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The Endangered Species Act is endangering species.

Anti-Conservation Incentives

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In early 2006, landowners in Boiling Springs Lakes, N.C., began clear-cutting timber from their property after the U.S. Fish and Wildlife Service (FWS) announced that development could threaten local red-cockaded woodpecker populations. The FWS released a map showing clusters of the woodpecker in the area and announced plans to identify additional habitat for the endangered bird. That prompted landowners to grab their chainsaws to clear their property of the trees in which the woodpeckers make their homes before their land could be designated as endangered species habitat.

Residents of Boiling Springs Lakes are not anti-environmental or particularly hostile to endangered birds. Red-cockaded woodpeckers have thrived there for years. "People are just afraid a bird might fly in and make a nest and their property is worth nothing," Boiling Springs Lakes mayor Joan Kinney told local papers. "It is causing a tremendous amount of clear-cutting." As one local resident told a reporter, "You had to get in line to get somebody with a chain saw.... I have not a single pine tree left. Folks around here are terrified of the prospect of losing their property. That causes people to get out there and find out what they can do to protect themselves." In just eight months, the city issued 368 logging permits but few building permits, leaving many empty lots throughout the area.

The rampant clear-cutting in Boiling Springs Lakes was a predictable, if highly regrettable, consequence of the economic incentives the Endangered Species Act (ESA) creates for private landowners. Under Section 9 of the act, it is illegal for a private landowner to engage in activities that could "harm" an endangered species, including habitat modification, without first obtaining a federal permit. Knowing violations can lead to fines of up to \$25,000 and even jail time. As a practical matter, the law requires private landowners to obtain per-

mission from the FWS before modifying endangered species habitat on their own land. However, it is not illegal to modify land that might become endangered species habitat some day in the future, nor are landowners required to take affirmative steps to maintain endangered species habitat. So, in Boiling Springs Lakes as elsewhere, landowners seek to avoid the burden of the ESA by eliminating potential species habitat on their land.

ANECDOTES AND DATA

Economists have been critical of the ESA's perverse incentives for years. In the most basic terms, the act penalizes and thus discourages the creation and maintenance of species habitat on private land. According to University of Arizona economist Robert Innes, "the possibility of uncompensated takings gives landowners an incentive to develop their property early on in order to reduce the risk that it will later be appropriated for public use." Such incentives have consequences. As Robert J. Smith wrote in *Regulation* 15 years ago, "The perverse incentive structure of the act accelerates destruction of the very habitat the act was designed to protect."

Anecdotal accounts of landowners who have sought to avoid having "endangered species problems" on their land are rampant. In Texas, property owners raze juniper tree stands favored by golden-cheeked warblers, while in California's Central Valley landowners disc brush and low-lying habitat favored by small endangered mammals such as kangaroo rats. There are even stories of landowners who "shoot, shovel, and shut up" when they encounter endangered species on or near their land.

Some environmental activists dismiss anecdotal accounts of the ESA's perverse incentives. "Anecdote is not the singular of data," they explain, stressing that the occasional horror story does not demonstrate that there is something fundamentally wrong with the act. But others have begun to recognize that the ESA's perverse incentives can create real problems for species

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conservation. Writing in *Conservation Biology*, a group of wildlife biologists observed that “the regulatory approach to conserving endangered species and diminishing habitats has created anti-conservation sentiment among many private landowners who view endangered species as economic liabilities.” As they explain,

Landowners fear a decline in the value of their properties because the ESA restricts future land-use options where threatened or endangered species are found [near] by [and] makes no provisions for compensation. Consequently, endangered species are perceived by many landowners as a financial liability, resulting in anticonservation incentives because maintaining high-quality habitats that harbor or attract endangered species would represent a gamble against loss of future opportunities.

The policy question today is not whether the ESA creates incentives for private landowners to work against the conservation of endangered species, but whether those incentives are so pervasive that the act is actually doing more harm than good.

EMPIRICAL EVIDENCE

Where there was once little more than economic theory and anecdotal accounts upon which to criticize the performance of the ESA, today there is a growing body of empirical evidence that the act’s regulatory provisions undermine species conservation on private land. Four recent studies show that the incentives created by the ESA cause systematic changes in private landowner behavior to the detriment of habitat conservation efforts. Taken together, the studies provide powerful evidence that the ESA may be endangering endangered species on private land.

In 2003, Dean Lueck and Jeffrey Michael published a paper in the *Journal of Law and Economics* examining the effect of endangered red-cockaded woodpecker populations on timber



management practices in North Carolina. Specifically, the study looked at whether private landowners engage in preemptive habitat destruction when the presence of the woodpeckers places landowners at risk of federal regulation and a loss of their timber investment.

Consistent with economic theory, Lueck and Michael found that “increases in the probability of ESA land-use restrictions, as measured by a landowner’s proximity to existing

[woodpecker] colonies, increase the probability of forest harvest and decrease the age at which timber is harvested.” Providing habitat for a single red-cockaded woodpecker colony can cost up to \$200,000 in foregone timber harvests. To avoid the loss, landowners at greatest risk of ESA-imposed restrictions were most likely to harvest their forestlands prematurely and reduce the length of their timber harvesting rotations. Cutting timber stands prematurely deprives red-cockaded woodpeckers of habitat because the birds only inhabit older trees. According to the Lueck-Michael study, the ultimate consequences were potentially significant, amounting to several thousand acres of lost woodpecker habitat, enough to provide habitat for between 25 and 76 red-cockaded woodpecker colonies. That is a significant habitat loss for a species dependent upon private land for its survival.

A second study on the effect of red-cockaded woodpecker

this case the ESA imposes costs but does not generate conservation benefits.

The perverse incentives of the ESA do not simply affect the woodpeckers and other species dependent upon private timberland in the southeastern United States. A study by environmental researchers Amara Brook, Michaela Zint, and Raymond de Young published in *Conservation Biology* looked at landowner responses to the listing of the endangered Preble’s Meadow jumping mouse, a small, nocturnal rodent native to parts of Wyoming and Colorado. The study conducted surveys of private landowners within the animal’s range and found that a significant number of landowners took actions to make their lands less hospitable to the mouse after it was listed as an endangered species. While some landowners sought to improve the quality of the habitat on their land, the survey responses suggested that “the efforts

The positive efforts of some landowners were “cancelled” by those who took negative actions in response to the act.

er populations on timber practices by Daowei Zhang in *Economic Inquiry* reinforced the Lueck and Michael findings. Zhang found that “regulatory uncertainty and lack of positive economic incentives alter landowner timber harvesting behavior and hinder endangered species conservation on private lands.” Absent such uncertainty, “landowners choose among harvesting methods to maximize stumpage revenue ... subject to constraints such as forest stand characteristics..., aesthetics, management objective, and tax liability.” The threat of regulatory prohibitions on timber activity under the ESA, however, alters landowners’ calculations. Zhang found that “a landowner is 25% more likely to cut forests when he or she knows or perceives that a red-cockaded woodpecker cluster is within a mile of the land than otherwise.” The threat of ESA regulation also increases the likelihood that a landowner would engage in clear-cutting when harvesting the timber, as opposed to a selective harvesting technique that may have less ecological impact. On that basis, Zhang concluded, “at least for the [woodpecker], the ESA has a strong negative effect on habitat,” and the effect appears to be “substantial.”

Zhang’s results largely confirm the Lueck-Michael findings. As Zhang reported,

Despite the use of different data, the basic conclusions reached in these two studies are similar: the ESA regulations actually lead landowners [to] cut their timber sooner, to the detriment of the [red-cockaded woodpecker], than they otherwise would do. As a consequence, [woodpecker] habitats have been reduced on private lands because of the ESA. In

of landowners who acted to help the Preble’s were cancelled by those who sought to harm it.” On that basis, the study concluded, “The current regulatory approach to the conservation of rare species is insufficient to protect the Preble’s mouse.” Indeed, the authors were forced to conclude that “as more landowners become aware that their land contains Preble’s habitat, it is likely that the impact on the species may be negative.”

The Brook findings illustrate the factors that motivate landowner behavior with regard to endangered species. Some landowners indicated a willingness to help the Preble’s Meadow jumping mouse upon hearing it was endangered, presumably because they wished to help an endangered species. Their positive reaction was not dependent upon the regulatory strictures of the ESA but on their belief in the importance of species conservation or other values. Those landowners who expressed intent to destroy potential habitat on their land, on the other hand, are unlikely to have been motivated by a visceral hostility to endangered species or conservation more broadly. It is more likely that those who took negative actions did so because of the threat of regulation and its potential economic consequences. Without ESA regulation, the existence of the jumping mouse would have posed no economic threat to private landowners and the likely effect of the mouse’s listing would have been a net increase in conservation efforts on private lands. Instead, the positive efforts of some landowners were “cancelled” by those who took negative actions in response to the act.

The *Conservation Biology* study also found evidence that the ESA discourages private landowners from cooperating with

environmental researchers. Specifically, it found that landowners would refuse to give biologists permission to conduct research on their land to assess mouse populations out of fear that land-use restrictions would follow the discovery of a mouse on their land. “Many landowners appeared to defend themselves against having their land-management options restricted by refusing to allow surveys for the Preble’s,” the Brook study reported. That is a grave concern because accurate data on species populations and their habitat are essential to successful conservation efforts. Not only is the ESA discouraging landowners from maintaining habitat, but the act could be obstructing the accumulation of data about what species are in need of protection in the first place.

A fourth study of uncompensated ESA regulation by economists John List, Michael Margolis, and Daniel Osgood sought to measure “the extent to which landowners act to preempt regulation during the urban growth process” by accelerating the rate at which land is developed. The study focused on landowner responses to the threat of regulation of habitat for the Cactus Ferruginous pygmy owl near Tucson, Ariz., and found evidence that the threat of ESA regulation accelerates the rate at which privately owned species habitat is developed. Specifically, the study found that land designated as critical owl habitat was, on average, developed one year earlier than equivalent parcels that were not designated as habitat. This acceleration of development was facilitated in part because the pygmy owl was listed and proposed critical habitat was published months before regulatory responses were imposed, “allowing landowners ample time to respond.” Those findings are reinforced by additional data showing that the value of undeveloped land designated as critical habitat fell relative to other lands in the study area. Although as a strict legal matter critical habitat designation is not necessary for land to be burdened by the ESA’s regulatory strictures, it provides a signal to landowners about the likelihood of future regulatory restraints.

While the List study focused on the timing of development, it should be noted that government actions that encourage more rapid development can be expected to result in more net development. For ecological purposes, the decision to develop land can be irreversible. Once habitat is lost, it can be difficult to replace. At the same time, land that is not developed today can still be conserved or protected before it is developed tomorrow. Thus, preventing — or, at least, avoiding

creating incentives for — premature development serves the ultimate goal of ecological conservation.

CONCLUSION

These studies, taken together, provide powerful evidence that the ESA is discouraging species conservation on private land. Worse, they suggest that the net effect of the ESA on private land could be negative. Given that habitat loss and fragmentation represent the greatest threat to endangered species, this should be of concern to wildlife conservationists. Indeed, the incentives created by the ESA should be of even greater concern because private land is indispensable to environmental conservation.

Most land — approximately two-thirds of the continental United States — is privately owned. The relative importance of such lands for the maintenance of species habitat and critical ecological functions is perhaps even greater. Over three-fourths of those species currently listed as threatened or endangered under the ESA rely upon private land for some or all of their habitat, according to the U.S. Government Accountability Office.

Without active conservation on private lands, meaningful ecological conservation cannot be achieved — and the available evidence suggests that it is failing. Only a handful of species listed as endangered or threatened in the past three decades have “recovered,” according to the FWS, and it is debatable whether there has been a single “success” story as a result of the regulation of habitat modification on private land. Instead, as the recent studies indicate, there is evidence that ESA regulation may be causing conservation failures.

Years ago, Aldo Leopold wrote of the need for a new land ethic among landowners to safeguard and steward the land. Given the dependence of endangered species on private land, such a land ethic is essential if many species are going to continue to survive in the wild. Yet today we are learning that the nation’s primary wildlife conservation law may be doing more harm than good, discouraging the very land ethic necessary for endangered species’ survival. The purpose of the ESA is to conserve endangered and threatened species. Instead it appears that the act may be endangering them. **R**

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