic and other nonscien-

*This has been used in only two cases. In the Tellico case, the committee ruled that the dam should not be exempted from the act, so Congress went ahead and passed a law exempting it. The second case, the Grayrocks dam and reservoir on the Laramie River in Wyoming received an exemption in accord with a simultaneous court settlement requiring the establishment of a fund to support whooping crane habitat on the Platte River.

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tific considerations in decision-making at every level. Some groups, for example, want final decisions about federal actions under Section 7 to be left to the "action agency," and ultimately with Congress, thereby reducing the role of the OES. There is considerable pressure to compel narrower definitions of critical habitat and to strengthen the requirement that it be defined along with the listing of animal species. While this sounds sensible, the work involved in analyzing the habitat (including the economic effects of the designation) results, in practice, in major delays in listing.

Because few, if any, projects have been canceled because of the Endangered Species Act, critics are concentrating on the increased costs and delays occasioned by its requirements. Monsanto Corp., for example, in its submission to the Senate committee, complains that it sank $500,000 into studying the needs of the mud turtle that inhabits the Mississippi River near its plant in Muscatine, Iowa (designation of the turtle was withdrawn following a review of people selected by the National Academy of Sciences; Spinks however defends the listing). ASARCO, a mining company, says that it spent $85,000 protecting an alleged habitat of the grizzly bear in Montana's Cabinet Mountains, even though no grizzlies had been seen there for years. Union Camp Corp. protests that in order to spare the trees used by the red-cockaded woodpecker it is making sacrifices that amount to $3,826 per bird per year. Citing cases like Union Camp, the American Forest Products Association wants the law amended to permit government compensation to companies.

One proposal that is viewed as particularly threatening to the act comes from the American Mining Congress, which suggests that the act confine itself to protecting animals in the phylum Chordata (basically vertebrates), and higher plants—leaving out mosses, molds, algae, and the like. A forest ecologist at the Mining Congress explained that "there are greater opportunities for substitution at those (lower) levels" and that the loss of lower species here and there would have no significant ecological effect, assertions that most scientists would find ridiculous.

Despite these onslaughts, the act seems to have been working with few major conflicts. Spinks points out that in the past 3 years there have been almost 10,000 formal and informal consultations over possible conflicts between an endangered species and projects covered under Section 7. In only 154 of these have there been a "jeopardy finding" requiring the action agency to find an alternative that will be less hazardous to the species in question. In virtually all of these cases, acceptable alternatives have been found. One well-publicized example was an interstate highway where a planned interchange was canceled because it interfered with the Mississippi sandhill crane. Another was the Grayrocks project where a fund was established for the whoopers' habitat.

Luther C. Goldman/U.S. Fish and Wildlife Service

Whooping cranes

At Aransas National Wildlife Refuge in Texas.

According to Patrick Parenteau of the National Wildlife Federation, there are only two significant cases now under litigation that involve the Endangered Species Act. One is over plans by the Riverside Irrigation District in Colorado to dam a tributary of the South Platte River, which supplies water critical to the whooping crane habitat in Nebraska. The other case is over plans by the Pittston Co. to build an oil refinery in Eastport, Maine, on the Bay of Fundy near bald eagle nesting grounds. Another conflict, not yet in court, is over the Tennessee Valley Authority's plans for the Columbia Dam on the Duck River, home of endangered mussels.

Recognizing that aesthetic arguments for species preservation do not carry much weight in the face of economic pressures, scientists are beginning to put much more emphasis on the practical benefits of species preservation. At hearings on 10 December before the environment subcommittee of the Senate Committee on Environment and Public Works, Cornell biologist Thomas Eisner noted that "restriction of diversity means restriction of the chemical treasure of nature," a treasure that so far has only been minimally explored. Alkaloids, for example, he said, have a wide range of uses, including anticancer activity, but only 2 percent of flowering plants have been tested for the presence of the compounds. Eisner related that only in the past few years his research group has isolated useful substances from invertebrate organisms including potential heart drugs from fireflies, a cockroach repellent from a millipede, and shark repellents from a marine mollusk. Eisner added that the new technology of gene transfer gives even added reasons for species protection. The loss of a species, he said, would "not simply mean the loss of one volume from the library of nature, but the loss of a loose-leaf book whose individual pages, were the species to survive, would remain available in perpetuity for selective transfer to other species."

Peter H. Raven, director of the Missouri Botanical Garden, related that the evening primrose, one variety of which is protected by the Endangered Species Act, has been found to contain gamma-linolenic acid, which may have a role in controlling heart disease and arthritis.

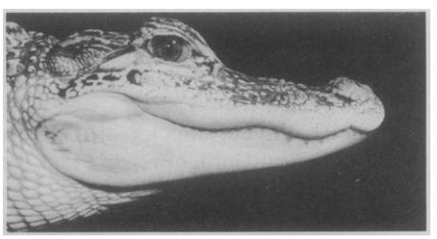
Scientists seem to be having a hard time trying to communicate to policymakers that time is of the essence—more so than in many other areas of research because the subjects of their investigations are disappearing. The study of tropical forests, for example, the world's richest ecosystems which will have virtually disappeared by the end of the century, received only $30 million worldwide in 1980. As Harvard biologist E. O. Wilson says, "there is far more complexity in a handful of soil in Virginia than on all the planets." Yet we put more into planetary exploration than in finding out how humankind's life support system works. Great trade-offs would not even be required. Ecologist Norman Myers writes in his book, *The Sinking Ark*, "We know more about sectors of the moon's surface than we know about the depths of tropical rainforests; a switch of 10 percent of funding from space exploration into ecological understanding of our earth home would increase research budgets many times over, and would greatly enhance our skills in planetary management."

To almost any biologist, says Thomas

Eisner, "the evidence seems overwhelming that in the case of the Endangered Species Act, we are not dealing with a situation in which legitimate goals conflict; rather we are witnessing a struggle to keep mankind's long-term options open in the face of threats by short-term interests."

At congressional hearings, it appeared that the bulk of scientific knowledge resides with those who are concerned with species protection. Developers are fond of laughingly asking the rhetorical question, "what is the value of the snail darter?" In fact, as Parenteau of the National Wildlife Federation points out, any species can act as "a miner's canary for monitoring the health of the environment." The weakening of the shells of falcon and eagle eggs, for example, pointed up the extensive penetration of DDT. The depletion of an aquatic species can signal growing levels of pollution or excessive diversions of water.

Elimination of lower species from protection of the act would be the height of folly, according to Stanford biologist Paul Ehrlich, who observes that microorganisms are the workhorses in "ecosystem services." He says, "Every population you wipe out is a working part of a system" that can be providing pest control, soil maintenance, climate amelioration, nutrient cycling, waste disposal, air and water purification, flood control, and myriad other functions.



E. P. Haddon/USFWS

The world faces an unprecedented and probably unavoidable tragedy of unspeakable proportions in the coming decades. According to a National Research Council report on tropical biology, 1 million species may be lost by the end of this century, and more than half of all existing species could cease to exist by 2100.

In view of what is happening in the tropics, the protection offered by the Endangered Species Act may seem small. But as scientists insist, the law is vitally important as a symbol worldwide. If Congress does not take a firm position defending the act this year it will become increasingly difficult to establish and defend the principle that mankind's well-being depends on diversity of species.

—CONSTANCE HOLDEN

Astronomer May Be Barred from Telescopes

How far can a scientist wander from the mainstream before his colleagues cut him off? A California astronomer is confronting that question now.

For 15 years, Halton C. Arp of the Carnegie Institution's Pasadena office has maintained that a key tenet of contemporary astronomy could be dead wrong. Quasars, he says, may not be immensely bright objects at immensely great distances; at least some of them may be dimmer entities associated with relatively nearby galaxies. He suspects that their high redshifts—commonly taken to indicate great distance from Earth—are actually due to some new principle of physics.

Over the years he has collected some provocative examples of quasars that indeed seem to cluster around visible galaxies. In certain cases the objects appear to be connected to those galaxies by faint tendrils of material. But the majority of Arp's colleagues have found his examples less than convincing, and Arp has gradually found himself more and more isolated. When quasars were new, the debate was stimulating, astronomer Leonard Searle recently told the Los Angeles *Times*. After nearly two decades, it has become "sterile and unproductive."

Now, the *Times* reports, the committee that allocates observing time on the Mt. Wilson, Palomar, and Las Companas, Chile, telescopes, has recommended that Arp either prove his case, take a new research tack, or be denied further observing time after this year. The recommendation, made last November in a letter addressed to the directors of the observatories, was only recently made public.

Wanting to avoid the appearance of suppressing an unorthodox view, the committee members said, they had been allocating Arp generous blocks of observing time over the years, even though they unanimously felt that there was little scientific merit in doing so. This year's grant of time was only made because of Arp's senior standing in the community.

The recommendation came as a surprise to Arp, who has always professed to enjoy the debate with his colleagues. "What was particularly upsetting," he says, "was their statement that they couldn't see where [my] research was leading."

Apparently it was not an easy decision for the committee. "No committee member is ever 100 percent certain he is right," one scientist said. "Everybody is aware of cases where a scientist regarded as wrong later turned out to be right. It boils down to this: You make a judgment and you simply do the best you can at that time and place."

Contacted by *Science*, Arp emphasized that his access to the telescopes has not yet been denied. The final decision will not come until the committee meets again in October, and everyone is trying to stay calm until then. "I hope they will actually look at the scientific validity of the observations," he says. "And if they do that, I think they will grant the time."—***M. Mitchell Waldrop***

White House Science Committee Formed

A panel of 13 scientists has been named to advise George A. Keyworth, director of the Office of Science and Technology Policy (OSTP) and science adviser to President Reagan. The committee, known as the White House Science Council (the acronym is pronounced whisk), contains several familiar faces on the Washington science policy circuit and two individuals generally regarded as being on the right wing of the scientific establishment—Edward Teller and Harold Agnew. All the members are male, and most of them are physicists.

The committee is, in theory, the highest level scientific advisory committee in the federal government. But it will be much less powerful than the old President's Science Advisory Committee (PSAC), which was formed in 1957 by President Eisenhower and abolished in 1973 by President Nixon. PSAC formally reported directly to the President; WHSC will report to the President's science adviser.

Indeed, in an interview late last year, Keyworth made clear that he had no intention of resurrecting PSAC. The new committee will func-

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