**Testimony of Dr. Reed F. Noss to House Committee on Natural Resources Oversight Hearing on "*Defining Species Conservation Success: Tribal, State and Local Stewardship vs. Federal Courtroom Battles and Sue-and-Settle Practices,*" Tuesday, June 4, 2013.**

Good morning, Chairman Hastings, Representative Bordallo, and the other members of the Committee on Natural Resources. My name is Dr. Reed Noss. I am the Provost's Distinguished Research Professor of Biology at the University of Central Florida. I have served as President of the Society for Conservation Biology and Editor-in-Chief of its scientific journal, *Conservation Biology*. I am an Elected Fellow of the American Association for the Advancement of Science.

I have worked in the fields of ecology and conservation biology for four decades, coinciding precisely with the venerable history of the U.S. Endangered Species Act of 1973. I teach conservation biology, ecosystems of Florida, ornithology, and history of ecology. My current research centers on the vulnerability of species and ecosystems to land-use change, climate change, and sea-level rise, and what we might do to address those threats. I have nearly 300 publications, including seven books, and am rated as one of the 500 most highly cited authors in all fields.

I am honored to address this committee during the 40th anniversary year of the U.S. Endangered Species Act, passed by Congress with nearly unanimous support and signed by President Richard Nixon in 1973. This Act is nothing less than one the most important and influential pieces of conservation legislation in the history of the world.

*Americans' concern about extinction*

I want to begin by reminding us why we have an Endangered Species Act (ESA). The short answer is extinction. The American people value their wildlife. They were concerned in 1973 and remain concerned today about the extinction of species. *Extinction is forever*; that is a cliché, but it is no less true.

As President Nixon said in signing the Act, "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. I congratulate the 93rd Congress for taking this important step toward protecting a heritage which we hold in trust to countless future generations of our fellow citizens. Their lives will be richer, and America will be more beautiful in the years ahead, thanks to the measure that I have the pleasure of signing into law today."

Americans remain concerned about extinction. According to a February 2013 survey of 657 registered voters conducted by Public Policy Polling, 61% of Americans are "concerned about the rate that wildlife is disappearing" (http://phys.org/news/2013-03-population-growth-threat-species-poll.html). With continued human population growth, conversion of natural areas to human uses, climate change, and sea-level rise, the Endangered Species Act is needed much more today than when President Nixon signed the Act into law in 1973.

Section 2 of the ESA states a clear purpose for the Act: "The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in…this section."

Because Congress never provided clear direction for the first stated goal of the Act – to conserve ecosystems – we are stuck with trying to protect and recover most species on an individual basis or in relatively small groups. This is probably not the most cost-efficient means to protect biological diversity and the integrity of America's ecosystems. However, lacking broader legislation, such as an Endangered Ecosystems Act, the Endangered Species Act (ESA) is the best we have to work with. And, given the challenges and complexities of conserving species, it works remarkably well.

*The value of species and nature*

An implicit assumption of the Endangered Species Act is that every species has value. This, in fact, is a dominant ethical norm of most religious and philosophical traditions around the world. In the United States, most people who belong to mainstream religions believe that God created all species and saw them as good. For example, Deuteronomy 11:12: "A land which the LORD thy God careth for: the eyes of the LORD thy God are always upon it, from the beginning of the year even unto the end of the year. " Furthermore, the Bible suggests that it is our duty as humans to care for and steward God's creation. In a 2006 American Values Survey, 81% of respondents agreed that "Taking good care of nature is part of our duty to God" (http://ecoamerica.typepad.com/blog/files/ecoAmerica_AEVS_Report.pdf).

A foundational principle of modern environmental ethics is that species have value in and of themselves, a view that is shared by a majority of Americans. A 1993 national poll conducted by Washington State University, Utah State University, and Oregon State University, and based on 1,300 phone interviews, found that 71% of respondents agreed with the statement, "wildlife, plants, and humans have equal rights to live and develop on the earth;" 89% agreed that "humans have an ethical obligation to protect plant and animal species" (http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/24967/EMNO8562.pdf?sequence=1).

A 2010 poll conducted for The Nature Conservancy by the Republican polling firm, Public Opinion Strategies, and the Democratic polling firm, Fairbank, Maslin, Maullin, Metz & Associates, found that "roughly equal proportions of American voters believe that the *best* reason to conserve nature is for its own sake (42%) and for the benefits it provides to people (45%)" (http://www.conservationgateway.org/Files/Pages/key-findings-recent-natio.aspx).

Besides intrinsic value, species have utilitarian or instrumental value. Individual species, for instance, may possess chemicals or structures in their bodies useful to medicine or industry, and there are many examples of such discoveries. Preventing extinction means that we still have the opportunity to make new such discoveries. Species also have value in terms of their role in ecosystems. It is now well established scientifically that the diversity of species in an ecosystem contributes to its "resilience," which is the ability to maintain or rapidly recover essential functions after disturbance. Ecosystem resilience is vitally important to human society because it assures the continuation of essential ecosystem services such as the provision of clean water, buffering of storm surges in coastal areas, pollination of crops, production of timber and other resources, and other benefits.

It is a bit tricky to determine the contribution of each individual species to ecosystem resilience, mostly because the vast majority of species are poorly studied scientifically. Some species clearly play more pivotal roles than others. As noted in a recent review, "The presence of one or a handful of species, rather than the overall diversity of an ecosystem, is often the determinant of stability against different perturbations …depending on the types of stability and perturbation, different species may play key roles" (Ives and Carpenter 2007). A synthesis of grassland biodiversity experiments shows that high plant species richness is needed to maintain

ecosystem services: “Although species may appear functionally redundant when one function is considered under one set of environmental conditions, many species are needed to maintain multiple functions at multiple times and places in a changing world” (Isbell et al. 2011).

Given continued uncertainty about the ecological role of individual species, it is sensible to prevent the human-caused extinction of any species. As wildlife biologist (turned philosopher) Aldo Leopold stated decades ago, “To keep every cog and wheel is the first precaution of intelligent tinkering.”

Americans are not ambivalent about the value of nature. The 2010 poll referred to above, conducted for The Nature Conservancy, found that 90% of registered voters in the U.S. believe that “Nature’s benefits for people” are “extremely important” or “very important.” The margin of error in this poll was plus or minus 3.5%.

*Listing and recovering species*

One key step for preventing extinctions is to list species that meet the criteria for listing under the ESA. Many highly imperiled species are not currently protected under the Act. A recent study compared the coverage of species under the ESA with the international IUCN Red List of Threatened Species. The authors found, for example, that 40% of IUCN-listed birds in the U.S. are not listed under the ESA. Altogether, a nearly 10-fold increase in listing would be required for the ESA to protect all IUCN-listed species found in the U.S. (Harris et al. 2011). It is also important to list declining species expeditiously. Currently, the prospects for many listed species are dim because they were already severely imperiled at the time they received protection under the Act.

Another critical goal of the ESA is to recover listed species to population sizes and distributions that will assure their persistence over the long run, in which case they can be delisted under the Act. One concern of people who question the efficacy of the Endangered Species Act is that species are not recovering in a timely manner. By definition under the ESA, a species is recovered when it is neither "in danger of extinction throughout all or a significant portion of its range" (ESA sec 3(6)) nor likely to become so "within the foreseeable future" (ESA sec. 3(20)). Therefore, to be legally considered recovered, a species must be sufficiently abundant and the threats it faces eliminated or managed such that delisting the species does not set off another round of decline (Neel et al. 2012).

It is important to understand that species recovery is extremely challenging today because the threats that led to species being listed in the first place have generally not subsided. Many, such as human population growth, resource consumption, urban sprawl, and climate change, are only getting worse.

Nevertheless, despite these continuing threats to species, the record of the ESA for species recovery is not so bad. As of December 2009, 25 previously listed species had been delisted and considered recovered. A high-profile example is the Bald Eagle, designated our national symbol by the Second Continental Congress in 1782 and one of the first species to be placed on the endangered species list. For the Bald Eagle, the ESA clearly worked. By 2007, the eagle population had recovered sufficiently to be removed from the list. I see Bald Eagles virtually every day where I live in Florida, and it’s always a wonderful experience.

A 2005 study found that 52% of species listed under the ESA either showed improvements in status or were not declining over the time period 1988–2002. The status of listed species generally has improved over time, with only 35% still declining 13 years or more after protection under the ESA (Male and Bean 2005).

Other researchers have noted improvements in recovery planning in recent years. For example, in comparison with plans completed prior to previous reviews in the early 1990s, Neel and colleagues found that "a larger proportion of species in later plans have the potential to be delisted, more have at least one quantitative recovery criterion, the overall numbers of populations and individuals required for recovery would increase, and these numbers would exceed the numbers when the recovery plan was written for more species" (Neel et al. 2012).

Still, too many species listed as Threatened or Endangered are unlikely to recover. Delisting may not be possible for many species, even when a recovery plan is fully implemented. The U.S. Fish and Wildlife Service and National Marine Fisheries Service estimate that delisting may be possible for only 73% of listed species. Neel et al. (2012) note that "delisting objectives for abundance remain on the lower end of the continuum of viability, with 68%-91% falling below published thresholds for the minimum numbers of individuals. In addition, 144 species could be considered recovered with even fewer populations than existed when the recovery plan was written." These facts suggest that the best available science is not always applied to delisting decisions.

We must acknowledge the need to continue and strengthen conservation efforts for imperiled species, even after their formal recovery goals have been met. A recent study determined that maintenance of viable populations of many species will require continuing, species-specific intervention over the long term. The authors termed such species "conservation reliant" and determined 84% of the species listed under the ESA are conservation reliant and will require "continuing, long-term management investments" (Scott et al. 2010). This finding should not be surprising. Human activity has made life tough for these species. Now it is our responsibility to help them survive.

*The Florida Grasshopper Sparrow*

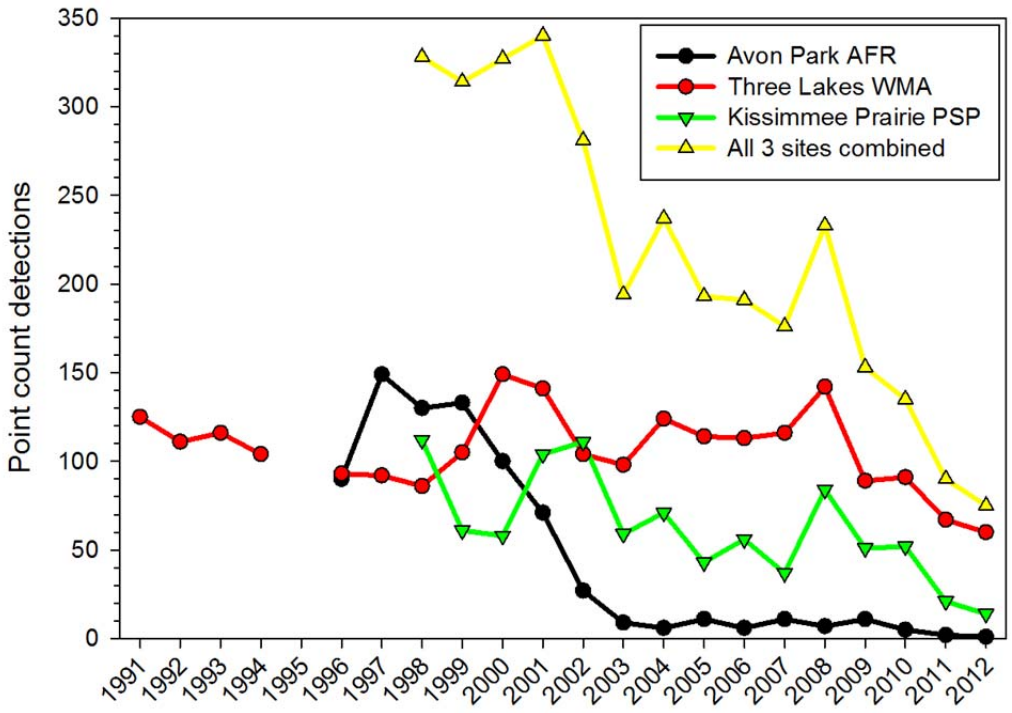
I'd like to give you an example of a species I know well, and have studied in the field, a species which is declining to extinction despite being listed under the ESA as Endangered in 1986. This species is the Florida Grasshopper Sparrow. This bird occurs only in the unique dry prairie ecosystem of south-central Florida, some 90% of which has been converted to improved pasture, agriculture, and recently, urban sprawl.

This sparrow is admittedly no Bald Eagle in terms of public charisma, but it means a lot to many of us in Florida. Close-up, it's really quite attractive (see photo below) and it is the flagship species of the Florida dry prairie, an ecosystem found nowhere else on earth (see photo below). Given that the first stated goal of the ESA is to conserve ecosystems, this sparrow potentially plays a very valuable role.

The Florida Grasshopper Sparrow (*Ammodramus savannarum floridanus*)

The Florida dry prairie ecosystem (Kissimmee Prairie Preserve State Park)

After declining at least 90% from habitat loss during the 20$^{th}$ century, the Florida Grasshopper Sparrow has declined another 80% just over the past decade (see figure below), and it is now probably the most highly imperiled bird in the continental United States.




Decline of Florida Grasshopper Sparrows at survey points within the last three sites that held significant populations, 1991-2012, and for all three sites combined.

We don't know exactly why the Florida Grasshopper Sparrow has declined so abruptly over recent years. Although we have some promising hypotheses, the U.S. Fish and Wildlife Service has repeatedly refused to fund the necessary field research to determine the cause, or causes, of decline. I am a founding member and former chair of the Florida Grasshopper Sparrow Working Group, an interagency group of scientists and managers, which serves as the de facto recovery team for the sparrow. We advise the U.S. Fish and Wildlife Service regarding protection, recovery, and management strategies and actions. Over the past few years we have submitted several proposals for field research on the Florida Grasshopper Sparrow to determine the causes of decline and what might be done to reverse the decline and recover the species. The local (Vero Beach) Field Office of the U.S. Fish and Wildlife Service has avidly encouraged and solicited our research proposals and sent them up the line, where they are uniformly and perhaps arbitrarily rejected by the Regional or National Offices of the Service.

The point is, we cannot recover species if we don't understand the causes of decline and the basic biology of the species. The likely extinction of the Florida Grasshopper Sparrow within the next few years does not represent a failure of the Endangered Species Act. It represents a failure of the U.S. Fish and Wildlife Service to obtain, through research, the scientific knowledge needed to stop the population decline and achieve recovery – and then act on that information. This failure, in turn, reflects at least in part the insufficient budget given to the Endangered Species Program of the Service by Congress and the Administration.

*Endangered species or private property rights?*

Finally, I will address briefly the perceived conflict between endangered species protection and private property rights. Conflicts between non-Federal landowners and the welfare of imperiled species are inevitable because, according to the U.S. General Accounting Office (1994), more than half of the species listed under the ESA have

81% of more of their habitat on private or other non-Federal lands. Species distributions seldom conform to political boundaries, so the states, tribes, and local jurisdictions are generally not well suited to oversee protection and recovery of species listed under the ESA. This is a federal – and in some cases an international – responsibility.

Our country has mechanisms to resolve conflicts between endangered species protection and private property rights. For instance, in the 1982 amendments to the ESA, Section 10(a) authorizes the U.S. Fish and Wildlife Service and National Marine Fisheries Service to issue to non-Federal entities a permit for the "incidental take" of endangered and threatened species on their lands. An incidental take permit allows a landowner to proceed with an activity that is legal in all other respects, but which results in the "incidental" taking of a listed species.

A number of incentives exist for non-Federal landowners who have listed species or species proposed for listing on their properties to pursue incidental take permits. The most significant requirement of Section 10(a) is that an application for an incidental take permit must include a habitat conservation plan (HCP) for any and all listed species that might be subject to take under the proposed activity. The purpose of an HCP is to minimize and mitigate the effects of the permitted action (for example, new housing development) on listed species. HCPs are intended to accomplish this objective through the protection, restoration, and management of habitat for the species covered by the plan.

A general benefit for private landowners, counties, and local jurisdictions who engage in the Section 10(a) permitting and the habitat conservation planning process is that a well-developed and defensible HCP, especially one that addresses the needs of multiple species and ecosystems, streamlines the permitting process and results in reduced costs to landowners and government in the long term. Some landowners who have multiple listed species on their properties have described HCPs enthusiastically as “one-stop shopping,” i.e., a single permit allows them to address all listed species concerns simultaneously for the specified period of the incidental take permit (generally from several years to 75 years).

In reality some HCPs have been of high quality and successful in meeting conservation objectives (so far), whereas others have been dismal failures. It all comes down to the quality of the science underlying the HCP, the moral commitment of the landowners and the agencies to follow the best available science for the benefit of the species concerned, and the reliability of long-term funding to implement the plan and to make adjustments to the plan (what we call “adaptive management”) as conditions change and new knowledge about the species and their ecosystems is obtained.

*Our responsibility*

To conclude, when President Nixon signed the ESA into law in December 1973, it was not a partisan issue. The bill was written by Republicans and Democrats, and it passed the House by a vote of 355 to 4. Respect for life and prevention of extinction is a universal ethical value. As Americans, we should be proud to have a powerful law that reflects this ethical value, and we should do everything we can to assure its successful implementation. I trust that this committee will take this responsibility seriously.

Thank you for the opportunity to testify before this esteemed committee.

Respectfully,

Reed F. Noss, Ph.D.

**Literature Cited in this Testimony:**


General Accounting Office, U.S. 1994. Endangered Species Act: information on species protection on nonfederal lands. GAO/RCED-95-16 . http://www.gao.gov/assets/230/220827.pdf

Harris, J.B.C. Harris, J.L. Reid, B.R. Scheffers, T.C. Wanger, N. S. Sodhi, D.A. Fordham, and B.W. Brook. 2012. Conserving imperiled species: a comparison of the IUCN Red List and U.S. Endangered Species Act. Conservation Letters 5:64–72.

Isbell, F., V. Calcagno, A. Hector, et al. 2011. High plant diversity is needed to maintain ecosystem services. Nature 477:199-202.

Ives, A.R., and S.R. Carpenter. 2007. Stability and diversity of ecosystems. Science 317:58-62.

Male, T.D., and M.J. Bean. 2005. Measuring progress in US endangered species conservation. Ecology Letters 8:986–992.

Neel, M.C., A.K. Leidner, A. Haines, D.D. Goble, and J.M. Scott. 2012. By the numbers: How is recovery defined by the US Endangered Species Act? BioScience 62:646-657.

Scott, J.M, D.D. Goble, A.M. Haines, J.A. Wiens, and M.C. Neel. 2010. Conservation-reliant species and the future of conservation. Conservation Letters 3:91–97.