Western Canada Bat Working Group
NEWSLETTER

ISSUE NO. 12 **SPRING 2008**

CONTENTS

FROM THE EDITOR

This was a rough winter on bats in the NE U.S., with bat mortalities due to White Nose Syndrome making the headlines; see the first article in this issue for a summary. Also included in this issue is a description of how bat biologists can help prevent the spread of the amphibian Chytrid fungus. The Alberta Bat Action Team has released their revised wind turbine pre-construction protocol this spring and it is available on the ABAT website – see the ABAT and Wind sections.

I'd like to make a final pitch for gray literature citations ('*grey*' literature for our American readers!). We all know that due to budget and time constraints, data are not always published, but end up in reports that are not always searchable online. As such, I would like to make a request to those of you producing reports to please consider submitting your gray literature citations to the newsletter to let others know what data are out there (see Recent Literature section). Be sure to include a contact so that the report can be obtained by interested persons. Include a sentence outlining what the purpose of the study was and/or key findings if this is not obvious from the title. The WBWG is also accepting grey literature citations on their website in a special section entitled *Papers of Interest on Bat Conservation*.

Be sure to check out the new WBWG forums, and feel free to start the ball rolling on any topics that you wish to discuss with other bat folks in western North America. See www.wbwg.org/forum.

Have a great summer,
Cori, corilausen@netidea.com

THE THREE W'S
WNS, Wind, Water

White Nose Syndrome


Photo Credit: New York State Department of Environmental Conservation

In the winter of 2006 – 2007, bats were found in four New York hibernacula to have a white fungus; the associated mortality in one year's time was high (90-97%) with thousands of bats dead at these sites. This winter, more affected sites were found in New York, and additional sites were discovered in Vermont, Massachusetts and Connecticut. In Pennsylvania bats with the white fungus have been found, but no bat mortalities have not been reported as of early May 2008. More than 25 sites with WNS have been reported in the NE U.S. this winter.

According to Al Hicks, with New York's Environmental Conservation Department, all but one known bat hibernaculum in the state has been affected. This site is one of low humidity, supporting Hick's hypothesis that this fungus is only affecting moist hibernacula. Species hibernating in drier conditions, such as *Eptesicus fuscus*, thus seem to be unaffected. Affected caves include many species of crevice-dwelling bats including the endangered Indiana bat (*Myotis sodalis*) and the rare Eastern small-footed bat (*M. lebeii*).

At affected sites, bats have been reported to behave unusually, flying during daylight hours outside of the hibernaculum. For video footage of this, see the U.S. Fish and Wildlife Service website (www.fws.gov/northeast/wns2.html). (This video can also be viewed on Utube).

Bats affected with the fungus have lower than expected fat stores, which may explain the unusual daytime flight activity. Additionally, bats with white noses are reportedly not arousing from deep torpor when disturbed suggesting they do not have enough fat to warm their bodies back to active temperatures.

It is not known whether the fungus is the cause of the deaths and unusual behaviour,or whether it is an opportunistic infection taking advantage of bats weakened by another pathogen. It is also not yet clear how and whether this disease is spread by bats and/or humans.

The US Fish and Wildlife Service is formulating guidelines for the research and caving community to ensure appropriate disinfection of equipment and research procedures to stop the spread of this condition, until it is determined whether it can be spread by human activity.

A powerpoint presentation by Al Hicks on WNS can be viewed at:
http://necaveconservancy.org/files/wns_3-30-08.pdf (8MB; March 30, 2008).

For up-to-date information and details about WNS, visit www.fws.gov/northeast/white_nose.html

Wind Energy and Bats Update

New Website Resources

The **WBWG Wind Energy Committee** compiled a collection of bat-related resources as they relate to wind energy. These resources with associated web-links can be found on the WBWG website. This site is updated as new wind resources become available, and is meant to provide a library of resources for our members seeking information on the bats and wind energy issue. Visit www.wbwg.org and click on Wind Energy.

ABAT Wind Protocol Updated. The second release of this protocol is now available: http://www.srd.gov.ab.ca/fishwildlife/guidelinesresearch/pdf/inventoryguide/Bats_and_wind_survey_protocol_May_2008.pdf. This version has introduced several changes regarding monitoring recommendations: see the *ABAT Update* section below for full details.

Bats and Wind Energy Cooperative (BWEC) has just launched a website: http://www.batsandwind.org/. Visit the site for various resources and to sign up for their newsletter.

-The second Bats and Wind Energy Cooperative technical experts workshop was held January 8-10, 2008 at the Radisson in Austin, TX.

-Ed Arnett is working on standard protocols for post-construction fatality monitoring that will be reviewed and approved by the BWEC Science Committee and disseminated to colleagues worldwide in May.

-Analysis of 3 years of pre-construction acoustic monitoring data has been done and a final report is expected in June.

-Ed Arnett was nominated to serve on a Federal Advisory Committee Act (FACA) committee to advise the U.S. Fish and Wildlife Service with evaluating and revising their guidelines for wind energy development and will work with this committee through fall 2009. (see next section)

US Fish and Wildlife Service. The newly formed Wind Turbine Guidelines Advisory Committee is a committee that will function in accordance with the Federal Advisory Committee Act (FACA) to provide advice and recommendations to the U.S. Secretary on developing effective measures to avoid or minimize impacts to wildlife and their habitats related to land-based wind energy facilities. You may wish to check out their website and sign up to receive updates from this committee: http://www.fws.gov/habitatconservation/windpower/wind_turbine_advisory_committee.html

Water for Wildlife

Bat Conservation International's Water for Wildlife initiative has produced a handbook for ranchers and range managers describing the dangers that typical water troughs pose to wildlife, and bats in particular, illustrating news designs that allow bats to safely escape. To read about this initiative, visit:
http://www.batcon.org/home/index.asp?idPage=62&idSubPage=56.
Download the Water for Wildlife Handbook at:
http://www.batcon.org/home/index.asp?idPage=62&idSubPage=143

Fiberglass stock water tanks that have these appropriate escape ramps built right into the design are now being manufactured by Fiberglass Structures, Inc. (Laurel, MT; contact Jay Story at (406) 628-1043).

UPDATES BY REGION

YUKON

Mammal Diversity in Coal Springs Territorial Park

Tom Jung, Yukon Government; Cori Lausen, Birchdale Ecological Ltd.; Dave Nagorsen, Mammalia Biological Consulting; Brian Slough, Whitehorse, Yukon.

Coal Springs Territorial Park is a remote-access only park in SE Yukon. This summer we plan to conduct an inventory of the mammal diversity, including bats. This small, remote park is located in the heart of a biologically diverse area, and it is anticipated that some new species for the Yukon will be found. Access will be primarily by helicopter during one week in late July.

MANITOBA

Submission from Dr. Craig Willis

University of Winnipeg

(www.uwinnipeg.ca/~cwillis)

It has been a busy but productive year getting the eastern suburbs of the WCBWG off the ground here in Winnipeg. We made progress in the field in 2007 and will be back at it on a number of bat projects in 2008.

Graduate Students for Sept. 2008:
Joel Jameson has been working on our preliminary efforts to study the wind farm issue here in Manitoba. He is currently developing a system using Pettersson time-expansion detectors for multi-day, remote recording at wind farms and control sites and will

continue this work for his graduate project in the brand new M.Sc. program in Biology and Policy at UW. He has just been awarded a NSERC Post-Graduate Scholarship.

Tracie Parkinson is about to defend her Honours project for which she conducted an experiment comparing energy expenditure and use of torpor by silver-haired bats exposed to different simulated roost temperature profiles. Tracie has just won a prestigious NSERC Canada Graduate Scholarship and will be another of the first members of the UW Biology M.Sc. program. For her project, she will be using PIT tags and radio-telemetry to quantify winter and summer social networks of little brown bats which hibernate by the thousands in limestone caves spread throughout Manitoba's inter-lake region.

Kristin Jonasson, who has worked with Robert Barclay and Erin Baerwald at the University of Calgary, will join us as another pioneer in UW's new M.Sc. program. She will be studying metabolic flexibility in populations of bats across a large latitudinal gradient spanning from central Manitoba to the southern United States.

Undergraduates:
Amanda Matheson was a great help in the field in 2007 and will join us again in 2008 for her Honours project in the Department of Biological Sciences at the University of Manitoba, co-supervised with Dr. Kevin Campbell. Amanda will conduct an experiment addressing the role of meal size and ambient temperature on digestive heat production and use of torpor in little brown bats.

Aaron Trachtenberg joined the lab as a research assistant in January and has been a great help analyzing data on seasonal variation in thermal energetics of Australian eastern horseshoe bats, among other things. We have tried hard to convert him to bat research but Aaron has found it hard to turn down a Rhodes Scholarship and will soon leave us for Oxford University where he will be doing a Ph.D. in cognitive neuroscience.

Kaleigh Norquay and *Scott Unruh* will join the lab for honours projects this year. Kaleigh will be using temperature telemetry to compare use of torpor by silver-haired bats and little brown bats and Scott will assist with bat work while also tackling a project on thermal energetics of shrews in southern Manitoba.

BRITISH COLUMBIA

Differentiating the Long-eared Species

Cori Lausen, Birchdale Ecological Ltd.; Dave Nagorsen, Mammalia Biological Consulting; Laura Friis, B.C. Min. of Environment

We are still awaiting genetics results from the 2007 field season. These genetics data will allow morphological and acoustic analyses. Results to date have allowed us to determine areas that need to be further sampled, and therefore, although our 2008 field season has not yet been fully scheduled, we are planning to return to the Hazelton and

Skagit/Manning areas to acquire more long-eared samples. We are also looking to sample fringed bats, as this species was not captured in the 2007 field season. We plan to net the Creston area with Thomas Hill of the Fish and Wildlife Compensation Program; there is also the possibility of some mistnetting in the Okanagan.

New B.C. Bat Distribution Maps Now Available Online!

Updated distribution maps for B.C. bats can now be accessed through the BC Species and Ecosystem Explorer site: http://www.env.gov.bc.ca/atrisk/toolintro.html
Dave Nagorsen compiled data for these maps which will also be available on the BC Bats government website once it is up and running.

South Okanagan Similkameen Community Bat Project

Aaron Reid


Photo: Juliet Craig

The South Okanagan-Similkameen regions of British Columbia, Canada, constitutes the northern most tip of the Great-Basin Desert, which spans much of the western United States and northern Mexico. This region supports Canada's greatest bat diversity and Canada's only true desert ecosystem. Because of the high diversity and precence of rare bat species, the South Okanagan has been the focus of many North American bat researchers. Past studies have focused on single species research and general inventory of natural habitat features; however, a large knowledge gap still exists. To date, no project has focused on reaching the general public and identifying roosts on private property. The South Okanagan-Similkameen Comunity Bat Project (SOSCBP) will promote education and bat awareness, identify bat roost sites (particulary on private land), and assist landowners with roost conservation planning.

The SOCBP, which begins spring 2008, will be modeled after the highly succesfull Kootenay Community Bat Project (KCBP). The KCBP has proven that many roosts go unreported on private land for various reasons, but primarily due to common misuderstanding about basic bat ecology and lack of local resources for the general public to address their bat issues. The KCBP has provided a proven template to inform and educate the general public about the conservation of bats and their critical habitat. From 2004 to 2006, the KCBP was responsible for identifying nearly 300 bat roosts. The project also presented over 50 educational programs to various communities throughout the Kootenays.

Results from a project of this kind in the South Okanagan-Similkameen have the potential to be very exciting, as this region has the richest diversity of bats in all of Canada. A total of 14

documented species, six of which are considered at-risk both provincially and federally (CDC, COSEWIC), are known to the South Okanagan. These at-risk species include the pallid bat (*Antrozous pallidus*), fringed myotis (*Myotis thysanodes*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), western small-footed myotis (*Myotis ciliolabrum*), and western red bat (*Lasiurus blossevillii*).

The key to success will be community support and involvement. The project will be highly publicized (e.g. posters "GOT BATS?", articles, radio, and website) and will encourage public participation with the identification and conservation of bat roosts. Literature will be provided in mail-out packages to answer the community's questions (i.e. rabies and bats, bat house building plans, bat friendly roost removal techniques). Residents will be encouraged to report bat roosts to the project's 1-800-number. Biologists will conduct a site visit to identify the species of bats and then work with the landowner, as per the landowner's wishes, to conserve, enhance or provide a method to safely relocate the bats. In addition, presentations, bat house building workshops and mist-netting nights will be held in various communities to raise awareness of the project and educate the community about bats and the important role they have in our environment.


Photo: Aaron

This project would not have been possible if not for funding from Habitat Conservation Trust Fund and Bat Conservation International, as well as the hard work and creativity of the Kootenay Community Bat Project. For more information on the KCBP and the SOSCBP go to www.bcbats.ca.

West Kootenay Townsend's Big-eared Bat *(Corynorhinus townsendii)* Project Report

Thomas Hill, Aaron Reid, Ross Clarke, John Krebs and John Gwilliam; Fish and Wildlife Compensation Program – Columbia Basin. For a copy of this report, email Thomas Hill (Thomas.hill@bchydro.com) or Ross Clarke (Ross.clarke@bchydro.com) for a pdf.

Purpose - A conservation initiative implemented in the West Kootenay region of British Columbia in 2003 to fill information gaps regarding the distribution, roosting ecology and foraging habitat use of the Townsend's Big-eared bat.

Key Findings - Over three years Townsend's big-eared bats (TBEB) were documented roosting in 58 new locations (27 natural rock features, 16 abandoned mines and 15 buildings) and three new populations were identified. Maternity roosts were located in four natural rock features and one building. Cold season surveys have been limited, however TBEB were found hibernating in five abandoned mines and one natural cave. All roosts occurred in either the *moist-warm, dry-mild, dry-warm* or *very-dry warm* subzones of the Interior Cedar-Hemlock Biogeoclimatic zone. HOBO Pro high-resolution temperature and relative humidity loggers were placed in two of the

hibernacula and five of the maternity roosts. Temperatures in cave maternity roosts were cooler and more stable than building roosts. Mean maternity roost temperatures were 15.7^{o}C +/- 0.028 SE in the natural caves and 19.3^{o}C +/- 0.067 SE in the buildings. The mean hibernacula temperature was 6.3^{o}C +/- 0.014 SE in the mine and 1.2^{o}C +/- 0.03 SE in the natural cave. Mean Relative humidity was almost identical in both hibernacula (75.4% +/- 0.257 SE) only differing by 0.3%. In 2006, foraging behaviour was examined in the Creston Valley through radio-telemetry. Foraging home ranges averaged 36.6 km2 with centers of activity averaging 4.7 km^{2}. The maximum distance travelled from the maternity roost to foraging areas was 8.9 km. Bats followed a predictable pattern each night, returning to the same areas to forage. Centers of foraging activity are dominated by mature black cottonwood stands (*Populus balsamifera)* bordering large river channels, which occur at an interface with wetland ecosystem complexes. Foraging habitat associations were evaluated following a use / availability design. Our best supported model identified three habitat parameters of significance (mature black cottonwood, open water and upland coniferous). Associations for both upland coniferous and open water were negative, with lower observed use of these types compared to random. The most significant parameter of our best supported model, which has a higher observed use than random, is mature black cottonwood.

ALBERTA

University of Calgary

Like a tsunami wave, three of Dr. Robert Barclay's students are finishing up their theses this spring/summer! Jen Talerico, Lea Randall and Erin Baerwald are writing up their MSc theses as we speak, and all hope to defend between now and early fall. Cori Lausen handed in her dissertation over the winter, officially completing her PhD. Jeff Gruver is writing up his PhD thesis while also working for West in Wyoming. Joanna Coleman is starting what is planned to be her final field season, working in the Calgary area. Brandon Klug officially starts in September but will be doing field work in the Pincher Creek area starting in July looking at scavengers at wind farms. Another new student (Cory Olson) starts in September on an as yet to be determined project.

Stantec Consulting Ltd., Edmonton, AB

Submitted by Marc Obert and Leah Rigney

Well the Stantec bat lovers (all of two of us) are off again this field season, conducting inventory level (presence/ not detected) surveys for various clients, in various places in Alberta. No wind farm, or underground mining projects as of yet, but the fat lady still has yet to sing! We wish you all a fun and safe 2008 season.

ALASKA

Second Season of Inventory Study in Skagway

Dashiell Feierabend, Wildlife Biotechnician
Dave Schirokauer, Natural Resources Program Manager
Klondike Gold Rush National Historical Park

We are continuing our passive acoustic monitoring study in Skagway, Alaska, that was initiated in the summer of 2007. This season we will use a single Anabat SD1 and an Anabat 2 unit paired with ZCAIM to collect daily recordings at one or more sites that were established last year. The hope is to gain a better understanding of the arrival and departure of seasonal bats, as well as the fluctuation of activity with respect to daylight and temperature.

Analysis of last season's call data revealed no evidence of *Lasionycteris noctivagans*, which was considered a possible summer resident in the region. Because Klondike Gold Rush NHP lacks the software to conduct discriminant function analysis on calls, it was not possible to accurately identify any calls to species level. However, the primary candidate for most of the call data is *Myotis lucifugus*, based on its known range and the shape of the recorded calls. Other possibilities include *M. keenii*, *M. volans*, and *M. californicus*, which have been documented in Southeast Alaska and British Columbia.

No winter hibernacula were identified in historic buildings monitored within the park.

The park would once again like to thank Aaron Poe and the Forest Service in Girdwood, Alaska, for the continued loan of Anabat equipment.

BATTING ACROSS BORDERS

Golder and Associates

Submitted by Carol Stefan

Golder is planning on conducting one baseline bat survey in northern Alberta this summer. The survey is in support of an environmental assessment project. Surveys will involve capture and echolocation call detection at study sites throughout the lease area. Golder will also be conducting pre-development monitoring for four wind farm projects in Alberta and one in Saskatchewan, plus additional projects in BC, Ontario and Quebec. Predevelopment surveys include site assessments and echolocation call detection. Post-construction monitoring, including carcass searches, will be completed for three operational sites in Alberta.

AMEC's Bat Work in B.C. and Alberta

Submitted by Chris Godwin-Sheppard, M.Eng., P.Biol., Senior Wildlife Biologist, AMEC Earth & Environmental, Calgary, Alberta

The programs we have lined up currently for the summer include a few of the usual EIA baseline inventories for bats near Fort McMurray, and our regular monitoring at Cold Lake, Alberta.

Most exciting has been our work in Osoyoos, British Columbia. Over the past few years, I've been involved in the closure of the abandoned Lakeview Dividend Mine, which is located adjacent to a new residential development in Osoyoos. The British Columbia Ministry of Energy, Mines & Petroleum Resources (MoEMPR) considers the site a significant safety risk to the public due to its proximity to the community. The mine adits are also used by bats for winter hibernation, and a few continue to use the site through the spring and summer, although no evidence of a maternity site has been found. The species of greatest concern are the Townsend's big-eared bat (*Plecotus townsendii*), and the western small-footed bat (*Myotis ciliolabrum*), both of which have been found inside the mine. MoEMPR has worked hard to reach a compromise that would close the mine to the public and still protect the bats.

Over this past winter (2007/2008), the mine was finally closed. Closure involved collapsing unstable rock into the central gloryhole, infilling, and recontouring the surface. Three original access portals are located outside of the area of instability and were left intact. The internal workings of the mine are connected underground, and were also left undisturbed.

Due to the concerns of disturbing hibernating bats, no blasting occurred during the closure. All unstable rock was collapsed using hydraulic jack hammers. To reduce impacts from dust inside the mine, fabric was placed over all exposed entrances. To maintain airflow through the adits, a culvert vent was installed vertically into the mine. Bat gate designs were adapted from Bat Conservation International (BCI) and were installed over the three access portals. Construction was completed in early April 2008, and at that time, workers counted 32 bats inside the mine.

On April 24 and 25, 2008, I traveled to Osoyoos to inspect the mine again for bat activity. With the help of Steve Rothman from MoEMPR, we found only a few bats. This is consistent with our findings over the same time period in 2006. However, we were very excited to find two Townsend's big-eared bats inside the mine. The Anabat data has yet to be fully analyzed and preliminary findings suggest there are at least two other species using the mine. The bat gates appear to be functioning, and we are hoping to conduct additional monitoring and determine if bats will continue to use the mine during hibernation. A big thanks to Steve Rothman for all his support over the past few years.

ABAT UPDATE

ABAT had two meetings over the winter, a small informal one in Red Deer in conjunction with the AB Chapter of the TWS Conference, and another as a conference call hosted by Golder in late April.

At the Red Deer meeting, the group discussed the wind turbine protocol briefly, mainly focusing on the website and revising the presentation of the work ABAT has done and the list of our research priorities and goals. This list of research priorities will be revisited next year, as will updating species distribution maps for the website.

Items discussed briefly at the meeting included banding efforts for this summer and notification of agencies for potential band returns. Meeting minutes are available on the ABAT website.

The conference call was mainly to discuss the final version of the revised Wind Turbine Protocol. This document replaces the original May 2006 version:

Lausen, C., E. Baerwald, J. Gruver, and R. Barclay. 2008. APPENDIX 5: Bats and Wind Turbines, Pre-siting and pre-construction survey protocols, 2nd Edn. Alberta Bat Action Team, University of Calgary, Alberta Fish and Wildlife.

The following is a summary of how this version differs from the original May 2006 protocol:

What's new in the May '08 (2nd) version of the Bats and Wind Turbine Protocol produced by the Alberta Bat Action Team

Overall, the 2nd version contains far more justification for recommendations made in the 1st version, primarily because there are now published sources related to this topic.

Site Selection

Each version is similar, but with more justification in the 2nd version.

Timing

For *southern* AB, monitoring through the first week of Sept. has been added. The 1st version recommended only the month of August. Continuous monitoring throughout month of August + first week of Sept. for two years, is the recommendation in the May 08 version.

Also in the 2nd version, wind farms for *central* and *northern* AB are addressed. Recommendation for monitoring in these Parkland and Boreal areas are for all of May and mid-July through end of Aug. Justification for this recommended timing is provided.

Further justification is also provided for why continuous rather than sporadic monitoring is recommended, and why 2 years of monitoring is strongly recommended.

Detectors

A list of what is needed in a detector for wind farm monitoring is found in the 2nd version, rather than just straight out endorsement of Anabat, as was the case in the 1st version.
A second detector system (Binary Acoustic Tech), offering more than Anabat, is close to being field ready and is mentioned in this new version.

Sampling

1st version – one detector hoisted (>30 m) at each sampling site. One detector at each turbine site if only 1 - 5 turbines, but otherwise, five detectors should be positioned at the periphery (4) to cover all cardinal directions, and one at the centre.

2nd version – to acknowledge the logistical challenges of hoisting detectors, we now suggest utilizing all available MET towers, but making use of ground-based detectors where hoisting is not feasible. We still encourage the use of temporary towers when possible. When only 1 – 5 turbines proposed, only one detector station needed (on the associated MET tower), but we recommend more detectors for larger farms, with a minimum of 5 detector stations for farms exceeding 100 km^2 and/or for heterogeneously complex terrain. The new definition of 'detector station' is introduced, whereby a station employs one ground-based detector and one hoisted (>30 m) detector when possible. Justification for this new recommendation is provided -- evidence is still not clear whether ground-based or hoisted detectors are better predictors of bat fatality. We also provide opportunity for an alternative sampling regime (detector rotation) for extreme cases of heterogeneous terrain in large wind development areas.

Data Reporting

This is a new section that provides a suggested standardized way of summarizing data for reporting to government agencies and/or providing to larger research efforts.

WESTERN BAT WORKING GROUP UPDATE

4rd Biennial Western Bat Working Group Conference

Austin, Texas, April 15-18, 2009. The conference will offer wildlife researchers and wildlife managers who are responsible for or interested in bat ecology, management and conservation the opportunity to exchange information and ideas with others in western U.S, Mexico and Canada. The conference will include a half day workshop on the last day; topic yet to be determined. There is a field trip planned to see the large free-tailed bat colony at Bracken Cave; additionally, the conference hotel is next to the Congress Avenue Bridge, so the amazing free-tail emergence can be seen while drinking cocktails on the patio! Keep checking www.wbwg.org for information.

WBWG Wind Energy and Bats Workshop

Austin, Texas, April 13-14, 2009. This two day workshop will appeal to a wide range of audiences. Topics include an overview of the bats and wind turbines issues, including up-to-date research findings, and a details-oriented discussion of both pre- and post-construction protocols, with specific focus on acoustic monitoring and use of acoustic equipment. There will the opportunity to get some close-up time with acoustics specialists and see the equipment in action at the nearby Congress Avenue Bridge.

Banding of Migratory Bats

A proposal to band migratory bats across North America by Dr. Robert Barclay during NASBR 2006 sparked a symposium on the issue at the WBWG conference in 2007 held at Tucson, AZ. A committee (WBWG Bat Banding Committee), led by Rob Schorr was formed (other members: Dixie Pierson, Dave Johnston, Robert Barclay, Pat Brown, and Sandy Wolf). They have since been compiling a database of bat banding records. Based on this database, the committee has provided some feedback to the WBWG Board and plans to deliver individual member summaries and recommendations for the WBWG Board to use in the production of a banding document. This document is expected to be out sometime this year, after the release of the ~120 page USGS report written by Laura Ellison. The USGS document reportedly summarizes bat banding history in the U.S. This report is currently in review and is expected to be released within the next few months. This report together with information from the WBWG Bat Banding Committee will be used as a foundation for the WBWG upon which to base recommendations for a guidance document or position statement.

In the spring issue of the WBWG Newsletter (will be posted shortly at www.wbwg.org) the WBWG provides recommendations to those doing bat work in the west, suggesting that migratory bat banding efforts not be undertaken this season. This would allow for informed decisions to be made based on forthcoming data from the WBWG Bat Banding Committee and from the USGS.

WBWG Forums Now Launched!

Visit www.wbwg.org/forum for the new forums on a variety of bat-related topics. Topics currently include:

Buy, Sell, Exchange, Give-Away
Scholarships, Grants, and Awards
Biennial Meeting
Caves and Abandoned Mines
Education
Wind Energy
Open Forum
Band Reporting
*State/Provincial Forums**

*each state/province has its own – you can use this forum to communicate with members of your local working groups!

Feel free to start the ball rolling on any topics that are of interest to you, to network with others in North America also interested in this issue/topic.

WBWG Advisory – WNS

In response to the White Nose Syndrome, the WBWG released a summary and recommendations for how to prevent the potential spread of the WNS. (see first newsletter article on WNS). Al Hicks (New York Dept. of Environmental Conservation) attended two WBWG conference calls this past winter to disseminate knowledge about the White Nose Syndrome in bats. WBWG received input from Al Hicks for the advisory document, and this document was reviewed and accepted by the WBWG Officers, the Board of Directors, and the Scientific Advisory Committee.

Soon to be posted on the website (www.wbwg.org) this advisory document entitled:
Recommendations from the Western Bat Working Group for addressing White Nose Syndrome (WNS) in western North America 4-29-08

WBWG Seeking Board Nominations

The term of office for the WBWG Board of Officers is two years. An election must take place in December of 2008. As such, this is a heads-up about the call for nominations which will take place in the fall. The WBWG is a working group that links biologists from across western North America. If you are interested, or know someone who is interested in running for a position within the Board, please contact Derek Hall halldb@nv.doe.gov and check out www.wbwg.org to find out more about what each position entails. There are 6 positions: President, Vice President, Secretary, Treasurer, and two at-large representatives. The current President and Vice President have each been in for 2 terms and will therefore not be re-running. This is a great opportunity to work with other bat biologists on bat conservation, management and research issues.

FIELD NOTES

FIELD EQUIPMENT UPDATES

The latest in new gear for the field:

***Monofilament Mist Nets**:* In the fall newsletter I indicated that monofilament nets are again available through Ecotone (www.ecotone.pl/), which is of course great news, especially for those of us trying to catch long-eared bats! Over the winter, however, demand was high for these nets and currently Ecotone can only supply 9m nets. This is a temporary shortage. Important note: For those of us in North America, we are no longer able to purchase these nets directly from Ecotone – they must be ordered through their North American supplier, Avinet (www.avinet.com; rumour has it these nets aren't as cheap through this venue, but payment and shipping procedures are easier than through Ecotone).

Acoustics Equipment Update: If you are not familiar with the new acoustic system by Mark Jensen of Binary Acoustic Technology (Arizona), you should check out his website: http://binaryacoustictech.com/ . Binary Acoustic Technology, or BAT for short, produces a system (AR125) that allows for passive acoustic monitoring with data collection to USB memory such as thumb-drives or USB hard-drives. All data collected are full spectrum, thus allowing all ultrasound (including harmonics) to be recorded, rather than just the most intense sound, as is the case with the Anabat system. The SCAN'R software will take in either full-bandwidth or time-expanded recording and transform them into call parameter lists that are either SonoBat or AnaLook compatible. Mark is currently working on additional features such as FM transmission of data from hoisted microphones to recording units on the ground which will be particularly useful for wind farm monitoring. The direct recording nature of this system allows full spectrum data to be recorded in real time so that bat calls are not missed (ie. time expansion not necessary), an advantage over passive collection with the current Pettersson system.

CHYTRID FUNGUS

If you are heading into the field this season to catch bats, don't forget about the amphibians! It has long been recognized that the Chytrid fungus (*Batrachochytrium dendrobatidis,* [*Bd*]) can be spread between water bodies by aquatic biologists. As such, fisheries and amphibian biologists have been required to disinfect equipment and gear such as waders between bodies of water. Because bat biologists often net in and around bodies of water, we too could be spreading this fungus during our surveys. If you mistnet in and around water bodies, you could inadvertently pick up the spores of this fungus and transfer to another source of water, thus perpetuating the spread of this disease that is killing amphibians, especially frogs. As such, many permitting agencies are now requiring that bat biologists disinfect their equipment including waders and mistnetting poles when moving between bodies of water. Below is an excerpt adapted from the BC protocol for aquatic researchers that bat biologists should follow when applicable.

STANDARD OPERATING PROCEDURES: HYGIENE PROTOCOLS FOR AQUATIC FIELD RESEARCH, 2008

ECOSYSTEMS BRANCH, MINISTRY OF ENVIRONMENT, BRITISH COLUMBIA

Definition of site

At geographic scales of tens of kilometres, watersheds and major geographical barriers should be used to designate separate sites.

Each tributary of a river should be considered a separate site. Wetlands, ponds and lakes separated by dry land should be considered separate sites

Site designation is particularly difficult at smaller geographic scales and with small isolated water bodies. At scales less than 500 m, if the water bodies remain separate under high water/flood conditions then they should be considered separate sites. Within a stream (at distances less than 500 m) sampling should occur in a downstream direction if possible. Each stream and each upstream location should be considered separate sites.

Equipment Treatment

In this standard operating procedure (SOP), we recommend household bleach for disinfection because it is widely available and it is easy to dispose under field conditions if the precautions below are followed. However, there are a number of *other disinfectants* that have been tested (*see Table below*) that offer a variety of other advantages. The SOP can be used with any of these disinfectants instead of bleach, but manufacturer's recommendations and Material Safety Data Sheet requirements for use and disposal must be followed.

1. Before leaving a site scrub using the pond/stream water to remove mud, algae, plants, snails and other invertebrates from all equipment. Disinfection procedures work best on equipment free of debris.

2. A bleach solution with 0.2 % sodium hypochlorite and exposure time of 10 minutes has been shown to be effective against *Bd* (Johnson et al 2003). Commercial household bleach sold in North America often contains 6.15% sodium hypochlorite. Add 32 ml of household bleach to 1 litre of water (~3.5 cups or 0.85 litre of bleach to one tall bucket ~ 25 litres of water). In the absence of municipal/well water supply, water from the pond or stream can be used.

3. Soak equipment for a minimum of 15 minutes. Chest waders, paddles, canoes, mistnet poles and other survey equipment should be thoroughly soaked with the bleach solution using a spray bottle.

4. Rinsed bleach solution off after 15 minutes with clean water from a well or municipal supply. If clean treated water is not available, the items can be hung out to dry, preferably in sunlight, so that the bleach evaporates.

5. The bleach solution can damage exposed skin and clothing. Dishwashing gloves and rubber aprons should be used to protect clothing and skin from exposure to the bleach solution.

6. The SOP is most easily carried out back at the field station. Store all equipment in a waterproof box or totes during transportation to prevent contaminating the vehicle and preventing the vehicles from acting as secondary sources of cross contamination.

7. If the equipment needs to be used immediately at another site prior to returning to the field station, the SOP should be carried out on a road or other impermeable surface away from the waterbody. If time permits, all equipment should be dried completely between sites. This is facilitated by having two sets of gear, one of which is drying while the other is in use. If the equipment needs to be used immediately at another site, residual bleach from nets and other equipment should be rinsed off using water from the second site, again working away from the waterbody. Even trace amounts of residual bleach can adversely affect aquatic organisms on contact.

8. In the field, the bleach solution is best disposed of far from the waterbody by poring over an asphalt, hard roadbed or concrete surface where it quickly breaks down in sunlight and evaporates. Ensure no bleach solution enters surface waters.

9. Washing road vehicles at a carwash between watersheds is desirable. All off-road vehicles, boats, canoes, and other floatation devices should be subject to the same SOP as

sampling equipment. Large equipment, such as boats and seine nets, are most easily handled by spraying with or soaking in the bleach solution and then rinsing off at a carwash using high pressure hot water rinses.

Minimal SOP

The above SOP should be implemented under all normal operating conditions. However, if for unforeseen and unplanned reasons it is not possible to adhere strictly to the SOP the following precautions can be taken to reduce the risk of disease transmission.

1. At a minimum, all equipment should be scrubbed and rinsed thoroughly to remove debris, algae, invertebrates and mud.

2. Complete drying of all equipment between sites can reduce the risk of transmission of some pathogens.

Other Disinfectants

(Adapted From Standard Operating Procedures: Hygiene Protocols For Aquatic Field Research, 2008)

Disinfectants for collection equipment, containers, footwear, waders, boats, nets and other field gear.

DISINFECTANT	CONCEN-TRATION	TIME to Kill *Bd*	COMMENTS
Household bleach (sodium hypochlorite 4-6%)	≥ 1% after dilution	≥30 sec	toxic to aquatic life; rinse and dispose properly away from waterbody
F10 Super Concentrate Disinfectant	0.7 ml/litre	1 min	safe and cheap -- non-toxic according the MSDS; is used on reptiles and birds to treat fungal infections
TriGene Viricidal Surface Disinfectant Cleaner	0.2 ml/litre	1 min	safe and cheap -- non-toxic according the MSDS; the most effective disinfectant according to Webb et al. 2007
Virkon	1 g/L	≥20 sec	comes as a powder; not cheap
Quaternary ammonium compound (Quat 128)	Full strength to 1x10-3	≥30 sec	there are a variety of Quat compounds on the market
Didecyl dimethyl ammonium chloride (DDAC)	1 in 1000 dilution	≥30 sec	active ingredient in Quaternary ammonium compound 128, and Path-X agricultural disinfectant; can be toxic to aquatic invertebrates
Sodium chloride	10%	≥ 2 min	Johnson et al. (2003) suggest this concentration may be damaging to equipment
Potassium permanganate	2% 1%	5 min 10 min	used as disinfectant in aquarium industry
Hot wash for cloth bags and clothing	60°C or greater	15 min	
Heat	60°C	30 min	

DISINFECTANT	CONCEN-TRATION	TIME to Kill *Bd*	COMMENTS
Complete drying (footwear only)		≥ 3 hrs	effective against *Bd* but not ranavirus
Sterilising UV light	1000 mW m-2, wavelength 254 nm	n/a	effective against ranavirus (1 min) but not *Bd*

Acknowledgements:
Thanks to B.C. Ministry of Environment's new Herp and Small Mammal Specialist Purnima Govindarajulu of the B.C. MoE for providing information for this section of the newsletter.

Further Information:
Documents and protocols on Chytrid fungus for B.C. are soon to be available at:
BC Frog Watch www.env.gov.bc.ca/wld/frogwatch
B.C. Wildlife Health www.env.gov.bc.ca/wld/wldhealth.html

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Speare, R., L. Berger, L. F. Skerratt, et al. 2004. Amphibian Disease Group, James Cook University, Australia. www.jcu.edu.au/school/phtm/PHTM/frogs/field-hygiene.pdf
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CLASSIFIEDS

DONATIONS SOUGHT
-BOB BERRY MEMORIAL FUND-

BOB BERRY MEMORIAL FUND. For those of you who had the pleasure of ever meeting Bob, you will know what a wonderful soft spoken individual he was. And if he knew you were a student trying to learn about a new piece of acoustic equipment, you would have almost surely been a recipient of advice and help from Bob. Bob Berry was proudly a 'techo geek' when it came to bat technical gear! And he was always reaching out to students to help them learn how to use the latest equipment. As such, his widow Pat Brown has initiated a Bob Berry Memorial Fund aimed at helping students access technical field equipment. Donations for this fund can be made to the WBWG P.O. Box 2153 Rapid City, South Dakota, USA 57709. They are currently not set up to take credit card donations, but hope to be within the year. In the interim, cheques or money orders are appreciated. Bob Berry passed away this winter; a tribute to him can be found in the spring '08 issue of the WBWG newsletter (accessible soon at: www.wbwg.org) .

ACOUSTIC EQUIPMENT NEEDED

I am working on windfarm projects in Alberta and require a few (at least three) additional Anabat systems (SD1s or Detector/ZCAIMs). Should you be interested in renting units to me, please email Dan at dsop@mts.net.

RESEARCH OPPORTUNITY

Opening at Dugway Proving Ground, Utah for an internship with the U.S Army Environmental Command in conjunction with the Utah Bat Conservation Cooperative. We are looking for a recent Master's degree or post-doctoral graduate that would be looking for a position in a government facility. Contact Lara Giordano at lara.giordano@orau.org.

VOLUNTEER OPPORTUNITIES

WBWG Biennial Conference April 15-18th in Austin, TX. We are *looking for volunteers* to help in planning and assisting in a few areas during the conference. Below is a list of tasks we need help with:
-- Printing the program; -- Running the registration desk; -- AV personnel and equipment
-- Conference souvenirs (tote bags, T-shirts, etc. *We need someone to work on a design and work with a vendor to order the items.*)
Similar volunteer opportunities also exist for the Wind Workshop taking place at this same venue April 13-14.
Contact Nyta Hensley at Nyta.Hensley@tpwd.state.tx.us if you are able to help out with any of these tasks.

Wildlife & Habitat Restoration Working Group is seeking a person who is interested in becoming our Communications Chairperson. This person will mainly be the website administrator of our working group website. If interested, send a short biosketch and application no later than June 1st to Stefanie Nagid (Stefanie.Nagid@MyFWC.com). After review, one of the nominees will be appointed as the Communications Chairperson and they will join us in the July conference call.

FIELD WORK PICTURES NEEDED!

The **WBWG Education Committee** is putting together a program on bats for the National Science Teachers Association conference that will be held in Portland, OR in fall of 2008. This is the first time we know of that an entire program on bats will be presented, so we're pretty excited about the opportunity to reach teachers nationwide. As part of our preparation, we need pictures of members conducting bat surveys to include in the program - also, please include any good close-up photos of bat species in your area - please limit the number of photos emailed - the photos need to be electronic and can be sent to my email aimeehart@fs.fed.us or mailed to the office Willamette NF 211 E 7th Ave Eugene, OR 97401. Please include information for photo credit if appropriate. Selected pictures will be put in an education presentation Powerpoint at the National Science Teacher Association Conference being held in Portland, OR - some photos will also be printed in a brochure about WBWG - if there are any questions call me at 541-225-8416. Thanks, Aimee Hart.

ANNOUNCEMENTS

MEETINGS/CONFERENCES/WORKSHOPS

WBWG Biennial Conference

April 15-18, 2009 in Austin, Texas. Hosted by BCI and the Texas State Working Group, at the Austin Radisson. Visit Bracken Cave, and watch the amazing Congress Avenue Bridge free-tail fly-out! Further details and registration forthcoming in the fall.

North American Symposium on Bat Research

NASBR 38, Scranton, Pennsylvania, 22-25 October 2008. For details visit: www.nasbr.org.

NASBR 39, Portland, Oregon, 4-7 November 2009.

Wind Energy and Bats Workshop

Mark your calendars for the first WBWG Wind Energy and Bats Workshop being held **April 13-14, 2009** Austin, Texas. This is during two days before the WBWG Biennial Conference in the same location. Details will be forthcoming in the fall.

Wind Energy Conferences

7th Annual World Wind Energy Conference "Community Power: Energy Autonomy for Local Economies**"**. This unparalleled event will be hosted by St Lawrence College in Kingston, Ontario on **June 24 - 26 2008**. http://www.wwec2008.com/

CanWEA | 2008 Conference & Trade Show Vancouver, British Columbia October 19-22, 2008. http://www.canwea.ca/events/conference_e.php

Wind Wildlife Research Meeting VII October 27-29, 2008 - Milwaukee, WI Meeting Purpose: Provide a forum for stakeholders and the general public to hear about and discuss the most recent research conducted related to wind power development and wildlife. Examine what has been learned, discuss methods for minimizing or mitigating wind energy's adverse/undesirable impacts on wildlife, identify questions about wind power development opportunities and impacts related to wildlife, and identify gaps in knowledge and research needs. Abstracts due June 30, 2008.
More Information: http://www.nationalwind.org/events/meetings/wildlifeVII.htm

WINDPOWER 2008. American Wind Energy Association. Houston, TX. 1 – 4 June 2008. http://www.windpowerexpo.org/conference_overview.cfm

Bat Grid Workshops

June 9-13, 2008 Ephrata, WA and **June 16-20, 2008 Hines, OR**

Instructors: **Dr. Joe Szewczak**, Humboldt State University, Sonobat software designer (http://www.sonobat.com/) and bat acoustics specialist; **Pat Ormsbee**, USFS, Region-6 Bat Specialist, specializing in inventory and monitoring techniques for bats; **Aimee Hart,** Field Technician and Data Manager for The Bat Grid.
Contact: Pat Ormsbee: 541-225-6442, pormsbee@fs.fed.us

BCI Workshops

Arizona workshop in the Chiricahua Mountains emphasizes western bats. -species identification (including by echolocation calls), bat conservation, management, education, public health and nuisance issues, artificial habitats and much more. **Two sessions: May 20-25 and May 25-30, 2008. Each session limited to 16 people.** *Departure city: Tucson, AZ.*

California workshop focuses on the conservation and management of bats in the northwest. Set among the rugged backdrop of unique lava formations at Lava Beds National Monument. -species identification (including by echolocation calls), bat conservation, threats, management, education, public health and nuisance issues and much more. **One session: July 19-24, 2008. Limited to 20 people.** *Departure city: Medford, OR.* $1,395

Pennsylvania workshop highlights eastern bats and their habitats. -all aspects of bat conservation, management, education and public health and nuisance issues. **One session: August 17-22, 2008. Limited to 20 people.** *Departure city: Harrisburg, PA.* Cost: $1,395

2008 ACOUSTIC MONITORING WORKSHOP In response to many requests, BCI is offering an acoustic monitoring workshop session at Lava Beds National Monument in California. The workshop will cover hardware and software including Anabat, Pettersson and SonoBat and teach call identifications and how to develop a monitoring program. Joining BCI's Janet Tyburec will be acoustic software developers Chris Corben and Joe Szewczak, along with acoustic experts Sybill Amelon and Ted Weller. The format will be similar to BCI's Bat Conservation and Management workshops, combining discussions of current research with hands-on demonstrations and fieldwork. Each night, we will be capturing bats and developing call libraries so participants can return to their home study areas and begin their own projects armed with knowledge and experience. BCI will have equipment available, but participants are encouraged to bring **their** own systems. The Acoustic Monitoring Workshop is an advanced workshop designed for graduates of previous BCI workshops and/or experienced bat workers. One session: July 24-29, 2008. Limited to 20 people. *Departure city: Medford, OR.* Cost: $1,595

For additional information, registration forms and scholarship applications, visit www.batcon.org 'Get Involved' or contact Kari Gaukler, BCI, PO Box 162603, Austin, TX 78716; 512-327-9721; kgaukler@batcon.org

The Wildlife Society Conferences

The newly formed **Canadian Section of The Wildlife Society** invites submission of abstracts for oral and poster presentations for its first conference to be held at Gimli, Manitoba from **14-17 August 2008**. http://joomla.wildlife.org/canada/?CFID=14408179&CFTOKEN=29014364

15th Annual conference of **The Wildlife Society**. Miami, Florida **Nov 8 – 12, 2008**.
http://joomla.wildlife.org/miami08/

RECENT LITERATURE

Journal Articles

Arbuthnott, D. and R.M. Brigham. 2007. The influence of a local temperature inversion on the foraging behaviour of big brown bats, *Eptesicus fuscus*. Acta Chirop. 9:193-201.

Lausen, C.L., T.S. Jung, and J.M. Talerico. Range extension of the northern long-eared bat (*Myotis septentrionalis*) in the Yukon. Northwestern Naturalist. In press.

Lausen, C.L., I. Delisle, R.M.R. Barclay and C. Strobeck. Beyond mtDNA: Nuclear gene flow suggests taxonomic over-splitting in the little brown bat (*Myotis lucifugus*). Canadian Journal of Zoology. In press.

Metheny, J.D., M.C. Kalcounis-Rappell, K.A. Kolar, C.K.R. Willis and R.M. Brigham. Genetic relationships of roost-mates in a fission-fusion society of tree-roosting big brown bats. Behav. Ecol. Sociobiol. In press.

Rambaldini, D.A. and R.M. Brigham. Torpor use by free-ranging pallid bats (*Antrozous pallidus*) at the northern extrent of their range. J. Mammal. In press.

Swystun, M.B., J.E. Lane and R.M. Brigham. 2007. Cavity roost site availability and habitat use by bats in different aged riparian cottonwood stands. Acta Chirop. 9:183-191.

Willis C.K.R. and R.M. Brigham. 2007. Social thermoregulation, not cavity microclimate, explain forest roost preferences in a cavity-dwelling bat. Behav. Ecol. Sociobiol. 62:97-108.

Gray Literature

Hill, T., A. Reid, R. Clarke, J. Krebs, and J. Gwilliam. 2007. West Kootenay Townsend's Big-eared Bat *(Corynorhinus townsendii)* Project. B.C. Fish and Wildlife Compensation Program – Columbia Basin. Available upon request from Thomas.hill@bchydro.com or Ross.clarke@bchydro.com.

Lausen, C., T.S. Jung, L. Randall, and J. Talerico. 2008. Bat Diversity in Yukon: 2007 Survey Results. Yukon Department of Environment Technical Report , 30 pp. Available upon request from Thomas.Jung@gov.yk.ca.

Theses

Lausen, C.L. 2007. Roosting ecology and landscape genetics of prairie bats. PhD Thesis, University of Calgary, Calgary, AB. 271 pp.

Status Reports

Alberta Sustainable Resource Development and Alberta Conservation Association. 2008. Status of the Western Small-footed Bat (*Myotis ciliolabrum*) in Alberta. Alberta Sustainable Resource Development, Wildlife Status Report No. 64, Edmonton, AB. 24 pp.

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