WHERE WILL WILDLIFE LIVE?

More People, Changed Climate, Lost Land Threaten Many Species

Eighty-eight acres of forest and wetland habitat near Totopotomy Creek, Virginia, may soon be destroyed by the construction of a transmission line. Wayne Watkinson, a local resident, is trying to stop that from happening. "In the evenings," he explains, "you can hear the different birds and see the squirrels foraging for nuts.... Species in trouble, like the bald eagle and tiger salamander, also appear here. The power line will put an end to that, requiring that both sides of Totopotomy Creek be cleared and sprayed with herbicides."

Mr. Watkinson, like others who see a rapidly changing landscape, find's something deeply disturbing in the continuing loss of nature—sometimes in small parcels, such as the acreage near Totopotomy Creek, and sometimes in huge chunks, such as new airports, reservoirs, or suburban centers across the United States. What will become of wildlife and nature if such losses continue to mount?

Vanishing Wildlife

No one knows the full extent to which our wildlife is declining. One indicator, however, is data on endangered species compiled by the U.S. Fish and Wildlife Service (FWS). Current data show that between 1,500 and 4,500 species of animals and plants domestic­ally are in danger of extinction currently or in the foreseeable future. (More than 120 others are known or feared extinct in recent decades.)

Among those species most clearly in danger are at least 66 mammals, 93 birds, 51 reptiles and amphibians, 96 fishes, 184 insects, spiders, mollusks, and other invertebrates, and 1,057 plants.

Unfortunately, the actual number of species clearly in trouble appears even greater than FWS records indicate. A recent Center for Plant Conservation estimate of plants considered to be at risk of extinction is about 14 percent greater than FWS records show; a recent study at Cornell University suggests that 7 additional species of birds—Vermilion flycatcher, seaside sparrow, spotted owl, loggerhead shrike, snowy plover, Harris's hawk, and Heml's sparrow—are threatened; and the State of Colorado's list of endangered species includes lynx, wolverine, river otter, and other species that are not yet recognized by FWS as being in jeopardy.

Another indication that the problem is greater than the records now show is the rapid growth of the official list of U.S. endangered and threatened species. Between January 1986 and January 1990, the number of entries rose 40 percent increase in listings for mammals, one of the groups better known to science. By the time many of these species are recognized as endangered, it may be too late. Consider, for example, the American burying beetle. It was only recently listed despite the fact that, al-
Above: Redwoods loom majestically in Humboldt State Park. Commercial timber production has claimed many unprotected great trees. Inset: A black bear cub depends upon abundant forests for survival.
...Whenever leaves alone whatever in nature wishes not to be disturbed, he or she will seem like a God, so unlike a human being, even to a snake.—Varian Bell

upon which they depend.

Despite this resolve, the wildlife and ecosystems continue to falter. Why? A primary reason is that our society has grossly under- estimated the task of conservation. Even as federal, state, and local re­ source operations are undertaken for the more “charismatic” species such as California, Nina conner and black-footed ferret, and while “game” species such as deer are managed to offset habitat loss, few Americans know of the thousands of other species that are declining and faced with extinction.

If we truly are to “conserve wildlife," we must keep the land in good enough shape for the existence of all 500 species of mamm­ als, 1,000 birds, 600 amphibians and reptiles, 2,200 fish, 90,000 insects, 20,000 clams, snails, spiders, and other invertebrates, 20,000 plants, a great number of subspecies and (plant) varieties, and a wide range of sim­ pler forms of life such as fungi and algae.

To do this, a broad diversity of habitats must be preserved. Much of our wildlife is depen­ dent on specific kinds of vegetation, forest growth, topography, aquatic conditions, con­ tiguous habitat, or local resources.

The second fundamental need is enough habitat. Adequate habitat gives wildlife pop­ ulations an opportunity to avoid extinctions due to chance events or genetic problems. Estimates vary as to how many animals are needed for a “viable” population but have typically been calculated at 426 individuals for elk and 5,012 acres for grizzly bear. For larger animals such as tigers, preserving hundreds of thousands of square miles of habitat is crucial.

Most efforts at protecting endangered wildlife focus on avoiding extinction in­ dividually and on controlling or removing distinct threats, yet few successes are evident. Of hundreds of endangered species, only a small brown pelican and the American alligator have fully recovered. The species approach has only marginal hope as long as prolonged con­ tinued habitat loss and in promoting thousands of species whose ecological needs are poorly known. According to the case studies pre­ sented in the GAO endangered species report, more than $215 million was spent for 18 species over the past five years. The results were disappointing. Of the 18 species, 3 continued to decline, 11 showed no apparent recovery, and 4 showed an improvement, but not any near to the point of recovery.

A second approach to wildlife conservation devotes itself to the preservation of distinct types of natural communities. For example, preser­ vation of a tal­ grass prairie community in Iowa would help to protect the threatened whooping crane, fringed orchid, along with hawksmoths, which serve to pollinate it, and other local nonthreatened species. While this approach often works for species that are associated with clearly defined natural communities of limited acreage, it serves far less to protect the myriad species dependent on a diversity of communities in a region or on a large block of land. Moreover, protection of all natural communities on a one-by-one basis is very difficult. An average state could contain more than 300 types of terrestrial and aquatic communities, according to Bill Crumpacker of the University of Colorado. While the species and community ap­ proaches have been somewhat effective in slowing the decline of America's wildlife and habitats, they have not—and cannot be ex­ tended to—prevent it. To do so requires pre­ serving the broader landscape. Only in this way can we provide for the needs of all spec­ ies and for a complete mosaic of natural communities that, over time, have room to shift with disturbances such as fire, floods, windstorms, earthquakes, and climatic change. In short, wildlife and nature preser­ vation requires an ecologically intact American landscape.

The idea of preserving the land as a whole is not new. It is, for example, embodied in the "biophere reserve" concept of the United Nation's Man and the Biophere Program. The natural biophere reserve is one where people live and work but where their activities do not destroy the land's ecological fabric. Such reserves should house all species native to the area. Some 275 bi­ ophere reserves have been established in more than 30 different countries, and have flourished in the first 10 years of the end of the century as a result of defore­station alone. Perhaps most importantly, natural ecosystems serve as stabilizers of climate, as purifiers of water and air, and as buffers against storms, sea surges, and other natural phenomena.

Enacting a policy of "no net loss of habitat" would create more efficient use of land. It would also bring about much of the technological, economic, and environmental benefits of restoration ecology. A major benefit would be a reduction in our nation's contribution to atmospheric carbon dioxide (more than 20 percent of the world's total, primarily through fossil fuel combus­ tion), the buildup of which threatens the global climate. While a "no-net-loss-of-habitat" policy for the United States could guarantee a more li­ quidable and sustainable twenty-first century for Americans, it could also serve as an impor­ tant model for other nations in curbing world wide land degradation (through deforestation, overgrazing, and overcivilization) and its con­ sequences—worsening droughts and floods, famine, reduced agricultural productivity, declining living standards, and swelling num­ bers of environmental refugees. These events are threatening the lives and well-being of over a billion people in the developing world.

"No net loss" must be applied as quickly as possible to:

• habitats essential to endangered and declin­ ing populations of wildlife, or what biologists commonly refer to as "critical habitat." In that sense, the watersheds of the Great Smoky Mountains region in the southeast, the Black Hills region of the Dakotas, and the North-West coast region of British Columbia, for example, cannot wait a decade, since what re­ mains of their breeding areas along the Florida coast would surely be lost to beachfront development by that time;

• threatened natural community types such as wetlands, tal­ grass prairies, and cypress-tupelo forests. These ecos­ systems have been reduced or are declining at such rates that there is no time to spare; and

• large landscape ecosystems that are still natural enough to serve as restoration areas for comprehensive communities of native animals and plants, including those that have been re­ gionally extirpated. Examples of such areas include the Baxter State Park region in Maine, the Great Smokey Mountains region in the southeast, the Black Hills region of the Dakotas, and the North-West coast region of British Columbia. Large natural ecosystems, now rare, are virt­ ually impossible to reestablish once they are lost.

Most threatened ecosystems will be used to expanded and or restored in order to secure them. Most other ecosystems lend themselves to some conversion from one type to another. Examples are old-field communities and early- to mid­growth forests, and sagebrush communities. In such cases there is flexibility in allowing some loss, with the earmarking of degraded lands and open space areas to make up the difference.

"No net loss of habitat" would seem to be little more than a pipe dream if it were not for the fact that, in a significant number of places, Americans are already working toward that goal! Local communities such as Sanibel, Florida, and Boulder, Colorado, have de­ veloped comprehensive land-use plans that heavily favor wildlife and habitat. Means for development include: voluntary constraints on development, encouraged by incentives such as tax breaks, and federal public-land acquisi­ tion and conservation easements through dedicated sales taxes, lottery, income tax. The federal government has also been discussing Conservation Reserve Program (70 percent of the American public is "will­ ing to pay taxes that are dedicated to preserve agricultural areas," according to research done by the President Commission on the American Outdoors); and careful land-development planning and design. Outdoor activities that bring the goal of "no net loss" within reach are exemplified in:

• Autumn Park of New York, a 6,000-acre area roughly the size of Vermont, home to 52,000 human residents and to nearly 500 native animal species.

• New Jersey Pinelands, a 1.1 million acre area covering 40 percent of the state and pro­ viding habitat for about 54 species of threat­ end, or endangered plants. More than fifty municipalities exist within this area.

• The California Desert Conservation Area, 2.5 million acres, covering about 25 percent of California. It includes more than a hundred communities and habitat for 635 vertebrates, of which 22 are endangered or threatened.

What lessons of habitat protection can be learned from these and similarly managed areas? First, critical to the entire process is a public consensus that the land as a whole should be conserved. When citizens see that major landscape values are at stake, they act to protect. Second, cooperative agreements among federal, state, and local governments and private landowners are essential. Finally, an overall landscape management plan is needed to direct and master development and ensure that protection and restoration of wild­ life habitat areas receive top priority.

A good start for many is not far from the front porch, such as at Topotopotomy Creek. We should “admit a, nearby habitat by learn­ ing about the local wildlife and its needs and by being involved in the political process as an advocate of "no net loss." Though sure to be tough, what could be a nobler challenge?

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