Project Title: An inventory of Chiropterans utilizing Felsenthal National Wildlife Refuge

Funding Requested: $10,750

Submitted by and contact information: Michael Stroeh (870-364-3167)

List Monitoring Objectives: Since 2012, refuge staff, in cooperation with the USFWS Region 4 I&M Network, have conducted mobile acoustic bat surveys to establish a baseline inventory of bats that utilize the refuge during the summer season.   A recent passive AnaBat survey on the refuge utilizing ultrasonic echolocation calls of bats for species identification confirmed the presence of a single Northern Long-Eared Myotis (*Myotis septentrionalis*). This species has been proposed to be listed as an endangered species under the Endangered Species Act as a result of many populations being decimated by the fungal disease, White Nose Syndrome (WNS). As of March, 2015, the Arkansas Game and Fish Commission had confirmed WNS in bats from 4 counties and suspected in 3 others. The most recent checklist of the wild mammals of Arkansas (Connior 2010) lists 15 species of vespertilionid bats and one species of free-tailed bats that occur in the state. However, refuge managers do not have a comprehensive list of bats found on the refuge, their relative abundance and the habitats with which they are associated.

What is the deliverable: Investigators will provide the refuge managers with a comprehensive list of all bat species identified on the Refuge, as well as the GPS locations of bat locations, roost sites, and maternity colonies. It is the intention of investigators to screen all captured bats for WNS utilizing a relatively new, non-invasive technique involving UV light (Meteyer and Demas 2014). All information on species richness, relative abundance and results from the UV screening will be included in a final report.

Briefly, **describe the deliverable in the context of the SHC framework, focusing on how the deliverable will affect Conservation Delivery:** With information on the species richness and relative abundance of bats utilizing the refuge, managers can incorporate this information into their HMP plan.

*Briefly***, if applicable, describe the deliverable in the context of the national I&M 7-Year Plan (Which focus area, goal, and task does this work advance):**

This project aligns with:
 Strategic Goal 1: Support the Service and Refuge System goals and legal requirements of:
a. Assessing the status and trends of Refuge System natural resources (fish, wildlife, plants, and habitats).
Strategic Goal 2: Support development of biological objectives for station planning and management, improved management decisions through iterative learning, and landscape scale conservation by:
a. Making available baseline data necessary to inform station and landscape level planning and assessments.
b. Providing relevant scientific information to support planning and management decisions at field stations and at landscape, regional and national levels.

This project also facilitates the following components of the National I&M 7-Year Plan: Endangered Species Act Reporting, Baseline Biotic Inventories, and Wildlife Health.

Who would do the work and who would manage the data: A graduate student under the direction of Dr. Kim Marie Tolson, Professor of Biology at The University of Louisiana at Monroe, would be responsible for collection of all data. Data would be compiled and analyzed at ULM, then distributed to refuge managers.

What method or protocol will be used, include sample design and the number of sites and frequency of monitoring. Multiple methods of sampling will be employed that include mist netting, AnaBat surveys, and cavity searches for diurnal roost sites, maternity colonies and hibernacula. Investigators will expand upon the previously established AnaBat survey to increase frequency of sampling and increase the area sampled. Satellite imagery will used to select optimum locations on the refuge for deploying mist nets. Cavity searches for roost sites will be concentrated in the colder months when bats are experiencing torpor. Intensive sampling will be conducted over the course of 12 months to establish a phenology of bat activity on the Refuge.

Address ability to analyze and use information, including how a single year of information is enough to make decisions:
A 1-year project to provide a comprehensive inventory of bats and bat habitat on Felsenthal NWR is important because so little is known about bats on Felsenthal NWR and because of the rising importance of bat conservation issues (endangered species and WNS). Furthermore, the refuge is proposing to use at least one bat species, Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), as a focal species to guide future habitat management.

What would the funding be spent on:

Supplies	$5,000	
GA Summer Salary	$3,750	($1250 x 3)
Travel	$2,000	

TOTAL	$10,750	

List Cooperators and Partners and what will they contribute: A graduate student from the University of Louisiana at Monroe, who is trained in bat identification, handling and capture techniques, will conduct all surveys on the Refuge. ULM will provide GIS and Remote Sensing support, statistical support, and funding for the graduate assistant for the 9 month school year. Felsenthal NWR can supply ATV and 4WD vehicles, and Refuge staff can assist as necessary in data collection and logistics.

Literature Cited:

Connior, M.B. 2010. Annotated checklist of the recent wild mammals of Arkansas. Occasional Papers, Museum of Texas Tech University, No. 293, 12 p.

Meteyer, C. and A. Demas. 2014. Ultra-violet light works as screening tool for bats with white-nose syndrome. USGS News Release, 29 May 2014.