

Western Canada Bat Network Newsletter

Issue No. 29 Winter 2016



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Cover – Remember summer? I-J Hansen sets up an SM2 Bat for passive NABat monitoring in the Peace Region. Photo by Brian Paterson.

Updates by region

Alberta

Provincial update

Lisa Wilkinson, Species at Risk Biologist,
 Alberta Environment and Sustainable Resource Development lisa.wilkinson@gov.ab.ca

In the summer, we continued to monitor acoustic detections as part of NABat, and hope to have a report that summarizes all data (including from sources other than AEP) in the new year. We caught bats outside of a major hibernacula in the early fall. Although annual counts are conducted each winter, captures had not occurred for over 20 years (thank you to the volunteers who helped). We confirmed the presence of three species: *M. lucifugus*, *M. septentrionalis*, and *M. volans*, all of which had been detected in the earlier survey. We took DNA samples for a post-doc student at the University of Calgary and recorded male sexual development. Next year, we plan to catch bats on at least three occasions between late August and late September to determine whether there are arrival patterns for certain species, genders, or age groups. We also plan to band bats in the interest of heightened monitoring in light of WNS.

Launch of the Alberta Community Bat Program

Cory Olson, Program Coordinator

The Alberta Community Bat Program finished its first official year in 2016 and has made terrific progress towards improving the conservation and stewardship of bats in Alberta. Among the program's objectives are to:

- Increase awareness of bats and bat conservation issues;
- Promote stewardship and sound management of bats and their habitat;
- Provide information and work with landowners concerned about bats on their property; and
- Use citizen science and traditional research to increase our understanding of bat biology, specifically as it relates to improving the conservation and stewardship of our bat populations.

The program is managed by WCS Canada and developed in collaboration with Alberta Environment and Parks. With the help of conservation grants, we have completed numerous bat house workshops, school talks, bat walks, information booths, and other presentations at locations throughout Alberta. We have responded to several information requests from the public regarding bats and bat roosts, and have made site visits to provide information on unwanted bat colonies. Through our citizen science program, we have collected over 40 guano samples from bat roosts, which have been sent for genetic species-identification. This information will be used to examine building-habitat use and species distribution of bats in Alberta.



Bat walk in Fish Creek Provincial Park. Photo: Lindsay Struthers.

In collaboration with the BC Community Bat Program, we released our first comprehensive guide focused on improving the management of bats in Alberta. This guide (“Got Bats? Alberta Guide for Managing Bats in Buildings”) provides much needed information to homeowners concerned about bats on their property – not only information about how to minimize the harm of planned bat exclusions, but also about how to maintain bat colonies in buildings without the need for eviction.

We have been making regular updates to our website (www.albertabats.ca), and social media pages (Facebook: www.facebook.com/albertabats; Twitter: www.twitter.com/albertabats). These sites have seen a large increase in the number of visitors and ‘likes’, which reflects significant public interest in bats among the public in Alberta.

We have now established regional coordinators throughout many regions in Alberta, and hope to make 2017 an exceptional year. If you know of bat roosts in Alberta, we’d love to hear from you!



Volunteers from Lethbridge College provide some finishing touches on bat houses built during a bat house building workshop. Photo: Cory Olson.

British Columbia

BC Bat Action Team Holds Emergency Planning Meeting in Response to WNS Action Plan Developed, New Website Launched, and Letter sent to Premier

By Cori Lausen, WCS Canada

On September 16 – 18, 2016, 20 biologists gathered in Chase, BC to develop an Action Plan to guide bat conservation in BC in light of the imminent threat of WNS. The meeting kicked off with some fun ice-breakers at the Squilax Shuswap Hostel where most of the participants stayed during the weekend, thanks to Blair Acton who donated the entire facility for BCBAT members. All day Saturday and half of Sunday was spent at the grindstone, compiling lists and prioritizing actions to help guide the next 5 years of research, conservation and management of bats in this province. Juliet Craig facilitated the weekend, expertly guiding the group through the brainstorming phase, goal setting and finally the pooling of flipchart pages full of actions.

Following the face-to-face meeting, several rounds of pooling, editing and revisiting took place, and a “Rebinning Committee” took on the task of consolidating the nearly 200 action items and 11 goals, into 6 main categories: WNS Response, Threats (other than WNS), Knowledge Gaps (Data and Research), Outreach and Stewardship, Policy and Tools, and Capacity Building. In the final plan there are 84 actions, 39 of which have been identified as high (Level I) priority. The main category with the largest number of actions (34) is “Capacity Building” which includes actions for promoting bat conservation such as Level I actions to communicate to government officials to respond to the WNS crisis, create a single ‘go-to-website’ for bat-related issues in BC, and promote technical training workshops for professionals.



Action planning in action. Photos: Cori Lausen.

In the spirit of accomplishing action items immediately following the development of this plan, Purnima Govindarajulu of MOE spear-headed the production of www.bcbat.ca, a new website that went live mid-December. This website is expected to evolve over time, and will act as the main portal with links to all other major bat-related programs in BC. The new Action Plan will be posted on this website in the New Year at <http://www.bcbat.ca/publications/> under the BC Bat Action Team portal.

Additionally, several media interviews were given by Juliet Craig and Cori Lausen to CBC concerning the lack of response of the provincial government to the impending WNS crisis. This was followed up by a letter to the premier submitted by WCS Canada. This letter was also cc'd to Ministers of Environment, FLNRO, Agriculture, Transportation and Infrastructure, and Energy and Mines. The official response was turned over to MOE to deliver, who also provided Purnima Govindarajulu with a cash insurgence for WNS-related issues for the end of this 2017 fiscal year. Because BC's first WNS surveillance season coincides with the start of the 2018 fiscal year, it will be important that bat conservation dollars are available for the start of the next fiscal year, and become a guaranteed line item in the provincial budget knowing that this disease is likely to arrive in BC this year, and impacts and spread will need to be monitored closely for coming years. WCS Canada plans to keep the pressure on the provincial government in hope of not only securing funds for WNS response, but for building capacity within government for appropriate direction of bat conservation in this province.

The BC Bat Action Team would like to acknowledge the organizations and individuals who made the September Action Planning meeting in Chase possible: Fish and Wildlife Compensation Program who provided funding for meeting space and food; Blair Acton owner of Squilax Shuswap Hostel who provided free accommodation for participants and catered the event at cost; the Adams Lake Indian Band who provided a discounted rate on the meeting facility rental; Dr. Cori Lausen with Wildlife Conservation Society of Canada who initiated the meeting and finalized the action plan; Fawn Ross who coordinated the meeting details; Juliet Craig who facilitated the meeting; Sarah Bennett of Origin Brand for graphic design of the final document; and the following members who worked to re-bin the plan categories in the final consolidation – Lorraine Andrusiak, Dr. Karen Hodges, Carita Bergmann, Mike Sarell, and Dr. Leigh Anne Isaac. We are particularly grateful to all the meeting participants who provided their time and travel in-kind to attend this meeting and develop the action plan, and to all of the individuals who

provided review and edits during its final stages. More than 360 hours of volunteer time was donated to the creation of this Action Plan.

See the entire Action Plan on the new bcbat.ca website; to help in implementing the actions in this plan, we encourage you to join the regular BC Bat Action Team conference calls held every 3 months (contact: bcbatteam@gmail.com).



We were allowed outside after the plan was drafted...

BC Coastal Bats Project: Boat-based echolocation call surveys

Lynne Burns, Ph.D. (lynne.burns@dal.ca) and Hugh Broders, Ph.D. (recruited in from Saint Mary's University)

In 2015, we initiated a program to help increase our collective knowledge of bats along the coast of B.C. With a large coastline that has many islands, deep inlets, steep terrain and complicated shorelines, this region presents a challenge for access to understand the bats that inhabit these areas. We wanted to begin work to assist in our understanding of coastal bat ecology including distribution and seasonal movements, and specifically those movements over water. With recent studies in Europe and eastern North America documenting bats regularly crossing ocean waters, we wanted to assess the occurrence of similar movements over water along the B.C. coast.

In the summer of 2015, we deployed a Wildlife Acoustics SM3Bat automated bat detector on a commercial salmon trolling vessel (13.1 m length) as a pilot project to opportunistically survey bat activity along the coast. The detector was outfitted with a GPS unit that simultaneously recorded the geographic coordinates to the recorded bat calls so that the locations of bats could be determined. The boat's home port is Vancouver (fall through to spring) and fishing in the summer took the vessel into the waters off Haida Gwaii, near Prince of Wales Island, Alaska, around Prince Rupert and down the North Coast. When the boat was anchored at night along its journey, the detector was programmed to record bat calls.



The *Pacific Provider* anchored off Cape Naden, Virago Sound, Haida Gwaii, British Columbia, showing the location of the microphone placement on the mast (@31 ft / 9.5 m), and GPS receiver (@9 ft / 2.75 m).

We recorded bat calls on 74 nights from June 23 to September 4, 2015 with approximately 2850 recordings containing bat-generated call sequences. Call analysis is ongoing but preliminary results suggest the majority of calls are attributable to *Myotis* species with lesser amounts of Hoary and Silver-haired/Big Brown bat calls. While *Myotis* and Silver-haired/Big Brown bat calls were recorded from summer through (late June/early July, respectively) to early autumn, Hoary bats calls were recorded from early August through to early autumn. On average, bat call sequences were recorded at a distance from the nearest shore (mainland or island) of 636 m (\pm 933 SD). The maximum distance bats were recorded from shore was 3.2 km (*Myotis* species; off the north coast of Graham Island, Haida Gwaii) and minimum distance was 60 m when the boat was docked at a marina in False Creek, Vancouver. The straight line distance between the most northern location (off Prince of Wales Island, AK) and the most

southern position (False Creek, BC) where bat call sequences were recorded, was 862 km. Hoary bat calls were detected from near Prince of Wales Island down along the coast to Vancouver but not off of Haida Gwaii.

This past summer (2016), the fabulous crew of the salmon troller agreed to again have the detector on board. Acoustic data will be analyzed this winter and we are looking forward to the exciting things we will learn from another year of detecting bats from the boat. We hope to secure funding to expand the project to other vessels since the method has proven itself quite successful. We thank Rick Burns and the crew of the *Pacific Provider* for installing and maintaining the equipment on the boat for past 2 years.

“Got Bats?” B.C. Community Bat Program Expands

Mandy Kellner, Program Coordinator

The BC Community Bat Program, “Got Bats?”, is a network of community bat projects across BC. Launched in May 2014, our program continues to grow, both in terms of the number of participating regions and the demand for the services we offer. In 2015 we had over 250 calls ... in 2016, this number exploded to over 1200 calls and emails, leading to some very busy regional coordinators!

In case you are not yet familiar with our program, we promote bat conservation, particularly of bats in buildings, by

- 1) detecting and protecting bat roost sites;
- 2) providing education to counter negative attitudes towards bats;
- 3) promoting the building and installation of bat-houses; and
- 4) coordinating a province-wide Citizen Science annual bat count.



A bat house workshop begins. Photo: Mandy Kellner

We are funded by the Habitat Conservation Trust Fund and Habitat Stewardship Program, in partnership with the Ministry of Environment and BC Conservation Foundation and local bat programs and land conservancies in 20 regions across BC. The network has a toll-free number (1-855-9BC-BATS) which links to various parts of the province as well as a Facebook page (<https://www.facebook.com/bcbats>) and a website with numerous resources (www.bcbats.ca).

BC Community Bat Program and WNS Surveillance

With funding from the BC government, the Got Bats network has also taken on the role of White Nose Surveillance for winter 2016/2017. Regional Coordinators will be soliciting reports of winter bat activity and dead bats, and collecting and shipping any dead bats to the lab for WNS testing. If you find a fairly

freshly dead bat in British Columbia please do not touch it with bare hands – you can refer to the BC Wildlife Health page on bat health at <http://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/wildlife-health/wildlife-diseases/white-nose-syndrome> for more information and the appropriate protocols, or contact the BC Community Bat Program through the 1-800 number or website.

Bats in Gwaii Haanas 2016: pre-WNS baseline and maternal colony monitoring

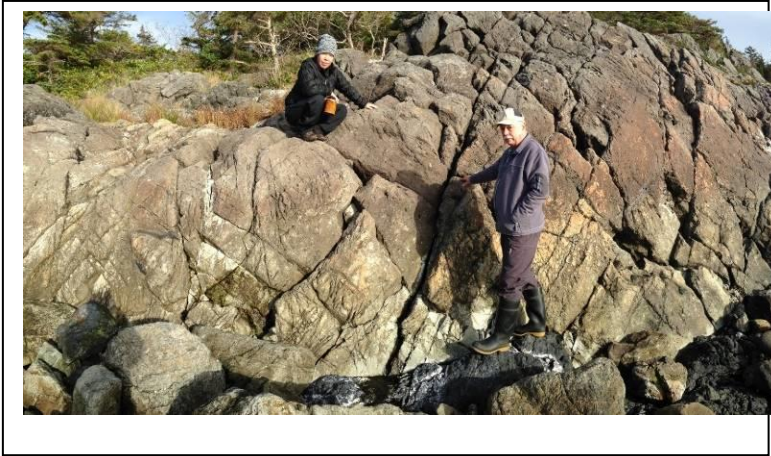
Carita Bergman, Terrestrial Ecologist, Gwaii Haanas (carita.bergman@pc.gc.ca)

Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site, affectionately known as Gwaii Haanas, is a 5000 km² protected area managed jointly by the Haida Nation and the Government of Canada. Gwaii Haanas is the southern portion of the Haida Gwaii archipelago located off the northwest coast of British Columbia.

Monitoring a maternity colony

In previous years, you may remember updates from one of our now-retired wardens, Doug Burles, on the status of a small, mixed-species (*M. lucifugus* and *M. evotis/keenii*) maternal colony that inhabits a unique roost heated by natural hot springs (photos below). We continue to conduct annual emergence counts, started by Doug in 1998. This colony appeared to be in decline from 2008 onwards. In 2012, a 7.8 magnitude earthquake disrupted hot water flow to many of the roosting sites, and the future of the colony was in question. The colony reached a low of just over 20 bats in 2013, but in the last two years, numbers (and much of the hot water!) have rebounded to previous levels, 120 bats. Our monitoring has evolved from a visual count conducted over just a few nights, to an acoustic count with nightly data from May to August. Although we find that acoustic counts underestimate emergence by 20%, we found a very high correlation between acoustic and visual data ($r^2=0.96$), so we are able to correct for the differences in methods. Additionally, being able to monitor nightly for an extended period allows us to estimate productivity – we see the numbers of bats approximately double after young achieve volancy.

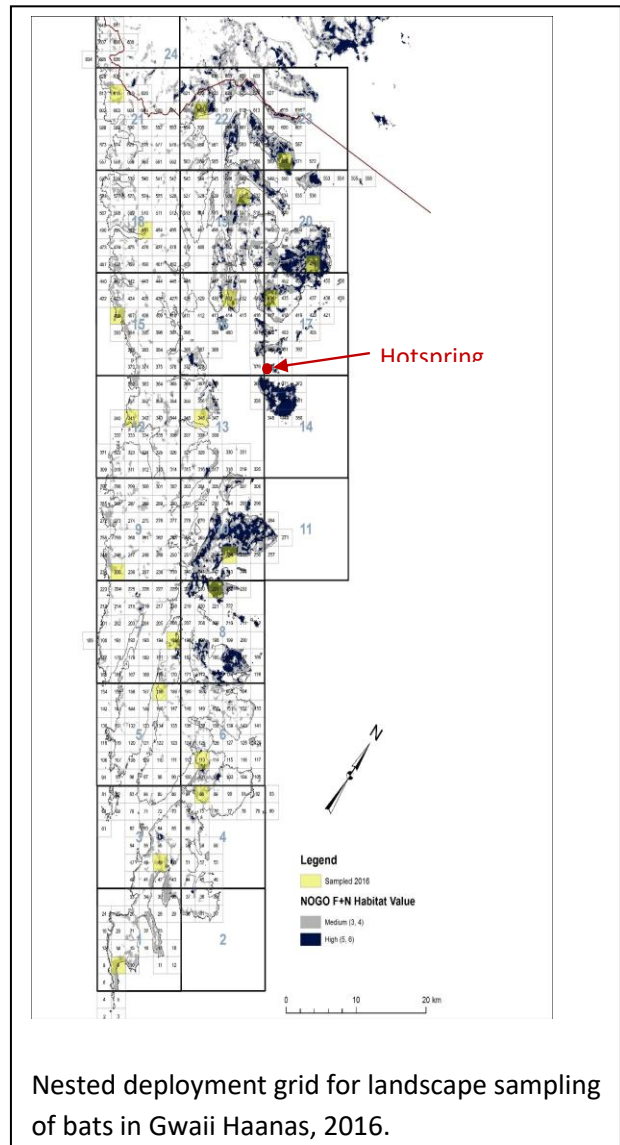




Fissured cliff on Hotspring Island, forming the mixed species maternal colony in Gwaii Haanas. The roost comprises a myriad of fissures and crevices, many heated by natural hot water seeps and solar radiation. The maternal roost extends approximately 100m along the shoreline just above the high water mark. Bats have even been found roosting intertidally during moderate tide cycles!

Landscape-scale monitoring

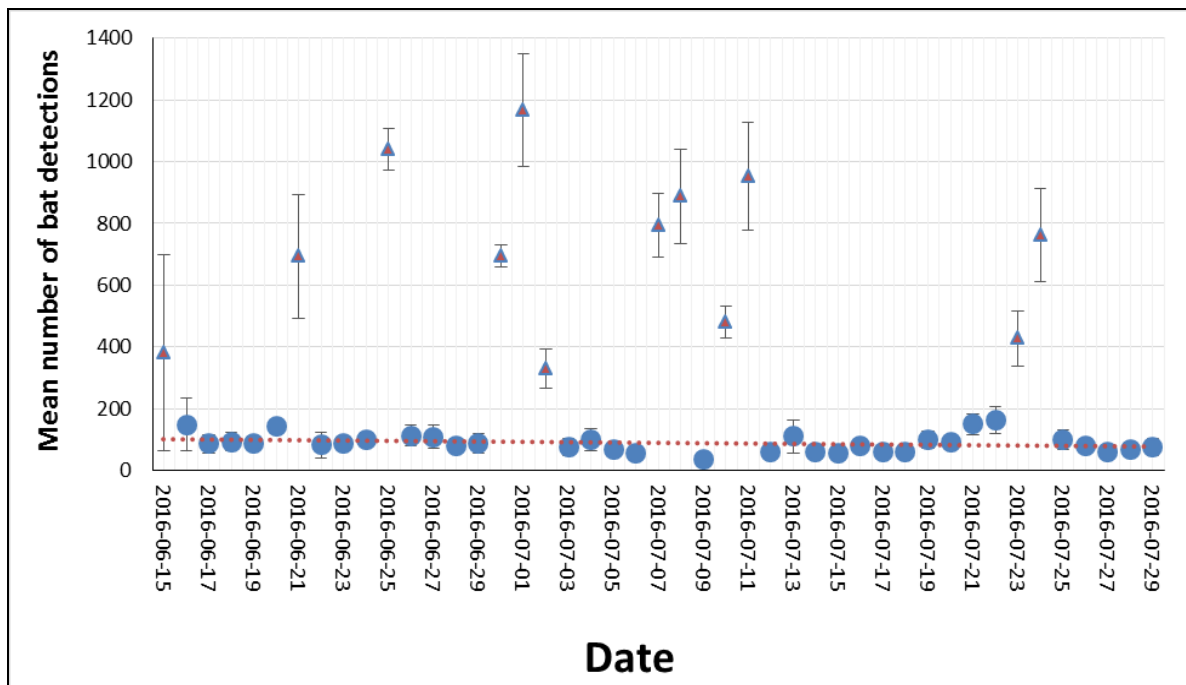
On other exciting fronts, we have embarked on our first year of landscape-scale monitoring for bats, developing an acoustic metric to contribute to the Gwaii Haanas ecological monitoring program. Due to the arrival of WNS in Washington this spring, we moved sampling ahead a year, to extend our opportunity to gather pre-WNS baseline data. Our remote off-shore location may provide a refuge for the disease as it spreads continent-wide. Our sampling design covers the entire extent of the protected area on a 12x12 km grid (24 cells). This year we were prepared to sample 15 of 24 cells, with SM4BAT Songmeters deployed in each. Within these large cells, we stratified habitat using an array of forest attributes, on a smaller 2x2km grid (Fig. 1). Sampling focussed on areas of large, old growth spruce and hemlock forest, using the NABat protocol for acoustic sampling to guide microsite selection and recorder programming. Given the remote location of our sampling sites, we were unable to move recording units around once deployed, so we simply let them run until the batteries were exhausted.



Nested deployment grid for landscape sampling of bats in Gwaii Haanas, 2016.

Ten ultrasonic recording units were deployed June 15, and another five on July 13. The nightly mean bat count across all site was 87 ± 5 detections sites (33 nights were outliers, removed due to false triggers on rainy nights; Fig. 2). Of the 13 496 recordings identified to species using Kaleidoscope software, 24% were classified as Little Brown Bats (*Myotis lucifugus*; MYLU), 31% California Myotis (*M. californicus*, MYCA), 21% Long-legged Myotis (*M. volans*), 14% Keen's Myotis (Western Long-eared Bats; (*M. evotis/keenii*; MYEV), 4% Yuma Myotis (*M. yumanensis*), 3% Eastern Red Bat (*Lasiurus borealis*), 2% Hoary Bat (*L. cinereus*), and 2% Silver-haired bats (*L. noctivagans*; LANO). Of these 8 species, only 4 are presently confirmed to inhabit the Haida Gwaii archipelago (MYLU, MYCA, MYEV, and LANO). Recordings have yet to be manually examined to determine whether any of the new species detections look accurate, so caution in interpretation is warranted. However, with the exception of Eastern Red Bat, these other species have been confirmed to occur in nearby SE Alaska. It is interesting to note that despite the lack of knowledge concerning presence of this species in Alaska, a red bat rabies variant was confirmed in an Alaskan bat.

In future, we plan to extend our landscape sampling to all cells on our grid, and to examine habitat relationships on a finer scale. For now, we are pleased that we have been able to gather a pre-WNS baseline dataset, and we continue to take precautions to prevent the spread of WNS to our island refuge.



Mean nightly count of bat detections at 15 sites in Gwaii Haanas, June-July 2016.

Saskatchewan

Long term effects of forest harvesting on habitat use by foraging bats

Audrey Lauzon, MSc. Candidate, University of Regina, SK

I just finished my first field season of data collection for my project on the long-term effects of forest harvesting on habitat use by foraging bats in Nelson (BC). We found and sampled 17 of the 24 transects (forest-edge-cut) Grindal and Brigham sampled in 1993-94 for their research project on the effects of forest harvesting on bat short-term activity patterns. Basic ultrasonic heterodyne detectors (Pettersson D100) were used to sample foraging bat activity on the transects, so we can repeat the methods used in this previous study. Recordings made with these detectors are still to be analyzed this winter. I expect that lots of interesting results will come out of these analyses...Stay tuned!



Yukon

Monitoring of maternal colonies of Little Brown Myotis (*Myotis lucifugus*) in bat houses in Yukon

Thomas Jung and Piia Kukka Biodiversity Program, Environment Yukon. thomas.jung@gov.yk.ca; piia.kukka@gov.yk.ca

Since 2000, we have monitored maternal colonies of Little Brown Bat in several bat houses in Yukon (with Brian Slough). From June to August each year, we capture and band bats, assess their age class and

reproductive status, and take body measurements. The number of years that we have visited each bat house ranges from 4 to 16 years. Through recaptures over the years, we have obtained long term capture histories for numerous individuals, allowing us to assess roost fidelity (see Brian Slough's update). We have banded a total of over 4400 Little Brown Bats with the hopes that band returns will elucidate their migration routes and hibernation locations. Our bands have one of the following prefixes: YT, BS, YTG or UAF, followed by a 3- or 4-digit number. If you find a banded bat, please contact us.



Acoustic monitoring of bats in the Nisutlin River Delta National Wildlife Area

Brian Slough slough@northwestel.net; Debbie van de Wetering, Environment and Climate Change Canada, Canadian Wildlife Service, Whitehorse, Yukon debbie.vandewetering@canada.ca.

Environment Canada and Climate Change Canada's Canadian Wildlife Service has conducted acoustic bat monitoring annually in the Nisutlin River Delta National Wildlife Area (NWA) from 2014 to 2016, to obtain data on the bat species present, seasonal and nightly activity patterns, and habitat use. The Nisutlin River Delta NWA, 150 km ESE of Whitehorse, is an important fall staging site for migratory waterbirds. Two Petterson D500X bat detectors were deployed in the study area from June or July

through the end of September each year. More than 16,000 full spectrum bat call sequence files have been recorded and analyzed. All files were manually vetted for species classification.

Seasonal activity peaked from the third week in July to the first week in August, and continued to late September, when freeze-up occurs. The peak in activity corresponds with the influx of volant juveniles from proximate Little Brown Myotis (*Myotis lucifugus*) maternity colonies, which was early in 2016, following a warmer than average spring. Nightly activity occurred in a single peak period, 4-6 hours after sunset. Activity in 2016 peaked in the first hour after sunset, presumably due to the proximity of the bat detectors to unknown maternity roosts.

Significantly, two species new to the area have been recorded, the Long-legged Myotis (*Myotis volans*) and either the Silver-haired bat (*Lasionycteris noctivagans*) or Big Brown Bat (*Eptesicus fuscus*). This is the second Yukon record of Long-legged Myotis (previously recorded near Whitehorse) and the first or second record of a 30-kHz bat, depending on species. Calls characteristic of the Long-eared Myotis (*M. evotis*) and Northern Myotis (*M. septentrionalis*) were also been recorded and call verification is ongoing. The Little Brown Myotis displays remarkable call plasticity in Yukon, confounding the definitive classification of the other Myotids.

Maternity roost and foraging area fidelity by Little Brown Myotis (*Myotis lucifugus*) in Yukon

Brian Slough slough@northwestel.net; Tom Jung, Biodiversity Specialist, Environment Yukon
Tom.Jung@gov.yk.ca.

Tom Jung and I have been analyzing a long-term bat capture dataset from 13 maternity roosts between 1997 and 2015. We captured and banded over 4000 individual Little Brown Myotis in over 200 trapping sessions using harp traps and mist nets. This intense level of effort over several years has allowed us to document roost fidelity, roost switching within foraging areas, long-distance roost switching, and dispersal movements. Adult females did not use single roosts, rather they used multiple roosts separated by ≤ 6 km within foraging areas, which they frequently moved between. Our observed roost fidelity rates of $\leq 49\%$ are the lowest reported for the species, and the roost switching rates of $\leq 39\%$ are the greatest. Twenty-one adult females ($< 1\%$) dispersed < 200 km to new roosts. One female returned to her original roost following an apparent dispersal. A cabin attic roost was replaced with bat houses at the same site during the study, and they were rapidly reoccupied by the same colony. Almost $\frac{1}{2}$ of the adult females banded at the cabin have been recaptured at the bat houses. We believe that females selected roosts, and switched roosts, to obtain optimal microclimatic conditions during pregnancy, lactation and juvenile development.



Some banded bats basking in the sun at a rock crevice roost on the Yukon River. Photo: Brian Slough

Alaska

Alaska Little Brown Myotis Maternity Roost Monitoring

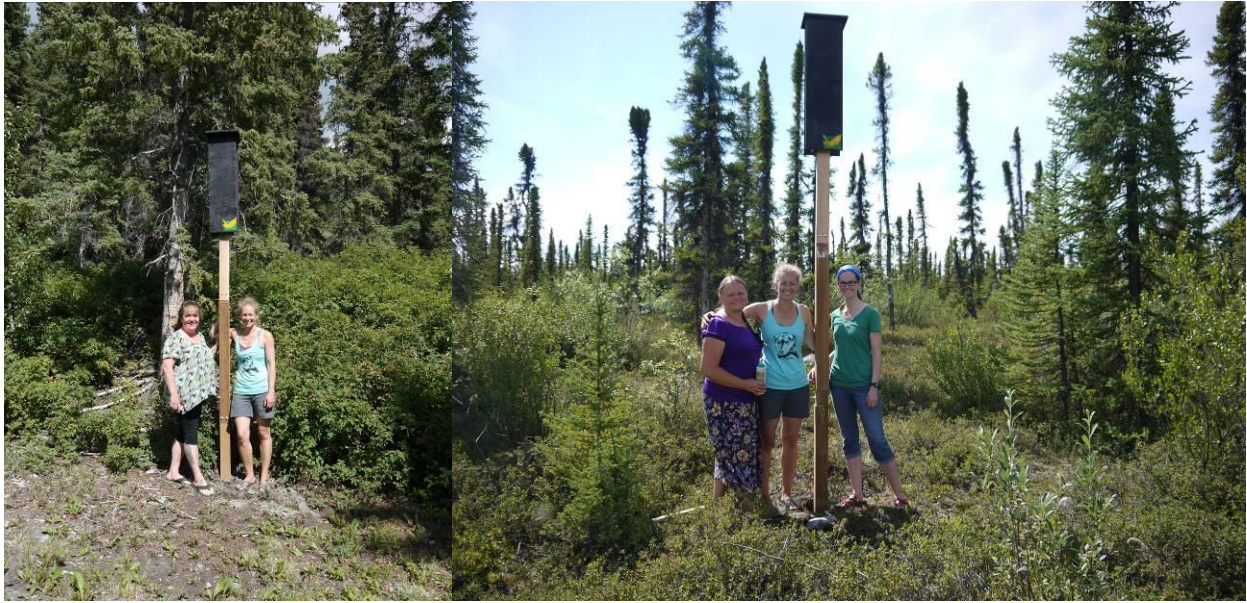
Alaska Center for Conservation Science, University of Alaska Anchorage

Jesika Reimer, Laura Kaupas and Paul Schuette

Contact Jesika Reimer, email: jpreimer@alaska.edu

This past summer, the Alaska Center for Conservation Science initiated a Little Brown Myotis maternity roost monitoring program. During July 2016, with the help of local residents, we located and surveyed six Little Brown Myotis maternity roosts along the Copper River. At each site we performed emergent counts followed by mist-netting surveys to document colony size and reproductive success. Roost measurements were recorded, captured bats were banded, and temperature loggers were placed both inside and outside each roost. In addition, we piloted a bat box project where we worked with three home owners to build single-chamber rocket box-style houses and installed them near currently occupied building maternity roosts. For summer 2017, we are planning on expanding our study to

include maternity roosts around the Fairbanks and Tanana River areas. Information about our maternity roost monitoring project can be found on our website: <http://accs.uaa.alaska.edu/zoology/bat-research>



Rocket boxes in Alaska. Photos: Jesika Reimer

Frostbite on the Frontier?

Alaska Center for Conservation Science, University of Alaska Anchorage

Jesika Reimer, Laura Kaupas and Paul Schuette

Contact Jesika Reimer, jpreimer@alaska.edu

During our 2016 summer roost surveys we frequently noticed bats that exhibited signs of mild to severe tissue damage of the ears, similar to that caused by frostbite (Figure 1). We presented our preliminary findings at NASBR in San Antonio, Texas (see abstract below), and are currently seeking out information from researchers that have seen similar ear tissue damage at other field sites. Our goal is to build a spatial database of ear tissue damage across North America to begin investigating possible causes. Are these high rates observed primarily at northern latitudes or high elevations? Is the damage related to roost materials such as hot tin roofs? We are currently 'putting points on the map' of sites with tissue damage observations, as well as sites with no tissue damage observed. If you have data to share or want more information, please contact Jesika Reimer, jpreimer@alaska.edu. Our current 'frostbite' map will be posted to our website in the New Year: <http://accs.uaa.alaska.edu/zoology/bat-research/frostbite>.

The following abstract was for an oral presentation made by J. Reimer at the North American Symposium for Bat Research, San Antonio, Texas, October 2016.

Frostbite on the Frontier? Jesika P. Reimer, jpreimer@alaska.edu; and Laura A. Kaupas, lkaupas@gmail.com Alaska Center for Conservation Science, University of Alaska Anchorage, Anchorage, USA

Little brown myotis are widespread across North America, however, little is known about their wintering behavior at the northern extent of their range. Large hibernacula have been discovered in the Northwest Territories, however, where bats hibernate in Alaska and Yukon, in the absence of large cave sites, is still unknown. During a recent summer survey of maternity colonies along the Copper River, Alaska, a large proportion of the populations exhibited signs of mild to severe tissue damage of the ears, similar to that caused by frostbite. We mist-netted little brown myotis at six known maternity roosts during July 2016, with colony sizes ranging from approximately 50 to 470 adults. Of the total number of captures ($n=140$), 12% had damaged ear tissue, and ear damage at each colony ranged from 0% to 24% of each population. Over the past few years, residents from interior Alaska have reported bats in human dwellings during the winter, and a recent study in southeast Alaska observed a small number of bats roosting in small cracks and crevices of scree fields and root wads. Whether these observations represent hibernating colonies, or merely juveniles or poor condition adults that did not migrate to their typical winter sites has not been determined. The high frequency of ear tissue damage observed in our research however, may indicate bats are spending the winter in hibernation sites throughout interior Alaska where temperatures fluctuate and drop to very low figures rather than migrating to more stable hibernacula farther south. This project was funded through a cooperative agreement with the Alaska Department of Fish and Game – Threatened, Endangered and Diversity program.



Ear damage on Alaska bats – possibly frostbite? Photos: Jesika Reimer

Western

Northern Myotis (*M. septentrionalis*) sample archiving

Lynne Burns, Ph.D. (lynne.burns@dal.ca)

With WNS detected unexpectedly in the West this past season, there is an elevated threat of the disease spreading to our central and western bat populations more quickly than we may have previously

anticipated. Although we are hopeful things will not speed up, we should prepare as much as possible for the 'WNS in the West Scenario'. Having worked out in Atlantic Canada pre- and during the WNS outbreak, hindsight has given me a different view on things out here in the West where I am now based. Out East, I collected and analyzed samples of *M. septentrionalis* for genetic work as part of my doctoral research to understand population connectivity in the species. I also collected fur samples for other research projects that used stable isotopes to look at movement patterns and diets out of the Saint Mary's University bat lab. I am starting initial stages of a project to expand this eastern work across to western Canada. Collectively, this should give us a better understanding of population structure across the northern portion of the range.

If you anticipate conducting surveys this year where you will, or have the potential to capture and sample *M. septentrionalis*, I am looking for fur and plagiopatagium samples to archive and put toward this project in the future. Should you have existing samples that you would like to contribute to the project, I would also be very grateful to accept these. Since this will be an archive for future projects, samples collected from all parts of the range can contribute. Those locations where many samples are collected from one site (summer, swarming site or hibernaculum) are especially valuable for us to understand fine-scaled population structuring. However, small sample sizes (including n=1's) from sites will also go a long way to helping inform questions over the large range of the species.

Please feel free to contact me for more info about sample storage, methodologies etc. and to answer any questions you have. Although I don't have a specific timeline for this project to start analyzing samples (and I still need to secure funding and collaborators ☺), my experience out east has shown me that NOW is the time to collect these samples and archive them for future research.

Many thanks, Lynne.

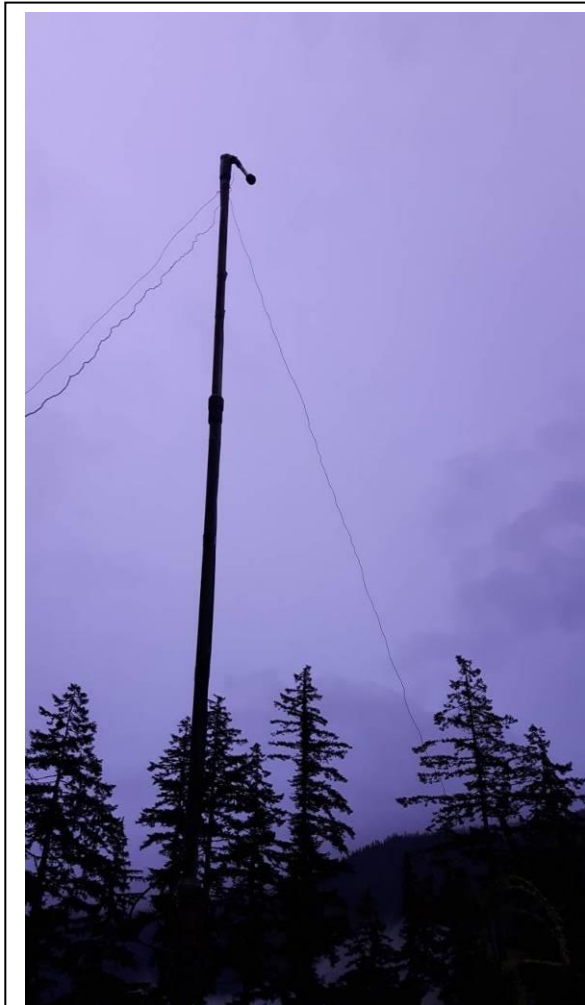
WCS Canada Bat Conservation Programs Continue

By Cori Lausen

BATCAVER: Our well known BatCaver program is into its 2nd official winter of detector deployments, following a pilot year in 2014-5. The program has been funded in BC by Habitat Conservation Trust Foundation, Fish and Wildlife Compensation Program, and Columbia Basin Trust; and in Alberta and BC by TD Friends of the Environment, and ECCC's Species at Risk Habitat Stewardship Program. To date the program has located more than 12 new bat hibernacula, one significant hibernaculum in each province. It is becoming clear that most caves in BC do not house many if any bats during winter months, and so the upcoming year of the program will focus on looking at what features cave hibernacula have in common and what features may determine winter occupancy by bats. Similarly, mines, if they are low elevation are typically used by bats in winter, at least in the southern portion of the province where these features are most common and have been monitored. No high elevation mines to date have been found to be used by bats in winter, although a mid-elevation mine (1500m) in the West

Kootenay is used by at least 5 species and is thought to house hundreds if not thousands of bats. Unfortunately, this privately-owned mine, thought to house the largest population and diversity of hibernating bats in the province based on current knowledge, is slated to reopen in the next year. BatCaver is working with the company to try to retain some undisturbed winter roost sites in the large mine complex.

ACBP: The Alberta Community Bat Program had a highly successful launch this past summer. See Cory Olson's separate submission for details. The ACBP is funded in part by grants from ECCC HSP SAR stream, Alberta Ecotrust, and TD Friends of the Environment to WCS Canada.



SM2Bat set-up for passive NABat monitoring in SW BC. Photo: Felix Martinez.

NABAT: The North American Bat Conservation Program (NABat) launched in BC this past summer province-wide, and exceeded expectation thanks to the dedication of many BC biologists and volunteers! A total of 22 grid cells were monitored, a fantastic accomplishment in just our first year! All of this success is owed to the following grid leaders who each identified a grid cell, deployed passive detectors and in most cases drove 2 transects during a ~7 day deployment period: Leigh Anne Isaac, Felix Martinez, Chris Currie, Aimee Mitchell, Michelle Evelyn, David Galvez, Fawn Ross, Inge-Jean Hansen, Brian Paterson, Doug Burles, Gillian Sanders, Cori Lausen, Heather Gates, Juliet Craig, Purnima Govindarajulu, Christian Engelstoft, Tanya Luszcz, Kirk Stafford, Mandy Kellner, Ashleigh Ballevena, and Michelle Dano.

The volunteer component of the NABat program was tremendous this year and we are so grateful for everyone's commitment to this 5 year project. Although I am sure to be missing some contributions, we've estimated there

were 19 volunteers and at 350 volunteer hours that have gone into Year 1's NABat deployment, and that is *prior* to the analysis of data which is ongoing this winter.

We had a series of well attended conference calls during the NABat season (late May to early July), to provide direction and support for everyone to get their detectors deployed. In late summer I delivered 2 webinars to assist in the analysis of the acoustics data, and these are saved for reference online, as are the guidance documents. Thanks to Juliet Craig who wrote all of the first drafts of the guidance documents (field and analysis) and to Jason Rae of WCS Canada who took the NABat Coordinator reins from Juliet when she had to leave the position for a full time conservation job. Jason has been instrumental in helping to finalize guidance documents, and working with grid leaders during their final phase of analyses. Jason also designed all of the species-specific Analoop filters that have been used in the analyses.

The implementation of NABat monitoring is ranked as a high priority action item in the BCBAT's Action Plan, and we are thus hopeful that it will continue to be funded. Our main funders to date include: Habitat Conservation Trust Foundation, Columbia Basin Trust, and TD Friends of the Environment. This would of course not be enough to support such a large-scale province-wide project, and we are therefore extremely grateful to our volunteers and collaborators, including: Associated Environmental Consultants Inc., Lillooet Naturalist Society, Sunshine Coast Wildlife Project, South Coast Bat Conservation Society, Habitat Acquisition Trust, Slocan Solutions Society and Slocan Lake Stewardship Society (via Slocan Wetland Assessment and Monitoring Project), Thompson Community Bat Program, Haida Gwaii Community Bat Program, Kootenay Community Bat Program, Okanagan Community Bat Program, Skeena Community Bat Program, Hemmera, Peace Community Bat Program, Nature Conservancy Canada, and more.



SM2Bat set-up for passive NABat monitoring in West Kootenay Region, BC by Juliet Craig, Silverwing Ecological.

WNS SURVIVORSHIP MODELLING: Brandon Baerwald, University of Regina, came to Creston, BC again this fall equipped with a metabolic chamber and oxygen analyzer for the second year of measuring respiration rates of bats just prior to hibernation. We have been focussing on 3 species: California myotis, Yuma myotis, and silver-haired bat. At the time of this newsletter submission the winter session of measurements was postponed due to extreme cold and lack of free-flying bats, but even without the winter sampling, preliminary models can be developed to estimate survivorship of these species with WNS infection. The disease modelling will be done by

collaborators in New Zealand. This work is funded by Min of FLNRO through Land Based Investment Strategy, and by Waneta Terrestrial Compensation Program (Waneta Expansion Project).



Heather Gates, Kaslo, WCS Canada Technician, and Rhiannon Kirton (intern for Min FLNRO, Nelson, from UK) examine a Townsend's Big-eared bat captured during the fall inventories of West Kootenay mines; these inventories were dual-purpose, providing samples for WNS survivorship modelling respirometry measurements.

International

46th North American Symposium on Bat Research (NASBR 2016) – Austin, TX

By Cori Lausen

This year's NASBR was in San Antonio, Texas 12 – 15 Oct. Attendees enjoyed the scenic River Walk just outside the door of the facility. Pre-conference tours included watching emergence of Free-tailed bats from Bracken Cave.

Canadians met for a lively luncheon meeting and discussed the possibility of the Willis lab submitting a bid for hosting an upcoming NASBR! The Auction was particularly entertaining for Canadians as Dr. Mark Brigham auctioneered in an ‘entertaining’ bat-hat bought by his students (former and current) for big bucks!



NASBR 2016. Mark Brigham (left at podium), touting his stylish and extremely expensive bat-hat, calls the “elimination dance for cash” for grad students, including Stephani Findlay from Robert Barclay’s lab (far right).

Conference talks included the following from Canadian authors or included Canadian topics/study sites:

Do Fatalities at Wind Turbines Threaten the Population Viability of Hoary Bats? by Erin F. Baerwald
 The Evolutionary Potential of Hibernation Phenology in *Myotis lucifugus*. By Quinn E. Fletcher, Quinn M.R. Webber, Allyson K. Menzies, Mary-Anne Collis and Craig K.R. Willis

Assessing the Effectiveness of Mitigation Measures at Reducing Turbine-related Bat Mortality in Ontario. By Lauren A. Hooton and J. Ryan Zimmerling.

Craniometric Distinctiveness of *Perimyotis subflavus* from Atlantic Canada. By Howard M. Huynh, Hugh G. Broders and Donald T. Stewart.

Thermoregulation and Timing and Rates of Reproduction in *Myotis septentrionalis* and *M. lucifugus* in Northern Canada. By Laura A. Kaupas.

- The Relationship between Core, Fur, and Skin Temperature in Little Brown Bats. By Emma L. Kunkel, Ana M. Breit, Quinn E. Fletcher and Craig K.R. Willis
- Hibernation Ecology and Thermoregulation of Silver-haired Bats Overwintering in British Columbia, Canada. By Cori L. Lausen and Thomas J. Hill.
- Long-term Effects of Forest Harvesting on Habitat Use by Insect Eating Bats. By Audrey Lauzon.
- Effect of White-nose Syndrome on the Skin Microbiome of Bats in Canada. By Virginie Lemieux-Labonté, Anouk Simard, Craig Willis, and François-Joseph Lapointe.
- Threats to North American Bats Prioritized by Region. By Rob Mies, Charles M. Francis, Rodrigo A. Medellin, Jeremy Coleman, Rita Dixon, Brian Carver, Vanessa G. Rojas, D. Scott Reynolds, Jorge Ortega, Jordi Segers, Angie McIntire, Jeff Gruver and Cori Lausen.
- Once upon a Time in Mexico: Prehistoric Habitat Suitability of the Spotted Bat. By Daniel E. Sanchez, Faith M. Walker, and Carol L. Chambers.
- Effects of Post-disturbance Salvage Logging on Occupancy of *Myotis lucifugus* near its Northern Range Limit. By Julie P. Thomas, Robert R.M.R. Barclay, Mary L. Reid and Thomas S. Jung.
- Bugs and Big Browns: Potential Transmission Routes for *Pseudogymnoascus destructans*. By Karen J Vanderwolf, David Malloch and Donald F McAlpine.
- To Spray or Not to Spray: Evaluating Alternative Management Approaches for White-nose Syndrome. By Craig K.R. Willis, Quinn M.R. Webber, Quinn E. Fletcher, Kaleigh J.O. Norquay, Ana M. Breit and Christina M. Davy.
- The White-nose Syndrome National Response in 2016. By Jeremy T.H. Coleman, Jonathan D. Reichard, Christina Kocer, Catherine Hibbard, Ann Froschauer, Jennifer Smith-Castro, Richard Geboy, Pete Pattavina, Bronwyn Hogan, Drew Crane and Jordi Segers.
- The Habitat Effect: Echolocation Call Variation in Three *Myotis* Species Affects Identification Accuracy. By Stephanie V. Findlay.
- How do you Track Crevice-hibernating Bats to their Hibernacula? By Stephanie V. Findlay and Nicole K. Besler.
- Hung Out to Dry? Arid Adaptation in Hibernating Big Brown Bats. By Brandon J. Klüg-Baerwald and R. Mark Brigham.
- Andean Influence on Biogeography of Bats in Peru Based on DNA Barcodes. By Burton K. Lim
- Thermoregulation in the Heat: Efficient Evaporative Cooling in Two Southern African Feathered Bats. By Ryan S. O'Connor, Blair O. Wolf, R. Mark Brigham, and Andrew E. McKechnie.
- Flight or Fright: The Relationship between Personality and Physiological Stress in Little Brown Bats Amelia Peterson, Kaleigh J.O. Norquay, Quinn E. Fletcher, Quinn M.R. Webber, Darcy Childs, W. Gary Anderson, and Craig K.R. Willis.
- Myotis sodalis* Thermoregulatory Flexibility. By Scott M. Bergeson, Joy M. O'Keefe and R. Mark Brigham

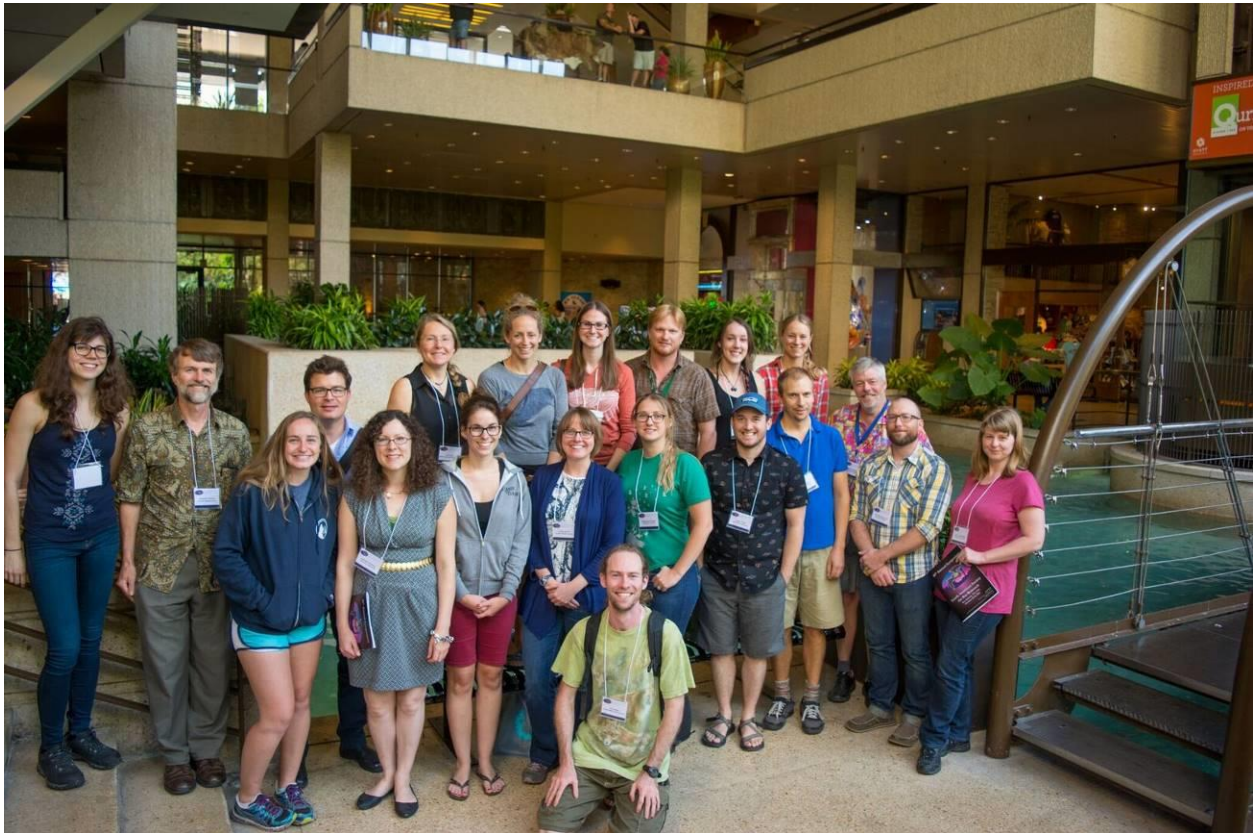


Photo: Mark Brigham sporting a hat he auctioned off, only to have students bid to keep him wearing it! Photo credit: Anonymous .

Energetic Implications of Roost Selection in Reproductive Silver-haired Bats. By Shelby J. Bohn and R. Mark Brigham.

Pathogen Transmission and Torpor Expression in *Myotis lucifugus*. By Ana M. Breit and Craig K.R. Willis.
The Use of Habituation-discrimination Tests in Bat Behavioral Ecology. M. May Dixon, Katrine Hulgard, Rachel A. Page, and John M. Ratcliffe.

Going Beyond a Leap of Faith When Choosing Between Active and Passive Bat Monitoring Methods Julie Faure-Lacroix, André Desrochers, Louis Imbeau and Anouk Simard.



The Canadian contingent at NASBR: Virginie Lemieux-Labonté (Université de Montréal), Charles Francis (Canadian Wildlife Service), Craig Willis (University of Winnipeg), Cori Lausen (Wildlife Conservation Society Canada), Jesika Reimer (Alaska Center for Conservation Science), Laura Kaupas (University of Calgary), Derek Morningstar (Golder Associates Ltd.), Nicole Besler (Saint Mary's University), Julie Thomas (University of Calgary), Ana Breit (University of Winnipeg), Kaleigh Norquay (University of Winnipeg), Julie Faure-Lacroix (Université Laval), Lynne Burns (Canadian Wildlife Service), Stephanie Findlay (University of Calgary), Cody Fouts (Saint Mary's University), Quinn Fletcher (University of Winnipeg), Mark Brigham (University of Regina), Brandon Klug-Baerwald (University of Regina), Karen Vanderwolf (New Brunswick Museum), Jordi Segers (Canadian Wildlife Health Cooperative). Photo credit: Jordi Segers (CWHC), submitted by Lynne Burns.

Conference abstracts can be found online at:

<https://custom.cvent.com/6617CEC09A47484FA6AE8D57DF33CE01/files/event/6FCE7B2106D14E00AA14BA72FCCBC276/570630a8edc04c7093750e966e2782bf.pdf>

White nose syndrome

Updated decontamination protocol

With the discovery of WNS in western North America, an updated Canadian decontamination protocol was produced. The most recent Canadian decontamination protocol for WNS continues to be available on the Canadian Cooperative Wildlife Health website (http://www.cwhc-rcsf.ca/wns_resources.php) or http://www.cwhc-rcsf.ca/docs/WNS_Decontamination_Protocol-Nov2016.pdf

The CWHC website has a variety of WNS resources, and is well worth investigating.

Funding for WNS research

The Canadian Cooperative Wildlife Health website also has information on funding for WNS-related research (<http://www.cwhc-rcsf.ca/docs/WNS%20Funding%20opportunities.pdf>)

Recent literature/resources

NASBR's online newsletter: https://www.nasbr.org/pdfs/Lasiurus_2016.pdf

Dr. Merlin Tuttle has established a new website (merlintuttle.org) on which many of his fabulous photographs are presented. He is allowing people to download these images for free if they are to be used for educational purposes.

Bohn, S.J., J.M. Turner, L. Warnecke, C. Mayo, L.P. McGuire, V. Misra, T.K. Bollinger and C.K.R. Willis (2016) Evidence of 'sickness behaviour' in bats with white-nose syndrome. *Behaviour*. 153:981-1003.

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- Kaupas, L., 2016. *Roosting Behaviour and Thermoregulation of the Northern Long-Eared Bat (Myotis septentrionalis) Near the Northern Extent of its Range* (Doctoral dissertation, University of Calgary).
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Conferences

Western Bat Working Group Biennial Meeting

Fort Collins, Colorado

April 11 – 14, 2017

Ah, springtime in Colorado...the sun is breaking a chilly winter and everyone is anxious for long, warm days of hiking, biking, or just sipping a good brew on the patio. It has been two years since the bat biologists of the western states have convened to chat about ecology, conservation, and management. It's about time to reconnect and continue these valuable discussions at another WBWG Meeting. Please join us in Fort Collins, Colorado for several days of bat-focused discussions and presentations.

Where: Fort Collins Hilton, 425 W. Prospect Rd.

To entice you even more, we'll be having our social at Odell Brewing Company!



North American Society for Bat Research: Upcoming NASBRs include 2017: October 18-21. NASBR 47, Knoxville, TN, USA; 2018: October 24-27. NASBR 48, Puerto Vallarta, MX.

Courses

Wildlife Acoustics Training Courses – Phoenix, AZ 5 – 7 April, and Maynard, MA 18 – 20 May.
Instructor: C. Lausen. This course will be free of charge to participants; check Wildlife Acoustics' website for details.

Techniques + Analysis courses in London, Ontario. 29 May – 3 June. Details forthcoming. Check <http://batsrus.ca/training-courses/> Instructor: C. Lausen

Comprehensive Acoustics courses – tentatively planned for Calgary, AB and Seattle, Washington June 2016. Details forthcoming. Check <http://batsrus.ca/training-courses/> Instructor: C. Lausen

Bat Inventory Course (Mistnetting and Handling of Bats). Tentatively scheduled for Lillooet, BC 23 – 29 July. Details forthcoming. Check <http://batsrus.ca/training-courses/> Instructor: C. Lausen

WBCN newsletter submissions

Please submit all newsletter submissions to Mandy Kellner: Western.canada.bat.network@gmail.com
Submissions can be made at any time.

Archived newsletters

This newsletter first started in Fall 2002. It is produced two times per year and is housed by the Alberta Sustainable Resource Development on the Alberta Bat Action Team website. All past issues can be accessed at the following link: <http://aep.alberta.ca/fish-wildlife/wildlife-management/alberta-bat-action-team/abat-programs-publications.aspx>

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