

“QUEEN CHARLOTTE” NORTHERN SAW-WHET OWL

Aegolius acadicus brooksi

Original prepared by R.J. Cannings

Species Information

Taxonomy

The genus *Aegolius* is a New World taxon consisting of four species; two are resident in the neotropics, another is widespread across the boreal forests of the Northern Hemisphere, and the fourth, the Northern Saw-whet Owl, is restricted to temperate forests in North America. *Aegolius acadicus brooksi* is the only subspecies of the Northern Saw-whet Owl other than the nominate form that occurs throughout the remainder of the range. *A. acadicus brooksi* is separated from the nominate form on the basis of colouration—the white spotting on the dorsal feathers of the nominate form is replaced by rich buff spotting in *A. acadicus brooksi* (Flemming 1916; Cannings 1993; Sealy 1998). The vocalizations of the two forms are similar, but tend to be higher pitched in *A. acadicus brooksi* (R.J. Cannings, unpubl. data).

Description

A tiny owl (male 75 g; female 100 g), with small head and no ear tufts. Sexes alike. Upper parts greyish to reddish brown, finely spotted with buffy white especially top of head, scapulars, and wings; around back of neck a narrow half-collar of mixed black and white. Lower breast and abdomen, white striped with dark brown. Tail dark brown with six or seven white cross-bars. Yellow eyes.

Distribution

Global

The Northern Saw-whet Owl breeds throughout southern Canada and the northern United States, south at higher elevations to South Carolina in the Appalachians and Oaxaca in the western cordillera. *A. acadicus brooksi* is restricted to the Queen Charlotte Islands (Cannings 1993).

British Columbia

The Queen Charlotte subspecies is a non-migratory resident on the Queen Charlotte Islands. There are a few records of individuals of the mainland population (*A. acadicus acadicus*) migrating through the Queen Charlottes, but no records of *A. acadicus brooksi* from the mainland (Sealy 1998).

Forest region and district

Coast: Queen Charlotte Islands

Ecoprovinces and ecosections

COM: QCL, SKP, WQC

Biogeoclimatic units

CWH: vh1, wh1, wh2

Broad ecosystem units

Breeding: primarily HS, some CH

Foraging: CB, CH, HS, SR

Elevation – (breeding)

0–1220 m

Life History

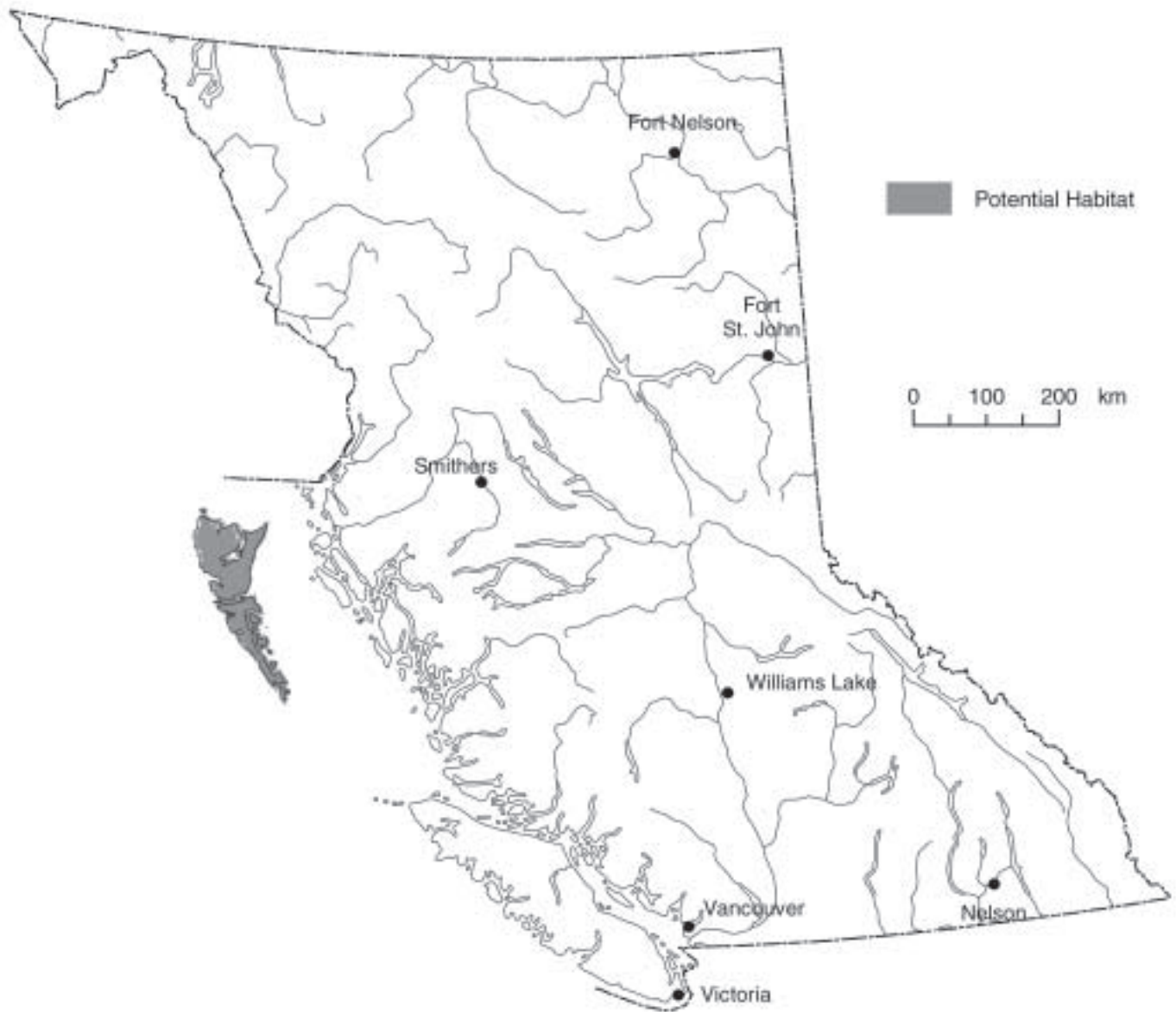
Diet and foraging behaviour

The Northern Saw-whet Owl feeds almost exclusively on small mammals such as deer mice (*Peromyscus*) and shrews (*Sorex* spp.) but will also eat small birds (e.g., Ancient Murrelet [*Synthliboramphus antiquus*] fledglings) and insects (Cannings 1993). On the Queen Charlotte Islands, some saw-whets feed extensively on intertidal invertebrates (Hobson and Sealy 1991). The species is highly nocturnal in all of its behaviours.

Reproduction

Northern Saw-whet Owls nest in tree cavities, and will use suitable nest boxes when available. Only two

Northern Saw-whet Owl - subspecies *brooksi* (*Aegolius acadicus brooksi*)



Note: This map represents a broad view of the distribution of potential habitat used by this species. The map is based on several ecosystem classifications (Ecoregion, Biogeoclimatic and Broad Ecosystem Inventory) as well as current knowledge of the species' habitat preferences. This species may or may not occur in all areas indicated.

nests have ever been located and described for this subspecies in British Columbia. This species is a secondary cavity-nester (Cannings 1993). There is a strict division of labour in breeding, with the smaller male providing all the food while the female incubates the eggs and broods the young. Courtship begins in March; three to seven eggs are laid from late March to early April and are incubated for approximately 4 weeks; eggs usually hatch from mid-May to late June and fledge by mid-July (Campbell et al. 1990; Cannings 1993).

Site fidelity

It is not known whether this subspecies reuses nest sites. Surveys conducted in 2002 on the Queen Charlottes confirmed the continued presence of owls at nine sites at which owls had originally been detected during surveys conducted by Gill and Cannings in 1996 (Hobbs and Holschuh 2002). The continued presence of owls at these sites suggests that these sites continue to be selected by this species over successive generations (Hobbs and Holschuh 2002). There is further evidence from the mainland subspecies that suggests reuse of the same nesting area.

Home range

Home ranges for breeding males in the Okanagan Valley range from 125 to 150 ha (Cannings 1987). No studies have measured this on the Queen Charlottes but it is likely similar. Cannings (1993) felt that territories in high quality habitat were generally about 100 ha; territories along rivers with mature to old-growth forests in the Queen Charlotte Islands are likely similar (Gill and Cannings 1997; pers. obs.).

Dispersal and movements

The Queen Charlotte subspecies is not migratory. There are no data on juvenile dispersal.

Habitat

Structural stage

- 6: mature forest
- 7: old forest

Generally prefers stages 6 or 7 but will forage in 3 (shrub/herb). Generally avoids stages 4 and 5 (pole/sapling and young forest).

Important habitats and habitat features

Nesting

Highest densities occur in coniferous forests. Early seral and mature forest habitats are used within the home range. To date, only two studies have been conducted on the ecology of this subspecies. In 1996, Gill and Cannings surveyed 238 sites and found 61 owls; in 2002, Hobbs and Holschuh surveyed 287 sites and found 26 owls. The sites with owls were closer to riparian habitat and had more old forest (>120-year-old) and more young forest (10- to 30-year-old) than sites without owls. Singing trees (trees used by males advertising for mates) were in old forest stands and two were in mature forest stands. Singing trees were larger in height and diameter, and had less shrub cover around them than randomly selected trees in similar aged forests. Daytime roost sites were located in the upper third (canopy) of large western hemlock trees within old growth forest stands (Hobbs and Holschuh 2002)

Wildlife trees with cavities are required for nesting. The Northern Saw-whet Owl is a secondary cavity-nester that uses old woodpecker nest sites in either coniferous or deciduous wildlife trees. Heart rot decadence may be a critical feature. Of two nests found in British Columbia for this subspecies, one was in a cavity located on the bole of a western hemlock (*Tsuga heterophylla*) snag and the other in a cavity in a Sitka spruce (*Picea sitchensis*) snag (Hobbs and Holschuh 2002; Tarver, unpubl. data). Both nest trees were classified as decay class 5 and >100 cm dbh. Tree heights were 28 m and 15 m, respectively.

Availability of suitable cavities for nesting may be more limiting on the Queen Charlotte Islands than on the mainland, because Pileated Woodpecker are absent from the Queen Charlotte Islands. Northern Saw-whet Owls on the Queen Charlotte Islands may only be able to use natural cavities in old trees and snags, or cavities excavated by smaller woodpeckers (e.g., Red-breasted Sapsucker [*Sphyrapicus ruber*])

and Hairy Woodpecker [*Picoides villosus*]) that have subsequently been enlarged by other cavity users. It is possible that Northern Flicker cavities are also suitable.

On northern Vancouver Island, 99% of the Red-breasted Sapsucker, Hairy Woodpecker, and Northern Flicker ($n = 322$) nests were in the CWHxm2 and CWHvm1 and 1% were in the MH biogeoclimatic zone (Deal and Gilmore 1998). Variables that best characterized these three woodpecker nest plots in the Nimpkish Valley included a greater dbh of amabilis fir (*Abies amabilis*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock, and western white pine (*Pinus monticola*); a greater density of western hemlock and western white pine; and a greater volume of western hemlock in the nest plots (Deal and Setterington 2000). This same study found that 77% of the three species of woodpecker nests were found on slopes <20%.

The four most common tree species excavated by these woodpeckers for nesting on Vancouver Island were western hemlock, western white pine, Douglas-fir, and Pacific silver fir (*Alnus rubra*). Other tree species used for nesting included red alder (*Alnus rubra*), lodgepole pine, yellow-cedar, and western redcedar (*Thuja plicata*). Black cottonwood may also be used. Woodpecker nests were found more often than expected in western white pine, and less than expected in western redcedar and yellow-cedar. They appeared to avoid trees <30 cm and to select trees that were within 80–100 cm dbh. Red-breasted Sapsuckers nest trees ($n = 155$) had large diameter, (mean \pm SD) 84.6 ± 2.0 SD cm, and tall height, 29.5 ± 0.8 trees. Hairy Woodpeckers nest trees ($n = 78$) had large diameter, (mean \pm SD) 79.6 ± 3.1 cm, and tall height, 26.7 ± 1.3 trees. The majority of Red-breasted Sapsucker and Hairy Woodpecker nests were found in wildlife tree classes 2–7.

Foraging

Uneven-aged forest structure with openings is preferred. This species can probably hunt successfully in small clearcuts, but not in young (pole/sapling) forests. It requires edge habitat in forest openings for hunting. Also forages in intertidal areas on the Queen Charlotte Islands.

Conservation and Management

Status

The Queen Charlotte Northern Saw-whet Owl is on the provincial *Blue List* in British Columbia. Its status in Canada has not been determined (COSEWIC 2002).

Summary of ABI status in BC and adjacent jurisdictions (NatureServe Explorer 2002)

BC	Canada	Global
S3	N3	G5T3

Trends

Population trends

The only population information comes from Gill and Cannings (1997) and Hobbs and Holschuh (2002). Assuming the species is largely restricted to CWH habitats, an approximate population estimate would be 2775 males throughout the Queen Charlotte Islands (based on an area of 8500 km² of CWH in the Queen Charlotte Islands). This is probably a liberal estimate because it assumes that habitat coverage in both surveys was representative of the entire Queen Charlotte Islands, that all habitat is equal and habitat is saturated, and that they were detecting owls only within 500 m of their calling stations.

Habitat trends

Suitable habitat is likely declining. Under the current harvest rates within the range of the Queen Charlotte Northern Saw-whet Owl, the annual rate of decline of suitable habitat is estimated to be between 2–4% and probably tending towards the lower end of this range given the recent harvest rate adjustments and some incremental gains in suitable habitat due to improvement in habitat conditions in second-growth stands (A. Cober, pers. comm.).

Threats

Population threats

The Queen Charlotte Northern Saw-whet Owl has a restricted range, occurs at low densities, and is an endemic non-migratory subspecies which may increase its risk of extinction.

Habitat threats

The primary threat to populations of Northern Saw-whet Owls in general, and *A. acadicus brooksi* in particular, is likely the loss and degradation of breeding and foraging habitat through forest harvest practices (Cannings 1993). This species requires tree cavities for nesting and forest openings for hunting; both these resources are reduced or eliminated by modern forest harvest practices. Cavities may be more of a limiting factor on the Queen Charlotte Islands than for mainland populations, because the Pileated Woodpecker are absent from the Queen Charlotte Islands.

Legal Protection and Habitat Conservation

The Northern Saw-whet Owl, its nests, and its eggs are protected from direct persecution by the provincial *Wildlife Act*.

Much of Gwaii Haanas National Park Reserve on the south end of Moresby Island (1470 km²) is likely

suitable habitat for this species, as is Naikoon Provincial Park on northeastern Graham Island (726 km²).

Habitat conservation may be partially addressed by the old forest retention targets (old growth management areas), riparian reserves, and wildlife tree retention area recommendations in the results based code. However, standard riparian management will often be too narrow to provide sufficient habitat, but a well-designed old growth management area could provide adequate habitat for this species.

Identified Wildlife Provisions

Sustainable resource management and planning recommendations

Since this species is largely dependent on woodpecker cavities for nest sites, management practices that benefit woodpeckers will also enhance habitat for this species.

- ❖ The objective for this species is to maintain wildlife trees >40 cm dbh and green recruitment trees for nesting across the breeding range and over time. Consider wildlife tree retention area, old growth management area, or riparian objectives for this species in the Queen Charlotte Islands Forest District.
- ❖ Blocks should be assessed to identify potentially suitable WTR areas. Suitable WTR areas for this species should be based on the information in Table 1.

Table 1. Preferred WTP characteristics for the Queen Charlotte Northern Saw-whet Owl

Attribute	Characteristics
Size (ha)	≥1 ha
Location	CWHwh, CWHvh; near riparian areas; slopes <20%
Tree features	visible woodpecker or natural cavities; evidence of heart rot
Tree species	coniferous and deciduous; particularly western hemlock, Sitka spruce, lodgepole pine, yellow-cedar, western redcedar, red alder
Tree size (dbh*)	83–85 cm or larger; in the absence of trees with the preferred dbh, trees ≥40 cm should be retained for recruitment
Wildlife tree class	3–5; mix of live and dead trees particularly those with an indication of heart rot

* Weighted mean and pooled standard deviation of trees selected by Red-breasted Sapsucker and Hairy Woodpecker (Deal and Setterington 2000).

- ❖ It is recommended that salvage not occur in WTR areas and OGMAs established to provide habitat for this species. In addition, these areas should be designed to include as many suitable wildlife trees as possible that should be maintained over the long term (>80 years).

Wildlife habitat area

Goal

Any nest sites and occupied breeding residences should be established as WHAs. Suitable habitat should be managed through the old forest and wildlife tree retention objectives.

Feature

Establish WHAs at known nest sites or occupied residences. Residency is indicated by detections made during the breeding season.

Size

Typically between 80 and 100 ha but size will depend on site-specific conditions.

Design

Design the WHA to minimize disturbance and maintain suitable foraging habitat. The WHA should include a 12 ha core area around the nest if known and a 300 m management zone. The management zone should encompass the remaining home range, which should be estimated based on suitable habitat. When the exact location of the nest site is not known, design core area to include highly suitable nest trees or known roost sites.

General wildlife measure

Goals

1. Maintain nest site or potential nest trees.
2. Minimize disturbance to nesting birds (1 March to 15 July).
3. Maintain suitable foraging habitat.
4. Maintain riparian corridors.
5. Ensure WHA is windfirm.
6. Maintain important habitat features (i.e., large diameter wildlife trees).

Measures

Access

- Do not construct roads within core area unless there is no other practicable option.
- Do not construct roads during critical breeding times (1 March to 15 July) within the management zone.

Harvesting and silviculture

- Do not harvest or salvage within the core area.
- Do not salvage within the management zone.
- In the management zone, use partial harvesting methods that retain 40% basal area. Retain wildlife trees as described in Table 1 or, where not available, retain largest diameter class to meet 40% retention and maintain for at least one full harvest rotation with no additional harvest entries.
- Do not harvest in the management zone during the breeding season (i.e., 1 March to 15 July).
- Retain a minimum 10 m reserve zone on all stream reaches.

Pesticides

- Do not use pesticides.

Additional Management Considerations

Queen Charlotte Northern Saw-whet Owls are associated with riparian habitats (Gill and Cannings 1997). To maintain suitable habitat for this species, large riparian buffers should be maintained.

Information Needs

1. Biology and habitat requirements of subspecies.
2. Inventory.
3. Impacts from forest harvesting.

Cross References

Ancient Murrelet, “Queen Charlotte” Goshawk, “Queen Charlotte” Hairy Woodpecker

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