Conserving Rafinesque's Big-eared Bats and Southeastern Myotis Roosting Habitat in Arkansas

PROJECT SUMMARY

BCI and project partners have created programming that combines the skills and regional experience of multiple agencies to address AWAP priorities through site-based stewardship efforts and increased awareness of these issues to the public and policy-makers. Arkansas is home to only three federally endangered mammals—all cave-dwelling bats—and Arkansas has done commendable work with those species. This project was preferred by our Arkansas Game & Fish partner as bringing focus to additional bat species of concern—Rafinesque's Big-eared Bats and Southeastern Myotis.

Project Leader

Mylea Bayless
Conservation Biologist
Bat Conservation International
P.O. Box 162603 , Austin , TX 78716
mbayless@batcon.org
512.327.9721 phone
512.327.9724 fax

Project Partners:

Thomas S. Risch
Assoc. Prof. of Wildlife Ecology
Arkansas State University
trisch@astate.edu
(870) 972-3333

David A. Saugey
Wildlife Biologist
Southeastern Bat Diversity Network
dsaugey@fs.fed.us
(501) 984-5313

Blake Sasse
Nongame Mammal/Furbearer Program
Arkansas Game and Fish Commission
dbsasse@agfc.state.ar.us
(501) 470-3650

Ned Hollenbach
Park Manager
Lake Greeson Field Office
US Army Corps of Engineers
Ned.J.Hollenbach@usace.army.mil
(870)285-2151 (x5005)

Project Advisor:

Eric Britzke
Research Wildlife Biologist
US Army Corps of Engineers, Engineer Research and Development Center
Eric.R.Britzke@usace.army.mil
(601) 634-3641

Total Project Cost = $41,976
Total Arkansas SWG request = $18,634
Total Matching Funds* provided = $23,342

*these are nonfederal dollars from BCI's foundation grants and donor funds, as well as a percentage of volunteer hours, partner non-federal match and in-kind contributions.

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Rafinesque's big-eared bats (*Corynorhinus rafinesquii*) and Southeastern myotis (*Myotis austroriparius*) are both identified as species of special concern (S2; imperiled) in the Arkansas Wildlife Plan (AWAP). Loss of roost sites through land conversion and habitat alteration have been identified as threat to these bat populations in the AWAP. Throughout the state these species have been documented using buildings, abandoned water-wells, cisterns, bridges, and mines in addition to caves and hollow trees. These two species rank 4th and 5th among mammal species of greatest conservation need in the Arkansas WAP. This project addresses the priority implementation actions identified by the WAP's Taxa/Habitat Teams and Steering Committee. Working together, our project partners have integrated Arkansas Wildlife Action Plan priorities with natural resource efforts at the local level by involving land stewards in the planning and implementation levels for each site. We are addressing the needs of species of greatest conservation need and delivering two on-the-ground stewardship projects that implement the priorities of the WAP and may be replicable in other places to protect the bats of Arkansas. Finally, we offer news stories, photos and text for partner websites that can be used to publicize our project and the goals of the state's Wildlife Action Plan to the general public.

Which of the funding priorities does your preproposal address? Our proposal addresses protecting man-made structures that have become artificial roost sites for these species, an identified funding priority in Attachment A of the 2009 Arkansas State Wildlife Grant request for pre-proposals. In addition to protecting these known sites we would conduct focused search efforts for nearby alternate roosts, and monitor selected bat colonies to evaluate the outcome of our protection efforts.

In what ecoregion, ecobasin, terrestrial habitat or area will your project be conducted? We have identified 2 target areas; Lake Greeson in southwest Arkansas and the Stumpy Point Tract of the St. Francis National Forest in eastern Arkansas (see Fig 1 on page 4). Each area has at least one known bat roost, and several nearby potential roost sites that we intend to survey periodically for use. The Lake Greeson mine adits occur in the southern portion of the Ouachita Mountains ecoregion, in primarily pine forest. The Stumpy Point site lies in the Mississippi Alluvial Plain ecoregion, and consists primarily of bottomland hardwood habitat. Based on the Arkansas SWAP priority scores, both bat species rank high among mammals (4th and 5th) in our proposed ecoregion project sites.

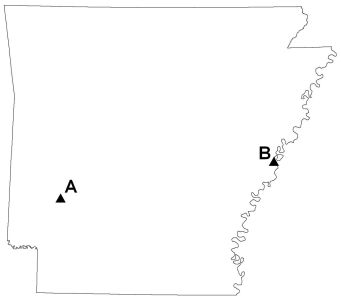

Fig. 1. Proposed conservation sites in Arkansas. A) Lake Greeson, and B) Stumpy Point Tract

What are the methods (briefly) by which you propose to carry out your work? Each location will require site specific methods to achieve the same three goals; protecting the known roost site(s), identified nearby alternate roost sites, and population monitoring to evaluate effect of protection activities.

<u>*Lake Greeson:*</u> Southeastern myotis currently hibernate in several abandoned mine adits on lands administered by the U.S. Army Corps of Engineers property. This same bat colony occupies a nearby state highway bridge over Lake Greeson during the maternity season. Because winter recreational activity in and around these adits pose a significant threat to hibernating bats, we propose to restrict access to known winter roosts by installing bat-friendly gates constructed of angle-iron. Construction would occur in fall 2009. In addition to protecting known mine adit roosts, we would survey nearby areas for additional subterranean structures for bat occupancy during winter months (Jan-Feb 2010). Southeastern myotis currently hibernate in several abandoned mine shafts on Corps of Engineers property. The same bat colony occupies a nearby bridge during the maternity season. Because recreational activity in and around the mine shafts poses a potential threat to hibernating bats, we propose to install bat-friendly gates constructed of angle-iron. Construction will occur in fall 2009. In addition to protecting known mine roosts, we will survey additional nearby subterranean structures for bat occupancy

during winter months (Jan-Feb 2010). We will install data loggers to monitor temperature, humidity and light changes inside each gated roost during the winter months. We will also physically enter and monitor each roost for bat use at least once between December 2009 and March 2010.

Stumpy Point Cistern: Rafinesque's big-eared bats have been documented roosting in an abandoned cistern on U.S. Forest Service (USFS) property. Several additional structures are scattered nearby but have not been surveyed. We propose to install a bat-friendly well-cap on the cistern during fall 2009, which would allow bat access, address liability issues associated with open cisterns/wells on USFS land, and reduce potential disturbance by National Forest visitors. In conjunction with protecting the single known roost at Stumpy Point, we would survey additional structures for bat occupancy during both summer and winter seasons. Students from Arkansas State University would install data loggers and monitor the cistern roost for bat occupancy and environmental conditions throughout the year. The Arkansas Natural Heritage Commission (ANHC) has identified the Stumpy Point tract as an element of special concern because of the high quality Mississippi River bottomland hardwood forest. Field personnel have routinely recorded trees two to three feet in diameter, the size Rafinesque's big-eared bats typically select as maternity roosts when hollow. Roost protection efforts and surveys in this area may lead to more stable bat populations in this relic section of high-quality bottomland hardwood forest habitat.

What measurable products or outcomes will result from your project? There are several measurable outcomes resulting from our proposal to protect and monitor these two known roost sites for Southeastern myotis and Rafinesque's big-eared bats. First, the number of protected roost sites on public land in Arkansas will be increased. Roost occupancy (an indicator of population stability), can be measured with limited monitoring at these two sites. Environmental conditions in each protected roost would be measured using data loggers that document temperature, humidity and light levels. These conditions may be used in future comparative roost site studies or serve as a baseline for creating new roosting opportunities. By searching for additional nearby roosts, we would likely increase the number of documented roost sites. Preserving roost sites and protecting habitat are identified as conservation actions in the Arkansas Wildlife Action Plan. Interim and final reports would be created and submitted for publication on partner, federal and state agency websites. BCI will also deliver images and text about the bats of Arkansas (not limited to the species in this project) for the Arkansas Game & Fish Commission website (http://www.agfc.com/wildlife-conservation/mammals.aspx) that lists many of the state's mammals but currently does not have a bat page. Additionally, press releases can be created from the reports that can be used for distribution to regional media outlets. Additional information regarding the distribution and abundance of these species could assist the Arkansas Game and Fish Commission and other entities when making informed management and policy decisions regarding these bats..

To what extent will your proposed project be able to take advantage of existing resources (e.g., funding, teams, conservation areas, partnerships)? Bat Conservation International has received funding from the National Fish and Wildlife Foundation (NFWF) to protect Rafinesque's big-eared bat and Southeastern myotis roosts throughout their range. To facilitate this process a technical advisory committee has been established to develop conservation strategies for both species (also funded by NFWF). Activities proposed in the project would build on these ongoing efforts by incorporating their strategies and recommendations into our methods. In addition, activities conducted in Arkansas would be included in summary reports documenting range-wide conservation efforts targeting both species. The U.S. Fish and Wildlife Service is currently preparing status reviews of both bat species. Proactive conservation activities demonstrates a partnership approach by both state and federal agencies responsible for managing these bat populations that would benefit these status review processes. Finally, project partners have existing relationships that should facilitate successful implementation of our proposed activities.

What is the proposed total budget of your project?

Budget Items	SWG Request	Match Funds	Non-Eligible Match	Total
Staff (salary & benefits)	**$4,149**	**$12,285**	**$4,000**	**$20,434**
BCI Biologist		*$4,125*		
BCI Cave Gating Specialist	*$1,749*			
Partner Biologists		*$6,000*	*$4,000*	
Mine Gating Assistants		*$2,160*		
ASU Students to Monitor roosts	*$2,400*			
Operating Expenses	**$12,572**	**$4,544**	**$600**	**$17,716**
Travel				
Airfare	*$600*			
Vehicle Mileage	*$1,160*	*$3,944*		
Lodging	*$1,960*			
Per Diem	*$2,652*			
Vehicle Rental & Fuel	*$1,600*			
Supplies and Materials				
Steel (angle iron and mesh)	*$2,000*			
Welding supplies	*$500*			
Dataloggers		*$600*		
Misc Hardware	*$100*			
Contractors				
Custom Well Cap	*$1,000*			
Welding Labor for bat gates	*$1,000*			
Boat Transportation of materials			*$600*	
Capital Expenses				**$0**
BCI's Federal Approved Indirect Cost Rate 10.03%	**$1,913**	**$1,913**	**$0**	**$3,826**
Total	**$18,634**	**$18,742***	**$4,600**	**$41,976**

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Qualifications of the individual(s) and organization(s) involved

Bat Conservation International (BCI) is committed to teaching the importance of bats through education; preserving critical bat habitats and encouraging others to join in our conservation efforts; and to advancing scientific knowledge about bats and the ecosystems that rely on them through research documenting their value and significance. BCI currently employs five Ph.D. level wildlife biologists among our program staff. We undertake long- and short-term projects. For the past two decades we have seen our list of MOUs with federal agencies increase from the Fish & Wildlife Service to include BLM, the Department of Defense, the National Park Service, the Forest Service, the USDA's Natural Resources Conservation Service and many state agencies and national nonprofits. In almost 30 years, BCI has built considerable experience addressing conservation through partnerships with academic institutions, federal and state agencies and nonprofits whose missions are better accomplished—as are ours—through partnerships. With our federal funding partners we have undertaken publications, workshops, scholarships and research, and site-specific programming across the nation and around the world.

Mrs. Mylea Bayless is a Conservation Biologist coordinating BCI's efforts to study and protect southeastern myotis and Rafinesque's big-eared bats, including species-level conservation planning. Bayless has worked as a wildlife biologist for 13 years, researching a wide variety of species. She completed her M.S. research at Colorado State University in 1997 and has worked for state and federal agencies, universities and private organizations.

Dr. Thomas S. Risch is an Associate Professor of Wildlife Ecology. He received a B.S. in Environmental Studies from The Richard Stockton College of New Jersey, a M.S. in Wildlife Management from Frostburg State University, and a Ph.D. in Zoology from Auburn University. Tom's research has focused on the conservation of threatened and endangered mammals, and the evolution of life-history traits and secondary sexual characteristics in birds and mammals.

Mr. Blake Sasse is the Arkansas Game and Fish Commission's first Nongame Mammal Program Manager and has been active in monitoring and management of endangered bats in Arkansas caves and mines. From 1996-2000 he participated in landscape scale wetland restoration projects in the Everglades as a wildlife biologist for the Florida Fish and Wildlife Conservation Commission. Blake completed a M.S. degree in Wildlife Management (University of New Hampshire, 1995) where he studied forest bat roosting ecology.

Mr. David A. Saugey is a 32 year career federal wildlife biologist and consultant. David has been heavily involved in bat studies in the Arkansas resulting in 20 peer reviewed publications on bat and bat related topics and reports regarding distribution studies of bats. David studied maternity and hibernating colonies of Rafinesque big-eared bat for 12 consecutive years in southern Arkansas and continues work on their utilization of man-made structures. These studies have included work with the Southeastern bat.

Mr. Ned Hollenbach is a Natural Resources Manager with the U.S. Army Corps of Engineers at Lake Greeson, in southwest Arkansas**.** His responsibilities include all recreation, flood damage reduction, and environmental stewardship activities associated with the Lake Greeson Project, which includes a combined 15,953 of land and water. He completed his B.S. in Wildlife Management at Louisiana Tech University in November of 1977.

Dr. Eric Britzke is a Research Wildlife Biologist with the Corps of Engineers, Engineer Research and Development Center. His recent research has involved the use of advanced techniques to investigate the life history and ecology of bats, particularly endangered species. This research has been conducted in numerous habitats and bat communities throughout the eastern United States. He completed his Ph.D. research at Tennessee Technological University in May 2003.