

## Listening to the Birds

JOSEPH TOBIAS, LEON BENNUN,  
AND ALISON STATTERSFIELD

The history of humankind is part fact and part fable and is strewn with iconic references to birds throughout. When the Gauls crept up the moonlit slopes of Capitoline Hill back in the first century BC, the sentries and their dogs slept, blissfully unaware of the danger. It was the geese that woke and raised the alarm, according to Titus Livius, just in time to save the garrison. The tale echoes, in romantic fashion, the theme of this essay. All around us, the clamor of birds is signaling danger: will we wake from our complacent sleep in time?

It is increasingly clear that biodiversity, the bedrock of life, is eroding away. We can only hope to reverse this process through vigilance and sound science—by assessing the risks biodiversity faces and setting priorities for its protection. Aside from our Roman geese, there are a number of reasons to consider birds as the most reliable early warning system at our disposal: birds are highly visible, familiar, and responsive to environmental fluctuations.

Avian diversity—around 10,000 species by current reckoning—is broad enough to show subtle shifts and patterns, and yet not so broad as to strain recording and analysis. Birds are widespread from poles to equator, from midocean to mountaintop. They are also better understood than all other vertebrates in terms of taxonomy, biogeography, and ecology. An active global network of expert and amateur ornithologists constantly generates a huge supply of data, allowing a glimpse of global population trends over recent decades. Birds provide a valuable starting point for mapping the richness and uniqueness of species in an area, as well as threats and conservation priorities. Therefore, until we are equipped with the time and resources for rigorous interdisciplinary exploration and analysis, we can, and should, use birds to judge and monitor the state of the wild.

A great deal of information on the status and distribution of birds has been compiled and analyzed by BirdLife International<sup>1</sup> and synthesized in the *State of the World's Birds*.<sup>2</sup> This document can serve as a progress report for global biodiversity, assessing its health, why it is being lost, and how we should conserve it;

the document can also play a role on a global scale similar to that of the canary carried down into the shaft of coal mines to test the quality of the air. What noxious fumes are lurking there?

More than 150 bird species are known or suspected to have disappeared since 1500,<sup>3</sup> almost entirely because of human activity, and the process continues today: wild populations of at least 17 species were lost in the last quarter of the 20th century. There is no road back for the Guam flycatcher (*Myiagra freycineti*), devoured by alien tree snakes, and no second chance for the Colombian grebe (*Podiceps andinus*), a victim of wetland loss, pollution, overhunting, and predation by introduced trout.

Extinction officially threatens 1,211 species—roughly one in eight of all birds. Of these globally threatened birds (GTBs), 179 are critically endangered. They stand at the brink of oblivion because of rapid declines or dimly small populations or ranges. An estimated 77 species are represented by less than 50 individuals, rendering them very vulnerable to environmental fluctuations and catastrophes, to demographic vagaries (one year, perhaps, most offspring might be male), and to a variety of social and genetic disruptions. At last count, there were 10 pairs of Tahiti monarch (*Pomarea nigra*) in French Polynesia and 12 wild Bali starlings (*Leucopsar rothschildi*). Time may have run out on Hawaii's pō'ouli (*Melamprosops phaeosoma*) when the last individual in captivity died late last year and the last two in the wild had not been seen for some months. Taking into account this overcrowded emergency ward of ailing species, and given the time lag between habitat loss and extinction,<sup>4</sup> a sizeable proportion of the world's birds may be living on borrowed time.

White-rumped vulture.  
(Credit: Otto Pfister)

But extinction is only part of the story. Even if extinction is averted, a world full of rare birds, clinging to existence in captive-breeding facilities and pockets of protected habitat isolated in an overpopulated, intensively cultivated, industrialized landscape, is hardly cause for celebration. Unfortunately, there are plenty of signs that such a world looms before us. The Red List Index—a score based on extinction risk documented in the IUCN Red List of Threatened Species—shows that birds overall are sinking deeper into danger.<sup>5</sup> Other analyses agree, documenting population declines and shrinking ranges. In South America, most threatened birds have disappeared from at least 30 percent of their range; in particularly hard-hit areas such as southeast Brazil, ranges have contracted by up to 99 percent.

Even common birds are feeling the pinch. The skylark (*Alauda arvensis*) and the red-winged blackbird (*Agelaius phoeniceus*) have long been among the most familiar species in Europe and North America,

respectively. How European farmland skylark, have declined since the 1960s.<sup>6</sup> Meanwhile, in the United States, blackbirds have declined 10 percent each year since 1990.

Waterbirds and shorebirds are also vulnerable for roughly half the reasons as others: 41 percent are threatened. News from the high Arctic shows yearly declines of up to 50 percent. South Atlantic oystercatchers show similar trends, including a 50 percent decline since 1990.

The caged canary is a symbol of clinging nervously to existence. It is in danger: biodiversity is declining.

But birds are going extinct. The threats are most serious where they are easily drawn between habitats. They claim the lives of 100 million people, including 95 percent of the world's poor. A finger of suspicion points to be a veterinary practice that is lethal to livestock. Vulture deaths are lethal results. In the case of the solution is real. In the case of albatrosses, we need to save vultures and the remaining population.

In general, captive breeding can be more familiar. Captive breeding is by far the most common. Unsustainable practices are disappearing. In the case of existing farmland, shifting agriculture and wildernesses, habitat loss, cultivation, industrialization, along with them, are the most common. Which decimate the world's birds.

Whether three



respectively. However, European farmland birds, including the skylark, have declined by over a third since the 1960s.<sup>6</sup> Meanwhile, across much of the United States, blackbird numbers dropped at least 1 percent each year between 1980 and 1999.<sup>7</sup>

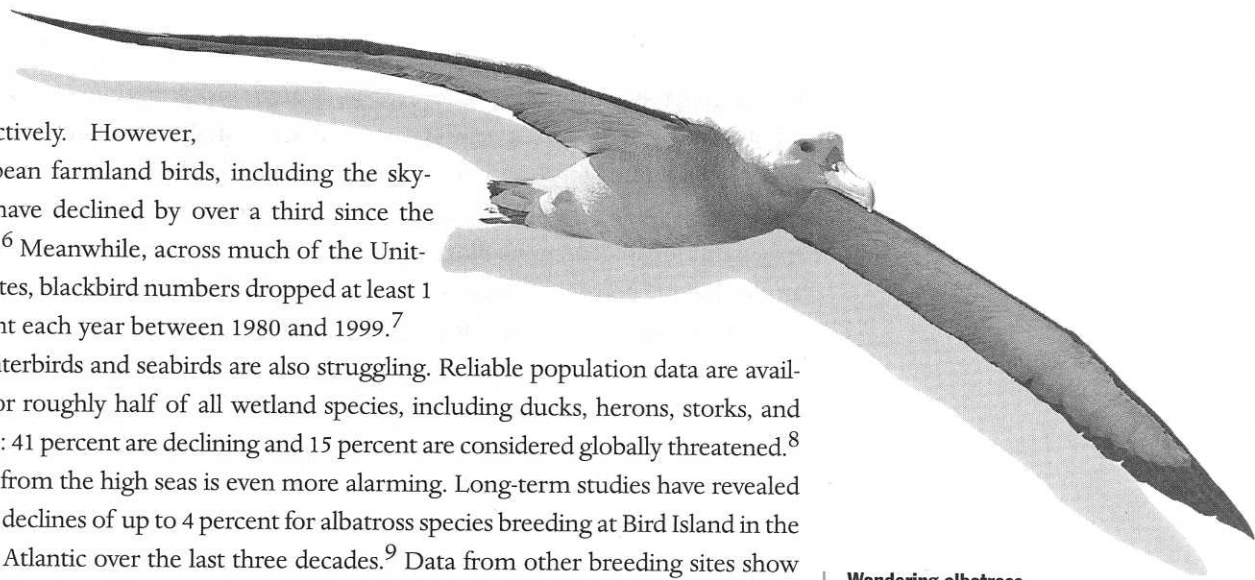
Waterbirds and seabirds are also struggling. Reliable population data are available for roughly half of all wetland species, including ducks, herons, storks, and others: 41 percent are declining and 15 percent are considered globally threatened.<sup>8</sup> News from the high seas is even more alarming. Long-term studies have revealed yearly declines of up to 4 percent for albatross species breeding at Bird Island in the South Atlantic over the last three decades.<sup>9</sup> Data from other breeding sites show similar trends, indicating rangewide declines of these spectacular seabirds.

The caged canary has long since stopped singing, and agitated geese are cackling nervously in the citadel. In concert, birds by the millions are telling us we are in danger: biodiversity, the world's self-regulating life-support mechanism, is at risk.

But birds are giving us much more than a warning. They are telling us which threats are most serious, and which responses are needed. For example, a link is easily drawn between declining albatross numbers and the longline fisheries that claim the lives of tens of thousands of seabirds each year.<sup>10</sup> But, recently, a staggering 95 percent decline in certain Indian vultures was harder to explain. The finger of suspicion pointed first at a viral disease, but the culprit is now known to be a veterinary drug, diclofenac, an anti-inflammatory routinely administered to livestock. Vultures ingest diclofenac when they feed on cattle carcasses, with lethal results. In these cases, the pathway of cause and effect can be traced, and the solution is readily identified, though not always easy to implement. To save albatrosses, we need to control unregulated fisheries and modify the way we fish; to save vultures we must substitute other, safer drugs for diclofenac and protect the remaining population.

In general, causal pathways are less straightforward, though the culprits may be more familiar. On a global scale, habitat destruction, degradation, and fragmentation is by far the most pressing problem, affecting 86 percent of threatened birds. Unsustainable forestry undermines 64 percent, and some forests are fast disappearing. In Indonesia, where three-quarters of logging is now illegal, 40 percent of existing forests were logged between 1950 and 2000. Elsewhere, intensifying agriculture threatens many open-country species. Even in the world's great wildernesses, habitat is being eroded by the inexorable spread of urbanization, cultivation, industry, and infrastructure. These changes bring other problems along with them—disturbance, fire, pollution, hunting, invasive species—all of which decimate birds and other wildlife (see color plate 16).

Whether threats are direct or indirect, there is no escaping the fact that we are



**Wandering albatross.**  
(Credit: Tony Palliser)

the problem: 99 percent of endangered birds are at risk from human activities. Hunting impacts 345 bird species (nearly 30 percent of all at-risk birds), with 262 species overhunted for food and 117 species trapped for the pet trade.

Some birds are particular hunting targets: waterfowl, birds of prey, galliforms (pheasants, quails, and francolins), pigeons and doves, curassows and guans, and an alarming 47 percent of cranes. Harvesting wild birds provides a vital source of both protein and income for many rural communities, but expanding markets, increased demand, and modern guns and traps have pushed the exploitation of many species beyond sustainable levels.

Among parrots, no less than 52 species are threatened by the caged-bird trade. They form a significant chunk of the estimated 4 million wild birds that are traded internationally each year,<sup>11</sup> valued at about \$60 million. Although the United States and Canada no longer import wild birds as pets, the European Union remains a major market. In the United Kingdom alone, 88 percent of parrots imported between 1995 and 2000 were caught in the wild—about 24,000 birds, and at least as many will have died during capture and transportation.

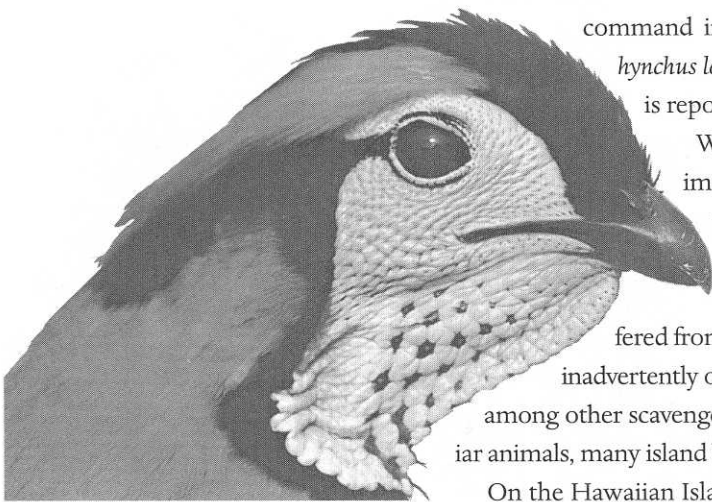
Southeast Asia is a notable hub of trade in live birds. This biodiverse region includes some of the world's poorest and most rapidly developing countries. Increased spending power in some places, and continued poverty in others, fuel an intensive wildlife trade. Birds that were once widespread are disappearing fast, such as the straw-headed bulbul (*Pycnonotus zeylanicus*) and the Philippine cockatoo (*Cacatua haematuropygia*), which are in high demand as caged birds.

Both national laws and the Convention on International Trade in Endangered Species (CITES) provide some controls on the trapping and sale of birds. Unfortunately, these are not always effective. Of the birds traded internationally each year, some 1.5 million are protected under CITES. But there is great demand for many species. Wild birds are still often cheaper to buy than captive-bred ones, driving a widespread illegal trade—the size of which can only be guessed at. The rarer the bird and the more restricted the trade, the higher the prices that specimens command in illegal markets. For example, Lear's macaw (*Anodorhynchus leari*), a big, blue, critically endangered parrot from Brazil, is reportedly worth more than \$45,000 on the black market.

Where people have not hunted birds into extinction, the animals accompanying us often have. Invasive species have wiped out at least 65 unique bird species since 1500, and currently affect two-thirds of imperiled birds on oceanic islands. On most of these islands, the native fauna has suffered from the arrival of humans and their tendency to introduce—inadvertently or otherwise—cats, rats, snakes, mongooses, pigs, and dogs, among other scavengers and predators. Lacking defenses against these unfamiliar animals, many island birds (and their eggs and chicks) have proved easy pickings. On the Hawaiian Islands, additional pressure is imposed by novel pathogens.

**The Blyth's tragopan is considered vulnerable because of deforestation of its restricted Himalayan range.**

(Credit: Jean Howman/WPA)



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two introduced diseases, avian pox and malaria, carried by mosquitoes (themselves introduced), have contributed to the extermination of over 50 bird species.

Looming behind these immediate pressures is the specter of climate change. We can already see its effects on bird distribution and behavior. To give just a few examples: in Costa Rica, lowland and foothill species such as the keel-billed toucan (*Ramphastos sulfuratus*) have extended their ranges up mountain slopes, as the level of the cloud-base rises. In the United Kingdom, many birds are breeding significantly earlier than they used to. Others, like the great tit (*Parus major*) are not, though food supply for this species' nestlings now peaks earlier and is out of synchrony with their breeding timing. In Europe, birds that spend the winter south of the Sahara are setting off earlier, possibly so that they can cross the Sahel before the seasonal dry period, while those wintering north of the Sahara are migrating later. In the northeastern United States, many migrants are arriving substantially earlier from their wintering grounds.

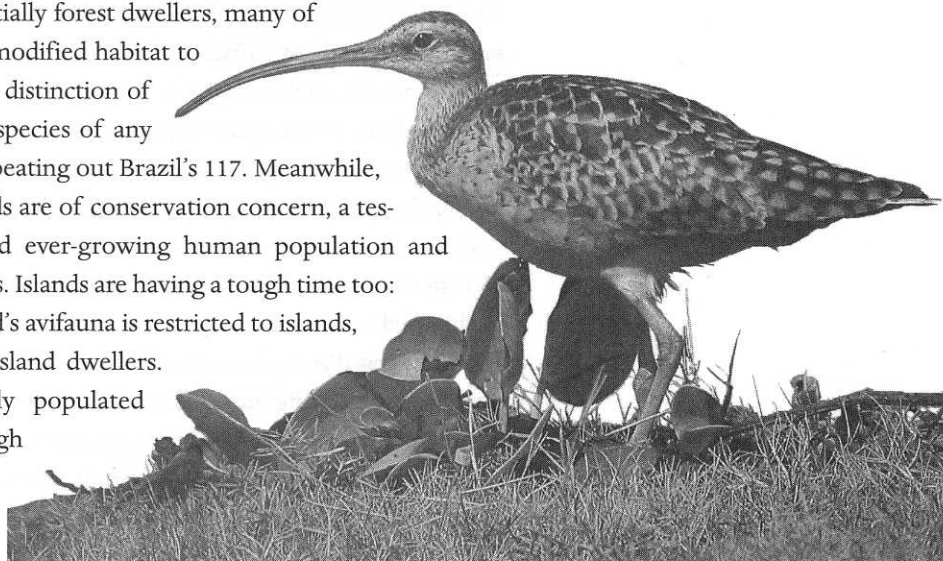
It may seem surprising that climate change is a major threat to birds. Can't they just fly off to where the climate suits them? Unfortunately, many will have nowhere to fly as climate shifts. Some bird species will be pushed off the top of mountains or the edge of continents, others will find their islands under water or their little remnant patches of habitat simply disappearing. Climate change brings in its wake new pressures from competitors, predators, parasites, diseases, and powerful disturbances such as drought-induced fires or storms that may act in synergy with other threats. How many species we may lose, and how far we can manage and mitigate the effects, depend crucially on how far and fast temperatures rise. Models suggest that a rise of more than 3.6°F (2.2°C) in the next century will be catastrophic for birds, biodiversity, and people.

If we look at the ranges of threatened birds, we find that most of them are distributed in the tropics, with four-fifths restricted to developing countries.

Three quarters of these are essentially forest dwellers, many of which require pristine or lightly modified habitat to survive. Indonesia has the dubious distinction of supporting the most at-risk bird species of any country, 119 to be exact—barely beating out Brazil's 117. Meanwhile, roughly a quarter of all Asian birds are of conservation concern, a testament to the region's high and ever-growing human population and consequent scramble for resources. Islands are having a tough time too: while only 17 percent of the world's avifauna is restricted to islands, half of all threatened birds are island dwellers. In the tropics, forests, islands, densely populated developing countries with high

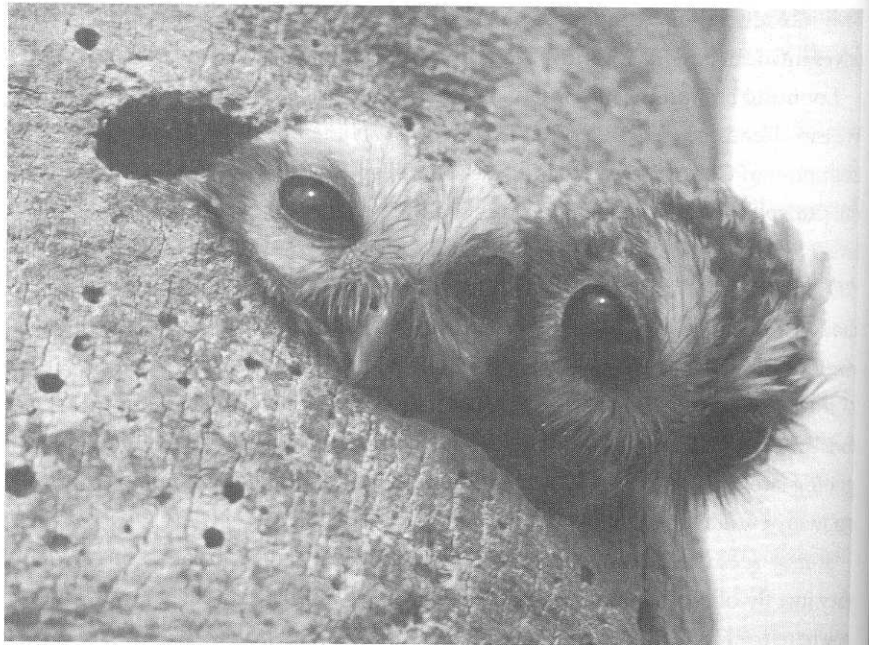
**The bristle-thighed curlew, a bird that nests on the Alaskan tundra and winters on tropical Pacific islands, is flightless during its winter molting season—making it vulnerable to cats, dogs, and other introduced predators.**

(Credit: John Clarkson)



**The extinction rate of endemic island birds remains high. A series of protected areas in Cuba has helped preserve populations of native birds, including Cuban screech owls, pictured here.**

(Credit: Steve Winter/National Geographic Image Collection)

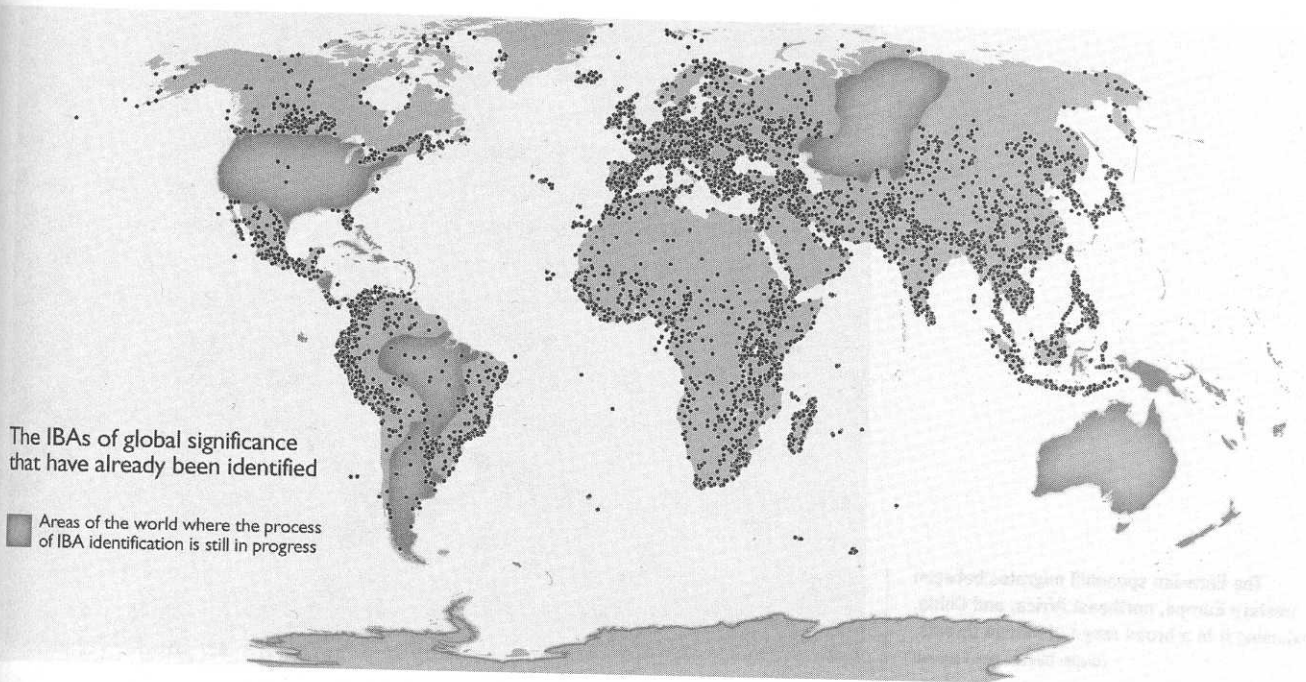


species uniqueness: these are the primary foci where conservation attention must urgently be trained.

We might think that efforts should already be under way to protect these key areas, but it requires financial commitment. Each year, the pitifully small global expenditure for protected areas totals \$7 billion—about one-third the estimated need—and only \$1 billion is spent in developing countries.<sup>12</sup> In fact, correcting for the preponderance of threatened birds in developing countries, conservation investment is almost 20 times lower there than in the developed world. To counteract this skew, investment in biodiversity needs to be much greater and more strategic. This might sound unreasonable, but conservation is affordable. We can safeguard the bulk of global biodiversity for much less than is spent on soft drinks in the United States each year.

Many birds concentrate in small, often overlapping, ranges, or in a few specific locations. These are the sites most deserving of conservation attention. Identifying these critical sites produces a global conservation strategy coded into a vast but conservable network known as Important Bird Areas (IBAs). If properly and effectively managed, IBAs will help ensure the survival of a large proportion of the world's birds as well as much other biodiversity.<sup>13</sup>

But saving IBAs is no mean feat. Tackling deforestation, curbing agricultural expansion, regulating the burning of grassland or drainage of wetlands: these objectives are easy to recommend but difficult to achieve because the issues involved are so complex, and the vested interests often so powerful. Human populations continue to grow, along with our demands on natural resources. Consumption



The IBAs of global significance that have already been identified ..

■ Areas of the world where the process of IBA identification is still in progress

and expectations of material wealth are rising in richer nations, driving agricultural intensification, habitat destruction, and overexploitation elsewhere.

According to our feathered indicators, we are using land unsustainably, and biodiversity is suffering as a result. Of course, our destruction of nature is driven by deeper problems based on a subtle interplay of greed, unfair trade, asymmetrical power, and distorted value systems. Above all, the state of the world's birds is symptomatic of a deep-rooted flaw in the way we value nature.

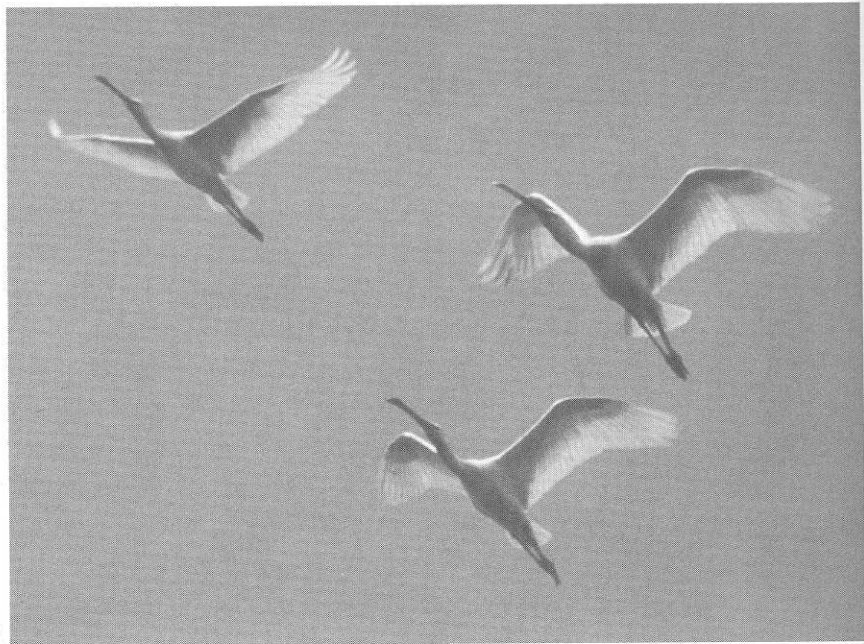
In developed societies, nature is increasingly popular as an aesthetic refuge, but the services that ecosystems provide are little understood or appreciated. Wild nature provides us with raw materials, medicines, and food—and stabilizes our climate, cleans our waste, consolidates our soils, and produces the oxygen we breathe. Biologists and economists recently attempted to hang a price tag on these ecosystem services, arriving at a figure of \$33 trillion per year—not far short of the annual gross global product. And yet, we harvest nature's spectacular bounty as if it were limitless. Why do we destroy a natural heritage that is not only beautiful, but fantastically valuable?

The answer has something to do with ignorance, arrogance, and hefty short-term profits for a privileged few. It has little to do with sustainable economics. In monetary terms, the long-term benefits of conserving our planet's natural habitat are estimated to exceed the costs by at least 100 to 1.<sup>14</sup> These facts must be driven home if policymakers are to shift their stance toward more sustainable forms of development and ensure that biodiversity conservation achieves the legal and financial backing it so badly needs.

**More than 6,400 Important Bird Areas of global significance have been identified in 167 countries and territories worldwide.**  
(Credit: BirdLife International)

**The Eurasian spoonbill migrates between western Europe, northeast Africa, and China, exposing it to a broad range of human threats.**

*(Credit: BirdLife International)*



There is international consensus that biodiversity is worth preserving, and commitment to slow its loss before 2010, a target confirmed at the World Summit at Johannesburg in 2002.<sup>15</sup> But if the planet's disappearing birds are any indicator, we are patently failing in our task. Policies are weak, vague, and riddled with loopholes. Options are narrowing. Time is running out.

Given the value of biodiversity, and the irreversible nature of extinction, our failure seems likely to affect all of humanity, permanently, and therefore constitutes a much more terrifying threat—with further-reaching consequences—than terrorism. Our freedom, security, and quality of life are endangered by our mismanagement of nature, and yet there is no government-touted, corporate-driven, prime time “War on Extinction.”

There is, however, a war on extinction of a different kind—a lower-case war, with lower profile and lower outlay—being fought by an army of motivated individuals, enlightened politicians, and conservation organizations. In the face of collective apathy and a shortage of political will, this army is managing to get things done.

In 2000, BirdLife compiled a list of 5,500 key actions for 1,186 globally threatened birds. By 2004, some of these actions had been implemented for an impressive 67 percent of targeted species, and at least some benefit was evident for one-quarter. However, the full suite of conservation measures is under way for a mere 5 percent. Plenty of challenges remain, not least of which are protections for the rarest of the rare—the 28 critically endangered bird species for which no actions are currently in place.

While we should not flinch from the central sobering message—that the state



of the world's birds is deteriorating fast—it is important to appreciate that many crucial steps have been taken toward reversing that trend. For conservationists, the emphasis must now switch from analyzing data and establishing priorities to active conservation. International treaties and paper commitments must be turned into positive action, and working relationships must be fostered among governments, corporations, nongovernmental organizations (NGOs), and communities to seek new ways of protecting biodiversity.

Therein lies our only chance of ensuring that birds will be protected worldwide. Birds are not only excellent ecosystem indicators but provide a gateway into environmental awareness. If we can use birds to engage the true support of governments and civil society, and if we can bring about a real change in values and behavior, there might yet be a song of hope.

This would be fitting because hope, after all, is the one virtue birds have symbolized for millennia. Perhaps the most famous of all is the white dove freed by Noah that returned seven days later with an olive leaf clasped in its beak, proof that the flood had abated (according to the author of the Book of Genesis). Birds, seemingly among the most fragile of animals, may have brought us a vital clue, and may yet help us steer the ark—harboring all the world's biodiversity, ourselves included—toward a brighter future. Whether this remains a myth or becomes a reality depends squarely on us.