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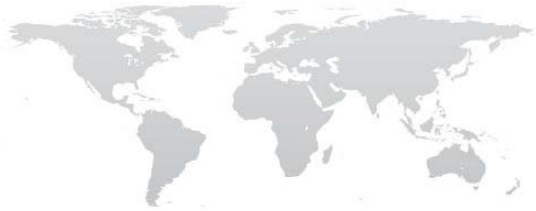

Reshaping the Endangered Species Act: A Holistic Approach Needed?

Lynn Scarlett[1]

Over a half century ago, noted conservationist Aldo Leopold heralded the importance of landowner stewardship (Leopold 1949). He applauded wildlife preserves, reserves, and parks but perceived that nature needed nurturing in backyards, communities, and on working landscapes. Today, the nation still struggles to fulfill Leopold's vision.

Nowhere is this struggle more evident than in the Endangered Species Act (ESA). In 1973, the Congress, with overwhelming approval, enacted the ESA to prevent the extinction of imperiled plants and animals. The act sets forth procedures to identify, list and protect threatened and endangered species. These protections include measures to restrict activities that would "take" (harm or harass) listed species. Because many endangered and threatened species live at least in part on privately owned lands, engaging landowners in their protection is critical to the act's success. Yet many critics argued that the act had the opposite effect, discouraging private landowner stewardship. Indeed, after its enactment, the ESA rapidly became one of America's most controversial laws, generating hundreds of legal challenges by government authorities, conservationists, landowners, and industry.

Three policy issues shape modern challenges to fulfilling the purposes of the ESA:

- Saving imperiled plants and animals on both public and private lands remains a daunting mandate. However, the nature of that task has evolved from one of strengthening landowner incentives for species protection toward one of coordinating the stewardship actions of multiple land managers across jurisdictional and ownership boundaries.

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- The species-by-species focus of the act is inconsistent with natural processes. Nature as we know it is characterized by interconnections, synergies, and interdependence. Species function interdependently across landscapes and ecosystems, yet the act is structured to focus on individual species, not their interconnected relationships within a functioning ecosystem.

- Effectively integrating science with management expertise and experience in the field is imperative in species management and recovery planning. These efforts cannot be left solely to scientists; a spectrum of players must be engaged, including farmers, ranchers, timber managers, fishermen, and others on public and private lands and waters.

Evaluating the Success of ESA

ESA observers typically measure success by tallying the number of species listed and delisted under the act, yet this simple metric conveys an incomplete picture of ESA's far-reaching effects. The act has significantly influenced public and private decision making, far more than any legislation in the era prior to enactment (Yaffee 2006). The act helped trigger extensive data gathering and analyses (Scott et al. 2006) and has motivated numerous large, landscape-scale conservation initiatives—for example, the Platte River Recovery Implementation Plan, the Upper Colorado River restoration, and the Missouri River restoration. Many of these efforts link public and private actions.

Illustrative of these many efforts, the Platte River Recovery Implementation Program was initiated in 2007 after a decade of negotiations.[2] The cooperative agreement and resulting program agreement, signed by the secretary of the interior and the governors of Nebraska, Wyoming, and Colorado, responded to a history of concerns and litigation over endangered species and water uses along the river.

The Platte River program implements certain aspects of the Fish and Wildlife Service's (FWS) recovery plan for four listed species—the whooping crane, least tern, pallid sturgeon, and piping plover—along the river, in the context of sustainable and multiple water uses in a predominantly agricultural region. The program includes provisions to: (1) recover more historical patterns of stream flow during relevant times of the year through retiming and water conservation and supply projects, and (2) enhance, restore, and protect habitats for the four listed species. A key component is an adaptive management plan, which provides a systematic process to test hypotheses about management strategies that will most effectively achieve program objectives. Improvements in the status of the four species and associated river form and function will guide decisions about the most appropriate management strategies.

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[2] See www.dnr.state.ne.us/PRRIP/docs/PRRIP_ProgramDoc.html (Accessed May 30, 2010).

That most listed species remain designated as threatened or endangered is a consequence of many factors. The act's early failure to set forth a context that motivated private stewardship has been one issue. But getting those incentives right through such tools as safe harbor agreements and recovery credits is not likely get vast numbers of species off ESA lists. The effects of a changing climate, land fragmentation, persistent environmental contaminants, and water scarcity all continue to threaten species in ways that transcend decisionmaking incentives within the ESA's provisions. Moreover, with listings often occurring well after some species have experienced serious population declines and habitat losses, their prospects for recovery, once listed, are often limited.

The Ongoing Saga of Private Incentives

Key to fulfilling the ESA is public and private land stewardship. More than 80 percent of species listed as endangered or threatened are found, at least in part, on private lands, and some one-third may be found only on private lands (Government Accountability Office 1994). Species conservation must be a matter for both public and private action.

Many ESA observers have lamented the limited successes in species conservation if the metric is removal of species from the threatened and endangered lists (Goble et al. 2006). Under the act, the nation has put many species in the "emergency room," to borrow a much-used metaphor. But guardians of species under the act have been less adept at making them well—that is, bringing populations back to levels of recovery (Goble et al. 2006).

The nation can do better, and private lands are important for future success. Through the 1990s, a growing concern surfaced about the ESA's effects on landowner incentives to engage in species conservation. Critics have accused the act's regulatory constructs of reinforcing a landowner "fortress mentality" that blocked access to information about species on private lands (Polasky and Doremus 1998). They have criticized the act's potential to discourage species protection on private lands as landowners feared the regulatory implications of supporting at-risk species on their lands.

These were central challenges in the first three decades after passage of the act. To some extent, they remain challenges. Nonetheless, over the past 15 years, many innovations have softened these disincentives. The ESA toolkit now includes safe harbor agreements, a "no surprises" rule, candidate conservation agreements with assurances, and habitat conservation planning with incidental-take permits. These agreements and rules establish restrictions on land use to protect listed and other at-risk species but provide landowners with assurances that no additional restrictions will be required in the future. All these tools partly remedy the problem that landowners have been reluctant to undertake conservation measures for fear that the presence of endangered species on their lands would invoke onerous land use restrictions.

Two additional tools—conservation banking and recovery credits—go beyond simply removing disincentives and instead establish some value in species conservation.

California pioneered use of conservation banks by issuing a policy in 1995 that allowed the conservation of land parcels, managed in perpetuity through easement provisions to benefit at-risk species. These permanently protected lands, which can be publicly or privately owned and managed, contain specific habitat features that benefit endangered species. “Overall, the practice of conservation banking refers to the process of setting up species credits via a banking agreement and the ‘trading’ (i.e., using or selling) of those credits” (Fox and Nino-Murcia 2005). The holders of easements are granted credits within a defined area based on the bank’s species and habitat values. Bank owners use or sell the credits to mitigate impacts to species protected under federal or state law. In 2003, the FWS adopted federal guidance on conservation banking (FWS 2003).

Though no formal database tracks conservation banking, a 2005 report identified 76 conservation banks, of which some 35 were approved by the U.S. Fish and Wildlife Service (FWS, 2005, 1001). The 2005 report indicated that 91 percent of these banks were financially motivated, with the majority of the for-profit banks breaking even or making money. In 2007, an informal tally undertaken at the Department of the Interior identified 78 banks that protected habitat to provide mitigation offsets for federally listed species (Maillett and Simon 2007). More recently, as of January 2009, The National Mitigation Banking Association reports that over 90 conservation banks now protect some 90,000 acres of habitat but detailed analysis of these banks is not available.

Recovery credits, like conservation banks, provide federal agencies a tool to implement actions on private lands to protect threatened and endangered species by offsetting adverse impacts elsewhere on federal lands. Recovery credits allow federal agencies to offset the impacts of their actions on threatened and endangered species on federal lands through conservation actions on non-federal lands if these actions result in net conservation benefits for the affected species. The Department of Defense first used them to offset impacts on the golden-cheeked warbler at Fort Hood by contracting through a reverse auction with private landowners for benefits provided from wildlife management plans (Robertson and Rinker 2010).

Both of these conservation tools provide some motivation for private landowner stewardship and offer opportunities to cluster benefits and coordinate private stewardship on multiple properties, providing a more holistic or landscape-scale conservation setting. But they are also far from perfect. The imperfections cluster into several categories:

- sometimes burdensome and time-consuming procedures (the average time to establish a conservation bank, for example, is more than two years) (Fox and Nino-Murcia 2005);

- performance requirements built on sometimes inadequate information (Robertson and Rinker 2010, 22);
- an emphasis on management prescriptions rather than on performance measured as species outcomes; and
- limited incentives in the context of private use of public lands for ranching and other purposes.

In addition, conservation banking and many other ESA agreements require permanent conservation protections, which some critics believe provide disincentives for participation and are ill-suited to dynamic environmental conditions. Yet these requirements are not inconsistent with adaptive management. In the context of the ESA, conservation banks are intended to sustain conditions that benefit targeted species. Through monitoring, management practices within a conservation bank can be adjusted to improve species benefits in an adaptive context. In the case of catastrophic or dramatic landscape changes—for example, the consequences of floods or fire—a better remedy than time limitations on conservation agreements is some sort of insurance mechanism or reserve pool of conservation and recovery credits. Recovery credits, in contrast to conservation banks, often use a term-limited contract, with many contracts lasting 7 to more than 20 years.

Importance of Public-Private Partnerships

In considering incentives, a broader framework is useful for thinking about private stewardship, conservation, and species protection. Across the nation, new formal and informal institutions are emerging, along with new types of cooperative conservation and collaborative problem solving.

These efforts are relevant to conservation in general and to the ESA context in particular, for several reasons. First, nature knows no boundaries. Problems such as vegetative fuel buildup in forests, water quality problems in waterways, and the spread of invasive species need collaborative public and private actions across jurisdictions and land ownership boundaries. Second, as Aldo Leopold noted, the nation cannot rely only on “reserves” alone—whether parks or conservation banks—to achieve conservation goals. Species protection requires conservation on working landscapes and across boundaries. This requisite suggests the need for decisionmaking contexts that facilitate bargaining, negotiating, and collaboration to accompany conservation incentives.

Such contexts do not derail property rights, as some argue. Instead, they affirm such rights but recognize the importance of governance mechanisms to coordinate action where problems

transcend landowner and jurisdictional boundaries, many rights intersect, and public resources and wildlife are involved.

An examination of the Upper Colorado River management initiative that involves many agencies and participants offers useful insights on collaboration and the ESA (Yaffee 2006). The management regime unfolds on an ecosystem scale, with a multispecies focus in which conservation actions take place on working landscapes in a context of technical and financial incentives to enhance participation. These features set the foundations for twenty-first century environmental performance, the recovery of species, and enhancement of habitat health.

Some of the best prospects for stimulating private stewardship and cross-boundary coordination lie alongside rather than within the ESA context. Programs such as the Partners for Fish and Wildlife Program, Joint Ventures, Coastal Program, Farm Bill conservation grants, and other similar programs inspire landowner stewardship through technical and financial assistance and rewards. These conservation programs increasingly operate on a landscape scale, bringing together multiple landowners to coordinate conservation activities within watersheds and broad ecosystems. Many of these programs function through competitive awards with a focus on performance. Yet some of the best opportunities to enhance species protection lie in strengthening the performance provisions of these programs to include species protections. Tens of thousands of landowners participating in these programs are engaged in land stewardship and land health ventures.

Other policies could further strengthen participation in these non-ESA programs. Tax code changes through which conservation grants are not deemed income would be helpful. Many Farm Bill conservation grant programs provide a precedent for such tax treatment. There is also the matter of funding. Current funding is inadequate for FWS employees to do all that is required of them—and all that is needed to enhance species protection. And an endless weight of lawsuits, often centered on process, deflects focus away from critical priorities. Citizen watchdogs help provide accountability through these lawsuits, but ESA decisionmakers need to ask whether the current approach strikes the right balance between assuring that citizens can hold their government accountable and enabling agencies, using their expertise, to set priorities and focus their actions on achieving outcomes.

The ESA toolkit, with safe harbor agreements, the “no surprises” rule, conservation banks, and recovery credits, seems to have significantly softened landowner disincentives to protect species. Extending safe harbor agreements to actions within some of these non-ESA conservation programs could potentially attract additional participants.

Beyond Incentives: The Multispecies Conundrum

Though ESA implementation could benefit from continuing improvements to tools that provide landowner stewardship incentives, the act is much better equipped to address the incentive issue than it was in the 1990s. Yet administrators are still grappling with a challenge just a central to the ESA's success: how to pivot from a species-by-species approach to a multispecies one. A related challenge is how to pivot to landscape-scale efforts.3

In 2008, the FWS developed a proposed rule to protect 48 Kauai, Hawaii, species as endangered, the first-ever listing that used an ecosystem-based approach. Published as a final rule in April 2010, the action also designated critical habitat for 47 of the listed species. The rule was path breaking for two reasons. First, it grouped species by ecosystem type and identified factors in those ecosystems that created shared threats to multiple species. Second, rather than identifying small, individual patches of critical habitat occupied by each species, the rule used a more holistic process to designate particular ecosystem types and areas, for a total of 26,582 acres, deemed important to the protection and recovery of the listed species.

In the preamble to the rule, the FWS highlights the ecosystem-based approach, noting, "On the island of Kauai, as on most of the Hawaiian Islands, native species that occur in the same habitat types (ecosystems) depend on many of the same biological features and on the successful functioning of that ecosystem to survive. We have therefore organized the species addressed in this final rule by common ecosystem" (FWS 2010).

In taking this pioneering step to use an ecosystem approach, the FWS affirms what many critics have long observed. The FWS notes that many species share ecosystems and, thus, face common threats that "require similar management actions to reduce or eliminate those threats." Moreover, the FWS states that "effective management of these threat factors often requires implementation of conservation actions at the ecosystem scale to enhance or restore critical ecological processes and provide for long-term viability of those species in their native environment" (FWS 2010).

In other words, though the FWS deemed this approach efficient and less redundant than a species-by-species narrative, a central motivation for using an ecosystem approach was "to more effectively focus conservation management efforts on the common threats that occur across these ecosystems, restore ecosystem function for the recovery of each species, and provide conservation benefits for associated native species."(FWS 2010)

[3] While several cases of multispecies listing have occurred, such listings are unusual, in part because of difficulties presented by the provisions of the ESA for taking such an approach.

Though the FWS succeeded under the existing act in crafting an ecosystem-based rule, language in the rule's preamble includes a subtle but significant additional statement that hints at the difficulty the act may present difficulties for broadly using this multispecies, ecosystem-based approach. Specifically, the FWS states, "Although the listing determination for each species is analyzed separately, we have organized the specific analysis for each species within the context of the broader ecosystem in which it occurs to avoid redundancy." The preamble also discusses the critical habitat designation, stating: "although critical habitat is identified for each species individually, we have found that the conservation of each depends, at least in part, on the successful functioning of the commonly shared ecosystem."

This language is carefully chosen, because the act establishes requirements for listing individual species and designating habitat for each listed species. The act's focus is on individual species rather than groups of species within a shared habitat (FWS 2010).In addition, the law includes five different categories of threats to assess the status of a species. Habitat degradation (ecosystem threat) is just one of the five threat categories.

The FWS announced that it plans to undertake ecosystem-based, multispecies analyses for all of the endemic Hawaiian species that are candidates for potential listing under the ESA. They anticipate one rule for each island of Oahu, Hawaii, and Maui Nui (which includes four islands). How well this approach, without some modifications in laws or regulations, will be applicable in other (non-island) circumstances remains untested.

Beyond the process of listing species and designating critical habitat, other features in the law's implementation present management challenges for using an ecosystem framework. Section 9 of the ESA makes it illegal to "take" an endangered species of fish or wildlife. The definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." At an ecosystem scale, with multiple listed species, actions that benefit one species may harm another. The ESA does not envision or provide a framework for addressing these sorts of trade-offs.

Precisely this sort of tension now complicates Everglades restoration and efforts in the California Bay-Delta region to protect both Delta smelt and salmon. In the Everglades, enhancing water flows across the southern Everglades, a central goal of restoration, is critical to the sustenance of the endangered snail kite and many other Everglades species. However, the century-old alteration of the Everglades landscape has altered species distribution patterns. For example, the Cape Sable seaside sparrow now uses some inland habitat for nesting. Rewetting these areas could adversely affect the sparrow. As a result, managers face a dilemma—how to achieve restoration with its concomitant multispecies benefits while not "taking" species like the Cape Sable seaside sparrow.

In the Bay Delta, the water management regime deemed necessary for the Delta smelt, if not carefully calibrated, may actually be detrimental to salmon. Federal managers sought court approval to combine the analyses of the two species, but approval was not forthcoming. Managers thus prepared biological opinions and corresponding management regimes for each species individually, heightening the prospects of conflicting requirements for the two species. It is possible to transcend these tensions through careful coordination among the several federal and state agencies with regulatory and management responsibilities for the Delta smelt and salmon, but the act does not facilitate such coordination.

Science, Experience, and Species Management

The ESA requires that listing decisions be made solely on the basis of science. Much has been written about this role of science, its complexities, legal interpretations regarding how much scientific evidence is required to sustain a decision, and what constitutes the best-available science. Two information challenges merit particular scrutiny as multispecies and ecosystem management become increasingly relevant. The first is a straightforward—though complex—scientific constraint. The second involves the relationship between scientific and experiential knowledge.

SCIENTIFIC CHALLENGES

Consider the scientific constraint. The FWS has signaled an intention increasingly to use a multispecies and ecosystem-based approach to ESA decisionmaking. Yet the science to support such decisionmaking is not well developed and involves substantial uncertainties. Landscape ecology is developing approaches to multispecies management. However, as one recent study concluded, its "treatment of uncertainty is in its infancy" (Burgman et al. 2005). Some scientists have proposed what they refer to as a "focal-species approach (Lambeck 1997);" others use an "umbrella species concept (Roberge et al. 2004)." Both involve targeting a single species or set of species and developing management options intended to restore vegetation and improve ecosystem processes that benefit these species. These approaches assume that the survival requirements of these targeted species—either clusters of species or individual indicator species—encompass the ecosystem attributes necessary to meet the needs of other biota in the same ecosystem.

Critics note that managers lack data "to guide the selection of a set of focal species in the majority of landscapes" (Lindenmayer et al. 2002). Moreover, they note the limited success of such strategies, especially those that use a single species as a surrogate for landscape health. One study of attempts to apply the umbrella species concept, for example, concluded that: "[U]mbrella species from a given higher taxon may not necessarily confer protection to assemblages from other taxa." At the same time, this study noted that "multi-species strategies

based on systematic selection procedures . . . offer more compelling evidence of the usefulness of the concept" (Roberge and Angelstam 2004). But this conclusion is contested by others who find that "the utility of umbrella and flagship species as surrogates for regional biodiversity may be limited" (Andelman and Fagan 2000).

The management of the endangered northern spotted owl is instructive (Courtney et al. 2004). Protecting a network of so-called "late-successional reserves" was intended to conserve late-successional forest conditions and benefit all associated species, including the northern spotted owl. This ecosystem-based approach was designed to achieve multispecies benefits. However, protection of suitable habitat for the owl (and other species) did not prevent invasion by the barred owl, a significant competitor and threat to the northern spotted owl. In some respects, these limitations of a habitat-focused approach reinforce the relevance of what the ESA has required since its inception—a multifactor evaluation of threats to species and, when a species is listed, a multifaceted approach to addressing all the threats, including but not limited to habitat.

The scientific challenges of using an ecosystem-based approach to species management do not negate its relevance. In many respects, such an approach is more consistent with the complex, intersecting natural world. But these challenges do underscore the need both for more scientific inquiry, the development and evaluation of ecosystem-based management tools, and the linking of these tools to other management considerations beyond habitat protection.

EXPERIENTIAL KNOWLEDGE

Another "knowledge" challenge relevant to enhancing implementation of the ESA in an ecosystem context is incorporating experiential knowledge—the knowledge of situation, place, and practice—in recovery planning and conservation measures. Such knowledge helps pinpoint the possible and define the doable.

Consider the effect of fisheries practices on the albatross in Alaska. The FWS had noted a declining albatross population in the state and concluded that commercial fishing practices were affecting albatross. The FWS presented the scientific information about albatross to the fishing community. The community, previously unaware of their impacts on albatross, used their experiential knowledge to come up with alternative ways to fish that would not adversely affect the albatross. The combination of scientific and experiential knowledge brought about a reduction in harm to albatross.

For many years, recovery planning for listed species received less attention than status reviews of species and corresponding listing decisions. That imbalance is beginning to change, with the FWS now having completed recovery plans for many listed species. The recovery planning process is also in transition. Recovery plans have often been the product of teams of scientists and have not included farmers, ranchers, the fishing community, or other resource managers that have

practical, experiential knowledge potentially relevant to identifying sustainable and feasible actions within recovery plans. Increasingly, the FWS is composing recovery-planning teams of scientists, resource managers, and others to introduce many kinds of information and knowledge into the planning process.

Conclusion: Managing Species Holistically

The challenges of interdependence, interconnections, and complexities put a premium on developing tools for cross-jurisdictional, public–private, and private–private coordination and cooperation. Collaborative initiatives (for example, the Blackfoot Challenge in Montana, the Duck Trap River collaboration in Maine, the Puget Sound Partnership, and others) are building blocks for this coordination and cooperation.

Growing attempts to look more holistically at species management and ecosystem protection also offer better prospects for avoiding unintended consequences of management actions and taking actions at a scale more commensurate with the problems that at-risk species face. Indeed, we need these evolving approaches if we are to increase our chances of recovering many species in the face of water scarcities and heightened competition for water, land fragmentation, and the effects of a changing climate.

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