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WBWG News Western Bat Working Group Newsletter

Bat Working Group Western

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WBWG NEWS

Volume 2, Issue 1

April 2006

Field Season Is Coming! Are You Ready?



Photos © Kristi DuBois



Western Bat Working Group



Western Bat Working Group

NEWSLETTER

Volume 2, Issue 1

April 2006

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PRESIDENT'S CORNER

I always feel a little like I'm coming out of hibernation myself this time of year. I imagine we're all at varying stages of launching another field season. Even those of you who focus on winter work must certainly sense the increased energy of bats and bat biologists that unfolds this time of year. There are bat blitzes, graduate students, bat-sniffing dogs, acoustic detectors, radio transmitters, mist nets, hand-nets, and cameras poised across all of western North America to document some aspect of bat activity during our relatively brief interlude with summer. I wonder just how many miles of mist net will be set up across western NA this summer. Despite our valiant efforts, the majority of our targeted quarry will elude us or not even know we're there.

It's important to me to accept this inevitable failure as part of preparing for field season - it keeps me humble, and I have long felt that humility is key to conducting credible science or conservation projects. This sense of humility brings me back to a checklist of fundamental pre-season questions that I want to share with you:

- How will my data or project contribute to our understanding of bat ecology or behavior, or further bat conservation?
- What are my objectives and is the work efficiently responsive to those objectives?
- Do I have a solid study plan, with an appropriate sampling design, field methods, and data analysis identified? For conducting surveys, do I have a sampling design and a clear survey protocol? And for construction or educational programs, do I have a construction design or lesson plan? Did I pull these documents together based on a review of the literature, expert input, or other credible resources?
- Have I invited a critical review of my proposed work by others who are qualified to provide insight that could improve the effectiveness of my work?
- Do I have the skills and knowledge to effectively conduct my fieldwork?
- Have I addressed safety issues relevant to my fieldwork?
- Where will the submission of my data or project do the most good for bats?

It is my hope that each of us can answer these pre-season questions positively and confidently. If you lack an enthusiastic and solid response when asking "so what?" of your project's outputs, perhaps it still needs a little work.

Setting clear and concise objectives is essential to staying on task and accomplishing what we set out to achieve.

Having a credible, detailed plan of work or study can improve our efficiency, increase the effectiveness of our data or project, provide consistent standards for performance or data collection, and serve as a future reference for others who may want to repeat our efforts.

We are fortunate to have such a wealth of experienced bat enthusiasts and experts in western North America. Asking for their review and input on our studies and projects allows us to build on their experiences and successes and avoid mistakes they've learned.

Acquiring skills and knowledge are essential when working with bats. This is especially important when bats are captured or disturbed, or when human safety is of particular concern. There is a steep learning curve when working with bats and it can take several field seasons to become proficient. If you are a novice and lack com-

petent skills and knowledge for working with bats, please make sure that you have appropriate guidance and oversight until you become skilled enough to work independently.

There are many aspects of the fieldwork we do that warrant safety considerations - night work and sleep deprivation alone can be a dangerous combination. Developing a safety plan that includes safety issues, accident prevention, and emergency procedures and reviewing it with all project personnel is essential to avoid mishaps that can be costly and traumatic to individuals and our projects.

Sharing the highlights and results of our work via publications, newspaper articles, or presentations allows others to benefit from our experience and efforts. Making sure our data is available to others, as opposed to having it sit in a drawer or file, can expand the value and application of our data.

If your project or study lacks these fundamental components, please ask for assistance. The Western Bat Working Group is comprised of a network of individuals committed to credible science and conservation. We have members who are experienced with a myriad of bat-related issues such as mine and cave management, appropriate methods for conducting field surveys, and monitoring wind energy facilities.

You can contact your State or Provincial Representative or one of the WBWG Officers (see "Who's Who in the WBWG" in this newsletter) who can assist you to find the right person in your area to help with the development of your project. Also, you can contact a member of our research committee (Toni Piaggio, Ted Weller, Mike Herder, Alice Chung-MacCubrey, and Cori Lausen) and they can help you find the resources you need for field studies. Deborah Crough is available to help you find resources for developing educational programs on bats. As we conduct our fieldwork this summer, I want all of us to feel confident that we have the resources we need to insure safe, quality work and credible science, that we are connected with others who are doing similar work, and that we feel supported by our peers.

So this summer do me a favor, look up at the night sky and visualize our network of bat enthusiasts and specialists dotted across the vastness of western North America, in some ways similar to the pattern of constellations. Take a few minutes to imagine who is where and what they are doing. Acknowledge the strength, support, and talents of our network and remember that you too are one of the contributing stars to our exceptional constellation of enthusiasts and professionals.

Have a safe, productive, and fun field season.

Respectfully - Pat

HEADLINERS

Compiled by Pat Ormsbee

New Representation: Since the last newsletter, we have had a few changes/additions to our state/provincial representation: **Joanna Wilson** from the Government of the Northwest Territories, **Heather Johnson** from California, **Derek Hall** from Nevada, **Trish Griffin** from New Mexico, and **Marylou Schnoes** from Oregon - welcome to the WBWG. Also, our sister organization, the **Southeastern Biology Bat Diversity Network**, has established a Southeastern Bat Conservation Director, a 3 year paid position. **Mary Kay Clark** has accepted this position and we look forward to coordinating with Mary Kay.

Some bat work this summer will be going to the dogs. **Alice Chung-MacCoubrey** will be testing the use of dogs to sniff out roost trees used by bats. If you visit Alice this summer, be sure to take some dog treats.

Wind Power protocols: **Ed Arnett** (BCI) and **Robert Barclay** (Univ. of Calgary) joined the WBWG April conference call to bring us up to date on pre- and post-construction survey protocols for wind energy sites. See the notes from the call for details and our website for related documents that Ed and Robert passed on for our use. In response to the wind energy and bats issue, the WBWG has initiated a sub-committee; see "Other WBWG News" for more details.

Position Statement: **Pat Ormsbee** is drafting a WBWG Position Statement on the importance of pre-exposure rabies vaccinations and maintaining protective tiers when working with bats. The draft will be reviewed by and submitted for approval to The Board of Directors over the next few weeks.

North American Symposium on Bat Research (NASBR): Mark your calendars, the annual NASBR will be held in **Wilmington N.C. Oct.18-21, 2006**. For more information check their website: <http://www.nasbr.org/>

The WBWG Conference 2007 is set for Tucson, AZ. **Angie McIntire** is taking the lead to put together our conference for Spring 2007. Stayed tuned for more details.

Special Thanks: To **Mike Bogan** and **Burr Betts** for working with the WBWG Research Committee to ensure scientific input and review of select materials. Also to **Paul Cryan** and **Tom O'Shea** for providing review and input on the draft WBWG position statement concerning the importance of pre-exposure rabies vaccinations and protective titers for individuals working with bats.

ABOUT THIS NEWSLETTER

We realize that with the first newsletter having come out not that long ago, some states/provinces did not have a lot to add to this issue. We look forward to hearing from you in the fall if you didn't get a chance to submit this round. The .pdf of this newsletter is available online at <http://www.wbwg.org/>, or from your state/provincial representative; to receive notification each time a new issue is posted, please join the Listserv (instructions on home page). 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 directly to corilausen@netidea.com. We accept submissions at any time of the year! Thanks for making this networking opportunity possible, and have a great summer.

Cori Lausen and Kristi DuBois, Newsletter Editors

STATE/PROVINCE UPDATES

ALASKA

Submitted by Carrie Talus, University of Alaska Southeast

Long-Term Remote 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 developing an acoustic bat sensor that is specifically designed for long-term acoustic monitoring of bats. This sensor system uses a lower power computer, and will be designed to continuously monitor bat activity from remote locations. The software is designed to recognize bat signals and automatically identify and eliminate background noise. During the 2005 summer season, the first prototype of the system was tested during three weeks of field work from 8 nights of recordings at 5 different locations on Prince of Wales (POW) Island in Southeast Alaska. The recordings collected during the 2005 field season were analyzed using Raven, a sound analysis software application developed by the Cornell Bioacoustics Research Program, in order to validate the system software and identify needed improvements. During the 2005/2006 winter, 35.5 hours of audio data have been analyzed in order to check and improve the software's ability to discriminate between bat signals and noise. Field research will again take place on Prince of Wales during the summer of 2006. The objectives of this second summer of data collection include 1.) Continuing to locate sites on POW where bats are located and to gather preliminary information on bat distribution, and 2.) Test the equipment by recording continuously for a week or longer if possible. If possible, one system will be left in the field to continue recording over the winter. The remaining development issues are reliability and use-friendly interface development. This project is funded by the Alaska Department of Fish and Game. More information can be found at <http://alaskabats.org/>.

ALBERTA

Submitted by Cori Lausen

Alberta Bat Action Team Produces Pre-construction Survey Protocol for Wind Energy Developments and Changes Provincial Status for Migratory Bats

In response to a request from the Alberta Government for a protocol to include as part of their "Wildlife Guidelines for Alberta Wind Energy Projects" document, the Alberta Bat Action Team, spearheaded by some members of the University of Calgary Bat Lab (Robert Barclay, Cori Lausen, Erin Baerwald, Jeff Gruver), drafted a pre-siting and pre-construction survey protocol for bats at proposed wind farms (soon to be available as a .pdf download from <http://www.srd.gov.ab.ca/fw/bats/ABAT.html>). This protocol is written as an appendix to the "Handbook of Inventory Methods and Standard Protocols for Surveying Bats in Alberta", the updated version also soon to be posted on the ABAT website. The wind energy protocol describes and recommends survey techniques for wind farms proposed in Alberta, and as such is somewhat tailored for the southern Alberta prairie landscape, where most wind energy developments are proposed. Current proposed wind farms are small, and the protocol guidelines reflect this, making it less suitable for large-scale wind energy proposals. ABAT has produced this protocol with the proviso that it is a "living document", allowing for frequent revisions as new data are gathered. Future revisions include making the protocol more applicable to larger wind farm proposals once more data on migratory bat patterns are gathered. Erin Baerwald of the University of

Calgary begins an MSc in southern Alberta this summer investigating the patterns of bat movement and mortality in relation to wind farm conditions and features, and it is expected that by fall her new data may warrant protocol revisions. ABAT has also been asked to produce post-construction monitoring guidelines, but this document has not yet been addressed by the group. Because the WBWG is in the process of forming a sub-committee that may review existing protocols, ABAT anticipates being able to adapt recommendations coming out of this sub-committee for the Alberta situation.

In response to the increasing wind energy developments in Alberta, Dr. Robert Barclay, on behalf of ABAT, submitted a letter to the Alberta Government, requesting that the status of migratory bats be changed to “sensitive”. See Robin Gutsell’s summary below for details regarding this ABAT request.

Changes in the Status of Migratory Bats in Alberta
Robin Gutsell, Alberta Sustainable Resource Development
Fish and Wildlife Division

At their November 2005 meeting, the Alberta Bat Action Team discussed the status of migratory bats in Alberta, with particular regard to 1) increased evidence that red bats are more common in the province than previously thought; and 2) the potential threat to all migratory bats from wind energy development. The group made a recommendation to the Alberta Fish and Wildlife Division that the eastern red bat should be added to the list of species in the province. Further, ABAT recommended that, along with silver-haired and hoary bats, red bats should be moved into the “sensitive” category in the upcoming *General Status of Alberta Wild Species: 2005* in view of the potential for high mortalities of migratory bats at wind energy sites. Previously, silver-haired and hoary bats were considered “Secure”, and red bats were considered “Accidental/Vagrant.”

This status change should enable government, land managers and industry to better highlight the issue of bat mortality around wind energy developments. The “Sensitive” category is considered a prevention category in Alberta, and is defined as *any species that is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk*. Sensitive species are given emphasis in environmental assessments, industrial guidelines, biological inventories and management planning. It is the hope of ABAT that this move will help focus attention on the potential conservation issues that have been raised by the high mortalities of migratory bats at wind energy developments in some parts of North America.

Bats of Alberta Poster
Submitted by Cori Lausen

The Alberta Conservation Association spearheaded the production of a “Bats of Alberta” poster. The poster committee consisted of representatives from Alberta Bat Action Team and Alberta Sustainable Resource Development. Pictures were provided by Merlin Tuttle of Bat Conservation International. The poster is currently being printed and will be available in the near future free of charge from SRD Information Centre (Main Floor, 9920-108 Street, Edmonton, AB T5K 2M4 / Ph: (780) 422-2110 Fax: (780) 427-4407). The Information Centre will ship these posters free of charge anywhere in the world. The poster will be available to view and order online at <http://www3.gov.ab.ca/srd/info> in the near future.

Research at the University of Calgary

Evaporative Water Loss in Prairie Bats. Jeff Gruver. This spring I will be heading back to Drumheller, Alberta to begin my third field season of work investigating the interplay between the roosting environments of bats (especially reproductive females) and their need to balance daily energy and water budgets. Following

up on the previous two year's work, I will be measuring physiological responses of *Myotis evotis* and *M. ciliolabrum* in the lab and of *M. evotis* in the field to determine if evaporative water loss influences roost selection in dry southeastern Alberta.

Preliminary results indicate that at a given ambient temperature and humidity, females lose significantly more water than males, and provide support for my hypothesis regarding the importance of water balance. Work during summer 2006 will focus on refining models of water loss at various levels of ambient temperature and humidity, and investigating differences in roosting conditions that influence water conservation.

The Effects of Urbanization on Prairie Bats. Joanna Coleman. I will be studying the urban ecology of bats. Although few studies have looked at how bats are affected by urbanization, the general view is that they decline in diversity and abundance and that rarer species disappear. However, at least a few species, including *Eptesicus fuscus* and *Myotis lucifugus* are commonly found in many North American cities, where they may be very successful. My study system will be communities of bats inside and outside the city of Calgary, Alberta. Five species (*E. fuscus*, *Lasiurus cinereus*, *Lasionycteris noctivagans*, *M. evotis* and *M. lucifugus*) are known to occur in the same geographic area as Calgary, and my objectives include determining whether these are found in equal numbers in and outside the city. I will also assess some of the underlying factors, i.e., availability of roosts and prey that are likely to impact the diversity of bats in urban and rural areas.

More Winter Bat Activity. Cori Lausen. This past winter I again monitored Dinosaur Provincial Park and East Coulee, Alberta, two riparian locations in the Alberta prairies that had substantial bat activity throughout last winter. Bats were again active at both locations, with *Myotis spp.* (mainly *M. ciliolabrum* and *M. evotis*) and *Eptesicus fuscus* flying throughout the winter. The coldest bat passes I detected this year were -7.3°C for *Myotis* (mainly *M. ciliolabrum* and *M. evotis*) and -7.9°C for *E. fuscus*. I monitored a third Red Deer River location this past winter — Dry Island Buffalo Jump Provincial Park. All three monitored locations have extensive badlands features, but Dry Island Park is furthest north, featuring spruce trees. Both *Myotis* and *E. fuscus* were active in this park each month this past winter, providing evidence that this area is also important for hibernation of prairie bats in Alberta. I look forward to seeing the acoustic results from Dry Island Park this spring, because given the presence of evergreen trees in this north-south river corridor, it may be an important migratory route for hoaries, silver-haireds and eastern red bats as they “magically” appear in northern Alberta from the U.S., seemingly by-passing the southern Alberta prairies. Results of my hibernation work from 2004-5 should be appearing in Canadian Journal of Zoology in the near future.

Bats and the Midnight Sun. Jennifer Talerico, another new student in Robert Barclay's lab, is starting her MSc. research this summer in Watson Lake, Yukon. For a full description of her project, see the Yukon Update.

Wind Energy Development and Bats. Erin Baerwald, a new student in Robert Barclay's lab will be starting a MSc. project this summer in southwestern Alberta looking at bat mortality and movement patterns in relation to wind turbines.

ARIZONA

Submitted by Angie McIntire

Arizona Game and Fish Department Bat House Projects Nancy Renison, Arizona Game and Fish Department (AGFD)

Maricopa County Flood Control Building (MCFDX): Mexican free-tail bats (*Tadarida brasiliensis*) are regular winter visitors to the MCFDX building in Phoenix. Over 400 free tailed bats were allowed to use the crevices between brick layers in a parapet wall until they strayed into the office areas of the building. AGFD bat biologists and volunteers were called upon to assess the entry points, devise a method to exclude the intruders, and to install alternate artificial roosts. AGFD in collaboration with Maricopa County administration and roofing contractors, successfully installed two belfry tube bat abodes from the parapet, and then excluded the migrants from the wall on March 13, 2006.



MCFDX Wall Occupants



MCFDX Belfry Abode

Desert Botanical Garden (DBG) Experimental Bat Homes: DBG administrators have agreed to install four different belfry bat abodes in the garden. In April 2006, two experimental abodes will be installed on a north-facing wall of DBG's new Learning Center and the other abodes will be mounted on steel poles near the Australia Outback pond. AGFD will monitor the artificial roosts for bat use and log temperature regimes in the belfry abodes. The abodes will have varying configurations for comparison including wall-mount belfry with and without sand insulation, and pole-mount belfries with and without additional reflective roofing.



DBG Learning Center



Australia Outback Pond

Hualapai Indian Boarding School: The Hualapai Indian Tribe (Tribe) is working with AGFD, Bat Conservation International, and the Lower Colorado River RC&D to develop artificial roosts for Townsend's big-eared (*Corynorhinus townsendii*) and various myotis bat species that occupy a vacant Indian boarding school. The Tribe plans to restore the historical structure as a museum and the process will exclude about 500 bats from their current summer residence. The Tribe has agreed to install two belfry tubes for the myotis species and to erect a cinder block tower for the big-eared bats.



Indian Boarding School



Townsend Bat Residents

Arizona Game and Fish Department Bat Conservation Grants

Angie McIntire, Arizona Game and Fish Department (AGFD)

AGFD is accepting grant proposals for bat conservation projects. Proposals must address specific objectives in the Arizona Bat Conservation Strategic Plan, and must benefit bats in Arizona. Proposals that promote broad project participation and foster collaborative efforts among diverse stakeholders in the conservation community are preferred. More than \$600,000 in bat conservation work has been undertaken since the inception of the bat grants program in 2003. Grant proposals are due May 26, 2006. Contact Angie for details (amcintire@azgfd.gov).

Understanding the Fall Migration of the Endangered Lesser Long-Nosed Bat (*Leptonycteris curasoae*) — An Extension of the Arizona-Sonora Desert Museum's Migratory Pollinator Program (2-year project)

Karen Krebs, Arizona-Sonora Desert Museum (ASDM).

Funded by AGFD, National Park Service, American Zoo & Aquarium Association Bat Taxon Advisory Group, and ASDM. We completed year two for this project and the entire report (2004-2005) will be bound and made available to everyone involved with the project. Over the two years, we handled 206 *L. curasoae* and marked 106 of these bats with either microchips or radio transmitters. We also collected DNA from 141 bats in the form of cheek or mouth samples. DNA samples were turned over to Dr. Melanie Culver at the University of Arizona. All bats were marked in southwestern Arizona (at 2 maternity roosts) in late July and early August of each year. We located 3 of the marked bats (2 adult and 1 sub-adult females) in mid and late August near the Patagonia, Mustang, and Whetstone Mountains in southeast Arizona for the 2-year study. We also tested a new passive transponder antenna design (Biomark, Inc.) for detecting the microchips at one of the maternity roosts.

Bat Species Richness & Abundance at the Chiricahua National Monument & Fort Bowie National Historic Site (10-year project)

Karen Krebs ASDM

Funded by the National Park Service, IMRICO, and ASDM. We completed the 6th year (Chiricahua National Monument) and 5th year (Fort Bowie National Historic Site) for the on-going 10-year inventory and monitoring project. Fieldwork was carried out in May, June, and August of 2005. We netted a total of 198 bats (15 species) for the 2 parks. At Fort Bowie National Historic Site we captured 2 new species (*Leptonycteris curasoae* and *Corynorhinus townsendii*) for our netting site and study. We also provided training and funds for bat netting equipment for a Biologist from the El Pinacate Biosphere Reserve during our 2005 fieldwork.

Bat House Use at the Arizona-Sonora Desert Museum in Tucson, Arizona

Karen Krebs, ASDM

Funded by the Wallace Research Foundation, Bat Conservation International, American Zoo & Aquarium Association Bat Taxon Advisory Group, and the ASDM. In February and March 2002, we installed thirty-three bat houses that varied in design, size, and color at different locations around the grounds of the Desert Museum. Bats began utilizing the houses in May 2002 and since this time more than 20 of the houses have been occupied by 3 species of bats (*Eptesicus fuscus*, *Myotis velifer*, *Tadarida brasiliensis*). All three of these species have utilized a few of the houses as maternity roosts. At this time, *Tadarida brasiliensis* is the predominant species utilizing the houses. In the past, desert spiny lizards have harassed the bats (and eaten some of the young) but it now appears that a ringtail has taken over that duty. Additional suggestions for predator proofing the bat houses would be appreciated!

BRITISH COLUMBIA

Protecting Threatened Pallid bats (*Antrozous pallidus*) in the Okanagan Valley, British Columbia

Daniela A. Rambaldini and the Nk'Mip (Osoyoos) Indian Band
Oliver, British Columbia

In 2005, our Pallid bat research once again focused on the Nk'Mip (Osoyoos) Indian Reserve, however 2 sites in Washington State were also visited. The focus of our research was quantification of habitat use for foraging - specifically, we wanted to determine to what extent Pallid bats foraged in vineyards compared to native habitat. By understanding how this species is adapting to the changing landscape, effective land management policies can be implemented. Our field work also included some of the "usual" bat field work protocols - mist netting, banding, radio tracking, and taking lots of pictures!!

Over the summer, 5 adult males and 1 lactating female were captured and all but 2 males were radio tagged with temperature-sensitive transmitters. Emergence surveys conducted at known colony roosts yielded slightly lower occupancy rates compared to previous years. Effects of ambient temperature and precipitation on roost emergence were not statistically significant. Radio tagged bats showed fidelity to roosting areas (5 new roosts were found) and foraged within 1.5 km of their day roost, albeit not all roost and foraging areas were found. Compared to tagged males, the female maintained higher daytime skin temperatures during the tracking period. A maternity roost was located in a cliff rock crevice, and a single untagged Pallid bat was discovered night roosting under an open girder concrete highway bridge; these are the first such roosting records for Pallid bats in Canada. Night vision surveys indicated that foraging activity in native habitat exceeded (by up to 50%) that in vineyards. Foraging behaviour and habitat use were not significantly affected by environmental conditions.

However, more bats were observed on warmer nights. Pitfall traps were constructed to assess arthropod composition in native habitat and vineyards; specimens from native habitat were larger, more taxonomically diverse, and more likely to be taken as prey (based on published literature for Pallid bat diet composition) than specimens collected in adjacent vineyards. Faecal analysis indicated that BC Pallid bats ate mostly Scarab beetles (Coleoptera: Scarabaeidae), whereas WA bats ate mostly Jerusalem crickets (Orthoptera: *Stenopelmatus* spp.) and had a more diverse diet than BC bats.

One objective - identifying colonies outside the current range - was not attempted due to time and labour constraints. Despite efforts, a hibernaculum was not found. The research team also presented several bat talks for local school and conservation centre education programs, outreach initiatives, and community events.

It is extremely important to continue Pallid bat research and public education. Future work will involve: surveying outside the delineated BC distribution; maintaining an updated census by surveying roosts, capturing bats, monitoring health of recaptures, and collecting tissue (DNA) samples; locating more maternity roosts and a hibernaculum; continue characterizing habitat use to assess seasonal trends, and include alternate locations and additional colonies, including maternity colonies; and addressing potential threats to population persistence (e.g., pesticide contamination). If you're interested, you can visit <http://www.zooaction.ca> (click on "Species at Risk") for more information (and some photos!) or check out the Western Bat Working Group website to download a full, detailed report.

Best of luck to everyone for the upcoming bat field season!!

CALIFORNIA

Submitted by Heather Johnson

The California Bat Working Group has drafted interim guidelines for evaluating bat survey and monitoring studies associated with wind farms. The interim guidelines contain recommendations for both pre- and post-construction surveys and discussions of survey and monitoring techniques. A checklist for evaluating the adequacy of surveys or survey proposals is included. This document is currently being revised before we request input on it from the WBWG. Audubon California hosted a wind energy conference which addressed impacts to bats. Conference proceedings and a variety of documents are available at <http://www.audubon-ca.org/wind.htm>. Our efforts to finish the draft state conservation plan are still awaiting funding resolution.

COLORADO

Submitted by Kristen Philbrook

The BLM's Grand Junction Field Office will be conducting a bat survey in the pinon-juniper and Douglas fir habitats of the Book Cliffs during May and early June. A crew led by Alice Chung-MacCoubrey of the USFS Rocky Mountain Research Station in Albuquerque will lead the field effort. The objectives are to generally characterize the bat communities of the Book Cliffs and to use radio-marked individuals to locate woodland roosts of BLM-Sensitive species that likely occur in the area. Volunteers may be needed - especially those with telemetry experience. Contact Brendan Moynahan, GJFO wildlife biologist, for more information. 970.244.3012; brendan_moynahan@blm.gov.

USGS scientists at the Fort Collins Science Center (Tom O'Shea, Laura Ellison, Paul Cryan, and Ernie Valdez) will be conducting the first summer of fieldwork at Mesa Verde National Park. They will be examining bat use of coniferous forests using a combination of mist-netting and radio-telemetry.

The BLM's San Juan Field Office will continue with a presence/absence survey using bat detectors in pinon-juniper habitat. Volunteers and agency personnel will conduct the surveys. Unlike the 2005 field, season, some of the project areas have been hydromowed, a fuels reduction treatment that removes some of the pinon-juniper trees. If you are interested in volunteering for these night surveys this summer, please contact Kristen Philbrook, wildlife biologist, at 970-882-6837.

IDAHO

Submitted by Chuck Harris

The Idaho Bat Working Group held its annual meeting 6 March 2006 in conjunction with the Idaho Chapter of the Wildlife Society. We had a record 64 people in attendance. Six presentations were given reviewing research and monitoring projects from 2005 followed by 5 presentations of upcoming projects for 2006. Work in 2006 will consist of ongoing bats and mine surveys throughout the state, Oregon Bat Grid sampling on National Forests in Idaho, and searching for Townsend's big-eared bat maternity colonies in southeastern Idaho. We were honored to have Pat Ormsbee talk about the BWG. We discussed the Idaho Comprehensive Wildlife Conservation Strategy, the need to submit bat data to the Idaho Conservation Data Center, and the importance of negative survey data for occupancy models and predictive range mapping and potentially using bat surveys as a pilot project. We had hoped to finalize the Idaho Bat Plan, but some had not had the opportunity to review the latest draft so action was deferred.

MONTANA

Submitted by Bryce Maxell and Paul Hendricks
Montana Natural Heritage Program

Bat Surveys on USFS Northern Region Lands in Montana

Montana Natural Heritage will be doing bat acoustic and mist net surveys on BLM lands in SW Montana in summer 2006 as part of a project to fill in gaps in distribution information for small mammals. MNH will also be doing acoustic and mist net surveys on USFS lands in SW Montana and central Montana for the Region 1 USFS inventory effort. Our recent report for the 2005 field season summarizes all bat records for Montana through statewide dot distribution maps for individual species:

Hendricks, P. and B.A. Maxell. 2005. Bat Surveys on USFS Northern Region Lands in Montana: 2005. Report to the USDA Forest Service, Northern Region. Montana Natural Heritage Program, Helena, MT.

The report can be downloaded as a pdf file off of our website at: http://mtnhp.org/reports/USFS_Bats.pdf.

Riparian Bat Surveys in Eastern Montana

Paul Hendricks, Bryce Maxell, Susan Lenard, Coburn Currier and Joseph Johnson

The distribution and status of bats in eastern Montana remain poorly documented, and the value of riparian corridors in Montana to bats has not been quantified. This is of conservation interest because management activities on prairie riparian corridors (e.g., timber harvest, impoundment and diversion of rivers and streams, livestock grazing) may have unintended consequences on habitats bats use for roosting and foraging, and may negatively impact bat populations. The Montana State Office of the BLM has designated five bat species as Sensitive: Pallid Bat (*Antrozous pallidus*), Townsend's Big-eared Bat (*Corynorhinus townsendii*), Spotted Bat

(*Euderma maculatum*), Northern Myotis (*Myotis septentrionalis*), and Fringed Myotis (*Myotis thysanodes*). Each of these, along with Eastern Red Bat (*Lasiurus borealis*), is a state Species of Concern, and each has been documented in eastern Montana.

The Montana Office of the BLM recognized the need for additional documentation of bats in eastern Montana riparian corridors to inform management activity, and initiated bat surveys across the eastern prairies in 2003 to address this need. We surveyed non-randomly chosen riparian sites for bats along the lower Missouri and Yellowstone rivers and tributaries (Tongue and Powder rivers in particular). This approach was targeted at identifying species richness at survey sites and may be useful for developing and implementing a state grid-based system for long-term monitoring.

We surveyed 33 sites using mist nets, electronic detectors, or both. Twelve species of bats were detected during late-July to mid-September in 2003 and 2005. We captured 111 individuals at 13 sites, representing ten species: Townsend's Big-eared Bat at two sites, Big Brown Bat (*Eptesicus fuscus*) at six sites, Eastern Red Bat at one site, Hoary Bat (*Lasiurus cinereus*) at five sites, Silver-haired Bat (*Lasionycteris noctivagans*) at six sites, Western Small-footed Myotis (*M. ciliolabrum*) at three sites, Western Long-eared Myotis (*M. evotis*) at four sites, Little Brown Myotis (*M. lucifugus*) at five sites, Long-legged Myotis (*M. volans*) at one site, and Yuma Myotis (*M. yumanensis*) at three sites. Spotted Bat and Fringed Myotis were detected at three and two sites, respectively, but not captured. Townsend's Big-eared Bat and Eastern Red Bat were detected by vocalizations at two and nine additional sites, respectively. Prior to this survey, Eastern Red Bat was documented in Montana by only two verifiable records. No bats were identified at four sites, although presence of bats was noted at all but one of these. Bats at 16 sites were identified only by their vocalizations.

The 2003 and 2005 field surveys filled important gaps in documented distributions in Montana, adding 29 new county records, and underscoring the importance of riparian corridors to bats in the eastern prairies. Existing bat records across the region clearly show that significant gaps in known distribution remain for all species, emphasizing the need for additional surveys. Large areas between the Missouri and Yellowstone rivers lack records of any bat species, and most records from the region are from the main river corridors. We recommend the BLM continue surveys in eastern Montana, possibly using a grid-based random sampling scheme stratified by ecoregion or Field Office that would allow for valid inferences of site occupancy rates across the selected stratum. This grid-based monitoring approach should be extended to all of Montana and coordinated with other partner agencies and organizations to guide effective bat management across the state.

Management for bats using riparian systems in eastern Montana should include retention of cottonwood stands whose ages range from decadent to newly regenerating. There is also a need to determine the response by bats to the presence and increase of exotic Russian olive (*Elaeagnus angustifolia*) and salt cedar (*Tamarix* spp.) in riparian corridors, as these two invasive phreatophytes seriously affect the ability of native cottonwoods to establish new stands and recruit at established stands.

Keywords: bats, Chiroptera, mammals, riparian, cottonwood, eastern Montana

Geographic Locations: Missouri River, Yellowstone River, Powder River, Tongue River

URL: http://mtnhp.org/Reports/Riparian_Bats..pdf

NEW MEXICO

Submitted by Trish Griffin

New Mexico Bat Working Group

The Working Group is making headway on the NM Bat Conservation Plan. We will complete the first draft of our 28 bat species accounts this spring, and we also have a solid outline developed for the plan. The next meeting of the New Mexico Bat Working Group will be at the Sevilleta National Wildlife Refuge 8-9 September 2006. Information on the NMBWG, our projects, and meetings, can be found on our web site at <http://members.bluefrog.com/ellicat/>.

Award-winning Bat-Mine Surveys

J. Scott Altenbach, University of New Mexico (batmine@unm.edu)

Congratulations to Dr. Altenbach for receiving the Wildlife Conservation Professional of 2005 award from the New Mexico Chapter of The Wildlife Society to recognize his excellent survey work on bats and abandoned mines. Scott, along with Dr. Pat Brown, started the evaluation program and he developed the protocols that are in use in much of the country. He has internally surveyed many thousands of mines in NM, UT, NV, TX, MN, WY, CO, CA, AZ, and was the first to develop a shaft evaluation procedure and to systematically evaluate them, 1200 to date. Dr. Altenbach continues to conduct biological surveys of mines throughout the state, and elsewhere, to survey for bat habitation prior to mine closures. More information on the New Mexico Abandoned Mine Lands program can be found at <http://www.emnrd.state.nm.us/EMNRD/Mining/AML/AMLmain.htm>.

Ongoing Nectar Bat Studies in Southwestern New Mexico

Mike Bogan, University of New Mexico (mbogan@unm.edu)

Mike Bogan, Paul Cryan, Christa Weise, Angela England and a host of field assistants from the U.S. Geological Survey, have been following the nocturnal movements of long-nosed bats in the Animas and Big Hatchet Mountains in southwestern New Mexico. During 2004-2005 they attached radios to 50 bats (31 *L. curasoae* and 19 *L. nivalis*) and successfully followed 34, resulting in a total of 900 useful location estimates. There were no clear differences in the patterns of movement between species and years or among sex, age, and reproductive classes. Both species cohabitated two major day roosts that were 30km apart and bats regularly moved between the roosts. Foraging occurred mostly in the Animas Mountains, where density of food plants (*Agave palmeri*) was high. Bats roosting in the Big Hatchet Mountains regularly commuted >20 km one-way to feed in the Animas Mountains. There was no evidence that *L. curasoae* and *L. nivalis* were limiting competition for common food resources by partitioning activity either spatially or temporally. The study was funded by the Bureau of Land Management.



Mike Bogan (left) and crew, the morning after

Pollination Studies of *Agave palmeri* in Southern New Mexico

Angela England, Graduate Student, University of New Mexico (aengland@unm.edu)

Angela is studying pollination of Palmer's agave in the one county in the U.S. where all three species of nectar-feeding bats are found. Studies will be conducted in the Animas Mountains and vicinity, comparing high-density agave sites where recent telemetry indicated use by *Leptonycteris*, versus no documented use. Experiments will quantify contributions from the various (diurnal vs. nocturnal, vertebrate vs. invertebrate) visitor guilds to the pollination success of the plants.

Bat Activity Along The Middle Rio Grande and the Use of Scent Detection Dogs

Alice Chung-MacCoubrey, U.S. Forest Service, Rocky Mountain Research Station
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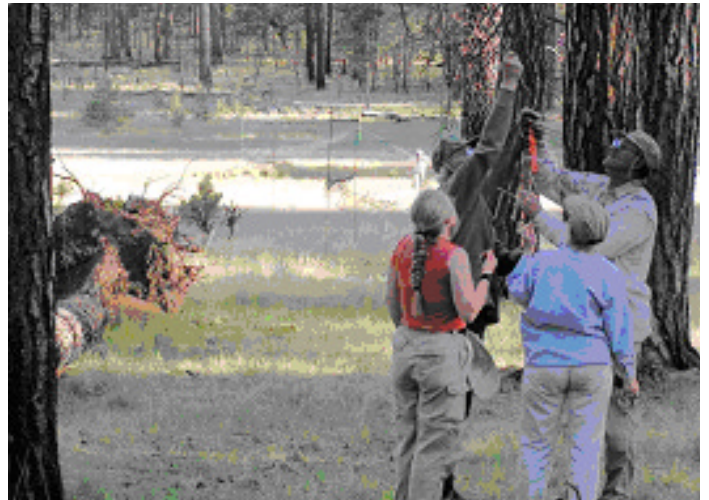
Alice is continuing her research on the effects of invasive plant management and fuels reduction on bat activity in riparian cottonwood forests (bosque) along the Middle Rio Grande. Initial analyses suggest that summer bat activity significantly increased after salt cedar, Russian olive, and other invasive woody plants were removed from the understory. Alice is also initiating a study this summer on the use of scent detection dogs as an alternative method for locating tree roosts in southwestern habitats.

Gila Wilderness Bat Study

Lyle Lewis, U.S. Fish and Wildlife Service (lyle_lewis@fws.gov)

Lyle and a group of biologists from U.S. Fish and Wildlife Service, U.S. Forest Service, and Canada spent 15 nights in 2005 surveying in the Gila Wilderness in southwestern NM as part of a New Mexico State Wildlife Grant. Although the focus of the survey was to detect Allen's big-eared 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. The portion of the Gila Wilderness surveyed in 2005 provides maternity roosts for Allen's big-eared bat, southwestern myotis, big brown bat, Arizona myotis, fringed myotis, long-legged myotis, and long-eared myotis, as was apparent from the capture of pregnant bats. This area appears especially important for big brown bats, Arizona myotis, and Allen's big-eared bats.



Lyle Lewis (right) and crew set up mist nets in the Gila Wilderness

Bats and Mines Surveys on National Forests Throughout New Mexico

Marikay Ramsey, U.S. Forest Service (mramsey02@fs.fed.us)

Marikay continues to conduct internal and external surveys for bats in abandoned mines on National Forest System lands. She is surveying multiple workings across several National Forests in New Mexico and Arizona, and will provide management recommendations. Marikay also stepped down this year after several years of leadership of the New Mexico Bat Working Group. The group presented her with a metal bat sculpture earlier this year in recognition and thanks for her contribution to the group.

Use of Bridges by Bats in the Lower Rio Grande Valley

Keith Geluso (gelusok1@unk.edu)

Abstract: Throughout the United States, bats are known to roost in bridges for various life-history functions, but in New Mexico, little is known about use of bridges by bats. In this study I examined use of bridges by bats in the lower Rio Grande valley of New Mexico. During a 19-month study, I documented 8 species using bridges as daytime shelters. Yuma myotis (*Myotis yumanensis*), Arizona myotis (*M. occultus*), and Brazilian free-tailed bats (*Tadarida brasiliensis*) used several bridges for maternity roosts. California myotis (*M. californicus*), fringed myotis (*M. thysanodes*), silver-haired bats (*Lasionycteris noctivagans*), big brown bats (*Eptesicus fuscus*), and pallid bats (*Antrozous pallidus*) roosted infrequently in bridges. Use of bridges by day-roosting bats differed seasonally, with the largest number of individuals occupying bridges from April to October. Numbers peaked in June and July when non-volant young also were present. From November to March, only small numbers of *T. brasiliensis* occupied bridges. Other bats discovered in cold months included 1 *M. yumanensis* in January and 4 *M. yumanensis* and 1 *L. noctivagans* in March. Of 17 bridges surveyed for bats, 88% contained day-roosting bats and at least 8 bridges contained maternity colonies during the study. Individuals roosted in many different sites in bridges, but 99.9% roosted in narrow cracks and crevices and only a few roosted in open areas during daylight hours. A total of 35,231 day-roosting bats were observed during this study—99.8% were observed in wooden bridges and 0.02% were observed in I-beam bridges constructed of cement, metal, or both. Paucity of individuals roosting in I-beam bridges likely reflects a lack of narrow spaces in these structures. Although bats mainly used wooden bridges as day roosts, I also observed evidence of night roosting by bats in 100% of wooden and I-beam bridges. This study demonstrates that some bridges represent important roosting sites for bats in New Mexico, and bridges likely have benefited bats in this part of the state by providing additional roosts. Bridges commonly used by bats should be managed as a resource, especially those bridges occupied by maternity colonies or large numbers of individuals.

Keith also produced a report for the NMDGF Share With Wildlife program titled “Winter activity of bats outside their roosts in New Mexico”.

Bat Surveys and Management at White Sands Missile Range

Trish Griffin, White Sands Missile Range (trish.griffin@us.army.mil)

WSMR is continuing to capture bats at water sites throughout the 2.2 million acre missile range to identify bat species and document their distribution for a baseline survey effort. WSMR is also continuing to investigate and monitor buildings throughout the range for use by bats. WSMR has over 100 water sites developed for livestock and big game species, and is working with Bat Conservation International to assess and modify water sites throughout the missile range to improve use by bats.



Doug Burkett (left) and crew prepare for a night of netting

Hibernating Bat Surveys for the BLM Roswell Field Office

Dan Baggao (Dan_Baggao@nm.blm.gov)

In early 2006, hibernating bats were counted in six caves in eastern New Mexico (De Baca, Chavez, and Lincoln Co.) by BLM volunteers Jennifer Foote, Laura Stark, Brian Kendrick, Steven Ball, Jim Sturrock, and Brady Anspaugh. Some of the sites have been surveyed periodically since the late 1980s or early 1990s. Species reported this year were *Myotis velifer*, *M. ciliolabrum*, and *Corynorhinus townsendii*. Wildlife Biologist, Dan Baggao, is the contact person for bats at the BLM Roswell Field Office.

Recent NM Publications

Chung-MacCoubrey, A.L. 2005. Use of pinyon-juniper woodlands by bats in New Mexico. *Forest Ecology and Management* 204:209-220.

Ellison, L.E., A.L. Everette, and M.A. Bogan. 2005. Examining patterns of bat activity in Bandelier National Monument, New Mexico, by using walking point transects. *Southwestern Naturalist* 50:197-208.

Geluso, K., T.R. Mollhagen, J.M. Tigner, and M.A. Bogan. 2005. Westward expansion of the eastern pipistrelle (*Pipistrellus subflavus*) in the United States, including new records from New Mexico, South Dakota, and Texas. *Western North American Naturalist* 65:405-409.

NORTHERN MEXICO

Submitted by Arnulfo Moreno

Building Bat Houses and Environmental Education on Bats in Two Primary Schools near La Boca Cave, Santiago, Nuevo León, México

Samara Ferrara-Belart (samara@itesm.mx), Friends of Nature Program, Environmental Quality Center
–Monterrey Tech University

The Friends of Nature is an environmental education program located in the Environmental Quality Center of the Monterrey Tech University. This program is available to Tec students in the Monterrey campus. To complete our program six of our students participated in the Ecology of Bats and Bat House Construction Project. This project took place in the Damian Carmona School and the Francisco Cirilo School in the Santiago district. Both schools are situated in rural communities close to La Boca Cave, which is 30 minutes away from Monterrey city. La Boca Cave hosts colonies of *Tadarida brasiliensis* mainly as well as 4 other less represented species of bats.

The FNP students have been visiting both schools for almost two years with projects concerning bats. This semester's objective was to educate approximately 100 students in the age range of 6 to 12 by providing them with information of the biology and ecology of bats, information of the specific bats living in Cueva La Boca, the economic and ecologic importance of protecting the bats, and the benefits of constructing bat houses in their community.

The seven students participating in the project assisted in an intensive lecture on the ecology of bats by the M.C. Nelly Correa. They also received a lecture on Building Bat Houses by Dr. Arnulfo Moreno. The students had 4 meetings to build a sample house. The first visit to the schools was March 15, 2006. On our first visit, students asked the kids what they remembered about bats from past years. We were impressed on how much

information the kids retained. In past visits we noticed that the kids had a misconception of bats. Some of the things that we found were that they believed all bats drink blood, that all bats have rabies, that bats are rats and that all bats are aggressive. This semester, when asked, kids responded that bats have different eating habits, that bats found on the ground are probably sick, that bats are mammals more like us and not rodents, and kids made drawings of bats with happy faces and with a friendly aspect.

Our second activity was to build bat houses with the kids. We noticed how the majority of the kids were eager to learn and participate. We explained about the care and responsibility of owning the bat houses, and we even tested them to see if they remembered what we had just taught them. They all agreed on hanging the bat houses on their school walls. The professors offered to hang the house in a place we all considered appropriate. The third activity was to give the children books, videos, and additional educational material donated by Bat Conservation International.

The kids were so excited that they begged for a second visit. The second visit will be on April 26 to both schools. The plan is to monitor the bat houses and make contact with the kids.

“Bats and Trails of Experiential Learning” and Urban Training in Bats During 2005-2006 School Year for Underprivileged Kids of the Monterrey, Mexico, Metro Area

Ana Gabriela-Robles (anagabriela@puntoverde.com.mx), Punto Verde Consultores, Calz. del Valle 400, 421, San Pedro Garza García, Nuevo León, México.

During 2005, Punto Verde Consultores, Bat Conservation International, Outward Bound Mexico (OBM), and Grupo Imagina facilitated workshops that had as a main objective to sensitize students from Nuevo León to the importance of bats for Earth, and the need to join the effort to avoid their extinction.

In both cases, Punto Verde was in charge of developing the manuals with known bats and activities, and training Imagina and OBM’s instructors. Punto Verde trained 7 Imagina instructors and 3 OBM guides. Both organizations through their activities in the city and in the sierra canyon lands, respectively, reached mainly kids in grades 5 to 9. Their work enhanced the their audiences’ knowledge of bats.

The workshop “Bats and Trails of Experiential Learning,” is facilitated by OBM instructors to public Junior High students from Nuevo León.

The main objectives of the workshops organized by Grupo Imagina were to develop in the participants ideas and proposals to improve their communities, take care of the environment, and develop leadership competences.

In all, the direct beneficiaries are the 720 students that participated in either activity. The indirect beneficiaries are 1440 persons, 2 per child, taking into consideration the average number of people living in a house in Nuevo Leon, according to Mexico’s Institute of Statistics, Geography and Informatics. In total about 2160 persons benefited by the activities, in both direct and indirect ways.

Importance of Cattle Ponds for the Bat Fauna at La Michilia Biosphere Reserve, Durango, México

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La Michilía is a protected area of the MAB-UNESCO reserve system, located on the southern portion of Durango State, México. Sixteen species are known from Michilía, 14 vespertilionids, 1 molossid, and 1 phyllostomid. Two are considered species of concern (NOM-059-ECOL-2001; IUCN's Red List).

Our research is focused on describing activity patterns and species richness of insectivorous bats in cattle ponds within the reserve, using acoustic detectors. Also we correlated activity patterns with a set of environmental variables (temperature, relative humidity, moon phase, and rain-dry seasons). Finally, we are updating the bat inventory and creating a bat sound library through the use of acoustic detectors, which will be useful for further bat monitoring in the reserve. Our general goal is to evaluate the importance of cattle ponds for the bat fauna of La Michilía.

So far we have accomplished one year of the two-year plan. We monitored bat activity during the dry and rain season. Preliminary results show no differences in overall bat activity during rain and dry seasons, although the ponds are quite different in size and amount of aquatic plants. Temperature seems to be the relevant factor that limits bat activity. The other factors are still under study.

Population Dynamics at Cueva del Guano, Cd. Lerdo, Durango, México

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34220

*Universidad Juárez del Estado de Durango at Gómez Palacio (UJED)

Cueva del Guano hosts colonies of *Tadarida brasiliensis*, *Mormoops megalophylla*, and *Leptonycteris curasoae*. Our research is currently focused on describing the population structure of the *T. brasiliensis* maternity colony during a year. We also have initiated a long term mark-recapture program to estimate population size and structure changes throughout the year, and hopefully to document migration. Our rough estimation of population size is 100,000 during the summer. Population decreases during winter months, but we have counted at least 3000 individuals in January. Along with this project, undergraduate students at UJED are currently studying ecto- and endoparasite loads in selected specimens throughout an annual cycle.

We have just started the marking program; our bats wear a numbered yellow plastic ring on the forearm. If you find one, please let us know (celialg@prodigy.net.mx).

Bats of the Upper Gulf of California and Rio Colorado Delta Biosphere Reserve, México

Roberto Martínez-Gallardo, Aldo Antonio Guevara-Carrizales, Ricardo Gonzáles-Gómez, & Lourdes Mexicano, Maestría en Manejo de Ecosistemas de Zonas Áridas, Facultad de Ciencias, Universidad Autónoma de Baja California. Km 103 carretera Tijuana-Ensenada, Ensenada, Baja California. C.P. 22800, México.

The Upper Gulf of California and Delta of the Colorado River Biosphere Reserve is located on the northeastern part of the State of Baja California and the northwest portion of the State of Sonora. The habitats that are present in this area have unique characteristics that include habitats from the surpluses of the Antique Delta of the Colorado River, bogs and freshwater outcrops in the coastal strip. In spite of the importance of this site,

there is an ample ignorance about the bats in the Reserve; the information is too general, and due to the marginal area, it only allows establishing the list of species that may occur in the zone.

For this reason, the objective of our future work is to elaborate the updated list of the bats present in the Reserve; to define the areas inhabited by bats; using historical records, make historical species distribution maps of the bat community in the Reserve; and to evaluate the conservation status of the bats and to define priority areas for this group.

Bats of Los Cirios Valley, Baja California, México

Aldo Antonio Guevara-Carrizales¹, Roberto Martínez-Gallardo¹ & Arnulfo Moreno²

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Los Cirios Valley constitutes the biggest protected area of Mexico, and is located on the central part of the Peninsula of Baja California. This work aims to determine the chiropterofauna of the site by compiling historical records from national and international collections in museums, and updating the information using field data collected in July, August and September 2005. At the present time, there are a total of 536 records (147 historical records and 389 updated by collects made in this work), corresponding to 3 families, 11 genders and 15 species.

These results increase the number of existent records by 72% and update the information about the chiropterofauna of the APFFVC. Also, presence-absence data of the historical and present records from the area, suggest that the species richness has been stable over the last 80 years.

Bat Fauna of Sierra de Juárez, Baja California, México

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The objective of this work was to contribute to the knowledge of the bat fauna of Sierra de Juarez in the State of Baja California; the catalogues of the main national and foreign collections were reviewed, and data were collected June to September 2004 using mist nets and ultrasonic bat detectors. The results show a total of 81 records from the reviewed collections, and 799 records from the field collections comprising 3 families, Vespertilionidae (11), Molossidae (3) and Phyllostomidae (1), 10 genera and 15 species of which the following six are new records: *Macrotus californicus*, *Lasiurus xanthinus*, *Eumops perotis*, *Myotis volans*, *Nyctinomops femorosaccus*, and *Tadarida brasiliensis*. Eighty percent of the bat species diversity for the State (N=19) was recorded in Sierra de Juarez, making it as an area of great importance for this group of mammals. This work has supplied basic and relevant information for further ecological studies.

Bat Fauna of Sierra San Pedro Martir, Baja California, México

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The Sierra San Pedro Martir is characterized by its specific environmental conditions and its relative isolation. Although understudied, this area has the greatest species diversity of the Peninsula of Baja California. For this reason, the objective of this work was to contribute to the knowledge of the bat fauna of this mountain range

by using mist nets and ultrasonic bat detectors during June to September 2004 to revise the catalogues of the main national and foreign collections. The results of the reviewed collections show a total of 233 records, while 647 records were obtained in the field work, for a total of 3 families (Vespertilionidae (11), Molossidae (3) and Phyllostomidae (1)), 10 genera and 14 species; *Myotis milleri* is endemic and three new species were recorded: *Corynorhinus townsendii*, *Macrotus californicus*, and *Eumops perotius*. The list of species obtained reflects the 73% of the bat diversity for Baja California, México (N=19).

Bats of Doña Petra's Canyon, Baja California, México

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Doña Petra's Canyon is located on the East side of Ensenada city, and constitutes the last fragment of natural vegetation in the urban area; it has been decreed a Green Area Reserve. An inventory made during the months of November 2004, and April and May 2005, using mist nets and acoustic detection methods, recorded a total of 2 families, 6 genera and 7 species, emphasizing the recurrent record of *Choeronycteris mexicana* for being listed in the NOM-059-SEMARNAT-2001.

Bats of the Oases of Baja California, México

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The oases constitute biological refuges of fauna of great importance; the water supplies provide food and offer a microclimatic different from their peripheral areas, allowing the presence of wild life. These productive basins are unique in the State of Baja California.

For this work, there have been visits to the oases and exploration for the possible existence of new basin locations in the State. The objective is to inventory the present species of bats and to discover the specific richness for each site. So far, of the 20 species of bats present in Baja California, 15 species have been recorded in the oases, representing 3 families and 11 genera. This reaffirms the importance of these sites to the community of bats, because 79% of the bat fauna of the State converges on them.

Conservation Status of the Bat Fauna in the Coastal Scrub of Baja California, México

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The objective of this work is to diagnose the conservation status of the bat fauna in the coastal scrub of Baja California, Mexico, which in the last twenty years has been lost to regional development: urban at the north and agricultural in the south, where there is still good quality coastal scrub remaining. For this work, four kinds of environments were identified: Urban, Urban-Rural, Agricultural and Natural Scrub. The sampling was made in 17 locations, using the ultrasonic signal analysis and mist nets. According to the results, the sampling method used for the number and type of location illustrated the fragmentation effect of the habitat over the community of bats. The most important effects are the following two: while the anthropogenic disturbance level increases over the habitat, the species richness diminishes. At a population level, some species tend to diminish their population numbers; on the contrary, other species increase their population size. In conclusion, the Coastal Scrub and the Urban-Rural environments showed the highest diversity and richness, due to the low

anthropogenic disturbance level, while in the Urban and Agricultural environments the community structure of bats was simplified.

Conservation Status of Urban Bats Based on their Feeding Habits, in Ensenada, Baja California, México

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The ecological role that insectivorous bats play in their ecosystems has been little studied in Mexico; for this reason, bats' possible contribution to insect regulation has only been speculated. Bats' agricultural importance and impact on insect vectors of mammalian and human illnesses had not been previously investigated. In this work we show the first analysis of feeding habits of insectivorous bats in Mexico, specifically of two urban species: *Eptesicus fuscus* and *Tadarida brasiliensis*, who live in Ensenada, Baja California. The intention of this work is to establish conservation strategies for the urban bats and their habitat. One hundred and sixty-five fecal pellets from the two species of bats were collected and analyzed. The most important prey items were coleopterans, chironomids and lepidopterans. There were 153 analyzed samples of *E. fuscus* during a period of 12 months (from July 2004 to June 2005), excluding the winter months. The feeding habits were represented by 31 nutritional items and 27 prey items of which the greatest volume percentage and frequency were chironomids and coleopterans. There were recorded seasonal variations, with the highest prey items richness occurring in summer; chironomids, coleopterans and lepidopterans were most important. *T. brasiliensis* showed 20 nutritional items and 17 prey items in 12 collected samples during spring 2005 (from May to June), with lepidopterans, coleopterans and chironomids being the most important. The results suggest that *E. fuscus* and *T. brasiliensis* may be contributing to the coleopterans, lepidopterans and dipterans regulation, as well as to hemipterans and cicadelids control, which are considered by local cultures as plagues and vectors of infectious and epidemiological illnesses. The refuges and foraging site availability in buildings in the urban environment is just as beneficial to bats as the street lamps. For this reason it is suggested to protect their main, alternative, nocturnal and potential refuge sites, as well as the areas that bats could visit to eat, and in this way guarantee the permanence of their environmental services.

The Ecological Role of Fruit Bats in the Tropical Deciduous Forest of Gómez Farías, Tamaulipas, México.

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The relationships between bats and plants is mainly restricted to tropical areas; perhaps these are the most abundant mammals influencing these ecosystems and are an important link in equilibrium. The study was done in Gómez Farías, Tamaulipas; the goal was to determine fruit bat species, and their interaction with plants of the humid tropical forest. Two hundred and ninety seven bats were captured from March 2002 to April 2003 using mist nets. Bat specimens were identified, and placed in cloth bags during 4 hours to obtain their feces. Captured species included: *Sturnira ludovici* (165), *S. lilium* (13), *Dermanura tolteca* (47), *D. azteca* (36), *Artibeus lituratus* (16), *A. intermedius* (7), *A. jamaicensis* (4) and *Glossophaga soricina* (9). The feces were analyzed in the lab; seeds were identified using a seed reference collection. The following plant species were identified *Ficus cotinifolia*, *F. cooki*, *F. obtusifolia*, *F. padifolia*, *Piper amalago*, *P. berlandieri*, *Piper umbellatum*, *Solanum acculeatissimum*, *S. erianthum*, *Psidium guajava* y *Selenicereus spinulosus*. Germination tests were performed in *Ficus cotinifolia*, *Piper amalago*, *P. berlandieri* and *Solanum erianthum*. *Piper amalago*, and *Solanum erianthum* showed 100 % germination, *Piper berlandieri* 99 %, and *Ficus cotinifolia* 83 %.

During the blank test *Piper amalago*, *P. berlandieri* and *Solanum erianthum* did not germinate, and *Ficus cotinifolia* only 30 % of the seeds did. Finally, the importance value of the plant species for the tropical deciduous forest of Gomez Farías was 30 % *Piper amalago*, 25 % *Ficus cotinifolia*, 16 % *P. berlandieri*, and 12 % *Solanum erianthum*.

Monitoring the Mexican free-tail bat (*Tadarida brasiliensis*) population at La Boca cave, Santiago, Nuevo Leon, Mexico

Sasha Carvajal-Villarreal (scarvajal@pronaturane.org) Pronatura Noreste A. C, Arnulfo Moreno (leptonycteris2000@yahoo.com.mx) Instituto Tecnológico de Ciudad Victoria

The State of Nuevo Leon, Mexico is a place of great biodiversity of flora and fauna. However, with human population growth and increased demand for diverse development of outdoor activities has caused the loss of the natural resources, and consequently the destruction of habitat and loss of biodiversity. For this reason, it's important to protect those areas that have been impacted and avoid further destruction of other places that haven't been impacted.

One of those sites considered as a conservation priority is "Cueva de La Boca", located in Santiago, Nuevo Leon. This cave is of great ecological importance, because in the past it housed one of the largest Mexican free-tailed bat colonies estimated to be more than 20 million bats.

In order to know the current Mexican free-tailed bat population at La Boca cave, we are monitoring the bat emergence twice a month with a video camera (SONY HANDYCAM DCR-PC109) and two infrared lamps. We videotape bat emergence from the same spot every day. Once we gather all the information, we will analyze the data to estimate the bat population size. Project equipment was generously donated by Don Eugenio Clariond.

Bats of the Natural Protected Area Sierra de Zapalinamé, Coahuila, México

Sergio Marines (marines@profauna.org.mx)

PROFAUNA, A.C., Juan Bautista Escorza 383 Saltillo, Coahuila 25020 México

The Natural Protected Area Sierra de Zapalinamé is an important water region in the Mexican city of Saltillo. Both Mexican long nosed bat (*Leptonycteris nivalis*) and the long tongued bat (*Choeronycteris mexicana*) had been recorded in the area; these bats are main Agave pollinators. Century plants or Agaves are very important plants to restore eroded soils, and to speed up the succession process after fires or clear cuts. During the past years more than 20 thousand wild agaves were planted in the reserve with support from local communities. This activity had two purposes: reduce soil erosion and feed the endangered bats. This year we are planning to do a bat survey, and determine key resources for the bat community.

Ecosystem services provided by *Tadarida brasiliensis mexicana* (Saussure, 1860) in Nuevo León, México

Adriana Nelly Correa Sandoval¹, Carlos A. Hernández Cienfuegos¹, Erika de la Peña Cuéllar, Luis Orlando Tejada¹, Humberto Quiroz-Martínez², Guillermo Gándara¹, Juan Luis Peña¹, Arnulfo Moreno³

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Bats are a very important group when taking about ecosystem services such as pest and disease control, pollination or seed dispersal. However, almost 50% of known species are currently endangered due to direct or indirect threats such as habitat destruction. In Nuevo León, one of the most important bat populations has dra-

matically decreased in part due to the easy public access to the cave. Fires caused both intentionally or by ignorance have caused severe damage to bats. To support conservation, we intend to provide more understanding of the role these bats play in our ecosystem, and how their presence in the region provides benefit to humans.

During 2004 and 2005 summer seasons, a total of 45 individuals from La Boca Cave, in Santiago, Nuevo León, México, were sampled to analyze both stomach and intestinal contents. Groups found were Lepidoptera, Pentatomidae, Cicadellidae, Curculionidae, Carabidae, Blattellidae, Formicidae, Delphacidae, Chironomidae, Gelechiidae, Cydnidae, Cercopidae, Scarabaeidae, Dolichopodidae, Culicidae, Hymenoptera, and some families from Coleoptera, Trichoptera, Ephemeroptera, Plecoptera, Hemiptera, Psocoptera.

A winter season population inhabiting a different cave was sampled in 2005. Identification is still in process. Currently, our group is conducting a study that will assess the economic benefit of the role these bats play as pest controllers in the region. We are collaborating with other institutions and individuals trying to reach the common goal of working for conservation and sustainable development.

NORTHWEST TERRITORIES

Submitted by Joanna Wilson, Environment and Natural Resources,
Government of the Northwest Territories, Yellowknife

Bats of the Northwest Territories

Very little work has been done to date on bats in the Northwest Territories (NWT). There are records of only three species in the NWT: *Myotis lucifugus*, *M. septentrionalis* and *Lasiurus cinereus*. Bats in the NWT are at the northern limit of their range. Records are very few. In 2005 a *M. septentrionalis* was found in the western NWT (in Fort Simpson) by Doug Tate of Parks Canada, thought to be only the second record of this species and lending support to the range distribution for this species in the territory. It is suspected that additional species, interesting habitats, and possibly hibernacula may be present in the NWT, particularly in the Nahanni National Park area. There are no ongoing bat research projects in the NWT at this time, but if funding is comes through, Cori Lausen, from the University of Calgary, will be doing a bat survey of the South Nahanni River Watershed this summer.

OREGON

Submitted by Steve Langenstein

Medford BLM District

Anthony E. Kerwin, Wildlife Biologist

This office is in the process of monitoring six known Townsend's big-eared bat sites. Surveys will include three at each site on the following schedule:

Winter surveys - by the end of spring (early maternity colonies forming) from ~ April 15 to May 15. Summer surveys (core of the maternity season) between mid June and mid July. Winter and spring surveys are internal at stable sites. Summer surveys will be out flight counts.

Six sites will be surveyed this summer (mist-netting) using Oregon Bat Grid work and project inventory methods.

Klamath Falls BLM District
Todd Forbes, Lakeview Resource Area

Todd will again be working on the Oregon Bat Grid Project this year. One gate will be placed on an abandoned mine at a Townsend's (*C. townsendii*) site. Other gates are planned for future placement on some other Townsend's caves. Surveys are planned to assess any potential impacts to the bats before proceeding with other proposed gates.

Coos Bay District
Steve Langenstein, Myrtlewood Resource Area

Steve and one volunteer (has inoculations) will continue to work on the Oregon Bat Grid. Biologists and volunteers who can show recent rabies titer check are welcome to contact me and assist if interested. There will be continued cooperation with Powers and Gold Beach Ranger districts (U.S. Forest Service) as needed.

Work continues to protect buildings as wildlife structures that are inhabited by bats, but unsuitable for human occupancy. Currently there are two such buildings within this district being considered for demolition.

For more information contact: Steve Langenstein, Coos Bay BLM, 1300 Airport Ln., North Bend, OR 97459, (541) 756-0100, e-mail: steve_langenstein@or.blm.gov

Rogue River National Forest
Norm Barrett

The Cascade Zone of the Rogue River National Forest is unfunded for bat work this year. Volunteer survey efforts led by U.S. Forest Service employee Norm Barrett are developing specific plans to identify sites and days for surveys. He will be concentrating on sites that will begin to fill in gaps on the bat grid occurring on the Cascade Zone of the Rogue River National Forest. Cooperation with BLM efforts on adjacent lands is expected. Volunteers with proof of current acceptable rabies titer are welcome. For more information contact: Norman M. Barrett, Wildlife Biologist, Cascade Zone - Rogue River National Forest, nmbarrett@fs.fed.us, (541) 560-3479.

TEXAS

The following are excerpts from the most recent Texas Bat Working Group Newsletter, submitted by Meg Goodman, Texas Parks and Wildlife Department

East Texas Rare Bat Working Group

On February 23, 2006 Texas Parks and Wildlife Department (TPWD) hosted the first annual East Texas Rare Bat Working Group meeting at Stephen F. Austin State University, Arthur Temple College of Forestry. The intended purpose of the meeting was to gather interested partners in East Texas to talk about the status of our 2 East Texas rare bats, Rafinesque's big-eared bat and Southeastern myotis, and how we could all work together towards the conservation, research and monitoring of the 2 species.

Forty-one people were in attendance from the following organizations: TPWD (7), US Forest Service (8), US Fish and Wildlife Service (5), Texas Forest Service (1), The Nature Conservancy (1), Stephen F. Austin State University (5), Texas A&M University system (2), National Park Service (1), Jesse Jones Nature Park Houston (1), Maberry Centre Bat Homes (2), Sierra Club (1), private landowners (3). We had 4 out-of-state guests: 1 from Fort Polk Army Installation in Louisiana, 1 from the Mississippi Museum of Natural Science, 1 graduate student from Virginia and the SE Bat Conservation Director from North Carolina.

We were lucky to have Mary Kay Clark in to help us with the meeting. Mary Kay is the Southeastern Bat Conservation Director, a partnership between the Southeastern Bat Diversity Network and North Carolina Wildlife Resources Commission. We were also happy to have Alison Sherman in from the Mississippi Museum of Natural Science and the Mississippi Bat Working Group to fill us in on what is going on with these 2 rare bats in Mississippi.

Participants interested in becoming more involved with the working group decided to meet again in June. At this meeting we will decide how our working group will proceed and what our next plan on action will be. Additional training such as how to monitor known roost sites as well as conduct bat surveys will be provided at this meeting.

An optional field trip was held on Friday, February 24th to view Southeastern myotis bat habitat at the USFS Southern Research Station Experimental Forest near Nacogdoches, and then onto the Aldridge Saw Mill in Angelina National Forest near Jasper where a maternity colony of Rafinesque's big-eared bats roosts in the summer months. Here we also observed the artificial tree roosts that the US Forest Service installed for the Rafinesque's big-eared bat. We also observed a highway culvert near Jasper where both rare bat species have been found in the summer months. Thirteen people attended the field trip.

We look forward to working with more partners in the effort to research, monitor, and conserve these East Texas rare bat species. If you would like to participate in the upcoming June meeting and be a part of the working group, please contact Meg and I will send you more information.

We also hope to form regional bat working groups such as this one in other areas of the state. Please contact Meg if you have any ideas or interests for these smaller working groups.

Texas Bat Viewing Site Forum

Texas is home to some of the largest Mexican free-tailed bat (*Tadarida brasiliensis*) colonies in North America. Many of these sites have become popular tourist destinations as the bats emerge in awe-inspiring numbers each summer. Attached is a list of all the different places you can see bat emergences in Texas. Soon, thanks to the efforts of the Texas Bat Viewing Site Forum there will be a free map/guidebook of all of the sites available for distribution and on TPWD's website.

The Texas Bat Viewing Site Forum was formed in January 2005 under the leadership of TPWD. This forum gathered staff from all Mexican free-tailed bat viewing sites in Texas for a meeting and planning session at LBJ State Park in Stonewall. Items for discussion at this meeting included: bat watching etiquette, a standardized bat emergence data form, and interpretive materials. The following organizations participated: TPWD, Bat Conservation International (BCI), The Devil's Sinkhole Society, The Nature Conservancy, and Hill Country Adventures.

In January 2006, the second annual Texas Bat Viewing Site Forum was held at LBJ State Park. Eighteen people were in attendance from the following organizations: TPWD (9), BCI (3), Hill Country Adventures (1), The Devil's Sinkhole Society (2), Lone Star Riverboats (1), Bamberger's Ranch (2). Some of the things discussed at this meeting included: a review of the past bat season by each viewing site, review of the Texas Bat Viewing Site study (the emergence data taken at each site initiated last year), initiation of new studies such as the trophic communities of bat guano (Andy Moore for Barbara French at BCI), bat viewing as nature tourism (Shelly Plante, TPWD), bat viewing site map (Amy Sugeno, TPWD), and interpretive skills and needs (James Rice, TPWD).

Interpretive and training needs are being fulfilled by providing materials for each site such as taxidermic bats and bat skeletons, new signage when possible at the viewing sites, and training opportunities through various workshops.

Bats and Bridges

Three of our Texas bat viewing sites are located under bridges: Congress Avenue in Austin, McNeil Bridge in Round Rock and Waugh Drive Bridge in Houston. Be sure and check out this issue's "Article of Interest" at the end of the newsletter for more information on the Waugh Drive Bridge.

Many bridges provide great bat roosting habitat and in 1994 BCI along with the Texas Department of Transportation (TXDOT) set out to understand why. The end result was a BCI publication called "Bats in American Bridges" which can be found on their website at <http://www.batcon.org> under "Conservation Programs" then "Bats in Bridges" then "Resources". The study indicated that certain bridge designs, especially the box beam style where crevices span the length of the bridge often make great bat roosting habitat for some species such as the Mexican free-tailed bat among others. The study also investigated how the presence of bats in a bridge or culvert affects public safety, workman safety, water quality if applicable, structural integrity, and the welfare of the bats. Results indicate that in all cases when properly managed there were no adverse impacts. Furthermore, the bats did not compromise the structural integrity of the bridge nor alter water quality when the roost was located over a body of water, such as the case with the Congress Avenue Bridge.

After participating in this study, TXDOT bridge engineer, Mark Bloschock, has designed and encourages his department to design bridges that are bat friendly when appropriate. Mark estimates that 30 new bat friendly bridges are built each year in Texas. Stay tuned for an upcoming "Article of Interest" by Mark Bloschock on Texas Bats and Bridges in a future newsletter.

If a bridge cannot be designed to be bat friendly from the start then there are some modifications that can be made, such as installing an artificial bridge lodge that will still make the bridge suitable for bats. Marvin Maberry of Maberry Centre Bat Homes in Dangerfield, Texas (<http://www.maberrybat.com>) has been making artificial bat roosts for 15 years now and his bridge lodges have been utilized to make many bridges across the U.S bat friendly.

Most recently, in Texas his artificial bridge lodges were placed under the San Gabriel River Bridge on the future State Highway 130 in Williamson County, northeast of Georgetown. State Highway 130 developer Lone Star Infrastructure and BCI teamed up to install the lodges which have enough room to provide homes for up to 40,000 bats. A press release and media day were scheduled to highlight the installation of these new roosts. Mark Bloschock of TXDOT was present at this media day and was quoted as saying "Many years ago we would have had a gathering such as this to discuss how to get rid of the bats but now thanks to years of hard work and education we are able to have a gathering to promote the importance of bats and to provide habitat".

A similar project is in the works in the Fort Worth area over the Trinity River and more information on that developing project will be provided in the next newsletter.

TPWD is still trying to build a "Bats and Bridges" database so that we can have a central location with updated information for all to use. We need your help. If you come across bats roosting in a bridge please contact Meg with the following information:

Location of bridge including GPS coordinates if known

Description of bridge- dimensions and roost location

Description of surrounding area (i.e. urban, rural, agricultural, presence of body of water)

Threats to the roost- (i.e. potential for flooding, accessible by people from below)
Types of bats (if known)
Emergence time (if known)
When are bats present (i.e. summer, year round??)

Bats in Buildings

It's that time of year again when the Mexican free-tailed bats are migrating back to Texas and occasionally take up residence in people's home and other buildings. There is an easy way to deal with this issue and that is to fit the openings used by bats to exit the building with a valve, generally a simple smooth tube or netting through which bats are able to exit but not re-enter the building. Valves should be left in place for one week to make certain all bats have gotten out, and then openings can be permanently sealed shut. This should never be done in the months May-August as flightless young may be present. These guidelines can be found on BCI's website at <http://www.batcon.org> under "Quick Links" and "Bats in Your Home". A list of professional bat excluders are also listed there by city in case the problem is too big for you to handle on your own.

Welcome BCI's new Artificial Roost Coordinator

Bat Conservation International has a new artificial roost coordinator. Please welcome Mylea Bayless. Since starting with BCI in March, Mylea has already begun working with partners to re-evaluate past efforts and redefine future projects. She will be building on past successes to develop a new program that will incorporate the most dynamic components of BCI's previous Bat House, Bats in Bridges, and Bats in Buildings programs.

She can be reached at mbayless@batcon.org or 512-327-9721.

Houston Bats Along the Bayou Project

Diana Foss, TPWD Urban Biologist- Houston

Houston residents and visitors now have a new place to go 'batty' about – the Waugh Drive Bridge Bat Colony. The bats have recently appeared in newspaper, television, and magazine articles, including an upcoming article in Texas Parks and Wildlife magazine. The bats' celebrity status is primarily due to the efforts of Joe Turner, the new Director of the City of Houston Parks and Recreation Department and his staff, as well as community volunteers.

Since the summer of 2005, volunteer members of the Houston Bat Project Team monitor the Waugh Drive Bat Colony at least four days each month. These extremely dedicated volunteers "count" (estimate numbers of) bats in the bridge crevices, as well as conduct emergence observations each month. Team members also host a question and answer "Public Night" on the third Friday evening of every month at Waugh Drive Bridge. The team consists of approximately 40 volunteers from: three local Texas Master Naturalist chapters, Texas Parks and Wildlife Department staff, Houston Parks and Recreation staff, Houston Zoo staff, Bayou Preservation Association, Buffalo Bayou Partnership, The Park People, and interested individuals from the general public. In addition to Waugh Drive Bridge, the Team is currently investigating and will be monitoring several other bridges in the Houston area that have resident or migratory bat colonies. To date, six additional bridges over three bayous in Houston are known to have bat colonies, with more reports arriving monthly.

For more information about the bats of Waugh Drive Bridge, check the Buffalo Bayou Partnership website (<http://www.buffalobayou.org>) or contact Diana Foss, Texas Parks and Wildlife Dept., 281-456-7029.

WASHINGTON

Submitted by Gerald Hayes

Washington Bat Working Group Spring Meeting

Gerald Hayes and Howard Ferguson, Washington Department of Fish and Wildlife, Olympia, WA 98501.

The spring meeting of the Washington State Bat Working Group was held in mid-March. Topics discussed included updates from the Western Bat Working Group, Northwest Bat Cooperative, Washington's Comprehensive Wildlife Conservation Strategy, State Bat Plan, mine closures on federal lands, and wind power. Two graduate students gave presentations on their research in the state. Graduate student Jeff Rosier presented his research results on the role of riparian areas on roosting and foraging by fringed myotis in Moses Coulee. Graduate student Kara McClanahan presented her research on the molecular characteristics of diets in five bat species in the Moses Coulee area.

Molecular analysis of bat diets: implications for conservation and insect management

Kara D. McClanahan, Washington State University, WA

Bats have been suggested to contribute to the management of insect populations due to their abilities to consume large quantities of insects during their lengthy foraging bouts. To determine whether bats are effective at controlling pest insect populations, we must first determine whether bats forage on these pests and which particular bat species are more likely to do so. Current studies that characterize bat diets use visual analysis of undigested insect parts in bat guano. Reliance upon the presence of large insect parts in the guano as well as researcher expertise of insect morphology can limit identifications to insect order. Molecular characterization of diets has been used for other organisms and this study will incorporate these methods to quantify bat diets beyond the ordinal level. The presence of specific agricultural pests will be identified in the diets of 5 bat species with overlapping foraging areas within central Washington, including *Antrozous pallidus*, and 4 myotis species (*M. ciliolabrum*, *M. lucifugus*, *M. thysanodes*, and *M. yumanensis*). Insect sampling will be performed to assess which insects are in greatest abundance as well as those most likely to be agricultural pests. Additionally, the extent to which the focal bat species are generalist or specialist foragers will be determined by comparing the presence of insects in guano to the relative abundance of the insects in the foraging areas. Bat species that are more likely to prey upon agricultural pests may also be at risk of exposure to insecticides. This may provide a special challenge to conservation efforts because habitat preservation may not be enough to protect some dwindling bat populations.

YUKON

Bats and the Midnight Sun

Jennifer Talerico, University of Calgary

Jennifer Talerico is starting her MSc. research this summer in Watson Lake, Yukon. She will be investigating how northern nocturnal mammals, specifically little brown bats (*Myotis lucifugus*), adjust their foraging behaviour and strategies where there is a short reproductive season, low temperatures and short nights. Jennifer will be examining: (1) bat emergence and return time, (2) foraging habitat, (3) diet, (4) insect abundance and distribution (5) light intensity and (6) weather. She will be working in cooperation with Thomas Jung, Yukon Department of Environment.

Bats of the Yukon

Brian Slough, Whitehorse

I am continuing my bat studies initiated in 1997 to learn about Yukon's bats. These were the first studies directed at bats in the territory and have been funded primarily by the Northern Research Institute, Yukon College. Objectives have been to determine species present, their distribution, colony dynamics, foraging and roosting habitats, and daily and seasonal activity patterns. Most, if not all, Yukon bats are migratory, and the locations of their swarming/hibernating sites remain a mystery. I am still trying to establish collaboration with Alaskan researchers to help answer this question. Here is a brief update on what I have learned.

I recorded a big brown bat (*Eptesicus fuscus*), in the southern Yukon in 1999 and captured northern long-eared bats (*Myotis septentrionalis*) (along with collaborators from the Yukon Department of Environment and NatureServe Yukon) in the southeast. I have banded almost 400 little brown bats (*Myotis lucifugus*) and collected biopsy punches from 200 bats at several colonies across the southern Yukon. Tanya Dewey, University of Michigan, is analyzing *M. lucifugus* genetics, and has found two subspecies, *M. l. lucifugus* and *M. l. alascensis*, with both types found at a single colony near Whitehorse. The northern limit of bats at 64° appears to be constrained by migration abilities rather than summer light conditions or habitat factors. Bats forage in continuous daylight at the darkest part of the day, presumably to minimize predation risk.

Little brown bat colonies are highly dynamic, with rates of recapture low, and evidence of movement between colonies. Natural day roosts have been observed in rock crevices and in dead trees. Riparian habitats are preferred. Seasonal migration to the Yukon begins in mid-April, parturition is around July 1, and colonies begin to disintegrate in early August, although many bats remain until late September. There are records of bats hibernating in buildings in interior Alaska, but this has not been documented in the Yukon. There are natural hibernacula in Southeast Alaska, and I suspect that many Yukon bats belong to that population.

OTHER WBWG NEWS

Submitted by Cori Lausen

Wind Energy and Bats - WBWG Sub-Committee. Arising out of the last WBWG conference call was a suggestion that the WBWG facilitate the standardization of protocols and data collection for wind turbine assessments and monitoring going on in wind farms throughout the west. A sub-committee was suggested as a way of compiling existing information, assessing whether standardization is feasible, and facilitating this standardization process. This includes coordinating with federal agencies that have already initiated work on the bats and wind energy issue. While this sub-committee is in its infancy, the urgency for goals to be set and protocols reviewed was recognized, so a preliminary group of individuals have already taken action to start compiling information. If your state/province is dealing with wind development issues and you would like to participate in this sub-committee, please contact Bronwyn Hogan at bhogan@dfg.ca.gov.

THE BAT BULLETIN BOARD

Volunteer Opportunities

Volunteer field assistant in eastern Washington. The project involves the characterization of bat diets through guano analysis within the shrub-steppe habitat in Washington State. The applicant will assist in the capture of bats by mist-nets and harp traps as well as the cataloging of guano samples collected. Hours/days worked will depend upon weather conditions, but generally the crew will be working 6-8 hours a night with negotiable days off. The terrain within the field sites is rocky and some hiking is required.

The applicant should have the following qualifications:

- familiar with the identification of Northwestern bat species
- previous mist-net or bat experience is preferred
- willing to live with the crew near the field site (housing and transportation within the field site will be provided)
- a team player and attentive to detail
- provide their own transportation to Wenatchee, WA
- obtain pre-exposure rabies vaccinations before hiring

Fieldwork will begin in mid-May and end late July. Thus far, this position is on a volunteer basis however, future funding may allow for a monthly stipend for assistants.

Please send a resume with 3 contacts with knowledge of work ethic and experience to Kara McClanahan at guanogirl3@yahoo.com.

Volunteers in Arizona. Experienced volunteers are needed for a large survey effort to assess bat diversity and use patterns in Arizona's Aubrey Valley (75 miles west of Flagstaff, in northern AZ). A wind generation facility has been proposed along the Aubrey Cliffs overlooking the valley. Arizona Game and Fish Department (AGFD) has written a letter to the Arizona State Land Department in opposition to this particular project, expressing deep concerns over likely wildlife impacts including direct threats to bats, which are thought to be highly diverse and abundant in the Aubrey Valley area. This effort would provide much needed data to fully and scientifically address this threat. To date, no large scale or extensive surveys have been conducted in this area. The objective is to monitor multiple netting and audio stations within the valley and surrounding woodlands and along the cliffs. Experienced folks are needed to assist and/or lead survey teams. The 2006 survey dates are June 26th-28th. Logistical information will be sent out as those dates approach. Please contact Steve Goodman (AGFD) at sgoodman@azgfd.gov or (928) 692-7700, Ext. 2332 if you are interested in helping. Thank you and hope to hear from you soon. We believe this will be a meaningful effort toward bat conservation.



Looking Northeast across Aubrey Valley to the Aubrey Cliffs

Background

Aubrey Valley, located outside Seligman south of the Grand Canyon, is a high desert grassland that grades into juniper-pinyon woodlands uphill and along the Aubrey Cliffs. Though few surveys have been conducted to date, it is believed that due to its location, juxtaposition of grasslands and woodlands, abundant insect populations, and available waters, this area is an exceptional foraging and roosting location for a variety of bat species. It is estimated that up to 17 of 28 Arizona bat species utilize this area, many of which are federal species of concern. Also, due to its proximity to the Grand Canyon, the valley potentially provides important foraging habitat for long-distance flying bats that roost and breed in the Grand Canyon. In 2005, Carol Chambers of Northern Arizona University and her crew fitted a spotted bat captured in Aubrey Valley with a radio transmitter and subsequently tracked it to its roost site in the Grand Canyon approximately 22 miles northwest. Additional interesting discoveries await us.

Volunteer in Egypt. A Bat scientist is required as part of an extensive biodiversity survey programme that is being implemented in the St Katherine Protectorate (in the Sinai Desert), Egypt. The applicant will be required to work for a 6 week period from 25th June to 5th August Primary duties: *To implement mist net and echo location surveys of the bat fauna of the St Katherine within the protectorate region. * To organise volunteers to assist with the surveys and ensure that they are aware of the purpose and outcome of the survey work. *To present the findings of the research to volunteers and other project staff. * To coordinate the write up and publication of the data collected.

Attributes, skills and experience required * Previous experience of mist net and echo location surveys for bat species (preferably within a desert environment) *Leadership experience, and evidence of good organisational abilities. *Ability to work in remote areas as part of a small friendly team *Previous publications are desirable, but not essential.

This is a *voluntary post*, however there is a travel bursary to cover the cost of travel to Egypt, and all food and accommodation costs in country are covered by the project.

Applications to be made by email to info@opwall.com. Applicants should enclose a CV and a covering letter identifying how they meet the attributes, skills and experience requirements listed above. Please put Bat Scientist in the email subject field.

Job Postings

Currently the following job postings are listed on the BCI website. For details, check out the "Bat Vine" at <http://www.batcon.org>.

- Two Bat Field Technicians to work at Camp Atterbury, just south of Indianapolis, IN looking at the potential effects of military training operations on endangered bats from 15 May through September 2006.
- An upper-level undergraduate student is wanted as an assistant for research on how stream channel geomorphology influences bat foraging activity.
- Six volunteers are needed to assist in radio tracking of Townsend's big-eared bats from July 10-21, 2006 near Kanab, Utah. Radio telemetry experience preferred, but not absolutely necessary.

Scholarships, Grants, Awards

Support for Mexican student to attend the North American Symposium on Bat Research (Bernardo Villa Prize). El premio Bernardo Villa es un reconocimiento que otorga la "North American Symposium on Bat Research Society" para que estudiantes de Licenciatura y/o Postgrado presenten el resultado de sus investigaciones sobre murciélagos en el Simposio anual de la Sociedad.

El premio incluye: transporte, hospedaje y costo del registro al Simposio.

Requisitos (enviar estos documentos a la dirección abajo mencionada):

Breve descripción del trabajo en español (máximo cuatro cuartillas), incluyendo título, autor(es), resumen, introducción, método, resultados, discusiones y conclusiones, y literatura citada. Se recomienda incluir tablas y figuras anexas.

Ser estudiante de Licenciatura o Postgrado, inscrito o con un año o menos de haber egresado de una institución mexicana (copia de credencial de estudiante vigente o similar).

Dos cartas de recomendación (una de su director de tesis).

Número de Becas que otorga por año: una

Fecha límite para entrega de documentos: 28 de Abril de 2006

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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. Awards are 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>. Applications will be available starting July 2006.

NABCP Conservation Fund. Since 1998 the NABCP Conservation Fund has supported priority bat projects across North America. All funds so far have been privately raised by Bat Conservation International, facilitating millions of dollars in bat work. Funding is for North American projects only. Grants are annual, and projects must be started in the calendar year following the November application deadline. Funding may be full or partial, with most awards in the \$1,000 to \$5,000 range. Projects directly supporting student research are not eligible for this program and should be directed to BCI's Scholarship Fund. For more information, please visit <http://www.batcon.org> then follow the links to "BCI Grants" and then "NABCP Funds". Application forms become available in July.

Also check out the BCI website for information on the **Global Grassroots Bat Conservation Fund**; applications can be filled out online and are processed on an ongoing basis.

Other Bulletin Items

Tom Rodhouse - John Day Fossil Beds National Park Service. The National Park Service - Upper Columbia Basin Network Inventory and Monitoring Program, is still actively pursuing an acoustic-based long-term bat monitoring protocol for several of its park units, including the John Day Fossil Beds National Monument (Oregon) and Craters of the Moon National Monument and Preserve (Idaho). High priority of the effort is to ensure close collaboration and, where possible, consistent methodology and design, with other regional bat monitoring efforts. The contact is Tom Rodhouse (541) 312-8101 or Tom_Rodhouse@nps.gov for anyone interested in more information.

Bat Grid Training. The Bat Grid is a systematic survey strategy to inventory presence and distribution of bat species across northwestern U. S. The Bat Grid is being implemented in Oregon, Washington, Montana, South Dakota, and Idaho. Training is provided free-of-charge and is sponsored by the USFS and BLM. Priority for participation is given to USFS and BLM employees. Training dates for the Bat Grid in 2006 are: June 5-9 Bend/Redmond, Oregon; June 12-16 Washington; June 18-20 Medford, Oregon; July 10-14 Helena, Montana. Pre-exposure rabies shots or current titer are required and you will need a laptop.

For more information contact: Pat Ormsbee - Willamette National Forest - R-6 Bat Specialist, pormsbee@fs.fed.us, 541-225-6442, c 541-954-0083 (Oregon and Washington) or Jenny Taylor - R-1 Bat Grid Coordinator, 208-769-3073 (Montana, South Dakota, Idaho).

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: <http://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 Marikay Ramsey at mramsey02@fs.fed.us.

Southeastern Bat Diversity Network. The Southeastern Bat Diversity Network is comprised of bat biologists, land managers and others interested in the conservation of bats that occur in the 16 southeastern United States. Membership dues for this working group are \$20 with a discount of \$10 for students. You can find out more information about bat events and other happenings in the southeastern U.S. by visiting their website at <http://www.sbdn.org>.

The USDA Forest Service is hosting the **2006 Southeastern Bat Diversity Network Bat Blitz** on August 6-10 in the mountains of South Carolina. In case you are not familiar with the Bat Blitz concept, it is a coordinated, intensive effort by regional bat biologists to document the bat community of a particular area during a short time period. It also serves as a training opportunity for undergraduate and graduate students and state and federal agency personnel. Participants are put on teams consisting of a team leader and 3-4 team members.

The base camp this year will be at Camp Chatuga near Mountain Rest, South Carolina (<http://www.campchatuga.com>). If you are interested in participating or would like more information you can contact Susan Loeb at 864-656-4865 or sloeb@fs.fed.us.

UPCOMING EVENTS...

14th International Bat Research Conference. Merida, Yucatan, Mexico, 19 - 23 August 2007. Details will be posted at <http://www.nasbr.org/> as plans unfold.

Bat Conservation and Management Workshops. Portal, Arizona June 12-17 and June 17-22, 2006; Harrisburg, Pennsylvania August 7-12, 2006; Nashville, Tennessee 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

Bat Conservation Acoustic Monitoring Workshop. Tucson, Arizona. June 22 - 27, 2006. For more information visit <http://www.batcon.org>

WBWG 2007 Conference. This biennial conference will be in Tucson, AZ Spring 2007. Details will be posted at <http://www.wbwg.org/> as plans unfold.

36th Annual North American Symposium on Bat Research. 18-21 October 2006. Wilmington, North Carolina. See <http://www.nasbr.org/> for full details.

12th Australasian Bat Society Conference. April 19-21, 2006, at the University of Auckland.
<http://www.sbs.auckland.ac.nz/absc2006/>

NJ Bat Study Techniques Workshop. Great Swamp National Wildlife Refuge. June 2-4, 2006. Two concurrent sessions are available to choose from: Acoustic Monitoring or Capture Techniques. Details: <http://www.batmanagement.com/Programs/programcentral>

TWS Bat Workshop. The Western Section of The Wildlife Society is sponsoring a four-day "Ecology and Management of Bats" Workshop in Monterey, CA, September 7-10. Recognized experts will be leading discussions, and field work with echolocation and mist-netting are among the many scheduled activities. Additional information is available at <http://www.tws-west.org> (click Meetings and Workshops).

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