

Written Testimony of Dr. Joseph Roman to the Natural Resources Committee, Oversight Hearing on the Endangered Species Act: “ESA Decisions by Closed-door Settlement: Short-changing Science, Transparency, Private Property, and State and Local Economies”

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Good morning, Chairman Hastings and members of the committee. My name is Joe Roman, and I am honored to appear before you to discuss the importance of the Endangered Species Act. I have been working on endangered species conservation for the past twenty years. I am a visiting scholar at Duke University and a fellow at the Gund Institute for Ecological Economics at the University of Vermont. My research and writing focus on the biology and economics of endangered species conservation. In 2011, my book *Listed: Dispatches from America’s Endangered Species Act* was published by Harvard University Press; it was awarded the 2012 Rachel Carson Book Award by the Society of Environmental Journalists.

Forty years ago this month, the Endangered Species Act was passed. When the Act came up for a vote in the Senate, there was widespread bipartisan support. Republicans Bob Dole of Kansas, Jesse Helms of North Carolina, Ted Stevens of Alaska, and Howard Baker of Tennessee voted for the bill. There were only four nays in the House of Representatives. Signing the Act on December 28, 1973, President Richard Nixon noted that the “legislation provides the federal government with the needed authority to protect an irreplaceable part of our natural heritage—threatened wildlife. . . . Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed. It is a many-faceted treasure, of value to scholars, scientists, and nature-lovers alike, and it forms a vital part of the heritage we all share as Americans.”

Forty years on, how has the act fared? The Endangered Species Act remains the strongest environmental legislation in the country, and the first comprehensive law to address the global extinction crisis: zero-tolerance legislation. No new extinctions, no exceptions. The diagnosis of listing a species is intended to be as clear as a visit to the doctor’s office: a species is endangered or it is not, regardless of political or economic considerations. Once a species is protected, the Fish and Wildlife Service has had a very high success rate: about 99% of listed species have been saved from extinction, and populations of most animals and plants protected under the Act are stable or increasing in size (Bean 2009). It is likely that hundreds of species would have gone extinct in the United States in the absence of this legislation.

There are clear successes: The bald eagle was recovered in 2007, with breeding eagles in every state on the continent. After hunting was banned and habitat preserved, the American alligator fully recovered in 1987. The Pacific gray whale, delisted in 1994, now has a population of about 19,000. The gray wolf, extirpated by park rangers in Yellowstone in the early twentieth century, is now an important part of the Rocky Mountain ecosystem. These are just a few of the species that have benefited.

The Endangered Species Act has been an influential law, serving as the model for biodiversity conservation around the world and in many states looking to protect biodiversity on a local level. By investing in endangered species, we are saving wildlife in all its forms and protecting our economy and human wellbeing. Yet stagnant funding levels hurt nearly every aspect of Endangered Species Act implementation, from listing species, to conducting recovery activities and providing sufficient law enforcement. When we make these investments, we can expect endangered species recovery and healthy ecosystems. Please allow me to discuss some of the many benefits of endangered species conservation.

The Economics of Wildlife Protection

Biodiversity produces the ecosystem services--from climate regulation to pollination and food production--that all of us depend on everyday. The field of ecological economics can help us to resolve conflicts and see a path forward that includes stewardship, sustainability, and the valuation of natural capital. It can also help us to quantify the benefits of protecting endangered species and their habitats. These benefits can be spiritual and cultural, and they can also be of direct value to local communities and human health.

On the most obvious level, wildlife brings in millions of recreational and tourism dollars to many communities, through bird watching, whale watching, and other forms of outdoor activities. The Department of the Interior, Commerce Department, and Census Bureau have been gathering economic data on outdoor activities since 1955. In 2011, Americans spent more than \$144 billion on hunting, fishing, and wildlife watching (U.S. Fish and Wildlife Service and U.S. Census Bureau 2012). About one in twenty people are employed directly or indirectly by such outdoor activities. Wildlife conservation supports millions of jobs.

Endangered species protection also supports local economies. Manatees, federally listed since 1967, attract hundreds of thousands of visitors to Florida each year (Fig. 1). Just about all of the tourism in Citrus County, on Florida's "Nature Coast," centers on manatees. Tourists spent \$23 million a year to see them in the local springs, and many tour operators support federal protections of these marine mammals. Homosassa, Florida, has erected a statue celebrating its favorite attraction.

Citrus County, like other parts of Florida, makes its living from protected species. Reef-based tourism around the Florida Keys is almost entirely dependent on corals, including the federally listed staghorn and elkhorn corals; the industry employs more than 43,000 people, whose wage income totals \$1.2 billion a year. By protecting whales, we created a \$956 million annual industry for coastal states in the Atlantic, Pacific, Gulf of Mexico, Hawaii, and Alaska (O'Connor et al 2009). In many cases, this industry helped diversify employment as commercial fishing opportunities were reduced. The figures for birdwatchers alone are staggering: there are 48 million in the United States, compared to about 33 million anglers and hunters. Bird watching is worth \$32 billion per year in the United States. Just as cities compete for stadiums and factories, communities should vie for parks and charismatic fauna, such as whooping cranes in Texas and Wisconsin, bald eagles at Mason's Neck in Virginia, and humpback whales in New England.



Fig. 1. Manatees are an essential part of the Florida coast, including its economy (photo courtesy of USFWS).

Though wildlife conservation clearly boosts employment, a common complaint is that protected areas reduce a community's tax base. But the reality is that these expenditures help local economies: wildlife watching and outdoor recreation bring in about \$40 billion in tax revenues to state and local governments (Southwick Associates 2012).

Endangered species conservation also supports our natural capital in the form of ecosystem services. Two endangered mussel species—the purple bankclimber and the fat three-ridge—are found only on the Apalachicola River in Florida. It appeared that they were in direct conflict with human activities, especially when Atlanta was suffering drought in 2007. But here's the thing: endangered species are their habitat, and these habitats provide long-term benefits to all of us. Protection of endangered mussels helps ensure that our waters are not overallocated or overexploited, and these filter-feeding bivalves can help reduce pollutants, which benefits people downstream. The riverine habitat of endangered mussels provides numerous services for people and their local economies. Flooding forests can buffer communities from storm surges and provide a nursery for shrimp, crab, and bass and other fish. Apalachicola fisheries are worth more than \$200 million per year. There are 1,200 oystermen and 25 packinghouses working in this region, representing 90% of the Florida harvest. The flooding forests are also the source of tupelo honey. In a good harvest year, the tupelo honey crop in Florida approaches \$900,000 (Roman 2011).

The benefits of protecting species often outweigh the short-term costs. Forests help stabilize the climate by absorbing and storing carbon dioxide in trees, soils, and understory foliage. Marshlands and barrier beaches protect us from extreme storms and hurricanes. Trees clean the air. By restoring and conserving natural infrastructure, we create jobs and provide ecosystem services to the most vulnerable populations, dependent on forests and oceans.

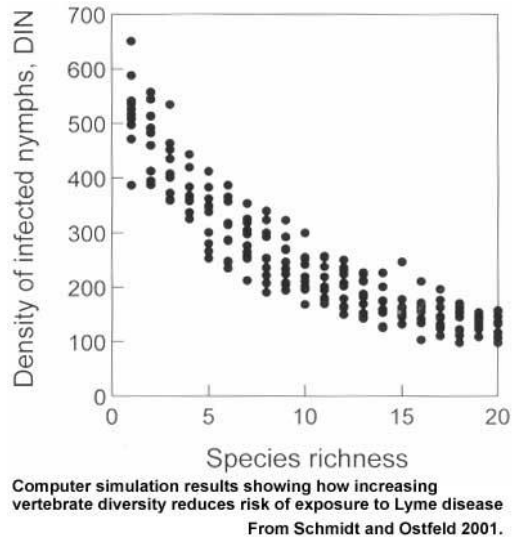
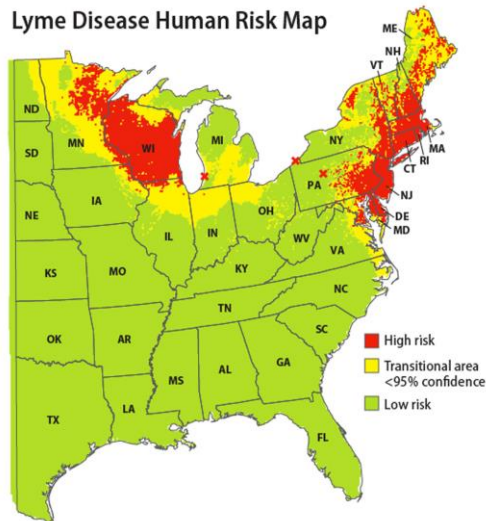


Fig. 2. A) Map of Lyme disease risk in the Eastern United States. B) Relationship between species richness (or number of wild species) and density of ticks (nymphs) infected with Lyme disease (Schmidt and Ostfeld 2001).

Biodiversity and Human Health

The diversity of life matters to our health and well-being on a day-to-day basis. More species diversity means greater chemical diversity and more opportunities to discover pharmaceuticals. Sixty percent of cancer drugs and 75% of drugs for infectious diseases come from natural compounds. There is also a direct correlation between the diversity of wildlife and the reduction of the transmission of zoonotic diseases, such as hantavirus, which are transmitted from animals to humans. This is important since we appear to be in a time when diseases are emerging and re-emerging at a high rate, perhaps because we are altering environments so quickly and traveling around the world more rapidly.

West Nile virus reached the United States in 1999 and is now found from Massachusetts to Florida to Washington State. The hosts for West Nile virus are our common birds of the suburbs, such as robins and crows, which can contract the disease and die. Other less common species, such as wading birds and woodpeckers, are epidemiological dead ends. When mosquitoes bite these birds, the virus is not transmitted, and the prevalence of the disease goes down (Ezenwa et al. 2006). The greater the species richness, the greater the dilution effect for the disease reservoir, and the lower the risk to people. More species diversity equals reduced disease transmission.

Lyme disease is the most commonly diagnosed vector-borne disease in the country, transmitted by the blacklegged tick (Fig. 2). An important host for this bacterial disease is the white-footed mouse, common in fragmented landscapes. Several studies have shown that areas with high

diversity of wildlife can reduce the risk of Lyme disease: many species play a protective role by feeding but not infecting blacklegged ticks. The Virginia opossum, for example, grooms and kills the ticks, which can reduce the prevalence of the disease (Ostfeld and Keesing 2012).

By restoring healthy ecosystems, with a full suite of native species from microbes to plants to predators, we can reduce disease transmission, bolster local economies, and enhance our experience of nature. Biodiversity protection may be as important to people on a local scale in their everyday lives as it is in remote protected ecosystems (Pongsiri et al. 2009).

Habitat Conservation

Historically, overexploitation was responsible for many of the extinctions in North America, such as the great auk, sea mink, and passenger pigeon. But now many species struggle with more systemic problems, such as habitat loss and invasive species. In the Southeast, 99% of the native long-leaf pine forests were cut down, endangering many of its residents, including the red-cockaded woodpecker. Loss and fragmentation of sagebrush habitats are the main causes in the decline of Gunnison and greater sage grouse populations. The Gunnison sage-grouse has declined by more than 90% from its historic abundance and has been proposed for listing as endangered with a final decision expected next year.

In its attempt to decelerate or mitigate such threats, the Endangered Species Act has become the nation's most effective habitat protection law. The drafters of the law made it clear that more than just species conservation in a zoo or arboretum, the Act was intended "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." The Supreme Court has affirmed that the Act's definition of "take" included the severe harm of habitat destruction. Our protection of endangered species depends on preserving and restoring healthy ecosystems.

Ways Forward

The Endangered Species Act is a powerful law, but its success depends on funding it adequately and on maintaining its integrity. If we invest more in protecting species, we can recover them and receive enhanced benefits from our natural capital. All species that deserve protection should be listed and fully protected. Many species have to wait years, and sometimes decades, to be protected under the Act even though the science is clear that they need to be listed. Delaying listing makes conservation more difficult, and species have gone extinct while waiting for status determinations. Decisions should be made based on the best available science, without political interference. Economic studies should examine the economic and ecological value of protecting endangered species in addition to the costs. We should work to incentivize voluntary conservation efforts through the Farm Bill and other legislation, to protect native species and endangered habitats on private lands.

I would like to conclude by thanking the members of Congress and the American people for supporting the Endangered Species Act. The law is in the fine American tradition of protecting our citizens, environment, and wildlife in all its forms. The Act has been successful in reducing extinctions and protecting our natural heritage. By protecting endangered species we can

conserve the flora, fauna, and natural systems that fuel our economy and protect our well-being.

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