Comment

Biodiversity and Federal Land Ownership: Mapping A Strategy for the Future

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INTRODUCTION

As the regulation of private property becomes a more suspect task in the United States, legislation seeking to preserve open space or wildlife habitat on private lands is coming under increasing scrutiny. The lagging, but hotly contested, efforts in Congress to reauthorize the Endangered Species Act illustrate the political sentiment favoring decreased burdens on private property, even if that results in lower
levels of environmental protection. The goal of biodiversity preservation will be especially hindered by increased protection of private property rights because wildlife habitat on private land is essential to preserving the full spectrum of biodiversity in the United States.

The increasing development pressure on private lands compounds the problem of increased reluctance to regulate private property. This pressure is particularly evident in regions of the country where vacation homes and other residential developments are emerging on large private tracts that once served as de facto wildlife refuges. Commercial and residential sprawl, while most prevalent at the urban fringe, has even spread into more remote and scenic regions of the country as Americans have become more mobile and recreational outposts have sprouted into full-fledged cities. Human population


3. See Oliver A. Houck, Foreword, to BIODIVERSITY AND THE LAW at i, xiii (William J. Snape, III, ed., 1996) (discussing generally the rapid pace of development on private lands and the link between the rapidity of such development and the number of endangered or threatened species in various regions).

4. There are numerous examples of large tracts of land in the northeastern U.S., many owned by timber companies, being subdivided and sold for vacation property. See, e.g., Allan R. Gold, New York and 3 New England States Sign Pact on Saving Forests, N.Y. TIMES, May 27, 1990, at 28 (citing effort by state governments and conservationists to minimize the environmental harm from sale of large tracts of forestland); John H. Cushman, Jr., House Passes Measure to Preserve Sterling Forest, N.Y. TIMES, Sept. 29, 1996, at 42 (referring to 20,000 acre tract of land along border between New Jersey and New York that was threatened with development until Congress appropriated money to protect it).

5. See generally Planning: Growth is Causing Strains in FL, CA and PA, GREENWIRE, Nov. 20, 1996, available in LEXIS, News Library, Curnws File (summarizing problems related to development in several regions of the country); Karen Brandon, Suburbia Sprouts in California’s Valley of Plenty: Population Surge Spurs Housing in Fertile Farmland, CHI. TRIB., Nov. 18, 1996, at N1 (describing growth in California’s Central Valley that threatens traditional land uses).

growth further exacerbates the impact of this development on the natural world.7

The combination of increasing development pressures and the fact that some degree of heightened protection for private property8 appears inevitable suggests a need to investigate alternative strategies for preserving biodiversity that do not rely solely on regulating private property. One potential alternative is to rely more significantly on federal lands and the government's ability to acquire additional lands or interests therein.

Increased protection of biodiversity on existing federal lands offers a promising beginning, but it is not sufficient. Federal land ownership, although vast, fails to adequately protect biodiversity because it does not encompass all ecosystems in the country.9 Moreover, many protected areas that are relied on today to play a role in preserving biodiversity were originally set aside for other purposes. For example, most national and state parks were designated as such in order to preserve their scenic beauty, not because of their biological value.10 Finally, even if every acre of federal land was managed solely for biodiversity preservation, all species would not be protected due to the fact that most federal land holdings are located in the western United States, and that coverage of ecosystem types is incomplete.


8. The fact that heightened protection for private property seems inevitable does not necessarily mean specific statutory protection will be granted. See Keith White, Private Property Rights Legislation Slowed in Senate, GANNETT NEWS SERVICE, July 4, 1995, available in LEXIS, News Library, Wires File. The private property rights legislation that the Republican Party introduced as part of its Contract with America did not meet with universal favor. See Where They Stand, THE TAMPA TRIB., Nov. 3, 1996, at 10 (citing the passage in the House of Representatives and the defeat in the Senate of property rights bills in the 104th Congress). Efforts to bolster private property rights in state legislatures have been slightly more successful. See John Tibbetts, Takings Laws Just Won't Die, PLAN., Feb. 1, 1996, at 16 (stating that 18 states have passed property rights legislation since 1991). But see Loren Singer, Property Rights Movement is Losing Momentum, WEST'S LEGAL NEWS, Jan. 5, 1996, available in 1996 WL 257801 (noting that although many states have passed property rights legislation, most of these measures do not provide the high level of protection for private property sought by property rights groups). However, the political reality in recent years has been that sincere needs to impose regulations on private property are often outweighed by a fear among elected officials that they will be seen to endorse “more government” and increased intrusion into people's lives.

9. See infra Part II.A.

10. Existing national parks do not include representative samples of all ecosystems; they are rarely large enough to preserve all of their resident species; biodiversity-harming activities are allowed within their borders; and external threats are not adequately protected against due to the lack of natural buffer zones around their boundaries. See REED F. NOSS AND ALLEN Y. COOPELLRIDER, SAVING NATURE'S LEGACY: PROTECTING AND RESTORING BIODIVERSITY 71-72 (1994) [hereinafter SAVING NATURE'S LEGACY].
even in that region.\footnote{11} Despite these shortcomings, however, federal lands can and do play an important role in protecting wildlife habitat.

As the loss of biodiversity becomes a more immediate threat, it would be beneficial to focus anew on potential environmental benefits from changes in the ownership pattern of federal lands as well as to emphasize better management of existing federal lands. This Comment explores methods through which current and future federal land ownership can be used to increase biodiversity protection in the United States. These methods are analyzed for their ability to assist in the establishment of a national system of biodiversity reserves that will serve as the front-line defense against loss of biodiversity. The methods suggested include the continued acquisition of fee interests by the federal government in certain regions of the country, the exchange of public land in some regions for private land in more biologically imperiled areas, and an increased reliance on government acquisition of restrictive easements on private land. These tools must operate within a comprehensive structure of biodiversity reserves that coordinates the efforts of federal, state, and local governments, as well as private conservation organizations.

I

FEDERAL LAND MANAGEMENT

The loss of biodiversity is generally agreed to be among the top environmental crises facing humanity today.\footnote{12} There are numerous justifications for preserving biodiversity, some anthropocentric and others that place an intrinsic value on all living things.\footnote{13}

Beyond the mere tallying of extinct species, it is difficult to quantify the extent of biodiversity loss due to the complex definition of biodiversity itself. The concept of biodiversity, which has been around

\footnote{11. \textit{See infra} part II.A.}
\footnote{13. \textit{See Keystone Center, Biological Diversity on Federal Lands: Report of a Keystone Policy Dialogue} 8 (1991) [hereinafter Keystone Report]. The Keystone Report lists five general rationales for maintaining biodiversity. First, it “supports the integrity and resilience of ecological systems on which humans depend” by providing genetic variation to allow for future adaptation and evolution in response to changes in climate and other broadscale changes to the environment. Second, biodiversity harbors the sources of new medicines. Third, biodiversity provides a source of new food crops and a reserve of genetic traits that may improve species already used for human sustenance. Fourth, many regard biodiversity as having intrinsic value that justifies its preservation in addition to, or absent, any anthropocentric concerns. Finally, biodiversity is aesthetically valuable and enhances our everyday surroundings. \textit{See id.; Saving Nature’s Legacy, supra} note 10, at 17-23.}
for a little over a decade, has evolved from the rudimentary notion of measuring the number of species in a given area to a broad evaluation of the richness of life on earth. Prominent conservation biologists Drs. Reed Noss and Allen Cooperrider offer the following definition:

Biodiversity is the variety of life and its processes. It includes the variety of living organisms, the genetic differences among them, the communities and ecosystems in which they occur, and the ecological and evolutionary processes that keep them functioning, yet ever changing and adapting.

Such a broad definition renders it difficult merely to comprehend the term, much less to assess the factors contributing to its loss and to design a strategy for preventing future losses. Nonetheless, conservation biologists are developing such strategies, both in theory and in practice. The developing science of conservation biology is based on the fundamental question of what action—or inaction—is necessary to maintain the variety of life on the planet in perpetuity. Each of the components of biodiversity must be factored into this equation.

The predominant direct cause of species extinction and biodiversity degradation is loss or displacement of natural habitat by human activities that alter the environment. Since the first Europeans set foot in North America, an estimated 200 species of plants and 71 spe-

15. See id. Noss and Cooperrider note that increasing species diversity on a local level may actually have detrimental consequences for biodiversity at the regional or global level. For instance, fragmenting large relatively homogenous habitats may increase the variety of species in a given area, but would likely result in the loss of sensitive species that require large, unbroken habitat. See id. at 4. Similarly, the introduction of exotic species into a region may increase species diversity in the short-term but have detrimental effects on native flora and fauna. See id.
16. See id. at 5. Biodiversity is frequently defined on four levels of organization: genetic diversity, population or species diversity, community or ecosystem diversity, and landscape or regional diversity. See id.
17. See id. at 3. Conservation biology is the newest discipline in the area of applied ecology, which already included forestry, wildlife management, and fisheries management. In addition to relying on the traditional biological sciences, it also requires an understanding of geography, geology, sociology, education, philosophy, law, economics, and political science. See id. at 84.
18. For example, the genetic diversity component of biodiversity is incompletely understood and often overlooked in conservation efforts, yet biodiversity preservation requires the maintenance of genetic variation within and among populations. The processes of genetic differentiation and gene flow must continue in order to ensure that populations maintain the ability to adapt to changing environmental conditions. Thus, inbreeding, common in small isolated populations, may result in reduced fertility and other physical problems. The other components of biodiversity are also critical to conservation efforts. See id. at 6, 8-11.
cies and subspecies of vertebrates have become extinct. Further, since the Endangered Species Act (ESA) was passed in 1973, the Department of the Interior has listed 960 species as threatened or endangered. Another 182 species are currently considered "candidate" species, meaning that the listing of such species is imminent. The current rate of extinction is thought to be 400 times greater than that recorded over recent geological time. On a global scale, scientists estimate that 27,000 species are being lost each year in the rainforests alone. As discussed below, the loss of species through extinction is only one aspect of the biological impairment that has resulted from human destruction of wildlife habitat.

Most of this country's past efforts at conserving what is today called biodiversity have focused largely on saving individual species through protecting their habitat and regulating their harvest. While this method has its benefits, and has succeeded in some cases, a more comprehensive approach is needed to preserve the full spectrum of biodiversity.

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20. See Saving Nature's Legacy, supra note 10, at 16; see also Fink, supra note 12, at 2-4 (citing other examples of the impairment of biodiversity in the U.S.).


22. See Saving Nature's Legacy, supra note 10, at 17. See also Norman Myers, A Major Extinction Spasm: Predictable and Inevitable?, in Conservation for the Twenty-First Century 42 (David Western and Mary C. Pearl eds., 1989) (pointing out that the background rate of extinction over the past 600 million years has been roughly one species every year and citing authorities for the proposition that today's extinction rate is hundreds, possibly thousands, of times greater than that).

23. See Wilson, supra note 19, at 280.


25. These benefits include the ability to use a single species as a symbol for a larger conservation effort. The preservation of large carnivores, such as the grizzly bear or wolf, both engenders public support and results in the establishment of protected areas large enough to preserve a host of other species inhabiting the same ecosystem. See Saving Nature's Legacy, supra note 10, at 8. This approach, however, may also be a drawback when there is not a charismatic species upon which to rely.

26. Some faults of single species preservation efforts have included the focus on "charismatic megavertebrates," the piecemeal nature of efforts to save single species, identification of the wrong cause for the decline of species (direct killing as opposed to habitat loss), and a reactive, as opposed to proactive, approach. See id. 70-71.
A. The Significance of Federal Lands for Biodiversity Protection

As private lands are developed and natural habitats destroyed, federal lands must play a more important role in any serious biodiversity conservation effort.\(^27\) Regulation of private property is becoming increasingly difficult due to both the restrictions imposed by Congress on land-use regulations and the Supreme Court's growing interest in the Takings Clause of the Fifth Amendment.\(^28\) While the strategy, promoted in this Comment, of relying on public lands to advance conservation goals will decrease the burden of biodiversity preservation on private property owners, many citizens and commercial entities with economic interests in the current management of federal lands will not be easily persuaded that this policy should be adopted. However, from a practical perspective, the stringent restrictions on land-use, that are necessary to protect biodiversity, will be more easily achieved where the government is already a title holder. Although federal land-use decisions will likely be challenged, especially in the West,\(^29\) changes in the management of federal lands provide the method of least resistance for preserving biodiversity.

B. The Extent of Federal Land Ownership

As of 1994, the federal government owned a total of 650 million acres, approximately thirty percent of the total land area of the United States.\(^30\) Most of these lands are controlled by four federal agencies: the Fish and Wildlife Service (FWS), the National Park Service (NPS), the Forest Service, and the Bureau of Land Management (BLM).\(^31\) These federal agencies are governed by a variety of statutes

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\(^28\) See generally Where They Stand, supra note 8; White, supra note 8. See also Lucas v. South Carolina Coastal Council, 505 U.S. 1003 (1992); Dolan v. City of Tigard, 512 U.S. 374, 392-95 (1994).

\(^29\) Hostility toward federal land management agencies has traditionally been the strongest in parts of the rural West. See, e.g., Timothy Egan, Court Puts Down Rebellion Over Control of Federal Land, N.Y. Times, Mar. 16, 1996, at 1; Keith Schneider, Bold Plan Seeks to Wrest Control of Federal Lands, N.Y. Times, Apr. 8, 1995, at 6.

\(^30\) See General Accounting Office, Land Ownership: Information on the Acreage, Management, and Use of Federal and Other Lands 2 (1996) [hereinafter LAND OWNERSHIP INFORMATION]. This acreage is almost twice the size of the State of Alaska, or equivalent to the size of the next seven largest states (Texas, California, Montana, New Mexico, Arizona, Nevada and Colorado) combined. When state and local governments are included, publicly held land accounts for more than 40% of the nation's land area. See National Research Council, Setting Priorities for Land Conservation 1-2 (1993) [hereinafter SETTING PRIORITIES].

\(^31\) The BLM is the largest land holder in the nation, controlling 267.1 million acres. Next comes the Forest Service with 191.6 million acres, including the national forests and national grasslands. The FWS manages 87.5 million acres. And the NPS controls 76.6 million acres. A significant portion of these federal land holdings are in Alaska. See Dale
and have divergent mandates for managing the land under their control.\textsuperscript{32}

Most federal lands are remnants of an era when the government obtained title to millions of acres as an expanding sovereign.\textsuperscript{33} Until 1934, the government primarily focused on transferring these lands into private ownership.\textsuperscript{34} Of the 1.838 billion acres that were once part of the public domain,\textsuperscript{35} the government had disposed of 1.188 billion by 1994.\textsuperscript{36} It was not until the enactment of the Federal Land Policy and Management Act of 1976 (FLPMA) that the disposal policy changed. Under FLPMA, the federal government adopted the official policy that “public lands be retained” unless disposal is deemed to serve the national interest.\textsuperscript{37}

\textbf{C. Current Federal Land Management Programs}

The first step in designing a system of biodiversity reserves must include an assessment of current public land holdings and management policies governing those lands.\textsuperscript{38} Below is an overview of the major federal land management agencies, their various statutory mandates, and a description of their land holdings.

\begin{itemize}
  \item \textit{Land Ownership Information}, supra note 30, at 3.
  \item See infra Part I.C.
  \item Clawson divides the history of federal lands into six eras: acquisition, disposal, reservation, custodial management, intensive management, and consultation and confrontation. See id. at 15.
  \item See id. at 20.
  \item See id. at 25.
  \item See \textit{Land Ownership Information}, supra note 30, at 2.
  \item Current management policies governing the federal lands are inadequate due to an almost complete lack of consideration for biodiversity in some instances and the ineffectiveness of policies intended to foster biodiversity in others. See \textit{Keystone Report}, supra note 13, at 17. Part of the problem with existing biodiversity policies is the lack of adequate resources to administer them. Equally troubling, many programs designed to manage natural resources were designed with only a few commercially important species in mind, whereas biodiversity concerns today encompass entire ecosystems, including commercially unimportant species. See id. Moreover, even the most effective federal land policies may be hindered by the harmful effects of neighboring land uses. See id. Some of these external threats include air pollution, exotic species, and the isolation of federal land holdings due to development surrounding those lands. See id.; Joseph L. Sax, \textit{Buying Scenery: Land Acquisitions for the National Park Service}, 1980 \textit{Duke L.J.} 709, 715 (noting that national park boundaries are often drawn in ways that make external threats a serious problem). It is clear that any long-term solution to the problem of biodiversity loss will require the cooperation and regulation of private landowners who neighbor public lands. See \textit{Keystone Report}, supra note 13, at 17.
\end{itemize}
1. The National Wildlife Refuge System

The National Wildlife Refuge System (NWRS) is the only extensive system of federal lands administered specifically for wildlife conservation purposes. The NWRS consists of approximately 500 refuges, ranging in size from a single acre to the 19.3 million acre Arctic National Wildlife Refuge along Alaska’s North Slope. The U.S. Fish and Wildlife Service (FWS) manages these lands, which are found in every state and which together comprise over 87 million acres.

The first wildlife refuges were designated early this century by President Theodore Roosevelt. Congress soon joined the action by authorizing the President to make further designations and by itself establishing many wildlife areas. Most refuges created since that time have been established administratively by the Secretary of the Interior under various statutory authorities, although Congress has created over thirty refuges by specific legislation. Approximately ninety-seven percent of present refuge lands were previously managed by another federal agency. However, more recent additions to the NWRS outside of Alaska have resulted from land acquisitions by the federal government through gift, purchase, or other means.

In 1929, Congress passed the first act specifically authorizing the acquisition of lands for wildlife habitat: the Migratory Bird Conservation Act. Soon thereafter, the Migratory Bird Hunting Stamp Act ensured a steady source of funds with which to acquire land for new refuges by requiring waterfowl hunters to purchase federal duck stamps. Additional refuges were added rapidly during the 1930s, as

40. Several new refuges are added nearly every year, making the precise count subject to constant change.
42. See LAND OWNERSHIP INFORMATION, supra note 30, at 3.
43. In 1903, President Theodore Roosevelt created the first national wildlife refuge on Pelican Island off the coast of Florida to protect wading birds that were being hunted for their plumes. Before leaving office, Roosevelt designated another 50 national wildlife refuges. See S. REP. No. 103-324 (1994).
44. Congress initially authorized the President to designate areas of the public domain as wildlife refuges and in 1908 itself established the National Bison Range in Montana. See BEAN, supra note 39, at 126.
45. See S. REP. No. 103-324 (1994).
46. See Fink, supra note 12, at 11 (stating that 97% of the National Wildlife Refuge System acreage was already federally owned).
47. See id. at 12.
48. See id. See also infra Part III.C.1.
49. See BEAN, supra note 39, at 126. However, because the funds came mostly from hunters with an interest in perpetuating their own sport, the money was used largely to
the loss of wetlands and over-hunting contributed to a sharp decline in waterfowl populations.\textsuperscript{50}

It was not until 1966 that these refuges were united in a single system by the National Wildlife Refuge Administration Act.\textsuperscript{51} This Act established the general standards that the FWS must follow in managing the refuges.\textsuperscript{52} However, many other statutes govern various aspects of the NWRS, including some that relate to particular refuges and others that concern particular categories of habitat and wildlife.\textsuperscript{53} Thus, the process of designating new refuges and acquiring the land lacks any coherent strategy,\textsuperscript{54} resulting in numerous detrimental consequences for the structure and management of the NWRS.\textsuperscript{55}

Although the NWRS is geared primarily toward preserving wildlife habitat, the laws governing its management fail to prohibit some activities that may negatively impact wildlife. A variety of uses may be carried out on a unit of the NWRS so long as the Secretary of the Interior determines that "such uses are compatible with the major purposes for which such areas were established."\textsuperscript{56} For example, hunting, fishing, trapping, and some "commercial" activities, such as mining and hay cutting, are allowed on the refuges.\textsuperscript{57} In addition, acquire refuges geared toward the production of migratory waterfowl. See Nathaniel P. Reed and Dennis Drabelle, The United States Fish and Wildlife Service 19 (1984) [hereinafter Reed and Drabelle].


\textsuperscript{51} 16 U.S.C. § 668dd (1998). See also Federal Public Land and Resources Law, supra note 41, at 139. The National Wildlife Refuge Administration Act made all areas managed by the Department of the Interior for "the conservation of fish and wildlife, including species that are threatened with extinction, all lands, waters, and interests therein administered by the Secretary [of the Interior] as wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas" part of the National Wildlife Refuge System. 16 U.S.C. § 668dd(a)(1) (1998).


\textsuperscript{53} See Fink, supra note 12, at 9; see generally id. at 9-38.

\textsuperscript{54} See id. at 12.

\textsuperscript{55} See id. at 20-24. Some of the consequences of the historically random process of refuge acquisition include: (1) varied management arrangements among the refuges within the NWRS; (2) the existence of reserved grazing and mineral rights that were granted to local landowners to quell opposition to the establishment of the refuge; (3) purposes behind the creation of individual refuges ranging from protection of a single species or group of animals to general wildlife protection; (4) pressures to favor the protection of waterfowl habitat due to funding from the Migratory Bird Hunting Stamp Act; and (5) failure to acquire representative examples of all natural communities, thus reducing the refuges' effectiveness as biodiversity preserves. See id. at 22-24.


\textsuperscript{57} See Federal Public Land and Resources Law, supra note 41, at 845. See, e.g., Wilderness Society v. Babbitt, 5 F.3d 383, 388-89 (9th Cir. 1993) (discussing whether the FWS was justified in allowing grazing on the Hart Mountain National Wildlife Refuge in Oregon); Animal Lovers Volunteer Ass'n, Inc. v. Cheney, 795 F. Supp. 994 (C.D. Cal. 1992) (reviewing the FWS' decision to allow predator control and oil drilling on Seal Beach National Wildlife Refuge in California).
proximately 1.5 million acres of the NWRS overlap with federal lands under the jurisdiction of other agencies. These overlay refuges present intractable management problems for the FWS due to the primary agency's ultimate control over what activities are carried out on such lands. Other complicating factors in managing the refuge system are the changing priorities and political influence that accompany each successive administration.

In recent years, Congress has engaged in considerable debate concerning the management of national wildlife refuges; some legislators would like to orient the refuge system solely to protect wildlife, while others want to open these lands to additional uses. In 1996, during the height of congressional debate over reforming the laws that govern national wildlife refuges, President Clinton issued Executive Order 12,996, which defined the mission of the NWRS as preserving "a national network of lands and waters for the conservation and management of fish, wildlife, and plant resources of the United States for the benefit of present and future generations." The Executive Order further clarifies that hunting and fishing are to continue on the refuges where "they are compatible and consistent with sound principles of fish and wildlife management, and are otherwise in the public interest[.]

More recently, Congress made significant amendments to the National Wildlife Refuge Administration Act that could set the stage for more comprehensive and effective management of the NWRS. These actions are positive developments toward making the NWRS a cornerstone of biodiversity protection.

59. See id.
60. See Fink, supra note 12, at 8. For example, one consistently neglected aspect of refuge management has been the accommodation of endangered species. See Oversight of National Wildlife Refuge System: Hearings Before the Subcomm. on Fisheries, Wildlife and Oceans of the House Comm. on Resources, 104th Cong. (1996) (statement of James R. Waltman, Director, Refuges and Wildlife Program, the Wilderness Society). Waltman noted that the national wildlife refuges have not traditionally been focused on fostering the recovery of endangered species. He argued that the refuges should be integral to the protection of endangered species because efforts on refuges would be "more cost effective, more lasting, and less controversial than similar efforts on private lands or 'multiple use' public lands." See id.
64. The National Wildlife Refuge System Improvement Act of 1997 was passed subsequent to completion of this Comment. See P.L. 105-57, 111 Stat. 1252. The Act expands
2. The National Park System

The idea of a national park system emerged in 1872, with the establishment of Yellowstone National Park. Today, the National Park System encompasses approximately 77 million acres, more than two thirds of which are located in Alaska. The primary purpose of national parks is to provide outdoor recreation for the American public, a purpose that generally includes the preservation of natural resources and landscapes. The National Park Service manages this system, as well as the several million acres of national monuments and a host of other federal land categories.

Management of the national parks is governed by both a general law—the National Park Act of 1916—and specific laws that apply to individual parks. The National Park Act defines the purpose of national parks as conserving "the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The regulations governing the management of wildlife and natural resources in

upon Executive Order 12,996 by defining which uses are allowed within the NWRS. See id. §§ 5-6. More importantly, it requires comprehensive conservation plans to be developed for each refuge that must, among other things, identify habitats and problems facing wildlife populations on the refuge. See id. § 7(e)(2). Furthermore, it requires that the FWS coordinate with state conservation planning efforts in developing each refuge conservation plan. See id. § 7(e)(3)(B).

65. See DYAN ZASLOWSKY & T.H. WATKINS, THESE AMERICAN LANDS: PARKS, WILDERNESS, AND THE PUBLIC LANDS 17 (1994) [hereinafter THESE AMERICAN LANDS]. The designation of the Yellowstone region as a national park had little effect on the area for several years, as the unfunded park was not policed and wildlife remained open to unregulated hunting. See id. at 18. The next parks to be created were Yosemite and Sequoia in 1890. See id. at 20.


67. See FEDERAL PUBLIC LAND AND RESOURCES LAW, supra note 41, at 140.


69. These lands include national recreation areas, national parkways, national seashores, national lakeshores, national rivers, national wild and scenic rivers, national trails, national gateway parks, national preserves, historical memorials, battlefield monuments, Washington, D.C. parks, and the Boundary Waters Canoe Area. See FEDERAL PUBLIC LAND AND RESOURCES LAW, supra note 41, at 140-41.


71. See John Lemons and Dean Stout, A Reinterpretation of National Park Legislation, 15 ENVTL. L. 41, 42 (1984) [hereinafter Lemons and Stout].

national parks establish a largely hands-off approach concerned only with regulating visitor use of the parks.\(^\text{73}\) Congress has stated its intent to minimize construction of facilities in the parks to preserve the values that led to their inclusion in the National Park System.\(^\text{74}\) The tension between providing public access to the parks and protecting the natural resources located therein has proved a constant struggle for the Park Service.\(^\text{75}\)

Probably more so than any other system of federal lands, the public closely associates the national parks with preservation of wildlife and natural landscapes. However, national parks are too isolated and few in number to serve as a primary defense against biodiversity loss. Even large national parks that have retained most of their native flora and fauna experience numerous internal and external threats to biodiversity.\(^\text{76}\) Like other federal land holdings, the National Parks can play a crucial role in preserving biodiversity, but only as a part of a comprehensive biodiversity reserve system.

3. The National Forest System

In 1891, the federal government began withdrawing land from the public domain for the conservation of timber resources.\(^\text{77}\) The creation of the National Forest System was also one of the first purposes for which the federal government began acquiring private land.\(^\text{78}\) To-


\(^{75}\) See Federal Public Land and Resources Law, supra note 41, at 888-89.

\(^{76}\) See General Accounting Office, National Park Service: Activities Within Park Borders Have Caused Damage to Resources (1996) (reporting on internal threats to the national parks, their severity, and the actions taken by the National Park Service in response to such threats). The GAO found that most internal threats to national parks could be grouped within one of five categories: the impact of private holdings or commercial development within the parks, detrimental impacts of non-native species, damage caused by illegal activities such as poaching, routine wear and tear from visitor use, and unintended consequences of past Park Service actions such as suppression of naturally caused fires. See id. at 2-3. See also General Accounting Office, National Park Service: Activities Outside Park Borders Have Caused Damage to Resources and Will Likely Cause More 4-5 (1994) (finding that the most common external threats to national parks were urban encroachment, water issues, human activities, air pollution, non-native plants and animals, and mining); William J. Lockhart, External Threats To Our National Parks: An Argument For Substantive Protection, 16 Stan. Envtl. L.J. 3, 39-40 (1997) (citing litany of external threats to national park system); Sax, supra note 38, at 715 (citing particular cases of threatening land uses neighboring national parks); Melissa Healy, U.S. Parks: Not So Great Outdoors: From Yosemite To The Smokies, Weary Rangers And Budget-Strapped Staffs Fight Crime, Grime And Crowding, L.A. Times, May 10, 1994, at A1 (citing numerous problems plaguing national parks, from traffic jams to poaching); Lemons and Stout, supra note 71, at 43 (listing numerous threats to national parks from overcrowding).

\(^{77}\) See Federal Public Land and Resources Law, supra note 41, at 137.

\(^{78}\) See id. at 137. From 1912 to 1930, the Forest Service purchased several million acres of neglected or abandoned land east of the Mississippi River under the Weeks Act.
day, the National Forest System totals approximately 191 million acres, comprised of both lands withdrawn from the public domain and lands purchased by the federal government. The U.S. Forest Service, an agency in the Department of Agriculture, manages these lands.

The Forest Service has generally managed wildlife as it does other resources in the national forests. However, the agency has historically focused most of its attention on the harvest of timber. The Multiple-Use Sustained-Yield Act of 1960 (MUSYA) formalized a broader mandate by declaring fish and wildlife to be one of five resources in the national forests to which “due consideration shall be given.” MUSYA lacks any binding language, and the Forest Service initially continued to operate as it had before, with nearly unfettered discretion. In the early 1970s, however, clearcutting became a volatile issue turning the public eye on the Forest Service, resulting in both gradual changes to national forest management and new statutory directives from Congress.

The National Forest Management Act of 1976 (NFMA) established new standards for national forest management. In addition to providing the Forest Service with more specific guidance, the Act also recognized the value of biodiversity in the national forests. NFMA directs the Secretary of Agriculture to promulgate planning regulations that “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area”

See id. The primary motivation for these purchases was provided by the fires, floods and erosion caused by large scale clearing of forests in the East. In contrast to the political climate surrounding federal lands today, the West Virginia legislature actually requested that the federal government purchase lands within the state for reforestation. The Great Depression also contributed to the establishment of the eastern national forests because many owners of cut-over land were anxious to sell and the federal government was the only entity with the resources to purchase. Much of the land was acquired at bargain prices. See These American Lands, supra note 65, at 77-78.


See Federal Public Land and Resources Law, supra note 41, at 622, 860.


See Federal Public Land and Resources Law, supra note 41, at 632. The practice of clearcutting in national forests was accelerated in the years following World War II as the demand for timber increased in response to the post-war boom in housing construction. See id. at 634.

See id. at 641.

See id.

and, to the extent practicable, maintain the "diversity of tree species similar to that existing in the region." Despite this mandate and the regulations issued thereunder, the "diversity" provision of NFMA has proven difficult to administer and has not been vigorously enforced by the courts.

The reality of the National Forest System is that timber production has defined the system's management throughout most of its history, and it is beset with many of the same environmental problems that affect private lands. The most prominent current example of this is the demise of the Pacific Northwest old-growth forests, which are located primarily in national forests and on other public lands. Clearcutting of these forests has severely compromised their biological integrity, resulting in the direct loss of biodiversity through habitat fragmentation, soil erosion, and the invasion of non-indigenous species. Despite these problems, the national forests remain as large blocks of mostly undeveloped, and in some cases pristine, land that should play a greater role in preserving biodiversity as private lands become further fragmented and their natural habitats are destroyed.

87. Id. The regulations are found at 36 C.F.R. §§ 219.26, 219.27(a)(5) and (g). They require that forest planning provides for "diversity of plant and animal communities and tree species" within the overall goal of multiple-use management. Id. § 219.26. In carrying out forest plans, federal foresters must abide by "minimum specific management requirements" that require management actions to "[p]rovide for and maintain diversity of plant and animal communities to meet overall multiple-use objectives[.]" Id. § 219.27(a)(5). However, "[r]eductions in diversity of plant and animal communities and tree species from that which would be expected in a natural forest, or from that similar to the existing diversity in the planning area, may be prescribed . . . where needed to meet overall multiple-use objectives." Id. § 219.27(g). See also Michael J. Gippert and Vincent L. DeWitte, The Nature Of Land And Resource Management Planning Under The National Forest Management Act, 3 ENVTL. L. 149 (1996) [hereinafter Gippert and DeWitte] (giving a description of the planning process under NFMA).

88. See Gippert and DeWitte, supra note 87, at 189-90. See, e.g., Sierra Club v. Marita, 46 F.3d 606 (7th Cir. 1995) (rejecting claim by environmental groups that Forest Service has to consider specific principles of conservation biology in carrying out NFMA’s diversity provision).


4. Bureau of Land Management Lands

The Bureau of Land Management (BLM), situated within the Department of the Interior, manages approximately 270 million acres, or one-eighth of the nation’s land surface—more than any other federal agency. The BLM lands, often referred to as simply the “public lands,” consist mostly of government lands that were not withdrawn from the public domain, as were the national forests and national parks, and that were not disposed of to private interests. Much of this land is semi-barren and unproductive, and almost all of it is located in the eleven contiguous western states and Alaska. Thus, the BLM has focused on grazing and mining, the only conceivable non-recreational uses for much of its land.

The Federal Land Policy and Management Act of 1976 (FLPMA) provides the general statutory guidelines for most land under the BLM’s control, and requires the agency to develop resource management plans for the public lands. Prior to FLPMA’s passage, the BLM paid little attention to resources that did not affect grazing or mining. In fact, until the passage of the Taylor Grazing Act in 1934, the public lands were considered open range and used freely.

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92. See Federal Public Land and Resources Law, supra note 41, at 138.
93. See Keystone Report, supra note 13, at 49.
95. One notable exception to the barrenness of BLM lands is the three million acres of O & C land in western Oregon, which is located in the heart of the coast range and contains highly valuable old-growth forest. The O & C lands were reclaimed from the Oregon & California Railroad after it failed to sell the land to settlers as stipulated in its grant agreement with the government. The land was originally granted in return for the railroad agreeing to build a line from Sacramento to Portland. See Federal Public Lands and Resources Law, supra note 41, at 684. The O & C lands, which are governed by their own statute, have been at the heart of efforts to save the spotted owl and other environmental debates. See id. at 684-85. The BLM’s management of the O & C lands is governed by the O & C Act of 1937. 43 U.S.C. § 1181. For a description of the history of the O & C lands and a criticism of their management by the BLM, see Paul G. Dodds, The Oregon And California Lands: A Peculiar History Produces Environmental Problems, 17 Envtl. L. 739 (1987).
96. See Federal Public Land and Resources Law, supra note 41, at 138. The BLM lands have been referred to as the “lands nobody wanted” because of their sparse character and the fact that they are the remnants of the public domain that were never claimed by individuals or reserved for other uses. See These American Lands, supra note 65, at 105.
97. See Federal Public Land and Resources Law, supra note 41, at 138 (noting that this focus has lead to the moniker of “Bureau of Livestock and Mining.”).
by ranchers to graze their livestock.\textsuperscript{102} Even in recent times, the BLM
has neglected the health of its lands by allowing overgrazing that has
resulted in changes to rangeland flora, erosion, and siltation of
streams.\textsuperscript{103} Powerful political forces have largely thwarted attempts to
reform the BLM's rangeland management practices.\textsuperscript{104}

The BLM lands, although generally arid and considered by many
to consist solely of rocks and sagebrush, actually encompass a wide
array of ecosystems, including grasslands, deserts, forests, and arctic
tundra.\textsuperscript{105} Under FLPMA's multiple use mandate, the BLM must
consider the value of these ecosystems and their component wildlife in
developing and implementing the agency's resource management plans,\textsuperscript{106} which are supposed to guide the resolution of conflicts be-
tween various users of the public lands.\textsuperscript{107}

FLPMA also authorizes the creation of "areas of critical envi-
ronmental concern" (ACECs),\textsuperscript{108} to protect the most sensitive areas of
the public lands.\textsuperscript{109} As of 1993, the BLM had designated 589 ACECs
encompassing 9.5 million acres.\textsuperscript{110} However, the exact significance of
these areas remains open to question, as the Act gives the BLM broad
discretion to determine what specific management objectives apply to
them.\textsuperscript{111} Furthermore, wide discrepancies exist in the designation and

\textsuperscript{102} See Clawson, supra note 33, at 30.
\textsuperscript{103} See Coggins, supra note 100, at 1. For a critical review of BLM management poli-
cies under FLPMA, see Nolen, supra note 94, at 771. Policies existing prior to the passage
of FLPMA have persisted in many instances due to the failure of the BLM to complete
resource management plans on time. The current date given for completion of all resource
management plans for BLM lands is 2013. See id. at 815.
\textsuperscript{104} See Coggins, supra note 100, at 2; Timothy Egan, In Battle Over Public Lands,
Ranchers Push Public Aside, N.Y. TIMES, July 21, 1995, at A1 (describing efforts in the
104th Congress to continue subsidized grazing of public lands and give ranchers greater
control over such lands). The BLM has a long history of being dominated by the political
influence of ranchers. See Nolen, supra note 94, at 785.
\textsuperscript{105} See Nolen, supra note 94, at 774.
\textsuperscript{106} See 43 U.S.C. § 1702(c) (1998) (defining "multiple-use").
\textsuperscript{107} See Nolen, supra note 94, at 780-81. While the planning process under FLPMA
somewhat resembles that carried out by the Forest Service under NFMA, the BLM has
much more discretion and fewer concrete guidelines. See id. at 796 n.223.
\textsuperscript{108} 43 U.S.C. § 1712(c)(3). ACECs are defined in 43 U.S.C. § 1702(a) as "areas
within the public lands where special management attention is required (when such areas
are developed or used or where no development is required) to prevent and prevent irrepa-
rible damage to important historic, cultural, or scenic values, fish and wildlife resources or
other natural systems or processes, or to protect life and safety from natural hazards." For
a history of ACECs and their implications for BLM management decisions, see Faith T.
Campbell & Johanna H. Wald, Areas of Critical Environmental Concern: Promise Versus Rea-
lity (1989); Nolen, supra note 94, at 816-21.
\textsuperscript{109} See S. REP. No. 94-583, at 43 (1975).
Public Land Statistics].
\textsuperscript{111} See Federal Public Land And Resources Law, supra note 41, at 752.
protection given to ACECs among different management districts within the BLM.112

While the BLM has allowed the degradation of its lands in the past, the sheer extent of its land holdings offers the potential for preserving entire ecosystems. At a minimum, the BLM lands could provide valuable buffer zones around more heavily protected national parks, wildlife refuges, or wilderness areas.

5. Other Federal Land Holdings

The largest remaining federal land holding not mentioned above belongs to the Department of Defense (DoD), which plays a significant role in preserving natural habitats. The DoD manages approximately 25 million acres of land scattered throughout the country and used for a variety of purposes, from artillery practice grounds to housing for military personnel.113 Because DoD installations are widely dispersed, they contain a diverse array of natural resources, many of which have been protected simply by virtue of the limited activity permitted on military reservations.114 In recent years, the DoD has taken an interest in managing its lands for the perpetuation of its wildlife resources.115 In addition, the DoD's downsizing efforts have proven a boon to wildlife conservation as military reservations and other facilities have been, or are proposed to be, converted to wildlife refuges.116

Finally, a complete discussion of federal land management must also include a reference to the Wilderness Act of 1964.117 The Wilderness Act established a system for designating certain remote and undeveloped federal lands as wilderness areas, permanently protecting

112. See Nolen, supra note 94, at 815.
113. See KEYSTONE REPORT, supra note 13, at 54.
114. See id.
116. One of the best opportunities to add a significant parcel of land to the NWRS comes from the change in mission of a Department of Energy nuclear research site in Washington State. The Hanford Nuclear Reservation consists of 353,000 acres located along the Columbia River in south-central Washington. Up to 100,000 acres of the Reservation must be disposed of because it is no longer needed by the Department of Energy. The future of this area remains in doubt. For a history of the Reservation and an argument for its protection as a wildlife refuge, see Shauna Marie Whidden, The Hanford Reach: Protecting The Columbia's Last Safe Haven For Salmon, 26 ENVTL. L. 265 (1996). See also Erin Hallissy, Tern Refuge at Alameda Endangers Plans for Base: Birds' Haven May Hinder Development, S.F. CHRON., Dec. 2, 1996, at D1 (describing the conversion of 525 acres of the soon-to-be-closed Alameda Naval Air Station to a wildlife refuge); In Their Arsenal: Wildlife Wins This Round As Savanna Depot Is Slated For Habitat Retention, CHI. TRIB., June 16, 1996, at C3 (announcing conversion of 9300 acres of the soon-to-be-closed Savanna Army Depot to a national wildlife refuge).
them from most commercial uses.118 The Wilderness Preservation System currently encompasses approximately 95 million acres, sixty percent of which are in Alaska.119 The management of these areas remains the responsibility of the agency whose lands are designated as wilderness,120 but the relevant agency must comply with the Wilderness Act, rather than its previous, often multiple-use, mandate.121 Wilderness areas are devoted to the preservation of the natural landscape unaltered by human activity and thus serve as de facto wildlife refuges.122 Some of the largest undeveloped regions of the United States are designated wilderness areas and provide the focal point for maintaining or restoring populations of endangered species, especially large carnivores.123

D. Arguments Against Federal Land Ownership

That the federal government remains by far the largest single landowner is a source of constant debate in a country founded on notions of individual free enterprise.124 Some arguments against federal land ownership, discussed below, may foster resistance to the conservation policies advocated by this Comment. Indeed, much debate over federal land ownership originates in the western states where most federal land is located, and where those who depend for their

118. See Federal Public Land and Resources Law, supra note 41, at 141.
119. See id.
121. See Federal Public Land and Resources Law, supra note 41, at 141.
122. The full definition of wilderness given in the Wilderness Act is:
A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this [Act] an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.
123. See, e.g., Daryl Gadbow, Proposal Aims to Save Jobs, Bears, Rocky Mountain News, Jan. 28, 1996, at 23A (describing plans to reintroduce the grizzly bear to the Frank Church and Selway-Bitterroot Wilderness Areas in Idaho); Kit Miniclier, Wolf Project '96 a Howling Success, Denver Post, Jan. 24, 1996, at B1 (describing the early success of wolf reintroduction efforts in Yellowstone National Park and the Frank Church Wilderness in Idaho).
124. The creators of The Keystone Report were unable to agree on the issue of continued acquisition of land by the federal government, although they reached consensus on many other issues relating to biodiversity on federal lands. See Keystone Report, supra note 13, at 22. For an in-depth discussion of the arguments for and against the retention of federal lands, see Clawson supra note 33, at 123-69.
livelihoods on resources from federal lands comprise a powerful political lobby.\textsuperscript{125}

Objections are raised to this massive government ownership on a number of fronts. First, the federal government often heavily subsidizes the extraction of resources that are produced in substantial quantities on federal lands.\textsuperscript{126} This large degree of government interference is an anathema to advocates of a true free market.\textsuperscript{127} Grazing fees on public lands illustrate this failure of the political process to yield an economically realistic system of resource management on federal lands.\textsuperscript{128} Indeed, the government often fails to recover even its own operating costs.\textsuperscript{129} During the 1980s and 1990s, the cost of operating the federal grazing program has consistently amounted to more than twice the revenue generated from grazing fees.\textsuperscript{130} In addition, the fees charged for grazing on public land are estimated to be a mere one-twelfth of the actual value of the right to graze on these lands.\textsuperscript{131} The federal timber sale program operated by the Forest Service has come under similar scrutiny for both its loss of money and its expensive infrastructure. As with grazing fees, federal studies of the timber sale program show that it does not generate enough revenue to cover its own costs.\textsuperscript{132} Hardrock minerals offer yet a further example of the federal government's inability to reap the rewards of its natural resource holdings; the government virtually gives away these re-

\textsuperscript{125} In recent years, a number of counties in western states have attempted, sometimes by force, to gain legal and physical control over tracts of federal land. \textit{See} Egan, \textit{supra} note 29, at 1; Schneider, \textit{supra} note 29, at 6.

\textsuperscript{126} \textit{See} Oesterle, \textit{supra} note 31, at 525, noting the effect of the federal government in natural resource markets and the "down-line" effect of this interference on markets of goods produced from these natural resources. In addition, if resources from federal lands are sold at less than their fair market value, as is often the case, other industries not directly connected to the natural resources will be affected. \textit{See id.}

\textsuperscript{127} \textit{See generally} \textsc{Richard L. Stroup and John A. Baden}, \textsc{Natural Resources: Bureaucratic Myths and Environmental Management} (1983).

\textsuperscript{128} \textit{See} Oesterle, \textit{supra} note 31, at 526; John H. Cushman, Jr., \textit{Administration Gives up on Raising Grazing Fees}, \textsc{N.Y. Times}, Dec. 22, 1994, at B12 (citing failure of Secretary of the Interior Babbitt to implement grazing reform on public lands).

\textsuperscript{129} \textit{See} Oesterle, \textit{supra} note 31, at 526.

\textsuperscript{130} \textit{See id.} (citing a 1983 BLM study finding that the cost of the federal grazing program was $61 million in that year and only $25 million was recovered from grazing fees). Similarly, a 1991 study by the General Accounting Office shows that BLM grazing fees continue to account for only about half the cost of running the program.

\textsuperscript{131} \textit{See id.}

\textsuperscript{132} \textit{See id.} at 527 (citing a 1995 study by the General Accounting Office that showed a national loss of $1 billion attributable to the Forest Service's timber sale program); Timothy Egan, \textit{Alaska Republicans Push Subsidy for Logging}, \textsc{N.Y. Times}, Sept. 12, 1995, at 14 (citing drive by Alaska legislators to continue subsidies for timber operations in southeast Alaska); Timothy Egan, \textit{Logging in Lush Alaskan Forest Profits Companies and Costs U.S.}, \textsc{N.Y. Times}, May 29, 1989, at 1.
The government's failure to price the resources it sells at anywhere near market value has been much chronicled and criticized in past years, but little has changed.

A second and related objection to the federal government's vast land holdings in the West is its failure to maintain adequately the quality of its lands. This failure has benefitted some groups at the expense of the environment and is in part the result of political pressure from groups that encourage lax management policies. For example, as a result of below market grazing fees, ranchers exert constant pressure on the government to allow more livestock on the public range. The resulting overuse decreases the value of the land for other uses such as recreation and wildlife habitat. Similarly, the heavily subsidized federal timber program and mere nominal pricing of mineral resources takes a heavy toll on the environment. A recent General Accounting Office study showed that over 424,000 acres of federal land are scarred from inadequately reclaimed mining operations.

As a third objection to federal land ownership, the vast amount of federal land in the western United States is frequently viewed as an intrusion on state and local sovereignty because many management decisions are dictated from Washington, D.C. The Sagebrush Rebellion brought this notion to prominence in the 1970s, and it has thrived in recent years as well. The federal government has added to the frustration of states and localities by failing to compensate fully local governments for the property taxes that are lost due to the tax exempt status of federal land. Further, many rural regions have de-
developed great mistrust of federal motives in the areas of land management and environmental protection.

Federal land management agencies have not only been hindered by hostility from state and local governments, but have also been plagued by the repercussions of irrational and ill-informed fears among rural residents. No matter how unfounded these fears, federal land management agencies are understandably reluctant to implement programs that would fan the flames of rural conspiracy theories. This, in turn, prevents the agencies from undertaking much-needed research and resource protection plans. The existence of this misinformation should also show such agencies the necessity of public involvement and education.

It is important to note that not everyone concerned about the mismanagement of federal lands believes that these objections necessarily invite the privatization of the lands in question. In fact, the arguments described above support disposition only if one assumes that the government is inherently incapable of effectively managing its natural resources and that federal lands have no other value protected by their public ownership. For example, the management of federal lands has come under attack on many fronts over the years by environmentalists, few of whom would advocate selling the public lands. Direct government regulation or ownership is the only method of effectively manifesting the public values assigned to biodiversity. Such values are underrepresented in the economic marketplace and are better expressed democratically.

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141. See Egan, supra note 29.
142. See Tom Uhlenbrock, Ozarks Uproar: Rumors of a U.N. Takeover Feed Fears of Conspiracy and Distrust of Government, St. Louis Post-Dispatch, Apr. 6, 1997, at A1, A6. One version of the far-flung theories circulating in some rural areas of the country stem from implementation of the United Nations Man in the Biosphere Program. According to those spreading these theories, including representatives of a group called People for the West, the U.N., federal agencies, and environmental organizations are seeking “to depopulate completely 50 percent of the United States for wilderness areas.” They argue that this plan will be carried out by U.N. troops at the expense of residents of these areas who “will be forcibly relocated into primitive concentration camps on the outskirts of large cities . . . .” Tom Uhlenbrock, Activist Takes Takeover Theory to the People, St. Louis Post-Dispatch, Apr. 6, 1997, at A7 (quoting William F. Jud, whom the article implies is a representative of People for the West).
143. See Uhlenbrock, Ozarks Uproar: Rumors of a U.N. Takeover Feed Fears of Conspiracy and Distrust of Government, supra note 142, at A6 (citing unwillingness of the Missouri Department of Conservation and the National Park Service to carry out regional planning activities after their intentions were misconstrued by some residents of the Ozark region).
II

DESIGNING A SYSTEM OF BIODIVERSITY RESERVES

Much progress remains to be made in the development of a national biodiversity conservation strategy.\textsuperscript{144} Although creating a system of biodiversity reserves represents a daunting task, recent efforts have tried to provide the scientific and geographic bases for such a system. Despite the difficulty of implementing these efforts, they have generated valuable criteria for those regions where biodiversity conservation is a top priority. Hopefully, these efforts will eventually lead to the creation of a national strategy.

A. Assessing the Biological Value of Land

Any attempt to create a pattern of public land ownership that will preserve biodiversity must begin with a solid scientific understanding of what lands will provide the best return on the public's investment. Ultimately, a comprehensive national biological inventory is needed to accomplish this task.\textsuperscript{145}

An important starting point is a complete assessment of the biological worth of current federal land holdings. The results of such an assessment could then be used to guide use restrictions on those lands of high biological value, to ease or lift restrictions where biodiversity is not threatened, and to ensure that any federal land disposition, through land exchanges or otherwise, does not impair the goal of biodiversity preservation. This process is being carried out gradually by the federal land management agencies as they prepare land and resource management plans under statutory directives such as FLPMA.\textsuperscript{146} A broad approach to conservation planning on the national level will require integration of data gathered from each unit with similar data gathered around the country from all federal, state,

\textsuperscript{144} See \textsc{Saving Nature's Legacy}, supra note 10, at 87 (noting the absence of a U.S. strategy to conserve biodiversity).

\textsuperscript{145} See \textit{id.} at 95. Noss and Cooperrider point out, however, that land conservation efforts should not wait until biological inventories are complete. The process is a perpetual one and if this is used as an excuse to delay management decisions, more biodiversity will be lost. \textit{See id.}

\textsuperscript{146} However, the National Park Service has no general mandate to inventory its lands and operates with incomplete knowledge of the biodiversity on its lands. Any information results from piecemeal research efforts within the national parks that lack a guiding or coordinating methodology. \textsc{See F. Dominic Dottavio et al., Protecting Biological Diversity in the National Parks: Workshop Recommendations 43 (1990).} The GAO reported to Congress in 1997 that more scientific information is needed to inform the management of the national parks. \textsc{See General Accounting Office, National Parks: National Park Service Needs Better Information to Preserve and Protect Resources 2 (1997).} Because of the present lack of information some natural resource problems go undetected until it is too late, or extremely expensive to fix them. \textit{See id.} at 2.
and local land management agencies, as well as from private institutions.\textsuperscript{147} Only when this information is in hand will federal land management agencies be able to coordinate, and thus improve, their conservation efforts.

Both government and private organizations are working steadily to increase the amount of available biological data. Rough estimates surmise that federal lands contain at least one occurrence of only fifty percent of federally listed threatened and endangered species.\textsuperscript{148} Estimates further establish that areas protected within the United States fail to encompass between twenty-one and fifty-three percent of the major terrestrial ecosystems located within the nation's boundaries.\textsuperscript{149} This data demonstrates that currently protected areas are not alone sufficient to protect biodiversity in the United States.\textsuperscript{150}

In 1991, the Keystone Center, a private, non-profit organization, released a report (Keystone Report) on biodiversity and federal lands that provides a starting point for assessing the biological worth of current federal land holdings.\textsuperscript{151} The Keystone Report concluded that, while federal lands can play a "significant role" in conserving biodiversity, current public land holdings alone, even with changes in land management, cannot adequately preserve biodiversity in the United States.\textsuperscript{152}

Current federal holdings, particularly in the West, contain areas relatively low in biodiversity.\textsuperscript{153} For example, the geography and ecology of the western region of the country consist largely of mountain

\textsuperscript{147} Biological information is being gathered around the country, but such efforts have generally not been coordinated. \textit{See} \textit{National Research Council, A Biological Survey for the Nation ix-x} (1993) [hereinafter \textit{Biological Survey}].

\textsuperscript{148} \textit{See} Bruce A. Stein et al., \textit{Significance of Federal Lands for Endangered Species, in Our Living Resources: A Report to the Nation on the Distribution, Abundance, and Health of U.S. Plants, Animals, and Ecosystems} 398, 400 (Edward T. LaRoe et al. eds., 1995). About 25% of listed species have over half of their known occurrences on federal lands. About 12% of listed species are found almost exclusively on federal lands, with fewer than 10% of their known occurrences elsewhere. \textit{See id.}

\textsuperscript{149} \textit{See} Susan Shen, \textit{Biological Diversity and Public Policy}, 37 \textit{Bioscience} 709, 711 (1987). \textit{See also} David W. Crumpacker et al., \textit{A Preliminary Assessment of the Status of Major Terrestrial and Wetland Ecosystems on Federal and Indian Lands in the United States}, 2 \textit{Conservation Biology} 103, 111 (1988) (finding that at least 24% of the major terrestrial and wetland ecosystems in the U.S. are poorly represented on federal and Indian lands).

\textsuperscript{150} \textit{See}, \textit{e.g.}, Fink, \textit{supra} note 12, at 8 (stating that the national wildlife refuge system does not provide an adequate defense against biodiversity loss).

\textsuperscript{151} \textit{See Keystone Report, supra} note 13, at 1. The Keystone Center convened scientists, representatives of commercial interests, policymakers, and other individuals to generate a consensus report on the management of biodiversity on federal lands and recommend future biodiversity preservation strategies. \textit{See id.} at 1.

\textsuperscript{152} \textit{Id.} One obvious reason for this conclusion is that not all ecosystems are represented on public lands. \textit{See id.}

\textsuperscript{153} \textit{See Saving Nature's Legacy, supra} note 10, at 12, 22. Most large protected areas in the U.S. were selected not on the basis of preserving biodiversity, but rather on the
ranges surrounded by expansive valleys. The valleys typically harbor the highest potential levels of biodiversity, but much of this land is privately held and few natural areas remain. By contrast, the largest protected areas are found in the high alpine areas of the mountains where biodiversity levels are lowest. In addition, many migratory species depend on a variety of habitats throughout the United States and other countries, rendering the current pattern of isolated protected areas of only limited benefit to them.

The biological value of federal lands is further diminished by the present pattern of federal landholdings. Arguably the most notable example of this is the checkerboard pattern of federal land ownership that resulted from nineteenth century disposition. This "hodgepodge" pattern of land ownership creates significant management obstacles because ecosystems rarely coincide with property boundaries.

The Clinton Administration has achieved moderate success at efforts to establish a cohesive system for gathering biological data. Most notably, in 1993, Secretary Babbitt created the National Biological Survey (NBS) within the Department of the Interior. Secretary Babbitt described the mission of the NBS as providing "the map we need to avoid . . . economic and environmental 'train wrecks'" by "unlock[ing] information about how we [can] protect ecosystems and plan for the future." This objective includes inventorying, mapping, and monitoring biodiversity, and performing research that will enable the government to make more informed natural resource decisions. Proponents also suggested that the NBS lead a cooperative effort among public and private entities that are currently researching the nation's biological resources. Unfortunately, the NBS was targeted

basis of scenic, recreational, and economic criteria. Noss and Cooperrider note that there are no large parks containing tall-grass prairie or old-growth forests. See id. at 101.

154. See id. at 12.
155. See id.
156. In between the privately-owned valleys and protected mountain peaks often lie zones of public land that are used extensively for commodity production. See id.
157. See KEYSTONE REPORT, supra note 13, at 18.
158. See id. at 22.
159. See, e.g., FEDERAL PUBLIC LAND AND RESOURCES LAW, supra note 41, at 97-98 (describing grants to railroads of over 100 million acres in alternate, odd-numbered sections).
160. See id. at 308-09.
162. BIOLOGICAL SURVEY, supra note 147, at vii.
163. See id. at viii.
164. The coordinated effort would be called the "National Partnership for Biological Survey." Id. at 3, 5-22.
by conservatives in Congress eager to eliminate administrative agencies and protect private property. In 1996, the agency was relegated by statute to a division within the long established U.S. Geological Survey. The mission of the NBS will presumably remain the same, but its stature and influence was undoubtedly diminished by this attack on the importance of its mission. If the present NBS is fully functional, it could serve as the foundation at the federal level for building and coordinating the knowledge base necessary to create a system of effective biodiversity reserves.

Other institutions and organizations, such as The Nature Conservancy, that could be part of the proposed cooperative effort under the NBS have long been working to develop the scientific tools necessary to patch together systems of land ownership and management that will preserve ecosystems and their component species. Since 1974, The Nature Conservancy has fostered the establishment of a network of State Natural Heritage Inventories, which is the most significant effort to date at cataloguing biodiversity in the United States.


167. See id. at 1.

168. See Mollie Beattie, Biodiversity Policy and Ecosystem Management, in BIODIVERSITY AND THE LAW 15 (William J. Snape, III, ed., 1996) (discussing efforts of the NBS and FWS to integrate the biological databases used around the country into a single national system).

169. See SAVING NATURE’S LEGACY, supra note 10, at 111.

170. See KEYSTONE REPORT, supra note 13, at 82. The Nature Conservancy’s (“TNC”) efforts have established State Natural Heritage data centers in all fifty states. Typically, this begins as a cooperative effort between TNC and state agencies, and the state agencies take over the program once it is off the ground. These programs are ongoing efforts to accumulate knowledge of biodiversity, particularly natural community types and individual species. The data centers also collect information on land ownership patterns associated with biologically important sites, existing preserves and protected areas, secondary information sources and key contacts associated with various natural community types or individual species. As the Heritage programs mature, they are focusing more on piecing together a system of land management that will allow for biodiversity preservation. This task includes identifying the various land owners, making them conscious of the attributes of their land, and attempting to put together voluntary land management agreements that will preserve the biological resources of the area. When linked together, the data centers act as a comprehensive information system using standardized terminology and methods for the entire U.S., parts of Canada, and about 25% of the rest of the Western Hemisphere. This system is used predominantly at the local level for conservation planning, environmental impact reviews, land and resource management, scientific research, and other purposes. See id. at 82-89. In addition to the Heritage Program, the federal government has already, and continues to, generate a number of studies and reports useful in implementing a program of biodiversity preservation. See id. at 4.
The U.S. Fish and Wildlife Service has also developed a project called Gap Analysis (GAP), which seeks to supplement the state inventories. GAP is currently assessing the presence and distribution of various species and vegetation types using a variety of techniques, including satellite imagery. Unprotected areas that contain important and unrepresented species or vegetation types are then given priority for future protection efforts. The agency has initiated this project in over half of the states and work is scheduled to be completed early next century.

Another program worthy of note, although not directly related to biodiversity censusing, is the National Wetlands Inventory Project being carried out by the U.S. Fish and Wildlife Service under statutory mandate. Congress has directed that, by the year 1998, the agency must map all wetlands in the contiguous states; by the year 2000, it must map the wetlands in the entire country; and by the year 2004, it must digitize these maps and store them in a computer database. Because wetlands are important to many species, this project will provide valuable information that can advance efforts to identify significant wetland types that are underrepresented in protected areas.

In addition, regional efforts to assess the adequacy of current reserves for preserving biodiversity require the mapping of biological resources. One key question these surveys seek to answer is whether improving the management of land already under the juris-

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173. See Saving Nature's Legacy, supra note 10, at 113. A successful example of this program occurred in Hawaii where the existing protected areas were not adequately protecting the most critical sites for native bird species. The results of this effort, presented in a visual form consisting of maps of native bird hotspots, served as the impetus for the protection of these important areas through acquisitions by The Nature Conservancy and state and federal agency action. See id.
174. See id. at 110.
176. See id. § 3931(a) (1998).
178. The U.S. Fish and Wildlife Service, National Fish and Wildlife Foundation, Idaho Department of Water Resources, Oregon Department of Fish and Wildlife, and the Idaho and Oregon Natural Heritage Programs have combined to survey existing preserves within those two states to determine their adequacy in preserving biodiversity in the region. This survey is using GAP techniques to determine what percent of biodiversity—defined as vegetation types, vertebrate species, and butterflies—is protected in the current system of reserves. Where units of biodiversity are found outside of the reserve system, a "gap" has been identified. These efforts will enable governments to concentrate their management and reserve acquisition efforts where they will be the most effective. See Keystone Report, supra note 13, at 89.
diction of federal or state agencies may preclude the need for further land acquisitions.179

While making significant strides toward inventorying the nation's biodiversity, the above methods have numerous limitations.180 For example, state heritage programs often exhibit "white holes," or areas where the databases show an absence of key elements of biodiversity only because the area has not been adequately surveyed.181 Complicating the issue further, the programs do not distinguish between "white holes" and actual areas of low biodiversity that have been thoroughly surveyed.182 Thus, persons using these databases must be aware that they may not accurately reflect ground conditions.183 GAP analysis also has problems; for example, it operates at a "coarse level of resolution," which means it fails to identify certain habitats.184 Despite several limitations, these two systems of identifying biodiversity often provide the only information available to conservation biologists and should be used to guide current conservation efforts and to focus further studies.185

B. The Science Behind the Creation of a Biodiversity Reserve System

Noss and Cooperrider identify four objectives for a biodiversity strategy to satisfy the ultimate goal of biodiversity preservation.186 Those objectives are:

1. Representation, in a system of protected areas, of all native ecosystem types and seral stages across their natural range of variation.
2. Maintenance of viable populations of all native species in natural patterns of abundance and distribution.
3. Maintenance of ecological and evolutionary processes, such as disturbance regimes, hydrological processes, nutrient cycles, and biotic interactions.

179. See id. at 91.
180. See Saving Nature's Legacy, supra note 10, at 118.
181. See id.
182. See id.
183. See id. An additional limitation is the inability of heritage databases to accurately depict the existence of mammals with large home ranges, such as grizzly bears and wolves. These animals, which may occur in low population densities, are not well tracked by such a system and must be accounted for individually. See id. at 119. Because the databases focus solely on the rarity of a plant or animal, they do not distinguish between a species that historically has been very rare and one that has suffered serious decline as a result of human disturbance. See id.
184. Because GAP tries to work at an efficient level and not get bogged down by excessive detail, it operates at a larger scale than might be ideal. GAP units are usually 100 hectares (247 acres) and are too large to identify small or isolated habitats. See id. at 119-20.
185. See id. at 120.
186. See id. at 89.
4. Management of landscapes and communities that is responsive to short-term and long-term environmental change and that maintains the evolutionary potential of the biota.187 This Comment focuses on the first objective by seeking to identify appropriate criteria for a biodiversity reserve system and by suggesting modifications to the legal authorities that will enable the federal government to play an effective role in establishing such a system.

Because of the importance of protected areas to any biodiversity conservation strategy, the selection of these sites is critical to success.188 The ultimate goal is to represent every genotype, species, ecosystem, and landscape within protected areas.189 But before this long-range goal will ever become a reality, many more focused decisions must be made to slow the loss of biodiversity. For example, a variety of sites may be available to represent a single species; the question then becomes how to choose most effectively among multiple sites that would be adequate to save the particular species. Noss and Cooperrider suggest two major criteria for making these decisions: the species richness of the site and the number of endemic species at the site.190 Several other criteria may be introduced into the process, such as “naturalness, rarity, area (extent of habitat), threat of human interference, amenity value, educational value, scientific value, and representativeness.”191

The preservation of biodiversity requires more than simply setting aside isolated parcels of undisturbed habitats based on the above criteria. A coordinated system of reserve design and management is also essential. In order to protect the core reserves and allow for movement of individual animals (genetic material) among the reserves, scientists and managers must develop a program of integrated management to connect core reserves.192 If one of many potential core reserves is completely isolated from other nearby centers of biodiversity, conservation efforts might be better focused on preserving a core reserve that, although less biologically valuable than the isolated site, has potential to be connected to other reserves. Ideally,
the most biologically valuable reserve would be protected as well, or efforts would be made to reconnect it to other natural areas. However, limited resources require protection first of those sites that will produce the greatest conservation benefits.

As conservation science has evolved over the past two decades, so has the understanding of what an effective reserve system looks like. Many important developments in conservation science were inspired by MacArthur and Wilson's theory of island biogeography. Developed in the 1960s, this theory predicts the presence of species diversity on islands based on two variables: an island's size and an island's proximity to larger land masses. The application of the theory to conservation science is obvious: small habitat parcels that are far from other areas of undisturbed habitats are likely to be poorer in species than are large habitat parcels located next to other areas of natural habitat. Further studies have validated this hypothesis and aided in the development of guidelines for reserve system design.

The basic principle underlying the modern reserve system concept is that such a system, if designed properly, can produce "a whole that is greater than the sum of its parts." Although no single reserve may be capable of maintaining all of its biodiversity, particularly where species have large ranges, a system of reserves connected by habitat corridors and protected by buffer zones will more likely be able to maintain the full range of biodiversity in perpetuity.

The "multiple-use module" (MUM) concept is based on core reserves surrounded by areas of increasingly intense human use, and has three essential components: core reserves, multiple-use buffer

193. See id. at 138.
196. See Saving Nature's Legacy, supra note 10, at 138. The principles derived from these studies were synthesized into a set of general rules for reserve design: (1) large reserves are better than small reserves; (2) a single large reserve is better than a group of small ones of equivalent total area; (3) reserves close together are better than reserves far apart; (4) round reserves are better than long, thin areas; (5) reserves clustered compactly are better than reserves in a line; and (6) reserves connected by corridors are better than unconnected reserves. See id. at 139. However, these principles, particularly the second in the list, were the subject of intense debate in the scientific community for many years. This debate has finally subsided with most scientists agreeing that an ideal reserve system should have both large and numerous reserves. See id. at 140-41.
197. Id. at 144.
199. See id.
Core reserves provide the backbone of such a reserve system. They are areas maintained in their natural state and in which historical disturbance patterns (e.g., fires, floods, etc.) are allowed to proceed unchecked, or are replicated by management practices where necessary. Areas protected as core reserves also provide a "base-datum of normality" against which the impacts of human influence can be measured on non-protected, or less protected, sites.

Multiple-use buffer zones are those areas surrounding core reserves in which development and other human activities can be integrated into the reserve system. Noss and Cooperrider define the multiple-use buffer zone as "a zone that permits a greater range of human uses than core reserves but is still managed with native biodiversity as a preeminent concern." The primary functions of the buffer zones are to protect the core reserves from human activities occurring in surrounding areas and to ameliorate edge effects resulting from abrupt changes in land uses outside the core reserve. Examples of activities that could coexist with the concept of a buffer zone include non-motorized recreation, selective forestry, light grazing, and small-scale agriculture. BLM or Forest Service lands that surround national parks or wildlife refuges offer the easiest places to implement buffer zones, although the task still faces political obstacles. Currently, neighboring land management agencies often work at cross-purposes because they do not coordinate their efforts. Management of these lands should be effectively integrated into broader scale land management efforts.

200. See id.
201. See id.
202. Noss and Cooperrider provide the following examples of what current protected areas would qualify as core reserves in a reserve system: national parks, wilderness areas, research natural areas, state parks and preserves, BLM areas of critical environmental concern, national wildlife refuges, and Nature Conservancy and Audubon sanctuaries. See Saving Nature's Legacy, supra note 10, at 147.
203. See Gap Analysis, supra note 172, at 1-41.
204. Aldo Leopold, Wilderness as a Land Laboratory, 6 Living Wilderness 3 (July 1941).
205. However, even core reserves may not be able to serve as control sites for measuring human impacts elsewhere due to the cross boundary effects of some human activities, such as air and water pollution. See Saving Nature's Legacy, supra note 10, at 131.
206. See id. at 149.
207. Id.
208. See id.
209. See id.
210. See id. at 150.
211. See id. at 133-37.
Connectivity among the core reserves is essential to the biological health of species. The primary goal of corridors is to provide the potential for movement and interchange of members of a given species. This, in turn, enables the exchange of genetic material by interbreeding and thus prevents the problems associated with inbreeding and genetic isolation. While connectivity is an important component of reserve systems, the conservation biologist community continues to wrestle with remaining questions as to how best to meet this need.

The outline of an effective biodiversity reserve system provided by these principles is well accepted in the field of conservation biology. While scientific debate persists on various aspects of these principles, a framework is in place that can guide initial efforts.

C. Existing Efforts to Create Biodiversity Reserve Systems

There has been no comprehensive program undertaken by the federal government to ensure comprehensive ecosystem representation within protected areas. While land preserved over the years through the federal government’s protective designations has certainly benefited biodiversity, most of these areas were established with only minimal scientific input. Even the most expansive parks and refuges suffer from the inconsistent management of neighboring lands. In the past, it was often thought that merely establishing a large park or refuge would preserve the ecosystems included therein. How-

212. The role of corridors can be subdivided into several functions: permitting daily and seasonal flow of animals; facilitating dispersal and consequent gene flow between populations, which may rescue small, genetically poor populations from extinction; and allowing for the long-distance range shifts of species that may be necessary in response to global climate change. See id. at 152. Corridors also provide permanent habitat for some plants and animals. See id. at 151.

213. See id. at 151.


215. The square shape of many parks and wildlife refuges indicate that natural boundaries and the needs of species were only minimally, if at all, considered in their creation. Further, many of these areas are too small to maintain viable populations of their resident species. See SAVING NATURE’S LEGACY, supra note 10, at 132.

216. See id. at 133.

217. A prime example of this failed philosophy is Everglades National Park, which was established to preserve south Florida’s Everglades ecosystem. Even though the Park is of immense size (1.4 million acres) and is bordered by Big Cypress National Preserve (586,000 acres), the Everglades ecosystem is in serious decline due to water pollution and water diversions north of the Park. See id. at 104.
ever, as reflected in the parks and wildlife refuges currently managed by the federal government, this model of reserves has largely failed to protect the full spectrum of biodiversity.\footnote{218}

In response to this lack of an effective federal biodiversity strategy, a number of private organizations have begun laying the groundwork for regional and national reserve networks. The most notable effort to establish a national biodiversity conservation strategy was the Keystone Report referred to throughout this Comment.\footnote{219} However, because the Report reflected diverse interests and opinions, it formulated a weaker policy than would have resulted from strict adherence to principles of conservation biology.\footnote{220} Rather than suggesting concrete steps, the Report merely concluded that a national biodiversity preservation strategy should be developed.\footnote{221}

In addition, The Wildlands Project seeks to establish a network of connected wildlands throughout North America, thereby planning for the conservation of biodiversity over the next century and beyond.\footnote{222} This project, described as "a cooperative effort of conservation biologists and environmental activists to restore biodiversity and wilderness in North America,"\footnote{223} has already resulted in the creation of designs for large scale reserve networks in several regions of the country.\footnote{224} Until the loss of biodiversity attains a higher ranking on the list of national concerns, such visionary plans are likely to remain just that. Regardless of practical complications, however, these efforts provide a necessary impetus for scientists and environmentalists to continue this valuable work. When regional conservation planning does become a priority, as it has in a few areas of the country, the plans will already be in place to implement.

Finally, The Nature Conservancy has also actively attempted to preserve entire ecosystems through land acquisition and cooperative

\footnote{218. The system has failed because of the isolation of the parks and refuges and their inadequate size. Small reserves are simply unable to maintain viable populations of many species and are subject to negative repercussions from external activities. The national parks will be unable to maintain all of their biodiversity over time without increased management of neighboring lands and the creation of corridors to other protected areas containing populations of like species. See id. at 142.}

\footnote{219. See Keystone Report, supra note 13; Saving Nature's Legacy, supra note 10, at 87.}

\footnote{220. See Saving Nature's Legacy, supra note 10, at 87.}

\footnote{221. See id.}

\footnote{222. The Wildlands Project seeks to preserve biodiversity throughout North America by developing a system of regional reserve networks. See The Wildlands Project Mission Statement, Wild Earth 3-4 (1992) (special issue); see also Saving Nature's Legacy, supra note 10, at 90, 121, 157.}

\footnote{223. See Saving Nature's Legacy, supra note 10, at 121.}

\footnote{224. Plans have been developed for Florida, the Coast Range of Oregon, the southern Appalachians, and the northern Rocky Mountains. See id. at 120-21, 157.}
efforts with private landowners. In its most ambitious project to date, The Conservancy has created a program called “Last Great Places” that seeks to protect entire ecosystems throughout the United States. Last Great Places represents a concerted effort to forge new systems that integrate human land-use and ecosystem protection.

D. The Role of Federal Lands in a Reserve System

The late Mollie Beattie, a former director of the U.S. Fish and Wildlife Service, envisioned the role of the National Wildlife Refuge System as providing “anchor points for biological diversity.” Such “anchors” are necessary to preserve elements of biodiversity that are most sensitive to human disturbance. These often large protected areas will require outright government ownership due to the imposition of restrictive land-use regulations. Ideally, anchors will consist of existing and yet to be established national parks, national wildlife refuges, and wilderness areas—lands on which only temporary human activity is allowed. A system of buffer zones, comprised of both private and public lands, will then have to be created around the core

225. See John C. Sawhill, Last Great Places: An Alliance for People and the Environment, Nature Conservancy 6-15 (May/June 1991). As of 1994, The Nature Conservancy had acquired a total of 3,051,730 acres for conservation purposes, 2,495,366 of which were subsequently transferred to other entities, primarily the federal and state governments. See Land Ownership Information, supra note 30, at 7. Two other private conservation organizations also play a large role in land conservation. The Conservation Fund has acquired 159,804 acres since its incorporation in 1985, transferring 85,282 of these acres to other entities. The Trust For Public Land has acquired 606,883 acres since its incorporation in 1972, with 585,205 acres subsequently being transferred. See id. In addition, local and regional land trusts have had a significant impact on land conservation, and they continue to grow in number. As of 1995, there were 1100 such organizations that had collectively protected over four million acres of open space, wildlife habitat, and farmland from development. Due to the diverse purposes under which land trusts operate, the difficult task of measuring their impact on preserving biodiversity has not yet been undertaken. See Telephone Interview with Kieran Roe, Information Specialist, Land Trust Alliance (Apr. 23, 1997).


227. See id.

228. Beattie, supra note 168, at 12.

229. See Keystone Report, supra note 13, at 22. These large reserves that will be most protected from human influence will allow evolutionary processes to continue as they would have in the absence of human interference. See id.

230. See id. It is not necessary that human activity be entirely prohibited in such areas, but management should emphasize the needs of long-term biodiversity preservation and evolutionary processes. See id. The contrary position presented in the Keystone Report argues that areas such as national parks and wilderness areas may actually hinder the conservation of biodiversity by locking up resources on those lands and causing heavier human activity on other public and private land. See id. at 23. This position also argues that the “spirit of cooperation” among private landowners, commodity users, and natural resource managers would be dampened if the threat of land acquisition or withdrawal appeared as a method of coercing the former two groups into adopting strategies to preserve biodiversity. See id.
reserves to protect them from external threats.\textsuperscript{231} Finally, a system of corridors between the core reserves will enable essential species dispersal and genetic mixing.\textsuperscript{232}

In some regions of the country, sufficiently large public land holdings can serve as more than mere "anchor points." In these regions, all public holdings need not be exclusively managed for biodiversity, but the same strategy of surrounding core reserves with zones of increasing human influence should be used. National parks and wilderness areas can provide the core reserves, with increasing levels of commodity production or recreational use permitted as one moves away from the reserve area. Land that is currently under federal control and that is deemed unnecessary for such a system may still play a role in conserving biodiversity through land exchanges that protect habitat in other regions.\textsuperscript{233}

\section*{III \textbf{TOOLS FOR INCREASING THE EFFECTIVENESS OF FEDERAL LAND OWNERSHIP IN THE PRESERVATION OF BIODIVERSITY}}

As discussed above, government property ownership is unlikely ever to satisfy fully the needs of biodiversity preservation. There simply are not adequate resources available, nor the political will necessary to make them available, to acquire conservation lands sufficient to protect every ecosystem. Laws that preserve habitat on private land through restrictions on the use of private property are therefore essential. However, existing tools within the arsenal of federal law, if fully implemented, could enable government property ownership to play a more prominent role in the preservation of biodiversity. Moreover, in certain areas, the structure of laws could be altered to serve this end more successfully. This Part discusses federal laws and programs that can be used to preserve biodiversity through federal land ownership, with emphases on improving their effectiveness as they currently exist and on altering them where necessary.

\textbf{A. Revitalizing the Land and Water Conservation Fund (LWCF)}

The Land and Water Conservation Fund (LWCF or Fund) was created by statute in 1964.\textsuperscript{234} The Land and Water Conservation Fund

\begin{footnotesize}
\begin{itemize}
  \item \textsuperscript{231} See id. at 22. The most readily envisioned system is one of concentric rings of permitted land uses surrounding the core reserve. However, this image is not always achievable, or even necessary, and the buffer zones may consist of a patchwork of land ownership and activities designed with the health of the core reserve in mind. See id.
  \item \textsuperscript{232} See id. at 23.
  \item \textsuperscript{233} See infra part III.E.
  \item \textsuperscript{234} 16 U.S.C. §§ 4601-4 - 4601-11 (1998).
\end{itemize}
\end{footnotesize}
Act (LWCF Act or Act) designates particular sources of federal revenue as available for use to acquire and develop facilities for outdoor recreation. The purpose of the Fund is to:

assist in preserving, developing, and assuring accessibility to all citizens of the United States of America of present and future generations and visitors who are lawfully present within the boundaries of the United States of America such quality and quantity of outdoor recreation resources as may be available and are necessary and desirable for individual active participation in such recreation and to strengthen the health and vitality of the citizens of the United States by (1) providing funds for and authorizing Federal assistance to the States in planning, acquisition, and development of needed land and water areas and facilities and (2) providing funds for the Federal acquisition and development of certain lands and other areas.235

Consistent with its purpose, the Fund has been used to create a vast array of outdoor recreation opportunities for the American public and visitors to the country. Since 1964, the LWCF has funded virtually every addition to the National Park System.236 It has also served as the “cornerstone” of state and local government efforts to improve outdoor recreation opportunities by providing matching funds for the acquisition and development of publicly held lands.237 Indeed, one author has labeled the LWCF the most significant piece of environmental legislation in the United States.238 By the early 1990s, the LWCF had provided $3.6 billion to the Departments of Agriculture and the Interior239 for the addition of over 2.8 million acres to their landholdings.240 As of 1993, the LWCF had provided $6.8 billion for the acquisition and development of outdoor recreation sites and wildlife habitat by federal, state, and local governments.241

The Kennedy Administration promoted the LWCF concept and submitted the original draft on which the Act was modeled when it passed almost a year after President Kennedy’s assassination.242 Then

236. See These American Lands, supra note 65, at 38. Among the most notable examples is the creation of Redwood National Park in 1968, which was the largest addition to the National Park System since Great Smoky Mountains National Park was created in the 1930s. See id.
237. See Peter A. Fahmy, Conversion Restrictions Of The Federal Land And Water Conservation Fund, 21 Colo. Law. 1417 (1992). Fahmy points out that, as of 1992, the LWCF had provided more than $66 million in matching grants for state and local projects in Colorado. See id.
239. See Setting Priorities, supra note 30, at 52.
240. See Federal Public Land And Resources Law, supra note 41, at 890.
241. See Setting Priorities, supra note 30, at 52.
Secretary of the Interior Stewart Udall led the effort from within the Administration.\textsuperscript{243} Forty-nine of the fifty states also endorsed the LWCF Act.\textsuperscript{244} Spurring this support was a growing awareness during the 1950s and 1960s that the lack of new national parks following World War II would contribute to dramatically increased use of existing parks, which would result in tremendous strain on the parks' unique qualities.\textsuperscript{245}

While the primary motivation for passage of the LWCF Act was to increase the availability of outdoor recreation,\textsuperscript{246} the Fund has, both directly and indirectly, conferred great benefits on biodiversity. Most areas acquired with Fund money at least tangentially benefit fish and wildlife, and many, such as the national parks and wildlife refuges, provide substantial and much-needed blocks of relatively undisturbed natural habitats. Both the Act and its legislative history reveal that Congress and the President envisioned more than playgrounds and tennis courts when considering potential uses for the Fund.\textsuperscript{247} Indeed, a proposed Senate amendment that would have allowed for the use of LWCF money to develop recreational facilities on federal land was rejected in a conference committee.\textsuperscript{248} The conference committee viewed the need for money to acquire lands as much greater than the need to fund additional recreational development.\textsuperscript{249} The committee further stated that the basic purpose of the Act was to rectify the

\textsuperscript{243} See \textit{Stewart L. Udall, The Quiet Crisis} 181 (1963) (stating that "[t]he Land and Water Conservation Fund proposed by President Kennedy may mark a turning point in conservation history").

\textsuperscript{244} See S. Rep. No. 88-1364, at 1.

\textsuperscript{245} See \textit{These American Lands}, supra note 65, at 38.

\textsuperscript{246} See S. Rep. No. 88-1364, at 4 (describing the LWCF bill as "a recreation bill"). Congress saw a great need for expanding the outdoor recreation opportunities as a result of increased use of outdoor recreation areas, both state and federal, since World War II. The Senate Report cites statistics that show a rise in the use of outdoor recreation areas far exceeding the growth in population. Between 1946 and 1962, the use of national parks more than quadrupled, use of national forests increased more than six times, and use of state parks more than tripled. See \textit{id}.

\textsuperscript{247} The LWCF Act allows expenditures from the Fund for limited additions to national parks, national forests, national wildlife refuges, and wilderness areas. See 16 U.S.C. § 4601-9(a)(1). Similar explanations in the legislative history of what types of lands were to be acquired with the Fund indicate that "recreation" was to include outdoor experiences requiring wilderness-like settings. See S. Rep. No. 88-1364, at 3, 7-9. Further, the original LWCF Act contained a provision allowing for acquisition of threatened and endangered species habitat with LWCF money. See \textit{id}, at 19, 21, 27. The availability of the Fund for aiding threatened and endangered species was reasserted in the Endangered Species Act of 1973, which specifically authorizes acquisitions of habitat financed by the Fund. See 16 U.S.C. § 1534(b) (1998).


\textsuperscript{249} See H.R. Conf. Rep. No. 88-1847.
backlog in land acquisitions. Other legislative history also indicates
that the Fund was to be used to protect natural resources in conjunc-
tion with providing outdoor recreation. In the few cases that deal
with the LWCF, courts have given the Act a preservationist gloss as
well.

1. How The LWCF Act Functions

There are two facets to the LWCF Act. First, it designates partic-
ular sources of revenue for funding land acquisition and outdoor rec-
reation projects. Second, it specifies criteria for expending these
funds once they are appropriated by Congress, unless Congress
designates how they are to be spent in the appropriating act.

The LWCF designates revenue sources that generate $900 million
annually. This large sum of money, kept within the U.S. Treasury
and guaranteed annually through the year 2015, originates from three
primary sources: (1) sales of surplus federal property; (2) taxes on
motorboat fuels; and (3) revenues payable to the U.S. Treasury as
“miscellaneous receipts” under the Outer Continental Shelf Lands
Act. The LWCF Act also allows for any money from the U.S.
Treasury “not otherwise appropriated” to be allocated to the Fund.

The distributive side of the LWCF has two components. The first
provides money to federal agencies for the purchase of new units of
land. The second aspect of the Fund is a matching grant program
that provides money to state and local governments for the acquisition
of outdoor recreation areas. At least forty percent of the money
appropriated from the Fund each year must be spent for federal pur-
poses—although in recent years federal projects have accounted for


251. See, e.g., Friends of the Shawangunks, Inc. v. Clark, 754 F.2d 446 (2nd Cir. 1985).
The court held that the LWCF was properly used to purchase conservation easements on
private land that did not also include the right to public access. The court found that the
LWCF Act allowed for “protection of a present resource in its natural state,” and that one
focus of the Act was “preservation.” Id. at 450.


253. See id.

254. 43 U.S.C. § 1331. These receipts are payments for leases auctioned off by the
Secretary of the Interior. Those leases allow drilling in offshore waters under the jurisdic-
tion of the federal government. See id. § 1337. This source of revenue was added to the
LWCF three years after its inception due to Congress’ realization that existing revenues
were inadequate to accomplish the purposes of the Act. See S. Rep. No. 90-1071 (1968),


256. See id. § 460l-9(a) (1998).

257. See id. § 4601-8(a) (1998).

258. See id. § 4601-7 (1998).
nearly all of the appropriations. This Comment focuses on the federal side of the program, but the state matching grants could play an equally important role in preserving biodiversity if states were inclined to use their grants for that purpose.

a. Federal Acquisitions

The LWCF Act enables Congress to appropriate money from the Fund for specific acquisitions designated in the appropriating act, or simply to appropriate money from the Fund and allow the Executive Branch to decide where to spend it, within limits imposed by the Act. However, the fact that Congress must make annual appropriations from the Fund has seriously limited its effectiveness. The requirement that all acquisitions have independent statutory authorization is an additional, although much less troublesome, restriction imposed by the Act; the Act provides only a source of funding, not an authority for land acquisition. Indeed, the LWCF Act imposes significant limitations on certain types of acquisitions, depending on what category of land is involved. Generally speaking, none of these restrictions, other than inadequate congressional appropriations, poses an insurmountable obstacle for executive agencies in acquiring lands to protect biodiversity.

The general grant of authority to the President provides that LWCF money appropriated, but not allocated, by Congress may be spent “[f]or the acquisition of land, waters, or interests in land or waters.” However, the Act imposes additional limits on the Executive’s discretion. As mentioned above, the Act prohibits spending money appropriated from the Fund unless the particular acquisition is authorized by other federal law. Thus, the Executive must ensure that there is an independent statutory basis granting land acquisition authority for a particular purchase and that the LWCF Act does not prohibit the use of Fund money for the purchase. This limit on agen-

259. See Alex Barnum, A Bid to Restore Park Fund That Congress Keeps Raiding, S.F. CHRON., Jan. 9, 1997, at A2 (citing diminishing appropriations for state projects in recent years).

260. See 16 U.S.C. § 460l-9 (1998). Both the Act itself and the legislative history make it clear that this was not intended to be an independent source of money for the federal agencies absent Congressional appropriation. See id.: S. REP. NO. 88-1364, at 10 (1964).

261. See 16 U.S.C. § 460l-9 (1998). See also S. REP. NO. 88-1364, at 19 (containing a letter from President Kennedy to the President of the Senate, Lyndon Johnson, asserting that the proposed Land and Water Conservation Fund would not create any new acquisition authority, but merely provide a source of funds to implement existing acquisition authorities or those enacted in the future).

262. 16 U.S.C. § 460l-9(a)(1) (1998). This provision permits acquisition of restrictive easements and water rights provided compliance with the remainder of the restrictions. See id.

263. See id. § 460l-9(b) (1998).
cies' discretion does not significantly impair their ability to create biodiversity reserves because numerous other statutory authorities allow use of LWCF money for land acquisition and impose only minimal, flexible standards on agencies. Further, in regard to national park inholdings, a federal district court has held that the National Park Service is authorized to use LWCF money to acquire inholdings, even in the absence of express statutory authority, due to the agency's long-standing practice of doing so and Congress' awareness of this practice. The court held that all that is required before LWCF money may be spent is a showing of general congressional intent to acquire lands. Presumably, this rationale would also apply to other agencies with similar long-standing practices of acquiring certain types of lands.

The LWCF Act names several statutes under which the Fund can be used to acquire land for the conservation of fish and wildlife, including the Endangered Species Act (ESA). Although the ESA focuses on species on the verge of extinction, its land acquisition authority grants the Departments of Agriculture and the Interior broad powers to acquire land for the conservation of "fish, wildlife, and plants," including, but not necessarily for, the protection of threatened and endangered species. Even before enactment of the ESA in 1973, the original version of the LWCF Act allowed for use of the Fund to acquire "national area[s] which may be authorized for the preservation of species of fish or wildlife that are threatened with extinction." The LWCF Act thus represents one of the first recognitions by Congress of the extinction crisis.

In addition, amendments to the LWCF Act since 1964 have broadened the government's ability to acquire wildlife refuges with LWCF money. As originally passed, the LWCF Act allowed the FWS to purchase new refuge lands only if they were subsequently to contain some form of recreational development. In 1976, Congress amended this provision to allow the FWS to acquire land for refuges created by statute without subsequently developing recreational facilities thereon. The Act was again amended in 1986 to allow for the

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265. See id. at 472.
267. Id. § 1534(a).
acquisition of any land or water, or interests therein, for the protection of fish and wildlife and other wetland areas with LWCF money.\textsuperscript{271}

Lastly, the LWCF Act authorizes the President to spend Fund money to purchase land located within or adjacent to any existing conservation area that is suitable for recreation related to fish and wildlife, natural resource protection, or the conservation of threatened and endangered species.\textsuperscript{272}

These avenues for acquisition provide executive agencies, most notably the FWS, considerable flexibility in applying LWCF money to biodiversity preservation projects. The acquisition provisions under the ESA appear unlimited in scope, provided a given acquisition satisfies the basic purpose of conserving “fish, wildlife, and plants.”\textsuperscript{273} Courts have also liberally construed the government’s ability to use the Fund for endangered species purposes.\textsuperscript{274}

In contrast to wildlife refuges, the LWCF Act significantly limits expenditures of LWCF money for the acquisition of additions to national parks and national forests. These restrictions may present complications for the Park Service or Forest Service when seeking to add to their holdings, a process that benefits fish and wildlife by providing buffer zones around existing national parks or forests.

National park acquisitions with LWCF money must be within the boundary of either an existing national park or another area administered by the Department of the Interior for outdoor recreation.\textsuperscript{275} This limits the ability of the Park Service to protect national parks by acquiring fee title or restrictive easements bordering national parks. However, the LWCF Act does grant the Secretary of the Interior the power to make “minor” boundary revisions to national parks where


\textsuperscript{272} See 16 U.S.C. § 460k-1 (1998). This amorphous definition explicitly covers units of the National Wildlife Refuge System and national fish hatcheries. The other areas it may include seem open to interpretation.


\textsuperscript{274} See Friends of Shawangunks, 754 F.2d at 450. The court in Shawangunks, a case relating to the state grant side of the Fund, interpreted the Act as providing, at least in part, for the “protection of a present resource in its natural state.” Id. Further analysis of the structure of the Act, such as the provision allowing for use of the Fund’s money for acquisitions to protect endangered species and for protection of natural resources, led the court to conclude that the LWCF had “preservation” as one of its purposes. See id. The holding of U.S. v. 0.37 Acres of Land allowed the National Park Service to acquire inholdings with LWCF money even though there was no direct statutory authority for that particular acquisition. The court inferred the authority from Congress’ intent to make funds from the LWCF available to the Park Service. See 414 F.Supp. at 472.

\textsuperscript{275} See 16 U.S.C. § 460l-9(a)(1) (1998). A common use of LWCF money is to acquire private “inholdings” in national parks, although the amount of money allocated for this purpose under the LWCF pales in comparison to the need for such acquisitions. These American Lands, supra note 65, at 46.
necessary for the preservation or protection of the park.\textsuperscript{276} LWCF money can be used for acquisitions within the "minor" boundary extensions.\textsuperscript{277}

In regard to the national forests, the LWCF Act requires that acquired lands be either (1) inholdings within wilderness areas of the National Forest System, (2) "other areas" within the boundaries of national forests as they existed upon passage of the LWCF Act if such "other areas" are "primarily of value for outdoor recreation purposes," or (3) areas within "purchase units approved by the National Forest Reservation Commission" after the date of the Act.\textsuperscript{278} The Act allows the acquisition of parcels up to 3000 acres in size that are adjacent to national forest boundaries if the parcels comprise an integral part of a forest recreational management area.\textsuperscript{279}

Ideally, the more stringent restrictions on how the Forest Service and Park Service can spend LWCF money would be eliminated to enable these agencies to use such funds better for the protection of biodiversity. Alternatively, the bulk of LWCF money could be appropriated to the FWS, which could then apply its greater ecological expertise to determining the uses for such funds that would most benefit biodiversity preservation.

\textbf{b. State Grants-in-Aid Program}

The LWCF also functions as a "matching grant program" that assists state and local governments in acquiring and developing outdoor recreation facilities.\textsuperscript{280} Until recently, appropriations to the states from the LWCF nearly equaled appropriations for federal expenditures.\textsuperscript{281} Some state and local Fund money goes to urban parks and recreational facilities that do not contribute significantly to the preservation of biodiversity. However, in many instances, states and localities have used the Fund to preserve open space, which may have substantial benefits for biodiversity.\textsuperscript{282} In addition, since 1988, states

\textsuperscript{277} Id.
\textsuperscript{278} Id. § 460l-9(a)(1).
\textsuperscript{279} See id. The Act also requires that no more than 15\% of the entire acreage added to the national forests under the Act be located west of the 100th meridian. See id.
\textsuperscript{280} See id. § 460l-8(c) (limiting LWCF grants to 50\% of the total cost of a state or local recreation project).
\textsuperscript{281} See Barnum, supra note 259, at A2.
\textsuperscript{282} See, for example, Friends of Shawangunks, Inc. v. Clark, 754 F.2d 446 (2nd Cir. 1985), where the court approved the acquisition of a conservation easement by the State of New York with an LWCF matching grant. Although the easement did not allow public access to the area in question, the court deemed the easement to be within the purposes of the Act, finding specifically that the easement was encompassed within the term "public outdoor recreation uses." See id. at 449; 16 U.S.C. § 460l-8(f)(3) (1998). The court further found that the preservation of "scenic vistas" and the protection of a buffer zone around a
have been required to give special consideration to wetlands as an important outdoor recreational resource when allocating LWCF grants among state projects.\textsuperscript{283}

The Department of the Interior operates the state grant side of the LWCF.\textsuperscript{284} States must designate a particular agency to administer the program; that agency then interacts with Interior in its grant allocations.\textsuperscript{285} Both state and local projects must comply with certain requirements, including the state's Statewide Comprehensive Outdoor Recreation Plan (SCORP) developed pursuant to the LWCF Act.\textsuperscript{286}

LWCF funding carries with it some federal control over future uses of the state or local project. The most significant restriction is that projects funded with LWCF money may not be "converted to other than public outdoor recreation uses."\textsuperscript{287} This restriction has spawned two published decisions from federal courts, both in cases brought by environmental organizations when a state or local government sought to alter the use of a park or open space purchased with LWCF grants.\textsuperscript{288} In order to actually convert an LWCF funded area, the state or local government must obtain approval from the Secretary of the Interior and offer property of at least equal fair market value and recreational utility to replace the property that will be converted.\textsuperscript{289} As a practical matter, the Secretary approves most conversion requests supported by the state agency overseeing the LWCF program.\textsuperscript{290} However, because the Secretary's approval is required, conversions are subject to review under the National Environmental Policy Act (NEPA) and can potentially trigger that Act's environmental impact statement requirement.\textsuperscript{291} Thus, the LWCF Act and NEPA provide the federal government and the public with a method of en-
suring that state and local governments fulfill the conservation promises they made when receiving LWCF funds.

2. Problem of Inadequate Appropriations

Congress' unwillingness to appropriate an amount even close to the total sum flowing into the Fund presents the greatest obstacle to relying on the Fund to provide significant resources for establishing a biodiversity reserve system. Prior to the passage of the Interior Appropriations bill for fiscal year 1998 in November of 1997, LWCF appropriations had declined to almost all time lows. For fiscal year 1997, Congress appropriated only $149 million from the LWCF, the smallest amount since 1974; it appropriated no money for state matching grants. Congress long ago recognized the likelihood of this problem. When debating the 1976 amendments to the Act, the conference committee stated that present unappropriated money in the Fund should be released and no backlogs be allowed to accumulate in the future.

Even during the Reagan Administration, when Secretary of the Interior James Watt scornfully termed the LWCF the "so-called park-a-month program," appropriations from the Fund were higher than they have been in recent years. The opposition advanced by Watt at the time, and that occasionally raised today, was that we should devote our limited resources to the upkeep of the public lands we currently have, rather than continually adding to the federal land base.

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292. Subsequent to the writing of this Comment, the debate over LWCF appropriations reached its greatest intensity in several years. This resulted in a $699 million appropriation for fiscal year 1998. P.L. 105-85. However, there was considerable controversy over this appropriation as Congress allowed for some of the money to be used by federal agencies for repair and maintenance.

293. Of this amount, $10.4 million went to the BLM, $44.5 million to the FWS, $53.9 million to the NPS, and $40.6 million to the Forest Service. See Pub. L. No. 104-208, 110 Stat. 3009 (1996).


297. Federal Public Land and Resources Law, supra note 41, at 890. Watt also labeled the program "park barrel politics" and declared a moratorium on land acquisition under the program, which was lifted soon after he resigned. Id. Interestingly, Watt had a vastly different opinion of the LWCF earlier in his career while heading the Bureau of Outdoor Recreation during the Nixon Administration; he once called the Fund "one of the most effective conservation programs in America." These American Lands, supra note 65, at 38.

298. See Federal Public Land and Resources Law, supra note 41, at 890.
Unappropriated Fund money remains in the federal Treasury, theoretically available for future appropriation. The balance of unappropriated money that has accumulated in the Fund currently exceeds $13 billion. The 1968 amendments adding off-shore oil lease revenue to the Fund specifically require that such revenue remain in the Fund "until appropriated by Congress" to carry out the purposes of the Act. In the 1987 amendments, Congress also required that money from all sources remain in the Fund until appropriated, amending the previous provision that allowed for money in the Fund not appropriated after two years to revert to miscellaneous receipts in the Treasury. A provision of the Act requiring that appropriations from the Fund may be made "without fiscal year limitation" further illustrates the fact that Congress intended the Fund to continue accumulating money when it failed to appropriate the authorized amount each year.

Recent legislative attempts to appropriate some of the accumulated money currently sitting in the LWCF have proven unsuccessful. For example, a failed 1993 Senate bill would have released $1 billion annually for five consecutive years for the acquisition of "the significant backlog of unacquired lands within the authorized boundaries of units of the national park, wildlife refuge, wilderness, wild and scenic river, trail, and forest systems." Of this amount, $200 million was to be awarded annually to state and local governments under the matching grant provision of the Act.

3. Proposals for LWCF Reform

During the recent era of budget belt-tightening, the LWCF did not play a major role in land conservation. Both environmental and recreation interest groups have long lobbied for reinvigorating the LWCF, but their efforts have failed to yield substantive reform.

300. See id.
304. See S. 721, 103d Cong. § 13(a) (1993) (introduced by Senator Johnston of Louisiana). See also, THESE AMERICAN LANDS, supra note 65, at 53 (arguing that a top priority for the Clinton Administration should be passage of a similar law to release funds for the acquisition of national parks).
305. See S. 721, § 13(b)(1).
306. The great-grandson of President Theodore Roosevelt along with 150 environmental, conservation and recreation groups behind him, is leading the effort in 1997 to urge Congress to increase the funding of public lands, including the LWCF. See Roosevelt, Con-
Even amidst current projections of budget surpluses, the LWCF is unlikely to provide a reliable source of conservation funding absent structural reforms that limit Congress' discretionary control over annual expenditures. Moreover, the media has failed to fully inform the public about congressional malfeasance regarding LWCF appropriations. Nevertheless, the public appears to substantially support spending money to acquire open space for aesthetic and environmental purposes. For example, state bond measures that provide funds for land acquisition programs have proliferated in recent years. Private land trusts are also becoming more numerous throughout the country. Thus, support may well exist for LWCF reform.

In addition to attempts to appropriate money accumulated within the Fund, there have been recent efforts to amend the structure of the LWCF. Most proposed remedies involve removing the LWCF from the budget process to prevent mixing of LWCF money with funds in the general treasury and to eliminate the necessity of annual appropriations.

The Florida black bear was cited as an imperiled species that would benefit from federal land acquisition under the LWCF. The U.S. Forest Service is in the process of acquiring the Pinhook Swamp in Florida, which provides a habitat corridor between the Osceola National Forest and the Okefenokee National Wildlife Refuge. This example demonstrates the usefulness of federal land acquisition in preserving biodiversity through protection of habitat corridors between existing large areas of relatively undisturbed habitat.

In general, the media focuses on the LWCF only when it is implicated in a local project. This attention helps publicize the existence of the Fund, but does not always inform the public that far more money exists within the Fund than is actually appropriated. Occasionally, an editorial page will publicize the LWCF, such as a June 5, 1996, editorial in the San Francisco Chronicle entitled "Stop Congress' Raid on Land Conservation." This editorial did focus on a local issue, specifically, an opportunity for the federal government to purchase a 240-acre inholding in California's Trinity Alps Wilderness. However, the editorial also mentioned Congress' general "looting" of the Fund and the dramatic increase in demand for outdoor recreation over the past 50 years. See generally Wilkinson, supra note 299, at 3 (describing the Fund as "one of the most obscure public endowments on the books").

Most proposed remedies involve removing the LWCF from the budget process to prevent mixing of LWCF money with funds in the general treasury and to eliminate the necessity of annual appropriations.
In 1988 and 1989, a major effort to reform the LWCF by establishing a “Heritage Trust” gained wide support in both Houses of Congress, but did not result in new law. The American Heritage Trust Act of 1989 (AHTA) would have revolutionized land conservation in the U.S. by creating a steady stream of funds for both state and federal projects, shielded from the vagaries of Congressional appropriations. Further, the AHTA recognized the important role of land conservation in preserving biodiversity. The Act stated that the United States should demonstrate through its policies the “pressing need to assure the global sustainability of species diversity and healthful functioning of natural systems.” Among the statistics cited in support of the AHTA was the annual loss of over 500,000 acres of wetlands and 750,000 acres of “farm and forest” to suburban sprawl and other development.

The AHTA would have created a permanent trust fund by investing money from the LWCF and Historic Preservation Fund in government securities, thus producing steady income for land conservation and historic preservation. The principal of the trust would be maintained at the level necessary to generate $1 billion per year for LWCF purposes and an additional $250 million per year for historic preservation purposes. Once the principal reached a sufficient level, the fund would no longer require input from traditional funding sources, thereby making it a self-sustaining program. The AHTA would have removed the current requirement that Congress appropriate the interest accruing to the trust; once the interest was generated, it would automatically be available for use. The AHTA would also have encouraged the creation of land conservation trusts at

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idea. FEDERAL PUBLIC LAND AND RESOURCES LAW, supra note 41, at 897. The report of the “President’s Commission on American Outdoors,” released in 1987, is entitled “Americans and the Outdoors.” Id.


313. See H.R. 876, 101st Cong. (1989); S. 370, 101st Cong. (1989). In addition to providing for the preservation of the country’s “natural” heritage, the AHTA would also have funded historical and cultural preservation projects. H.R. 876, § 101.

314. H.R. 876, § 2(a)(4); see also 135 CONG. REC. S1255 (1989) (statement of Senator Graham) (adding habitat protection, preservation of species, and protection and restoration of ecological systems to the goals of the AHTA).


318. See H.R. 876, § 203.


320. See H.R. 876, § 204.
the state level by allowing, for a limited number of years, grants that would be put into the states' own trust accounts.\textsuperscript{321}

Subsequent attempts to legislate mandated appropriations from the Fund have proven equally unsuccessful. In 1993, Senate Bill 322 mandated funding of federal programs under the LWCF at levels twice the amount spent in fiscal year 1992.\textsuperscript{322} The bill also required that appropriations from the Fund be split evenly between state and federal programs.\textsuperscript{323} The bill further provided a small incentive for states to pursue recreation projects with environmental or wildlife benefits by increasing the federal matching grant to eighty percent of the cost of such "multi-purpose" projects.\textsuperscript{324} However, this bill also failed to pass into law.

The notion of a "heritage trust" that is not subject to raids by Congress is appealing from a biodiversity preservation perspective. A trust would guarantee a certain amount of money to federal agencies every year to be spent on the purchase of critical wildlife habitat or the acquisition of restrictive easements on private property. A consistent source of funding would have benefits beyond the acquisition of more land. The knowledge that funds would be available for the foreseeable future would enable agencies to plan better their acquisitions and to attempt larger projects that may require several years to complete. In addition, agencies could prioritize the acquisitions with a narrow time frame for completion without worrying that an even more biologically valuable, but less imminently endangered, parcel might have to be passed up in the future due to inadequate or fluctuating funding.

When and if Congress amends the LWCF to create a permanent trust, additional criteria should govern priorities for acquisition. Even when lands are acquired primarily for recreational purposes, biodiversity should be recognized as a preeminent consideration. These uses are by no means mutually exclusive and both should be considered when making any acquisition. Further, states should have to account for biodiversity considerations in the development of their SCORPs. While the LWCF is not geared exclusively toward wildlife preservation, any acquisition by a state or local government should consider the benefits, or lack thereof, to biodiversity. The amended LWCF should require that a portion of LWCF money going to a particular state be used to address gaps in the coverage of protected natural areas within that state.

\textsuperscript{321} See id. § 206(j)(1).
\textsuperscript{322} See S. 322, 103d Cong. § 3(a)(2) (1993).
\textsuperscript{323} See id. § 3(a)(3). The existing requirement is that at least 40% goes to federal purposes.
\textsuperscript{324} See id. § 5(a)(2)(A).
4. Roadblocks to Reform

Although promising in the late 1980s, LWCF reform, or even increased appropriations, seems a more remote possibility in this era of tighter federal budgets and increased hostility toward environmental programs. Improved funding for land acquisition faces several barriers.

First, some argue that the federal government already owns far too much land, much of which serves no purpose beyond commodity production. However, the vast amount of land under federal ownership does not ensure that future needs for biodiversity preservation will be satisfied. Instead, the land currently in federal ownership is inadequate to provide the necessary reserves for a larger biodiversity conservation strategy.

Second, the budget cutting era of the recent past offered an easy rationale for any spending cut or non-expenditure of LWCF money. However, estimates of potential budget surpluses may alleviate this pressure over the next decade. Furthermore, this justification is less persuasive in the LWCF context than that of other federal spending programs because the former program evinces an express statutory intention that such revenue be used for land acquisition. If a balanced budget truly requires removing money from the LWCF, then Congress should further open the debate to the political process by attempting to amend the LWCF Act, or by eliminating it altogether, rather than simply failing to appropriate money from the accumulating Fund.

Third, some argue, as did former Secretary of the Interior James Watt, that maintenance of the land currently in federal ownership should take precedence over additional acquisitions. This viewpoint assumes the LWCF to be a fungible asset that can be used in any manner desired, rather than a source of acquisition funds, as Congress intended. While it is certainly true that our national parks and other recreational areas are in need of better maintenance, this is not a reason to forgo the critical task of preserving habitat. The management costs incurred from additional wildlife refuges will not be as significant as those required to maintain roads, buildings, and other facilities at national parks and recreation areas. There will undoubt-

325. See generally Oesterle, supra note 31.
326. See Barnum, supra note 259, at A2 (quoting chairman of the House Interior Appropriations subcommittee, Ralph Regula, who, in discussing the LWCF, stated that "you can't balance the budget and spend all the money").
328. See Federal Public Land and Resources Law, supra note 41, at 890.
329. See Healy, supra note 76, at A1 (describing inadequate funding of national park upkeep).
edly be some management necessary to protect refuges from exotic species or other threats to biodiversity, but infrastructure will be less expensive to maintain.

The numerous authorities under which LWCF money can be used to acquire lands provide sufficient discretion to agencies to pursue biodiversity conservation. Further, the LWCF Act currently allows money from the Fund to be used for “preacquisition” work where authorization to acquire a specific parcel is “imminent.” This presumably allows for a biological survey within the boundaries of an area soon to be designated for acquisition, meaning that the most biologically sensitive lands can be identified as the boundaries of a new federal park or refuge are being established. Regardless of whether the LWCF is fundamentally reformed, its current structure would allow agency expertise to guide the assembling of a national system of biodiversity reserves, provided adequate appropriations are made available for that purpose.

B. Other Sources of Funding for Land Acquisition

While the LWCF potentially provides a large source of funds for the acquisition of fish and wildlife habitat, other federal statutes also designate specific sources of funds available for land acquisition.

1. The Migratory Bird Conservation Fund

Of the approximately five million acres added to the NWRS through purchases by the FWS, the agency acquired four million with money from the Migratory Bird Conservation Fund (MBCF). The FWS spent over $600 million to acquire this land, more than half of which was raised through the sale of duck stamps pursuant to the Migratory Bird Hunting Stamp Act of 1934 (Stamp Act). Other sources of revenue flowing into the MBCF include import duties collected on arms and ammunition and a subsequently forgiven $200 million “loan” that Congress paid into the MBCF upon its creation.

332. See S. Rep. No. 103-324. Duck stamps are required of all adult waterfowl hunters and may be used in lieu of an entrance fee at national wildlife refuges that charge a fee. See 16 U.S.C. § 718.
The Stamp Act is one of the oldest federal statutes designed to protect wetlands. Congress passed the Act in response to drought conditions during the early 1930s, which had resulted in great losses of wetlands and dramatic declines in waterfowl populations. The Act's central feature requires hunters of migratory waterfowl to purchase a duck stamp in addition to the usual state license requirement; the proceeds from these stamps flow into the MBCF. Unlike the LWCF, MBCF money is immediately available to the Secretary of the Interior once deposited into the general treasury. The Stamp Act itself appropriates the money from the MBCF to eliminate the need for annual appropriations and this money remains available to the Secretary until spent. MBCF money, less administrative costs incurred by the Postal Service in manufacturing and selling the duck stamps, is then used for the "location, ascertainment, and acquisition of suitable areas for migratory bird refuges under the provisions of the Migratory Bird Conservation Act." Although the MBCF is directed only to certain habitats, it can make significant contributions to biodiversity preservation. The MBCF is maintained by those who benefit from the protection of wetlands (waterfowl hunters) provides a constant source of money, and is not subject to budget cutting or other political pressures on an annual basis.

2. The Pittman-Robertson Wildlife Restoration Act

The Pittman-Robertson Wildlife Restoration Act establishes a system of cooperation between the Department of the Interior and state departments of fish and wildlife to foster and fund wildlife restoration programs. This system includes the "selection, restoration, rehabilitation, and improvement of areas of land or water adaptable as feeding, resting, or breeding places for wildlife, including acquisition by purchase, condemnation, lease, or gift of such areas or estates

337. See Johnson, supra note 335, at 4 n. 14. Duck stamps currently cost $15 per year and can be purchased at most post offices, in addition to other designated locations. See 16 U.S.C. § 718b(b).
339. See id.
340. See id.
341. See id. § 718d(a).
342. Id. § 718d(b). See infra part III.C.1 for a description of the land acquisition authority under the MBCA. The Stamp Act also provides acquisition authority beyond that granted in the MBCA for the purchase of "Waterfowl Production Areas." See infra part III.C.2 for a description of Waterfowl Production Area acquisition.
or interests therein."344 The federal government can fund as much as seventy-five percent of each individual state project through this program.345 In 1996, $202.4 million was apportioned among the fifty states under the Pittman-Robertson Act.346 Since its inception, the program has supported the acquisition of over five million acres of wildlife habitat.347

A federal tax imposed on guns, ammunition, and bows and arrows provides funding for projects under the Pittman-Robertson program.348 The revenue generated from these taxes flows into the "Federal Aid to Wildlife Restoration Fund" in the U.S. Treasury and is then available for Pittman-Robertson projects.349 The fund is apportioned among the states in the following manner: one-half on the basis of the land area of each state as a proportion of total U.S. land area, and one-half on the basis of the number of hunting licenses issued in each state as a proportion of all hunting licenses issued by all the states.350 If a state does not spend available funds, that money becomes available to the Secretary of the Interior to implement the Migratory Bird Conservation Act.351 The Secretary of the Treasury must invest any unallocated portions of the fund in U.S. bonds, the interest from which is available for expenditure under the North American Wetlands Conservation Act of 1989.352

Like most federal grant programs, receipt of Pittman-Robertson money comes with strings attached. Prior to receiving grants under the program, states must have passed wildlife conservation laws, including a law prohibiting diversion of hunting license fees to purposes other than administration of the state's fish and wildlife department.353 By ensuring that all of the $481 million in annual state hunt-

344. Id. § 669a. Other types of projects qualifying for funding under the Pittman-Robertson Act include the construction of wildlife-related structures and wildlife management research. See id. States may participate in the cooperative programs in one of two ways. They may either submit a comprehensive wildlife conservation plan to the Secretary of the Interior, or they may proceed on a project-by-project basis, giving the Secretary of the Interior detailed descriptions of each proposed project. See id. § 669e.

345. See id. § 669e.


348. See 16 U.S.C. § 669b; 26 U.S.C. §§ 4161(b), 4181. Pistols and revolvers are subject to a 10% sales tax, and other guns and ammunition are taxed at 11%. Id. § 4181.


350. See id. § 669c(a). However, revenue generated from the tax on pistols, revolvers, and bows and arrows is allocated according to population. See id. § 669c(b).

351. See id. § 669b. See infra part III.C.1 for a discussion of the Migratory Bird Conservation Act.


ing license fees goes back into the resource, the program probably results in a larger commitment to fish and wildlife conservation than indicated by the amount of the grants alone.

3. The Dingell-Johnson Sport Fish Restoration Act

The Dingell-Johnson Sport Fish Restoration Act (DJA), like the Pittman-Robertson Act, is one of the most celebrated pieces of conservation legislation among wildlife managers, conservation organizations, and outdoor sports enthusiasts. The DJA provides for cooperation between the Department of the Interior and state fish and wildlife agencies to promote fishery conservation projects. As its main component, the DJA levies a federal sales tax on items related to sport fishing activities, from which the revenue is distributed to states for fishery conservation projects. In 1996, the states received $197.1 million under the DJA. Indeed, during the more than fifty years of their existence, the Dingell-Johnson and Pittman-Robertson Acts combined have generated over $5 billion in revenues for fish and wildlife conservation.

In addition to generating tax revenue, the DJA also requires states receiving its benefits to manage their fish and wildlife conservation programs in certain ways. First, the Act requires recipient states to assent to the provisions of the DJA and to pass state laws “for the conservation of fish.” The Act also requires states receiving its ben-

355. See U.S. Dept. of Int., U.S. Fish and Wildlife Service News Release, Citing Public Satisfaction, Service Proposes No Change In Federal Aid, Dec. 15, 1994, at 1. Despite the satisfaction expressed by those who do know of the DJA and Pittman-Robertson programs, surveys indicate that only a small fraction (2-3%) of those persons who purchase items subject to the taxes imposed under the DJA or Pittman-Robertson are aware of their existence. See George Reiger, User Fees: For Years Conservation Programs Have Been Funded By Sportsmen. Isn't It Time For Others to Help Pay the Bills?, FIELD AND STREAM, Oct. 1, 1996, at 14.
356. See 26 U.S.C. § 9504 sets up the Sport Fish Restoration Account, which provides the source of funds for the DJA. The Sport Fish Restoration Account consists of revenue generated from two sources. 26 U.S.C. § 4161 imposes a 10% tax on the sale of “any article of sport fishing equipment” and a 3% tax on the sale of “electric outboard motors and sonar devices suitable for finding fish.” The second source of revenue is import duties on fishing tackle, yachts and “pleasure craft.” 26 U.S.C. § 9504(b)(1)(B).
357. See 16 U.S.C. § 777. The money is divided among several recipient programs. Eighteen percent of the money appropriated under the DJA goes to the protection and restoration of coastal wetlands under provisions of the Coastal Wetlands Planning, Protection, and Restoration Act, 16 U.S.C. § 3951-3956 (1998). The remaining funds are divided between state boating safety programs and grants to states based on their relative land area and number of licensed fishers. See id. § 777c. One authorized use of grant money given to the states is to provide 75% of the costs of acquiring interests in land for fishery conservation. See id. § 777e(d).
359. See id.
benefits to designate money received from the sale of state hunting and fishing licenses for use in "the administration of [the] State fish and game department."\textsuperscript{361} Through these requirements, Congress spread the responsibility of managing the nation's fish and wildlife among all the states, yet maintained the long-standing tradition of state fish and wildlife regulation. In this way, the DJA mirrors the Pittman-Robertson Act. However, the federal government attaches further strings to the use of DJA money; the Secretary of the Interior must agree with state departments of fish and wildlife about projects to be funded with the money, and all such projects must comply with standards promulgated by the Department of the Interior.\textsuperscript{362}

The intent of the DJA, pursuant to its source of funding, is to carry out projects that benefit "species of fish which have material value in connection with sport or recreation."\textsuperscript{363} However, this includes a broad range of projects: (1) research of problems in fishery management;\textsuperscript{364} (2) fact-gathering activities related to the management of fisheries, including censusing fish populations and measuring the extent of fishing pressure;\textsuperscript{365} (3) restocking projects concerning food or game fishes;\textsuperscript{366} and (4) restoration or acquisition by purchase or lease of areas of land or water that would provide fish habitat.\textsuperscript{367}

Both the Dingell-Johnson and Pitmann-Robertson programs represent tremendous successes for wildlife conservation. While both laws are linked to consumptive uses of wildlife, they have also provided enormous benefits to non-game species. They offer a model that should be emulated generally for non-consumptive uses.

4. Potential Expansion of Outdoor Recreation Related Taxes

Despite enormous incidental benefits to non-game species,\textsuperscript{368} programs that focus on the protection of game animals necessarily neglect some species and ecosystems. A general strategy of biodiversity

\textsuperscript{361} Id.
\textsuperscript{362} See id. The DJA imposes criteria on the expenditure of money received under its program. For example, coastal states must apportion DJA money between saltwater and freshwater projects in proportion to the number of saltwater resident anglers and freshwater resident anglers in that state. See id. § 777(b)(1).
\textsuperscript{363} Id. § 777a.
\textsuperscript{364} See id. § 777a(a).
\textsuperscript{365} See id. § 777a(b).
\textsuperscript{366} See id. § 777a(c).
\textsuperscript{367} See id. § 777a(d).
\textsuperscript{368} For example, the Stamp Act and MBCA play a more than trivial role in preserving biodiversity by protecting and restoring wetlands. One-third of threatened and endangered plants and animals rely on wetlands for survival, and wetlands have suffered serious declines in North America, especially the lower 48 states. See U.S. DEPT. OF THE INT., U.S. FISH AND WILDLIFE SERVICE, WETLANDS STATUS AND TRENDS IN THE COTERMINOUS UNITED STATES MID-1970s TO MID-1980s 3 (1991).
preservation, including the creation of biodiversity reserves, requires
greater resources. The three statutes described above all fulfill spe-
cific niches in biodiversity preservation, but there are gaps that re-
main. In addition to increased LWCF appropriations, several
potential methods exist to raise additional funds for non-game species
and biodiversity preservation.

An idea that is growing in popularity, but is still subject to intense
debate, is taxation of other types of outdoor equipment beyond those
items taxed under the Dingell-Johnson and Pittman-Robertson
Acts. The International Association of Fish and Wildlife Agencies
(IAFWA) has proposed a sales tax on recreation equipment, from
which the revenue would be distributed among the various states ac-
cording to population and land mass criteria, similar to that employed
under the existing Acts. The program, labeled the “Fish and Wild-
life Diversity Funding Initiative” or “Teaming With Wildlife,”
would fund state conservation projects that focus particularly on non-
game species. Supporters anticipate that it would raise roughly
$350 million annually in support of such projects. Taxed items
would include hiking boots, campers, motor homes, binoculars, ca-
noes, backpacks, and other outdoor equipment, and the amount of the

369. See Judy Leand, Pall of the Wild: Outdoor Groups Debate a Taxing Solution to
Conservation Funding, SPORTSTYLE, Jan. 1, 1997, at 7. Part of the debate centers on what
items should be subject to such a tax and whether items presumably made for outdoor use
are actually used for outdoor recreation purposes. See id. Some outdoor recreation product
manufacturers oppose the tax because it would put them at a competitive disadvantage
compared to manufacturers whose products were not considered outdoor-related and thus
not subject to the tax. See Mark Tedeschi, User Fee Plan on Boots Sparks Serious Debate,
FOOTWEAR NEWS, May 6, 1996, at 10. Similarly, some manufacturers have criticized the
fact that the plan benefits wildlife. Those critics argue that if the tax is imposed, the reve-
ue should benefit trail and park maintenance. See id.

370. See Leand, supra note 369, at 7. The International Association of Fish and Wild-
life Agencies has put together a coalition called “Teaming With Wildlife” to push for pas-
sage of the tax. See id. Under the IAFWA proposal, two-thirds of the revenue would be
distributed according to the population of the state and one-third according to the state’s
land area. See Hearings on the “Teaming with Wildlife” Initiative: Before the Subcomm. on
Fisheries, Wildlife and Oceans of the House Comm. on Resources, 104 Cong., 2nd Sess.
(1996) [hereinafter Teaming with Wildlife Hearings] (statement of Robert L. McDowell,
Secretary/Treasurer, International Association of Fish and Wildlife Agencies) [pincite?]. No
state would receive less than one-half of one percent or more than five percent of the
annual revenue. See id.

371. Teaming with Wildlife Hearings, supra note 370 (statement of Jim Saxton, Chair-
man, House Subcommittee on Fisheries, Wildlife and Oceans) [pincite?].

372. See Tedeschi, supra note 369, at 10. In support of its proposal, the IAFWA cites
the fact that there are over 1800 species of wildlife for which no reliably funded conserva-
tion program exists. Teaming with Wildlife Hearings, supra note 370 (statement of Jim
Saxton, Chairman, House Subcommittee on Fisheries, Wildlife and Oceans) [pincite?].

373. See Teaming with Wildlife Hearings, supra note 370 (statement of Don Young,
Chairman, House Committee on Resources) [pincite?].
tax would range between one-quarter of one percent and five percent, depending on the type of item.\textsuperscript{374}

In 1996, the IAFWA proposal was raised in congressional hearings but resulted in no legislation. Several outdoor recreation businesses testified in favor of the proposal, as did the IAFWA and a similar association of state park agencies.\textsuperscript{375} However, a significant segment of outdoor recreation goods manufacturers and retailers remain opposed to the proposal,\textsuperscript{376} and many lawmakers appear reluctant to support any type of tax increase in the foreseeable future.\textsuperscript{377}

An idea similar to the proposed tax is to increase the fees charged to users of public lands, such as wildlife refuges and national forests.\textsuperscript{378} The revenue generated from such fees could be used to improve biodiversity preservation on public lands through better management practices and land conservation efforts.

A more drastic approach would place federal lands in trust accounts with the public as beneficiary.\textsuperscript{379} To ensure biodiversity preservation on the federal lands, a biodiversity fund would also be statutorily mandated as a beneficiary of the trust, and the proceeds from this fund would be used for land conservation and management.\textsuperscript{380} Because federal lands would become self-sustaining or even profit-generating, this approach would have the likely benefit of reducing opposition to further federal acquisitions.

A federal stamp or tax on hunting or fishing for certain species is a useful idea that may be expanded into new areas. For example, a salmon stamp could be required for species of salmon that remain sufficiently abundant to harvest with the revenue earmarked for particular uses. Proceeds could be used to acquire conservation easements along spawning streams or to create stream habitat restoration programs. However, like the Dingell-Johnson and Pittman-Robertson

\begin{footnotesize}
\textsuperscript{374} See Tedeschi, \textit{supra} note 369, at 10.
\textsuperscript{375} See \textit{Teaming with Wildlife Hearings}, \textit{supra} note 370 [pincite?].
\textsuperscript{376} See id. at [pincite?] (statement of David Peri, Director of Marketing, Mountainsmith, Inc., on behalf of the Outdoor Recreation Coalition of America) (arguing that the tax is too broad based and would impose an undue burden upon those individuals who purchase products subject to the tax and may never use the projects funded with the revenue).
\textsuperscript{377} The 1996 presidential race even became embroiled in issue when Secretary of the Interior Babbitt publicly supported the idea only a few months before the election, spurring a constant attack on the idea from challenger Bob Dole. See Katharine Q. Seelye, \textit{U.S. Economy Is Off Track, Dole Declares}, \textit{N.Y. Times}, Sept. 25, 1996, at A1.
\textsuperscript{378} See \textit{National Forests Sprouting User Fees}, \textit{DENV. POST}, Nov. 27, 1996, at A2 (citing rising fees to enter national parks and forests and a new program designed to allow such revenue to be used at the site of its collection).
\textsuperscript{379} See \textit{A Proposal For Federal Forest Trusts: Hearings Before The Subcomm. on Forest and Public Land Management of the Senate Comm. on Energy and Natural Resources, 105th Cong. (1997)} (statement of Randall O'Toole).
\textsuperscript{380} See id.
\end{footnotesize}
Acts, this strategy depends on the value consumptive users place on a species and may run afoul of traditional state prerogatives in managing wildlife populations.

Regardless of particular strategies, biodiversity conservation and habitat protection will require substantial sums of money. Even with significant appropriations from the LWCF, new sources of revenue will have to be generated. The proposals for a permanent trust fund not subject to annual congressional appropriations and an additional tax on recreational items hold the most promise for raising the necessary money. Whether strategies designed by conservation biologists to preserve biodiversity will be given a chance at success depends largely on the outcome of these political battles.

C. Authorities for Land Acquisition

Numerous statutory authorities grant federal agencies power to acquire lands, waters, or interests therein for conservation purposes, most of them related to the creation of a particular national park or wildlife refuge. Several broad statutes also give federal agencies considerable discretion to acquire new land for a wide variety of purposes. The broad authorities related to land acquisition for conservation purposes are listed below. These authorities operate subject to the proviso that Congress controls appropriations for acquisitions. However, an overview of acquisition authorities provides a useful look at the mechanisms currently available to conserve biodiversity through federal land ownership.

1. The Migratory Bird Conservation Act

The Migratory Bird Treaty Act of 1918 implemented a migratory bird protection treaty with Great Britain. The Act spawned a new round of refuge creation, but itself lacked any new authority for the acquisition of refuge lands. This gap led to the passage of the

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381. See Setting Priorities, supra note 30, at 57-78 (discussing the land acquisition authorities that guide various federal agencies).

382. This list of acquisition authorities is not exhaustive, although it includes the authorities under which the bulk of federal land acquisition takes place. Other acquisition authorities related to conservation include: The Fish and Wildlife Coordination Act of 1934, 16 U.S.C. §§ 661-666c, which allows for federal water resource agencies to acquire lands for the enhancement of fish and wildlife habitat in conjunction with federal water projects, Fink, supra note 12, at 14-15; and the Fish and Wildlife Act of 1956, 16 U.S.C. § 742, which grants the Secretary of the Interior broad authority to take action necessary for the conservation of fish and wildlife, including the acquisition of land or water through purchase or exchange. See 16 U.S.C. § 742f(a)(4).


Migratory Bird Conservation Act (MBCA) in 1929, the first federal statute authorizing habitat acquisition.\textsuperscript{385}

The MBCA created the Migratory Bird Conservation Commission (Commission), which oversees the acquisition of lands, or interests therein, with MBCF money.\textsuperscript{386} The Commission acts upon recommendations from the Secretary of the Interior as to what areas should be purchased or rented under the authority of the MBCA, and sets the price at which such areas can be purchased or rented.\textsuperscript{387} The Commission must approve the creation of every migratory bird refuge under the MBCA.\textsuperscript{388}

Criteria set forth in the MBCA guide the Secretary of the Interior in identifying and recommending sites to the Commission.\textsuperscript{389} The criteria require that areas identified by the Secretary of the Interior be "necessary for the conservation of migratory birds," and that the Secretary have consulted with the county and state in which the parcel is located.\textsuperscript{390} Prior to the purchase of any fee interest by the federal government, the state in which the parcel is located must give its consent.\textsuperscript{391}

Once the government has acquired an area, the Secretary must manage the area in accordance with international treaties for the protection of migratory birds. The Secretary may also consider other species found in the area, including species listed as threatened and endangered under the Endangered Species Act.\textsuperscript{392} In other words, although acquisition itself must be based upon the value of sites as migratory bird habitat, acquired lands subsequently may be managed to benefit all species.

2. The Migratory Bird Stamp Act

In addition to MBCA-authorized acquisitions, the Stamp Act itself authorizes the use of duck stamp money "to acquire, or defray the
expense incident to the acquisition by gift, devise, lease, purchase, or exchange of small wetland and pothole areas, interests therein, and rights-of-way to provide access thereto. These small wetland sites are referred to as “Waterfowl Production Areas” and may be acquired without the approval of the Commission or regard to the MBCA criteria. The federal government commonly uses this provision to acquire easements over small wetlands that provide important waterfowl habitat. This practice has occurred most extensively in the prairie pothole region of the upper Midwest, where the breeding success of many waterfowl species depends on the maintenance of habitat surrounding numerous small wetlands.

3. The Endangered Species Act

The Endangered Species Preservation Act of 1966 granted the Secretary of the Interior authority to acquire land for the preservation of threatened and endangered species. This authority was carried over into the Endangered Species Act of 1973 (ESA). Specifically, the ESA authorizes the Secretaries of the Interior and Agriculture to acquire “by purchase, donation, or otherwise, lands, waters, or interest therein” to carry out programs to “conserve fish, wildlife, and plants, including those which are listed as endangered species or threatened species.” This grant of authority is broad; the only restriction is that acquisitions must be in furtherance of an established program for the conservation of fish, wildlife or plants.

4. The Emergency Wetlands Resources Act of 1986

The Emergency Wetlands Resources Act of 1986 was designed to promote wetlands conservation both for general environmental benefits and to fulfill obligations under migratory bird treaties with Can-
ada, Mexico, Japan, and the Soviet Union. The Act accomplishes its goals by intensifying cooperative efforts in wetland conservation between "private interests and local, State, and Federal governments," and by acquiring fee interests and easements. The Act also requires the creation of the "national wetlands priority conservation plan," which prioritizes types of wetlands for acquisition efforts and authorizes the Secretary of the Interior to acquire wetlands, or interests therein, in accordance with the plan. In addition, the Act authorizes certain national wildlife refuges to charge admission fees, and seventy percent of the revenue thus generated is to be deposited into the MBCF.

One important provision of this Act allows the expenditure of LWCF money to acquire small wetland habitats, thus removing previous restrictions that prevented such uses of the LWCF. The Act also guarantees approximately $40 million annually for federal acquisition of refuge lands through the wildlife refuge admission fees and import duties collected on arms and ammunition.


The North American Wetlands Conservation Act of 1989 (NAWCA) represents the most recent grant of non-area specific statutory authority for habitat acquisition. One purpose of the Act is to implement the North American Waterfowl Management Plan, an agreement between the United States and Canada for waterfowl protection, through cooperative programs that preserve wetlands and provide habitat. The Act contemplates that most lands acquired

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399. *See id. § 3901(b).*

400. *Id. § 3901(b).*

401. *Id. § 3921(a). See supra note 286.*

402. *See 16 U.S.C. § 3922 (1998). As described in part III.A.1.i, LWCF money can be used to acquire wetlands within the guidelines of the national wetlands priority conservation plan.*

403. *See id. § 3911(a), (c); see also Fink, supra note 12, at 19.*


407. In 1986 the U.S. and Canada signed the North American Waterfowl Management Plan, which sets forth a plan for preserving sufficient habitat to maintain populations of North American waterfowl and other migratory birds. The plan calls for the acquisition, protection, or improvement of 1.9 million acres of wetlands within the United States. *See U.S. FISH & WILDLIFE SERVICE, NORTH AMERICAN WATRFOWL MANAGEMENT PLAN 13 (1986).*

408. *See 16 U.S.C. § 4407(b) (1998). Only 50% of the money that is necessary for projects (both domestic and foreign) that are not on federal land can be provided by the federal government under the NAWCA. Furthermore, the matching portion from private
under its authority will become part of the NWRS, and makes the majority of funding available for cooperative efforts with Canada and Mexico upon approval of projects by the Migratory Bird Conservation Commission. The NAWCA established the North American Wetlands Conservation Council, which recommends acquisitions to the Commission. If the Commission approves a project recommended by the Council, the NAWCA requires that federal funding be made available for the acquisition from specific sources of revenue. Cooperative programs undertaken among the federal government, states, and private landowners have successfully restored millions of acres of wetlands habitat.

In addition to authorizing acquisitions, the NAWCA appropriated money for this purpose, amounting to $20 million in both 1995 and 1996, and $30 million in both 1997 and 1998. Funds from forfeitures and fines levied under the Migratory Bird Treaty Act are also available for implementing the programs under the NAWCA. As of 1994, $105 million in federal funds had been matched by $202 million landowners participating in cooperative habitat restoration programs in the United States cannot come from other federal grant sources. See id. See also H.R. REP. NO. 101-269, at 1, reprinted in 1989 U.S.C.C.A.N. 1437; Fink, supra note 12, at 19 n.17.

409. See 16 U.S.C. § 4405(a)(2)-(3) (1998). However, the Secretary of the Interior may turn over an acquisition to a state or other entity where the Secretary finds that the state or entity will manage the acquisition to preserve the wetland values of the property. See id. § 4405(a)(3).

410. See id. § 4405(b). In fact, of the money available under the NAWCA, 50-70% is to be made available for projects in Canada and Mexico. See id. § 4407(a)(1).


412. See id. § 4404(e). The sources of revenue referred to in the Act are funds made available under its provisions and interest accruing on government obligations purchased by the Secretary of the Treasury with unexpended funds under the Pittman-Robertson program. Any money the Secretary of the Treasury deems unnecessary to carry out the Pittman-Robertson program in a given fiscal year must be invested by him in “interest-bearing obligations of the United States.” Id. § 669b(b).

413. See id. §§ 4401(a)(14), 4401(b), 4407(b). For a description of cooperative efforts among the U.S. Fish and Wildlife Service, non-profit organizations, and private landowners under these programs, see LAND CONSERVATION THROUGH PUBLIC/PRIVATE PARTNERSHIPS 85-103 (Eve Endicott ed., 1993) [hereinafter LAND CONSERVATION]; Fink, supra note 12, at 19. See also Suzanne Keating, Region Wins $1 Million in Grants for Wetlands: Almost 800 Acres of Environmentally Sensitive Wetlands That Are Under Development Pressure In Narragansett, South Kingstown And Westerly Will Be Preserved, According To Sen. John H. Chafee, PROV. J.-BULL., Dec. 13, 1996, at C1 (describing local wetlands preservation project funded in part with NAWCA money and stating that over 2.6 million acres of wetlands have been preserved or restored in the U.S. and Canada with NAWCA financing, and over 19 million acres of wetlands in Mexico have been in some way protected under NAWCA); Missouri Outdoor Column: Wetland Restorations Helping Waterfowl Populations Rebound, ST. LOUIS POST-DISPATCH, Aug. 7, 1996, at 5 (stating that “NAWCA has provided $166 million for wetlands projects and generated an additional $332 million from non-federal and private partners” since 1989).


415. See id. § 707.

416. See id. § 4406(b).
in partnerships established under the NAWCA, resulting in the financing of 276 wetlands conservation projects in 36 states.\textsuperscript{417}


The Refuge Recreation Act of 1962 (Recreation Act) grants the Secretary of the Interior authority to acquire land, or interests therein, adjacent to or within existing conservation areas that are suitable for "incidental fish and wildlife-oriented recreational development, [or] the protection of natural resources, [or] the conservation of endangered species or threatened species."\textsuperscript{418} The Recreation Act initially authorized only acquisitions fitting the recreational development prong of this description,\textsuperscript{419} but the provision was subsequently amended to permit the wider variety of land acquisitions listed above.\textsuperscript{420}

7. *Acquisitions Through Donation*

Donations of individuals, corporations, and non-profit organizations have significantly contributed to the conservation lands of the United States.\textsuperscript{421} Several sources of authority allow the Secretary of the Interior to accept lands for addition to the NWRS.\textsuperscript{422} Early donations included some of the land in the National Elk Refuge in Wyoming, and the Charles Sheldon Antelope Range in Nevada.\textsuperscript{423} In recent years, numerous large additions to the NWRS have been made through donations, particularly by The Nature Conservancy.\textsuperscript{424}

All of these land acquisition authorities, particularly the ESA, provide an existing framework of laws under which a system of bi-

\textsuperscript{417} See U.S. Dept. of Int., *supra* note 386, at 2.

\textsuperscript{418} 16 U.S.C. § 460k-1.

\textsuperscript{419} See *Setting Priorities*, *supra* note 30, at 54-55.

\textsuperscript{420} See id.

\textsuperscript{421} See *Fink*, *supra* note 12, at 19-20.


\textsuperscript{423} See *Reed and Drabelle*, *supra* note 49, at 21. The lands for the National Elk Refuge were donated by the Izaak Walton League, and those for the Charles Sheldon Antelope Range were donated by the National Audubon Society and the Boone and Crockett Club. *See id.*

\textsuperscript{424} See id. One of the largest donations of land created the Alligator River National Wildlife Refuge in North Carolina. In 1984, the Prudential Life Insurance Co. donated 118,000 acres to The Nature Conservancy, which then turned the land over to the FWS. With subsequent additions to the Refuge, it currently encompasses approximately 150,000 acres. *See* Toni Whitt, *Taking Refuge In The Wild Life*, *The Virginian-Pilot And The Ledger-Star*, May 21, 1995, at 6. The gift of the land by Prudential was estimated to be worth $50 million and is thus the largest corporate conservation gift in history. *See* Eve Endicott, *Preserving Natural Areas: The Nature Conservancy and Its Partners*, in *Land Conservation*, *supra* note 413, at 17, 23.
odiversity reserves could be developed. It is not for lack of acquisition authority that such a system has not been implemented, but rather because of the insufficiency of political support that has manifested itself in dwindling appropriations for land acquisition. However, laws that give agencies discretion over land acquisition are an important piece of the puzzle. If funds become available, scientific principles, not political horse-trading, should dictate how reserve systems are assembled.

D. Federal Ownership of Conservation Easements and Cooperative Agreements with Private Landowners

It is often neither necessary nor desirable for the federal government to own fee title to lands needed for conservation purposes. It may be that the bulk of a landowner’s use of his or her land is compatible with the preservation of biodiversity, or that public access is not a strong policy consideration in the particular area. In such cases, acquiring restrictive easements or entering into contractual agreements concerning private land-use may be as beneficial as, and more cost effective than, obtaining fee title to the land. This approach may particularly suit areas considered to be buffer zones around core regions in a system of biodiversity reserves, as outlined in part III.B above.

Restrictive easements, or similar programs that dictate land-use decisions to private property owners in return for payments, negate many concerns expressed about federal land ownership. They may also provide valuable income to the owners of ecologically sensitive lands. Private property interest groups and sectors of the economy that rely on intensive use of the land are likely to favor such programs because they are mostly voluntary and entail direct payments to the private landowner. In addition, voluntary programs resulting in a bargained-for agreement between the government and landowner raise no Fifth Amendment takings concerns.425

Most existing federal programs that use restrictive easements and agreements focus on agricultural land. Because almost ninety percent of privately-held land in the United States is devoted to some form of agriculture, these programs have the potential to influence land-use practices on much of the nation’s land.426 Agricultural practices, which may include farming, forestry, and grazing, have serious environmental consequences in the form of habitat loss and water pollu-

Although most agriculture-related conservation programs do not focus on biodiversity loss in particular, they can produce significant incidental benefits for wildlife.\textsuperscript{428}

However, there are several important drawbacks to such programs. First, from a regulatory standpoint, direct payments to landowners may establish a troublesome compensation precedent. Such a precedent, if firmly established, would create an atmosphere of entitlement and redefine the concept of property rights in a much more protective manner than is currently accepted. A political atmosphere that precluded regulatory mechanisms could negatively impact biodiversity preservation and other goals of current regulatory programs. Moreover, government resources are too limited to turn easement acquisitions and cooperative agreements into the sole methods of regulating land-use.

Second, many existing easement acquisition and cooperative agreement programs are of finite duration and require annual payments, thus saddling the government with recurring costs while limiting landowners' contractual obligations. These problems threaten the permanence of such programs, especially as development pressures increase over the duration of the program, resulting in possibly large financial gains from converting the property to other uses once the program expires. Criticisms based on the ephemeral nature of these programs do not apply ubiquitously because some are of infinite, or very lengthy, duration.\textsuperscript{429} Those programs that do require annual payments, or that are of only short duration, must also be reassessed for their cost effectiveness. In some instances, the government is spending more money in annual payments than would have been necessary to buy the property.\textsuperscript{430} This can be viewed largely as the political trade-off of a non-acquisition, voluntary conservation program where government acquisition of large areas of farmland would be politically untenable.

A third drawback of these programs is their high administration and monitoring costs. Where the government holds fee title to land,

\textsuperscript{427} See Environmental Defense Fund, Plowing New Ground, Using Economic Incentives to Control Water Pollution from Agriculture, ES-1 (1994) (claiming that non-point runoff from agricultural sources is the largest contributor to water pollution in the U.S.); Reed F. Noss et al., Endangered Ecosystems of the United States: A Preliminary Assessment of Loss and Degradation 16 (1995) (stating that 87% of recent wetland losses are attributable to agriculture).

\textsuperscript{428} See Dana Clark and David Downes, What Price Biodiversity? Economic Incentives and Biodiversity Conservation in the United States, 11 J. Env't. L. & Litig. 9, 42 (1996).

\textsuperscript{429} See, e.g., infra Part III.D.2 (describing Wetlands Reserve Program that utilizes perpetual conservation easements).

\textsuperscript{430} See Wildlife Management Institute, America Needs the Conservation Reserve Program 33 (1994) (noting that the sum of CRP payments to some landowners exceed the value of their land).
activity thereon is subject to the government's consent; by contrast, restrictive easements and agreements often allow the landowner to continue certain uses of the land. This arrangement opens avenues for the landowner to violate the agreement, and to avoid immediate detection of violations by the administering agency. At the very least, therefore, monitoring of private lands on which private economic activities are taking place will be more burdensome than simply declaring a given area off limits to most commercial uses.

Despite these potential drawbacks, several government programs operate primarily through restrictive easements or cooperative agreements with private landowners. As funds available for direct government acquisition of fee interests in land have decreased dramatically in recent years, funding for these other programs has increased. The Conservation Reserve Program, Wetlands Reserve Program, and Water Bank Program are all administered by the Department of Agriculture, and are described below. In addition, several other sources of statutory authority enable the government to own conservation easements over a substantial amount of land in order to preserve wildlife habitat.

1. The Conservation Reserve Program

The Conservation Reserve Program (CRP), established in 1975, authorizes the Secretary of Agriculture to enter into contracts with landowners to assist them in conserving and improving the "soil and water resources" of their land. Up to 36.4 million acres may be maintained in the CRP at any given time through the year 2002, making it the most massive land conservation program undertaken by the federal government. Not less than one-eighth of the enrolled land must be converted to vegetation or water that provides permanent wildlife habitat. The annual financial commitment under the program reached $1.9 billion in 1996, far exceeding appropriations for land acquisition.

"Highly erodible cropland" and certain marginal pasture lands qualify for enrollment in the CRP. Under a CRP contract, land-

432. Id. § 3831(d).
433. See Farrier, supra note 2, at 329 (discussing the significance of agricultural conservation programs).
435. See Pub. L. No. 104-37, 109 Stat. 299, 315 (1995); see also Farrier, supra note 2, at 329 n.106 (comparing the appropriations for endangered species programs to those for the CRP).
436. 16 U.S.C. § 3831(b). "[H]ighly erodible cropland" can be enrolled if its continued cropping could "substantially reduce the production capability for future generations." Eligible pasture land includes marginal pasture land that was converted to wetland or wildlife habitat prior to November 28, 1990, and marginal pasture land that is located in or near a
owners must develop a plan, subject to approval by the local conservation district,*437* that puts the enrolled land to a “less intensive use,” which may include pasture, grassland, legumes, forbs, shrubs or trees.*438* The landowner is thereafter prohibited from harvesting crops or forage from the land for commercial purposes, except in certain emergency situations.*439* The length of CRP contracts can range from ten to fifteen years.*440* In return, the landowner receives annual payments to compensate for the reduced use of his or her land.*441* The landowner is also eligible for technical assistance and cost sharing payments from the Department of Agriculture for carrying out conservation measures specified in the plan.*442*

Upon application by a state agency, the Secretary of Agriculture may designate entire watersheds or other areas of “special environmental sensitivity as conservation priority areas.”*443* These areas then receive heightened priority in enrollment decisions to increase their water quality and wildlife habitat benefits.*444* In deciding which lands to enroll, the Secretary may consider the extent of environmental benefits provided by the various parcels, including soil, water quality, and wildlife habitat benefits.*445* Relevant criteria may depend on what conservation measures are most suited to a particular region of the country.*446*

riparian area and will be “devoted to trees” for water quality purposes. *Id.* Certain other lands may be enrolled in the program if the Secretary of Agriculture determines that the enrollment of such lands would provide significant water quality or other environmental benefits. *See id.* § 3831(b)(4).

*437.* A local conservation district is defined as “any district or unit of State or local government formed under State or territorial law for the express purpose of developing and carrying out a local soil and water conservation program.” *Id.* § 3801(a)(4).

*438.* *Id.* § 3832(a)(1). The plan must set forth the conservation measures that are to be completed on the enrolled land and any commercial uses that are to be allowed under the contract. *See id.* § 3832(b)(1).

*439.* *See id.* § 3832(a)(7).

*440.* *See id.* § 3831(e)(1).

*441.* *See id.* § 3833.

*442.* *See id.* The portion of costs borne by the government is largely at the discretion of the Secretary of Agriculture, but can be as much as 50% of total costs. *See id.* §§ 3833, 3834(b)(2). In the case of lands planted in trees or shrubs under a CRP contract, the government will pay up to 50% of the cost of maintaining the plantings for up to four years. *See id.* § 3834(b)(3). The 1996 Farm Bill also established the Wildlife Habitat Incentives Program (WHIP) to encourage the restoration of wildlife habitats on private lands through cost-sharing agreements. $50 million was allocated to this program for the years between 1996 and 2002. *See id.* § 3836a.

*443.* *Id.* § 3831(f)(1). To be eligible for such a designation, a watershed must contain areas “with actual and significant adverse water quality or habitat impacts related to agricultural production activities.” *Id.* § 3831(f)(2).

*444.* *See id.* § 3831(f)(4).

*445.* *See id.* § 3834(c)(3)(A).

*446.* *See id.* § 3834(c)(3)(B).
The CRP has produced significant environmental benefits since its inception, especially for wildlife in the upper Midwest and Great Plains states.\textsuperscript{447} The 36.4 million acres enrolled in CRP is double the size of all federal and state wildlife refuges in the lower forty-eight states.\textsuperscript{448} The resurgence in waterfowl populations in recent years is at least partially attributable to nesting habitat on CRP acreage,\textsuperscript{449} and the previously diminished tall-grass prairie ecosystem has been reestablished on some parcels.\textsuperscript{450} In the Southeast, the CRP has resulted in the planting of millions of trees on retired farmland.\textsuperscript{451}

However, the CRP remains subject to congressional reauthorization in each new version of the so-called "farm bill." While conservation programs fared well\textsuperscript{452} under the Federal Agricultural Improvement and Reform Act of 1996,\textsuperscript{453} it is unclear whether Congress will be willing to foot the bill for continued extension of CRP contracts. As demonstrated by the above description of the ecological value of CRP lands, the environmental consequences of terminating the CRP could be enormous.\textsuperscript{454}

2. The Wetlands Reserve Program

The Wetlands Reserve Program (WRP)\textsuperscript{455} authorizes the Secretary of Agriculture to enroll up to 975,000 acres of privately owned wetlands in restrictive easement and wetland restoration agreements.\textsuperscript{456} The authorized acreage is to be divided equally among per-

\textsuperscript{447} See Arthur W. Allen, Conservation Reserve Program (CRP) Benefits to Wildlife: A National Perspective, 38 LAND & WATER 23 (1994) (pointing to significant environmental benefits from less intensive land uses under the CRP).

\textsuperscript{448} See WILDLIFE MANAGEMENT INSTITUTE, supra note 430, at 5.

\textsuperscript{449} See William K. Stevens, Prairie Ducks Return in Record Numbers, N.Y. TIMES, Oct. 11, 1994, at B5, B8.

\textsuperscript{450} See WILDLIFE MANAGEMENT INSTITUTE, supra note 430, at 5.


\textsuperscript{452} See Eric Schmitt, House-Senate Comm. Agrees On Overhaul of Farm Programs, N.Y. TIMES, Mar. 22, 1996, at A1 (citing conservation provisions in new farm bill, including money to prevent the development of farmland and to protect land near the Everglades National Park); Clinton Signs Farm Bill Ending Subsidies, N.Y. TIMES, Apr. 5, 1996, at A22 (citing extension of Conservation Reserve Program in new farm bill).


\textsuperscript{454} See William K. Stevens, U.S. Effort to Return Farm Land to Natural State Wins Praise, N.Y. TIMES, Jan. 10, 1995, at C4 (discussing the environmental benefits of the CRP and the broad support it maintains among most politicians and conservationists). But see Farrier, supra note 2, at 331 (pointing out that criteria for enrollment in the CRP does not closely reflect the value of such land for biodiversity conservation). For a discussion of which regulatory mechanisms might prevent conversion of CRP land back to agricultural production once the contracts expire, see Raymond J. Watson, Jr., Conservation Reserve Program: What Happens to the Land After the Contracts End?, 14 N. ILL. U. L. REV. 733 (1994).


\textsuperscript{456} See id. § 3837(b).
manent easements, thirty-year easements, and restoration cost-share agreements.\textsuperscript{457} The WRP focuses on restoring wetland ecosystems to their original state, rather than simply lessening the intensity of land uses.\textsuperscript{458} Funding for WRP has increased in recent years, allowing for a faster pace of easement purchase under the program.\textsuperscript{459} Thus, the WRP, more than the CRP, has the potential to produce significant long-term benefits for biodiversity.

In determining which lands are suitable for enrollment in the program, the Secretary of Agriculture must consult with the Department of the Interior.\textsuperscript{460} The agencies must respect the following statutory criteria: (1) accepted lands are either "farmed wetland or converted wetland,"\textsuperscript{461} including adjacent lands that are "functionally dependent" on the wetlands; (2) enrolled lands "maximize[] wildlife benefits and wetland values and functions"; and (3) successful restoration and resultant benefits will likely justify the costs of the restoration.\textsuperscript{462} Other lands are eligible if they "maximize[] wildlife benefits" and are: (1) wetlands enrolled in the CRP program that are likely to return to production after leaving the CRP; (2) wetlands that would not be eligible under the above criteria, but would "significantly add to the functional value" of an adjoining WRP easement; or (3) riparian areas linking wetlands either enrolled in WRP or protected by some other "device or circumstance that achieves the same purpose as an easement."\textsuperscript{463} In general, the agencies must give purchasing priority to easements with the highest value for protecting wildlife habitat.\textsuperscript{464}

Once candidate lands are accepted into the program, the landowner enters into an agreement with the Secretary of Agriculture to grant an easement to the Secretary, implement a "wetland easement conservation plan," record an appropriate deed restriction under provisions of state law, and provide written statements of consent by those holding a security interest in the land.\textsuperscript{465} The wetland easement

\textsuperscript{457} See id. § 3837(b)(2)(A).
\textsuperscript{458} See Farrier, supra note 2, at 335 (noting the difference between the goals of the CRP and WRP).
\textsuperscript{461} Wetlands that were converted after December 23, 1985, are not eligible to be enrolled in the program. See id. § 3837(c)(2).
\textsuperscript{462} Id. § 3837(c). The importance of wildlife benefits as a criteria for selecting land is emphasized again in section 3837c(d), which requires the Secretary of Agriculture to consult with the Secretary of the Interior and consider benefits to migratory birds and other wildlife when enrolling land.
\textsuperscript{463} Id. § 3837(d).
\textsuperscript{464} See id. § 3837c(d).
\textsuperscript{465} Id. § 3837a(a).
conservation plan obligates the landowner to restore and protect the functional values of the enrolled wetlands, but does not require the landowner to grant public access. The plan must specify any future activities that will alter wildlife habitat or natural features of the land, or of adjacent lands. If specified in the conservation plan and consistent with the long-term protection of the wetland, the statute permits hunting, fishing, managed timber harvesting, haying, and grazing.

The WRP also includes specific provisions for financial management of the program. Participating landowners receive between five and thirty annual payments in an amount agreed upon by the owner and the Secretary of Agriculture. The total payments may not exceed the difference between the fair market value of the land with and without the easement. The WRP authorizes the Secretary of Agriculture, if in the public interest and appropriate, to contribute to the cost of restoring and managing the wetland. The program also requires the Secretary to provide technical assistance to landowners in complying with the wetland easement conservation plan. If a landowner violates the conditions of the easement, the easement remains in force and the Secretary may require the landowner to refund all or part of the payments made, including interest thereon.

3. The Water Bank Program

The Water Bank Act of 1970 directs the Secretary of Agriculture to design and implement a program to prevent significant losses of wetlands, and to preserve, restore, and improve wetland areas. The Act, through the water bank program it creates, grants the Secretary of Agriculture authority to enter into ten year wetland conservation agreements with landowners in "important waterfowl nesting and breeding areas." The agreements may include natural or created

466. See id. § 3837a(b). A representative of the Natural Resources Conservation Service, in consultation with the State technical committee, develops the restoration plan. See id. § 3837a(c). The Secretary of Agriculture creates state technical committees to assist him in implementing conservation programs under Title 16 of the U.S. Code. See id. § 3861(a).
467. See id. § 3837a(b).
468. See id. § 3837a(d).
469. See id. § 3837a(f).
470. See id.
471. See id. § 3837a(a). For permanent easements, the Secretary must provide 75-100% of the costs deemed in the public interest. See id. § 3837c(b)(1)(A). For 30 year easements, the government must pay 50-75% of the costs. See id. § 3837(b)(1)(B).
472. See id. § 3837a(g).
473. Id. §§ 1301-1311.
474. See id. § 1301. See generally BEAN, supra note 39, at 129-30.
475. 16 U.S.C. § 1302. If both the Secretary of Agriculture and the landowner agree to an extension of the agreement upon its expiration, they may enter into an additional 10
wetlands and prohibit landowners from farming, draining, burning, filling, or otherwise destroying the "wetland character" of the included acreage. In addition, the landowner must draft a "wetland conservation and development plan" in cooperation with the local Soil and Water Conservation District.

In return for accepting these restrictions, the landowners receive annual payments in amounts deemed to be fair and reasonable by the Secretary of Agriculture in relation to the obligations assumed by the landowners. The Department of Agriculture may also bear part of the cost of establishing and managing the wetland. If the landowner agrees to grant public access to the wetland without charging fees, the rate of compensation may increase in proportion to the public benefit derived. The Secretary of Agriculture may not enter into agreements that would put the total cost of the program over $30 million annually, and not more than fifteen percent of payments in any one year may go to a single state. As of 1991, the federal government was spending $8 million annually to protect 543,208 acres of wetlands under the Act.

4. Other Authorities for Easement Acquisition

Many of the statutes that are discussed above and that concern acquisition also authorize the government to purchase less than fee interests in land. For example, the Migratory Bird Stamp Act al-

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476. See id. § 1302.
477. Id. § 1303(a)(2).
478. Id. § 1302.
479. See id. § 1304.
480. See id.
481. See id.
482. See id. § 1310.
483. See id.
485. Several other programs provide for acquisition of easements. For example, the Environmental Easement Program permitted the Secretary of Agriculture to purchase long-term conservation easements on lands enrolled in the CRP or Water Bank Program, or on other environmentally sensitive croplands, between the years of 1991 and 1995. See 16 U.S.C. § 3839(b). Unfortunately, this program was never funded by Congress. See 1995 Farm Bill: Hearings Before the Subcomm. on Forestry, Conservation, and Rural Revitalization of the Senate Comm. on Agriculture, Nutrition, and Forestry, 104th Cong. (1995) (statement of Gary Mast, President of the Ohio Federation of Soil and Water Conservation Districts). Moreover, attempts to extend its authority beyond 1995 failed during debate over the 1996 Farm Bill. See, e.g., S. 1541, 104th Cong. § 355(h) (1996) (proposing to extend the Environmental Easement Program through the year 2002). In addition, the Forest Legacy Program, created by the 1990 Farm Bill, authorizes the government to acquire fee title or easements in forested lands. See 16 U.S.C. § 2103c(a). The program emerged in response to threats of large scale conversion by timber companies in the Northeast who
lows the Secretary of the Interior to establish Waterfowl Production Areas, many of which are protected by easements rather than ownership. The Migratory Bird Treaty Act also authorizes the Secretary to acquire land or “interests therein” for the protection of waterfowl habitat. Other easement acquisition authorities related to environmental protection include the Emergency Wetlands Resources Act of 1986, the Endangered Species Act of 1973, the North American Wetlands Conservation Act of 1989, the Refuge Recreation Act of 1962, the Fish and Wildlife Coordination Act of 1934, and the Fish and Wildlife Act of 1956, and the many acts creating particular parks or refuges. Finally, the government may also use LWCF money to purchase “interests in land or waters.” The government has used this authority to purchase conservation and scenic easements.

were selling their forested acreage. The program has already resulted in significant conservation efforts on thousands of acres of private lands. See N.E. Forests: VT Timber Co. to Protect 31,000 Acres, GREENWIRE, Nov. 4, 1996, available in LEXIS, Envirn Library, Grnwire File; 140 CONG. REC. E1355 (1994) (containing remarks of Rep. Bernard Sanders on benefits of Forest Legacy Program in Vermont). For a general discussion of the creation of the Forest Legacy Program and other methods of preserving the forest of the northeast, see Laura S. Beliveau, The Forest Legacy Program: Using Conservation Easements to Preserve the Northern Forest, 20 B.C. ENVTL. AFF. L. REV. 507 (1993).


See id. § 715a, 715d (1998).

See id. § 3901(b) (authorizing “acquisition in fee, easements or other interests and methods by local, State, and federal governments”).

See id. § 1534(a) (authorizing the acquisition “by purchase, donation, or otherwise, lands, waters, or interest therein”).

See id. § 4402(9)(A) (authorizing the implementation of wetlands conservation projects including the “obtaining of a real property interest in lands or waters, including water rights”).

See id. § 460k-1 (authorizing acquisition of “areas of land, or interests therein”).

See id. §§ 661-666c.

See id. § 742I(a)(4) (authorizing “acquisition by purchase or exchange of land and water, or interests therein”).

See, e.g., id. § 698(c) (establishing the Big Thicket National Preserve); id. § 696 (establishing the National Key Deer Refuge).

Id. § 4601-9(a).

One recent example in which the LWCF was used to purchase conservation easements occurred in the Sawtooth Mountains of Idaho. See Tim Woodwind, Congress OKs Money to Preserve Sawtooths, THE IDAHO STATESMAN, Oct. 1, 1996, at A1. When proposals emerged to subdivide private lands within the Sawtooth National Recreation Area, Congress stepped in with $800,000 from the LWCF to purchase “scenic easements” from the property owners planning new developments. See id. About 90% of private land within the Sawtooth National Recreation Area is already protected by federally-owned conservation easements. See id.
E. Federal Land Exchanges

The exchange of federal land for private land in another location offers a potentially useful tool for increasing the benefits of federal land ownership to biodiversity conservation. Ideally, this practice could be used to exchange lands in biologically poor areas, or lands containing ecosystems already protected elsewhere, for private lands harboring biologically rich habitats that need protection. It may also be used to increase federally protected areas in the eastern U.S., where relatively little public land currently exists, by exchanging vast public holdings in the West for important and privately-held habitats in the East. In recent years, land exchanges have achieved greater popularity on some fronts. However, they have also been subject to attacks from those with interests in existing public lands, and by some environmentalists not wanting to see any lands leave public ownership. Despite these complications, this mechanism resulted in the exchange of millions of acres over the past decade.

Traditionally, all of the major federal land management agencies have had the power to exchange lands under their control for private lands. However, the various statutory authorizations for exchanges impose limitations on this power, usually requiring that the exchanged lands be of equal value. The Forest Service and BLM are governed by the general exchange provisions in FLPMA, in addition to a host of specific provisions relating to various tracts of federal land. Due to increased interest in the value of land exchanges for a number of purposes, Congress passed the 1988 Federal Land Exchange Facilita-

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497. See John H. Cushman, Jr., U.S. Using Swaps to Protect Land, N.Y. TIMES, Sept. 30, 1996, at A1 (describing the increased use of land swaps by the Clinton Administration to accomplish the goal of land preservation).

498. Among the proposals for land exchanges in the recent past, many have been hindered, rightly or wrongly, by opposition from those concerned with the protection of the public lands that were part of the exchange. See, e.g., Nancy Vogel, Critics Blast Offer to Trade Headwaters for Old-Growth Pine, SACRAMENTO BEE, Jan. 31, 1997, at B1 (describing opposition to trading public forest land for the privately-owned Headwaters Forest in northern California); Kim A. O'Connell, Oklahoma Trade Put on Hold: Opposition Blocks Bill to Sell Lands to Buy Sterling Forest, NAT'L PARKS, Mar. 13, 1996, at 17 (describing the opposition to the sale of national grasslands in Oklahoma to finance the purchase of a large area of forest in New York and New Jersey that was threatened with development).

499. See Cushman, supra note 497, at A1 (stating that millions of acres worth hundreds of millions of dollars have been involved in land exchanges in recent years).

500. See FEDERAL PUBLIC LAND AND RESOURCES LAW, supra note 41, at 309.

501. See id.


503. See FEDERAL PUBLIC LAND AND RESOURCES LAW, supra note 41, at 309. The Forest Service also operates under a general exchange provision in 16 U.S.C. § 516 that largely reflects the provision in FLPMA.
tion Act to amend the procedures in FLPMA to further facilitate land exchanges.504

FLPMA generally requires that land exchanges involving Forest Service or BLM lands be in the public interest, meaning that the balance of benefits accruing to the public not be reduced by the exchange.505 FLPMA additionally requires that the lands exchanged be located within the same state.506 The lands must also be of equal value, or a cash payment made in the amount of the difference,507 unless the value of the federal land is not more than $150,000, in which case the lands only have to be of "approximately equal value."508 If the newly acquired lands lie within the boundaries of current federal holdings, they automatically become part of that area without further agency or congressional action.509

Lands within the National Wildlife Refuge System are the FWS' concern. Pursuant to statute, the Secretary of the Interior may acquire private lands in exchange for lands that are under his jurisdiction and that he "finds to be suitable for disposition."510 The properties exchanged must be "approximately equal" in value or the difference must be compensated with a payment in cash.511 Congress has also added significant lands to the NWRS through land exchanges that Congress specifically authorized.512

In recent years, land exchanges have become a more common means to consolidate federal land holdings and bring biologically valuable property under federal ownership.513 The BLM is among the


507. See id.

508. Id. § 1716(h).

509. See id. § 1716(c).

510. 16 U.S.C. § 668dd(b)(3). Some have criticized this authority as giving the Secretary too much discretion over the disposal of NWRS lands. See Reed and Drabelle, supra note 49, at 34.


512. See, e.g., Pub. L. No. 102-584, 106 Stat. 4937,4940 (1992) (authorizing the transfer of national forest land in Idaho to the Potlatch Corporation in exchange for nearly 41,000 acres of land to add to two national wildlife refuges in Arkansas).

513. See Jon Margolis, Let's Make A Deal: Federal Land Swaps and Conservation Policy, Audubon, Mar. 13, 1997, at 70; Omnibus Parks and Public Lands Management Act of 1996, Pub. L. No. 104-333 § 305 (1996). This Act contains many exchange provisions, including a trade of 48,000 acres of national forest land in Arkansas and Oklahoma for 181,000 acres of land owned by the Weyerhaeuser Company in the same two states. The Act's proponents in Congress said the private lands were of greater ecological value. See id.
most frequent users of land swaps, averaging sixty or seventy exchanges per year and involving roughly 150,000 acres annually. BLM exchanges generally aim to consolidate the agency's widely scattered holdings.514

The government also undertakes land swaps to preserve large expanses of important habitat. A notable example occurred in 1988, when the Department of the Interior exchanged 100 acres in downtown Phoenix for 100,000 acres bordering the Big Cypress National Preserve in Florida.515 More recently, the government has proposed large scale land swaps to acquire a gold mine that threatened Yellowstone National Park, land in Utah's Red Rock Wilderness, and a privately-owned redwood forest in California, among others.516 When current Secretary of the Interior Bruce Babbitt was governor of Arizona, he "literally remade the map of the state" by exchanging vast amounts of state land for federal and private land, benefiting all parties involved.517

1. Benefits of Land Exchanges

Land exchanges are a way of both divesting the government of land that serves no public purpose and bringing under federal control property that should be acquired but for which there are inadequate

514. See Cushman, supra note 497, at A1 (quoting Ray Brady of the BLM). The Forest Service uses land exchanges almost as frequently as the BLM. Annually, the Forest Service conducts an average of 135 exchanges per year for 100,000 acres of previously private land. See Margolis, supra note 513, at 70. In 1993, the first year of the Clinton Administration, the federal government exchanged 158,248 acres for 231,352 acres of state and private land. The BLM accounted for 115,358 of the acres received and the Forest Service 39,910. See Public Land Statistics, supra note 110, at 15.


516. See Cushman, supra note 497, at A1. An agreement to exchange federal assets for the rights to the proposed New World mine near Yellowstone gained recognition in late 1996, when President Clinton announced the deal. The agreement would turn over $65 million in federal assets to Crown Butte Mines, Inc. for the company's rights to develop the mine and its promise to clean up pollution from past mining activity. See Kim Murphy, Land Swaps To Save Environment Gain Ground: But Some Believe Deals May Trade Threat In One Place For Another Elsewhere. Others Fear Speculation On Federal Lands, L.A. Times, Nov. 17, 1996, at A36. The Utah exchange resulted from President Clinton's designation of the Grand Staircase-Escalante National Monument in southern Utah. To ease the state's opposition to the Monument, Clinton agreed to allow the state to swap lands it owned within the boundary of the Monument for federal assets elsewhere. See id. Recently, a proposed exchange to save redwood trees in the Headwaters Forest in California would have swapped $380 million in state and federal assets for 7,500 acres of privately owned land. Opposition to the trade of publicly owned forests for the redwood grove has set back the Headwaters proposal. See Vogel, supra note 498, at B1.

funds to do so.\textsuperscript{518} Unlike direct sales of public land, exchanges guarantee a reinvestment in land conservation. This mechanism provides a significant advantage over disposition of federal lands because there is no chance that funds will be diverted to other uses.

Part of the appeal of exchanges stems from the fact that much federal land in the West is currently used only for mining, grazing, or timber production, and often contributes little to the public beyond the economic value of these activities. These lands produce substantial quantities of resources, which private ownership might make available to the public in a much more efficient manner.\textsuperscript{519} Unless these federal lands are expected to produce future public benefits that depend on government ownership, there may be little reason not to exchange them for important habitats that require government ownership. These arguments are particularly applicable to surplus commercial or industrial property held by the federal government. In fact, such properties may hold the most promise for land exchanges because of their high economic value and low "public" value for recreation or conservation purposes.\textsuperscript{520}

The divestiture through exchanges of public lands used primarily for commodity production could balance federal ownership throughout the country. Currently, federal land ownership is concentrated primarily in the western U.S. and Alaska. Unfortunately, this means that many eastern ecosystems exist almost exclusively on private lands. Redistribution of federal ownership may benefit biodiversity by allowing more thorough protection of North American ecosystems.

In addition, as appropriations for land acquisition continue to shrink, land exchanges may prove one of the few available methods for finding the resources that are necessary to bring biologically valua-

\textsuperscript{518} See Leshy, supra note 517, at 685. Secretary of the Interior Babbit has advocated the use of land exchanges where other methods of preserving vital habitat have failed. Babbit, \textit{supra} note 515, at 364. Mr. Leshy, who is currently Solicitor at the Department of the Interior, \textit{supra} note 517, at 679, has argued forcefully for the benefits of exchanges. Leshy, \textit{supra} note 517, at 685.

\textsuperscript{519} See Oesterle, \textit{supra} note 31, at 525, stating that the federal government owns 50% of the nation's soft-wood timber, 12% of the forage in the western states, and 30% of the nation's coal reserves. In addition, federal lands account for approximately 6% of the national output of oil and gas in any given year, 90% of the nation's copper, 80% of the nation's silver, and nearly 100% of the nation's nickel. Many other minerals are also extracted in large quantities on the federal lands each year. \textit{See id.} For an example of current support from within the Department of the Interior for disposing of certain federal lands, see Leshy, \textit{supra} note 517, at 685 (stating that "the federal government owns some land that serves no genuine national interest and would be better off in state or private hands").

\textsuperscript{520} The example of an exchange involving a highly valuable parcel of downtown Phoenix real estate and 100,000 acres near the Big Cypress National Preserve should serve as a model for exchanges to benefit biodiversity. \textit{See Expanding the Everglades, supra} note 515.
ble lands into government ownership. For instance, there may be less opposition on financial grounds to preserving a particular area if the funding comes from the exchange of other federal assets. Moreover, those who oppose the notion of adding to government land ownership may be more amenable to the idea of redistribution, which does not actually add to the federal land base. Additional benefits may accrue in some instances from the greater speed and ease of land exchanges in comparison with direct purchases.

Land exchanges may also provide a favorable means of consolidating federal landholdings in the West, where land ownership is often characterized by a checkerboard pattern. This fragmented landscape causes more frequent conflicts with nearby private landowners and makes it impossible to manage entire ecosystems that do not follow artificial property boundaries. Consolidation may also benefit private owners by facilitating development.

2. Drawbacks of Land Exchanges

Despite the benefits of land exchanges, some drawbacks and complications may make the process unwise or extremely burdensome, if not impossible. For a number of these reasons, land exchanges tend to become politically charged issues, often making agency officials reluctant to pursue them.

Probably the largest drawback of land exchanges, and one relevant to direct purchases and easements as well, is that the mechanism treats federal lands as bartering chips to solve the debate over Fifth Amendment takings issues. The government must be free to impose restrictions on private property to maintain biodiversity without having to compensate every landowner with an exchange of other federal property. Only where a legitimate scientific rationale necessitates government ownership, or where regulations would unduly burden the landowner, should federal lands be exchanged for private property. These factors may be present when establishing core reserves, but are usually not present when considering the buffer zones around reserves where traditional land-use restrictions under the ESA or other statutes will suffice.

Similarly, some have charged that the exchange of public land for existing private rights to use of public land simply sweeps land man-

521. See Cushman, supra note 497, at A1 (quoting David Wilcove of the Environmental Defense Fund, who points to the lack of alternative methods of acquisition as a factor favoring land exchanges).
522. See id.
523. See id.
524. See FEDERAL PUBLIC LAND AND RESOURCES LAW, supra note 41, at 308-09.
525. See id. at 309.
526. See Leshy, supra note 517, at 685.
agement conflicts under the rug. Instead of regulating land uses that threaten the environment, the government will find it politically easier to acquire the offending site via a land exchange. Such actions may encourage speculators to assert private rights in public lands in an effort to obtain compensation for tabling their purported development plans.

Another potential problem arises when the government takes inadequate precautions in determining which existing federal lands should be part of a swap. The government may simply be trading environmental problems in one area for other problems elsewhere. Local interests often have become accustomed to using a given tract of federal lands and may oppose placing the tract in private ownership despite the tract's suitability for an exchange that would benefit biodiversity. Because of increasing interests in recreational uses of public lands, such as hunting, fishing, and hiking, delays in implementing a system of land exchanges could decrease any chance of success. The disposal of large tracts in the West might also be opposed by those who view such lands as the "last frontier" protected from development by federal ownership. The existence of large tracts of land free from the private right to develop is itself a valuable commodity in many people's minds. Very few places in the East can match the feeling of isolation and wildness of parts of the West. Even though some barren landscapes may be devoid of much use for biodiversity preservation, they supply visitors with awe inspiring views and rekindle the sense of the frontier and our nation's history.

Valuation presents another potential complication for a system of land exchanges. Present fair market value may not adequately reflect land in the West because it fails to account for "non-market" variables, such as the value of its vastness, that cannot be replaced by similarly priced, but much smaller, tracts. No prospective purchaser is likely to be willing to pay more than market value, but the question remains whether the government should have to ensure that the land exchanged is of equal recreational, biological, and non-use value. The

527. See Cushman, supra note 497, at A1 (quoting Phil Hocker of the Mineral Policy Center, who is critical of using land exchanges to circumvent land management decisions on public lands).
528. See id.
529. See Murphy, supra note 516, at A36 (describing the phenomenon of patenting mining claims in prospective wilderness areas with the likely intent of obtaining compensation rather than of developing the claim). See also Margolis, supra note 513, at 70 (stating that the Clinton Administration has quietly turned the process of exchanging federal lands for private interests that threaten the environment into official policy).
530. See id.
531. See infra note 535, citing opposition to recent land exchange proposals.
532. See generally Roderick Nash, Wilderness and the American Mind 238-71 (3d ed. 1982) (discussing the many values people place on wilderness).
greatest threats to biodiversity tend to occur in areas where land values are extremely high due to their development potential. Meanwhile, the market value of land in the arid West tends to be very low. A system of land swaps based on fair market value alone may result in several million acres of land in the West being exchanged for a few thousand acres in areas experiencing intense development pressure elsewhere. Thus, a system of land exchanges may result in dramatic reductions in the total acreage held by the federal government.533

Finally, although the Federal Land Exchange Facilitation Act534 streamlined the process somewhat, many statutory complications still thwart the use of land exchanges absent specific congressional approval.535 Most importantly, FLPMA's restriction on interstate exchanges makes land swaps involving the BLM or Forest Service nearly impossible in many eastern states due to the scarcity of federal land in that region.536 This limitation also prevents the exchange of large public land holdings in the West for private lands in the East, as described above. Because there is relatively little federal land in the East, almost any proposed intrastate exchange in that region will likely be opposed by a large constituency of users.

3. An Improved Land Exchange System

Any system of rearranging federal land ownership patterns, including land exchanges, will necessarily entail transaction costs. One such cost involves instituting and implementing a procedural framework to ensure that such exchanges are carried out in a manner that fosters the goal of preserving biodiversity. The National Environmental Policy Act and its environmental impact statement requirement already apply to land exchanges that constitute major federal actions, and should be utilized to ensure that public benefits will accrue from particular exchanges.537
For a system of land exchanges to maximize public benefits, it must involve the steady disposition of relatively small parcels of high value, typically where federal lands abut cities or contain valuable mineral deposits. A wholesale disposition of federal lands in the West will neither provide much benefit nor be politically viable, due to the recreational and aesthetic values of most large tracts of undeveloped land. Similarly, the disposal of large amounts of land in any particular region is likely to depress the market for such land and further reduce its value.\footnote{See Rosenthal, supra note 536, at 397.} Finally, local interests opposing government land disposition may voice strong concerns and must be considered in any exchange.

CONCLUSION

Biodiversity loss constitutes a present and growing crisis in the United States. Unlike many other environmental problems that have been at least partially remedied by technological solutions, no "quick fix" is available to stem the extinction of species. Nothing short of massive habitat conservation efforts will preserve the Earth's biodiversity. The task of designing practical solutions to this problem is a daunting one in the face of continued human population growth and increasing consumption around the world. Nevertheless, both public and private interests have joined the task, and it demands continued attention and resources.

Unfortunately, the recognition of biodiversity loss as a significant environmental problem has been late in coming. While the era of environmental awakening during the 1960s and 1970s produced legislation designed to protect individual species, there has historically been little attention paid to the maintenance of functioning ecosystems to preserve biodiversity in perpetuity. A system of biodiversity reserves founded on scientific principles, while necessary to save ecosystems and their component species, has yet to be established.

Adding to this injury is the increasing reluctance of elected officials to impose restrictions on the use of private property that are needed to maintain a healthy natural landscape. Within this current political constraint, it appears that the goal of biodiversity preservation cannot be fulfilled by increasing the regulation of private property. Development pressures on private land are responsible for most of the continued destruction of wildlife habitat. However, such areas are regulated, for the most part, only by local zoning ordinances that strive to maintain property values and community character rather than functioning ecosystems. Ultimately, all property, both private
and public, must be viewed in the context of natural boundaries and managed to maintain the functioning whole.

The United States is fortunate to have a large amount of publicly owned land that can provide the foundation for a system of biodiversity reserves. Nevertheless, even with better management, the vast acreage under public control is currently inadequate to protect the full spectrum of biodiversity in this country. Therefore, a comprehensive biodiversity strategy should include the acquisition of additional public lands or partial interests in private land, through outright acquisition and land exchanges. In conjunction with the regulation of private property and intelligent large scale land-use planning, this strategy has the potential to stem the loss of biodiversity and restore fragmented ecosystems.

Most importantly, funding for land acquisition must be increased at the federal level. The Land and Water Conservation Fund Act already generates $900 million each year, but has, in the past, been abused by Congressional appropriations that repeatedly allow most of this money to remain in the Fund. Congress should respect the purpose of the LWCF Act and appropriate the full amount annually; alternatively, the structure of the Fund should be changed to provide for a permanent trust account that is not reliant on annual appropriation measures. A self-sustaining trust account, as proposed in the American Heritage Trust Act, would provide a continued source of funding and add continuity to federal land conservation programs. The $13 billion that is currently accumulated within the LWCF would, if treated as the principal of a trust account, provide far more money for land conservation than has been appropriated annually in recent years. Land acquisition for the preservation of biodiversity should be among the highest priorities of the federal government and should receive greater resources.

In addition to reforming the LWCF, other existing sources of land conservation funding should be maintained and innovative proposals implemented. The federal duck stamp program has successfully preserved waterfowl habitat and could be emulated in other areas, although states would likely balk at any major federal intrusion into their historical role of regulating hunting and fishing. At least in the limited context of imperiled species that have economic value for recreation, a strong argument can be made for increased involvement by the federal government. By creating a system that allows a greater portion of the economic value of these species to be used to protect the resource, their survival will be ensured and many other species will benefit as well. Tapping the economic value of certain species will create constituencies for these species and may also improve agency responsiveness to the needs of all natural resources. If states perceive
this federal management of fish and wildlife as an alternative to future federal involvement under the auspices of the Endangered Species Act, they are far more likely to accept the "intrusion."

Probably the most promising alternative for raising significant additional funds for land conservation is a recreation tax, modeled after the successful Pittman-Robertson and Dingell-Johnson programs. Non-game species should enjoy the same benefits that game species have received from laws requiring that those who use a resource pay for its protection. It is probable that most people who would be subject to a tax on outdoor recreation goods would support such a proposal. A closer nexus between the source of funds and those who most value the outdoors would address the arguments of conservation funding critics who oppose conservation's costs to the federal treasury. The states could use the projected $350 million in revenue that would be generated under the Fish and Wildlife Diversity Funding Initiative to acquire lands that serve the dual purposes of providing additional outdoor recreation opportunities and preserving critical wildlife habitat. Like the Pittman-Robertson and Dingell-Johnson Acts, the program should be structured to make this revenue available to state parks and wildlife departments on an annual basis, without the need for congressional approval. In return for such grants, states should be required to develop biodiversity preservation plans to map statewide strategies for protecting biodiversity. Funds coming from the federal government could then be restricted to projects that further the implementation of such plans. This structure conforms with the current trend of entrusting states with national policy goals through greater flexibility and regional autonomy.

Once adequate funding is in place, the task of assembling a biodiversity reserve system must proceed rapidly. Current statutory authorities for land acquisition provide federal agencies with sufficient discretion to assemble a system of reserves. However, the various federal land management agencies must coordinate their efforts to prevent redundancy. A prerequisite to assembling a reserve system is to discern which elements of biodiversity are adequately protected by existing parks and refuges. Coordination of the biological inventories being conducted around the country should be a top priority. The establishment of buffer zones and corridors around existing parks and refuges will be necessary in many instances, and will produce the quickest and least costly results. Throughout this process, the federal government should take a leadership role in coordinating conservation efforts at all levels of government with those of private environmental and land conservation organizations.

Conservation easements can play a large role in protecting habitats on private lands where government acquisition is not necessary,
such as in buffer zones around core reserves. Many easement programs are already in place, but they have not traditionally focused on biodiversity preservation. In addition, they often lack permanence, especially in the case of the CRP’s ten to fifteen year agreements. For economic and environmental reasons, future easement programs should be focused where they will have the greatest environmental benefit and should utilize permanent easements rather than short-term agreements.

Biodiversity can be a prominent factor in the implementation of existing conservation easement programs without hindering their primary policy goals. In deciding between equivalent regions or particular parcels for enrollment in a program, the value of that region or parcel as a buffer zone or link in a biological corridor should be weighed heavily within the purposes of the particular program. Restrictive easements should be relied on more frequently to achieve other conservation goals beyond biodiversity. The WRP, if expanded in scope through additional funding, could produce tremendous environmental benefits while maintaining land in private ownership and allowing some economic uses of the land to continue. Regardless of whether land conservation budgets are increased, federal agencies should seriously consider the use of conservation easements to accomplish their goals. Existing statutory authorities for easement acquisition provide an avenue to stretch appropriations under the LWCF and to tailor monetary expenditures to the desired level of protection for a particular area.

If federal budgets for land acquisition shrink again in the future, land exchanges could provide an increasingly attractive, and more practical, means of bringing environmentally valuable land into federal ownership and protection. Land exchanges not only eliminate the need for land conservation funding, but also silence critics of government land ownership because they divest the government of property at the same time as they bring the environmentally sensitive property into government hands. Exchanges are often sought by private landowners who desire more readily developable property. The exchange may thus produce value greater than the sum of the properties, as the developable property is worth more to an individual than to the government, and the environmentally sensitive property produces public benefits not fully recognized when in private hands.

Federal agencies should view government property that provides few public benefits as a resource for protecting additional land that does offer significant public benefits. The Forest Service and BLM can achieve important benefits from exchanges because they control the most land, and much of their holdings are used primarily for commodity production. Current statutory mechanisms allow these agen-
cies to conduct land exchanges within a single state. A further provision allowing interstate exchanges would give the agencies the flexibility needed to pursue the national goal of protecting biodiversity. This expansive power, if granted, should be checked by explicit criteria for implementing exchanges that require a net increase in public benefits, including the preservation of biodiversity. In addition, avenues for public comment under the National Environmental Policy Act should be used as a mechanism to determine whether the formulated criteria are satisfied. In sum, exchanges seem to be an extremely useful means of protecting lands of special value without necessarily increasing overall government land ownership.

These tools for adding to and rearranging public land ownership enable the federal government as landowner to play a more significant role in preserving biodiversity than it has in the past. Although they do not obviate many difficult choices that must be made, the mechanisms described in this Comment will lessen the burden on private property owners while advancing the goal of biodiversity preservation.