

“INTERIOR” WESTERN SCREECH-OWL

Otus kennicottii macfarlanei

Original prepared by R.J. Cannings

Species Information

Taxonomy

The Western Screech-Owl was first described in 1867, but was long considered conspecific with the Eastern Screech-Owl, *Otus asio* (e.g., AOU 1957). One hundred years later, Marshall (1967) recognized four incipient species within this larger taxon: *O. asio*, *O. kennicottii*, *O. seductus*, and *O. cooperi*. This separation was formalized by AOU (1983) by resurrecting *O. kennicottii* and giving it the English name Western Screech-Owl. Indeed, AOU (1983, 1998) and König et al. (2000) now consider all four of Marshall’s incipient species as allospecies of a superspecies.

Fifteen subspecies were recognized by Peters (1940) and 13 by AOU (1957). In the next major revision, Marshall (1967) considered much of the geographic variation in Western Screech-Owls to be clinal, and further reduced the number of subspecies to eight. Hekstra (1982a, 1982b), on the other hand, recognized 18 subspecies. In a recent revision based largely on morphometrics, Gehlbach (2003) retains eight subspecies, only slightly different from Marshall’s treatment. Subspecies that range into British Columbia are:

- *O. kennicottii kennicottii*, along entire coast including the Gulf Islands and Vancouver Island.
- *O. kennicottii macfarlanei*, southern Interior, and west Kootenays.

Description

The Western Screech-Owl is a small owl (150–250 g) with noticeable feather tufts on the corners of its head. Generally cryptically coloured; breast and belly are pale with dark streaks, back is brownish (coast) or brownish-grey (interior) with fine dark streaks. *O. kennicottii kennicottii* is generally a large

subspecies with brown base colour to its plumage, while *O. kennicottii macfarlanei* is greyer in colour and even larger in size.

Distribution

Global

Resident along the Pacific coast from southern Alaska south to Baja California, and in the interior areas of western North America from southern British Columbia south through western Montana, western Colorado, and western Texas south to central Mexico. The Interior Western Screech-Owl occurs east of the Cascade Mountains from southern British Columbia, south to Washington, Oregon, Idaho, and Montana.

British Columbia

The Interior Western Screech-Owl occurs in the Okanagan Valley. There are scattered records elsewhere in the southern Interior but no evidence of breeding. It probably breeds, at least irregularly, in the Thompson Valley between Chase and Spences Bridge. Breeding has recently been confirmed in the West Kootenays near Castlegar and Creston.

Forest region and districts

Southern Interior: Arrow Boundary, Cascades, Kamloops, Kootenay Lake, Okanagan Shuswap

Ecoprovince and ecosections

SIM: EKT, SCM, SFH, SHH, SPM

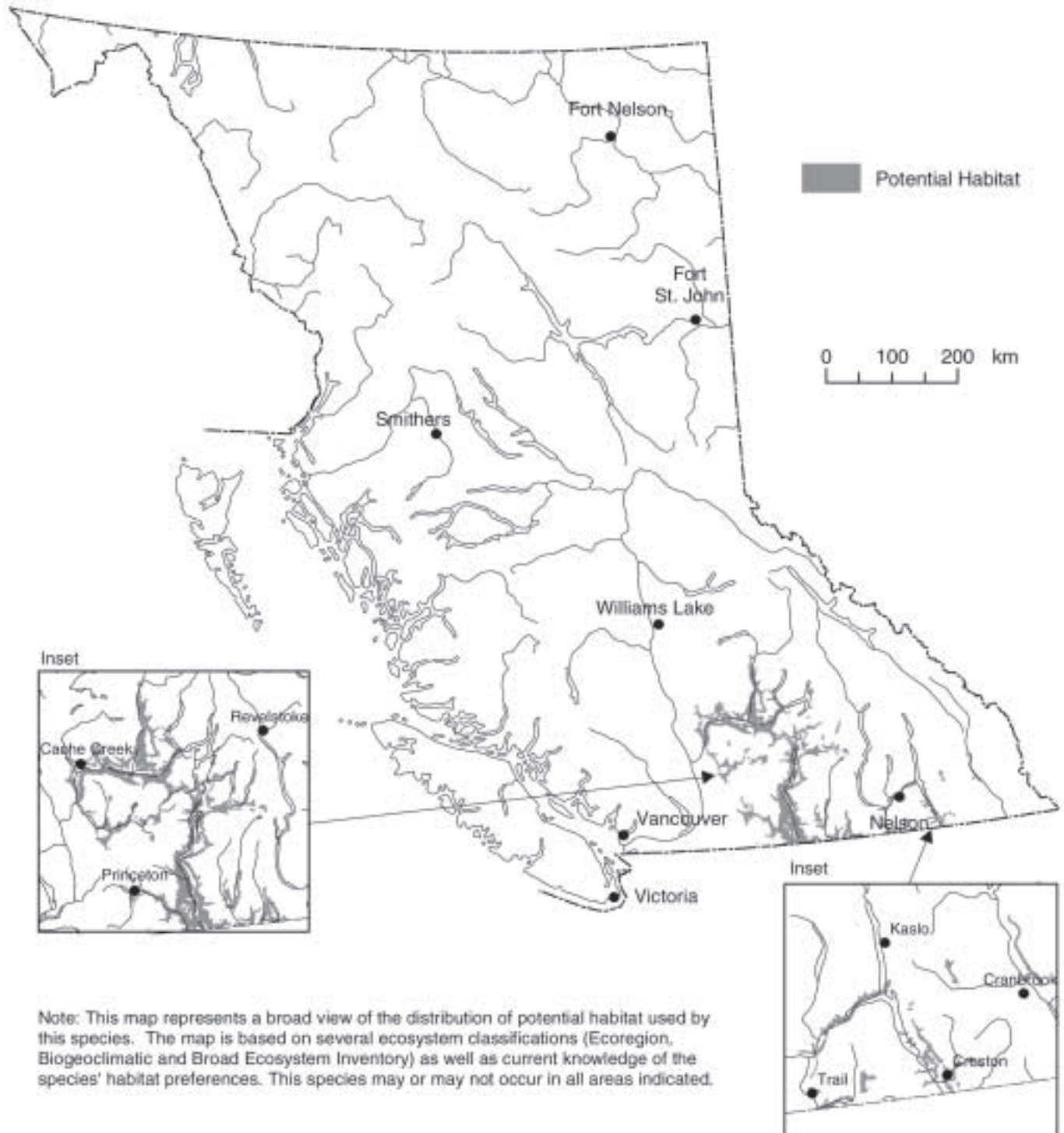
SOI: GUU, NIB, NOB, NOH, NTU, OKR, SHB, SOB, SOH, irregular in STU, THB, TRU

Biogeoclimatic units

BG: xh1, irregular in xh2, xw, xw1

PP: dh1, dh2, xh1, xh2

Western Screech-Owl - subspecies *macfarlanei* (*Otus kennicottii macfarlanei*)



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.

IDF: dk1, dk2, dk3, dm1, mw1, mw2, xh1, xh1a,
irregular in xh2, xw

ICH: dw, mw2, irregular in xw

Broad ecosystem units

CR, DF, DP, IG, PP, RR, SP, WL, WR

Elevation

0–700 m

Life History

Diet and foraging behaviour

The Western Screech-Owl is a generalist predator on small animals, including mice, shrews, birds, insects, frogs, salamanders, crayfish, fish, and earthworms (Cannings and Angell 2001).

Reproduction

Western Screech-Owls nest in tree cavities, including those excavated by Pileated Woodpeckers (*Dryocopus pileatus*) and Northern Flickers (*Colaptes auratus*); they also readily use nest-boxes. British Columbia nests ranged from 1.2 to 12.2 m above ground; all nests reported were in trees >25 cm dbh ($n = 43$; Campbell et al. 1990). There is a strict division of labour; males provide all the food for females and young while the females incubate the eggs and brood the young. Clutch size is two to seven eggs, usually three to five (Cannings and Angell 2001). Egg dates in British Columbia range from 17 March to 31 May ($n = 49$), most (53%) 9–21 April; dates for young in nests range from 19 April to 21 August ($n = 53$), with 51% from 8 May to 3 June (Campbell et al. 1990).

Site fidelity

Pairs are resident throughout the year on nesting territories (Cannings and Angell 2001).

Home range

Home range sizes can be very small in optimal habitat, but a reasonable estimate for home range size in British Columbia would be about 2.5–10 ha (Cannings and Angell 2001).

Dispersal and movements

The Western Screech-Owl is non-migratory; young birds disperse in late summer and fall to establish new territories. Both male and female young disperse from the natal area, but on average females travel about three times as far as males (about 15 km vs. 5 km) in the first 3 months of dispersal (Ellsworth and Belthoff 1997).

Habitat

Structural stage

6: mature forest

7: old forest

Important habitats and habitat features

Nesting

Breeding territories are closely associated with riparian habitats, particularly those dominated by black cottonwood (*Populus trichocarpa*), trembling aspen (*Populus tremuloides*), and water birch (*Betula occidentalis*) (Cannings 1997). Since cavities are needed for both nesting and roosting, a breeding territory must contain at least two suitable cavities to be useful to a pair of screech-owls. Nest trees may be in decay class 2 through 6.

Nesting and roosting sites are in tree cavities, usually those made by Northern Flickers or Pileated Woodpeckers in large diameter deciduous trees (though coniferous trees are also used). Dense vegetation and thickets are also used for roosting. Because cavities of Pileated Woodpecker and Northern Flicker are most often used, it may be important to consider the nesting requirements of these species in ecosystems where the Interior Western Screech-Owl occurs (see Appendix 12).

In the Okanogan National Forest, Pileated Woodpecker nesting sites generally had a high live basal area and tree density, and also a large number of snags in all diameter classes (Madsen 1985). Similar conclusions about the importance of high densities of large trees and snags have been found in other similar western coniferous forests. The Northern Flicker is less selective in stand structural features, and generally nest trees were located either within or

close to open forest areas. However, Northern Flickers use old Pileated Woodpecker cavities.

Pileated Woodpeckers in northwestern Montana selected mainly western larch and occasionally Douglas-fir as nest trees (McClelland and McClelland 1999). They used ponderosa pine where there were groves almost entirely composed of ponderosa pine and Douglas-fir. In riparian forests, nest trees were in large black cottonwood and all aspen nest trees were in monospecific groves of aspen (McClelland and McClelland 1999). In northern Montana and in the aspen parklands in Alberta, aspen often is the only tree species that reaches sufficient size for Pileated Woodpecker nesting (Bonar 1997; McClelland and McClelland 1999). In south-central British Columbia, Pileated Woodpeckers nested exclusively in trembling aspen (Harestad and Keisker 1989). In the Okanogan National Forest, Northern Flickers selected ponderosa pine and western larch in greater proportion than Douglas-fir or other species (Madsen 1985). Northern Flickers preferred trembling aspen to conifers near Riske Creek (Wiebe 2001). Diameter at breast height (dbh) of nest trees differed particularly between coniferous and deciduous trees for both species of cavity-nester (Table 1).

In the Okanogan National Forest, Pileated Woodpecker nest trees were exclusively in decay stages 4

and 5 (Madsen 1985). Nest trees in northwestern Montana often had broken tops and fire scars were present on $\geq 50\%$ of western larch, ponderosa pine, and aspen nest trees (McClelland and McClelland 1999). In northern Oregon, 45% of Pileated Woodpecker nest trees had intact tops, whereas 49% had $\geq 10\%$ of the top broken off (these were largely ponderosa pine) (Bull 1987). Alternately, 92% of the nest trees in Alberta (mainly aspen) were living but all had signs of heartwood decay and conks were present on 62% of nest trees (Bonar 1997).

Conservation and Management

Status

The Interior Western Screech-Owl is on the provincial *Red List* in British Columbia. It is considered *Endangered* in Canada (COSEWIC 2002).

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

BC	ID	MT	OR	WA	Canada	Global
S1	S4	S3S4	S4?	S5	N1	G5T4

Table 1. Dbh (mean \pm SD) (cm) of Pileated Woodpecker and Northern Flicker nest trees in several locations.

Forest	Location	<i>n</i>	Pileated Woodpecker	<i>n</i>	Northern Flicker	Citation
Coniferous	Blue Mountains Oregon	13	75.3 \pm 11.7			Bull 1975
Coniferous	Okanogan National Forest	6	84.2 \pm 17.5	16	70.4 \pm 27.2	Madsen 1985
Coniferous	Northern Montana	89	73.4 \pm 1.9			McClelland and McClelland 1999
Coniferous	South central British Columbia	20	40.5 \pm 7.1	17	31.9 \pm 9.9	Harestad and Keisker 1989
Deciduous trees	Riske Creek, British Columbia			159	33.87 \pm 10.34	Wiebe 2001

Trends

Population trends

Population trends are unknown, but is likely slowly declining, as habitat is lost at lower elevations in the Okanagan Valley.

Habitat trends

About half the riparian habitat in the south Okanagan Valley has been lost to urban or agricultural development over the last 50 years (Cannings et al. 1999) and a similar loss has likely occurred in the north Okanagan. This loss is particularly severe in the main valley and less critical along small creeks.

Threats

Population threats

Coastal populations of Western Screech-Owls seem to have suffered significant declines in the last 10 years due to a newly established predator, the Barred Owl (*Strix varia*) (pers. obs.; J. Hobbs, pers. comm.). Barred Owls began nesting on the south coast in the early 1990s and anecdotal evidence points to a concomitant decline in Western Screech-Owl breeding populations since then, both in the Greater Vancouver and Victoria areas (pers. obs.; D. Fraser, pers. comm.). Barred Owls are potentially a threat in the Interior as well (M. Chutter, pers. comm.)

Habitat threats

Habitat loss is the primary threat to the Interior Western Screech-Owl which occurs in riparian woodlands at low elevations in the Okanagan Valley, where approximately half of the suitable habitat has been lost in the last 50 years and most of the remaining habitat is degraded to some extent (Cannings et al. 1999). Livestock grazing, and burning to clear shrubs has reduced or altered suitable habitats along the Nicola Valley (J. Hobbs, pers. comm.)

Legal Protection and Habitat Conservation

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

Some habitat is protected in the following parks: Coldstream Regional Park, Inkaneep Provincial Park, Okanagan Mountain Provincial Park, South Okanagan Grasslands Provincial Park, White Lake Grasslands Provincial Park, Woodhaven Regional Park, Mission Creek, Duck Lake, and Lac du Bois parks.

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.

The results based code riparian guidelines likely afford little direct protection for Interior Western Screech-Owl habitat, since many territories are along very small non fish bearing streams and wetlands. Harvesting is permitted within the riparian management zones often resulting in loss of large diameter trees and snags for nesting and roosting. It is also likely that upland forest habitat is also important for foraging.

Special riparian management zones outlined in the Okanagan Shuswap Land and Resource Management Plan are similar to those of the results based code.

Identified Wildlife Provisions

Sustainable resource management and planning recommendations

Because this species depends largely on woodpecker cavities, particularly those of Northern Flickers and Pileated Woodpeckers, for nest sites, management practices that benefit woodpeckers will also enhance habitat for the Western Screech-Owl.

- ❖ The objective for this species is to maintain wildlife trees and green recruitment trees for nesting across the breeding range and over time. Consider wildlife tree retention (WTR) areas, RMAs, and OGMA objectives for this species in

the following forest districts: Okanagan Shuswap, Kamloops, Cascades, and Arrow Boundary.

- ❖ Blocks should be assessed to identify potentially suitable WTR areas. Suitable WTR areas for this species should be based on the information in Table 2.
- ❖ 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 and that they should be maintained over the long term (>80 years).
- ❖ Maintain forested riparian management zones.

Wildlife habitat area

Goal

Because few nest areas are known for this subspecies, these sites should be established as WHAs. Suitable habitat should be managed through the wildlife tree retention within landscape level planning objectives.

Feature

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

Size

Typically between 5 and 30 ha. Size should be based on estimated home range size using habitat suitability and number of occupied breeding territories. Areas of highly suitable habitat may have more than one occupied breeding territory.

Design

Design the WHA to minimize disturbance and maintain suitable foraging habitat. The WHA should include a 5–12 ha core area for the nest area and may include a ~100 m management zone (i.e., smaller WHAs may be managed as a no harvest core area only). The management zone should include suitable foraging habitat. Other features to include are large diameter snags (particularly black cottonwood, trembling aspen, water birch, and broadleaf maple) with suitable nest cavities.

General wildlife measures

Goals

1. Maintain nesting and foraging habitat.
2. Maintain an adequate supply of suitable wildlife trees and associated nest and roost cavities.
3. Maintain a healthy riparian habitat.
4. Minimize disturbance to roost and nest sites.
5. Maintain native vegetation.
6. Maintain/encourage deciduous component in riparian and conifer stands.
7. Ensure WHA is windfirm.
8. Maintain riparian areas in properly functioning condition.

Measures

Access

- Do not construct roads or stream crossings in the core area. Within the management zone, avoid constructing roads or stream crossings.

Table 2. Preferred WTP characteristics for the Interior Western Screech-Owl

Attribute	Characteristics
Size (ha)	≥2.5 ha
Location	PPxh, PPdh, IDFxh, IDFxw, IDFdk, IDFmw; riparian areas
Tree features	visible woodpecker or natural cavities
Tree species	deciduous preferred; trembling aspen, black cottonwood, water birch, Douglas-fir, possibly ponderosa pine, and western larch
Tree size (dbh)	deciduous spp.: 34–44 cm or larger; coniferous spp. 74–85 cm or larger; in the absence of trees with the preferred dbh, trees with ≥30 cm dbh should be retained for recruitment
Wildlife tree class	2–6

Harvesting and silviculture

- Do not harvest or salvage within the core area.
- In PP and IDF zones, selective harvest of $\leq 20\%$ basal area may occur within the management zone provided no suitable wildlife trees (see Table 2) are removed.
- Do not harvest or salvage within the management zone during the breeding season (1 March to 15 August).
- Retain deciduous species.
- Within riparian management zones, retain $>60\%$ of trees including all suitable wildlife trees (see Table 2).

Pesticides

- Do not use pesticides.

Range (BG, PP, and IDF zones)

- Plan livestock grazing (timing, distribution, and level of use) to maintain desired structure of plant community, desired stubble height, and browse utilization.
- Do not place livestock attractants within WHA.
- Do not burn understorey vegetation.

Recreation

- Do not construct trails within 50 m of a known nest site.

Additional Management Considerations

Consider fencing stream or stock-watering works to limit the access of livestock to a stream within the WHAs.

Consider using nest-boxes if wildlife trees and other trees with suitable cavities have been felled for safety reasons.

Information Needs

1. Habitat use and home range size. It would be very useful to find out the degree to which owls use coniferous forests adjacent the riparian zone during foraging bouts.
2. Impact of Barred Owl predation and any opportunity to design WHAs to reduce/minimize predation by Barred Owls.

Cross References

Lewis's Woodpecker, Yellow-breasted Chat

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