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Article

***245** CONSERVATION OPTIONS: TOWARD A GREATER PRIVATE ROLEBarton H. Thompson, Jr. [\[FNa1\]](#)

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***246** The federal government helps ensure the preservation of environmentally valuable private lands through a variety of mechanisms. The United States government regulates the development of private land through laws such as the Endangered Species Act; finances the acquisition of fee and servitude interests by federal, state, and local governmental agencies; provides grants to land trusts and other non-governmental organizations for land conservation; and uses tax laws to support the preservation efforts of nonprofit conservation organizations. The federal government did not consciously plan the current mix of regulation, governmental acquisition, grants, and tax incentives. Nor has Congress or the executive branch ever thought carefully about the ideal mix of conservation tools. Little, if any, thought has been given to the advantages and disadvantages of each approach, the most appropriate setting in which to use each method, or the extent to which the current approaches reinforces or undermines each other.

This article steps back, examines the choice among approaches, and considers whether the current mix and coordination of approaches is roughly "optimal." In measuring optimality, the Article takes a largely and unabashedly utilitarian perspective: society should conserve land to the extent that the benefits of conservation outweigh the costs, and it should do so at the lowest practicable cost. The benefits of conservation are diverse and frequently difficult to calculate. The benefits include commercial use values (e.g., the opportunity to charge a fee for duck hunting on a preserved wetland), non-commercial use values (e.g., pleasurable views), and non-use values (i.e., option, existence, and ***247** bequest value). [\[FN1\]](#) Although the benefits of conservation are many and often large, the benefits are also limited; land conservation is not of infinite value. Conservation, moreover, is costly; conservation has an opportunity cost equal to other uses to which the land could be put. As a first approximation, therefore, a conservation policy is optimal when it helps ensure that the amount of land conserved, after factoring in uncertainties and irreversibilities, maximizes the net benefits to society from conservation, and when the policy minimizes the cost of the conservation. [\[FN2\]](#)

Economic efficiency is not the only criterion by which the optimality of the government's mix of approaches must be judged. As discussed below, a major difference among approaches lies in who pays for the conservation. Property owners, for example, bear the cost of regulation, while taxpayers bear at least part of the cost of direct governmental acquisitions. Although efficiency may be relevant in choosing who should bear the cost, concepts of fairness are also important.

This article's focus on federal efforts to preserve private lands is not meant to downplay the importance of public lands or of state and local efforts to preserve land. The federal government's management of the public domain dwarfs in historical significance the federal government's role in preserving currently private lands. As shown in Table 1, four major national land agencies (the Forest Service, Bureau of Land Management, Fish and Wildlife Service, and National Park Service) managed over 620 million acres of land in 1994. [\[FN3\]](#) Almost half of this land was "managed for conservation,"

***248** in the loose sense of not being open for general mineral extraction or other commercial use. The government purchased only a small percentage of this land from private property holders. [\[FN4\]](#) As shown in Table 2, for example, of the approximately 91 million acres of wildlife refuges currently managed by the Fish and Wildlife Service, over 90 percent was reserved from the public domain or obtained from other federal agencies. Less than 10 percent of the acreage involved federal acquisition - and thus conservation - of private land or easements.

Forest Service	BLM	Fish & Wildlife Service	National Park Service	Total
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Total acreage managed	192 million	267 million	87 million	77 million	623 million
% managed for conservation	26%	22%	100%	100%	44%
Conservation acreage	50 million	58 million	87 million	77 million	272 million

Table 1 Federal Conservation Acreage (1994)

Source: U. S. General Accounting Office, Land Ownership: Information on the Acreage, Management, and Use of Federal and Other Lands 6 tbl. 1 (GAO/RCED-96-40, March 1996).

Method of Acquisition	Wildlife Refuge Acreage	% of Total Acreage
Reservation from public domain	82.0 million	87.7%
Acquired from other federal agencies	2.6 million	2.9%
Devise or gift	0.7 million	0.7%
Fee purchase	3.9 million	4.8%
Easement, lease, or other agreement	1.6 million	3.9%
Total	90.8 million	100%

Table 2 Method of Acquiring National Wildlife Refuge Acreage (2000)

Source: United States Fish and Wildlife Service data

Conservation of currently private lands, nonetheless, is critically important. The federal government holds vast amounts of land in the West, but little in the remainder of the United States. [\[FN5\]](#) Even in ***249** the western United States, conservation of private land is essential to providing a variety of valuable services. Ecosystems do not observe the artificial boundaries between public and private land, so effective preservation of various ecosystem services requires the conservation of both public and adjacent private lands. [\[FN6\]](#) Because early settlement naturally occurred along streams in the lower elevations, much of the key riparian land in the West is in private hands. [\[FN7\]](#) Some valuable ecosystems today are found only on private lands. [\[FN8\]](#) Looking just at the need to preserve land for habitat value, about 80 percent of the species protected by the Endangered Species Act in the mid-1980s inhabited at least some private land. [\[FN9\]](#) More than a third of the species did not inhabit any federal land, making it impossible to ensure recovery purely through federal land management, and less than a quarter had habitats located primarily on federal land. [\[FN10\]](#)

The federal government also is not the only governmental body involved in conservation efforts. State and local governments, not the federal government, have historically played the central role in promoting the conservation of private lands - and for good reason. Although there is a national (and indeed global) interest in the conservation of some private land, many, if not most, of the benefits from conservation (ranging from scenic enjoyment to recreation to such ecosystem services as water-quality protection and flood mitigation) flow primarily to residents in the general region of the land. Local governments, moreover, often have a more nuanced understanding of the local landscape and of local needs and constraints. The current devolution of federal conservation efforts back to local and regional levels highlights the benefits of addressing environmental problems at a smaller scale. [\[FN11\]](#)

***250** Federal conservation policy, nonetheless, is the best place to start in evaluating the appropriate mix of conservation policies for several reasons. First, despite the importance of local and regional conservation efforts, the federal role is, and will remain, significant both because of the national interest in land conservation and the greater financial capacity of the national government. Second, one can get one's hands more readily around federal conservation programs than the programs of 50 states and myriad local, regional, and ad-hoc governmental units. More data also is available on

federal programs. Finally, all conservation efforts, whether designed and implemented by the federal government, by local governments, or by a stakeholder group formed to develop a regional habitat conservation plan or manage a watershed, draw on the same general set of approaches or tools: (1) regulation, (2) governmental acquisition and conservation of land, and (3) the encouragement of nonprofit involvement through grants, tax advantages, and other financial incentives. The key question also is the same: what is the optimal mix of these three sets of approaches? An examination of the historic federal approaches thus sheds considerable light on how local governments and new ad-hoc institutions should approach promoting conservation.

The appropriate governmental approach to preserving private lands not only is an important question in its own right but also sheds valuable light on the options available to governments in ensuring the provision of public goods and services more generally. As discussed in Part I, the preservation of environmental land is, at least in part, a public good that the private market cannot be expected to provide at an economically optimal level. Methods that the government uses to ensure land preservation can also be used to provide other public goods such as education or national defense. In the same way that the government directly acquires land to preserve it, the government pays for public schools and a defense force. If the government wants to saddle the private sector with some or all of the cost of these public goods, it can regulate land development, require parents to educate their children at their own expense, or draft soldiers. The government also can help support the private production of these public goods through tax deductions for land trusts, school vouchers, or payments to mercenary forces. An interesting question is why some of these options *251 look better in one context than in another. Examining the tradeoffs among options in the context of land preservation provides us with insights into the broader question of when each of the various options works best in providing other public goods.

Part I of this article looks at whether governmental intervention is needed to preserve an economically optimal level of environmentally valuable land and at the risk that governmental involvement might undercut private land preservation that otherwise would occur. Part II then summarizes current federal preservation efforts. Part III considers whether there are other potentially useful approaches to land preservation that the federal government is not using. As Part III suggests, the federal government faces two key questions in promoting land preservation: who should pay the cost of land preservation (landowners, public volunteers, or particular taxpayers), and who should manage the preservation efforts (the government or the private sector)? Part IV considers the limited ways in which the federal government's options are constitutionally constrained. Parts V and VI analyze the arguments for and against each approach, with Part V focusing on who should pay for preservation and Part VI focusing on the choice between governmental and private preservation. Finally, Part VII looks at the degree to which particular approaches may help reinforce, or undermine, private norms that would increase the amount of land that is preserved without increased governmental involvement. Part VIII briefly concludes.

I. Coordinating Public and Private Conservation

A. Land Conservation as a Joint Public and Private Good

The traditional justification for government involvement in land conservation is that many of the benefits from land conservation are "public goods," and thus the private market is unlikely to provide an optimum level of land conservation. [FN12] Benefits are public goods if they are nonexcludable and if one person's enjoyment of the benefits does not take away from other people's enjoyment of them. [FN13] Some of the benefits of land conservation certainly meet this definition. Whenever I drive from Stanford to San Francisco along Interstate 280, I pass thousands of forest-covered acres that *252 San Francisco has preserved as part of the catchment basin for its water supply. The view is gorgeous, and no matter how much San Francisco might want to make me pay to see the view, there is no practical way that they can prevent me from enjoying that view. My lingering gaze out over the pine-covered hillsides, moreover, does not interfere in the slightest with my fellow drivers' ability to take in the view.

Economists and policymakers generally assume that, in this situation, public intervention is needed to preserve the land. A private owner of the land would not be able to capitalize on the value of the view and would have every economic reason to develop it. Recognizing the public value of the view, however, the government can step in and either purchase the land or prohibit its development. As explained below, however, the land may well have commercial value in its natural state. Private individuals also may be willing to contribute toward its preservation.

1. Commercial Conservation

Not all the benefits from land conservation are classic public goods, or San Francisco would never have preserved the hillsides that I treasure. The hillsides are several miles south of San Francisco and are not visible to its residents unless they are traveling south; if the city was simply considering the "public good" value of the hillsides, the city probably would have sold off the land long ago at a pretty penny for suburban development. San Francisco has preserved the hillsides because the protected watershed ensures a high level of water quality for which the city's water consumers implicitly pay. [\[FN14\]](#) In this regard, the hillsides are no more a public good than a filtration plant.

Although no empirical study has been conducted, the bulk of the benefits from most land conservation may not constitute public goods. Because of the water quality benefits provided by preserved watershed lands, water suppliers like San Francisco actually own most of the remaining open space in a number of states and regions. [\[FN15\]](#) And water suppliers from New York City to Seattle are actively purchasing or otherwise acquiring privately held land to ***253** increase water quality protection.

[\[FN16\]](#) Even if the lands also provide vistas and other classic public goods, these water suppliers are finding that it is economically in their interest to preserve the lands. Other "ecosystem services," such as flood control, also provide an economic incentive to preserve land in its natural state. [\[FN17\]](#)

Other benefits from land preservation also are not public goods. If governments did not furnish parks, public beaches, and other public commons, some private landowners would find it economically profitable to provide access to open space and beaches in return for user fees; private beaches and camp grounds already abound, as an alternative to overcrowded and often poorly maintained public facilities. [\[FN18\]](#) Other landowners will choose to preserve portions of their land because they personally enjoy the view or ecosystem services provided by the land. In theory, even San Francisco could convert my view into a private, commercial good by getting the federal government's permission to turn Interstate 280 into a city toll road and charging a toll that reflects the awesome view that comes with the drive. I at least would pay extra to drive Interstate 280 rather than Interstate 101, which also can get me from Stanford to San Francisco but is wedged for most of its route between the world's ugliest collections of warehouses and modern strip malls.

For varied reasons, however, our nation typically does not treat such benefits as purely private goods. Part of the reason is that converting public goods into private goods, even when theoretically possible, often can generate high transaction costs. San Francisco might be able to collect for the view from Interstate 280 by making it into a toll road, but the transaction costs of doing so are likely to outweigh the value of the view. A far more important factor, however, is the social value that our society often attaches to and obtains from treating open space as a public good - as a commons that all members of the public can enjoy. [\[FN19\]](#) The nation ***254** could charge market prices for use of parks and public beaches, for example, but I doubt that the citizenry would stand for it. Most people prize the nation's public commons not only because the commons provide valuable environmental amenities but also because they are commons. The existence of a public good, in short, often can be a public good in itself - what I will call a "second-order public good."

To the degree that significant levels of conservation benefits are public goods either by choice or technological necessity, the government may need to intervene to ensure an optimum level of land conservation. Yet without government intervention, some land will be preserved for its private value. For the reasons just discussed, entities will conserve some land because the land protects water quality or provides other excludable, natural service values. Duck hunting clubs and other private entities will raise the money needed to preserve additional land through user or member fees. [\[FN20\]](#) In the remainder of this paper, I will call this "commercial conservation" (even though the conserving

entity may often be a public service entity such as a water agency) because the conservation can pay for itself.

2. Philanthropic Conservation

Without governmental intervention, land also will be conserved for its public value. Some private landowners will choose not to develop their land or will decide to restore wetlands or other valuable ecosystems on their property because they believe that it is the correct thing to do. Other private citizens will contribute toward conservation efforts of philanthropic organizations because they believe that such efforts are beneficial. According to the latest survey by the Land Trust Alliance, over 1200 land trusts now operate throughout the United States. [\[FN21\]](#) About a dozen are national, including The Nature Conservancy (TNC), the Trust for Public Lands (TPL), and the Conservation Fund. [\[FN22\]](#) The rest are local or regional, including such major land trusts as the Rocky Mountain *255 Elk Foundation, Save the Redwoods League, and the Wildlands Conservancy. [\[FN23\]](#) Local land trusts are now responsible for conserving over 500,000 acres of land in each of four regions of the nation: the Mid-Atlantic, New England, the Rockies, and the West Coast, as well as smaller amounts of land in other regions. [\[FN24\]](#)

Such "philanthropic conservation" almost certainly will not reflect the full public value of land conservation for at least two related reasons. First, as economists have long informed us, many citizens will choose to free ride on the contributions of others and either not contribute at all or contribute less than conservation is worth to them. [\[FN25\]](#) Why contribute to The Nature Conservancy when everyone, contributor or free loader, benefits pretty much the same from its conservation efforts? Second, and of equal importance, most people do not spend the time to learn what conservation is needed and who is engaged in it. When people buy a car, they will engage in the necessary research. But people do not have to contribute toward land conservation and thus generally will not engage in the research needed to determine the importance of and opportunities for contributions. The Save the Redwoods League might be engaged in very valuable land preservation, but I have never spent the time to find out and so do not contribute any money to it. This informational problem, of course, is just a variant of the free rider problem: because information is costly to obtain, people free ride on others' willingness to engage in the necessary research and to make wise contributions. Or, to put the point slightly differently, information about the value of conserving particular lands is itself a public good.

B. Maximizing Commercial and Philanthropic Conservation

Because neither commercial nor philanthropic conservation is likely to reflect the total value of land conservation, governments must actively intervene to ensure an optimal level of conservation. As discussed in later sections, however, governmental efforts to increase land conservation often will generate negative economic side effects or raise difficult fairness issues over how to allocate the conservation costs. Political pathologies, moreover, may restrict *256 governmental support for land conservation to a suboptimal level. It is thus critical that the government ensure the maximum level of commercial and philanthropic conservation.

1. Providing the Legal Infrastructure for Commercial Conservation

Governments influence commercial and philanthropic conservation, often without conscious thought, through a variety of general governmental policies. Consider, for example, the ways in which federal and state policies affect the degree to which land is preserved for water quality benefits. As noted earlier, the value of watershed preservation to downstream water quality is one of the major driving forces for conservation. Federal policies that require minimum levels of drinking water quality, and that permit water distributors to meet the requirements by land preservation, serve as a powerful motivation for land preservation. [\[FN26\]](#) In perhaps the most famous example, New York City chose to purchase and preserve land in the Catskills watershed because the federal Environmental Protection Agency otherwise would have required the city to build a filtration facility costing \$6-8 billion. [\[FN27\]](#)

By contrast, a federal policy that mandated an engineering solution such as filtration would undercut water suppliers' interest in preserving watershed lands. [\[FN28\]](#) State regulation of investor-owned water utilities also can be significant. Many state utility commissions, for example, require water utilities to value any watershed lands that they hold at original book value for ratemaking purposes, creating an incentive for utilities to sell the property to capitalize on the land's higher market value. [\[FN29\]](#)

Governments also can promote commercial conservation by authorizing new legal institutions that permit the beneficiaries of the "ecosystem services" provided by conserved land to overcome collective action problems. The preservation of land in a watershed, **257* for example, might enhance water quality for a number of water suppliers and individual users, reduce flood potential, and provide local recreation. Left to their own devices, the multiple beneficiaries might not succeed in coming together to purchase and preserve the land, even though the overall benefits would outweigh the cost, because of the temptation to free ride and other barriers to a joint agreement. Governments might help the beneficiaries overcome these barriers by authorizing the creation of an "ecosystem services district." Special districts have long been used to overcome collective action problems involved in the provision of such capital investments and services as flood control structures (flood control districts), irrigation water (irrigation districts), and agricultural pest extermination (pest control districts).

[\[FN30\]](#) An ecosystem service district would provide an environmental twist on this traditional mechanism: those who benefit from preserving land in a watershed, or any other ecosystem, could vote to form an ecosystem services district that could impose and collect fees based on the value that each beneficiary receives from the ecosystem and then use the collected funds to preserve land in the ecosystem. [\[FN31\]](#)

Governments also can help overcome the collective action barriers to commercial conservation by securitizing ecosystem services. Farmers, for example, benefit from the conservation of wildlands that serve as habitat for bees and other pollinators. [\[FN32\]](#) Because of collective action problems, however, farmers might not pay to preserve wildlands in their vicinity, even though the loss of the wildlands will force them to use more expensive pollination services. The government could solve the collective action problem by requiring each farmer to hold a set amount of "wildlands credits" for every acre of land that he or she farms, with the credits reflecting the pollination services needed by the farmer. Farmers could **258* either directly preserve the wildlands or pay someone else to do so.

[\[FN33\]](#)

2. Taking Precautions Not to "Crowd Out" Commercial and Philanthropic Conservation

In taking active steps to promote land conservation, moreover, the government must be careful not to undermine the commercial and philanthropic conservation that would otherwise occur. Depending on how government programs are structured and implemented, government investment may actually lower the amount of commercial and philanthropic conservation. To the degree that the federal government pays to conserve some forms of land, for example, entities that would otherwise engage in commercial conservation may try to convince the government to subsidize in whole or in part the cost of conserving the land they would like to preserve - offsetting rather than adding to existing conservation efforts. Rather than spending their own funds on watershed conservation, for example, public and private water suppliers may seek to get the federal government to pay for the entire cost of the land preservation. For example, San Francisco sought and received federal permission in the 1920s to build its main drinking-water reservoir in the Hetch Hetchy Valley of Yosemite National Park where the federal government, not San Francisco, provides the land conservation. [\[FN34\]](#) The Hetch Hetchy Valley was a superior engineering site for the reservoir, but San Francisco also avoided the cost of land conservation because the watershed was protected from development by its federal park status. Where land conservation jointly produces both commercial and public benefits, in short, commercial entities have an incentive to try to minimize their own expenditure and maximize the federal government's contribution.

The federal government should not refuse to spend money on land preservation simply because the preservation produces some commercial benefits. Where undeveloped land produces both public and

commercial benefits, and the commercial benefits by themselves are insufficient to justify preserving the land, governmental contributions may be needed to ensure that an efficient amount of land is conserved. Assume, for example, that preserving the current *259 open space in a particular watershed would cost \$4 billion, that the present value of the water quality benefits to a local water supplier of preserving the land total \$3 billion, and that the present value of the public benefits of the open space (e.g., aesthetics or hiking opportunities) is \$1.5 billion. Although conservation produces a net benefit, the land may not be preserved unless the water supplier and government act together. The water supplier will want to load as much of the conservation cost as possible onto the government. At a minimum, the water supplier will want the government to invest the equivalent of \$1.5 billion (permitting the water supplier to reduce its own investment from \$4 to \$2.5 billion), and the water supplier has an incentive to try to convince the government that the public benefits actually exceed \$1.5 billion. As already noted, however, many forms of government conservation carry negative economic side-effects not present in commercial conservation, and the resources available for government investment may be constrained at a suboptimal level. For these reasons, governments interested in optimizing land conservation should be careful to minimize public conservation contributions and maximize commercial investment.

Government intervention is in a similar tension with philanthropic conservation. Governmental intervention can and often does build on private philanthropy. The federal government and nonprofits such as TPL and TNC, for example, collaborate frequently in conserving open space. In some cases, nonprofits serve as a broker for the federal government: the nonprofits acquire land that the government cannot directly purchase because of temporary budget limitations or landowner mistrust, and then subsequently sell the land to the government. In other cases, the government and nonprofits jointly raise money for acquisitions for which neither by itself has the available resources. As discussed in Part II, moreover, the federal government leverages contributions of money and land to nonprofit land trusts by offering tax incentives for such contributions.

At least in theory, however, government intervention presents the risk of "crowding out" philanthropic contributions. Economists have long worried that governmental expenditures on various public services, such as welfare, education, or public radio, may lead to reduced charitable giving for such services. [FN35] In one study *260 of public radio funding, for example, private contributions went down fifteen cents for every dollar increase in federal funding. [FN36] Empirical studies of private contributions to other charitable causes have shown crowding out effects ranging from five to twenty-eight percent. [FN37] Experimental studies of the crowding out effect have suggested an even greater dampening of charitable giving, although the reductions have never exceeded the increase in governmental support. [FN38] If such studies are applicable to land conservation programs, governments in deciding whether to invest in such programs must discount the expected benefits to reflect that the governmental investments in land conservation will lead to a decline in philanthropic investments. [FN39]

When, and even if, governmental investments in land conservation will reduce charitable contributions, however, is an open question. The mechanics of the crowding out effect are not well understood, and there are no empirical studies of the relationship between governmental investments in land conservation and private contributions to land trusts. One possible explanation of the crowding out effect, although largely ignored by the economics literature, is that governmental investments affect the effort that *261 nonprofits put into fundraising: if the government increases its contributions toward a public good, nonprofits need not invest as much in the public good and will reduce the amount of time and resources that they put into fundraising. This "demand driven" effect may be the best explanation for the inverse relationship between government funding and private contributions to public radio. If the federal government increases its support of national public radio, public radio stations do not need to spend as much time and effort in their periodic fundraising drives (which not only are expensive, but irritate members of their listening public by interrupting regularly scheduled shows).

If this is the main cause of the crowding out effect, government investments will decrease private contributions only to the degree that the governmental investment reduces a nonprofit's perceived need for revenue. This is most likely to be the case where the government directly defrays an

organization's expenses and least likely where an organization's goals differ significantly from those of the government or are largely unmet by the government's investments. Increases in federal funding for wildlife refuges, for example, will not decrease The Nature Conservancy's fundraising efforts if The Nature Conservancy believes that its conservation efforts serve a different role or, because of the enormous unmet need for habitat preservation, are still sorely needed.

Although the "demand driven" effect would seem to provide a strong explanation for some of the empirical findings on the crowding out of private charitable contributions, the more common explanation in the economics literature for the crowding out effect is that increased governmental investment in a public good decreases public interest in contributing to nonprofits that provide the same type of good. [FN40] Under this "supply driven" explanation, governmental investment in a particular public good decreases the perceived need for charitable support and thus leads citizens either to reallocate their charitable contributions to other organizations or to reduce their charitable giving overall. A critical assumption here is that citizens know the level of government investment. (This may help explain why experiments have shown a much higher degree of crowding out than empirical studies of actual contributions. In experiments, subjects are told the degree of governmental investment. [FN41])

***262** Most contributors are unlikely to know year-to-year shifts in governmental funding of conservation programs and, as a result, any "supply-driven" crowding out effect should be negligible. However, well-publicized announcements of sizable new conservation programs (or the well-publicized elimination of sizable existing programs), particularly when coupled with public pronouncements by government officials or environmentalists of the importance of the change, may lead some contributors to decrease or eliminate their contributions. Major regulatory programs, moreover, may have a significant "supply-driven" crowding out effect even if the regulatory program is relatively ineffective in implementation. The mere creation of a regulatory program may lead potential contributors to conclude that the government is taking care of the issue and that philanthropic conservation is no longer needed, even if the need remains as large as before. Perception, in short, may matter more than reality in determining the "crowding out" effect of governmental conservation efforts. [FN42]

II. Current Federal Conservation Efforts

The national government has tried to promote the conservation of privately owned land through four major means. In terms of total land conserved, the government's two principal approaches have been (1) regulation of land development and (2) direct governmental acquisition and preservation of land. Although empirical comparisons are difficult due to the lack of good data, direct governmental acquisition probably has played a more significant role than regulation (in part reflecting the federal government's historically limited role in land-use regulation, but also reflecting the difficulty of regulating land use in the face of intense political opposition). The government also has tried to increase the amount of land that nonprofit land trusts conserve both by offering various tax incentives to individuals who donate land or funds to the land trusts and by direct governmental grants. Of these latter two approaches, tax incentives have overshadowed direct grants in importance.

***263** A. Regulation

Although the federal government only became involved in significant land-use regulation in the last third of the twentieth century, regulation now forms one of the major means by which the federal government promotes land conservation. Section 9 of the Endangered Species Act (ESA), for example, limits the ability of private landowners to develop land that serves as habitat for endangered or threatened species. [FN43] A large swath of land on San Bruno Mountain, which I also can see on my drive to San Francisco, lies untouched due in part to the Endangered Species Act. [FN44] Section 404 of the Clean Water Act restricts the filling and development of wetlands, including the baylands near Stanford that are a haven for birdwatchers. [FN45] The federal Swampbuster program further protects wetlands by making farmers' eligibility for specific agricultural benefits contingent on their compliance with federal wetlands conservation guidelines. [FN46]

*264 1. Estimating the Importance of Federal Regulation

It is difficult to get an accurate estimate of the amount of land that has been protected as a result of federal land-use regulations (or how effective the protection has been). Part of the problem is the lack of adequate data on regulatory actions. Except where Congress asks for information, most federal agencies do not regularly compile or publish data on the overall impacts of their regulatory programs. In many cases, effective monitoring systems are not even in place to measure the impacts. In addition, regulations can have both a direct effect on land conservation (e.g., someone who applies for a permit under section 404 of the Clean Water Act to develop 100 acres of wetlands is denied a permit and told that they cannot build on the land) and an indirect effect (e.g., a potential developer does not even apply for a permit under section 404 because the developer believes an application would be fruitless). Although some data is available on the direct effect of federal conservation regulations, estimating the indirect effect is purely guesswork.

Section 404 of the Clean Water Act and the federal Swampbuster program almost certainly have played a significant role in conserving privately held wetlands, but the actual impact of these programs on land preservation is often overstated. [\[FN47\]](#) Aggregate loss of wetlands slowed considerably in the last several decades of the twentieth century. [\[FN48\]](#) Much of the reduction in annual loss, however, is attributable to causes other than federal regulation, including downturns in the agricultural economy, the direct acquisition of wetlands or conservation easements by governments or non-profit land trusts, and state and local regulation. [\[FN49\]](#) *265 Indeed, the downward trend in wetland loss began prior to the modern era of federal wetlands regulation. [\[FN50\]](#) A variety of statutory restrictions and implementation weaknesses have limited the impact of section 404. [\[FN51\]](#) Although there is no reliable estimate of the exact number of acres subject to regulation under section 404, [\[FN52\]](#) the Clean Water Act in theory applies to the vast majority of the remaining private wetlands in the United States, which total approximately 90 million acres of often environmentally sensitive land. [\[FN53\]](#) Only activities that involve the discharge of dredged or fill material into a wetland, however, are regulated. Property owners thus can drain wetlands with impunity under section 404. [\[FN54\]](#) Section 404(f), moreover, exempts a number of other activities from permitting requirements, including "normal farming, silviculture, and ranching activities" [\[FN55\]](#) - and the majority of wetlands remaining in the United States are in agricultural regions. [\[FN56\]](#) Finally, only a portion of the property owners interested in using their wetlands in a manner that subjects them to section 404 must apply for individual permits and submit themselves to detailed case-by-case review by the Army Corps of Engineers. The remaining property owners proceed under nationwide general permits that provide automatic permission for specified activities. [\[FN57\]](#) In *266 1994, almost 90 percent of non-exempt agricultural activities were approved under nationwide general permits. The lack of any systematic surveillance program also has undercut effective enforcement of section 404. [\[FN58\]](#)

Decisions on individual permit applications by the Army Corps of Engineers in 1999, which was a typical year, directly preserved or enhanced slightly more than 45,000 acres of wetlands as mitigation for the alteration of slightly more than 21,000 acres. [\[FN59\]](#) The indirect effect of section 404 almost certainly is larger. Although section 404 does not flatly prohibit filling and developing covered wetlands, the Army Corps of Engineers has become increasingly strict in reviewing applications for individual permits. In most cases, the corps today requires landowners to offset any wetland loss with restoration or enhancement of mitigating wetlands, with an overall national goal of no net loss of wetlands. [\[FN60\]](#) As a consequence, many private landowners contemplating the development of land that includes significant wetlands either plan around the wetlands or defer development plans entirely rather than fruitlessly pursue a permit. [\[FN61\]](#) Given the many statutory and administrative exceptions just discussed, however, even the indirect effect of section 404 is limited.

The effect of the Swampbuster program is even less clear. Again, the Swampbuster program theoretically enjoys a long reach: almost 85 percent of privately-held wetlands are farmed. [\[FN62\]](#) Between 1987 and 1996, however, the Department of Agriculture denied benefits on only 351 tracts

representing about 15,000 acres. [FN63] Studies have debated whether this small level of denial results from a strong deterrent effect, so that sanctions do not have *267 to be imposed, or lax enforcement. [FN64] The Department of Agriculture estimates that, based on the economics of agricultural production, over 2 million acres of wetlands would be converted to farm production over a ten year time span if the Swampbuster program were repealed. [FN65]

The ESA probably has not had a major direct impact on private land conservation outside a small number of geographic regions, although its potential future impact remains theoretically large. [FN66] The main mechanism by which the federal government conserves habitat under the ESA is through habitat conservation plans, which landowners must prepare before engaging in any land development that would "take" an endangered species. [FN67] As of February 2001, the federal government had approved over 340 habitat conservation plans (HCPs), encompassing a planning area of approximately 30 million acres (up from only 20 million acres at the end of 1999). [FN68] But existing HCPs directly preserve only a small fraction of this planning area. Many property owners are permitted to develop their land in return for the preservation of a small percentage of the land, contributions toward the preservation of other land, or alternative mitigation measures. [FN69] Some "regional HCPs," encompassing multiple property owners, have established sizable land preserves, but the federal, state, and local governments, along with nonprofit land trusts, often have agreed to pay for much of the *268 preserved land; regulation thus can be credited with at most a small part of the conservation. [FN70]

The ESA's indirect effect on land development is less certain. The effect can be very significant in regions such as the Balcones region outside Austin, Texas, where much of the region is potential habitat, and either the federal government or environmental organizations present a realistic enforcement threat. [FN71] But the ESA has had only a marginal impact on land development in much of the United States.

2. The Role of Cost Under Federal Regulation

An interesting facet of the federal regulatory approach is the limited formal role that cost plays in the implementation of the regulatory regimes. [FN72] Indeed, an important question, considered in more detail in Part III, is whether the very choice of regulation over other conservation approaches discourages the consideration of cost. Section 9 of the ESA bans any take of an endangered species; cost is irrelevant. [FN73] Section 10 permits the Fish & Wildlife Service (F&WS) to issue "incidental take" permits, but the role of economic considerations in the permit process is limited at best. [FN74]

The value of the land use for which a permit is sought is not directly relevant to whether a permit should issue: if the land use would "appreciably reduce the likelihood of the survival and recovery *269 of the [endangered] species in the wild," the F&WS is not to issue a permit no matter how much value the land use would produce. [FN75] Cost comes into play only in determining whether the landowner has a habitat conservation plan that will minimize the land use's impact on endangered species "to the maximum extent practicable." [FN76] Although the ESA is silent on whether "practicable" involves economic, or merely scientific and technological, considerations, the F&WS states in its Habitat Conservation Planning Handbook that in close cases it may weigh the costs of potential mitigation measures. [FN77]

Cost plays a larger, but still constrained role under section 404 of the Clean Water Act. Section 404 guidelines establish a feasibility standard for the issuance of permits to develop wetlands. A particular development proposal is precluded "if there is a practicable alternative . . . which would have less adverse impact on the aquatic ecosystem," with "practicable" defined as an alternative that is "available" and "capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." [FN78] If an alternative is "available," the cost of the conservation, the value of the particular wetland, and the avoided impact on the wetland are all technically irrelevant.

Despite the limited role that cost is supposed to play under both the ESA and section 404 of the Clean Water Act, cost considerations have had a major impact on the manner in which the federal

government has implemented the regulatory regimes. Where the listing of a species is likely to impose large costs on property owners, for example, political and legal pressures from landowners often delay the listing or, in isolated cases, even derail it. [\[FN79\]](#) Political and legal pressure from concerned interest groups also has weakened the government's enforcement of the prohibitions of both sections 7 and 9 of the ESA. [\[FN80\]](#) Costs, in short, do factor into the *270 implementation and effectiveness of the ESA but at a political level rather than through an open and objective balancing of costs and benefits. Political considerations of cost also have played a role in the relatively lax approach the Army Corps of Engineers has historically taken to the implementation of section 404; political pressure from property owners, communicated through members of Congress, local government officials, and others, influences how the Corps enforces section 404. [\[FN81\]](#) As with the ESA, however, costs are considered largely outside public scrutiny and not in a reasoned fashion.

B. Direct Governmental Conservation

The federal government also promotes land conservation by directly acquiring and conserving land; indeed, outside the wetlands context, acquisition has probably been the federal government's main approach to conservation. In many cases, the government has acquired a fee simple interest in land and then included the land in the federal public lands system. Although westerners are accustomed to thinking of the national forests as "reserved" from the public domain, eastern national forests stem almost entirely from acquisitions. [\[FN82\]](#) As shown in Table 3, the four major federal land agencies acquired approximately five million acres of land from private owners between 1964 and 1994. [\[FN83\]](#) Government data does not indicate how much of this land is, in the broadest sense of the term, "managed for conservation." [\[FN84\]](#) However, assuming that the same percentage of acquired land is managed *271 for conservation as the percentage of each agency's total acreage, the government during this period acquired and conserved about 3.7 million acres as part of the federal public lands system. [\[FN85\]](#) The federal government also provides funds to state and local governments to acquire environmentally valuable land. [\[FN86\]](#)

Federal Agency	Acres of Land Purchased	% of all lands managed for conservation	Estimated acres purchased for conservation
Forest Service	1,479,348	26.0%	384,630
BLM	297,080	21.8%	64,763
Fish & Wildlife Service	1,998,247	100%	1,998,247
National Park Service	1,303,292	100%	1,303,292
Total	5,077,967	74%	3,750,932

Table 3 Federal Land Acquisitions (1964-1994)

Source: U. S. General Accounting Office, Land Ownership: Information on the Acreage, Management, and use of Federal and Other Lands 6 tbl. 1 & 27 tbl. 27(1994).

Under a variety of programs adopted in the latter decades of the twentieth century, the federal government also pays some property owners to preserve or restore their land without conveying to the government a fee interest in the land. The first and still the largest program is the Conservation Reserve Program (CRP), which pays farmers under ten-year contracts to retire lands from crop production. CRP currently idles about 36 million acres - double the amount of land preserved in federal and state wildlife refuges in the lower forty-eight states. [\[FN87\]](#) Although the CRP historically has benefited farmers more than the environment, [\[FN88\]](#) environmental benefits have been significant. [\[FN89\]](#) In recent years, moreover, the *272 federal government has increasingly tried to factor

environmental concerns into the choice of lands to preserve in the context of this program. [\[FN90\]](#) A number of programs address the preservation of wetlands. Under the Small Wetland Acquisition Program, the federal Fish and Wildlife Service can acquire either a fee interest in wetlands or a permanent easement restricting wetland use. [\[FN91\]](#) By the late 1990s, perpetual easements under the Small Wetland Acquisition Program were protecting some 1.2 million acres of land. Under the Wetland Reserve Program (WRP), the federal Department of Agriculture pays landowners who restore and protect wetlands on their property. [\[FN92\]](#) In 2000, almost 915,000 acres of wetlands were enrolled in the WRP, which is capped at 975,000 acres. [\[FN93\]](#) In most cases, landowners provide the federal government with a permanent easement encumbering the wetlands; however, about 5 percent of the wetlands are enrolled in 10-year restoration agreements. [\[FN94\]](#) The federal government also protects over 500,000 acres of wetlands through short-term conservation agreements entered into under the Water Bank Act of 1970. [\[FN95\]](#)

Yet additional federal programs are designed to acquire and protect different forms of environmentally sensitive lands. Under the Forest Legacy Program (FLP), for example, the federal government pays up to 75 percent of the cost of acquiring fee interests or conservation easements in forest lands threatened with conversion to non-forest uses. The remainder of the funding comes from state, ***273** local, or private funding. [\[FN96\]](#) As of mid-2000, the FLP protected over 110,000 acres. [\[FN97\]](#) Federal acquisition of fee simple or other property interests, either directly or through grants for state and local governmental purchases, will increase significantly with the passage in 2000 of a six-year, \$12 billion dedicated funding package for conservation. [\[FN98\]](#) Under this compromise package, which was passed as part of an Interior Department appropriations bill, federal expenditures on conservation will increase from \$1.6 billion in fiscal year 2001 to \$2.4 billion in fiscal year 2006. [\[FN99\]](#) Most of this money will go to state governments and wildlife agencies for land acquisition, but increased funding is also included for federal acquisition of land, including habitat, forests, and coastlands. [\[FN100\]](#)

C. Leveraging Philanthropic Conservation

A third major approach that the federal government uses to increase land conservation is to leverage or match private contributions to nonprofit conservation organizations. Through federal tax laws, for example, the United States underwrites a sizable portion of the private donations to conservation organizations such as The Nature Conservancy and the Trust for Public Lands. If a donor itemizes his taxes, the federal government will effectively reimburse the taxpayer for a portion of his contributions by reducing ***274** the taxpayer's taxable income by the amount of the contribution, and thus reducing his taxes. [\[FN101\]](#) If a landowner gives the conservation organization either a fee simple interest or a permanent conservation easement, the federal government similarly subsidizes a portion of the contribution by permitting the taxpayer to reduce her taxable income by the value of the property interest. [\[FN102\]](#)

The government also provides estate tax benefits to property owners who donate an interest in their land to a conservation organization. [\[FN103\]](#) Under the Taxpayer Relief Act of 1997, if a landowner donates a conservation easement to a nonprofit organization or the government, the executor of the landowner can exclude 40 percent of the value of the land from the landowner's estate upon his death. [\[FN104\]](#) The exclusion, however, applies only if the land is within 25 miles of a metropolitan area, national park, or national wilderness area, or within 10 miles of an urban national forest. [\[FN105\]](#) If charitable tax deductions and credits constituted merely a governmental sharing of the cost of private contributions, they would not benefit land conservation. Instead, the tax deductions and credits would simply redistribute income from general taxpayers to those taxpayers donating to land trusts and itemizing their charitable contributions. But charitable tax deductions and credits almost certainly increase the total amount of private donations. Tax deductions and credits lower the effective cost of charitable giving to the donor. [\[FN106\]](#) To help a land trust accomplish a particular conservation goal, a donor need contribute only a fraction of the actual cost. Most economic studies suggest that, at current income tax levels, the elasticity of donations is greater than one, so that for

every dollar that the federal government provides in tax deductions or credits, private donors increase their giving by more than a dollar. *275 [FN107] A number of economic studies similarly suggest that there is still considerable room for additional leveraging in the tax system. [FN108]

Charitable tax deductions and credits also may increase private contributions to land conservation through several indirect mechanisms. First, absent tax deductions and credits, some individuals might decide not to donate to land trusts out of fear that they would become patsies by contributing funds while others free ride on their altruism. Deductions and credits may help ease or erase this fear by ensuring that society at large shares in the contribution and, by reducing the cost of contributions, making it more likely that others will also contribute. Second, the process of itemizing charitable contributions on tax returns might increase people's attention to and thus levels of charitable giving - including contributions to land trusts. Itemization here loosely resembles environmental impact statements: the very process of itemization requires people to think about whether they are giving sufficient sums to land trusts and other charities. Every December, for example, I pull out my old tax return and compare my charitable contributions for the current year with those itemized for the prior year; almost inevitably, I decide that I should write some additional end- *276 of-the-year contributions. Finally, as discussed in Part VII, charitable deductions and credits may well signal to citizens that our society prizes charitable giving and thus help inculcate a norm favoring charitable giving.

It is difficult to measure the exact amount of land conservation that federal tax policies have encouraged. Nonprofits are playing an increasingly important role in land conservation. As shown in Table 4, national, state, and local land trusts currently own or hold easements to almost 4 million acres of land (this does not include property interests that nonprofits have purchased and then sold to the government). The question is what portion of this conservation is attributable to federal tax incentives. Assuming conservatively (but realistically) that approximately 40 percent of these acquisitions were financed from private or corporate donations of either money or land, and that donations would have been approximately 20 percent lower absent charitable tax deductions, federal tax policies have led to nonprofit conservation of approximately half a million acres of land - or about 10 percent of the amount of land directly acquired by the federal government during approximately the same period (see Table 3). [FN109] Although the land preserved to date through tax incentives thus may not have been very significant relative to direct governmental acquisitions, the amount of land being conserved through private land trusts is increasing at an accelerating pace. In the last decade, the number of land trusts increased by 63 percent (to 1,213 local, regional, and national trusts in 1998) and the amount of land protected through the trusts increased by 135 percent. [FN110]

The federal government also can use matching grants to leverage private donations to land trusts. When the federal government offers to match the funding of a nonprofit organization in the acquisition of land or conservation rights, the government again lowers the cost of conservation to private donors. If the government promises a land trust to match the cost of buying a parcel of land on a 50-50 basis, for example, the government doubles the value of a private donation to that trust. This increases the attractiveness *277 of donations. Public radio stations know this instinctively and thus often advertise matching grants during pledge drives. The best example of a conservation program that uses matching grants at the federal level is the North American Wetlands Conservation Act, which provides grants to organizations that are willing to match investments in North American wetland ecosystems on at least a dollar-to-dollar basis. [FN111]

	Acres Owned	Acres Under Easement	Total Acres Protected
National Land Trusts	830,000	940,000	1,770,000
Ducks Unlimited		80,000	80,000
TNC	790,000	810,000	1,600,000
State & Local Land Trusts	830,000	1,380,000	2,210,000
Total	1,660,000	2,320,000	3,980,000

Table 4 Approximate Nonprofit Land Holdings (1997)

Source: Land Trust Alliance, 1998 National Directory of Conservation Land Trusts (1998).

In a similar fashion, the federal government leverages conservation efforts by individual property owners through various partnership programs in which the government helps fund private conservation efforts on a "matching" basis. Under its Partners for Fish and Wildlife program, for example, the Fish and Wildlife Service (F&WS) provides financial and technical assistance to landowners interested in restoring habitat on their properties. [\[FN112\]](#) Although F&WS sometimes funds the entire restoration cost (in which case the funding constitutes another example of direct governmental provision of habitat), the Service normally requires matching contributions by the landowner or other partners. [\[FN113\]](#) In return, the landowner signs an "assistance agreement," promising to maintain the restoration project for at least ten years, with the exact length of the agreement depending on the size of the federal assistance. [\[FN114\]](#) Since 1987, the program has provided assistance to over 21,000 landowners and helped to restore over a million acres of wetlands and native prairie, grassland, and other upland habitats, as well as over 2,700 miles of riparian and in-stream aquatic ***278** habitat. [\[FN115\]](#) Programs such as Partners for Fish and Wildlife promote private preservation by lowering the cost to the private landowner and by encouraging "altruistic" actions.

D. Grants to Nonprofits

A final approach that the federal government has taken toward land conservation has been to provide non-matching grants to nonprofit land trusts for conservation activities. Such grants are different from federal tax incentives and matching grants because, although they increase the amount of land acquisitions in which nonprofits can engage, they do not lower the cost of private contributions and thus do not directly leverage private donations. Federal tax policy and matching grants increase the amount of private donations. Non-matching federal grants, by contrast, merely delegate funds to nonprofits for investment in land conservation and do not necessarily increase private donations. Non-matching grants might still stimulate private donations in some cases. For example, government grants might permit a small nonprofit to begin operating at a scale that attracts significant new donations. Or the grant might signal to potential private donors that the non-profit is a sound and effective organization, worthy of contributions. [\[FN116\]](#) However, any leveraging that occurs is likely to be less significant than in the case of tax incentives and matching grants.

Only a few federal programs provide direct non-matching grants to nonprofits for land conservation. The relative insignificance of direct grant programs - matching or non-matching - compared to the other federal conservation efforts discussed above, is reflected in the overall distribution of funding of nonprofit land trusts. The Nature Conservancy, for example, reports that only about 5 percent of its annual funding comes from government contracts and grants (including state and local grants).

[\[FN117\]](#)

***279** III. A Taxonomy of Governmental Options

The federal government's approaches to land conservation differ along two basic dimensions. The first dimension is the method by which the government finances land conservation. The various approaches use three different methods of financing. Regulation finances land conservation through an implicit tax on landowners; the entire financial burden of the regulation, in the form of decreased property values, falls on the owners of the regulated land. By contrast, the government finances its direct acquisition and conservation of land, as well as its non-matching grants to nonprofits, through a diverse array of taxes and other revenue sources. The major sources of revenue for direct acquisition and grants have been the federal income tax, the Land and Water Conservation Fund, duck stamps, and federal excise taxes on sporting arms. [\[FN118\]](#) Finally, the federal government uses federal funds, or in the case of tax deductions, gives up potential federal tax revenue, to leverage private contributions to nonprofit land trusts. Here, the government is effectively using a combination of both general public funds and private contributions to finance additional land conservation. The second dimension along which the principal federal approaches differ is in the locus of

responsibility for choosing and implementing land conservation. The approaches can be grouped into two broad categories. With regulation and direct governmental acquisition, the government itself decides on what land to conserve. With tax leverage and grants, non-profits are making the principal decision. [\[FN119\]](#)

These differences suggest a three-by-two grid of potential governmental approaches to land conservation, as illustrated in Figure 5. The four methods actively used by the federal government are ***280** shown in roman type. The grid, however, suggests two other potential approaches (shown in italics) - delegated regulation and government contribution incentives - that should be considered. [\[FN120\]](#)

	Government Decisionmaking	Nonprofit Decisionmaking
Landowner Financed	Uncompensated regulation	Delegated Regulation
General Tax Revenue or Other Public Funds	Governmental Acquisition	Non-Matching Grants to Nonprofits
Leveraged Private Contributions	Government Contribution Incentives	Charitable Tax Deductions Matching grants to NGOs

Figure 5 Taxonomy of Governmental Methods to Promote Conservation

A. Delegated Regulation

Under delegated regulation, the federal government would delegate its regulatory authority to nonprofit organizations. In one extreme form of delegated regulation, for example, the federal government could authorize a nonprofit such as The Nature Conservancy to identify land that is essential habitat for endangered species and then to regulate the development and use of that land. Under this regime, The Nature Conservancy would become a private, non-profit version of the federal Fish & Wildlife Service.

Although the notion of delegating the government's regulatory authority to a non-governmental entity might sound exceptionally radical (and indeed it raises troubling policy and constitutional concerns that are discussed below), the federal government currently comes close to this approach in its implementation of the Endangered Species Act (ESA). Regional habitat conservation plans (HCPs) are typically negotiated through local stakeholder groups which discuss and effectively decide what combination of development fees, preserves, and land-use regulations best meet the ESA's requirements. [\[FN121\]](#) Although the federal government must review and approve a final HCP to ensure that it adequately protects endangered species and otherwise meets the requirements of ***281** the ESA, the government seldom questions the particular mix of protections to which stakeholders agree, as long as the mix meets the overall standards. It does not seem too large a step to imagine implementation of the ESA through a series of non-profit ecosystem trusts made up of key stakeholders and overseen to some degree by the federal government.

The major policy concern with delegated regulation, of course, is democratic accountability. Nonprofits, unlike governmental agencies, are not directly accountable to popular will. But accountability cannot be the complete explanation. Through charitable tax deductions, the federal government effectively delegates to nonprofits and their contributors the discretion to spend federal tax dollars with virtually no accountability to voters or the government. All levels of government, furthermore, delegate various regulatory functions to private entities. [\[FN122\]](#) As a lawyer, for example, I am regulated by a non-profit state bar association, not by the state. [\[FN123\]](#) So what is different about delegated regulation of land use? Why would most people find delegated regulation inherently suspect but not think twice about charitable tax deductions or private regulation of the bar? The answer, in part, might be familiarity. Various forms of private delegation are a historic part of our landscape. We might not even think of them as involving delegations from the government. Although charitable tax deductions indirectly give nonprofits federal tax funds (because without the deduction provisions the dollars otherwise would go to the federal treasury), the federal government does not

directly transfer federal treasury funds to nonprofits. If the government did, people might sense that there was a need for greater federal oversight of how the dollars are spent. Bar regulation of lawyers seems more a continuation of trade guilds than delegation of governmental regulatory authority. Although these factors almost certainly help to explain people's acceptance of such practices, they do not provide an acceptable normative explanation of why we should differentiate the delegation of land regulation authority.

Substantive differences, however, also exist. A major concern with delegated regulation in the land conservation context is that ***282** nonprofits would be free to impose large direct costs on individual members of society with whom they often hold competing, rather than shared, interests. Charitable tax deductions require all taxpayers to contribute toward the charitable causes of other taxpayers. However, if asked to consider the fairness of this, most taxpayers are likely to conclude that, while they might not favor all of the charitable causes, the policy on the whole is not biased in favor of or against any set of taxpayers. Averaged out across all taxpayers, the benefits of the tax deduction probably loosely parallel the public desires of taxpayers as a whole. While the typical taxpayer might be comfortable with the current charitable tax deduction, however, the taxpayer would feel far less comfortable letting individual nonprofits decide on the overall federal tax rate or on how tax revenue as a whole should be allocated. In this context, the typical taxpayer is likely to fear that the interests of the nonprofit will conflict with the desires of the public. Lawyers do not strongly object to regulation by the state bar because they largely control the actions of the bar. By contrast, if the government delegated regulatory authority to land trusts, property owners would fear that their interests would not be adequately protected, and policymakers might fear that the land trusts would not adequately take into account all public interests.

B. Government Contribution Incentives

A final option, identified in Figure 5, is the creation of incentives designed to encourage private contributions to direct governmental conservation efforts - what Figure 5 labels "government contribution incentives." As described in Part II, charitable tax deductions leverage private contributions to nonprofits by lowering the cost of supplying a particular level of public goods or services; at current tax levels, each dollar in tax benefits brings in more than a dollar in additional contributions. [\[FN124\]](#) The dollars available for direct governmental conservation spending can be leveraged in a similar fashion. The government, for example, could provide taxpayers with an opportunity to contribute extra dollars to federal land conservation, and permit taxpayers to deduct those dollars from their net income exactly as they deduct charitable contributions. Moreover, the government could readily publicize this opportunity by permitting taxpayers to make their contributions on their annual income tax return. The government alternatively could leverage its ***283** expenditures on land conservation by matching private contributions. The government could agree to dedicate an additional sum to the conservation effort for every dollar a taxpayer contributes to governmental land conservation. . At current tax rates, the additional private contributions to governmental conservation efforts under either approach likely would exceed the cost of the approach to the government, increasing the total dollars available for direct governmental conservation efforts. [\[FN125\]](#)

The federal government has not entirely ignored this option. Contributions to federal, state, and local government are deductible on federal tax returns. Federal agencies, moreover, use the deductibility on a selective basis to encourage gifts of high-priority parcels of land that they do not have Congressional funding to acquire directly. [\[FN126\]](#) As seen in Table 6, between 1964 and 1994, the major land agencies acquired from as little as one percent (in the case of BLM) to almost a quarter (in the case of the National Park Service) of their new lands through gifts or donations. The federal government, however, has made no effort to capitalize on the deductibility of governmental contributions to increase private funding for federal land acquisition. Few taxpayers are aware that they can either make or deduct contributions to the federal government. The government's land agencies do not actively seek solicitations of money (or even mention the opportunity to make contributions in their publications and web sites), perhaps for the simple reason that they would not be able to keep such contributions. Absent Congressional authorization, any private contributions of

money go to the federal treasury and not to the federal agency that the taxpayer seeks to help. [\[FN127\]](#) A significant opportunity to increase the monies available for governmental land acquisition thus remains untapped.

Agency	Total Land Acquired	Land Acquired By Gift or Donation	Percentage Acquired by Gift or Donation
Bureau of Land Management	1,071,950 acres	14,646 acres	1.3%
Fish & Wildlife Service	2,876,176 acres	586,377 acres	20%
Forest Service	4,286,455 acres	522,326 acres	12%
National Park Service	2,627,026 acres	631,747 acres	24%
Total	10,861,607 acres	1,755,096 acres	16%

***284** Table 6 Federal Land Acquisitions & Gifts (1964-1994)

Source: U. S. General Accounting Office, Land Ownership: Information on the Acreage, Management, and Use of Federal and Other Lands (1996).

One potential problem with government contribution incentives is the risk that Congress will reduce its appropriations in light of increased contributions. When someone donates money to a land trust, the contributor assumes (whether correctly or not) that the donation will add to the total amount of societal conservation - that the land trust will not reduce its solicitation efforts elsewhere, and that the government will not lower its conservation funding to reflect the greater monies being spent by the land trusts. If citizens were given the option on their tax returns to donate money directly to a governmental conservation agency, many citizens might reasonably fear that the legislature would factor their donations into its annual conservation appropriations. As donations rose, Congress might conclude that it could reallocate federal funds to other pressing needs. Even if citizens are likely to assume naively that Congressional appropriations will not change, neither the relevant federal agencies, nor their environmental constituencies are likely to push politically for the creation of governmental contribution incentives if they believe that an increase in private contributions is likely to result in a net reduction in legislative funding. Legislatures can help overcome such fears by providing long-term dedicated funding for conservation. Even so, the fear might remain that legislatures will take expected future private donations into account in setting the level of long-term funding, and possibly revisit the commitment if donations turn out to be higher than expected.

IV. Constitutional Restrictions & Lessons

In considering in more depth when and why the federal government might use one or another of the six options for promoting conservation identified in Figure 5, the United States Constitution is a good place to start. This is for two reasons: first, the Constitution restricts the options that can be used in some settings; second, ***285** constitutional analysis provides useful insights into the potential policy concerns surrounding particular options.

A. Takings Restrictions on the Regulatory Option

Current takings jurisprudence significantly limits the ability of the federal government to conserve land through uncompensated regulation. Indeed, the two tests that the Supreme Court has announced for "categorical" takings seem directed exactly at two of the principal purposes of current federal land conservation efforts - natural preservation and recreation. Under *Loretto v. Teleprompter Manhattan CATV Corp.* and its progeny, any effort to open private property to public recreational use through regulation is likely to constitute a permanent physical invasion of the property and thus a taking.

[\[FN128\]](#) *Lucas v. South Carolina Coastal Council* warns the government that efforts to preserve land in its natural condition require compensation if the landowner is thereby deprived of the ability to make any economically viable use of her property. [\[FN129\]](#) As Professor Joseph Sax has observed, the Supreme Court's message in *Lucas* seems clear: governments "may not regulate land use solely by

requiring landowners to maintain their property in its natural state as part of a functioning ecosystem, even though those natural functions may be important to the ecosystem.” [\[FN130\]](#)

The Lucas “test” provides the government with somewhat more latitude than the Loretto doctrine. The government may be able to require preservation of a portion of someone's land, so long as the landowner can make a viable economic use of the remainder of the land. The constitutionality of the regulatory option ultimately depends on the degree to which courts apply the Lucas line of decisions to subparcels of land. To date, the Court of Federal Claims and Federal Circuit Court have been relatively generous to the government, upholding the constitutionality of most (though certainly not all) permit denials under section 404 of the Clean Water Act. [\[FN131\]](#) In some cases, where subparcels were not contiguous or ***286** were purchased at different times or for different purposes, the courts have held that regulatory actions that denied the property owner the economic use of a subparcel could constitute a taking, even though the owner could make use of the remainder of the land. [\[FN132\]](#) In most cases, however, the courts have looked at the property owner's entire land in deciding whether a Lucas taking occurred. [\[FN133\]](#) The Supreme Court's decision in *Tahoe-Sierra Preservation Council v. Tahoe Regional Planning Agency* reinforces Lucas' limited scope by emphasizing that courts “must focus ‘on the parcel as a whole’” (although the trick obviously is determining what the “parcel” is). [\[FN134\]](#)

Takings law also restricts the ability of the government to use its regulatory authority to restore land, rather than merely protect the status quo. Although regulations preventing landowners from developing a portion of their property might be upheld more often than not, courts generally invalidate regulations requiring landowners to remove structures from their land, or to stop using their land (at least absent some reasonable amortization period). [\[FN135\]](#) This restriction poses a serious obstacle to meeting ecological goals. Restoration may be essential to maximizing the natural services provided by land. [\[FN136\]](#) The federal government has recognized that the nation must not only preserve the existing amount of wetlands, but work to restore at least 100,000 additional acres of wetlands each year. [\[FN137\]](#) Many species currently listed under the Endangered Species Act are endangered or threatened specifically because their existing habitat acreage has already fallen below the amount of land needed to sustain the species on a long-term basis. Unless additional habitat is provided by restoration, such species sooner or later will go extinct. [\[FN138\]](#)

***287** To some degree, the federal government can constitutionally require restoration of an area of land by making it a condition for the development or use of other land. For example, the government frequently conditions the destruction of existing wetlands not only on preservation of any remaining wetlands on the property but also on the restoration of other wetlands in the vicinity. [\[FN139\]](#) HCPs under the ESA similarly sometimes require restoration of previous habitat. [\[FN140\]](#) However, the United States Supreme Court's decisions in *Nollan v. California Coastal Commission* and *Dolan v. City of Tigard* restrict the government's ability to bootstrap its regulatory authority over land development into a restoration requirement. [\[FN141\]](#) Although the government can require restoration as an offset to any destruction that it permits, any effort to require property owners to restore significantly more than they seek to destroy could run afoul of the requirement that any condition be “roughly proportional” to the damage that the property owner's actions would otherwise cause. [\[FN142\]](#)

Beyond restricting what the government can do, takings law provides useful policy insights into the attractiveness of direct governmental regulation as an approach toward land conservation. For example, one concern underlying the takings protections is the risk of unjustified discrimination among property owners. [\[FN143\]](#) Where a large number of land parcels could meet a particular public need, the government's choice of which parcel to regulate may be arbitrary or politically motivated. Providing compensation to the owner of the selected parcel protects against a few landowners bearing an inequitable or politically discriminatory burden. By contrast, where a given public need can be met only by one specific parcel, arbitrary discrimination is less a concern.

***288** Governmental conservation efforts form a continuum between these two extremes. Where the government seeks to conserve “generic” open space or wilderness, the risk of discrimination among property owners is quite high. The risk also can be high under the ESA if the government enjoys significant latitude in choosing which land to preserve. Not surprisingly, large landowners involved in

the development of regional HCPs frequently have sought to offload the regulatory burden onto more diffuse groupings of smaller landowners. [\[FN144\]](#) One aborted regional HCP for North Key Largo, Florida would have restricted development of much of the region, but not of the areas dominated by the large landowners represented on the stakeholder committee. [\[FN145\]](#) In these settings, governmental regulation may be both unnecessary and a source of constitutional concern. Uncompensated regulation raises suspicions of arbitrariness or political discrimination. Because multiple properties can meet the conservation need, moreover, the government or nonprofits may be able to acquire needed land without fear of paying monopoly rent. By contrast, where virtually all of the remaining habitat of an endangered species must be preserved, the risk of discrimination is low, and efforts to purchase needed habitat on the open market may well encounter inflated price demands from landowners enjoying a monopoly position. [\[FN146\]](#)

A number of jurists and academics have expressed the separate concern that regulation creates the risk of fiscal illusion. [\[FN147\]](#) In its simplest form, the concern is that regulation permits the government to engage in off-budget expenditures. If not required to pay for the economic value that the regulation destroys, the government will tend to over-invest in conservation or other forms of property regulation. Under this analysis, only the political power of landowners constrains the government's incentive to over-invest, and landowners may not be able to overcome the majority's interest in the regulatory product. By contrast, direct government expenditures for land are subject to several possible legislative checkpoints: the revenue decision of how much money to raise through taxation and other funding mechanisms, the authorization decision of whether the government should engage in a given conservation ***289** project or program, and the appropriative decision of how much of the government's revenue to spend on the project or program. At each of these checkpoints, multiple competing interests, by lobbying for their own interests and asking tough questions, help reduce the chances that the government will over-invest in conservation.

Although there are truths buried in this analysis, a central assumption of the traditional argument - that landowners are systematically at a disadvantage in defeating regulations that are not cost justified - appears wrong both as a matter of theory and empirical evidence. [\[FN148\]](#) Landowners would seem to be the prototypical concentrated interest group, well able to prevail in the political arena, particularly when aligned against the generally diffuse interest of the public in land conservation. As discussed in Part II, political opposition by property owners has undercut the potential impact of a number of major regulatory programs, such as the Endangered Species Act, section 404 of the Clean Water Act, and Swampbuster. [\[FN149\]](#) Some individual property owners might find themselves at a disadvantage, but property owners as a group enjoy considerable political strength.

A variant of the fiscal illusion argument is even more troubling: regulation may tend to subvert open consideration of costs and benefits. [\[FN150\]](#) Where the government directly finances the cost of conservation, it will generally engage in a reasoned, albeit political, balancing of the costs and benefits of various levels of conservation. The political appropriations system might be far from perfect, but it frames the appropriations question as one of choices capable of being analyzed - should the government put more money into conservation and either find additional revenue sources to pay for that conservation or reduce spending for education and other programs? The language of regulation, by contrast, is one of rights: what should a property owner have a "right" to do, or what is the public's "right" to open space? Rights, in our traditional legal lexicon, often have proven antithetical to a reasoned discussion of costs and benefits. [\[FN151\]](#) As a result, regulatory programs generally eschew full consideration of costs, and thus the costs of regulatory ***290** programs are addressed in political skirmishes that occur behind closed doors rather than in an open, rational fashion. [\[FN152\]](#) The problem is not, as the standard "fiscal illusion" argument suggests, that costs are ignored or that landowners always lose. The problem is that costs are not dealt with in a reasoned fashion, often leading to highly arbitrary and inefficient results.

This danger is reflected in current federal conservation regulations, which, as discussed in Part II, typically do not provide for full and reasoned consideration of costs. Legislatures can reduce the risk of fiscal error by requiring any conservation measure to be conditioned on a determination that the benefits of conservation are worth the costs. This need not mean a precise quantitative balancing, and

indeed such balancing is often difficult, if not impossible, to achieve in the area of land conservation. [\[FN153\]](#) But it should involve at least a qualitative judgment, based on known information that the societal benefits of particular conservation measures are worth the cost. Regulatory programs, however, frequently generate and reinforce notions of rights that drown out any rational consideration of costs. Costs are considered, but through political pressure. Because regulations drown out rational consideration of costs, regulation is often a "second best" solution to be used only where the disadvantages of other approaches outweigh the regulatory risks of fiscal error.

B. Unconstitutional Delegation

Delegated regulation raises not only policy concerns, as discussed in Part III, but also potential constitutional concerns. The doctrine of "unconstitutional delegation" of legislative authority has been effectively moribund for decades at the federal level, but virtually all of the cases in this area have dealt with Congressional delegations to administrative agencies. In these cases, federal courts have permitted Congress to make wide delegations of authority. In a few instances, federal courts also have upheld Congressional legislation against claims that the legislation involved unconstitutional delegations to private actors. [\[FN154\]](#) However, most of these cases have involved only indirect or circumscribed delegations; [*291](#) for example, where Congress conditioned legislation on referenda by private organizations. [\[FN155\]](#) Federal courts have never confronted Congressional legislation in which private organizations were given the right to directly regulate economic activities with no oversight by federal agencies.

State courts have more frequently addressed legislation authorizing private regulation. [\[FN156\]](#)

Although these cases provide little in the way of consistent guidance, often differentiating among similar pieces of legislation based on mere ipse dixit, [\[FN157\]](#) the cases demonstrate a skepticism regarding some forms of private delegations. Traditional forms of private regulation, as when trade groups are given the authority to restrict entry into the trade, have generally been upheld. Yet courts have typically invalidated other legislation authorizing private groups to regulate or encumber different private entities. [\[FN158\]](#) The Texas Supreme Court has rejected legislation permitting a private entity to impose a pest control program on cotton farmers; the court explained that these types of delegations to private entities:

[C]learly raise even more troubling constitutional issues than their public counterparts. On a practical basis, the private delegate may have a personal or pecuniary interest which is inconsistent with or repugnant to the public interest to be served. More fundamentally, the basis concept of democratic rule under a republican form of government is compromised when public powers are abandoned to those who are neither elected by the people, appointed by a public official or entity, nor employed by the government. Thus, we believe it axiomatic that courts should subject private delegations to a more searching scrutiny than their public counterparts. [\[FN159\]](#)

Discussions of private delegation in state court opinions suggest a variety of differentiating factors that serve both as predictors of [*292](#) the risk of constitutional invalidation and to highlight relevant policy considerations for deciding when the benefits of private delegations outweigh their costs. These factors can be grouped into three broad questions. First, how strong is the justification for private delegation? Private delegations are more acceptable where the private delegate enjoys special expertise that is likely to improve the quality of the regulation. [\[FN160\]](#) Although public agencies might be able to solicit and incorporate this expertise into their own regulations, private delegations might provide a faster and administratively simpler means of exploiting this expertise. The special expertise of trade organizations, such as the American Bar Association or American Medical Association, is often cited in upholding their regulatory authority over their respective professions. In some cases, the local expertise of a land trust might also militate in favor of delegating to the trust a regulatory role in local land use decisions.

Second, what are the risks of private delegation? Does the private delegate have any potential conflicts of interest that would lead it to diverge from the decision that a public agency would likely make? [\[FN161\]](#) Does the delegate only promulgate general rules, or does the delegate also apply the rules to particular entities or facts, raising greater concerns of private discrimination? The risk of

private delegation may depend on one's model of appropriate public decisionmaking. Under a pluralistic or representative model of government, the question will boil down to whether the private delegate represents a sufficiently broad segment of the public; if regulated entities are not represented, courts are likely to hold the private delegation unconstitutional. [FN162] Nonprofit land trusts, of course, do not typically represent the interests of developers or other aggressive users of land, and thus do not fare well under a pluralistic or representative model. Under a republican model of public decisionmaking, by contrast, the question turns to the deliberativeness of the decisionmaking. Viewed from this framework, *293 delegations to nonprofit land trusts often may seem less troubling. [FN163]

Finally, what safeguards does the legislation provide against any risks that the private delegation poses? [FN164] Does the legislation contain strict directives to the private delegate? Are the private delegate's regulatory decisions and actions subject to meaningful review by the government, through either an administrative process or by the courts? Are those individuals and entities subject to the regulation at least permitted to participate in the process by which the delegate makes its regulatory decisions? Despite initial concerns, delegations to land trusts might survive constitutional challenge if sufficiently hedged in by governmental oversight and restrictions.

V. Choices Among Financing Mechanisms

As Figure 5 illustrates, one of the major questions that the government faces in promoting land conservation is how to finance the conservation. Land conservation, as I noted at the outset of this paper, is inherently costly. Of course, this does not mean that the government should never encourage land conservation. The benefits of land conservation may (and often do) outweigh the costs. Indeed, over time, we have learned that the benefits of land conservation are far greater than historically recognized. [FN165] But even when the benefits make conservation worth pursuing, the government must still decide who should bear the costs.

Although the government enjoys an almost infinite variety of choices, the options can be usefully categorized into the three groups identified in Figure 5: (1) landowner financing through regulation; (2) government financing through taxes or other levies on a different, often broader set of citizens; and (3) leveraging of private contributions. In choosing among these options, the government should consider a variety of criteria. In addition to the considerations of discrimination and "fiscal illusion" already discussed *294 in connection with takings law in Part IV, these criteria include economic efficiency, administrative cost and complexity, horizontal and vertical equity, and fiscal responsiveness. [FN166]

Most of the interesting issues raised by land conservation involve considerations of economic efficiency, horizontal equity, and fiscal responsiveness. As discussed below, no financing option is clearly superior to the others across all criteria and in all circumstances. Indeed, the relative advantages and disadvantages of each option turn out to be very situation specific. The highly varied mix of financing tools actually used by governments in preserving private land thus should not be surprising.

A. Economic Efficiency

Whenever the government forces any segment of the population to finance a particular good or service such as conservation, the targets of the financing mechanism will take steps to avoid the burden. These steps often can create significant economic inefficiencies. Consider what is likely to happen if the government tries to finance a good or service through an income tax. Some individuals will try to avoid the tax by switching from work to leisure activities, distorting the optimal allocation of their time and the benefits to society as a whole (a "deadweight loss"). [FN167] Other individuals will try to evade the tax by switching to an underground economy, incurring unnecessary costs in trying to keep their economic transactions secret and forcing the government to pay for a higher level of surveillance and enforcement ("evasion costs"). [FN168] Finally, individuals will make often sizeable political investments to try to get the legislature to reduce their tax share ("political costs"). [FN169]

One goal in choosing among different financing options should be to try, if possible and if not outweighed by other goals, to minimize these avoidance costs.

As discussed below, neither regulation nor government financing is inherently more efficient in this regard. In some specific settings, however, regulation is likely to generate greater avoidance costs than using governmental funds to purchase needed property interests. Moreover, some forms of regulation and governmental *295 financing are likely to be more efficient than others. The choice of how to regulate land use or how to raise the funds for governmental purchases often may be more important than the choice between regulation and governmental purchase. Leveraging private contributions, by contrast, does enjoy an inherent advantage over direct government financing because it relies in part on voluntary contributions.

1. Regulatory Efficiency

All forms of regulation are likely to generate political costs as regulatory targets scramble to avoid the regulatory burden. The size of any deadweight loss and evasion costs, however, will depend on the nature of the regulation and the ability of regulatory targets to escape the regulation through economic actions. As I have elaborated elsewhere, the Endangered Species Act (ESA) is structured in a manner that maximizes efficiency losses. [FN170] Private land is free from regulation under the ESA unless (1) a species is dependent on the property for survival (which frequently is not known absent an environmental evaluation of the property), and (2) the species has been listed by the government as endangered or threatened (which requires a lengthy regulatory process and is thus predictable in advance by property owners). [FN171] Property owners therefore can often evade the ESA without great cost by destroying any viable habitat on their property either before a species is listed or before anyone discovers that the habitat exists. [FN172] The danger, which is one aspect of the so-called "Shoot, Shovel, and Shut-up" (or 3-S) syndrome, is not merely hypothetical. One empirical study of North Carolina forestry practices, for example, revealed that the proximity of forested land to endangered red-cockaded woodpeckers increased the probability that the land would be developed and decreased the age at which the trees were harvested. [FN173]

Not all regulatory programs will suffer from avoidance costs of the same size or destructiveness. The ESA raises significant efficiency concerns because property owners often find it relatively easy to evade its strictures and because the evasive action involves *296 exactly what the law was meant to avoid - destruction of endangered species' habitat. [FN174] Section 404 of the Clean Water Act, by contrast, is unlikely to produce the same level of efficiency loss. In contrast to the ESA, section 404 is automatically applicable to any wetland and does not depend on a triggering event (such as the listing of a species). The applicability of section 404 to particular properties will typically be more visible. In addition, the costs of covertly eliminating the wetland will generally be more expensive because the land must be drained or filled. All three differences make evasive actions, such as destruction of the wetland, less viable under section 404 than under the ESA.

Regulatory schemes thus do not inherently generate large efficiency losses. The size of losses will depend both on what is being regulated and on how it is regulated. Regulatory programs will work better in some settings - where, for example, evasion is more difficult or less costly societally - than in others. Congress can minimize efficiency losses, moreover, through the design of the regulatory program. In the case of the ESA, for example, Congress could reduce the evasion loss resulting from property owners who modify their land before a species is formally listed by extending the protections of the ESA back in time to the point when a petition for listing is filed or the federal Fish & Wildlife Service first proposes a listing. Given the difficulty in many cases of determining current habitat without inspecting a parcel of land, however, any scheme that links the degree of preservation to the land's status as habitat is unlikely to totally avoid the 3-S syndrome.

2. Efficiency in Taxes & Other Forms of Government Funding

Even if it will generate significant efficiency losses, regulation may still be preferable to the other financing mechanisms if the other mechanisms would generate greater efficiency losses. The efficiency losses from taxes and fees depend on the exact nature of the revenue mechanism. If efficiency were

the only concern, the federal government would not finance conservation with general tax revenue. Although attempts to measure the deadweight loss of existing federal taxes have generated inconsistent and often controversial results, the marginal efficiency loss from the primary taxes used by the federal government is almost certainly substantial. Estimates of the welfare loss from the federal income tax, *297 which encourages taxpayers to switch from work to leisure, range from 7 to 28 percent. [FN175] One well-known study in the mid-1980s of the marginal excess burden of the nation's overall tax system concluded that the welfare loss, resulting from distorted economic decisions, of a one percent increase in all taxes probably ranged from 17 to 56 cents for every extra dollar of revenue. [FN176]

At least in theory, other forms of fees and taxes are less troublesome and, in some cases, could increase efficiency. A significant portion of the federal revenue historically used for land conservation has come from explicit or disguised user fees. Under the federal duck stamp program, for example, all waterfowl hunters over the age of 15 must purchase and carry a federal duck stamp. [FN177] If set at a proper level, such user fees can efficiently allocate a common resource. [FN178] Other fees or taxes can increase efficiency by correcting existing economic distortions arising from externalities and perverse governmental incentives. [FN179] Fees or taxes on new land development can help to counterbalance the pro-development subsidies provided by government. They can also force property owners to take into account the externalities that the development imposes on area residents and the local ecosystem. [FN180] Fees or taxes on water use can internalize the opportunity cost of removing the water from the stream and, in the case of federal reclamation water, offset the sizable federal subsidies that currently encourage excessive use. [FN181]

Even where fees or taxes theoretically could provide allocative or corrective efficiency, however, excessive fees or taxes can reduce societal efficiency by discouraging people from engaging in an activity or using a resource that would lead to an overall increase in satisfaction. Because the government imposes few fees or taxes with efficiency explicitly in mind, the levels of current fees or taxes are unlikely to be set at an efficient level. Rather, the fees *298 and taxes tend to correlate with governmental revenue needs or other political goals. However, given that the fees and taxes are generally imposed on concentrated interest groups such as hunters or developers, the fees and taxes are more likely to be too low than excessive from a purely efficiency perspective. If so, the fees and taxes probably increase efficiency even if they do not provide for the most efficient use of resources.

3. The Efficiency Advantage of Leveraged Private Contributions

Leveraging private contributions should lead to less economic inefficiency than direct governmental financing. The private contributions are entirely voluntary; people are free to make contributions or not depending on how they value the particular conservation being provided. The only significant danger is setting so generous a tax incentive that an inefficiently high level of investment in conservation results. Given the likely level of free-riding that currently occurs, however, it is doubtful that the current charitable tax deduction - or even a full tax credit - would lead to a charitable over-investment in conservation. For all practical purposes, the only efficiency loss from leveraging private contributions stems from the increase, if any, in general tax rates needed to offset the revenue lost from the charitable tax deduction or other tax incentive. But the resulting tax increase and thus the accompanying deadweight loss will be only a fraction of those that would accompany a program of full governmental financing. [FN182]

B. Fairness

1. Regulatory Fairness

Fairness is simultaneously an extremely elusive criterion for judging between funding options and the most basic factor on which political debates over such options are waged. One could imagine assembling the land for a large public park through regulation: the government would decide randomly on an area to set aside as a commons, and then refuse to let the owners of land within the

borders of that area develop their properties. But the government has never taken this approach, in part perhaps for constitutional reasons, but more likely because the resulting financial burden would likely seem unfair and open to political influence. Most people would see it as unfair to force some property owners to bear unique losses based on factors over which the property *299 owners had no control or culpability, and which they could not predict in advance.

Similar concerns have motivated challenges to other forms of uncompensated land regulation. Opponents of ESA regulation, for example, have emphasized the apparent randomness of regulatory costs. [FN183] The ESA constrains land use by one farmer whose land is habitat for an endangered burrowing rodent, while a farmer less than a mile away remains free to use her land however she wants because the endangered rodents have not been spotted there. Moreover, although all development, past and present, has contributed to the endangered status of most species, only current developers are burdened by the ESA. [FN184]

The unequal burden on my two hypothetical farmers seems arbitrary to many people, much like the burden created by my hypothetical regulatory approach to assembling the land for a public park. The choice of which farmer to regulate is not totally random; property owners are singled out specifically because their land serves as valuable habitat. But the farmer who is host to the endangered rodent sees no reason why he should be subject to a greater public burden simply because his land turns out to host an endangered species. The criterion for selection does not appear to relate to the traditional criteria for allocating public fiscal burdens. The farmer is doing nothing different than his neighbor. He could not have predicted and thus avoided the burden, nor is he better able to deal with the financial loss than his neighbor. The farmer has simply lost the celestial lottery that determines where endangered species will turn up. The discovery that the farmer's land is valuable habitat is, to the farmer, nothing different than a bolt of lightning hitting his barn. Such distinctions in governmental burdens are not based on conscious choices, culpability, or ability to shoulder societal costs, and are deemed unfair by many members of society, even where the placement of the burden is not entirely random.

Even assuming that these distinctions are akin to lightning bolts, should society worry about this form of arbitrariness when not accompanied by obvious and conscious discrimination? People endure risks of arbitrary harm every day: houses burn down, people are struck by lightning. The government generally does not intervene except in cases of catastrophic disaster such as earthquakes, *300 floods, or hurricanes; instead, the government leaves the risks of arbitrary loss up to the private insurance market. However, regulatory risks may be different in at least three ways. First, with regulatory risks, government affirmatively chooses how to allocate the costs of land conservation. If the government were imposing a tax to fund biological work involving the protection and recovery of endangered species, choosing to tax only property owners who have endangered species on their land would strike many as unacceptably arbitrary. The fact that the tax is disguised as regulation, and that the government is funding land conservation rather than biological work, should not matter to the equity analysis. Second, for various reasons (including adverse possession and moral hazard), insurance is not currently available for the risks of governmental regulation. [FN185] Although some landowners can reduce the overall risk by diversifying their portfolio of land holdings, many landowners will not be able to eliminate the risk. Finally, it is often difficult to determine whether the risk of land regulation is purely arbitrary or also politically motivated. As noted earlier, ESA enforcement is not currently uniform, and politics plays a role in how the burden of ESA regulation is spread. [FN186]

The differences in burden placed on current and past developers also raise serious equity concerns. First, there is a mismatch of causation and burden. Species are now in danger because of the prior development of land, but only new development is regulated. There may be a non-political explanation for the distinction in regulation: the government did not regulate the earlier development because it did not know of the harm to biodiversity that the development posed. But this does not explain why some of the burden of the current regulation should not be borne by those existing residents who benefited from the prior development. In addition to this concern regarding equity is the fear that more conscious political discrimination is taking place in ESA regulatory decisionmaking. Having purchased a home in the area and reaped the benefits of prior development, current residents

may see regulation of new development as a means of solving a problem they contributed to without having to suffer any of the burden. Furthermore, if only a small amount of land remains undeveloped, current residents through their sheer numerical voting power may well enjoy greater ***301** political strength than the owners of the remaining undeveloped land.

It is important to recognize the narrowness of the arbitrariness concern. In some situations, seemingly arbitrary burdens might reflect valid distinctions among individuals. Current developers, for example, might have benefited from prior development which has increased the value of undeveloped sites; if so, imposition of additional burdens is not necessarily arbitrary. The question is whether the government has consciously chosen regulation for this reason (or would choose to allocate burdens based on land values if forced to fund conservation through taxes). Even where there is not a direct equitable justification for the burden allocation, moreover, there may be non-equity reasons for choosing regulations over taxes. Regulations, as discussed in the next section, might provide greater flexibility in adjusting to changing scientific information and needs. Some regulations might prove to be administratively simpler than broader based taxes. If a specific regulation is chosen for such reasons, the allocation of the burden is not arbitrary, but merely an unobjectionable consequence of a reasoned choice among policy instruments.

2. Tax Equity

An extensive literature exists on the equity implications of different taxes and fees. [\[FN187\]](#) As noted earlier, the federal government uses a variety of taxes and fees to support direct land preservation. In many cases, the matching of taxes or fees with specific land preservation efforts appears equitable. General national revenues, collected both through federal taxes and through the Land and Water Conservation Fund, appropriately go toward the acquisition of lands in many of the major national land systems, such as national parks. [\[FN188\]](#) In many other cases, the government pays for land of particular value to specific sectors of the population, such as hunters, ***302** recreational users, and wildlife refuge visitors, through user fees. [\[FN189\]](#) A number of habitat conservation plans under the Endangered Species Act use local development fees to partially finance habitat acquisition and preservation; unlike regulation, the fees are imposed on all developers and not simply those whose land is chosen for preservation (although temporal inequities might still exist between current and prior developers). [\[FN190\]](#) However, a closer look at the matching of revenue sources with land acquisition may raise significant equity issues. While we are used to thinking of Yosemite or Yellowstone when we think of national parks, for example, a number of the parks are small, local sites of little national interest or importance. [\[FN191\]](#) A taxpayer in Oregon might have a legitimate objection to being forced to support the Steamtown National Historic Site in Scranton, Pennsylvania.

3. Equity Issues in Leveraged Contributions

Just as the leveraged contribution option promises an efficiency advantage, it also offers more assured fairness than either regulation or full governmental funding. Private contributors voluntarily provide funding for land conservation to the degree that they believe the conservation will benefit them or the warm glow of philanthropy is rewarding to them. Although we might believe that conservation support should come from a broader portion of the population, offering an incentive for voluntary contributions certainly raises no specter of inequity. The only question, therefore, is how the incentive is financed. In an ideal system, the financing would come from taxes levied on those who also benefit from the conservation supported by the contributions but, consciously or subconsciously, are free riding. The current system of charitable tax deductions, which is effectively financed by income taxpayers generally, does not necessarily meet this latter criterion. To the degree that taxpayers contribute to organizations like the Nature Conservancy, which engage in nationwide conservation of general interest, federal income-taxpayers would seem an appropriate class to finance the deduction ***303** incentive. But taxpayers also receive deductions if they contribute to local land trusts such as the Essex County Greenbelt Association (which preserves the "open space heritage" of a single Massachusetts county), [\[FN192\]](#) the Heritage Foundation of Franklin & Williamson County (which preserves the "geographic and cultural heritage" of two Tennessee counties), [\[FN193\]](#) and the Land

Trust for Santa Clara County (which preserves open space in the urbanized region near Stanford University). [\[FN194\]](#) The case for nationwide support is not clear in these cases. What is the national interest in forcing me, for example, to contribute to the cultural heritage of Franklin and Williamson Counties? With over 1200 land trusts now operating in all 50 states, however, policymakers might conclude that the geographic distribution of the benefits and costs of the charitable tax deduction is likely to balance out to an acceptable degree. [\[FN195\]](#)

C. Fiscal Responsiveness

Ideally, the funding mechanism chosen by the government also should be responsive, on a timely basis, to changes in our knowledge regarding what and how much conservation is needed. What is "timely" will depend on the nature of the desired conservation. Speed may not be important where land is being conserved for public parks. Speed will often be crucial, however, where the government is trying to avoid irreversible losses. Consider again endangered species. With increases in scientific information, the government may learn that more, or different, land in a region must be conserved to protect endangered species. Given the already endangered status of the species, the government may need to act promptly on this information.

The logic of adaptive management highlights the importance of flexibility. [\[FN196\]](#) Currently, scientists simply do not know enough to develop permanent management plans for ecosystems and their critical components. Management instead must be an iterative process in which knowledge gained from monitoring the results of initial steps is used to modify those steps and, where necessary, ***304** identify supplementary actions. In many cases involving biological resources, moreover, speed is an important component in making the necessary adjustments. [\[FN197\]](#)

Where speed is of the essence, regulation initially appears to carry an advantage over both traditional tax funding and leveraged contributions. [\[FN198\]](#) If the Department of the Interior discovers that additional land must be preserved to protect an endangered species, section 9 of the ESA automatically limits development of that land; Interior need not seek new Congressional authorization. If Interior needed to fund the new measures through direct governmental expenditures, by contrast, it might need to return to Congress to obtain an additional appropriation. In a similar fashion, if the funding came from leveraged contributions, the government or NGOs might need to convince donors of the additional financial need, which would also slow reaction time.

The apparent advantage of regulation, however, is not as clear-cut as it might first appear; nor is governmentally financed conservation intrinsically less responsive to rapid changes in need. Regulation might allow a rapid response within its domain, but regulation is generally directed to specific issues, therefore constraining the field of responses. If new information suggests that new land uses are threatening endangered species, for example, the ESA provides a theoretically rapid response mechanism. However, the ESA would not be helpful if a need was identified to restore previously modified habitat. Political opposition, moreover, often slows the response time of regulation. [\[FN199\]](#) Because property owners bear the entire cost of regulation, they likely will strongly oppose any new regulatory action.

The response time of governmentally financed conservation, by contrast, is not inherently slow. The relative inflexibility that currently characterizes governmentally financed conservation stems from the traditional set of checks and balances imposed on most governmental spending. [\[FN200\]](#) Two types of flexibility can be added: the flexibility to reallocate resources, and the flexibility to add resources. ***305** The federal government can provide reallocative flexibility in a variety of fashions. One approach, which I have discussed at length elsewhere, is environmental brokerage. [\[FN201\]](#) The relevant governmental agency would be given a starting portfolio of resources, which could include funding and/or land, and permitted to manage the portfolio to maximize the benefits to the environment - much as an investment manager constantly reallocates funds to maximize the value of a financial portfolio. The agency could sell land in its portfolio and use the proceeds to purchase other land or resources that the agency believes, based on new scientific information or market developments, would be more valuable to its conservation goals. The federal government has adopted a variant of this scheme, known as an Environmental Water Account, in connection with its efforts to

better manage instream flows in the delta water system of northern California. [\[FN202\]](#) Congress also could provide agencies with the flexibility to add resources on an emergency basis. This could be accomplished either through some form of fast track appropriations system, or by appropriating an annual discretionary fund to be used when carefully specified needs arise. Congress, of course, is likely to balk at giving up traditional pre-expenditure review. But the substantive need, or lack thereof, for pre-expenditure review is unrelated to whether funding comes from general federal revenues or from regulation. If agencies cannot be trusted with discretion in the investment of public monies, why are they trustworthy in making regulatory determinations? Nothing about regulation, in short, makes it inherently more flexible of a tool for funding land conservation; current differences merely reflect historic institutional differences, not an intrinsic structural difference.

VI. Choices Among Organizations

As Figure 5 highlights, another major choice is which organizations should decide on and implement conservation goals. The same organization need not both set and implement goals. The government, for example, could decide on how much land should be conserved in a particular area and then award a grant to the Trust for Public Land or The Nature Conservancy to implement that goal. Under the major federal approaches to land conservation outlined in Part II, however, the functions are largely paired. ***306** The federal government, for example, generally decides on what federal land areas should be established and then acquires or withdraws the necessary land. Land trusts may play an important and creative role in the initiation or implementation of decisions by acquiring needed land from private owners and then reselling the land to the government, acquiring additional land in the area to establish a larger conservation unit, or donating land to the federal government to start a particular conservation unit. But the federal government generally plays the principal role in implementation of Congressionally-established goals. Similarly, with charitable deductions, land trusts both decide what lands to conserve and implement the decision.

A. Reconsidering Governmental Primacy

Historically, governments have played the principal role in both setting and implementing conservation goals. The case for governmental primacy in setting goals is extremely strong. Governments are representative of the entire population and thus are politically better suited than private land trusts or other non-governmental organizations (collectively "NGOs") to bear ultimate responsibility for the appropriate level and mix of land conservation. As discussed in the next section, however, land trusts permit groups of citizens who disagree with the government's decision to provide an additional amount or mix of conservation.

The case for governmental primacy in the implementation of Congressional conservation goals is considerably weaker. Although there is no evidence that NGOs are more efficient than the federal government in acquiring and managing conserved land, NGOs often have other advantages over the government in implementation. Property owners, for example, frequently feel more comfortable working with NGOs, in part because NGOs do not have split acquisition-regulatory responsibilities and thus are less suspect than the government. [\[FN203\]](#) Because land trusts often are locally based and staffed by local activists, NGOs also frequently have important contextualized knowledge of local environments and needs, both biological and social, that the central government may lack.

***307** The federal government can try to gain the same contextualized knowledge by devolving responsibility either to local federal employees or to local governments, but NGOs have inherent advantages over both approaches. Devolution within the federal government, perhaps counterintuitively, can actually intensify local communities' sense that they have no effective control over implementation: with devolution, the locus of power runs not from the local employee to the local community, but from the local employee to Washington, D.C., and then through Congress back to the local population. Decentralization within federal agencies thus can increase the degrees of separation between interested citizen and decisionmaker. Local governments are more responsive than federal agencies to local constituencies, but have inherent jurisdictional limits. Conservation today requires organizations that are coextensive with ever shifting "problemsheds," but governments are jurisdiction

bound. NGOs, by contrast, are often formed around, or can be morphed to meet, particular geographic and ecological issues. Today's land trusts address innumerable shapes and sizes of conservation needs, including: [\[FN204\]](#)

Small local areas sharing common heritages or conservation needs (e.g., the Huntsville Land Trust);

Larger intrastate regions (e.g., the Great Land Trust, which focuses on South-central Alaska);

Interstate regions (e.g., the Ozark Regional Land Trust, which operates in the Ozark Hills of Missouri, Arkansas, and Oklahoma);

Watersheds (e.g., the Broad River Watershed Association in Georgia);

Regional wetlands (e.g., the Huntington Beach Wetlands Conservancy in Southern California);

Trails (e.g., the Florida Trail Land Trust);

The needs of particular wildlife (e.g., the Rocky Mountain Elk Foundation in the western United States, or the Desert Tortoise Preserve Committee in Southern California);

Private lands within and around particular federal lands (e.g., the Rincon Institute, which acquires land near the Saguaro National Park, or the Wilderness Land Trust which acquires private inholdings in federal wilderness areas);

Forests (e.g., the Forest Trust which protects forest lands in the Four Corners region of the Southwest);

***308** Caves (e.g., the Southeastern Cave Conservancy);

A variety of other specific geographical features (e.g., the Lookout Mountain Land Trust in Alabama).

Despite the advantages of using NGOs for implementation, the government may still need to take the lead in several situations. First, as discussed in Sections III and IV, governmental agencies will generally need to exercise regulatory power for both constitutional and policy reasons. Ultimate authority for purely regulatory conservation thus must generally reside in the government. Where both land acquisition and regulation are being used to accomplish a particular conservation goal, moreover, centralizing implementation of both approaches in the same governmental agency can ensure coordination as well as economies of scale. Second, in some cases such as national parks, part of the value of the land lies in its public ownership. An NGO-owned Yellowstone would not provide the same value as Yellowstone National Park, which provides both a wondrous outdoor experience and also a communal sense of national heritage. Even in such situations, however, NGOs can still play a valuable role in helping assemble needed land.

Reflecting the need for more flexible organizations, even where government plays the principal implementation role, the federal government has begun to create ad-hoc assemblies of governmental agencies and stakeholders to address specific conservation needs. [\[FN205\]](#) Examples include the agency/stakeholder groups involved in the development of regional habitat conservation plans, [\[FN206\]](#) the CALFED process by which the federal government has tried to develop a plan for promoting and restoring the environment of the Sacramento-San Joaquin delta in Northern California, [\[FN207\]](#) and the various ad hoc groups assembled to help guide the government's restoration of areas such as the Florida Everglades. [\[FN208\]](#) Not surprisingly, land trusts are frequently key players in these special assemblies.

B. The Important Supplemental Role of Land Trusts

Land trusts also play several important supplemental roles. First, where individual citizens want more, or different, land conservation than the government provides, land trusts provide them ***309** with a means to satisfy their preferences. [\[FN209\]](#) The government is a monopolist, and citizens are required to accept the level of conservation preferred by the median voter. Some citizens would prefer to pay for less conservation, others would be willing to pay for more. Land trusts offer the latter citizens a competitive choice. If citizens highly value additional conservation, they can contribute money to the land trust and achieve a level or type of conservation that is closer to their preferences.

In a similar fashion, land trusts also can provide valuable guidance to the government in the setting of conservation goals. [\[FN210\]](#) Because the electorate is not regularly and directly polled on their conservation views, legislators have only a rough understanding of public demand for particular forms

of conservation. Contributions to land trusts provide additional information on public demand. If contributions to land trusts rise or move toward one or another form of conservation, the contributions provide the government with valuable evidence that governmental conservation investments may need to be recalibrated. Here too, land trusts provide a benefit akin to competition: by offering options, the land trusts provide valuable market information.

Land trusts also can provide competition of ideas and technology. [\[FN211\]](#) Efforts to protect Attwater's greater prairie chicken, an endangered grouse that historically inhabited the Texas gulf coast, illustrate the point. [\[FN212\]](#) The federal government, which already manages a prairie chicken wildlife refuge in a rural area outside Houston, was offered the opportunity in the early 1990s to acquire another small parcel of habitat in the middle of Texas City, a highly industrial area next to Galveston. The federal government turned down the offer, believing that the land was too small and isolated to serve as effective habitat. TNC, however, acquired the property, which has now proven to be even more effective habitat than the larger governmental reserve (probably because its industrial surroundings provide the prairie chicken with greater protection from predators). Given the high level of uncertainty in conservation science, ***310** multiple and competing approaches are exceptionally valuable.

Finally, land trusts are generally more agile than the government in promoting conservation. The federal government is burdened by a wide variety of procedural safeguards designed to protect the public from abuse of governmental power. While providing important safeguards, these protections also slow the reaction time of the government. Land trusts therefore can often respond faster than the government to market opportunities (e.g., a property that has suddenly come on the market) and to changing demands and scientific information.

Most, but not all, of these advantages call for governmental support of land trusts through grants or tax incentives. The fact that land trusts give citizens who want more conservation an opportunity to better meet their preferences by itself does not argue for direct governmental support. Even if the government provides no support, citizens still can contribute to land trusts as they see fit. However, to the degree that land trusts develop competitive approaches and are more agile, the government has an interest in promoting their conservation efforts. If contributions to particular land trusts also reflect more general public demand for the conservation that those land trusts provide, charitable tax deductions also provide a mechanism for better directing governmental funding to appropriate conservation measures by linking federal funding to the private contributions.

VII. Influencing Preferences & Behavior

Recent academic scholarship has shown an increasing interest in the role that law can play in changing preferences and influencing voluntary behavior. Several scholars, in particular, have suggested that regulation, in contrast to markets, may help promote an ethic consistent with the goals of the underlying regulation. [\[FN213\]](#) Under this argument, protecting habitat through the ESA would be preferable to purchasing needed habitat because over time property owners would be more likely to develop an internal understanding of and belief in the importance of managing their land in a way that is protective of endangered species.

Social science research, however, does not provide clear guidance on how the choice of governmental intervention will affect ***311** landowner preferences or norms. A significant body of psychological and economic literature suggests that monetary payments, by themselves, are unlikely to promote the development of an environmental ethic. [\[FN214\]](#) If landowners are compensated for conservation, they will respond by looking for profitable opportunities to conserve, but their conservation efforts will not extend beyond the reward; remove the reward and landowners will conserve no more than before. Of greater concern, financial payments sometimes can "crowd out" existing altruistic behavior.

[\[FN215\]](#) Landowners who previously might have preserved land for ethical reasons might no longer be willing to preserve the land unless paid. In extreme circumstances, the level of preservation theoretically could even decrease. [\[FN216\]](#)

Regulation, however, might well have the same type of effect. [\[FN217\]](#) So long as landowners are forced to conserve by the ESA or other regulatory regimes, they will do so (albeit often fighting along

the way), but there is no evidence that they will increase their level of voluntary conservation; end the regulation and the landowners are likely to return to their previous practices. Here again, moreover, the regulation might "crowd out" altruistic behavior on the part of landowners. [\[FN218\]](#) This is exactly what happened in one experiment examining timber cutting in rural Columbia. [\[FN219\]](#) In a series of games played in rural Columbian villages and designed to replicate actual decisions, researchers found that villagers considered the adverse impact on local water supplies in deciding how many trees to cut down; rather than maximizing personal economic wealth, villagers behaved in quasi-altruistically. When an imperfectly-enforced regulatory system was imposed on the villagers telling them the maximum *312 number of trees that they could cut down, however, the villagers actually increased their cutting.

We still know very little about the exact ways in which governmental interventions, whether financial or regulatory, interact with preferences, norms, or individual behavior. The interactions are certainly complex. One reason why governmental interventions may "crowd out" altruistic land conservation, however, is the psychological phenomenon known as "over justification." [\[FN220\]](#) Individuals who are paid to engage in an activity that they already believe is valuable, or who are penalized if they do not engage in the activity, reduce the value that they place on the activity. Students who believe that learning a particular subject matter is valuable, for example, become less convinced of its value if paid to study it or told that they will be penalized if they do not study it. Psychologists suggest that people reason that the activity must not be as valuable as they thought if someone has to pay or penalize people to get them to engage in the activity; the value of the action thus becomes "over justified." In a similar fashion, for property owners already inclined to conserve, paying for conservation or penalizing development may undermine their sense that conservation is intrinsically valuable and thus make them less inclined to conserve voluntarily. While the payment or penalty may lead property owners to engage in the specific conservation that the payment or penalty is designed to encourage, property owners will not engage in other conservation and may be less inclined than before to conserve if the payment or penalty is eliminated.

Psychological studies, however, suggest that people will become more inclined to engage in a voluntary activity if they are rewarded with social praise or if an optional material reward appears to acknowledge the intrinsic motivation with which the person acts. [\[FN221\]](#) In these cases, people internalize the reward and increase the value that they attach to the rewarded activity. People who are thinking about engaging in the activity and are aware of the reward become more likely to act. Charitable tax deductions therefore may have a more favorable impact on land ethics than either direct governmental acquisition or regulation. Individuals who contribute either money or property *313 to land trusts believe that the contributions are important; otherwise, they would not make the contribution, which, even after the tax deduction, still has a net cost to the donor. Charitable tax deductions in our society are an implicit form of social praise; they reward such donors because the donors are being socially helpful. Charitable tax deductions also provide donors with an optional material reward; donors need not claim the deduction. Although there is no empirical study of how charitable tax deductions affect landowners' views on conservation, current psychological research suggests that charitable tax deductions should increase the intrinsic value that landowners attach to conservation.

VIII. Concluding Thoughts

Additional research is needed to understand fully the advantages and disadvantages of the alternative mechanisms available to the government to preserve environmentally valuable land currently in private hands, the actual effects of existing governmental programs, and the appropriate mix of governmental programs. Existing information and analyses, however, suggest half a dozen or so starting policy observations and recommendations.

First, the government should promote further commercial and philanthropic conservation. Compared to governmental conservation through direct acquisitions or regulation, commercial and philanthropic conservation raises fewer efficiency and fairness concerns, enjoys greater speed and flexibility, and faces less political opposition and constitutional constraints. Philanthropic conservation, particularly when recognized and rewarded by tax deductions and other governmental acknowledgements, also

can help promote a conservation ethic, and thus increase voluntary conservation efforts by property owners, to a far greater degree than either governmental regulation or directly governmental acquisition of property rights.

The federal and state governments therefore should work to further promote and not undercut commercial and philanthropic conservation. Governments can promote commercial conservation by developing new mechanisms for resolving coordination problems (e.g., ecosystem service districts and securitized ecosystem services) and ensuring that regulatory systems and governmental conservation programs do not undercut the incentive to invest in land conservation. Governments can promote philanthropic conservation by increasing current tax incentives for donations of land and money and by being careful not to "crowd out" philanthropic giving. *314 Studies suggest that increased tax incentives would be cost effective: for every additional dollar in tax revenue given up, more than a dollar in contributions would flow to land trusts.

Second, even with increases in commercial and philanthropic conservation, there will still remain a need for substantial governmental conservation. Although commercially-valuable ecosystem services are extensive, land conservation also provides a variety of public goods that commercial conservation will never adequately produce. And despite tax incentives, philanthropic conservation will never reflect the full value that the public attaches to land conservation because of each person's incentive to free ride on others' information-gathering and donations.

Third, the federal government should consider using land trusts even more extensively in its own conservation efforts. The work of land trusts is already intricately linked with the conservation efforts of the federal government; land trusts acquire and reconvey land to governmental agencies, engage in significant research of importance to governmental conservation, and advise governmental efforts. Land trusts, however, enjoy a number of advantages over governmental agencies - including their flexibility in structuring around specific problemsheds and conservation needs - of which the federal government could make significantly greater use. In a similar vein, where responsibilities for local or regional conservation efforts cannot be delegated to land trusts, the federal government should continue to experiment with the formation of ad-hoc, problem-defined working groups.

Fourth, the federal government should encourage voluntary contributions to governmental conservation work. Leveraging voluntary contributions is preferable to both regulation and direct governmental financing. Congress should authorize federal land agencies to retain monetary contributions made to the agencies and should increase tax incentives for contributions to such agencies or to conservation agencies within state and local governments. Because potential donors may reasonably fear that any contributions will go merely to offset appropriations, legislatures should ensure long-term, dedicated funding for conservation (with the additional benefit of giving land agencies an opportunity to engage in more carefully planned and flexible conservation).

Fifth, regulation often is - an inferior conservation tool to direct governmental acquisition. Because of constitutional constraints, regulation is not as robust of a tool; while regulation may be able to restrict development of land, for example, it is an awkward tool *315 at best for requiring restoration.

Regulation also tends to drown out rational considerations of cost; costs get considered, but through political opposition rather than an open public balancing of costs and benefits. Finally, regulation raises considerable fairness issues and, in some cases, generates greater economic inefficiencies than government-financed conservation. Whether regulation or government-financed conservation is preferable in any given instance, however, depends on a context-specific analysis.

Sixth, where the federal government directly finances conservation, it should consider the efficiency implications of the funding mechanism. The federal government should make greater use of user fees and of taxes that correct for existing subsidies or market imperfections.

Finally, the federal government should look for ways to reduce the response time of its conservation efforts to new information and needs. At the moment, this is one of the perceived advantages of regulation. But regulation does not always have as quick of a response time as its supporters suggest. And there are a variety of mechanisms for making governmental conservation more adaptive on a short time scale, including the concept of governmental brokerage discussed in Part V.

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Senior Scholar, Stanford Institute for International Studies. I would like to thank Professor Jon Cannon and the Virginia Environmental Law Journal for sponsoring the Conference on Saving Nature:

Theories, Tools and Strategies in Environmental Conservation and to thank the other speakers and participants at the conference for their many helpful comments and suggestions.

[FN1]. See Gretchen C. Daily, Introduction: What are Ecosystem Services?, in *Nature's Services: Societal Dependence on Natural Ecosystems 1* (Gretchen C. Daily ed., 1997) (noting the valuable services provided by natural ecosystems); Sandra Postel & Stephen Carpenter, *Freshwater Ecosystem Services*, in *Nature's Services: Societal Dependence on Natural Ecosystems 195, 206-07* (Gretchen C. Daily ed., 1997) (noting potential non-use values); Andrew Wilcox & John Harte, *Ecosystem Services in a Modern Economy: Gunnison County, Colorado*, in *Nature's Services: Societal Dependence on Natural Ecosystems 311* (Gretchen C. Daily ed., 1997) (discussing the costs to a local community of developing regional land and resources). See also Trust for Public Lands, *The Economic Benefits of Parks and Open Space* (May 1999) (discussing the multiple economic benefits of land preservation).

[FN2]. For the classic justification of a utilitarian approach to environmental and resource issues which recognizes the cost of producing the environmental amenity, see William F. Baxter, *People or Penguins: The Case for Optimal Pollution 1-12* (1974).

[FN3]. These lands constituted about 95 percent of the federal public domain (with most of the remaining land managed by the Department of Defense). See U.S. Gen. Accounting Office, *Land Ownership: Information on the Acreage, Management, and Use of Federal and Other Lands 2* (1996).

[FN4]. See *id.* at 2-6, 27 (showing amounts of land owned and acquired by the federal government between 1964 and 1994).

[FN5]. See George Cameron Coggins et al., *Federal Public Land and Resources Law 11* (4th ed. 2001) (public lands constitute about two-thirds of Alaska and nearly half of the land in the eleven coterminous western states, but less than five percent of the land in the remaining states).

[FN6]. Reed F. Noss & Allen Y. Cooperrider, *Saving Nature's Legacy: Protecting and Restoring Biodiversity 71-72* (1994); Dale A. Oesterle, [Public Land: How Much is Enough?](#), *23 Ecology L.Q. 521, 568* (1996); Evan van Hook, [The Ecocommons: A Plan for Common Property Management of Ecosystems](#), *11 Yale L. & Pol'y Rev. 561, 566-67* (1993).

[FN7]. John A. Baden & Pete Geddes, [Environmental Entrepreneurs: Keys to Achieving Wilderness Conservation Goals?](#), *76 Denv. U.L. Rev. 519, 530* (1999); Robert B. Keiter, [Assessing the Challenges Ahead](#), *69 Chi.-Kent L. Rev. 911, 926* (1994).

[FN8]. David Farrier, [Conserving Biodiversity on Private Land: Incentives for Management or Compensation for Lost Expectations](#), *19 Harv. Envtl. L. Rev. 303, 317-18* (1995).

[FN9]. U.S. General Accounting Office, *Endangered Species: Information on Species Protection on Nonfederal Lands 4-6* (1994).

[FN10]. *Id.* at 5.

[FN11]. See Brad Karkkainen, *Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism*, ?? Va. Envt'l L.J. ?? (2001)[need a cite for this!]; Sean T. McAllister, [Community-Based Conservation: Restructuring Institutions to Involve Local Communities in a Meaningful Way](#), *10 Colo. J. Int'l Envtl. L. & Pol'y 195* (1999); Stephen M. Nickelsburg, [Mere Volunteers? The Promise and Limits of Community-Based Environmental Protection](#), *84 Va. L. Rev. 1371* (1998).

[FN12]. See, e.g., Marla E. Mansfield, [When "Private" Rights Meet "Public" Rights: The Problem of Labeling and Regulatory Takings](#), *65 U. Colo. L. Rev. 193* (1994).

[FN13]. See Richard Corner & Todd Sandler, *The Theory of Externalities, Public Goods, and Club Goods* (2d ed. 1996).

[FN14]. See Paul McHugh, *Issues Crystal Clear in Peninsula Watershed Debate*, *S.F. Chron.*, Feb. 17, 2000, at E8.

[FN15]. See Barton H. Thompson, Jr., [Markets for Nature](#), *25 Wm. & Mary Envtl. L. & Pol'y Rev.* 261, 299 (2000) (noting, however, that water suppliers nationwide on average own only approximately two percent of the land in their watersheds).

[FN16]. [Id. at 298-301.](#)

[FN17]. For a discussion of the reasons why various entities might preserve land for their potential "ecosystem services," see James Salzman et al., [Protecting Ecosystem Services: Science, Economics, and Law](#), *20 Stan. Envtl. L.J.* 309 (2001).

[FN18]. See James R. Rinehart & Jeffrey J. Pompe, *Private Entrepreneurship & Environmental Amenities: The Case of Coastal Beaches*, *14 J. Private Enterprise* 1 (1998); James R. Rinehart & Jeffrey J. Pompe, *Entrepreneurship and Coastal Resource Management*, *1 Indep. J.* 543 (1997). Cf. Dean Lueck, *The Rule of First Possession and the Design of the Law*, *38 J. L. & Econ.* 393, 423-24 (1995) (observing that the "conversion of a private beach into a public beach may well lead to crowding and pollution of the beach").

[FN19]. See Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, *53 U. Chi. L. Rev.* 711, 771-81 (1986); Barton H. Thompson, Jr., *Environmental Policy and State Constitutions: The Potential Role of Substantive Guidance*, *27 Rutgers L.J.* 863, 887 (1996).

[FN20]. See, e.g., Terry L. Anderson & Donald R. Leal, *Free Market Environmentalism* 66-69 (Palgrave rev. ed. 2001) (describing conservation efforts stemming from hunting demand).

[FN21]. See Land Trust Alliance, *1998 National Directory of Conservation Land Trusts* (identifying 1213 local and regional land trusts in the United States and its territories) [check this citation--need source!].

[FN22]. See *id.* at 197-99.

[FN23]. Every state currently enjoys at least one land trust, with the greatest number found in New England. See *id.* at vii.

[FN24]. See *id.* at xiii. The smallest amounts of land - less than 100,000 acres in 1998- were protected in the Plains and the Southwest United States. See *id.*

[FN25]. See Eric J. Brunner, *Free Riders or Easy Riders?: An Examination of the Voluntary Provision of Public Radio*, *97 Pub. Choice* 587 (1998).

[FN26]. Thompson, *supra* note 15, at 302-03.

[FN27]. See National Research Council, *Watershed Management for Potable Water Supply: Assessing the New York City Strategy* (2000) (describing and critiquing New York City's efforts); The Trust for Public Land, *Protecting the Source: Land Conservation and the Future of America's Drinking Water* 18-20 (1997) (describing the city's program); Scott D. Anderson, [Watershed Management and Nonpoint Source Pollution: The Massachusetts Approach](#), *26 B.C. Envtl. Aff. L. Rev.* 339, 376-77 (1999)

(describing the city's efforts to avoid filtration requirements under the federal Safe Drinking Water Act).

[FN28]. Thompson, *supra* note 15, at 303.

[FN29]. *Id.* at 304-05.

[FN30]. See, e.g., Brian P. Baker, *Pest Control in the Public Interest: Crop Protection in California*, 8 *UCLA J. Envtl. L. & Pol'y* 31, 39-47 (1988) (discussing the history and function of pest control districts); Barton H. Thompson, Jr., *Institutional Perspectives on Water Policy and Markets*, 81 *Cal. L. Rev.* 673, 686-95 (1993) (discussing the history and function of irrigation districts and other local water districts).

[FN31]. For more detailed discussions of the concept of ecosystem service districts, see Thompson, *supra* note 15, at 306-07 (discussing the idea of watershed districts); Barton H. Thompson, Jr., [People or Prairie Chickens: The Uncertain Search for Optimal Biodiversity](#), 51 *Stan. L. Rev.* 1127, 1177-78 (1999); Geoffrey Heal et al., [Protecting Natural Capital Through Ecosystem Service Districts](#), 20 *Stan. Envtl. L.J.* 333 (2001).

[FN32]. See Gary Paul Nabhan & Stephen L. Buchmann, *Services Provided by Pollinators*, in *Nature's Services: Societal Dependence on Natural Ecosystems* 133 (Gretchen C. Daily ed., 1997) (discussing the value of wild pollinators and the concomitant need for wildlands habitat).

[FN33]. See Thompson, *supra* note 31, at 1177 (discussing the idea of pollination credits).

[FN34]. For the history of San Francisco's efforts to use the Hetch Hetchy Valley as its water reservoir, see Holway R. Jones, *John Muir and the Sierra Club: The Battle for Yosemite*, 82-169 (1965); Brian E. Gray, *The Battle for Hetch Hetchy Goes to Congress*, 6 *Hastings W.-N.W. J. Env. L. & Pol'y* 199 (2000).

[FN35]. For some of the classic expositions of the "crowding out" theory, see Russell D. Roberts, *A Positive Model of Private Charity and Public Transfers*, 92 *J. Pol. Econ.* 136, 137, 141-47 (1984); Peter G. Warr, *Pareto Optimal Redistribution and Private Charity*, 19 *J. Pol. Econ.* 131 (1982).

[FN36]. See Bruce Kingma, *An Accurate Measure of the Crowd-Out Effect, Income Effect, and Price Effect for Charitable Contributions*, 97 *J. Pol. Econ.* 1197, 1203 (1987).

[FN37]. See, e.g., Charles T. Clotfelter, *Federal Tax Policy and Charitable Giving* 78-79 (1985) (showing a five percent effect); Burton A. Abrams & Mark D. Schmitz, *The Crowding Out Effect of Governmental Transfers on Private Charitable Contributions: Cross Section Evidence*, 37 *Nat'l Tax J.* 563 (1984) (showing a twenty-eight percent effect); Eric Brunner, *An Empirical Test of Neutrality and the Crowding-Out Hypothesis*, 92 *Pub. Choice* 261 (1997) (showing a 7.5 percent effect).

[FN38]. Several experiments, for example, have found that government contributions to the supply of a public good result in a decline in private contributions of over seventy percent. See James Andreoni, *An Experimental Test of the Public-Goods Crowding-Out Hypothesis*, 83 *Am. Econ. Rev.* 1317 (1993) (finding a seventy-one percent decline); Gary E. Bolton & Elena Katok, *An Experimental Test of the Crowding Out Hypothesis: The Nature of Beneficent Behavior*, 37 *J. Econ. Behav. & Org.* 315 (1998) (finding a 73.7 percent decline). Some early models of the crowding-out effect suggested that government support should crowd out private contributions on a complete dollar-per-dollar basis. See, e.g., Warr, *supra* note 35. But more nuanced models have suggested that the crowding-out effect should be partial, which is supported by both the empirical and experimental results. See, e.g., Andreoni, *supra*.

[FN39]. Some economists have suggested that, contrary to the traditional crowding-out theory,

governmental contributions toward a non-profit's supplying of a public good could generate greater private contributions to the non-profit by priming the pump. See, e.g., Susan Rose-Ackerman, *Do Government Grants to Charity Reduce Private Donations?*, in *The Economics of Nonprofit Institutions* 313 (Susan Rose-Ackerman ed., 1986). This possibility is analyzed further in Part V below.

[FN40]. See Bolton & Katok, *supra* note 38, at 316-17.

[FN41]. See Andreoni, *supra* note 38; Bolton & Katok, *supra* note 38, at 320.

[FN42]. In fact, political shifts might have a greater crowding-out effect than governmental decisions over what conservation programs to create and fund. If control of Congress or the White House shifts from the Republican to the Democratic party, for example, citizens who previously gave to land trusts might assume that governmental funding of land conservation programs will increase and thus reduce their contributions - no matter what the reality of actual governmental spending is.

[FN43]. [16 U.S.C. § 1538 \(1999\)](#). For an extended discussion of section 9 of the Endangered Species Act, see *The Endangered Species Act: A Stanford Environmental Law Society Handbook* 104-26 (2001).

[FN44]. San Bruno Mountain is host to one of the last remaining habitats of the callippe silverspot butterfly. Even before the butterfly was designated an endangered species, the local government had insisted that two-thirds of the mountain remain undeveloped. Efforts to protect the butterfly under the ESA, however, preserved ninety percent of the mountain from development. For discussions of the San Bruno Mountain Habitat Conservation Plan (which led to the addition of section 10 of the ESA), see Lindell L. Marsh, [Conservation Planning under the Endangered Species Act: A New Paradigm for Conserving Biological Diversity](#), 8 *Tul. Envtl. L.J.* 97 (1994); Robert D. Thornton, *The Endangered Species Act: Searching for Consensus and Predictability: Habitat Conservation Planning under the Endangered Species Act of 1973*, 21 *Envtl. L.* 605 (1991).

[FN45]. [33 U.S.C. § 1344 \(2001\)](#). For detailed overviews of section 404 and federal regulation of wetlands, see Paul R. Cylinder et al., *Wetlands Regulation: A Complete Guide to Federal and California Programs* (1995); Steven M. Silverberg and Mark S. Dennison, *Wetlands and Coastal Zone Regulation and Compliance* (1993).

[FN46]. [16 U.S.C. §§ 3821-3824 \(2001\)](#). In particular, farmers lose benefits if they convert non-exempt wetlands without complying with an approved wetland conservation plan. Exempt wetlands include those that were previously converted or artificially created or that can be farmed with minimal environmental impact. See Jeffrey A. Zinn, *Soil and Water Conservation Issues* (Cong. Res. Serv. Issue Brief No. 96030, Aug. 20, 2001), at <http://cnie.org/NLE/CRSreports/Agriculture/ag-18.cfm> (last visited Apr. 15, 2002) (describing the Swampbuster program). Whether the Swampbuster program should be considered a "regulatory" program is debatable: it protects wetlands primarily by removing federal benefits that encourage wetlands destruction. At the same time, however, the Swampbuster program does discourage specific land use practices through the threat of a negative economic sanction - the denial of federal agricultural benefits.

[FN47]. In February 1998, the Clinton Administration announced a Clean Water Action Plan that called for a coordinated strategy regarding wetlands that would provide for a net gain of up to 100,000 acres of wetlands annually through 2005. See *Clean Water Action Plan: Restoring and Protecting America's Waters*, at <http://www.cleanwater.gov/> (last modified Jan. 19, 2001); Jeffrey A. Zinn & Claudia Copeland, *Wetland Issues* (Cong. Res. Serv. Issue Brief No. 97014, Aug. 7, 2001), at <http://cnie.org/NLE/CRSreports/Wetlands/wet-5cfm>. (last visited Apr. 15, 2002). But this plan involves multiple strategies, including acquisition and restoration of wetlands, and thus does not provide any direct estimate of the current impact of the Clean Water Act regulatory regime.

[FN48]. The U.S. Fish and Wildlife Service estimates that approximately 117,000 acres of wetlands were lost each year from 1985-1995, down sixty percent from the loss rate that prevailed in the prior decade. Teresa Opheim, *Wetland Losses Continue But Have Slowed*, 19 Nat'l Wetlands Newsl. 7 (1997). Between 1954 and 1974, the annual loss rate stood at almost 500,000 acres annually. Zinn & Copeland, *supra* note 47.

[FN49]. See Ralph E. Heimlich et al., *Wetlands and Agriculture: Private Interest and Public Benefits* 29 (U.S. Dep't of Agric., Agric. Econ. Report No. 765, Sept. 1998) (discussing the role of the agricultural economy).

[FN50]. *Id.* at 29.

[FN51]. See *id.* at 38 (noting that section 404 has been criticized as ineffectual); Joseph G. Teis, [Wetlands Loss and Agriculture: The Failed Federal Regulation of Farming Activities under Section 404 of the Clean Water Act](#), 9 Pace Env'tl. L. Rev. 1 (1991) (criticizing the ineffectiveness of section 404).

[FN52]. See Heimlich et al., *supra* note 49, at 22 (stating that there is no reliable way to estimate the extent of land subject to section 404).

[FN53]. The Corps has not tried, at least publicly, to estimate the total acreage subject to regulation under section 404. Most observers, however, believe that section 404 extends to a large subset of those lands that scientists would consider wetlands. See, e.g., Zinn & Copeland, *supra* note 47. In 2000, a report issued by the Congressional Research Service estimated that approximately twenty percent of the nation's wetlands were excluded from regulatory oversight. *Id.* The Corps' jurisdiction over wetlands further shrank in early 2001 when the United States Supreme Court overturned the Corps' "Migratory Bird Rule," under which it had claimed jurisdiction over isolated wetlands that served as habitat for migratory birds. [Solid Waste Agency v. United States Army Corps of Engineers](#), 531 U.S. 159 (2001).

[FN54]. In 1998, the federal Court of Appeals for the D.C. Circuit overturned the so-called "Tulloch" rule, under which the Corps had tried to use its wetlands jurisdiction to prevent developers from draining wetlands. See [National Mining Ass'n v. Army Corps of Engineers](#), 145 F.3d 1399 (D.C. Cir. 1998). The Swampbuster program, described in the text below, addresses the draining of wetlands, but only in connection with farming.

[FN55]. [33 U.S.C. § 1344\(f\)](#) (2001).

[FN56]. Zinn & Copeland, *supra* note 47.

[FN57]. Heimlich et al., *supra* note 49, at 27. During the Clinton Administration, however, efforts were made to tighten the requirements for nationwide permits. *Id.* at 38.

[FN58]. U.S. Gen. Accounting. Office, *Wetlands: The Corps of Engineers' Administration of the Section 404 Program* (July 1988).

[FN59]. Zinn & Copeland, *supra* note 47. Less than one percent of all applications for individual permits are denied. Heimlich et al., *supra* note 49, at 27.

[FN60]. See White House Office of Environmental Policy, *Protecting America's Wetlands: A Fair, Flexible and Effective Approach* (1993) (endorsing goal of no net loss); Michael C. Blumm, [The Clinton Wetlands Plan: No Net Gain in Wetlands Protection](#), 9 J. Land Use & Env'tl. L. 203, 226 (1994).

[FN61]. See, e.g., Virginia S. Albrecht & Bernard N. Goode, *Wetland Regulation in the Real World* (1994); J. Alvaay & J.S. Baen, *The Implications of Federal Wetland Protection Programs for the Real Estate Appraisal Industry*, 5 *J. Real Est. Res.* 153 (1990).

[FN62]. Heimlich et al., *supra* note 49, at 22.

[FN63]. *Id.* at 42. Since 1985, moreover, the Swampbuster program has been largely on administrative hiatus because of controversy over wetland delineation. Zinn & Copeland, *supra* note 47.

[FN64]. Heimlich et al., *supra* note 49, at 28.

[FN65]. *Id.* at 37.

[FN66]. The federal government has released no public data on the impact of the ESA on land conservation, perhaps because any data could be used to argue against the ESA - little impact would suggest the ESA is not effective, while a large impact would fuel attacks by property rights advocates. For largely political reasons, ESA opponents have developed a litany of examples of how the ESA is impacting property owners, but the same examples are cited repeatedly and do not appear to be typical of nationwide experience.

[FN67]. See Albert C. Lin, [Participants' Experiences with Habitat Conservation Plans and Suggestions for Streamlining the Process](#), 23 *Ecology L.Q.* 369 (1996) (discussing the habitat conservation plan process and providing data on its implementation).

[FN68]. See U.S. Fish & Wildlife Service, *Endangered Species: Habitat Conservation Planning*, at <http://endangered.fws.gov/hcp/index.html> (last updated Feb. 8, 2001) (providing current data on habitat conservation plans); Marj Nelson, *Habitat Conservation Planning*, 24 *Endangered Species Bull.* 12, 13 (Nov. 1999) (describing habitat conservation planning status at end of 1999).

[FN69]. See, e.g., Barton H. Thompson, Jr., *The Endangered Species Act: A Case Study in Takings & Incentives*, 49 *Stan. L. Rev.* 305, 317, 380 *tbl. 7* (1997) (describing and providing data on mitigation measures proposed in habitat conservation plans between June 1, 1994 and June 30, 1996); U.S. Gen. Accounting Office, *Endangered Species Act: Fee-Based Mitigation Arrangements* (2001) (describing fee-based mitigation provisions of habitat conservation plans).

[FN70]. See Thompson, *supra* note 69, at 320-21 (describing how some regional habitat conservation plans shift costs onto general taxpayers); Eugene H. Buck & M. Lynne Corn, *Endangered Species: Difficult Choices* (Cong. Res. Serv. Issue Brief No. 10072, Sept. 5, 2001), at <http://cnie.org/NLE/CRSreports/Biodiversity/biodv-1.cfm> (last visited Apr. 15, 2002) (noting that federal and state governments spent about \$230 million in fiscal year 1993 in implementing the Endangered Species Act, eighteen percent of which was spent on land acquisition).

[FN71]. See Thompson, *supra* note 69, at 316-17 (describing the relatively unique role of the Endangered Species Act in the Balcones region of Austin, Texas).

[FN72]. For a detailed criticism of the limited role of cost under the Endangered Species Act, see Thompson, *supra* note 31, at 1139-65. See also Pamela Baldwin, *The Endangered Species Act: Consideration of Economic Factors* (Cong. Res. Serv. RL 30792, Jan. 5, 2001), at <http://cnie.org/NLE/CRSreports/Biodiversity/biodv-39.cfm> (last visited Apr. 15, 2002) (describing the limited role of economics in the formal implementation of the Endangered Species Act).

[FN73]. [16 U.S.C. § 1538\(a\)\(1\)](#)(13) (2000). See [U.S.C. § 1532\(19\)](#) (2000) for the definition of "take."

[FN74]. Under section 10, the government can issue an incidental take permit only if it determines that (1) the taking is incidental to a lawful activity (such as developing a parcel of land), not purposeful, and (2) the applicant has devised an acceptable habitat conservation plan that minimizes the activity's impact on endangered species "to the maximum extent practicable" and ensures that the species' likelihood of continued survival and recovery is not "appreciably reduce[d]." [16 U.S.C. § 1539\(a\)\(2\)\(B\)](#) (2000).

[FN75]. See U.S. Fish & Wildlife Serv. & Nat'l Marine Fisheries Serv., *Habitat Conservation Planning Handbook* 7-4 to 7-5 (1996).

[FN76]. [16 U.S.C. § 1539\(a\)\(1\)\(B\)](#) (2000).

[FN77]. U.S. Fish & Wildlife Serv. & Nat'l Marine Fisheries Serv., *supra* note 75, at 7-3. See J.B. Ruhl, *How to Kill Endangered Species Legally: The Nuts and Bolts of Endangered Species Act "HCP" Permits for Real Estate Development*, 5 *Envtl. L.* 345, 382-83 nn.126-28 (1999) (describing the practicability test as pushing landowners "to the limit of economic feasibility").

[FN78]. [40 C.F.R. § 230.10\(a\)\(2\)](#) (2001).

[FN79]. See Thompson, *supra* note 31, at 1151-52; Amy Whitenour Ando, [Waiting to Be Protected Under the Endangered Species Act: The Political Economy of Regulatory Delay](#), 42 *J.L. & Econ.* 29 (1999).

[FN80]. See Thompson, *supra* note 31, at 1152-53.

[FN81]. See Eric T. Freyfogle, [The Owning and Taking of Sensitive Lands](#), 43 *UCLA L. Rev.* 77, 82 (1995); see generally Richard B. Stewart, [A New Generation of Environmental Regulation?](#), 29 *Cap. U. L. Rev.* 21 (2001); Michael J. Mortimer, [Irregular Regulation Under Section 404 of the Clean Water Act: Is the Congress or the Army Corps of Engineers to Blame?](#), 13 *J. Env'tl. L. & Litig.* 445 (1998).

[FN82]. See John M. Vandlik, [Waiting for Uncle Sam to Buy the Farm ... Forest, or Wetland? A Call for New Emphasis on State and Local Land Use Controls in Natural Resource Protection](#), 8 *Fordham Env'tl. L.J.* 691, 694 (1997).

[FN83]. Federal agencies, moreover, plan to continue to acquire significant amounts of land, subject to federal appropriation or other available sources of funding. The Fish and Wildlife Service, for example, has identified almost three million acres of land that it wishes to acquire in order to establish and expand federal wildlife refuges. See U.S. Gen. Accounting Office, *Fish and Wildlife Serv.: Agency Needs to Inform Congress of Future Costs Associated with Land Acquisitions* 1 (2000).

[FN84]. As used in federal reports, the term "managed for conservation" is quite broad and encompasses national parks, national wildlife refuges, wilderness and wilderness study areas, wild and scenic rivers, and areas of critical environmental concern. See U.S. Gen. Accounting Office, *supra* note 3, at 24 (providing information on areas managed for conservation).

[FN85]. The estimated acreage managed for conservation probably underestimates the actual amount. While only a relatively small percentage of the land held by the Bureau of Land Management is "managed for conservation," for example, it is unlikely that the bureau would acquire new land that did not have significant conservation benefits.

[FN86]. Under the Coastal Wetlands Planning, Protection, and Restoration Act, for example, the federal government provides competitive grants to states to acquire and protect coastal wetlands. In fiscal year 1998, such grants led to the acquisition and restoration of 13,000 acres of land. See Zinn &

Copeland, *supra* note 47, at 9-10.

[FN87]. Edward J. Heisel, [Biodiversity and Federal Land Ownership: Mapping A Strategy for the Future, 25 Ecology L.Q. 229, 296 \(1998\)](#); Peter Feather et al., Economic Valuation of Environmental Benefits and the Targeting of Conservation Programs: The Case of the CRP 5 (U.S. Dep't of Agric., Agric. Econ. Report No. 778, April 1999); Zinn, *supra* note 46, at 4.

[FN88]. See Zinn, *supra* note 46, at 4 (noting that the General Accounting Office in the early 1990s had been "critical of the potentially ephemeral nature of [the] environmental benefits" from CRP).

[FN89]. See Heisel, *supra* note 85, at 296 (crediting CRP with a resurgence in waterfowl populations and the tall-grass prairie ecosystem).

[FN90]. See Feather et al., *supra* note 87, at 5 (noting the effect of the Food, Agriculture, Conservation, and Trade Act of 1990 on enrollment criteria under the CRP); Zinn, *supra* note 46, at 4 (describing the Department of Agriculture's efforts to provide continuous sign up for individuals wishing to enroll land with particularly high environmental values).

[FN91]. Heimlich et al., *supra* note 49, at 27.

[FN92]. [16 U.S.C. §§ 3837-3837\(f\) \(2000\)](#). See generally Heimlich et al., *supra* note 49, at 27 (describing WRP).

[FN93]. Zinn, *supra* note 46. Another 100,000 acres or so are enrolled under the related Emergency Wetlands Reserve program. Heimlich et al., *supra* note 49, at 42 (noting that 530,000 acres of wetlands were protected under the two programs in 1997, of which about 400,000 were enrolled in the WRP).

[FN94]. Zinn & Copeland, *supra* note 47.

[FN95]. [16 U.S.C. §§ 1301-1311 \(2000\)](#). See Heisel, *supra* note 87, at 298-99 (describing the federal water bank program).

[FN96]. The Forest Legacy Program was created by the Food, Agriculture, Conservation, and Trade Act of 1990, [Pub. L. No. 101-624, 104 Stat. 3359](#). See generally U.S. Dep't of Agric., Forest Legacy Program, at <http://svinet2.fs.fed.us/spf/coop/flp.htm> (last modified Nov. 30, 2001) (providing detailed information on the Forest Legacy Program); Vandlik, *supra* note 82, at 693-99 (providing an overview of the program). The Forest Legacy Program is different from many other federal acquisition programs in that the states determine which lands to preserve. *Id.* at 698.

[FN97]. See U.S. Dep't of Agric., Forest Legacy Program Overview (June 20, 2000), at http://www.fs.fed.us/spf/coop/legacy_overview.PDF.

[FN98]. Department of the Interior and Related Agencies Appropriations Act of 2001, [Pub. L. No. 106-291, 114 Stat. 922](#). See also Jeff Zinn, Protecting Natural Resources and Managing Growth: Issues in the 107th Congress [hereinafter Zinn, *Managing Growth*] (Cong. Res. Serv. Issue Brief No. 10015, Aug. 6, 2001), available at <http://cnie.org/NLE/Csreports/Natural/nrgen-16.cfm> (last visited Apr. 15, 2002) (describing the basic provisions of the appropriation bill). The Clinton Administration had proposed a much larger Lands Legacy Initiative. See Jeffrey A. Zinn, The Administration's Lands Legacy Initiative in the FY2001 Budget Proposal - A Fact Sheet (Cong. Res. Serv. Rep. for Cong. No. 20471, Feb. 14, 2000), available at <http://cnie.org/NLE/CRSreports/Public/pub-9.cfm> (last visited Apr. 15, 2002) (describing the key elements of the initiative).

[FN99]. See Zinn, *Managing Growth*, *supra* note 98; White House Office of the Press Secretary,

Historic Protection for America's Environment and Cultural Heritage, M2 Presswire, Oct. 12, 2000, available at LEXIS News Library, News File.

[FN100]. White House Office of the Press Secretary, *supra* note 99.

[FN101]. [I.R.C. § 170 \(2000\)](#).

[FN102]. To obtain a tax deduction for the donation of a property interest, the landowner must generally satisfy the requirements of [section 170\(h\) of the Internal Revenue Code](#). Conservation easements qualify only if they are permanent and donated exclusively for conservation purposes. See Maureen Rudolph & Adrian Gosch, [A Practitioner's Guide to Drafting Conservation Easements and the Tax Implications](#), 4 *Great Plains Nat. Resources J.* 143, 161-74 (2000) (discussing the ins and outs of the federal tax deduction for donations of property interests).

[FN103]. For detailed descriptions of the estate tax benefits and rules, see [id. at 175-81](#); Stephanie L. Sandre, [Conservation Easements: Minimizing Taxes and Maximizing Land](#), 4 *Drake J. Agric. L.* 357, 363-68 (1999).

[FN104]. [I.R.C. § 2031\(c\)](#) (2000).

[FN105]. [I.R.C. § 2031\(c\)\(8\)\(B\)](#) (2000).

[FN106]. Charles T. Clotfelter, Tax-Induced Distortions in the Voluntary Sector, 39 *Case W. Res. L. Rev.* 663, 670-71 (1989).

[FN107]. Studies and analyses concluding that the elasticity is greater than one (at least for non-religious organizations) include Charles T. Clotfelter, *Federal Tax Policy and Charitable Giving* (1985); Charles T. Clotfelter & Lester M. Salamon, *The Impact of the 1981 Tax Act on Individual Charitable Giving*, 35 *Nat'l Tax J.* 171 (1982); Charles T. Clotfelter & C. Eugene Steuerle, *Charitable Contributions*, in *How Taxes Affect Economic Behavior* 403, 422-37 (Henry J. Aaron & Joseph A. Pechman eds., 1981); Martin Feldstein, *The Income Tax and Charitable Contributions: Part I - Aggregate and Distributional Effects*, 28 *Nat'l Tax J.* 81 (1975); Martin Feldstein, *The Income Tax and Charitable Contributions: Part II - The Impact of Religious, Educational, and Other Organizations*, 28 *Nat'l Tax J.* 209 (1975); Joel Slemrod, *Are Estimated Tax Elasticities Really Just Tax Evasion Elasticity? The Case of Charitable Contributions*, 71 *Rev. Econ. & Stat.* 517 (1989). These studies, however, have not gone unchallenged. See, e.g., Gerald E. Auten et al., *The Effects of Tax Reform on Charitable Contributions*, 45 *Nat'l Tax J.* 267 (1992); Amy J. Broman, *Statutory Tax Rate Reform and Charitable Contributions: Evidence from a Recent Period of Reform*, 11 *J. Am. Tax Ass'n* 7 (1989). One problem in estimating elasticity has been trying to distinguish long-term elasticities from the effects of time shifting (as taxpayers shift their contributions from one year to another to take advantage of lower tax brackets in some years). See William C. Randolph, *Dynamic Income, Progressive Taxes, and the Timing of Charitable Contributions*, 103 *J. Pol. Econ.* 709 (1995) (concluding that actual long-term elasticity is between 0.08 and 0.51).

[FN108]. See, e.g., Charles T. Clotfelter, *Tax Incentives and Charitable Giving: Evidence from a Panel of Taxpayers*, 13 *J. Pol. Econ.* 319 (1980) (concluding that extending deductions to non-itemizers would be efficient); Martin Feldstein & A. Taylor, *The Income Tax and Charitable Contributions*, 44 *Econometrica* 1201 (1976) (same). But see Christopher M. Duquette, *Is Charitable Giving by Nonitemizers Responsive to Tax Incentives? New Evidence*, 52 *Nat'l Tax J.* 195 (2000) (questioning these findings).

[FN109]. Approximately forty percent of The Nature Conservancy's income comes from private or corporate donations. Charles Clotfelter and Richard Schmalbeck estimated that if the current

charitable tax deduction were eliminated, contributions to charities as a whole might drop by twenty-two percent. See Charles T. Clotfelter & Richard L. Schmalbeck, *The Impact of Fundamental Tax Reform on Nonprofit Organizations*, in *Economic Effects of Fundamental Tax Reform* 211, 230 (Henry J. Aaron & William G. Gale eds., 1996).

[FN110]. See Land Trust Alliance, *supra* note 21.

[FN111]. See U.S. Fish & Wildlife Serv., Division of Bird Habitat Conservation, North American Wetlands Conservation Act Grants Program, at (last visited Mar. 1, 2001).

[FN112]. Information about the program, which was formerly called "Partners in Wildlife," may be found at <http://partners.fws.gov>.

[FN113]. See U.S. Fish and Wildlife Serv., *Partners for Fish and Wildlife: Frequently Asked Questions*, at (last modified Mar. 2001).

[FN114]. *Id.*

[FN115]. U.S. Fish and Wildlife Serv., *Partners for Fish and Wildlife: Accomplishments*, available at (last modified Mar. 2001).

[FN116]. See Susan Rose-Ackerman, *Do Government Grants to Charity Reduce Private Donations?*, in *The Economics of Nonprofit Institutions: Studies in Structure and Policy* (Susan Rose-Ackerman ed., 1986) (discussing how governmental support can help "crowd in" private contributions).

[FN117]. See, e.g., *The Nature Conservancy, Annual Report, Fiscal Year 1996: The Year in Conservation* 79 (1997).

[FN118]. See Jeffrey Zinn, *Land and Water Conservation Fund: Current Status and Issues* (Cong. Res. Serv. Rep. No. 97-792, March 26, 2001), at <http://cnie.org/NLE/CRSreports/Public/pub-1.cfm> (last visited Apr. 27, 2002) (noting that Land and Water Conservation Fund has been the principal federal source of monies for new recreation lands); Bradley C. Karkkainen, [Biodiversity & Land, 83 Cornell L. Rev. 1, 34 \(1997\)](#) (discussing importance of duck stamps); Heisel, *supra* note 87, at 279-09.

[FN119]. The locus of decision is actually more a continuum than a strict government-nonprofit differential. For example, although nonprofits have virtually complete freedom to choose and implement land conservation projects funded by private contributions leveraged by tax deductions, the federal government generally reviews proposed projects before awarding grants to non-profits. Cf. Nancy A. McLaughlin, [The Role of Land Trusts in Biodiversity Conservation on Private Lands, 38 Idaho L. Rev. 453, 465-66 \(2002\)](#) (analyzing whether the government would be better off switching from broad tax deductions for land-trust donations to a more focused program of land investment).

[FN120]. One could imagine further expanding the grid by including another column in which commercial entities were the decisionmaker. The government, for example, could permit tax-deductible contributions to investor-owned utilities interested in investing in watershed conservation or could provide grants to such utilities. Most governmental conservation programs, however, operate either through the government or non-profits. For insights into why governments might prefer to operate through non-profits, see [Henry Hansmann, The Role of Non Profit Enterprise, 89 Yale L.J. 835, 895 \(1980\)](#).

[FN121]. See Timothy Beatley, *Habitat Conservation Planning: Endangered Species and Urban Growth* (1994).

[FN122]. For insightful discussions of private delegations, see Jody Freeman, [The Private Role in Public Governance](#), 75 N.Y.U. L. Rev. 543 (2000); David M. Lawrence, [Private Exercise of Governmental Power](#), 61 Ind. L.J. 647 (1986).

[FN123]. See generally Quintin Johnstone, [Bar Associations: Policies and Performance](#), 15 Yale L. & Pol'y Rev. 193 (1996).

[FN124]. See notes 106-108 supra and accompanying text.

[FN125]. See notes 107-108 supra and accompanying text.

[FN126]. Donations of land to the federal government have contributed significantly to the development of the Federal Wildlife Refuge System and other conservation land programs. See Heisel, supra note 87, at 291; U.S. Gen. Accounting Office, [Fish and Wildlife Service: Agency Needs to Inform Congress of Future Costs Associated with Land Acquisitions 3-5](#) (RCED 00-52 2/2000). Several statutes, including the Endangered Species Act, [16 U.S.C. § 1534\(a\)\(2\)](#), authorize the Secretary of the Interior to accept such donations.

[FN127]. Miscellaneous Receipts Statute, [31 U.S.C. § 3302\(b\)](#) (2001). See Kate Stith, [Congress' Power of the Purse](#), 97 Yale L.J. 1343, 1364-70 (1988) (describing the operation of the Miscellaneous Receipts Statute).

[FN128]. See [Loretto v. Teleprompter Manhattan CATV Corp.](#), 458 U.S. 419 (1982); [Nollan v. California Coastal Comm'n](#), 483 U.S. 825 (1987).

[FN129]. See [Lucas v. South Carolina Coastal Council](#), 505 U.S. 1003 (1992).

[FN130]. Joseph L. Sax, [Property Rights and the Economy of Nature: Understanding Lucas v. South Carolina Coastal Council](#), 45 Stan. L. Rev. 1433, 1438 (1993).

[FN131]. For recent discussions of takings challenges to federal wetlands regulation, see Laura Pfefferle, [A New Green Weapon: Shooting Down Regulatory Takings with Estoppel](#), 13 Tul. Envtl. L.J. 471 (2000); Courtney C. Tedrowe, [Conceptual Severance and Takings in the Federal Circuit](#), 85 Cornell L. Rev. 586 (2000).

[FN132]. See, e.g., [Loveladies Harbor, Inc. v. United States](#), 28 F.3d 1171, 1182 (Fed. Cir. 1994).

[FN133]. See, e.g., [Deltona Corp. v. United States](#), 657 F.2d 1184 (Ct. Cl. 1981), cert. denied, 455 U.S. 1017 (1982).

[FN134]. See [Tahoe Sierra Preservation Council v. Tahoe Regional Planning Agency](#), U.S., (2002), quoting [Penn Cent. Transp. Co. v. New York City](#), 438 U.S. 104, 130 (1978).

[FN135]. See Richard A. Epstein, [Babbitt v. Sweet Home Chapter of Oregon: The Law and Economics of Habitat Preservation](#), 5 S. Ct. Econ. Rev. 1, 46 (1997).

[FN136]. See generally Alyson C. Flournoy, [Restoration Rx: An Evaluation and Prescription](#), 402 Ariz. L. Rev. 187 (2000); Duncan T. Patten, [Restoration as the Order of the 21st Century: An Ecologist's Perspective](#), 18 J. Land Resources & Envtl. L. 31 (1998).

[FN137]. See Clean Water Action Plan, supra note 47.

[FN138]. See Thompson, *supra* note 31, at 1151 (discussing the need for habitat restoration to preserve Attwater's greater prairie chicken).

[FN139]. See, e.g., Jennifer Neal, [Paving the Road to Wetlands Mitigation Banking](#), 27 *B.C. Env'tl. Aff. L. Rev.* 161, 166 (1999).

[FN140]. See Thompson, *supra* note 69, at 380 tbl. 7.

[FN141]. See [Dolan v. City of Tigard](#), 512 U.S. 374 (1994); [Nollan v. California Coastal Comm'n](#), 483 U.S. 825 (1987). Under Nollan, an "essential nexus" must exist between a governmental land-use exaction and a legitimate governmental interest. Under Dolan, there also must be a "reasonable relationship" or "rough proportionality" between the exaction and the land-use impact that the government seeks to avoid.

[FN142]. See Thompson, *supra* note 69, at 339-43 (discussing Nollan and Dolan in the context of regional habitat conservation plans).

[FN143]. See Daniel A. Farber, [Economic Analysis and Just Compensation](#), 12 *Int'l Rev. L. & Econ.* 125 (1992) (discussing anti-discrimination arguments for providing just compensation); Barton H. Thompson, Jr., [Judicial Takings](#), 76 *Va. L. Rev.* 1449, 1492-95 (1990) (same).

[FN144]. See Thompson, *supra* note 69, at 320-21.

[FN145]. *Id.* at 321; Beatley, *supra* note 121, at 103-06.

[FN146]. In the case of the Delhi Sands flower-loving fly, for example, only five parcels of habitat remain. To preserve the fly, the government thus may need to preserve all of the remaining habitat. See [Determination of Endangered Status for the Delhi Sands Flower-loving Fly](#), 58 *Fed. Reg.* 49,881 (1993).

[FN147]. See Thompson, *supra* note 143, at 1489-92.

[FN148]. See, e.g., Farber, *supra* note 143, at 129-32.

[FN149]. See, e.g., Thompson, *supra* note 31, at 1150-53 (describing the impact of property owner opposition on implementation of the Endangered Species Act).

[FN150]. See Mark Kelman, *Strategy or Principle: The Choice Between Regulation and Taxation* (1999).

[FN151]. *Id.* at 120-24.

[FN152]. See Thompson, *supra* note 31, at 1150-53 (discussing the role of cost under the Endangered Species Act).

[FN153]. See *id.* at 1156-58 (discussing the problem of applying cost-benefit analysis to preservation of habitat).

[FN154]. See Lawrence, *supra* note 122, at 648-49 (noting that "federal courts have consistently allowed delegations of federal power to private actors").

[FN155]. See, e.g., [Mulford v. Smith](#), 307 U.S. 38 (1939) (upholding statute under which marketing quotas were conditioned on a referendum by the producers of the affected crop); [United States v.](#)

[Rock Royal Co-Op, 307 U.S. 533 \(1939\)](#).

[FN156]. State decisions, however, cannot be used as clear guidance on how federal courts are likely to rule on private delegations by Congress. As Professor David Lawrence has observed, federal courts “have accepted, often without comment, delegations of federal power identical or very similar to state or local delegations that state courts have found unconstitutional.” Lawrence, *supra* note 122, at 648.

[FN157]. *Id.* at 650 (criticizing the inadequate logic of state court decisions).

[FN158]. See, e.g., [Leathers v. Gulf Rice Arkansas, Inc., 994 S.W.2d 481 \(1999\)](#) (holding that legislature could not authorize rice producers to impose an assessment on rice buyers).

[FN159]. [Texas Boll Weevil Eradication Found., Inc. v. Lewellen, 952 S.W.2d 454 \(Tex. 1997\)](#).

[FN160]. Expertise is the principal justification given by commentators for private delegations. See, e.g., Lawrence, *supra* note 122, at 656-57; Eric Theroff, The [Private Nondelegation Doctrine in Kansas and the Kansas State High School Activities Association](#), 44 *U. Kan. L. Rev.* 633, 635-36 (1996).

[FN161]. See Lawrence, *supra* note 122, at 659 (noting a common concern in private delegation cases that regulatory power “will be used to further the private interests of the private actor, as opposed to some different public interest”).

[FN162]. See, e.g., [Leathers, 994 S.W.2d at 483-85](#).

[FN163]. Not all courts have concluded that the public interest is promoted best by ensuring that all interests have a say in the decision. In [Hillman v. Northern Wasco County People's Utility District, 323 P.2d 664, 674 \(Or. 1958\)](#), for example, the court criticized the National Electrical Safety Code as representing a compromise among the many drafting parties rather than the best judgment of the Bureau of Standards.

[FN164]. See Freeman, *supra* note 122, at 586 (discussing the means by which legislatures can protect private delegations from constitutional challenge by providing various forms of safeguards).

[FN165]. See Salzman et al, *supra* note 17 (discussing the ecosystem services provided by conserved land).

[FN166]. Thompson, *supra* note 69, at 358-63 (identifying these criteria as useful in deciding whether to compensate property owners for the regulation of their land).

[FN167]. See Harvey S. Rosen, *Public Finance* 304-23 (4th ed. 1995); Joseph E. Stiglitz, *Economics of the Public Sector* 375-76, 390-92 (1986).

[FN168]. See Rosen, *supra* note 167, at 349-55.

[FN169]. See Thompson, *supra* note 69, at 359.

[FN170]. See *id.*, at 349-54.

[FN171]. *Id.* at 351.

[FN172]. *Id.*

[FN173]. See Anderson & Leal, *supra* note 20, at 72-73 (citing Dean Lueck & Jeffrey Michael, *Preemptive Habitat Destruction Under the Endangered Species Act* (1999) (unpublished manuscript,

on file with the Department of Agricultural Economics and Economics, Montana State University, Bozeman, MT).

[FN174]. See Thompson, *supra* note 69, at 356.

[FN175]. See Richard A. Musgrave & Peggy B. Musgrave, *Public Finance in Theory and Practice* 293 (5th ed. 1989).

[FN176]. See Charles L. Ballard et al., *General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States*, *Am. Econ. Rev.*, Mar. 1985, at 128.

[FN177]. See U.S. Fish & Wildlife Serv., *History of the Federal Duck Stamp*, at <http://duckstamps.fws.gov/history.html> (last visited Apr. 15, 2002).

[FN178]. See generally Clayton P. Gillette & Thomas D. Hopkins, [Federal User Fees: A Legal and Economic Analysis](#), *67 B.U. L. Rev.* 795 (1987).

[FN179]. See *id.*; Ian Bowles et al., [Economic Incentives and Legal Tools for Private Sector Conservation](#), *8 Duke Envtl. L. & Pol'y F.* 209, 228 (1998).

[FN180]. See, e.g., Thompson, *supra* note 69, at 356-57.

[FN181]. See, e.g., Lawrence J. MacDonnell, [Managing Reclamation Facilities for Ecosystem Benefits](#), *67 U. Colo. L. Rev.* 197, 254 (1996); Thompson, *supra* note 31, at 1181.

[FN182]. See notes 175-176 *supra* and accompanying text.

[FN183]. See Thompson, *supra* note 69, at 360-61 (summarizing the equity objections).

[FN184]. *Id.* at 361.

[FN185]. See William A. Fischel & Perry Shapiro, *Takings, Insurance, and Michelman: Comments on Economic Interpretations of 'Just Compensation' Law*, *17 J. Legal Stud.* 269 (1988).

[FN186]. See notes 79-81, 144-145 *supra* and accompanying text.

[FN187]. See Rosen, *supra* note 167, at 334-48.

[FN188]. The major source of funding for many federal land acquisitions appears to be the Land and Water Conservation Fund, which receives its revenue primarily from offshore oil and gas leasing by the federal government. See, e.g., U.S. Gen. Accounting Office, *supra* note 126, at 3-4 (stating that fund for recreation lands come from Land and Water Conservation Funds); U.S. Gen. Accounting Office, *Federal Land Management: Federal Land Acquisitions in California Since January 1994*, at 6 (PUB INFO?? 2000) (identifying the principal revenue sources for federal land purchases in California). [asking author]

[FN189]. See, e.g., U.S. Gen. Accounting Office, *supra* note 126, at 3-4; U.S. Gen. Accounting Office, *supra* note 188, at 6. [asking author]

[FN190]. See Thompson, *supra* note 69, at 320 (stating that developer fees have been the predominant means of financial habitat preservation in regional habitat conservation plans).

[FN191]. See Richard J. Ansson, Jr., [Funding Our National Parks: Will Recent Congressional Legislation Adequately Protect Our Embattled National Parks in the Twenty-First Century?](#), *6 Hastings W.-N.W. J.*

[Envtl. L. & Pol'y 53, 63 \(1999\)](#).

[FN192]. See Land Trust Alliance, *supra* note 21, at 88 (providing information on the Essex County Greenbelt Association).

[FN193]. See *id.* at 169 (providing information on the Heritage Foundation of Franklin & Williamson County).

[FN194]. See *id.* at 12 (providing information on the Land Trust for Santa Clara County).

[FN195]. See notes 21-24 *supra* and accompanying text.

[FN196]. See Kai N. Lee, *Compass & Gyroscope: Integrating Science and Politics for the Environment* (1993).

[FN197]. See Thompson, *supra* note 69, at 313.

[FN198]. See *id.* at 361-62 (discussing the "fiscal responsiveness" of regulations).

[FN199]. See *id.* at 362 (discussing problem of quick responsiveness under the Endangered Species Act); Thompson, *supra* note 15, at 309-10 (discussing the problems of changing regulations).

[FN200]. Cf. U.S. Gen. Accounting Office, *supra* note 126, at 4 (noting Congressional concern that U. S. Fish & Wildlife Service might be using alternative funding to purchase land for which Congress denied appropriations).

[FN201]. See Thompson, *supra* note 69, at 307-14.

[FN202]. See *id.* at 308-09 (describing the Environmental Water Account).

[FN203]. See Elizabeth Evensen, [Open Space Preservation in Utah: Techniques, Tools, and First "Quality Growth" Steps](#), 19 *J. Land Resources & Env'tl. L.* 267, 281-282 (1999) (discussing various of the advantages that land trusts enjoy compared to the government).

[FN204]. Land Trust Alliance, *supra* note 21 (including descriptions of each of these examples of land trusts, along with the other approximately 1200 land trusts that participated in the Land Trust Alliance's survey in 1998).

[FN205]. See Karkainen, *supra* note 11.

[FN206]. See Beatley, *supra* note 121.

[FN207]. See Robert W. Adler, [Watersheds and the Integration of U.S. Water Law and Policy: Bridging the Great Divides](#), 25 *Wm. & Mary Env'tl. L. & Pol'y Rev.* 1, 37-45 (2000).

[FN208]. See *id.* at 46-54.

[FN209]. See Barton H. Thompson, Jr., The [Continuing Innovation of Citizen Enforcement](#), 2000 *U. Ill. L. Rev.* 185, 223 (discussing similar advantages to environmental monitoring by non-profit organizations).

[FN210]. Cf. *id.* at 209-10 (discussing how citizen suits can provide similar guidance to the government).

[FN211]. See [id. at 206-09 & 224](#) (discussing the competitive advantages of having non-profits involved in enforcement of environmental laws).

[FN212]. See Thompson, *supra* note 31, at 1144-49 (describing efforts to protect Attwater's greater prairie chicken).

[FN213]. See Thompson, *supra* note 15, at 277-278 (discussing and citing articles that suggest regulations can be useful in developing norms and preferences).

[FN214]. For summaries of the research, see Bruno S. Frey & Reto Jegen, *Motivation Crowding Theory*, 15 *J. Econ. Surveys* 589 (2001); Hannelore Weck-Hannemann & Bruno S. Frey, *Are Incentive Instruments as Good as Economists Believe? Some New Considerations*, in *Public Economics and the Environment in an Imperfect World* 173 (Lans Bovenberg & Sijbren Cossen, eds. 1995).

[FN215]. See Weck-Hannemann & Frey, *supra* note 214, at 174-176 (describing the "crowding out" effect from fiscal incentives).

[FN216]. See *id.* at 182 (noting circumstances under which the crowding out effect can outweigh the positive incentives of a fiscal instrument).

[FN217]. Unlike direct governmental acquisitions, however, regulation might have a positive expressive effect by informing citizens of the importance of land preservation. See Bruno S. Frey, *Morality and Rationality in Environmental Policy*, 22 *J. Consumer Pol'y* 395, 404-06, 410 (1999) (noting the positive expressive effect of regulatory regimes).

[FN218]. See *id.* at 399 (noting that both rewards and regulations can crowd out intrinsic motivation).

[FN219]. Juan Camilo Cardenas et al, *Local Environmental Control and Institutional Crowding-Out*, 28 *World Dev.* 1719 (2000).

[FN220]. See Weck-Hannemann & Frey, *supra* note 214, at 175 (noting that "oversufficient justification" is one reason why financial incentives can "crowd out" intrinsic motivations).

[FN221]. See, e.g., Bruno S. Frey, *Motivation as a Limit to Pricing*, 14 *J. Econ. Psychol.* 635, 639-40, 646 (1993) (describing how rewards that recognize good actions can increase intrinsic motivation).

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