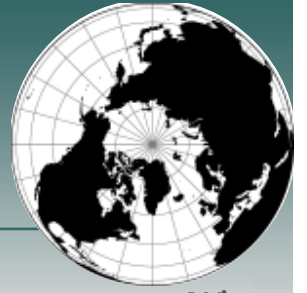


# ABResearch Notes



ABR, Inc.—Environmental Research & Services

Main Office: P.O. Box 80410 Fairbanks, AK 99708 ♦ [www.abrinc.com](http://www.abrinc.com)

P.O. Box 249 Forest Grove, OR 97116 ♦ P.O. Box 240268 Anchorage, AK 99524 ♦ 15 Bank Row, #B, Greenfield, MA 01301

Winter  
2009/10

## Spotlight on Bats: Increased Mortality Causes Alarm

North American bats are the focus of many environmental studies, as some populations in the US and Canada are undergoing catastrophic declines. Migratory tree-roosting species comprise the majority of fatalities at wind-energy facilities, while hibernating cavern-roosting bats are succumbing to a fungal infection, resulting in one of the most precipitous population declines in wild-life history. With the help of industry, state and federal agencies, universities, and nonprofit organizations, bat biologists are working to understand and resolve these problems. A summary of our current findings is presented below.

### Bats and White-nose Syndrome

White-nose syndrome (WNS), a disease presumably caused by the fungus *Geomyces destructans*, has infected 6 species of hibernating bats (little brown, northern long-eared, small-footed, Indiana, big brown, and tri-colored) in 9 states (VT, NH, MA, CT, NY, NJ, PA, VA, WV) and Canada, decimating entire populations. First discovered in New York during the winter of 2006, WNS is estimated to have killed more than 1 million bats in 3 years. In 2009, it is expected to spread westward into states with large populations of hibernating Indiana and gray bats, both federally endangered species.



Little brown bat at Greeley Mine, VT, with white-nose syndrome, March 26, 2009. Photo by M. Moriarty/USFWS.

Many organizations are exploring means of containing the spread of this epidemic. Bat Conservation International (BCI) provided initial funding targeting research priorities. The USFWS and USGS have created disinfection protocols for biologists studying bats. The USFWS, through its Preventing Extinction program also is funding 6 grants totaling \$800,000 to investigate the cause and control of WNS. Congress recently secured \$1.9 million for research in the final 2010 Interior Environmental Appropriations bill. The Western Bat Working Group, along with state and federal agencies, is working continuously to prevent the western spread of this disease.

### Bats and Wind Energy

Our understanding of bat/turbine interactions at wind-energy facilities has increased thanks to ongoing pre- and postconstruction monitoring studies. Previous efforts focused on the timing of peak bat activity and fatality (~mid-July to October) and the species most impacted

by wind energy development (i.e., migratory tree-roosting bats). While these studies continue to provide valuable information, additional research examining specific causes of fatality and potential mitigation options may assist in reducing adverse bat/turbine interactions.

Researchers recently discovered that a high proportion of bat fatalities (up to 50%) was not caused by direct contact with turbine blades. Close examination of carcasses revealed hemorrhaging in internal organs and blood vessels. This phenomenon, called *barotrauma*, results when bats fly through pressure differentials or vortices near blade tips.

Acoustic monitoring has provided critical information on spatial (horizontal and vertical) and temporal (nightly and seasonal) patterns of bat activity. Studies using detailed acoustic analyses now provide species identification (as opposed to grouping bats into broad frequency categories), which aids in determining when species of interest (i.e., hoary, silver-haired, and eastern red bats) are present at a site.

BCI is leading investigations into possible mitigation options using acoustic deterrents and curtailment. Acoustic deterrents that emit high decibel, ultrasonic frequencies are being used to discourage bat presence, and preliminary studies have documented reduced bat activity in and around these deterrents. Because bat activity generally increases on low-wind nights, increasing the cut-in speed of turbines from ~3–4 m/s to 5–6 m/s also is reducing bat mortality around wind-energy facilities and may provide an ecologically sound and economically viable solution to the problem.

ABR's bat program, led by Dr. Cris Hein ([chein@abrinc.com](mailto:chein@abrinc.com)), provides expertise on a range of issues, including wind-energy and Indiana bat research.

### Inside This Issue

Climate Change and the American Pika.....	2
Allison Lake Hydroelectric Project.....	2
GIS-Based Website for Arctic Ocean Research Coordination.....	2
Remembering Betty Anderson.....	3
New Eagle Nest Regulations.....	3
Biological Assessment of Tualatin Valley Floor.....	3
Tundra Treatment Manual Update.....	3
Bioshare.....	4

## Climate Change and the American Pika

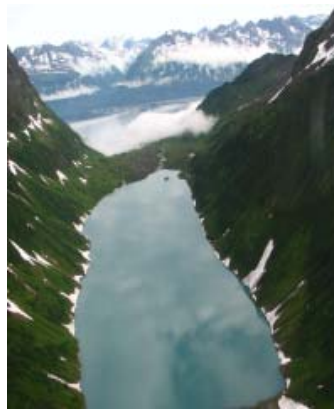


American pika resting on a boulder, Columbia River Gorge, OR. Photo by T. Mabee.

Global climate change is a serious potential threat for the American pika which has triggered a petition to list them under the federal Endangered Species Act. In the Pacific Northwest, climate change models predict temperatures to increase from 3–10°F. The anticipated decreased summer rains and increased summer temperatures could threaten pikas

by changing the extent and composition of plant communities where they live, decreasing the period when they can gather food, and increasing the risk of overheating during the critical summer period. Because of these concerns, Senior Scientist and Research Coordinator **Todd Mabee** and Research Biologist **Leslie Rodman** initiated a study through ABR's Bioshare program to survey pika along the Columbia River Gorge in Oregon. Their findings are being used by the USFWS in connection with the ESA petition and to provide ideas for future research in the region. ABR hopes to continue surveys in 2010 in order to establish long-term monitoring sites and to identify areas important for pika conservation. For more information or to get involved with this project, contact Todd at [tmabee@abrinc.com](mailto:tmabee@abrinc.com).

## Allison Lake Hydro Project Moving Forward



Aerial view of Allison Lake, over looking the PWS toward the city of Valdez.

Copper Valley Electric Association is planning to construct a hydroelectric facility at Allison Lake across Prince William Sound from Valdez, Alaska. In support of the permitting process, CVEA and Hatch Acres contracted with ABR to conduct a publication review and field studies on biological resources in the project area. Research Coordinator **Robert Burgess** is leading the project. Field studies were carried out this summer by several of our

research biologists. **Jennifer Boisvert** completed aerial surveys for Bald and Golden eagle nests, ground surveys for Kittlitz's and Marbled murrelets, and point-counts for nesting landbirds/shorebirds. **Wendy Davis** conducted a jurisdictional wetland delineation, including field work for the development of a habitat map to be completed in 2010. **John Seigle** led surveys for fish and macroinvertebrate resources. The permitting process is expected to be completed in 2010.

Contact Bob Burgess at [bburgess@abrinc.com](mailto:bburgess@abrinc.com) for more information.

## GIS-Based Website Facilitates Research Coordination in the Arctic Ocean

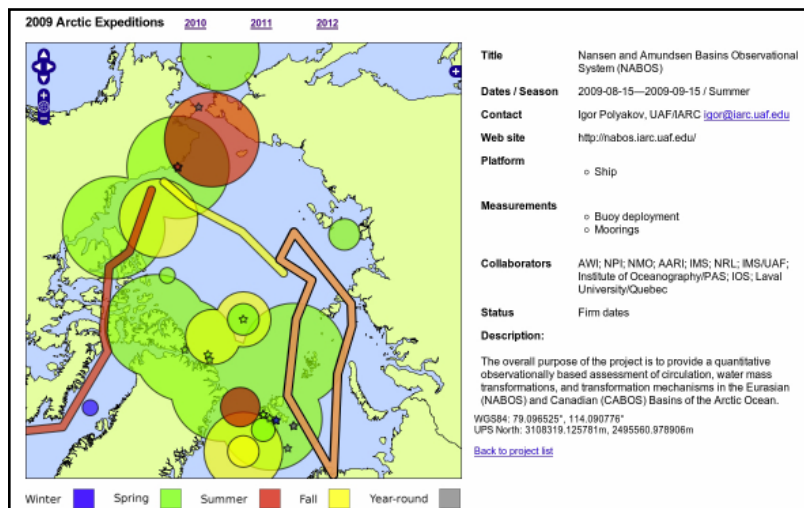
**Christopher Swingley**, Information Technology Manager for ABR, recently developed a geographic information system (GIS)-based website for the University of Alaska Fairbanks (UAF) that enables Arctic Ocean scientists to coordinate their research activities on-line. The site displays a map (see example, below) using an interface similar to Google Earth but is populated with project-planning data from scientists conducting research in the

area. Clicking on individual project polygons displays information about the research being conducted there. The system is flexible, allowing for the addition of other geographic datasets such as ship track data, ice-edge information, or views of the results from expeditions. Project data, including the polygons defining the range of project operations, can be edited using another web-based input form. This not only allows data entry by users who

are unfamiliar with GIS systems, but the user does not require a commercial GIS system to enter data. Data storage, map rendering, and web output is performed using a free toolchain, which minimizes the long-term cost of the system.

The underlying system is a free geospatial database extension (PostGIS) to the PostgreSQL database server. PostGIS stores all the spatial information for the shapes (polygons, lines and points). With the extension, a wide range of complex geospatial calculations can be performed using only SQL database queries, often more rapidly than is possible using graphical GIS packages. MapServer renders the shapes into images for the web, and OperLayers pulls everything together (data, images, shapes, and navigational controls) on the site.

Contact Chris at [cswingley@abrinc.com](mailto:cswingley@abrinc.com) for more information.



GIS-based website example showing 2009 Arctic Ocean expeditions. To access this site, go to <http://www.iceplan.org>.

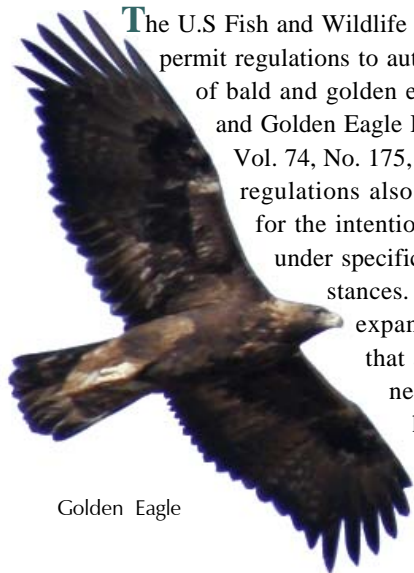
## ABR to Update Tundra Treatment Manual



L to R: ABR ecologists Joanna Roth, Aaron Wells, and Patricia Miller sampling vegetation with point frames.

Research Biologist **Timothy Cater** is working with Alaska Clean Seas to update the newest edition of *Tundra Treatment Guidelines* for the Alaska Department of Environmental Conservation. The manual is used by spill responders to minimize the physical damage incurred during a clean-up operation while maximizing the recovery of contaminants. Working toward these objectives simultaneously is intended to enhance vegetation recovery and stabilize soil thermal regime, key components of productive ecosystems in permafrost terrain. Tim supervised an ABR field crew that collected data at 12- to 20-year old spill sites and assessed the relationship between residual concentrations of hydrocarbons left in soil after the clean-up and vegetation recovery. He also completely revised the manual, including adding a new tactic for transplanting live tundra sod in cases where the excavation of contaminated soil was necessary. If questions, contact Tim at [tcater@abrinc.com](mailto:tcater@abrinc.com).

## New Rules Allow Taking Eagle Nests



Golden Eagle

The U.S. Fish and Wildlife Service is finalizing permit regulations to authorize limited take of bald and golden eagles under the Bald and Golden Eagle Protection Act (50 CFR, Vol. 74, No. 175, Parts 13 and 22). These regulations also establish provisions for the intentional take of eagle nests under specific, but limited circumstances. Examples include expanding current provisions that allow nest removal necessary to ensure public health and safety, nests built on human-engineered structures, and where there will be a net benefit to eagles (including projects where the net benefit is the result of compensatory mitigation measures). Although the rule went into effect on 10 November 2009, the agency is drafting implementation guidelines which are expected to be forthcoming. For more information, contact Eliza Savage, Division of Migratory Bird Management, [eliza\\_savage@fws.gov](mailto:eliza_savage@fws.gov).

### ABR in Montana

ABR has personnel in Montana who provide a wide range of services, including avian and bat studies for the wind industry and aquatic studies. For more information, contact **Nathan Schwab**, [nschwab@abrinc.com](mailto:nschwab@abrinc.com).

## Biological Assessment Tool to be Refined



ABR Biological Technician Merle (Tony) Roberts preparing samples.

ABR Senior Scientist **Michael Cole** and Research Biologist **Jena Lemke** are leading a project to describe least-disturbed conditions on the Tualatin Valley floor in Oregon. This information will help researchers measure levels of impairment to biological conditions in the region's low-gradient rivers and streams. ABR worked with Clean Water Services this fall to identify and sample macroinvertebrate communities from nearly a dozen least-disturbed stream reaches in the region. Using these data to characterize "best attainable" biological conditions, a new model will be developed that will more accurately assess biological conditions in valley floor streams. Results of the study and the new model are expected to be available by June 2010. For more information, contact Jena at [jlemke@abrinc.com](mailto:jlemke@abrinc.com).

## Remembering Betty Anderson



Betty Ann Anderson (1955–2009)

**Betty Ann Anderson** passed away Wednesday, October 7, 2009, in Fairbanks, Alaska. She was active in environmental studies in Alaska from 1979 and an avid ornithologist.

Betty joined ABR in 1984 as a research biologist. Her primary research interests were the behavioral ecology and dynamics of bird populations and communities, particularly in relation to resource development, disturbance, and habitat modification. In addition to research on passerine habitat selection, Betty worked extensively on terrestrial bird censuses and migration studies in the Susitna River basin and east-central Alaska, and on waterfowl and shorebird studies on the North Slope. She was promoted to senior scientist in 1990, combining her scientific work with proposal management and oversight of the company's information database.

Betty was an important member of the ABR family. We valued her opinions, and she was a key sounding board for ideas presented by others. Throughout Betty's professional career, her main passion was birds, and, indeed, she was highly regarded as an ornithologist. She will be deeply missed.

—See announcement about a new scholarship in Betty's name, page 4.



# Bioshare

ABR's staff shares a sense of responsibility for the well being of our local and global communities. We try to meet this responsibility by providing resources, biological expertise, and our time through a program we call *Bioshare*.



Luis Mendoza

## Graduate Student Participates in ABR's Cross-Cultural Exchange Program

ABR's Oregon office hosted a visiting graduate student from the University of Xalapa, Veracruz, as part of Research Coordinator **Todd Mabee's** cross-cultural exchange with Mexican students. **Luis Mendoza** participated in a variety of radar, avian, and mammalian field projects and benefited greatly from a deeper understanding of how to design and implement field studies.

Todd met Luis in the State of Oaxaca, Mexico, where he spent his sabbatical last fall as part of a collaboration with Mexican scientists begun in 2006. Todd worked on the first wind-power project in Mexico, where world-class raptor migration occurs in the fall (1–2 million raptors). He helped train Mexican biologists on the use of radar, and on conducting raptor migration counts, behavioral studies, and avian and bat fatality searches.

## School Built In Pakistan with ABR Donations



The Central Asia Institute (CAI) is a nonprofit organization with the mission to promote and support community-based education, especially for girls, in remote regions of Pakistan and Afghanistan. Since 1996, the CAI has built over 130 schools in the remote mountain regions of those countries. The cost to build a school and support teachers for five years is \$50,000. In 2008, ABR donations—supplemented by contributions from its owners—helped build a new school in Pakistan. Visit <https://www.ikat.org/> for more information on the CAI and its founder, Greg Mortenson.

## Betty A. Anderson Memorial for Avian Studies



CEO Bob Ritchie handing KaLynn Coffey, UAF Scholarship Manager, a \$5,000 check.

### ABR

established a scholarship in Betty Anderson's name at the University of Alaska Fairbanks.

The purpose of the scholarship is to provide awards to students interested in avian studies, particularly those which mirror Betty's passions and professional interests. These include the natural history of birds, avian behavior, application of techniques to monitor rare birds, and impact assessment due to industrial development and climate change. To make a donation, contact the UAF Development Office for more information or go on-line at <http://www.uaf.edu/giving/>.



.....

### ABR, Inc.

P.O. Box 80410  
Fairbanks, Alaska 99708

*Return Address Requested*

