

Western Bat



Working Group

WBWG NEWS

Volume 1, Issue 1

December 2005



Myotis volans

▣ Kristi DuBois



Western Bat Working Group



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NEWSLETTER

Volume 1, Issue 1

December 2005

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ABOUT THIS NEWSLETTER

A big thank you to state and provincial WBWG representatives who provided updates to make this newsletter possible! It is great to see so much bat work going on in western North America. The goals of this newsletter are to keep all WBWG members informed and to facilitate networking. As this is our first newsletter, this is a trial run to see what works and doesn't work, and we expect the newsletter will evolve over time; we welcome any suggestions or feedback you have regarding the submission process, content, layout, distribution, etc. As the first issue, this newsletter is very long; for ease of navigation we have made bookmarks available in the pdf. There are also weblinks for most URLs. This newsletter is available online at <http://www.wbwg.org/>, and to receive notification each time a new issue is posted, please join the Listserv (instructions on home page). The frequency of the newsletter has not yet been decided, but we plan to have another issue in the spring. If you have news items you'd like to share with the newsletter, please contact the WBWG representative for your province/state, or send an email to corilausen@netidea.com.

Cori Lausen and Kristi DuBois, Newsletter Editors

PRESIDENT'S CORNER

How exciting - the Western Bat Working Group (WBWG) has its first Board of Officers elected by you, the members, under the newly adopted bylaws. Before pontificating further on the current status of the WBWG, I want to acknowledge the previous board whose members initiated and nurtured the WBWG as we know it. Lyle Lewis, Chuck Harris, Dixie Pierson, Kirk Navo, Mike Herder, and Brad Phillips are responsible for a number of accomplishments, including:

- Establishment of the WBWG, including an active network comprised of the Executive Board and State and Provincial Representatives.
- Implementation and maintenance of our website.
- Development of bylaws.
- Initiation of 501 c nonprofit status process.
- Development and implementation of the *Species Conservation Assessment and Conservation Strategy for the Townsend's big-eared bat*.
- Initiation of the Survey Protocol Committee to develop a standardized survey protocol.
- Development and updates of species accounts for the western U. S.
- Establishment of a survey matrix identifying effective survey methods associated with western bat species.

On behalf of the Officers and WBWG Board of Directors (State and Provincial Representatives), I thank the previous board for all that they accomplished and for making our transition straightforward because of the foundation that they established.

As our new Officers wind down the honeymoon stage of our term (we've just passed the 6 month mark of a two year term), I want to step back from our passionate flurry of activities and revisit a critical element of suc-

cessful working groups. By design, a working group is a consortium of people with a common interest yet varying perspectives and skills, whose members willingly come together to accomplish common goals. The strength and success of the WBWG lies in the engagement of our diverse membership. The WBWG does not belong to the officers or state and provincial representatives – we are simply fellow members with temporary titles who have stepped forward to facilitate momentum for reaching the goals established by the membership. Please don't make us guess what you want from your working group. Remember that it is the diversity of your ideas and skills that we have agreed to represent and support. When the current Officers were elected we distributed a questionnaire to the membership asking your input for setting a priority of work. From that questionnaire, we established an action plan. While the WBWG Action Plan serves as our directive from you, it is a dynamic document that changes as we accomplish tasks and receive input to add new ones. We need you to engage in this process to keep the Action Plan up-to-date and to accomplish the tasks identified in the Plan.

To make your engagement in the WBWG easier, here are some specific steps you can take:

1) Visit the website (<http://www.wbwg.org>). This is our main way of keeping you informed. Please become a member of the WBWG by using the “Become a Member” button located along the left of the homepage screen. Membership is free, and we need a record of all members to further our non-profit status application.

2) Sign up for the listserv option on the website so that you receive electronic materials from the WBWG. Typically, there are a low number of correspondences that you will receive, so you won't be flooded with email.

3) Contact your State or Provincial Representative, get on their mailing list, find out what is going on in your area, and get involved with your State or Provincial Working Group. The State and Provincial Representatives are your spokespeople for the WBWG so please make sure that they have your input.

4) Let us know what you think about our efforts and how we're doing.

The WBWG Officers, Board of Directors, and the members who have engaged in the WBWG are a delightfully fun, inspiring, and talented group of dedicated individuals. I sincerely hope that you take the time to join us and contribute your talents in whatever way you can.

Respectfully, Pat



Pat Ormsbee shows how to set a mist net during the U.S. Forest Service Bat Grid Survey Workshop.

WHO'S WHO IN THE WBWG

Officers

(2-year term from April 2005- March 2007)

President	Pat Ormsbee	pormsbee@fs.fed.us
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Board of Directors

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Education Committee

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Deborah Crough (California)	dannysgirltoo@yahoo.com

Listserv Manager

Joe Szewczak	joe@humboldt.edu
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HEADLINERS

Compiled by Pat Ormsbee

New Representation: The Western Bat Working Group Board of Directors is pleased to announce that **Patrick Isakson** from North Dakota and **Arnulfo Moreno** from Northern Mexico have joined the WBWG Board. Arnulfo has agreed to work with **Mike Herder** to begin making our website bilingual. ¡Que Bueno!

How great is Colorado? The greatest — of course. **Kirk Navo** (Colorado Bat Working Group Co-Chair) worked with **Rick Adams** and his non-profit (Colorado Bat Society) to secure mining claims for several mines that are key *Corynorhinus townsendii* maternity roosts. The mining rights of the maternity sites now belong to Colorado Bat Society and the whole process only took a few months!

WBWG Survey Protocol: Completion of the WBWG Survey Protocol is progressing nicely under the wise leadership of **Bill Zielinski** and **Ted Weller**. Now that field season is over, Bill, Ted and the rest of the committee working on the protocol (**Mike Herder, Linda Angerer, Pat Ormsbee, and Dixie Pierson**) are settling in for a concerted effort of winter writing. A draft of the survey protocol is expected in spring, 2006.

Educational and Research Committees: **Juliet Craig** and **Deborah Crough** have joined forces to steer the WBWG Educational Committee. Both have extensive training and experience with community and classroom approaches to education and we are very lucky to have them on board. The WBWG Research Committee (**Toni Piaggio, Ted Weller, Mike Herder, Alice Chung-MacCoubrey, and Cori Lausen**) has begun developing a program and strategy of work. Stay tuned for useful products from both of these committees.

Special Thanks: To **Steve Langenstein** (Oregon State Working Group Co-chair) for helping **Mike Herder** with website management while he was in DC, to **Dan Taylor** of BCI for working with us to provide the \$500 fee for our non-profit application in exchange for completed water site forms from across the west, and to **Joe Szewczak** for setting up and managing our listserv operation.



STATE/PROVINCE UPDATES

ALASKA

Submitted by Aaron Poe

Distribution and habitat ecology of bats in Southeast Alaska

John Hayes & Julia Boland, Oregon State University, Dept. of Forest Science, 321 Richardson Hall, Corvallis, Oregon 97331, 541-737-8459 Julia.Boland@oregonstate.edu

Julia Boland and crew recently completed the first of two field seasons examining distribution and habitat use by bats in six areas throughout Southeast Alaska. We surveyed from May-Sept 2005 in the areas around Yakutat, Juneau, Hoonah, Petersburg, Wrangell and Prince of Wales Island. We captured *Myotis lucifugus*, *M. volans*, *M. keenii*, and *M. californicus*. We also sighted and concurrently recorded the echolocation calls of *Lasiurus noctivagans*. We established an echolocation call library of tethered bats using Pettersson and Anabat II detectors and collected tissue and guano samples for DNA analysis. We used passive acoustic monitoring to document activity levels in four different habitat types (clearcut, muskeg, simple conifer, and complex conifer) and we began preliminary work documenting day roosts of bats on Prince of Wales Island. We will return to Southeast Alaska in May 2006 for a second field season.

Status Review of Alaska Bats

Tracey Gotthardt and Jodi McClory, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, AK 99501, (907) 257-2782, antg@uaa.alaska.edu

As part of the of the State of Alaska's Comprehensive Wildlife Conservation Strategy we reviewed the conservation status of Alaska's six known bat species: Keen's myotis, California myotis, silver-haired bat, little brown bat, big brown bat and the long-legged bat. Each status review included summarizing information on species' life history, range, abundance and trends, habitat preferences, protection and threats. Reviews also included recommendations for research and inventory needs as well as conservation and management needs. We are currently compiling distribution information for these species in order to develop range maps and document known occurrences in Alaska. Complete status reports are available online at:

http://aknhp.uaa.alaska.edu/zoology/Zoology_ADFG.htm. They can also be accessed via the Alaska Bat Monitoring website at <http://aknhp.uaa.alaska.edu/akbats/index.htm>.

Long Duration Acoustic Bat Detector

Matt Heavner, Assistant Professor of Physics, University of Alaska Southeast, 11120 Glacier Highway, Juneau, AK 99801, (907) 796-6403 matt.heavner@uas.alaska.edu

Dr. Matt Heavner of the University of Alaska Southeast is funded by the Alaska Department of Fish and Game to develop a long duration (100+ days) acoustic bat monitor. Dr. Heavner is developing a lower power computer based system to continuously monitor an area for bat activity. During the 2005 summer season, the various components (sensor, computer, power, etc) were tested independently. Additionally, three weeks of field work at five locations on Prince of Wales Island in Southeast Alaska were conducted by Dr. Heavner and Elizabeth Mallott (an NSF funded REU summer student). A surprisingly large amount of bat activity was recorded. This fall, the computer software to run the system is being improved using the continuous acoustic recordings from Prince of Wales as test input.

The First Forest Service Bat Gates in Alaska

Aaron Poe, Wildlife Biologist, Chugach National Forest, Glacier Ranger District, P.O. Box 129, Girdwood, AK 99587, (907) 754-2345, apoe@fs.fed.us

Abandoned mines are common throughout lands managed by the US Forest Service and there are hundreds on the Chugach and Tongass National Forests in Alaska. This summer the construction of three bat gates was completed on the Chugach. Bat gates have been used in all other Forest Service Regions but these are the first to be completed in the Alaska Region. In Alaska few details are known about bats in general, but we do have evidence that at least some mines are hosting bats during winter and summer months. Forest Service biologists have conducted external surveys at abandoned mine sites on both the Chugach and Tongass using Trailmaster motion sensors placed at entrances to detect bat use. These three mines were closed with bat gates based on both detected roost and expected potential to support roosts. A night roost in the Case Mine on the Kenai Peninsula was documented during internal summer surveys conducted by the Forest Service and Christopher Newport University in 2003. Activity patterns recorded by motion sensor indicated that the Alaskan Homestake Mine, in western Prince William Sound was being used by bats during winter. The Culross Mine, also in the western Sound, was closed using a bat gate because the complexity of its internal workings was thought to be conducive to use by hibernating bats. These closure operations were accomplished by a combination of efforts including contracting with Holistic Wildlife Services and partnerships with the State of Alaska Department of Natural Resources and Christopher Newport University.

Conservation Planning for Bats in Alaska

Mary Rabe, Nongame Program Coordinator, Alaska Department of Fish and Game, Division of Wildlife Conservation, mary_rabe@fishgame.state.ak.us

As part of a statewide effort to develop a Comprehensive Wildlife Conservation Strategy, species experts identified information needs, issues and concerns, and conservation actions for bats in Alaska (Appendix 4, Section P, pages 411-414). The draft report is at: http://www.sf.adfg.state.ak.us/statewide/ngplan/NG_outline.cfm. Key conservation activities include: increasing our knowledge of bat distribution, abundance, and life history in Alaska; identifying critical habitats; assessing relative use of old-growth and second-growth forest; and measuring bat use of Alaska's karstic landscape.

The Alaska Bat Monitoring Program

David F. Tessler, Regional Nongame Biologist, Alaska Department of Fish and Game, 333 Raspberry Road, Anchorage, Alaska 99518, (907) 267-2332, david_tessler@fishgame.state.ak.us

In 2004, the Nongame Program at the Alaska Department of Fish and Game lead the creation of the Alaska Citizen Science Program, a partnership that also includes U.S. Fish and Wildlife Service, Chugach National Forest, The Alaska Zoo, and The Alaska Natural Heritage Program. In 2005, the Partnership for Citizen Science launched the Alaska Bat Monitoring Program, a new citizen science project combining public education and outreach with enlisting volunteers to collect information on the distribution of the little brown bat (*Myotis lucifugus*) in South-central and Interior Alaska. The most common and widely distributed bat in Alaska, *M. lucifugus* is the only species found north of the southeast panhandle. Much of what is known about the Alaskan distribution of this species comes from 279 specimens collected at 54 sites dating from 1883 to the present. Their distribution and abundance during the summer months is poorly understood, and even less is known about where they go in the winter. This project relies principally on individual volunteer cooperators submitting their observations of bats and bat roosts along with the geographic location, and several general habitat and/or structure variables. Volunteers are organized through extensive radio and print outreach efforts, public and school programs, as well as the Alaska Bats website (www.akbats.net). We've developed a compact disk of educational materials for distribution to educators and other agencies and organizations that wish to participate in the program. The CDs include instructions for volunteering, data sheets, and two power-point presentations appropriate for different ages, and background materials for lecturers so anyone interested can present our program. Information generated from this project is envisioned to be the first step in a broader program to define the temporal and spatial distribution of *M. lucifugus*, identify its important summer habitats, migration routes, and potentially critical winter refuges. This year, after a late kickoff, over fifty volunteers submitted observations of roosting little brown bats stretching from Kachemak Bay up through North Pole, Alaska.

Temperature and Humidity Monitoring in Alaskan Abandoned Mines

Robin Ives¹, Jeff Frederick¹, Aaron Poe², and Rick Sherwin¹

¹ Christopher Newport University, Newport News, Virginia; rsherwin@cnu.edu

² Chugach National Forest, Girdwood, Alaska

Little is known about the association of bats with abandoned mines in Alaska, and it is largely supposed that subterranean habitat will not generally provide critical roosting habitat for bats. In this study we conducted internal surveys of seven abandoned mines on the Chugach National Forest looking for direct evidence of occupancy by bats. Additionally we installed data loggers throughout all surveyed mines and generated internal thermal profiles. Data-loggers were programmed to collect temperature data every 30 minutes from August

2003 – August 2004. Thermal profiles were then used to infer potential roosting habitat offered by each of the surveyed sites. Variation in climatic conditions was determined through standard descriptive statistics and internal conditions were compared with ambient temperatures to determine the degree of thermal buffering offered by each mine. Humidity was recorded at, or near, 100% inside all of the mines, so relative humidity data for mine interiors was not used to infer climatic profiles. All of the mines surveyed during this project were cold and wet with average summer temperatures of 46° F. These cool, wet conditions are likely most conducive to hibernation and/or summer bachelor use. None of the mines included temperatures of sufficient warmth for use by maternity colonies. No bats were observed during the surveys, but evidence of night roosting activities was found in one of the mines (Case Mine). It is most likely that little brown bats (*Myotis lucifugus*) utilize abandoned mines in Chugach National Forest during winter hibernation and bachelor males and mixed-sexed groups probably use the mines as night roosts during the summer. Thermal profiles were used to make recommendations for abandoned mine reclamation, and these activities are now underway.

ALBERTA

Submitted by Cori Lausen

Alberta Bat Action Team (ABAT) Meeting — A Focus on Wind Energy

Cori Lausen

The Alberta Bat Action Team (ABAT) met on 2 November 2005 to specifically address the growing wind energy development in Alberta and its impact on bats. Richard Quinlan, the Alberta Government contact for wind energy companies, attended the meeting and introduced us to a new document that he plans to have completed by Jan. 2006: “Wildlife Guidelines for Alberta Wind Energy Projects”. Richard asked that the Alberta Bat Action Team produce a document outlining guidelines for pre- and post- windfarm construction with regards to bats. The first draft of this document is being written by Dr. Robert Barclay and his students at the University of Calgary, and will incorporate research findings from Ed Arnett, BCI. Eventually these guidelines will be a standalone document as an Appendix to our “Handbook of Inventory Methods and Standard Protocols for Surveying Bats in Alberta”. Also addressed at this recent meeting was the status of bats in Alberta. *Lasiurus borealis* is currently listed as ‘accidental’ in our province. This summer several red bats were captured and many were detected acoustically providing evidence that this species is not accidental in Alberta. Robert Barclay has since submitted a letter to the appropriate authorities to initiate the change of status for red bats, hoaries and silver-hairs (changing reds from accidental to sensitive, and hoaries and silver-hairs from secure to sensitive). The change of status for the latter 2 species stems from the discovery this summer that existing wind farms in the southern part of the province are killing large numbers (approximately 12/turbine at 1 farm) of migratory bats. ABAT has approached the local AB chapter of The Wildlife Society to include a symposium, plenary speaker and perhaps panel discussion on bats and wind energy at the upcoming provincial conference in March. This proposal has been accepted and details are forthcoming.



ARIZONA

Submitted by Angie McIntire

Seventeenth Annual Lesser Long-Nosed Bat Monitoring At Fort Huachuca

Project Lead: Ronnie Sidner

Funded by the U.S. Army, during summer/fall 2005, Dr. Sidner continued into the 17th consecutive year of monitoring bats, especially *Leptonycteris curasoae*, at Fort Huachuca. We obtained the highest exit count of *L. curasoae* that we've ever recorded at Pyeatt Cave, over 11,000 bats. Considering the highest count as of 2004 was 9400, and that there were no *L. curasoae* at this known roost in 1989 through 1995, the continuous increase in numbers there every few years since 1995 has shown that strict protections of roosts does allow species recovery. It also indicates that management strategies may have to tolerate a considerable period of time for recovery to occur. Other species, *Myotis velifer*, *Choeronycteris mexicana*, and *Corynorhinus townsendii*, at various roosts continued to show stable or increasing numbers at Fort Huachuca.

Sampling In Southeastern AZ Mountain Ranges For *Euderma maculatum*, *Idionycteris phyllotis*, And *Leptonycteris Curasoae*

Project Leads: Ronnie Sidner, Debbie Buecher

The objective of this project was to sample the sky island ranges in southeastern Arizona for three species of bats, *Euderma maculatum*, *Idionycteris phyllotis*, and *Leptonycteris curasoae*. The mountains sampled included the Huachucas, Dragoons, Grahams, Galiuros, Santa Ritas, and Santa Catalinas. Before beginning the project, project leads established a sonar call library for these species in areas where they are known to occur. This project has increased our understanding of the lesser long-nosed bat distribution at the northeast edge of their range. Project leads also captured a western yellow bat (*Lasiurus xanthinus*) which is the first record in the Galiuros.

Lesser Long-Nosed Bat Habitat Selection Criteria Model Project

Project Lead: Shawn Lowry, Arizona Game and Fish Department

This model looks at temperature, relative humidity, and light levels within specific roosts that met criteria set at the initiation of the project; i.e. occupation for the past two years with more than 50 individuals counted in the yearly simultaneous lesser long-nosed bat census. Data loggers are currently being retrieved from roosts throughout southeastern Arizona and have already been collected from the maternity roosts. The next segment of this project will be to deploy data loggers in mines and caves within northern Mexico roosts.

Cienega Creek Roost Stabilization and Creation Project

Project Lead: Don Carter, Pima County Natural Resource Parks and Recreation

Now that many bats have migrated to their winter homes, Don Carter, with help from boy scouts and other volunteers, is stabilizing soil-piping caves, also called suffusion caves, that have been used by Mexican long-tongued (*Choeronycteris mexicana*), Townsend's big-eared (*Corynorhinus townsendii*), pallid (*Antrozous pallidus*), pipistrelle (*Pipistrellus hesperus*), and Myotis bats for years. The goal of the project is to protect this bat roost from collapsing. Also, since new caves are not being formed to replace those that are eroding and collapsing, an experimental "cave" is being constructed in the area using rebar, mud, and lathe.

Determining the Distribution in, and Seasonal Use of, the Tucson Area by *Leptonycteris curasoae* and *Choeronycteris mexicana* by Monitoring Hummingbird Feeders

Project Lead: Sandy Wolf, Bat Research and Consulting

The goal of this project is to involve and educate members of the community to monitor hummingbird feeders for lesser long-nosed and Mexican long-tongued bats, the two species of nectar bats that feed at hummingbird feeders in the Tucson area.

San Tan Park Bat Gate Installation

Project Lead: Cindy Schofield, Maricopa County Parks and Recreation, Arizona Game and Fish Department

The goal of this project is to construct a bat gate to protect a California leaf-nosed bat (*Macrotus californicus*) roost in a Phoenix area Mountain Park.

California leaf-nosed Bat Winter Roost Cupola Installation

Project Lead: Shawn Lowry, Arizona Game and Fish Department

Recently, a cupola was installed on a mine shaft near Buckeye, Arizona that is a winter roost for about 100 California leaf-nosed bats (*Macrotus californicus*). One post-structure survey has been done (the bats just returned in November) and so far the bats are continuing to use the shaft.

Hualapai Reservation Bat House Project

Project Lead: Lower Colorado River RC&D, Hualapai Tribe, Arizona Game & Fish Department

The goal of this project is to construct a bat house or bat tower in early 2006 to replace lost habitat for Townsend's big-eared bat (*Corynorhinus townsendii*) due to the historic Valentine school house on the Hualapai Reservation is renovated.

Phoenix area Bat House Use

Project Lead: Nancy Renison

Arizona Game and Fish Department is working with the Phoenix Desert Botanical Gardens to install bat houses at the Botanical Garden to investigate design options in the Phoenix metro area and provide educational information about bats to visitors.

Forest Treatment Study

Project Lead: Valerie Horncastle and Mylea Bayless, Arizona Game and Fish Department

This season (2005) 288 artificial roosts were installed in three different forest treatment areas (proposed thin, thin/burn treatments and a control). Once each month all the bats roosting in the boxes were removed using a modified harp trap which captures the bats as they exit the boxes in the evening. Eighty-seven bats were captured and marked (with tattoos and color id bands) during three trapping events. Fourteen bats were recaptured in the boxes during the season's trapping events. Six species used the boxes (*Eptesicus fuscus*, *Myotis auriculus*, *M. evotis*, *M. occultus*, *M. thysanodes*, and *M. volans*). Bats occurred most often in east facing boxes, followed by west, south and north facing boxes respectively. Bat box use peaked in mid-August with an 11.5% occupancy rate. We also mist-netted once a month in each of the three treatment areas and netted an additional 168 bats comprised of 11 species. In addition to those listed above we captured *Antrozous pallidus*, *Idionycteris phyllotis*, *Lasiurus cinereus*, *Myotis yumanensis*, and *Tadarida brasiliensis*. Also in 2005 we installed temperature sensors in each box and the data are currently being analyzed to determine the relationship between temperature within and artificial roost and it's occupancy status by bats.

BRITISH COLUMBIA

Kootenay Community Bat Project Continues for Second Year

Juliet Craig and Mike Sarell

Last year, the Slocan Valley Bat Project was initiated as a pilot project to engage communities in bat conservation activities. The resounding success and support for that project provided the incentive for a larger scale outreach program and in response, this year, the Kootenay Community Bat Project was launched. The project is located in south-eastern BC, and this year covered the West Kootenays, from Creston to Trail and as far north as Galena Bay. The project's goals are to: 1) raise awareness about bats and bat conservation; 2) identify local bat species and roost sites; and 3) work with residents who have bats on their property to develop a roost conservation plan. Extension activities include numerous press releases, bat-house building workshops, interpretive programs and public mist-netting nights. Residents are encouraged to report their bats so that Project biologists can visit their roost sites, identify species present, and discuss and address their issues.

During the past two summers we have conducted 215 site visits and identified 180 roost sites for seven species of bats (COTO, EPFU, MYCA, MYEV, MYLU, MYYU, and MYVO). This number includes 96 maternity roosts, 48 day (non-maternity) roosts, 24 night roosts, and two unknown sites. As well, this year, we initiated the first "Annual Backyard Bat Count" to begin long-term data collection. Another project that began this year was to provide an addition to a home that has Townsend's big-eared bats living within it, to provide a quieter, less disturbed section for these bats. Funding has been acquired, and building will take place in 2006.

The response from this project has been overwhelming, with residents reporting roost sites, dropping off dead bats, volunteering to assist at events, and donate special skills such as website design and GIS mapping. One of the greatest values of this project is the education and awareness component that is integral to each of the project activities. As a result of this project, residents are conserving bats and their roosts, and collecting unique and valuable data that contributes to the understanding and conservation of local bat species.

For more information on the project, see www.kootenaybats.com or contact Juliet Craig at (250) 352-2260.

West Kootenay Townsend's Big-eared Bat Project – Update 2005

Thomas Hill, Aaron Reid, Ross Clarke and John Gwilliam, Columbia Basin Fish and Wildlife Compensation Program, Nelson, British Columbia, Canada

In 2003, a conservation initiative was implemented in the West Kootenay region of British Columbia to fill information gaps regarding the distribution and roosting ecology of the Townsend's Big-eared bat. Prior to this project, Townsend's Big-eared bats had only been documented roosting in three locations within the project area. Species distribution was determined through mist-netting and visual inspections of abandoned mines, buildings and natural caves. Mist-netting at night roosts (abandoned mines and caves) was undertaken to radio tag reproductively active females to locate maternity roosts. Due to the rugged mountainous topography within the project area radio tagged females (n=13) were tracked from fixed wing aircraft. Over three years Townsend's big-eared bats were documented roosting in 56 new locations (25 natural rock features, 16 abandoned mines and 15 buildings). Maternity roosts were located in three natural rock features and one building. Cold season surveys have been limited, however Townsend's big-eared bats were located hibernating in two of the three mines sampled. All roosts occurred in either the *moist-warm*, *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 one of the hibernacula and one of the maternity roosts in a natural cave. Conservation strategies include working with the Ministry of Mines to develop a protocol that incorporates the

needs of Townsend's big-eared bats into plans for mine entrance closures; as well as providing recommendations to modify current provincial forest practices legislation so that maternity colonies occurring in natural rock features receive adequate protection.

CALIFORNIA

Submitted by Heather Johnson

The top priority of the California Bat Working Group is to complete our state bat conservation plan. Several sections of the plan are drafted, including descriptions of bioregions, species accounts, and the research needs and action items associated with several conservation issues. The draft plan will be completed when we generate updated range maps and address additional conservation issues, hopefully aided by funding from the California Department of Fish and Game. At our last meeting we discussed the lack of bat occurrence information in the California Natural Diversity Database which is commonly relied upon by entities producing environmental documents. We will contact the database managers about tracking roost locality data while protecting this sensitive information. We need to have further discussion about how to deal with acoustic versus capture locality records. We also discussed the adequacy of wind farm pre-construction surveys and decided to write a position paper stating the minimum requirements for wind farm siting surveys. Recently Dixie Pierson and Pat Brown held a symposium on bat ecology and management, and Dave Johnston and Joe Szewczak held a workshop on bat ecology and field techniques; both events were sponsored by the Western Section of The Wildlife Society. Winston Lancaster from California State University Sacramento hosted the 2005 North American Symposium on Bat Research. Heather Johnson authored bat conservation strategies for the South Sacramento Habitat Conservation Plan, drafts are available for review and comment at <http://www.saccounty.net/planning/habitat-conservation/faq.html>, and Drew Stokes produced a report of bat surveys for the San Diego Multi-Species Habitat Conservation Plan (in review). A status assessment of the western red bat (*Lasiurus blossevillei*) in California by Dixie Pierson and Bill Rainey will soon be available on the CDFG website, and the California Department of Fish and Game Mammal Species of Special Concern document is expected in spring of 2006. Fourteen of our twenty-five bat species are considered Species of Special Concern.

COLORADO

Submitted by Kristen Philbrook

Colorado Division of Wildlife

Kirk Navo

The CDOW continues with its efforts of conserving bat habitat in abandoned mines. This year was the 15th field season for the Bats/Inactive Mines Project. The primary project personnel of Navo, Lea Bonewell, Nancy LaMantia-Olson, and Sophia Oglesby conducted evaluations of about 300 mines during the year. Preliminary results indicate about 18 bat gates will be recommended, and an additional 23 sites may potentially receive gates after further evaluations in 2006. The Bats/Inactive Mines Project has been conducting mine evaluations on public and private lands for 15 years. During this time we have evaluated approximately 4,300 mines, and we have had 636 bat gates installed, or pending installation, by our partners, the Colorado Division of Minerals and Geology, Federal Land Use Agencies, and the National Fish and Wildlife Foundation.

This year we documented another Townsend's big-eared bat (*Corynorhinus townsendii*) maternity roost. This roost is in a mine, with natural cave passages, that are heated by natural hot springs. This colony is the largest known in western Colorado. The ownership and future operations of this mine are in question. Efforts are underway the mine owner and USFS to help conserve this important roost site.

A paper evaluating the post gate surveys at gated mines in Colorado was published in 2005 in Bat Research News (Spring; Vol. 46 No.1). The paper provides some positive results on the use of gates, including culvert gates and bat ladders.

Small Mammal Survey

Jeremy Siemers

In 2001, The Colorado Division of Wildlife (CDOW) contracted with CNHP to develop a protocol for a statewide small mammal survey. The primary objective of this 10-year project is to expand knowledge of the distribution of lesser-known mammals in the orders Insectivora, Chiroptera, and Rodentia. CNHP biologists, in consultation with CDOW, developed a list of priority species for inventory. In addition, to better evaluate the presence of small mammals in habitats throughout Colorado, CNHP biologists identified major ecological systems within each area to survey.

CNHP surveyed northwest Colorado during the 2004 and 2005 field seasons and southwest Colorado during 2005. Efforts focused on the Wyoming pocket gopher (*Thomomys clusius*), pocket mice (*Perognathus* spp.) and bats. We documented new occurrences of two species of rare bat: the spotted bat (*Euderma maculatum*) and the pallid bat (*Antrozous pallidus*). We also recorded additional records of the state rare sagebrush vole (*Lemmyscus curtatus*). Additional survey work will continue in western Colorado in 2005.

Colorado Bat Working Group Bat Studies

Kristen Philbrook

Paul Cryan of the USGS is studying the role that bat migration plays in mortality at wind turbines, as well as helping with research on endangered long-nosed bats in southern New Mexico.

The last season of fieldwork was completed for the 5-year rabies in big brown bats (*Eptesicus fuscus*) project in Fort Collins, Colorado. This research effort was a joint collaboration of Colorado State University, the US Geological Survey, and the Centers for Disease Control and was funded by NIH/NSF. The 5-year dataset on about 5,000 PIT tagged big brown bats is currently being summarized and prepared for publication.

The San Juan BLM Field Office conducted presence absence bat surveys on BLM land proposed for hydromowing. Hydromowing is a mechanical fuels reduction technique that reduces the amount of pinyon, juniper and brush, including Gambel oak. Bat presence was detected at 14 of the 15 survey stations using a Pettersson D 230 Ultrasound detector. An Anabat placed at one station detected 5 western small footed myotis and 2 little brown bats. Follow up surveys are planned following project implementation. In addition, in July of 2004, a big free-tailed bat, BLM sensitive species, was netted and radio tagged by Alice Chung-MacCoubrey. The roost site was located on state land adjacent to Mesa Verde National Park.

IDAHO

Submitted by Chuck Harris

Day-roosting Behavior of Female *Myotis volans* in Xeric and Mesic Forests of the Intermountain Northwestern United States

Michael D. Baker, Michael J. Lacki, and Joseph S. Johnson, University of Kentucky, Lexington, KY

The harvest of timber is important to the economy of the intermountain northwestern United States, where ecologically based forest management requires basic information regarding habitat use by wildlife, including insectivorous bats. Currently, colony formation and use of diurnal roosts during the breeding season by female long-legged myotis (*Myotis volans*) are insufficiently understood. We investigated these behaviors for long-legged myotis inhabiting xeric and mesic forests by radiotracking 136 females in six watersheds in Washington, Oregon, and Idaho between 2001 and 2005. Eighty-seven bats in xeric (i.e., annual precipitation ≤ 30 cm) forests used 195 snags and declining live trees, and 34 rock crevices as day-roosts. Forty-nine bats in more mesic (i.e., annual precipitation ≥ 90 cm) forests used 168 snags and declining live trees as day-roosts; no female long-legged myotis used a rock crevice for roosting in mesic forests. Bats in both forest types used true firs (i.e., *Abies grandis* and *A. concolor*), with these tree species comprising 38% of day-roosts in xeric forests and 49% of day-roosts in mesic forests. Differences in use of tree roosts between habitats were evident; 53% of day-roosts in xeric forests were in ponderosa pine (*Pinus ponderosa*), whereas day-roosts in mesic forests were distributed more evenly among western larch (*Larix occidentalis*, 20%), Douglas-fir (*Pseudotsuga menziesii*, 16%), western white pine (*P. monticola*, 10%), and western redcedar (*Thuja plicata*, 5%). The formation of maternity colonies by long-legged myotis (defined as ≥ 10 bats exiting a roost tree) was more prevalent in xeric forests than in mesic forests (29% vs. 8% of day-roosts, respectively). Roosts situated beneath exfoliating bark on ponderosa pine represented 84% of colony roosts in xeric forests. In contrast, colony roosts in mesic forests were distributed among a greater diversity of tree species including western redcedar (36%), grand fir (29%), western larch (21%), western white pine (7%), and Douglas-fir (7%). Larger colonies were more prevalent in xeric forests, with half the colonies comprised of > 50 bats and 19 colonies comprised of > 200 bats. Colony roosts in mesic forests typically contained fewer bats, with only four roosts supporting > 50 bats and one > 200 bats. These data suggest that management prescriptions for long-legged myotis in the northwestern U.S. will require consideration of the variation in roosting behavior of these bats occupying xeric versus more mesic forests in this region.

Foraging Behavior of the Long-legged Myotis (*Myotis volans*) in Northern Idaho

Joseph S. Johnson, Michael J. Lacki, and Michael D. Baker, Department of Forestry, University of Kentucky, Lexington, KY

Effective conservation of bat populations in the commercial forests of the northwest United States will rely on accurate knowledge of their habitat requirements. Data on how foraging behavior and habitat use of bats changes throughout the year will help forest managers identify habitat components necessary to protect the continued existence of forest-dwelling bats. Limited data are available on the foraging behavior of the long-legged myotis (*Myotis volans*), a species of concern throughout much of its distribution. To evaluate patterns in use of home range among bats of different reproductive conditions, we captured and radio-tagged 35 long-legged myotis during the summers of 2004 and 2005 in north-central Idaho. Females were identified as pregnant ($n = 12$), non-pregnant ($n = 3$) or lactating ($n = 9$), and reproductive and non-reproductive males were grouped together ($n = 11$). Radio-tagged bats were tracked to their day roosts and movements of bats triangulated using multiple detection stations throughout two study watersheds. Home range size was calculated for any bat with ≥ 40 locations, and habitat use of bats analyzed by determining the percent area of each home

range occupied by available habitats in the watersheds (i.e., upland forest, mid-slope forest, clearcut forest, riparian forest). Bats roosted up to 5.8 km from where they were observed foraging. Home range size ranged from 0.2 km² to 31.5 km² for males, 0.6 km² to 25.1 km² for non-pregnant females, 1.1 km² to 9.8 km² for pregnant females and 0.58km² to 2.3km² for lactating females. These data indicate that reproductively active, adult female long-legged myotis use a smaller home range, especially in lactation, than non-reproductively active females. Data on use of available habitats will be presented.

Ecological Correlates Of Genetic Structure Of Townsend's Big-Eared Bats In Southeast Idaho: From Individual Relatedness To Patterns Of Gene Flow Among Populations

Katie Miller (graduate student) and Marjorie Matocq (Assistant Professor), Idaho State University, Pocatello

Project Summary: In this project we will integrate genetic and field studies to examine patterns of genetic diversity and how these are related to microclimate roost characteristics and landscape level habitat associations of Townsend's big-eared bat (*Corynorhinus townsendii*) in southeast Idaho. The results of this study will provide significant insight into ecological and genetic characteristics of this species and will provide baseline data against which to measure future change in this species and others that occupy the lava tube caves of southeastern Idaho.

Objective: The objective of this study is to identify the genetic composition and roost habitat requirements of Townsend's big-eared bats in hibernacula and maternity colonies in southeast Idaho. Our objective will be met by examining patterns of genetic diversity and gene flow in the context of microclimate and landscape level roost characteristics. Our study will greatly increase understanding of the genetic structure and habitat associations of Townsend's big-eared bat.

Expected Results and Benefits: Results from this project will provide microclimate, habitat, and genetic data that will inform conservation efforts of this species in Idaho and across the species' range. Such data will provide direct input for scientists and managers critical to the management and conservation of this species. Importantly, conservation efforts focused on the hibernacula of Townsend's big-eared bat will have a direct positive effect on the primary habitat of many other species inhabiting lava tube caves.

Results to Date: In late October 2005, 57 genetic samples (wing punches) were collected from 7 known hibernacula. DNA extraction is underway, and preliminary results will be presented at the Idaho Bat Working Group and Idaho Chapter of the Wildlife Society meetings in March 2006.

Idaho Bat Conservation Plan

The second draft of the Idaho Bat Conservation Plan is finished and will be sent out to members of the Idaho Bat Working Group for another round of review. The intent is to have a final draft ready for approval at the Idaho Bat Working Group meeting in March 2006. We will also post the draft plan on the WBWG web site under the State/Province link and welcome any comments.

External Bat Surveys of Abandoned Mines

Owyhee Field Office, Idaho BLM

External bat surveys will be conducted at adits, shafts, or other openings at abandoned mine sites in Owyhee County, Idaho and additional sites within the state. The work will be conducted in 2006 and is supported by the Idaho State Office of the Bureau of Land Management. Based on results of the surveys, BLM will install appropriate bat gates or other closures at mines that function as bat habitat. Project Leader is Rita Dixon, Zoology Program Leader, Idaho Conservation Data Center.

The Idaho Department of Fish and Game (IDFG), BLM, and U.S. Forest Service (USFS) cooperated in conducting several abandoned mine surveys in 2005 and are ramping up to conduct more surveys in 2006, but as we do so we are finding our biggest limiting factor is having enough qualified and trained biologists available to conduct the surveys. The BCI Bats and Mine training sessions offered in and around Idaho are packed with participants. However, given the multitude of job responsibilities these people typically have, abandoned mine surveys for bats could be back burner stuff. It may be time to pull together a multi-agency bat SWAT team dedicated to abandoned mine surveys much as we do for breeding bird surveys. An item for discussion at the Idaho Bat Working Group meeting.

We are discussing the possibility of developing a central data base in the Idaho Conservation Data Center to keep track of abandoned mine surveys, e.g., date, name of mine, location, who conducted surveys, what type of surveys, bat use, etc. (the general info on the Bats in Mines External Survey Form and Bats in Mines Emergence Observations). We would be interested to know if anyone else has developed such a database for their state or province.

The Upper Snake Region of Idaho Fish and Game (eastern Idaho) began surveys in summer 2005 to determine species presence and distribution along the South Fork of the Snake River. Seven bat species were captured with mist nets: *Eptesicus fuscus*, *Lasionycteris noctivagans*, *Lasiurus cinereus*, *Myotis evotis*, *Myotis thysanodes*, *Myotis yumanensis*, and *Myotis lucifugus*, the latter being the most common capture. Data from acoustic surveys are still being analyzed. IDFG and USFS personnel also began evaluating bat use of abandoned mines on the Salmon-Challis National Forest. Some mines are slated for closure beginning the summer of 2006.

MONTANA

Submitted by Kristi DuBois

Conservation Planning

Montana Fish, Wildlife & Parks has completed the Comprehensive Fish and Wildlife Conservation Strategy (CFWCS), as required under the USFWS State Wildlife Grants Program. The CFWCS identified bats as a group as Tier 1 (highest priority) for survey and monitoring. Three bat species were classified as Tier 1 species for conservation efforts: the pallid bat (*Antrozous pallidus*), spotted bat (*Euderma maculatum*), and Townsend's big-eared bat (*Corynorhinus townsendii*). For more information on the Montana CFWCS, go to <http://fwp.mt.gov/wildthings/cfwcs/default.html>. The Montana Bat Working Group is working on a draft Montana Bat Conservation Plan, to be completed by December 2006. For more information on the Montana Bat Conservation Plan, contact Kristi DuBois at (406) 542-5551, kdubois@mt.gov.



Joe Szewczak demonstrates use of a Pettersson bat detector and IRiver for acoustic monitoring.

U.S. Forest Service Grid Surveys

Montana was pleased to host the Bat Grid Survey Workshop, put on by Pat Ormsbee, Joe Szewczak and Jenny Taylor. The purpose of this workshop was to train Forest Service biologists and partners who were involved in initiating grid-based surveys in the Northern Region during 2005. These surveys provided a great boost to Montana's spotty bat distribution records, including at least 10 new county records for bats in the 2005 season. Jenny Taylor is pursuing funding to continue these surveys on R1 Forest Service lands in 2006. For more information, contact Jenny at (208) 769-3073, jctaylor@fs.fed.us.

Eastern Red Bat Captured in Montana!

The MNHP captured an Eastern red bat (*Lasiurus borealis*) near Culbertson in northeastern Montana, while doing riparian bat surveys for the BLM during August 2005. This was the third documented record of this species in Montana. It was an adult female, and seemed to be part of a small group of bats. It is unclear if the bat was a summer resident or a migrant. The two previous records were both migrants, from mid-September. For more information, contact Bryce Maxell, (406) 444-3655, bmaxell@mt.gov.



Lasiurus borealis captured in NE Montana.

Bats and Bridges

The Montana Natural Heritage Program recently completed a survey on bat use of bridges for the Montana Dept. of Transportation (abstract below). The study yielded some unexpected results, including a fairly high frequency of bat use for bridges in a northern climate, and the first documented use of a hoary bat (*Lasiurus cinereus*) using a bridge for day-roosting. The complete report can be found, along with other MNHP reports on bats at: <http://mtnhp.org/reports.asp#Mammals>.

Hendricks, P., S. Lenard, C. Currier, and J. Johnson. 2005. Bat use of highway bridges in south-central Montana. Report to Montana Department of Transportation. Montana Natural Heritage Program, Helena. 31 pp.

Abstract: We studied use of highway structures by bats in the Billings, Montana area during 2003 and 2004. We found evidence of bat use at 78 of 130 highway structures examined during summer 2003 in Carbon, Stillwater, and Yellowstone counties; 66 structures were used apparently exclusively for night roosting, and 12 bridges were day roosts. Use of highway structures was widespread throughout the study area and among the state highway system categories (Interstate: 73.2%, Primary: 47.2%, Secondary: 57.1%, Local/State Maintained: 60.0%). Day roosts were found in all highway system categories, but relatively more were in the Local/State Maintained category; maternity colonies were in all but the Interstate category.

Bat species identified at day roosts included Big Brown Bat (*Eptesicus fuscus*), Hoary Bat (*Lasiurus cinereus*), Little Brown Myotis (*Myotis lucifugus*), and Western Small-footed Myotis (*M. ciliolabrum*), none of which is a state Animal Species of Concern; use of a bridge for day-roosting by the Hoary Bat is apparently the first documented case for this species. Day roosts occupied in 2003 and 2004 included maternity colonies of Big Brown Bat (2) and Little Brown Myotis (2).

Use of bridges for roosting, and intensity of use at night roosts, were generally unrelated to the landscape within 3 km (1.86 miles) of the structure. Only mean percent of forest cover was significantly greater around day roost structures, but substantial overlap among unused, night roost, and day roost categories indicated that this pattern was a trend and not the major influence on structure use by bats. All day roosts were found within 8 km (5 miles) of riparian corridors.

Bats used 75.9% of concrete structures, 37.5% of steel structures, and 31.6% of wooden ones. Day roosts were found in concrete or wood structures, none in steel; three maternity colonies were in wood bridges, one in a concrete bridge. Slab bridges were the least preferred concrete spans because they provided few if any protected sites for roosting bats on the underside of the deck. Night roosting bats perched on the exposed vertical surfaces of girders of concrete and steel bridges. Day roosting sites in concrete bridges included accessible

expansion joints between cast-in-place and T-beam bridge sections, the longitudinal slots on the underdeck of parallel box-beam structures, and the space between two abutting bridge lanes. Day roosts in wood bridges included the narrow space between parallel girders, and the spaces between wood supports under the deck where railing posts were anchored. Of the 12 day-roosts found in 2003, nine, including all maternity colonies, were occupied on at least one visit in 2004. Maternity colonies were occupied from early June (possibly late May) into September, but dispersal from them had begun by late August.

Bat Roosts in Burned Forest

Nate Schwab, MS student at the University of Montana, Missoula completed his second field season looking at bat use of trees in burned forest for roosting. The dual objective of this project was to identify and characterize trees within burned forests that are used by bats as roosts, and examine differences in foraging activity between burned and unburned forests. Nate is analyzing data and writing his thesis. For more information, contact him at (406) 243-4104, nathanschwab@hotmail.com.



*Nate Schwab at the base of a 51" dbh western larch snag used by *Myotis evotis* as a maternity roost.*

NEVADA

Submitted by Jennifer Newmark

There is a variety of bat work going on in the State of Nevada. One area of concentrated activity is at the Nevada Test Site in southern Nevada. Seven water sources and six potential roosts have been surveyed in the past year. A long term acoustic monitoring station has been running for over two years. Although results are considered preliminary, this station is providing intriguing information on seasonal species composition and an astounding amount of winter activity. A monitoring plan for the area, including the use of thermal imaging cameras, has been developed for three *Corynorhinus townsendii* maternity roosts.

Elsewhere in southern Nevada, ten full time acoustic monitoring stations are up and running in a variety of habitats, including desert washes, springs, and at higher elevation sites. Additionally, eight passive mobile acoustic units are being used to learn more about bat distributions.

Abandoned mines continue to be an important component of the bat work going on in Nevada. Fifty-five hazardous mines were permanently closed this past year, all cleared for bats prior to the bulldozer. Many additional mines surveyed will not be closed due to bat activity. As funding becomes available, these sites will be proposed for bat gates. Abandoned mine closures happen all throughout the state, but the majority are concentrated close to urban areas such as Reno, Elko, and Las Vegas.

In eastern Nevada there are many proposals submitted to the Bureau of Land Management for wind generation in eight to nine different mountain ranges. Long term acoustic monitoring has been deployed at five of these sites to begin to develop a more thorough understanding of species composition and seasonal patterns.

Finally, general survey work continues, as does the Nevada Bat Working Group's conservation planning efforts.

NEW MEXICO

Submitted by Marikay Ramsey

Continuing Bat Research Along The Rio Grande

Alice Chung-MacCoubrey, U.S. Forest Service, Rocky Mountain Research Station.

Alice is continuing her research on the bat assemblage of southwestern riparian forests (bosques) in New Mexico, and has recently published a paper entitled: *The effects of fuels reduction and invasive plant removal on bat activity in cottonwood forests along the Middle Rio Grande.*

Gila Wilderness Bat Study

Lyle Lewis, U.S. Fish and Wildlife Service

Lyle and a group of biologists from U.S. Fish and Wildlife Service, U.S. Forest Service, and Canada spent 15 nights surveying in the Gila Wilderness (southwestern NM) as part of a New Mexico State Wildlife Grant. Although the focus of the survey was to detect Allen's lappet-browed bats (*Idionycteris phyllotis*), a great deal of information was collected about the bat species assemblage in the Gila Wilderness. Approximately 400 bats were captured and released using mist nets, and AnaBat systems were used for acoustic surveys. Data analysis is ongoing.

Bats And Mines Surveys

Marikay Ramsey, U.S. Forest Service

Marikay continues to conduct internal and external surveys for bats in abandoned mines on National Forest System lands. Over the past year, multiple workings were surveyed across six of the eleven National Forests in New Mexico and Arizona, followed by management recommendations.

Ongoing Nectar Bat Studies In Southern New Mexico

Mike Bogan, Keith Geluso, and Ernest Valdez of the Arid Lands Field Station, U.S. Geological Survey, and Angela England, Graduate Student at the University of New Mexico

Mike, Keith, Ernie, Angela and many assistants are continuing their multiple-year conservation studies of long-nosed bats (*Leptonycteris*) along the New Mexico – Mexico borderlands.

NORTH DAKOTA

Submitted by Patrick Isakson

Game and Fish Department Completes Comprehensive Plan

The North Dakota Game and Fish Department has completed the states Comprehensive Wildlife Conservation Strategy (CWCS) and submitted it for approval. North Dakota's CWCS outlines conservation needs and threats for all of the states wildlife with an emphasis placed on nongame and rarer species. Up to this point most of these species have received little attention in the state. The strategy includes a list of priority species. Included in the strategy's Species of Conservation Priority are three bat species, the long-legged myotis, long-eared myotis, and the western small-footed bat. Designation as a Species of Conservation Priority will allow the Game and Fish Department to prioritize funding for projects for these species.

For more information you can contact Patrick Isakson with the NDGFD at 701-328-6338.

NORTHERN MEXICO

Submitted by Arnulfo Moreno

Our newest WBWG board member, Dr. Arnulfo Moreno, is currently a faculty member at the Instituto Tecnológico de Ciudad Victoria, Tamaulipas. He also serves on the Scientific Advisory Board of Bat Conservation International and is member of the Board of Directors of NASBR. Dr. Moreno received his Ph.D. degree in 2000 from Texas A&M University, where his thesis research focused on long-nosed bat/agave plant interdependence. He has been working with a wide variety of partners in Mexico. Through partnerships he planted more than 120 thousand wild agaves along the Mexican long-nosed bat nectar corridor, and trained more than 120 land owners and managers, resource specialists, educators and community leaders in bat management and conservation. In Northern Mexico, in 1991, he surveyed the largest known bat caves, and his current work is documenting unknown bat roosts.

Punto Verde is a non-government organization that just finished a bat Education program in the Mexican States of Coahuila and Nuevo León. They trained Primary School Teachers in ecology and conservation of bats. Punto Verde is starting another bat education campaign in Nuevo Leon in collaboration with BCI.

Amigos de la Naturaleza is a group is doing a lot of bat education work in Monterrey and La Boaca cave areas. They have trained hundreds of school teachers in bat conservation.

Facultad de Ciencias Biológicas at Universidad Autónoma de Nuevo Leon — a group of biologists from this university is doing species inventories in mountain ranges in the state of Nuevo Leon.

Dr. Roberto Martinez and his graduate students of Universidad Autónoma de Baja California are investigating the diet of insectivorous bats in urban areas of Encenada, and surveying the bat fauna of Los Cirios Biosphere Reserve. Also, they are performing a very popular bat story to educate kids on bat conservation.

Nelly Correa and her students at Instituto Tecnológico y de Estudios Superiores de Monterrey are studying the role of Mexican free-tailed bats in Nuevo Leon's agriculture.

PROFAUNA AC is a non-government organization using wild agaves to recover soil from erosion at Zapaliname Reserve in Saltillo, Coahuila. This region is within the nectar corridor of *Leptonycteris nivalis*. They have planted more than 20 thousand agaves in the past two years.

PRONATURA Noreste is a non-government organization. They are monitoring the Mexican free-tailed bat population size at La Boca Cave; they are also working with local groups and donors to buy La Boca Cave and ensure the long term conservation of this important bat roost in Northern Mexico.

OREGON

Submitted by Steve Langenstein

Bat biologists on a regional level received encouragement & an excellent review, because of the presence of the WBWG biennial meeting in Portland.

The OR Bat Grid was continued in Oregon and expanded into Idaho, Washington, Montana, and NY South Dakota to expand the “big picture” during the 2005 field season. Funding for the next few years will continue to be difficult in some field offices. Volunteers will continue to provide needed assistance because reduced

funding and shrinking ranks of biologists are projected to limit field office involvement with bat surveys. Rabies pre-exposure inoculations paid for by an agency office is being supported to promote both cost savings and continued survey opportunities.

Genetics analysis work has continued at Portland State University for distinguishing between *Myotis* species, and to develop a micro-array for determining presence of multiple species from guano collected at roost sites.

Bats received attention in the Oregon Wildlife Conservation Strategy via comments from the Oregon Bat Working Group. Information about the Strategy can be accessed on the web at:

<http://www.dfw.state.or.us/conservationstrategy>

The strategy addresses bat resource items such as:

- identifying habitat requirements
- including bat/bird corridor considerations in wind turbine or communications towers
- forest roosts (not just non-forest locations)
- escape devices & clear airspace design for livestock tanks
- other related items

Simon Wray-Oregon Department of Fish and Wildlife and Pat Ormsbee – Regional Bat Ecologist for the U.S. Forest Service and Oregon/Washington Bureau of Land Management, have been working with Oregon Dept. of Transportation to establish construction standards to insure that replacement bridges are bat friendly. Oregon is beginning to have a good inventory on the use of bats on the many bridges around the State. Many bridges have been retrofitted with bat boxes and there is a good rate of occupancy (however this has not been quantified Statewide). Several designs of bat boxes have been deployed however the success of these has also not yet been quantified by design in all cases.

Wildlife in Oregon suffered future habitat losses from the passage of a State measure reducing the need for state-wide land use planning. The measure waives land use planning for lands in developer ownership before 1973. This will most affect urban sprawl areas.

At the Mt. Hood National Forest, some contracted bat surveys had been conducted in the 1990's with Mark Perkins. Currently the forest is not funded to do any bat work, and they do not expect having any funding to any in the near future.

The National Park Service is in the process of implementing long-term monitoring in parks across the country. The Upper Columbia Basin Network has identified "Bat Communities" as a priority vital sign in three of its parks: John Day Fossil Beds NM (Oregon), Craters of the Moon NM (Idaho), and City of Rocks NR (Idaho). Tom Rodhouse is cooperating with Gary Fellers, USGS, and colleagues to solve technical and sampling problems, but he is in the process of developing an acoustically-based monitoring protocol for the network and has initiated a pilot sampling in the Fossil Beds. He has well defined objectives and Some additional info on the program, including some bat inventory reports and other background, can be found on the website:

<http://www1.nature.nps.gov/im/units/ucbn/>

Lakeview District BLM has done surveys over the past 3+ years. This year the Oregon bat grid protocol was applied twice each week and they completed 2 of 12 cells (3.2 million acres plus FS lands). One abandoned mine and one cave was gated this year for Townsend's Big-eared bats. We know of six Townsend's maternity caves since completing our cave inventory project. One abandoned building used for bat roosting habitat was saved from demolition and one cave has been closed to the public on the Klamath River with Townsend's use.

In addition six bridges were retrofitted with bat boxes, and then monitored for the remainder of the year. They recently constructed two large “bat roost condos” to be placed under a bridge during maintenance planned to start in late November, 2005. We consider bats (especially bureau sensitive and assessment) in most of our NEPA documents.

There is a substantial range of management support at the Forest Service District and BLM Field office levels. Some offices have good funding and are actively trying to understand the condition of bat resources and then address them during management actions. Some offices provide little support and often do not fund or turn down funding opportunities to understand this resource. In one case a Forest Service Biologist is volunteering time to conduct surveys because there is no funding to support this work. In his case there is a feeling that the management team does not feel there is much impact on the bat resource from their land uses management, even if snags are felled during management operations. Snag creation is generally a project which is annually funded.

SASKATCHEWAN

Submitted by Mark Brigham

University of Regina

Dr. Mark Brigham Lab, Regina, SK, Canada — Research Projects

Kristen Kolar: MSc. project. Testing the Fission-Fusion Hypothesis for social interactions between big brown bats in the Cypress Hills (SW Saskatchewan). Kristen is using PIT tags to mark all individuals in roosting areas in order to assess the validity of telemetry data (small sample size and short term monitoring) suggesting Fission-Fusion. Kristen plans on defending her thesis by early 2006.

Devin Arbuthnott: Hons. Project. Devin is testing the idea that big brown bats take advantage of temperature inversions that occur due to elevation changes in the Cypress Hills. He predicted that bats would forage in the places that remained warmest. He will complete his thesis by April 2006.

Kristin Bondo: MSc. Project. Kristin has just begun her M.Sc. and will continue our long term focus on the roosting ecology of big brown bats in the Cypress Hills. The PIT tag technology and reader system appears to provide us with an opportunity to address the question of how and perhaps why bats choose the specific sites to roost in that they do. Kristin has some preliminary evidence of “prospecting” behaviour by individuals which she hopes to learn more about.

Miranda Milam: PhD project. Miranda has just begun her doctoral work and intends to focus on geographic variation in the physiology of hibernation. As yet she has not chosen a focal species but a migratory bat is likely.

Jackie Metheny: MSc. project. Jackie is a student at Univ. North Carolina – Greensboro supervised by Dr. Matina Kalcounis-Rueppell. Jackie is evaluating whether or not the preferred social interactions between individual big brown bats in the Cypress Hills can be explained on the basis of genetic relationships. Jackie intends to complete her thesis by late summer 2006.

A summary of some of our recent work in the Cypress Hills appeared in the Bat Conservation International Publication “BATS” Spring 2005.

SOUTH DAKOTA

Submitted by Brad Phillips

South Dakota Bat Working Group

SDBWG is: Brad Phillips and Dr. Scott Pedersen (Co-chairs), Alyssa Kiesow (Secretary)

SDBWG Advisory Board: Eileen Stukel (SDGFP), Doug Backlund (SDGFP), Dr. Cheryl Schmidt, and Joel Tigner.

SDBWG and South Dakota Game, Fish and Parks, Department (SDGFP) work closely regarding the funding of bat conservation related projects that work toward accomplishment of 'action items' set forth in the South Dakota Bat Management Plan (available on our website) http://nat_hist.sdstate.edu/SDBWG/SDBWG.html.

In 2005, the SDGFP funded bat research along the Missouri River ("Distribution and monitoring of bat species, especially species of conservation concern, along the lower Missouri River with emphasis on resident versus migratory behavior") with the objectives of: 1) Determine migratory behaviors/patterns and migratory timing of bats in South Dakota, specifically those that may use the Missouri River drainage as a corridor, and 2) Determine the distribution, seasonal activity pattern and habitat selection of bats utilizing the Missouri River drainage. SDBWG co-chairperson and SDSU professor Scott Pedersen is the Principal Investigator along with his M.S. student, Brandon Bales. Brandon is surveying bats with mist-nets and via Pettersson detectors (and Sonobat software). In addition he radio-tagged some during the summer (to determine roost-sites) and will continued tracking them into the fall (to determine migratory behaviors). He is following them via plane. This is an action item in the SD Bat Management Plan.

SDGFP also funded a bat study conducted by Joel Tigner (BatWorks). This research focused on riparian areas on the Buffalo Gap National Grasslands. It started in 2004 and continued through 2005. Last year Joel found six species in this area: Townsend's Big-eared Bat, Big Brown Bat, Red Bat, Hoary Bat, Western Small-footed Bat, and Northern Myotis using these habitats. Also an action item in the SD Bat Management Plan.

SDGF&P also provided funds to Joel Tigner(BatWorks) to begin establishing a bat call library for plains states as well as bat database. Part of this requires sample efforts in open areas, such as the grasslands (e.g., Dakota Prairies Grasslands in north central SD). In addition, he is compiling a database of all literature and research conducted on bats in South Dakota. The information in the database (or at least some of the information in the database) will be available to other researchers upon request. The call library and database are two action items of the SD Bat Management Plan.

As part of the effort to create a bat call library for SD or rather the region, a *Sonobat* Software workshop (sponsored by BatWorks, SDGFP, and SDBWG) was held in May. It was a successful coordination that included participates from SD and surrounding states (CO, WY, ND). This was a big first step in the objective of developing a regional bat call library for the plains states.

Alyssa Kiesow (SDBWG Secretary, and terrestrial biologist for SDGF&P) is continuing to conduct research on bats along the Missouri River near Pierre. Alyssa is also in charge of the Wind Power Ad Hoc Committee with The Wildlife Society- SD Chapter, particularly because of the impacts of wind power sitting to bats and birds. They had their first meeting in late August (2005). Dealing with wind power issues is an action item of the SD Bat Management Plan.

In response to these wind power issues SDBWG and SDGFP co-wrote the “*Siting Guidelines for Wind Power Development in South Dakota*” (also available online at the SDBWG website). As a group and agency, we are actively involved with wind power development in South Dakota, participating in meetings/conferences and writing environmental reviews (when the opportunity arises).

SDBWG co-chairperson and Forest Service wildlife biologist Brad Phillips has been working with the local caving club and Black Hills National Forest Recreation staff on a partnership to improve knowledge and protection of caves where bats are present.

SDBWG will hold its annual meeting December 16, 2005 in Pierre. The agenda includes: reviewing our State Bat Management Plan, holding officer elections, and planning work for 2006.

TEXAS

Submitted by Meg Goodman

Texas has had a great year of bat conservation work. The Texas Bat Working Group was formed and 2 newsletters have since gone out. Many good connections and networking have come out of the new group and we hope to continue to grow and hold a meeting somewhere down the line.

Bat conservation work completed this past year in Texas is outlined by ecoregion below.

Statewide

Comprehensive State Wildlife Conservation Plan

Texas Parks and Wildlife solicited input from bat biologists in Texas on priorities for Texas bats for the Comprehensive State Wildlife Conservation Plan. Sixteen of our thirty three recorded bat species made the priority list. These rankings as well as the conservation actions laid out for each species will be helpful in finding funding for bat conservation projects in Texas.

Bats in Bridges

Texas is home to a large number of bat friendly bridges. Following the Bat Conservation International (BCI) and Texas Department of Transportation (TXDOT) Bats and Bridges study in 1996, Mark Bloschock, a TXDOT bridge engineer began designing bridges to be bat friendly whenever possible. The result is a lot of supplemental habitat for bats throughout the state.

TPWD initiated a bats and bridges database in 2005 which is useful for planning highway maintenance and other projects within the area.

However, many of the existing bat bridges throughout the state were mere accidents! Most everyone is familiar with the Congress Avenue Bridge in Austin, home to at least 1.5 million Mexican free-tailed bats, which has become one of the top tourist destinations in the area but just up the street in Round Rock, Texas is an equally large colony at the McNeil Bridge. This colony is under a major freeway and above a busy interchange which also includes a train! TPWD is working with TXDOT to develop a more accessible bat viewing area complete with bat education signage while protecting the bats from the people with things such as fencing.

The big city of Houston now has their own large bat colony with at least ½ million Mexican free-tailed bats that have found a home at the Waugh Drive Bridge- just a few miles from the busy downtown. This colony is over the Buffalo Bayou and the bridge design is similar to the Congress Avenue Bridge. TPWD is working

with the City of Houston Parks Department and the Buffalo Bayou Partnership to develop the site into a public bat viewing site complete with educational signs and volunteer interpreters. Diana Foss, a TPWD biologist in Houston is working with several partners such as the City of Houston Parks Department, Houston Zoo, Master Naturalists and Bayou Preservation Association to survey the bat colony on a regular basis. Hopefully soon we will know more about this important colony.



Waugh Street Bridge.

The city of Fort Worth is also working hard to provide bat habitat in bridges as part of their Trinity River Restoration Project through the Streams and Valleys organization. This organization is planning on installing large bat abodes under many bridges along the Trinity River. This was all due to the hard work of a local bat rehabber, Wayne Peplinski, who took it upon himself to educate the city officials about the importance of bat habitat within the city.

Texas Bat Viewing Site Forum

Texas is home to a large number of Mexican free-tailed bat caves, many of which offer public viewing opportunities. In January 2005 the Texas Bat Viewing Site Forum was formed to provide cooperation and coordination between the 10 public viewing sites. A meeting was held prior to the bat season to discuss bat watching etiquette, collecting standardized data and identifying resource needs. Data collected from all of the sites is maintained in a database at TPWD.

TPWD Cave and Karst Working Group

TPWD has formed a cave and karst working group to advise and assist park managers on managing their cave resources. This group is made up of TPWD personnel, various professionals such as geologists and hydrologists, other agencies such as the USFWS and volunteer cavers. TPWD is the largest in holder of caves in the state with over 400 caves. This group advises on topics such as biology, geology, archaeology, and cave recreation. Not all of these caves are bat caves but TPWD does own some significant Mexican free-tailed bat and cave myotis caves. This group helps to ensure that management and conservation of these caves is a top priority.

Bat Outreach and Education

Bat outreach and education is provided to a variety of groups throughout the state. Public health officials and animal control officers are a big target due to bats and rabies and bats in buildings concerns. A large number of these folks from across the state were reached at the Diseases in Nature conference where Barbara French from Bat Conservation International (BCI) and Meg Goodman from Texas Parks and Wildlife Department (TWD) presented a talk on urban bats. This conference will continue to be a forum to get this type of information out. BCI and TPWD also answer hundreds of calls per year on this topic to people throughout the state.

The Texas Master Naturalist Program is a statewide program where volunteer naturalists receive training on a variety of topics and then work toward their naturalist certification with volunteer hours. Many bat programs have been provided through this venue throughout the state and many volunteer bat projects have been completed. Donna Berry is one of our volunteer naturalists interested in bats and she and other volunteers in her area have come to be known as the bat ladies of the Rio Grande Valley/South Texas. They made a bat cave and display this at many nature events as well as give bat talks to schools and other interested groups.



Donna Berry's bat cave.

East Texas

The eastern portion of Texas is known as the Pineywoods Ecoregion and is where the majority of national forests and other forestland can be found in Texas. The bottomland hardwood forests of this region are where the westernmost Rafinesque's big-eared bats (*Corynorhinus rafinesquii*) and the southeastern myotis (*Myotis austroriparius*) bats can be found. These bats are listed as high priority on the Comprehensive Wildlife Conservation Strategy for Texas. Much attention is given to these bats in the way of surveys, monitoring and research. TPWD will be hosting a meeting in January 2006 to gather diverse partners such as private landowners, federal and state agencies, non-profits and universities to discuss the status of these bats and research and monitoring priorities.

Several partners this past year have taken the initiative to provide supplemental habitat in the way of artificial hollow trees. These artificial trees were created by BCI in cooperation with a private landowner in Georgia in 2000. Since that time they have been tried in North Carolina, Florida and Mississippi. In 2004 and 2005, the Trinity River National Wildlife Refuge, Angelina National Forest and the Shangri-La Botanical Gardens all installed these artificial trees with much success. The Trinity River NWR roosts were made out of cinderblock and were installed in September 2004. Success came quick as these roosts were occupied by at least a couple of Rafinesque's



Trinity River NWR bat roost.



Angelina NF pipe roost tree.

big-eared bats sometime between January and March 2005. By June 2005, 10-15 bats had moved into the roosts and that number increased to 20 by July. The bats have stayed throughout the summer.

Angelina National Forest installed the hardy-pipe style roosts in September 2005. These roosts were installed near an old abandoned concrete saw mill where a colony of Rafinesque's big-eared bats has been roosting. No bats have been recording using the artificial roosts yet but it is our hope that the bats will find them soon.

Shangri-La Botanical Gardens also installed the hardy-pipe style roosts in August 2005. No bats have been recorded using the roosts yet but we hope they too will be successful soon.

Central Texas

Caves

The central portion of Texas is known as the Edwards Plateau ecoregion and includes many caves that are home to bats such as the Mexican free-tailed bat (*Tadarida brasiliensis*) and cave myotis (*Myotis velifer*). TPWD and BCI are partners in bat cave surveys throughout this region. Several of the large Mexican free-tailed bat caves have been surveyed and mapped and many others as well as cave myotis colonies will be surveyed this winter.

Fort Hood Army Base has cave resources and has done some work recently to ensure their protection. One of their caves, Shell Bat Cave, is home to a maternity colony of approximately 10,000-12,000 cave myotis bats. In 2004 the existing cave gate was replaced with a bat friendly cupola style box gate. The area is used by

armor and infantry units to develop and maintain war-fighting tactics. In order to protect the bat cave from this activity, a highly visible diverter trail which deflects traffic from the cave area was established as well as a rock barrier around the cave itself. Research and monitoring is continuing on this cave. Two additional caves have been discovered that were once home to thousands of cave myotis bats. Vegetation had enclosed upon the roosts making it unusable by the bats. Vegetation has been cleared and the caves are being monitored for any new bat use.



Shell Bat Cave, Fort Hood.

Texas Bats and Agriculture Project (Agrobats)

Dr. Tom Kunz- Boston University, Dr. Gary McCracken-University of Tennessee at Knoxville , Dr. John Westbrook- US Dept. of Agriculture and Pat Morton- TPWD have a 5-year National Science Foundation grant to study the relationship between Mexican free-tailed bats and agriculture in Texas. The study is in its second year and has already shown that the value of bats to agriculture is immense- saving farmers at least 2 rounds of pesticides each year!

TPWD arranged for a media day in summer 2005, which brought in media from all of the major metropolitan areas as well as a cable HDTV station to learn about the project so that they may publicize the positive relationship of bats to agriculture to a wider audience. This media day was very successful and got the word out to not only Texans but to people all over the United States.

North Texas

One of our public bat viewing sites is located in the panhandle area of Texas. This site is at an old railroad tunnel known as Clarity Tunnel. Little is known about this colony other than the fact that it is home to about half a million Mexican free-tailed bats and is the largest known colony for this bat in the area. TPWD is partnering with West Texas A&M to do at least 2 years of bat research at the tunnel in which we hope to learn more about the colony and which bat species are using it in the winter.

UTAH

Submitted by George Oliver

Great Basin Bat Cooperative (GBBC)

Founded in December of 2004, the GBBC provides a cooperative mechanism for state, federal, and private entities to identify objectives, share resources, and coordinate inventories and research to proactively manage Utah's bats. The structure and objectives of the GBBC were designed to overcome regional data shortcomings and provide adequate information to write and implement a Utah Bat Conservation Strategy. Objectives of the GBBC include 1) To conduct a systematic inventory of the bat species utilizing the northern portion of the Great Basin, 2) To identify areas of particularly high value to bats (i.e. roosts, hibernacula, foraging habitat) for the purposes of establishing monitoring protocols and establishing conservation measures, and 3) To create and maintain a central geodatabase for storage and analysis of past and future bat work. The GBBC currently includes the creative input from 12 separate agencies and non-profit organizations and their personnel. Successful completion of the GBBC's research objectives also relies heavily on volunteer participation. Volunteer involvement serves to expand the GBBC's influence and provides excellent opportunity for education and outreach.

During the last six months significant progress has been made on all three objectives. 1) The GBBC met monthly through last winter to finalize a dichotomous bat key and adopt a standardized survey protocol and datasheet. The spring and summer field seasons were spent in smaller work teams conducting systematic inventories throughout a formal sampling grid. Over 130 ponds were assessed for netting value and 48 netting surveys were conducted on mixed ownership lands using GBBC's standardized protocol. 2) Spring surveys were conducted in 112 Box Elder county mines and caves to assess their use by state sensitive Townsend's Big-eared bats. The bats using these mines are currently being marked to assess the extent of inter and intra mine movement during the winter months. The same mark-resight techniques being used to quantify movement will also provide a glimpse at winter survival. 3) Efforts have been made by all member agencies of the GBBC to centralize historical data on bats distribution and abundance. Data retrieved from federal, state, and private archives as well as from grey literature, academic works, and the GBBC current survey efforts are being entered into a spatial geodatabase for distribution to cooperating agencies on a yearly basis.

The GBBC is currently a pilot program focused in the northern and central portions of Utah and works in close cooperation with the Utah Chapter of the Western Bat Working Group.

Additional Activities

Undergraduate Research Internship: The UDWR's Sensitive Species Program mentored two undergraduate students as part of a collaborative effort between the Great Basin Bat Cooperative, Weber State University, and National Science Foundation. Both students conducted research investigating the spatial distribution of bats in northern Utah. Over 430 individual bats were handled, identified, sexed, and aged as part of their research. Their intensive netting efforts led to elevation range extensions of over 500 meters for two bat species, documented two previously unrecorded species within counties and verified the previously unknown breeding status of silver-haired bats in Utah. Data collected this summer will be prepared for publication in a peer reviewed journal.

Critical Bat Habitat Map of Utah: As a critical element of a state-wide Bat Conservation Strategy, the Great Basin Bat Cooperative and Utah Division of Wildlife Resources have proposed to develop a habitat suitability model to identify critical bat habitat in Utah. Specifically, the model is being designed to 1) identify distribution, quantity, and quality of suitable bat habitat in Utah, 2) allow federal, state, and private land managers to identify landscape characteristics that promote or limit potential use by bats, and 3) serve as a foundation for future cooperative bat research and management efforts in the state. Funding requests were recently submitted to the North American Bat Conservation Partnership Conservation Fund.

Digital Key: Efforts are currently being made to create a digital version of Utah's bat key for use in a PDA or Laptop computer. The key's user will be prompted to input morphometric characters to return a series of possible species identifications and associated probabilities. The key will be especially useful in identifying the often difficult to discern *Myotis* species from one another.

GBBC Web Site Development: In order to facilitate the dispersal of information and increase communication among GBBC members a web site is currently under development. The site is being designed, built and housed using in-kind donations of GBBC members.

Infrared Detectors To Detect Bat Use in Mines

Mike Herder, USDI BLM Arizona Strip Field Office, St. George, UT

Working from a grant with BCI, John Taylor and Kate Grandison of SUU, and Mike Herder of BLM, installed two experimental water troughs at the Tuacahn Center for the Performing Arts in St. George. Infrared cameras were installed on the two troughs to document use by bats. Boards and wires were placed in the path of approaching bats and water levels were lowered over time to determine the effect on bats of various obstructions. A 10,000 ft² water pond was netted off to force bats to use the two new troughs. Video cameras recorded the number of successful watering passes to the total number of attempts by bats. Data is still being analyzed.

Infrared Detectors To Detect Bat Use in Mines

Joel Diamond, Utah State University

Joel Diamond (Utah State University) conducted research using infrared detectors from Trail Master to determine their ability to detect bat use and use type within mines over the long term. This is a means of conducting surveys for activity remotely as the units are left inside the mine and are downloaded regularly. He tried three different sets and two different types of detectors (active horizontally set within mine, active vertically set within mine, and passive covering entire opening). Preliminary results suggest that passive detectors (covering the entire portal) are unreliable and are unable to detect use and type. Active detectors are reliable in the vertical position (bisecting the mine from roof to floor) but may not detect all type of bat use within the mine. His thesis is nearly complete, and he hopes to have a paper in press within a year.

Mine Reclamation and Townsend's Big-eared Bat Maternity Colonies

Gabrielle Diamond, Utah State University

Gabrielle Diamond (Utah State University) conducted research of abandoned mine reclamation effects on Townsend's big-eared bat maternity colonies (primarily bat-compatible gate installation). Preliminary results suggest that there is about a 6-fold increase in circling after reclamation. Not all colonies respond the same to gating at least initially. Gates may in fact be buffering temperature and relative humidity fluctuations over the long term as differences are apparent between mines after reclamation (this is still being analyzed). She is still interpreting the results and hopes to have her thesis done by spring and to have a paper or two out within a year.

Winter Population, Movements, and Ecology of Townsend's Big-Eared Bats

Adam Kozlowski, Utah Division of Wildlife Resources and Mike Wolfe, Utah State University

Adam Kozlowski (Utah Division of Wildlife Resources) and Mike Wolfe (Utah State University) are investigating winter habits of Townsend's big-eared bats in abandoned mines in the Copper Mountain area of the Pilot Range of extreme northwestern Utah. Their goals are to determine the size of the wintering population in the area of study and in each of the surveyed mines, to quantify winter movement within and between mines, to define basic hibernation ecology and microsite selection preferences (if any), and to estimate winter survival. The possible "interim" use of mines in late fall and spring is of particular interest in their study. They are also interested in recreational disturbances of mines during winter and the potential need for protection of the mines.

WASHINGTON

Submitted by Gerald Hayes

A Preliminary Survey of Bat Species Composition and Distribution in San Juan National Historic Park, San Juan Island, Washington.

Roger G. Christophersen, North Cascades National Park Service

Preliminary investigations are being conducted in San Juan National Historic Park (SAJH), San Juan Island, Washington to determine bat species presence and distribution. Initial assessment began in March 2002 at the Crook House, a building currently listed on the National Historic Register. At the time, the structure was slated for structural and interior repair. It was known that bats previously inhabited the building, and it became apparent that information about species composition, abundance, and seasonal use was needed before construction efforts could begin.

A site visit during the late winter 2002 concluded this house was not used as a hibernaculum. An exit count in July 2002 revealed a minimum of 1,500 bats of at least two species: yuma myotis (*Myotis yumanensis*) and big brown bat (*Eptesicus fuscus*), the latter being less prevalent (30%). In 2005, acoustic recordings also revealed the presence of little brown (*Myotis lucifugus*) and silver haired bats (*Lasiurus noctivagans*).

The Crook House had many exit points for bats, and was identified as a maternity roost based on the presence of juveniles. Discussion on how to best accommodate the bats and still remodel the building resulted in an interim step of constructing approved bat houses; in June 2004, a multi-chamber nursery house was installed in the vicinity of the Crook House. It uses a back-to-back structure and accommodates several hundred bats. Monitoring efforts in 2005 revealed the bat box being used by ~136 *Myotis yumanensis*.

Additional inventory surveys are being conducted at SAJH. In July 2005, sites were sampled in both English and American Camps using Anabat detectors and mist nets. Mist netting revealed one new species, western long-eared bat (*Myotis evotis*), that had not previously been identified on federal lands of the island. There is presently some concern whether this individual bat may have been misidentified and could actually have been a Keen's myotis (*Myotis keenii*), given the similar characteristics and the fact that the location could be *Myotis keenii* coastal habitat. Additional surveys and DNA workup may be warranted to clearly make this determination. We hope to conduct additional inventory surveys and continue to monitor the Crook House maternity colony and the man-made bat box during the 2006 field season.

Role of Riparian Areas on Fringed Myotis (*Myotis thysanodes*) Roosting and Foraging in an Arid Landscape

Jeff Rosier (Graduate Research Assistant) and Dan Rosenberg (Principal Investigator), Utah State University, Dept. of Forest, Range, and Wildlife Science

In the summer of 2005 we conducted research on land managed by the Bureau of Land Management (BLM) and the Nature Conservancy (TNC) in Moses Coulee, central Washington. Moses Coulee is located (47° 35' N, 119° 45' W) approximately 172 km west of Spokane. The Moses Coulee Preserve, managed by the Nature Conservancy, supports one of the largest remnants of intact shrub-steppe habitat in Central Washington.

The objectives of this project are three-fold: to evaluate (1) the extent of foraging site selection of riparian habitat over shrub-steppe habitat by fringed myotis, (2) the intensity of use among riparian foraging sites to identify riparian site characteristics that most influence selection, and (3) the relationship between foraging site selection and the distance to roost sites. To address these objectives we used a combination of echolocation surveys and radio telemetry.

We conducted echolocation surveys using two methods: (1) comparing bat activity in riparian and non-riparian habitat (transect method), and (2) comparing bat activity among riparian sites (site comparison method). A total of 10 replicate echolocation surveys were completed for each method, at each of six sampling sites. We anticipate that these data will provide an index of bat use at isolated water sources in Moses Coulee. Insect trapping and habitat characterization surveys were conducted in conjunction with echolocation surveys to provide an index of prey abundance and changes in habitat characteristic throughout the field season. Surface water area, depth, pH, and electrical conductivity, were measured weekly throughout the field season while riparian vegetation surveys were completed at each sampling site once.

In addition to echolocation surveys, we attached radio transmitters to adult fringed myotis to identify foraging and roosting locations. Fourteen bats were radio tagged over a 2-month period. Roost sites were located daily and nightlong foraging telemetry observations were conducted on 28 nights throughout the field season. We found a total of 33 day-roost sites, all of which were located in rock crevices in basalt cliffs. We are currently in the process of reviewing and analyzing the data.

Preliminary Draft of Washington Bat Conservation Plan.

Gerry Hayes, Washington Department of Fish and Wildlife, Olympia, WA.

The first draft of the Washington Bat Conservation Plan was finished in late October. Copies were distributed to members of the State Bat Working Group, and other bat experts in academia and natural resource agencies in Washington and Oregon. Comments are due by December 14th after which comments will be reviewed and a series of workshops will be scheduled with the State Bat Working Group to finalize the document. Anticipated completion of the state plan is spring of 2006. Anyone interested in reviewing the document please contact me at (360) 902-2371 or hayesgeh@dfw.wa.gov. Copies are being distributed on CD.

Mine inventories on Kapowsin Tree Farm, Kapowsin, Pierce County, Washington

Michelle Tirhi, Washington Department of Fish and Wildlife, Olympia, WA.

Michelle Tirhi and trained volunteers perform external surveys of the 34 documented mines occurring on Rainier Timber Company LLC property. The Bats In Mines External Survey Form was used to evaluate each mine for bat use. Information to be collected included: 1) number, dimension, location, and description of all entrances; 2) airflow direction, if any, through entrances; 3) outside air temperature; 4) the presence of any restrictions at or near entrances; 5) the presence of standing water or evidence of prior flooding; 6) internal features that can be safely determined from outside, such as depth, side passages, ventilation shafts; and 7) visual signs of bats, such as droppings, roosting bats, carcasses, or piles of insect parts. The information is being used to determine the mines ability to support bats.

Maternity Colony of *Myotis yumanensis* Makes a Comeback.

Theresa Mathis, Bureau of Land Management, Spokane, WA.

Rock Creek Ranch is located in the core of Washington's Channeled Scablands and was acquired by the Bureau of Land Management in 1999. In August of that year, biologists Neal Hedges and Todd Thompson observed approximately 1000 bats in a swarming event at one of the barns. However, unauthorized visitor entry disturbed the bats and resulting in abandonment of the roost in 2000 and 2001. In 2002 the bats once again began using the barn as a maternity roost when an exit survey revealed approximately 150 adults and young were present. In the spring of 2003, windows and doors were secured to prevent unauthorized entry and prevent vandalism to the site. Additionally, two bat boxes were also installed within the barn to provide habitat

for expansion of the maternity colony. Exit counts conducted in 2003 revealed 1 bat March 2, 12 bats April 11, 468 bats on July 24 and no bats were observed on Sept. 19.

Volunteers coordinated by Jackie Olson, conducted exit counts and timing of exits during 2005. Their results show the colony has rebounded to its original size. Also interesting to note is the variation of exit length with peaks occurring several times throughout the maternity season. There doesn't appear to be a correlation between exit length and number of bats exiting. It is possible the reproductive state of the bats may explain the variation in exit length; however, further research needs to be done.

Protecting Bat Roosts in Mines

Theresa Mathis, Bureau of Land Management, Spokane, WA

Abandoned underground mines provide important roosting habitat for bats. However, they also provide hazards to an unwary public and many mines have been closed to protect the public. Recently, mines were closed by bulldozing them shut. This protected the public but it also reduced potential roosting habitat for bats. During the fall of 2005, using money received for a mining trespass, biologists and geologists with the Bureau of Land Management (BLM) identified and closed 13 mines with bat friendly gates that were used by bats in eastern Washington. Mines were examined separately to determine how best to close them to protect the public and yet continue to provide roosting habitat for bats. Culverts, with a gate in them, were used to close shafts (vertical opening) and adits (horizontal openings) at 6 of the mines. Sizes ranged from 36 to 48 inches in diameter and were between 15 and 21 feet long. Gates were installed in the culvert prior to placing the culvert in the adit or shaft. Dirt was filled in around the culvert.

Bat gates were used at 5 adits and were cut to size and welded on site. At one site, rather than installing a cupola over a deep adit, a chain link fence was built around the adit. This was done to prevent any inadvertent change to the temperature and wind flow regimen at that site, a known maternity roost for Townsend's big-eared bats. Through this project the BLM was able to protect habitat known to be used by several species of bats including *Corynorhinus townsendii* (Townsend's big-eared bat), *Myotis yumanensis* (yuma myotis), *Myotis californicus* (California myotis), *Myotis ciliolabrum* (western small-footed myotis), *Eptesicus fuscus*, *Myotis lucifugus* (little brown myotis), *Myotis volans* (long-legged myotis), *Myotis evotis* (long-eared myotis), and *Myotis thysanodes* (fringed myotis).

WYOMING

Submitted by Martin Grenier

Wyoming Bat Working Group Update

A Conservation Plan for Bats in Wyoming is now complete and available to all those interested. The plan provides relevant information on all bat species, habitats, and human conflict/safety issues that pertain to Wyoming. This document is intended to offer researchers and managers, conducting bat research, a technical framework to familiarize themselves with issues, needs, and concerns that pertain to WY. Please contact Martin Grenier @ 307-332-2688 or martin.grenier@wgf.state.wy.us for additional information, or to obtain a pdf version of the plan.

YUKON

Submitted by Thomas Jung

Bats of the Northern Boreal Forest: An Update

Thomas Jung, Yukon Department of Environment, Whitehorse, Yukon

As in the past season, our work in the Yukon this past field season was focused on three broad themes: 1). preliminary investigations into the life-history strategy of the little brown bat in the northern boreal forest, 2). examining the response of bats to natural and anthropogenic disturbances in the northern boreal forest, and 3). assessing the diversity and distribution of the bat fauna of the Yukon. Also, we worked hard this past year to raise public awareness and appreciation of bats in the north. Updates of two specific field projects are below.

Life-History Adaptations of the Little Brown Bat

How do bats under the Midnight Sun make a go of it? To begin to examine this question we regularly monitored maternity colonies and obtained data on breeding chronology, activity patterns, and diet. Analyses are pending, but a couple of interesting findings are apparent: a) bats arrive and depart from northern colonies following a chronology similar to populations further south, suggesting canalization of the chronology, despite a shorter season North of 60, and b) activity patterns of female little brown bats appear to be synchronized with the period of relative darkness; the implications being that, in the north, the most time-constrained period for foraging is congruent with the period of highest energy demand (late-gestation and lactation). The intent is to further this work in 2006, in cooperation with several other researchers, primarily the Barclay Lab at the University of Calgary.

Bat Activity in Burned Boreal Forest

Fire is one of the most pervasive agents of change in the boreal forest. Yet, the response of bats to changes created by fire is not known. I used AnaBat II detectors to monitor activity of little brown bats in a recent burn and adjacent mature, unburned forest. I found that little brown bat activity was about 3 times lower at upland sites in the burn compared to upland sites in unburned forest. Activity at lacustrine sites in the burn, however, was similar to that in unburned boreal forest. Regardless of whether the forest was burned, activity was much greater at lacustrine sites than upland sites. In addition, I examined the use of edges created by burns. Activity was 9 times greater at the burn-forest interface compared to at edges created by roads, but 3 times less than at lacustrine-forest edges. Subsequent investigations will examine patterns of use of burned forest in relation to fire intensity and time since the fire.

NEWS FROM BAT CONSERVATION INTERNATIONAL

Submitted by Dan Taylor

Wind Power

The Bats and Wind Energy Cooperative (BCI, the U.S. Fish and Wildlife Service, the U.S. Department of Energy, the American Wind Energy Association and two committees of international experts) is coordinating research, developing guidelines and searching for approaches that might reduce bat kills at wind power sites. The study is led by BCI Project Director Ed Arnett. Researchers are using many tools such as radar, acoustic monitoring, and thermal imaging to discover how bat kills might be prevented. A detailed summary of the bats and wind energy issue, project mission, partners, and 2004 research findings is available on BCI's web page at www.batcon.org, or <http://www.batcon.org/home/index.asp?idPage=55>

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Bats and Water (“Water for Wildlife”)

Few things are as vital to the survival of bats in the arid American West as water, and they increasingly rely on artificial water tanks established for livestock or wildlife. But because bats typically drink on the fly, swooping down onto standing water, they are highly vulnerable to barbed wire and other obstructions adjacent to or over stock tanks. Many bats have trouble when trying to drink from such tanks, and they often become trapped when water levels are low and escape ramps are lacking. BCI hopes to improve conditions for these bats through its Water for Wildlife program, launched with federal, state and private partners. The program last year evaluated almost 300 water tanks in Arizona, Idaho, New Mexico and Utah, gathering information on size, configuration, water level, obstacles and escape ramps. Project Director Dan Taylor and colleagues with the U.S. Natural Resources Conservation Service, Northern Arizona University and Southern Utah University found that less than 10 % of livestock water troughs had the required escape ramps, and almost 40% had significant obstructions to bat access. In addition, our research found that obstructions and low water levels cost bats 3 to 10 times the passes and energy necessary to drink over full, unobstructed water troughs. These findings are being compiled for a comprehensive handbook for range and wildlife managers on developing wildlife friendly livestock water facilities. The publication of the handbook is expected in early 2006, and will be followed by a series of trainings and workshops with livestock and wildlife professionals to help put the handbook recommendations into practice.

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Bats & Mines

Some highlights of BCI's Bats & Mines Project in 2004 included the implementation of a special mine-gating workshop at Mojave National Preserve in California, sponsored by BCI, the California Conservation Department, Army Corps of Engineers and National Park Service, and the installation of five gates at the Mammon Mine in Arizona, home to some 1,200 California leaf-nosed bats and several other species. BCI also partnered with the U.S. Bureau of Land Management and the California Conservation Department to gate the big Umberci Mine complex, home to California myotis and Townsend's big-eared bat. Additional accomplishments include collaborating with U.S. Borax, U.S. Fish and Wildlife Service, and Death Valley National Park to identify, prioritize, and protect important mines in the Furnace Creek region of Death Valley, collaborating with California Department of Conservation and Joshua Tree National Park to identify, prioritize, and protect important mines, working with the California Department of Conservation and the Bureau of Land Management to gate important mines in southern California, the Imperial National Wildlife Refuge to gate an important Yuma myotis maternity roost in Arizona, and collaborating with Dr. Rick Sherwin and Dr. Scott Altenbach to write a new bats and mines handbook, building upon the science and insights of the past decade.

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Borderlands

Dr. Arnulfo Moreno is the Borderlands Program Coordinator for BCI and is working to identify priority sites with bats in Northern Mexico and to collaborate with the land owners/managers to implement important conservation activities at given sites to help recover the colony or to protect the bats from threats to its long-term persistence. Activities include vegetation removal, education and awareness programs, closure of entrances that have created less than optimal conditions in the cave, etc. BCI is also conducting broad-scale bat conservation education and awareness programs targeting communities near known bat caves, management programs for land-owners and professionals, and programs for educators. An important tool to facilitate many of these efforts includes the distribution of BCI's new Spanish-language publication, Cave Bats of Northern Mexico. Among others, projects in the Borderlands Program include: Collaborating with Punto Verde, San Diego Museum of Natural History, Arizona Sonoran Desert Museum, Pronatura, and others to

implement various educational projects incorporating bat conservation, awareness, and management.

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Caves

Jim Kennedy and Merlin Tuttle are continuing work with numerous state and federal agencies and private landowners to monitor temperature and humidity at more than 40 caves – including 19 endangered Indiana bat (*Myotis sodalis*) hibernacula. Their findings are demonstrating that most of the Indiana bat's recorded decline is attributable to inappropriate temperatures in hibernation roosts, largely because of altered entrances and passages that affect airflow. A model for this approach is being developed at Saltpetre Cave in Kentucky. The cave, a major hibernaculum some 200 years ago, was largely abandoned by Indiana myotis because man-made changes raised temperatures. Work already has begun to re-establish previous conditions and monitor the predicted return of Indiana myotis. BCI also recently launched a pilot study to document the status of cave myotis (*Myotis velifer*), a once-abundant species throughout the southwestern United States and Mexico. Cave myotis seem to have suffered alarming declines, but studies have not been done to confirm that or identify real or potential threats.

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Bat Houses

BCI and its partners are developing new alternative roosts to meet the needs of bats displaced by the loss of old-growth trees that featured large hollows. Eighteen artificial tree roosts ("Concrete trees"), originally made with concrete culvert, and now with less-expensive cinder blocks, have been installed since August 2000 in Georgia, North Carolina, Mississippi, Kentucky and Texas. All 18 have been occupied by bats, mostly Rafinesque's big-eared bats, but also by four other species. The latest installation, at the Trinity River National Wildlife Refuge in Texas, was occupied within months of its construction. The project also remains committed to supporting traditional bat houses and increasing their success rates, as it has for more than a decade through bat-house monitoring and reporting by thousands of bat-house owners around the world. The project is also moving aggressively in new directions to increase the number of bat species that can find homes in artificial roosts.

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Education

BCI's education programs continue to develop, refine, and make available educational information on every aspect of bat conservation, biology, and research, including public health information, teacher's curricula, audio visual and other multi-media educational materials, and educator's and conservation workshops. BCI's Bat Conservation and Management Workshops have provided training to hundreds of wildlife biologists, educators, and other serious students of bat conservation. Through hands-on experience, participants learn bat conservation and research techniques including netting, trapping, radio tracking, night-vision observation, and habitat assessment. North American venues for 2006: Arizona, June 12-17 and 17-22, Pennsylvania, August 7-12, and Kentucky, August 16-21. In 2006 BCI will also be holding an Acoustic Monitoring Workshop at the Southwest Research Station location in Portal, Arizona, June 17-22. This workshop is designed to give bat-detector owners hands-on experience with the equipment and guided practice sessions in the field to make their own recordings and analysis. The courses are taught by leading experts in the field of acoustic monitoring who have extensive practical knowledge with the use and capabilities of various systems (including Anabat and Pettersson) under field conditions. More information on these workshops and BCI's education programs and materials are available on the BCI web site, www.batcon.org.

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OTHER WBWG NEWS

Letters Go Out to States, Provinces and Territories

Submitted by Toni Piaggio

As the newly elected board we wanted to reach out and contact our membership in a meaningful and constructive way. We made this decision at a time when our membership states let us know that they could use our help and support in getting their Comprehensive Wildlife Conservation Strategies (CWCS) completed with the inclusion of bat species. Our state and provincial membership also expressed a strong desire to have our help to initiate or complete each states Bat Conservation Plan.

For those of you who have not been exposed to a CWCS, let me explain. Each state was required to complete a CWCS for the U.S. Federal Government and these CWCS documents would help drive how State Wildlife Grants would be distributed and what species would be targeted. Therefore, getting bat species into these strategies was quite important for targeting funds for bat work in the near future. Our hope was that for the states that had a Bat Conservation Plan in place that their CWCS could be tiered directly to the bat plan and therefore really highlight bat species, habitat, and research needs in detail. For those states and provinces that did not yet have a Bat Conservation Plan we hoped to facilitate initiating and completing one so that when any funding came through CWCS, it would be easy to target bat needs.

With all of these issues on the table we decided that we could accomplish our goals by sending a letter to the head of each member state (14) and provincial (4) wildlife agency, the lead biologist, and anyone else identified by our state/provincial representative as an appropriate contact. Each letter was individually tailored to each state or province and this was done through tight collaboration with each state/provincial representative. Key points included in each letter were as follows:

- Who and what the WBWG is comprised of and how we are structured, including our relationship to NABCP (North American Bat Conservation Partnership) and subsequently IAFWA (International Association of Fish and Wildlife Agencies).
- A request or thank you (as appropriate) for including bat species in the state CWCS.
- A request or thank you (as appropriate) for providing a state/provincial representative to the WBWG.
- A request or thank you (as appropriate) for the initiation or completion of a state/provincial Bat Conservation Plan.
- Acknowledgement of our state/provincial reps and their work in the relevant state/province.
- An invitation to contact us for any resources required for including bat species in a CWCS or initiating/completing a state/provincial Bat Conservation Plan.

Pat Ormsbee, Tim Snow and Toni Piaggio began the process of writing these letters and coordinating with state/provincial reps in May 2005, the last letter was sent out as of October 2005. It took us longer (of course) than we hoped, but we have had some really good responses and actions as a result of this effort:

We have a new state representative in North Dakota, where we had not previously had representation.

We got a letter of acknowledgement back from the Territory of Saskatchewan. We have several states who have completed their state Bat Conservation Plan and several who have drafted one in this time period.

We want to thank each one of our state and provincial reps because they each helped make it possible for us to tailor these letters to each and every state/province. Without this it would have simply been a form letter and not addressed the specific issues surrounding bat conservation plans/strategies in each state/province.

THE BAT BULLETIN BOARD

Radio transmitters for sale: (11) new, Blackburn 0.27 g transmitters, built spring 2005, 150 MHz frequency range. \$65/tag plus shipping and handling. Also, (28) unused, HSL LB-2N 0.35-0.42 g transmitters, built spring 2004, freq range 164-165. Price negotiable. Contact Jeff Rosier at j_rosier@hotmail.com or leave message at 435 753-1785.

2006 BCI Student Research Scholarship Program

Bat Conservation International's Scholarship Program supports student research anywhere in the world that adds new knowledge and is relevant to bat conservation. The goal is to help nurture a new generation of bat science and conservation leaders. For 2006 awards have been increased to a maximum of **\$5,000** and normally are used to leverage matching funds from other sources. Scholarship applications are reviewed and ranked by some of the world's most respected bat researchers and must be complete, well-planned and clearly related to bat conservation. For more information visit BCI's website: <http://www.batcon.org/schol/schol.html> or contact Andy Moore amoore@batcon.org, or 512-327-9721. Deadline for applications is **December 15, 2005**.

Water Trough Information Needed! Bat Conservation International is seeking measurements and descriptions for livestock water tanks across North America to assess their potential for bat use and risk of mortality. If you own or live near a stock water tank, could you please take a few minutes to measure it. The information needed is listed on the online form available at: www.batcon.org (click on Conservation Programs, Water for Life, then "Participate"). For Canadians filling in the form online there is no place to enter Province or Territory, so simply leave that blank and include it into another entry such as Notes or Range/Management Unit. Alternative to online submission, you can print and fax the form to 619-280-0202 or mail to Dan Taylor, BCI, 4251-46th St, San Diego, CA 92115. Word document forms are available that can be filled in as an email attachment from Dan Taylor at dtaylor@batcon.org or your WBWG representative. BCI is eager to get a wide-spread sampling of troughs; your help is greatly appreciated!

Old Mist Nets Wanted! Do you have old mistnets you no longer use because of too many holes? Nets are always useful in Mexico...mistnets with holes are better than no mistnets at all. Please contact Arnulfo Moreno at leptonyceteris2000@yahoo.com.mx.

Band Returns Wanted! Little Brown Bats from the Yukon, Thomas Jung, Yukon Department of Environment, Whitehorse, Yukon

Brian Slough and I have been banding little brown bats in the Yukon for several years; hundreds have been banded thus far. Among other questions, we are interested in where bats summering in the Yukon hibernate; we suspect it's not in the Yukon. Bats we've banded have either red or gold alloy lipped-bands (Lambournes, UK) punched with UAF and 4 numbers (e.g. UAF 2953) or silver alloy bands (Geys, Pennsylvania, USA) punched with YTG and 3 numbers (e.g. YTG 078). Please contact me (thomas.jung@gov.yk.ca) should you encounter a bat banded in the Yukon.

Honduras Volunteer Opportunity! Operation Wallacea is currently accepting applications from enthusiastic and experienced bat scientists to join their survey teams in Parque Nacional Cusuco, northern Honduras for their 2006 field season. Required: extensive bat mist netting experience within a forest habitat (preferably within the Neotropics); evidence of leadership skills; ability to work in remote areas as part of a small friendly team. Desirable: experience in a developing country; knowledge of Spanish. Food and accommodation in country are covered. Full Position 27 June - 8 September, or part positions: 27 June - 9 August or 25 July - 8 September. Applications: info@opwall.com. Enclose 1 to 2-page CV + covering. Put 'Bat Scientist - Cusuco Forest' in the email subject field.

Closing date: **23rd December 2005**. See <http://www.opwall.com/> for details.

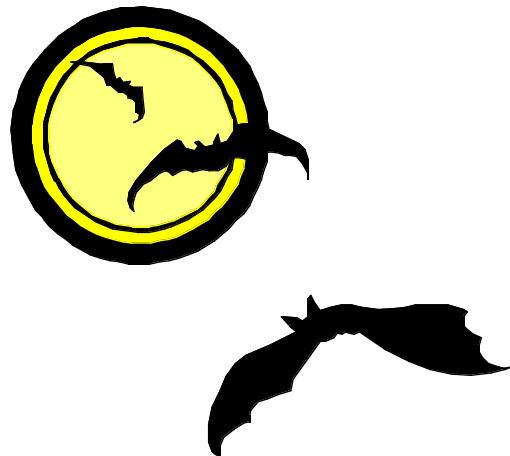
Graduate Research Assistantship (GRA) in Northern Arizona. The School of Forestry at Northern Arizona University will fund a Masters-level graduate assistantship starting in July 1, 2006 (or as early as May). This 2-year project has the objectives of describing bat communities in the wildland urban interface around Flagstaff Arizona and assessing the impacts of forest restoration treatments on bats.

The ideal candidate will have:

- excellent bat identification skills for the 28 species of bats that occur in Arizona
- experience or familiarity sampling bats including mist netting, radio telemetry, use of Anabat detectors
- experience or familiarity sampling vegetation and habitat elements
- experience or familiarity sampling bat prey (for example, insect sampling using light traps)
- rabies pre-exposure shots and titer check
- demonstrated quantitative, verbal, and writing skills
- ability to maintain consistent focus on detail-intensive tasks
- ability to work well with other field crew members
- ability to conduct field work on rough terrain during inclement weather
- ability to drive 4WD vehicles in a safe and careful manner

This GRA is funded at \$14,708 per year. Health insurance is provided as an additional benefit.

For additional information contact Dr. Carol Chambers: Telephone 928/523-0014 or E-mail: Carol.Chambers@nau.edu



UPCOMING EVENTS...

14th International Bat Research Conference, Merida, Yucatan, Mexico, Late August 2007. This conference will be co-hosted by NASBR. For more information: 14ibr@ecologia.unam.mx or check <http://www.nasbr.org/>.

Bat Conservation and Management Workshops: Arizona June 12-17 and June 17-22, 2006; Pennsylvania August 7-12, 2006; Kentucky August 16-21, 2006. For information and applications, visit <http://www.batcon.org/> or contact Kari Gaukler, Bat Conservation International, PO Box 162603, Austin, TX 78716, 512-327-9721; kgaukler@batcon.org

Idaho Bat Working Group will meet 6 March 2006 in Boise in conjunction with the joint meetings of the Idaho Chapter of the Wildlife Society, the Northwest Section of The Wildlife Society, and the Northwest Scientific Association. The agenda for the meeting will be posted on the Idaho Chapter TWS website sometime in February 2006 (<http://www.ictws.org/>).

Conference Announcement: Windpower and Wildlife in Colorado. January 23-25, 2006. Ramada Inn, Fort Collins, CO. In conjunction with the Colorado Chapter of TWS.
Symposium Goals: To make available up-to-date information about the effects of windpower development on wildlife and ways to minimize impacts in Colorado; To make available information about applicable laws, regulations and guidance associated with windpower and wildlife in Colorado; To foster an open dialogue between the wildlife conservation community and the wind industry in Colorado.
For More Information contact David Klute, Bird Conservation Coordinator, Colorado Division of Wildlife (303) 291-7320; david.klute@state.co.us; or visit the website for Colorado TWS: <http://www.wildlife.org/chapters/co>.

Wind Turbines and Bats Symposium - tentatively scheduled as part of the Alberta Chapter of The Wildlife Society Conference (in conjunction with the Alberta Bat Action Team). 9 - 11 March 2006 at Lethbridge, Alberta. Keep checking <http://www.albertadirectory.net/actws/> for details.

36th Annual North American Bat Symposium, 17-21 October 2006. The original venue for this conference has recently changed. It will now be in Wilmington, North Carolina, hosted by Mary Kay Clark. See <http://www.nasbr.org/> for details.

