

WESTERN CANADA BAT WORKING GROUP

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NEWSLETTER

ISSUE NO. 3

FALL 2003

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GREETINGS

Here is your third issue of the Western Canadian Bat Working Group Newsletter. Thanks to all of you for your contributions and continued interest in the newsletter. Future issues will now be handled by Cori Lausen (corilausen@hotmail.com), as I am moving to the east coast. I wish all of you the best of luck in future research.

Sincerely,

Krista Patriquin

WCBWG Newsletter Editor

RESEARCH UPDATES

BRITISH COLUMBIA

Lillooet Bats

Vivian Birch-Jones, President, Lillooet Naturalist Society, Lillooet, BC

The Fraser River old bridge renovations are going ahead with the bat roosts as part of the plan. This presents education and bat promotion opportunities, and also, as a small bat house erected nearby actually attracted some bats over the summer, this may really work for the bats. The Kindergarten class has invited me to teach a class again and a second teacher has taken an interest. We heard Spotted Bats here over the summer and saw a Silver-haired bat in the bark of a Ponderosa Pine. Bat news was covered on our local radio by yours truly. Logging proceeds apace, in spite of breeding Spotted Owls identified here, but we hope some protection plans will be put in place and our naturalist group has lobbied for that.

Bat Conservation Strategy for B.C. and Alberta

Vanessa Craig, Ph.D., R.P. Bio., EcoLogic Research, Gabriola Island, B.C.

The B.C. and Alberta Governments, represented by Laura Friis and Lisa Wilkinson, are collaborating to develop a Bat Conservation Strategy for those provinces. I have been contracted to coordinate the project. The Strategy will provide a framework for future conservation and management activities for bats in B.C. and Alberta. The Strategy will identify issues that have the potential to affect bats and bat habitat, outline conservation goals and objectives, and identify key knowledge gaps. In addition, it will identify research and inventory necessary to fill information gaps.

The initial draft is being prepared with input from Laura and Lisa, Robert Barclay, Susan Holroyd, and Krista Patriquin. I may also be pestering some of you for other information for the Strategy!

Species accounts and range maps will be part of the Strategy. I would like to ensure that the most up-to-date information is included. Therefore, I am requesting capture or roost/hibernaculum records for all species of bats in B.C. and AB.

- For Alberta records I have those submitted to Alberta Fish & Wildlife – if you have captured any bats or found roosts/hibernacula in the past, but did not submit the records to F&W, I would appreciate receiving them. I am collecting records for all species of bats in Alberta. I will credit you as the source of the information in the document.
- For B.C. records I hope to gain access to those used in Nagorsen and Brigham's "Bats of British Columbia" published in 1993. I will also access records submitted to the BC Conservation Data Centre. Again, to ensure that I include the most up-to-date range maps for the species in the Strategy, I would appreciate receiving records for any of the species of bats found in B.C. I will credit you as the source of the information in the document.

If you have any questions or comments, or would like to submit records, please contact me at vcraig@shaw.ca Thanks!



Taku River Bats

Mandy Kellner, M.Sc, R.P.Bio, Pacific Slope Consulting, Prince George, BC

I attempted an opportunistic inventory of late-summer bat presence on the Taku River of northwestern BC, while I was working in the area on another project. Logistics and the weather were both large obstacles. I did detect (visually and acoustically) low levels of activity at several sites, where 1 or 2 *Myotis* spp. were observed flying at dusk, but my one attempt at mist-netting was unsuccessful. Bats were detected from late-August through September and into early October, when nighttime temperatures were close to 0 Celsius and weather was consistently cool and rainy. I have heard the interesting thought that bats from the colder interior plateau areas of Atlin and environs may head down into the Taku valley for the fall and to hibernate. Main conclusions – bat work should be attempted earlier in the year (but we knew this already!), by a dedicated party with potential to camp out at netting sites.

Comparison of morphology, echolocation call structure, and genetics of *Myotis lucifugus* and *Myotis yumanensis*.

Tanya M. J. Luszczyk, Jason M. K. Rip, Krista J. Patriquin, Lydia M. Hollis, Joanna M. Wilson, Heather D. M. Clarke, Robert M. R. Barclay, and Jan Zinck, University of Calgary, AB, Canada; Portland State University, OR, USA.

The vespertilionid bats *Myotis lucifugus* and *M. yumanensis* are sympatric through parts of their range. These two species are morphologically similar, and can be difficult to tell apart in the hand. However, they exhibit differences in their reproductive chronology and foraging ecology, so it is important to be able to distinguish between them. Various researchers have described methods with which these two species can be distinguished in the hand using morphology, behaviour and more recently, echolocation call structure. However, no published studies have combined these methods to identify individuals. A large maternity colony of both species in a building in North Cascades National Park, USA represented a unique opportunity for a comparative study of these bats in the same environment. Our objective was to compare the external morphology, echolocation call structure, and genetics of *M. lucifugus* and *M. yumanensis*. Based on previous literature, *M. lucifugus* is described as having longer, shinier fur with darker ears and wing membranes, while *M. yumanensis* has shorter, duller pelage with lighter ears and wing membranes. Previous studies suggest that *M. lucifugus* has a minimum echolocation call frequency near 40 kHz while *M. yumanensis* has a minimum call frequency around 50 kHz.

We used genetic differentiation to determine the success of identification using external morphology and echolocation call structure. Bats were mistnetted at the building and measured independently to minimize bias. Fur and membrane colour were classified in two ways (using a Munsell colour chart and by classifying fur as shiny/dull, long/short and membranes as dark/light). Wing punches for DNA analysis were taken from the posterior part of the wing membrane away from major blood vessels. Upon release of the bat in a standard location, two researchers recorded echolocation calls using ANABAT II ultrasonic detectors and a spotlight to track each individual.



Preliminary genetic analysis indicates that minimum call frequency is a good measure of species' membership between *M. yumanensis* and *M. lucifugus*, while identification based on external morphology does not produce consistent results and is subject to high researcher bias. Final results from all methods of species' identification will be presented and compared.

Habitat Use and Roost Selection by Pallid Bats (*Antrozous pallidus*) in British Columbia

D.A. Rambaldini, MSc candidate, University of Regina, Regina, SK

This summer yielded some very fascinating and exciting discoveries. I study Pallid bats, which, in Canada, are restricted to the Okanagan Valley. Little is known of their ecology and behaviour at the northern limits of the species' North American range. During our field season in 2003, my field assistants and I found a colony roost that was home to more than 113 Pallid bats! This is the largest concentration of Pallid bats yet discovered in Canada, albeit the colony appeared to consist of mostly males. These bats foraged in the native habitat as well as in nearby vineyards - we observed some bats flying low between rows of grapes. Additionally, they used fruit trees in orchards as night and/or feeding roosts. Overall, we located 20 new roost sites. All day roosts were in rock crevices whereas during the night bats either returned to their day roost or roosted in an alternate rock crevice, a Ponderosa pine, Douglas fir, deciduous tree, or fruit tree. We found no bats roosting in man made structures. Unfortunately we did not find any hibernacula but that is one of our goals for next year.

An investigation of a population of Townsend's Big-eared Bats at Fort Shepherd in the West Kootenays of British Columbia

M.J. Sarell, J. Gwilliam, and T. Hill; Funded by the Columbia Basin Fish and Wildlife Compensation Program

Nine species of bats, representing 479 observations, were encountered during a five-year bat survey in the Pend d'Orielle Valley (Vonhof and Gwilliam 2000). Male and females were caught for most species. All species were reproductively active, based on the presence of reproductive females, males with enlarged testes, or juveniles. The Pend d'Orielle Valley is a tributary to the southernmost portion of the Columbia River in British Columbia. Across the Columbia River from the confluence of these watersheds is an area known as Fort Shepherd. During the five-year study, a series of caves were investigated in Fort Shepherd, and a solitary male Townsend's Big-eared Bat in was found roosting in 1996. This same cave was visited in June of 2002 during a biodiversity inventory (Schaeffer et al. 2002) and approximately 24 female Townsend's Big-eared Bats were observed in a tight cluster. It was speculated that this may be a pre-maternity staging site, and later occupied by solitary males.

The cave was monitored during the spring of 2003 in anticipation of the arrival of the cluster of female bats. The caves on this slope consist of voids amongst large blocky colluvium, with varying degrees of exposure. The cluster was first detected on 24 May. During the next seven weeks, a total of six females were radiotagged in order to identify a maternity roost in the vicinity. During this time, the adult female bats used a total of



four different colluvial caves and one mine adit. When they dispersed, members of the cluster used at least six abandoned buildings. Two of these were located in Washington State, one of which was thought to be the maternity roost, but could not be confirmed as access was restricted by the landowner.

Colluvial caves were monitored during the summer after the female cluster left this area. Solitary Townsend Big-eared Bats were observed during the remainder of the summer in 16 caves, including those that had been used by the female bats. All of the ones that were examined were adult males, except for one yearling female (as determined by partial ossification of the epiphyses of the metacarpal-phalangeal joints) that roosted in a cave that was never observed to be used by the adult female bats. This site consisted of a large slab against the bedrock and was relatively exposed to light and weather.

A number of important questions still remain. Are these adult females hibernating in the deep recesses of the colluvium or are they hibernating elsewhere and specifically using the Fort Shepherd area for pre-maternity requirements? Also, males were not observed while the adult females were present. Are they hibernating elsewhere or are they emerging from hibernation later than the females? There is also the solitary behaviour of the solitary yearling female. Are there at least some yearling females that do not reach sexual maturity, or are they not preferred by copulating males, and therefore do not join the maternity colony?

Insectivorous bats as predators in forest pest outbreaks

Joanna Wilson, MSc candidate, University of Calgary, Calgary, AB

I recently completed a second field season in southern interior British Columbia, near Merritt. I am investigating changes in bat foraging behaviour in response to a western spruce budworm outbreak in Douglas-fir forests. I am comparing bat activity levels and bat diets (moth consumption) in budworm outbreak and non-outbreak sites, both before and during the budworm moth flight period. My results so far indicate that bats significantly increased their moth consumption in response to the budworm outbreak. Western long-eared bats, *Myotis evotis*, showed the strongest response. Budworm moths appear to be an important prey item for bats, but there is also evidence that bats prey on budworm caterpillars. I will estimate the potential economic impact of bat predation on this important pest.

ALBERTA

Bats in the Fort McMurray Region

Chris Godwin-Sheppard, P.Biol., AMEC Earth & Environmental Ltd.

AMEC Earth & Environmental Ltd. was commissioned to undertake the preparation of an Environmental Impact Assessment for two proposed Oil Sands projects north of Fort McMurray, Alberta. The field programs required to complete the assessments included data collection on bat species within the project areas. A third smaller project in the vicinity of the study areas allowed the opportunity to collect data over one additional night. Sampling was conducted throughout the month of July and



concluded on the 2nd of August, 2003. A total of 26 net nights were divided over the three project areas. Six nets were set up on most evenings and ranged in height from 6 feet over closed streams to 20 feet across cutlines.

Results from the survey have not yet been analyzed, however, netting appeared to be most successful near streams and in mature white spruce and aspen forests. Black spruce forests appeared to have less activity. A total of 53 bats were captured over the survey period and included 28 *Myotis lucifugus*, 15 *Lasionycteris noctivagans*, and 10 *Myotis septentrionalis*. Analyses of Anabat recordings indicate that *Lasiurus cinereus* was also present, although in small numbers.

Age-related changes in metabolic savings due to clustering for big brown bats, *Eptesicus fuscus*

Lydia Hollis, University of Calgary, Calgary, Alberta

Torpor involves a periodic lowering of body temperature, in association with reduced metabolic rate, which is followed by arousal using endogenous heat sources (i.e. brown adipose tissue). Although adult bats benefit from torpor use (i.e. great energy savings), juvenile bats experience disadvantages at low body temperatures (i.e. reduced growth rates). One way to reduce the costs of thermoregulating at low ambient temperatures is through clustering. The purpose of my study was to investigate metabolic savings associated with clustering and to determine changes in thermoregulatory ability with age in big brown bats (*Eptesicus fuscus*).

To determine metabolic savings of clustering at different ages, I measured body temperatures (with temperature-sensitive radiotransmitters) and metabolic rates (i.e. oxygen consumption) of individuals and groups of 4 captive big brown bats at six different ambient temperatures (i.e. from 10°C to 35°C increasing in 5°C increments) for four different age classes (i.e. early prevolant, late prevolant, volant juveniles, and adults). Data from both individual and clusters of early prevolant bats suggest that very young pups (< 5 days old) are incapable of staying warm at low ambient temperatures. However, older pups and adults are able to stay warm when by themselves or in a group of four. Older pups and adults that choose to go torpid at low ambient temperatures (i.e. 10°C) can acquire metabolic savings of 98% (without the costs of rewarming) compared to individuals/groups that remain euthermic at low ambient temperatures. Alternatively, **groups** of older pups or adults that thermoregulate at 10°C can acquire metabolic savings of ~50% compared to **individuals** thermoregulating at the same ambient temperature. Thus, older pups that are clustered together in the roost may reduce the costs of staying warm (especially when ambient temperatures drop), and thus increase their growth rates through clustering behaviour. Visual observations within the roost reveal that pups are typically in clusters of 2-10 individuals with 1-2 adults present. Adults and older pups may therefore be “responsible” for keeping the younger pups warm while their mother’s are away from the roost during foraging.



Movement and Distribution of Prairie Bats

Cori Lausen, PhD candidate, University of Calgary, Calgary, AB

My fieldwork this season consisted of two components: summer DNA sampling and a winter hibernation project. The summer work took place in SE Alberta (Writing on Stone Provincial Park, Pinhorn Grazing Reserve, and OneFour substation [Milk River] and at Bow Island [Saskatchewan River]), and North Central Montana during June and July. In Montana I sampled at 3 study sites: Havre (along the Milk River), Coal Bank Landing (Missouri River, near Big Sandy), and McClelland Ferry Crossing (Missouri River, near Winifred). DNA samples were collected from *Myotis lucifugus* (535 in total), *E. fuscus* (163), and *M. ciliolabrum* (309) for my overall PhD study. At Havre, the majority of all captures were males. At the Missouri sites, I also caught *M. volans* (19), *Corinhorinus townsendii* (24) and *M. thysanodes* (2). Capture of this latter species has yet to be confirmed genetically, given that this is extralimital to the accepted range for this species. Capture of reproductive female *C. townsendii* occurred at both Missouri River sites, and while maternity roost locations could not be confirmed, mineshafts and rock crevices existed in both areas but buildings did not. *M. evotis* (58) were also captured. The fall component of my work just recently ended. I netted Oct. 4-26 at Dinosaur Provincial Park, monitoring activity using several anabat systems, and I attached radiotransmitters to 5 bats (3 species, both sexes). Roosts of tagged bats were not located, and transmitter signals were not detected again, with the exception of a single pass by one tagged female *E. fuscus* 7 days after transmitter attachment. Bat activity was high and consistent along the river throughout the entire month. Captures (27) were mainly male (4 females only): *E. fuscus* (10), *M. ciliolabrum* (16), and *M. lucifugus* (1). Bat activity was high right up until the night that cold winter weather set in. I will continue to monitor the park using anabats throughout the winter during warm Chinook weather. Last year I detected bats flying at the end of November in this park. Reference calls from this area have now been collected allowing for analysis of these calls, and of any that may be recorded this winter.

ALASKA

Evaluating internal bat habitat characteristics of abandoned mines in southcentral Alaska

Aaron Poe, Wildlife Biologist, Chugach National Forest, Girdwood Alaska.

I contracted Rick Sherwin (University of New Mexico) to conduct internal mine surveys for bat use and deploy Hobo temperature and humidity loggers in abandoned mines on the Kenai Peninsula and Prince William Sound, Alaska. Data loggers will collect internal temperature and humidity hourly throughout the calendar year and will be retrieved during summer of 2004. This information will be used to develop seasonal thermographic profiles for each mine. By comparing these profiles with a suite of biotic and abiotic attributes evaluated during surveys of each mine, we will be able to make inference about the potential for bat use. This work is conducted in support of Abandoned Mine Land (AML) reclamation activities on US Forest Service lands in



Alaska. Results from this study will help facilitate understanding of the potential for bat use of abandoned mines on US Forest Service lands in Alaska and will direct future closure activities with respect to impacts on potential bat habitat. A total of eight abandoned mines were located and internally surveyed between August 4 and 10, 2003. The majority of mines surveyed included some vertical complexity, suggesting that internal thermal conditions will be somewhat variable. Without exception, mines were cool and wet, with condensation evident on ribs and back and in most cases standing water was observed in portions of each mine. We did not observe any bats during these surveys, but did find evidence of night roosting activities at a single location.

There was no news submitted from others in Saskatchewan, Manitoba, Yukon or Northwest Territories.

BATTING AROUND THE WORLD

Some of our colleagues have been fortunate enough to do some traveling. Below are summaries of their exploits.

AUSTRALIA

Mark Brigham, Professor, University of Regina, Regina, SK

I am on sabbatical in Australia until 30 June 2004 working in the lab of Fritz Geiser at the University of New England in Armidale NSW. As far as bat work goes, I have pretty much turned to the dark side and am working mostly on birds. We have a project going on Laughing Kookaburras on thermoregulation and I have done some preliminary work on starting a project on Australian Owlet-nightjars in the area around Alices Spings in the Northern Territory. This work will hopefully become part of a PhD project starting in 2004. I am presenting a paper about the social behaviour of *Eptesicus fuscus* (co-authored by Craig Willis - they are his data) at the Ecological Society of Australia meeting to be held in Armidale in early December and intend to attend and present at the Australasia bat meetings which will be held in April 2004 in Toowoomba, QLD.

CENTRAL AMERICA, SOUTH AMERICA AND THE CARIBBEAN

Trudy Chatwin, Rare and Endangered Species Biologist, Nanaimo, BC

I didn't have any projects in BC per se, although lots of activity on the bat "rescue" scene and bat calls regarding rabies. In May I volunteered with a Malaspina University College Field studies course in Belize. I helped the students with capture. One student Lynne Henderson is doing a project on Anabat analysis calls from a site on the Sibun River. In a couple of nights of netting we caught some amazing bats including the Greater Fishing Bat. As well I visited some fascinating bat caves in Guatemala and Cuba.



BAT CONSERVATION SOCIETY OF CALGARY

Wendy Gardner is currently the sole member of this group. Wendy is actively involved in public education in the Calgary area. She usually gives one presentation a week from October to April. Wendy also plays an important role in the rehabilitation of injured bats. She currently has a big brown and silver-haired bat in her care. Both of these bats are under her permanent care as they are not fit for release.

BC/ALBERTA BAT CONSERVATION PLAN

Laura Friis and Lisa Wilkinson

The purpose of a bat conservation plan is to provide information and direction for land managers regarding bat conservation needs. The plan will likely be structured around conservation issues and will provide actions relevant to different ecoregions. Recommendations will encompass a range of strategies, such as monitoring, education and communication, and habitat protection measures. The plan was initiated in October, and will be developed over the next couple of years. Individuals with bat expertise will be given opportunities to provide input for the plan, and all comments are welcome. Several USA states are developing bat conservation plans, and they appear to be useful resource tools.

ABAT MEETING MINUTES

I have highlighted items from the meeting minutes of the 8th ABAT meeting. If you would like the detailed meeting minutes, please contact Lisa Wilkinson.

- Wind farms: Robert discussed the potential for some work at the Pincher Creek and Ft. McLeod wind farms.
- Caves: the group agreed that future cave surveys should be only be conducted every 2 years, maximum.
- WBWG: Lisa provided an update, they are considering adopting a structure similar to the Wildlife Society.
- Newsletter: Cori Lausen agreed to assume the responsibility of future issues of the WCBWG Newsletter.
- BC/AB Conservation Plan: Lisa and Susan provided some background for this plan; see summary above.
- Bat Survey Protocol: Lisa received revisions from Maarten Vonhof. Several of us agreed to review the final protocol so it can be placed on the ABAT website.
- NASBR: Robert highlighted some of the topics presented at this year's NASBR meeting. Most notably: bats are not susceptible to West Nile Virus, it does not survive the transfer.



- Education: Lisa purchased some items for Edmonton area, Calgary area is covered thanks to Robert and his lab.
- Website: We identified information that should be included on the website that is not currently there.

REQUESTS

BAT RECORDS FOR B.C. AND ALBERTA

I am writing a Bat Conservation Strategy for B.C. and Alberta (see summary under BC/Alberta Conservation Plan). I would like to include the most up-to-date range maps possible for species found in B.C. and Alberta. To that end, I am requesting capture or roost records for all species of bats in B.C. and Alberta.

- For Alberta records I have those submitted to Alberta Fish & Wildlife – if you have captured any bats or found roosts in the past, but did not submit the records to F&W, I would appreciate receiving them. I am collecting records for all species of bats in Alberta. I will credit you as the source of the information in the document.
- For B.C. records I hope to gain access to those used in Nagorsen and Brigham’s “Bats of British Columbia” published in 1993. I will also access records submitted to the BC Conservation Data Centre. Again, to ensure that I include the most up-to-date range maps for the species in the Strategy, I would appreciate receiving records for any of the species of bats found in B.C. I will credit you as the source of the information in the document.

Thank you for your help,
Vanessa Craig
vjcraig@shaw.ca

REFERENCES

The Alberta Bat Action Team created a bibliography of bat-related reference material for Alberta back in 2000. We would like to update this bibliography with your help. Any of you who have published any bat work for the Alberta area since the year 2000, please send a pdf of your work or a full citation to Susan Holroyd at susanholroyd@hotmail.com. Thanks for your help.

ANABAT REFERENCE CALLS

I am responsible for compiling a list of reference calls collected with Anabat detectors. Originally this list was to include Alberta, however, now that we have created the WCBWG, I feel the list should be more exhaustive. If any of you have reference calls, could you please notify me and include the geographic region, species, number of individuals per species and habitat in which the calls were collected as well as your contact information.

Thanks for your help,
Krista Patriquin



QUALIFIED BAT BIOLOGIST LOOKING FOR WORK

I am presently working on data analysis and write-up for my M.Sc. thesis at the University of Calgary, and I will be defending in January 2004. I am looking for full-time employment/contract work beginning January 2004.

Some of my relevant skills include:

- Mistnetting experience with bats and birds
- Extensive handling of bats, other small mammals, birds and fur seals
- Acoustic monitoring of bats using ANABAT II systems
- Acoustic identification of bats using Anabat/Analog software and multivariate statistics
- Radio-tagging and tracking experience with bats, woodpeckers and fur seals
- Vegetation plots associated with studies of bat habitat use/roost selection
- Plant identification (trees, shrubs and herbs)
- Ungulate, carnivore and small mammal track identification
- Survey experience (use of map, compass, hipchain, clinometer, GPS)
- Extensive leadership and supervisory experience
- Excellent oral and written communication skills
- Exceptional organizational skills and high motivation
- Ability to work well independently and in group situations

I would be happy to provide a copy of my resume at your request.

Sincerely,

Tanya Luszc

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(403) 286-1276



ANNOUNCEMENTS

AWARDS

Two of our very own received awards for their research and presentation skills at this year's North American Symposium on Bat Research in Lincoln, Nebraska. Tanya Luszc received an award for her poster, which summarized a collaborative effort to differentiate between *M. lucifugus* and *M. yumanensis*. Donald Solick received an award for his oral presentation dealing with his MSc work investigating differences between two populations of *M. evotis*. Both are MSc students in Robert Barclay's lab at the University of Calgary.

MEETINGS AND CONFERENCES

35TH ANNUAL NORTH AMERICAN SYMPOSIUM ON BAT RESEARCH

To be held in Salt Lake City, Utah, 27-30 October 2004.

8th ABAT MEETING

TBA: probably sometime in February/March

2ND NORTH AMERICAN SYMPOSIUM WORKSHOP ON BAT CONSERVATION AND FOREST MANAGEMENT

To be held in Hot Springs Arkansas, 9-12 March 2004. There will be invited speakers on topics ranging from The ecological role of bats in forests, Roosting ecology of forest-dwelling bats, Foraging ecology of forest-dwelling bats, to Relationships between forest management and bats, Inventory and monitoring for forest bats, and Bat conservation and forest planning. There will also be a call for contributed papers and poster presentations. Much of the final day will be devoted to specific workshop sessions designed to produce a "technical handbook" aimed at forest managers who want to include bats in their inventory, monitoring and forest planning. More information and contacts will come later.

DISTRIBUTION LIST

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