

Priorities for Preservation

The magnitude of the problem of disappearing species, viewed worldwide, dwarfs resources currently available to address it. By the end of the century, experts predict, one species will be lost every hour. Faced with shrinking budgets and accelerating extinction rates, environmental managers agonize over which species to save. Different criteria for placing value on species—ecological, economic, aesthetic, cultural—compete with one another, and controversy abounds. One proposal for sidestepping direct debates about the value of species is to adopt a system of triage, which takes its name from the French policy of sorting wartime casualties into three categories for medical treatment: those with superficial wounds that do not require immediate attention; those with wounds too serious to make treatment efficacious; and those in the middle range, having serious but treatable wounds.

Once the issue is formulated in this manner, it seems obvious that efforts toward species preservation are best concentrated in the third category. Scarce funds and energies should be targeted at saving those species that are both in need of saving and susceptible to being saved. But the most arresting formulation of an issue is not always the most illuminating one; it will be useful to stand back from the triage formulation, which casts the problem of setting priorities as one of sorting species into categories, and ask whether there are other, more fruitful ways to look at the problem.

What Is the Endangered Species Problem?

The endangered species problem is not a single problem. It is more accurately seen as four closely related problems: (1) what should be done when a species' population becomes so depleted as to threaten its continued existence; (2) what should be done to keep relatively healthy populations from declining and thereby falling into the threatened category; (3) how to avert, or at least slow, the predicted and potentially cataclysmic reduction of biological diversity over the next few decades; and (4) how to slow the trend toward conversion of natural systems to intense human use?

In the triage formulation the priorities problem is most naturally associated with question (1), because it considers threats to individual species. Once threatened, species require management initiatives designed to protect and nurture them, individually. But the goal of protecting biological diversity should not be reduced to the goal of protecting remnant populations of threatened species. If one thinks about the endangered species problem in this way, there is a ten-

dency to treat it as merely a problem of protecting genetic diversity, with each species regarded as a repository for a set of genes. Indeed, some preservationists speak as if the protection of species involved little more than preserving samples of seeds and germ plasm.

Biological diversity is a much broader concept than genetic diversity. Biological diversity is constituted not merely by the number of species, subspecies, and populations extant, but also by the varied associations in which they exist. A species existing in an ecosystem represents not a static but a changing pool of adaptations, a whole series of different genetic dynamics and varied evolutionary trajectories. Diversity of biological life is also a valuable aesthetic and cultural resource. To perceive biological diversity only in terms of a diverse gene pool is to ignore the whole range of aesthetic and cultural values dependent upon varied landscapes.

Loss of genetic diversity is a manifestation of the deeper problem of decreasing biological diversity. As natural habitats are altered, converted, and simplified, many species suffer a decline in their number of independent populations. Attempting to protect genetic diversity through the protection of a few remnant populations will result only in a continual scramble to save individual species. A broader approach, by recognizing the forces that bring species to a threatened stage, should keep more species from requiring individual attention. The triage formulation of the priorities issue would, in the process, be circumvented. Society would no longer face an interminable series of difficult choices among threatened species. Rather, the problem would be viewed holistically as one of halting the general tendency toward habitat destruction and loss of biological diversity.

Nature as Habitat vs. Nature as Warehouse

Viewed in its most general terms, the problem of endangered species raises questions about the sort of relationship modern technological societies can and should have with nature. Will we see ecosystems as human habitats, as associations on which human life depends? If so, we will see them as having a holistic integrity that must be protected. Or will we see natural objects as no more than commodities available for use in the production of goods and services? Nature is then seen as a warehouse of consumable supplies.

On the warehouse view, nature is seen as a self-replenishing supply of goods and services; humans assume they can go to it and find what they need when

they need it, drawing on its resources without fear of depletion. If the population of some species falls below a danger point, thereby threatening access to it as a commodity, then that species is "listed" for special concern; it is isolated from normal interaction with humans, saved for future consumption. It is never asked why human beings cannot normally cohabit with other species or why more and more species suffer precipitous declines in population.

The warehouse view is widely held these days. Nature is no longer seen as the human habitat. It is no longer seen as a producer, sustainer, giver of life. Nature can produce, but humanly manipulated monocultures do it more efficiently. Nature can provide an endless variety of genetic resources, but these can be better protected in gene banks. Nature can provide aesthetic experiences, but it's easier to get them in zoos. Humans are not seen as one species, like others, inescapably dependent on natural systems. Technology increasingly insulates humans from the ways in which they depend on nature. Nature becomes not a place to live, but a repository of raw materials to be extracted and used in technological forms of production.

It is not necessary to undertake a metaphysical critique of the nature-as-warehouse approach. The triage formulation of the priorities problem is, in a practical sense, a test case for that approach. The triage formulation is intimately linked with the species-by-species approach to preservation, and the species-by-species ap-

proach is a natural outgrowth of the world view on which nature is seen as a warehouse of raw materials to be protected because they may prove useful in the technological production of commodities or for aesthetic "consumption." But the triage formulation fails. More and more species are threatened by habitat destruction caused by technological advances and by expanding human populations; smaller and smaller proportions of species that require protection will receive it. The triage formulation leads to insoluble problems. Resources are not available to protect, on an individual basis, all the species that will be threatened by a policy permitting wholesale conversion and alteration of natural systems. The world view that sees nature as a warehouse of commodities is simply not, in the long run, compatible with the goal of species preservation.

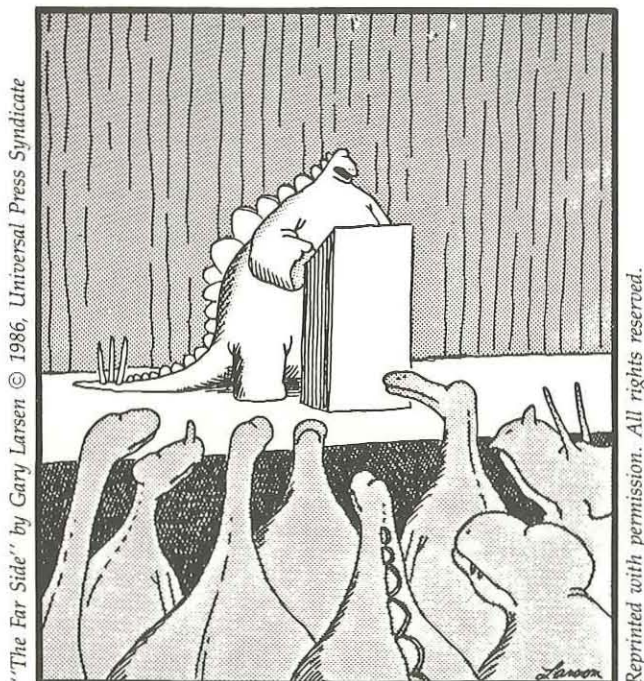
Habitat Protection

Instead of asking, "Which species should be saved?" we should ask instead, "How might agencies best spend the resources available to protect biological diversity?" Habitat or ecosystem protection provides a more promising approach to preserving species than activities designed to protect species individually.

The advantages of a holistic, ecosystem approach are numerous. Protection of large areas from human alteration serves as a reminder that human life grew out of and is sustained by the productive forces of nature. It treats species not as commodities held in waiting, ready at hand to provide goods and services as the need arises, but as having an independent existence of their own, drawing upon resources available in the natural communities to which they also contribute. Habitat protection provides opportunities for encountering species not only in zoos and botanical gardens, but in their natural settings, leaving room for unexpected encounters with other species that can jar the senses and the sensibilities.

Above all, the habitat protection approach has a reasonable chance of success. Funds and efforts expended to protect species by protecting ecosystems and habitats are far more likely to be successful in the long run. In isolation from their habitat, species require great amounts of care. Managers often lack the knowledge and resources necessary to provide substitutes for the services provided naturally in undisturbed ecosystems. The ecosystem approach protects species before they reach critical stages and require individual attention. Addressing the problem in less acute stages leads to more efficiency per dollar spent. Efforts of this sort address not just the problem of how to save species once they have become severely endangered. They address all four forms of the endangered species problem simultaneously, by keeping healthy populations from undergoing decline, by protecting biological diversity generally, and by placing limits on how natural systems are altered for human use.

It would appear, then, that when the question of priorities is posed as one of how best to expend funds



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"The picture's pretty bleak, gentlemen. ... The world's climates are changing, the mammals are taking over, and we all have a brain about the size of a walnut."

and efforts, the answer is clear. They should be expended to protect as many and as varied types of natural systems as possible.

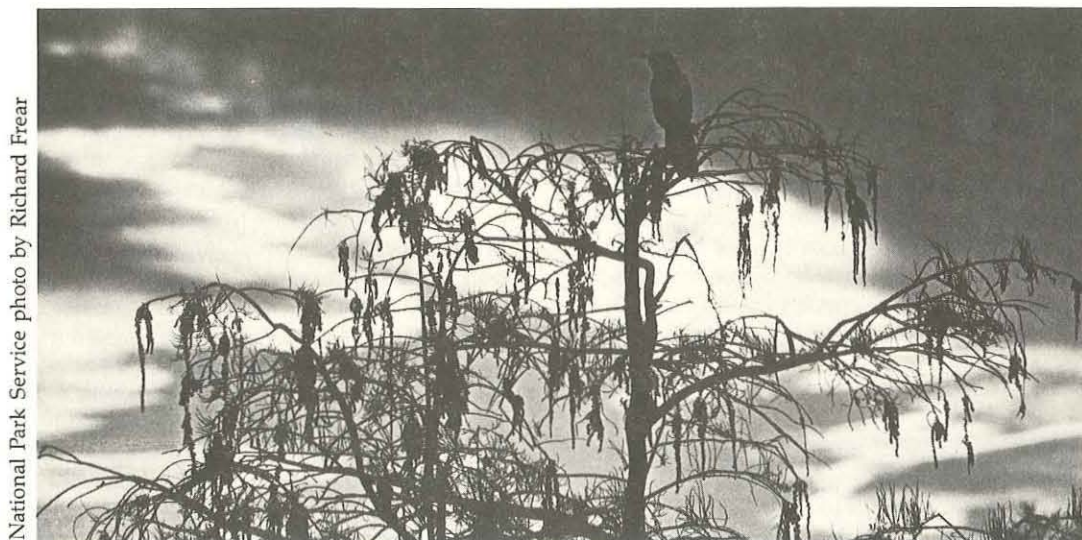
A Comprehensive Effort Outlined

A national effort is necessary to attack all four of the endangered species problems listed above in a coordinated manner. The central offensive in such a campaign should be the protection of habitat. Domestically, this would require development of a set of categories identifying types of habitats and ecosystems and efforts to ensure that several systems of each type in each geographical locale receive protection.

Organizations like the Nature Conservancy and other private ecosystem protection groups have already done much to identify areas where more protection is necessary and have efforts under way to provide it.

the core of a national program of species preservation. The emphasis of the Office of Endangered Species should therefore shift considerably, with less effort expended in listing species and no assumption made that every endangered species be given special protection. Indeed, the listing process might be phased out. This may imply abandoning some species now identified as endangered and allowing events to take their course. But more species will be saved by efforts directed at habitat protection than by efforts to identify, list, and develop recovery programs for each individual endangered species. Scaling down the listing process would, presumably, free resources for a coordinated campaign to protect habitats.

Since the bulk of threatened species are found in other parts of the world, especially in the tropics, a complete endangered species protection policy must



National Park Service photo by Richard Frear

The Florida Everglades

Federal and state governments should cooperate by offering financial assistance, by helping to coordinate ongoing efforts, and above all, by limiting the use of publicly owned lands that are appropriate for habitat protection. Private owners of lands requiring protection could be compensated with other less sensitive and perhaps more economically productive public lands in a program of land trading.

Within this general context, efforts to protect remnant species would retain some considerable place: many species are already too threatened to survive merely through habitat protection and, despite our best efforts to protect their habitats, others are likely to become threatened in the future. When there are recognized reasons for treating a particular species as having special economic, cultural, aesthetic, or ecological value, there are special reasons to protect it, which may justify protection and recovery programs.

But it is a mistake to think of an office devoted to listing and protecting already endangered species as

address the problem globally. Obviously, the U.S. government cannot act unilaterally within the boundaries of another nation. But supported by funds and efforts by the United States, programs of international cooperation could make a tremendous difference in setting aside preserves of undisturbed habitat throughout the world.

It may be protested that the task set is too large, that it would cost too much in lost developmental opportunities. But I believe that, compared to the benefits (considered in the broadest terms over the longest run), a comprehensive policy to protect biological diversity may represent a remarkable bargain for the human species.

—Bryan G. Norton

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