

Western Canada Bat Network Newsletter



Issue No. 30 Spring 2017

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Cover – An exciting discovery in the boreal forest! Likely *Myotis lucifugus*, the species of these hibernating bats will be confirmed with acoustic monitoring and analysis of collected guano. Photo by Dave Hobson.

Updates by region

British Columbia

Update from the Peace Region

Inge-Jean Hansen, Biologist, MoE



A caving trip in the Wicked River area as part of the FWCP Williston Bat Ecology Program, with Trent Blair (left) and Kirk Safford (right) on a first descent into a newly discovered cave, "Rock'n 2 Veg" where a roost logger was deployed. Photo: Brian Paterson.

The Williston Bat Ecology Program received its third and final year of funding from the Peace Fish and Wildlife Compensation Program to investigate winter bat ecology on the Peace Arm of Williston Lake. Brian Paterson, Cori Lausen and Inge-Jean Hansen continue to search for winter hibernacula in this remote region of northeastern BC.

In 2016 the researchers conducted early autumn bat capture and radio-tagging in an attempt to determine exact locations of wintering bats. Four rock crevice roosts were discovered, along with tree and anthropogenic feature roosts. More details will follow soon, as roost loggers and acoustic detectors from this winter's monitoring season are currently being retrieved.

Additionally, the successful winter recording of a single 40 kHz *Myotis* (species undetermined) last year in the Bocock Peaks Provincial Park, led to increased interest in continuing the caving aspect of the project. A cave expedition was conducted in August 2016 and three roost loggers were deployed in

coordination with the BatCaver program. These acoustic monitors will be recovered this summer, as the team endeavors to locate additional underground sites to deploy roost loggers for the final year of the program. Updates and final reports can be found at <http://fwcp.ca/studying-bat-ecology-in-williston-reservoir/>, or by contacting the researchers directly.



Early autumn mist-netting on the Peace Arm of Williston Reservoir with (l to r) Sue Dulc, Jared Hobbs, Cori Lausen and Inge-Jean Hansen. Photo: Brian Paterson.

Got Bats? BC Community Bat Program Updates

Winter WNS passive surveillance, Annual Bat Count review, and call for volunteers

Mandy Kellner, Coordinator, BC Community Bat Program

BC Community Bat Program and WNS Surveillance

With funding from the BC government, the Got Bats network undertook passive White Nose Surveillance this past winter. Regional Coordinators solicited reports of winter bat activity and dead

bats, and collected and shipped dead bats to the lab for WNS testing. To-date, no WNS has been reported in BC.

Annual Bat Count Review

The winter also brought time to review the Annual Bat Count (part of the Community Bat Program), and assess the strengths and weaknesses of the Bat Count and its utility as a province-wide monitoring program. The executive summary of the report is included below. If you are interested in the full report, please contact Mandy at bcbats@gmail.com.

Summary: White-Nose Syndrome is an emerging fungal disease that results in high mortality of susceptible bat species. It has not yet been detected in British Columbia (BC) but is expected in the near future. To monitor the spread of the disease, identify species-specific impacts, and track recovery of affected species, we need a statistically-robust program for monitoring bat populations. The BC Annual Bat Count offers good potential for population monitoring trends in species of bats such as the federally-endangered Little Brown Myotis (*Myotis lucifugus*) that use human structures for roosting.



The BC CBP received numerous reports of bats overwintering in firewood piles (like this Silver-haired Bat), and behind window trim. Photo: Bill Bengeyfield.

The Annual Bat Count is currently the only long-term roost monitoring program; p[in the province, can contribute to the large North American Bat Monitoring Program launched in 2016, covers much of BC, and is cost-effective due to the large volunteer component and regional coordinators who implement the Count as part of the BC Community Bat Program. The Annual Bat Count has been conducted from 2012 – 2016, is growing each year, and has data on seven bat species at 190 sites.

Review of the data has highlighted several aspects that can be improved to ensure that the Annual Bat Count develops into a more effective, robust monitoring program. These recommendations include ensuring the program has a 5-year strategic plan, acquires necessary count data for statistical power analysis (i.e. increased number of sites, especially in regions where WNS is expected to arrive; increased temporal replicates per site), and identifies species at priority colonies. To achieve these objectives, the Program needs ongoing provincial-level coordination, data management, analysis and reporting, funding support for regional coordinators, and funds for acoustic monitoring equipment and DNA analysis.

Seeking volunteer bat counters and bat colonies

The BC Community Bat Program is gearing up for our first round of colony counts for the Annual Bat Count (June 1 -21). We are always looking for interested bat counters, and are 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).

Alberta

Hibernacula Surveys in Alberta, Winter 2016/2007

Dave Hobson, Senior Wildlife Biologist, Upper Athabasca Region,
Alberta Environment and Parks

Batcavers Alberta and Alberta Environment and Parks were busy this winter surveying a number of caves that were known to be hibernacula and identified a new hibernaculum in the boreal forest of northern Alberta.

Cadomin Cave was extensively surveyed this year including the lower portion which was last surveyed in the winter of 1999-2000. One hundred and ninety-six bats were counted, up from 112 during the 1999/2000 survey. We placed roostloggers and temperature/humidity loggers in the lower levels. The main galleries of Cadomin Cave were also surveyed in March. The count of 1489 was a bit lower than the last 3 counts but still above the last 10 year average. We had moved the survey from January/February to March this year to improve our chance of observing WNS if it was here already. Thankfully, there was no sign of WNS.



The researchers placed ultrasonic sound detection equipment as well as temperature and humidity loggers in the cave. Credit: Dave Hobson / AEP

Last December, Chuck Priestley surveyed Wapiabi Cave and found 17 bats. He also placed roostloggers



Photo: Dave Critchley

and temperature/humidity loggers in the cave. One of the 2 known hibernacula in the Nordegg area was surveyed again this year and the roostloggers and temperature/humidity loggers serviced. Dave Critchley and Greg Horne found 95 bats, the same number as when last surveyed in 2016. There are both *Myotis lucifugus* and *M. septentrionalis* hibernating in this cave. Dave and Greg also placed educational signs at the entrances to both caves.

And, finally, with financial assistance from the Wildlife Conservation Society Canada and Alberta Environment and Parks, Dave Critchley, Greg Horne and I were able to fly into a remote part of northern Alberta to investigate a cave located in the boreal forest. Unlike all the other caves with known bat hibernacula in Alberta, this cave has been formed by

weak sulfuric acid dissolving rock. A sulfur spring within the cave has flooded about half the cave floor with a shallow pool of weak sulfuric acid. The cave ceiling was low, forcing us to belly crawl to get into the cave and, at best, a duck walk the rest of the way. Dave and Greg, wearing dry suits, left me in the dry portion of the cave and explored deeper in, crawling through the sulphur pool. /We discovered that the cave was, indeed, a hibernaculum. Two hundred and twelve bats, probably *M. lucifugus*, were counted. This makes it the largest known Alberta bat hibernaculum outside of the mountains. We collected guano to determine species and left behind roostloggers and temperature/humidity loggers. More details and pictures from the cave can be found below in the BatCaver news section.

Perhaps the most interesting find was the cave temperature. All other known hibernacula in Alberta have year-round temperatures of around +2 or +3°C. This cave, as measured with a laser temperature reader, had temperatures of around +10°C on the rocks close to one of the larger bat clusters.



Crawling through the sulphuric waters in the cave required dry suits and care to protect eyes and mouths.
Credit: Dave Critchley/ BatCaver - WCS Canada



Access to the cave is extremely tight and it proved challenging to explore its narrow passages. Photo: Dave Hobson / AEP

Provincial update

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

Alberta biologists will continue with NABat monitoring this year, and are hoping to add some new sites. In 2016, 10 sites were monitored in Alberta, including National Parks.

Barclay Bat Lab

Dr. Robert Barclay, Professor, Biological Sciences, University of Calgary

The Barclay lab at University of Calgary has undergone some changes, including moving to a new space, and comings and goings of students. Laura Kaupas defended her MSc on roosting, thermoregulation and foraging of NWT bats last summer and is working on papers from her thesis. Stephanie Findlay defended her MSc on roosting and echolocation behaviour of bats in the prairies in December and is also working on manuscripts. Julie Thomas has completed her MSc research looking at bat (and other mammal) use of salvage-logged areas in Yukon and will be defending this coming Fall. Lizelle Odendaal, a post-doc from South Africa, is working on the genetics of prairie and mountain populations of little brown and

long-eared bats, and contributing to a collaborative effort to identify possible corridors that WNS might move along across the mountains. Joining the lab are Erin Miller who will study the use of bat boxes in southern Alberta for her honours thesis and as part of the Alberta Community Bat Monitoring Project. Lisa Sims will join the lab at the end of the summer for her MSc on an as yet to be determined project. Robert has been catching up on research while on leave in South Africa. He returns in August.

Saskatchewan

Brigham Bat Lab

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

The Bat lab in Regina has had a very productive time (see Recent Publications below) over the past 6 months or so. In large part this is due to Brandon Klug-Baerwald who recently defended his PhD and Zen Czenze who is soon to do so at the University of Auckland in NZ. We have also seen Kayla Balderson (Sage Grouse) defend her M.Sc. thesis recently and top it off with having a baby girl - way to go Kayla! Andrea Sidler (Nighthawks) is closing in on finishing her M.Sc. as well. This flurry is all to do with me going on sabbatical at the end of June. I will be spending a year working with Ben Smit at Nelson Mandela Metropolitan University in Port Elizabeth, SA. I have plans for some projects on bats and nightjars and maybe even swifts. Shelby Bohn (who is finishing up her M.Sc. on silver haired bats and planning to begin a Phd At Guelph in Sept). will join me in Port Elizabeth for 3 months as will Alyssa Stulberg who will undertake an Honours project on bats there). Alyssa won an NSERC USRA summer award to help fund her work. Audrey Lauzon is headed back to Nelson, BC for her second field season of her M.Sc. degree this summer. She just won an NSERC CGS Scholarship which is a great achievement. Erin Baerwald won an NSERC PDF and will be formally joining the lab in Jan. 2018 although she is already an important informal member. She was instrumental in acquiring some funding for a project on bats and wind-turbines and we will welcome new M.Sc. student Erin Swerdfeger to the lab in September who will work on that project.

I attended the bat echolocation meeting put on by Brock Fenton in Tucson at the end of March and coming out of that will be helping to write the handbook on how to best use bat detectors to study bats (a sabbatical project). All in all a busy and productive and productive spring. All that and at this writing the Leafs are even winning! (And as I put the newsletter together very much later, hockey is STILL going on! - MK)

Western

Upcoming Acoustic and Capture Inventory Training Courses Offered in Western Canada/Pacific Northwest

Cori Lausen, WCS Canada, clausen@wcs.org

I will be instructing a mistnet capture course in beautiful Lillooet, BC, 20 -26 July 2017. Additionally, I am offering 2 upcoming acoustics courses in the west: Lethbridge, Alberta (31 July – 4 Aug. 2017) and Spokane, Washington (12-16 June 2017).

The capture inventory course will teach basics of bat capture and species identification in hand. This includes hands-on practice with measuring bats, DNA sampling, white-nose syndrome protocols, acoustic reference calling, radiotracking and banding. This course is being offered in the Lillooet area as there are 12 species of bats in this region and we have the opportunity to follow up on work that has already taken place in the area. Several maternity roosts are known for spotted bats, and participants will learn to use double, triple and quad nets to target this species.

The acoustics courses are designed to provide a comprehensive overview of all detector types, how to decide what type of detector to buy and how you would deploy a certain type of detector to optimize your chance of identifying recordings to species (assuming that is your goal). I provide some field hands-on practice with Wildlife Acoustics and Titley Scientific products as these manufacturers are supporting these courses. I will also address Pettersson detectors in the course; hands-on practice can be obtained with these detectors if you have one that you'd like to bring to the course.

Placing detectors on the landscape seems like it should be easy. But in fact it is one of the hardest things to do correctly and it is most often done incorrectly. Far too often I have people show up at my classes that have large sets of files already recorded, and they have come to 'learn how to analyze the calls'; most are terribly disappointed to discover that they have placed their detectors in such a way that they have recorded largely high clutter calls of bats, or worse yet, a lot of reflections, and so their species identification is confounded. Some people record in zero-crossing, while others

in full spectrum, without realizing that the format that you record in has dramatic ramifications for how you deploy your detector, and how you analyze your files. And finally, even simple things like which detector settings (especially in full spectrum) and microphones (frequency response, directionality, signal to noise ratio) are used, can affect your downstream analyses. My take home message in this newsletter article is really this: if you plan to do acoustic monitoring of bats and are new to bat acoustics, I highly recommend you obtain some training before you pull the detectors out of the box and head to the field!



A gorgeous Spotted Bat. Photo: Mike Proctor

Once you have collected your data, then the analysis component can of course be tricky. Increasingly there are many options for analyzing recordings because software packages are rapidly developing, and different statistical techniques exist. In my courses, I introduce you to 2 auto-identification packages: Sonobat and KaleidoscopePro (fee-based software). I also introduce you to Anlook (freeware) and while this is not often thought of as an auto-identification software package, it can be if you know how to build filters and do scans. So in the classes, I walk you through how to make filters and do scans. You will get hands-on practice with the software through exercises that will dually allow you to get to know the western bat species and begin the somewhat long process of learning bat species identification. We will follow a typical workflow pattern that can be used to analyze large datasets such as that for North American Bat Monitoring Program. As I played a key role in the development of the NABat program, the standard language and techniques that I teach in this class follow that protocol.

All course proceeds go to Wildlife Conservation Society Canada's bat conservation and research program. To find out more details and to register for eastern or western courses, please visit:

<http://batsrus.ca/training-courses/> or email Heather hgates@wcs.org.

WCS Canada Western Bat Program:

NABat Gears Up for Another Season of Bat Monitoring, BatCaver Has Another Successful Winter of Locating Hibernacula, and more.

Cori Lausen, WCS Canada, clausen@wcs.org

North American Bat Monitoring Program - NABat

We have received funding from Columbia Basin Trust, Fish and Wildlife Compensation Program Columbia, TD Friends of the Environment (SW BC) and Habitat Conservation Trust Foundation to proceed with year 2 of the North American Bat Monitoring Program. We hope, that through continued support from volunteers and collaborators that we can monitor for a second year at the same 22 grid cells as last year, and perhaps even add a few new grid cells this year. If anyone who is not already helping to implement NABat in BC would like to get involved, please contact Jason Rae (irae@wcs.org), WCS Canada's BC NABat Coordinator. We look forward to working with everyone again this year with monitoring beginning 1 June.

BatCaver

Cavers were underground this year in both BC and Alberta. Through acoustic monitoring largely with Titley Roostloggers, we have been able to add 58 bat hibernacula to the BC bat hibernacula database. These are a combination of caves, mines and buildings. Some additional sites have yet to be confirmed, and for many species identification is pending. Several remote helicopter expeditions took place this winter, to either locate new hibernacula or swab sample hibernating bats in known locations to confirm species. To date, although many locations are suspected of housing overwintering little brown myotis in both provinces, only in Alberta have little brown hibernacula been discovered. One noteworthy find this past winter garnered a lot of media attention within US and Canada and even in parts of Europe (see press release: <https://www.wcscanada.org/News/Press->

[Releases/articleType/ArticleView/articleId/9910/Big-Bat-Find-in-Albertas-Boreal-Forest.aspx](#)). This Alberta expedition was led by WCS Canada's Bat Caver Coordinators Greg Horne and Dave Critchley and Alberta Environment and Park's (AEP) Dave Hobson (see report by Dave HOson above, under 'Alberta' News). This was the second winter in a row that new substantial western Canadian hibernacula have been found for one or both of the endangered species of bats in Canada (little brown and northern myotis), thus locating critical habitat for future monitoring of white-nose syndrome. This year's find was in the boreal region of Alberta, highlighting the importance of looking for hibernacula beyond the mountains. The Alberta cave expedition was cost-shared between AEP and BatCaver sponsors (Environment Canada Habitat Stewardship Program Species at Risk, and Patagonia). BatCaver is additionally funded in BC by Habitat Conservation Trust Foundation, and Columbia Basin Trust. Bat detectors are still underground in most locations of BC, but as snow retreats, detectors will be retrieved and discoveries of new bat hibernation locations in BC are anticipated.



A cluster of Little Brown Myotis seen in newly discovered hibernaculum in Feb. 2017. This cave system holds hundreds of bats and has yet to be fully explored. Photo: Alberta caver Dave Critchley of NAIT (and Co-coordinator for Alberta portion of WCS Canada's BatCaver program).

Alberta Community Bat Program

ACBP is gearing up for their 2nd official summer as a WCS Canada program. The program is being led by Cory Olson, and new regional coordinators have come forth to help expand the program widely in

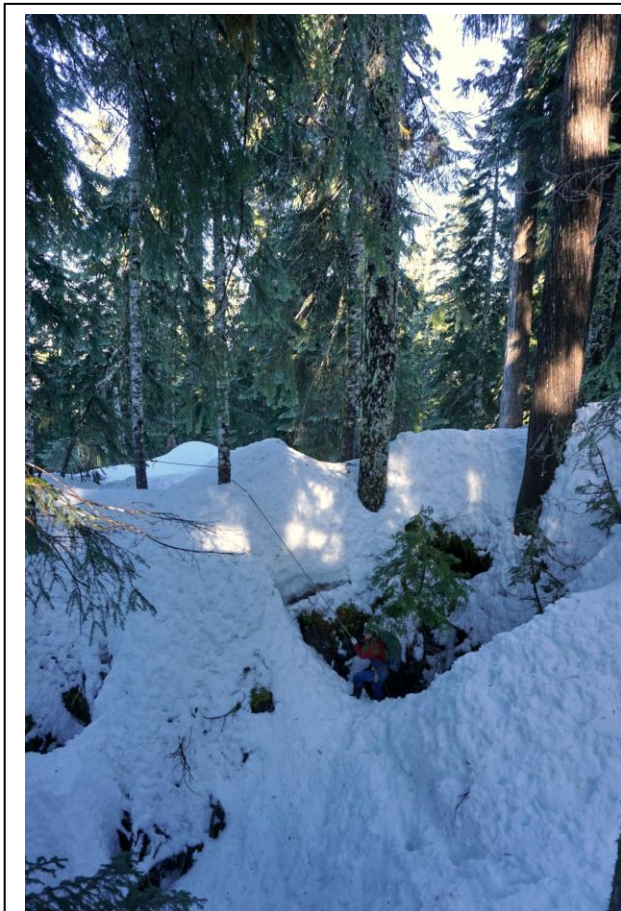
Alberta: ACBP will be operating this summer out of Edson (Lisa Wilkinson), Edmonton (Erin Lowe), Calgary (Susan Holroyd), Fort McMurray (Chris Godwin) and Lethbridge (Mike Kelly). Although fundraising continues for this program, to date we are happy to acknowledge Alberta Conservation Association, Environment Canada Habitat Stewardship Program Species at Risk, Alberta Ecotrust, and TD Friends of the Environment (Calgary) as major supporters. This spring, spear-headed by Cory Olson, the first 'bat mini-condo' in the province is being erected in Fish Creek Provincial Park. Expect to hear more about this and see photos in the fall issue! Be sure to check out the resources page of www.Albertabats.ca.

New Program Manager for WCS Canada's Western Bat Program

WCS Canada welcomes Jason Rae as the official new Program Manager working with Cori on the Western Bat Program. Jason moved from Toronto to Nelson in March and is already networking with many of the BC bat folks that he met back in September when he helped develop the BCBAT Action Plan. Jason is the new BC NABat Coordinator, and is also working with the Kootenay and BC Community Bat programs to conduct a long term large-scale experiment looking at temperatures in bat houses and bat roosts in relation to fitness of bats and in particular pup mortality. This has stemmed from reports over the past few summers of dead pups under bat houses that have seemingly overheated during summer heat waves. This summer Jason will be distributing his prototype occupancy monitors to collaborators to install into bat houses to detect the presence of bats. This will enable the characterization of roost microclimates of occupied bat houses in relation to other building roosts. He will also be working with Community Bat Program folks to try to document pup mortality at these monitored bat houses to start getting a better sense of whether some bat house designs in some areas may be associated with higher pup mortality.

West Kootenay Community Bat Program

Heather Gates and Jason Rae, of WCS Canada, will be implementing the West Kootenay Community Bat Program this summer with focus on bat house occupancy and temperature monitoring, funded in part by Kootenay Conservation Program's Kootenay Lake Local Conservation Fund and Habitat Conservation Trust Foundation.



Martin Davis (BC BatCaver Coordinator) rappels into Labyrinth Cave early this spring after a helicopter lift, to swab sample hibernating *Myotis* for species identification.



Mistnetting of the 'Bat Condo' in Creston Valley Wildlife Management area on 23 April. This roost was already hopping with lots of Yuma myotis with a grand capture total of 85 – 15 of which were recaptures banded in previous years, largely in April or October. Getting suited up in Tyvek at the start of the night, from left to right: Heather Gates (WCS Canada, Kaslo), Jason Rae (WCS Canada, Nelson), Elodie Kuhnert (volunteer, Nelson), and Alexis Heckley (volunteer Nelson). Taking photo: Cori Lausen (WCS Canada, Kaslo).

International

Echolocation Symposium, Tucson Arizona

26 March – 1 April 2017

By C. Lausen, WCS Canada

Approximately 100 participants from 13 countries and 28 U.S. States attended this symposium on bat echolocation. This was one of the most jam-packed conferences I've ever



attended with presentations, vendor displays and workshops, and evening bat walks/talks. You barely had time to take a break to eat! The presentations were general on day 1 providing basic background information for those new to bat acoustics and use of bat detectors, but then over the course of the conference, the information presented built upon this foundation. There was an amazing range of presentation material including informative review/historical, biological, technical, and application/practical, with a lot of discussion about challenges and future directions. A common thread running through the evenings was the chapter by chapter discussion of the production of a handbook on echolocation. This will be a second edition to the one produced in 2004 still available here: <http://www.batcon.org/pdfs/workshops/EcholocationProceedings.pdf>

This new handbook will be edited by: **R. Mark Brigham**, University of Regina, Saskatchewan; **Erin Fraser**, Memorial University of Newfoundland, Grenfell Campus, Newfoundland; **Herman Limpens**, Zoodiervereniging, The Netherlands; and **Alex Silvis**, U.S. Geological Survey, Virginia Tech, Christiansburg. The objective of the Handbook is to be a brief but comprehensive summary of bat echolocation, targeting people with varying levels of experience. For an update on this handbook, or to see how you might be able to participate, visit: <http://www.batsurveysolutions.com/Events/2017acousticsymp.html> and scroll to the very bottom. This conference was organized by Brock Fenton, Brian Keeley, and Janet Tyburec. The program and agenda can be accessed at the same link provided above.

The main bat detectors were represented at the conference:



Wildlife Acoustics gave away 40 new EchoMeter Touch modules on the first evening's bat walk. The new red coloured modules are sold in 2 models – standard or pro.



Titley Scientific was showcasing their new Anabat Swift passive detector (full spectrum and zero-cross detector).



Sonobat and Petterson detectors were show-cased at this extravagant display booth by Bat Conservation and Management. Sonobat 4 is available now for sale on sonobat.com website, and a new version that contains regions for Alberta and BC is expected out this spring.

New echolocation kids on the block this spring that were showcased :



Titlely Scientific's first combined full spectrum and zero-cross passive detector: Anabat Swift

Wildlife
Acoustic's new
EchoMeter
Touch module



Western Bat Working Group Biennial Meeting, Fort Collins Colorado

11-14 April 2017

By C. Lausen, WCS Canada



This conference consisted of several special symposia bringing together presenters who would speak on a topic and then the group of presenters would form a panel at the end of the session for a comprehensive discussion with questions from the audience. These special symposia were: Caves and Mines, Crevice and Talus Roosting, WNS Decontamination and Winter Acoustics, Acoustic Monitoring in Western US, Pilot Studies in NABat, and WNS Surveillance. Other session topics included: Habitat Use, Conservation and Ecology, Acoustics, Technological Advances, and White-nose Syndrome in Western North America.

The Thursday night social included a silent and live auction and the passing of the baton (literally, a passing of a 'short bat' emblazoned with the outgoing president's signature is now the new tradition!). Ernie Valdez, outgoing president, passed the baton to Katie Gillies. The new vice president is Justin Stevenson, secretary is Milu Velardi, treasurer continues to be Brad Phillips, and the two at-large representatives are Shannon Hilty and Bill Haas. There are a growing number of awards available through WBWG and these were presented the banquet. The Dixie Pierson Fund gives out two \$500 scholarships, the Bonnie Bat Fund gives a \$250 education grant, and the Bob Berry Fund gives away the following awards: SonoBat and Binary Acoustic Technology Award (2), Pettersson Elektronik and SonoBat Awards (2), Bat Survey Techniques Workshop Awards, Wildlife Acoustics Award, Hohohil Award, Titley Electronics Award.

The conference officially wrapped up at noon on the 14th, and after that there was a special WNS/Pd Surveillance Best Practices Workshop led by Anne Ballman (USGS National Health Center) and Michelle

Verant (National Park Service), and an 'Introduction to Sonobat 4' workshop led by John Chenger and Joe Szewczak.

The meeting program can be viewed: http://wbwg.org/wp-content/uploads/2017/04/WBWG_2017_Meeting_Program.pdf. Abstracts are: http://wbwg.org/wp-content/uploads/2017/04/WBWG-2017_Abstacts_4-8-2017.pdf

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

Barclay, R.M.R., D.S. Jacobs, C.T. Harding, A.E. McKechnie, S.D. McCulloch, W. Markotter, J. Paweska, and R.M. Brigham. 2017. Thermoregulation by captive and free-ranging Egyptian rousette bats (*Rousettus aegyptiacus*) in South Africa. *Journal of Mammalogy* 98: 572-578. doi:10.1093/jmammal/gyw234.

Bondo, K., D. Brooks and R.M. Brigham. 2017. Quantifying relative levels of solar radiation at bat roosts using pyranometers. *Wildlife Society Bulletin*. doi:10.1002/wsb.766

Czenze, Z.J., R.M. Brigham, A.J.R. Hickey and S. Parsons. 2017. Cold and alone?: roost choice and season affect torpor patterns in lesser short-tailed bats. *Oecologia* 183:1-8. doi:10.1007/s00442-016-3707-1

- Florko, K.R., Bohn, S.J., Kalcounis-Rueppell, M.C. and Brigham, R.M., 2017. A 23-Year-Old Little Brown Bat (*Myotis lucifugus*) Record From Southwest Saskatchewan, Canada. *Northwestern Naturalist*, 98(1), pp.57-59.
- Florko, K.R.N., S.J. Bohn, M.C. Kalcounis-Rueppell and R.M. Brigham. 2017. A 23-year old little brown bat (*Myotis lucifugus*) record from southwest Saskatchewan, Canada. *Northwestern Naturalist* 98:57-59.
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- Klüg-Baerwald, B.J. and R.M. Brigham. 2017. Hung out to dry? Arid adaptation in hibernating big brown bats (*Eptesicus fuscus*). *Oecologia* 183:977-985. doi 10.1007/s00442-017-3837-0
- Klüg-Baerwald, B.J., C.L. Lausen, C.K.R. Willis and R.M. Brigham. Home is where you hang your bat: winter roosting selection by prairie-living big brown bats (*Eptesicus fuscus*). In press. *Journal of Mammalogy*.
- Klüg-Baerwald, B.J., L. Gower, C.L. Lausen and R.M. Brigham. 2016. Environmental correlates and energetics of winter flight by bats in southern Alberta, Canada. *Canadian Journal of Zoology* 94: 829-836
- Martin, C.M., Arnett, E.B., Stevens, R.D. and Wallace, M.C., 2017. Reducing bat fatalities at wind facilities while improving the economic efficiency of operational mitigation. *Journal of Mammalogy*, 98(2), pp.378-385.
- Neubaum, D.J., Navo, K.W. and Siemers, J.L., 2017. Guidelines for Defining Biologically Important Bat Roosts: A Case Study from Colorado. *Journal of Fish and Wildlife Management*.
- Rydell, J., Nyman, S., Eklöf, J., Jones, G. and Russo, D., 2017. Testing the performances of automated identification of bat echolocation calls: A request for prudence. *Ecological Indicators*, 78, pp.416-420.

Echolocation Symposium abstracts and photos:

<http://www.batsurveysolutions.com/Events/2017acousticsymp.html>



An evening at the Echolocation Symposium.

Conferences

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.

WBWG meeting – spring 2019, Tulsa, Oklahoma, hosted by the new president Katie Gilles

Courses

Please check Cori Lausen's webpage (www.batsrus/training-courses/) for info on these upcoming courses:

12-16 June 2017 – Spokane, WA. Comprehensive Acoustics Course. NorthernQuest Resort and Casino. \$1440 USD.

31 July – 4 Aug 2017 – Lethbridge, AB, Canada. Comprehensive Acoustics Course. \$1200 CAD.

2017 BAT CAPTURE TECHNIQUES COURSE : 20-26 July – Lillooet, BC, Canada. \$1800 CAD.

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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Townsend's Big-eared Bats hibernating in tandem! Photo: C.Lausen