

# Bull Shoals Field Station Annual Report 2007

February 2008



## **Bull Shoals Field Station Mission**

Our mission is to provide a location for faculty, students, and visiting scientists to conduct research and educational programs that increase public understanding of southwest Missouri ecosystems.

## **Overview of yearly activities**

Our major goal for the year was to complete the construction projects and increase the use of the facilities. Use had been down during the renovation and construction phases. The construction of the classroom building was completed in late March.

Our total number of person days increased to over 1000. We had three public events, three conferences held at the station, three other universities bring classes to the station, 9 Missouri State classes take field trips to the station, and two Missouri State classes were held completely on site.

## **Expenditures**

The major expenses for 2007 include (1) maintenance of the facilities (utilities for the Mincy House, maintenance agreement for the solar power system, propane for the heat at the Drury House, boat maintenance and marina rental) and (2) travel to conferences and to/from the station.

## **Partnerships**

BSFS staff continues to work closely with the U.S. Army Corps of Engineers and Missouri Department of Conservation staff. We routinely correspond on research and monitoring questions. The Drury-Mincy site manager and the BSFS Director also communicate about maintenance issues and the timing of group events.

BSFS works closely with the Greater Ozarks Audubon Society (GOAS) on the Christmas Bird Count for Taney County serving as the host site for the compilation event as well as BSFS staff counting on the Drury Conservation Area. GOAS, MDC and BSFS are also working closely on a cane restoration and bird monitoring project. MDC is providing the labor in the cane restoration, GOAS is providing the expertise in the bird monitoring and BSFS is providing the data collection and analysis aspect.

BSFS staff also works closely with several watershed groups including the James River Basin Partnership and especially the Upper White River Basin Foundation to address watershed issues. We recently completed a long-term monitoring project of Beaver Creek and Bull Shoals Lake and are currently working with UWRBF on establishing a basin-wide monitoring system.

## **Classes, Workshops, & Meetings held at BSFS**

- MSU
  - Teaching Outdoor Research Skills
  - Field Ecology Methods and Analysis
  - Limnology
  - Advanced Limnology
  - Geohydrology
  - Herpetology
  - Mammalogy
  - Plant Ecology
  - Plant Taxonomy
  - Woody Plant Identification
  - Advanced Woody Plant Identification
  
- Other Universities
  - Lakeshore Community Ecology Research Class, Dr. Wendy Anderson, Drury University
  - Herpetology, Dr. Jennifer Mittelhauser, University of Central Missouri – Warrensburg
  - Insect Taxonomy, Dr. Greg Zolnerowich, Kansas State University

**BSFS Use Statistics for 2007 (person-days): Total = 1008**

- Tours: 27 visitors
- Classes: 212 (including students and faculty)
- Professional meeting: 131 for three scientific meetings
- Research (undergraduate, graduate, and staff research): 185
- Community use: 210
- Maintenance, security, or staff work day: 243

**Research**

*Faculty/Staff*

Adam Crane/Alicia Mathis. Escape response by Ozark zigzag salamanders that were exposed to armadillo stimuli.

*Graduate Students*

Becky Gehringer. Examining the relationships between fire history, habitat type and canopy cover Advisor: Dr. Alexander Wait.

Jason Wolf. Effects of fish cues on zooplankton vertical migration behavior. Advisor: Dr. John Havel.

Tammy Yelden. Essential fatty acids as tracers of reservoir food webs. Advisor: Dr. John Havel.

### *Undergraduate Students*

Doug Hughes: Independent study (GLG 499): Hydrology of the Bull Shoals Field Station. Advisor: Charles Rovey

### **Manuscripts**

Havel, J.E., and R.J. Rhodes. Spatial distribution and dynamics of plankton in an Ozark reservoir recovering from eutrophication. Submitted to *Lake and Reservoir Management* (August 2007).

Mormann, B. and L.W. Robbins. 2007. Winter Roosting Ecology of Eastern Red Bats in Southwest Missouri. *Journal of Wildlife Management*. 71:213-217.

Dunbar, M.B., J.O. Whitaker, Jr., and L.W. Robbins. 2007. Winter Feeding by Bats in Southwestern Missouri. *Acta Chiropterologica*. 9:305-310.

### **Presentations**

Bowles, B., C. Prussia, and J. Greene. 2007. Beaver Creek and Upper Bull Shoals Lake water quality monitoring project. Poster Presentation. Missouri Natural Resources Conference. Lake of the Ozarks, Missouri.

John Havel. April 2007. Seminar at Arkansas Tech University, Department of Biology: Advances in aquatic ecology: invasions, rivers, and grazing snails.

### **Scientific meetings held at BSFS**

SEAPRE Island Ecologist Conference. May 2007.

Central Plains Society of Mammalogists. October 2007.

Missouri Herpetological Association Annual Meeting. September 2007.

### **Grants**

Missouri Department of Conservation. Fire, Oak Regeneration, and Understory Flora Development in Managed Ozark Forests: Mechanistic Assessments for Managers. 4/07-6/07. \$6,500.

Faculty research grant (MSU), September 2007, funded for \$ 7,444. Food resources for migrating zooplankton: signature fatty acids as tracers of diet.

Black, J., J. Greene, K. Shade, and M. Gutierrez. Not funded. Earth Systems Education. \$700,000.

Greene, J., and A. Wait. 2007. Not funded \$94,951. National Science Foundation. Renovation of a wet laboratory at Bull Shoals Field Station.

Prussia, C., and J. Greene. Not funded. Leopold Education Project. Development of non-formal education activities. \$16,625.

Greene, J., and H. Neill. Submitted. U.S. Environmental Protection Agency. County Wide Watershed Festivals in the James River Watershed. \$40,021.

Greene, J., and H. Neill. Submitted. U.S. Environmental Protection Agency. Water Warriors: A web-based interactive water education program. \$91,038.

### **Research use outside of the university**

Nicole Miller. Washington University.

### **Reports**

The Bull Shoals Field station completed a report of the results of four years of water quality monitoring for the Upper White River Basin Foundation. The monitoring was conducted in Beaver Creek and upper Bull Shoals Lake.

Bull Shoals Field Station Long Range Plan. Report from the Long Range Planning Workshop. January 2007. (Workshop held September 2006)

### **Community Outreach and Service**

- Participation in the development of new activities for the Leopold Education Project that are targeted toward elementary-aged students and family use at nature centers, parks, and zoos. (C. Prussia)
- The lichen survey project developed a key for some of the most frequently encountered lichens of the BSFS area and a set of samples to use interactively as a public educational tool to orient visitors to lichen identification. These were used at the BSFS classroom and at a middle school in Springfield for student enrichment summer classes. (C. Prussia)
- Filmed segment for video, *White River Heritage: Guarding the Treasure*, produced by the Upper White River Basin Foundation.
- Worked with Missouri Department of Conservation to host high school groups from Branson and Forsyth in October 2007.
- Conducted an informal presentation on algae to the James River Basin Partnership. (B. Bowles)
- Conducted a workshop on aquatic biology to the EDISON homeschool science group. (B. Bowles)

- Missouri Department of Conservation tour. Fire effects on Oak Regeneration (Alexander Wait).
- Held Winter Wonders workshop for the public (C. Prussia)
- Held a night sky watch event for the public (C. Prussia)
- Lichen identification presentation to Master Naturalist training (C. Prussia)
- Lichen identification presentation to Phelps School for the Gifted (C. Prussia)

### **Additional Activities**

- Initiated a long-term water quality monitoring program in upper Bull Shoals Lake. The monitoring complements the data collected by the Lakes of Missouri Volunteer Program and includes zooplankton and phytoplankton monitoring.
- Conducted Community Advisory Committee meeting in Fall 2007.
- Conducted mast monitoring for Missouri Forestkeepers Project.
- Conducted amphibian monitoring for Missouri Department of Conservation and North American Amphibian Monitoring Project.

### **Facilities**

The new classroom at the Drury House area was completed in the spring of 2007 and has been put into use for public events and classes. Tables and chairs, projection screen, blinds, and science-related equipment has been installed.

Safety equipment added to the Drury House includes fire extinguishers and escape ladders for the second floor bedrooms.



Inside view of the new classroom building

### **New Acquisitions**

A new inverted microscope was purchased for the field station this year. It will be used to count and identify algal populations in the Bull Shoals Lake long-term monitoring project and for other research purposes.

BSFS procured a Cub Cadet Off-Road Utility Vehicle (ORUV) with 4-wheel drive for grounds maintenance use and access to research sites on MDC property that were inaccessible by the 4WD F-150 truck. A brush hog mower was obtained for high grass situations to improve access to areas of the Mincy and Drury House grounds.

Dissecting and compound microscopes were procured and installed in a heavy duty secured locker in the classroom.

### **Christmas Bird Counts**

The Christmas Bird Count was held on December 29 in conjunction with the Greater Ozarks Audubon Society. It was a cold but fun day. Nancy and Hammonds Schanda (Master Naturalists) and the entire Greene family counted on the Drury area.

### **Cane Restoration on the Drury and Mincy Areas**

The Missouri Department of Conservation and the Greater Ozarks Audubon Society are restoring giant river cane along Mincy and Bee Creeks. BSFS is working with them to monitor the effects of the restoration on the endangered Swainson's warbler. Three breeding bird surveys were conducted from mid-May through mid-July. No Swainson's warblers were heard, as was expected, but we will continue monitoring and hoping for their return. Data will be posted on the web.

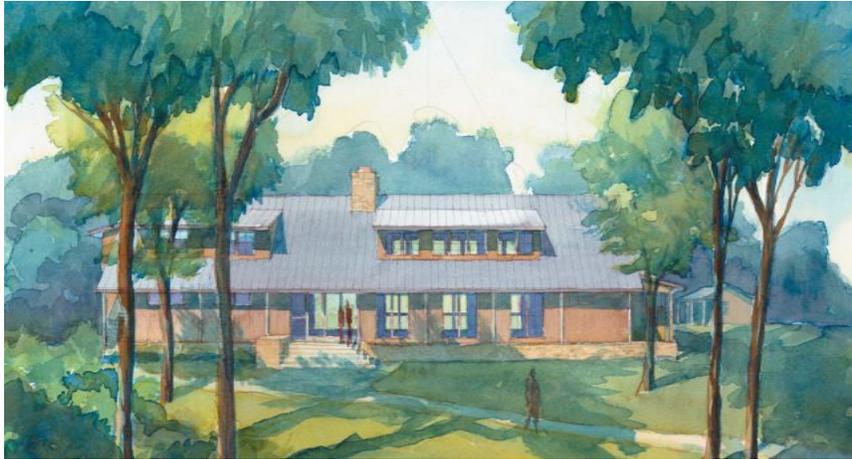
### **Upper White River Basin Foundation**

The BSFS staff has been working extensively with the Upper White River Basin Foundation to develop a long-term monitoring plan for the Upper White River basin. In the fall, BSFS developed a proposal and budget for water quality monitoring that the Foundation used to secure grant funding.

### **Goals for 2008 and list of needs for the future**

We continue to plan for the future. We are working on fund raising to purchase additional land across from the Mincy House. This will enhance our abilities to provide education programs, conduct manipulative research, and build additional structures.

We had plans drawn up for an Ozarks Education Center which would serve as a dormitory for larger groups, provide a large kitchen and commons room. This will also provide fewer conflicts between large groups and researchers when they overlap in time. We also continue to look for funds to renovate the shed for a small wet lab space.



Architect rendition of the proposed Ozarks Education Center

As we grow, we hope to continue to attract more graduate students from a variety of Missouri State Departments and other universities. We also hope to increase our use by community groups.

In light of the new activity development by the Leopold Education Project (LEP) and our involvement, we envision a resurgence of interest in workshops and presentations by formal and non-formal educators seeking access to these materials. We are including an LEP workshop as part of a summer 2008 week-long training (offered as a component of the Missouri Environmental Education Association's "Environmental Educator Certification" program).

We are striving to make the 2008 BSFS Open House our largest event on the site to date with a Water Festival theme. Plans include displays and personnel from water quality and other environmentally-related associations. To enhance the festival atmosphere, a live blue grass band will perform.

#### Staff

With the Provost Incentive Funds, we will be increasing Dr. Beth Bowles' time to  $\frac{3}{4}$  time and changing her title to Research Assistant Professor. She will have new responsibilities in research and teaching for BSFS and Biology.

In addition, with a cooperative agreement between the City of Springfield, Greene County, and the Watershed Committee of the Ozarks, Missouri State University will be the State Sponsor of Project WET, an international environmental education program focused on water. The State Coordinator will be housed in the BSFS. We hope to have this position filled shortly. The Provost's office has helped fund this position for the first year.

We will need additional funds to help with these positions in future years.