



Northern Spotted Owl

The Northern Spotted Owl evolved for thousands of years in the old-growth forests of the Pacific Northwest.





Why are Northern Spotted Owls at risk?

The Northern Spotted Owl has a very restricted range within British Columbia. It is at risk in this province because much of its habitat has been adversely affected by logging or lost due to land development. The Northern Spotted Owl – the subspecies of Spotted Owl found on the Pacific coast – evolved for thousands of years in the old-growth forests that dominated this area. It is dependent on the features of old-growth forest stands for its nest sites, roosts, cover and prey.

The kinds of forest preferred by the Northern Spotted Owl are also those of greatest value to the forest industry. Little old-growth remains in the Northern Spotted Owl's range within Washington and Oregon, and populations there are declining. The total known range of the Northern Spotted Owl in British Columbia is approximately two percent of the provincial area. Within that area, only about 30 percent of the original low-elevation old-growth remains and the total owl population is estimated to be about 100 breeding pairs. The size of pre-logging owl populations is not known, but it is very likely the numbers were higher than at present. In British Columbia, owl habitat is becoming fragmented. The widely spaced populations are vulnerable to severe natural events that can cause local extinction. When the habitat was continuous, areas of local extinction could be re-populated by owls from adjacent areas. This is less feasible when the remaining habitat patches are separated by large areas of clear-cut land, urban development or farm fields.

Logging and other forms of land development are continuing within the Northern Spotted Owl range in British Columbia. Only a few tracts of low elevation old-growth are protected in parks. Biologists are working hard to ensure that logging practices are carried out in such a way that Northern Spotted Owls will continue to exist.

What is their status?

The total known population of Northern Spotted Owls is only 4000 adult pairs. British Columbia is estimated to have fewer than 100 pairs. The Northern Spotted Owl has been placed on British Columbia's Red List because of its small and vulnerable population and continuing habitat loss. The Red List includes those species being considered for legal designation as Endangered or Threatened under the British Columbia Wildlife Act. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has designated the Northern Spotted Owl as Endangered in Canada,

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meaning that the species is threatened with imminent extirpation throughout all or a significant portion of its Canadian range. In 1988, the Northern Spotted Owl was listed as Endangered in Washington State and Threatened in Oregon. In 1990, it was designated as Threatened throughout its entire range in the United States under the U.S. Endangered Species Act.

The Northern Spotted Owl is one of British Columbia's rarest birds, although it may never have been widespread or abundant in this province. Its status is precarious but may improve with the concerted con-

servation effort which has begun.

What do they look like?

The Northern Spotted Owl (*Strix occidentalis caurina*) is a fairly large, brown owl, 40 to 48 centimetres long, with a puffy round head and no ear tufts. Of the 14 species of owls that nest in British Columbia, only the Great Gray and Great Horned are noticeably larger. Female Northern Spotted Owls are slightly larger than males, but both have similar colouring and markings. The chocolate to chestnut brown feathers of the head, neck, back and underparts have many circular or irregular white spots, for which this attractive owl is named. The Northern Spotted Owl has large, round facial discs with dark outer rims, dark brown eyes and a yellowish-green bill.

In British Columbia, the Northern Spotted Owl is most likely to be confused with its close relative, the slightly larger Barred Owl. These species are best differentiated by their underparts. The Northern Spotted Owl is brown with oval white spots on the body feathers and white horizontal bars on the chest. The Barred Owl has vertical brown streaks on a whitish background and no white spots.

Like other owls, the Northern Spotted Owl has fluffy plumage that allows nearly soundless flight; sharply curved talons and a hooked bill to catch and tear apart prey; eyes adapted for night vision; and very acute hearing.

What makes them unique?

The owls as a whole are a unique group – phantom-like night hunters with eyes and ears that are sensitive to the dimmest light and faintest rustle. Several of British Columbia's 14 breeding owl species occur in coastal Pacific forests, but none seem to be so at home there as the Northern Spotted Owl and no others are restricted to that zone.

Though armed with a raptorial bill

and talons like the hawks and falcons, the style of the Northern Spotted Owl is not to attack with lightning stoop and bruising force, but rather to sit patiently on a perch and wait. This strategy is suited to foraging in dense forests at night. Not powerful flyers, these owls employ a few flaps and a silent glide to capture prey from tree branches or the forest floor. They are also adept at walking and climbing, useful traits in their cluttered forest habitat. If on the first try they miss a mammal on the ground, they often run after it on fully extended legs, with wings widespread for balance. They exhibit a rolling gait when they walk on the ground, or along a tree limb to cache prey or bring food to their young.

Vocal communication is important for keeping in touch at night and the Northern Spotted Owl has an array of at least 13 calls, including hoots, barks, whistles and chitters. These are associated with mating, territorial advertisement, approach of predators, contact between mates, begging for food, and other activities in the nightly life of the owls. This species is unusual in having the ability to learn the calls of its Northern Spotted Owl neighbours and make fine adjustments to its own call to imitate them. Recognition of neighbours' calls serves to limit territorial disputes.

Females can be distinguished from males by the higher pitch of their hooting calls. The best known nesting season call, made by both sexes and



known as the “four-note location call,” has been described as hoo—hoo—hoo—hooo. This call is the one most frequently imitated by biologists, either vocally or with a tape recorder, when censusing these owls at night. Thinking a stranger has invaded their territory, the resident owls respond and reveal their presence.

Being so closely tied to old-growth forest, the Northern Spotted Owl is a valuable barometer of the integrity and health of such ecosystems. It has been more intensively studied than any other owl and is one of the best understood old-growth residents. Knowledge of how individuals, pairs and populations of Northern Spotted Owls respond to various forest management measures can be instru-

mental in protecting other less-known wildlife species that have similar habitat requirements.

How do they reproduce?

Northern Spotted Owls are monogamous and adult pairs have weakly defended, overlapping home ranges of about 32 square kilometres in size. They occupy these territories for long periods, probably for life. The territories must be large enough to sustain an adequate population of Northern Flying Squirrels, their principal prey.

In fall and winter the adults lead a mostly solitary existence, but in late February or March – one to two months before egg-laying – the resident male and female begin to roost

together near the nest site. At this time they begin to call almost every night, particularly at dusk and dawn. Copulation sessions begin two to three weeks before egg-laying and continue until a few days after the last egg is laid. The male brings food nightly to his nest-bound mate during the laying, incubation and early brood-rearing stages, and roosts near the nest by day.

Nests are centrally located within a pair's home range, usually near streams or springs that are thought to be important for bathing and drinking. Along the Pacific coast, Northern Spotted Owl nests are almost always 10 to 50 metres above ground in large coniferous trees in old-growth stands. The typical nest is in an open-ended,

“stovepipe” cavity created by breakage at the top of a tree; the branches of secondary stems or neighbouring trees provide cover above the cavity. Alternatively, a cavity in the side of a tree may be used. These owls are sometimes platform nesters – using either abandoned stick nests made by hawks, woodrats or squirrels, or dense, misshapen clusters of mistletoe-infected branches known as “witches’ brooms.” Being large in diameter and prone to breakage, heart rot and dwarf mistletoe infection, old trees provide nest sites that are lacking in second-growth forest.

Northern Spotted Owls never build or even repair their nests; the female merely scrapes out a hollow in the needles, twigs and rotten wood that are already present. There she lays usually two, sometimes three or rarely four elliptical white eggs at three-day intervals. Incubation, beginning soon after the first egg is laid, is entirely by the female and takes about 30 days. During incubation, the female only leaves the nest for occasional 10 to 20 minute periods at night to regurgitate pellets, defecate or preen. For the first 10 days after the owlets hatch, she broods them almost constantly. After that she begins to make short forays to catch prey, but roosts with the young by day, until they are nearly ready to leave the nest. The pure white down of the newly hatched owlets is mostly replaced by their first or juvenile plumage by the time they are ready to

fledge – about 35 days after hatching. In British Columbia, egg laying probably occurs in early April, incubation in April and early May, and fledging from late May to early July.

Young Northern Spotted Owls are poor flyers when they leave the nest, often falling to the ground and then climbing trees or shrubs for safety. Researchers in Oregon found that several owlets fell from platform nests prematurely, at only 15 to 25 days of age, and were killed by the fall or by predators. This was not observed at cavity nests, which appear to be more secure brood-rearing sites. Fledged siblings stay together near the nest and are fed by their parents until late August or early September, but start catching some of their own food by late summer. In autumn they disperse randomly away from the nesting area and must fend for themselves. Juveniles often find territories within 5 to 20 km of their natal area, but may disperse 50 km or more during their first year.

Pairs normally nest in the same area for several years, although sometimes they have to switch trees when the old one dies, falls or rots away. In Oregon, about 60 percent of the adult pairs nest each year; the rest just hold down

The Northern Spotted Owl is a valuable barometer of the integrity and health of old-growth ecosystems.



their nest sites but don't lay any eggs. Usually about 80 percent of nesting attempts result in successful fledging of young. The causes of egg and nestling losses include occasional abandonment by adults, nest destruction due to predation or collapse of the tree, unexplained death of owlets in the nest, and premature departure of owlets from the nest. About 35 percent of the fledged young die by late August, a major cause being predation by ravens and by raptors like the Great Horned Owl, Red-tailed Hawk and Northern Goshawk.

Northern Spotted Owls may breed when one or two years old, but most young are produced by females that are three or more years old. They are long-lived birds, as shown by records of individuals surviving at least 25 years in captivity and 16 to 17 years in the wild. Such longevity is typical of species with a low reproductive rate and a high rate of adult survival.

What do they eat?

Largely inactive by day, the Northern Spotted Owl is a superb night-hunter, gliding swiftly and quietly from a perch to pounce on its unsuspecting prey. Most hunting occurs during the first two hours after sunset and again just before dawn. Being nocturnal, the owl must satisfy its dietary needs with animals that are also active at night. It specialises on small mammals, which comprise 90 to 95 percent of its diet.

Predominant food items vary throughout the range of the Northern Spotted Owl. In the wet coastal regions from British Columbia to Oregon the main prey is the Northern Flying Squirrel, which is most abundant in old-growth forests. Additional prey include the Deer Mouse and other mammals like woodrats, voles, moles and hares. In the more inland and drier parts of the owl's range, woodrats tend to be more important than flying squirrels. An intensive study in Oregon determined that Northern Spotted Owls killed 31 kinds of mammals, including snowshoe hares. Birds comprise only about five percent of the owl's diet. Large insects and the occasional reptile are also eaten.

Prey are caught on the ground or in trees. The owls seize their victims with their talons and use their beak to kill them by crushing their skull or breaking their neck. They usually eat mammals headfirst, a common practice of owls and hawks. Small mice may be swallowed whole, but most mammals are dismembered and the stomachs and tails discarded. Northern Spotted Owls regularly cache or store excess food and retrieve it later. Cached food is wedged securely in place with the beak, either in trees or on the ground beside a log, tree or large rock.

Studies of radio-tagged Northern



ADULT NORTHERN SPOTTED OWL.
Jared Hobbs photo

Spotted Owls in areas with a mixture of logged land and old-growth forest have shown they have a strong preference for foraging in old-growth stands. Areas that have been clearcut or burned within the previous 20 years are rarely used for hunting.

Where do they live?

Northern Spotted Owls live in western North America, from southern British Columbia to central Mexico. Three subspecies or geographic races have been described. The Mexican Spotted Owl inhabits mountainous terrain from Colorado southward into Mexico. The California Spotted Owl is found in the dry forests and canyons of interior and south-coastal California. The Northern Spotted Owl is restricted to the temperate coniferous forests from northern California to extreme southwestern British Columbia. The range in British Columbia is very small: north to the vicinity of the Elaho River, Pemberton and Carpenter Lake, and east to the Fraser Canyon, the Coquihalla and Manning Park. They do not occur on Vancouver Island.

In British Columbia, Northern Spotted Owls have been found from sea level to 1370 metres elevation within the Coastal Western Hemlock, Mountain Hemlock, Interior Douglas-

fir and Englemann Spruce-Subalpine Fir zones. The characteristics of their preferred habitat include numerous large trees and snags with broken tops, large cavities or mistletoe-infected limbs to provide nest sites; lots of logs and woody debris which encourage the presence of small mammal prey; and a canopy that is open enough to allow owls to fly within and beneath it, and is sufficiently multi-layered to provide roosting and foraging perches at a variety of heights.

These habitat features are most often found within old-growth and mature forests. Although owls have been observed using younger forests in drier parts of their range, these have generally been forests that contained some structural characteristics of old-growth – such as large trees, snags and downed logs – left behind after fire, wind or selective logging removed the majority of the trees.

Surveys in British Columbia have identified breeding pairs in the Capi-lano, Seymour and Coquitlam river watersheds near Vancouver; the Lillooet River watershed; the Fraser River area south of Lytton; the upper Chehalis and Chilliwack river watersheds; around Boston Bar, Hope and the Skagit River; and in Manning Park and the upper Similkameen. This species may also occur slightly beyond the known range, but further surveys are needed to confirm or disprove this. Northern Spotted Owls are now absent from the heavily settled Greater Vancouver-Fraser Valley area and scarce in extensively logged valleys like the Squamish-Pemberton corridor.

What can we do?

Research on the Northern Spotted Owl has documented its dependence on coastal old-growth, the most commercially valuable forest

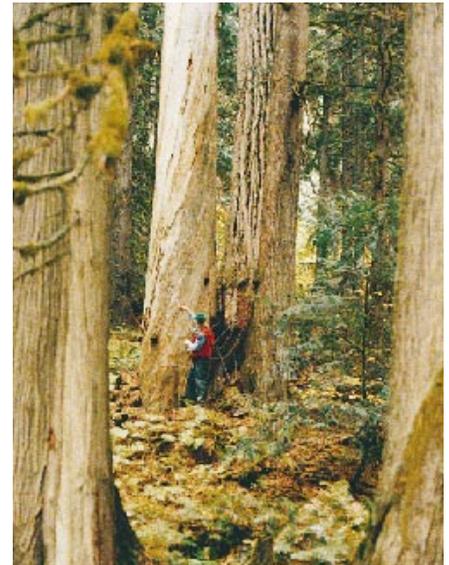
stands in North America. Outside of parks, the majority of old-growth in this owl's range has already been logged. The remainder is in some jeopardy and owl populations are declining. Although more inventory and research is always desirable, we already have clear evidence that this owl can survive only if reserves containing significant amounts of mature or old-growth forest are provided for it. Such reserves will, of course, also benefit many other organisms.

In 1994, the Canadian Spotted Owl Recovery Team completed a recovery plan for the species which included a variety of options addressing both owl conservation and economic impacts. A joint Ministry of Environment, Lands and Parks and Ministry of Forests team then developed a management plan, released in 1997. This plan allows for permanent protection of some key habitat through the Protected Area Strategy and for the establishment of Special Resource Management Zones, each maintaining 2 to 13 breeding pairs of owls, in the Chilliwack and Squamish Forest Districts. Forest practices in these zones will be directed towards creating, enhancing or maintaining 67 percent of the area of these zones in suitable Northern Spotted Owl habitat conditions. Owls found outside the zones should still receive some protection through the biodiversity guidelines of the Forest Practices Code. The probability of maintaining or even slightly increasing existing population levels with these management practices is estimated at 60 percent.

The public can help Northern Spotted Owls by supporting endangered species programs and by encouraging government to place a high priority on maintaining and recovering endangered and threatened species and their habitats. Naturalists are urged to become familiar with Northern Spotted Owl calls and to report sightings of this



THIS SIMILARLY-SIZED BARRED OWL HAS VERY DIFFERENT MARKINGS THAN THE NORTHERN SPOTTED OWL. *Jared Hobbs photo*



NORTHERN SPOTTED OWLS PREFER OLD-GROWTH FORESTS SUCH AS THIS FOR NESTING. *Dave Dunbar photo*

vulnerable and intriguing bird. Half the people in British Columbia share the Lower Mainland region with the Northern Spotted Owl. Good neighbours should be concerned about what is happening next door. As goes the Northern Spotted Owl, so will go other wildlife species, and we will be the poorer for losing them. ❏



SPOTTED OWL NESTLING. *Dave Dunbar photo*

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