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# Balancing Business Interests and Endangered Species Protection

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Andrew J. Hoffman  
Max H. Bazerman  
Steven L. Yaffee

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*Is it possible to maintain valuable, productive ecosystems while furthering local, regional, and state economies? Improvements in implementing the Endangered Species Act can satisfy both interests.*

# Balancing Business Interests and Endangered Species Protection

Andrew J. Hoffman • Max H. Bazerman • Steven L. Yaffee

If you ask most Americans what they know about the Endangered Species Act (ESA), they will likely respond, "the spotted owl." This Pacific Northwest controversy epitomizes the conflict between jobs and the environment that the ESA has come to symbolize. To protect the spotted owl, large tracts of federal lands were withheld from logging, the supply of raw timber decreased, mill capacity was eliminated, logging jobs were lost, and prices increased. As this example illustrates, endangered species protection can alter local, regional, and national economies. It also shows the kind of win-lose negotiations that typify ESA debates. Each side in the debate sees beating the other as the way to achieve its goals. Environmentalists want a better environment and are willing to sacrifice economic development toward that end. Development interests want economic growth and consider it unacceptable to forfeit jobs or economic prosperity for species protection.

As species protection is weakened, we move toward satisfying development interests at the expense of environmental interests. As species protection is strengthened, we move toward satisfying environmental interests at the expense of development interests. Undoubtedly, such a tug-of-war debate will always persist, but we argue that there are opportunities to expand the scope of debate, finding solutions that will improve the potential outcome simultaneously for both environmental and development interests.

In the managerial negotiations literature, scholars used to argue over whether to follow a win-lose philosophy or a win-win philosophy.<sup>1</sup> But more recent formulations argue that either is costly. Rather, rational negotiators now think about how to first create a larger pie and then claim a significant portion of that pie, subject to concerns for fairness and the ongoing nego-

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tiation relationship.<sup>2</sup> But environmentalists and developers are still trapped in win-lose debates. While political debates have fueled the dichotomy between environmentalists and development interests, we see the need for a balanced perspective to manage the two sets of concerns simultaneously.

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*Andrew J. Hoffman is assistant professor of organizational behavior, School of Management, Boston University. Max H. Bazerman is the J. Jay Gerber Distinguished Professor of Dispute Resolution and Organizations, J.L. Kellogg Graduate School of Management, Northwestern University. Steven L. Yaffee is professor of natural resource and environmental policy, School of Natural Resources and Environment, University of Michigan.*

In this article, we begin with an overview of the ESA and its surrounding controversies. We then argue that, when viewed from a broad economic perspective, the benefits derived from nature can, under certain circumstances, create mutual gain solutions for both economic and environmental interests. It becomes clear that it is not the objectives of the Endangered Species Act that cause economic dilemmas but its implementation. To that end, we offer practical ways to improve ESA implementation.

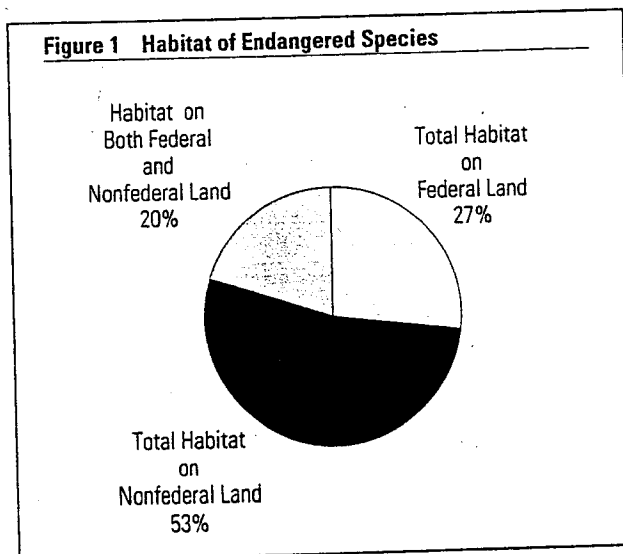
### The ESA and Controversy

In species protection debates, public opinion is often formed by anecdotes rather than by the substance or objectives of legislation. The attention that the ESA garners centers on costs to individual landowners and ignores the aggregate economy. For example, Ben Cone, a forester in North Carolina, shifted from a sixty-year tradition of sustainable forest management to clear-cutting when he feared finding the endangered red-cockaded woodpecker on his property.<sup>3</sup> Clearly, this is not the solution that the ESA intended. But this kind of image captures national attention and comes to symbolize ESA outcomes. In reality, it was not the act's implementation that caused Cone's actions but rather his misperceptions, which precipitated a hasty reaction. Only after the story became a touchstone for ESA critics was it revealed that endangered species considerations affected only 15 percent of Cone's land. He was free to continue thinning trees on the remaining land. Furthermore, the Fish and Wildlife Service (FWS) repeatedly offered Cone habitat conservation proposals, insulating him from future ESA responsibilities, but he refused to cooperate, fearing further economic loss.<sup>4</sup> Cone's fear of the complete devaluation of his assets led him toward a radical protective strategy.

To understand such controversies, we must first understand the ESA. In 1973, the ESA was created to protect endangered or threatened species and restore them to a secure status in the wild.<sup>5</sup> It is administered by the FWS (Department of Interior) for land-based species and the National Marine Fisheries Service (NMFS, Department of Commerce) for marine species. Each agency maintains a list of plants and animals considered worthy of protection under

the act. Species listed as "endangered" are at risk of extinction throughout all or a significant portion of their range. Those "threatened" are likely to become endangered in the foreseeable future. Once a species is listed, the act forbids its import, export, or interstate or foreign sale. Further, it becomes illegal to kill, harass, possess, or remove the protected species from the wild ("taking" a species). The agencies draft recovery plans to ensure the species' long-term survival. Most important is section 7 of the ESA, which requires all federal agencies to review their own actions and those they fund or permit to ensure that they do not jeopardize any listed species or destroy or modify critical habitat. Section 7 is administered through an interagency consultation process, in which the FWS or NMFS gives biological opinions to development and permitting agencies on proposed action.

Of the 781 domestic species for which the FWS was responsible as of May 1993, the majority lived on private land (see Figure 1).<sup>6</sup> Although no court has ever found that operation of the ESA has taken private property in violation of the Fifth Amendment, the costs associated with endangered species protection are real, at times resulting in significant economic impacts at the local and regional level.<sup>7</sup> Economic effects are due to: (1) delays from providing permits and petitioning, (2) alterations to development plans to accommodate endangered species protection, and (3) in the most extreme cases, job loss due to endangered species restrictions. The last category is the



most visible, but all three incur economic costs to private developers.

The FWS is attempting to minimize these impacts by offering private landowners a flexible compliance option. To balance the objectives of species protection and economic development, section 10 of the ESA allows private landowners to formulate habitat conservation plans (HCPs). Once the FWS approves an HCP, it gives landowners permits to "incidentally take" listed species during development, provided that the landowner takes certain steps to conserve that species. There are approximately 150 currently approved HCPs and more than 200 in development.<sup>8</sup>

### Viewing the ESA from an Economic Perspective

#### Overstated Costs and Understated Benefits

To accurately assess the economic impact of the ESA, we must step back from individual cases and consider the broad economic context. In the aggregate, the picture is often quite different. Stephen Meyer, director of the Environmental Politics and Policy Center at MIT, studied the impact of endangered species listings on state economies and the agricultural sector. He found that, first, "endangered species listings have not depressed state economic development activity as measured by growth in construction employment and gross state product" and, second, "the assertion that the Endangered Species Act has harmed the American farmer, hobbled agricultural production, and decimated the forest industry is baseless."<sup>9</sup> And the number of projects hindered by ESA implementation between 1987 and 1995 is very small (see Figure 2).<sup>10</sup>

Even in the spotted owl case, the story has been one not of economic recession but rather of economic transition. While some logging companies were hurt by restrictions on timber supply from federal lands, windfall profits accrued to others that relied on timber from private lands and smaller, more efficient timber mills. As a result, in the ensuing debate, some had an interest in resisting and trying to delay this market transformation, while others quietly capitalized on the opportunity it created. Some in the forestry industry deftly placed blame for their

economic circumstances on the ESA, while others successfully adapted to its goals by formulating HCPs (for example, Weyerhaeuser and Plum Creek) or implementing sustainable forestry techniques (for example, Collins Pine Co.).

The state of Oregon continues to be one of the U.S.'s largest producers of timber products. But, instead of relying on 300-year-old trees from public lands, the industry there is relying on wood from privately-held, sustainable tree farms. Despite a cutback in timber use, most timber-dependent counties report rising property values, increasing timber wages, and an overall increase in jobs. This is due to newer, leaner operations that have replaced the aging mills and workforce retraining for the region's growing high-tech industry.<sup>11</sup> Tom Powers, a University of Montana economist, recently reported that from 1988 to 1994, jobs in the region grew by 18 percent, contrary to dire predictions.<sup>12</sup>

Developers do not exist within a social, economic, or environmental vacuum, free from the effects of their actions. An accurate appraisal of the costs of endangered species protection should also consider

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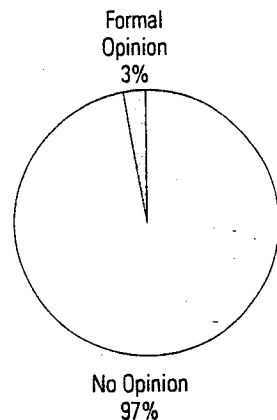
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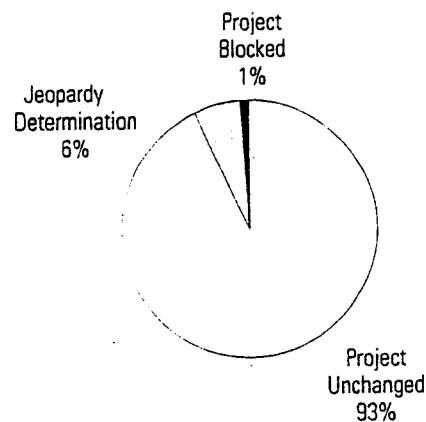
the external effects of individual development decisions. For example, a timber sale by the Bureau of Land Management (BLM) in southern Oregon would allow increased logging, which the NMFS has determined would adversely affect the nearby Umpqua River, the centerpiece of a \$36 million sports-fishing industry and the habitat for the threatened Umpqua cutthroat trout. Portions of the river are part of the Wild and Scenic River system, which supports rafting, sightseeing, and, most economically important, fishing.<sup>13</sup> Traditional land-use decision making has often been ineffective in forcing developers to consider the external costs of individual actions. Ironically, the decision-making processes of

**Figure 2 Effects of the Endangered Species Act**

Of the 198,013 projects evaluated under the ESA from 1987 to 1995, 6,644 resulted in formal opinions being rendered. The rest were allowed to proceed unobstructed.



Of these formal opinions, 421 resulted in determinations of "jeopardy" and 54 were blocked. (Of the 54 blocked, all but 10 were related to the Northwest Forest Plan in 1991.)



the ESA have provided interactions in which one economic interest can influence the actions of another.

Other tangible economic benefits are associated with endangered species protection. Some are direct, while others are more generalized benefits of ecosystem protection for which endangered species are useful indicators. Here we highlight five areas that illustrate the broader economic potential of endangered species protection: pharmaceutical products, advanced materials, food production, flood control and drinking water filtration, and recreation.

• **Pharmaceutical Products.** Some pharmaceutical companies view nature as the best available R&D operation. Plants and animals vary both genetically and chemically, and the subtle distinctions between species found in different regions can provide the needed component of a new medicine or industrial product. After millions of years of evolution, adaptation, and diversification, organisms have fine-tuned antibiologics and other compounds that are effective for their existence and could help ours. Nature has already done the testing; labs can replicate it only at high cost and still not match the number of generations of product variability that evolution has provided. Hence it is more cost-effective to look for new products with benefits to humans in nature than in the artificial, costly lab environment.

Digitalis, derived from the purple foxglove, saves the lives of 3 million heart disease sufferers in the

United States per year.<sup>14</sup> The ancient horseshoe crab has a blood-clotting system that produces proteins for detecting gram negative sepsis, a potentially life-threatening bacteria affecting more than 10,000 people annually.<sup>15</sup> Taxol, a promising treatment for

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ovarian and breast cancer (which kills approximately 40,000 women per year), comes from the bark of the Pacific yew tree, found primarily in endangered ecosystems of the Pacific Northwest.<sup>16</sup> The rosy periwinkle, a native of a seriously endangered habitat in Madagascar, provides a critical component in the treatment of childhood leukemia and Hodgkin's disease.<sup>17</sup> The nearly extinct Houston toad produces alkaloids that may prevent heart attacks and an anesthetic more powerful than morphine.<sup>18</sup> The National Cancer Institute is now studying four plant compounds that protect against the replication of the HIV-1 and HIV-2 viruses. One is derived from the leaves and twigs of a tree in the Malaysian

rainforest, and the other comes from a tropical vine in the rainforest of Cameroon.<sup>19</sup>

Between 25 percent and 40 percent of all prescriptions in the United States are based on substances derived from natural sources. Fewer than 10 percent of these compounds can be synthesized economically. The World Health Organization estimates that 80 percent of global health problems are treated by plant-based medicines. However, only about 5 percent of the world's known plant species have ever been investigated for pharmaceutical properties.<sup>20</sup> Those with no apparent utility today may reveal their hidden potential tomorrow. Beyond the simple respect for diverse life forms, prudence and responsible management would dictate the protection of species for which we can find no current direct use.

So valuable are the potential medicinal benefits that pharmaceutical companies are investing in biological diversity protection. For example, in 1991, Merck and a Costa Rican biological diversity organization called Instituto Nacional de Biodiversidad (INBio) agreed to catalogue all plants and animals in Costa Rica. In exchange for the right to screen the results of this "chemical prospecting," Merck pays INBio \$1 million up front and royalties on any drug developments; 10 percent of the initial fee and 50 percent of the royalties are used for conservation and biological diversity protection through an arrangement with the Costa Rican government.<sup>21</sup>

In another example, Shaman Pharmaceuticals of San Francisco, California, sends medical anthropologists to work with indigenous peoples of Central and South America, Africa, and Southeast Asia to identify plants used for medicinal purposes. In an industry where speed to market can mean success or failure through the control of crucial patent rights, Shaman foresees that this targeting will help it bring drugs to market in seven to eight years, compared with the industry average of ten to twelve years. With the blessing of the Food and Drug Administration, the company is running two drugs through clinical trials, one that fights respiratory syncytial virus and another that shows promise against drug-resistant herpes.<sup>22</sup>

• **Advanced Materials.** Materials made from plants and plant by-products could challenge the foundations of the petrochemical and composites indus-

tries. For example, biopolymers, which are stronger and more lightweight and biodegradable than synthetics, are derived from microbial systems, extracted from higher organisms such as plants, or synthesized chemically from basic biological building blocks. A wide range of emerging applications include medical materials, packaging, cosmetics, food additives, clothing fabrics, water treatment chemicals, industrial plastics, absorbents, biosensors, and even data storage elements.<sup>23</sup> As applications and production techniques expand, so too will the search for new sources of biological raw materials. As in the case of pharmaceuticals, most of the available plant feedstocks have yet to be investigated.

• **Food Production.** Genetic diversity is critical to the strength and continued production of plant and animal stocks. Crop production and fish supply need diversity to maintain strains that resist new diseases, predators, and natural disruptions. This diversity is best maintained naturally. For example, a National Research Council report states that salmon hatcheries, once thought to be key to survival, are pushing many naturally spawning salmon species to extinction by inadequately maintaining the unique biological traits of hundreds of salmon varieties that eventually could become endangered.<sup>24</sup> Scientific researchers have confirmed that increasing the number of species improves an ecosystem's productivity.<sup>25</sup>

Monocultures drive the gene pool toward increasing homogeneity through inbreeding. The economic side effects are tangible. In 1978, 15 percent of the U.S. corn production was destroyed by Southern leaf blight, with losses estimated at \$1 billion. Seed producers were able to limit the damage by introducing new strains of corn that were less vulnerable to the blight. One, the endangered Mexican wild corn, is immune to a serious agricultural viral corn disease. Furthermore, through cross-fertilization, new types of strains can be created as well. For example, crossing corn with an endangered grass from Mexico produced a corn strain with increased resistance to Northern leaf blight.<sup>26</sup>

• **Flood Control and Drinking Water Filtration.** Habitat destruction can contribute to increased flooding and increasing demands on drinking water purification. Much flooding in the Mississippi River has been attributed to the elimination of vital wet-

lands, the straightening of river courses, and the construction of extensive levees. In response to the 1993 floods that killed 50, left 70,000 homeless, and caused farm and property losses in excess of \$10 billion, researchers and the government are beginning to realize that reserving bottom land for wetland conservation is more cost-effective in controlling floods. Thus far, federal expenditures of nearly \$250 million have been allocated to buy more than 8,000 bottom-land homes from Midwesterners willing to move.<sup>27</sup> At the same time, the government has chosen not to reinforce or rebuild levees in some less populated areas to allow wetlands to re-form. Across the country, the U.S. Army Corps of Engineers is returning altered and straightened rivers to their original, meandering courses.

Wetlands act as purification and detoxification systems for aquatic environments. As such, endangered species can signal when ecosystems are in crisis, much like the canary in the coal mine. For exam-

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ple, the threatened Ozark cavefish is an indicator of water quality in the region; efforts to protect the cavefish also provide a valuable monitoring system for protecting the water supply.<sup>28</sup>

• **Recreation.** Economic and social demographics are altering land-use demands. The needs and desires of an increasingly urban and environmentally concerned population are supplanting the traditional interests of logging, mining, and grazing. The 1990 census showed that the West (the location of nearly all BLM and much of Forest Service land) has become nearly as urban as the Northeast, with more than 83 percent of its residents living in cities. In Idaho, where 60.6 percent of the land is federally owned, the state commerce department estimated that tourism returned \$1.4 billion to the state's economy in 1989 — slightly

more than the \$1 billion generated by the state's livestock and mining industries combined.<sup>29</sup>

Currently, 50 million anglers drive a \$69.4 billion-a-year economy and are responsible for millions of jobs in the United States.<sup>30</sup> Nationwide, their numbers have increased 11 percent from 1985 to 1991. The number of hunters has similarly increased 3 percent, with a corresponding increase in expenditures of 7 percent to \$12 billion.<sup>31</sup> Texas draws more hunters than any other state, generating \$1 billion in annual income. Of this, 39 percent accrues to private landowners; the rest goes to restaurants, motels, and equipment suppliers.<sup>32</sup> And the number of "nonconsumptive" participants (hikers, birders, and so on) increased by 10 percent from 1985 to 1991. Overall, Department of Commerce data reveal that more than 108 million Americans (nearly 2 of every 5) participated in a wildlife-related activity in 1991.<sup>33</sup> Leading the list, birding has become one of North America's fastest-growing hobbies, with enthusiasts spending \$18 billion a year on travel and equipment.<sup>34</sup>

Some corporations and landowners have capitalized on this trend. For example, International Paper has implemented a fee-based recreation program in its commercial forests in Texas, Louisiana, and Arkansas. The program charges hunters for access and leases small tracts of land on which families can park their motor homes and enjoy the woods. After three years, the company's revenues from the program have tripled, growing to 25 percent of its total profits from the area. Deseret Land and Livestock in south Texas pursued a similar strategy when its cattle ranch fell on hard times. By charging fees, the company now makes 60 percent of its income from hunters and nature lovers.<sup>35</sup>

In each case, the focus of the land value shifted from extraction to natural beauty and a balanced ecosystem. This shift, and the reality that 73 percent of sportsmen consider themselves to be conservationists, has led the country's environmental and conservation groups, such as the Sierra Club and the National Audubon Society, to form coalitions with hunting and sporting groups.<sup>36</sup> Constituting a powerful economic and political interest block, many sportsmen now oppose the efforts of logging, mining, and oil interests to release federal lands to state control for fear that they will be sold and lost to sporting interests.<sup>37</sup>

Cities and states are also tying economic prosperity to ecosystem protection. Sauk Prairie, Wisconsin, became a steward of the American bald eagle. By attracting tourists with events like Bald Eagle Days, the town reaps \$1 million annually into its economy. Louisiana has identified the link between restoration of alligator populations for viewing and carefully controlled hunting and the state's economy.<sup>38</sup> In New Jersey, The Nature Conservancy acquired 3,257 acres of primeval river, pine and oak forest, and abandoned salt mines near the state's southern edge in 1994. It plans to create a wildlife sanctuary that the local community expects will attract bird-watchers and hikers. The Rio Grande Valley Birding Festival in Harlingen, Texas, attracted approximately 1,500 people in 1995, representing 41 states and providing an estimated \$1.6 million for the five-day event; 465 species of birds were sighted, including 34 species not found elsewhere in the United States.<sup>39</sup>

• **Nonmarket Value.** Not all the value of endangered species is tangible. For example, economists have priced the annual (nonmarket) benefits of spotted-owl protection in excess of \$1 billion, which represents the popularity of endangered species protection among the U.S. public.<sup>40</sup> In a recent survey, 42 percent of Americans believed that the Endangered Species Act does not go far enough, and 33 percent said it strikes about the right balance, whereas only 22 percent said it goes too far.<sup>41</sup> In the same survey, 63 percent opposed any reduction in protecting endangered species; 59 percent opposed the expansion of logging, mining, and ranching on public land; and 67 percent were against opening the Arctic National Wildlife Refuge to gas and oil exploration.<sup>42</sup>

### Natural Capital and Economic Transitions

We are not arguing that economics should be the sole criterion for determining the merit of endangered species protection. Clearly, the economic costs of protection are often overstated, and the direct and indirect economic benefits are often understated. Indeed, when viewed more broadly, environmental protection is an important component of economic systems, both in providing natural capital and in inducing economic transitions that promote efficiency and productivity over the long term.

• **The Role of Natural Capital.** In building the natural resource base of democracy in the United States, Thomas Jefferson noted, "The greatest service which can be rendered any country is to add a useful plant to its culture, especially a bread grain."<sup>43</sup> Now, just as in Jefferson's time, we need to invest in natural capital to maintain a sustainable economy for the long term.

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dened with massive debt and then not ensure a sound resource base and a stable living environment. Responsible economic foresight necessitates present-day ecosystem management. As plants and animals become scarce, the costs of protecting them rise exponentially. It is better to invest small amounts of resources and proactively avoid such catastrophes as the spotted-owl and salmon controversies. While the spotted-owl case was a costly effort to protect an endangered species, it was also a mistake that could have been avoided, had the agencies and interest groups dealt with the underlying issues early and proactively.<sup>44</sup>

• **Economic Transitions.** Including natural capital in the conception of a healthy economy introduces the notion of environmental protection as necessary to economic management. Endangered species signal the need to make environmental, technical, and economic corrections and indicate stresses to the natural system that often lead to problems in local economies and human health. For example, declining eagle populations in the 1960s signaled an ecosystem overburdened by DDT spraying. The overlapping declines of spotted owls, murrelets, and Pacific salmon species point to declining water quality, affecting both fisheries and overall forest health.



Economic transitions are underway at all times. As consumer demands change, technologies advance, and regulatory priorities evolve, certain industries face demise, while others rise to fill their place. For example, the typewriter industry was virtually eliminated by the computer, the compact disc replaced the phonograph album, and the dissolution of the Bell system wrought structural changes in the telecommunications industry. With changing federal forest management due to spotted-owl protection, price fluctuations have made steel studs an economically viable alternative to framing lumber in new-home construction and have stimulated a new, more sustainable market in engineered wood products.

The protection of endangered species promotes economic transitions designed to protect the natural resource base. By moving away from a purely extractive view of natural resources, it shifts us toward stewardship. Rather than using resource scarcity as a last-minute signal to stimulate rapid economic transitions, we should rely on distressed species as an early warning that gives more time for a balanced response. For example, the diminishing supply of large timber from old-growth forests signals that this resource will eventually be exhausted and that an economic transition may occur.

### Negotiation Biases and Joint Gains

Any assessment of the economic implications of endangered species protection must include the long-term interests of diverse stakeholders to communicate economic transitions and develop alternative strategies consensually. Unfortunately, this is not occurring in policy development discourse. Most people have the common, unfortunate perspective that "what is good for the other side is bad for us" in terms of the economy and the environment. But, to the extent that environmental and economic interests weigh issues differently, we can find new opportunities by shifting our mind-sets.<sup>45</sup>

According to a 1995 poll, 69 percent of Americans believe that environmental protection and economic development can work together.<sup>46</sup> Some companies are following the trend. Carrier Corporation, a division of United Technologies, invested \$500,000 to eliminate the toxic solvents for cleaning copper and aluminum parts in the manufacture of air condition-

ers. After one year, it had recouped \$1.2 million in reduced manufacturing costs.<sup>47</sup> DuPont announced a \$500 million capital improvement plan at three North and South Carolina chemical plants, which will reduce air emissions by 60 percent and increase production by 20 percent.<sup>48</sup>

A shift in mind-set is critical if the ESA is to enhance economic competitiveness rather than diminish it. It is useful to think of the ESA as an early, useful, but imperfect solution to an implicit dispute. As Howard Raiffa explains: "We must recognize that a lot of disputes are settled by hard-nosed, positional bargaining. Settled, yes. But efficiently settled? Often not. . . . They quibble about sharing the pie and often fail to realize that perhaps the pie can be jointly enlarged. . . . There may be another carefully crafted settlement that both [parties] might prefer to the settlement they actually achieved."<sup>49</sup>

Moving beyond preconceptions is possible. For example:

- Riverfront Plaza, an outlet mall along the banks of the Kansas River in Lawrence, Kansas, was originally slated for construction in a bald eagle nesting area. Through a negotiated settlement, the city established permanently protected easement areas on both sides of the river to defend some of the best remaining habitat, planted replacement trees, and closed the outside walkway of the mall when most eagles are present. Subsequently, architects designed one-way windows for viewing the eagles, which attracted customers to the mall.
- In Cleveland, Ohio, the 1993 Independence Day fireworks threatened to harm a pair of nesting falcons. Various groups resolved potential conflicts through negotiations and produced an alternative fireworks plan. As a result, the newly hatched falcons became a spotlight attraction, benefiting the Tower City Center shopping mall and other downtown businesses.<sup>50</sup>
- A California developer proposed building a retail mall on the wetland habitat of the Sebastopol meadowfoam, a protected plant. After consultation with the Army Corps of Engineers and the FWS, the developer agreed to establish a new Sebastopol meadowfoam colony offsite and acquire and protect additional habitat with an existing natural population of the species.<sup>51</sup>

Under sections 7 and 10 of the ESA, federal agencies can negotiate the provisions of their projects to ensure that they do not jeopardize endangered species and can expand this process to private landowners. HCPs are a way for companies to develop plans that serve the interests of the endangered species and the proposal. Many private landowners have used these plans to work with other stakeholders in finding optimal solutions.

## Implementation of the ESA

An enhanced Endangered Species Act that will integrate economic and environmental interests must have three objectives: first, it must work within the market system to create individual incentives for protecting biological diversity; second, it must foster an inclusive regulatory program that incorporates the interests and needs of all affected parties; and third, it must evolve beyond the single-minded focus on individual species and consider the whole ecosystem. Relevant parties in the debate must acknowledge that the environment and the economy are intertwined.

To improve the implementation of the ESA, we propose: (1) the promotion of economic incentives, (2) a reduction in the uncertainty facing affected groups, (3) the allocation of adequate resources, (4) more stakeholder involvement in the ESA decision-making process, and (5) a move toward ecosystem-based management.

### 1. Promote Economic Incentives

Other environmental programs, such as the Clean Air Act, utilize market incentives to achieve their goals. To make the ESA consistent with this, we should incorporate policies to harness the power of the marketplace so landowners and corporations find it in their interest to protect biological diversity based on properly adjusted prices. The policies include tax incentives (estate, property, and income), special trust funds, transfer of critical habitat from private to public control, and user fees on federal lands.

• **Tax Code Reform.** Currently, both estate and property taxes are calculated based on land's highest and best-use value, which usually involves development. The taxes are an incentive for landowners to (1) devel-

op the land, (2) harvest the land's resources to pay the taxes, or (3) sell off parcels of land to pay the taxes, thereby breaking up biologically valuable properties. Estate tax reform would allow heirs to defer or avoid applicable estate taxes on inherited land in return for managing their land in ways that benefit endangered species. The agreement could be revocable, and the estate taxes would become due when heirs have stopped managing the land as agreed on. For example, a bill before the 104th U.S. Congress proposed easing inheritance taxes to give landowners incentives

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to create and maintain wildlife habitats.<sup>52</sup> Estate tax reform could also allow the estate (or heirs) to make tax-deductible gifts of land or an interest in land to a qualified organization.

Property tax reform could create credits for the cost of land management programs that benefit endangered species on private lands. In a move that has gained the support of both property-rights advocates and environmentalists, the Texas legislature recently approved proposition 11, a law that allows owners of agricultural land to convert it to wildlife management uses without losing valuable property-tax exemptions.<sup>53</sup> Or an income tax deduction could allow for the costs of land improvement to enhance its value as an endangered species habitat.

Tax law could also establish a program of tradable permits in endangered species protection.<sup>54</sup> Based on a system for measuring the conservation value of land, increases or decreases could be measured in standardized units, for which the landowner would receive a credit. Any landowner wishing to decrease the conservation value of his or her land would do so by offsetting this decrease with credits gained by arranging an equivalent increase elsewhere or by purchasing those credits from another landowner.

• **ESA Special Trust Funds.** Two impediments to reestablishing endangered species are (1) building

adequate local support and (2) providing enough funding for management of a particular species. Authorizing a species-specific trust fund with nonfederal cost-sharing requirements could relieve these im-

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pediments. Individual and corporate donors could contribute to the protection of particular species, as Exxon Corporation has worked with the National Fish and Wildlife Foundation to establish the international "Save the Tiger" fund. This technique engages private-sector and local interests in recovery of endangered species while also stimulating the local economy associated with species recovery.

An innovation grants program could promote and reward ecosystem-level partnership efforts. All non-profit organizations and government agencies would be eligible for ecosystem management grants on a matching basis. Such a program would motivate competitive forces and provide flexible funding arrangements.

- **Government Land Exchanges.** In the few situations in which all or most of the development of a property is precluded because of the needs of an endangered species, a program could be devised to trade federal lands with low biological diversity value for private land with high biological diversity value, thereby shifting some ESA costs back to the government and reducing the burden on private landowners. A recently proposed swap involved \$380 million in federally owned oil and gas fields and timberland in exchange for thousands of acres of old growth in the Headwaters Forest in California, currently owned by Maxxam Inc. Through such trades, the Department of the Interior can use its surplus land portfolio, including oil and gas subsurface leases, as assets in exchange for private-sector lands. By targeting economically valuable federal lands that lack biological diversity, the department can sell them to the highest bidder and use the money to benefit endangered species. Such a program should be for implementa-

tion, not as compensatory entitlement for private landowners.

A test of this concept is underway in the Umpqua River Basin, which extends from the crest of the Cascade Mountains to the Pacific Ocean. With funding from the National Fish and Wildlife Foundation, the timber industry, and others, an interdisciplinary team of resource experts is analyzing fish and wildlife habitats to identify areas critical to the basin's long-term health. The team will then determine the feasibility of land exchanges between private owners and the government landowners in the area (such as the Bureau of Land Management, the Forest Service, and the state and local counties) to protect vital areas.

- **User Fees for Natural Resources.** Increased user fees for federal lands could be charged for hunting, fishing, hiking, and camping. The Forest Service, by charging market value for national forest recreation, could collect as much as \$6.6 billion per year. Extending this to lands that the other federal agencies manage could bring the total to \$11 billion.<sup>55</sup> These fees could offset the tax burden for operating expenses and link users and land managers to ensure that managers provide the resources that users most want.
- **The Pitfalls of "Takings" Legislation.** Current proposals call for "takings" legislation to offset the loss of private land value. (Unlike the term's connotation as harmful to endangered species, "takings" refers to government control of private land.) We are concerned that providing a subsidy for takings would promote opportunism and excessive costs to state and federal treasuries. The complications are threefold. First, takings compensation is based on anticipated, not necessarily real, loss of value. Developers' estimates of what they can make on the land are not adequate measures for just compensation. Second, there are tremendous opportunities for speculation. If a parcel of land is a known habitat for an endangered species, a developer could obtain the property with the intention of extorting rewards at the expense of the federal or state government. Third, takings can often assign property rights to the wrong individual. If clear-cutting is the stated right of the logging industry, should loggers be compensated for not creating runoff that damages the downstream salmon fishery? If a developer chooses to fill in a wetland, should it be compensated for not destroying fish-breeding grounds,

natural water-filtering capacity, or the ability of the river to absorb rising floodwaters?

Each complication affects sport fishermen and downstream municipal water plants and communities. Which party should be assigned the property right of a balanced ecosystem? How can the social costs of habitat destruction be included in development economic formulas? Takings legislation resolves neither issue, while market incentives offer an efficient solution to both.

## 2. Reduce Uncertainty Facing Affected Groups

The most problematic aspect of ESA controversies is the uncertainty that they generate for the landowner. The timber industry in the Northwest might have been relatively satisfied with less national forest land on which to log commercially if it had been guaranteed availability in perpetuity. Sawmills with millions of dollars in capital on the line cannot make wise investment decisions without knowing the long-term viability of their raw materials supply. Thus far, most encounters between the developer and the ESA have resulted in negotiated solutions. But the time that these solutions take and the uncertainty about whether the final agreement will be satisfactory and permanent is problematic. Current congressional indecision on the ESA increases uncertainty about the HCPs of such companies as Weyerhaeuser, Georgia-Pacific, the Scofield Corporation, and Simpson Timber. To cut funding would undermine their efforts, creating costly uncertainty, delaying corporate expenditures already allocated, and ultimately increasing overall costs.

At the same time, we know that information on species' needs, development impacts, and the most cost-effective protection methods will change over time. Landowner agreements such as HCPs could include provisions for ongoing monitoring, preferably with all parties' active involvement. We could establish such agreements for a fixed time period to provide investment certainty for the midterm (five to ten years) but not preclude efficient, effective solutions in the long term. Protection provisions included in an agreement should be conservative enough to allow for adaptive change. If monitoring indicates that a species can tolerate more disturbance, the landowner could expand development. If new infor-

mation suggests that protection needs to be altered significantly and imposes increased costs, the public should share or largely underwrite the burden of that change.

Another way to reduce landowners' uncertainty is to streamline ESA review procedures where possible. We should review deadlines in place to make more timely decisions. We might consider small-scale blanket exemptions to specific provisions of the ESA (such as for small landowners) to facilitate decision making and ease the burden on such landowners.

But the primary ways of ensuring more certainty are to (1) generate more information about species needs and ecosystems, (2) encourage collaborative problem solving by all participants considering all available information, and (3) provide adequate resources for local, regional and federal implementation. These critical points correct market inefficiencies and involve the business community in species protection.

## 3. Allocate Adequate Resources for Implementation

Developing ecosystem management requires adequate funding and resources for generating the scientific and economic information essential to wise investment decisions. And, in resolving ESA disputes, high-quality information is needed to resolve conflicts. Developers must understand the regulatory consequences of various features of their land.

The National Biological Service now operates the GIS-Gap analysis program in forty-three states. Gap analysis represents state-of-the-art inventory and landscape mapping to identify areas needing protection. The public will be able to learn about identified areas through interactive geographic information systems (although it might be necessary to withhold the identity of some parcels to discourage opportunistic collecting of endangered species).<sup>56</sup>

Several analysts have suggested that inadequate resources have led to delays and problems in the ESA's history.<sup>57</sup> In fiscal 1994, Congress appropriated \$67.5 million for the FWS's endangered species program, of which only 20 percent was for consulting. On an absolute basis, this was only 0.5 percent of the total federal outlay on natural resources and 1.5 percent of the budget for the Environmental Protection Agency. On

a relative basis, this amount is out of proportion with the increased activities that the service is undertaking. Formal project opinions grew by 280 percent, and species listings increased by 37 percent (see Figure 3). By most accounts, "The endangered species program is severely short of money and overwhelmed by a backlog of hundreds of imperiled species — and by almost as many lawsuits demanding action to save them."<sup>58</sup>

It is economically irresponsible to create an endangered species protection program and then starve it of needed resources. An impoverished program is likely to lead to delays, uncertainties, and impasses, which create uncertainty for business, which, in turn, cause more delays and cost overruns. Complete, credible data, coupled with more stakeholder interaction, require personnel who are trained and skilled in negotiation, communications, and development processes.

#### 4. Involve Stakeholders in Decision Making

Generated information must incorporate the perspectives of multiple stakeholders. Currently, recovery planning teams are composed almost exclusively of scientists. Science-based assessment of alternative conservation strategies is critical, but it is also important for affected interests to participate in recovery planning. Advisory boards of affected and interested groups can identify ways to minimize local impact and future impasses. Development proponents should

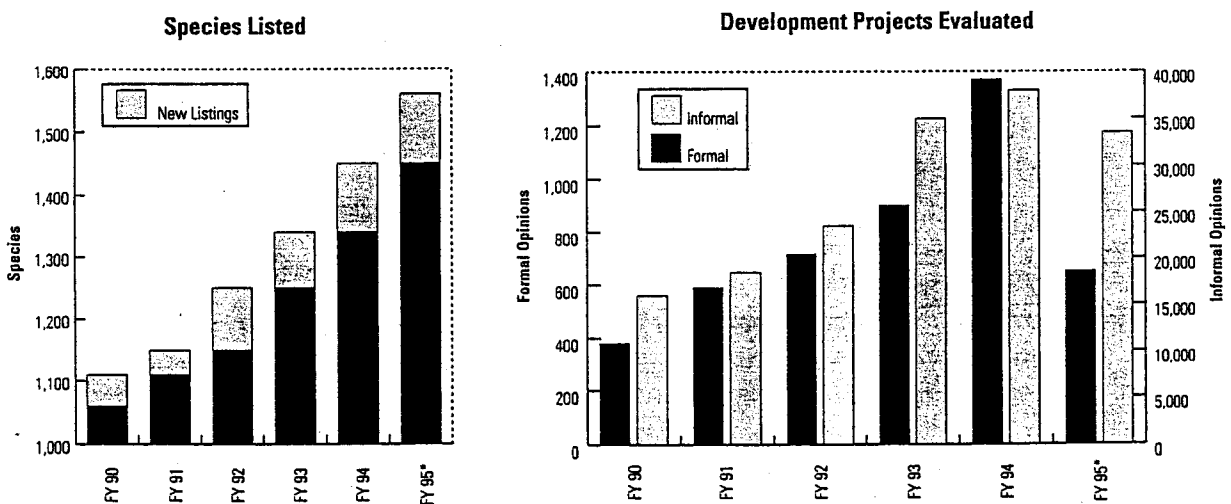
understand the ramifications on natural systems and propose actions that are both scientifically and financially sound. Unless all parties find solutions that consider as much information as possible, impasses will remain.

The current process for granting federal protection to species requires no formal involvement of affected groups beyond an opportunity for public comment in the rule-making process. On one level, it seems appropriate to limit consideration of a species' status to scientific input and assessment. At the same time, it would be more efficient to consider the ramifications of federal listing earlier, allowing affected groups to act before listing is needed.

Through HCPs, public and private parties can interact and devise plans that are sensitive to local economies while protecting endangered species.<sup>59</sup> By learning from recently completed HCPs, we can improve the planning process and reconsider the level of public involvement and review, post-HCP monitoring, and legal standards to ensure that HCPs are effective ecologically and economically.

Ultimately, an overarching federal mandate can help ensure that interested parties negotiate. Multiparty negotiation can function in an incentive structure that encourages parties to bargain in good faith and seek creative solutions. In the many negotiations already conducted under the ESA, it is clear that the absolute mandate to protect species helped motivate vari-

Figure 3 U.S. Fish and Wildlife Service Project Load



Source: Information provided by the National Fish and Wildlife Foundation, B. Cairns, deputy director.

\*Estimated

ous public and private interests to simultaneously protect environmental and economic concerns.<sup>60</sup> Without incentives, integrated solutions are unlikely.

In many ways, this approach parallels that of other market-based mechanisms to pollution con-

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**E**ndangered species management is useful as an indicator of ecosystems in crisis, but the ultimate objective is a stable ecosystem.

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trol, in which government standards set binding objectives but affected interests determine how to reach those standards. Having clear performance measures and flexibility will yield the most efficient, effective strategies for achieving economic and environmental objectives simultaneously.

#### 5. Move toward Ecosystem-Based Management

A new type of resource management, called ecosystem management, incorporates many themes — science-based decision making, stakeholder involvement, articulation of social values, and long-term planning. Ecosystem management attempts to shift from a single-minded focus on individual species to a broad-based focus on regional resource management. Endangered species management is useful as an indicator of ecosystems in crisis, but the ultimate objective is a stable ecosystem. From an economic standpoint, healthy ecosystems are needed more than most individual species. But ecosystems are composed of assemblages of species and natural processes, overlaid by human communities. Hence it is necessary to protect species as components of ecosystems and as a proxies for ecosystem integrity.

Early research on ecosystem-based approaches to resource management suggests that they may be appropriate for the future.<sup>61</sup> They are regional in scale, emphasize collaborative decision making by a full range of public and private interests, and seek to balance economic and environmental concerns. Their ability to focus public and private resources on shared problems

and work through conflicts that have often led to impasse can yield substantial efficiencies for all parties.

One way to move toward an ecosystem-based approach might be to delegate aspects of ESA implementation to state and local officials.<sup>62</sup> Many states already have sensitive-species programs underway that might result in program efficiencies and more sensitive, local decision making. But other parties, including nongovernmental organizations, can play a role in consortia to protect valuable ecosystems. These consortia must have the capacity, motivation, and authority to implement endangered species programs. Since enforcement requires the policing powers of a government unit, government must be one partner in a regional consortium.

Encouraging multistate and other regional decision making would also help facilitate ecosystem-level action. For example, the current ESA state-grants program could promote the regional consortia's ecosystem-level action with a provision to delegate program authority. Such a program could also introduce competition between states and consortia to promote innovation. Any program that delegates federal powers must be subject to strict performance criteria and ongoing monitoring. Providing ways for citizens to sue guarantees that such innovative approaches are monitored for effective implementation.

Ecosystem-based approaches to species management, underway in many places, are likely to represent the future of natural resource management in the United States. A recent University of Michigan study examined 105 situations in which individuals from both the private and public sectors used and lauded ecosystem-based approaches.<sup>63</sup> For example, the Georgia Conservancy has proposed a statewide watershed protection project centered on clusters of community-based groups in fifteen major watersheds in Georgia, while the Conservation Fund has formed a voluntary land-protection program along Georgia's Ebenezer Creek. In Maine, three large paper companies — Baskahegan, Champion International, and Georgia Pacific — have banded together to form the Salmon Habitat and River Enhancement Project (SHARE) to protect the habitat of the Atlantic salmon. And landowners in southwest Florida are joining to voluntarily protect more than 3 million acres that make up the habitat for the endangered Florida pan-

ther. This project is anticipated to accomplish its goal at taxpayer savings of \$1 billion. These kinds of locally based, public-private partnerships will move resource management debates from a reactive, crisis mode to a more proactive, deliberative community approach.

## Conclusion

When first written, the ESA was intended as a policy of last resort, in which species deserving intensive care received protection. But our understanding of resource management, policy implementation, and the interrelationship between the economy and the environment have evolved considerably. Now the ESA is part of a framework of laws, institutions, and national capabilities that collectively promote sustainable societies, both economically and environmentally. Ultimately, the goal of endangered species protection represents the goal of the entire framework. Rather than pursuing environmental goals based on the fluctuations of "best available technology" or most practicable economic calculations, endangered species protection has the goal of maintaining valuable, productive ecosystems. By developing management plans that are guided by the objective of balancing local, regional, and state economies with the health of the ecosystem on which they are based, the ESA seeks the end-point of all environmental objectives: economic and environmental sustainability.

Species protection is not only for ourselves but for future generations. As stewards, we can enhance the benefits of our actions, minimize the costs, limit the hidden externalities, maintain our natural capital, and avoid the precipitative effects of boom-and-bust economic transitions only if we promote improvements in the ESA process. One way to be more proactive is to move toward ecosystem-scale management that includes human populations while still providing a safety net for the most endangered organisms. By including the human population, the ESA process must become more inclusive and negotiations more creative. By taking a broad look at all aspects of this process — economic, environmental, and political — cooperative ecosystem management is the best way to foster joint gains in environmental protection and economic growth over the long term. ♦

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## Endangered Species Act

Andrew Hoffman et al. have done us a great service in "Balancing Business Interests and Endangered Species Protection" [Fall 1997, reprint 3915]. Once and for all, they have demolished the persistent and pernicious myth that conserving imperiled species hinders economic growth. Instead, they have established a new point of departure for any informed debate on the ESA by making the tight, compelling case that we routinely underestimate the benefits of species protection while overestimating the costs.

Not only does the article deftly capture the complex web of issues, attitudes, fact, and fiction that surround the ESA, but it also offers a set of common-sense recommendations for enhancing the act. Although none of the proposals that the authors advance are particularly revolutionary, the context in which they place these proposals represents a significant step forward. They argue that a successful reform of the ESA must reflect the market system, include all affected parties in the regulatory process, and shift its focus from species to ecosystems. Based on The Nature Conservancy's extensive experience in dealing with landowners and the practical, on-the-ground complications of implementing the ESA, these three objectives are right on target. Indeed, it is difficult to conceive of the act working well unless it reflects these goals.

The authors underestimate one major obstacle to enhancing the ESA, however: the difficulty of shifting public attitudes and mind-sets. The Nature Conservancy, for example, has made good progress in joining with private landowners in conservation partnerships, but many people remain suspicious of species protection, perceiving it as unwanted governmental intrusion. These opinions are rooted more in emotion than economics, and purely economic arguments do not resonate with this critical audience. Conservationists therefore need to find creative new ways of engaging these landowners in protection efforts. Without them, we will never manage to "enlarge the pie" — in the authors' term — and without enlarging the pie, we will never get past the kind of win-lose debates that have plagued the ESA.

## John C. Sawhill

President and Chief Executive Officer  
The Nature Conservancy  
Arlington, Virginia