

Review of the COSEWIC 2012 assessment of Western Screech-Owl (*kennicottii* subspecies)

by

Marcel Gahbauer and Jon McCracken

COSEWIC Birds Species Specialist Subcommittee

December 2014

Executive Summary

The most recent update status report for the Western Screech-Owl *kennicottii* subspecies for coastal BC estimated a population of 1500-3000 mature individuals and a decline of 20 to 30% over the previous 15 years (COSEWIC 2012). As such, COSEWIC recommended a status of Threatened in May 2012, referencing criterion C1, which specifies a population of fewer than 10,000 mature individuals, coupled with a continuing decline of at least 10% over 10 years. This status recommendation was subsequently questioned during the public review process under SARA, largely on the basis that the population size may have been underestimated in the report. In particular, the appropriateness and reliability of detectability estimates and habitat modeling parameters were challenged, as they may have been biased towards a smaller population size. Also, the relative proportion of the population formerly occurring in the BC South Coast was used in the report as a basis for trend estimation, but was not sufficiently substantiated and may not have been representative of the population density along the mainland coast.

In response to these challenges, the Birds Species Specialist Subcommittee (SSC) formally reassessed the population and trend estimates for the *kennicottii* subspecies that had been provided in COSEWIC (2012). The resulting report provides:

- A range of population estimates based on a range of plausible assumptions derived from available literature; and
- A population trend estimate for the past 10 years, derived from existing literature and data from ongoing surveys (i.e., Christmas Bird Count and BC Nocturnal Owl Survey).

Population Size Estimate: At the conclusion of this exercise, the Birds SSC determined that detectability was indeed probably overestimated in the COSEWIC (2012) report, resulting in what was probably an unrealistically small population estimate for the *kennicottii* subspecies. Whereas the 2012 report assumed that all owls within 800 m of survey stations were detected, a more realistic detection radius for the species is 400 to 500 m, and recent studies suggest that detectability rates tend to range between 0.2 and 0.3. Although some Western Screech-Owls occur between 300 and 600 m elevation, it is unclear how many; estimating that density is half as great as below 300 m is a guess, but perhaps closer to reality than assuming either none above 300 m or a uniform density up to 600 m. Finally, while very little is known about the distribution and abundance of the mainland population, it seems likely that the Vancouver Island density is at least twice as great as originally surmised.

Based on these adjustments alone, most calculations predict a population well above 10,000 individuals. However, the actual suitability of much of the potentially available habitat is unknown, and it is difficult to suggest the degree to which the estimates should be reduced. The most plausible unadjusted estimates, based on recent (2006-2007) data from large-scale systematic surveys, suggest a wide range

of between 4300 and 47,000 individuals. Moreover, if only 20% of potential habitat is not occupied for whatever reason, the low end of most estimates would fall below 10,000 birds. Furthermore, the estimates are based on data from 2006-2007. If the population has continued to decline since then (which seems to have happened), then population estimates would need to be reduced further.

Also, despite just a few parameters involved in generating population estimates (detection radius, detection rate, and selection of source data), estimated population sizes vary by more than an order of magnitude, and therefore it is important to acknowledge the relatively low level of certainty associated with any estimate.

Moreover, it is important to recognize that the owl population likely fluctuates substantially from year-to-year in response to variation in weather conditions and prey availability, and that such natural variation should be accounted for in any population estimate. Given all of the above, there may be more than 10,000 birds in some years. And in others, there may be fewer. Embracing this level of uncertainty is an important component of how COSEWIC assesses species status.

Population Trend Estimate: While there is still considerable uncertainty over a population estimate for the *kennicottii* subspecies in British Columbia, all sources for trend estimates suggest that the Vancouver Island population has declined by at least 50% during the past decade. This is supported by results from the most recent surveys that indicate declines in the Campbell River and Nimpkish Valley regions. The mainland population has been monitored in much less detail, but on balance, it seems reasonable (and precautionary) to conclude that the overall rate of decline for the entire *kennicottii* population in British Columbia is likely to be at least 30% over the past decade. Therefore, even if the most liberal population estimates (see above) are too large for criterion C1 to apply, then the rate of decline is still sufficiently great to warrant Threatened status under criterion A2b (estimated >30% reduction in number of mature individuals over the last 10 years, with the causes not well understood and possibly not ceased).

Conclusion: As an outcome of the review, the Birds SSC suggests that a reasonable precautionary interpretation of all the available data leads us to maintain that the subspecies was indeed correctly designated as Threatened in the most current status report -- whether under criterion C1 and/or under criterion A2b. Moreover, trends in adjacent jurisdictions suggest that rescue effect cannot be invoked, as the species appears to be reducing its range in southeastern Alaska and declining rapidly in Washington State.

The full review (Gahbauer and McCracken 2014) is available from the COSEWIC Secretariat (cosewic/cosepac@ec.gc.ca):

- Gahbauer, M. and J. McCracken. 2014. Review of the COSEWIC 2012 assessment of Western Screech-Owl (*kennicottii* subspecies). Unpublished COSEWIC report produced by the Birds Specialist Subcommittee. 27 pp.

The recent update status report (COSEWIC 2012) referred to in this document is available from the species at Risk Registry:

- COSEWIC. 2012. COSEWIC assessment and status report on the Western Screech-Owl *kennicottii* subspecies *Megascops kennicottii kennicottii* and the Western Screech-Owl *macfarlanei* subspecies *Megascops kennicottii macfarlanei* in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa ON. Available from http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=720