Western Canada Bat Network Newsletter

Issue No. 32 Spring 2018

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Table of Contents

Cover – Brian Paterson of Zonal at the cemetery detector setup on Atlin Lake, August 2017. Photo: Inge-Jean Hansen, Zonal.

Updates by region

Alberta

Provincial update

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

We are gearing up for another year of NABat monitoring. For most grids this will be the fourth year, and the fifth year for the southeastern Alberta sites. We are slowly expanding and will be adding a few more grids this year. We are considering acoustic monitoring in the late summer to begin trying to identify migration corridors. I am working with AB Parks to roll out the stow-away bat campaign and hope to have signs up at campgrounds soon. Of course, WNS is on our radar and we're developing a monitoring and surveillance plan and continue to work with the caving community.

Hiking into Cadomin. Photo: C. Olson. Harp trap in place. Photo: AESRD

This summer we will be doing a bat blitz in the Castle Wilderness (near Waterton). One of our goals this summer, working with the Alberta Community Bat Program, is to expand the number of identified maternity roosts and establish long term monitoring sites. As always, there will be lots of outreach.

Hibernating Myotis, Cadomin Cave, AB. Photo: C. Olson.

Alberta Community Bat Program

Cori Lausen, WCS Canada, clausen@wcs.org

Cory Olson continues to coordinate the Alberta Community Bat Program at the provincial level, along with a growing number of dedicated regional coordinators. This spring Cory released his comprehensive guide to “Bat-Friendly Communities” and recently updated the Bat House Guide. Thousands of downloads of these documents have taken place in only a few weeks, evidence of the effectiveness of this community bat program and the enthusiasm among the public for bat conservation guidance. AB Community Bat Program continues to be supported by grants to WCS Canada from Alberta Conservation Association, Alberta Ecotrust, Chawker’s Foundation and Habitat Stewardship Program (Environment and Climate Change Canada). Visit the website at www.albertabats.ca .

British Columbia

British Columbia Best Management Practices for Bats

Susan Holroyd, Vanessa Craig (EcoLogic Research), Purnima Govindarajulu and Orville Dyer (BC Ministry of Environment)

The Best Management Practices for Bats series was developed to provide guidance, to industry, government biologists and the public, on protecting bat populations and their habitats. Resource sectors that are most likely to affect bats and their habitats are the focus of the series. Each chapter was developed with input from bat biologists, government resource specialists and the relevant resource professionals for each sector. Each chapter has been reviewed by the BC Bat Action Team and the final products reflect those reviews.

Currently there are four chapters posted on the BC Ministry of Environment website [http://a100.gov.bc.ca/pub/eirs/viewDocumentDetail.do?fromStatic=true&repository=BDP&documentId=12460]:

- Chapter One: Introduction to Bats in British Columbia
- Chapter Two: Mine Developments and Inactive Mine Habitats
- Chapter Three: Caving, Rock-climbing, Geocaching and Other Activities Around Cave and Crevice Habitat
- Chapter Four: Wind Power Developments

Four more chapters are in DRAFT or review stages. These include:

- Bridges
- Hydroelectric Developments, and,
- Forestry
- Urban Developments (Building Bat-Friendly Communities, a stand-alone publication co-authored by Cory Olson and Mandy Kellner), to be housed at www.bcbats.ca/index.php/get-involved/bat-friendly-communities .

Our hope is to have these chapters posted in 2018. The authors will be looking to BCBAT and any other interested parties for feedback after an initial review is completed by the end of May. BC Best Management Practices for Bats is a set of living documents that will require updating as additional relevant research becomes available. Best practices may need to be adapted to reflect the most current state of knowledge and to identify any changes in threats identified for bats and their habitats in British Columbia.

Taku River Tlingit First Nations Bat Ecology Program

Brian Paterson, Inge-Jean Hansen, Dr. Cori Lausen and the Taku River Tlingit Land Guardians

Funded by the Aboriginal Fund for Species at Risk (AFSAR), researchers Inge-Jean Hansen and Brian Paterson deployed acoustic monitors in the traditional territory of the Taku River Tlingit First Nations (TRTFN) with the assistance and guidance of the TRTFN Land Guardians, based out of Atlin, BC. This two-year project aims to answer some very basic questions regarding the presence, range, and habitat use of federally endangered little brown and northern myotis as well as confirming the presence of other species in the study area. Research is being conducted in coordination with Dr. Cori Lausen (Wildlife Conservation Society Canada - WCSC) and after the first year of acoustic monitoring and community outreach, the team is gearing up for a species inventory in August 2018.

Trevor Williams, Land Guardian, and Brian Paterson, Zonal, conducting a winter download of the GrottoBluffs detector, February 2018. Photo: Inge-Jean Hansen, Zonal.

A total of six locations were monitored for bat activity between August 2017 and May 2018. The locations were identified through a combination of traditional ecological knowledge (TEK) and reconnaissance using both satellite imagery and ground-truthing of potential areas.

Bats were recorded as soon as detectors were deployed in mid-August. The last bat recorded at any of the detectors occurred on October 8, 2017 and no bats were recorded during the winter.

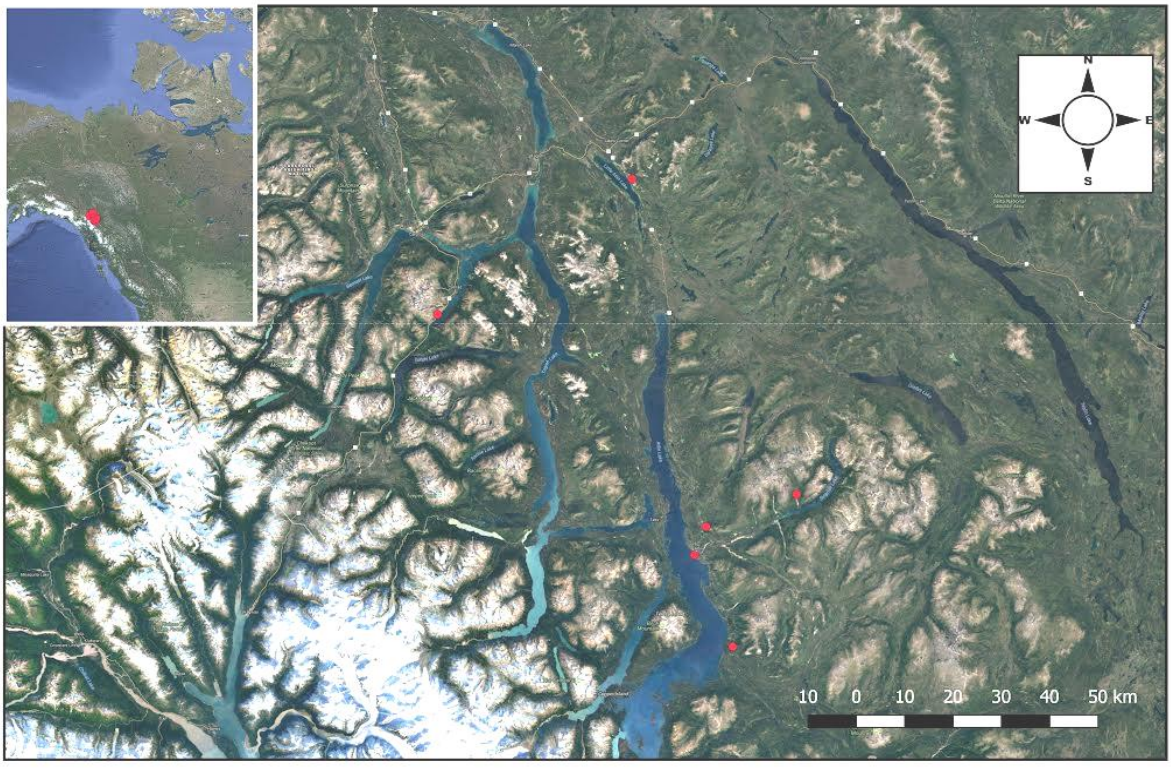
Spring emergence and arrival data is still being analysed but to date, the project has already yielded significant acoustic detections that expand the known range of several bat species and confirmed the presence of federally endangered little-brown myotis and northern myotis. Little brown myotis was known to occur in the area; however, northern myotis had not yet been confirmed. In addition to these species, the known range for hoary bat (acoustic) and silver-haired bat (acoustic and voucher specimen) was expanded to include the Atlin area. Bat passes that likely represent Yuma myotis, a species known to occur in Southern Alaska, were recorded. If confirmed with capture efforts in 2018, this will be a notable range extension for the species in that it may be indicative of a coastal distribution. Big-brown bats were not recorded to date and, if present, are generally active (albeit at a much-reduced rate) in the winter and have been recorded every month of the year in northern climates including the Peace Region of British Columbia. The project area may be outside the range of big-brown bat.

The project also saw the creation of 16 four-chambered nursery houses built by the TRTFN Land Guardians and members of a TRTFN skill building program. These have been distributed throughout the community and the TRTFN traditional territory and will be monitored by the TRTFN Land Guardians.

Data from this research has been has been shared with the BC and Yukon Centres for Data Conservation and information gleaned has already contributed to updated range maps for BC.

The researchers would like to thank the Aboriginal Fund for Species at Risk (AFSAR), the Taku River Tlingit Land Guardians, Anna Schmidt, WCSC and Zonal Ecosystem and Wildlife Consultants Ltd for making this research possible. Additional regional information was shared by Brian Slough and Debbie van Wetering, and we are very appreciative of the information sharing for project improvement.

Steve Williams, Land Guardian and Brian Paterson of Zonal investigating the cave



Study area in the Taku River Tlingit First Nation Traditional Territory with detector locations (red dots).

Community Bat Programs: Lessons learned in BC and Alberta

Hannah Flagg and Courtney Jones, MFLRNO

The BC government initiated a survey and production of a small report, with the goal of sharing valuable bat information between biologists, wildlife professionals and the public. Co-op Wild-life Technicians Hannah Flagg and Courtney Jones conducted phone interviews with a number of BC and Alberta bat program coordinators in the winter of 2018. Their completed newsletter follows at the end of this regular newsletter.

WCSC and protection of caves

Cori Lausen, WCS Canada, clausen@wcs.org

This spring, WCS Canada submitted a letter to BC Ministry of Environment and Climate Change and Ministry of Forests Lands Natural Resource Operations and Rural Development. This letter outlined the critical need in BC for cave and karst protection. Unlike many other jurisdictions that have rich karst resources, BC does not afford protection to these features. WCSC outlined the important habitat (and in some cases critical habitat) that karst can provide to bats, and the urgent need to develop karst protection legislation in this province.

Got Bats? BC Community Bat Program Updates

WNS surveillance activities, Annual Bat Count, bat house mortalities

Mandy Kellner, Coordinator, BC Community Bat Program

<u>BC Community Bat Program and WNS Surveillance</u>

With funding from the BC government, the Got Bats network again undertook passive surveillance for White-nose syndrome (WNS) this past winter (2017/18). As in 2016/17, regional coordinators solicited reports of winter bat activity and dead bats, and collected and shipped dead bats to the CWHC Animal Health Lab for WNS testing. To-date, no WNS has been reported in BC. We did receive numerous reports of bats over-wintering in woodpiles and under shakes and siding, adding to our knowledge of how bats in BC may spend the winter.

WNS surveillance included asking the public to report winter activity and dead bats, and collecting carcasses for testing. Photo: HAT

This spring we are piloting a project to sample for *Pseudogymnoascus destructans* (Pd), the fungus responsible for WNS, by collecting spring guano from known roost sites in anthropogenic structures. When bats emerge from hibernation, they groom off any fungal spores on their bodies. These spores get ingested and then excreted, and can be detected in guano in the spring. Based on protocols developed by Anne Ballmann in the US, we have been prepping roost sites and are currently collecting fresh spring guano, to be subsampled and tested for Pd. These spring guano samples have the potential to greatly increase our sample size and sample area for disease surveillance.

Both of the surveillance efforts rely heavily on the volunteer participation of many citizen scientists. A huge thank you to all who have participated in reporting bats, collecting carcasses, and collecting guano.

Annual Bat Count

The Annual Bat Count review initiated in 2017 was updated in 2018, and now contains a summary of the program from 2012-2017. This review is useful to inform the future of the project, and determine areas where focus is needed. The report is available on our website at www.bcbats.ca/index.php/bat-basics/community-bat-publications .

NatureKids preparing for an Annual Bat Count. Photo:HAT

The Annual Bat Count is a yearly program, and we are once again seeking interested bat counters for our first round of colony counts (June 1 -21). We are also continually on the lookout for new colonies that may be good candidate sites for long-term monitoring. If you are keen to help monitor, or know of a bat colony, please contact Mandy (bcbats@gmail.com) or your regional Community Bat Program (see www.bcbats.ca). The Annual Bat Count is funded in 2018 by Habitat Conservation Foundation and the Forest Enhancement Society.

Requesting reports and carcasses of dead bats from bat houses

The BC Government and the Community Bat Program are requesting reports and carcasses of dead bats from bat houses. Deaths of adult and flightless bat pups have been reported from bat houses, often during the hottest parts of summer. Reports of bats roosting outside of bat houses on hot days also have been made. However, the distribution, numbers, age structure, species and type of bat houses are not readily available so the issue is not clearly understood.

This has led to concerns that some bat houses may be contributing to bat mortality due to high heat. Research is underway through the Wildlife Conservation Society of Canada, Environment Canada and BC Parks to quantify temperatures in and out of bat boxes in some areas.

Dead bats from Okanagan Valley bat boxes were necropsied by the Ministry of Agriculture, Animal Health Branch, in 2016. They died from viral pneumonia. Although pneumonia was the cause of death, heat or other issues may have made the infection worse and contributed to mortality. The Ministry of Agriculture is interested in clarifying the issue and identifying the specific virus involved.

We request that you report all dead bats from bat houses as soon as possible to the BC Community Bat Program and collect all carcasses for analysis. Contact your local Community Bat Program or bcbats@gmail.com to report an incident and for more information on collecting and shipping carcasses.

Reduction of WNS Mortalities through Probiotic Applications

Cori Lausen, WCS Canada, clausen@wcs.org

As detailed in the fall issue, WCS Canada, Thompson Rivers University (TRU), McMaster University and University of British Columbia Okanagan are working on a collaborative project in B.C. developing a probiotic approach for reducing the severity of WNS in the west. This project is funded by National Fish and Wildlife Foundation as a grant to TRU, with additional grants to WCS Canada from FightWNS (MicroGrants for MicroBats), Habitat Conservation Trust Foundation, and Forest Enhancement Society of BC. Further funding was received this spring from a 'Tri-universities' grant that promotes collaboration between BC universities and additional research partners. The probiotic project has been nicknamed the "Probiotic Protection Program" – captive trials will take place as early as August this year, with field trials to begin in summer 2019. See separate newsletter entry below from Leah Rensel, MSc student at UBC Okanagan, supervised by Dr. Karen Hodges and Dr. Cori Lausen. Many biologists from across BC and Alberta have and continue to contribute to the development of the probiotic through wing swabbing of bats. To help with this effort, please contact Cori Lausen (WCS Canada) or Ann Cheeptham (TRU).

Population dynamics of urban bats

Leah Rensel, MSc. Candidate, UBCO

My name Leah Rensel and I am a recently accepted graduate student of University of British Columbia, Okanagan Campus. Under Dr. Karen Hodges of UBCO and Dr. Cori Lausen of WCSC, I will be studying urban bat populations dynamics in Vancouver, BC, in preparation for the eventual arrival of White-Nose Syndrome from nearby Washington State. I intend to focus on maternity colonies of

Leah Rensel will be in the field in the Vancouver area this summer.

Little Brown Myotis and Yuma Myotis, comparing roost structure, foraging behavior and reproductive success across the varied urban habitats available in Vancouver. This project is establishing the framework for the application of the anti-*Pseudogymnoascus destructans* probiotic that will be tested in Vancouver (as described in the fall issue of the WCBN newsletter). I and my assistant Nick Hindley, who is an undergraduate student at UBC, will be developing an applicator for this probiotic this summer. My project will also identify candidate control and test sites for the White-Nose Syndrome prophylaxis project.

I'd like to thank the following organizations for their generous support of this project: FightWNS – MicroGrants for MicroBats Program; British Columbia Habitat Conservation Trust Foundation; Forest Enhancement Society of British Columbia; Mitacs Canada.

The Kootenay Community Bat Project: Summary Report and Lessons Learned from 2004 to 2017

Juliet Craig and Dr. Leigh Anne Isaac

The Kootenay Community Bat Project (KCBP) started in south-eastern British Columbia (BC) in 2004. It was, to our knowledge, the first community-based approach to bat conservation in North America that included outreach and education, site visits with landowners, building and promotion of bat houses, and an annual bat count.

The goals of the KCBP are to:

1) Work with landowners to promote the conservation and enhancement of roost sites on their property through site visits, information packages, and bat house installations;
2) Increase knowledge of suitable bat roost modification, bat house design and site installation for the Kootenay region and BC;
3) Gather baseline data and establish permanent roost monitoring sites prior to the potential arrival of White-Nose Syndrome in the Kootenay region; and,
4) Promote education and awareness of bats and their habitats through newspaper articles, radio interviews, public interpretive programs, school programs, and educator workshops.

The success of this project has led to other regions in BC, as well as Alberta and elsewhere, adopting a similar approach to promote bat conservation using KCBP as a model. Over the years, KCBP has tried a variety of approaches to bat conservation and modified program activities based on this experience. The purpose of this report is to share the experience and lessons learned from the KCBP and to identify best practices that can be extended to the rest of the province. This report summarizes lessons learned and provides 51 recommendations for community bat projects based on our experience. Download a copy here: www.bcbats.ca/index.php/bat-basics/community-bat-publications .

Graduate and teacher of the Vancouver Bat Acoustics Class, Stanley Park, May 2018.

Bat Acoustics Training in Stanley Park

Cori Lausen, WCS Canada, clausen@wcs.org

Cori Lausen taught a bat acoustics course to 13 participants at Stanley Park, Vancouver, in mid-May. This 5 day long course covered all of the basics of bat echolocation and species identification, with hands on instruction and practice for many bat detectors, emphasizing Wildlife Acoustics and Titley Scientific models. Cori thanks both of these acoustics companies for providing detectors for the course.

Field activities included mobile monitoring, passive detector deployment and active monitoring with bat spotlighting. The analysis portion of the class focussed largely on Sonobat, Kaleidoscope, and Analook. Cori thanks the software designers for their support for this portion of the course. Also a big thank you to the Stanley Park Ecological Society who hosted the course.

Cori also gave a one day overview of bat acoustics with focus on active monitoring to BC Community Bat Program. The course consisted of one day in the classroom and an evening of actively recording bats with EMTouches and Walkabouts, visiting several locations in Stanley Park.

Cori being a bat in the BC Community Bat Program class (left); participants wait for bats to emerge during the field excursion (right). Many Silver-haired bats (likely migrating) were soon observed and recorded. Photo: M. Kellner.

Northwest Territories

Lutsel K'e Dene Bat Ecology Program

Inge-Jean Hansen, Brian Paterson, Dr. Cori Lausen and the Ni Hat'ni Dene

Study area showing bat detector locations (red dots) in Yellowknife and on the east arm of Great Slave Lake (in the Lutsel K'e Dene traditional territory and the new proposed national reserve area, Thaidene Nene).

During late summer and fall of 2017, researchers Inge-Jean Hansen and Brian Paterson deployed detectors on the east arm of Great Slave Lake (see figure 1.) with the help of the Ni Hat'ni Dene (Dene Watchers of the Land) from Lutsel K'e, NWT and in coordination with Dr. Cori Lausen (Wildlife Conservation Society Canada – WCSC). There is a paucity of information regarding the presence of bat species near the tree line, including along the eastern arm of Great Slave Lake in the traditional territory of the Lutsel K'e Dene First Nation. Bat range maps from the NWT did not include the east arm of Great Slave Lake, likely due to a lack of research in the region.

A total of six locations were monitored for bat activity between August and October 2017. The locations were identified through a combination of traditional ecological knowledge (TEK) and reconnaissance using both satellite imagery and ground-truthing of potential areas. Over 250 nights of monitoring occurred and two endangered species, little brown myotis and northern myotis, were detected as well as hoary bats and eastern red bats. This discovery extends all four species known ranges.

Data from this research has been submitted to the Government of the Northwest Territories to help inform the species distributions within the territory.

The researchers would like to thank the Aboriginal Fund for Species at Risk (AFSAR), the Lustel K'e Dene,

Brian Paterson of Zonal and Berna Catholique of the Ni Hat'ni setting up a detector on Great Slave Lake, August 2017. Photo credit: Inge-Jean Hansen, Zonal.

WCSC and Zonal Ecosystem and Wildlife Consultants Ltd for making this research possible.

Visit: http://landoftheancestors.ca/team/ni-hatni-dene-program.html to read a blog about this project and browse the Land of the Ancestors website to see more of the work the Ni Hat'ni Dene are doing and read the timeline for this huge new National Park Reserve.

View of the White Cliffs monitored during this study from the Ni Hat'ni boat, August 2017. Photo credit: Inge-Jean Hansen, Zonal

Berna Catholique, Ni Hat'ni, stands at an acoustic detector in Moose Bay that she helped deploy, August 2017. Photo credit: Inge-Jean Hansen, Zonal.

Saskatchewan

Brigham Bat Lab

Dr. R. Mark Brigham, Professor of Biology, University of Regina, SK

Alyssa Stulburg completed her Honours thesis on bat personality, got an NSERC PGS M and is moving to the University of Winnipeg to do a M.Sc. with Craig Willis. Audrey Lauzon is nearing completion of her M.Sc. regarding bats and forestry and Erin Swerdfeger is gearing up for field season #2 of her MSc. Lauren Bailey has finished the field work for her M.Sc. at Rhodes University in Grahamstown and is currently writing, hoping to be done by the end of the year. Zenon Czenze has completed his PhD at the University of Auckland and is awaiting a Visa to begin a PDF at the University of Pretoria with Andrew McKechnie. Dr. Erin Baerwald has formally run the lab most capably from 1 Jan. She is an NSERC PDF working on bat migration and the resulting interactions with wind energy developments. Formally in

Sept., Eric and Dana Green will join the lab to undertake PhD projects. At this point it looks like Dana will be working on bats but Eric's project is still being developed.

The work on edition 2 of the Bats of BC and the Echolocation Handbook are making progress. We hope to have the handbook done by late summer.

I am finishing up my sabbatical at Rhodes with Ben Smit. Currently we have two 3rd projects and two Honours projects on bats undergoing. I have also been joined by Dr. Andrew Cameron from the U of R and we are hoping to begin some work on the microbiology fauna of bats in the context of heat stress. The sabbatical has been wonderful and we will be very sorry to head home.

Wahlberg's epauletted fruit bat (*Epomophus wahlbergi*) with fig. Photo: A. Brigham.

Alaska

Alaska Little Brown Myotis Maternity Roost Monitoring – Yearly Update

Alaska Center for Conservation Science, University of Alaska Anchorage
Jesika Reimer, Laura Kaupas and Paul Schuette
Contact Jesika Reimer, email: jpreimer@alaska.edu

The Alaska Center for Conservation Science, is entering its third year of little brown myotis maternity roost monitoring, and expanding the study area to include Southeast Alaska and the Kenai Peninsula. The roost network is currently comprised of XX roosts that will be visiting this summer for emergence counts and capture events to assess the health and status of each colony. Spring data collection is already underway with acoustic detectors and temperature loggers deployed at each roost site to determine active season length and variation amongst colonies across the state of Alaska. A pilot study assessing roost switching by reproductive females will be initiated during July. Information about our maternity roost monitoring project can be found on our website:
http://accs.uaa.alaska.edu/zoology/bat-research

Variation in roost conditions and reproductive success of little brown myotis across a latitudinal gradient in Alaska

Jesika P. Reimer, Laura A. Kaupas, A. Droghini and Paul A. Schuette
Alaska Center for Conservation Science, University of Alaska Anchorage, Anchorage, USA

The following abstract was for an oral presentation made by J. Reimer at the Wildlife Society Meetings, Alaska Chapter, Anchorage, AK, February 2018.

During 2017 we embarked on a project to document and monitor a network of little brown myotis (*Myotis lucifugus*) maternity colonies throughout Alaska. Fourteen colonies were surveyed during June and July across a latitudinal gradient from the Kenai Peninsula in the south, to the Copper and Tanana rivers in the north. All colonies were established in human structures that ranged in size, shape and roof structure. Colony size ranged from 2 - 568 adults with the smaller colonies occurring at the more northern sites in the Delta Junction and Fairbanks areas. Average internal roost temperatures during July ranged from 19.0 to 21.4°C, and reproductive success ranged from 33% to 100% across colonies. Preliminary analysis suggests that, in general, bat roosts in Alaska are cooler and colony reproductive rates are lower than observed in the lower 48. There is preliminary evidence of a geographic pattern in

colony size and internal roost temperature, however, reproductive success was not correlated with either of these variables. This first year of data raises questions about colony size in relation to roost quality and/or roost availability, and provides us with a preliminary view of the spatial distribution of little brown myotis colonies and their reproductive success, climatic differences, and roost characteristics, which we will continue to monitor and assess over the next five years. This project was funded through a cooperative agreement with the Alaska Department of Fish and Game – Threatened, Endangered and Diversity program.

Western

WCSC Western Bat Programs: NABat full steam ahead, Alberta Community Bat Program, Modelling WNS Survivorship, and BatCaver

Cori Lausen, WCS Canada, clausen@wcs.org

North American Bat Monitoring Program - NABat

Continental NABat Program: WCS Canada's Cori Lausen worked with Brian Reichert, North American Bat Monitoring Coordinator (USGS), and several other bat biologists to develop new acoustic analysis guidance. This workflow document will be available on the NABat website (nabatmonitoring.org) this spring.

Provincial NABat Program (BC): The 3rd year of North American Bat Monitoring (NABat) will begin B.C. at the end of May. This is being coordinated by WCS Canada's Bat Program Manager, Jason Rae. Many thanks to the growing list of collaborators and partners who are helping to monitor bats each year. This year will see an expansion by at least 12 new NABat grid cells, thanks to the participation of BC Parks under the coordination of Orville Dyer with BC Ministry of Environment. NABat monitoring in B.C. continues to be supported through grants to WCS Canada from Habitat Conservation Trust Foundation, Forest Enhancement Society of B.C., Columbia Basin Trust, and Fish and Wildlife Compensation Program Columbia.

Alberta Community Bat Program

Cory Olson continues to coordinate the Alberta Community Bat Program at the provincial level, along with a growing number of dedicated regional coordinators. This spring Cory released his comprehensive guide to "Bat-Friendly Communities" and recently updated the Bat House Guide. Thousands of downloads of these documents have taken place in only a few weeks, evidence of the effectiveness of this community bat program and the enthusiasm among the public for bat conservation guidance. AB Community Bat Program continues to be supported by grants to WCS Canada from Alberta Conservation Association, Alberta Ecotrust, Chawker's Foundation and Habitat Stewardship Program (Environment and Climate Change Canada). Visit the website at www.albertabats.ca .

Modelling WNS Survivorship of Bats

In B.C. -- This winter WCS Canada wrapped up year 3 of 3 of their WNS Survivorship Modelling project in B.C. where we have now collected enough data on 3 species of bats (Yuma Myotis, Californian Myotis, and Silver-haired Bat) to develop preliminary models. These models show under what microclimate conditions a species' survival will be reduced when infected with WNS, and to what extent. Preliminary models have been generated by Massey University in New Zealand (collaborators Dr. David Hayman and PhD candidate Reed Hranac). These data have also confirmed that respiration rates measured in fall versus early winter do not differ significantly, opening up the possibility that more of the respiration work could be done in the fall, rather than winter, increasing the likelihood that this modelling effort could be applied to more species in B.C. whose wintering locations are not known, but fall captures are possible. This B.C. work was funded by Min of FLNRORD and Waneta Dam Terrestrial Compensation Program (Columbia Power). **In Alberta** -- A massive field effort at Cadomin Cave in Alberta this winter produced a dataset of arousal rates for Little Brown Myotis. These data will be used by WCS, Texas Tech, Massey University, MT State Univ, and other collaborators ("SERDP" team) as a critical parameter in generating WNS survivorship models for this species. These data are also being used to examine the role that latitude plays in WNS mortality rates. This field effort was led by Cory Olson in Alberta, and funded by a grant to WCS Canada from the US Fish and Wildlife Service and the Alberta Conservation Association. We thank numerous volunteers who helped with the field efforts at Cadomin Cave this past fall, winter and spring.

Bat caught hibernating by the BatCaver team. Photo: Felix Ossig-Bonnano.

Locating Bat Hibernacula

BC's BatCaver program had a busy season – in 2017 - 8, there were 46 new placements of underground roostlogger acoustic detectors, of which 24 were deployed in mines across the province. In Alberta, roostloggers were deployed in 14 locations for winter monitoring. Retrieval of detectors is underway. Earlier this spring, WCS Canada's BatCaver Coordinators Martin Davis and Greg Horne ventured on a helicopter expedition in NE BC to locate bat hibernacula. They found the first cave hibernaculum for Little Brown myotis in B.C., which is critical habitat under the federal species at risk legislation. Although the photos and range maps leave little uncertainty regarding the taxonomic identity of the hibernating bats, genetic confirmation is pending. New hibernacula have been identified in Grand Forks, Clayquot Sound (Sutton Pass), and Prince George.

RoostLoggers were deployed at 46 sites in 2017/18, including a lava tube at the Nisga'a Memorial Lava Beds Provincial Park. Photo: M. Davis.

In Alberta and B.C., BatCaver continues to be supported through grants to WCS Canada from Habitat Stewardship Program (Environment and Climate Change Canada). In Alberta, support is also received from Alberta Conservation Association, Alberta Ecotrust, and Chawker's Foundation. In B.C. BatCaver is additionally supported by Habitat Conservation Trust Foundation, Forest Enhancement Society of B.C., Columbia Basin Trust, and Fish and Wildlife Compensation Program Columbia.

White nose syndrome

Updated decontamination protocol

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-Mar2017.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

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Upcoming Conferences/Courses

June 4-8, 2018 – Edmonton, AB. Comprehensive Acoustic Training, NAIT Campus.

June 12-14, 2018: US 2018 White-nose Syndrome National Meeting. June 12 – 14, 2018, Tacoma, Washington.

Oct 24-27, 2018: North American Society for Bat Research. NASBR 48, Puerto Vallarta, MX.

Spring 2019 WBWG meeting- Tulsa, Oklahoma, hosted by the new president Katie Gilles

Spring 2019. BC BAT working group: Location and dates TBD.

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/bat-management/abat-programs-publications.aspx

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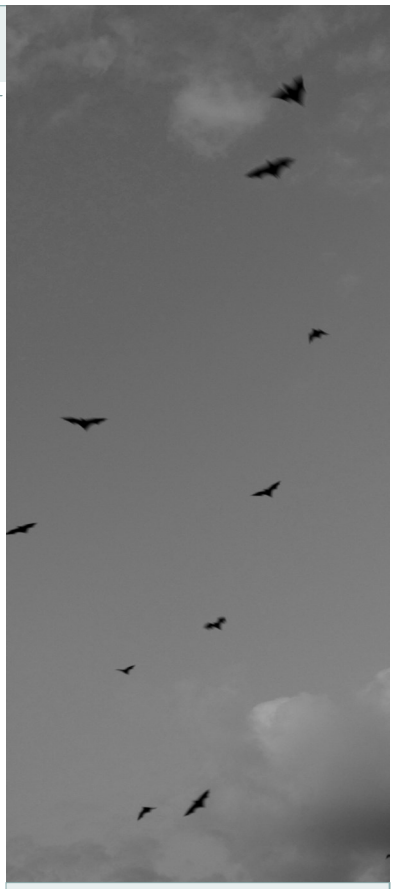
View from Cadomin Cave, AB. Photo: AESRD

Community Bat Programs: Lessons learned in BC and Alberta

Little brown bat-J. Hobbs

'Bat palace' in Lilooet, BC.—V. Birch-Jones



The BC government initiated this publication with the goal of sharing valuable bat information between biologists, wildlife professionals and the public. Co-op Wildlife Technicians Hannah Flagg and Courtney Jones conducted phone interviews with a number of BC and Alberta bat program coordinators in the winter of 2018. Look inside to see some of their answers!

INTERVIEW TOPICS

THANKS FOR THE INTERVIEWS:

VIVIAN BIRCH-JONES

Lillooet, BC

Bat program began in 2002.

ASHLEIGH BALLEVONA

Skeena region, BC

Bat program began in 2014.

DOUG BURLES

Thompson and Haida Gwaii region, BC

Bat program began in 2015.

INGE-JEAN HANSEN

Peace region, BC

Bat program began in 2015.

MANDY KELLNER

Columbia/Shuswap region, BC

Bat program began in 2015.

www.bcbats.ca

LEIGH ANNE ISAAC AND JULIET CRAIG

East Kootenay region, BC

Bat program began in 2004.

Bat house—B. Kosugi

Q: HOW HAVE YOU ENCOURAGED HOMEOWNERS TO LIVE WITH BATS?

A: Peter Ommundsen—We have made over 100 educational visits to land owners, looked at their bat colonies, and provided them with literature and education on living with bats. There is also a 'Stewards in Training' program run by the Salt Spring Island Conservancy that exposes children to natural history in schools. Students from grades k-8 are taken out once per year to natural history sites. We are providing education about bats to kids at a young age. We also sponsored school bat art projects where students are asked to submit bat art and it is displayed publicly in the lobby of the public library.

A: Inge-Jean Hansen—Education is key. When the majority of people call me they use words such as 'infested' or they identify bats as flying rodents. However, with just a little bit of education it's relatively easy to completely change their minds. I let them know that bats are less related to rodents than humans; they live for 30-40 years in the wild; they don't chew holes and they won't necessarily make conditions worse in your attic. It's about imparting the knowledge to homeowners that they have a wise little creature living with them! This tends to turn the majority of people around from seeing bats as pests to seeing them as something that can be lived with.

"We have made over 100 educational visits to land owners and looked at their bat colonies, providing them with literature and education about living with bats." - Peter Ommundsen

A: Cory Olsen—We use a variety of different methods, including our website (www.albertabats.ca) where we provide information about bat friendly exclusions. A year ago we released a guide about managing bats in buildings of Alberta. This guide is a comprehensive loadable document that includes recommendations for situations where homeowners need to exclude bats to situations where homeowners might be able to live with bats and ways they can minimize the potential challenges of having bats in their buildings. The purpose of the guide is to get people thinking about alternatives to excluding bats and that necessary exclusions can be done in a way that won't cause harm to the bats.

A: Bruce Kosugi—We receive phone calls from homeowners having problems with bats and will often go out and visit sites to provide recommendations. We also keep bat boxes on reserve for homeowners that might want to perform exclusions. When boxes are given out we provide recipients with information on installation and the preferred environmental features for bat boxes and ask homeowners if they plan to install the box on their home or on a pole. We encourage homeowners to wait until the end of the season before excluding their bats because it's important that we don't disturb the bats while roosting/nesting.

Q: DO YOU BUILD BAT HOUSES? HOW DO YOU GET THEM OUT IN YOUR COMMUNITY?

A: Ashleigh Ballevona—Every year in the fall we do a bat box building workshop in conjunction with the local naturalist group. All materials are pre cut and we have 12 participants come and build the boxes. The pre-cutting and prep work is done by two members of the naturalist group. At the end of the workshop 20 boxes will have been built. There is always a waiting list for our workshops! All participants take a box home and the remaining boxes (if any) are sold by the naturalist group with funds made by the sale of the boxes going towards local bat initiatives. In 2016 these funds were used to put up an interpretive sign on one of the local trails.

A: Lisa Card— We conduct bat house building workshops in the fall, with one workshop for each county I work with. There are 40 bat box kits available for each workshop. Bat box kits for the workshops are built by my dad in the summer—he has built over 200 bat houses in the past two years! The workshops are very popular and usually have a waitlist of up to 15-20 people. I try to also have extra kits available for groups of students or kids. The demand for bat box workshops and bat houses is beyond my capabilities. If I had more resources I could conduct more workshops in my counties and I think they would all fill up.

A: Inge-Jean Hansen—Our program is fairly new so we have done one bat house building workshop with the Timberline Nature Club of Dawson Creek for International Bat week for Halloween. We built 20 bat houses and distributed all of them to those who had bats in their homes, so this coming year we are going to try to distribute more.

A: Cory Olsen—We occasionally have workshops to build bat houses, but we don't do a lot of them because they are a lower priority for us. It's clear from our website statistics that people are very interested in bat house workshops, but there is weak evidence that bat houses are providing the best benefit for bats so we tend to focus on other areas. However, we still think it is an important part of the program so we do hold some workshops.

"The workshops are very popular and usually have a waitlist of up to 15-20 people." - Lisa Card

A: Doug Burles—We build the bat houses ourselves with the help of the Kamloops Naturalist Club. A club member has a table saw and we build the bat boxes together. We build and give away about 8 bat houses per year, although in our first year we built and gave away ~20 single chamber houses during a presentation with the city.

A: Bruce Kosugi— We build bat boxes with a local school district. We usually do workshops for the high school biology or science class although we have had elementary classes that have built the boxes in the past. Our general plan involves students building bat houses and finding volunteers in the Peace area that would be willing to monitor their boxes over 5 years. We give out bat boxes free of cost if people are willing to commit to the 5 years of monitoring. Results of monitoring go directly to BC Bats.

THANKS FOR THE INTERVIEWS:

LISA CARD

Highway2Conservation

Barhead, Westhock, and

Athabasca county, AB

Bat program began in 2016.

www.highway2conservation.com

COREY OLSEN

Alberta Community Bat Program

Bat program began in 2015.

http://www.albertabats.ca/

PETER OMMUNDSEN

Salt Spring Island Conservancy

Salt Spring Island, BC

Bat program began in 2014.

saltspringconservancy.ca/protect/wildlife/bats/

BRUCE KOSUGI

Charlie Lake Conservation

Society Charlie Lake, BC

Bat program began in 2014.

www.charlielakeconservationsociety.ca

LISA WILKINSON

Alberta Community Bat Program. Alberta Government.

Bat program began in 2015.

Q: WHY DO YOU PUT UP BAT HOUSES IN YOUR COMMUNITY?

A: Vivian Birch-Jones—Bat houses involve the community and are a visible reminder of species that the community can be oblivious to. The main focus with bat houses is public engagement and awareness. We are fortunate to have a lot of suitable habitat for bats in Lillooet.

A: Doug Burles—The primary reason we give away bat houses is for exclusions and providing homeowners with alternatives. Some don't want to have bats in their houses. In most cases it is in response to an issue.

A: Ashleigh Ballevona—It's really about awareness and community engagement and I think it's working because in the last couple of years we have seen a change in people's perception of bats.

Q: WHAT STYLES OF BAT HOUSES DO YOU BUILD OR INSTALL?

A: Lisa Wilkinson—We don't know what the best designs are for bat houses yet as most research on this has come from the USA. We are supporting students taking on their own research projects to learn more about bat boxes and effective designs.

A: Inge-Jean Hansen— We build maternity 4-chamber boxes.

A: Doug Burles—We build the 4-chamber bat houses. Although we have also built and given away ~20 single chamber bat house kits.

A: Vivian Birch–Jones —Most recently we built a 'Bat palace'!

A: Cory Olsen—We are trying to collect information on what designs are the most effective, including data on internal temperatures of bat houses. We have collected a fair bit of preliminary data to help us determine the best bat house design. However, we need more observations and (ideally) paired studies that compare different bat houses in the same area. While this is preliminary, it seems the Rocket boxes have a pretty low success rate in Alberta (usually few or no bats use them). The traditional design of the Bat Conservation International 4-chambered nursery house has been more successful, especially on the sides of buildings.

"We promote multi-chambered bat houses including four-chambered nursery boxes and two-chambered rocket boxes."-Leigh Anne Isaac and Juliet Craig

A: Lisa Card—We design our own two-chambered bat houses because the designs we found online are often too technical for workshops. We also did this because of cost and time. We know our design works because we have documented bats using the boxes. Our design maximizes wood materials, resources and time so that we can build as many bat houses as possible.

A: Ashleigh Ballevona—We build the 'cadilac' of bat boxes. The carpenters with the naturalist group came up with this design which has been modified from other sources. The design is basically a 3-chambered bat house with a bit of insulation on the front. It's quite wide, heavy, and tall and can house at least 100 bats. This template works really well – and it minimizes waste of materials.

A: Leigh Anne Isaac and Juliet Craig—We promote multi-chambered bat houses including four-chambered nursery boxes and two-chambered rocket boxes. Multi-chambered bat houses provide more micro-climate options especially important during extreme weather events which is why we have phased away from approaches involving single-chambered bat houses. We won't promote single-chambered bat houses unless more research is done on their effectiveness and suitability, particularly in hot climates. During hot spells, residents with single-chambered bat houses were reporting numerous dead pups below the bat houses. If a single-chambered bat house is installed, we recommend putting it in a shady location (it will more likely serve as a day roost rather than a maternity roost).

Q: DO YOU KNOW IF YOUR BAT HOUSES ARE BEING INSTALLED PROPERLY?

A: Inge-Jean Hansen—Partially, although we have several boxes that are completely unknown. There are 13 bat houses in the community that we know are checked every year by homeowners, with three of those houses inhabited by bats. We have another seven bat houses in the community, but we don't know if they are being monitored as we haven't heard back from the bat house owners. This is partly because we partnered with restaurants participating in the 2017 Candlelight Conservation dinner by donating bat boxes to be raffled off at each of the participating restaurants. We met with each of the recipients and provided them with the monitoring information but we didn't hear back from any of them. The 13 bat boxes we know of in the community have been mounted facing south or southwest on a variety of outbuildings (barns, garages) and elevated anywhere between the 8 foot and 12 foot range.

A: Leigh Anne Isaac and Juliet Craig—In 2012 we conducted a telephone survey of 123 attendees from historic bat house workshops. Of the respondents (response rate 49.5%), 37.7% had not put up their bat house. Some of the reasons for not installing included not getting around to it and not knowing where to put it. Guidelines for installation were provided at the workshops but some residents did not have a suitable location that met the criteria provided. For those who had installed their bat houses, 71.0% had put it on an unheated building, post or tree, none of which are ideal locations for a single-chambered bat house. We have adjusted our approach based on these findings and now maintain a contact list of all participants so that follow-up surveys can be conducted to determine efficacy of the approach and support effective installation and monitoring.

"There are 13 bat houses in the community that we know are checked every year by homeowners, with three of those houses inhabited by bats."—Inge-Jean Hansen

Bat box workshop, 2015—A. Ballevona

A: Ashleigh Ballevona — We have a huge response to bat house building workshops, but we don't always know that bat boxes are being put up. I try to keep an updated spreadsheet on the status of bat boxes and follow up with people. Based on the amount of workshops over the years, there are at least 100 boxes out, if they were all put up.

ANNUAL BAT COUNTS

Mandy Kellner—We conduct annual exit counts at roost sites. We aim to conduct two counts in June before pups are born and two counts in July or August after the pups are born. Ideally we would like to grow this aspect of the program and make it an effective monitoring strategy. Most of our sites are actually counted by volunteers, whether it is the homeowner or volunteers that are recruited to go and count at someone's house. With 1-4 evenings a year, it's a pretty low time commitment. It's a fairly major part of our program as there is a need for monitoring before White Nose Syndrome gets here. It's also a great way to get homeowners involved with their colony. The longest count we have right now is six years from the Kootenays, but two years is probably more common. Because the program is recent we have a lot of one and two year old counts that we hope will be continued.

Q: WHAT IS THE FOCUS OF YOUR PROGRAM?

A: Corey Olsen—An important focus for bat conservation is to ensure that bats are able to survive and successfully reproduce in human communities. Some colonies contain over 1000 individuals. A single eviction can cause many adult and pup deaths and have a significant negative effect on the local bat population. We provide recommendations for people to reduce to the risk of harm to bats while managing them in their buildings. This also involves changing public perception of bats. Not too long ago there were many negative opinions of bats. Changing public perception of bats will help reduce harm to bats caused by humans and ensure local bat populations survive.

Long-eared Myotis—M. Kellner

Q: WHAT ARE YOU DOING IN YOUR REGION THAT HAS WORKED REALLY WELL?

A: Bruce Kosugi—Working with school kids really increases the awareness of bats across the community. Students get very passionate about bats and leave school to tell their family and friends about it. It's a great way to spread the message. The more of the public involved, the better!

A: Peter Ommundsen—Our public education program has helped raise awareness of bats. Getting kids excited at a young age about bats is great because it's not long before they are homeowners themselves.

A: Mandy Kellner—Currently, our partnerships with other environmental groups in the area are working really well. Partnering with local groups that are already active in the region is a good way to connect with people that are already interested in conservation.

A: Doug Burles—News releases work. Last year I put one out and got responses from people interested in volunteering and doing emergence counts.

"We are exploring novel ways to reach a different audience"- Lisa Wilkinson

A: Corey Olsen- Bat walks have been quite successful with the public. We take a group of people with bat detectors out to a wetlands and listen to the foraging bats. Its quite an interesting experience for people and kids love it. These events are easy to organize and require fewer expenses than doing bat workshops. We also have the neighbourhood bat watch research network (batwatch.ca) which is an important component of this program. Through this program we hope to involve the public in collecting information on locations and species of bats. An interactive map allows people to monitor their bat colonies over time and report observations. As more people get involved we hope there will be a substantial database of roost counts that can be used for monitoring.

A: Lisa Wilkinson– We have branched out to do a variety of bat-related activities based on public requests and local opportunities. If a school reaches out, we do a presentation and try and come up with a hands-on activity. We've also found that bat walks are an effective way to involve the public in bat conservation. Using a spectrogram on the walks allows the public to see an image of the bat calls at night and provides the public with an engaging experience. We have branched out into some more unusual events and venues like the Jasper Dark Sky festival and the Telus World of Science where we set up a display for people to look at and answer questions. At the Telus World of Science we did an adult event on the science of sex and set up a display about bat reproduction! We are exploring novel ways to reach a different audience.

Q: WHAT IS YOUR BIGGEST CHALLENGE IN RUNNING YOUR COMMUNITY BAT PROGRAM?

A: Lisa Card— People misinterpreting what I'm doing. Sometimes people think I am an exterminator or that I am trying to take down bat roosts. Time is also another huge challenge. Lots of time goes into these projects so I can't always get out to visit the sites and interact with people face to face.

A: Vivian Birch-Jones— We could use more expertise in the Lillooet area along with more informed people in the community. Two research studies have been conducted in the area so far, but are still so many unknowns and much more research that could be done.

A: Ashleigh Ballevona— Just getting the information out can be a big challenge. I send information about the program out to newspapers, online event boards, and put up posters around town which can also be time consuming.

A: Mandy Kellner— Finding volunteers willing to commit to ongoing work is quite a challenge. We need lots of help doing annual bat counts and monitoring and there are not a lot of people that want to take on that responsibility. We have to be careful what we ask for from our volunteers and that we don't overtax them.

> *"Finding volunteers willing to commit to ongoing work is quite a challenge."- Mandy Kellner*

A: Inge-Jean Hansen— Bodies. Having enough people that are consistently interested in reaching out to landowners, helping with bat house workshops, and helping with other tasks. The North in general struggles with this problem. Because of the smaller population in the region it can be difficult to retain volunteers. There is often the same dedicated group of people doing all of the volunteer work in the community and they get burnt out.

A: Doug Burles— Having enough time is a challenge. We usually go months without hearing from the public and then there is a flurry of calls all at once in August as the young bats start to fly and show up everywhere. This is when people start to realize they have bats in their attic and become concerned.

A: Peter Ommundsen— Getting enough funding for conservation of riparian and wetland habitat— as well as convincing people that restoring wetland habitat is an important issue.

A: Corey Olsen— Having people record their observations. I am certain there are thousands of buildings with bats in them across the province, but we only hear about a small fraction of them. Resources are also a challenge. We are wanting to do more follow-ups on maternity roosts but this is resource and time intensive. We need a better network of volunteers and biologists to take on monitoring more roosts.

Q: AT THIS TIME HOW MANY BAT BOXES WOULD YOU ESTIMATE ARE IN THE COMMUNITY?

A: Bruce Kosugi—I would say at this time ~120 boxes. Some people have asked for multiple bat houses (three chambered maternity style bat houses). We don't know how many of the 120 bat boxes are being occupied.

EXCITING BAT STORY!

A: Doug Burles— I was in Vernon doing a bat presentation when a man attending asked me to come take a look at the bat houses in his yard. The man's property was lakeside and had two big bat houses set up in his yard which were filled with bats! I estimate there was about 1000-1500 bats living in them. About half a block away his neighbour had another four bat boxes to accommodate about the same number of bats that were living on his property. We mist netted on his property to see what species they were—the majority were Yuma bats. The people in the area were happy to have the bats, which kept the mosquitos off the beach.

IMPORTANT LINKS

Community Bat programs of BC webpage:

www.bcbats.ca

AB bat webpage:

www.albertabats.ca

Faceboook links:

www.facebook.com/bcbats

www.facebook.com/Charlie-Lake-Conservation-Society-106452476111399/

BC Bat Action team:

www.bcbat.ca

Other:

batwatch.ca

HANNAH FLAGG AND COURTNEY JONES.

We are biology students at the University of Victoria currently working a co-op term as Wildlife Technicians in Fort St. John. We have enjoyed our time in the North and are grateful for this opportunity to learn more about bats.

DAWSON CREEK, BC—BRITISH COLUMBIA'S FIRST BAT FRIENDLY COMMUNITY

Inge-Jean Hansen—The idea of bat friendly communities was something Mandy Kellner and I had been chatting about, partly because various communities had expressed interest in becoming designated for doing work with bats. Muncho Lake Lodge in the Liard region had contacted me to help them convey a positive message to clients about bats. They asked if there was a designation for a bat friendly facility which spurred the initial talks about bat friendly communities. So when the BC Community Bat Program was given a booth at the North Central Local Government Association conference where municipal elected officials from over 70% of BC's landmass would be attending, I thought okay—what am I going to present here and how will I engage all of these politicians? I decided to jump on the idea of bat friendly communities. I had a list and clipboard out and asked "Are you interested in becoming a bat friendly community?". This strategy worked well and even played on political rivalries. It was actually a bit of a landslide of communities signing up and committing to be a bat friendly community. It consists of three easy steps—1. Preserving and conserving bat habitat, 2. Adopting International Bat Week, 3. Promoting education and stocking the BC Community Bat pamphlets in city hall so if anyone came in to apply for a license to alter their building they would get a pamphlet about bats, or if relevant businesses (e.g. realtors, chimney specialists) renew/apply for business licences they get the information. Dawson Creek was the trial run because I live here and the city and council were keen.

> *"The bat friendly community is still in it's infancy, but what it really relies on is devoted volunteers in the region." - Inge-Jean Hansen*

The city of Dawson Creek jumped on board immediately and adopted International Bat Week, put up bat houses with a commitment to monitor them annually, and committed to planting bat friendly trees in the watershed right in town. There is also a community run daycare and every year we come in to do a bat talk to educate the youth. The bat friendly community is still in it's infancy, but what it really relies on is devoted volunteers in the region. The West Moberly First Nations community is next to become a bat friendly community, followed by Hudson's Hope and Tumbler Ridge. I am hoping it will be somewhat of a bullseye effect, starting with Dawson Creek and expanding out from there. There is an information package available for communities interested in becoming a bat friendly community. Interested communities or coordinators just need to contact Mandy Kellner and she will give them a link where they can download everything. The package contains a step by step guide covering the process with city council, applying for a delegation, and the commitments and responsibilities required of the community such as annual monitoring of bat houses. Moving forward, Dawson Creek is now going to begin promoting bat friendly residential gardening including night scented flowers and plant species that attract bat prey species.

Q: DO YOU HAVE ANY GAPS IN YOUR PROGRAM?

A: Peter Ommundsen—Wetland restoration. Wetlands account for less than 2% of the area on Salt Spring Island, while forest accounts for ~78%. When we look at what is limiting bats, prey (insects) limitations are likely a bigger problem than cover or shelter. Over the years wetlands area has decreased on the island as land has been appropriated for farming and various developments. For about five years conservancy biologist Laura Matthais has been working to create and restore wetlands. We have conducted before and after monitoring on newly created wetlands and seen an increase in bat numbers where very few were using the habitat before.

A: Vivian Birch-Jones—There are gaps in knowledge about bat behaviour and ecology. We still don't know a lot about where bats are wintering in the Lillooet region which is important for protecting hibernacula. We have moderate knowledge of what bats eat but we still don't know the effects of pesticides on bats. In general there are just a lot of unknowns that could help inform bat conservation efforts.

"There isn't a lot of knowledge about where bats are wintering in the Lillooet region which is important for protecting cave habitat."- Vivian Birch-Jones

A LIVING WITH BATS SUCCESS STORY

Lisa Card received a call from a woman who owned a very old barn from the early 1900's. She wanted to restore its roof, but suspected she had a great deal of bats living there. Not wanting to disturb the bats and unsure how to proceed with the roof restoration the woman reached out to Lisa. Indeed the big red barn was so old it could almost be considered a historic site and it housed a huge colony of Big Brown bats. The woman worked with Lisa to ensure the roof restoration would not affect her bats because she wanted to protect them! They waited until all the bats had left before beginning restoration and designed the new barn roof so the bats could still have access to their roosting areas and the home owner could keep an eye on them.

THANK-YOU TO THE DEDICATED COORDINATORS AND VOLUNTEERS IN BC AND ALBERTA!

BRITISH COLUMBIA

'Bat palace' construction in Lilooet, BC.—V. Birch-Jones