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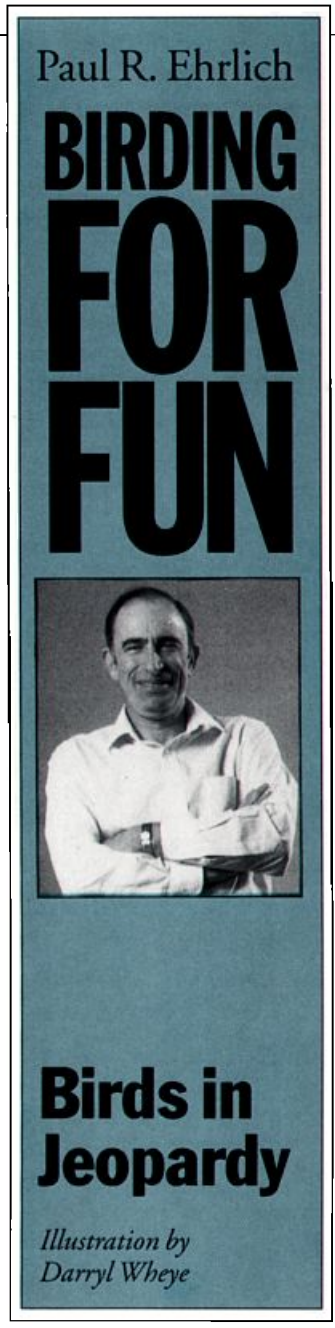


PEOPLE WHO BUILD model airplanes face no shortage of kits; stamp collectors are not about to run out of stamps to squirrel away; sports fans have a seemingly endless array of events to watch; gardeners won't run out of seeds; music lovers can immerse themselves in the clear sounds of compact laser disks. These and other hobbyists face no obvious threats to the pursuit of their avocations or, for that matter, of their children's pursuits. NOT SO BIRDERS. There are many fewer migrant songbirds in eastern forests these days; ducks are dramatically down in numbers; shorebirds appear to be in decline also.

Most people who are deeply interested in birds are well aware of this; I've been disturbed by it for some time, as my column on "People *vs.* Birds" (*American Birds* 44: 193–196) indicated. But recently, with my colleagues David Dobkin and Darryl Wheye, I had the opportunity to examine the status of "our" birds in more detail as we put together our new book *Birds in Jeopardy* (Stanford University Press, March 1992). It was a depressing exercise.

First of all, it was sad to see how little detailed information there is on the status of many birds, despite the large number of people—ornithologists, birders, and nature-lovers in general—who are concerned about them. What information there is is scattered through a vast literature, much of it in difficult-to-find government documents. Broad patterns can be pieced together from Christmas Bird Counts and the Breeding Bird Census (both sponsored by the National Audubon Society); the U.S. Fish and Wildlife Service's Breeding Bird Survey and the Winter Bird Populations Study, and other efforts. Nonetheless, we're not really sure why the Harlequin Duck is declining in eastern Canada, why Loggerhead Shrikes seem to be losing ground virtually everywhere on the continent, or exactly why Bachman's Warbler has disappeared.

What can be done with information already in hand is exemplified by conservation biologist Terry Root's fine *Atlas of Wintering North American Birds: An Analysis of Christmas Bird Count Data* (University of Chicago Press, 1988). But current levels of data acquisition and analysis are not sufficient to provide the detailed picture we should have of the conservation status of the North American avian community. That community, besides giving us great pleasure, can serve as a "miners' canary" to warn of general environmental deterioration.

Sadly, few resources are available to improve survey methods, to analyze data promptly and thoroughly (and make results readily available), or to monitor more bird populations. Nevertheless, some such efforts are underway. For example, the National Audubon Society, various other national and international conservation

**A sample of imperiled birds. (Clockwise from the top) Northern Aplomado Falcon, Puerto Rican Parrot, Whooping Crane, Sharp-tailed Grouse, Nukupu'u, Canvasback, Piping Plover, Nene (Hawaiin Goose), Loggerhead Shrike, Ivory-billed Woodpecker.**

organizations and seven federal agencies have started a "Partners in Flight" program. One element of the program will be more systematic assessment of the status of migrants and their habitats in both North America and Latin America.

In the process of writing *Birds in Jeopardy,* I saw a familiar broad-scale pattern being reinforced with details. For species after species, subspecies after subspecies, the story was the same: habitat destruction and alteration by humanity was behind the avian decline. Many birds are simply faced with a total loss of habitat. In the southwest, most of the swamps in which Wood Storks once foraged have been drained to free land for agriculture or building homes or factories. Similarly, most of the extensive bottomland cypress forests that Ivory-billed Woodpeckers partitioned into breeding territories (of up to 2000 acres) have been destroyed and the birds extirpated from the United States. Bachman's Warblers are presumed to have suffered both from the clearing of extensive canebreak breeding habitat to make room for crops and from a loss of habitat in its Caribbean wintering grounds. In coastal Texas and Louisiana the open coastal prairies required by Attwater's Greater Prairie-Chicken have all but disappeared under farm fields, homes, and oil-drilling operations. In the West, decimation of riparian zone vegetation by cattle grazing is behind Willow Flycatcher declines.

In other cases, changes in habitats are more subtle. Eastern Screech-Owls have suffered from the creosote preservative applied to telephone poles, which reduces the survival of young in nest cavities that the owls use in the poles. Forestry practices that harvest trees before they are mature and suitable for nesting, and which eliminate standing dead trees, jeopardize the Red-cockaded Woodpecker and Purple Martin. Land-use changes, in particular the replacement of forest with farms, has promoted the increase and spread of that efficient brood parasite, the Brown-headed Cowbird which has reduced population sizes of many songbird species. Cowbird control programs are now employed to help keep the Kirtland's Warbler and the Black-capped Vireo from disappearing altogether.

Invasions of exotic organisms are a type of habitat modification that has had serious impacts on many bird populations. Hairy and Red-headed woodpeckers, and Eastern and Western bluebirds all seem to be suffering from competition for nest-holes from imported House Sparrows and European Starlings. Predation by arctic foxes introduced to the Aleutian Islands was a prime factor in the decline of the Aleutian Canada Goose.

The impact of exotics is usually much greater on islands than on the mainland, because island floras and faunas have generally evolved with fewer competitors and predators and under relatively benign climatic conditions. While only four North American species have become extinct north of Mexico (five, if Bachman's Warbler is counted), 17 or 18 Hawaiian species have been lost in recent history. Organisms transported to the islands by *Homo sapiens* have been the main reason that the Hawaiian lowland avifauna has been virtually wiped out and exotics continue to threaten the survivors. Feral cats

and mongooses from India gobble the young of the Nene (Hawaiian Goose) and Koloa (Hawaiian Duck). A combination of non-native insects carrying malaria and avian pox, habitat destruction by feral pigs, competition from rats, and predation by cats have killed off all but a couple dozen Large Kaua Thrushes. Similar problems have helped push the Molokai Thrush, 'O'u, Oahu Creeper, Molokai Creeper, and Po'o-uli to the verge of extinction and have contributed to the decline of the Palila, Maui Parrotbill, Nukupu'u, 'Akiapola'au, and Crested Honeycreeper.

Of course, on the mainland, overuse of persistent pesticides continues to be a problem for Peregrine Falcons and other raptors. But physical habitat destruction and modification (including importing of exotics) are prime factors in the decline of roughly 80% of the some 150 imperiled species and subspecies treated in *Birds in Jeopardy,* and are involved to one degree or another in the declines of about 90%. If there were adequate data on the causes of declines of migrant songbirds in eastern forests and population trends in shorebirds, it seems certain that the patterns would be similar. Humanity alters the landscape dramatically, and biodiversity, including the birds we love to watch, disappears.

As is detailed in *Birds in Jeopardy,* extensive efforts are underway to preserve some of our most imperiled birds. Much of the work involves application of the Endangered Species Act, a landmark piece of legislation, but one that is nonetheless sadly deficient. The Endangered Species Act draws attention to the declines of species or subspecies only after they are well advanced, instead of focussing on the maintenance of widespread, healthy, natural ecosystems that can support both wildlife and a healthy human society. Environmental scientists struggle to use the Endangered Species Act as a tool to do just that, but their efforts often are misunderstood (as in the case of the northern Spotted Owl and the remnants of old-growth forest in the Northwest that are essential to the long-term health of the timber industry). The Endangered Species Act desperately needs strengthening to make it a better vehicle for keeping the vital services that ecosystems provide to society from faltering further.

But I fear that the Endangered Species Act will not be made strong enough. In the long run, perhaps even over the next couple of decades, many of our attempts to save imperiled birds are destined to fail. As the United States population (now third largest in the world) moves towards 300 million; habitat destruction in Mexico, the Caribbean, and Central America accelerates; and the scale of the global human enterprise grows; the problems confronting birds will grow apace. "Human needs" will increasingly be cited as the reason for destroying additional critical habitat. Federal regulators will be asked to "compromise" and permit half of an area of habitat to be destroyed. Unnoticed will be the previous destruction of 99.5% of the habitat, so that the "compromise" will amount to the destruction of 99.75% and the preservation of 0.25%. That familiar pattern will be repeated, and the next compromise proposed will be to take half of the remaining 0.25%, and so on.

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But human needs and those of our dwindling avifauna are actually congruent. Global warming, ozone depletion, wetland destruction, desertification, and urbanization of land threaten not only the birds, but civilization itself. The flooding caused by a sea-level rise that would wipe out birds in coastal marshes would also salinize precious supplies of groundwater and submerge vital croplands. Climate change that would exterminate the Kirtland's Warbler also would threaten United States agricultural productivity. Spreading cities threaten both bird populations and vital farmland.

One good start on saving both people and birds would be to retire George Bush. His actions, with rare exceptions, have been exactly the opposite of those one would expect from an "environmental president." He has blocked every attempt to deal with population growth that is such a major contributor to habitat destruction and the threat of climatic change. He has been a major stumbling block in international efforts to deal with global warming, made an attempt to define much of our critical wetlands out of existence, and has generally supported a policy of raping and pillaging the environment to benefit well-off people today.

So if you are concerned about whether our children and grandchildren will enjoy a fine diversity of birds to watch for fun (or, indeed, if they'll have a decent world to live in), become an environmental activist. Put at least a tenth of your time into learning about, and trying to reverse, the processes that threaten our birds and our kids. Become politically active, working to make politicians take the steps necessary to keep Earth's life-support systems functioning. Birding is fun, but joining an organization dedicated to preserving a livable planet, and getting to know and work with like-minded people has its pleasures too. Becoming active in the Audubon Society, if you are not already, would be a good place to start.

—*Paul R. Ehrlich is Bing Professor of Population Studies at Stanford University, and coauthor of* The Birder's Handbook *and* Birds in Jeopardy