

Spotted Owl Occurrence in Mt. Rainier National Park

By Sonny Paz and Janet Edwards

If you were a resource manager within a national park in the Pacific Northwest's Cascades or Olympic Mountain ranges, you would be faced with the challenge of protecting the northern spotted owl. *Strix occidentalis* is currently on the Washington and Oregon state threatened species lists and a proposal to nominate it for listing as a federally threatened or endangered species, has been received by the U.S. Fish and Wildlife Service.

The primary concern for the decline of the spotted owl in the Pacific Northwest arises from the gradual loss of habitat. Spotted owls are found most frequently within old-growth forests of Douglas-fir, Pacific silver fir, western hemlock and western red cedar below 4,000 feet. A home range often encompasses over 4,000 acres of old-growth forest. Pressures to harvest timber and expand development for urban uses, threatens much of the contiguous old-growth stands. Commercial harvests fragment forests, reducing the amount of preferred spotted owl habitat. These cuts also interfere with juvenile dispersal by leaving large open areas, which juveniles generally avoid.

The U.S. Forest Service, Bureau of Land Management, National Park Service and state wildlife agencies conduct research on the spotted owl to determine habitat requirements, home range size, breeding success and juvenile dispersal. These coordinated inter-agency programs are essential for preservation of the spotted owl since no one agency can maintain enough acres of habitat to support available populations.

Mount Rainier NP employees began studying spotted owls in the summer of 1983; the program has continued each summer through 1986. The study objectives were to:

1. Locate and map spotted owl pairs and their young.
2. Collect information about the behavior and biology of the bird through field observations and pellet analysis.
3. Collect data on barred owls.

Life History of the Owls

The northern subspecies of the spotted owl, which ranges from southern British Columbia to northern California, is seldom seen or heard. This reclusive spends most of its time under the protective canopy of old-growth and mature forests. The spotted owl is well camouflaged; its chocolate brown and white feathering, peppered about the head, back and abdomen, creates an amazing mimic of the bark found on the Douglas-fir and western hemlock trees. These trees are selected for nest sites. The owl's eyes are dark, and the rounded head lacks "horns" or "ear-tufts."

This flying enigma, which measures 16-19 inches long with a three-foot wingspan, is capable of precise and muted flight. Unwary arboreal and semi-arboreal mammals constitute the majority of prey taken. In Washington the flying squirrel accounts for much of the owl's diet.

The female will spend 32 days incubating a clutch of two to three eggs in a secure nest on a platform with overhead cover, while the male provides food for her. The lifetime partnership usually results in April or May hatching of two down-covered owlets every three

years or so. Juveniles, when learning to fly are clumsy, erratic, and frequently fall to the ground. With talons and beak, juveniles climb trees to the lowest branches to rest and avoid predators.

The parents usually feed the young until late September. By October adults discontinue feeding the young, and the hungry, full-grown juveniles leave the parental territory.

By contrast the barred owl, *Strix varia*, which looks strikingly similar to the spotted owl, reproduces more frequently. Since its habitat requirements are not nearly as restrictive, the barred owl has expanded its range into spotted owl habitat zones.

Research Methodology

Early surveys were conducted entirely along park roads. Because the project was part of the Natural Resource Specialist Trainee Program, the park interior also was surveyed in 1986. Backcountry trails were sampled up to 5,000 foot elevation, 1,000 feet higher than owls normally are found. Although old-growth forests have been labeled as the exclusive domain for the owl, other habitat types, that were commonly bisected by the selected routes, also were surveyed. Surveying younger stands helped to alleviate the bias towards sampling exclusively in old-growth forests. Standard U.S.F.S. survey methods, with improve-



Janet Edwards projects a vocal imitation of a spotted owl location-call at night from a trail in Mount Rainier NP. Working late hours is fatiguing, but an owl response creates a boost of energy and excitement.



This down-covered juvenile, seen here on July 23 is more than 3 months old. Although it has become an expert flier it still depends on the parents for food.

ments incorporated from Sonny Paz's seven years of field experience with the owls, were used.

On a typical night, surveys began at a trailhead at dusk, so that "calling" could be conducted during the dark hours when the owl is most active. Negotiating the trail with headlamps, we stopped at quarter-mile intervals and projected a vocal imitation of the spotted owl "location call," "hoo-hoo-hoo-hoooo," uttered every 60 seconds for 10 minutes. If no response was heard during that time period, we hiked to the next station and repeated the process. It took approximately one hour to cover one mile on the trail. If an owl was heard during the survey, calling continued until the bird's location could be positively identified. The variety of calls, and the behavior of each owl made each experience unique, which compensated for the body fatigue endured from the anomalous working hours.

Whenever possible, the sites of the nighttime responses were revisited during the day to relocate the owl's roost. Because the spotted owl can use up to 10,000 acres of forests, the chance of relocating the birds during the day is marginal. When the birds were located, a technique known as "mousing" was employed. A live rodent was tethered to the ground near the owl. The rodent's activity attracted the owl's attention whereupon the owl dove to capture its prey. This technique resulted in the location of juveniles, be-

cause the adult would then fly off to feed the young owlets. "Mousing" provided opportunities for collection of biological information, photographs, and reproductive censusing.

Conducting spotted owl surveys can be a monumental job for just two park employees. To offset the labor-intensive nature of the task, volunteers were recruited from local universities and conservation groups. We presented both classroom and field training sessions in wildlife ecology and survey methodology and these volunteers contributed over 200 hours of field time. In order to add to the employees' knowledge of resource management programs, we spoke to seasonals during two orientation sessions and one endangered species workshop. As a result, several park employees helped achieve the program goals.

Survey Results

Even though home ranges could not specifically be identified without the use of radio telemetry, occupied areas could easily be discerned from the data. Since 1983, owls have been heard and/or seen in 13 different locations in the park, most on repeat surveys. Juveniles were observed in five of the locations. Barred owls were heard in two locations, both in suitable spotted owl habitat. At one of the locations two juvenile barred owls were found. Adult spotted owls in six lo-

cations were heard close enough to the park boundary to establish that habitat protection across agency lines is critical.

At the conclusion of the study, we developed and presented two campfire programs for park visitors and two slide presentations for park staff. The public responded with genuine interest, especially in the close-up wildlife slides, imitations of various owl calls, and information on how to observe this rare bird.

Within the Pacific Northwest, managers have demonstrated a similar interest in increasing knowledge of the spotted owl within the national parks. They recognized the importance of strengthening interagency cooperation when, in 1985, Acting Regional Director Bill Briggie issued a policy directive. It stated that the NPS would cooperate with other government agencies to help ensure the long term preservation of owls in the Pacific Northwest. This team effort involves sharing information, collaborating on surveys and research, reviewing management plans, and participating in local or regional interagency committees.

More attention to spotted owl management concerns will be incorporated into interpretive programs. As funds permit, the four major parks with spotted owl populations (Crater Lake, Mount Rainier, North Cascades, and Olympic) will continue to gather baseline data on spotted owl numbers, distribution, and reproductive success. In response to this initiative, Rainier NP Supt. Neal Guse has earmarked monies from the new fee collection fund, for the continuation of field research within the park. And a regional research program on spotted owls, is among the top ten priorities in the 1987 Natural Resource Assessment and Action Program.

No one knows the future of the northern spotted owl. Is it destined to become extinct through conflicts with human land use practices? Can it adapt to the changing environment in time to retain a viable population? Will the more adaptable barred owl replace the spotted owl in the Pacific Northwest? As resource managers, our task is to work with other agencies to preserve a viable population of spotted owls and to prevent the loss of this unique and spectacular bird of prey.

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