Description of Residence for Bank Swallow (*Riparia riparia*) in Canada

Preface

Section 33 of the *Species at Risk Act* (SARA) prohibits damaging or destroying the residence of a listed threatened, endangered, or extirpated species. SARA defines residence as: "*a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating*" [s.2(1)]. With respect to a listed wildlife species that is an aquatic species or a species of bird protected under the *Migratory Birds Convention Act, 1994*, the prohibition applies wherever the residences are found. For any other listed wildlife species, the prohibition applies automatically when the residence of the species is on federal lands and will only apply on non-federal lands if an order is made pursuant to sections 34 or 35 of SARA. Under section 97 of SARA every person who contravenes section 33 of the Act commits an offence.

A residence would be considered to be damaged or destroyed if an alteration to the residence and/or its topography, structure, geology, soil conditions, vegetation, chemical composition of air/water, surface or groundwater hydrology, micro-climate, or sound environment either temporarily or permanently impairs the function(s) of the residence of one or more individuals.

The following residence description was created for the purposes of increasing public awareness, and enhancing conservation outcomes by promoting compliance with the above prohibitions.

Under SARA, Bank Swallows have one type of residence: the occupied burrow.

Under SARA, the destruction of this migratory bird species' residence is prohibited automatically on all lands. Under certain conditions, SARA provides that permits may be issued for activities that affect a listed wildlife species, its critical habitat or residences of its individuals. SARA also provides exceptions for certain activities that relate to public safety, health or national security. The Government of Canada will work with landowners and land managers to explore options when situations concerning public health and safety arise.

Damage and Destruction of the Residence

Any activity that damages or destroys the functions of the occupied burrow would constitute damage or destruction of the residence. These activities include, but are not limited to, damaging or destroying the burrow; blocking access to the burrow; changing the slope of the vertical face used for nesting; adding, moving or removing material from the vertical face causing the burrow to collapse or to be filled; or any other activity that would destroy the function of the burrow.

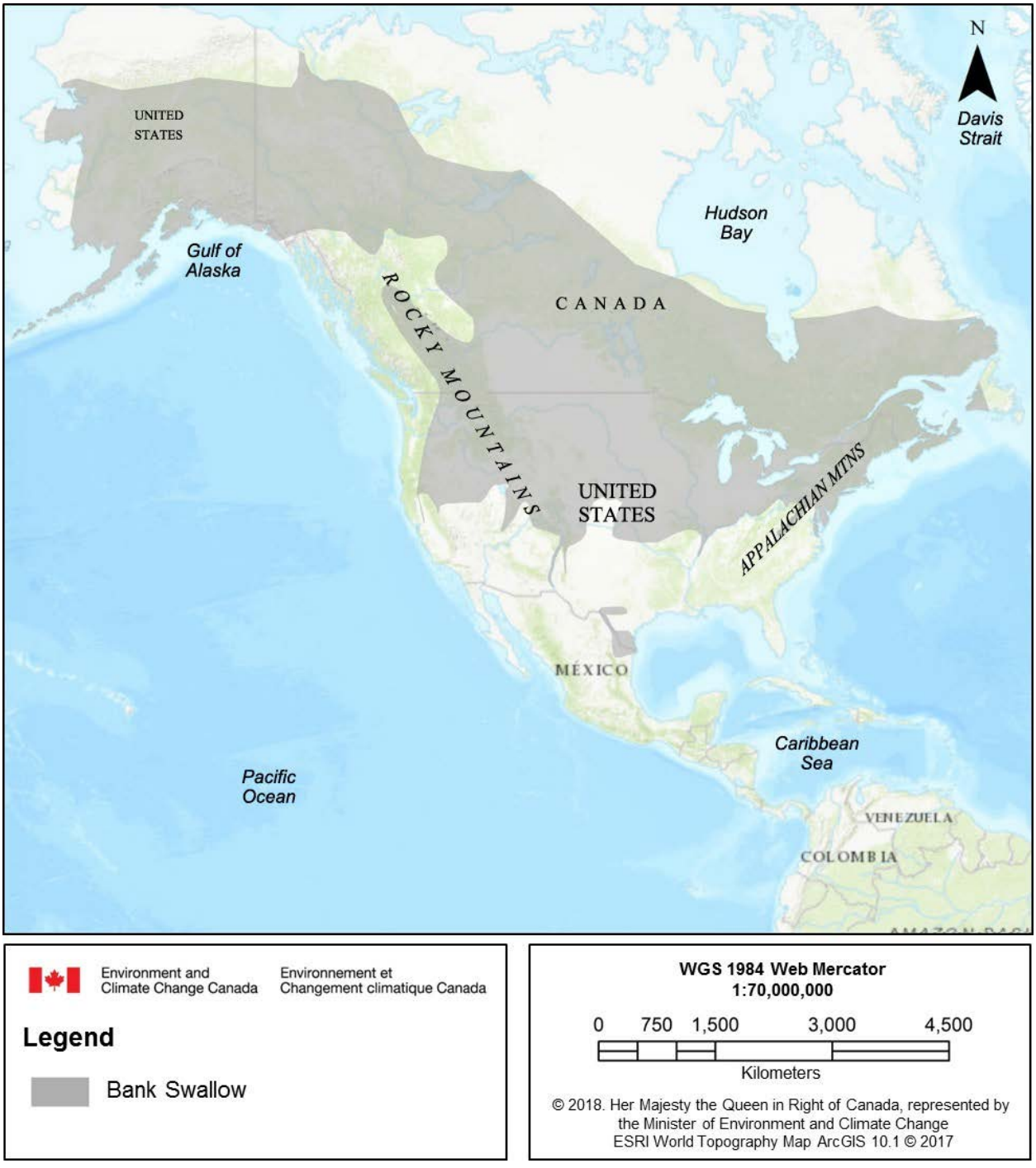

Figure 1. Known breeding distribution of the Bank Swallow (*Riparia riparia*) in North America. Note that nesting may occur outside of the currently known distribution; residences are protected wherever they occur.
Data Source: BirdLife International (2016)

1) The Burrow

Physical Appearance and Context

Any occupied[1] Bank Swallow burrow is considered a residence. The nesting burrow containing the nest is excavated by the birds parallel to ground surface and perpendicular to the bank face (Garrison 1999). The Bank Swallow builds a rudimentary nest made of grasses, feathers, twigs, rootlets, plant stalks, or leaves in a nest chamber at the end of the burrow (Campbell et al. 1997). Horizontal depth of the nest burrow averages 90 cm (range 42–180 cm) in British Columbia (Campbell et al. 1997) and 63.6 cm (range 15–145 cm) in Saskatchewan (Hjertaas 1984). In Ontario, lakeshore burrow depth averaged 71 cm (range 40 to >110 cm; n=70) and pit burrow depth averaged 65 cm (range 25 to >110 cm; n=88; Burke 2017).

In natural settings, Bank Swallows excavate burrows in near-vertical banks composed of exposed and unconsolidated silt or sand deposits (Falconer et al. 2016). Heights of banks at nesting colonies average 1.8 m (range 0.5–6.6 m) in Saskatchewan (Hjertaas 1984; Hjertaas et al. 1988). In Ontario, Bank Swallow colonies in lakeshore banks were found on vertical faces averaging 5.6 m in height (range 1.2–10.8 m; Burke 2017). On southern Ontario rivers (n=41 colonies), colony face length and height averaged 64.2 m (range 2.0–289.5) and 6.3 m (range 0.7–40.9), respectively (M. Cadman and M. Browning, pers. comm.). In Ontario pits, colony face length and height averaged 39.1 m (range 2.5–333.9) and 3.44 m (range 0.5–28.4), respectively (M. Cadman and M. Browning, pers. comm.). Nesting colonies in natural settings are generally located along rivers, streams, lakes, and ocean coasts (Garrison 1999). The location alongside waterbodies generally contributes to the natural erosion of the vertical profile, keeping the bank suitable for nesting (Garrison 1999; Falconer et al. 2016).

Burrows are aggregated into colonies of extremely variable sizes, ranging from a few nesting pairs to several thousand (Garrison 1999; COSEWIC 2013). In British Columbia, Campbell et al. (1997) reported a range of 3 to 3,035 burrows (n=491 colonies). Average size of colonies in Saskatchewan is 5 nests (range 1–48, n=79 colonies; Hjertaas 1984). Colonies along rivers in southern Ontario (n=50 colonies) averaged 100 burrows (range 1–1,256), but the median was 38 burrows (M. Cadman and M. Browning, pers. comm.). Surveys of lakeshore colonies at Lake Erie, Ontario suggest mean and median colony sizes of about 130 and 50 nests, respectively (Falconer et al. 2016). In southern Ontario, average colony size appears smaller in aggregate pit sites (112 ± 17 burrows) than at lakeshore sites (560 ± 138 burrows; Burke 2017).

The Bank Swallow often nests in human-made habitats. Burrows can be found in vertical faces in aggregate pits, along road-cuts, and in piles of sand, gravel, or sawdust (Garrison 1999; COSEWIC 2013; Falconer et al. 2016). Bank Swallows may also build nests in holes in human-made structures or occupy artificial faces

[1] Occupied is defined as the presence of one or more adult, young or viable egg.

built as surrogate habitat (Laberge and Houde 2015). Human-related excavation of material can refresh the vertical face and make banks suitable for nesting (Falconer et al. 2016).

Unoccupied burrows are typically present at active nesting colonies (Garrison 1999; Burke 2017). These burrows can remain from previous nesting seasons, result from failed excavation attempts by breeding Bank Swallow pairs, or have been abandoned by males that have not attracted a female (Garrison 1999). Mean burrow occupancy, the percentage of burrows in a colony that contain an active nest, ranges from 43 to 74% and varies annually, seasonally and by habitat characteristics (Garrison 1999; COSEWIC 2013). A recent study in Ontario (n=3205 burrows; Burke 2017) found that burrow occupancy is similar between lakeshore sites (63%) and aggregate pit sites (60%).

The presence of a nesting colony should be confirmed from the bottom of the vertical face, or otherwise in front of the face, as the occurrence and size of the colony can be easily overlooked from the top of the bank above the colony. The presence of a residence can be identified by one or more Bank Swallows entering or leaving a burrow, or the presence of young at the burrow entrance. The occupancy of a burrow can be confirmed from a single observation described above.

Function

The burrow provides thermoregulation of the eggs and nestlings, and protection against predators and harsh weather (Garrison 1999; Burke 2017). From the start of burrow excavation through the beginning of egg-laying, the burrow is used for roosting by both members of the breeding pair (Garrison 1999). The nest itself forms a rudimentary platform on which the Bank Swallow can lay and incubate its eggs and raise its chicks. In Canada, clutch size averages five eggs (range 2–7 eggs; Falconer et al. 2016); eggs are mostly incubated by females (COSEWIC 2013). Both parents feed young in the nest. Young depart the nest usually at about 18–22 days of age (Garrison 1999), but the burrows are still used for roosting for up to one week after fledging (COSEWIC 2013).

Bank Swallows are highly colonial breeders (COSEWIC 2013). Colonial nesting provides protection from predators (Burke 2017) and colonies provide an indication to the species of habitat quality (Garrison 1999; COSEWIC 2013). Large numbers of adult swallows at nesting colonies can more effectively detect, mob and deter potential predators. During post-fledging dispersal, juveniles visit multiple colonies, presumably assessing the suitability of breeding sites for future years (COSEWIC 2013).

Period and Frequency of Occupancy

In Canada, the possible period occupancy of the residence is about four months, typically from May to late August. Bank Swallows investigate many potential nesting locations, ranging over several kilometers, upon arrival on breeding grounds (Garrison 1999). Peak periods of egg-laying include the first half of June in Ontario (Peck and James 1987); in British Columbia, 55% of nests with eggs were

recorded during 14–28 June (Campbell et al. 1997). Second broods may occur in Canada, but limited evidence exists (Falconer et al. 2016).

Bank Swallows exhibit fidelity rates of 55–92% to previous nesting locations (Falconer et al. 2016). The location of colony sites might change because of the ephemeral nature of nesting habitat, while various factors can make previous nesting locations unsuitable for nesting between years. Larger colonies are more likely to be found at the same location (Freer 1977; Garrison 1999) and are more frequently reused than smaller ones. At natural sites along rivers, colonies tend to be found in the same location from year to year, although may be unoccupied some years. Adults that have successfully bred in previous years often return to the same general breeding area (Falconer et al. 2016). However, adults experiencing major nest mortality events, including predation or bank collapse, do not appear to recolonize the same nesting location, although new birds may recolonize these sites in successive years (Freer 1979; Falconer et al. 2016).

Bank Swallows typically dig new burrows each year, as erosion or human activities can cause the vertical face to collapse and expose fresh material (Garrison 1999). The burrow-excavation phase usually occurs over a period of 4–5 days, but can take longer depending on the soil type and composition (Garrison 1999). If old burrows remain, some may be reused, enlarged and deepened with excavation activities that are part of pair-bond formation. Old nests are often removed from reused burrows and new nests constructed (Garrison 1999).

Under SARA, the occupied burrow is considered a residence from the date when adults are first seen entering or leaving the burrow to the date when a bird is last seen at the burrow.

Additional Information

For more information on the Bank Swallow, go to:
https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=1233

For more information on SARA, go to:
https://www.canada.ca/en/environment-climate-change/services/species-risk-act-accord-funding.html

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