

Results and Discussion

Preventing Extinction

Endangered species are at high risk of extinction and require considerable conservation effort simply to remain in existence. The mere saving of species from extinction, therefore, is one important measure of the Endangered Species Act's effectiveness. Four of the 56 endangered species that occur in the Northeast are extinct. But all of them became extinct or extirpated from the United States *prior* to their placement on the endangered species list. The eastern cougar was listed under the Endangered Species Conservation Act (the precursor to the Endangered Species Act) in 1973 and listed as an endangered species under the modern Endangered Species Act in 1974, but the last verified individual was captured in 1938 and died in captivity several years later. The Eskimo curlew was listed under the Endangered Species Conservation Act in 1967 and listed as an endangered species in 1974, but was last documented in the United States in 1962 and in the world in 1963. The longjaw cisco was last seen in U.S. waters in 1967, the same year it was listed under the Endangered Species Conservation Act. It was listed as an endangered species in 1974 and was seen only once again, in 1975 in Canada. The blue pike, listed under the Endangered Species Conservation Act in 1967, was last seen in 1971, three years before it was listed as endangered under the Endangered Species Act.

The pike and cisco were removed from the endangered list as extinct in 1983. The cougar and curlew remain on the list in the hope that they, like the ivory-billed woodpecker, will be rediscovered. Occasional sightings of these two species are still reported, but none have been documented in decades.

The Endangered Species Act has been 100% successful in preventing the extinction of endangered species in the Northeast.

Full Recovery: What is a reasonable expectation?

Critics of endangered species conservation have seized on the fact that only 14 of the 1,350 species have been removed from the endangered species list due to recovery. This is variously described as a one or zero percent success rate.³ While full recovery and delisting are obviously important, it is illogical to hold them up as a primary, or even a remotely adequate, measure of the Act's success. Such a rationale declares all improvement short of complete recovery a failure. Under this measure, the spectacular increase in bald eagle numbers (417 pairs in the Lower 48 in 1963 grew to 7,280 in 2003; 21 in the Northeast in 1967 grew to 562 in 2005) would be declared a failure, as would the increases in the shortnose sturgeon (12,669 Hudson River spawning fish in 1979 grew to 56,708 in 1994-1996) and the Atlantic piping plover (550 pairs in 1986 grew to 1,423 in 2004).

³ Pombo, op. cit., Pombo, R. 2005. "ESA has a zero percent success rate". Commentary published by California Farm Bureau Federation, April 6, 2005

Additionally, this argument presumes without justification that it is reasonable to expect all species to have recovered by 2005. However, the recovery of endangered species is guided by federal recovery plans that establish goals, benchmarks, processes, and timelines, based on each species' status and needs. In particular, the timelines estimate the length of time necessary to achieve recovery. The average length of expected recovery time for species in our sample is 42 years. Currently, these species have been listed for an average of just 24 years. Consider the Atlantic salmon: It has only been on the endangered list for five years and only received a recovery plan in November 2005. The plan explains that recovery will require decades of intensive, difficult work. Or consider the North Atlantic Right Whale Recovery Plan: it suggests that this long-lived, slow reproducing species will require 150 years just to qualify for downlisting to "threatened" status.

A more sensible measure of recovery would be to examine the number of actual recoveries in relationship to the number predicted by federal recovery plans. Northeast recovery plans identify only eleven species that were expected to recover by 2005 (table 1). Seven of these species have indeed been delisted, proposed for delisting, or downlisted. Two species not expected to have recovered by 2005 have been recommended for down or delisting in whole or in part.

Table 1. Predicted vs. Actual Recovery Trends

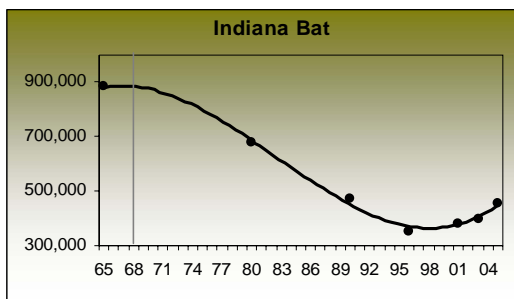
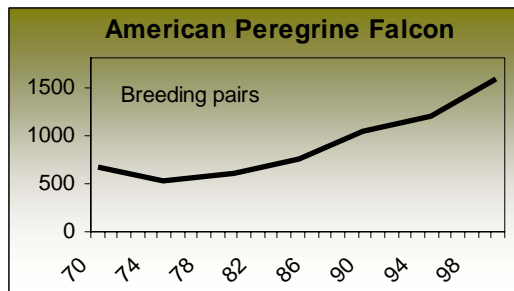
Species	Expected Recovery Date	Current Status
American Hart's-tongue fern	1999	Declined since listing, primarily due to NY trend; great majority of plants occur in Canada and are apparently stable.
American peregrine falcon	2000	Delisted
Arctic peregrine falcon	1995	Delisted
Bald eagle (Continental U.S. DPS)	2000	Proposed for delisting
Brown pelican (Southeastern DPS)	1985	Delisted
Dwarf cinquefoil	2003	Delisted
Gray wolf (Eastern DPS)	2005	Proposed for delisting
Knieskern's beaked-rush	1997	Trend unknown
Northeastern beach tiger beetle	2005	Stable; large Virginia populations; introductions occurring in NJ and MA
Small whorled pogonia	2003	Downlisted to threatened in 1994
Swamp-pink	2002	Trend unknown, but relatively populous
Northeastern bulrush	2014	Recommended for down or delisting by biologists
Shortnose sturgeon	2024	Connecticut, Delaware, Hudson, and Kennebec River System populations recommended for down or de-listing

The delisting of eleven species by 2005 is a reasonable expectation given full funding of recovery plans. Nine species have reached or are near to recovery, indicating that the Endangered

Species Act has performed well by this measure, especially considering the chronic underfunding of the conservation actions needed to effect recovery.⁴

Progress Toward Recovery

As few species were expected to fully recover by 2005, the most pertinent measure of success is whether species are progressing toward recovery. The datasets typically used to approach this question scientifically are the U.S. Fish and Wildlife Service and National Marine Fisheries Service recovery reports to Congress.⁵ These reports categorically score all endangered species as improved, declined, or stable over a specific two-year period. While useful for some purposes, these scores are not quantitative and do not intend to indicate long-term population trends or total trends since listing. For example, the California least tern is correctly rated as having declined during 2001-2002,⁶ but it nonetheless has experienced an impressive and nearly constant increase from 225 nesting pairs in 1970 when it was listed to 6,561 pairs in 2004. The Atlantic leatherback sea turtle is also correctly rated as declining in 2001-2002, but it too increased significantly between its 1978 listing and the present day. Going the other direction, the Hawaiian monk seal did indeed increase in 2001-2002, but it is merely a blip in an otherwise long and precipitous decline. Finally, the Puritan tiger beetle is correctly rated as being stable in 2001-2002, but from a broader perspective it clearly declined since its 1990 listing due to a population crash in Chesapeake Bay.



While most researchers are careful not read too much into these short-term trends, others have improperly cited them as conclusive evidence that the Endangered Species Act is failing to put species on the road to recovery. Thus Congressman Pombo declares "...government data makes it clear the vast majority of these species have not improved under implementation of current law."⁷ That conclusion can not be drawn from the federal data and is strongly contradicted by other data which does directly address long-term recovery trends.

The primary contribution of this paper is the compilation of long-term, quantitative data demonstrating the population trend of Northeastern species since they were placed on the endangered species list. Our analyses show that the populations of 93% of listed species increased or remained stable (65% increased, 28% were stable).

⁴ Miller J.K., J.M. Scott, C.R. Miller and L.P. Waits. 2002. The Endangered Species Act: Dollars and sense? *BioScience* 52: 163–168; Restani, M. and J.M. Marzluff. 2002. Funding extinction? Biological needs and political realities in the allocation of resources to endangered species recovery. *BioScience* 52:169–177.

⁵ See for example, Miller et al., op. cit., Restani and Marzluff, op. cit., and Taylor, M.F.J, K.F. Suckling, and J.J. Rachlinski. 2005. The Effectiveness of the Endangered Species Act: A Quantitative Analysis. *BioScience* 55(4):360-367

⁶ U.S. Fish and Wildlife Service. 2004. Recovery Report to Congress: Fiscal Years 2001–2002. Washington, D.C.

⁷ Pombo, op. cit.

Improving species include the bald eagle, American peregrine falcon, Arctic peregrine falcon, Atlantic piping plover, roseate tern, humpback whale, fin whale, Delmarva fox squirrel, shortnose sturgeon, American burying beetle, dwarf cinquefoil and many others. Only three species declined: the Indiana bat, Puritan tiger beetle, and the American Hart's-tongue fern.

The next section, *Photos and Population Graphs*, provides a visual overview of the trend since listing for each species. *Highlighted Species* provides a simple one page summary of the management and trends of ten species. *Technical Species Accounts* give a longer, cited review for each species. The report ends with state by state list of species and their overall population trends.