Politics and Preservation: The Endangered Species Act and the Northern Spotted Owl

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INTRODUCTION

Until the 1960's, the environmental costs of unchecked economic development remained largely unrecognized or ignored. To address the resulting environmental degradation, Congress passed laws in the 1970's designed to protect environmental values, including the National Environmental Policy Act (NEPA),1 the Clean Air Act,2 the Clean Water Act,3 and the Resource Conservation and Recovery Act.4 These laws contained strong prohibitions against environmental degradation and provisions designed to force private and public decisionmakers to consider environmental costs in actions affecting the environment.

Congress took an especially strong regulatory approach to species preservation. In the late 1960's, the spiralling extinction rate of plant and animal species alarmed Congress. Although recognizing the difficulty of assigning an economic value to species, Congress concluded that species' unknown but potentially invaluable biological and ecological

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qualities made preservation imperative. Accordingly, Congress passed the Endangered Species Act of 1973 (ESA or Act), which prohibited actions threatening the existence of species.

Perhaps more than any other federal environmental statute, the ESA highlights the tension between economic development and conservation. Pursuant to the Act, courts have halted a multimillion-dollar dam in Tennessee to protect the snail darter (a small fish); radically modified or prohibited logging practices in west Texas to preserve the red-cockaded woodpecker; banned hunting of the timber wolf by sheep ranchers in Minnesota; and ordered the removal of nonnative sheep in Hawaii whose grazing was destroying the habitat of the palila (a type of finch). The listing of the northern spotted owl as being threatened with extinction on June 26, 1990 has created another such controversy, with environmentalists and the timber industry squaring off over the future of the ancient forests of the Northwest.

The northern spotted owl controversy has a several year history. The controversy over this inconspicuous nocturnal resident of the old-growth forests of the Pacific Northwest has evolved into a bitter and
occasionally violent standoff between environmental and timber interests. To the logging industry, the protection of the northern spotted owl represents an irrational barrier to economic development. Timber interests have predicted economic doom if the owl is protected. To many environmentalists, on the other hand, the owl symbolizes the struggle to preserve the Earth's dwindling biological resources. Environmentalists have concluded that the economic impact of listing the owl will be only moderate and welcome the listing as an important first step in protecting old-growth forests and species such as the spotted owl which these forests sustain.

In many ways, the struggle to protect the owl and the ancient forests has just begun. Timber interests, Northwest lawmakers, and the Bush administration are working to minimize the economic impact by challenging the scientific evidence supporting the listing, by pushing temporary legislation through Congress which sidesteps the ESA, and by calling for amendment of the Act. Even if the ESA survives this onslaught, timber interests will likely exploit mechanisms the ESA provides for cushioning the economic blow, including limiting the amount of habitat set aside for the owl and possibly exempting timber harvesting from the ESA's requirements. Furthermore, when balancing economic and environmental interests in either the determination of critical habitat


16. See infra notes 380-84 and accompanying text.


19. While only biological information may be considered in deciding whether to list a species as threatened or endangered, economic and other nonbiological factors may be considered in determining how much habitat should be set aside to preserve the species. 16 U.S.C. § 1533(b)(2) (1988). For a discussion of how such factors may be considered in designating critical habitat for the northern spotted owl, see infra text accompanying notes 350-87.

or the exemption process, which determine how much protection a listed species will receive, the President's appointees may exercise considerable discretion.21

This Comment reviews the scientific evidence supporting the need for action to preserve the northern spotted owl, the legal mechanisms available for owl protection, and the forces within federal agencies, Congress, and the Bush administration working against providing concrete protections for the owl. It concludes that the protections of the ESA are necessary to save the owl from extinction because of the inadequacy of state and other federal laws. Still, even with the listing of the owl, the political pressures chiseling away at strict implementation of the Act threaten the owl's survival.

The first part of this Comment examines the northern spotted owl itself, focusing on the bird's biology, its old-growth habitat and the management of that habitat, the factors driving the owl to extinction, and recent developments in the spotted owl controversy. Part II surveys and evaluates state and federal protective measures other than the ESA. Part III considers the probable source of most future protective measures — the ESA. From the petitioning procedure to habitat conservation requirements to general prohibitions against taking or jeopardizing listed species, part III will outline the most significant provisions of the Act and apply their criteria to the northern spotted owl. Having considered the ESA's protective measures, part III will then examine escape valves capable of diluting these protections. This examination reveals that while Congress feared species extinction, in some cases it feared even more the economic consequences of species protection.

I

THE SPOTTED OWL

A. The Northern Spotted Owl: A Biological Profile

1. Description and Distribution

Scientists divide the spotted owl into three subspecies based on differences in physiology and location. The California spotted owl (Strix occidentalis occidentalis) inhabits the Sierra Nevada range, the California coastal ranges south of San Francisco, and the Sierra San Pedro Martir in Baja California.22 The Mexican spotted owl (Strix occidentalis lucida) lives in mountain regions of Arizona, New Mexico, western Texas, Colo-
rado, and Mexico. The range of the northern spotted owl (Strix occidentalis caurina) extends west from the Cascade Mountains to the Pacific Ocean and south from British Columbia to northern California.

The Northwest old-growth forest controversy centers primarily on the northern subspecies. The northern spotted owl is a medium-sized bird approximately sixteen to nineteen inches tall. Dark to chestnut brown in color, it has dark eyes, white spots on the head and neck, and white mottling on the abdomen and breast. The bird is secretive, monogamous, territorial, and nocturnal. Evidence suggests that the bird is also long-lived; one study predicted an average lifespan of 17.25 years, although another found that the spotted owl may live only for about 10 years. The owls feed primarily on small nocturnal mammals such as flying squirrels, wood rats, red-backed voles, and deer mice, although their diet does vary according to physiographic province and availability. Owls will occasionally consume a bird, reptile, or insect.

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23. Id. at 208.
24. Id. More precisely, northern spotted owls range in California south to Marin County and east to northeastern Shasta County. Id.
25. M. ZARN, TECHNICAL NOTE: SPOTTED OWL (STRIX OCCIDENTALIS) 3 (U.S. Bureau of Land Management, Habitat Management Series for Unique or Endangered Species Report No. 10, 1974). "Female spotted owls are larger than males. ... Females weigh an average of 22.4 ounces with a range of 19.2-26.7 ounces. Males average 20.4 ounces with a range of 18.2-24.4 ounces. Wing length in females averages 12.2 inches ... and in males, 11.9 inches....” Id. (citation omitted).
26. FWS STATUS REVIEW, supra note 12, at 1.
27. Id. The term “territorial” must be qualified. Early observers long regarded spotted owls as sedentary. However, recent evidence suggest that adult northern spotted owls make limited migrations between breeding and wintering ranges. A radiotelemetry study of the California subspecies documented seasonal migration:

[The birds began a downslope movement in late October, dispersing over distances as great as 19.9 mi (32 km), moving southward into distinctly different habitats (pine-oak woodland) where they remained until late winter. They returned to their nest sites in the mixed-conifer forest by mid-April. The downslope movement... allowed the owls to occupy winter ranges below the level of persistent snow.]

28. See Lande, Demographic Models of the Northern Spotted Owl (Strix occidentalis caurina), 75 ECOLOGIA 601, 606 (1988). Lande actually assumed a potential longevity of 72 years for the owl. See id. at 605. However, no empirical evidence supports that assumption: Lande used the the 72-year longevity figure as part of an exponential distribution of death ages, with 72 being the high end of the range. See id. If he had assumed that all owls would die by a certain age, then his projections would have been overly bleak, since some owls would outlive the assumed death age. See id.
31. E. FORSMAN, E. MESLOW & H. WIGHT, DISTRIBUTION AND BIOLOGY OF THE SPOTTED OWL IN OREGON 40 (The Wildlife Society, Wildlife Monographs No. 87, 1984). One study has quantified the bird's diet in Oregon. See id. at 40-46. Ninety-eight percent of the prey biomass consists of vertebrates, with mammals accounting for 90% of the biomass.
predominantly “sitting and waiting” foraging tactics, spotted owls scan for potential prey from an elevated perch and then swoop down upon them.32

Spotted owls mate in late winter or early spring.33 Like most owls, they do not construct nests.34 Instead, they use broken treetops, tree cavities, or the abandoned stick nests of other birds of prey.35 The owls lay eggs two to three weeks after beginning to copulate, and copulation continues until the owls have laid up to three eggs.36 The northern spotted owl’s reproductive performance is highly variable. In some years a pair might produce more than one offspring, while in others the birds might not mate at all.37

During the incubation and nesting period, the male forages for his mate and the chicks, while the female remains at the nest.38 When the young are approximately two weeks old, the female may begin to assist with foraging.39 Spotted owl chicks are fledged from mid-May to late June and disperse in the fall.40 Juvenile survivorship is extraordinarily low. Perhaps eighty percent of the young die prior to or during dispersal from the nest.41

Because the northern spotted owl is small, secretive, and lives in remote habitat, the species’ exact number is unknown. A 1986 United States Department of Agriculture study estimated that 500 pairs live in Washington.42 Another survey documented approximately 500 pairs in Washington, 500 pairs in California, and 1460 areas in Oregon frequented by pairs of northern spotted owls.43 Thus, the Pacific states are home to between 4000 and 6000 individuals.44

32. E. FORSMAN, E. MESLOW & H. WIGHT, supra note 31, at 42-44. Owls are magnificently equipped for night hunting. They have large, light-sensitive eyes with binocular vision, remarkably acute hearing, and feathers that muffle sound. J. SPARKS & T. SOPER, OWLS: THEIR NATURAL AND UNNATURAL HISTORY 7-29 (1989).
33. See E. FORSMAN, E. MESLOW & H. WIGHT, supra note 31, at 32.
34. Scientific Advisory Panel Report, supra note 22, at 209.
35. Id.
36. Letter from Dr. E. Charles Meslow, Professor, Cooperative Wildlife Research Unit, Oregon State University, Corvallis, Oregon, to Mark Bonnett and Kurt Zimmerman (Feb. 1990) [hereinafter Meslow Letter].
39. Id.
40. Lande, supra note 28, at 605.
41. 2 FSEIS, supra note 12, at C-18.
42. FWS STATUS REVIEW, supra note 12, at 24.
43. Id. at 23.
44. Id.; see INTERAGENCY SCIENTIFIC COMMITTEE, A CONSERVATION STRATEGY FOR THE NORTHERN SPOTTED OWL 20 (1990) [hereinafter ISC REPORT] (2000 pairs have been
2. The Spotted Owl's Dependence on Old-Growth Forests

Most studies demonstrate a close association between the northern spotted owl and old-growth forests. The Forest Service has recognized this relationship, listing the owl as an indicator species which gauges the health of the old-growth forests. Ninety-three percent of the 1500 known owl sites are in stands exceeding 100 years of age, while areas of little or no old-growth harbor only 1.7 percent of known sites. Biologists found similar patterns of old-growth occupancy in Washington and California. Sitings of owls in young forests generally occurred near patches of old-growth, suggesting that those owls use old-growth patches for nesting and roosting, and younger growth for occasional foraging.

A forest's characteristics, not its age alone, determine habitat suitability. Nevertheless, primarily old-growth forests exhibit those peculiar characteristics necessary for the owl's survival. First, large, old trees provide numerous sites for nesting. Since spotted owls do not construct nests, the broken treetops and tree cavities of older forests offer critical nesting sites. Second, the dense, multi-storied canopy of old-growth provides thermal cover, protecting owls from both winter and summer temperature extremes. Third, snags and other decaying matter on the forest floor afford ideal homes for owl prey such as mice and other small rodents. Finally, the dense cover probably hampers the foraging of the

located in the last five years and an actual count of 6000 is consistent with monitoring information). According to the Regional Coordinator for the spotted owl in San Francisco, 313 single owls and 532 pairs have been observed in the forests of northwestern California. Telephone interview with Terry Simon-Jackson, Spotted Owl Regional Coordinator, San Francisco, California (Jan. 8, 1990) [hereinafter Simon-Jackson Interview].

45. See FWS STATUS REVIEW, supra note 12, at 18. Old-growth forests are generally at least 200 years old. See id. For a detailed discussion of old-growth characteristics, see infra text accompanying notes 77-85.


47. The Scientific Advisory Panel defines a site as a place "where a pair of owls has been observed, young have been found between May and September, or a vocal defense of the area has been heard or solicited." Scientific Advisory Panel Report, supra note 22, at 212. The Fish and Wildlife Service defines a site as a place "where an individual or a pair of owls have been located." FWS STATUS REVIEW, supra note 12, at 4 n.2.

48. Scientific Advisory Panel Report, supra note 22, at 209. Other studies conducted in Oregon have shown that 89% of roosting owls and 91% of nesting pairs were found in old-growth. FWS STATUS REVIEW, supra note 12, at 18-19.


54. Id. at 209.

55. See id.

56. See id. at 210.

57. See id. at 211.
northern spotted owl’s predators, the great horned owl (*Bubo virginianus*) and the northern goshawk (*Accipiter gentilis*).

Recent studies by the Timber Association of California found that northern spotted owls use young-growth for foraging, roosting, and breeding in northwestern California. The biologists who conducted the study concluded that the owls do not require old-growth throughout their range. Two authorities on the owl, one a research biologist and the other a professor of wildlife ecology, caution that studies conducted in the redwood zone of northwestern California involve a fast-developing forest yielding young-growth stands that exhibit many of the physical and ecological characteristics of old-growth stands. Thus, studies conducted in such forests do not refute the owl’s dependence on characteristics most commonly found in old-growth forests. Moreover, the research sponsored by the timber industry has not appeared in peer-reviewed journals, casting additional doubt on its validity as a challenge to the owl’s need for old-growth.

The California Department of Fish and Game has also discovered spotted owls in second-growth forests. Kent Smith, a Fish and Game biologist familiar with the research, notes that selective timber harvesting produced these second-growth “managed forests.” Stands were never clearcut and residual old-growth trees were actually left as “seed trees.”

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58. See E. Smith & S. Self, The Timber Association of California’s Comments to USFWS Regarding the Proposal to List the Northern Spotted Owl as Threatened (Dec. 13, 1989) [hereinafter TAC Comments]. These biologists studied approximately 912,000 acres of young-growth (30-80 years of age) consisting of redwood, fir, pine, or some combination thereof. L. Irwin, S. Self & L. Smith, Status of Northern Spotted Owls On Managed Forestlands in Northern California 2 (1989) [hereinafter TAC Study] (study conducted for the Timber Association of California). According to the authors, “[s]potted owls appear relatively abundant and breed successfully in young, managed forests in northern California.” Id.

59. TAC Comments, supra note 58, at 36-38, 88.

60. Telephone interview with Dr. Eric Forsman, Research Biologist, United States Forest Service, Olympia, Washington (Jan. 3, 1990) [hereinafter Forsman Interview]. Redwood forests, for example, appear to display old-growth features after decades rather than after centuries of growth. Telephone interview with Dr. E. Charles Meslow, Professor, Cooperative Wildlife Research Unit, Oregon State University, Corvallis, Oregon (Jan. 3, 1989) [hereinafter Meslow Interview]. High precipitation and mild weather also appear to contribute to this accelerated growth. Id. Finally, spotted owls in northwestern California consume wood rats, which occupy a broad range of habitat, while in Oregon and Washington the owls feast predominantly on flying squirrels, which inhabit the thick old-growth canopy. Telephone interview with Kent Smith, Biologist, California Department of Fish and Game, Sacramento, California (Jan. 22, 1989) [hereinafter Smith Interview]. The TAC study surveyed 1556 miles of transects in 40- to 120-year old managed forests in Washington, and located only 12 owls, including only two pairs. United States Fish & Wildlife Service, The Northern Spotted Owl Status Review Supplement 2.4 (1989) [hereinafter FWS Status Review Supplement]. In addition, neither of the pairs exhibited breeding activity. Id.

61. Smith Interview, supra note 60.

62. Id.

63. Id. Clear-cutting involves the removal of all trees in patches of 40, 60, or even 120 acres. Proposition 130: Logging Firms Portray Themselves as Environmentalists, L.A. Times,
to reforest the harvested areas. Coincidentally, waste wood left on the forest floor also imitates the abundant snags and logs found on the floor of old-growth forests. This particular silvicultural practice, therefore, may retain and even promote old-growth characteristics.

Even upon completion, research on second-growth owl habitat will probably be inconclusive. Smith suggests that "while adequate in the short-run, second-growth may not support the northern spotted owl in the long-run." Other biologists agree with Smith that over the great majority of the owl's range, the bird strongly prefers old-growth for foraging, nesting, and breeding. The United States Fish and Wildlife Service (FWS) reached essentially the same conclusion in a 1989 supplement to its original Status Review of the owl:

> From the available evidence, the foraging, roosting, and nesting activities of northern spotted owls are strongly associated with old-growth forests, and all relevant studies have shown that owls have clearly and repeatedly demonstrated a significant preference for old growth.

In sum, the timber industry findings, if accurate, may apply only to California's managed forests, and thus carry little predictive value for northern spotted owl's habitat requirements in Oregon and Washington.

Spotted owls use and may require substantial areas of old-growth to survive. Using data gathered by fitting individual owls with transmitters, biologists have estimated that each owl pair uses an average of 4200 acres of old-growth forest in Washington and 2300 acres in Oregon and northwestern California. However, a spotted owl's range presumably varies "in relation to quality and structure of habitat..." Some biologists believe that habitat ranges need not be in single patches, so that a matrix of closely spaced patches of old-growth apparently can support a breeding pair. But the Interagency Scientific Committee report casts

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64. Smith Interview, supra note 60.
65. Id.
66. Id.
67. Id. Smith suggests this in part because much of the existing second-growth is scheduled to be cut again soon. Id; see Pissot Letter, supra note 30.
68. Forsman Interview, supra note 60.
69. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 2.10-2.11.
70. Data on range and habitat management plans involve owl pairs because this is the minimum reproductive unit. Id. at 2.11.
71. Scientific Advisory Panel Report, supra note 22, at 220. In the Sierra Nevada, the spotted owl's old-growth needs were estimated at 1400 acres. Id. at 227. These figures are for old-growth; the total range (old-growth, mature, and young-growth) used by the owls is actually greater. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 2.11-2.16.
72. Scientific Advisory Panel Report, supra note 22, at 221.
73. Technical Comments by the Interagency Scientific Committee to Address the Northern Spotted Owl (Dec. 20, 1989) [hereinafter ISC Technical Comments].
significant doubt on this theory. The Committee, which included the foremost experts on the owl, recommended that very large Habitat Conservation Areas (HCA’s) be set aside to preserve the owl.75

B. The Old-Growth Dispute

Heated disputes have arisen over the habitat requirements of the northern spotted owl. Most scientists agree that the northern spotted owl inhabits, and requires for survival, old-growth forests or at least a combination of old-growth and mature coniferous forests.76 Unfortunately, the parties involved in the dispute have yet to agree on a precise definition of old-growth forests, or on the amount of this particular ecosystem remaining.

I. Defining Old-Growth, Mature, and Second-Growth Forests

Old-growth forests are defined most simply as those forests consisting of trees over 200 years old.77 This definition, however, is not universally accepted. One Oregonian has written that “[d]ecades ago, everyone knew what old-growth timber was — it was tall trees too wide for a man to reach around, just ripe for logging. Today, big trees don’t automatically equal an old-growth forest.”78

Instead, contemporary scientists often describe old-growth forests as complicated ecosystems of uneven ages,79 emphasizing the forests’ ecological structure and function, rather than the forests’ actual age, size measurements, or aesthetics.80 The Forest Service defines old-growth as a forest displaying a considerable degree of decadence, with dead trees, snags, and decaying logs, and containing multiple canopy layers, young saplings, and larger stands that are at least 200 years old.81 Congress has

74. For a discussion of the Interagency Scientific Committee, see infra text accompanying notes 265-87.
76. ISC Technical Comments, supra note 73, at 1, 17-21.
78. Id.
79. Id.
81. United States Forest Service, Generic Definition and Description of Old-Growth Forests (Oct. 11, 1989) (Memorandum to Regional Foresters, Station Directors, and WO Staff). Most of the old-growth stands in the Douglas-fir region of the Pacific have developed over 250-750 years since their origin. Franklin & Spies, Characteristics of Old-Growth Douglas-Fir Forests, in New Forests for a Changing World 328, 329 (1983) (Proceedings of the 1983 Convention of the Society of American Foresters). In the Cascade Range, the most common age classes are probably between 400 and 500 years. Id. However, trees over 1000 years of age are not unusual. Id.

While the dominant species in the Pacific Northwest is the towering Douglas fir, the forests are also home to other trees such as the western hemlock, Sitka spruce, and tan oak. United States Forest Service, Research Note PNW-447, Interim Definitions for Old Growth
adopted two, slightly different, "temporary" definitions of old-growth to facilitate management of mature forests.\textsuperscript{82} Both broadly reiterate the Forest Service definition, but add certain minimum size, age, and density standards which effectively restrict the definition of old-growth.\textsuperscript{83}

As with old-growth, there are no universally accepted definitions of mature and second-growth forests. Some biologists refer to second-growth forests as stands regenerated after logging.\textsuperscript{84} For the coniferous range inhabited by the northern spotted owl, young- or second-growth forests are generally defined as those less than 100 years of age; mature forests are those between 100 and 200 years old.\textsuperscript{85}

2. Old-Growth Availability

Because the northern spotted owl almost certainly depends on old-growth forests, determining the amount of old-growth acreage remaining is vitally important. However, imprecise definitions of old-growth impede the calculation of acreage figures. Before white settlers arrived, old-growth covered 60-70\% of the forested areas of the Pacific Northwest.\textsuperscript{86} Lumber companies have since harvested over two-thirds of that old-growth timber.\textsuperscript{87} According to the Forest Service, approximately 6.1 million acres of this suitable spotted owl habitat remain in the Pacific Northwest.\textsuperscript{88} Of the 6.1 million acres, about 67\% (4.1 million acres) lie in the National Forest system, and 24\% are under the jurisdiction of the Bureau of Land Management (BLM) (900,000 acres) and the National Park Service (NPS) (550,000 acres).\textsuperscript{89} The remaining 9\% is on private, state,

\textsuperscript{82} See Pub. L. No. 101-121, 103 Stat. 701, 746 (1989); USFS Research Note, supra note 81, at 4-6.

\textsuperscript{83} See Pub. L. No. 101-121, 103 Stat. 701, 746 (1989). For example, according to the USFS Research Note, groups of Douglas fir in "mixed sites" of western hemlock must be greater than 32 inches in diameter, be older than 200 years, and have a density equal to or greater than 8 trees per acre in order to be considered old-growth forest. See USFS Research Note, supra note 81, at 4.

\textsuperscript{84} Pissot Letter, supra note 30.

\textsuperscript{85} FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 2.1 n.1. Some biologists define young-growth as forests which are fewer than 100 years old and which have been regenerated after fire or other natural disaster, not logging. Pissot Letter, supra note 30.

\textsuperscript{86} See Franklin & Spies, supra note 81, at 328-29. The remaining 30-40\% consisted of younger forests generated in the aftermath of fires and other natural catastrophes. See id.

\textsuperscript{87} See FWS STATUS REVIEW, supra note 12, at 21.

\textsuperscript{88} Id. at S-24 to S-25. Both the National Park Service and the BLM are branches of the United States Department of the Interior (DOI). See Reorganization Plan No. 3 of 1946, \textsuperscript{89} § 403(a), 5 U.S.C. app. (1988) (creation of BLM within DOI); 16 U.S.C. \textsuperscript{84} § 1 (1988) (creation of NPS within DOI). The National Park Service administers approximately 76 million acres nationwide. \textsuperscript{85} UNITED STATES DEP'T OF COMMERCE, STATISTICAL ABSTRACT OF THE UNITED STATES 219 (1989). The BLM administers 272 million surface acres and an additional 300 million acres of mineral estate. Telephone interview with Bob Johns, BLM Assis-
and tribal lands.\textsuperscript{90} Of the 4.1 million acres in the National Forest system, over 2.5 million acres are considered suitable for timber production, with the remaining 1.6 million acres either unsuitable for harvest (822,000 acres), or reserved for other purposes such as wilderness (761,000 acres).\textsuperscript{91} BLM considers approximately 700,000 acres of its land in the Pacific Northwest to be suitable for harvest, and roughly 450,000 acres on private, state, and tribal lands are available for timber harvesting.\textsuperscript{92}

Northwestern California harbors approximately 963,000 acres of suitable spotted owl habitat.\textsuperscript{93} Of these acres, 806,000 are in four National Forests, 45,000 are in National Parks, and only 10,000 are on BLM land.\textsuperscript{94} The remainder is either on tribal and state land (94,000 acres) or is privately held (8000 acres).\textsuperscript{95} Nearly 400,000 acres of the suitable spotted owl habitat in California are either reserved or considered unsuitable for timber harvest.\textsuperscript{96}

In summary, approximately sixty percent of the northern spotted owl habitat in Washington, Oregon, and California is available for timber production. The remaining forty percent of the habitat area is either reserved in federal wilderness areas or is unsuitable for timber production. Table 1 reproduces the figures as developed by the Fish and Wildlife Service.\textsuperscript{97}

\begin{table}[h]
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\begin{tabular}{lrrr}
\hline
& \textit{Reserved/Unsuited for Timber Harvest} & \textit{Unreserved/Suitable for Timber Harvest} & \textit{Totals} \\
Forest Service & 1881 & 3073 & 4954 \\
NPS & 575 & --- & 575 \\
BLM & 167 & 699 & 866 \\
State, private, and tribal & 120 & 498 & 618 \\
\hline
\textit{Totals} & 2743 & 4270 & 7013 \\
\end{tabular}
\caption{Reserved/Unsuited for Timber Harvest}
\end{table}

\textsuperscript{90} 1 FSEIS, \textit{supra} note 12, at S-24.
\textsuperscript{91} \textit{Id.}
\textsuperscript{92} \textit{FWS STATUS REVIEW SUPPLEMENT, supra} note 60, at 2.25. The FWS calculated these figures for BLM forests. FWS figures include owl habitat located in California. Thus, for all three states, the FWS estimates that the total owl habitat is 7,013,000 acres. \textit{Id.} (The actual number listed in the \textit{FWS STATUS REVIEW SUPPLEMENT} is 7,014,000 acres. However, the FWS misadded one of the columns, thus leading to incorrect total.)
\textsuperscript{93} \textit{Id.} at 2.25. Figures for California are generally distinct from Oregon and Washington figures. \textit{See id.}
\textsuperscript{94} \textit{Id.} at 2.25.
\textsuperscript{95} \textit{Id.}
\textsuperscript{96} \textit{Id.}
\textsuperscript{97} \textit{See id.}
\textsuperscript{98} The figures in the table represent thousands of acres.
Forest Service figures exaggerate the amount of old-growth remaining. The agency used outdated maps in calculating old-growth, deriving figures that the FWS calls "neither very accurate nor up to date with some estimates over 18 years old."99 The agency admits lumping mature and old-growth acreage together in calculating the 6.1 million Pacific Northwest acreage figure.100 The Wilderness Society,101 using Forest Service standards,102 independently surveyed nine national forests of the Northwest,103 and tallied less than half the old-growth acreage claimed by the Forest Service.104

The old-growth quantitative and qualitative imbroglio may soon end. Congress has appropriated money for biologists to develop a universal definition of old-growth, and the Forest Service is reinventorying its old-growth holdings.105 A standard definition would substantially reduce the uncertainty involved in determining remaining old-growth acreage. Such a definition would at least enable environmental, timber, and governmental interests to focus their energy on the primary issue — conservation of sufficient old-growth habitat to save the spotted owl and other old-growth-dependent species from extinction.

3. The Forest Service’s Role in Managing Old-Growth Forests

The Forest Service’s original mission was to administer a timber reserve, although its current mission is not, according to federal statutes, exclusively the sale of timber. The Multiple-Use Sustained-Yield Act of 1960106 requires the agency to administer and promote multiple uses such as “outdoor recreation, range, timber, watershed, and wildlife and fish purposes.”107 According to the National Forest Management Act of 1976 (NFMA),108 the Forest Service must “limit the sale of timber from

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99. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 2.17-2.18 (citation omitted).
101. The Wilderness Society is a national environmental group of 275,000 members. Brown, supra note 77, at 58.
102. For a description of these standards, see USFS Research Note, supra note 81.
103. USFS Responses, supra note 100, at 1. The Wilderness Society surveyors visually inspected each acre. Brown, supra note 77, at 58.
104. Brown, supra note 77, at 58. Specifically, Forest Service draft forest plans indicated that 2.5 million acres of old-growth existed in these forests, while the Wilderness Society found that only 1.1 million acres met the Forest Service’s definition of old-growth. P. MORRISON, OLD GROWTH IN THE PACIFIC NORTHWEST: A STATUS REPORT v-vi (1988). An update to this report, compiled after two years of additional logging, estimates that fewer than 890,000 acres of old-growth remain in these forests. The Wilderness Society, Old-Growth Estimates for Public Lands West of the Cascades in Washington and Oregon (1990). In response, the Forest Service has contended that the Wilderness Society survey ignored non-Douglas-fir forests and forests east of the Cascades. See USFS Responses, supra note 100, at 1.
105. Brown, supra note 77, at 60.
107. Id. § 528.
each national forest to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis..."109 Thus, one of the Forest Service’s primary objectives remains the production of wood at a nondeclining rate.110 This sustained yield practice rotates the harvesting of even-aged trees at intervals of 70-120 years, and reforests harvested areas.111 Newly planted forests grow faster and yield more wood fiber annually than old forests.112 Because of these rotations, “forested lands that are intensively managed for timber production, in general, will no longer develop or retain the old-growth characteristics which require about 200 years” to develop.113

According to the Fish and Wildlife Service, during the 1980’s the Forest Service allowed annual harvests of 36,000-40,000 acres of old-growth and mature forests in Oregon and Washington combined, and 12,000 acres in northwestern California forests.114 The BLM authorized the harvest of an additional 22,000 acres of mature Oregon forests per year during this same period.115 The Forest Service “has tentatively planned to allow logging of 900,000 old-growth acres over the next 10 years, and 2.3 million acres over the next 50 years.”116 Unless the agency dramatically reduces harvest rates, most northern spotted owl habitat on public land will vanish entirely within sixty years,117 leaving only isolated patches of roadside or riparian buffer strips.118 Almost all old-growth on private land will vanish by the year 2000.119

Thus, while the Forest Service’s practices produce generous timber harvests and revenues, they inhibit wildlife preservation. Too often, sustained yield practices turn ancient forests with great biodiversity into uniform managed forests which support only a fraction of the species that older forests once supported.120

109. See FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 3.1.
110. See id. For aesthetic and other purposes, the Forest Service may require even longer rotations. Telephone interview with Al Burkhardt, Section Head for Timber Resources and Inventory Management, USFS Region 6, Portland, Oregon (Jan. 9, 1989) [hereinafter Burkhardt Interview].
111. See id. at 3.1-3.3.
112. Burkhardt Interview, supra note 111.
113. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 3.1.
114. Id. at 3.3.
115. Id. at 3.1-3.3.
117. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 3.3.
118. Pissot Letter, supra note 30.
119. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 3.3.
C. Extinction and the Spotted Owl

As old-growth forests disappear, the scientific community has become increasingly concerned about the viability of the northern spotted owl. Biologists are particularly concerned about the effects of declining and increasingly fragmented habitat. Declining habitat means less foraging and nesting ground for the spotted owl. Fragmented habitat tends to isolate owls in old-growth patches, causing inbreeding. Furthermore, once an owl pair dies or vacates an old-growth patch, dispersing juvenile owls often are unable to recolonize that area, effectively reducing the total habitat available to owl populations. Inadequate habitat not only pressures the spotted owl toward extinction by depriving it of vital foraging, shelter, and nesting areas, but also makes the owl more vulnerable to external forces such as predators, competitors, and forest fires. Forest Service biologist Dr. Eric Forsman concluded in 1984 that “[t]he most serious threat to the spotted owl in Oregon [is] the gradual elimination of its preferred habitat. . . .”

I. Habitat Occupancy

According to mathematical models predicting population declines for a species with a low reproductive rate and diminishing habitat, the northern spotted owl faces a significant risk of extinction. This finding was based primarily on the habitat occupancy threat. As density of suitable habitat declines and patches of old-growth occur less frequently, dispersing spotted owls are less likely to survive, since their survival depends on the probability of finding suitable habitat. Juvenile spotted owls search inefficiently for suitable habitat and have difficulty locating such habitat when dispersing into mixed-age, fragmented forests. Furthermore, dispersing owls may not even recognize suitable habitat when they find it. Thus, the probability of dispersing owls recolonizing patches of old-growth appears to decline significantly as old-growth becomes scarce and fragmented. Decreasing habitat also means that fewer owls disperse, aggravating the recolonization problem. Taking these factors into account, the mathematical model predicts that the vast ma-

121. E. FORSMAN, E. MESLOW & H. WIGHT, supra note 31, at 56.
122. See Lande, supra note 28, at 606.
123. See id.
125. Id. Juvenile owls would not be expected to be efficient searchers for old-growth habitat. Id. Until very recently by the evolutionary clock, they could disperse in virtually any direction and encounter old-growth. Id. Consequently, owls with superior searching abilities have not yet been selected for a biologically significant period of time. Id.
126. Id.
127. Id.
iority of remaining old-growth forests should be protected to ensure the owl's viability.128

2. Extinction Pressures

In 1981, FWS biologist Dr. Mark Shaffer published a seminal article discussing population viability.129 Shaffer listed four sources of extinction pressure:

1. Genetic stochasticity, caused by changes in gene frequencies due to inbreeding and other genetic factors;
2. Natural catastrophes, such as floods, fires, and droughts which may occur randomly over time;
3. Environmental stochasticity, due to temporal variation of habitat parameters, disease, and the populations of competitors, predators, and parasites; and
4. Demographic stochasticity, arising from chance events in the survival and reproductive success of a certain group of individuals.130

The term “genetic stochasticity” describes the loss of genetic variability that occurs in small populations of a species.131 Low genetic variability may lessen a species’ ability to respond to environmental changes.132 As these troubled populations decline, further inbreeding occurs, and the species’ decline accelerates.133

The fragmentation of northern spotted owl habitat increases the risk of genetic stochasticity. In Washington's Olympic Peninsula and northern Cascades, Oregon's central and southern Cascades, and possibly around Marin County, California, natural or manmade obstacles increase the owl's susceptibility to genetic isolation as its habitat is destroyed.134 The preferred method of timber harvesting in much of the owl's range — clearcutting — leaves the forest looking like a checker-

128. See Lande, supra note 28, at 606. Lande's conclusion on habitat occupancy and protection were confirmed by a computer model generated by Daniel Doak, a graduate student at the University of Washington Department of Zoology, and a study by Dr. Barry Noon (USFS Experimental Station in Arcata), which found that habitat occupancy was critical.
129. Shaffer, Minimum Population Sizes for Species Conservation, 31 BIOSCIENCE 131 (1981). While the habitat occupancy problem is in many ways peculiar to the spotted owl, Shaffer's principles apply to other animal species as well.
130. Id. at 131 (citations omitted). Although the precise effects of inbreeding on spotted owls are unknown, the process in the vast majority of species generally produces offspring that are less fit or are ill-equipped for survival. Telephone interview with Dr. E. Charles Meslow, Professor, Cooperative Wildlife Research Unit, Oregon State University, Corvallis, Oregon (Nov. 6, 1990).
133. See id.
134. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 3.6-3.9. The Columbia Gorge and the Oregon Coast Range are examples of natural obstacles, while logged areas are the most common manmade obstacles. See id. at 3.7-3.8.
board from the air. Such forest fragmentation may discourage or prevent the exchange of genetic material necessary for population viability.

Thus, isolated subpopulations in Washington, Oregon, and California may vanish without "genetic or demographic contributions" from other owls. Guaranteeing sufficient genetic contributions for northern spotted owl populations in northwestern California may require federal agencies to promote interbreeding between those owls and California spotted owls, which inhabit the northern Sierra Nevada range. Most wildlife management plans assume such interbreeding will occur. But while owls may interbreed near the Pit River, the area between ranges poses a serious obstacle. It has been deforested by private timber companies and "looks like a war zone," in the words of one biologist. Even in California, therefore, the necessary interbreeding may not occur.

As habitat becomes isolated and more scarce, northern spotted owls also become especially vulnerable to natural catastrophes. A report by the FWS outlined these threats to the birds' survival, noting in particular that the 1980 eruption of Mount St. Helens eliminated about 25,000 acres of northern spotted owl habitat, and that fires in Oregon destroyed 100,000 acres of known and potential owl habitat in 1987.

In evaluating environmental pressures, the FWS report deemphasized disease as a danger to owl populations. The study did express concern that predation by the great horned owl and the northern goshawk could further jeopardize the subspecies, particularly because dispersing fledglings are especially vulnerable to attack from the larger predators. The FWS also requested further study of the northern spotted owl's chief competitor, the barred owl (Strix varia). Apart

135. See id. at 3.13.
136. Id. at 3.12.
137. Id. at 3.6.
138. Smith Interview, supra note 60.
139. Meslow Interview, supra note 60.
140. Smith Interview, supra note 60.
141. See FWS STATUS REVIEW, supra note 12, at 22.
142. See id.
143. Id.
144. Examples of these environmental extinction pressures (stochasticity) include: low success of dispersing juvenile owls, increased susceptibility to predation, and degraded habitat which causes lower reproduction rates. Pissot Letter, supra note 30.
145. FWS STATUS REVIEW, supra note 12, at 12. Knowledge about diseases affecting owls generally, and spotted owls specifically, is limited. "Although some diseases may cause overt sickness and mortality, most diseases are subclinical and interfere with either normal growth behavior or other reproductive success but do not necessarily kill the host." Hunter, K. McKeever, L. McKeever & Cramshaw, Disease Susceptibility in Owls, in BIOLOGY AND CONSERVATION OF NORTHERN FOREST OWLS 67, 70 (Forest Service General Tech. Rep. No. RM-142, 1987).
146. FWS STATUS REVIEW, supra note 12, at 12-13.
147. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 3.14-3.15.
from a slight size advantage, this competitor — or cogeneric\textsuperscript{148} intruder — is almost indistinguishable in appearance from the northern spotted owl.\textsuperscript{149} The barred owl has proliferated from Canada to as far south as Mendocino County in California, replacing or displacing the spotted owl from portions of its range.\textsuperscript{150} The barred owl is aggressive and apparently more adaptive to the habitat perturbations that are gradually decimating its smaller cousin.\textsuperscript{151}

Forest Service biologists have examined the extinction risks facing the spotted owl using Shaffer's discussion of genetic stochasticity.\textsuperscript{152} These biologists concluded that the probability of genetic stochasticity posed a less serious problem than did the threat of demographic stochasticity.\textsuperscript{153} Even so, the biologists warned that "there is no reason for complacency" about the genetic fitness of the northern spotted owl.\textsuperscript{154}

The National Audubon Society also examined the viability of the spotted owl, specifically focusing on demographic and genetic stochasticity.\textsuperscript{155} An independent panel appointed by the Society reported that "[t]heory plus experience . . . tell us that demographic stochasticity presents a real danger of extinction to such a species if average population size is low."\textsuperscript{156} The panel suggested that the northern spotted owl's estimated population of 3000 pairs might be considered "low."\textsuperscript{157} The panel also challenged Forest Service biologists' finding of low genetic stochasticity risk, concluding that those studies may have underestimated the threat.\textsuperscript{158}

\begin{itemize}
\item \textsuperscript{148} "Cogeneric" means that both species belong to the same genus, although biologists are unsure whether they can interbreed. Forsman Interview, \textit{supra} note 60.
\item \textsuperscript{149} \textit{Id.}
\item \textsuperscript{150} FWS \textsc{Status Review Supplement}, \textit{supra} note 60, at 3.14.
\item \textsuperscript{151} \textit{Id.} at 3.15.
\item \textsuperscript{152} Barrowclough & Coats, \textit{The Demography and Population Genetics of Owls. With Special Reference to the Conservation of the Spotted Owl (Strix occidentalis)}, in \textsc{Ecology and Management of the Spotted Owl in the Pacific Northwest} 74-85 (Forest Service General Tech. Rep. No. PNW-185, 1985).
\item \textsuperscript{153} See \textit{Scientific Advisory Panel Report}, \textit{supra} note 22, at 214-16.
\item \textsuperscript{154} \textit{Id.} at 216.
\item \textsuperscript{155} In 1985, the Society suggested that the Cooper Ornithological Society select a panel of experts to review published studies, take testimony from concerned parties, and formulate independent conclusions. \textit{Id.} at 205. The panel's final report applied Shaffer's principles of population viability to the owl. \textit{Id.} at 212-14.
\item \textsuperscript{156} \textit{Id.} at 214.
\item \textsuperscript{157} \textit{Id.} As mentioned above, scientists are not certain exactly how long spotted owls live, and owl reproductive habits also appear variable. Some years they might breed and produce more than one offspring, while in other years the birds might not even nest. \textit{Id.} at 212. "Such random variation is inconsequential for large populations, but for small ones it could be catastrophic — a series of bad years could very quickly destroy a small population." \textit{Id.} An optimistic study speculated that regionwide population is declining at approximately one percent annually. 1 FSEIS, \textit{supra} note 12, at III-20.
\item \textsuperscript{158} \textit{Scientific Advisory Panel Report}, \textit{supra} note 22, at 215-16. The panel, like the FWS, concluded that environmental pressures and natural disasters also are likely to impact heavily on a species with few individuals, such as the spotted owl. \textit{Id.} at 216.
\end{itemize}
Because the panel recognized that population viability was a new science and that conclusions based on its model might appear arbitrary, it placed the owl’s viability into perspective using historical and contemporary “parallels” as measuring sticks. Citing as examples such defunct avian species as the heath hen (Tympanuchus cupido cupido) and the ivory-billed woodpecker (Campephilus principalis), and the currently endangered red-cockaded woodpecker (Picoides borealis), the scientists analogized that the northern spotted owl faces a real danger of extinction. Indeed, the FWS admitted that, under the timber and spotted owl management plans in effect prior to the owl’s listing as a threatened species under the ESA, current and projected habitat data predicted continued declines in spotted owl numbers as preferred habitat was converted to young stands.

3. Minimum Viable Population

The marked decline of the northern spotted owl’s population and the lessons of past extinctions suggest that the owl is approaching and may eventually fall below what biologists describe as a minimum viable population (MVP). In simple terms, an MVP is a population that can persist when confronted by the various extinction pressures described above. When a species numbers less than its MVP, “its continued

159. *Id.* at 217-18.
160. *Id.* at 217-18. Another projection, after accounting for the spotted owl’s low birth-rate and high fledgling mortality, estimated complete extinction in four generations, or about 20 years. *Id.* at 213.

The best-studied case of avian extinction is the heath hen. These birds once ranged from Maine to Virginia, living on sandy scrub oak plains. *Id.* at 217. Hunting and habitat alteration led to their near extinction by the beginning of the 20th century. *See id.* In 1908, a 1600-acre refuge was established for the remaining 50 birds. *Id.* By 1915 the population had exploded to 2000. *Id.* Despite precautions, a fire swept through the breeding area in 1916, destroying the eggs. *Id.* The conflagration was followed by a severe winter and the arrival of predatory goshawks. *Id.* Within a year the population had dwindled to only 150 birds. *See id.* Inbreeding and a turkey disease produced further declines, and in 1932 the species vanished. *Id.*

The ivory-billed woodpecker is another, less documented example. This species lived in the old-growth hardwood forests of the southeastern United States. *Id.* Heavy logging began in earnest in 1885 and continued through 1910-15. *Id.* As its habitat dwindled, the bird’s population declined rapidly. *Id.* The last record of breeding ivory bills was in 1939. *Id.*

Today, numerous birds are on the verge of extinction, although the situation of the red-cockaded woodpecker probably is most similar to the northern spotted owl. Like the owl, this woodpecker is dependent on old-growth forest and occupies a large geographic range. *Id.* at 218. The species ranges from the southern Atlantic coast to Oklahoma and Texas. *Id.* Its habitat has been gradually destroyed by intensive logging; estimates of its population vary between 4500 and 10,000 individuals. *Id.* at 219.

161. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 7.3.
162. *See Scientific Advisory Panel Report, supra* note 22, at 212-14; *supra* text accompanying notes 129-61. Shaffer offers a more expansive but tentative definition: “A minimum viable population for any given species in any given habitat is the smallest isolated population having a 99% chance of remaining extant for 1000 years despite the foreseeable effects of demographic, environmental, and genetic stochasticity, and natural catastrophes.” *Shaffer, supra*
existence becomes increasingly precarious and large scale human inter-
vention, often expensive, is required to prevent extinction. . . .”163 Still, 
the MVP is conceptually problematic. MVP’s vary by species and their 
calculation depends on such unpredictable factors as reproduction rates, 
the species’ adaptability to long- and short-term environmental changes, 
and the nature, extent, and foreseeability of those changes.164

The northern spotted owl has no universally accepted MVP. Based 
on studies of extinct avian species, the Audubon Society puts the “abso-
lute minimum” at 1500 pairs.165 This figure includes birds in Washing-
ton, Oregon, and northwestern California, as well as the California 
subspecies of spotted owl that inhabits the Sierra Nevada.166 Inclusion 
of the California spotted owl assumes an adequate gene flow between owl 
populations.167 Some environmentalists believe the figure is too low, 
charging that it was produced by a committee whose conclusions consti-
tute compromises between interests, or by biologists who believe that in 
order to maintain credibility they must temper their frightening conclu-
sion that all of the remaining owls may need to be preserved in order to 
ensure the species’ survival.168

D. Development of the Spotted Owl Controversy

Environmentalists have attempted to draw attention to owl habitat 
requirements and inadequate forest preservation through legal and other 
means. Environmental groups have filed numerous lawsuits, many seek-
ing to enjoin the sale or logging of stands of old-growth timber.169 Some 
environmentalists have taken the battle to the forests by blockading ac-
cess roads, climbing up old-growth trees that are scheduled to be cut, and 
even booby-trapping large trees with embedded metal spikes.170 Other 
environmentalists have charged that the two agencies administering most 
of the bird’s habitat — the Forest Service and the BLM — refused to 
adopt management plans which would assure the future viability of the 
species, and have consequently filed numerous lawsuits, many seeking to 
enjoin the sale or logging of old-growth stands.171

note 129, at 132.
164. See Shaffer, supra note 129, at 131-33.
166. Id.
167. See id.
168. Stahl Interview, supra note 124.
169. See, e.g., Seattle Audubon Soc’y v. Robertson, 914 F.2d 1311 (9th Cir. 1990); Head-
waters, Inc. v. U.S. Bureau of Land Mgmt. 914 F.2d 1174 (9th Cir. 1990); Marble Mountain 
Audubon Soc’y v. Rice, 914 F.2d 174 (9th Cir. 1990).
170. See, e.g., Lemonick, supra note 13. Earth First! recently renounced the practice of 
spiking trees. See Diringer, Environmental Group Says it Won’t Spike Trees, San Francisco 
171. See infra text accompanying notes 238-64.
These agencies have had duties to protect the owl for many years under the National Forest Management Act and the Migratory Bird Treaty Act. The plans developed under these laws protect limited owl habitat in Washington, Oregon, and California. However, the plans set aside areas of owl habitat that are smaller than the mean preferred habitat areas biologists calculate are necessary, thus giving no assurance of long-term survival for the bird.

Seeking to end perceived agency complacency, the environmental organization GreenWorld petitioned the FWS in January of 1987 to list the northern spotted owl as endangered under the ESA. In August of the same year, the Sierra Club Legal Defense Fund, on behalf of twenty-nine other environmental groups, petitioned the FWS to list the owl as endangered in the Olympic Peninsula and along the Oregon coast, and as threatened over the remainder of the species' range.

The FWS denied the petitions, claiming that the owl did not qualify for listing. The agency instead struck a deal with the Forest Service, the BLM, and the NPS to "protect spotted owls informally." Although the agreement lacked affirmative duties and an implementation plan, it did result in the creation of the Interagency Scientific Committee (ISC), also called the Thomas Committee after Jack Ward Thomas, the Committee's head. The Committee was charged with developing a "scientifically credible conservation strategy" for the owl. In its April 1990 report, the ISC recommended setting aside Habitat Conservation Areas (HCA's) of varying sizes, most commonly of 50,000-60,000

172. See infra text accompanying notes 225-37.
175. See infra text accompanying notes 263-64.
176. See id.
177. GreenWorld apparently consists of only one person, Max Strahan. Telephone interview with Burton Nadler, GreenWorld counsel in Cambridge, Massachusetts (Nov. 15, 1989) [hereinafter Nadler Interview].
178. Id. Other environmental organizations attempted to join the petition later. Meslow Letter, supra note 36.
180. Listing Final Rule, supra note 11, at 26-118.
181. GENERAL ACCOUNTING OFFICE, REP. No. GAO/RCED-89-79, ENDANGERED SPECIES: SPOTTED OWL PETITION BESET BY PROBLEMS 1 (1989) (also filed under GAO Doc. No. B-226076.2). The petition was denied in December 1987. Id.
183. Jack Ward Thomas, a prominent spotted owl authority, was the designated team leader of the ISC. See ISC REPORT, supra note 44, at 48. For discussion of the committee and its recommendations, see infra text accompanying notes 271-87.
184. ISC REPORT, supra note 44, at 47.
acres.\textsuperscript{185} The committee's report suggested that preserving the owl would require the prohibition of logging on thirty to forty percent of available public forests.\textsuperscript{186}

Meanwhile, environmental groups filed suit in federal court, challenging the FWS's decision not to list the owl as "arbitrary and capricious or contrary to law."\textsuperscript{187} The suit alleged that the FWS had violated the ESA in four significant ways. First, it alleged that the FWS failed to articulate a rational connection between the administrative record and its decision. Second, the FWS allegedly did not base its listing decision solely on the best scientific data available, as the ESA mandates, but instead considered economic and other factors. Third, the suit alleged that the FWS improperly relied on its informal interagency memorandum as a substitute for its duties under the ESA. Finally, the plaintiffs alleged that the FWS neglected to consider listing the owl as threatened rather than endangered, even though twenty-nine organizations had specifically petitioned that the owl be given that status.\textsuperscript{188}

Federal district court Judge Thomas Zilly, ruling on a motion for summary judgment, found that the agency had ignored the opinions of its own experts and indeed had acted in an "arbitrary and capricious" manner, "contrary to law."\textsuperscript{189} Attempting to reconcile the FWS's decision with expert opinions unanimously supporting the proposition that the owl was in danger of extinction, Zilly lamented that "[a]lthough the Status Review cites extensive empirical data and lists various conclusions, [the Service] fails to provide any analysis. The Service asserts that it is entitled to make its own decision, yet it provides no explanation for its findings."\textsuperscript{190} Judge Zilly cited the inadequate record as another ground for overturning the FWS's decision, noting that the record did not clarify whether the agency considered listing the owl as threatened.\textsuperscript{191} Judge Zilly ordered the FWS to produce evidence and

\begin{footnotesize}
\begin{enumerate}
\item[185.] See infra text accompanying notes 275-83.
\item[186.] Stein, supra note 75, at A1, col.1.
\item[189.] Northern Spotted Owl, 716 F. Supp. at 483.
\item[190.] Id. at 482.
\item[191.] Id. at 483. A report prepared by the General Accounting Office (GAO) supports Judge Zilly's findings. Prior to the trial, Rep. Gerry Studds (D-Mass.), Chairman of the House Subcommittee on Fisheries, Wildlife Conservation, and the Environment, asked the GAO to review the FWS's decision. See General Accounting Office, supra note 181, at 1. The GAO concluded that FWS officials in Washington compromised the integrity of the listing process. See id. at 12.

First, the GAO faulted the FWS for unnecessarily delaying the listing process, thus giving scientists less than three months to complete their study. Id. at 7. Indeed, members of the spotted owl study team informed the GAO that, in the limited time available, they would be unable to obtain information they considered important for reaching a decision. Id. The ESA
\end{enumerate}
\end{footnotesize}
documentation supporting its conclusion that the owl was not endangered.\textsuperscript{192}

gives the FWS up to one year to review a listing petition, determine whether further study is warranted, conduct the study, and render a decision. \textit{Id.} at 6. Unless it would hamper efforts to list other species in greater need of protection, the FWS may use up to 90 days of this one year period to determine whether action on a petition is warranted. \textit{Id.} The FWS, however, took nearly six months to decide that a study was warranted, \textit{id.} at 6, effectively limiting the spotted owl team's study time to less than six months. The FWS Director further reduced the time that the ESA authorizes for the study by two months when he established a December 1, 1987 deadline for reaching a listing decision. \textit{Id.} at 7. After time spent organizing the team, the scientists assigned to study the owl had less than three months to complete their report. \textit{Id.}

Second, the GAO concluded that “FWS management substantively changed the body of scientific evidence presented in the . . . status report. . . . The revisions had the effect of changing the report from one that emphasized the dangers facing the owl to one that could more easily support denying the listing petition.” \textit{Id.} at 1. Three FWS biologists and a FWS expert in population viability prepared the original draft of the status report after review by outside experts. \textit{See FWS STATUS REVIEW, supra note 12.} This draft concluded that old-growth destruction was related to the northern spotted owl's decline, and that Forest Service programs for the owl would lead to its extinction. \textit{GENERAL ACCOUNTING OFFICE, supra note 181, at 9.} Under the FWS's decentralized management structure, the final listing decision was ostensibly in the hands of the FWS Regional Director in Portland, Oregon. \textit{Id.} at 2. However, “as events actually unfolded,” the FWS Director in Washington and other high-ranking FWS officials actively and forcefully participated in the decisionmaking process. \textit{Id.} at 9 n.6. One FWS team member was requested by superiors in Washington to “sanitize the report.” \textit{Id.} at 10. The Regional Director in Portland at the time, Rolf Wallenstrom, reported that “one top Interior official made his view clear that the owl should not be listed under any circumstances.” \textit{Id.} at 11. The FWS Director had expressed similar views in various conversations. \textit{Id.} Furthermore, Wallenstrom later admitted that James Cason, then Deputy Assistant Secretary for Land and Minerals, “called to warn that under no circumstances would the [FWS] be permitted to list the owl because of the impact that such an action would have on the economy of the Pacific Northwest.” \textit{Stein, supra note 182, § 1, col.5.} Pressure from Washington apparently proved successful. Over a one-week period, a member of the study team and a management liaison officer rewrote the report to favor the no-list position. \textit{GENERAL ACCOUNTING OFFICE, supra note 181, at 10.}

\textsuperscript{192} \textit{Northern Spotted Owl}, 716 F. Supp. at 483. The court did not reach the question of whether the interagency memorandum agreeing to “protect spotted owls informally” justified excluding the owl from the endangered or threatened lists. \textit{Id.} at 482 n.6. Likewise, the court ignored the plaintiffs' allegation that political, economic, or other nonbiological concerns had improperly influenced the listing decision. \textit{See id.} at 483. The Act prohibits the consideration of nonbiological factors in making the listing decision. \textit{See 16 U.S.C. § 1533(b)(1)(A) (1988); see also H.R. CONF. REP. No. 835, 97th Cong., 2d Sess. 19, \textit{reprinted in 1982 U.S. CODE CONG. & ADMIN. NEWS 2860.} Defendants argued that this assertion was based on two rather ambiguous statements by FWS officials which possibly were taken out of context and which were made after the petition finding was issued. \textit{Northern Spotted Owl, 716 F. Supp. at 482; Memorandum in Support of Federal Defendants' Motion for Summary Judgement at 27-28, Northern Spotted Owl v. Hodel, 716 F. Supp. 479 (W.D. Wash. 1988) (No. C88-573Z) [hereinafter Defendants' Brief]. For example, the plaintiffs quoted FWS Assistant Regional Director David Riley for the proposition that the economic impact of listing the owl weighed heavily on the FWS. \textit{Defendants' Brief, supra, at 28.} It is possible that the “selective” quotation may have misrepresented Riley's statement that

\begin{quote}
I literally believe that even if there's only half of what was forecast in the Pacific Northwest what shutting down timber practices would have done, that's what a lot of people wanted to do, would have been very detrimental to the whole region. Now, that's not a reason not to list, but certainly it weighed heavily on our mind as to how you can deal with it because once you've listed, your hands are really tied as to what
\end{quote}
In response, the FWS notified the court in April 1989 that it had begun "steps to officially propose the species for addition to the federal list as a threatened species" because of modification and loss of its habitat.\textsuperscript{193} Finally, on June 26, 1990, the FWS listed the northern spotted owl as a threatened species under the ESA.\textsuperscript{194} The agencies have not adopted final plans yet.

While the FWS reconsidered the listing decision, Congress passed an appropriations bill that required that a minimum of 9.6 billion board feet of public timber in the combined fiscal years 1989 and 1990 be offered for sale.\textsuperscript{195} This represents only a ten percent reduction in timber harvesting from 1987 and 1988 levels.\textsuperscript{196} The BLM intends to comply with this bill\textsuperscript{197} through 1992.\textsuperscript{198} Subsequently, the BLM will return to its habitat plan based on Spotted Owl Management Areas (SOMA's), which are usually smaller than the HCA's proposed by the ISC.\textsuperscript{199} The Forest Service favors implementation of the ISC recommendations, but the Department of the Interior and the Bush administration oppose that plan.\textsuperscript{200}

Several days after the FWS announced its listing of the northern spotted owl, the Secretaries of Agriculture and Interior announced a "five-point plan" to deal with the spotted owl.\textsuperscript{201} The plan approves the BLM's decision to comply with the appropriations bill's timber quantities and then to use SOMA's to protect owl habitat.\textsuperscript{202} The Forest Service will also comply with the appropriations bill.\textsuperscript{203} A new interagency task force will find a balance between economic and preservation concerns, and the Bush administration will support legislation to exempt certain timber sales from the ESA and to expand the powers of the Endangered Species Committee.\textsuperscript{204}

This Comment next discusses in greater detail the limited owl protection under state and federal laws other than the ESA which prompted environmentalists to seek the greater protections offered by the ESA. The Comment then goes on to discuss the ESA itself, including provi-
sions in the Act which give discretion to agency officials to balance protection against economic factors. Finally, the Comment examines recent attempts to avoid the requirements of the Act by convening the Endangered Species Committee or amending the Act to weaken its mandate. As a result of these efforts, the northern spotted owl controversy may end in the circumvention or evisceration of one of the strongest environmental statutes Congress has passed.

II
SPOTTED OWL PROTECTION EXCLUSIVE OF THE FEDERAL ESA

State endangered species acts and federal laws other than the ESA offer owls limited protection to the northern spotted owl. State laws have had little practical impact on preserving the owl because most spotted owl habitat is on federal or private land and because the laws themselves are often weak, offering only token protective measures. Although the Migratory Bird Treaty Act (MBTA), the National Forest Management Act, and the Sikes Act offer some protection for spotted owls in federally owned old-growth, these laws are either too weak or lack sufficient jurisdiction to deal effectively with the problem. Only the ESA directly addresses the plight of a declining species such as the spotted owl; other laws may slow the owl's decline, but none stop it.

A. State Laws

Although Washington and Oregon have listed the owl under their endangered species acts, and California has recognized that the spotted owl is a species of special concern for the purposes of timber harvesting regulations, these measures will not save the owl from extinction. First, over ninety percent of spotted owl habitat is under the jurisdiction of the Forest Service, the BLM, and the NPS. Thus, even assuming their effectiveness, state laws can have only a minimal impact. Second, the laws themselves are in fact deficient, as of yet offering little habitat protection. Washington has listed the northern spotted owl under its en-

205. The spotted owl controversy is not limited to the Northwest; it may soon spill over into Arizona, New Mexico, western Texas, and Colorado because groups have recently petitioned that the Mexican spotted owl be listed. Telephone interview with John Fay, FWS Administrator, Washington, D.C. (Jan. 8, 1990) [hereinafter Fay Interview]. Since evidence suggests that the California spotted owl also may be threatened, California will likely also become further embroiled in the controversy. Spotted Owl Update, supra note 29.


209. See FWS STATUS REVIEW, supra note 12, at 29.

210. See 1 FSEIS, supra note 12, at S-26; supra text accompanying notes 86-96.
dangered species act.  

Under Washington law, as under Oregon law, endangered species, or goods made from such species, may not be bought, sold, possessed, or transported. Washington also has established a joint committee to provide the legislature with "findings on matters relating to threatened and endangered species," including the protection of such species' habitats. These provisions, however, contain no mandatory habitat conservation measures.

Like Washington, Oregon has also listed the owl under its endangered species act. Unlike Washington, Oregon provides for nongame wildlife recovery or management plans to restore breeding populations of federal and state listed species. However, the Oregon statute is weak. Species are to be managed "to minimize serious economic impacts and misuses," and "at levels consistent with habitat availability, public acceptance, and other uses of the lands and waters of the state." Indicative of the Oregon Department of Fish and Wildlife's reluctance to tie up large amounts of old-growth habitat, the Department had as of 1990 recommended protection for only about 400 pairs of spotted owls.

In California, the spotted owl is not listed under the state endangered species act. However, California forestry statutes specifically prohibit timber harvests that would adversely affect the northern spotted owl. The owl is listed under state law as a species of special concern. This listing, along with the owl's listing under the federal ESA, means that no timber harvest taking place on state or private lands may be performed if it would "irreparably damage" or "cause significant, long-term damage" to the species. In addition, California forestry regulations

216. Id. 635-100-015(1)(e).
217. Id. 635-100-015(2).
220. See FWS Status Review, supra note 12, at 29.

Environmentalists view the Department of Forestry as being overly sympathetic to the
northern spotted owl needs more protection than state agencies can or will provide.

B. Protection Under Federal Laws Other Than the ESA

In addition to the ESA, three other federal acts may also offer some protection to the northern spotted owl. In each case, the federal statute at least partially focuses on endangered species protection. However, all three merely fill gaps left by the ESA and remind agencies whose decisions affect endangered species of Congress' continuing concern about the survival of such species. However, in the absence of the ESA, they are inadequate to prevent the extinction of the northern spotted owl.

1. The Migratory Bird Treaty Act, the National Forest Management Act, and the Sikes Act

The Secretary of the Interior has listed the owl under the Migratory Bird Treaty Act (MBTA), which implements international agreements to protect specified avian species from extinction. The MBTA aids in the restoration of migratory birds which have adapted to parts of the United States and have become scarce. Specifically, the MBTA makes

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timber industry. However, the Department has recently exercised its authority under the Act to reject a timber harvest plan that would clearcut parts of the Headwaters Forest in Humboldt County, a patch of old-growth that has been the focus of controversy between the timber industry and environmentalists. Forestry Board Rejects Appeal by Company to Harvest Redwoods, 1 Cal. Env't Rep. (BNA) 83 (Jan. 21, 1991). The Department rejected the timber harvest plan because it would threaten the marbled murrelet, a small bird that, like the spotted owl, is dependent on old-growth. Id.

223. See FWS Status Review Supplement, supra note 60, at 2.25.
224. California's passage of Proposition 3 on June 7, 1988, may also be a small step forward. Proposition 3 established a $41 million Wildlife and Natural Areas Conservation Fund designed to preserve listed and other rare species by a combination of acquiring, enhancing, restoring, and protecting those species' habitats. Cal. Fish & Game Code § 2720(a) (West 1990).
226. 50 C.F.R. § 10.13 (1990). The U.S. Supreme Court has frequently underscored the value of avian species. In the often cited case, Missouri v. Holland, 252 U.S. 416 (1920), the Court held that the treaty between the United States and Great Britain which led to the passage of the Act actually superseded inconsistent state laws. Id. at 434-35. Justice Holmes emphasized that the treaty protected certain birds because "they were of great value . . . but were in danger of extermination through lack of adequate protection." Id. at 431. As recently as 1983, the Supreme Court reiterated Holmes' sentiments: "[t]he protection of migratory birds has long been recognized as 'a national interest of very nearly the first magnitude.'" North Dakota v. United States, 460 U.S. 300, 309 (1983).
it unlawful to take or kill any bird protected by the law. 228 Federal agencies must comply with the MBTA and citizens may enjoin agency conduct inconsistent with the statute. 229 The Forest Service has developed plans, discussed more fully below, to fulfill its statutory duty under the MBTA to protect listed species such as the owl.

Second, the National Forest Management Act of 1976 (NFMA) 230 and its implementing regulations require that viable populations of all native species of vertebrates remain well distributed throughout their range. 231 As discussed below, the Forest Service has examined owl habitat needs for many years under the auspices of NFMA. 232

Third, under the Sikes Act 233 the Forest Service must provide adequate protection to fish and wildlife officially classified as threatened or endangered under the ESA or any similar state act. 234 However, the law applies only to military reservation lands. 235 Under the Sikes Act, the Forest Service must establish a conservation and rehabilitation program including "habitat improvement projects" for threatened or endangered species. 236 This Act covers the northern spotted owl, since Oregon and now the FWS have listed the bird as threatened, but is of limited help since few, if any, spotted owls inhabit military reservations. 237

228. Id. § 703. Analogizing to the ESA, environmentalists argue that a "taking" must be interpreted broadly to include habitat modification. See Palila v. Hawaii Dep't of Land & Natural Resources, 649 F. Supp. 1070, 1075 (D. Haw. 1986), aff'd, 852 F.2d 1106 (9th Cir. 1988); Sierra Club v. Lyng, 694 F. Supp. 1260, 1270 (E.D. Tex. 1988).
229. Alaska Fish & Wildlife Fed'n v. Dunkle, 829 F.2d 933, 938 (9th Cir. 1987), cert. denied, 485 U.S. 988 (1988) (setting aside Secretary of the Interior's decision to enter into certain agreements with Alaskan Natives allowing subsistence hunting of listed birds); Defenders of Wildlife v. Environmental Protection Agency, 688 F. Supp. 1334, 1348 (D. Minn. 1988) (setting aside EPA's decision to register pesticides for uses that foreseeably would result in harm to non-target listed birds).
231. U. S. Forest Service, Record of Decision 2 (Dec. 8, 1988) [hereinafter Record of Decision] (open memorandum from Dale Robertson to the public regarding Forest Service's decision to favor Alternative F in its amendment to the Pacific Northwest Regional Guide); FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 4.2. A viable population "has the estimated numbers and distribution of reproductive individuals to insure its continued existence..." 36 C.F.R. § 219.19 (1990).
234. Id. § 670h(c)(3)(D). The Sikes Act authorizes the Secretary of Defense to carry out programs for planning, development, and coordination of conservation and rehabilitation plans for fish and wildlife within military reservations. Id. § 670a. The plan must be coordinated with the Secretary of the Interior and the designated agency of the affected state. Id.
235. Id. § 670a.
236. Id. § 670g(a).
237. The ISC Report lists 67,000 acres of Fort Lewis Army base, which is approximately 15 miles south of Tacoma, Washington, as spotted owl habitat. See ISC REPORT, supra note 44, at 343.
2. Federal Agency Involvement Under These Statutes

Since 1984, the Forest Service has acknowledged the northern spotted owl habitat issue in its regional management plans. With the exception of injunctions prohibiting logging in certain old-growth forests, these plans have formed the owl’s principal source of habitat protection. After years of study, the Forest Service completed a proposal for the Pacific Northwest Region — called Alternative F — in 1988. This plan set aside 347,000 acres as owl habitat in so-called Spotted Owl Habitat Areas (SOHA’s), which arguably are capable of supporting 1540 pairs of owls 150 years after the planning period. However, this plan was to operate for only five to fifteen years, with reevaluation pending new data. Also, the plan was intended to maintain owl viability at the least impact to the economies of Oregon and Washington, providing little assurance of long-term population viability. 

238. See 1 FSEIS, supra note 12, at I-6.
243. See 1 FSEIS, supra note 12, at S-34, S-37. According to the Forest Service, Viability of spotted owls depends on:
1. Total amount and distribution of suitable habitat that provides for a biological population of relatively high number and widespread geographic distribution; this, in turn, depends on
2. Capability of specific areas to support reproduction and provide for interaction and movement of individuals throughout the population.

Id. at S-31. In fact, Forest Service scientists reviewing this plan projected a staggering population reduction of 43% within 150 years after the planning period. See id. at S-30 (table S-3). The Forest Service selected Alternative F instead of Alternative M. Alternative M would have protected 4500 acres in Washington and 2500 acres in Oregon near each known or suspected nest site. See id. at S-21. By removing 977,000 acres of old-growth from harvesting, see id. at S-39, Alternative M supposedly ensured a high likelihood of well-distributed population in the planning area 50, 100, or even 150 years beyond the planning period. Telephone interview with Grant Gunderson, Regional Spotted Owl Coordinator, Region 6, Portland, Oregon, and member of the Interagency Scientific Committee (Jan. 8, 1990). The National Audubon Society concluded otherwise:

Information now being compiled by researchers indicate [sic] that network sites are being established in areas that lack both owls and suitable habitat. In Washington, three national forests lack owls on 57% of their designated habitat areas. On the Olympic Peninsula in Washington, only 18% of the sites dedicated for spotted owls actually have spotted owls in them. Timber has been sold in formally identified spotted owl habitat areas in at least the following national forests: Gifford-Pinchot, Willamette, Wenatchee, Siuslaw, Mt. Hood, Rogue River, Siskiyou, and Mt. Baker-Snoqualmie.
In the four national forests in northwestern California, the Forest Service administers 267 SOHA's under a plan originally called Alternative B. Each SOHA includes at least 1000 acres of base habitat unscheduled for harvest, plus "replacement habitat" areas ranging from 650 to 1650 acres. The Forest Service also has established twenty-nine interim management areas in these forests — essentially SOHA's of 2000 acres — and twenty-one "less restrictive" areas of concern.

Guidelines and policies have changed frequently, however, and the Forest Service has had difficulty implementing a coherent plan for recovery. The Department of the Interior and the Related Agencies Appropriations Act (Hatfield-Adams Appropriations Bill) further diminishes the protective value of NFMA and other federal legislation, at least temporarily. In any case, a habitat conservation plan adopted pursuant to the ESA will supersede these plans.

The Bureau of Land Management also has been drawn into the controversy over northern spotted owl preservation, since the agency manages a considerable amount of spotted owl habitat in Oregon and has some smaller holdings in California. The Bureau may place ten-year restrictions on certain tracts for various purposes, presumably including species protection. The Sierra Club Legal Defense Fund argues that

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Spotted Owl Update, supra note 29. The Society expressed concern about implementation, monitoring procedures, and agency accountability. Id.

The Forest Service also rejected Alternative L. This alternative would have protected all suitable habitat (2.6 million acres of which is suitable for timber production) and habitat capable of becoming suitable in 100 years. 1 FSEIS, supra note 12, at II-36. This alternative gave the owl the best chance of survival. See id. at S-33, S-37. Even under this plan, the Forest Service projected a population decline of 11% due to the destruction of private old-growth. Id.

244. ISC REPORT, supra note 44, at 74.
245. Id. Replacement habitat replaces those areas where the trees have died and no regeneration has occurred. Simon-Jackson Interview, supra note 44.
247. PACIFIC SOUTHWEST REGIONAL GUIDE, supra note 12, at 8-1 to 8-2, apps. B-F.
249. See infra text accompanying notes 502-10.
250. The Forest Service will likely adopt the plan recommended by the Interagency Scientific Committee, which sets aside large HCA's. See infra text accompanying note 391. The Bush administration, however, has set up a special task force to seek a solution that avoids significant job losses. Schaefer, Timber Harvest Formula Criticized: Neither Side is Pleased, Seattle Times, Sept. 22, 1990, at A10. The task force recommended cutting harvest rates on Forest Service lands in Oregon and Washington by 20% to the level of 3.2 billion board feet for 1991, while the ISC Report called for a reduction to 2.6 billion board feet. Id. Environmentalists argue that the task force plan guts the ESA, NFMA, and other environmental statutes and will hasten the decline of the spotted owl and other species dependent on old-growth. Timber interests, on the other hand, say the plan will cause too many jobs to be lost. See id.
251. See FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 2.25. The BLM manages 856,000 acres in Oregon and 10,000 acres in California. Id.
252. See Portland Audubon Soc'y v. Lujan, 884 F.2d 1233 (9th Cir. 1989). In Portland Audubon Society, the court summarized the BLM's procedure for adopting ten-year plans for
the BLM must manage all forest resources, not just timber, for permanent production.253

Under an agreement with the Oregon Department of Fish and Wildlife, the BLM has been restricting timber harvesting in 110 Spotted Owl Management Areas (SOMA’s).254 Like the Forest Service’s SOHA’s, the Bureau’s SOMA’s are smaller than the mean preferred habitat areas documented by scientists using radio telemetry.255 Some pairs of owls will not persist in these below-average sized habitats.256 Furthermore, those owls that do persist might die off gradually as old-growth forests are reduced by timber harvesting.257

Finally, the National Park Service administers approximately eight percent of the spotted owl’s habitat.258 The NPS must manage its lands to conserve wildlife,259 and although it intends to cooperate in research and monitoring efforts, it also intends to follow its policy of not managing national parks to the benefit of a single species such as the owl.260 Consequently, the NPS will not designate formal owl management areas.261 Nevertheless, as the NPS is prohibited from managing its land for timber production,262 owls in national parks remain relatively safe from habitat destruction.

These agency plans which predate the listing of the owl under the ESA do little to ensure the owl’s viability. Based on radio telemetry studies documenting the spotted owl’s habitat requirements,263 federal programs probably set aside insufficient owl habitat. Indeed, demographic projections under these habitat management plans give the species only a moderate chance of survival, even without considering catastrophic occurrences such as disease or fire.264

253. Stahl Interview, supra note 124; see Stahl Letter, supra note 239.
254. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 4.4.
255. Id. at 4.4-4.5.
256. Id. at 4.5.
257. Lande, supra note 28, at 606.
258. See FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 2.26 (NPS manages approximately 575,000 acres out of total estimated northern spotted owl range of 7 million acres).
261. Id.
262. See 16 U.S.C. § 3 (1988) (permitting timber sales only when necessary to control insects and disease or when otherwise necessary to “conserve the scenery or the natural or historic objects” in the park).
263. See Scientific Advisory Panel Report, supra note 22, at 207.
264. See supra text accompanying notes 161, 175-76.
3. The Interagency Agreement of 1988 and the Interagency Scientific Committee

Under a 1988 Interagency Agreement between the Forest Service, the FWS, the BLM, and the NPS, federal agencies agreed to manage spotted owl habitats cooperatively. Specifically, the Forest Service, the BLM, and the NPS must carry out habitat and population inventories on their respective lands and issue annual reports to the FWS. The coordinating agencies will then release the reports. The agencies must also carry out research programs and/or cooperate in the research programs of the other agencies. This agreement places no meaningful duties on the agencies, however, and has no implementation plan. The agreement also has been characterized as nonbinding because it may be altered by mutual consent of the parties, or cancelled by any party after thirty days' notice.

Despite its shortcomings, the agreement did have a constructive byproduct — the formation of the Interagency Scientific Committee, spearheaded by the Forest Service. The Committee was composed of six scientists from the agencies involved. In addition, the Committee invited five “knowledgeable observers,” including an environmentalist representative, a timber industry representative, and state representatives from Oregon, Washington, and California. The ISC was responsible for developing a “scientifically credible conservation strategy for the northern spotted owl.”

On April 4, 1990, the ISC recommended prohibiting logging on thirty to forty percent of available public forests. Specifically, the ISC suggested setting aside large spotted owl habitat conservation areas (HCA’s) ranging from less than 50 acres in northern California to 676,000 acres on Washington’s Olympic Peninsula. The areas would contain old-growth and some younger growth forests. Each HCA

266. Id.
267. Id.
268. Id.
269. See Plaintiffs' Brief, supra note 188, at 31.
270. Interagency Agreement, supra note 265.
271. See ISC REPORT, supra note 44, at 47-49.
272. Id. at 48.
273. Id. In addition, the ISC has also hired 11 other assistants who also have no participatory authority. Stahl Interview, supra note 124.
274. ISC REPORT, supra note 44, at 47.
276. See ISC REPORT, supra note 44, at 328-41 (tables Q4 and Q6 and accompanying comments).
277. See id.
would support 1-50 pairs of owls. Optimum HCA's would be 50,000-
60,000 contiguous acres spaced twelve miles apart, sufficient to support
at least 20 pairs of owls. Some HCA's would be spaced only seven
miles apart. The ISC recommended 48 HCA's of varying sizes in Ore-
gon, 43 in Washington, and 99 in northern California. Total acreage
set aside would total almost eight million acres, nearly six million of
which is otherwise potentially available for timber harvesting. No
timbering activity of any kind would be permitted within the habitat
areas.

The ISC plan garnered mixed reactions from the federal interests
involved. The Forest Service favors adoption of this plan for its forests,
although the agency charged with implementing the ESA, the Depart-
ment of the Interior, does not. The BLM and the Bush administration
balked at the Committee's recommendations, regarding them as too
costly. The BLM intends to comply with the Hatfield-Adams provi-
sions through the 1990 fiscal year, and to protect owl habitat using

Habitat Conservation Areas are a vast improvement over SOHA's
and SOMA's in terms of owl protection. HCA's are much larger and
therefore less likely to isolate owl pairs or subpopulations. Furthermore,
with the exception of some in California, the HCA's exceed the owls'
mean preferred habitat areas. Unlike any prior habitat conservation
program, HCA's provide owl pairs with a margin of safety to persist
where they require above average range.

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278. Id. at 23.
279. See id. at 28, 327-43. "Empirical data and theoretical modelling . . . indicate that
habitats block with as few as 15-20 pairs have a relatively low probability of 'winking out' [e.g.,
dying off]." Id. at 286.
280. Id. at 28.
282. See ISC REPORT, supra note 44, at 343.
283. Id. at 4.
A21, col.1.
285. Id.; see Five-Point Plan, supra note 18.
286. BLM Proposal 3 (June 26, 1990). The BLM has adhered to its plans despite the
spotted owl listing and criticism by Jack Ward Thomas, who indicated that the owl's survival
cannot be assured without a shift in BLM forest management policy. BLM's Owl Protection
Plan Criticized (Associated Press, Sept. 8, 1990). Specifically, the BLM will not offer timber
for sale in the 110 SOHA's established under a 1987 agreement with the Forest Service, or in
the 12 sites identified in the Hatfield-Adams Bill. BLM Proposal, supra, at 2. While the BLM
indicated that the Thomas Committee's guidelines "will not be applied in developing timber
sale plans," the BLM will nevertheless try to avoid selling timber in some proposed HCA's.
Id.
287. See ISC REPORT, supra note 44, at 320.
The ESA allows the Fish and Wildlife Service, the National Marine Fisheries Service, and concerned citizens to seek protection for a species. If the responsible government agency agrees that the species requires special protection, a wide array of requirements and prohibitions are triggered. This part of the Comment will apply the ESA provisions to the northern spotted owl, evaluate the FWS's decision to list the owl as a threatened rather than an endangered species, and discuss the dynamics of implementing the ESA’s requirements.

A. Overview of the Act

Congress enacted the ESA recognizing that species were disappearing at a distressing rate and that such extinctions would erase forever these species’ unknown but potentially invaluable biological and ecological qualities. The Act’s fundamental purpose is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved. . . .” The legislative history of the Act explains that:

- as we increase the pressure for products that [evolved plants and animals] are in a position to supply (usually unwillingly) we threaten their — and our own — genetic heritage. The value of this genetic heritage is, quite literally, incalculable. . . . [I]t is in the best interests of mankind to minimize the losses of genetic variations. The reason is simple: they are potential resources. They are keys to puzzles which we cannot solve, and may provide answers to questions which we have not yet learned to ask.

Congress hoped to elevate fish and wildlife concerns to a level that would, in the Supreme Court’s words, “halt and reverse the trend toward species extinction, whatever the cost,” and, in Congress’ own words, preserve the “esthetic, ecological, educational, historical, recreational, 

288. 16 U.S.C. § 1533(b)(3)(A) (1988). Any “interested person” may also petition to remove a species from the lists of endangered or threatened species as well. Id.

289. 16 U.S.C. § 1531(a) (1988). “Well over 90% of the species which have lived on earth are extinct. . . . [However,] more than half of the known extinctions over the last 2000 years occurred during the last 60 years. Rates of extinction are likely to accelerate indefinitely if trends in resource use and land management are not changed.” Sagoff, On the Preservation of Species, 7 COLUM. J. ENVTL. L. 33, 36-37 (1980). A report by the Council of Environmental Quality in 1975 estimated that 1 out of every 10 animal species native to the United States may be threatened or endangered. Id. at 37-38.


292. Tennessee Valley Auth. v. Hill, 437 U.S. 153, 184 (1978). The Court noted Congress’ resolve in this landmark decision, describing the Act as “the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.” Id. at 180.
and scientific values [species provide] to the Nation and its people."

In other words, Congress apparently believed that the risk of scientific uncertainty should be shifted toward preservation. Prior to the ESA's enactment, the loss of species and their unknown biological contributions was a risk presumably outweighed by economic concerns. In 1973, however, Congress recognized the potentially infinite cost of species loss, and accordingly recalculated the economic development-conservation equation in passing the ESA.

Congress charged the Department of the Interior (DOI) and the Department of Commerce with implementing the Act. The Department of Commerce, acting through the National Marine Fisheries Service, presides over marine species, while the DOI, acting primarily through the Fish and Wildlife Service, exercises jurisdiction over terrestrial and freshwater species. While the FWS Director delegates limited authority to directors of each FWS region, the FWS Director or Assistant Secretary retains final authority to list or propose to list all species under the ESA.

295. Illustrative of Congress' apparent belief that the cost of lost biodiversity was immeasurable is 16 U.S.C. § 1533(a)(1) (1988), which requires the Interior and Commerce Departments to consider only biological factors in deciding whether to list a species. In other words, the economic costs of protecting species are not even considered at the time the agency makes the listing decision. See infra text accompanying notes 318-22.


Other federal agencies and some state agencies also become involved because they may manage, as does the Forest Service, some or all of a listed species' habitat. For a discussion of how divided responsibility for carrying out the ESA between a host of federal and state agencies affects implementation of the Act, see Tobin, Interorganizational Implementation of the Endangered Species Act: A Hawaiian Case Study, 4 J. LAND USE & ENVTL. L. 309 (1989).

298. See GENERAL ACCOUNTING OFFICE, supra note 181, at 2.
Several steps precede protection under the ESA. The Secretary of the Interior and the Secretary of Commerce must propose and list a species as "endangered" or "threatened" if its biological condition so warrants. An "endangered" species is any species in danger of extinction throughout the greater portion of its range, and "threatened" species are those likely to become endangered throughout all or a significant portion of its range within the foreseeable future. Interested parties may also petition to have a species listed, as environmental groups did in the case of the northern spotted owl. If the party believes the listing decision was unlawfully made, or that the Act is being otherwise violated, the ESA authorizes a private right of action to enjoin acts by any entity or agency violating the Act.

Listing a species triggers a wide array of substantive and procedural requirements. The Fish and Wildlife Service must identify and, if feasible, protect the species' essential habitat, and must implement a recovery plan for that species. No agency or other person may harass, harm, or capture a listed species. Furthermore, all other federal agencies must cooperate in the "conservation" of the species and must not "jeopardize" the species' continued existence or habitat.

The next sections of this Comment discuss in further detail and in relation to the northern spotted owl the petition process, the listing determination, the critical habitat designation, recovery plans, and the general prohibition against taking and jeopardizing species, as well as the man-

299. 16 U.S.C. § 1533(a)(1) (1988). Because this Comment focuses on the northern spotted owl, we will hereafter refer only to the Secretary of the Interior, who exercises jurisdiction over the owl, or to the FWS, which performs most of the DOI's duties under the ESA. See infra note 312.

300. Of course, a population must first be classified as a species within the meaning of the Act before it can be listed. According to the Act, a "species" includes "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." 16 U.S.C. § 1532(16) (1988). Thus, a listable "species" could be a species or subspecies in the taxonomic sense, or some other distinct group which breeds when mature, meaning any three of the spotted owl subspecies could qualify independently for listing.

301. Id. § 1532(6).
302. Id. § 1532(20).
303. Id. § 1533(b)(3)(A).
304. See GENERAL ACCOUNTING OFFICE, supra note 181, at 5. 50 C.F.R. § 424.14 (1988) provides that:

   Any interested person may submit a written petition to the Secretary requesting that one of the actions described in Section 424.10 [adding or removing a species or critical habitat from the endangered or threatened species lists] be taken. Such a document must clearly identify itself as a petition and be dated. It must contain the name, signature, address, telephone number, if any, and the association, institution, or business affiliation, if any, of the petitioner.

306. Id. § 1533(a)(3), (f)(1).
307. See id. §§ 1532(19), 1538(a)(1)(B).
308. See id. § 1536(a)(1).
309. Id. § 1536(a)(2).
date of conservation. The Comment then discusses the options available to agencies seeking to avoid the Act or soften its mandate in the owl’s case. Finally, the Comment examines the condition of the northern spotted owl in the context of the structure of the ESA.

B. The Petition Process

The FWS maintains its own list\textsuperscript{310} of species under consideration for listing.\textsuperscript{311} The ESA and regulations issued pursuant to the Act also permit interested parties to petition for the listing or delisting of a species.\textsuperscript{312} Because of limited resources or political pressure, the FWS often cannot evaluate a species immediately. The petitioning procedure allows concerned citizens to compel the FWS to consider a species.

The Fish and Wildlife Service has ninety days after receiving the petition to make an initial finding of whether the listing may be warranted.\textsuperscript{313} If the petition presents information suggesting that the species should be listed, the Fish and Wildlife Service must begin reviewing that species’ status and must publish notice of its finding in the Federal Register within one year.\textsuperscript{314} When the FWS considered the northern spotted owl

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\bibitem{310} Fay Interview I, \textit{supra} note 205.
\bibitem{312} \textit{See supra} note 304. Interestingly, when GreenWorld petitioned the FWS to list the northern spotted owl, the FWS declined to consider the request because it was not explicitly identified as a “petition.” \textit{General Accounting Office, supra} note 181, at 5. Subsequently, GreenWorld inserted the word “petition,” and the FWS then considered the request. \textit{Id.}
\bibitem{313} More precisely, the Act provides that within 90 days of receiving the petition, the FWS must, “[t]o the maximum extent practicable,” issue a finding as to “whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted.” 16 U.S.C. § 1533(b)(3)(A) (1988). In this initial 90-day finding, the FWS evaluates only whether the evidence demonstrates that the species may be in trouble. Fay Interview I, \textit{supra} note 205. The precise standard is whether a reasonable person would think that a problem may exist. \textit{Id.}
\bibitem{314} 16 U.S.C. § 1533(b)(6)(A) (1988). The agency has three choices. It must decide that either (i) the petitioned action is not warranted, (ii) the petitioned action is warranted, or (iii) the petitioned action is warranted, but pending listing proposals preclude listing the petitioned
owl petition, the initial review took nearly six months, leaving only six months for the in-depth review by a team of specialists.  

For one year after publishing notice of the proposed regulation, the FWS accepts public comments and continues to study the species' condition. The agency must then publish in the Federal Register either a final regulation to list the species, as the FWS did for the northern spotted owl on June 26, 1990, a finding that there is insufficient evidence to support the listing, or a notice of extension of the one-year period.

C. The Listing: Is the Northern Spotted Owl Threatened or Endangered?

The ESA requires the FWS to list a species as being endangered or threatened based on the presence of any of the following five factors:

(A) the present or threatened destruction, modification, or curtailment of its habitat or range;
(B) overutilization for commercial, recreational, scientific, or educational purposes;
(C) disease or predation;
(D) the inadequacy of existing regulatory mechanisms; or
(E) other natural or manmade factors affecting [the species'] continued existence.

In making this determination, the agency must decide "solely on the basis of the best scientific and commercial data available to [it]. . . ."
Only biological factors may be considered. The term "commercial data" allows the use of "trade data," but does not "authorize the use of economic considerations in the process of listing a species."

The five factors vary in significance as they relate to the northern spotted owl. The FWS correctly based the owl listing on the first factor, habitat destruction or modification. Few dispute that the owl's "habitat or range," the old-growth forests of the Pacific Northwest, are presently being destroyed and face the threat of future elimination. Old-growth forests have been virtually wiped out on private land, and over one-half of the 5.5 billion board feet of timber cut in 1988 was old-growth. Little change occurred in 1990, as the Hatfield-Adams Appropriations Bill authorized the sale of a combined 9.6 billion board feet — most of which is old-growth — during that fiscal year and fiscal 1991. Furthermore, under the Forest Service's tentative plan operating at the time of listing, spotted owl habitat on public lands and accessible to loggers would virtually disappear within sixty years. Unless one accepts timber industry studies suggesting that the owl's habitat includes second-growth forests — studies which have questionable applicability and come from a partisan source — the continued destruction of the owl's habitat is assured.

The FWS did not cite any of the ESA's other four potential justifications when it listed the northern spotted owl. Indeed, the second justification, overutilization for commercial, recreational, scientific, or educational purposes, has little relevance to the spotted owl. The owl is not a game bird. Scientists banding or attaching radio transmitters to the owls are responsible for occasional fatalities, but this adverse impact is presumed to be insignificant. However, predation may pose a threat, even though the FWS did not mention this third factor. Great horned owls and northern goshawks
continue to prey on the northern spotted owl.331 Spotted owls often venture out of the protective canopy of the old-growth to forage, crossing clearcuts and second-growth plantations which offer little or no cover from predators.332 With increasing habitat fragmentation, predation appears to be a significant factor exerting extinction pressure and thus also justifies the listing.

Existing regulatory mechanisms, the subject of the fourth potential justification for listing, have been inadequate in the case of the northern spotted owl. As discussed above, state regulations confer little, if any, habitat protection.333 Moreover, under federal statutes other than the ESA, the owl is unlikely to survive.334 The FWS probably should have cited this factor to support its listing.

The last ESA listing factor, natural or manmade threats to the species' continued existence, applies to the owl as well. First, in many areas barred owls are displacing spotted owls as a result of forest fragmentation.335 Second, problems such as inbreeding will become more acute as the spotted owl population declines and becomes increasingly isolated.336 Third, spotted owls may be unable to recolonize suitable habitat.337 Together, these natural and manmade factors certainly appear capable of affecting the northern spotted owl's continued existence.338

Because at least three and possibly four of the five listing factors apply to the northern spotted owl, the FWS was undeniably correct in at least listing the owl as threatened.339 However, the FWS failed to mention significant threats to the owl other than habitat destruction which independently may have justified a listing.340 Had the agency examined the cumulative impacts of the factors, it may have concluded that the owl was endangered — not merely threatened — throughout significant portions of its range.

Determining whether a species is threatened or endangered is a complicated question, because the point at which a threatened species becomes endangered is difficult to ascertain. If one of the policies of the ESA is to shift scientific uncertainty in favor of species survival, then a threatened species such as the owl arguably meeting the criteria for "endangered" status should indeed be upgraded.

332. Forsman Interview, supra note 60.  
334. See supra text accompanying notes 225-64.  
335. See supra text accompanying notes 146-51.  
336. See supra notes 136-40 and accompanying text.  
337. See supra text accompanying notes 124-27.  
339. See id. § 1533(a)(1).  
340. See Listing Final Rule, supra note 11, at 26, 118.
The ESA defines an endangered species as “any species which is in danger of extinction throughout all or a significant portion of its range,” and a threatened species is defined as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Unfortunately, a species’ biological condition does not fit neatly into the statutory categories. Consequently, experts have tried to clarify that language. In the Senate Hearings on the ESA, the Associate Administrator of the National Oceanic and Atmospheric Administration (NOAA) suggested one possible way to distinguish threatened from endangered species:

[A threatened] species might be judged to be likely in the foreseeable future to become endangered in those circumstances where continued exploitation or habitat destruction at a given rate would result in its becoming endangered in a period of up to ten years, depending on the animal’s breeding characteristics in relation to population size.

The above definitions suggest, as did the five-factor test, that at least threatened status was appropriate for the northern spotted owl. Most scientists predict a steady decline in the bird’s population, even though they may disagree on precise reproduction, recruitment, and mortality rates. General demographic trends suggest at least a possibility of extinction in several decades under current habitat management programs. Most biologists, however, would agree that given current old-growth harvest rates and the low success rate of juvenile owl dispersal, the northern spotted owl is likely to be in danger of extinction (i.e., endangered) within ten years, and is consequently threatened under the NOAA Administrator’s definition.

By contrast, the bird faces a more immediate threat of extinction in areas where harvesting practices genetically and demographically isolate the owl. The ESA explicitly contemplates independent listings of the same species, providing that “any distinct population segment of any species” can qualify for listing. Isolated subpopulations of spotted owls,
given their lower numbers and smaller gene pools, already appear to be in danger of extinction.\footnote{349} Disease, fire, or continued logging could wipe out these subpopulations swiftly. Because subpopulations already are “in danger of extinction” in their range, the FWS arguably erred in not listing them as endangered.

\section*{D. Elements of Endangered Species Act Protection}

\subsection*{1. The Critical Habitat Determination}

If the FWS lists a species as threatened or endangered, with limited exceptions\footnote{350} a designation of “critical habitat” should accompany the listing.\footnote{351} The FWS need only designate the critical habitat of the relevant species “to the maximum extent prudent and determinable.”\footnote{352} The qualifier, “prudent,” gives the agency decisionmaker some discretion over the amount of critical habitat designated, or whether to designate any habitat at all.

The northern spotted owl listing did not include a critical habitat designation.\footnote{353} However, a federal district court held on February 26, 1991 that the FWS had abused its discretion in not including a designation of critical habitat with the listing.\footnote{354} The court found in the ESA “a clear design by Congress that designation of critical habitat coincide with the species listing determination.”\footnote{355} On the basis of this interpretation the species in Alaska. Hager, \textit{Small Owl Incites Big Battle Over Environment, Jobs}, 47 CONG. Q. WEEKLY REP. 2306, 2308 (1989).

\footnote{349} FWS STATUS REVIEW SUPPLEMENT, \textit{supra} note 60, at 3.6.

\footnote{350} These exceptions include situations where “it is essential to the conservation of such species” that the listing be published promptly, or where the critical habitat cannot be determined at that time, in which case the Secretary or the FWS may grant a one-year extension to determine the critical habitat. 16 U.S.C. § 1533(b)(6)(C)(i)-(ii) (1988).

\footnote{351} Id. § 1533(b)(6)(C).

\footnote{352} 16 U.S.C. § 1532(a)(3) (1988). The word “prudent” gives the agency wide discretion, but is generally considered to include measures that benefit the listed species. Fay Interview II, \textit{supra} note 312. FWS regulations promulgated in 1988 provide that a critical habitat designation is not prudent when either or both of the following situations exist: “(i) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species, or (ii) Such designation of critical habitat would not be beneficial to the species.” 50 C.F.R. § 424.12(a)(1) (1989).


\footnote{355} Id. at *8. Specifically, the court noted that the ESA originally did not allow the FWS to avoid a designation of critical habitat concurrent with the listing of a species. \textit{Id.} at *8-9. The 1978 amendments to the ESA added the qualifier “to the maximum extent prudent and determinable” to the statute. \textit{Id.} at *10. The FWS's discretion under this language “was
of the ESA, the court ordered the FWS to publish its proposed critical habitat plan for the spotted owl no later than May 1, 1991.

The ESA defines critical habitat as those areas within the species' geographical range which have "those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection," and certain areas not occupied by the species at the time of listing which nevertheless "are essential for the conservation of the species." FWS regulations require that such habitat at least include:

1. Space for individual and population growth, and for normal behavior;
2. Food, water, air, light, minerals, or other nutritional or physiological requirements;
3. Cover or shelter;
4. Sites for breeding, reproduction, [and] rearing of offspring . . .
5. Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

Thus, critical habitat does not necessarily include all geographic areas which the species could occupy; the species could inhabit areas not essential to its conservation. On the other hand, critical habitat does include areas not occupied by the species if those areas are essential to its survival and require special protection.

The Secretary must base the critical habitat determination primarily on the best scientific data available, but, unlike when making the listing determination, the FWS may also consider economic factors when designating critical habitat. Specifically, the agency may exclude areas from critical habitat if the benefits of the exclusion outweigh the benefits of designating the area as critical habitat and if the exclusion will not cause the species' extinction.

The FWS frequently declines to designate critical habitat for listed species, frustrating many environmentalists. In the FWS's defense, in some cases the incremental benefits of designating critical habitat may not justify devoting further resources to a listed species that is already protected by the conservation and jeopardy provisions of the ESA, when other dying species lack even those protections. The process of critical habitat designation consumes considerable amounts of limited FWS re-

intended to be circumspect . . . a critical habitat designation is not 'prudent' only if it is not in the best interests of the species.” Id. at *10-11.
357. 50 C.F.R. § 424.12(b) (1989).
359. Id. § 1532(5)(A)(ii).
360. Id.
361. Id. § 1533(b)(ii).
The FWS can ill afford to devote substantial resources to a comprehensive recovery program for one species when many other species desperately require the FWS to initiate protective measures.\textsuperscript{364} The FWS may also be justified in declining to designate critical habitat because the requirement itself is arguably redundant.\textsuperscript{365} The designation requires the same consultation already required under section 7 of the ESA for activities that may jeopardize a listed species or result in the destruction or adverse modification of its habitat.\textsuperscript{366} The agencies also must consult with the FWS in carrying out programs for the conservation of listed species.\textsuperscript{367} The FWS could not decline to designate critical habitat and hope to avoid section 7’s requirements, since any act threatening habitat important to the species’ survival would also “jeopardize” the species in violation of the Act, and would clearly not “conserve” the species. In other words, the jeopardy prohibition and the conservation requirement theoretically protect a listed species’ habitat even if the critical habitat designation does not insure the protection of habitat in all cases.

The FWS will nevertheless designate critical habitat for the northern spotted owl. In that case, the timber industry in all likelihood will fight such a designation of old-growth by emphasizing the TAC report indicating that northern spotted owls, at least in northwestern California, may live in second-growth forests.\textsuperscript{368} This reasoning, however, is flawed. To the extent one adheres to the findings of the TAC report, then the critical habitat of the spotted owl might include second-growth forests as well as old-growth forests. Yet critical habitat need not include the entire geographic area which the species can occupy.\textsuperscript{369} Thus, critical habitat for the spotted owl would probably not include the species’ entire potential geographic range, and, assuming the owl can occupy second-growth, would probably exclude that less important habitat. The biological evidence, most notably Lande’s research outlining the “habitat occupancy” threat,\textsuperscript{370} suggests that all of the remaining old-growth habitat is...
“essential” to the northern spotted owl’s conservation. In short, the appropriate critical habitat designation would appear to include virtually all remaining old-growth.

In designating critical habitat, the FWS may consider economic factors. Considering such factors would likely dilute the protective power of the critical habitat designation for the northern spotted owl. Although Congress hoped to protect species by conserving “the ecosystems upon which endangered species and threatened species depend,” it lacked the political courage to protect a species’ habitat absolutely. Thus, the Act’s principal means of preventing a species’ extinction — protecting vital ecosystems — may be subverted to economic considerations where unpopular decisions would otherwise result.

The imprecise balancing test vests also in the agency broad discretion to interpret nebulous biological information. Determining what habitat has features “essential” to a species’ survival can be nearly impossible since useful biological research is often nonexistent and always incomplete. Even in the case of the northern spotted owl, where the biological record is one of the most extensive ever compiled, some timber industry biologists continue to question the owl’s dependence on old-growth. The discretion vested in the agency may be politically convenient, but it plainly contradicts the ESA’s implicit policy of resolving doubts in favor of troubled species.

Once it designates habitat, the agency then may balance the costs and benefits of excluding certain areas from such designation, as long as the exclusion will not cause the species’ extinction. In the owl’s case, the agency will have to weigh the harm related to the destruction of the species’ habitat against the economic benefits gained, directly or indirectly, by logging the area. Nonbiologists might argue that if the habitat loss will not drive the species to extinction, no significant cost is involved and the habitat should be left unprotected. If the species has been listed for reasons other than habitat loss or modification, then that argument may be valid. However, where a species, such as the northern spotted owl, is endangered or threatened primarily by habitat destruction, excluding critical habitat appears fundamentally inconsistent with the goal of preservation, even where the precise amount of habitat re-

371. See supra notes 360-61 and accompanying text.
373. Stein, supra note 284.
374. See TAC COMMENTS, supra note 58, at 34-39.
376. The cost should also include the biological value of the species multiplied by the probability of the species becoming extinct because of the habitat exclusions. Such a figure is highly speculative. What is more certain, however, is that the FWS probably would not incorporate the expected value of losing the species into its cost-benefit equation.
quired for survival is subject to scientific uncertainty. In light of the ESA’s policy of resolving scientific uncertainty in favor of troubled species, the FWS should only exclude habitat when it has listed a species for reasons other than habitat loss.

Timber interests hope economic considerations will heavily influence FWS action in its designation of critical habitat for the owl. The Northwest Forest Resource Council, an industry lobby group, argues that the owl listing, which necessarily involves some habitat protection measures, will eliminate 130,000 industry and vaguely defined service jobs and will cost the federal government over $1.6 billion and local governments $459.3 million in lost timber revenue. Conservationists scoff at such assertions, claiming that Oregon, the nation’s leading lumber-producing state, supports fewer than 65,000 lumber and wood-processing jobs. The timber industry counters by asserting that economic recession in the early 1980’s caused this employment decline. Conservationists in turn emphasize that although the timber industry has been cutting record volumes of timber, today’s highly automated mills employ 16,800 fewer workers than in 1978. The National Wildlife Federation and the Wilderness Society project that productivity improvements (principally automation) will eliminate nearly 25,000 timber industry jobs in Oregon and Washington by the year 2030. According to these groups, declining timber harvests will cause only 8200 lost jobs

379. NORTHWEST FOREST RESEARCH COUNCIL, supra note 14, at 18.
380. Stein, supra note 182.
381. See NORTHWEST FOREST RESEARCH COUNCIL, supra note 14, at 36.
382. Stein, supra note 182.

The Forest Service defines a direct job as a job in the wood processing industry, such as a sawmill worker. See 2 FSEIS, supra note 12, at F-11. Restricting the timber supply not only will reduce direct jobs, but also will reduce other jobs, such as logging equipment manufacturing and retailing, through the multiplier effect. The Forest Service assumes that for each direct job there are 2.7 indirect jobs. 1 FSEIS, supra note 12, at S-41. Jeff Olson has challenged this multiplier, however. Pissett Letter, supra note 30. Under Alternative F, the Forest Service projected that 1683 to 3367 direct and indirect jobs would be lost. See 1 FSEIS, supra note 12, at S-42 table S-6. Under Alternatives M and L, these figures would be 4569 to 9139 and 16,890 to 33,781 jobs lost, respectively. See id. The low end of each range assumes that timber from other sources can offset 50% of the harvest reductions, id., which in the short run (five years) might be possible. Id. at S-41. Diverting for domestic sale and processing logs harvested on private and state lands that are currently being exported also might stabilize unemployment. According to the Wilderness Society, about 20% (three billion board feet) of all timber harvested in 1985 in the western areas of Washington and Oregon and in northwestern California was exported. J. OLSON, supra, at 28. These exports include only timber harvested from private and state lands, since the export of unprocessed timber from federal lands is prohibited by federal law. Id.
by the year 2030, and old-growth protection will cause only 2300 lost jobs by the year 2030.384

The Thomas Committee's recommendation in April 1990 that nearly eight million acres be set aside in the Northwest as Habitat Con-

384. J. OLSON, supra note 383, at 29. The Forest Service prepared economic loss projections based on the implementation of Alternatives F, L, and M. See supra notes 238-43 and accompanying text. Assuming that the effects of the Alternatives on timber supplies relate directly to the number of acres available for timber production, the Forest Service gauged the annual economic impact of protecting the owl under each Alternative. See 1 FSEIS, supra note 12, at S-42. According to the Lane County Audubon Society, the Forest Service figures are highly suspect. "[T]he detrimental effects upon the timber industry (lost jobs and revenue) are stated relative to a theoretical maximum cut... and in terms of a non-existent market for timber products rather than relative to current or recent cuts and market levels." 2 FSEIS, supra note 12, at G3-153.

Notwithstanding their probable inaccuracy, in order to understand the Forest Service numbers it is useful to review how timber is sold and how money from the sales actually changes hands. The Forest Service selects and prepares lots for logging at its own expense before auctioning them to private bidders. Telephone interview with John Nunen, Forest Planner with the United States Department of Agriculture, Portland, Oregon (Nov. 20, 1989) [hereinafter Nunen Interview]. Primary expenses are those associated with surveying and building roads into the lots. Id. Part of the sales proceeds are actually applied to the Forest Service's budget, and pursuant to the 25 Percent Fund Act of 1908, 16 U.S.C. § 500 (1988), the Forest Service returns 25% of the gross revenues from National Forest activities, 95% of which are generated by timber sales, to the states. Timber Association of California, 25 Percent Fund IV-I (1989) (unpublished manuscript). The payments to the individual states can be substantial: in 1988, Oregon received $131,942,000, Washington $32,490,000, and California $52,560,000. U.S. DEP'T OF AGRICULTURE, AGRICULTURAL STATISTICS 1988, 486 table 672 (1988).

The Forest Service also estimated that for every million board feet cut, the wood processing industry pays individual and business taxes of about $6500 to Washington, $9700 to Oregon, and $30,000 to the federal government. 1 FSEIS, supra note 12, at S-41. In addition to these direct tax effects, payments from related or dependent industries are probably at least double these amounts. Id.

The negative consequences of harvest reductions, of course, would not be distributed evenly. Id. at S-43. The impact would be relatively light on communities in Washington. Id. In certain areas of Oregon, by contrast, even modest reductions in National Forest timber harvests could devastate communities dependent on mills supplied with National Forest logs. Id. Nevertheless, "[t]o the extent that re-employment opportunities exist in the future, lower estimates of employment losses and adverse economic effects than those presented... would be likely." Id. Similarly, the Forest Service's tax reduction predictions probably ignore offsetting industrial or service activities in other sectors of the Pacific Northwest economy which would take up some of the economic slack left in the wake of mill closures. Id.

The Pacific Southwest Region of the Forest Service, which includes northern California, has not prepared a Final Status Review Supplement to its Regional Guide which projects the economic effects of implementing each alternative. A Southwest Region economist, however, has estimated that under a "worst-case scenario," listing the owl in northwestern California could reduce timber harvests by 500 million board feet, at a cost of 6000 direct and indirect jobs. Telephone interview with Michael Skinner, USFS Regional Economist, San Francisco, California (Jan. 8, 1990). Again, the effects of protecting owl habitat would fall heavily on counties that purchase timber from the four National Forests in northwestern California. In 1989, the Forest Service sold 508 million board feet of timber in these forests for over $83 million. Telephone interview with Brian Stone, USFS Sale Preparation and Valuation, San Francisco, California (Jan. 8, 1990). As with the Forest Service projections for the Northwest, projections for California ignore the offsetting effects already described.
servation Areas has sparked a new round of economic debate. According to an analysis conducted by Oregon State University for Oregon Governor Neil Goldschmidt, the Thomas Committee’s recommendations, if implemented, could result in the loss of 12,000 to 50,000 jobs and $470 million to $2 billion in lost wages. However, these figures assume discontinued logging on private land under the ISC plan, while the plan’s HCA’s do not include private holdings.

In sum, the critical habitat designation may play a limited role in preserving the northern spotted owl’s ecosystem. Even though the FWS will designate critical owl habitat, it will perform an imprecise balancing test and may exclude certain areas from the designation.

2. Recovery Plans

In addition to the designation of critical habitat, the ESA requires the agency to develop “recovery plans” for the “conservation and survival of listed species.” Species most likely to benefit receive first priority, especially if threatened by development projects or other types of economic activity. Each plan must describe site-specific actions needed to conserve the species, include objective criteria which, if met, would remove the need to maintain the species on the endangered or threatened list, and include an estimate of the time and cost involved in carrying it out.

At this writing, it is unclear which of several plans the agencies will adopt. Although the Thomas Committee was composed of the foremost spotted owl experts and the plan fulfills many of the requirements for a recovery plan under the ESA, several administration leaders are resisting its implementation. The Forest Service favors the Thomas Committee plan. However, the BLM and its parent agency, the Department of

386. Oregon State University, News Release, Economic Impact of Owl Decision to be Major, Widespread (June 28, 1990). This analysis assumes that the Thomas Committee’s strategy protects 1.6 million acres of public timber land from harvest, and increases the percentage of protected forest lands to 33% of the total in western Oregon. Id. Uncertainty regarding what type of conservation regulations private landowners would face and how they would respond largely accounts for the wide range of job and wage loss figures. See id.
390. Id. § 1533(f)(1)(B)(i)-(ii).
391. Stein, supra note 284.
the Interior, and the Bush administration favor a forest management plan with less adverse economic impact. As set out in its five-point plan, the Bush Administration will attempt to avoid the Thomas Committee's recommendations by establishing a "high-level interagency task force" to draw up its own forest management plan. The five-point plan also seeks to expand the tasks of the Endangered Species Committee to include the development of forest management plans.

Whatever plan eventually is implemented must conform to the statutory requirement that it ensure species survival. First, any habitat management program should be designed to maintain at least a minimum viable population. While the MVP for the northern spotted owl is uncertain, experience with other species suggests a minimum of 1500 pairs. But many biologists caution that 1500 pairs may not be enough. Environmentalists also point out that a committee produced the 1500 pair figure, implying that it was a compromise rather than an accurate assessment of the owl's MVP. Given the inherent uncertainty in determining a MVP, doubts probably should be resolved in the owl's favor. In that case, perhaps all 2500-3000 known pairs should be protected to ensure the bird's viability.

Maintaining a minimum viable population therefore may require setting aside most, if not all, of the remaining old-growth forests. Each owl pair on average uses 4200 acres of old-growth habitat in Washington, 2300 acres in Oregon, and 1900 acres in northwestern California. The Forest Service reported 500-600 pairs of northern spotted owls in Washington, up to 1500 pairs in Oregon, and 563 pairs in northwestern California. Based on simple mathematics, a forest management plan should preserve at minimum 2,100,000 to 2,520,000 acres of old-growth in Washington, about 3,450,000 acres in Oregon, and about

392. See id.
393. Five-Point Plan, supra note 18; see infra text accompanying notes 515-16.
395. See Five-Point Plan, supra note 18.
396. See supra text accompanying notes 162-68.
397. Stahl Interview, supra note 124.
398. Id. Thomas even admits that the Committee recommended setting aside only "what was required in our mind to ensure scientific credibility." Owl Debate, supra note 385. Even assuming that the Thomas plan is implemented, the Committee predicts a further population decline of 50%. Id. The Thomas Committee's primary goal was to set aside the minimum habitat necessary for the Committee to have a high level of confidence that the northern spotted owl would not die out in the next 100 years. Id. The Committee did not even purport to be recommending measures to ensure the owl's survival; rather, it aimed for a compromise that would be both scientifically credible and politically tolerable.
400. FWS STATUS REVIEW, supra note 12, at 23; Simon-Jackson Interview, supra note 44.
401. We say minimum because the figures are derived from pairs of owls, and exclude unpaired individual owls, which obviously also require old-growth. Furthermore, the protected areas would have to be networked so that owls can interbreed, requiring still more old-growth. See FWS STATUS REVIEW, supra note 12, at 21.
1,070,000 acres in northwestern California.\textsuperscript{402} Even using Forest Service data on total remaining old-growth, which probably exaggerates old-growth acreage,\textsuperscript{403} these figures indicate that preservation of 92\% and 95\% of the old-growth in Oregon and Washington, respectively, would be needed to ensure stable owl populations. In California, the northern spotted owl population probably needs 111\% of the remaining old-growth to remain stable.\textsuperscript{404}

These calculations suggest that at present insufficient old-growth habitat remains to support current owl populations.\textsuperscript{405} Consequently, even with protection of all existing old-growth acreage, some owls which are "hanging on" appear destined to die off.\textsuperscript{406} The Thomas Committee's recommendation, which does not call for preservation of all remaining old-growth is nevertheless acre-for-acre more effective than establishing many smaller habitat areas, which more readily isolate subpopulations. Even so, it is questionable whether the Thomas Committee's recommendation can maintain a minimum viable population.

Second, habitat areas should be based on the acreage and type of forest the owl actually uses, and should allow for uncertainties such as catastrophe and difficulties in recolonization of vacant habitat.\textsuperscript{407} These areas should be organized to permit and encourage demographic and genetic exchanges essential to the species' long-term survival. The Thomas Committee's recommendations, which include vast conservation areas, effectively address these concerns by not isolating vulnerable islands of owl subpopulations. In addition, the possibility that northern and California subspecies interbreed should be explored further. If interbreeding occurs, such activity could be promoted to maintain an adequate gene pool.

Finally, any successful habitat management program must incorporate procedures to monitor and ensure the accountability of officials charged with implementing protective measures. The program also should encourage further research. Although it underscored the significance of research,\textsuperscript{408} the Thomas Committee did not specifically address these issues.

\textsuperscript{402} These figures are derived by multiplying for each state the estimated number of pairs of owls by their estimated range in acres.

\textsuperscript{403} See supra text accompanying notes 99-104.

\textsuperscript{404} See FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 2.25 (stating that only 963,000 acres of northern spotted owl habitat in California remains).

\textsuperscript{405} But see TAC COMMENTS, supra note 58, at 34 (reporting that data produced by the TAC-financed study indicates that "young growth supports owls as well as does old growth").

\textsuperscript{406} Smith Interview, supra note 60.


\textsuperscript{408} ISC REPORT, supra note 44, at 166, 296.
3. Generalized Protections Under the ESA

Regardless of the manner in which the FWS protects the northern spotted owl through the critical habitat determination and the recovery plan, the ESA contains other general directives aimed at federal agencies and others. The ESA prohibits private and government actors from “taking” a listed species under most circumstances, requires all federal agencies to carry out programs within their jurisdiction to “conserve” listed species, and requires federal agencies to consult with the FWS to ensure that their actions do not “jeopardize” a listed species. These protections are discussed next.

a. The Taking Prohibition

The ESA generally prohibits anyone from “taking” an endangered or threatened species within the United States or its territorial seas. The Act defines taking to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in such conduct. The word is defined as broadly as possible to include “every conceivable way in which a person can take or attempt to take fish or wildlife.” Accordingly, courts have stated that a taking occurs whenever an action has a prohibited impact on an endangered species. However, the Act does allow regulated takings of threatened species under certain conditions.

“Harm” is the kind of taking which typically applies to Forest Service and BLM practices. FWS regulations define “harm” in the context of the ESA as “an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.”

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410. Id. § 1536(a)(1).
411. Id. § 1536(a)(2).
412. Id. § 1538(a)(1)(B). For a list of those who are prohibited from taking any listed species, see id. § 1532(13).
413. Id. § 1532(19).
415. See Palila v. Hawaii Dep’t of Land & Natural Resources, 639 F.2d 495, 497 (9th Cir. 1981).
Courts have recognized that harm does not require actual death, and that harm can occur even where the species' population is unchanging. For example, the district court in *Palila v. Hawaii Dep't of Land & Natural Resources* found that mouflon sheep were "harming" the palila (a small finch) by browsing on tree shoots and sprouts, thereby reducing the palila's mamane forest habitat. The defendant argued that the mouflon's foraging on mamane shoots only "potentially" harmed the palila. The court disagreed, concluding that the habitat degradation was "actually presently injuring" the palila by reducing its food and nesting sites.

In finding harm, the court required neither a finding of death to some individual member of the species, nor a finding that habitat degradation actually was driving the species towards extinction, nor even a finding that the population of the endangered species had decreased. According to the court, "[h]abitat destruction that prevents the recovery of the species by affecting essential behavioral patterns" causes "harm" under the ESA. In affirming the decision, however, the Ninth Circuit Court of Appeals specifically left this issue open.

Still, later cases suggest that such habitat modification may constitute harm. Moreover, the ESA itself suggests that habitat modification can constitute harm: "conserve" includes "the use of all methods and procedures which are necessary to bring any endangered species or threatened species" to the point where it need not be listed, including such methods as habitat acquisition and habitat maintenance.

A federal judge in Texas recently analyzed the relationship of habitat destruction to harm under the ESA in *Sierra Club v. Lyng*. The court found that the Forest Service's timber management activities harmed the red-cockaded woodpecker "in a number of different ways, evidenced by the precipitous decline in the woodpecker population in recent years." It disturbed the court that Forest Service practices had

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419. *Id.* at 1077-80.
420. *Id.* at 1075.
421. *Id.* at 1080.
422. *Id.* at 1075.
423. *Id.* Note that habitat modification per se does not harm a species. *Id.* at 1076 n.21. There must be a "showing of concomitant harm" to the species. *Id.* at 1077 n.24.

424. *Palila v. Hawaii Dep't of Land and Natural Resources*, 852 F.2d 1106, 1110-11 (9th Cir. 1988). The Ninth Circuit affirmed only the district court's finding that habitat degradation that could result in extinction constituted harm. *Id.* at 1110. The court specifically left open the issue of whether habitat degradation that prevents an endangered species from recovering constitutes harm. *Id.* at 1110-11.


428. *Id.* at 1271. The different ways included: (1) impairing the woodpeckers' behavioral
not merely prevented the recovery of the woodpecker, but actually had "caused and accelerated the decline of the species."\textsuperscript{429} The court presumed harm because of the decline of the red-cockaded woodpecker's population,\textsuperscript{430} and condemned the Forest Service's 60- to 80-year forest harvesting rotations.\textsuperscript{431}

Relatively passive action by a government agency also may constitute a taking. In \textit{Defenders of Wildlife v. Environmental Protection Agency},\textsuperscript{432} the Eighth Circuit found a clear relationship between the EPA's registration of strychnine pesticides for above-ground use on rodents and the death of endangered species.\textsuperscript{433} Even though no allegations were made claiming that the EPA distributed or used the pesticide, the court held that the effect of the EPA's regulations constituted an illegal taking under the Act.\textsuperscript{434}

In general, then, activities that affect the breeding, feeding, or nesting patterns of an endangered species can harm that species and constitute a taking. A declining population appears to be a sufficient but not a necessary condition for finding harm. In other words, habitat destruction or modification that causes a species to become extinct certainly constitutes harm. Destruction or modification which, even if it does not cause the species' population to decline, nevertheless prevents it from recovering, probably harms that species within the meaning of the ESA.

Under this standard, almost any forest management plan could constitute harm to the spotted owl, since any further destruction of remaining old-growth could drive the northern spotted owl to extinction.\textsuperscript{435} Even implementation of the Thomas Committee's recommendations could constitute a taking, since the Committee predicts a forty percent decline in the spotted owl population.\textsuperscript{436} Under the rule articulated in \textit{Palila v. Hawaii Dep't of Land \\& Natural Resources}, old-growth harvesting that prevents the recovery of the owl by affecting its "essential behavioral patterns" harms the species under the ESA.\textsuperscript{437} Similarly,

\begin{itemize}
\item patterns by isolating their colonies;
\item interfering with the woodpeckers' breeding by isolating them into colonies, thereby reducing their gene pool;
\item forcing the birds to expend too much energy in search of food because of clearcutting near the woodpecker colonies; and
\item eliminating through even-aged management practices the older growth stands of forest where the woodpeckers nest. \textit{Id.} at 1271-72.
\end{itemize}

\textsuperscript{429} \textit{Id.} at 1271.
\textsuperscript{430} \textit{Id.} at 1270.
\textsuperscript{431} \textit{Id.} at 1271.
\textsuperscript{432} 882 F.2d 1294 (8th Cir. 1989).
\textsuperscript{433} \textit{Id.} at 1301.
\textsuperscript{434} \textit{Id.}
\textsuperscript{435} See supra text accompanying note 128.
“checkerboard” clearcutting would cause loss of habitat and isolation sufficient to find harm in under the standard used in *Lyng*.439

To avoid harming the northern spotted owl, the FWS, the Forest Service, and the BLM should adopt management plans which specifically prevent isolation, minimize harvesting of the owl’s old-growth habitat, and generally ensure the stability, if not the recovery, of the species. While the Thomas Committee plan may meet these minimum criteria, any less-protective conservation strategy would appear to constitute harm under the ESA. Nevertheless, federal government actors appear to favor plans under consideration that are less stringent than the Thomas Committee’s recommendations.440

Although the ESA prohibits all takings of endangered species, it allows “regulated takings” of threatened species in some cases.441 First, the FWS may allow regulated taking of a threatened species where the species’ population overburdens an ecosystem.442 Second, the FWS may authorize an act that normally would be a prohibited taking if the act is necessary “for scientific purposes or to enhance the propagation or survival of the affected species. . . .”443 Thus, removing diseased members of an endangered species from the population or banding animals to enable biologists to track and study the species would be within the agency’s discretion, whereas authorizing a sport season would not.444 Third, the Act provides for an “incidental taking” of a threatened or endangered species where the FWS, after consultation, either concludes that the agency action will not jeopardize a listed species,445 or offers reasonable and prudent alternatives which in the agency’s view would not jeopardize the species.446 Since actions taken pursuant to these exceptions may not jeopardize a species, they theoretically do not present a significant threat to species survival.

438. See supra text accompanying notes 134-36.
439. See supra notes 427-31 and accompanying text.
440. See supra text accompanying notes 284-86.
444. Sierra Club v. Clark, 755 F.2d 608, 614 n.8 (8th Cir. 1985).
445. 16 U.S.C. § 1536(a)(2) (1988); see infra text accompanying notes 462-83
446. 16 U.S.C. § 1536(b)(4) (1988). If the requirements for an incidental taking are met, the FWS must issue an incidental taking statement outlining the expected impact of the takings, the measures required to minimize that impact, and the terms and conditions that govern the agency’s implementation of the measures. Id.; 50 C.F.R. § 402.14(g)(7), (i) (1989). The incidental taking exception is unavailable if the agency fails to obtain the statement from the FWS prior to the occurrence of the takings. See Defenders of Wildlife v. Environmental Protection Agency, 882 F.2d 1294, 1300 (8th Cir. 1989) (pesticide registered by EPA harmed listed species before EPA obtained an incidental taking statement from the FWS).
The taking prohibition overlaps to some extent with the conservation and jeopardy provisions in cases where an agency takes a species by an action that destroys or modifies its habitat. However, the taking provision also applies to all "persons," not just to federal agencies. For this reason, and perhaps because the taking language is more precise, environmental litigants increasingly rely on the taking prohibition instead of the conservation and jeopardy clauses.

b. The Conservation Requirement

The ESA's other provisions are stated more generally than the taking prohibition. The Act requires all federal agencies to "utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation" of listed species. The Secretary must "issue such regulations as he deems necessary and advisable to provide for the conservation" of listed species. "Conserve" is defined as removal of the need for the Act's protections. Department of the Interior regulations must "bring these species back from the brink so that they may be removed from the protected class," and the agency must utilize "all methods necessary to do so.

In doing so, the FWS must use all available management tools, not just

447. The term "person" includes an individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State, municipality, or political subdivision of a State, or of any foreign government; any State, municipality, or political subdivision of a State; or any other entity subject to the jurisdiction of the United States.


448. Id. § 1538(a)(1).

449. For a complete discussion of wildlife takings, see generally Field, supra note 295.


451. Id. § 1533(d). This provision specifies the Secretary's duties with respect to threatened species. Note that the "conservation" language is consistent with the requirement in section 7 that all federal agencies act to "conserve" a listed species. Id. § 1536(a)(1). Thus the section 7 conservation requirement is a minimum standard of protection below which the Secretary and other federal agencies must not fall. Nevertheless, the FWS has promulgated rules allowing the taking of threatened species for predator control, public hunting, and public safety. Note, supra note 442, at 412-25.

452. According to the Act, "conserve" includes "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided [by the ESA] are no longer necessary." 16 U.S.C. § 1532(3) (1988). This definition has generated some controversy. For example, in Sierra Club v. Clark, 577 F. Supp. 783 (D. Minn. 1984), rev'd in part, 755 F.2d 608 (8th Cir. 1985), the FWS had allowed a sport season on the eastern timber wolf, a threatened species. The court explained that "conerving" the wolf did not mean "managing" the species through a hunting season, because that practice "would be against the declaration of Congress that the number of wolves be increased." Id. at 789 (emphasis added).

Note that this provision applies to all federal agencies, 16 U.S.C. § 1531(c) (1988), while only the Department of the Interior and the FWS are responsible for developing a recovery plan for the "conservation" of a listed species. See id. § 1533(f).

those it deems most important or most effective.\textsuperscript{454} One district court has held that federal agencies must act to \textit{increase} a listed species' population.\textsuperscript{455} However, another court found that a regulation may be within an agency's authority even if it fails to ensure the species' survival.\textsuperscript{456} Instead, "the record need only show that such regulations do in fact prevent prohibited takings of protected species."\textsuperscript{457}

The definition of conservation permits the taking of threatened species in some circumstances. However, the FWS has very limited discretion to authorize such a taking. The agency may do so only "in extreme circumstances, as where a given species exceeds the carrying capacity of its particular ecosystem and where this pressure can be relieved in no other feasible way...\textsuperscript{458} Unless this unlikely determination is made, the FWS is not acting to conserve the species if it authorizes a taking and the regulation is not within the agency's authority.\textsuperscript{459} The FWS may also prohibit with respect to threatened species any act prohibited against endangered species.\textsuperscript{460} The agency may, for example, decide to permit the taking but not the importation of a particular threatened species.\textsuperscript{461} This provision allows the FWS to increase protection of threatened species above the minimum statutory requirement.

In the case of the northern spotted owl, the FWS, the Forest Service, and the BLM could argue that almost any plan they developed would prevent prohibited takings of the owl. Furthermore, the plan would not even necessarily have to ensure the owl's survival to satisfy the conservation mandates. While significant conservation mandates therefore do not necessarily offer the owl adequate protection, any plan also must satisfy the jeopardy prohibition.

\textsuperscript{454} \textit{Id.}
\textsuperscript{455} \textit{Clark}, 577 F. Supp. at 789; see supra note 452.
\textsuperscript{456} \textit{Louisiana ex rel. Guste v. Verity}, 853 F.2d 322, 332 (5th Cir. 1988)
\textsuperscript{457} \textit{Id.} at 332-333. The court noted that "Congress simply presumes that prohibited takings will deplete the species." \textit{Id.} at 333. \textit{Connor v. Andrus}, 453 F. Supp. 1037 (W.D. Tex. 1978), provides an example of the "conservation" principle in operation. In that case, the court overturned the FWS's ban on hunting the Mexican duck in much of the Southwest because evidence did not show that the ban would restore the Mexican duck population, but rather suggested that it would result in the destruction of duck habitat. \textit{Id.} at 1041-42. Presumably, with no hunting season, private hunters and hunting organizations would have no incentive to preserve or improve waterfowl habitat. The court in \textit{Verity} noted that to the extent that its holding was inconsistent with \textit{Connor v. Andrus}, it disapproved that lower court's holding. 853 F.2d at 333.
\textsuperscript{458} \textit{H.R. CONG. REP. NO. 740}, 93d Cong., 1st Sess. 23 (1973), \textit{reprinted in} 1973 U.S. \textit{CODE CONG. & ADMIN. NEWS} 2989, 3001-002. The report emphasizes that raising this possibility "in no way is intended to suggest that this extreme situation is likely to occur." \textit{Id.}
\textsuperscript{459} \textit{Sierra Club v. Clark}, 755 F.2d 608, 613 (8th Cir. 1985).
\textsuperscript{461} \textit{See id.}
c. The Jeopardy Prohibition

All federal agencies must consult with the Secretary or the FWS to "insure" that any action that they authorize, fund, or carry out is unlikely either to jeopardize a listed species' viability, or destroy or adversely affect the species' designated critical habitat. To comply, federal agencies must confer with the FWS on any current or proposed agency action which is likely to affect a threatened or endangered species. Consultation is also required where the action is likely to jeopardize the viability or adversely affect the proposed critical habitat of species proposed to be listed.

An agency's consultation with the FWS involves three steps. First, the agency must ask the FWS whether a species listed or proposed to be listed "may be present" in the area of the proposed action. If so, the agency must then prepare a biological assessment to determine if the action is "likely" to affect the species. If the assessment indicates that the action likely will affect such a species, the agency then must consult formally with the FWS, leading to the creation of a biological opinion issued by the Secretary of the Interior. This biological opinion must consider the direct effects of the proposed action and potential effects of other actions which presumably will follow. For example, a biological


463. 50 C.F.R. § 402.02 (1989) defines "jeopardize the continued existence of" within the context of the ESA as engaging "in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."

464. 16 U.S.C. § 1536(a)(2) (1988). Sierra Club v. Lyng, 694 F. Supp. 1260 (E.D. Tex. 1988), illustrates the application of this subsection. In that case, the court held that the Forest Service, by promulgating timber management practices which generally allowed the harvesting of trees only 60-80 years old, had jeopardized the red-cockaded woodpecker by failing to "insure" that its practices did not threaten the continued existence or the critical habitat of the woodpecker. Id. at 1272.


466. Id.

467. Id. § 1536(c)(1).

468. Id. Without such an assessment, the agency would be unable to determine whether the proposed act violates any of the ESA's substantive provisions. See, e.g., Thomas v. Peterson, 753 F.2d 754 (9th Cir. 1985), where the court held that where an agency fails to prepare a biological assessment for a proposed action where endangered species may be present, an injunction pending compliance with the Act is the proper remedy. Id. at 764. The court also suggested that because the ESA contains substantive provisions which the procedural provisions are designed to enforce, those procedural provisions should be more strictly enforced than where substantive provisions are absent. Id.

The biological assessment also may be conducted as part of an environmental impact statement required by NEPA for "major Federal actions significantly affecting the quality of the human environment. . . ." 42 U.S.C. § 4332(c) (1988).


470. See Conner v. Burford, 848 F.2d 1441, 1453 (9th Cir. 1988).
opinion on the effect of leasing forest land for oil and gas drilling must assess not only leasing but "all post-leasing activities through production and abandonment."  

If the biological opinion indicates that the proposed action will jeopardize a listed species or adversely affect its habitat, the agency may adopt alternatives suggested by the Secretary which avoid jeopardy and destruction or adverse modification of habitat. If the FWS concludes that the action will not violate the Act, it still may require that the acting agency take measures to minimize the action’s impact.  

During the consultation period, neither the federal agency nor the applicant may make "irreversible or irretreivable" commitments of resources which will prevent the "formulation or implementation of any reasonable and prudent alternative measures" which do not violate the Act. Furthermore, should significant new information surface that may affect the species, the agency must reinitiate formal consultation with the FWS. 

Assuming no exemption by special committee or by Congress, the Forest Service and the BLM will have to consult with the FWS to insure that no current or proposed agency action "is likely to jeopardize the continued existence of" the northern spotted owl. Such agency actions include those that "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery" of the bird by reducing its reproduction, numbers, or distribution. Even the Thomas Committee’s recommendations may not meet this requirement. Under that plan, the owl population is projected to decline forty percent. This would appear to "reduce appreciably" the

471. Id.
473. Id. § 1536(b)(4).
474. Id. § 1536(d).
475. 50 C.F.R. § 402.16(b) (1989).
476. See infra text accompanying notes 484-501.
477. Timber interests and the Bush administration have indicated that they also will seek a specific exemption — probably permanent, instead of temporary like the Hatfield-Adams Act — from Congress independent of the special committee exemption process already provided for in the Act. The fourth of the Bush administration’s five points discusses asking Congress to pass legislation allowing adoption of BLM and Forest Service forest management plans without the disruption of "court challenge." Five-Point Plan, supra note 18. This only can mean specifically exempting such forest plans from ESA coverage. No real basis exists for such an exemption; the timber industry and the Bush administration simply dislike the result of implementing the ESA as Congress envisioned. While the timber industry and the Bush administration push for protective legislation, bills have flooded Congress on the subject of preserving the nation’s ancient forests. See, e.g., S. 2713, 101st Cong., 2d Sess. (1990).
479. 50 C.F.R. § 402.02 (1989).
480. See supra text accompanying note 436. In fact, some Thomas Committee members feel their recommendations were compromised too much. According to Barry Noone, a com-
owl's chance of survival and recovery. In a case factually similar to that of the northern spotted owl, the Forest Service's even-aged forest management practices unlawfully jeopardized the red-cockaded woodpecker by reducing the bird's foraging and living habitat, causing the species' population to decline dramatically.481 Any forest management plan proposed by the government as an alternative to the Thomas Committee's plan almost certainly will reduce greatly the northern spotted owl's habitat. Under both the definition of actions which jeopardize and the reasoning of Sierra Club v. Lyng, such a plan would jeopardize the owl.

Because almost any timber-harvesting activity that the Forest Service or the BLM conducts in the Northwest will likely affect the owl, these agencies clearly must consult with the FWS before acting. Furthermore, harvesting old-growth almost certainly jeopardizes the owl by reducing its distribution, and probably also by reducing its reproduction and recruitment rates. Consequently, if these agencies adopt a forest management plan less protective of the owl than that of the Thomas Committee, the plan in all likelihood would unlawfully jeopardize the owl.

Once meaningful consultation has occurred, the acting agency—not the Department of the Interior or the FWS—retains the authority to make the final decision on whether or not to proceed with its action.482 Although the consultation burden under the jeopardy prohibition is high and should serve to protect endangered species, the agency's ultimate discretion appears to countermand the policies of the ESA. In the case of the northern spotted owl, the Forest Service and the BLM, the agencies which most directly affect the species, historically have been biased in favor of timber production and economic concerns rather than conservation.483

**E. Political Escape Valves from the ESA's Mandate**

The ESA at this time provides the best hope for protecting the northern spotted owl. Under the auspices of the ESA, the FWS theoretically should designate critical habitat and formulate a protective recovery plan. Even if the FWS exercises its discretion under the statute and designates only small areas of habitat or none at all, or implements a minimally protective recovery plan, the general protections of the ESA will still apply. Although the FWS probably can defend against a claim

mittee member, "our further modeling [analysis] would suggest that we were a bit over-optimistic. If I were to start the process over today, we would need larger HCA's." Spotted Owl Controversy Moves to Congress, Eugene Register Guard, Sept. 2, 1990, 1, at 1, col. 1.


482. Sierra Club v. Froehlke, 534 F.2d 1289, 1303 (8th Cir. 1976).

483. The Forest Service, which favors adoption of the Thomas Committee plan, has made some strides towards true multiple-use forest management, although the BLM's behavior still indicates a bias in favor of timber production. See supra text accompanying notes 284-86.
that the agency failed to conserve the owl, the FWS will be fighting an uphill battle against claims based on the taking and jeopardy prohibitions if it adopts a plan less restrictive than that proposed by the Thomas Committee.

The tale of the spotted owl controversy, however, does not end with habitat preservation. Several avenues exist for agencies to avoid the requirements of the Act, and all have been under consideration by the federal actors involved. The following section discusses such “escape valves” as special committee exemptions, temporary appropriations bills, and possible congressional amendments to weaken the ESA.

1. The Endangered Species Committee

If the FWS issues a “jeopardy opinion” indicating that Forest Service or BLM actions may jeopardize the owl or its habitat, the timber industry along with the Bush administration could request that the Endangered Species Committee (otherwise known as the God Committee) exempt such actions from ESA requirements. The Bush administration’s five-point plan specifically advocates this strategy.

Congress created the God Committee in response to *Tennessee Valley Authority v. Hill,* in which the Supreme Court enjoined the final completion of the Tellico Dam on the Little Tennessee River because it jeopardized the federally listed snail darter. *Tennessee Valley Authority* drove home to Congress the financial implications of saving endangered species, frightening Congress enough to amend the ESA to include the God Committee bailout provision. The politically expedient amendment plainly seems inconsistent with Congress’s 1973 mandate that all dying species be saved, whatever the cost. With the addition of

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484. *See supra* text accompanying notes 462-71.
485. The Endangered Species Committee was nicknamed the “God Committee” or “God Squad” because its primary function — distinguishing species truly worthy of protection under the ESA (thus insuring their continued existence) from those which are not (thus dooming them to certain extinction) — seems to infringe upon the normal duties of the deity.
489. *Id.* at 184.
the 1978 amendment, all species should be saved, except those that, in the opinion of the God Committee, cost too much to save.

The Committee may consider an exemption from the ESA at the request of a federal agency, the governor of the state where an agency action will occur, or a permit or license applicant, and may grant an exemption only if five of the Committee's seven members find that:

1. there are no reasonable or prudent alternatives to the agency action,
2. the benefits of the agency action clearly outweigh the benefits of alternative courses of action which would preserve the critical habitat of the species,
3. the action is in the public interest and of regional or national significance,
4. neither the agency nor the exemption applicant has made irreversible or irretrievable commitments of resources, and
5. the agency establishes reasonable mitigation and enhancement measures, including habitat acquisition and improvement, to minimize the adverse effects of the action on the species' critical habitat.

Applying the standards to the northern spotted owl, the Committee would have difficulty deciding in good faith that this five-factor test for an exemption has been satisfied. First, reasonable and prudent alternatives to destroying the critical habitat exist, including thinning or otherwise harvesting trees in some old-growth forests without destroying the unique structure, harvesting more second-growth stands, exporting fewer logs for processing, and retooling old-growth mills for second-growth and younger logs.

Second, the somewhat uncertain economic benefits of harvesting old-growth do not clearly outweigh the unquantifiable benefits of

492. Timber companies bidding on timber sales probably do not have standing to request this exemption. Fay Interview II, supra note 312.
493. First the Committee must be convened. 16 U.S.C. § 1536(h)(1) (1988). This in itself may present logistical obstacles, rendering the exemption even less likely. Permanent members of the committee, five of whom must vote in person on an exemption application, id., include the Secretary of the Army, Secretary of Agriculture, and the Administrators of the EPA and the National Oceanic and Atmospheric Administration. Id. § 1536(e)(3).
494. Id. § 1536(h)(1).
495. Jerry Franklin, the Forest Service's chief plant ecologist, advocates a "kinder, gentler" forestry that avoids clearcutting and burning of remaining slash. Brown, New Forestry, Old Arguments, Or. Bus., December 1990, at 28. Specifically, Franklin recommends: (1) maintaining or increasing the structural complexity in timber stands by leaving standing dead trees and downed wood at the site; (2) delaying closure of the forest canopy by spacing trees farther apart and by thinning to allow more sunlight to reach the forest floor; (3) replanting a variety of species such as fir, hardwoods, and cedar to avoid Douglas fir monoculture; (4) leaving some green trees behind which provide insect and wildlife habitat; and (5) clearcutting larger patches, if at all, and not disturbing the area for decades. Id.
496. Spotted Owl Update, supra note 29.
497. See infra text accompanying notes 520-21.
498. These benefits would include the preservation of biological diversity, one of the primary reasons Congress passed the ESA. 16 U.S.C. § 1531(a) (1988). Other benefits might include the continued availability of both northern spotted owls and old-growth forests to
setting aside moderate amounts of old-growth and ensuring the viability of the northern spotted owl and other species that depend on old-growth forests for survival.

Third, whether harvesting trees for short-run economic gain at the expense of the entire old-growth ecosystem and its inhabitants such as the northern spotted owl is in the "public interest" depends on the public's preference between long-term conservation and short-term development. It may be in the public interest for the timber industry to adapt now to changes that appear inevitable. On the other hand, few would dispute that the Forest Service's and the BLM's forest management plans are economically significant, at least to the Northwest, if not to all states with harvestable forests. Although the "significance" requirement appears satisfied, the third requirement as a whole is satisfied only if both the "public interest" and the "significance" subrequirements are met, which is questionable.

Fourth, while the agencies involved probably have committed some irretrievable resources in seeking to avoid a critical habitat designation, these commitments do not appear to foreclose the formulation or implementation of measures which would not destroy the owl's critical habitat.499

Finally, the last requirement for an exemption appears impossible to satisfy in the case of the northern spotted owl. After harvesting old-growth forests, no mitigation or enhancement measures will be available to minimize the adverse effects on the owl's critical habitat. In Oregon and Washington, the owl feeds primarily on flying squirrels and is preyed upon by great horned owls and northern goshawks.500 Once the old-growth canopy which sustains the squirrels and protects the owl from its predators is harvested, it cannot be regenerated for at least one hundred years, if ever.501

In short, at least two and probably three of the conditions for an exemption are not met. Because five members must find that all factors are satisfied, even if convened the God Committee seems unlikely to grant an exemption in the case of the owl. Nonetheless, other federal maneuverings still threaten owl habitat.

499. See id. § 1536(d).
500. FWS STATUS REVIEW SUPPLEMENT, supra note 60, at 2.7-2.8.
501. See FWS STATUS REVIEW, supra note 12, at 26. Thinning of old-growth and leaving some logs on the ground, however, actually might enhance the forest floor component of the habitat. This would be helpful in northwestern California, for example, where northern spotted owls feed primarily on wood rats. See id. at 11. Furthermore, the regeneration in California might not take as long as in the Northwest, so that reasonable mitigation and enhancement measures may successfully minimize the adverse effects on the owl of harvesting old-growth.
2. The Hatfield-Adams Appropriations Bill of 1990

In the midst of the owl controversy, heavy industry lobbying in 1989 induced Congress to pass the Hatfield-Adams Appropriations Act,\(^\text{502}\) a temporary "compromise."\(^\text{503}\) The Hatfield-Adams Act requires the Forest Service to offer for harvest 7.7 billion board feet of timber and the BLM to offer 1.9 billion board feet of timber in combined fiscal 1989 and 1990 regardless of how much old-growth existing federal environmental statutes otherwise would preserve.\(^\text{504}\) The 9.6 billion board feet total is only a small reduction from the two-year harvest of 11 billion board feet in 1987 and 1988.\(^\text{505}\)

Environmentalists do not describe this as a compromise. According to David Wilcove, a biologist with the Wilderness Society, "[t]here was never an agreement. . . . It was a pro-timber solution they tried to cram down our throats."\(^\text{506}\) Environmentalists also express concern about a subsection of the bill in which Congress essentially instructed courts how to interpret federal environmental statutes.\(^\text{507}\) Language in the legislation indicating that its substantive provisions "shall not be subject to judicial review by any court of the United States" also caused concern.\(^\text{508}\) This latter provision has since been ruled unconstitutional by the Ninth Circuit Court of Appeals.\(^\text{509}\)

In any case, with only slightly less timber offered under the Hatfield-Adams Act than was offered previously, the owl appears to stand little chance of remaining well distributed throughout its range. The Hatfield-Adams Act made no attempt to meet the requirements of the ESA; rather, it sought to avoid the Act altogether in order to accommodate the same special interests against whom the environmental statute is directed.\(^\text{510}\) In the case of the northern spotted owl, Northwest lawmakers

\(^{503}\) Hager, supra note 345, at 2308.
\(^{505}\) Nunen Interview, supra note 379.
\(^{506}\) Hager, supra note 348, at 2308.
\(^{507}\) Stahl Interview, supra note 124.

[n]o restraining order or preliminary injunction shall be issued by any court of the United States with respect to any decision to prepare, advertise, offer, award, or operate a timber sale or timber sales in fiscal year 1990 from the thirteen national forests in Oregon and Washington and Bureau of Land Management lands in western Oregon known to contain northern spotted owls.

*Id.* § 318(g)(1), 103 Stat. at 749.

\(^{509}\) Seattle Audubon Soc'y v. Robertson, 914 F.2d 1311 (1990).
\(^{510}\) Pub. L. No. 101-121, § 318, 103 Stat. 701, 745-50 (1989). For example, the bill requires the Forest Service and the BLM to consult with the FWS according to ESA consultation requirements prior to offering any timber for sale, but these agencies may reject such recommended modifications without preparing "additional environmental documents. . . ."

*Id.* § 318(c)(2), 103 Stat. at 748. The Hatfield-Adams Act is similar in one sense to the snail darter controversy. After the God Committee unanimously denied the snail darter exemption
decided that the ESA should not apply in their region because they believed that protecting the spotted owl would severely harm the regional economy. Clearly, if lawmakers may run to Congress and secure temporary riders which effectively avoid or modify the ESA, the ESA ceases to have any practical significance.

3. Recent Administration and Agency Maneuvering

After the FWS listed the northern spotted owl as threatened under the ESA, the Secretary of Agriculture and the Secretary of the Interior announced a five-point plan addressing the plight of the owl. The main points of the plan are:

1. The BLM will implement a plan to preserve 125 more owl pairs than would be preserved by the ISC plan, while causing less economic dislocation.

2. In fiscal 1990, the Hatfield-Adams Appropriations Act timber sale program will go forward in “full compliance with the ESA... in a manner not inconsistent with the ISC report.” The Forest Service, the BLM, and the FWS will expedite timber sales.

3. A “high level interagency task force” will devise a forest management plan for the Forest Service for fiscal 1991, because implementation of the conservation strategy recommended in the ISC report for Forest Service lands would have entailed significant job losses. The Secretary of Agriculture will find a “balance between protection of owl habitat and concern for jobs” by September 1, 1990.

4. The Bush administration will attempt to invoke the God Committee whenever owl protection under the ESA conflicts with logging plans, and will seek legislation which (a) adopts BLM and interagency task force plans and allows their “implementation to proceed without disruption by court challenge,” and (b) expands the power of the Endangered Species Committee “to allow it to develop a long-term forest management plan for Federal lands.”

5. The Bush administration will support legislation banning the export of raw logs harvested on state land.

request, Congress passed an appropriations bill which exempted the dam project from the provisions of the ESA. Erdheim, supra note 491, at 634 n.51. The dam was completed. Id.

Five-Point Plan, supra note 18.

The BLM estimates the loss of only 1000 jobs under its plan, compared with 7600 lost jobs under the ISC plan. Id.

Id.

Id.

Id.

Id.

Id. The Secretary's “balance,” released on September 21, 1990, calls for a 20% reduction of current harvest levels on Forest Service lands, down to 3.2 million board feet for 1991. Schaefer, supra note 250, at A10. By comparison, the Thomas Committee recommended a 2.6 million board feet harvest. Id. The plan next goes to Congress next.

Five-Point Plan, supra note 18.

The ban will reduce job loss in the Pacific Northwest by approximately 6000 jobs by the year 2000. Id.
As with the Hatfield-Adams Act, the Bush administration’s five-point plan focuses on minimizing the economic impact of protecting the northern spotted owl, while offering little protection for the owl. First, the plan fails to consider implementing the most scientifically credible report on the owl — that of the Thomas Committee. Instead, it places the owl’s fate in the hands of a “high-level interagency task force” comprised of governors of affected states and “key members of Congress from the committees with jurisdiction over forestry and endangered species issues.” The plan essentially asks politicians and executive appointees to act as forest planners. The task force members likely will be sympathetic to economic interests, but lack the scientific knowledge or the incentive to protect the northern spotted owl or any other species threatening their home economies.

Second, the plan makes conclusory and arguably contradictory assertions that it protects more owls and preserves more jobs than the Thomas Committee’s plan, while not running afoul of the ESA or the Thomas Committee report. The administration has offered no specifics to substantiate this claim.

Third, the plan in fact is a temporary fix to allow logging at largely unchanged rates, even though nearly all old-growth on private land and two-thirds of old-growth on federal land has now been logged and continues to be cut at a rate of over 80,000 acres per year. Such temporary “solutions” delay the inevitable adjustment toward mature and younger growth logging, supplying timber-dependent workers with false hopes of unending employment. If the administration truly wants to protect the Northwest economy, it should offer financial assistance to mills to retool for smaller logs and fund retraining programs. To its credit, the administration did support recently passed legislation which bans the export of raw timber cut on federal lands.

The Bush administration and a Congress willing to adopt temporary exceptions to the ESA threaten to drag forest management policies back into the dark ages by ignoring the extensive information about the owl and its old-growth habitat. The northern spotted owl now faces more than dwindling habitat. In the Bush administration, the owl faces a political predator determined to avoid paying the necessary cost of owl protection.

519. Id.
521. See supra note 383.
CONCLUSION

When Congress enacted the ESA, few people anticipated the conflicts soon to arise. *Tennessee Valley Authority v. Hill* provided a first glimpse of how the Act as originally drafted would protect even a seemingly insignificant species against the forces of economic development. Congress responded by amending the ESA to allow an exemption when the economic or political price of saving a species became too high. The northern spotted owl controversy has brought even more pressure to bear on the ESA, with the timber industry and many politicians seeking ways to avoid the ESA or abolish it altogether.

Although the FWS has listed the northern spotted owl under the ESA as a threatened species, the battle between development and conservation continues, with the ESA itself a potential victim. The ESA prohibits consideration of economic factors in the listing decision, but allows such factors to be considered when setting aside critical habitat, even though habitat protection is the Act’s fundamental means of species preservation. The ESA’s apparent provision for agency discretion may result in the owl’s extinction. In the course of the owl controversy, the agencies involved have exercised their discretion at every opportunity to deny the owl ESA protection, and even have abused their discretion at times. The agencies clearly want to resolve scientific uncertainty as to minimum habitat in favor of economic development, although the ESA at least in spirit suggests a resolution in the species’ favor. On the other hand, if the FWS designates sufficient habitat, the Bush administration, along with the timber industry, will attempt to convene the Endangered Species Committee or the interagency task force, which could exempt many timber sales from the ESA’s requirements. In any case, the administration has called for further amendments to weaken the ESA. Meanwhile, timber sales mandated by the Hatfield-Adams Appropriations Act have gone forward.

Many have opposed old-growth protection for the northern spotted owl, arguing that protecting the bird is only a surrogate for a strict ancient forest preservation platform. Regardless, the underlying controversy over the conservation of old-growth forests still must be resolved, or environmentalists and industry interests will replay this episode as other declining species that rely on old-growth forests are discovered and petitioned for listing. Instead of resolving the controversy, however, the

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522. One problem is the difficulty of accurately valuing a species, rendering it difficult to challenge the FWS’s calculations.
523. See supra note 191.
524. In response to this argument, the Thomas Committee stated explicitly that its report would focus only on “questions of spotted owl population viability” rather than on how much old-growth should be protected. ISC REPORT, supra note 44, at 11.
timber industry, the Bush administration, and environmentalists have relied on legal and political "quick fixes."

The timber industry and its political supporters apparently believe that old-growth logging will continue forever. However, old-growth logging must slow now because of the owl or stop altogether in the near future when all accessible old-growth has been logged. It is unnecessary to sacrifice the old-growth forest ecosystem and the species it supports, not to mention the Endangered Species Act itself, so that a dying segment of the timber industry may log old-growth forests until they disappear.