

# WORLD·WATCH

Working For A Sustainable Future

## The Plight of Birds

by Howard Youth

Illustrations by Tony Disley

*Excerpted from May/June 2002 WORLD WATCH magazine*

© 2002, Worldwatch Institute

For more information about Worldwatch Institute and its programs and publications,  
please visit our website at [www.worldwatch.org](http://www.worldwatch.org)

 WORLDWATCH  
INSTITUTE  
1776 Massachusetts Ave., NW  
Washington, DC 20036  
[www.worldwatch.org](http://www.worldwatch.org)

# The Plight of Birds

*Today, more than a thousand species of birds face extinction. Many more are in steady decline. Significantly, the strategies that can stop this attrition are the same strategies needed to achieve a sustainable human future.*

by Howard Youth

Illustrations by Tony Disley

**V**ery little remains of the rich wildlife that once flourished in Europe. Most of the wolves, bears, and bison are long gone. The few fragments of wilderness that remain are highly valued. Among them, not many can compare with Spain's Doñana National Park, which lies on the Mediterranean coast a short distance across from Africa, and which is habitat to animals from two continents—and to an extraordinary variety of birds. Doñana's 50,000 hectares (123,000 acres) of marsh, dune, brush, and forest are one of the largest remaining breeding grounds for the endangered Spanish imperial eagle (*Aquila adalberti*) and the wintering grounds of hundreds of thousands of waterfowl.

Yet, Doñana is a paradise in peril. Siltation from upriver and water demands from irrigated farms surrounding the park are drying out marshes earlier in the year than in decades past. Nesting waterfowl such as the once abundant and now rare marbled duck (*Marmaronetta angustirostris*) are left high and dry. Cut off from the water, the birds have poor prospects for finding food and few places to escape foxes and other predators. Non-native eucalyptus trees, which were planted before the area was declared a park in 1969, have been growing fast and choking out native vegetation. And in 1998, a zinc mine reservoir just north of the park burst and spilled 5 million cubic meters of acidic water—heavily laced with cadmium, lead, copper, and other heavy metals—into the river.



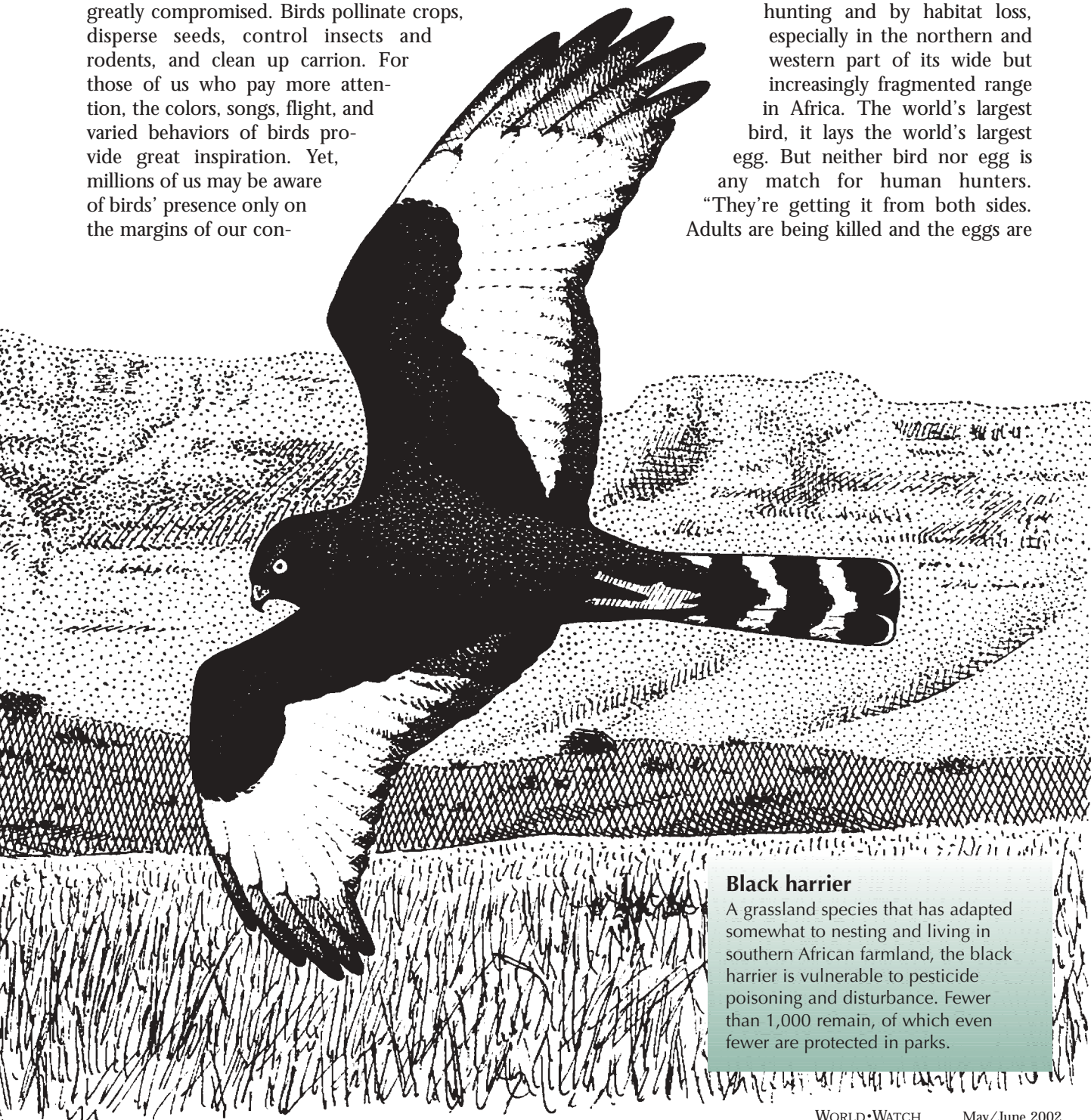
The spill covered almost 10,000 hectares (25,000 acres) with toxic sludge, saturating the park's buffer zone and killing thousands of fish and birds, leaving much of the surviving wildlife contaminated at levels that likely impair their ability to breed.

Threats to Doñana's birdlife exemplify the range of pressures on many of the world's birds, which are increasingly in jeopardy despite their ability to fly from one place to another. From the nearly 3-meter-tall African ostrich to Cuba's 6-centimeter-long bee hummingbird, more than 9,800 bird species live on the planet. They perform essential natural services, without which our own existence would be greatly compromised. Birds pollinate crops, disperse seeds, control insects and rodents, and clean up carrion. For those of us who pay more attention, the colors, songs, flight, and varied behaviors of birds provide great inspiration. Yet, millions of us may be aware of birds' presence only on the margins of our con-

sciousness. As a result, many bird species appear likely to die off in the coming decades.

## Unprecedented Decline

Like Doñana's wildfowl, most of the world's declining bird species face multiple threats, virtually all of them from human activities. Even when a species is endangered by a single threat, remediation is difficult; but when the dangers come from several directions, the difficulty grows exponentially. The ostrich (*Struthio camelus*), for example, is being decimated both by hunting and by habitat loss, especially in the northern and western part of its wide but increasingly fragmented range in Africa. The world's largest bird, it lays the world's largest egg. But neither bird nor egg is any match for human hunters. "They're getting it from both sides. Adults are being killed and the eggs are



### Black harrier

A grassland species that has adapted somewhat to nesting and living in southern African farmland, the black harrier is vulnerable to pesticide poisoning and disturbance. Fewer than 1,000 remain, of which even fewer are protected in parks.



### Steller's sea-eagle

A predator and scavenger native to the eastern coast of Russia and the Japanese island of Hokkaido, the Steller's sea-eagle is losing out to habitat destruction and, indirectly, to river pollution and overfishing, which are forcing the fish that it preys on into decline. In some areas, these birds scavenge deer carcasses, risking lead poisoning from shot embedded in the meat.

being robbed," says Smithsonian Institution scientist Steve Monfort. In 2001, Monfort participated in a wildlife survey in Chad, and found no ostriches—only years-old shattered egg fragments. And in most parts of Africa where scattered ostriches do remain to take their chances with hunters, the fragile grasslands on which they depend for their varied diet of leaves, seeds, roots, and insects are being chewed up by over-grazing of livestock.

Variants of this story are being repeated on every continent, including Antarctica. In North America, massive displacement of native grasslands for monoculture farming and grazing is driving out two species of prairie chickens (*Tympanuchus phasianellus* and *Tympanuchus pallidicinctus*). In Eurasia, the great bustard (*Otis tarda*) and three other species of bustard are in rapid decline—there, too, as a result of what ecologist Paul Goriup calls the "generally low priority afforded to the conservation and sustainable use of grasslands, steppes, and rangelands throughout the world." In France and Spain, the pin-tailed sandgrouse (*Pterocles alchata*) is in biological freefall,

for similar reasons. As the human population expands (from 1.6 billion to more than 6 billion in the past century alone), the Earth itself is becoming increasingly humanized—meaning that landscapes are being deforested, drained, paved, and chemically altered to make way for *Homo sapiens*. Generally, the more human-dominated a landscape is, the more biologically poor and unstable it becomes overall.

Over the past two centuries, 103 species of birds have gone extinct. Among those never to be seen again are the New Zealand laughing owl (*Sceloglaux albifacies*), the Cuban macaw (*Ara tricolor*), and the once spectacularly abundant North American passenger pigeon (*Ectopistes migratorius*). In the next one century 1,186 species could go extinct, according to *Threatened Birds of the World*, a comprehensive study published in 2000 by the global conservation group BirdLife

International. And a far greater number, perhaps approaching 6,000 species, have gone into general decline. In Great Britain, for example, 139 of 247 breeding bird species are in moderate to rapid decline, according to annual surveys. Some Australian ornithologists estimate that one in five of their native birds are threatened with extinction in the not-too-distant future.

Many biologists argue that extinction is just the last stage of decline, occurring long after a species ceases to function as a natural part of its ecosystem. As local populations die out, remaining populations become isolated, their genetic diversity impoverished. "Avian diversity is in major decline," says Nigel Collar, an ornithologist who monitors world bird diversity at BirdLife International. "Not only are more and more species edging closer to extinction, but an unknown number of subspecies and populations are disappearing, and species with continuous ranges are breaking up into isolated pockets of organisms, allowing less and less genetic interchange. Sometimes when we lose what we think is a mere population, we

may be losing a virtual species, in terms of its genetic variation. And what is true for birds is of course true for all of the Earth's life-forms."

## The Greatest Threat

Habitat loss and degradation endangers more birds than any other factor. Habitat is routinely destroyed by commercial logging, slash-and-burn clearing, industrial or urban development, intensive farming, and over-grazing, among other land uses. According to the U.N. Food and Agriculture Organization's *State of the World's Forests* report, the planet is losing 9.4 million hectares (over 23 million acres) of forest cover per year, even though that calculation counts all the natural forest that's converted into plantations as still forested, which from a bird's standpoint is a further loss. Of all the species identified by BirdLife International as threatened, 85 percent are affected by habitat loss. Of these, more than 900 live in forests, almost 400 in grasslands, and 150 in wetlands.

The diversity of birds, like that of insects, mammals, or trees, is highest in the tropics. Predictably, the greatest numbers of threatened bird species also live in the tropics, particularly in Asia and Central and South America, where the human population is still growing rapidly. But while tropical forests have attracted the most public attention, less-heralded habitats face threats just as great. Grasslands, which once covered large areas of all continents except Antarctica, have largely disappeared—and with them many birds, including once-abundant prairie-chickens, bustards, and sandgrouse. In North America, the great grasslands that covered 40 percent of what is now the United States when the Europeans first arrived have declined to 1 percent of the country today. The prairie dog population has declined by 98 percent, and birds that once maintained ecological relationships with these colonial rodents, such as the burrowing owl (*Athene cunicularia*), which nests in

the animals' old burrows, have largely disappeared.

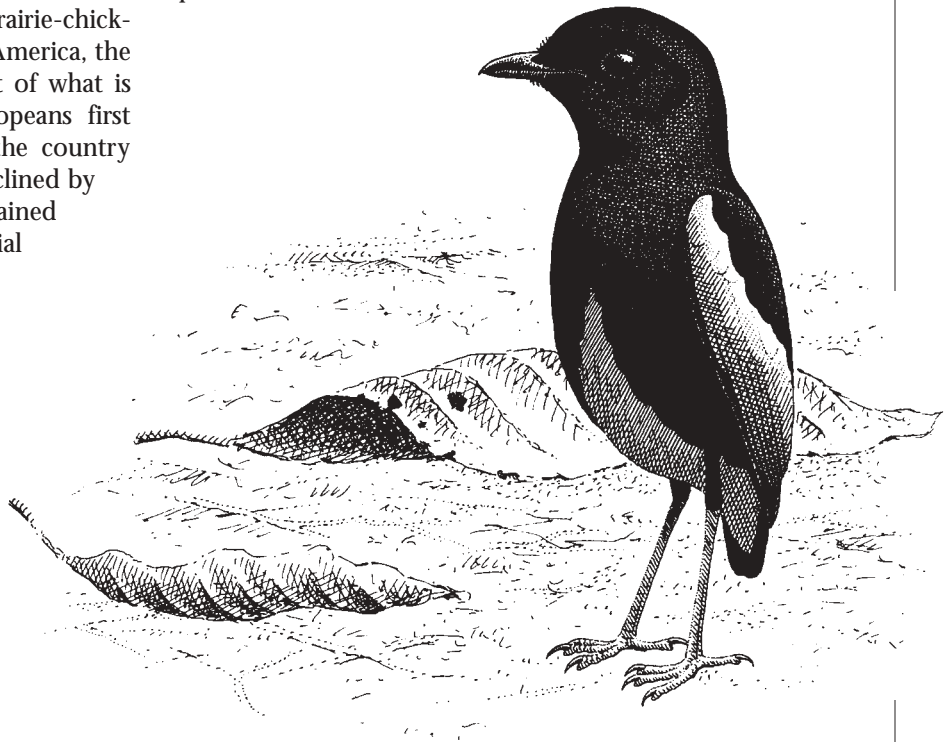
In forested areas, woodland birds are declining as their habitat is increasingly fragmented—cut up by roads, plowed fields, and housing tracts. Fragmentation dries out forest edges, changes plant composition, increases vulnerability to storms, fires, and disease, and clears the way for invasive plants and animals. In North America, wood thrush and other forest songbird populations have diminished because when forests are fragmented, they are more easily invaded by the brown-headed cowbird, an interloper that lays its eggs in other species' nests—much to the detriment of the hosts' own young.

Forest remnants are also more likely to be raided for firewood or fence posts, even if they are not being formally logged, and the loss of much-sought-after dead trees severely limits nesting possibilities for parrots, owls, and other cavity-nesting birds. Furthermore, trees near edges are more subject to wind damage and the removal of loose bark, which would normally be a foraging site for birds such as Australia's crested shrike-tits (*Falcunculus frontatus*). Meanwhile, North American researchers have found that nesting populations of migrant birds such as scarlet tanagers and broad-winged hawks still thrive where woodlands remain extensive and contiguous, despite increased migratory perils and habitat destruction on their wintering grounds.

In many countries, reforestation programs have increased overall tree cover in the past few decades.

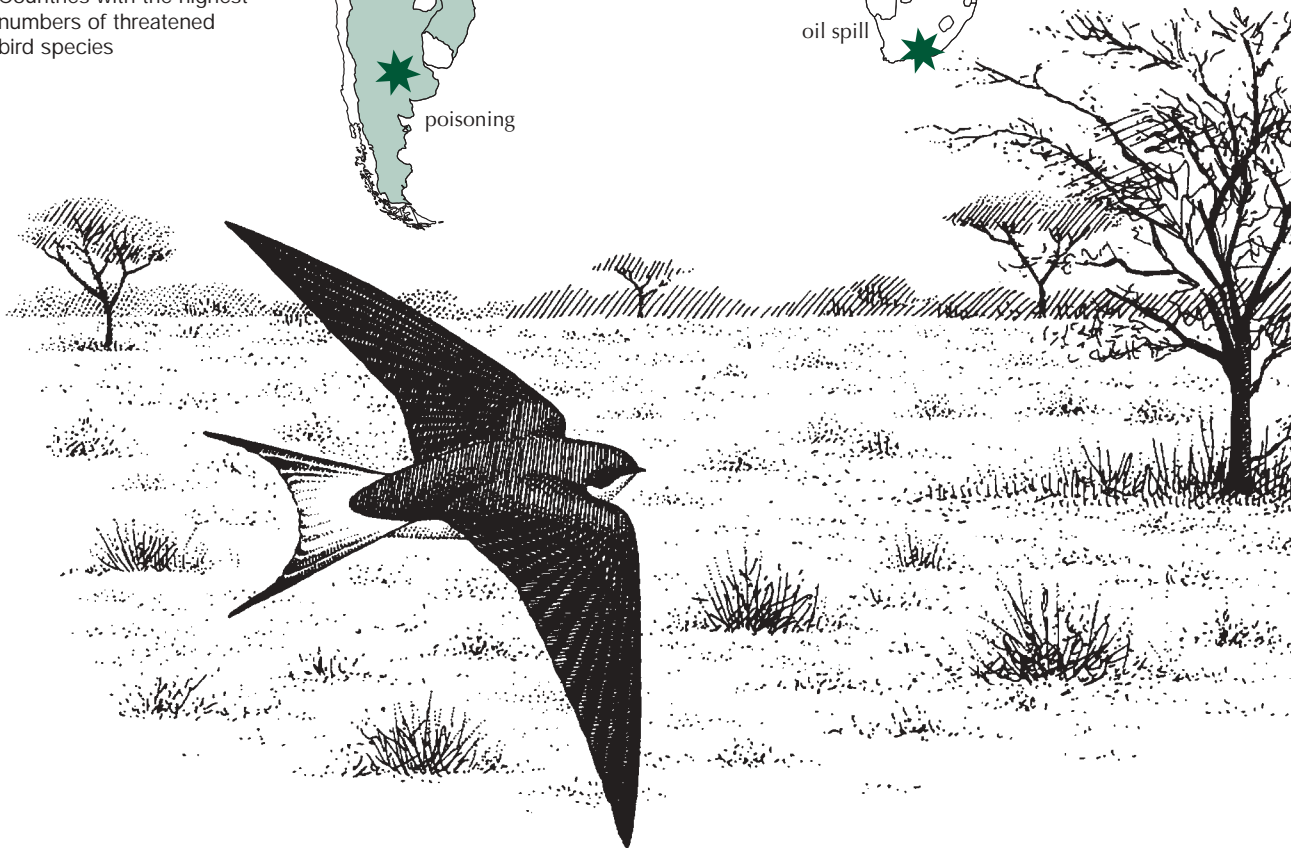
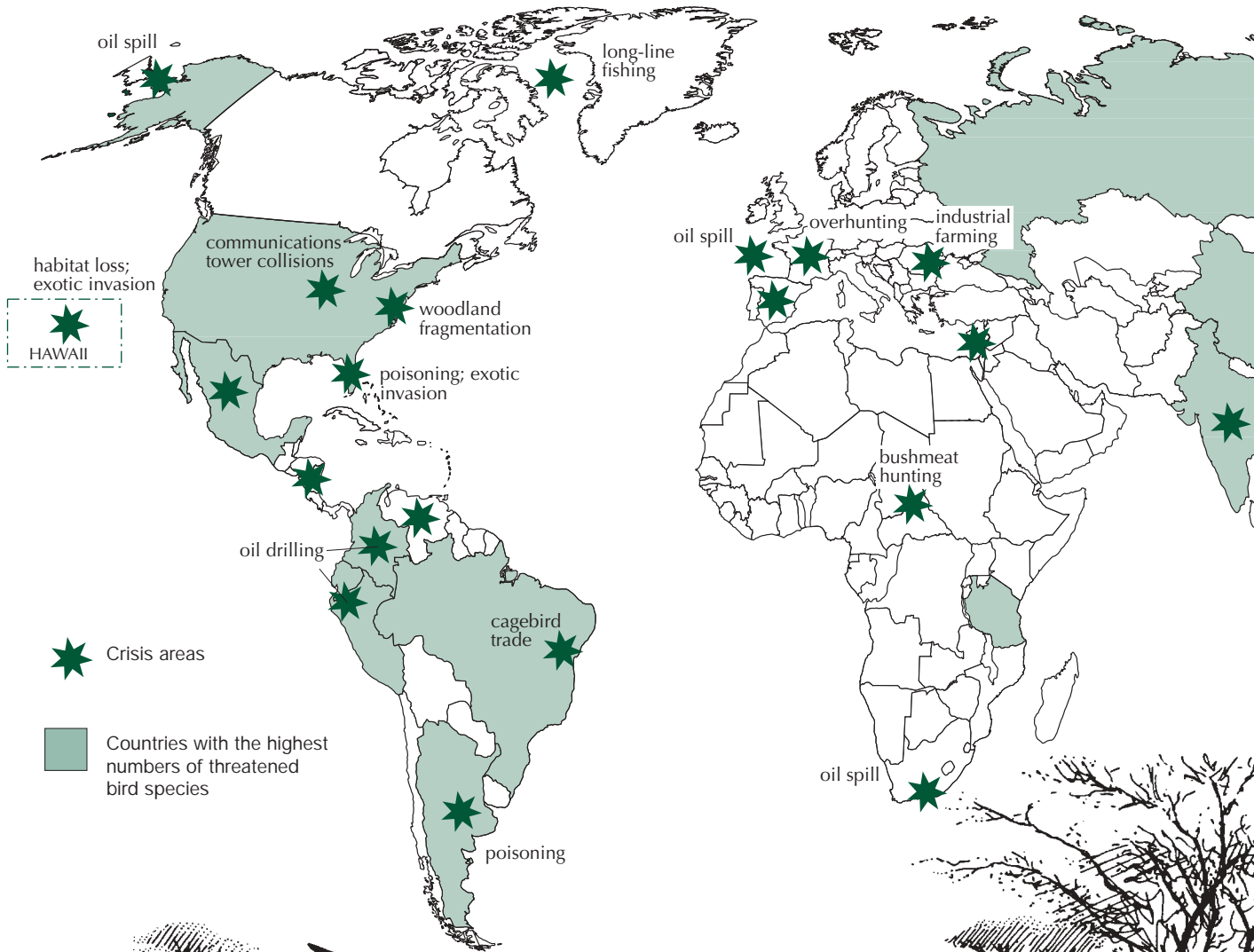
### Superb pitta

Found only on the Papua New Guinean island of Manus, this striking black, scarlet, and blue bird spends its life cloaked in forest. Deforestation and introduced cats and dogs may affect its population, but few scientists have explored this remote area and no formal surveys document the whereabouts of this mysterious creature.



# BIRD WATCH

These are a few of the places where heavy losses or extinctions of birds have been linked to particular causes.





### White-tailed swallow

Scientists know little about the status and habitat needs of the white-tailed swallow, a species found only within a small range in southern Ethiopia. While not yet endangered, it could become vulnerable if its acacia-studded savanna habitat is converted to grazing pastures.

But those programs have put more emphasis on speeding up the production of wood or pulp than on protecting biodiversity. Tropical and subtropical foresters typically plant fast-growing, non-native eucalyptus, casuarina, and pine. In the southeastern United States and other temperate zones, foresters often replace natural forests with plantations of just one type of pine. These monotypic stands, lacking the plant and age diversity of natural forests, offer few bird species an adequate replacement for the original habitat.

Wetlands, the cradle of life for many species, remain under siege from industrial and agricultural pollution, infill and draining for construction or farming, or water diversions for irrigation or city water supplies. Increasingly, wildlife managers responsible for protecting wetlands in drier areas have had to acquire water rights to keep their protected areas wet and therefore welcoming to birds and other wildlife. Dropping water tables and rising soil salinity in Australia and other arid countries have destroyed once-extensive bird habitats, as well as farmland. An Australian government study, for example, estimated in 2000 that up to 1.5 million hectares (4.6 million acres) of the continent's wildlife habitat will be threatened by salt accumulation over the next 50 years.

Aside from being vital nesting grounds for birds, many of the world's wetlands are key stopover sites for millions of transcontinental migrants, on coasts or bays where the birds pause to rest and refuel before or after trans-oceanic journeys. Major examples include China's Deep Bay, Surinam's coastal mudflats, Alaska's Copper River Delta, and Australia's Gulf of Carpentaria. Other stopover sites—favored by storks, hawks, and myriad songbirds—include narrow land corridors such as those at Gibraltar; Turkey's Bosphorus Strait; Eilat, Israel; Point Pelee, Canada; and the coastal Mexican city of Veracruz. In many cases, habitats at these key areas are shrinking due to development.

## The Chemical Menace

The worldwide thirst for oil sends tankers crisscrossing oceans and estuaries in a non-stop game of navigational roulette—resulting in hundreds of spills each year. The largest of these accidents have drawn worldwide attention to the effects of oil on ecosystems and birds. The 1989 Exxon *Valdez* spill killed at least 250,000 birds. A 1994 spill off South Africa killed 5,000 African penguins (*Spheniscus demersus*), and six years later another spill in the same area threatened up to 40 percent of the remaining population. (Catastrophe was averted when thousands of volunteers rescued and relocated many of the birds.) A 1999 spill off of France's Brittany Coast killed an *estimated* 100,000 to 200,000 birds of 40 species. In

January 2001, an Ecuadorian tanker spill off the Galapagos Islands similarly threatened many endemic species (species found only in one place), including the world's rarest gull, the lava gull (*Larus fuliginosus*), and the Galapagos penguin (*Spheniscus mendiculus*). Fortunately, the current swept much of the slick clear of the islands.

Sometimes the chemical menace begins right at the point of raw materials extraction. Proposed drilling in the Arctic National Wildlife Refuge would put the risk of oil-contamination not only in the middle of a major caribou fawning ground, but also amidst nesting grounds for shorebirds and waterfowl that migrate from Alaska to southern North America, South America, Australia, and Asia. Drilling projects in Ecuador and Peru threaten fragile rainforests that rank among the world's areas of highest bird diversity.

Pesticides affect millions of birds worldwide, both in the water and on land. The persistent pesticide DDT builds up in fish-eating birds' tissues and causes widespread nesting failure—as was seen in the United States in the 1950s and 1960s. After U.S. law banned DDT in 1972, the country's peregrine falcon, bald eagle, osprey, and brown pelican populations rebounded. In 2000, 120 countries signed a pesticide treaty that included a phase-out of DDT use elsewhere. But DDT has not gone away. The organochlorine pesticide is still used to control mosquitoes and other pests in many tropical countries (see "Malaria, Mosquitoes, and DDT," beginning on page 10 of this issue), and it persists in soil and water even in places where its use was discontinued 30 years ago.

Perhaps nothing highlights DDT's persistence as well as the 1998 bird die-off at Lake Apopka Restoration Area northwest of Orlando, Florida. There, over 7,200 hectares (about 18,000 acres) of marshland along the north shore of the lake had been diked off and converted to agricultural fields beginning in the early 1900s. In the late 1990s, the Florida state government, with some federal contributions, bought back the farms and land managers flooded the former corn fields and other cropland to control weeds and start restoring the marshland. More than 170 species of birds—including an estimated 40,000 individuals on a single day in December 1998—were attracted by the shallow habitat created by the flooding.

At the time, some observers considered Lake Apopka to be among the most bird-rich inland habitats in North America, especially for wintering species, including white pelicans. However, between November 1998 and March 1999, about 400 white pelicans died there, and another 500—likely birds dispersing from the area—were found dead in other

### São Tomé grosbeak

Once known only from 19th century museum specimens, the São Tomé grosbeak was rediscovered in 1991. It nests in the remnant forest of the little island of São Tomé off the west coast of Africa. Introduced predators—black rats, mona monkeys, civets, and weasels—may threaten this rare songbird.



parts of the state. Preliminary investigation by the U.S. Fish & Wildlife Service determined that the fish-eating birds had been poisoned by organochlorine pesticides such as toxaphene, dieldrin, and DDT derivatives, all of which had been used on the farm fields for decades. The fields were drained by early spring 1999 and remain dry. Extensive research is underway to better understand the fates of, and the risks posed by, the agricultural chemicals there.

The saga of the declining Swainson's hawk, a migratory raptor that breeds in the American West, provides another example of powerful pesticides run amok. In late 1995 and early 1996, an estimated 20,000 of these hawks—about 5 percent of the birds' already declining population—died after eating grasshoppers in Argentine alfalfa, corn, and sunflower fields that had been sprayed with the pesticide monocrotophos, a product of the Ciba-Geigy company. After an international public outcry, Ciba-Geigy offered to buy the chemical back from the farmers, and the Argentine government banned any further spraying of it in Swainson's hawk wintering areas.

Finally, there is the poisoning that occurs as an after-effect of hunting. Waterfowl that escape being shot by hunters often die of lead poisoning, after ingesting spent shot. Many countries now ban the use of lead shot, and the list of such countries is growing, but thousands of birds still die when they mistake shot for food, or for the small stones they normally swallow to grind food in their gizzards. The same fate awaits loons in North America, when they eat the lead sinkers that have been lost by generations of fishermen.

## Alien Effects

As millions of us humans have taken to the skies for high-speed global travel, and as global trade has ramped up the quantities of goods moving across the seas in recent decades, a huge menagerie of other species has followed—in our baggage, in our blood, on our shoes, and of course in the ballast water or shipping containers of our boats. Ranging from microorganisms to invasive plants and predatory snakes, these hitchhiking organisms pose a range of dangers to birds and other wildlife. Exotic species are



### Helmet vanga

Madagascar's vanishing evergreen tropical forests harbor many endemic mammal, reptile, and bird species, including the helmet vanga. This blue-billed bird is disappearing with its habitat, which is falling to timber cutters and subsistence farmers.

moving increasingly into habitats that have no natural defenses against them. The movement is often aided by road-building or land-clearing projects that open up previously protected habitats. The invasion may also be facilitated by global warming, which shifts the natural range of many species.

Alien insects and plants already play a major part in changing bird habitats. In North America, for example, hemlocks and firs are being attacked by Asian and European woolly adelgids, and have largely disappeared from parts of their natural range. The disappearance of the trees has led to declines in warbler and other forest bird populations. Elsewhere in North America, a picturesque flower called purple loosestrife has choked out native marsh vegetation. Meanwhile, vigorous Eurasian weeds such as crested wheat grass, leafy spurge, and cheatgrass have transmogrified millions of acres of grassland and range—driving out sagebrush and other vegetation upon which many native species depend, and increasing the frequency of wildfires.

Cats, mongooses, foxes, and other introduced predators bring a different set of pressures, affecting at least a quarter of the world's threatened bird

species. For example, cats and foxes, originally brought by well-meaning settlers from Europe, have decimated many Australian birds, particularly ground-nesters like the malleefowl. A recent study in southern Australia documented feral cats killing members of 186 of the country's 750 species. On smaller Pacific islands, cats have proved even more voracious, contributing to the extinctions of at least eight bird species since 1800. One was the little Stephen's Island wren (*Traversia lyalli*), a flightless bird that lived nowhere else. Much of the island's forest was destroyed when a lighthouse was built there in 1894. The lighthouse keeper's cat finished off the remaining birds shortly thereafter.

Similarly, sometime after World War II, brown tree snakes from the Solomon Islands or New Guinea evidently hitched a ride to Guam on military airplanes. The invaders eventually wiped out endemic rails, flycatchers, and other wildlife. Biologists fear they might do the same on the Hawaiian Islands, where a few of the snakes have turned up around airports. In Hawaii's mountains, 28 species of unique red, yellow, and orange native birds called honeycreepers have disappeared, and of the 21 or 22 that survive, 18 more are threatened with extinction. In a true case of paradise lost, the birds are plagued by introduced avian pox and malaria, spread by competing exotic birds and exotic mosquitoes. Mosquitoes first arrived aboard the whaling ship *Wellington*, in 1826, and were probably dumped ashore by sailors rinsing out water barrels. Only two species of honeycreepers show signs of developing resistance. The others, along with the vanishing Hawaiian crow, only survive at higher altitudes, which the mosquitoes are slowly invading.

In other parts of the world, diseases now plague even some of the most adaptable birds. In just the past four years, India's once abundant long-billed and white-backed vulture populations have crashed, most likely from a virus. A decade ago, India's vulture populations were booming around open dumps and fields littered with rotting cow carcasses. Now, with vultures gone from many areas, feral dog, rat, and crow populations are exploding. As the microbe marches west into Pakistan, ornithologists fear that African and European vulture populations will soon be affected, wiping out important scavenging birds from the Serengeti to the Pyrenees.

The West Nile Virus's North American arrival in 1999 killed ten or eleven people, but also killed thousands of birds and put rare-bird breeding programs in jeopardy. Subsequent spraying programs, aimed at killing the mosquitoes that spread the sickness, also wipe out a broad spectrum of insect life that many birds depend upon to feed themselves and their young. Most mosquito control districts use chemicals such as pyrethroids, which are not very directly toxic

to birds, but which are highly toxic to pollinating insects and most aquatic life, including many of the frogs, fish, and dragonflies that birds need for food.

## Hunting, Trapping, and Fishing

In many countries, poorly regulated hunting puts millions of birds in the line of fire. Although public awareness campaigns over the past decade have reduced the massacre to some degree, millions of birds are still indiscriminately shot in Malta, Greece, and parts of France and Italy, or are caught with sticky lime on Cyprus and in eastern Spain. Although far less frequently than in decades past, eagles and hawks are still illegally shot in some parts of North America.

In the tropics, as settled areas lose their wildlife, subsistence hunters and trappers move into more and more remote areas:

- In southern Mexico, Central America, and South America, habitat loss and heavy hunting are pushing large turkey-like birds called guans and curassows toward extinction.

- In South America, small songbirds called red siskins and yellow cardinals have been captured to feed the continent's insatiable cagebird trade, and are now at the brink of extinction.

- In New Guinea, mountain hunters target the black sicklebill and birds of paradise, which are prized both for their showy feathers and as food.

- In equatorial Africa, after logging companies cut new roads into large tracts of remaining tropical rainforest, bush meat market hunters systematically wipe out the birds and other wildlife.

- In Brazil and elsewhere, illegal trapping of birds for the pet trade has made parrots one of the world's most threatened bird families. And despite international treaties limiting trade in wild birds, almost a third of the world's 330 parrot species are threatened with extinction due to collecting as well as to habitat loss.

Even the high seas provide little haven for birds these days. After a 1991 international moratorium on the use of drift nets, the huge nets that scoop up massive quantities of sea birds and other animals along with fish, a new danger has emerged in the form of long-line fishing. Dragged behind ships, long lines can be up to 80 miles long and studded with 12,000 or more baited hooks. Albatrosses and petrels grab the bait, get hooked, then drown as the lines sink. Some international measures have been taken—such as night-time line setting—to reduce the fatalities of these long-lived but slowly reproducing birds. But a large illegal industry continues to thrive. Off the coast of Patagonia, for example, a pirate toothfish fishery threatens the ecology of Antarctic waters not only by further reducing fish stocks but also by drowning hundreds of thousands of seabirds. Some

albatross populations are very small and may soon go extinct. At the same time, growing numbers of introduced predators such as rats threaten many of these seafaring birds when they make annual landfalls to nest on far-flung islands.

### Modern Conveniences and Climate Change

Many of the conveniences that we generally take for granted—better communication, brighter workspaces, and ample electricity—come at a heavy cost to birds. Many birds migrate at night, and many die

after mid-air collisions with the world's growing forest of television, radio, and cell-phone towers. During just one cloudy night in January 1998, for example, between 5,000 and 10,000 lapland longspurs, sparrow-like birds that breed on tundra but winter far south on farms in the United States, died after hitting one 420-foot-tall tower in Kansas. Between 1957 and 1994, 121,000 dead birds of 123 species were counted beneath a single, 960-foot television tower in Eau Claire, Wisconsin.

Large day-flying birds, such as cranes, storks, eagles, and bustards, often hit electrical lines

#### Long-tailed ground-roller

Multiple pressures endanger the long-tailed ground-roller, a bird endemic to a small patch of dry, thorny forest on Madagascar. Urbanization sends growing numbers of people into its habitat to cut wood and hunt the birds. Slash-and-burn agriculture, overgrazing, and introduced dogs and rats also threaten this ground-loving bird.



obsured by fog. Many others are electrocuted when they touch wires while perching atop power poles. Glass-walled or large-windowed office buildings, which reflect the images of nearby trees, also confuse and knock out thousands of migrating birds.

To the dangers of man-made structures must now be added the dangers of human-caused global warming, which is hastened by many of the same activities that destroy habitat—forest clearing, forest fires, road building, and urban expansion. Over the past few decades, scientists have documented earlier flower blooming, butterfly emergence, and frog calling—and earlier migration and egg-laying dates for European and North American birds, from geese to swallows. Many bird species' ranges are creeping northward. It's not clear whether the various components of natural systems will shift in synchrony, but many probably will not. Habitats may change too quickly for many species to adapt. Park boundaries may be rendered useless, and many localized species may have no place to go.

## Strategies for Saving Birds

In 1998, conservation biologists Russell A. Mittermeier, Norman Myers, and Jorgen B. Thomsen wrote in the journal *Conservation Biology*: "If we are to have a real impact on biodiversity conservation worldwide, it is essential that we place great emphasis on the biologically most important regions regardless of their political or social situation and do whatever possible to overcome social and political options." Decades of field work, computer modeling, and analysis of satellite imagery had pinpointed "hot spots"—areas that harbor disproportionately high diversity and high numbers of imperiled bird species. About 20,000 Important Bird Areas—the most important bird breeding and migration spots—have

been identified around the world, as have 218 Endemic Bird Areas—areas with the highest numbers of unique or endemic species. Taken together, these two sets of areas harbor almost 70 percent of the world's threatened bird species. While not conferring formal protection, these designations offer a means of establishing priorities for international, national, and local protection efforts.

We cannot improve the plight of birds—and biodiversity—without simultaneously addressing the needs of local people, wildlife, and the natural systems upon which both people and wildlife depend. But that also means that failure to do what's necessary to protect birds would be to endanger our own future. Yet failure seems likely in many areas. Nothing nullifies conservation gains faster than warfare or the ascension of corrupt leaders. In the 1970s, for example, the north-central African nation of Chad had one of the best park and game reserve systems in the world. Then came 20 years of civil war and political turmoil, and Chad lost not only its park system but much of its native wildlife. Similar losses occurred during Idi Amin's dictatorship in Uganda. In the early 1990s, Rwanda's civil war forced officials to abandon the country's parks, which were also one of the country's most important sources of foreign income. The war in Yugoslavia led to a similar devastation and abandonment of wildlife areas. In short, many progressive wildlife laws exist to protect birds and other wildlife, yet go unenforced. And poverty often renders it impossible for local people to embrace efforts to protect natural resources unless they clearly benefit in the bargain. Most countries also place economic advancement far ahead of environmental protections, yet the two interests are not mutually exclusive.

Over the past 20 years, the emergence of the multidisciplinary field of conservation biology—a joining of biology, conservation science, economics, and social integration—changed the focus of biodiversity preservation from a park to a landscape level, incorporating not just protected areas but adjacent lands and water sources. Today, landscape management increasingly places conservation alongside planning for human convenience and economic gain. This approach is not only progressive but pragmatic, since most of the world's remaining wild areas remain in private hands or under unprotected status. Marriages between agriculture and conservation interests, in particular, are becoming more frequent and now include:

- The growing popularity of Central and South American shade-grown coffee, a crop grown the traditional way, beneath a tropical forest canopy that also shelters res-



The illustrations in this article, all of endangered birds, were done by Tony Disley of the United Kingdom. Disley illustrated the field guides *The Birds of the Gambia and Senegal* (Pica Press), *Birds of South East Asia* (New Holland Press), and *Birds of the Seychelles and Outlying Islands* (A&C Black, London). He was awarded the Gold Medal for Botanical Illustration by the Royal Horticultural Society in 1991. His website is [www.ram-internet.co.uk/tdisley/](http://www.ram-internet.co.uk/tdisley/).

ident and migratory birds. Shade-grown coffee also requires far fewer chemical inputs than coffee grown on “modern,” pesticide-heavy “sun” farms. (See Brian Halweil’s article beginning on page 36 of this issue.)

- Some successful incentive programs, such as the U.S. Conservation Reserve Program, which pays farmers to periodically set aside land for wildlife as well as soil conservation reasons. Many grassland birds get a boost from this program.

- A program set up by Dutch biologists that offers dairy farmers payments to protect and encourage nesting birds as a farm product. The experiment, conducted between 1993 and 1996 and described in *Conservation Biology* in 2001, found that it was cheaper to pay farmers to monitor and manage breeding wild birds as if they were a crop than to offer compensation for keeping farm land out of production. The project resulted in increased breeding of lapwings, godwits, ruffs, and other meadow birds, while not interrupting the dairy business. By 1998, about 11,000 hectares (27,000 acres) of Dutch farmland were enrolled in this scheme.

- Conservation on rice farms. When the California state government restricted rice growers from burning their stubble in fall, rice farmers joined with conservationists to flood their fields and augment available winter waterfowl habitat in the Sacramento Valley, while helping their stubble biodegrade instead of going up in smoke. From a pilot project in 1993, the program grew to embrace about 61,000 hectares (150,000 acres) by 1998.

The valley is now an important wintering area for thousands of ducks, geese, ibis, herons, gulls, sandpipers, and other wetland birds.

In my article “Flying into Trouble,” in the

January/February 1994 issue of this magazine, I noted that Europe’s familiar, often rooftop-nesting white storks were in precipitous decline. Since then, many white stork populations have rebounded, benefiting from recent wet seasons on their drought-prone African wintering grounds. The topsy-turvy fortunes of this spectacular species illustrate how completely birds’ survival is intertwined with ours—a point I could not forget last spring as I watched six of these stately birds wade on bright red legs through Doñana National Park’s rippling shallows. My enjoyment of watching these striking creatures was muted by worries about their future. Three years after the mine spill drifted into Doñana, parts of the ecosystem remain highly contaminated, and up to 2 percent of local white storks are born with visible deformities. Would heavy metal contamination keep the apparently robust birds I watched from raising young? Might they strike power lines one cloudy morning? Or will these birds someday spearhead a new colony in a town far to the north, where their kind has not been seen for decades? Through their fortunes or failures, storks and other feathered bellwethers will help us keep ourselves in check, if we care to heed the warnings.

---

Former WORLD WATCH associate editor Howard Youth frequently writes on wildlife conservation issues.

### Wattled Crane

While wetland destruction is the primary threat to the wattled crane, poisoning, power line collisions, and hunting also take their toll on these elegant African birds.

