



Western Canada Bat Network Newsletter

Fall 2023 - Issue 39

Cover photo: Bat condo in Widgeon Marsh Regional Park by J. Saremba. **In this newsletter:**

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Alberta



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WCS Canada's Alberta Bat Program Update

By Cory Olson, Program Coordinator, Alberta Community Bat Program, Wildlife Conservation Society Canada, contact: colson@wcs.org. **Bats and Bridges** WCS Canada's Bats and Bridges project concluded its third full year. **Over 900 bridges have now been surveyed** across western Canada, including about 200 in 2023. The project now spans the **Yukon, Northwest Territories, British Columbia, Alberta, Saskatchewan, and Manitoba**. The main components of the project are expected to wrap-up following the 2024 season. Field work was conducted by WCS Canada staff, contractors, volunteers and partner organizations. We are especially grateful to the Yukon Department of Environment, Northwest Territories Environment and Climate Change, Saskatchewan Ministry of Environment, Alberta Environment and Protected Areas, and the University of Saskatchewan (Lane Lab) for completing surveys and for other in-kind contributions to this project during the 2023 season. Lab analyses were completed with the support of the Species from Feces Lab at Northern Arizona University, as well as Wildlife Genetics International, and the Animal Health Lab at the University of Guelph. Financial support during the 2023 season was received from Environment and Climate Change Canada, Government of Alberta, Calgary Foundation, and others.



Our results indicate that bridge use is widespread across most of the study region, with more than half the bridges surveyed having guano deposits. The notable exception is Manitoba, where none of the bridges surveyed to date (all along the Red and Assiniboine River) had evidence of substantial use by bats, although we were able to retrieve a few (< 10) fecal pellets at 4 of the 19 bridges surveyed in the province. Other regions of Manitoba will be surveyed during 2024. In contrast, bridges and culverts surveyed in the Yukon had among the highest usage rates, with 24 of the 36 sites having evidence of bats. Guano has been collected at nearly all bridges where we documented use by bats. These samples are being sent for **DNA barcoding** (either using metabarcoding or single-species assays), and several of the sampled bridges also had samples collected for Pd testing. Analysis of 2023 samples will be completed in 2024. Prior year's samples have been used to document the first detections of Pd in Alberta (2022) and Saskatchewan (2021), and DNA barcoding results have already expanded the known range of multiple species in our study region. For example, we now know that Western Small-footed Myotis occurs much farther west in Alberta than has been reported (including all the way to the Waterton River); Northern Myotis occurs in Edmonton's park system and along the foothills almost as far south as Calgary (near Cremona); and Long-eared Myotis is present along the Peace River in northern Alberta. Full results are expected to be published around late 2024 or 2025. **Project updates will be posted to www.albertabats.ca/bridges.**

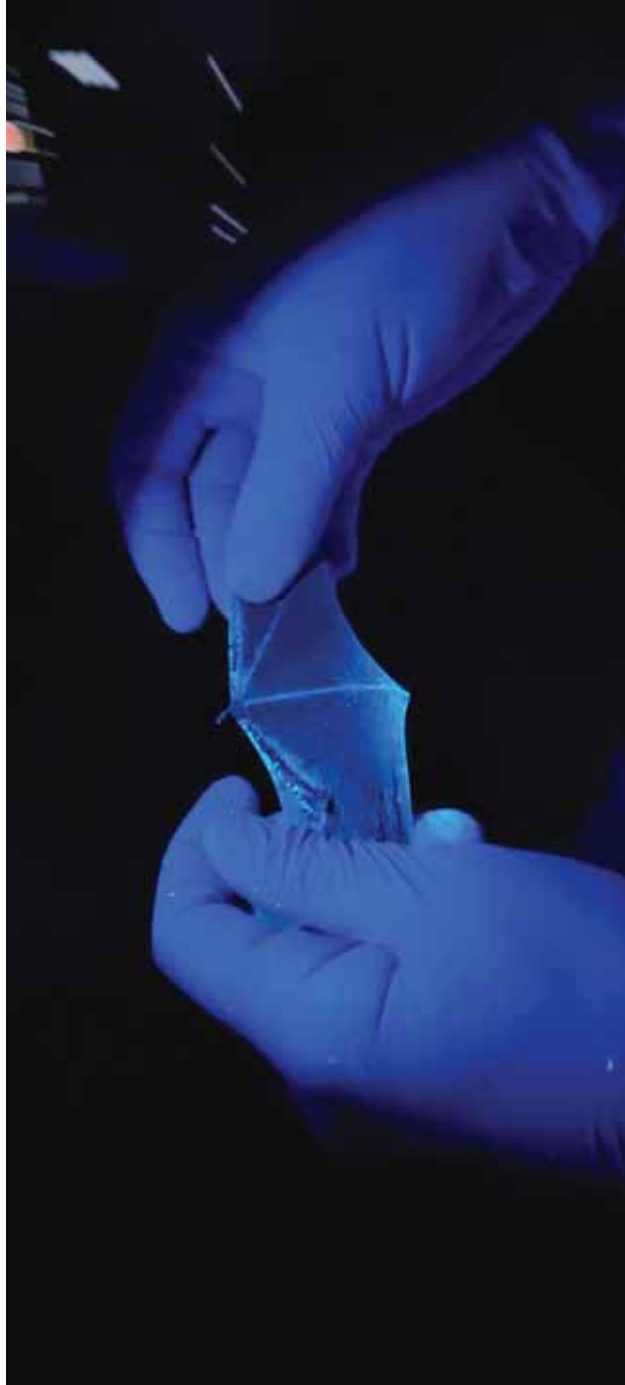


1 - Monitoring bat use of bridges across Western Canada. Photo: C. Olson.



WNS Monitoring in Alberta

By Cory Olson, Program Coordinator, Alberta Community Bat Program, Wildlife Conservation Society Canada, contact: colson@wcs.org. WCS Canada and Government of Alberta staff and volunteers (Lisa Wilkinson, Sandi Robertson, Susan Holroyd, Camila Hurtado, Wonnita Andrus, Mike Kelly, Allison Choquette, Cameron Lockerbie, Dave Hobson, Stefano Liccioli, and Cory Olson) **captured bats for five nights in May 2023 to screen for potential white-nose syndrome (WNS)** and the presence of *Pseudogymnoascus destructans* (Pd). This included sites along the Red Deer River (19 Little Brown Myotis; 15 Western Small-footed Myotis) and Milk River (4 Little Brown Myotis; 1 Western Small-footed Myotis; 1 Long-eared Myotis; 1 Big Brown Bat). **No visible signs of WNS infection were observed, but skin swabs and fecal samples from Little Brown Myotis along both rivers tested positive for Pd.** All other captured species tested negative. Pd was already confirmed to be present along the Red Deer River and was suspected to be present along the Milk River, based on bridge sampling in 2022. But the recent detections are the first confirmation that Little Brown Myotis, specifically, has been exposed to Pd. Thirteen bat boxes located near the Red Deer River sampling location were all well occupied, suggesting major die-offs associated with WNS have yet to occur. In addition to the spring captures, we revisited a cave along the upper Red Deer River in June 2023. This work was completed with the help of Alberta Speleological Society members (Batgirl Omura, Christian Stenner, Will Raleigh-Smith, Jaren Habiak, Vladimir Paulik), as well as Mike Kelly, Jason Headley, and Cory Olson. Only a few dead bats were observed, which is consistent with normal over-winter mortality, and fecal samples collected from the cave tested negative for Pd (some additional samples are still being tested). Several guano samples were also collected at summer roosts in Alberta during 2023, including 28 from bat boxes or building roosts (2 positive; 19 still being tested), and 80 samples from bridges (1 positive; 2 inconclusive; 16 still being tested). Several additional samples were collected at roosts outside of Alberta. **Results from Alberta confirm the presence of Pd along the Red Deer River and Milk River, and there is an inconclusive detection along the Beaver River in Alberta** (along with confirmed and inconclusive detections along the same river in Saskatchewan). All the rivers where Pd was confirmed to occur in Alberta during 2023 already had confirmed or inconclusive Pd detections in 2022. Thus, while Pd became easier to detect and was detected farther upriver than in 2022, work in 2023 has not yet shown a major advancement in the range of the fungus compared to the prior year (but some samples are still being tested). We thank several volunteers and partner organizations for their help in collecting samples needed to support ongoing Pd monitoring in Alberta. This project was funded by the Government of Alberta, Environment and Climate Change Canada, Alberta Conservation Association, Calgary Foundation, and through public donations.



3 - Bat capture for Pd sampling in Alberta. Photo: C. Olson.

Alberta Community Bat Program Update

By Cory Olson, Program Coordinator, Alberta Community Bat Program, Wildlife Conservation Society Canada, contact: colson@wcs.org. The Alberta Community Bat Program delivered over **44 events** around Alberta during 2023, which we estimate had over **10,000 participants**. These events included a

combination of information booths, bat walks, school presentations, and public talks, which were delivered by our coordinators: Susan Holroyd (Calgary region), Cory Olson (Edmonton region), Darcey Shyry (Vermilion region), Chris Godwin (Fort McMurray), Mike Kelly and Jason Headley (southern Alberta), and others. We thank Erin Low, Kelsey Low, Camila Hurtado, Abby Giles, Tracy Flach, Michaela Foley and Sarah O'Brien for their assistance running events, as well as the many partner organizations that hosted these events. Hundreds of thousands more people were reached through the program's social media accounts, which now have more than eleven thousand followers across Facebook (@albertabats), Instagram (@abcommunitybatprogram), Twitter/X (@albertabats), and YouTube (@albertabats) - **Follow and re-share to show your support!**

Funding for the program was provided by Environment and Climate Change Canada, Government of Alberta, Calgary Foundation, the Alberta Conservation Association, and public donors.



4 - Bat outreach events consistently attract a large and cheerful crowd. Photo: C. Olson.

Alberta Environment and Parks Update

By Lisa Wilkinson, Senior Species at Risk Biologist/ Provincial Bat Specialist, Alberta Environment and Parks, contact: lisa.wilkinson@gov.ab.ca, and Gavin Berg, Provincial Habitat Specialist, Alberta Environment and Parks, contact: gavin.berg@gov.ab.ca. **Alberta Environment and Protected Areas (EPA) is working to update its *Bat Mitigation Framework for Wind Power Development (2013)*.** This is a document that no longer aligns with the needs of effective bat management in the face of rapidly increasing industrial pressures. Alberta has witnessed a boom in renewable energy and is viewed as one of the leading markets in Canada for future development. There are just over 1500 turbines on the landscape in Alberta, with continued growth expected for the foreseeable future. To create effective solutions for both the bats and industry, EPA is working closely with industry partners to **create a model that allows robust testing of various mitigation options.** The inputs to the model and associated tools are **inclusive of bat biology, turbine engineering and abiotic forces** (i.e. weather, climate change, geographic locations etc.) in an attempt to consider all angles of the issue. The model is malleable and allows flexibility when faced with some data that can be less than certain. **The outputs of the model provide projections for bat populations** (in this case, we are focused on hoary bats) and megawatt production. EPA is hopeful that the model will provide a solution that is widely supported by

stakeholders and reduces the impact to both bat populations and industries bottom line. This expected result will provide the backbone upon which the updated Bat Mitigation Framework for Wind Power Development (note: name likely to change) will be based. **EPA will strive to have an updated policy in the first half of 2024.**



British Columbia



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 - Examining Wing Microbiomes
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Updates from the BC Government

By Mandy Kellner, Bat Conservation Coordinator, WLRS Conservation Science Section. Contact:

Mandy.Kellner@gov.bc.ca. **1 - Data submission requirements changes for wind development in BC**

BC has updated the data submission requirements for wind power developments. The 2016 Bats and Wind BMP has been slightly updated to specifically require

1. Reporting of all known bat fatalities, and submission of dead bats found Nov 1 – May 31, and
2. Reporting survey protocols and data, including summarized acoustic monitoring data, to WLRS on appropriate templates (Bat Acoustic, Carcass Searches, etc.). This was undertaken to ensure acoustic and mortality data is easily available to support analyses around migratory and other bats, particularly as our three 'migratory' species have been recommended as Endangered by COSEWIC – report available here: <https://species-registry.canada.ca/index-en.html#/documents/412>

B.C. Ministry of Environment. 2023. **Best Management Practices for Bats in British Columbia, Chapter 4: Wind Power Developments**. B.C. Ministry of Environment, Victoria, BC. 83pp.

<https://a100.gov.bc.ca/pub/eirs/finishDownloadDocument.do?subdocumentId=22141>



2 - Mixed-species Roost Project BC WLRS / WCSC

Bat colonies in buildings are an obvious source for obtaining abundance data through emergence counts. However many of our maternity roosts in buildings are occupied by multiple species of bats ([at least 18 % of roosts monitored in the BC Annual Bat Count](#)). This means that changes in count numbers are not linked to a single species, and as we expect differential impacts of WNS and other threats, we are working to develop a simple and affordable protocol to assess the proportion of each species in a mixed roost.

We are currently exploring acoustics to determine the proportion of Little Brown and Yuma Myotis in mixed roosts. In Year 1 and 2 (2022 and 2023), we conducted a pilot project at four sites, comparing the

proportion of each species from 'in-hand' samples (genetics from guano, capture identification) to proportion of echolocation calls in a recording made during emergence. **Results from Year 1 (2022) are extremely promising**, suggesting that an acoustic recording taken under specific conditions can provide a close estimate of the proportion of species present.

Year 2 results are pending, and we are excited to expand the project in Year 3 to a larger diversity of sites. For more information on this project please reach out to Mandy.Kellner@gov.bc.ca

This project is a collaborative effort of WLRS and WCSC and relies heavily on the participation of roost stewards, the BC Community Bat Program, and many field crew and volunteers who help with the painstaking guano collection, processing captured bats, and managing data and samples.

3 - Myotis Roost Tree Project

Northern Myotis and Little Brown Myotis are at risk from diverse threats, including the invasive fungal disease white-nose syndrome. With no cure for the disease, conservation relies on supporting bat populations both pre- and post-WNS through reduction of other threats and through habitat protection. Maternity roosts are generally viewed as critical resources for many bat species, and as such are prioritized for habitat protection. **The BC Myotis Roost Tree Project involves capture, tagging, and telemetry to refine the known range of Northern Myotis and to describe biophysical attributes for roosts in forests to aid in identifying critical habitat for Northern and Little Brown Myotis.**

In 2023 we conducted a **second year of fieldwork** in the Columbia Mountains north of Revelstoke to locate and describe roost trees of Northern and Little Brown Myotis in Interior Cedar Hemlock (ICH) forests. We targeted areas where female Northern Myotis had been captured last year or in previous studies.

It was another field season of high effort and limited capture success, even in the Giant Cedars area of Glacier NP which had historically had more numerous Northern Myotis (Holroyd 1993). These 2023/ Year 2 findings put to rest the theory that June 2022 was too cold and wet to support reproduction – 2023 was much warmer and drier, and still not many reproductive females! **HOWEVER**, every roost tree located contributes to our understanding of bat tree use and movements, and will aid in identifying summer critical habitat and develop Best Management Practices for habitat retention in different forest types.

Thanks to the techs, Parks Canada staff, and volunteers that helped out this summer.



5 - Bat capture occurred at wetland edges and in small gaps or trails. Photo: M. Kellner.



6 - Sunny hot Little Brown Myotis maternity roost tree. Photo: M. Kellner.



7 - Radiotelemetry in the Interior Cedar Hemlock BEC zone. Photo: M. Kellner.

4 - BC Bats and Bridges Project The BC Bats and Bridges project continues, with a huge thank you to partners involved in surveying and collecting samples – WLRS, MOTI, WCSC Western Canada Bat Team, WCSC Alberta Bat Program, BC Community Bat Program, the BC Wildlife Health Program, and with funding support from BC LBIS, WLRS, and ECCC. Data from all contributors is summarized here. **Project Goals**

1. increase our understanding of the amount of use and the distribution and attributes of bridges as roosting habitat by Little Brown Myotis and other species, and
2. provide essential information on the presence of the fungus that causes white-nose syndrome, in a targeted zone across southern BC suspected to be most at risk for invasion of the disease from Washington State/ Idaho / Montana / Alberta

Objectives

1. survey bridges to identify those used by bats,
2. confirm species of bats using bridge roosts,
3. characterize structures used by bats,
4. increase surveillance for Pd in high priority regions of BC, and

5. develop and prioritize a list of maternal roosts to target with subsequent work, including compiling historical survey data into one database and linking to Ministry of Transportation Bridge ID.



8 - Bridges surveyed from 2017 – 2023. Green dots indicate bat use; red dots are bridges with no use.

Results

Data collection and compilation:

- development of a standard survey form; development of online data portal
- compilation of all known bridge survey work from 2017 – 2023 into one database
- to date we have collected and compiled survey data from 384 bridges that have been surveyed for bat sign or reported as having bats, with 479 survey visits in the database

Bat-bridge ecology:

- evidence of use by bats at 46 % (176/384) of bridges
- identification of 49 maternity/day roosts (13 %, 49/384 bridges) in diverse parts of the province, highlighting the widespread use of bridges as artificial roosts
- seven species of bats have now been confirmed at bridges, through multi-species and single-pellet analyses: Little Brown Myotis, Yuma Myotis, Long-eared Myotis, Long-legged Myotis, Big Brown Bat, Townsend's Big-eared Bat, and Silver-haired Bat. Possible detection of Fringed Myotis and Dark-nosed Small-footed Myotis

Disease surveillance:

- guano samples were collected for Pd testing as part of the province's WNS surveillance effort
- in 2022, 27 samples were tested, leading to the first confirmation of Pd in BC at guano collected at a bridge in August 2022

- in 2023, 48 samples were sent for testing – results pending

Upcoming:

- continue to work on strengthening relationships and communication with BC MOTI,
- share BMPs and information about bridges with bats to MOTI this winter,
- continue to summarize survey data to identify preferred bridge types used as maternity roosts, and
- plan for 2024 survey work to target regions of the province with little data as well as priority sites for Pd surveillance

If you have historic records of bridge surveys, or knowledge of bat use of bridges, let us know!

5 - BC Bat Action Plan The newly formatted-plan follows IUCN Threat categories and [IUCN-Conservation Measures Partnership Action Classification](#). This update removes repetition, breaks down multi-part actions into single actions, and facilitates analysis of what types of threats we focus on and where gaps remain. **Join us in mid-January for a focused session to review action ranks and finalize the document through 2025.** Contact – Mandy.Kellner@gov.bc.ca.

6 - WNS / Pd Surveillance in BC

White-nose syndrome surveillance period is from Nov 1 – May 31.

All dead bats (n =43 bats) and swabs (n = 235) that were submitted from the 2022/23 season have been tested and are negative for Pd. We are currently waiting for testing results from the 2022/23 guano samples (n = 47 bridge samples, 59 spring roost sites).

In partnership with the BC Community Bat Program and others (see Bridge Project), we are continuing to gather several sample types for **testing for the 2023/24 surveillance season**.

1. Dead bats – any dead bat found from Nov 1 – May 31 should be reported and ideally submitted to the BC Animal Health Centre for testing ([Click to report dead bats](#)).
2. Swabs – from bats in rehab or bats handled for research
3. Early spring guano at select known maternity roosts
4. Guano from bridges; contact the BC Community Bat Program to report dead bats and winter activity

Contact Mandy.Kellner@gov.bc.ca about other sample types.

WCS Canada's Western Bat Program Update

By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact:

clausen@wcs.org. **Program Highlights** The WCS Canada Bat Team **welcomes Erin Low as a full-time staff member at the Kaslo, BC office.** Erin comes to us from Alberta where she completed an MSc on bat

ecology in Robert Barclay's lab. Erin's focus will be on BC projects, with part of her time spent on Alberta projects. The Bat Team also had the pleasure of employing **two new interns** during 2023: **Kaila Keutzer in the Kaslo office, and Maleen Mund in Vancouver**. Maleen will be staying on in 2024 to help coordinate the Probiotic Project in the Greater Vancouver area. **Two main events** stood out for us in 2023: 1. Co-hosting the WBWG meeting in Victoria in April (the first time this conference was held in Canada) and 2. Delivering a Bat Capture and Inventory course in Lillooet in July (see below for details). To learn more about WCS Canada's Bat Program projects, visit www.wcsbats.ca.



Northern Myotis and Old Growth

By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact: clausen@wcs.org.

In August 2022 our bat team **captured 2 Northern Myotis on the Kinbasket Reservoir amongst a 'sea of young forest'** that has resulted from the heavy logging that has occurred in this area. This species is known as an old growth specialist and the Bat Team was at first rather surprised to capture this species in such a highly logged area. But **subsequent radiotracking of these individual bats** by Jason Rae and others **led them to two residual mature/old forest stands that had been reserved**. This confirmed that this species does indeed select crevices in old tree stands and that the species is still persisting to some extent in the south part of the Kinbasket despite heavy logging. What is not known is what size of old tree patches are needed, and how interconnected they need to be. Research by others has shown that Northern Myotis typically do not forage more than a few hundred metres away from a forest edge, and typically forage within the forest where they glean insects off of leaves of vegetation. Thus, understanding how this species persists in BC forests on the south end of their range in areas that are under varying levels of threat from timber harvest is of high priority. This is especially true of old growth deferrals and new forest stewardship plans that are being written and approval for many years into the future.



9 - Northern Myotis. Photo: H. Gates.

WCS Canada, funding pending, is looking to launch into a more intensive study of the Northern Myotis, a federally endangered species that is increasingly rare in the southern part of its western range. Our capture efforts in 2023 to find this species in remnant patches of old growth cedar-hemlock in a drainage south of Glacier National Park where there are previous records of this species, have so far not yielded this species. Now that **Northern Myotis (and Little Brown Myotis and Hoary bat)** are species proposed for the Identified Wildlife list under Forest and Range Practices Act, old tree forest patches where the species still persists could possibly be protected as WHAs (wildlife habitat areas). This is in contrast to WHFs (wildlife habitat features) that exist as an option to protect single trees in the Kootenay region. The protection of single snags that foresters have identified as potential bat maternity roosts and registered as a WHF (with a buffer of trees around it no bigger than 1.5 tree lengths wide) is of course not well suited to protecting forest habitat for tree-roosting bats who typically switch roosts every 1 – 2 days. While the new potential for WHAs for Northern Myotis offers a glimmer of hope for real protection of forest habitat for bats, there are still many barriers including the years that can often pass in trying to create these protected areas while timber harvest pursues. Our work to understand where Northern Myotis roost, work towards habitat protection, and help shape forestry policy/practice is in its infancy and is currently being supported by our newest foundation funder – the Audain Foundation. We also thank BC Conservation and Biodiveristy Awards and BC Conservation Foundation, and Fish and Wildlife Compensation Program Columbia.

Tree Enhancement and Roost Mitigation (TERM) Project

By Heather Gates, *Bat Program Field Coordinator, Wildlife Conservation Society Canada, contact: hgates@wcs.org*. This project is being led by WCSC staff Heather Gates. **This project began in 2020 with 2 test poles to see if we could “create old growth tree habitat” as a successful mitigation tool for loss of old and mature trees.** Our goal is two-fold: 1. to mitigate for lost tree roost habitat for as many tree-roosting species as possible; 2. to test the efficacy of a variety of tree-roost type structures (i.e. various pole designs and chainsaw modifications of trees). Working with Todd Manning and arborists, we created 47 roosts for bats out of trees. This involved either installing BrandenBark on a young tree or creating strategic chainsaw cuts in trees that lacked crevices. The types of crevices we created have been evolving for the past 4 years as we learn what bats use and what chainsaw cuts can be made safely. We have used a combination of ‘slab’ and ‘plunge’ cuts, and lightning strike simulations. The plunge cut is modelled after a similar procedure used successfully to produce bat slits in Australia. BrandenBark was also installed on poles in some areas. We worked with two local contractors in West Kootenay and with Nupqu in East Kootenay to install a total of 15 pole roosts. We have also been experimenting with cutting BrandenBark into smaller pieces to act as rainshields and smaller roost options to hopefully appeal to bats that are seeking a smaller volume of roosting space than the large cavity provided by a wrapped sheet of BrandenBark. **To date, with partners, we have created a total of 152 tree-like roosts in the Kootenays with more installations planned for 2024.** By fall of 2022, 26 roosts were being monitored for occupancy through the use of guano traps installed at the base of the roosts. Twelve samples were sent to labs for genetic analysis in November. Results indicate use by five species: Little Brown Myotis, Long-eared Myotis, Long-legged Myotis, California Myotis, and Big Brown Bat. In spring of 2023, an additional 39 guano traps were installed on roosts created in 2022. Guano collected this year is being compiled for lab submission by the end of November. Funds/donations for this project have been provided largely by: Columbia Basin Trust, Environment Canada and Climate Change (via Nature Grant to Kootenay Connect and HSP), Columbia Valley Local Conservation Fund, FWCP, HCTF, Teck, and Fortis. Partners in this project in 2023 include: Okanagan Nation Alliance, Nupqu, Min of Forests in West Kootenay, Nature Trust BC, Nature Conservancy of Canada, Slocan Lake Stewardship Society, Meadow Creek and Hill Creek Spawning Channels, Creston Valley Wildlife Management Area, Trail Wilderness Association, The Land Conservancy, BC Parks, Valhalla Ecological Foundation, and BC Ministry of WLRs in East Kootenay.



10 - Example of a guano trap installed at the base of a tree to collect pellets dropped by roosting bats. Photo: H. Gates.



11 - Installing BrandenBark on a delimiting tree. Photo: H. Gates.



12 - Finished installation of BrandenBark on a pole. Photo: H. Gates.



Examining Wing Microbiomes

By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact: clausen@wcs.org.

We are assisting McMaster University to **research the relationship between microbiomes of bats and geography, genetic relatedness, species, and seasons**. For the past 2 summers we have captured bats across BC, collecting guano samples, genetic tissues samples, and swabbed their wings to sample their wing microbiomes. McMaster University is working with additional partners in eastern Canada to examine these microbiome relationships across the country. East vs west findings will inform white nose syndrome vulnerabilities.



13 - A video highlighting this work is available on the WCS Canada Western Bat Program Youtube Channel here: <https://youtu.be/V0tuiB6ailE?si=4cgG78VQSFqRlqj6>.

WNS Probiotic Project and Year-round Acoustic Monitoring in Lower Mainland

By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact: clausen@wcs.org; and Maleen Mund, Bat Research Technician, Wildlife Conservation Society Canada, contact: mmund@wcs.org. **The probiotic was applied for the first time in Washington spring/summer 2023** in collaboration with the Washington Fish and Wildlife Department and USFWS. **In BC, probiotic was applied for the 5th year**, twice during the summer season (in May and August). There are now a total of 11 study sites: 5 control and 6 treatment sites. **Several of the WA sites have been confirmed Pd positive in 2022 and/or 2023, while the BC sites remain Pd negative** based on the most recent samples collected in 2023. This year in BC, we successfully established a 5th study site (second control site). This is at Stanley Park, where a colony of mixed Little Brown and Yuma Myotis roost part-time in bat boxes and buildings. In 2024, we will continue mark-recapture efforts here, using bands and PIT tags, in addition to building a bat mini-condo in collaboration with the Stanley Park Ecological Society that is likely to enhance habitat and make reading of PIT tags more effective. In BC, captures occurred over 34 nights (3 zero capture nights) among the 5 long-term study sites with the help of 6 long-time volunteers and 6 new volunteers. **In total, we captured nearly 900 bats, including 168 recaptures that had been marked in previous years (bands/PIT-tags applied 2017-2022)**. The field team (led by Chris Currie), PIT tagged **600 additional bats** this past summer. We sampled more than 870 bats to confirm species identification and test for presence of probiotic and/or baseline wing microbes. Approximately **230 bats**

were swabbed to test for presence of *Pseudogymnoascus destructans* (Pd) during the BC government White-nose Syndrome surveillance period.

We thank Aaron Aguirre, and partners from McMaster University; (Dr. Jianping Xu, Chadabhorn Insuk, and Nico Popescu) for assistance in the field. In November, the field team deployed winter detectors in the Coquitlam Watershed and at Stave Lake with assistance from members of the Kwikwetlem and Kwantlen First Nations respectively. This project is funded largely by FWCP Coastal, Environment and Climate Change Canada, and Habitat Conservation Trust Foundation, with small contributions from other partners.





North American Bat Monitoring Program (NABat)

By Jason Rae, Data and Research Scientist, Wildlife Conservation Society Canada, contact: jrae@wcs.org.

2023 marks the eighth year of WCS Canada's NABat in BC. Within BC, we collected data from approximately sixty 10 x 10 km grid cells in 2023. Each year since 2016 we have expanded our network of partners and in 2023 we established two new grid cells with partners to fill gaps in geographic coverage. These efforts add critical samples to expand our occupancy, distribution, and activity datasets that will

contribute to reference points for detecting species diversity changes and evaluating the impacts of stressors on bat populations. This past summer was also **our first year of a new collaboration with the Alaska Department of Fish and Game (Karen Blejwas), the [BC-SE_AK Hub](#)**! This Hub is expanding and in transition. We are now in conversation with Biodiversity Pathways to bring Alberta into this collaboration, where they will adopt leadership of the expanded Hub in 2024. Over this past year we have continued to refine our procedural documents and tools to facilitate consistency and efficiency of both provincial/state monitoring efforts and increase the sample size for our activity trend estimates. For example, we **created Survey123 field forms** that allow grid leaders to easily record and submit their site information from the field using a smartphone or tablet without the need to transcribe paper data sheets into a separate template. These resources and analysis tools developed by WCS Canada will be shared with Biodiversity Pathways during the 2024 year of project leadership transition. Our NABat network continues to operate smoothly due to the dedication of the many volunteers, landowners, biologists, and partner organizations from across the province who participate in the program – without you, this critical long term monitoring program would not be possible. Our major partners include: BC Community Bat Program, BC Parks, BC Ministry of Water, Land and Resource Stewardship, Ktunaxa Nation Council, Kwadacha Nation, Lillooet Naturalist Society, Nature Conservancy of Canada, Okanagan Community Bat Program, Okanagan Nation Alliance, Peace Community Bat Program, Parks Canada, Pemberton Wildlife Association, Quest University, South Coast Bat Conservation Society, Slovan Solutions Society, Slovan Lake Stewardship Society, Skeena Community Bat Program, Stewardship Pemberton Society, Salt Spring Conservancy, Thompson Community Bat Program, Tsay Keh Dene Nation, and West Moberly First Nations. We also thank our funders, including: Columbia Basin Trust, Habitat Conservation Trust Foundation, Forest Enhancement Society of British Columbia, Fish and Wildlife Compensation Program, BC Ministry of Water, Land and Resource Stewardship, BC Parks, Environment and Climate Change Canada, Regional District of Central Kootenay, Regional District of East Kootenay, and Kootenay Connect.



14 - Stationary acoustic detector setup for NABat monitoring. Photo: E. Low.

Migration Monitoring

By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact: clausen@wcs.org. Led by WCS staff Erin Low. Although our main acoustic monitoring efforts have focused on NABat for early summer recording, we recognize the **growing urgency to understand where and when bats move seasonally**. In particular, which river valleys in BC are migration corridors? Do

some species fly over mountain ranges, or follow river valley bottoms? Which valleys are important for which species across BC (e.g., North-South, or East-West)? The COSEWIC assessment has strengthened the urgency to learn more about the 3 “migratory” bat species. **Migration monitoring has largely been focused to date in the Columbia Basin**, as that is where the bulk of our funding has been for this and other bat monitoring efforts (FWCP Columbia, Columbia Basin Trust). We continue a modest effort to obtain more data on seasonal bat movement patterns in other areas of southern BC (funded by Habitat Conservation Trust Foundation and FWCP Coastal) and expect to ramp this up in coming years, funding pending.



15 - Long-term acoustic migration monitoring setup on solar panels. Photo: Jason Rae.

Parson Air BnB (swallow-bat condo) Completed

By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact: clausen@wcs.org. The condo that was designed by Parson's local Cory Schacher was constructed in spring/summer 2023. Cory was tragically killed in a motorbike accident during this process. The structure has some work to complete in the interior roosting chambers that Erin Low will be overseeing this winter. The structure is being dedicated in Cory's memory. This is collaborative project with Wildsight Golden and Upper Columbia Swallow Habitat Enhancement Project. The bat portion was largely funded by Environment and Climate Change Canada and the Nature Fund (via Kootenay Connect), with substantial donations of time and materials from local citizens, the Invermere Rod and Gun Club and Invermere Rona.



16 - Parson Air BnB – This 'Bats and Birds' structure has the top part of structure as bat condo and the underneath and shed area are for nesting swallows. This is located only metres away from the Columbia River in Parson, BC. Also in the photo are 2 poles, one with BrandenBark wrapped around the top as an additional roosting location. Photo: E. Low.

Capture Course in Lillooet

By Dana Blouin, Program Manager, Bat Program, Wildlife Conservation Society Canada, contact: dblouin@wcs.org; and By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact: clausen@wcs.org. Most of the Bat Team (6 WCSC employees/intern) helped conduct a Capture Course in Lillooet. There were 22 people including all instructors. We capture nearly 350 bats of 11 species over 6 nights of hands-on experience. Trainees included 2 biologists from Parks Canada (Waterton NP, Gwaii Haanas NP), and 1 BC Gov Biologist (Dpt WLRS), 3 local First Nation biologists/technicians with Sekw'el'was Band (Splitrock Environmental), 4 grad/undergrad students, and two BC Community bat people. Specifically, this course trained 2 grad students who are working under the supervision of Dr. Zenon Czenze (Australian researcher) and Dr. Erin Baerwald (UNBC) for the collaborative Hot Bats Project -- Assessing Climate Change Effects on Bats. This course served as the kick-off for the Hot Bats Project which then continued for the rest of the summer.



17 - Spotted Bat. Photo by: I. Routley.



18 - Bat processing stations. Photo: C. Lausen.



19 - Students installing nets to capture bats. Photo: C. Lausen.

BC Community Bat Program Fall 2023 Update

By Paula Rodriguez de la Vega, Provincial Coordinator, BC Community Bat Program. Contacts: bcbats@gmail.com.

www.bcbats.ca/ [Facebook page](#).

The **BC Community Bat Program** (BC CBP) is a network of community bat projects across BC that promotes bat conservation through 1) education and outreach to raise awareness of threats to bats and to recruit local bat stewards, 2) detection, protection and monitoring of bat roosts, 3) province-wide Citizen Science involvement to engage the public and detect population declines due to White-nose Syndrome and other threats, and 4) enhancement of habitat including installation of bat boxes. In 2023, the program was offered across BC by 21 regional coordinators. It is implemented by local, established stewardship organizations or consultants with direct landowner contacts in each region. The BC CBP works closely with the BC government and many partner organizations, volunteers and stewards. We aim to build community support for resilient bat populations that can survive the myriad of threats bats now face.



White-nose Syndrome Surveillance and Management - BC CBP

The discovery of *Pseudogymnoascus destructans* in Southern BC in 2022 has dramatically increased risks to BC bats, which are vital to our economy and ecology. In 2023, the BC CBP continued to work

closely with the BC government and many partners and volunteers to monitor bat populations in BC. The BC CBP is actively involved in WNS surveillance and mapping through collecting and submitting dead bats; population monitoring to detect declines in summer colonies (BC Annual Bat Count) – particularly important in western Canada where almost no large winter congregations are known that could be used for monitoring population impacts. **Reducing harm to bats and building resilient bat populations are currently the only way to manage impacts from WNS.** The BC CBP continues to refine and/or use existing targeted outreach products/ BMPs to reduce harm to bats, as well as promote our Bat-friendly Communities initiative to develop local stewards and ideally result in inclusion of bats and bat habitat in local planning processes and activities.



20 - A bat box in spotlight. Photo by Mayne Island Community Bat Program.

BC Community Bat Program Summary Statistics 2023 Interest in the BC CBP continues to increase, with impressive involvement of private landowners and local and provincial wildlife managers. To-date in 2023, we have;

- answered over 1200 calls and emails,
- conducted 120 site visits,
- located 155 new roost sites,
- submitted 83 guano samples for [DNA testing](#),
- delivered 108 presentations or events,
- built 63 bat boxes,
- involved at least 800 Citizen Scientists in over 1300 individual [Bat Counts](#), and provided a summary of the [2022 bat counts](#),
- organized and delivered 3 Bat Ambassador training workshops,
- trained [Bat Ambassadors](#) (developed and piloted in 2021) to a current total of 113 adults and 100 Grade 12 students trained as Bat Ambassadors in the Okanagan, Metro Vancouver, and Kootenay regions combined,

- increasing interest and development of [BatPacks](#) and [Bat EduKits](#) with partner groups around the province, inclusion of [Comox](#) as our newest [Bat Friendly Community](#), the first community on Vancouver Island,
- established a new partnership with BC Nature, and organized our first introductory [webinar](#). The goal being to offer targeted Bat Ambassador training to teach members about bats, encourage participation in citizen science activities, and eventually to work towards developing their local Bat Friendly Communities,
- established first tourism partnership with the [Thompson Okanagan Tourism Association](#) and provided information and outreach on their website to the tourist industry,
- reached out to WildSafe BC who expressed interest in working together in 2024,
- increased TV media presence in [Vancouver Island](#), Okanagan and Kootenay areas where they are now airing bat programs on local Shaw/Rogers TV community channels
- expanded Bat Week. This year it was more popular than ever, with workshops, presentations, interviews, and TV appearances across the province. Even Science World and BC Public Libraries helped promote the importance of bats this October.
- continued to support Kelowna Museum's ["Bats – Out of the Darkness" travelling museum display](#) which is now on exhibit at the [Rossland Museum](#).

The BC CBP is administered by the BC Conservation Foundation and funded by the Habitat Conservation Trust Foundation, Habitat Stewardship Program, Forest Enhancement Society of BC, BC Government, and many regional and local community grants.



21 - One of the many bats found by residents and reported to BC Community Bat Program. Photo by M. Sariyski.



22 - Celebrating Community Bat Program volunteers on Gabriola Island. Photo by Gabriola Rescue of Wildlife Society (GROWLS).

Burke Mountain Naturalists Society Bat Program Update

By John Saremba, BMN Bat Program Coordinator. Contact: johnsaremba@gmail.com. Photos: J. Saremba.

In 2023, our Burke Mountain Naturalists Society (BMN) bat program participated in a diverse range of bat monitoring, research, education, conservation, and habitat enhancement activities and events in the Metro Vancouver region. Highlights from these are presented as follows.

Monitoring and Research With other local organizations graciously taking over our previous **bat monitoring** and counts at various locations, we continued to support their efforts with assistance and technical guidance. For example, several of our volunteers and I joined bat counts at Widgeon Marsh Regional Park as coordinated through a group from BCIT. The main bat roost at this park is a bat mini-condo with at least 900 bats observed on the August 2nd count. We also appreciated the opportunity to provide technical support to the Minnekhada Park Association (MPA) for the **installation of HOBO temp/rH data loggers** at the Minnekhada Heritage Farm bat mini-condo. These data loggers were used to track the interior temperature and rH compared to ambient conditions at this bat mini-condo. Custom-made bat guano collection trays were also built and donated to the MPA for use at this mini-condo.



23 - Volunteers preparing to count bats emerging from bat mini-condo at Widgeon Marsh Regional Park.



24 - Bat mini-condo at Minnehada Regional Park.

As part of our bat monitoring activities, we continued to conduct **bat surveys and study species presence, composition and behavior** at several local wetlands, marshes, and small lakes. These sites included Blakeburn Lagoons in Port Coquitlam and Como Lake in Coquitlam. Both waterbodies support a considerable number of Little Brown and Yuma myotis bats, who forage during the late spring and summer at these sites, as well as other bat species that were detected nearby. Our nature club also conducts **water quality sampling** on a monthly basis at six local waterbodies with the use of the Water Rangers freshwater [explorers test kit](#). As bats, birds other and wildlife are known to frequent these sites for drinking water and food sources, we feel that it is useful to understand water quality trends at these sites.



25 - Participants set up to observe bats foraging in and around west pond at Blakeburn Lagoons Nature Park.

Our bat program really enhanced its ability to study bats this year with the purchase of a **thermal camera**. This was made possible by a very gracious contribution from a private donor combined with funds raised through the sale of our bat boxes and supplies. After consideration of our requirements, we decided to purchase a [Pulsar AXION Model 2 XG35 Thermal Imaging Monocular](#). This model was chosen for the following features: long detection range and variable magnification, good resolution quality and pixel dimensions, waterproof rating, wi-fi connectivity to smart devices, and built-in photo and video recorder. This device proved quite useful for various methods to study bats, including the ability to observe their flight and foraging characteristics even in very low light conditions. The thermal monocular was also a very good educational device that enabled participants to view bats in flight and emerging from bat roosts in almost complete darkness. As well, it proved very effective as a way to record videos of bats emerging from a bat box or mini-condo. We could then transfer the video to a computer and accurately count the number of bats seen leaving the roost.



26 - Thermal monocular set up on a tripod to view and record bat foraging in and around a lagoon.

Education and Conservation Events Early this year, we were thrilled that the **City of Port Moody** was awarded the **BC Bat Friendly Community certification**. This award was presented by Danielle Dagenais (BC Community Bat Program Regional Coordinator) to Meghan Lahti (Mayor of Port Moody Mayor) at a City Council meeting on March 28, 2023. **Many thanks to all those involved in supporting and helping the City achieve this award.**

During this year, we continued to partner with different local municipalities and groups to promote appreciation and protection of bats and their habitat. Such educational events included bat walk and talks as sponsored by the City of Port Moody Environment department at the Westhill Park Rotary Trail in

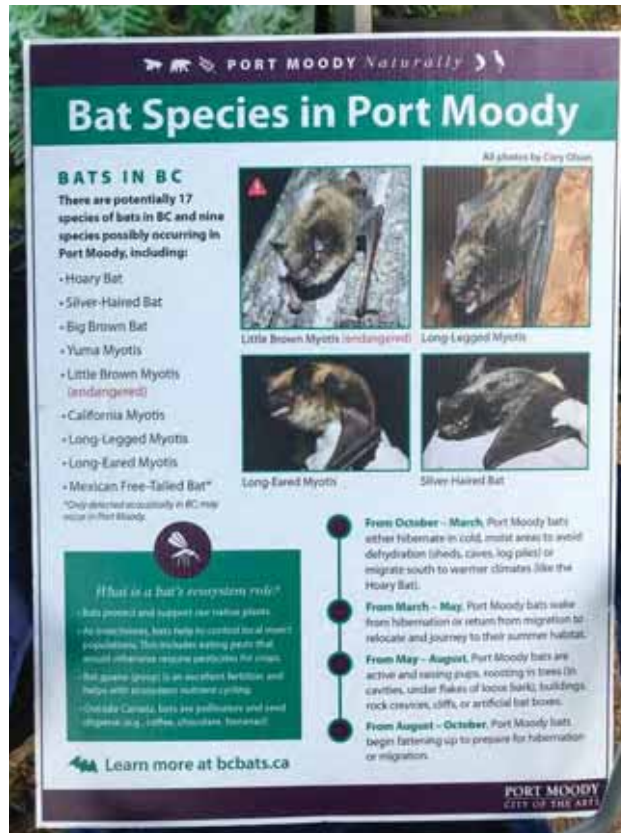
late April and July. The City of Port Moody created a series of excellent large posters for display at such nature-related events.



27 - Port Moody receives a Bat-friendly Community Certification. Danielle Dagenais (BC Community Bat Program Regional Coordinator) presents the award to Meghan Lahti (Mayor of Port Moody Mayor) at a City Council meeting on March 28, 2023.



28 - City of Port Moody and BMN bat display and set up at April 28th bat walk and talk event.



29 - One of the City of Port Moody bat display posters.

Other bat education events included a pair of **nocturnal nature walks and bat surveys** conducted in association with the Minnehada Park Association at Minnehada Marsh in Coquitlam, BC. These two July events enabled 20 participants to view and confirm the use of two large marshes by a variety of bat species. On mid-July, we were invited to set up our bat display and educational props at the Campbell Valley Regional Park Nature House in Langley, BC. Thanks to the creative efforts of our volunteer bat equipment builder, Gord Mayenburg, we designed and built a variety of items for such nature displays. This year, we created a **see-through bat box with acrylic exterior panels** to show people what the inside of a bat box looks like. This item is designed to be mounted on a three-foot cedar post with a bat guano tray attached and either a bird nest box or a wood demo bat box mounted on the other side of the post. This type of education prop garners considerable interest at nature events.



30 - Participants at the July 8th nocturnal bat monitoring session at Minnehada Marsh.



31 - The BMN bat program display at Campbell Valley Nature House in Campbell Valley Park (Langley, BC).



32 - See-through demo bat box on stand with guano tray and bird nest box on other side.

This year, we also focused in the **development of a partnership alliance between the BC Federation of Nature Clubs (BC Nature) and the BC Community Bat Program**. This initiative was led by Kephra Beckett (BC Nature Conservation Coordinator) and Paula Rodriguez de la Vega (BC Community Bat Program Provincial Coordinator). For this alliance, BC Nature and BC Community Bat Program signed a working Terms of Reference with the goal to further bat conservation through increasing the awareness of BC's bat fauna and conservation challenges, and increasing knowledge of, and participation in, existing educational opportunities and conservation efforts. **Together, these two organizations have started on a journey to increase bat awareness and citizen science within their memberships.** As a member of the partnership working group, Kephra, Paula and I began planning for several bat education events. The first of which was hosted by Kephra on behalf of BC Nature with Paula giving an excellent bat orientation presentation to BC Nature members and others on October 23rd as part of Bat Appreciation week. Close to 100 participants took part in the one hour zoom presentation with plans are underway for bat ambassador training in the spring.

Habitat Enhancement This year we again conducted field trips with various municipal staff and other groups to offer advice in the installation, inspection, monitoring, and maintenance of bat boxes. This included field trips with the City of Port Moody environmental staff (i.e., Emily Phillips) and local BMN bat enthusiasts, Judy Taylor-Atkinson and Jim Atkinson.

We also continued our volunteer work to support local schools and municipalities in the **creation and enhancement of bat-, bird- and pollinator friendly nature gardens**. These efforts included the construction of bat boxes and bird nest boxes, as well as enhancement of local habitat. One such project involved the City of Port Moody and volunteers in the creation of a **native plant garden** to support bat and pollinator species near a nature interpretation trail at Westhill Park. Our nature club also coordinates and provides volunteers for a variety of **vegetation management activities in partnership with local municipalities**. These activities focused on the **removal of invasive plant species** and replacement with native plants at two nature spaces, both of which are major bat foraging sites, i.e., Blakeburn Lagoons Nature Park in Port Coquitlam and Como Lake Park in Coquitlam. During such events, BMN volunteers set up a wildlife pop-up display for park visitors, including bat education materials.



33 - Installation of native plant garden for bat and pollinator species at Westhill Park.



34 - Signage at native plant garden in Port Moody Westhill Park Rotary Trail area.



35 - Bat portion of BMN Nature Education Pop-up Display during Invasive Species Removal Event at Como Lake Park.

Saskatchewan



Brigham Bird and Bat Lab Update

*By Mark Brigham, Professor, University of Regina, Contact: mark.brigham@uregina.ca. The lab was out in full force at this year's North American Symposium of Bat Research (NASBR) meeting held in tropical Winnipeg. Hannah Wilson, Dana Green, Emma Blanken, Siobhan Cunningham and Sara Burns all gave talks or posters. Dana was rewarded with a prize for one of the best student talks. She also retired as the longest serving student representative on the board of directors. Dana, Hannah and Emma are working full throttle at finishing of theses for their degrees. All have some exciting results that they presented at the meeting and which should make a splash in the literature shortly. I am pleased that the final (Introduction) [paper](#) in the Brock Fenton Festschrift has been published in Canadian Journal of Zoology. This special collection is in honour of Brock's 80th birthday. Most of the papers are open access but I think the introduction is especially worth a read. Paul A. Faure, Gary P. Bell, and John M. Ratcliffe. 2023. Preface to *Festschrift* honouring the contributions of Professor M. Brock Fenton to the study of bats. *Canadian Journal of Zoology*. e-First <https://doi.org/10.1139/cjz-2023-0149>.*

Canada



In this section:

- Pest Control Training Project
 - Canadian Bat Box Project
-

Pest Control Training Project

By Susan Holroyd, Conservation and Outreach Coordinator, Alberta Bat Program, Wildlife Conservation Society Canada, contact: sholroyd@wcs.org. A national online training course for pest control operators and other industries that manage situations involving bats is currently being developed. The first half of the course was piloted in 2023 with feedback incorporated to improve the course. **The training course will be hosted on our training platform at www.training.canadabats.org and will be finalized in 2024.**



Canadian Bat Box Project

By Karen Vanderwolf, Trent University Post-doc. Contact: kjvanderw@gmail.com. This past summer was **the final field season for the 3-year [Canadian Bat Box Project](#)**, but we are brainstorming research directions based on the results of this study. Even though the project in its present form is ending, I can still add records to my database of when bats return to your bat box next spring as the final publication of results is still at least a year or two away. Also be sure and let me know how late into the fall bats stay in your bat boxes! **You can [register your bat box](#) with the project up until April 2024, after which the survey will be deactivated.**

Visits by myself and other colleagues to bat boxes this past summer resulted in **44 swab samples** of bat boxes to test for the fungus that causes white-nose syndrome. **All samples were negative**, so it does not appear that bat boxes are a major environmental reservoir involved in the transmission cycle of the fungus. Good news so far! Additional samples are pending, so we'll have to wait and see what those results say.

We received results on bat species identification based on molecular analysis of all the guano samples participants mailed to us as of October 2022, as shown in **Table 1**. We will receive more results from additional guano samples in June 2024. The table shows the number of bat boxes with each species by province. There were a few samples in British Columbia where the identification was uncertain. The lab will perform further analysis on these samples to resolve the identification issues. **Outside of British Columbia, only Little Brown Myotis and Big Brown Bats use bat boxes in Canada, which means the other seven bat species that live east of British Columbia do not appear to use bat boxes.** Some bat boxes harbored both Little Brown Myotis and Big Brown Bats, but multi-species colonies cannot be detected through our guano analysis protocol since the lab only analyses one guano pellet per sample. These colonies were identified by professional biologists and therefore the occurrence of multi-species

colonies in bat boxes is likely higher than these data suggest. The endangered Little Brown Myotis is the most common species using bat boxes in most provinces.

Table 1. Distribution of bat species in bat boxes across Canadian provinces and territories.

Province	Little Brown Myotis	Big Brown Bat	Little Brown & Big Brown	California Myotis or Western Small-footed Bat	Little Brown Myotis or Long-eared Myotis	Yuma Myotis
Alberta	78	14	6	0	0	0
British Columbia	1	1	0	2	3	1
Manitoba	3	0	0	0	0	0
New Brunswick	5	1	0	0	0	0
Newfoundland & Labrador	14	0	0	0	0	0
Northwest Territories	0	0	0	0	0	0
Nova Scotia	12	0	0	0	0	0
Ontario	78	39	3	0	0	0
Prince Edward Island	13	0	0	0	0	0
Quebec	5	1	0	0	0	0
Saskatchewan	3	8	5	0	0	0
Yukon	15	0	0	0	0	0
Total	215	64	14	2	3	1

Participants came through this summer and submitted lots of **bat count data** from their bat boxes (see **Table 2**)! To the left of the dotted line, the table shows the number of boxes with and without bats; **38.7% of bat boxes registered with our project currently have bats or had bats in the past**. To the right of the dotted line, the table below shows the maximum number of bats (organized by category) counted in each bat box by province. The majority of boxes had fewer than 10 bats. Large colonies of bats will use bat boxes, but it is relatively rare in Canada.

Table 2. Inventory of bat boxes and their occupancy across Canadian provinces and territories.

Province	Total Boxes	% Occupied	No Bats	Bats Present	Bats present, but unknown number	<10 bats	10 to 49 bats	50 to 99 bats	100 to 200 bats	>200 bats
Alberta	175	72.0	49	126	11	60	36	12	5	2
British Columbia	88	48.9	45	43	12	24	3	2	0	2
Manitoba	44	29.5	31	13	5	3	5	0	0	0
New Brunswick	199	16.1	167	32	10	16	5	0	0	1
Newfoundland & Labrador	19	73.7	5	14	2	0	3	4	3	2
Northwest Territories	1	0.0	1	0	0	0	0	0	0	0
Nova Scotia	75	44.0	42	33	10	14	2	6	1	0
Ontario	647	34.3	425	222	50	94	37	33	7	1
Prince Edward Island	43	41.9	25	18	7	3	1	7	0	0
Quebec	76	23.7	58	18	5	11	1	0	0	1
Saskatchewan	46	47.8	24	22	1	16	5	0	0	0
Yukon	25	60.0	10	15	0	11	2	1	0	1
Total	1438	38.7	882	556	113	252	100	65	16	10

Thank you to everyone for submitting count data! It's not too late to submit more count data if you have not yet done so. Just email me or fill out this [short survey](#). A big THANK YOU to all the project participants!!

International



In this section:

- Western Bat Working Group Meeting 2023
- International Best Management Practices document for use of bat houses in US and Canada
- Journal of North American Bat Research
- English Pronunciation of Bat Names

Western Bat Working Group Meeting 2023

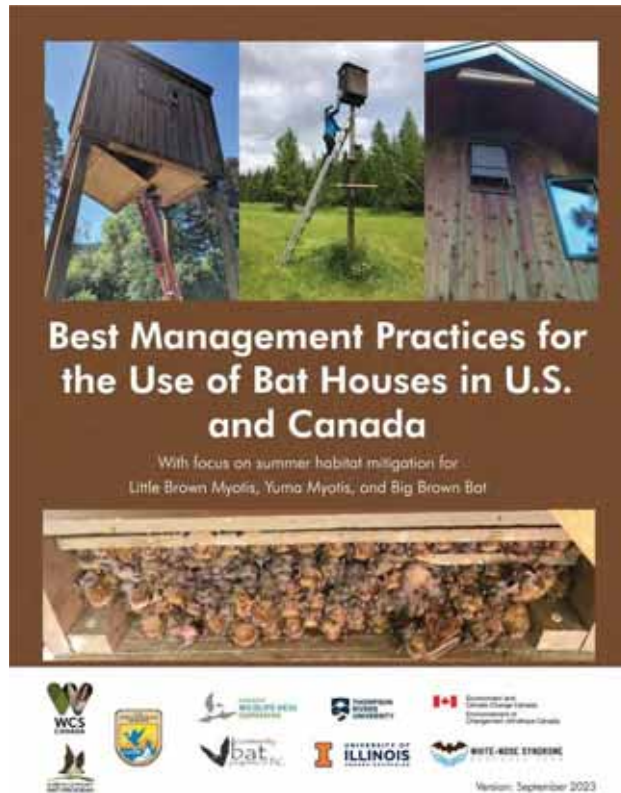
By Dana Blouin, Program Manager, Bat Program, Wildlife Conservation Society Canada, contact: dblouin@wcs.org **WCS Canada co-hosted a very successful Western Bat Working Group conference in Victoria in April 2023** (the first time this conference was held in Canada). Approximately 150 people from Canada and the US attended the conference themed “Bats Across Borders” and took advantage of the first of these conferences hosted in Canada to discuss international bat conservation issues. The conference ran from April 18-April 21, concluding with a ½ day workshop on migratory bat conservation and wind energy impacts. The BC Bat Action Team took advantage of everyone being in one location to hold a pre conference team meeting, and many workshop participants also took part in a whale watching tour prior to the kick-off social. Coming out of the wind energy and bats workshop was a list of action items that individuals have been following up on to ultimately mandate regulations to the wind energy industry. Both US and Canadian federal government representatives committed to helping move this forward. A letter has been drafted by WBWG that will target states and provincial leads to try to initiate regulations. See more in the **Conservation Corner** section of this newsletter (below).



36 - The 2023 WBWG conference greeted 150 attendees from US and Canada in Victoria, BC. Photo: D. Blouin.

International Best Management Practices document for use of bat houses in US and Canada

By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact: clausen@wcs.org. After many years of meetings, in person and virtual, **the BMP is finally complete!** This is a culmination of more than 3 years of meetings/webinars on the topic with more than 50 others with varying degrees of experience with bat boxes. *This document aims to standardize designs and outlines appropriate use of bat boxes and bat condos to replace lost roosting habitat for bats.* It is a very long and comprehensive document. This was done purposefully so that it is a **'one stop shop' for everything we know and don't know about bat boxes and bat condos**. WCS Canada's Susan Holroyd led the writing of this document and there are many co-authors that contributed ideas, data and text. Check out the full document [here](#). **A short summary of this guidance will be generated in 2024** by the WNS Conservation and Recovery Working Group in partnership with the co-authors which will be a more digestible way to distribute the main recommendations in this BMP. **Reference** Holroyd, S., Lausen, C.L., Dulc, S., de Freitas, E., Crawford, R., O'Keefe, J., Boothe, C., Segers, J. and Reichard, J. 2023. Best Management Practices for the Use of Bat Houses in US and Canada -- with focus on summer habitat mitigation for Little Brown Myotis, Yuma Myotis, and Big Brown Bat. Wildlife Conservation Society Canada, produced in cooperation with US Fish and Wildlife Service and Canadian Wildlife Health Cooperative for the WNS Conservation and Recovery Working Group. Version (last updated): 20 Sept. 2023. <https://doi.org/10.7944/P99K4BF5>



37 - Best Management Practices document for use of bat houses in US and Canada.
<https://ecos.fws.gov/ServCat/DownloadFile/241311>.

Journal of North American Bat Research

By Shannon Hilty (she/her/hers), State Bat Biologist Montana Fish, Wildlife & Parks. Contact: Shannon.Hilty@mt.gov. A new journal announcement and call for submissions: Bat Research News (BRN) has come to an end, but we (the supporting BWGs, [Eagle Hill Institute](#), and the Editorial Board) would like to introduce you to its successor, the [Journal of North American Bat Research](#) (JNABR). BRN has been in existence since 1960 when Wayne Davis started it as Bat Banding News, changing the title to BRN in 1964. Much appreciate goes out to Margaret Griffiths, BRN's Publisher and Managing Editor, whose dedication kept BRN going. JNABR will have a slightly different feel. It won't have the Recent Literature section, but will have Research Articles, Notes, and special issues of invited papers or conference proceedings. It will be open-source and will include submissions from Canada, Mexico, US, and the West Indies (Bahamas, Greater Antilles, and Lesser Antilles). Have no fear of losing access to BRN, the JNABR website will become a repository for past issues as .pdfs on the website. Please visit the website and plan your next submission to [JNABR](#). Take a look at the beautiful poster and finish up final edits on that manuscript sitting on your desktop.



38 - Journal of North American Bat Research - Call for submissions.

English Pronunciation of Bat Names

By Peter Ommundsen, Salt Spring Island, British Columbia. Contact: bats@capewest.ca. Bat scientific names are treated as Latin words for purposes of spelling and syntax, no matter what the language of origin of the name, but pronunciation is influenced by the native tongue of the speaker. Present-day English letter sounds differ from those of Roman Latin of two thousand years ago. In that era, the word *Caesar* would be "kysar," the bat genus *Cynomops* would be "koonomops," and *Vampyrum* would be "wampoorum" (Allen 1988). Anglo-Latin pronunciation, while deviating from ancient Roman letter sounds, does largely conserve the classical Latin rule of stress, the "Penultimate Law" (Kelly 1986). In words of more than two syllables, the stress falls on the second to last syllable if it contains a classical Latin long vowel or diphthong (*Myo'tis*, *Macro'tus*, *niva'lis*, *Corynorhi'nus*, *Rhinopo'ma*, *Chirome'les*). The stress also falls on the second to last syllable if that syllable ends in a consonant, as in splitting of a consonant cluster (*Euder'ma*, *Molos'sus*, *Parastrel'lus*), and "x" is treated as a double consonant as in *convex'us*. Otherwise, the stress is on the third to last syllable: *Chirop'tera*, *Glossop'haga* (like *eso'phagus*), *luci'fugus*, *Lopho'stoma*, *nocti'vagans*, *Nyc'talus*, *Nycti'mene*, *Scoto'philus*, *Apro'teles*. Certain consonant pairs such as ch, ph, th, qu, br, are treated as single consonants, giving *Rhino'lophus* (like *Rhino'cerus*), *Hypsig'nathus*, and *cilio'labrum*. **The devil is in the details**, and *ciliolabrum* is instructive. The letter "a" in *labrum*, meaning "lip", is a classical Latin short vowel, so the third to last syllable in *ciliolabrum* is stressed (Woods 1944). A word of the same spelling, *labrum*, meaning "basin", has a classical Latin long "a", which would bring the stress onto the second to last syllable in *ciliolabrum*.

if “basin”, rather than “lip”, were the intended meaning. Although many of the bat names listed above are derived from Greek words transliterated into Latin, syllable stress follows the Latin rule (Else 1967). Literature Cited Allen, W. S. 1988. *Vox Latina*. A guide to the pronunciation of classical Latin. Cambridge University Press, Cambridge, United Kingdom, 133 pp. Else, G. F. 1967. The pronunciation of classical names and words in English. *The Classical Journal*, 62:210-214. Kelly, H.A., 1986. Pronouncing Latin words in English. *The Classical World*, 80:33-37. Woods, R. S. 1944. *The Naturalist’s Lexicon*. The Abbey Garden Press, Pasadena, California, 282 pp.



Conservation Corner



We are thrilled to introduce a new section to the Western Canada Bat Network Newsletter - **Conservation Corner**.

This section will highlight actionable conservation projects and updates related to policies and legislation impacting bat conservation. Sharing stories in Conservation Corner will help stay relevant and informed on ongoing challenges and solutions for bat conservation in the West.

In this section:

- Call to action on wind energy front
- White-nose Syndrome

Call to Action on Wind Energy Front

By Cori Lausen, Director of Bat Conservation, Wildlife Conservation Society Canada, contact: clausen@wcs.org. As most of us know, **wind energy development is ramping up, and with that, cumulative bat fatalities across North America**. Dr. Erin Baerwald of University of Northern British Columbia brought this issue back into focus at the Western Bat Working Group (WBWG) conference in Victoria, BC in April with her hard-hitting keynote address. True to the theme Bats Across Borders, the focus of the half day working session was on wind energy development as a major threat to migratory

bats. This goal of this workshop (co-led by Lisa Wilkinson, Erin Baerwald and Cori Lausen) was to develop an action plan to advance regulation of the wind energy industry in both US and Canada. **An action framework was drafted, with both US and Canadian federal government representatives indicating they would work to advance this in each country. WBWG is working on a letter that will be submitted to key individuals in states and provinces.** The call to action was revisited in October 2023 at NASBR in Winnipeg when WCS Canada partnered with Bat Conservation International's Michael Whitby and UNBC's Erin Baerwald to host an end of conference check-in. A letter from NASBR is being drafted with the goal of distributing this in 2024 after NASBR approval. The letter will go to provinces and states with the goal in the US of having this stimulate states to ask the federal government to respond to this urgent issue. The letter is still very much in draft form but currently contains 4 main actions of states/provinces, embedded in several pages of context. Here is a small section with the main directives outlined.



39 - Hoary Bat, a migratory species of bats directly affected by wind energy development. Photo: M. Mund.

Main directives: "Wind energy is a valuable tool to reduce carbon emissions and limit the negative impacts of global climate change on biodiversity.

However, wind energy has considerable measurable negative impacts on bat populations. Wind energy is documented to cause direct bat mortality of numerous bat species through collision with spinning blades.

The bat conservation community and wind industry have worked together for over a decade to measure the impact of wind energy generation on bats and research techniques to minimize those impacts. While there is no solution to date that will stop fatalities, there are measures that can be taken to reduce fatalities and thus buy time while research continues. Legal protection, regulations and enforcement are needed. As a stopgap measure as these come into place, fatalities in some areas can be reduced by up to 50% with mitigation tools currently available. The following 4 actions are being recommended for immediate implementation by all states and provinces:

- *Feather all turbines below manufacturer's cut-in speed during all times of the year that bats are active (i.e. dawn to dusk from May through October, regardless of weather conditions*

- *Curtail turbines at 5.0 m/s at night during the period when most fatalities are observed in the area (i.e., July 15 -Sept 30 in most of North America)*
- *Site away from hibernacula and outside habitats with high abundance and/or diversity of bats.*
- *Requirement of industry to submit data collected using standardized methods, enabling analyses to further develop solutions."*

A similar letter for call to action has been drafted by WBWG that will target states and provincial leads to try to initiate regulations. Association of Fish and Wildlife Agencies (AFWA) Bat Working Group has also indicated they will be working on this bats and wind energy issue moving forward. Erin Swerdfeger, Saskatchewan Conservation Data Center, is now a member of AFWA Bat Working Group and brings to the group a wealth of experience with migratory bats and appropriate siting of wind turbines. Cory Olson, WCS Canada has prepared an informative website page [here](#) further addressing the wind energy development issue for bats. **If you wish to be actively engaged in this informal wind energy and bats working group, please send your contact information to Erin Low at elow@wcs.org.**

White-nose Syndrome

For the latest Canadian and North American updates with WNS and *Pseudogymnoascus destructans* (Pd) spread maps, please click [here](#) to visit the Canadian Wildlife Health Cooperative website. Pd has now been detected in Alberta and British Columbia. https://www.cwhc-rcsf.ca/white_nose_syndrome_reports_and_maps.php

Recent Literature and Resources



Journal Articles:

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Barclay, R. M. R., and Jacobs, D. S. 2023. **Interindividual communication by bats via echolocation.** *Canadian Journal of Zoology*, 101(3), 128–143. <https://doi.org/10.1139/cjz-2022-0121> Blejwas, K., L. Beard, J. Buchanan, C. L. Lausen, D. Neubaum, A. Tobin, and T. J. Weller. 2023. **Could White-Nose**

Syndrome Manifest Differently in *Myotis lucifugus* In Western Versus Eastern Regions of North America? A Review of Factors. *Journal of Wildlife Diseases* 59(3):381-397. doi: 10.7589/JWD-D-22-00050

Lausen, C.L., Falxa, G.A., Solick, D.I., McEwan, A.L., Baker, M.D., de Freitas, E., and Sarell, M. 2024. **Singing silver-haired bats (*Lasionycteris noctivagans*).** *Wildlife Society Bulletin*, in press. Lausen, C.L, P. Lentini, S. Dulc, L. Rensel, C. Threlfall, E. de Freitas, and M. Kellner. 2022. **Bat boxes as roosting habitat in cities – ‘thinking outside the box’.** In: Urban Bats - Biology, Ecology, and Human Dimensions (eds. L. Moretto, MB Fenton, K Patriquin, J Coleman, C Korine, C Davy, Chapter 6:pp. 75-93, Springer Publishing, Switzerland. <https://doi.org/10.1007/978-3-031-13173-8>

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Myotis roost use is influenced by seasonal thermal needs. *Journal of Mammalogy*.

<https://doi.org/10.1093/jmammal/gyad031> Sanchez D.E., Walker F.M., Sobek C.J., Lausen C., and Chambers C.L. 2023. **Once upon a time in Mexico: Holocene biogeography of the spotted bat (*Euderma maculatum*).** *PLOS ONE* 18(5): e0274342. <https://doi.org/10.1371/journal.pone.0274342> Slough, Brian G., Donald G. Reid, Dafna S. Schultz, and Maria C.-Y. Leung. 2023. **Little Brown Bat Activity Patterns and Conservation Implications in Agricultural Landscapes in Boreal Yukon, Canada.** *Ecosphere* 14(3): e4446. <https://doi.org/10.1002/ecs2.4446>

Other:

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Please submit all newsletter submissions to editors Erin Low and Anna Skurikhina at Western.canada.bat.network@gmail.com. Submissions can be made at any time.

The two yearly submission date deadlines are:

- April 15th for inclusion in the Spring Newsletter, published May 1
- November 15th for inclusion in the Fall Newsletter, published December 1

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