COMMITTEE ON THE
STATUS OF ENDANGERED
WILDLIFE IN CANADA

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COMITÉ SUR LE STATUT
DES ESPÈCES MENACÉES
DE DISPARITION AU
CANADA

OTTAWA (ONT.) K1A 0H3
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STATUS REPORT ON THE WESTERN SCREECH-OWL *OTUS KENNICOTTI* IN CANADA

BY

DAVID A. KIRK

STATUS ASSIGNED IN 1995
INDETERMINATE

REASON: MORE INFORMATION NEEDED ON POPULATION NUMBERS.

OCCURRENCE: BRITISH COLUMBIA

COSEWIC - A committee of representatives from federal, provincial and private agencies which assigns national status to species at risk in Canada.

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JUNE 1994

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IN CANADA

BY

DAVID A. KIRK
C/O CANADIAN WILDLIFE SERVICE
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STATUS ASSIGNED IN 1995
INDETERMINATE

Contents

Executive Summary

Description. The Western Screech-Owl *Otus kennicotti* occurs in at least 18 different forms (subspecies) and these vary in weight, as well as colouration (Marshall 1967). There are two main phases, the grey phase, which resembles the Eastern Screech-Owl *Otus asio*, and the red phase, which is rare. Owls in the grey phase are more dull in colouration than *O. asio* with brown and grey plumage. The back has dark streaks and the belly prominent vertical streaks, but with thinner crossbars or rows of spots than in *O. asio*. Another distinguishing feature separating the two races in the United States is the black bill, usually with a whitish tip, in *O. kennicottii*, compared to the green, turquoise or yellow bill of *O. asio*. However, according to Godfrey (1986) this is not the case in Canadian populations. The red phase of the Western Screech-Owl occurs only in coastal British Columbia and Alaska, and is cinnamon-buff in colour.

Population size and trends. Extremely little is known about population size in this species. There were insufficient routes from the Breeding Bird Survey to assess population trends in the species between 1966-1991. Christmas Bird Counts suggest an increase in the species over the whole of North America but these may reflect increased coverage or the use of playback tapes in recent years. Qualitative assessment of the species' abundance from British Columbia suggests that Western Screech-Owls are uncommon to fairly common residents on the south coast. They are rare to uncommon in both the northern mainland coast and central-southern interior, while in the west and east Kootenays they are considered very rare. The species is thought to be absent from the Queen Charlotte Islands.

General biology. Western Screech-Owls are monogamous and resident year-round on their territories. They are cavity nesters, using holes excavated by woodpeckers, and lay a mean clutch of 3-4 eggs. Clutches might be larger at higher latitudes. Reproduction in this species is thought to resemble that in the Eastern Screech-Owl. Prey taken by screech-owls includes 53 species, mostly small mammals, but also invertebrates.

Limiting factors. As in many other birds of prey the main factor limiting the size of the Western Screech-Owl population is food. Increased forest cutting may reduce the habitat available and/or the number of nest cavities available for screech-owls in some regions and thus become a limiting factor.

Protection. In the United States and Mexico, the Western Screech-Owl is protected under the Migratory Birds Treaty. In Canada, limited provincial legislation affords protection to the species.

Special significance of the species.
The conservation and management of Western Screech-Owls is complex and difficult, not only because of the secretive, nocturnal characteristics of the species, but also because of extensive polymorphism in this species. Each subspecies may differ in its habitat requirements and ecology; basic information on the species' biology is lacking.

Conclusions. There is insufficient information available to recommend a COSEWIC designation for the Western Screech-Owl; it likely cannot be considered in any category until more information becomes available.

A Abstract

The Western Screech-Owl *Otus kennicottii* is a small (111-235.6 g) forest owl inhabiting a wide range of habitats in the western United States and Canada. Part of a complex of 18 or more subspecies, this species inhabits parts of Mexico, as well as the western states, east to western Montana and Idaho, Alaska and British Columbia. The latter is the only province in which the species breeds in Canada, and there are two subspecies recorded for this region: *O. kennicotti kennicotti* in coastal British Columbia and *O. k. macfarlanei* from the southern interior (Okanagan valley). Little information exists concerning population densities or status, since most studies have concentrated on diet and resource partitioning between this and other owl species. Christmas Bird Count data for the whole of North America indicate an increase in the species, but this might be a result of increased coverage or increased use of playback tapes. Assessments of abundance by ornithologists in British Columbia suggest that the species is uncommon to fairly common on the south coast, rare to uncommon on the north mainland coast and central-southern interior and very rare in the west and east Kootenays. Over its entire North American range a wide range of habitats are used from hot deserts and chaparral to humid, temperate old growth rain forests in the Pacific Northwest. Thus, habitat requirements and population demography may vary widely among the different subspecies of Western Screech-Owl. Screech-owls are monogamous, probably breed at one year old and use cavity nests excavated by woodpeckers.

B Distribution

The Western Screech-Owl occurs along the west coast of North America and although its range overlaps slightly with that of the Eastern Screech-Owl *Otus asio*, apparently it does not interbreed with the latter species.

1) Canada. The only province in which Western Screech-Owls occur is British Columbia, where the species is essentially coastal or southern in distribution (Johnsgard 1988). According to Godfrey (1986) the Western Screech-Owl *Otus kennicottii* is 'a permanent resident in western and southern interior British Columbia (coast of mainland, Vancouver and Goose Islands; southern interior; Okanagan valley and north rarely to Vanderhoof region). However, contrary to Godfrey (1986), Campbell et al. (1990) stated that they were not aware of any records north of Adams Lake. Campbell et al. (1990) indicated that the species is found year-round on Vancouver Island and adjacent mainland coast to through the Fraser Lowlands to Hope. They also suggest that Western Screech-Owls are resident on the north mainland coast to the west of the Coast Ranges, as far north as Terrace. Below elevations of 600 m the species is also found from Adams and Shuswap Lake south through the Okanagan valley. According to Johnsgard (1988) the subspecies of Western Screech-Owl in coastal British Columbia is *O. k. kennicottii* whereas in the interior it is *O. k. bendirei* (including *macfarlanei* and *quercinus*). Godfrey (1986) refers to the subspecies in the interior as *O. k. macfarlenei*. Campbell et al. (1990) note that the taxonomy of this species is highly confused.

2) United States. The ranges of Eastern and Western Screech-Owls meet along the western flank of the Great Plains (AOU 1983). A complex of subspecies of the Western Screech-Owl (see Marshall 1967) inhabit the western United States and Mexico. *O. k. suttoni* occurs from the Mexican plateau (Distrito district) north to Guadalupe Canyon, Arizona, and Big Bend, Texas, while in central Sonora and Sinaloa, the subspecies *O. k. vinaceus* is found. In Baja California Norte the subspecies is *O. k. cardonensis*, while in Baja California Sur, *O. k. xantusi* is found. *O. k. yumanensis* is the subspecies in the Colorado Desert, lower Colorado River, and northwestern Sonora.

Western Screech-Owls are also found in north-central Sonora, eastern California, Nevada, Utah, Arizona, New Mexico, southeastern Colorado, and western Oklahoma (subspecies *O. k. aikeni* including *gilmani, inyoensis, cineraceus*). The range of *O. k. bendirei* (which occurs in British Columbia) extends to Idaho and south to southern California. Finally, *O. k. kennicotti* (including *brewsteri)* is the subspecies of the Oregon and Alaskan coast (Johnsgard 1988). Western Screech-Owls are resident year-round in this range; according to Christmas Bird Count data, their most dense population is between San Luis Obispo and Santa Barbara in the Californian Sierra Madre (Root 1988).

C Protection

In the United States and Mexico, the Western Screech-Owl is protected under the Migratory Bird Treaty Act (Olendorff et al. 1980). Provincial legislature (game and wildlife acts) affords limited protection for the species in Canada.

D Population size and trends

Little is known about the population status of Western Screech-Owls in Canada, partly due to its nocturnal habits and its limited range. During Breeding Bird Surveys in southern British Columbia, the species was recorded on only nine routes between 1966-1977 and a further eight routes in 1978-1983 (Collins and Wendt 1989). The corresponding percent annual change on these routes was 0.33 for the first period and 0.13 for the second period (Collins and Wendt 1989), but this index is invalid statistically because of the small number of routes.

According to a recent analysis of Christmas Bird Count (CBC) data for the whole of North America, the Western Screech-Owl increased significantly between 1959-1988 (annual increase 2.1%, $n = 206$ circles, $P < 0.01$; mean owls/100 party hours 0.07; B. Hoover, J.R. Sauer pers. comm.). However, rather than a real population trend this increase may be due to increased coverage or the recent use of playback tapes in the CBC to enhance counts.

There are a few records of possible Western Screech-Owls occurring in Saskatchewan (Smith in press). Campbell et al. (1990) described the species as an 'uncommon to fairly common resident on the south coast, including Vancouver Island' and as a 'rare to uncommon resident on the northern mainland coast'. It is also a 'rare to uncommon local resident in the central-southern interior' and 'very rare in the west and east Kootenays' (Campbell et al. 1990). A total of 102 breeding records (62 nests), and a total of 1,377 nonbreeding records have been recorded for the province (Campbell et al.

1990). Compared to other raptors the large number of records suggests that the species is relatively common.

There are no current studies of the Western Screech-Owl in British Columbia. However, R. Cannings (pers. comm.) believes that the species has declined on the coast (due to predation by increasing populations of Barred Owls *Strix varia*) and because of habitat loss on both the coast and in the interior (e.g. loss of riparian habitat along streams and lakes). For example, prior to three years ago R. Cannings could always call in birds around the University of British Columbia in Vancouver, but this is becoming more difficult. Also, during inspection of several hundred nest boxes erected for Northern Saw-whet Owls *Aegolius acadicus* usually one or two were occupied by Western Screech-Owls; over the last three years there have been none occupied. In the southern Okanagan which R. Cannings considers to be the core range of this species in British Columbia, loss of riparian habitat may be causing declines in Western Screech-Owls. The species is very hard to find in the BC interior and Cannings estimated five pairs for the southern Okanagan. For example, R. Cannings estimated that on occasions when he called specifically for Western Screech-Owls an individual of this species replied on one occasion out of five; on one occasion out of two, however, Barred Owls replied to these calls. Moreover, most birdwatchers in British Columbia believe the Western Screech-Owl to now be uncommon whereas several years ago it was considered a common owl (R. Cannings pers. comm.).

In the western United states the Western Screech-Owl is considered to be common, except in Montana (though this may be due to lack of information; D. Holt in pers. comm. to Marti and Marks 1989). No population estimates exist for the Western Screech-Owl in the western states. Marti and Marks (1989) believed that the species was 'doing well in a variety of habitats'. Because Western Screech-Owls are tolerant to human presence and adapt to feeding on a range of prey items they are not threatened by human activity. However, the species may be vulnerable to habitat loss (particularly lack of nest sites) in some parts of its range and may also be susceptible to pesticide contamination (Marti and Marks 1989). Surveys in the southwestern United States indicate that Western Screech-Owls have declined through loss of riparian habitats (Johnson-Duncan et al. 1988). There are few estimates of densities for the species. Density estimates in mesquite indicated that territories were 300m apart whereas Johnson et al. (1979) found that pairs were spaced 55 m apart in optimum riparian cottonwood-mesquite bosque.

Nature Conservancy rankings are available for two subspecies in British Columbia (*macfarlanei* and *kennicotti*) as S3 (i.e. rare or uncommon in state; in the order of 21-100 occurrences; S. Cannings pers. comm.). Given the number of nest records and sightings in Campbell et al. (1990) this may be updated to an S4.

E Habitat

General Due to the wide latitudinal range of the Western Screech-Owl, a variety of habitats are utilized. In the northern part of its range (British Columbia and Alaska), coastal temperate rainforests are inhabited, while in the south, coastal tropical evergreen and deciduous forests are inhabited in Baja California and chaparral habitats in the interior (Johnsgard 1988). Johnsgard (1988) suggests that the species prefers partly open habitats with deciduous trees, particularly riparian habitats or oak (*Quercus*) arroyos.

In coastal British Columbia, Western Screech-Owls prefer mixed deciduous/coniferous forests, normally near water sources, whereas in the interior deciduous woods along lakeshores or streams are preferred (Campbell et al. 1990). In the Pacific Northwest, according to Lehmkuhl and Ruggiero (1991), screech-owls are considered at moderately high risk from logging impacts in late successional forests.

Where overlap occurs with the Whiskered Screech-Owls *Otus trichopsis* (in Mexico) the two species may be ecologically separated by habitat, perhaps due to interspecific competition (Marshall 1957). Western Screech-Owls are common in pine-oak woods, where there are no Whiskered Screech-Owls. The latter species prefers more dense forests (Marshall 1957).

Hayward (1983) recorded screech-owls in low elevations in deciduous forests, especially those in river bottoms, and containing a high proportion of bunchgrass habitat. In this respect the screech-owl was clearly different from the other owl species studied by Hayward and Garton (1988). About 50% of the roosts Hayward (1983) located were in deciduous trees (mean height 21.2 m) and averaged 4.6 m high.

Nesting Natural cavity nests in British Columbia were found in black cottonwood, *Populus trichocarpa*, red alder *Alnus rubra*, Douglas fir *Pseudotsuga menzieii*, western red cedar *Thuja plicata* and western hemlock *Tsuga heterophylla*. Nest heights (including those in nestboxes) ranged from 1.2-12.2 m and most (65%) of these were 3.0-4.6 m high (Campbell et al. 1990).

F General Biology

1) Reproductive. Preferred nest sites for the Western Screech-Owl are those excavated by woodpeckers. In British Columbia most nests were in boxes (61%) and natural cavities (26% - for tree species see Habitat, nesting) (Campbell et al. 1990). Thirteen percent were in cavities of Northern Flickers *Colaptes auratus* and Pileated Woodpeckers *Dryocopus pileatus*. In other parts of their range, Western Screech-Owls also favour holes made by Northern Flickers, in either willow or cottonwoods bordering streams, or in junipers in arroyos. As well, junipers in dry arroyos are preferred nest sites. Cacti (especially giant saguaro) are used almost exclusively by the *gilmani* race in river bottoms and adjacent mesas in southern Arizona (from 1.2 m high to the cactus top) (Johnsgard 1988). In the western United States, where there are no tree cavities, old nests of Black-billed Magpies *Pica pica* or cliff cavities, are used (Marks 1983, Marti and Marks 1989).

Average clutch size varies from 1 to 5 eggs in British Columbia (Campbell et al. 1990) or 3 to 4 eggs in its overall range, and eggs are laid at 1-2 day intervals. There is a suggestion that clutches are larger at higher latitudes (except along the Pacific coast), and from the coast towards the interior United States (Johnsgard 1988). In British Columbia, laying dates varied from 17 March to 31 May (n = 49). In 53 broods young were found from 19 April to 21 August (51% between 8 May and 3 June) (Campbell et al. 1990). The remaining breeding biology of the Western Screech-Owl is thought to resemble that of the Eastern Screech-Owl (see Penak 1986, Gehlbach 1989).

2) Movements. Apart from dispersal associated with production of young, Western Screech-Owls are essentially resident. There are few data on movements of birds; Hayward (1983) reported home ranges of 3-9 ha (75% confidence interval) and 29-58 ha (95% confidence interval), from a sample of two owls. Clearly, more data are needed on this aspect of the Western Screech-Owl's biology.

3) Behaviour/Adaptability. Judging by its use of a very wide range of habitats the Western Screech-Owl appears adaptable to macro-habitat differences. However, certain habitat features appear essential such as availability of snags, nesting cavities and riparian bottomlands in some parts of the range.

The prey of the Western Screech-Owl is probably the best known aspect of its biology. Marti et al. (1993a; summarizing the studies of Brown et al. 1986, Barrows 1989, Marti et al. 1993b) recorded screech-owls preying on 53 species; these had an average weight of 4.4 g. The most common species in the diet of Western Screech-Owls in Idaho was *Microtus montanus* (38.1% of prey items), followed by *Perognathus parvus* (12.3%), *Peromyscus* spp. (10.5%) and Dermaptera (Insecta; 10.2%) (Marti et al. 1993b).

G Limiting factors

As in other owl species, the main factors limiting population size in Western Screech-Owls are probably food supply and nesting sites. Predation is also a factor that could limit the population, either by other, larger owl species or mammalian predators. With increased destruction of habitat in parts of its range, habitat quality for the species may be decreased. However, Johnsgard (1988) also suggests that provision of other habitats (e.g., urban parks) may be beneficial for screech-owls. Also Marti and Marks (1989) note that the species is tolerant of human presence, appears to be abundant and has a flexible diet.

H Special significance of the species

The Western Screech-Owl is part of the complex of *Otus* owls in North America. It was only recognized as a distinct species in 1983 (AOU 1983). Little is known about the adaptive significance of polymorphism in the species (Owen 1963). It is likely that different morphs vary in their habitat but research is lacking from most parts of the species' range.

I Evaluation and proposed status

Extremely little is known about the population status of the Western Screech-Owl. Most studies have concentrated on diet (e.g., Marti and Hogue 1974) or resource partitioning between this and among other species (e.g., Hayward and Garton 1988). Given that its distribution in Canada is restricted to British Columbia, that this forms a large part of the range of the subspecies *kennicottii*, and that this subspecies may be secondarily dependent on old growth forests (i.e. they are not optimal habitat but could be important for some component of the population), further information is needed, particularly in relation to population density estimates and habitat use. The species may also be affected by

destruction of riparian habitats (Marti and Marks 1989), especially in arid parts of the west where these habitats are susceptible to livestock. Screech-owls are also apparently vulnerable to contaminants (Henny et al. 1984).

In conclusion there is insufficient information to recommend a COSEWIC status for the Western Screen Owl, but given its widespread distribution, currently extensive habitat, and behavioural adaptability the Western Screech-Owl may not require designation in any category.

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K Acknowledgements

I thank Environment Canada for funding and C. Hyslop for the opportunity to prepare this COSEWIC report. B. Peterjohn and B. Hoover and J.R. Sauer provided BBS and CBC data, respectively, and J.R. Sauer performed the trend analyses on CBC data. S. Cannings, J. Duncan, M. Huot and D. Sutherland provided nature conservancy rankings for the species. I am very grateful to Richard Cannings for providing information on this poorly-known species. C. Hyslop and R.D. James commented on earlier versions of the manuscript.

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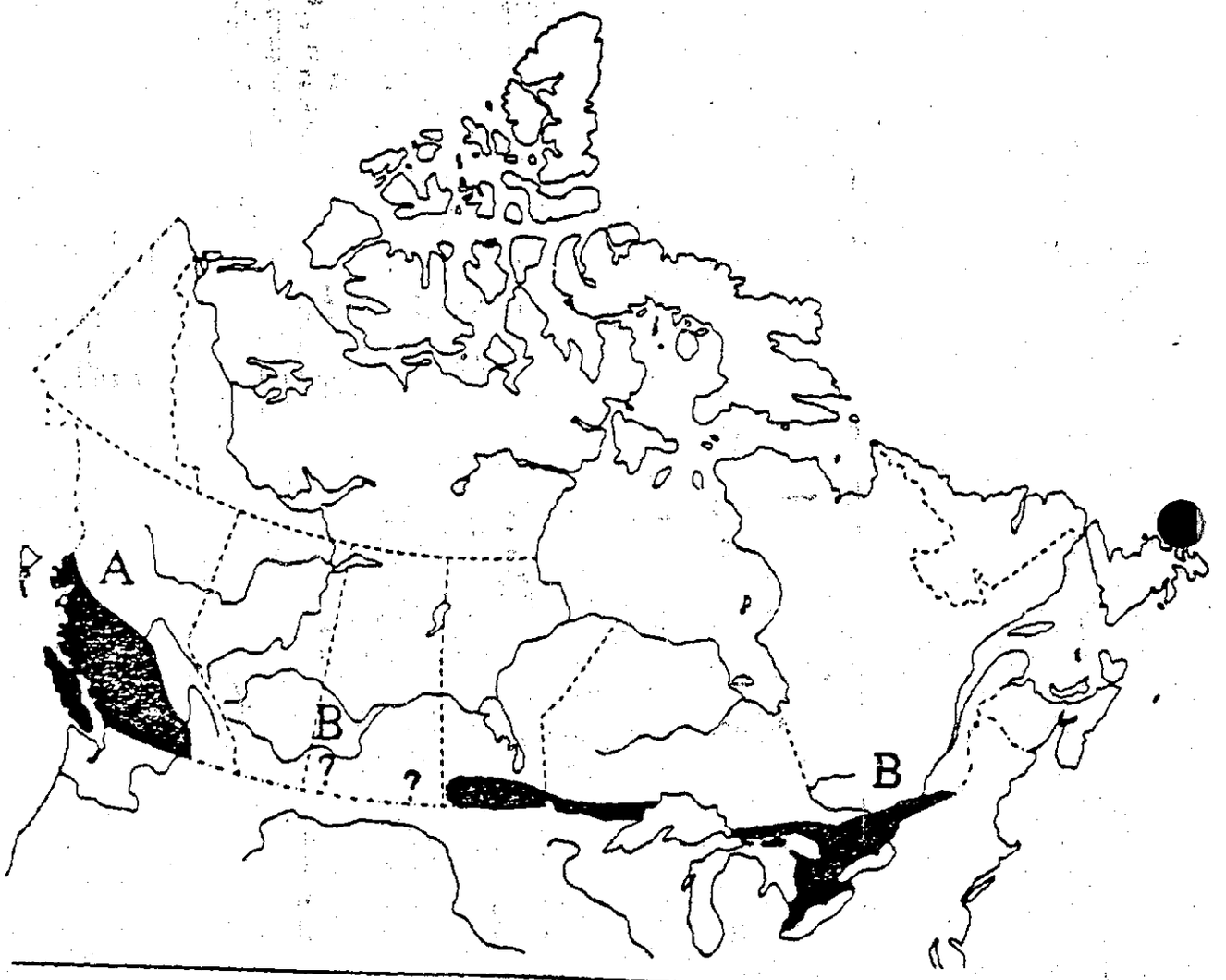
Figure 1 Distribution of Screech-owls in North America

(after Godfrey 1986)



Breeding Distribution of
A) Western Screech-Owl
B) Eastern Screech-Owl