

Endangered Species - Human Causes Of Extinction And Endangerment, Why Are Endangered Species Important?

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An endangered species of **plant**, **animal**, or microorganism is at risk of imminent **extinction** or extirpation in all or most of its range. Extinct **species** no longer occur anywhere on **Earth**, and once gone they are gone forever.

Extirpated species have disappeared locally or regionally, but still survive in other regions or in captivity.

Threatened species are at risk of becoming endangered in the foreseeable future.

In the United States, the Endangered Species Act (ESA) of 1973 protects threatened and endangered species that meet specified criteria. Many nations have their own version of the ESA and, like the United States, are members of the World Conservation Union (IUCN), and signatories of the Convention on International Trade In Endangered Species of Wild Fauna and Flora (CITES).



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Species have become extinct throughout geological history. Biological **evolution**, driven by natural climate change, catastrophic geologic events, and **competition** from better-adapted species, has involved extinction of billions of species since the advent of life on Earth about three billion years ago. In fact, according to the fossil record, only 2–4% of the species that have existed on Earth exist today. In modern times, however, species threatened by human activities are becoming extinct at a **rate** that far exceeds the pace of extinction throughout most of geologic history. (The mass species extinctions that occurred at the end of the Paleozoic and Mesozoic eras are noteworthy exceptions to this generalization. Geologic data show evidence that a cluster of very large meteorite impacts killed about 85% of the Earth's species, including the dinosaurs, about 65 million years ago at the end of the Mesozoic Cretaceous era.) Meteorite impacts notwithstanding, scientists approximate that present extinction rates are 1,000 to 10,000 times higher than the average natural extinction rate.

Species endangered by unsustainable hunting

Overhunting and overfishing have threatened animal species since aboriginal Europeans, Australians, and Americans developed effective hunting technology thousands of years ago. The dodo, passenger pigeon, great auk, and Steller's sea cow were hunted to extinction. Unsustainable hunting and fishing continue to endanger numerous animals worldwide. In the United States, many of the animals considered national symbols—bald eagle, grizzly bear, timber wolf, American **Bison**, bighorn **sheep**, Gulf of Mexico sea **turtles**—have been threatened by overhunting. (American bison, incidentally, are no longer considered threatened, but they exist mainly in managed herds, and have never repopulated their wide range across the American and Canadian west.)

The eskimo curlew is a large sandpiper that was abundant in **North America** in the nineteenth century. The birds were relentlessly hunted by market gunners during their **migration** from the prairies and coasts of Canada and the United States to their wintering grounds on the pampas and coasts of South America. The eskimo curlew became very rare by the end of the nineteenth century. The last observation of a curlew nest was in 1866, and the last "collection" of birds was in 1922. There have been a few reliable sightings of individuals in the Canadian Arctic and small migrating flocks in Texas since then, but sightings are so rare that the species' classification changes to extinct between each one.

The Guadalupe fur seal was abundant along the coast of western Mexico in the nineteenth century, numbering as many as 200,000 individuals. This marine mammal was hunted for its valuable fur and almost became extinct in the 1920s. Fortunately, a colony of 14 **seals**, including pups, was discovered off Baja California on Guadalupe Island in 1950. Guadalupe Island was

declared a pinniped sanctuary in 1975; the species now numbers more than 1,000 animals, and has begun to spread throughout its former range. The Juan Fernandez fur seal of Chile had a similar history. More than three million individuals were killed for their pelts between 1797 and 1804, when the species was declared extinct. The Juan Fernandez seal was rediscovered in 1965; and its population presently numbers several thousand individuals.

Commercial whaling for meat and oil since the eighteenth century has threatened most of the world's baleen whale species, and several toothed whales, with extinction. (Baleen whales feed by straining microorganisms from seawater.) Faced with severe depletion of whale stock, 14 whaling nations formed the International Whaling Commission (IWC) in 1946. While the IWC was somewhat successful in restoring whale populations, it lacks authority to enforce hunting bans, and non-member

The endangered golden frog, Panama. JLM

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nations often threaten to disregard IWC directives. The Marine Mammal Protection Act of 1972 banned all whaling in United States waters, the CITES treaty protects all whale species, and many whales have been protected by the ESA. In spite of these measures, only a few whale species have recovered to their pre-whaling populations, and a number of species remain on the brink of extinction. Seven baleen whales, and four toothed whales, remain on the ESA list and the IUCN Red List today: northern and southern right whales, bowhead whale, blue whale, fin whale, sei whale, humpback whale, sperm whale, vaquita, baiji, and Indus susu. The California gray whale is a rare success story. This species was twice hunted near extinction, but it has recovered its pre-whaling population of about 21,000 individuals. The gray whale was removed from the endangered species list in 1993.

Large predators and trophies

Many large predators are killed because they compete with human hunters for wild game like deer and elk, because they prey on domestic animals like sheep, or sometimes because they threaten humans. Consequently, almost all large predators whose former range has been developed by humans have become extirpated or endangered. The list of endangered large predators in the United States includes most of the species that formerly occupied the top of the food chain, and that regulated populations of smaller animals and fishes: grizzly bear, black bear, gray wolf, red wolf, San Joaquin kit fox, jaguar, lynx, cougar, mountain lion, Florida panther, bald eagle, northern falcon, American alligator, and American crocodile.

A number of generally harmless species are, sadly, endangered because of their threatening appearance or reputation, including several types of **bats**, **condors**, non-poisonous **snakes**, **amphibians**, and lizards. Internationally, many endangered species face extinction because of their very scarcity. Though CITES agreements attempt to halt trade of rare animals and animal products, trophy hunters, collectors of rare pets, and traders of luxury animal products continue to threaten numerous species. International demand for products like **elephant** tusk ivory, rhino horn, aquarium fish, bear and cat skins, pet tropical birds, reptile leather, and tortoise shells have taken a toll on many of the earth's most extraordinary animals.

Endangerment caused by introduced species

In many places, vulnerable native species have been decimated by non-native species imported by humans. Predators like domestic cats and dogs, herbivores like cattle and sheep, diseases, and broadly-feeding omnivores like **pigs** have killed, starved, and generally outcompeted native species after introduction. Some destructive species introductions, like the importation of **mongooses** to the Pacific islands to control snakes, are intentional, but most of the damage caused by exotic species and diseases is unintended.

For example, the native birds of the Hawaiian archipelago are dominated by a family of about 25 species known as **honeycreepers**. Thirteen species of honeycreepers have been rendered extinct by introduced predators and habitat loss since Polynesians discovered the islands, and especially since European colonization. The surviving 12 species of honeycreepers are all endangered; they continue to face serious threats from introduced diseases, like avian **malaria**, to which they have no immunity.

Deliberate introduction of the Nile **perch** caused terrible damage to the native fish population of Lake Victoria in eastern **Africa**. Fisheries managers stocked Lake Victoria, the world's second-largest **lake**, with Nile Perch in 1954. In the 1980s the perch became a major fishery resource and experienced a spectacular population increase that was fueled by predation on the lake's extremely diverse community of cichlid fishes. The collapse of the native fish community of Lake Victoria, which originally included more than 400 species, 90% of which only occurred in Lake Victoria, resulted in the extinction of about one-half of the earth's cichlid species. Today, most of the remaining cichlids are endangered, and many of those species exist only in captivity.

Species living on islands are especially vulnerable to introduced predators. In one case, the accidental introduction of the predatory brown **tree** snake to the Pacific **island** of Guam in the late 1940s caused a severe decline of native birds. Prior to the introduction of the snake there were 11 native species of birds on Guam, most of which were abundant. By the mid-1980s seven of the native species were extinct or extirpated on Guam, and four more were critically endangered. The Guam rail, a flightless bird, is now extinct in the wild, although it survives in captivity and will hopefully be captive-bred and released to a nearby, snake-free island.

Endangerment caused by habitat destruction

Many species have become extinct or endangered as their natural habitat has been converted for human land-use purposes. The American ivory-billed woodpecker, for example, once lived in mature, bottomland hardwood forests and cypress swamps throughout the southeastern United States. These habitats were heavily logged and/or converted to agricultural land by the early 1900s. There have been no reliable sightings of the American ivory-billed woodpecker since the early 1960s, and it is probably extinct in North America. A related subspecies, the Cuban ivory-billed woodpecker, is also critically endangered because of habitat loss, as is the closely related imperial woodpecker of Mexico.

The black-footed ferret was first discovered in the North American **prairie** in 1851. This small **predator** became endangered when the majority of its grassland habitat was converted to agricultural use. Farming in the American and Canadian plains also dramatically reduced the population of prairie dogs, the black-footed ferret's preferred food.

Furbish's lousewort is an example of a botanical species endangered by habitat destruction. This herbaceous plant only occurs along a 143-mi (230-km) reach of the St. John River in Maine and New Brunswick. It was considered extinct until a botanist "re-discovered" it in Maine in 1976. At that time, a proposed hydroelectric reservoir threatened the entire habitat of Furbish's lousewort. In the end, the controversial dam was not built, but the lousewort remains threatened by any loss of its habitat.

The northern spotted owl lives in the old-growth **conifer** forests of North America's Pacific Northwest. These small **owls** require large areas of uncut forest to breed, and became endangered when their habitat was greatly reduced and fragmented by heavy logging. The Environmental Species Act prescribes, and legally requires, preservation of large areas of extremely valuable timber land to protect the northern spotted owl. Upon receiving its status as an endangered species, the otherwise unremarkable owl became a symbol of the conflict between environmental preservation and commercial enterprise. For environmentalists, endangered classification of northern spotted owl brought the possibility of protecting the forests from all exploitation; for timber industry workers, the decision represented the government's choice to preserve a small bird instead of their livelihood. Small stores on the back roads of the Pacific Northwest expressed their resentment for the ESA by advertising such specialties as "spotted owl barbeque" and activities as "spotted owl hunts."

Like the northern spotted owl, the endangered redcockaded woodpecker of the southeastern United States requires old-growth pine forest to survive. The woodpecker excavates nest cavities in heart-rotted trees, and younger plantation trees do not meet its needs. Suitable forests have been greatly diminished by conversion to agriculture, logging, and residential development. Natural disturbance like hurricanes and wildfires threaten the remaining diminished and fragmented populations of red-cockaded **woodpeckers**. The ESA has attempted to protect the red-cockaded woodpecker by establishing ecological reserves and non-harvested buffers around known nesting colonies outside the reserves. Also like the spotted owl, the red-cockaded woodpecker is maligned by farmers, loggers, and developers for its role in their economic restriction.

Tropical deforestation presents represents the single greatest threat to endangered species today, though destruction of coastal

and shallow marine habitats associated with anthropogenic **global warming** may present an even larger challenges in the future. While there was little net change (-2%) in the total forest cover of North America between the 1960s and the 1980s, the global area of forested land decreased by 17% during that period. Conversion of species-rich tropical forests in Central America, South America, Africa, and the Pacific islands to unforested agricultural land accounts for most of the decline. (Ironically, tropical soils have such poor structure and nutrient content that they generally cannot support profitable agriculture once the forest **biomass** has been removed.)

In the mid-1980s, tropical rainforests were being cleared at a rate of 15–20 million acres (6–8 million hectares) per year, or about 6–8% of the total equatorial forest area. The causes of tropical deforestation include conversion to subsistence and market agriculture, logging, and harvesting of fuelwood. All of these activities represent enormous threats to the multitude of endangered species native to tropical countries. Recent efforts to slow the rate of deforestation have included international financial and scientific aid to help poorer tropical nations protect important ecosystems, and to adopt new, more sustainable, methods of profitable resource use.

Actions to protect endangered species

Numerous international agreements deal with issues related to the conservation and protection of endangered species. The scientific effort to more accurately catalog species and better define the scope of biodiversity has dramatically raised the number of recorded threatened and endangered species in recent years. In spite of these shocking **statistics** of endangerment, there is a good deal of evidence that national and international efforts to preserve endangered species have been very successful. Some of the most important international conventions are ratified by most of the world's nations, and have had significant power to enforce agreements in the decades since their introduction: (1) the 1971 Convention on Wetlands of International Importance that promotes wise use of **wetlands** and encourages designation of important wetlands as ecological reserves; (2) the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage that designates of high-profile World Heritage Sites for protection of their natural and cultural values; (3) the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); (4) the 1979 Convention on the Conservation of Migratory Species of Wild Animals of 1979 that deals with species that regularly cross national boundaries or that occur in international waters; and (5) the 1992 Convention on Biological Diversity (CBD). The CBD was presented by the United Nations Environment Program (UNEP) at the United Nations Conference on Environment and Development at Rio de Janeiro, Brazil in 1992, and has been regularly updated since then; the most recent amendments to the CBD occurred at the 2002 United Nations Earth Summit in Johannesburg, South Africa. The CBD is a central element of another international program called the Global Biodiversity Strategy, a joint effort by the IUCN, UNEP, and the World Resources Institute to study and conserve biodiversity.

Many countries, like the United States, have also undertaken their own actions to catalog and protect endangered species and other elements of biodiversity. Many of these national conservation efforts, like the ESA, have an international component that deals with species migration and trade across borders, and that mesh with the international conventions. Another important aspect of endangered species protection is collaboration with non-governmental organizations like the World Wildlife Fund, the Nature Conservancy and the Ocean Conservancy. The United States, for example, has a network of **conservation** data centers (CDCs) that gather and compile information on the occurrence and abundance of biological species and ecosystems that was designed and established by The Nature Conservancy. The Nature Conservancy has also facilitated development of CDCs in Canada and in Central and South America.

International, national and non-governmental agencies attempting to conserve biodiversity and protect endangered species choose whether to pursue single-species approaches that focus on particular species, or to develop more comprehensive strategies that focus on larger ecosystems. Because there are so many endangered species, many of which have not even been discovered, the single-species approach has obvious limitations. While the method works well for charismatic, large animals like giant **pandas**, grizzly **bears**, whales, and whooping **cranes**, this approach fails to protect most endangered species. More effective strategies focus on entire natural ecosystems that include numerous, hidden elements of threatened biodiversity. Furthermore, more conservation policies are attempting to consider the social, political, and economic ramifications of a species or environmental protection plan. As in the case of the northern spotted owl, policies that require large economic sacrifices and offer no immediate local benefits often alienate the very humans that could best help to preserve an endangered species or ecosystem. Modern environmental protection strategies attempt to present alternatives that permit sustainable

human productivity.

See also [Stress, ecological](#).

Resources

Books

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Bill Freedman

Laurie Duncan

KEY TERMS

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Endangerment

—Refers to a situation in which a species is vulnerable to extinction or extirpation.

Endemic

—Refers to species with a relatively local distribution, sometimes occurring as small populations confined to a single place, such as a particular oceanic island. Endemic species are more vulnerable to extinction than are more widespread species.

Extinction

—The condition in which all members of a group of organisms have ceased to exist.

Extirpation

—The condition in which a species is eliminated from a specific geographic area of its habitat.

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Human activities that influence the extinction and endangerment of wild species fall into a number of categories: (1) unsustainable hunting and harvesting that cause mortality at rates that exceed recruitment of new individuals, (2) land use practices like deforestation, urban and suburban development, agricultural cultivation, and water management projects that encroach upon and/or destroy natura...

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Sociopolitical actions undertaken to preserve endangered species and their natural habitats often conflict with human economic interests. In fact, efforts to protect an endangered species usually require an economic sacrifice from the very business or government that threatened the plant or animal in the first place. It is necessary, therefore, to define endangered species in terms of their aesthe...

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I love this page. It proves that humans actually impact the animals life and the earth. But no one listens until someone reaches out and tells people that we need to change and help the environment and the animals.



  **Deborah** about 6 years ago
Thanks for writing such an awesome and informative article! It's sad how much the world doesn't care about all of this.

  **Jessy Lockfields** over 4 years ago
I Like this, really helps for my project on endangered animals at school. Thank you! I appreciate it.
Jessy

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This is soul stirring. Thank you for creating a concise picture to assissting me in researching and writing about endangered species I am humbled and feel responsible for our biological magnification of the natural word's ills and the solutions.

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Endangerment caused by habitat destruction

Many species have become extinct or endangered as their natural habitat has been converted for human land-use purposes. The American ivory-billed woodpecker, for example, once lived in mature, bottomland hardwood forests and cypress swamps throughout the southeastern United States. These habitats were heavily logged and/or converted to agricultural land by the early 1900s. There have been no reliable sightings of the American ivory-billed woodpecker since the early 1960s, and it is probably extinct in North America. A related subspecies, the Cuban ivory-billed woodpecker, is also critically endangered because of habitat loss, as is the closely related imperial woodpecker of Mexico.

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In the mid-1980s, tropical rainforests were being cleared at a rate of 15–20 million acres (6–8 million hectares) per year, or about 6–8% of the total equatorial forest area. The causes of tropical deforestation include conversion to subsistence and market agriculture, logging, and harvesting of fuelwood. All of these activities represent enormous threats to the multitude of endangered species native to tropical countries. Recent efforts to slow the rate of deforestation have included international financial and scientific aid to help poorer tropical nations protect important ecosystems, and to adopt new, more sustainable, methods of profitable resource use.

Actions to protect endangered species

Numerous international agreements deal with issues related to the conservation and protection of endangered species. The scientific effort to more accurately catalog species and better define the scope of biodiversity has dramatically raised the number of recorded threatened and endangered species in recent years. In spite of these shocking statistics of endangerment, there is a good deal of evidence that national and international efforts to preserve endangered species have been very successful. Some of the most important international conventions are ratified by most of the world's nations, and have had significant power to enforce agreements in the decades since their introduction: (1) the 1971 Convention on Wetlands of International Importance that promotes wise use of wetlands and encourages designation of important wetlands as ecological reserves; (2) the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage that designates of high-profile World Heritage Sites for protection of their natural and cultural values; (3) the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); (4) the 1979 Convention on the Conservation of Migratory Species of Wild Animals of 1979 that deals with species that regularly cross national boundaries or that occur in international waters; and (5) the 1992 Convention on Biological Diversity (CBD). The CBD was presented by the United Nations Environment Program (UNEP) at the United Nations Conference on Environment and Development at Rio de Janeiro, Brazil in 1992, and has been regularly updated since then; the most recent amendments to the CBD occurred at the 2002 United Nations Earth Summit in Johannesburg, South Africa. The CBD is a central element of another international program called the Global Biodiversity Strategy, a joint effort by the IUCN, UNEP, and the World Resources Institute to study and conserve biodiversity.

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Extirpation

—The condition in which a species is eliminated from a specific geographic area of its habitat.




























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		Bob Jenkins	over 1 year ago
		Hi	
		James Palmer	over 1 year ago
		Deez Nutz	
		GOT EM!!!!!!	
		Ninevah	almost 7 years ago
		Do you think that hunting, just for the fun of it, not to keep the population under control, or hunting for food, do you think that hunting for fun is ethically correct	
		Shalisa Burnt	over 1 year ago
		This is totes awesome and delouse.	
		Mansi Mudgil	almost 4 years ago
		i agree but i think there r some points that proof humans r not responsible 4 all extinct species. i w'd like 2 know about those 1es	
		Mansi Mudgil	almost 4 years ago
		i agree but i think there r some points that proof humans r not responsible 4 all extinct species. i w'd like 2 know about those 1es	
		teiraney	over 3 years ago
		yall do not need to text if it anit funny or sad	
		DudeMan120	about 3 years ago
		lol I like pepsi	
		AJay	over 3 years ago
		thank's for writing	
		Frank Hatch	over 3 years ago
		Invitation to escape Human Extinction:	
		This is an invitation to Functional Individuals of a corrupt species - i.e., the human species called, "Man." This invitation was originally offered by the first New Man or Son of Man, but it has since collected a swamp of clerical additions. However, after two thousand years, the invitation is still open. Indeed, in the moment before your death, the invitation will still be open to you.	
		Definitions for Functional and Non-Functional Individuals: http://www.FrankHatchiii.com/Invitation.html	
		Best Regards,	
		Frank Hatch	
		Initial Mass Displacements	
		Chrision	over 4 years ago
		awesome	
		Colt Carpenter	almost 5 years ago
		This was very cool.	
		miguel	almost 5 years ago
		sup	
		temesgen	almost 5 years ago
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An endangered species of plant, animal, or microorganism is at risk of imminent extinction or extirpation in all or most of its range. Extinct species no longer occur anywhere on Earth, and once gone they are gone forever. Extirpated species have disappeared locally or regionally, but still survive in other regions or in captivity. Threatened species are at risk of becoming endangered in the foreseeable future. In the United States, the Endangered Species Act (ESA) of 1973 protects threatened and endangered species that meet specified criteria. Many nations have their own version of the ESA and, like the United States, are members of the World Conservation Union (IUCN), and signatories of the Convention on International Trade In Endangered Species of Wild Fauna and Flora (CITES).

Species have become extinct throughout geological history. Biological evolution, driven by natural climate change, catastrophic geologic events, and competition from better-adapted species, has involved extinction of billions of species since the advent of life on Earth about three billion years ago. In fact, according to the fossil record, only 2–4% of the species that have existed on Earth exist today. In modern times, however, species threatened by human activities are becoming extinct at a rate that far exceeds the pace of extinction throughout most of geologic history. (The mass species extinctions that occurred at the end of the Paleozoic and Mesozoic eras are noteworthy exceptions to this generalization. Geologic data show evidence that a cluster of very large meteorite impacts killed about 85% of the Earth's species, including the dinosaurs, about 65 million years ago at the end of the Mesozoic Cretaceous era.) Meteorite impacts notwithstanding, scientists approximate that present extinction rates are 1,000 to 10,000 times higher than the average natural extinction rate.

Species endangered by unsustainable hunting

Overhunting and overfishing have threatened animal species since aboriginal Europeans, Australians, and Americans developed effective hunting technology thousands of years ago. The dodo, passenger pigeon, great auk, and Steller's sea cow were hunted to extinction. Unsustainable hunting and fishing continue to endanger numerous animals worldwide. In the United States, many of the animals considered national symbols—bald eagle, grizzly bear, timber wolf, American Bison, bighorn sheep, Gulf of Mexico sea turtles—have been threatened by overhunting. (American bison, incidentally, are no longer considered threatened, but they exist mainly in managed herds, and have never repopulated their wide range across the American and Canadian west.)

The eskimo curlew is a large sandpiper that was abundant in North America in the nineteenth century. The birds were relentlessly hunted by market gunners during their migration from the prairies and coasts of Canada and the United States to their wintering grounds on the pampas and coasts of South America. The eskimo curlew became very rare by the end of the nineteenth century. The last observation of a curlew nest was in 1866, and the last "collection" of birds was in 1922. There have been a few reliable sightings of individuals in the Canadian Arctic and small migrating flocks in Texas since then, but sightings are so rare that the species' classification changes to extinct between each one.

The Guadalupe fur seal was abundant along the coast of western Mexico in the nineteenth century, numbering as many as 200,000 individuals. This marine mammal was hunted for its valuable fur and almost became extinct in the 1920s. Fortunately, a colony of 14 seals, including pups, was discovered off Baja California on Guadalupe Island in 1950. Guadalupe Island was declared a pinniped sanctuary in 1975; the species now numbers more than 1,000 animals, and has begun to spread throughout its former range. The Juan Fernandez fur seal of Chile had a similar history. More than three million individuals were killed for their pelts between 1797 and 1804, when the species was declared extinct. The Juan Fernandez seal was rediscovered in 1965; and its population presently numbers several thousand individuals.

Commercial whaling for meat and oil since the eighteenth century has threatened most of the world's baleen whale species, and several toothed whales, with extinction. (Baleen whales feed by straining microorganisms from seawater.) Faced with severe depletion of whale stock, 14 whaling nations formed the International Whaling Commission (IWC) in 1946. While the IWC was somewhat successful in restoring whale populations, it lacks authority to enforce hunting bans, and non-member The endangered golden frog, Panama. JLM Visuals. Reproduced by permission. nations often threaten to disregard IWC directives. The Marine Mammal Protection Act of 1972 banned all whaling in United States waters, the CITES treaty protects all whale species, and many whales have been protected by the ESA. In spite of these measures, only a few whale species have recovered to their pre-whaling populations, and a number of species remain on the brink of extinction. Seven baleen whales, and four toothed whales, remain on the ESA list and the IUCN Red List today: northern and southern right whales, bowhead whale, blue whale, fin whale, sei whale, humpback whale, sperm whale, vaquita, baiji, and Indus susu. The California gray whale is a rare success story. This species was twice hunted near extinction, but it has recovered its pre-whaling population of about 21,000 individuals. The gray whale was removed from the endangered species list in 1993.

Large predators and trophies

Many large predators are killed because they compete with human hunters for wild game like deer and elk, because they prey on domestic animals like sheep, or sometimes because they threaten humans. Consequently, almost all large predators whose former range has been developed by humans have become extirpated or endangered. The list of endangered large predators in the United States includes most of the species that formerly occupied the top of the food chain, and that regulated populations of smaller animals and fishes: grizzly bear, black bear, gray wolf, red wolf, San Joaquin kit fox, jaguar, lynx, cougar, mountain lion, Florida panther, bald eagle, northern falcon, American alligator, and American crocodile.

A number of generally harmless species are, sadly, endangered because of their threatening appearance or reputation, including several types of bats, condors, non-poisonous snakes, amphibians, and lizards. Internationally, many endangered species face extinction because of their very scarcity. Though CITES agreements attempt to halt trade of rare animals and animal products, trophy hunters, collectors of rare pets, and traders of luxury animal products continue to threaten numerous species. International demand for products like elephant tusk ivory, rhino horn, aquarium fish, bear and cat skins, pet tropical birds, reptile leather, and tortoise shells have taken a toll on many of the earth's most extraordinary animals.

Endangerment caused by introduced species

In many places, vulnerable native species have been decimated by non-native species imported by humans. Predators like domestic cats and dogs, herbivores like cattle and sheep, diseases, and broadly-feeding omnivores like pigs have killed, starved, and generally outcompeted native species after introduction. Some destructive species introductions, like the importation of mongooses to the Pacific islands to control snakes, are intentional, but most of the damage caused by exotic species and diseases is unintended.

For example, the native birds of the Hawaiian archipelago are dominated by a family of about 25 species known as honeycreepers. Thirteen species of honeycreepers have been rendered extinct by introduced predators and habitat loss since Polynesians discovered the islands, and especially since European colonization. The surviving 12 species of honeycreepers are all endangered; they continue to face serious threats from introduced diseases, like avian malaria, to which they have no immunity.

Deliberate introduction of the Nile perch caused terrible damage to the native fish population of Lake Victoria in eastern Africa. Fisheries managers stocked Lake Victoria, the world's second-largest lake, with Nile Perch in 1954. In the 1980s the perch became a major fishery resource and experienced a spectacular population increase that was fueled by predation on the lake's extremely diverse community of cichlid fishes. The collapse of the native fish community of Lake Victoria, which originally included more than 400 species, 90% of which only occurred in Lake Victoria, resulted in the extinction of about one-half of the earth's cichlid species. Today, most of the remaining cichlids are endangered, and many of those species exist only in captivity.

Species living on islands are especially vulnerable to introduced predators. In one case, the accidental introduction of the predatory brown tree snake to the Pacific island of Guam in the late 1940s caused a severe decline of native birds. Prior to the introduction of the snake there were 11 native species of birds on Guam, most of which were abundant. By the mid-1980s seven of the native species were extinct or extirpated on Guam, and four more were critically endangered. The Guam rail, a flightless bird, is now extinct in the wild, although it survives in captivity and will hopefully be captive-bred and released to a nearby, snake-free island.

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Endangerment caused by habitat destruction

Many species have become extinct or endangered as their natural habitat has been converted for human land-use purposes. The American ivory-billed woodpecker, for example, once lived in mature, bottomland hardwood forests and cypress swamps throughout the southeastern United States. These habitats were heavily logged and/or converted to agricultural land by the early 1900s. There have been no reliable sightings of the American ivory-billed woodpecker since the early 1960s, and it is probably extinct in North America. A related subspecies, the Cuban ivory-billed woodpecker, is also critically endangered because of habitat loss, as is the closely related imperial woodpecker of Mexico.

The black-footed ferret was first discovered in the North American prairie in 1851. This small predator became endangered when the majority of its grassland habitat was converted to agricultural use. Farming in the American and Canadian plains also dramatically reduced the population of prairie dogs, the black-footed ferret's preferred food.

Furbish's lousewort is an example of a botanical species endangered by habitat destruction. This herbaceous plant only occurs along a 143-mi (230-km) reach of the St. John River in Maine and New Brunswick. It was considered extinct until a botanist "re-discovered" it in Maine in 1976. At that time, a proposed hydroelectric reservoir threatened the entire habitat of Furbish's lousewort. In the end, the controversial dam was not built, but the lousewort remains threatened by any loss of its habitat.

The northern spotted owl lives in the old-growth conifer forests of North America's Pacific Northwest. These small owls require large areas of uncut forest to breed, and became endangered when their habitat was greatly reduced and fragmented by heavy logging. The Environmental Species Act prescribes, and legally requires, preservation of large areas of extremely valuable timber land to protect the northern spotted owl. Upon receiving its status as an endangered species, the otherwise unremarkable owl became a symbol of the conflict between environmental

preservation and commercial enterprise. For environmentalists, endangered classification of northern spotted owl brought the possibility of protecting the forests from all exploitation; for timber industry workers, the decision represented the government's choice to preserve a small bird instead of their livelihood. Small stores on the back roads of the Pacific Northwest expressed their resentment for the ESA by advertising such specialties as "spotted owl barbeque" and activities as "spotted owl hunts."

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