Report from the Center for
PHILOSOPHY & PUBLIC POLICY

Endangered Species: Which Ones Do We Save?

Well over 90 percent of the species which have lived on earth are extinct. This is as one might expect: extinction is an inevitable part of natural history. It is the ultimate fate of every species. When extinction occurs in the course of natural selection—one thinks of the dinosaurs, for example—normative issues are not involved. One does not ask if extinction of that kind is good or bad, right or wrong. It is part of natural history and is to be studied as fact, not justified as policy.

What concerns us today is not extinction in itself, but the astonishing increase in the rate of extinction and the knowledge that our technological society is largely responsible for it. We do not believe that plants or animals succumb to natural selection when their habitats are destroyed by suburban sprawl or when chemical pollutants diminish their ability to reproduce. We recognize our responsibility for the destruction or preservation of species.

Estimates differ widely concerning the number of species that are endangered or threatened; indeed, the total number of species which exist in the world is a matter of conjecture. The Council for Environmental Quality, however, reports that approximately one out of every ten species native to the United States may be endangered or threatened. Likewise, 10 percent of identified species worldwide are thought to be endangered or threatened with extinction. This would support the guess that, in all, about one million species are in jeopardy.

Assuming that it is not possible to save *all* species, or, indeed, even to list all those that are endangered, we may ask whether we can defend a set of principles or a scheme of priorities for deciding which to preserve—especially when the preservation of species conflicts with other pressing public interests. Why are species morally, aesthetically, historically, or ecologically valuable? How should we respect and protect those values?

Triage Systems

One strategy for preservation may direct itself not so much to the comparative *value* of endangered species, but to the degree to which they are endangered. Such an approach may employ an analog of that used by the French army to treat the wounded during World War I. Following this practice, we would divide all threatened species into three categories: those threatened only slightly; those endangered but with good prospects for recovery; and those with just a few left in the breeding population. One may then decide to commit the largest share of available resources to species within one of these categories. One might, following the French example, try to save the species in the middle category, where the limited resources may have the greatest effect. But reasons may be offered for committing resources to species in another category. For example, it may seem reasonable to keep species from becoming endangered, rather than to try to save those which are already in critical condition. Concerns of this kind are likely to arise within any strategy we adopt for the preservation of species.

Ecological Values

Several principles may be proposed for preserving species on the basis of their ecological importance. Proposals or directives for policy may include:

1. *Preserve ecological communities.* This approach would target for preservation, not species, but communities, ecosystems, or eco-units within larger environments. The idea is that eco-units, rather than the individual species within them, have biological value. It is the functioning, for example, of the entire salt marsh or forest community, and not just the vitality of the wildlife in them, which we must protect, if we are to show concern and respect for the ecosystem as a whole. The preservation of species, of course, requires the preservation of the habitats that are critical to them. But the suggestion here is to establish priorities among habitats, and therefore among endangered species, based on the role these play in larger ecological systems.

The strategy, then, is not so much to save a biological community to preserve a species, but, rather, to preserve the species in order to save the community. This approach has certain advantages. It is more likely to succeed, over the long run, than is the attempt to preserve isolated habitats apart from the surrounding communities. It is also likely to add to the predictability of investment: industries will have a better idea in advance where not to locate. The social costs may be smaller than if they were spread more thinly in geographical terms. It may be difficult to define areas which are comparatively self-contained in their ecology. But

U.S. Fish and Wildlife Service, Mike Smith

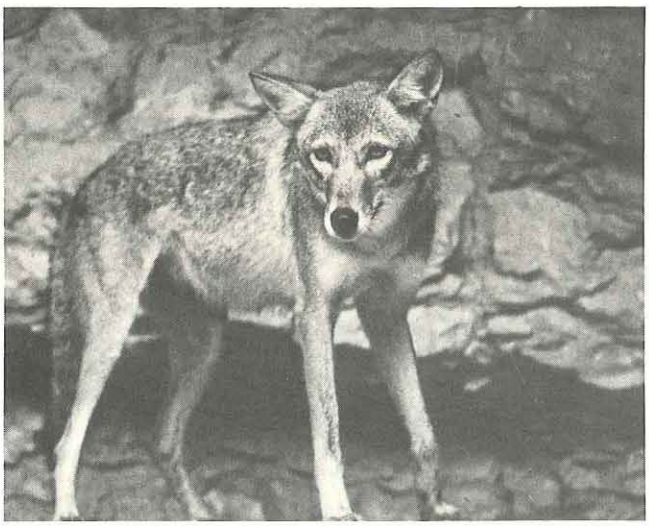
Peregrine falcon

the identification and protection of communities of that kind would constitute a plausible way to approach the task of preservation.

2. *Preserve diversity.* This strategy looks primarily at the uniqueness of a species or its rarity within a genus. While it is sometimes difficult to establish the meaning of these concepts in theoretical terms, they lend themselves to explanation by example. The snail darter has many close relatives: eighty or ninety species of darter exist in Tennessee alone, and new ones are being discovered at the rate of about one a year. On the other hand, "relict" species, like the sequoia, have a very high uniqueness value, having survived geological changes that destroyed near relatives.

What is diversity—or are there many kinds of diversity? How is it measured? Why should we think the diversity of species has an ecological value? (For example, are sequoias *ecologically* valuable?) These are intensely interesting questions. Some people believe, for example, that the diversity of species is connected with the stability of ecosystems. Is there anything in this principle which may guide or justify policies for preservation?

Texas red wolf



U.S. Fish and Wildlife Service, Hal Swiggett

Aesthetic Values

Recreational and aesthetic arguments for preserving species, and, within these arguments, reasons for giving some species priority over others, need to be investigated, for their importance is not fully understood. Sometimes these arguments are hastily dismissed. One may say, for example, that they apply only to creatures which, like the bald eagle and the peregrine falcon, excite admiration or serve as symbols of superior qualities. Similarly, it is comparatively easy to defend the recreational importance of species which can be fished or hunted, which are large and showy, and come out during the day, especially if they have large, brown eyes. If aesthetic arguments for the preservation of species ended with these observations, however, they would not, indeed, be very helpful. They surely would not help with the vast majority of endangered plant and animal species, most of which are small, rarely recognized even by those who notice them, and are not prized for their beauty or admired for their strength.

U.S. Fish and Wildlife Service, Del Weniger

Black lace cactus

Aesthetic and recreational arguments for the preservation of species, however, cannot be so easily dismissed. It is important to recognize that environmentalists and others who value the natural world for aesthetic reasons and who seek to contemplate and enjoy nature in its variety, do not necessarily favor one species over another. What they value is nature itself as the product of evolutionary history; they value wilderness and natural environments for the qualities nature expresses or exemplifies as a whole.

Economic Values

In the Endangered Species Act of 1973 Congress did

not include economic values among the reasons it found for preserving species. Two explanations may be given for this. First, endangered species are not, in general, economically the most valuable ones. The idea of the act is to preserve economically "useless" species among the rest. Second, Congress may not have wanted to give the impression of preserving species simply or primarily for their economic importance.

In spite of what has been said, however, an economic criterion may be suggested for establishing priorities among species. The use of such a criterion in order to establish priorities among species does not commit one to the view that species should be preserved simply for economic reasons. One may argue, on the contrary, that the will of the nation is to protect species at considerable economic cost even after the benefits of protection are taken into account. Nevertheless, since not *all* species can be saved, we may use economic considerations to determine which ones we shall sacrifice, so that the economic benefits may be maximized, even if they do not equal costs.

The value of various species in teaching, environmental monitoring, and scientific research is well known. The question to be answered, however, is this. Can we project from the species which have these values to those species which have not yet been discovered to have them? The firefly, for example, has an exemplary method of making much light with little heat. What other organisms have solved problems efficiently which we may have to solve? Plainly, no secure answer to these questions can be given. But something may be done to set directions for answering them.

Finally, many Americans are concerned that we must, as a nation, "dig in our heels" somewhere. We suspect that, for most endangered species and most of the projects that threaten them, it will be arguable that the particular project is "worth more" than the particular species. Yet each species, we think, may contribute more to the ecosystem as a whole, than, say, each highway contributes to the highway system as a whole, or each dam contributes to whatever "whole" dams contribute to. If we cannot save every species, can we tell which species make the greatest contribution, not to us directly, but to ecological stability overall?

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THE FAR SIDE By GARY LARSON

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These are important questions, and they are also challenging ones. Because of recent work in philosophy of biology, ecology and systematics, aesthetics, economics, and other fields, these questions may be amenable to a useful program of research. If anything calls for an interdisciplinary approach, then, surely, the problem of endangered species requires this kind of investigation.

Conclusion

It is likely that the strategy we should adopt for preserving endangered species will contain a mixture of the priority-systems sketched here. Plainly, species of high symbolic and aesthetic importance—one thinks of the bald eagle and the blue heron—would have to be protected on those grounds alone. Other species may obtain a high priority for other reasons, as for example, their economic value, their important ecological function, or because of more general triage considerations. The fundamental need is to gain an understanding of the values and concepts which lie behind our national project to preserve those species we can still protect.

—Mark Sagoff

The Center for Philosophy and Public Policy has begun a two-year research program in the preservation of endangered species. Under the direction of Bryan Norton, Research Associate at the Center, a multidisciplinary working group will examine the principles upon which we may base reasonable and workable strategies for protecting and conserving endangered species, with special attention to reauthorizing, applying and implementing the Endangered Species Act of 1973.