



Spotted Owls in National Parks:

Report of the Interagency Committee

The northern spotted owl (*Strix occidentalis caurina*) occupies forests from southern British Columbia to Marin Co. California. Management of this handsome, demure appearing, creature has been a contentious issue in the Pacific Northwest. The bird inhabits coniferous forests that exhibit a particular structure, notably: multilayered, multispecies canopies dominated by large overstory trees showing moderate to high canopy closure; a high incidence of large trees with cavities, broken tops and other signs of "decadence"; numerous large snags, and heavy accumulations of logs. These conditions are most commonly, but not exclusively, associated with "old-growth" forests – and therein lies the rub.

Old forests are being harvested very rapidly, thereby eliminating large areas of suitable owl habitat and leaving much of the remainder as fragmented, isolated stands. Spectacular legal battles have been waged recently among environmental groups, federal land management agencies, and timber interests over how much owl habitat should be maintained on public lands. These owl wars led to the establishment, in 1989, of an Interagency Scientific Committee¹ to address the conservation of the bird. The Committee, headed by USFS Biologist Jack W. Thomas, was charged with developing "... a scientifically credible conservation strategy" for the owl.

I represented the National Park Service at the deliberations of the committee² from October 1989 until April 1990, when the strategy was made public³. These activities represented the most intensive, group scientific effort I have ever been involved with. The team of 17 biologists worked for 6 months to muster all relevant information on the biology of the owl, and then applied this knowledge to produce an on-the-ground, map-based, conservation plan.

The purpose of this note is to outline the process used by the team in deriving the conservation strategy (because it may serve as a blueprint elsewhere), to discuss the impact of the plan on park management, and to offer some observations on the relative quality of NPS baseline data.

Sideboards and Processes

The committee adopted certain operating sideboards, four of which are relevant here⁴:

1. A successful strategy will be rooted in the philosophy embodied in the National Forest Management Act which requires Forests to maintain viable populations of native species that are well distributed.

2. All land ownerships will be considered in the conservation strategy.

3. "Hands on" management of habitats and animals will be considered, i.e., transplanting owls, modifying silvicultural prescriptions, etc.

4. Although the spotted owl issue is, to some degree, a surrogate for the old-growth forest issue, i.e., how much old-growth shall be preserved, where, and in what form – we will focus strictly on questions of spotted owl population viability across its occupied range.

The process by which the team obtained, examined, and interpreted information was completely open. Anyone with information was welcome to address the group, to participate in discussions, etc. The open-door policy lasted until the team began to prepare the final report, the last month of the 6 month process. Moreover, much of the report consists of appendices that should allow anyone to track the logic and steps which led the team to their conclusions. Finally, a draft was

submitted for peer review by scientists selected by the presidents of five professional societies⁵.

The procedures followed in designing the strategy are noteworthy. All relevant literature on the owl was acquired, reviewed, and synthesized. Virtually everyone conducting research or monitoring the status of owls made presentations and supplied data. Owl habitats across 3 states were examined during field trips. The committee also sponsored three workshops: 1) Field biologists experienced with owl biology appraised several proposed conservation strategies based upon their knowledge of landscapes and owls; 2) Silviculturalists and forest ecologists explored silvicultural alternatives to enhance owl habitat in managed forests; 3) Conservation biologists and landscape ecologists critiqued the evolving strategy for owls in light of their experience and knowledge of applicable theory. The team also evaluated the current quality and consistency of management by interviewing field personnel on National Forests and BLM Districts.

Synthesis of the information led the team to conclude that a conservation strategy was indeed warranted: the bird was imperiled over significant portions of its range⁶. The committee proposed a two-part strategy. In the first stage, steps were taken to ensure that adequate amounts of habitat were protected and well distributed to provide for the owl's long term survival. Large blocks of suitable habitat, *Habitat Conservation Areas* (HCAs), were proposed throughout the bird's range. The second stage calls for research and monitoring to test the adequacy of the strategy and to seek ways to produce and sustain suitable owl habitat in the managed forests (i.e., outside the HCAs). Knowledge gained in the second stage will be used to alter or replace habitat conservation plans prescribed in the first stage, but only if the modified strategy provides adequately for the owl.

The rationale for the size and spacing of HCAs drew heavily from demographic studies, modeling of owl extinction probabilities in differently arranged landscapes, and inferences from extinction rates of small populations of other birds throughout the world. HCAs capable of providing for 20 or more interacting pairs of owls spaced no more than 12 miles apart (based on studies of dispersal distances of juvenile owls) formed the basis for the strategy. Where geography, land ownership patterns, or past logging precluded large HCAs, smaller ones were to be established closer together. Dedicated corridors for owl dispersal among the HCAs were deemed unnecessary, provided forests in the intervening landscape matrix met certain structural criteria. All logging in HCAs was to cease.

Once this rule set was established, maps were drawn for Washington, Oregon, and northern California, and checked for consistency with the guidelines. Not surprisingly, "real world" landscapes often forced modification of the idealized design. At least 10 iterations of each map were necessary before tests produced the size and spatial arrangements deemed satisfactory. The committee estimated that the system of HCAs proposed for federal lands now contains about 1465 pairs of owls. As young, previously cutover, forests in HCAs mature, these areas might support 1750 pairs. This brief introduction to the complex, map-based strategy is necessarily oversimplified – the report must be read to gain full understanding.

Owls in Parks

The spotted owl is known to occur in 8 NPS areas from North Cascades to Muir Woods (table 1). The bird



The Northern Spotted Owl (*Strix occidentalis caurina*)

may also occupy the Whiskeytown NRA because it is known to occur in that region of California. NPS areas may altogether contain about 570,000 acres of suitable owl habitat, but these estimates should be regarded as crude first approximations, particularly for the larger parks. The configuration and quality of habitat differ markedly among the areas. Habitat in the large, mountain parks of Washington and Oregon occurs in blocks at low elevations around the perimeters of the parks, separated by unsuitable high elevation areas in the interior. Overall, NPS areas contain roughly 7-8 percent of the existing owl habitat and may support 100 or more pairs of owls (in contrast, about 74 percent of the owl habitat occurs on National Forests). The largest single park population may occur in Olympic NP; estimated conservatively by the park staff at 40 pairs. The committee, using additional information from Landsat, estimated the Olympic population at 60-80 pairs. Other parks have populations ranging from perhaps 1 to 20 pairs.

Several things are apparent from the information in table 1. First, the NPS is a relatively minor player in the overall business of conserving the northern spotted owl. More importantly, conservation biology suggests that the numbers of owls in National Parks are too small for the species to persist over time if isolated from birds in surrounding areas because of habitat fragmentation. Considerations of physiography and size of parks in Washington and Oregon, for example, suggest that survival of the birds in these areas is closely tied to the welfare of owls on surrounding lands. Each park contains owls at the upper elevational limit of their distribution, and North Cascades and Olympic also approach the species' northern geographic-range limits. Spotted owls that exist under such biogeographic constraints may be particularly susceptible to wide fluctuations in abundance over time, with correspondingly increasing probabilities of extinction. Spotted owl populations on the Olympic Peninsula, including Olympic NP, already appear to be isolated from other populations and are thought to be especially vulnerable.

The Committee and the Parks

The committee viewed the management objectives for National Parks as generally compatible with conserving owls. They recognized the importance of maintaining ecological processes (as opposed to preserving particular biological states), and accepted single species management as generally inappropriate.

The committee showed particular concern for the welfare of NPS owls: parts of six Park Service units are within proposed HCAs (table 1). Additionally, an HCA abuts the southwest corner of Crater Lake.

What does inclusion in an HCA mean to park management, given the committee's apparent acceptance of broad NPS objectives? Overall, in my view, HCA designation will have relatively little effect on park operations. Certain activities, however, are prohibited in the management prescriptions for HCAs: 1) timber harvest, including firewood cutting and salvage of downed trees; 2) road construction, except when no feasible alternatives exist.

A fire plan is also to be prepared for each HCA, and the NPS was asked by the committee to review existing fire plans for compatibility with owl management objectives. Prescribed fire was recognized by the committee as being important in maintaining the structural diversity of some forest communities occupied by owls. Intense stand-replacement fires obviously can do bad things to owl habitat in the short term. Over the long term, in my view, maintaining mosaics of different-aged forest communities (which differ in fuel loading and susceptibility to burning) may be important in reducing probability of large, catastrophic fires.

I judge that the NPS will receive considerable pressure to survey owls in parks. Monitoring the status of owls annually will be required in some HCAs as part of the adaptive management strategy. Inventory and monitoring efforts will be closely coordinated among agencies; this will require NPS to develop Geographic Information System capabilities that are compatible with those of other agencies. Parks may also receive more attention as owl research sites: Redwood NP, for example, has a unique opportunity to document the stand structure and age at which owls first recolonize second-growth redwood forests.

NPS Baseline Data

Overall, the quality of information that the NPS could bring to bear on the owl issue was relatively poor, compared to that of other federal and state agencies. This included not only data on owls, but reliable, accessible information on forest distribution and structure. (There were bright exceptions: Mount Rainier, for example, has wonderful information on forests.) The committee noted that the "... inadequacies of information on the status of the owl and its habitat in the National Parks, particularly the Olympic NP, have presented problems to us in developing the conservation strategy." In response, it might be argued that since park management is generally compatible with owls, and all parks certainly have management issues that are seemingly more pressing, there was little need heretofore to acquire such information. This granted, the counterargument still lacks bite, and underscores fundamental shortcomings. I believe, in our inventory and monitoring programs.

Implementation?

Whether or not the plan, or any part thereof, is implemented remains to be determined. Two things are certain: 1) Watching this issue play out to resolution will be

Table 1. Areas (1000s of acres), distribution, and results of spotted owl surveys on NPS lands

STATE Locality	Estimated area of owl habitat ^a	Habitat ^b distribution	Owl pairs ^c		Owl inventories ^d	HCA's ^e
			Known	Estimated		
WASHINGTON						
North Cascades	126	1	0	20	P	Y
Mt. Rainier	31	1	8	?	P	Y
Olympic	323	1	12	40	P	Y
OREGON						
Crater Lake	50	1	4	14	P	N
Oregon Caves	0.5	3	1	1	C	N
CALIFORNIA						
Redwood	20	2	0	5	U	Y
Pt. Reyes	16	2	2	4	P	Y
Muir Woods	0.5	3	1	1	C	Y
Whiskeytown	4?	?	0	?	U	N

^a Generally gross estimates subject to revision, small areas excepted.

^b 1 = Habitat around low elevation perimeter and separated into blocks by mountains or lakes in the core of the park; 2 = blocks of contiguous low elevation habitat; 3 = essentially all suitable habitat.

^c Known pairs are those located from 1985 to 1989. Estimates are habitat capability extrapolations, usually from FS or FWS Status Review Supplements.

^d P = Partial surveys with large backcountry areas still unsurveyed; C = complete surveys; and U = unsurveyed lands.

^e Y = Part of the area within one or more designated HCAs.

extremely interesting; 2) We on the team found the effort challenging and educational.

The postscript to the report offers an appropriate perspective: "We were asked to do a scientifically credible job of producing a conservation strategy for the northern spotted owl. We have done our best and are satisfied with our efforts. We have proposed. It is for others – agency administrators and elected officials and the people whom they serve – to dispose. That is the system prescribed in law. It seems to us a good one. We can live with that."

Houston is a Research Biologist with the NPS Pacific Northwest Region, based at Olympic NP.

Notes and References

1. Agencies involved were: U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and National Park Service.
2. The six member core committee consisted of: J.W. Thomas, E.D. Forsman, B.R. Noon, and J. Verner of USFS; J.B. Lint of BLM; and E.C. Meslow of USFWS. The overall team included: (1) a represen-

tative from each of the 3 states, (2) advisor/participants representing timber interests, environmental groups, and academia, and (3) technical staff/advisors from the federal agencies. On the team were 17 biologists (12 of whom were experienced in dealing with the biology and management of the owl). All team members participated fully in all aspects of the effort, with the core committee responsible for signing the final report.

3. Thomas, J.W. et al. 1990. A conservation strategy for the northern spotted owl. Interagency committee to address the conservation of the northern spotted owl. Portland, Oregon, April, 1990. 458 pp.
4. Some of what follows is taken nearly verbatim from the committee's report, with permission from J.W. Thomas.
5. Reviewers were drawn from: American Ornithologists Union, Ecological Society of America, Society for Conservation Biology, Society of American Foresters, The Wildlife Society.
6. The decision whether or not to list the owl under provisions of the Endangered Species Act is currently being considered by a committee of USFWS biologists; this was not the responsibility of the Thomas team.
7. See for example, Romme, W.H. and D.G. Despain. 1989. Historical perspective on the Yellowstone fires of 1988. *Bioscience* 39:695-698.

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