COSEWIC
Assessment and Update Status Report

on the

Northern Spotted Owl
Strix occidentalis caurina

in Canada

ENDANGERED
2000

COSEWIC
COMMITTEE ON THE STATUS OF
ENDANGERED WILDLIFE
IN CANADA

COSEPAC
COMITÉ SUR LA SITUATION DES
ESPÈCES EN PÉRIL
AU CANADA

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For additional copies contact:

COSEWIC Secretariat
c/o Canadian Wildlife Service
Environment Canada
Ottawa, ON
K1A 0H3

Tel.: (819) 997-4991 / (819) 953-3215
Fax: (819) 994-3684
E-mail: COSEWIC/COSEPAC@ec.gc.ca
http://www.cosewic.gc.ca

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COSEWIC
Assessment Summary

Assessment Summary – May 2000

Common name
Northern Spotted Owl

Scientific name
Strix occidentalis caurina

Status
Endangered

Reason for designation
Numbers of this habitat specialist are very small in Canada. It requires old growth coniferous forests, which are decreasing in extent and becoming highly fragmented.

Occurrence
British Columbia

Status history
Designated Endangered in April 1986. Status re-examined and confirmed in April 1999 and in May 2000. May 2000 assessment based on new quantitative criteria applied to information from the existing 1999 status report.

COSEWIC
Executive Summary

Northern Spotted Owl
Strix occidentalis caurina

Distribution

The Northern Spotted Owl breeds in the coastal mountains and eastern and western slopes of the Cascade Mountain Range from northern California through Oregon and Washington to southwestern British Columbia (B.C.). In Canada, Northern Spotted Owls occur only in B.C., where they are found as far north as Anderson Lake, east to Mowhawkum Creek and west to Capilano River. Northern Spotted Owls occur from sea level to about 1370 m altitude in the northern range.

Protection

In B.C., the Northern Spotted Owl is protected under Section 34 of the Wildlife Act which prohibits the taking of eggs, or the destruction of nestlings, nesting adults or active nests. The species is also on the Provincial Wildlife Branch Red List. In 1995, the B.C. government announced a management plan for the Northern Spotted Owl based on three approaches: a Protected Areas strategy, the Forest Practices Code and other land use and resource management initiatives.

Population

There are currently estimated to be less than 100 resident pairs of Northern Spotted Owls in B.C. Between 1985 and 1996, at least 98 adult owls were recorded at 60 sites; 38 of these were resident pairs. In more recent years, breeding was confirmed at nine sites and pairs were recorded at 25 of 39 active sites. In 1985, six Spotted Owl sites were located in southwestern B.C.; three new sites were found in 1986, as well as three new pairs and two single owls in 1987.

Population trends for the species are hard to determine because 1) intensity of survey effort has increased over recent years; 2) the species is widespread and occurs at low density and is therefore difficult to monitor; 3) because of the longevity of owls and the presence of adult and sub-adult floaters it is hard to determine whether populations are declining or not. Even if a population is undergoing an overall decline, territorial owls that die will be replaced by floaters.

Because the area of old-growth forest in southwestern B.C. has decreased since the 1900s, it is likely that historical populations of Northern Spotted Owls were larger and that the range of the species was more extensive. On the other hand, while urban and agricultural development in the lower Fraser River valley has removed extensive former Spotted Owl habitat, evidence exists that the range of the species has extended into Douglas fir forest in the interior.

Habitat

The Northern Spotted Owl is associated with dry, interior, late successional or old growth forest. While the habitat requirements of the species in B.C. were previously assumed to be similar to those of owls in Washington state, detailed research is needed to evaluate the habitat associations of the species in B.C.

Although they will use mixed conifer-hardwood stands, generally in wet forest types, Northern Spotted Owls use stands dominated by conifers. Pure hardwood stands may be used in summer for foraging and roosting, but these stands are not used in winter. In dryer forest types, Spotted Owls use pure fir or mixtures of pine and fir or other mixed conifer forests (but with > 20% Douglas-fir and grand fir). Forest composition and structure have important implications for prey species of the Spotted Owl. For example, in Douglas-fir forests, ectomycorrhizal fungi are important food sources for flying squirrels which are in turn the most important prey of the Spotted Owl.

Owls will use younger forest types in some regions, probably mostly for foraging, but their densities there are very low. Young forests used by Northern Spotted Owls tend to have structural characteristics resembling old growth forests (e.g., large trees, snags and downed logs) that were created by disturbances such as fire, windthrow and selective logging. Such habitats occur in interior Douglas-fir and dryer submaritime Coastal Western Hemlock.

Biology

The species is highly territorial, resident year-round and monogamous. While individuals occasionally breed in their first year, most pairs do not breed every year and sometimes not for 5-6 years. Clutch size is 1-4 eggs. No information exists on demographic parameters for Spotted Owls in B.C. Studies in the United States suggest that there is geographic, annual and individual variation in reproduction. In some areas 62% of pairs may attempt to breed and nesting success ranges from 0-100%.

Limiting factors

The main limiting factors for the Northern Spotted Owl are habitat availability (old growth and late successional forest) and food supply. Logging diminishes overall habitat for the Northern Spotted Owl by affecting landscape configuration. Habitat fragmentation, isolation, and lack of connectivity affects owls' dispersal capabilities and mortality). Logging also has indirect effects by improving habitat for some of the Northern Spotted Owl's predators/competitors (e.g., Great Horned Owl, Northern Goshawk, Barred Owl).

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) determines the national status of wild species, subspecies, varieties, and nationally significant populations that are considered to be at risk in Canada. Designations are made on all native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fish, lepidopterans, molluscs, vascular plants, lichens, and mosses.

COSEWIC MEMBERSHIP

COSEWIC comprises representatives from each provincial and territorial government wildlife agency, four federal agencies (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biosystematic Partnership), three nonjurisdictional members and the co-chairs of the species specialist groups. The committee meets to consider status reports on candidate species.

DEFINITIONS

Species	Any indigenous species, subspecies, variety, or geographically defined population of wild fauna and flora.
Extinct (X)	A species that no longer exists.
Extirpated (XT)	A species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A species facing imminent extirpation or extinction.
Threatened (T)	A species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.
Not at Risk (NAR)**	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)***	A species for which there is insufficient scientific information to support status designation.

* Formerly described as “Vulnerable” from 1990 to 1999, or “Rare” prior to 1990.
** Formerly described as “Not In Any Category”, or “No Designation Required.”
*** Formerly described as “Indeterminate” from 1994 to 1999 or “ISIBD” (insufficient scientific information on which to base a designation) prior to 1994.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list.

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The Canadian Wildlife Service, Environment Canada, provides full administrative and financial support to the COSEWIC Secretariat.

Update
COSEWIC Status Report

on the

Northern Spotted Owl
Strix occidentalis caurina

in Canada

David A. Kirk[1]

1999

[1]Aquila Applied Ecologists
C.P. 87
Carlsbad Springs, ON
K0A 1K0

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INTRODUCTION

In Canada the Northern Spotted Owl *Strix occidentalis caurina* occurs only in south-west British Columbia (B.C.). It was listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 1984 (Campbell and Campbell 1984) because of its association with late seral coniferous forests and the loss of this habitat as a result of timber harvest and development (urban and agricultural). There was also a paucity of historical records for the province (n=28). The species is thus "threatened with imminent extinction throughout all or a significant portion of its Canadian range". Since the original COSEWIC report, extensive surveys have been conducted to determine Spotted Owl distribution and abundance. At the request of the Committee for Recovery of Nationally Endangered Wildlife (RENEW), the B.C. director of wildlife established the Canadian Spotted Owl Recovery Team (SORT) whose mandate was to determine the status of Spotted Owls and develop a recovery plan. Because the recovery plan had implications for forest management and thus potentially economic and social impacts, a management plan was developed (Dunbar and Blackburn 1994). A Spotted Owl Management Plan was initiated in 1995 in order to provide stability and long-term viability to the population of Spotted Owls in B.C. It was also initiated in order to assuage fears of impact on the forest industry in B.C. within the range of the Northern Spotted Owl.

DISTRIBUTION

In Canada, the Northern Spotted Owl is resident as far north as Anderson Lake, east to Mowhawkum Creek, west to Capilano River in southwestern British Columbia (SOMIT 1997b, Cannings 1998) (Fig. 1). They occur from sea level to 1370 m elevation in the Coastal Western Hemlock (CWH), Mountain Hemlock (MH), Interior Douglas-fir (IDF) and Engelmann Spruce - Subalpine Fir (ESSF) biogeoclimatic zones (Blood 1998). The distribution is continuous with the United States population and thus extends southwards to the International border. In the western United States, the Northern Spotted Owl occurs in the coastal mountains and eastern and western slopes of the Cascade range in Washington and Oregon to northern California (Gutierrez *et al.,* 1995). The species occurs in the coastal ranges of California south to Marin County and as far east as the limits of mixed conifer forest in Washington, Oregon and California (USDI 1992).

Two other subspecies occupy more southerly portions of the species' range. The California Spotted Owl *S. o. occidentalis* is found in California from the southern Cascade Range and northern Sierra Nevada south to the western Sierra Nevada and Tehachapi Mountains, and locally east of the Sierra Nevada crest south to northern Baja California (Gutierrez *et al.,* 1995). The Mexican Spotted Owl *S. o. lucida* occurs in forested and isolated mountain ranges from southern Utah and Colorado south to Michoacan, Mexico (Gutierrez *et al.,* 1995).

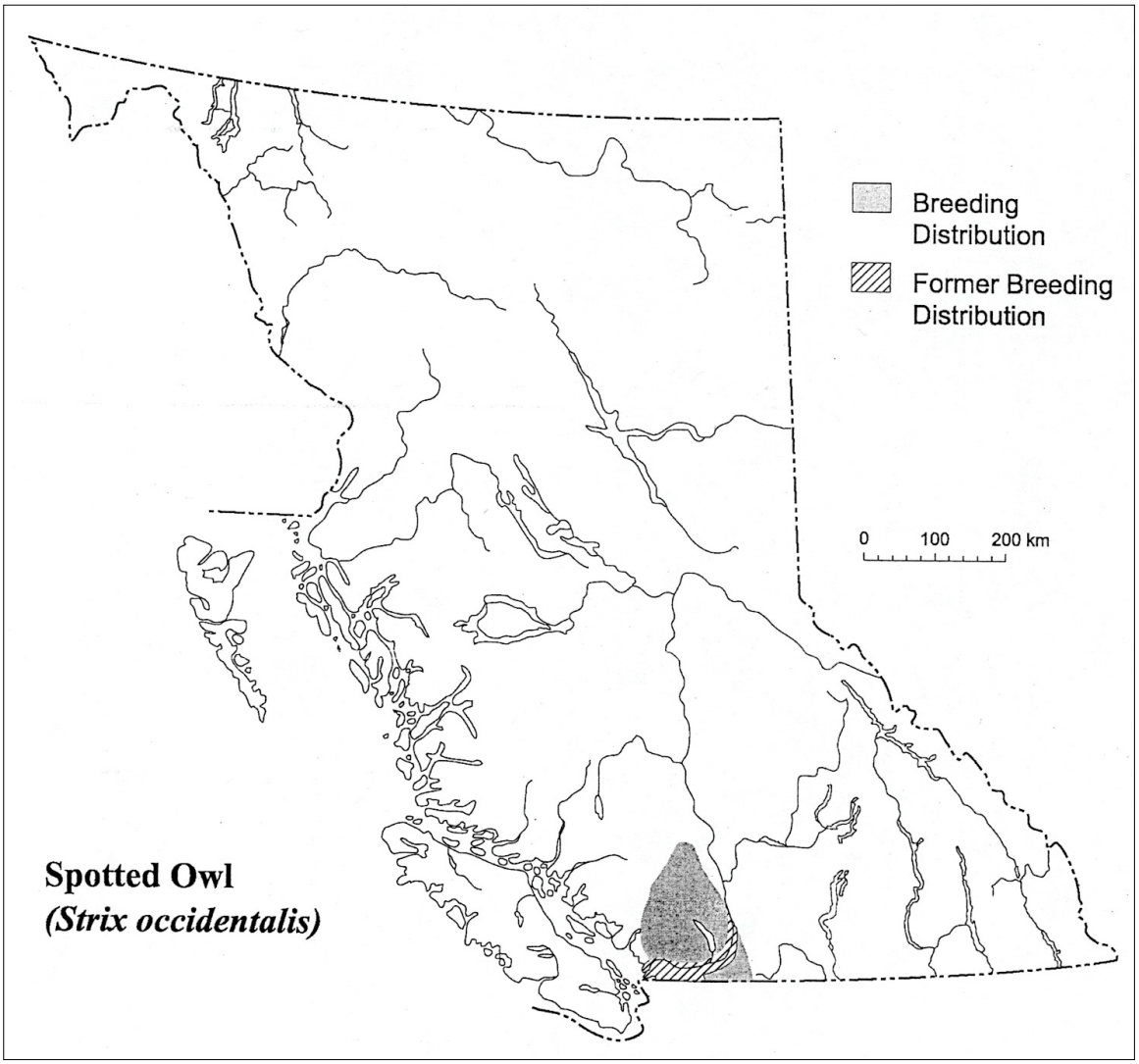

Figure 1. Distribution of the Northern Spotted Owl in British Columbia (from Fraser *et al*. 1999).

There are marked differences in the population density of owls related to habitat quality (Thomas *et al.,* 1990). Although Spotted Owls are year-round residents there may be some altitudinal migration to lower (or sometimes higher) elevation forests that are not used for breeding (references in Gutierrez *et al.,* 1995).

The surveys conducted on Northern Spotted Owl distribution in B.C. since 1985 have varied in intensity, coverage and timing. Hence they may not accurately reflect owl distribution and abundance. While most habitat has not been severely changed since historical times, there are some areas where habitat has been completely removed by development. For example, urban and agricultural development have transformed most of the lower Fraser River Valley.

POPULATION NUMBERS, SIZE AND TRENDS

The latest estimate of the population size of Northern Spotted Owls in B.C. is fewer than 100 pairs. At least 98 adult owls have been recorded at 60 sites; 38 of these were resident pairs (SOMIT 1997a).

It is difficult to determine trends for this species for several reasons. First, intensity of survey effort has increased over recent years, so total population estimates have also increased. The species is widespread and occurs at low density and is therefore difficult to monitor; most historic records are from areas that were populated by, and accessible to, humans. Second, because of the longevity of owls and the existence of adult and sub-adult floaters, it is hard to determine whether populations are declining or not. Thus even if a population is undergoing an overall decline, territorial owls (those that can be monitored) that are lost will be replaced by floaters.

(Campbell *et al.,* 1990) considered the Northern Spotted Owl to be a rare, local resident species. At the time of the COSEWIC status report (Campbell and Campbell 1984) there were only 28 historical records of the Spotted Owl in British Columbia.

In 1985, six Spotted Owl sites were located in southwestern British Columbia; three new sites were found in 1986, as well as three new pairs and two single owls in 1987 (Forsman and Dunbar 1985, Forsman and Booth 1986, Hetherington *et al.,* 1987). Based on playback tapes, a density of only 0.03 owls/km in 1985 and 0.018 owls/km was estimated in 1986. Nesting has been confirmed in the vicinity of Garibaldi and Mannings Parks and the owl probably breeds throughout its range in the province (Campbell *et al.,* 1990).

Between 1985 and 1996, a minimum of 60 active sites (98 adult owls) have been found in B.C. Active sites are considered those where there was a recent detection - within 5 years - of a single owl or pair. In more recent years, breeding was confirmed at nine sites and pairs were recorded at 25 of 39 active sites.

Extrapolations from modelling performed on owl populations in the Pacific Northwest suggest that all five study populations declined between 1985-1991 (Marcot and Holthausen 1987, USDA 1988, Doak 1989, Lande 1988, Noon and Biles 1990, Thomas *et al.,* 1990, Lutz 1992, Lamberson *et al.,* in press, Lahaye *et al.,* 1992). Thus Spotted Owl populations may be declining throughout most of their range in North America (Thomas *et al.,* 1990, USDI 1992).

The SOMIT believes this also to be true of populations in B.C. Given that the area of old-growth forest in southwestern B.C. has decreased dramatically since the 1900s, it is highly probable that historical populations of Spotted Owls were both larger and more extensive. For example, urban and agricultural development in the lower Fraser River valley has removed extensive former Spotted Owl habitat. There is some evidence that the species has increased its range into Douglas fir forest in the interior (D. Dunbar, pers. comm.).

No information exists on demographic parameters for Spotted Owls in B.C. Studies in the United States suggest that there is geographic, annual and individual variation in reproduction. Apparently 62% of pairs may attempt to breed (16-89%; Forsman et al. 1984) and nesting success ranges from 0-100% (USDI 1992).

HABITAT

The Northern Spotted Owl is associated with late successional or old-growth forest in the Pacific Northwest of the United States and the province of B.C. There have been limited efforts to determine the habitat requirements of Spotted Owls in British Columbia (Dunbar and Blackburn 1994) and most extrapolations have been made from Washington state, the closest locality to B.C.'s Spotted Owls (see Hanson *et al.,* 1993 for summary). There is an urgent need for detailed research on the habitat requirements of the species in British Columbia (SOMIT 1997). Radio-telemetry studies show that owls select mature or old forest stands in preference to young stands (e.g., Forsman *et al.,* 1984, Carey *et al.,* 1990, 1992).

In wet forest types, Spotted Owls generally use stands dominated by conifers, although they will use mixed conifer-hardwood stands. While pure hardwood stands may be used in the summer for foraging and roosting, such stands are not used in the winter. In dryer forest types, Spotted Owls use pure fir or mixtures of pine and fir or other mixed conifer forests (but with > 20% Douglas-fir *Pseudotsuga menziesii* and grand fir *Abies grandis*). Forest composition and structure have important implications for prey species of the Spotted Owl. For example, ectomycorrhizal fungi in Douglas-fir are important food sources for flying squirrels *Glaucomys sabrinus* which in turn are the most important prey of the Spotted Owl.

The best quality habitat (for nesting, roosting, foraging and dispersal) is generally in stands older than 140 years with heights greater than height class 2 (i.e. stand type A below). In wetter maritime zones, such stands are uneven-aged with a multi-layered, multi-species canopy and are dominated by large overstorey trees (76 cm diameter at breast height (dbh) with 60-80% canopy closure) at a density of 37-185 stems/ha. They also have a high incidence of large trees with deformities (cavities, deformed limbs or broken tops) and snags (76 cm dbh at 5 stems/ha), as well as downed woody debris and fallen trees (these are important for mammalian prey such as flying squirrels, voles, shrews and mice). The tree canopy must be sufficiently open to allow owls to fly within and beneath it (see Thomas *et al.,* 1990; USDI 1992; Hanson *et al.,* 1993).

Habitat of moderate quality (type B) are forest stands of 100-140 years of age of height class > 2 and canopy cover 60-80%. It has few canopy layers, a multi-species canopy dominated by large (> 51 cm dbh) overstorey trees (247-457 stems/ha but sometimes as little as 86 stems/ha if trees are large dbh). It also has some large trees with deformities, as well as large snags (> 51 cm dbh) and downed woody debris and fallen trees.

Type C habitat is of marginal quality — young forest stands resulting from windthrow or fire — with some old-growth or mature element/structural component. Such habitats may also be the result of partially-harvested stands which had only 40% of timber by volume removed, but still contain structural elements preferred by Spotted Owls.

Owls will use younger forest types in some regions, probably mostly for foraging. However, their densities in these young forests are very low. Young forests used by Spotted Owls tend to have structural characteristics that resemble old-growth forests (e.g., large trees, snags and downed logs) that were created by disturbances such as fire, windthrow and selective logging. Such habitats occur in interior Douglas-fir (IDF) and dryer submaritime Coastal Western Hemlock (CWH). This suggests that some young forests may be made more suitable for use by Spotted Owls through management. Spotted Owls have not been recorded in the wetter Coastal Western Hemlock biogeoclimatic zone in British Columbia in forests < 120 years old (Blackburn 1991).

The wetter maritime forest types (CWH and MH) biogeoclimatic zones in B.C. resemble those in the western Washington Cascades, while the dryer forest types (IDF, submaritime CWH and leeward MH) resemble the eastern Washington Cascades.

In dryer submaritime ecosystems, the best quality (type A) habitat consists of old-growth amabilis fir *Abies amabilis*, Douglas-fir and ponderosa pine *Pinus ponderosa* forest. Again canopies are multi-species, and multilayered; large overstorey trees (> 51 cm dbh) dominate (173-247 stems/ha or as low as 86 stems/ha where there are large trees). Some large trees have deformities (see earlier), there are large snags (51 cm dbh, > 7 stems/ha) and these stands also have downed woody debris with fallen trees (> 51 m dbh).

Type B habitat also has a multi-layered, multi-species canopy with overstory trees of c 30 cm dbh dominating. To qualify as type B habitat 20% of the overstory in these stands must be composed of Douglas-fir or hemlock and they must have 50% canopy closure. In addition type B stands have dominant live trees with deformities (i.e. large cavities, broken tops and dwarf mistletoe infections); at least some of the snags and downed logs must be similar size (dbh) to standing dominant live trees.

As in wetter ecosystems type C habitats are generally younger stands at low or mid-elevation where some element or structural components of old-growth remain. This habitat may be composed of a mosaic of small, older stands located within an area of young stands. It may consist of sites that were high-graded historically (with less than 40% by volume of timber removed), but retain structural or old-growth components. Stands that are on rocky or poor soils but otherwise have characteristics of stand types A and B also fall into the Type C category, as do stands that are dominated by Ponderosa pine with only 10% or less of the overstory as Douglas-fir (SOMIT 1997a).

Although there have not been any radio-telemetry studies of home range completed to date in B.C., median annual home range size in the Western Cascades was 3321 ha and in the Eastern Cascades, 2675 ha (Hanson et al. 1993). Therefore,

during the preparation of the management plan and operational guidelines for B.C. a median annual home range size was used for each part of Washington state to correspond with the wetter and dryer ecosystem types. Similarly, the median amount of suitable habitat within each territory was also used. It should be borne in mind that these home range sizes were derived from small samples from a declining population of Spotted Owls in Washington state. Therefore, their application to B.C. forests should be viewed with caution. Moreover, within the western United States, home range size increases northwards, suggesting that Spotted Owls in British Columbia may have even larger home ranges than is currently assumed (SOMIT 1997a).

LIMITING FACTORS

The main single limiting factor for the Northern Spotted Owl is probably habitat availability (old-growth and late successional forest) and food supply (Barrows 1981, Gutierrez 1985, Forsman *et al.,* 1987, USFWS 1989).

Timber harvest

Within the range of the Spotted Owl in B.C., 3000 ha is harvested annually. This logging has several direct impacts on Spotted Owls. First, logging alters forest structure and composition. The type of logging clearly determines its effect on Spotted Owl populations. Obviously clear-cuts would completely remove Spotted Owl habitats, whereas partial cuts (e.g., selection cutting or shelterwood systems would have lower impact). The volume of timber removed determines the effect of harvesting on Spotted Owls.

A second effect of logging is that individual pairs of owls become increasingly isolated. This has repercussions for the population viability of Spotted Owls in B.C.

Third, logging increases fragmentation and decreases the continuity of forest blocks, thus rendering stands unsuitable for Spotted Owls. This affects the productivity of owls as well as decreasing their dispersal capacity and increasing mortality. The area that is currently, or will in the future, be protected from logging amounts to 156,717 ha. Most of this land (71%) is within Golden Ears, Garibaldi, and Mount Judge Howay parks; the remaining 24% is in Manning, Skagit and Cascade parks.

One goal of the Spotted Owl management plan is to provide suitable owl habitat at an earlier stage than would be achieved by natural succession. This would extend the area of habitat suitable for Spotted Owls to a larger area base.

Food supply

Spotted Owls generally prey on nocturnal or arboreal forest mammals (Thomas *et al.,* 1990). From central Oregon to B.C. they mainly prey upon flying squirrels. Given that woodrats *Neotoma spp.* and voles *Clethrionomys occidentalis* have become an increasingly important component of the diet of Spotted Owls in southwestern Oregon

and northwestern California, owls found in dry submaritime forests in B.C. may have similar diets.

The food supply available for Spotted Owls is determined by forest type, structure and composition. Thus, in Washington, flying squirrels are almost twice as abundant in old-growth as any other forest types (Carey 1992). Therefore, forest management practices have an important effect on prey populations and subsequently Spotted Owl densities.

Competition and predation

Logging may also have the indirect effect of increasing habitat suitability for predators (such as the Great Horned Owl *Bubo virginianus,* Northern Goshawk *Accipiter gentilis,* Red-tailed Hawk *Buteo jamaicensis*) or competitors (like the Barred Owl *Strix varia*). The Great Horned Owl is the most common predator of the Northern Spotted Owl (Miller 1989). However, the degree of threat from this species is unknown. Generally Great Horned Owls occur in areas that are more fragmented than those inhabited by Spotted Owls; they also contain significantly less mature/old-growth or interior forest (but more shrub/forb, sapling and shelterwood stands) with greater edge to area ratios (Johnson 1993). To some extent Barred Owls and Spotted Owls are spatially segregated. Barred Owls generally occur at low elevation where there are young hardwood forests containing riparian habitat, whereas Spotted Owls are more likely found in middle to high elevation forest where there are still some old-growth conifer forests. However, there is evidence that Barred Owls may displace, hybridize with, or be a predator of, the Spotted Owl (Dunbar *et al.,* 1991, Hamer 1994, Leskiw and Gutierrez 1998).

Population viability – island effects – genetic variability

Because the population of Spotted Owls in B.C. is so small it is susceptible to stochastic environmental or demographic events.

The fact that Spotted Owls occur on the periphery of their range in B.C. may make this population a critical component of the genetic variability in the continental population. This is because this population occurs in a harsher climatic zone in a less predictable habitat.

SPECIAL SIGNIFICANCE

This species is a symbol of late seral stage coniferous forests in the western United States and B.C.; its conservation has aroused heated debate between the logging industry, economists, wildlife biologists, environmentalists and the United States government. Over the last decade there has been huge scientific interest and public discussion over the conservation of the Spotted Owl (Forsman *et al.,* 1984, Verner *et al.,* 1992, USDI 1992, Yaffee 1994). This species has become a catalyst for the development of new conservation strategies and the advancement of ornithology as a

science in general (Gutierrez *et al.,* 1995). It also symbolizes the difficulties and dilemmas faced by conservationists attempting to integrate the needs of a threatened species (and the protection of unique ecosystems) with human economic and social needs. Given the situation in the United States, there is great concern in B.C. over the economic and social implications of protecting Spotted Owl habitat, both on local communities and the forest industry.

PROTECTION

In British Columbia, the Northern Spotted Owl is protected under Section 34 of the Wildlife Act which prohibits the taking of eggs, or the destruction of nestlings, nesting adults or active nests. It is on the provincial Red List, meaning it is designated as an endangered species under the B.C. Wildlife Act (Fraser *et al.,* 1999). The Conservation Data Centre ranking for the province is S1, meaning critically imperiled because of extreme rarity. The CDC global rank for the Northern Spotted Owl is G3, indicating that it is rare or uncommon and may be susceptible to large-scale disturbances. Gutierrez *et al.,* (1995) estimated the population in North American at a minimum of 8500 pairs but with a downward trend. Both the Northern Spotted Owl and Mexican Spotted Owl (*S. o. lucida*) are listed as threatened under the U.S. Endangered Species Act (USDI 1990, 1993).

In 1995, the B.C. government announced a management plan for the species based on three approaches: a Protected Areas Strategy, the Forest Practices Code and other land use and resource management initiatives. A management plan, strategic plan and operational plan were then prepared to integrate the needs of the Spotted Owl with commercial timber harvest. The goal of this strategy is to achieve “a reasonable level of probability that owl populations will stabilize and possibly improve over the long term without significant short-term impacts on timber supply and forest employment”.

Permanent protection of Spotted Owl habitat will be achieved through the Protected Areas Strategy. Spotted Owl Conservation areas will be protected under the Forest Practices Code in protected areas and as Special Resource Management Zones (SRMZs) in the Chilliwack and Squamish Forest Districts. Together, these cover a land area of about 363,000 ha. Forest management within the SRMZs will be geared towards creating new habitat or maintaining or enhancing existing Spotted Owl habitat. The intention is that these will return to, or achieve, 67% habitat suitability for Spotted Owls. This will be brought about at the operational level through Resource Management Plans (RMPs) which will identify stand and landscape level management strategies for both Spotted Owl conservation and human socio-economic needs.

The RMPs are comprised of a series of eight steps which are: 1) owl inventory to determine critical habitats; 2) establishment of activity centres (averaging 3200 ha and circular in shape to encompass the median annual home range of breeding Spotted Owls); 3) forest stand inventories to determine how much type A and type B habitat (see Habitat) are available; 4) within each activity centre (which may or may not be occupied

by owls) maintain at least 50% of the forest stand as type A habitat, as well as maintaining large patches (500 ha +) and corridors (> 1 km wide) of owl habitat and a 500 m buffer zone around nest and roost sites. In order to reduce impacts on timber supply, the area designated as owl habitat should include inoperable forests, sites with low productivity, sites set aside for aesthetic objectives, environmentally sensitive areas, Forest Practice Code requirements, and other red/blue listed or regionally important wildlife habitat needs); 5) harvest and silvicultural priorities include salvage cuts in areas with catastrophic damage and clearcuts if the remaining stands provide 67% of suitable habitat. Clearcuts should be in large blocks to reduce fragmentation. Other types of harvest designed to enhance owl habitat include: partial harvest of 80- to 100-year-old stands, thinning in 30- to 80-year-old stands and partial harvest in stands 100 years +; 6) step 6 includes joint approval of the plan by government agencies; 7) make changes to the RMPs according to changing needs; and finally 8) submit the RMP for approvals. Detailed operational guidelines are contained in SOMIT (1997b).

EVALUATION AND PROPOSED STATUS

Unfortunately, the management plan (SOMIT 1997 a,b) has a limit on the number of Spotted Owls that can be effectively protected since it stipulates that only 67% of owl habitat is protected. There is also a proviso that within SRMZs the maintenance or enhancement of Spotted Owl habitat and populations will only be implemented if it results in no more than a 10% reduction in timber supply. Furthermore, 159,000 of the 363,000 ha slated for inclusion within SRMZs is already under protected area status.

Also, concessions have been made to the logging industry so that some areas with known breeding owls will be logged (D. Dunbar pers. comm.). Given the small size of the population and the fact that it is also much reduced from historical levels this could have serious implications for the viability of Spotted Owl populations in British Columbia.

Because of its small population, specific habitat requirements and susceptibility to habitat changes caused by logging, I propose that the “Endangered” status be maintained for the Northern Spotted Owl in Canada. Further work is needed to evaluate habitat requirements home range, and detailed long-term studies of reproduction and dispersal in different forest types in B.C. are essential.

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THE AUTHOR

David A. Kirk obtained his Masters degree in conservation from University College London in England in 1983 and his Ph.D. in zoology from the University of Glasgow (Scotland) in 1989. He has 16 years experience as a research ecologist designing and conducting fieldwork and scientific writing. He has a special interest in applied ecological research and has worked the last nine years as a consulting research ecologist. He has provided recommendations on forest management or farmland management to enhance and conserve wildlife, especially birds. More specifically, he has a long-standing interest in raptor conservation and management and for nine years (1969-1978) he rehabilitated wild raptors that were orphaned or incapacitated.