


The State of The Nation's Ecosystems 2008

Focus On

Wildlife

Heinz Center Report Highlights U. S. Wildlife, Habitat



Fish and wildlife have always been an integral part of the American experience. Americans today have a deep appreciation for wild animals, whether songbirds at the backyard bird feeder, waterfowl on local bays and rivers, trout in a cold mountain stream, or elk and grizzly bears in national forests and parks. Each year, millions of Americans participate in wildlife-related recreational activities, from bird-watching and butterfly gardening to more traditional pastimes such as hunting and fishing. Wildlife also provide us with substantial economic benefits: native and domesticated bees pollinate agricultural crops worth billions of dollars each year in the United States, while American wildlife enthusiasts spend additional billions every year in the pursuit of hunting, fishing, and wildlife-watching opportunities.

Our wildlife species depend on ecosystems, which provide the four essential **habitat** elements (food, water, shelter, and places to raise young) necessary for wildlife to thrive. Wildlife also contribute to ecosystem processes such as pollination and the cycling of important nutrients. **The Heinz Center's *State of the Nation's Ecosystems 2008*** provides a large-scale view of ecosystems in the United States and includes a set of key **indicators** that describe important aspects of ecosystem condition and use.

How Are U. S. Wildlife Species Doing?

Approximately one-third of U. S. native plant and animal species are at risk of extinction. Some of the key factors contributing to extinction risk in these species are small population size, declining population trends, and threats from human activities and other sources. (Source: NatureServe.)

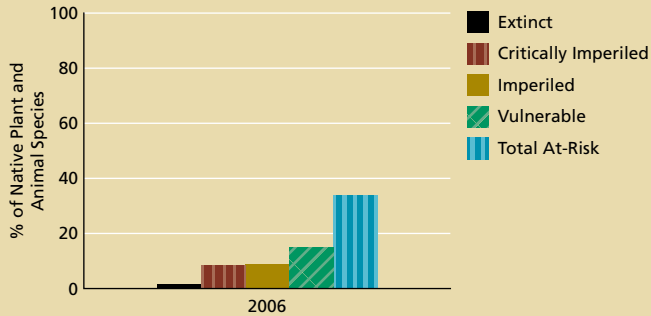
- Examples of at-risk wildlife species include the Whooping Crane, California Condor, North Atlantic Right Whale, Bog Turtle, and Florida Manatee. Many native plant species are also at risk of extinction.
- Among the native vertebrate animal species that are at risk, 28% have declining populations, 23% have stable populations, and 1% have increasing populations. Population trends among the remaining at-risk vertebrate species (48%) are unknown.

The State of the Nation's Ecosystems 2008 tracks trends in important ecological conditions, including conditions that will be influenced by climate change.

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At-Risk Native Species, by Risk Category (2006)

Partial Indicator Data: Native Terrestrial and Freshwater Plant and Animal Species



Data source: NatureServe and its Natural Heritage member programs. Coverage: all 50 states. Technical details: The degree of risk for any particular species varies considerably, from those species that are relatively secure, to those that are in imminent danger of extinction. The data cover many of the best-known groups of terrestrial and freshwater native plants and animals, totaling about 22,600 native species. Species are assessed based on such factors as the number and condition of individuals and populations, population trends, the area occupied by the species, and known threats. In all cases, a wide variety of factors contribute to overall ratings.

- The percentage of at-risk native animals is higher in fresh waters (37%) than in forests (19%) or grasslands and shrublands (18%). In all three ecosystem types, a large majority of at-risk vertebrate animal species with known population trends have populations that are either stable or declining, and 3% or fewer have populations that are increasing.

How are U. S. Wildlife Habitats Faring?

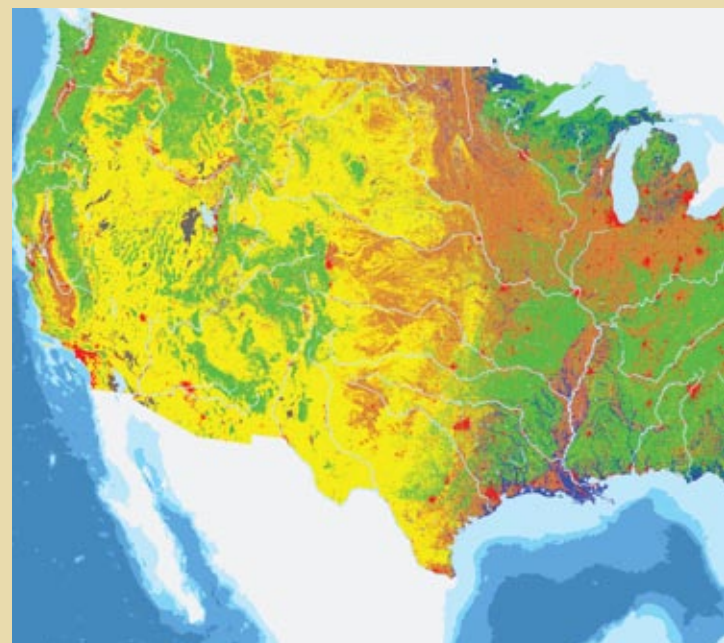
The State of the Nation's Ecosystems 2008 reports on trends in the extent of major ecosystem types. Key findings include:

Wetlands, Riparian Areas, and Aquatic Habitats: DECLINES EVIDENT

- The area of freshwater wetlands in the United States has decreased by 9% since 1955. In 2004, there were 96 million acres of wetlands (not including ponds) in the lower 48 states, or about 6% of total land area. (Source: FWS.)
- The area of ponds has increased steadily since 1955, reaching 6.2 million acres in 2004, an increase of almost three-quarters of a million acres since 1998. (Source: FWS.)
- About 62% of the freshwater plant communities in wetland and riparian areas are considered to be at risk. (Source: NatureServe.)
- Twenty percent of the riparian (streamside or riverside) habitat in the United States has been altered to agricultural land or urban development. (Source: Multi-Resolution Land Characterization Consortium, USGS, EPA.)
- Bottom-dwelling animal communities in 28% of wadeable streams in the lower 48 states are considered to be in “natural” condition; 42% of streams have communities in “degraded” condition; and 25% have communities in “moderate” condition. (Source: EPA.)

- Since the mid-1950s, the acreage of coastal wetlands on the Atlantic and Gulf coasts has declined by about 9% (to about 4.6 million acres). (Source: U. S. Fish and Wildlife Service, or FWS.)

U.S. Land Cover and Ocean Depth



| Land Cover | | Ocean Depth |
|--------------------|---------------------------|----------------------|
| Water | Grasslands and Shrublands | 0 to 800 ft. |
| Urban and Suburban | Croplands | 800 to 3000 ft. |
| Bare Lands | Wetlands | 3000 to 10,000 ft. |
| Forests | | 10,000 to 16,000 ft. |
| | | More than 16,000 ft. |

Data source: lower 48 states: Multi-Resolution Land Characterization (MRLC) Consortium; bathymetry data: NOAA; analysis by USGS EROS data center.

Spotlight On

Fish and Fisheries

Did you know...

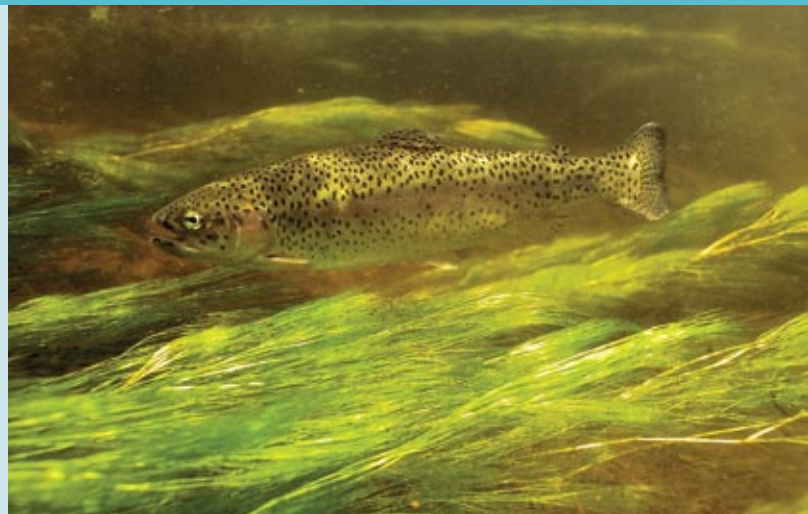
- Between 2003 and 2005, Americans went freshwater fishing 1.4 billion times per year and saltwater fishing 300 million times per year. (Source: USDA Forest Service.)
- In 2005, 4.6 million tons of fish and shellfish were landed in U. S. waters, an increase of almost 90% since 1950. Since 1990, Alaskan waters have provided the bulk of U. S. commercial landings. Alaska is the only region where landings have increased since 1978. From 1978 to 2005, landings have decreased in the West Coast and Hawaii, the Gulf of Mexico, and the North/Mid-Atlantic and South Atlantic. (Source: National Oceanic and Atmospheric Administration)
- Thirty-seven percent of native freshwater aquatic animal species are currently considered at risk for extinction, and, of these, 4% may already be extinct. This includes fish as well as mussels and small aquatic invertebrates that are sensitive to changes in water quality. (Source: NatureServe.)

increased. Over half of U. S. timberland is less than 60 years old; 12% is more than 100 years old; less than 1% is of uneven age (trees of different ages). (Source: USDA Forest Service.)

- In 2006, **fire affected almost 10 million acres** of forest, grasslands, and shrublands in the United States; insect damage (defoliation and tree mortality) **affected 13 million acres of forest**. (Source: USDA Forest Service.)

Grasslands and Shrublands: UPS AND DOWNS

- **Grasslands and shrublands** occupied about 40% of the land area of the lower 48 states in 2001, or nearly 700 million acres (excluding pasturelands and haylands). This represents a decline of about 170 million acres from the extent prior to European settlement. More recent trends are not available. (Source: Multi-Resolution Land Characterization Consortium, EPA, U.S. Forest Service.)
- About 70% of invasive and 80% of non-invasive **grassland and shrubland bird species had increasing populations** for the most recent time period (2001–2005). Since 1966–1970, there has been no clear trend in the percentage of invasive or non-invasive grassland and shrubland bird species that have increasing populations. (Source: Breeding Bird Survey, Patuxent Wildlife Research Center, U. S. Geological Survey.)



Forests: COMPOSITION CHANGING, TOTAL AREA NOT CHANGING

- Since 1953, **total forest area** in the United States **has not changed** significantly. In 2006, forests covered 36% of the land area of the lower 48 states, or about 621 million acres. (Source: USDA Forest Service.)
- **The composition of U. S. forests is changing.** Since 1963, certain forest types, such as ponderosa pine and elm–ash–cottonwood, have declined in area, while other forest types such as fir–spruce and maple–beech–birch, have



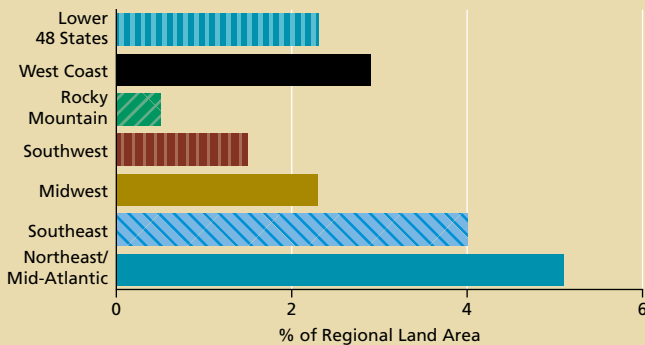
Challenges for Wildlife and Habitats

Indicators in *The State of the Nation's Ecosystems 2008* can be used to measure or track many of the changes in ecosystems that are caused by human activities and natural processes. The following major threats and stressors to wildlife and ecosystems have been documented by the International Union for the Conservation of Nature (IUCN) and the Conservation Measures Partnership, a consortium of major conservation organizations.

Urban and Suburban Development Urban and suburban growth can displace many species of wildlife. Conversely, these areas create habitats for select wildlife species, such as white-tailed deer.

- Urban and suburban landscapes covered about 45 million acres in the lower 48 states in 2001 (about 2.6% of the total). USDA's Economic Research Service estimated that the land area

Urban–Suburban Landscapes As a Percentage of Total Land Area, 2001



Data source: Multi-Resolution Land Characterization (MRLC) Consortium; analysis by U.S. Forest Service and EPA.

covered by urban development has quadrupled between 1945–2002. (Source: USDA Economic Research Service, Multi-Resolution Land Characterization (MRLC) Consortium.)

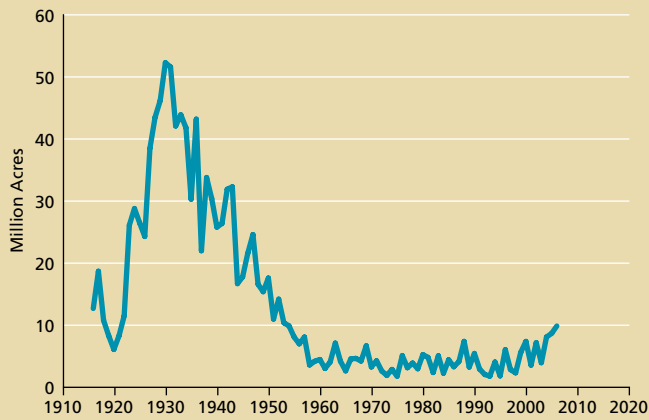
Non-native Species Non-native plants and animals are frequently introduced into the United States through human activities; examples include zebra mussels, snakehead fish, kudzu, and purple loosestrife. These species compete with native wildlife for food or habitat, act as predators or parasites of native species, cause or transmit disease, and alter essential habitat features.

- Tracking systems for non-native species are inadequate for reporting either the proportion of established non-native species or the ecological effects of those species at a national scale.
- Data that are available suggest that invasives are a significant problem: for example, 58% of U.S. watersheds have more than 10 established non-native fish species. (Source: U.S. Geological Survey.)

Water Pollution Water pollution from human activities poses a threat to both aquatic and terrestrial wildlife species. *The State of the Nation's Ecosystems 2008* contains indicators that describe chemical contamination of aquatic systems. [Data from the Environmental Protection Agency (EPA) and U. S. Geological Survey (USGS).]

- Virtually all streams tested had one or more contaminants at detectable levels; about half of streams had one or more contaminants at levels exceeding benchmarks for the protection of aquatic life.
- About 80% of freshwater fish tested had at least one contaminant at detectable levels; more than 40% had at least 5 detectable contaminants. One third of fish tested had at least one contaminant at levels that exceeded less stringent wildlife benchmarks; an additional 43% exceeded higher benchmarks. Of 26 tested chemicals, PCBs and DDT were most commonly found above benchmarks (testing was not conducted for mercury).
- Nearly all saltwater fish tested had at least five contaminants at detectable levels. Aquatic life benchmarks are not available for saltwater fish.

Wildfire Acreage (Forests and Grasslands/Shrublands)



Data source: USDA Forest Service, National Forest System (1916–1959) and the National Interagency Fire Center (1960–2006). Coverage: all 50 states. Note that these data include all wildland fires (forests, grasslands and shrublands).

Fire Catastrophic wildfire can significantly disrupt ecosystems and wildlife populations. Severe fire can leave soils exposed to erosion, increase sedimentation in streams and open up new areas to invasion by non-native plants. Conversely, certain ecosystem types, like longleaf pine and pitch pine barrens, are dependent on periodic fire.

- Fires burned almost 10 million acres of forests and grasslands–shrublands in 2006. Since 1916, there has been a significant decline in the number of forest and grassland–shrubland acres burned due to wildfires. However, in recent years this trend has reversed, with a slight but significant increase in the area disturbed by fire between 1979 and 2006.

Climate Change Many of the ecosystem changes that are thought to be associated with climate change can

be tracked through *The State of the Nation's Ecosystems 2008*, including increases in sea surface temperature and rising atmospheric concentrations of carbon dioxide and methane. See also our separate fact sheet on *Climate Change*.

- From 1985 to 2006, sea surface temperature increased significantly in near-coastal waters in three U. S. regions: Gulf of Alaska, Gulf of Mexico, and South Atlantic. Over the same period, there was no clear increase or decrease in surface temperature in near-coastal waters in the North and Mid-Atlantic¹, Southern California, Bering Sea, Pacific Northwest, or Hawaii regions. (Source: National Oceanic and Atmospheric Administration and NASA.)
- As of 2006, atmospheric carbon dioxide had increased by 35% and methane concentrations had increased by more than 150% over pre-industrial levels. Atmospheric carbon dioxide and methane have both increased steadily since 1950. (Source: *State of the Nation's Ecosystems 2008*, based on data from the IPCC Working Group I Report, 2007.)

Opportunities for Conservation

Americans have been leaders in wildlife conservation, beginning with efforts to conserve the American bison in the 19th century and campaigns to protect shorebirds and egrets from excessive hunting in the early 20th century. More recent activities have focused on the management of game species and fisheries, as well as on imperiled species under the Endangered Species Act. Notable successes include the recovery of bald eagle populations and the successful reintroduction of white-tailed deer, elk, and American bison into portions of their former ranges.

Americans have also been at the forefront in protecting wildlife habitat, through federal, state, and private land conservation efforts. Although data are not available for all ecosystem types, partial data presented in *The State of the Nation's Ecosystems 2008* indicate that approximately **10% of forests in the United States have been set aside** as national parks, wilderness, and similar areas.

Beginning in 2003, state wildlife agencies began preparation of State Wildlife Action Plans (also known as Comprehensive Wildlife Conservation Strategies), to address **challenges facing all species of wildlife**. These documents focus on “keeping common species common,” targeting those species and habitats most in need of conservation to prevent them from becoming endangered. The Heinz Center is working in close partnership with states and wildlife experts to develop management indicators for these plans (<http://www.heinzctr.org/wildlife>).

¹ Longer term records exist for some locations, such as the northeast, where temperatures rose more than 1°F during the 20th century.

Better Information Is Needed To Improve Wildlife Conservation

To manage wildlife and their habitats more effectively, conservationists and wildlife professionals need better information about wildlife populations and key threats and stressors that affect wildlife.

The State of the Nation's Ecosystems 2008 highlights some important data gaps for wildlife:

- **Information is needed on wildlife status and trends.** Monitoring programs in the United States have tended to focus on more popular species (such as game species, migratory waterfowl, and breeding birds), or on species that are in danger of extinction. Even for at-risk species, monitoring programs are incomplete. Population trend information is available for only about half of the at-risk mammals, birds, reptiles, amphibians, and fish in the United States and is lacking for most at-risk invertebrates and plants.
- **Information is needed on the number and distribution of non-native species and their effects on wildlife and ecosystems.** Data on the proportion of established non-native species and their ecological effects are not adequate for reporting at a national level. Although many counties, states, and regions track certain non-native species, differences in methods for collecting data make it impossible to track non-native species comprehensively at the national level.

The State of the Nation's Ecosystems 2008

This fact sheet presents materials from *The State of the Nation's Ecosystems 2008: Measuring the Lands, Waters, and Living Resources of the United States* (available from Island Press www.islandpress.com). The report was produced by The Heinz Center and hundreds of collaborators from businesses, environmental organizations, universities, and federal, state, and local government agencies.

The State of the Nation's Ecosystems 2008 is based on the premise that Americans should have access to high-quality, nonpartisan, science-based information on the condition and use of our lands, waters, and living resources. The report presents information through a series of indicators—specific, well-defined measures of key ecosystem properties—selected and refined by representatives from businesses, environmental organizations, universities, and federal, state, and local governments. The report does not make value judgments about data and does not make specific policy recommendations.



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At the crossroads of science and environmental policy, The Heinz Center brings leaders together from business, government, academia, and environmental groups to brainstorm solutions that are both scientifically and economically sound. Founded in 1995 in honor of Senator H. John Heinz III, the Center's guiding philosophy is that only by working together can we solve today's environmental challenges and leave the world a better place for generations to come.

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