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Extension's Role in Endangered Species Management

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Abstract: Cooperative Extension is an ideal facilitator for volatile wildlife issues such as endangered species management on private lands. Often, lack of trust in government agencies or fear of Endangered Species Act regulations hinders conservation efforts on these private lands. Extension personnel have close ties to local affected communities and thus can be instrumental in educating landowners regarding options that may be available to them in regards to sensitive, candidate, threatened, or endangered species. While in the past these species have been regarded as liabilities to landowners, in many cases they can actually be assets. However, state and federal agencies are often unable to effectively communicate this message. Additionally, trust levels between stakeholders and agencies (particularly U.S. Fish and Wildlife Service) are insufficient for cooperative conservation. If our field is to move past "shotgun" approaches to conservation and begin to truly conserve species at the ecosystem level, we must be more innovative and find ways to make wildlife valuable to those who control resources. While this has been widely applied to game animals, the potential for endangered species on private lands is largely unexplored. Cooperative Extension should play a pivotal role in this area in the coming years to assist recovery of at-risk species.

Key Words: at-risk species, candidate species, Cooperative Extension, Endangered Species Act, endangered species, recovery, Safe Harbor, stakeholder, threatened species

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ENDANGERED SPECIES ACT

Background

In response to growing concern for biodiversity and increased sensitivity to environmental health arising in the 1960s, the U.S. Congress passed the Endangered Species Preservation Act in 1966 (USFWS 2006). This act was limited in ability and had little regulatory authority. In 1969, the Endangered Species Conservation Act was passed, which essentially targeted species that were globally in peril. This act had one notable outcome: the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (USFWS 2006). Soon after the signing of CITES, the U.S. Congress passed a considerably stronger act called the Endangered Species Act (ESA), which replaced the weaker predecessor laws (USFWS 2006).

Description and Record

The primary purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. The act is administered by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (USFWS 2006). Within the context of species and ecosystem protection, two primary goals emerged. They were to protect species, and to recover species. Protection is accomplished through the regulation of "take", with "take" being defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (USFWS 2006). Recovery is largely accomplished by means of recovery plans for each species, as well as the designation of critical habitat (USFWS 2006).

For the purposes of the ESA, a species' taxa are defined as species, subspecies, varieties, and populations. O'Brien and Mayr (1991) noted that uncertainties and lack of clarity concerning taxa have caused great confusion and conflict over the Act. Taxa designation was also discussed by Wilcove et al. (1993).

The ESA also defines three levels of listing: endangered, threatened, and candidate. An endangered species is one that is in danger of extinction throughout all or most of its range. A threatened species is one that is in danger of becoming endangered throughout all or most of its range in the foreseeable future. A candidate species is a species in which sufficient data exist to warrant listing, but higher priorities preclude it

(USFWS 2006). The primary factors used in deciding whether or not to list a species include: species' habitat; overuse of the species for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing protection; and other natural or human related threats to the species' survival (USFWS 2006).

From its inception, the ESA has been controversial. From the infamous Tellico darter (*Percina tanasi*) to the spotted owl (*Strix occidentalis*), the ESA has been tested, debated, and scorned; yet, it remains largely unchanged from its original form. There exist multiple misconceptions regarding what the ESA means. The USFWS has repeatedly issued statements in attempts to clarify the ESA. A recent publication by Environmental Defense has also attempted to elucidate the ESA and its successes (Bean 2005). Yet, critics still are quick to point out the track record. Of 1,507 endangered species and 321 threatened species, only 10 have been delisted and another 16 downlisted (USFWS 2006). However, over 350 species have been stabilized or improved and another 900 have been prevented from going extinct (Bean 2005).

Both of these facts are only part of the story, however. There exist species which are likely recovered but have as of yet not been officially delisted (e.g., bald eagle, *Haliaeetus leucocephalus*, and grizzly bear, *Ursus arctos horribilis*). Alternatively, it is highly questionable for many species whether the ESA has contributed to stabilization or prevention from extinction. This paper will not attempt to address these items. What is of importance here is that for whatever reason(s), the ESA has a good record at species protection but not a high success at full recovery. Thus, we should be concerned with methodologies to improve recovery of species in the future— the original intent of the ESA.

STAKEHOLDERS

There are multiple reasons to explain the lack of recovery for various species listed under the Endangered Species Act. One of the most obvious is lack of resources (money, time, labor). Other reasons that are more difficult to address include natural processes, such as climate change. However, with over $\frac{2}{3}$ of all listed species occurring on private lands, it is obvious that the degree that we are able to empower private landowners to conserve endangered species is of utmost importance. For this discussion, I will consider endangered, threatened, candidate, and significantly declining species collectively as “at-risk” species. While in some instances, private landowners have been successfully brought in to the recovery process, in many others this has not happened, despite the need. Examples of successful landowner ownership in recovery efforts include the red-cockaded woodpecker (*Picoides borealis*) and the Columbia spotted frog (*Rana luteiventris*). By expanding the discussion beyond those who directly control or own land to include all those who will be affected by decisions, the term ‘stakeholder’ becomes pertinent. Involving stakeholders in at-risk species conservation, in many cases, has been difficult (Brook et al. 2003).

While the ESA directly mandates that social factors be considered in ESA decisions, often they have been given insufficient weight (Kellert 1985). Society generally supports the ESA (Czech and Krausman 1999, and Table 1); however, those most directly impacted by ESA listings often fear implications of ESA listings (Elmore 2006). This fear may in fact hinder species conservation on private lands for some species (Brook et al. 2003, Elmore 2006). For example, a recent survey in Utah found that 34% of agricultural producers have attempted to discourage the threatened Utah prairie dog (*Cynomys parvidens*) from their land, specifically to avoid regulatory concerns related to the ESA (Elmore 2006). In many cases, the fear factor involved with ESA implications is due to lack of accurate information. Evidence exists that by increasing stakeholder involvement, both knowledge and support for controversial wildlife management can be increased (Lafon et al. 2004). Conservation is, at its simplest level, a personal choice. Therefore, if we desire society to make those decisions that will adequately conserve at-risk species, it is prudent for wildlife professionals to include and empower stakeholders.

Table 1. Urban, rural, and agriculture respondents that agreed, did not know, or disagreed with statements regarding the Endangered Species Act, 2005 (Elmore 2006).

Statement ^b	Urban			Rural			Agriculture		
	A	NS	D ^a	A	NS	D	A	NS	D
Good Intent	77	20	3	74	15	11	62	19	19
Misused	29	54	17	66	25	9	83	11	6
Threatening	31	40	28	72	19	9	86	9	5
Revoked	8	38	54	29	38	33	53	31	16
Maintained	19	58	23	13	32	55	4	21	76
Success	25	59	16	10	47	42	7	30	64

^aChoices were: agree (A), not sure (NS), or disagree (D).

^bStatements were: the original intent was good (Good Intent), it is being misused (Misused), it threatens private property rights (Threatening), it should be revoked (Revoked), it should be maintained as is (Maintained), and the act has been a success (Success).

Community-Based Conservation

Currently, there seems to be a major paradigm shift across the country in how we approach species conservation. If the recent listening sessions on cooperative conservation hosted by the U.S. Department of the Interior (USDI) are any indication, the federal government is convinced that stakeholder involvement works (USDI 2006). There are several terms commonly used to describe this grassroots effort at conservation, but the simplest is perhaps ‘community-based conservation’, which is conservation discussion and decisions at the local level. This rationale makes intuitive sense, as those most directly impacted by management decisions should have direct involvement in discussion and decisions regarding resources. Not only could local stakeholder involvement potentially lead to more informed decision-making, but it also could help reduce costly litigation, which has plagued the ESA (Broderick 2004). This would manifest from increased acceptance of management decisions through ownership in the process.

Involving Stakeholders

If involvement of stakeholders would lead to a better implementation of the ESA and thus better conservation of at-risk species, how can this be achieved? I propose that there are two primary avenues to increase stakeholder involvement. The first primarily pertains to landowners and land managers, while the second applies to all of society.

Remove Fear

As discussed earlier, fear has been identified as a major constraint for species conservation on private lands for some species (Brook et al. 2003, Elmore 2006). Seventy percent of Utah agricultural producers surveyed revealed that fear of restrictions under the ESA hinders their willingness to receive conservation aid or assistance regarding the threatened Utah prairie dog (Elmore 2006). This should be a sobering statistic for managers, who have for over 30 years dealt with this particular recovery effort. A mechanism currently exists to reduce concerns over ESA listing in the form of the USFWS Safe Harbor program. This program essentially acts as an insurance program for landowners, by offering voluntary agreements to promote management on private lands that benefit endangered species, while assuring participants that no additional future regulatory restrictions will be imposed (USFWS 2004a). It initially was designed to address the unintentional negative management of red-cockaded woodpeckers that resulted from fear of ESA implications (Bean 2005). While this program has been available since 1995, few landowners have ever heard of it, and it has not been applied to many listed species at present. The Candidate Conservation Agreement with Assurances is a similar program but applies to candidate species (USFWS 2004b).

Perhaps the most obvious way to reduce concerns and fears about current, proposed, or possible ESA listings is simply education of the facts. A review of articles on the ESA in periodicals reveals a large collection of writings verging on mass hysteria. Often, fears have been unfounded and are a result of

misinformation and lack of communication. Lafon et al. (2004) found that by increasing stakeholder involvement, both knowledge and support for controversial wildlife management increased. While the USFWS has released multiple fact sheets in an attempt to bring logical discussion to clouded arguments, often the information never reaches those most in fear of ESA implications. USFWS lacks the manpower and, in some areas, the credibility to personally deliver the message in a way that landowners can accept as meaningful. This highlights the need for personal direct contacts from trusted sources to deliver the information that landowners need to make informed opinions and decisions.

Provide Value

The second method to increase stakeholder involvement and acceptance of at-risk species conservation is to provide value for the species. While there are many forms of value that can be placed on wildlife, I will focus briefly on economic, ecological, and intrinsic.

Economic value can be achieved in two forms: increasing returns, and reducing losses. Incentive payments are not new to species conservation, and these often come in the form of U.S. Department of Agriculture Farm Bill programs such as Conservation Reserve Program, Wildlife Habitat Incentive Program, Wetland Reserve Program, and Environmental Quality Incentives Program, among others. While these programs may not target at-risk species specifically, in many instances they can be used as a mechanism to encourage proper management for declining species or ecosystems. There also exist methods that directly target listed species, which in many areas of the county are underutilized. Conservation banking allows for long-term species protection and the selling of “credits” using the free-market system. These credits, which allow for “take” on other lands, can bring substantial income to private landowners that have significant habitat for at-risk species (USFWS 2004c). Additionally, landowners may be able to reduce the cost (whether perceived or actual) of listed species with Habitat Conservation Plans that allow for some “take” of a listed species (USFWS 2000). Recreational use of at-risk species aligns closely with economics in the form of wildlife viewing, which continues to increase in use but is not being adequately measured across the U.S. A 1996 review found that even the most costly species’ recovery efforts produced more economic benefits than costs incurred (Loomis and White 1996). It is likely that with the present increased demand for recreation, this trend continues. There are specific instances where landowners have begun to market at-risk species as a non-consumptive experience on their private lands. Lesser prairie-chicken lek viewing is one excellent example of society’s willingness to pay for access to at-risk species on private lands. The few ranchers in western Oklahoma offering this experience have not yet met the public demand (Sue Selman, Oklahoma rancher, personal commun.).

While wildlife biologists do a good job at documenting the ecological value of species, we often do a poor job of communicating that information to the public. For instance, a recent survey of Utah residents found very low levels of acceptance that prairie dogs are a keystone species (Elmore 2006). This is disturbing, since prairie dogs are a textbook example of that concept. The public will only value what has been demonstrated to have a direct personal value. If basic ecological functions are not clear, we cannot expect that society will simply trust us that the value exists. Therefore, we need to do better at articulating ecological function.

While many of the above value terms are heavily anthropocentric, they often can lead people to truly recognize intrinsic values, which changes their entire worldview. This should be our ultimate aim. Essentially, we are in the business of changing the way that people fundamentally see the world, which will affect the way that they live their lives, with the end result being adoption of a Land Ethic (Leopold 1949). So, while initial attempts to provide value may involve anthropocentric evaluations, in time we would expect a deeper value system to develop in stakeholders that will carry over across generations.

COOPERATIVE EXTENSION

I propose that the Cooperative Extension Service is the ideal facilitator to achieve greater stakeholder participation in at-risk species conservation. There are several reasons for this, which all hinge on the

interrelationships that already exist between the universities, agencies, non-governmental organizations, landowners, and the general public.

Bridging Gaps

As pointed out earlier, a primary problem with endangered species recovery is that in many instances there exists great fear and mistrust of the federal government (particularly the USFWS). Recent data from Utah regarding the threatened Utah prairie dog revealed that, regarding Utah prairie dog issues, the Utah Farm Bureau and the Utah Cooperative Extension Service were the most preferred groups for landowners to work with (Table 2). In fact, there was no difference in between views on Cooperative Extension and the Farm Bureau, which attests to the high trust levels that landowners in this region have for Extension. There are several reasons for this. One is that Cooperative Extension is non-regulatory. Therefore, landowners do not perceive Extension personnel to be threatening, and they are more likely to openly discuss controversial and volatile topics. Additionally, trust levels are already well established, due to the presence that Extension has at the county level. While it may be convenient to utilize the local county Extension agents to deal with ESA implications and listed species conservation, this may be counterproductive in some instances. Local county agents may be reluctant to risk strained relations with friends, family, and peers at the county level over controversial subject matter. Therefore, it may be more productive for area and state specialists to take those risks and carry out programming in targeted areas, with the logistical help of the county agents. This will undoubtedly lead to a higher demand for state specialists' time, which is already a limited resource. However, the consequences of no action could be dire for both species conservation and landowners.

Additionally, Cooperative Extension has close working relationships with agencies that do have regulatory authority, most notable the USFWS. Therefore, Extension should act as a conduit of information between the USFWS and landowners. Also, Extension can be an effective facilitator for public meetings to discuss volatile topics such as at-risk species. Ideally, once these initial contacts are made and personal relationships begin to form between stakeholders and agencies, Extension personal can move on to other needed areas. In this way, we can both facilitate difficult discussion and maximize the effect, while involving as many stakeholders as possible.

Research

In many instances, state and even area specialists now have dual appointments of extension and research. This provides ideal opportunities to incorporate needed research with extension activities relating to species conservation. Even if state specialists do not have research appointments, other qualified

Table 2. Agriculture respondent willingness to work with various organizations to manage conflict caused by Utah prairie dogs, 2005 (Elmore 2006).

Groups ^a	Very Willing	Somewhat	Not Willing
	%	%	%
UDWR	28	38	36
USFWS	19	31	50
BLM	22	37	42
USFS	19	35	46
NRCS	22	40	38
Wildlife Services	20	38	42
Environmental Defense	10	16	74
Nature Conservancy	10	22	68
Farm Bureau	48	34	19
Extension	47	37	16

^aGroups are: Utah Division of Wildlife Resources (UDWR), U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), U.S. Forest Service (USFS), Natural Resources and Conservation Service (NRCS), Wildlife Services, Environmental Defense, Nature Conservancy, Farm Bureau, and Utah State University Extension Service (Extension).

faculty could serve as collaborators to achieve this dual role. This combined research/extension arrangement is appealing for several reasons. First, being part of the land grant system, Cooperative Extension has ready access to personnel, students, equipment, and funding needed to carry out research. Second, since Cooperative Extension is such a trusted source of information, research findings are more likely to be accepted and incorporated into actual management on private lands, particularly if stakeholder involvement is achieved. Research with a heavy extension focus is also excellent training for tomorrow's scientists, who need to understand the societal factors in natural resource management. And lastly, needs-driven research that produces meaningful output for stakeholders will be looked favorably on by university administration.

Education

The final place that Cooperative Extension fits into at-risk species management is education. As discussed earlier, society often does not see values that species provide to humans and to ecosystems. An informed public is generally more supportive and involved in wildlife management (Chase et al. 2000) and more likely to embrace controversial management actions, such as the ESA (Lafon et al. 2004). Cooperative Extension is in a unique position to deliver data in ways that agencies are incapable of, due to our existing trust level and networking systems. This dissemination of information is the reason that the Extension Service exists. We fulfill the land grant university mission in providing scientific knowledge and expertise to the public.

SUMMARY

It is encouraging that society at large believes that the original intent of the ESA was justified and that its goals are worthy. But, despite the high ambitions and some notable successes, many species are far below recovery goals. The ESA has been shown to effectively prevent species extinction. A preservationist, regulatory, or reintroduction approach to species recovery may work for those species that have been overexploited or damaged by toxicants and pollutants (e.g., bald eagles; or peregrine falcons, *Falco peregrinus*), but for species lacking habitat sufficient for recovery, voluntary conservation efforts on private lands should be encouraged and facilitated. Private lands must be more adequately included in recovery efforts for most species that are currently at risk, and major habitat improvements on private lands will be necessary. It is questionable whether existing programs for conservation on private lands are adequate to recover many listed species. Regardless of this, there exists a great chasm between private landowners and resources available for at-risk species conservation (knowledge, dollars, technical assistance, and manpower).

Cooperative Extension personnel have shown that the Extension system is capable of delivering research-driven information to stakeholders in an efficient manner for over 100 years. But, with some notable exceptions, endangered species management has received little attention since the 1973 passage of the ESA. Additionally, we have not effectively shown the value of at-risk species to landowners and stakeholders in general. Until a value is recognized, there will be little interest in conserving a species. The current state of fear that exists on the part of landowners toward the ESA is counterproductive to conservation. Fear is a poor motivator.

There will always be a place for more traditional outputs of wildlife Extension, such as fact sheets and training sessions on timely topics. However, I contend that a major need exists at present for the respective Cooperative Extension Services at the major land grant institutions to facilitate recovery efforts of at-risk species nationwide. This effort is being unfulfilled by existing state, federal, and private organizations at the scale needed for comprehensive recovery of many potentially recoverable species. Not only do the species need this coordinated output from us, but so do those stakeholders that Cooperative Extension serves.

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