

Project report from: Habitat use of bats in protected and unprotected areas of east Vancouver Island

Research Organizations:

Environment and Climate Change Canada, University of British Columbia, Nanaimo and Area Land Trust

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2022 Survey Summary:

This project is examining habitat use of bats on Vancouver Island to understand how species diversity and abundance vary with local habitat type (wetland edge, riparian areas, forest gaps), protected area status and the composition of the surrounding landscape. As part of this project, we surveyed bats at two sites in Morrell Nature Sanctuary between July 11 and July 13, 2022. One site was located on the North side of Morrell Lake (49.1549, -123.9894) and the other a meadow bluff located near the Alder Trail (49.1552, -123.9830).

At each site, we placed ultrasonic acoustic recorders for three nights where they surveyed from sunset to sunrise. Between the two sites we observed 5 species (Big Brown Bat, Hoary Bat, Silver-haired Bat, California Myotis, Little Brown Myotis) with 4 species observed at Morrell Lake and 3 at the meadow bluff (Table 1). Hoary Bat and Little Brown Myotis were the most commonly detected species and were observed at both sites on each of the three nights. California Myotis and Silver-haired Bat were each detected on one night at Morrell Lake, while Big Brown Bat was detected on one night at the meadow bluff site. The average nightly call abundance, which represents each time an individual bat passes the recorder, was about four times higher at Morrell Lake than at the meadow bluff.

We originally planned to survey four sites within Morrell Nature Sanctuary but experienced mechanical issues with the Acoustic Recording Units in two cases. This project is continuing in May to July, 2023 and if permitted, we will return and survey the other two sites then.

Table 1. Bat species occupancy at Morrell Nature Sanctuary in July, 2022 (Yes=observed, No=not observed). Species four-letter abbreviations are discussed in the text.

Species	Morrell Lake	Meadow Bluff
Townsend’s Big-eared Bat	No	No
Big Brown Bat	No	Yes
Hoary Bat	Yes	Yes
Silver-haired Bat	Yes	No
California Myotis	Yes	No
Long-eared Myotis	No	No
Little Brown Myotis	Yes	Yes
Long-legged Myotis	No	No
Yuma Myotis	No	No

Table 2. Mean number of nightly feeding calls detected at each site. High F refers to the total number of calls from the five high frequency Myotis species (California, Little Brown, Long-eared, Long-legged, Yuma). Low F refers to the total number of combined calls from the four low frequency species (Townsend’s Big-eared Bat, Big Brown Bat, Hoary Bat, Silver-haired Bat).

Site	Avg. Number Calls	Avg. High F Calls	Avg. Low F Calls
Morrell Lake	306	233	73
Meadow Bluff	45	8	37

Dr Scott Wilson is a research scientist with Environment and Climate Change Canada and an adjunct professor in forest ecology at UBC. One of his current research projects is to identify characteristics of agroecosystems to support bird, bat and amphibian biodiversity. Dr Amy Wilson is a veterinarian and an adjunct professor in the Department of Forest and Conservation Sciences at UBC, where she studies the ecological and anthropogenic factors influencing wildlife health and disease, as well as the conservation ecology of bats in BC. In 2007, Scott and Amy Wilson were awarded the Bert Hoffmeister Scholarship, a joint effort by the Nature Trust of BC, Wildlife Habitat Canada, BC Ministry of Environment, and UBC to support their doctoral research. Scott’s PhD thesis focused on the potential impacts of climate change on Rock Ptarmigan and White-tailed Ptarmigan in the southern Yukon. Amy’s PhD was on the population genetics of island populations of Song Sparrows on the Pacific Coast. Linda Brooymans has an M.A. from the University of Alberta, is involved with the Community Bat Programs of BC (Mid Island), and is Stewardship Manager for the Nanaimo & Area Land Trust (NALT).