

Bank Swallow Canadian Genoscape

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Birds that hunt insects while flying, known as *aerial insectivores*, are experiencing significant declines in Canada. We also know that these declines vary across the country, with declines in certain provinces and territories being stronger than others. This suggests that the birds of the same species in different provinces and territories represent different populations. The gold standard for determining if animals are from different populations is based on genetics. If populations differ genetically, it allows the federal government to address specific threats to individual populations.

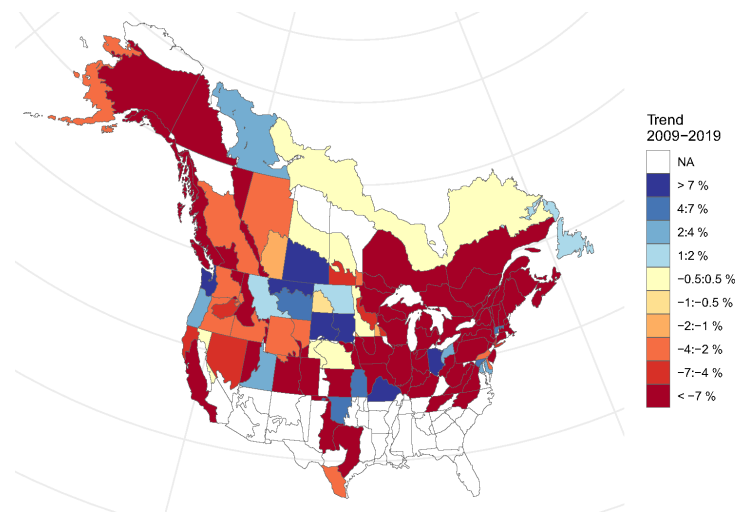
Bank swallows (Figure 1), a species of aerial insectivore, can be found across Canada in every province and territory, except for Nunavut. Most bank swallows migrate to South America for the winter, with smaller numbers of birds in western Mexico and Central America. The species digs small burrows in sandy bluffs along riversides, lakeshores, and in sand and gravel pits for nesting. Unfortunately, their populations have dropped dramatically in North America and Europe since the 1970s. In Canada, their numbers have plummeted by a shocking 93%, again, with declines happening more severely in some areas than others (Figure 2), suggesting that different populations across Canada are experiencing different threats on the breeding grounds, during migration, or on the wintering grounds.



Figure 1. Picture of breeding Bank Swallows from the north shoreline of Lake Erie. Photo by Brock and Sherri Fenton.

As part of a previous project to study migration patterns in bank swallows, we collected hundreds of central tail feathers from hundreds of birds from Alaska to Nova Scotia. Feather collection is a standard procedure and the particular feathers we collect do not harm the birds. We were unable to collect feathers from the Northwest Territories, Manitoba, and Newfoundland. We are proposing to fill this data gap. Thanks to new technology, we can study the genetic information of these birds from just one feather. Also, because the birds grow their feathers on the wintering grounds, we can also estimate where they spent the winter based on a chemical signature in the feather that varies depending on where it was grown. This research will help us understand potential threats to this endangered species outside of Canada. Additionally, we aim to determine if there are different groups of Bank Swallows that need special help to recover. In summary, this information will help us understand what the different populations of Bank Swallows are, where these birds overwinter and what potential threats they may face, both in Canada and beyond, so we can take steps to protect them.

Figure 1. Breeding Bird Survey (BBS) population trends for Bank Swallows in North America from 2009-2019 (Provided by A. Smith). This map shows the different population trends of Bank Swallows across North America.



In June/July 2024, we are proposing to capture adult Bank Swallows at breeding colonies using mist nets in sand pits or cliffs at targeted locations. Each bird will receive a US Fish and Wildlife Service aluminum leg band. We will measure wing chord, mass, and tarsus length, and visually estimate fat score (0-7). In total, we will process 90 bank swallows (30 per target province/territory).

We will collect two tail rectrices (R3) by gently pulling them out and storing them in dry coin envelopes. These feathers will regrow in about two weeks, well before migration starts. They will be used for genetic and isotope analysis to determine wintering regions. Central tail feathers are preferred to minimize flight impacts and because they grow on wintering grounds. We will gather a total of 180 feathers from 90 bank swallows across the Northwest Territories, Manitoba, and Newfoundland.