

# SHORT-EARED OWL

## *Asio flammeus flammeus*

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## Species Information

### Taxonomy

One subspecies, *Asio flammeus flammeus*, is recognized over most of this species' range including British Columbia (AOU 1957; Cannings 1998). Eight or nine other subspecies occur in disjunct populations in South America and on islands elsewhere in the world (Holt and Leasure 1993).

### Description

The Short-eared Owl is a medium-sized owl with small ear tufts. At a distance it appears to be a pale buff colour, with black "wrist" patches on the wing. Its flight is moth-like, with erratic wing beats, typically carrying it low over the ground. When perched, it sits slantwise, rather than vertical, as do most other owls of its size.

### Distribution

#### Global

Short-eared Owls breed across subarctic and temperate North America and Eurasia as well as on the grasslands of South America and some islands including Hawaii, the Galapagos, the Falkland Islands, Cuba, Puerto Rico, Borneo, and the Philippines. Some populations are resident; however, the northernmost populations are migratory. In North America, birds winter from extreme southern Canada, south to central Mexico. Eurasian birds winter in the Mediterranean region of Europe, Northern Africa, and southern Asia to Malaysia (Holt and Leasure 1993).

### British Columbia

Short-eared Owls breed locally on the south mainland coast, through the Fraser River delta east to Fort Langley, in the south and central Interior north through the Thompson and Chilcotin-Cariboo basins to Prince George, and in the Peace Lowland. It is an uncommon migrant throughout the province. The Fraser River delta is the main wintering area in the province although a few birds winter on southeastern Vancouver Island and in the southern Interior (Campbell et al. 1990).

#### *Forest regions and districts*

Coast: Campbell River, Chilliwack, North Island, South Island

Northern Interior: Fort Nelson, Peace (Mackenzie probable), Prince George, Skeena Stikine

Southern Interior: 100 Mile House, Arrow Boundary, Central Cariboo, Chilcotin, Columbia (possible), Kamloops, Kootenay Lake, Okanagan Shuswap, Quesnel, Rocky Mountain

#### *Ecoprovinces and ecoregions*

BOP: KIP, PEL

CEI: CAB, CCR, CHP, FRB, QUL

COM: NIM, WIM

GED: FRL, GEL, LIM, NAL

NBM: TAB

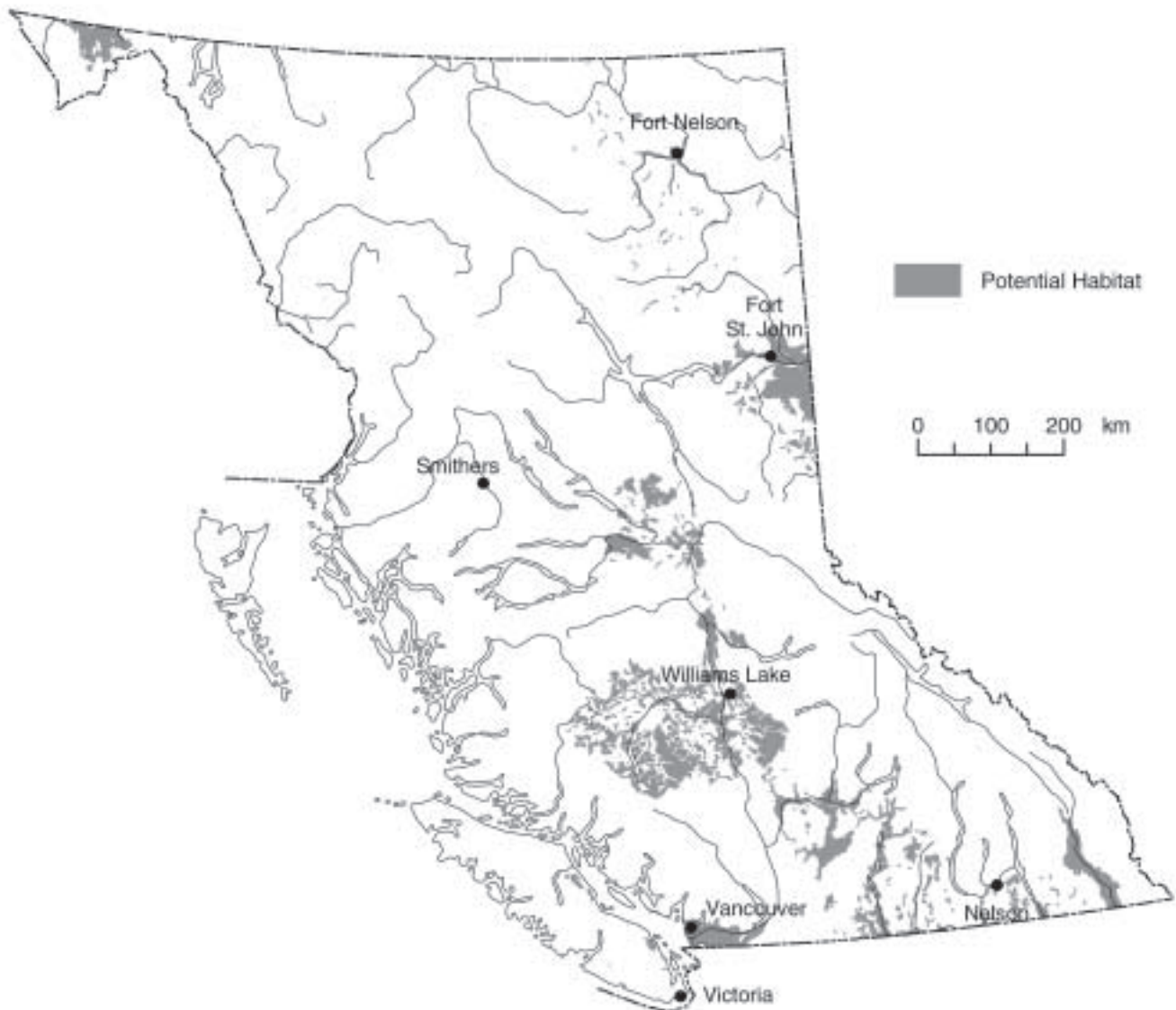
SBI: NEL

SIM: EKT, SCM, SFH, SPM

SOI: GUU, NIB, NOB, NOH, OKR, SHB, SOB, SOH, STU, THB, TRU

TAP: FNL, MUF, MUP

## Short-eared Owl (*Asio flammeus*)



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. More detailed maps are available for this species from the Ministry of Sustainable Resource Management.

### ***Biogeoclimatic units***

BG: xh1, xh2, xh3, xw, xw1, xw2  
BWBS: dk1, mw1  
CDF: mm  
CWH: dm, vm1, xm1, xm2  
ICH: mw2, xw  
IDF: dk1, dk1a, dk3, dk4, dm, mw1, mw2, un, xh1, xh1a, xh2, xh2a, xm, xw  
PP: dh1, dh2, xh1, xh1a, xh2  
SBS: mh, mk1  
SWB: dk

### ***Broad ecosystem units***

AB, BS, CF, DE, DP, ES, GO, ME, MS, OV, PP, RR, SM, SS, UR, WG, WL, WP, WR, YB

### ***Elevation***

Near sea level to 975 m, occurrence up to 2165 m (Campbell et al. 1990)

## **Life History**

### **Diet and foraging behaviour**

Short-eared Owls are prey specialists, concentrating on small rodents (primarily microtines), which undergo regular population cycles (Wiebe 1991; Sullivan 1992; Holt and Leasure 1993). When microtine populations crash in one area, Short-eared Owl populations must move to find a new prey supply. Other small mammals, insects, and birds are taken in lesser quantities.

Short-eared Owls usually hunt in a low flight path over grasslands, marshes, fallow fields, and other open areas. They also hover or hunt from a perch (Wiebe 1987; Holt and Leasure 1993).

### **Reproduction**

Monogamous pair bonds are formed in the late winter and likely last only for a single season (Holt and Leasure 1993). Nesting may begin as early as late March, although late April to early May is more common in British Columbia (Campbell et al. 1990). In British Columbia, clutch size ranges up to 13 eggs, but six or seven eggs are most common (Campbell et al. 1990). Clutch sizes are larger in

times of greater prey abundance (Johnsgard 1988). The female alone incubates the eggs for 24–28 days. Incubation begins before the clutch is completed, resulting in asynchronous hatching of young. The male brings food to the incubating and brooding female. Nestlings leave the nest after about 12–16 days but are unable to fly for another 10–12 days (Holt and Leasure 1993).

Short-eared Owls begin breeding at one year of age. One brood is probably raised annually. Some researchers believe that a second brood may be raised during years of extremely abundant prey, although conclusive evidence is lacking. Restarts after nest failure have been documented (Johnsgard 1988; Holt and Leasure 1993).

Nests are placed in open areas such as fallow fields, dry marshes, or grasslands with sufficient ground cover to conceal nests. This species is unusual among owls in that it builds its own nest, rather than using the nest of another bird species (Johnsgard 1988). Nests are built on the ground, in a scrape lined with vegetation and feathers (Campbell et al. 1990; Holt 1992; Semenchuk 1992; Holt and Leasure 1993). Nests are usually on dry, raised ground, although wet areas may also be used (Holt and Leasure 1993).

### **Site fidelity**

Nest sites are infrequently reused in subsequent years; however, it is uncertain whether this is by the same or different individuals (Bent 1938). In general, nest site fidelity is not strong, presumably because this species is nomadic. Roosts may be used year after year.

### **Home range**

Although Short-eared Owls are territorial during the breeding season, they have been documented nesting close to one another in good habitat where prey is abundant (Johnsgard 1988). Densities of breeding pairs have been as high as 1 pair/5.5 ha (Holt and Leasure 1993). In Manitoba, mean size of five territories was 73.9 ha (Clark 1975). Territory size may decrease with increasing prey densities (Clark 1975).

In winter, this species is non-territorial, congregating where there is suitable habitat and a good prey supply. In British Columbia, roosts with up to 110 birds have been documented in the Fraser River delta (Campbell et al. 1990).

### **Dispersal and migration**

In British Columbia, the Short-eared Owl is primarily a migratory species, with most individuals breeding in the Interior then moving southward in the fall. Populations in the northern breeding range of British Columbia begin fall migration in late October (Campbell et al. 1990). Some individuals, particularly in the Fraser River delta, are resident (Campbell et al. 1990; Sullivan 1992). It is possible that this species only migrates in search of food, and that more owls do not migrate in years when prey is abundant (Cadman 1994).

### **Habitat**

#### **Structural stage**

##### *Breeding*

2–3 or old-growth field

##### *Wintering*

2–3a and old-growth field (multi-year crop rotation)

#### **Important habitats and habitat features**

##### *Foraging*

The Short-eared Owl requires ample, accessible prey near the nest site. Open areas with patchy vegetation provide suitable forage for small mammal prey species and opportunities for the owls to access their prey.

##### *Nesting*

Extensive open areas such as grasslands, savannahs, rangeland, or marshes with an abundant prey base, suitable nest sites, and adequate roosting sites are important breeding habitats (Cannings et al. 1987; Campbell et al. 1990). In British Columbia, most of the nests reported in Campbell et al. (1990) were found in shrubby, grassy fields adjacent to agricultural areas (e.g., pastures, fallow fields, and cultivated fields). Other sites, in order of frequency,

included airport fields, marshes, open rangeland, sagebrush plains, and hayfields. In the Peace Lowlands (B.C.), uncultivated edges around wetlands are also used (M. Phinney, pers. comm.). Elsewhere, Short-eared Owls have been documented using newly cleared forests (Johnsgard 1988; Semenchuk 1992; Holt and Leasure 1993). Nests are usually situated on a raised, dry site within low, concealing vegetation (Holt and Leasure 1993).

##### *Wintering*

It is likely that the availability of suitable winter habitat with a sufficient prey base and adequate roost sites is the limiting factor for wintering populations in British Columbia (Butler and Campbell 1987; Campbell et al. 1990). Open areas such as marine foreshores, estuaries, marshes, grasslands, fallow fields, hay fields, pastures, airports, and golf courses are used by this owl (Cannings et al. 1987; Johnsgard 1988, Semenchuk 1992; Holt and Leasure 1993). In the Fraser River delta, Short-eared Owls have been reported to favour “old-field” habitat characterized by variable grass heights and shrub patches (Campbell et al. 1990; Searing and Cooper 1992; Sullivan 1992).

Prey abundance and accessibility are critical factors for wintering Short-eared Owls, both of which seem to be strongly linked with old-field habitat. In the Fraser River Valley, Townsend’s Vole (*Microtus townsendii*) is the most abundant microtine and their highest densities are in old-field habitat. Small mammals also tend to be more accessible to owls in old-field habitat rather than in the uniform vegetation of cultivated fields (Cadman 1994).

##### *Roosting*

Winter roost sites must be close to hunting areas, provide protection from the weather and concealment from predators and mobbing birds, and be relatively free from human disturbance. This owl typically roosts on the ground within tall grass or shrubs, or in hedgerows (Holt and Leasure 1993). On Sea Island (British Columbia), roosts often occur in patches of Scotch broom (*Cytisus scoparius*). They will also roost in trees when snow depths exceed 5 cm (Johnsgard 1988).

## Migration

Habitat requirements are probably similar to breeding season, although smaller open habitats may be used (Holt and Leasure 1993).

# Conservation and Management

## Status

The Short-eared Owl is on the provincial *Blue List* in British Columbia. It is considered a species of *Special Concern* in Canada (COSEWIC 2002). (See Summary of ABI status in BC and adjacent jurisdictions at bottom of page.)

## Trends

### Population trends

Population size and trends are difficult to assess because this owl is cyclic and nomadic, an unknown portion of the population nests in remote, unsurveyed regions, and even within easily accessible, known owl habitat, there has been a lack of consistent standardized census effort (Holt and Leasure 1993, Cadman 1994). Although these owls are occasionally active during the day, they are easily overlooked when roosting because they roost in heavy cover on the ground, and are usually well camouflaged. Estimating population size is further complicated by migration patterns because wintering, migrating and resident bird populations overlap (Cannings et al. 1987). During the breeding season, females are reluctant to flush off nests, making nests difficult to locate and breeding status difficult to determine (Holt and Leasure 1993).

At this time there is insufficient data to assess the overall population trend in British Columbia.

However, Munro and Cowan (1947) suggested an apparent province-wide decline over the previous 15–20 years. In the Fraser River delta, evidence suggests that the local population has been in decline for the last few decades (Campbell et al. 1990). In addition, Christmas Bird Count data from the Lower Mainland show a steady reduction in peak number of Short-eared Owls from 1984 to 1990 (Campbell et al. 1990). In the 1960s, several hundred Short-eared Owls were banded on Sea Island (Campbell et al. 1990), but it is unlikely that the reduced amount of habitat on Sea Island today could support such numbers now.

## Habitat trends

This species relies on winter habitat that has been significantly reduced and is further threatened (Tate 1986; Fraser et al. 1999). Habitat at lower elevations is undoubtedly less abundant than in the past. In the Southern Interior Mountains Ecoprovince, most low elevation grassland has been converted to agricultural lands and marshes have been drained. In the Central Interior Ecoprovince, and likely elsewhere (e.g., East Kootenay Trench ecosection), potential breeding and foraging habitat is being lost as grasslands are reduced by forest encroachment due to fire suppression (Hooper and Pitt 1995).

On the coast, estuarine marshes have been eliminated by industrial development and fallow fields have been converted to housing, industry or more intensive agricultural practices.

## Threats

### Population threats

As a ground nesting species, hazards to nests and nestlings include fire, flooding of marsh or coastal habitat, farm machinery, and predators (Campbell et al. 1990; Cadman 1994). Mortality in adults has

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

BC	AK	CA	ID	MT	OR	WA	Canada	Global
S3B, S2N	S3N, S5B	S3	S5	S4	S4?	S4B, S4N	N4N, N5B	G5



also been attributed to shooting; collisions with cars, aircraft, and other machinery; and entanglement with barbed wire and hip chain (Holt and Leasure 1993; Cadman 1994).

Elsewhere in North America, Short-eared Owls have been extirpated from areas that still contain apparently suitable habitat. Holt and Leasure (1993) speculate that mammalian predation of eggs and nestlings could be the cause. An increase in populations of feral cats and dogs or coyotes, in combination with urbanization, likely seriously impacts this species reproductive success. These factors may be influencing local breeding populations near Boundary Bay and on Sea Island as both areas are popular with dog owners, and coyotes are now established at both locations.

### **Habitat threats**

In British Columbia, the primary threat to this species is loss or degradation of old-field winter habitat (Butler and Campbell 1987; Campbell et al. 1990). The Fraser River delta supports the largest winter population of Short-eared Owls in the province. However, this area has been, and continues to be, modified through urbanization and increasingly intensive agricultural practices (Campbell et al. 1990). Habitat loss leads directly to a reduction in food availability causing an increase in intra- and interspecific competition (e.g., with Northern Harriers). Ongoing loss and fragmentation of habitat make new prey supplies harder to find (Cadman 1994).

Although the Short-eared Owl's breeding range in British Columbia is more widespread than its winter range, loss of nesting habitat can have an impact on local populations. Nesting habitat is especially subject to pressure from urbanization and modern agricultural practices in the Fraser and Okanagan valleys (Campbell et al. 1990). In more remote areas, nesting habitat may be degraded from overgrazing by livestock, or nests may be destroyed by mowing of meadows for hay.

## **Legal Protection and Habitat Conservation**

The Short-eared Owl, its nests, and its eggs are protected from direct persecution in British Columbia under the provincial *Wildlife Act*.

Breeding habitat in British Columbia is associated with agricultural areas in the lower Fraser River Valley, Okanagan Valley, Thompson, and Peace lowlands. Undoubtedly, these owls also breed locally in more remote areas as well. Although a small area of wintering and breeding habitat in the lower Fraser River Valley is protected in the Alaksen National Wildlife Area, Boundary Bay Reserves, and Centennial Park (all in Delta), most of the wintering habitat in the lower Fraser River Valley, Okanagan Valley and Thompson is on private land. Delta farmers (Delta Farmland and Wildlife Trust) have an old-field management program that they operate in co-operation with the Canadian Wildlife Service; this program may help provide suitable habitat for this species on private agricultural land. Conservation of habitat on Crown land may be partially addressed by range use guidelines.

## **Identified Wildlife Provisions**

### **Wildlife habitat area**

#### **Goal**

Maintain important habitat features (i.e., tall grass) at traditional winter, roosting, or nesting locations.

#### **Feature**

Although Short-eared Owls tend to be nomadic, they may traditionally use areas for breeding, roosting, or wintering. Establish WHAs at traditional communal (>8 owls) roosting sites, traditional nest, or winter areas.

#### **Size**

WHAs for traditional (used for several years) roost sites will generally be 5 ha and WHAs for traditional nest sites or wintering sites will generally be 10 ha but will depend on site-specific factors.

## ***Design***

The WHA is not intended to encompass the entire area used by the owls but rather is intended to maintain key areas used for nesting, roosting, or foraging. Where appropriate, centre WHA on the known nest or roost sites.

## **General wildlife measure**

### ***Goals***

1. Minimize human and livestock disturbance to active winter roosts and nest sites.
2. Maintain important structural features. For example, maintain a range of mid-height to tall grasses with some low shrub cover for nesting.

### ***Measures***

#### ***Access***

- Do not construct roads.

#### ***Pesticides***

- Do not use pesticides.

#### ***Range***

- Plan livestock grazing to maintain the desired structure of plant community (i.e., tall grass), desired stubble height and browse utilization. Establish a key area to monitor structure, height, and utilization. If damage from livestock is found to be degrading the vegetative structure, fencing may be required. Consult MWLAP for fencing arrangements.
- Maintain grass structure (i.e., 50 cm or depending on the site's potential).
- Delay burning or mowing until after the breeding season (1 August).

## **Additional Management Considerations**

Where possible, control forest encroachment into natural grassland habitat with controlled prescribed burning or other methods. Use prescribed burning in forest clearings where Short-eared Owls are nesting. Burning should occur outside of the breeding season.

In agricultural areas:

- Increase percentage of fields left fallow within winter range.
- Leave patches of shrubs and hedgerows between fields.
- Minimize disturbance by people and dogs during critical times (i.e., April through May; December through February).
- Enhance habitat for voles and other microtines, wherever possible.
- Consider fencing high use areas or known nesting areas to protect from management activities such as haying.

Old-field habitat is usually on private land. Due to the importance of old-field winter habitat for this species, landowners should be encouraged to retain or rotate fields in such a way as to maintain as much of this habitat as possible. Fields known to be used by Short-eared Owls should be managed to minimize negative impacts of disturbance by humans, vehicular traffic, and domestic animals.

Grassland, marshes, rangeland, and estuaries suitable for Short-eared Owl winter or nesting habitat should have appropriate vegetation characteristics retained and should be protected from undue disturbance by human activities.

In grassland areas, meadows should not be burned or mowed until >1 August to protect eggs and unfledged young.

Maintain a mosaic of grassland and old field habitat in suitable condition to ensure a continued supply of nesting and wintering habitat.

## **Information Needs**

1. Status of breeding and wintering localities.
2. Impacts of human recreational use of nesting areas on reproductive success.
3. Suitability of clearcuts for foraging and nesting habitat.

## **Cross References**

Sandhill Crane

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