

**Bull Shoals Field Station  
Annual Report  
2008**

**February 2009**



## **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 increase the number of programs held on-site.

Our total number of person days was 991. We had one public event, one national conference held at the station, three Missouri State classes were held completely on site and four others conducted field trips to BSFS.

## **Expenditures**

The major expenses for 2008 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 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. However, the monitoring aspect did not happen this year (see below). We have also started another project (see Future Plans).

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
  - Winter Ecology

- Ethnobotany
- Biodiversity
- Plant Ecology
- Plant Taxonomy
- Mammalogy
- Other Universities
  - Lake Shore Community Ecology, Dr. Wendy Anderson, Drury University
- Workshops
  - Missouri Environmental Education Association Certification Workshop: July 8-11, 2008
  - Leopold Education Project Educator Workshop: July 2008
  - Leopold Education Project Facilitator Workshop: October 2008

**BSFS Use Statistics for 2008 (person-days): Total = 991**

- Tours: 6 visitors
- Classes: 414 (including students and faculty)
- Professional meeting: 50 for one meeting
- Research (undergraduate, graduate, and staff research): 226
- Community use: 70
- Maintenance, security, or staff work day: 225

**Research**

*Faculty/Staff*

Adam Crane, Jenny Parsons, Rob Hunt, Carly McGrane (Faculty: Alicia Mathis). Behavioral tests on salamanders at BSFS.

*Graduate Students*

Becky Gehringer. Fire effects on canopy development, oak regeneration and understory plant community composition. Advisor: Dr. Alexander Wait.

Nicole Miller, Washington University Missouri Botanical Garden, Plant-pollinator interactions and stress adaptation: Implications for glade endemism.

**Manuscripts**

Bowles, B., and J. Greene. 2008. Upper White River Basin Monitoring Analysis. Report submitted to Upper White River Basin Foundation.

Bowles, B.D., S.J. Interlandi, S.S. Kilham, and E.C. Theriot. In review. Effects of analysis method and local sampling extent on perception of phytoplankton species maxima and co-occurrence. In review at Canadian Journal of Fisheries and Aquatic Sciences.

Frey, T., J. Greene, H. Neill, and D. Allen. In press. County Watershed Festivals: Teaching 5<sup>th</sup> graders about local water issues. *In* Proceedings of the 37<sup>th</sup> Annual North American Association for Environmental Education Annual Conference. Wichita, KS.

Havel, J.E., and R.J. Rhodes. 2009. Spatial disconnection of plankton dynamics in an Ozark reservoir. *Lake and Reservoir Management*, in press.

### **Presentations**

Bowles, B.D. and E.C. Theriot. 2008. Ecological gradients versus ecological drift in phytoplankton community dynamics. Poster presentation. Ecological Society of America Annual Meeting, Milwaukee, WI.

Frey, T., J. Greene, H. Neill, and D. Allen. 2008. County Watershed Festivals: Teaching 5<sup>th</sup> graders about local water issues. North American Association for Environmental Education Annual Conference. Wichita, KS.

Gehringer, Becky. 2008. Fire impacts on leaf litter production and light penetration in managed Ozark forests. Missouri State University seminar.

Gehringer, B. and D.A. Wait. 2008. Fire effects on canopy cover and light in Ozarks forests: management implications. Missouri Natural Resource Conference. Osage Beach, MO.

Greene, J. 2008. Send Them Outside: Improving Scores, Skills and Attitudes. Academy for Educational Studies - Rethinking Education: Is it time for radical change in the public schools? Branson, Missouri.

Greene, J. 2008. BRRR! How plants and animals deal with winter. Missouri Environmental Education Association Annual Conference. St. Louis, Missouri.

Greene, J. March, 2008. Invited Presentation. Aldo Leopold: His life and interest in birds. Greater Ozarks Audubon Society. Springfield, MO.

Miller, Nicole. 2008. Plant-pollinator interactions and stress adaptation in a glade system: implications for endemic plant species. Ecological Society of America Annual Meeting, Milwaukee, Wisconsin.

Prussia, C. 2008. Take a Likin' to a Lichen. Missouri Environmental Education Association.

Prussia, C. 2008. Leopold Education Project Educator Workshop. Lees Summit, MO.

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

LEP State Coordinator Meeting – October 10-12, 2008

## **Grants**

Bowles, B.D. and J. Greene. 2008. Upper White River Basin Foundation. The plan for long-term monitoring of water quality and ecological condition of the Upper White River basin in Arkansas and Missouri. Two grants totaling \$29,877.

Greene, J., and H. Neill. Not funded, 2008. U.S. Environmental Protection Agency. County Wide Watershed Festivals in the James River Watershed. \$40,021.

Greene, J., and H. Neill. Not funded, 2008. U.S. Environmental Protection Agency. Water Warriors: A web-based interactive water education program. \$91,038.

Black, A. (Jill), and J. Greene. Not funded, 2008. Earth Systems Education: From the Ozarks to the Oceans. National Oceanic and Atmospheric Administration. \$700,000.

Berger, L. and Greene, J. \$26,000. GLADE: Green Leadership Academy in Diverse Ecosystems. Funding to Greater Ozarks Audubon Society for leadership academy at Bull Shoals Field Station.

Miller, Nicole. Washington University Missouri Botanical Garden

- Obtained 2008
  - Hudson Memorial Award, Missouri Native Plant Society, \$500
  - Mickey Scudder Scholarship, Webster Groves Nature Study Society, \$1000
  - Small Grants Program, Prairie Biotic Research, \$1000
- Submitted 2008-2009
  - Doctoral Dissertation Improvement Grant, National Science Foundation, \$15,000
  - Graduate Fellowship, Association for Women in Science, \$4000
  - Graduate Fellowship, Graduate Women in Science, \$4000

Wait, A. and Gehringer, B. 2008. Missouri Department of Conservation. Fire, Oak Regeneration, and Understory Flora Development in Managed Ozark Forests: Mechanistic Assessments for Managers. 12/08-8/09. \$3,500. (Funded)

Wait, A. and Gehringer, B. 2008. Missouri Department of Conservation. Fire, Oak Regeneration, and Understory Flora Development in Managed Ozark Forests: Mechanistic Assessments for Managers. 4/08-12/08. \$9,070. (Funded)

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

Nicole Miller. Washington University Missouri Botanical Garden.

## **Upper White River Basin water quality monitoring project**

The Bull Shoals Field Station completed the first year of a major water quality monitoring design and analysis project for the Upper White River Basin Foundation. The project will provide multi-year funding for long-term monitoring of the Upper White River basin in Arkansas in Missouri. The activities completed in the first year included the development of monitoring objectives, writing and peer review of the monitoring plan, data mining of historical United States Geological Survey water quality data, development of a Water Quality Index for the basin, evaluation of the status of ten stream sites in the basin using the Index, trend analysis of long-term water quality data for eight sites in the basin, and writing the technical report to the Foundation of the water quality data analysis.

### **Additional Activities**

- Bull Shoals Field Station display at the Ecological Society of America Annual Meeting, Milwaukee, Wisconsin.
- Bull Shoals Field Station Display at Missouri Natural Resources Conference
- Bat Blitz bat survey of the field station property – US Fish and Wildlife Service
- Helped Upper White River Basin Foundation secure funding (> \$30,000) from Coover Foundation.
- Helped James River Basin Foundation secure funding (> \$30,000) from Coover Foundation through grant writing.
- J. Greene served on James River Basin Foundation Board
- Christmas Bird Count January 2009
- Hosted a meeting of scientists from US Geological Survey, OEWRI, Beaver Water District, Bull Shoals Field Station, and Drury University to evaluate the monitoring plan for the Upper White River Basin Foundation project.
- Watershed Committee of the Ozarks held their annual retreat at BSFS.

### **Facilities**

In 2008, we added benches to the sides of the picnic pavilion which also added a safety feature since the back side of the pavilion is several feet above the ground. This feature provides much needed added seating as well. We continue to seek funds to purchase the available land adjacent to the Mincy house.

### **New Projects**

In addition to the long-term monitoring program on Bull Shoals Lake, BSFS staff joined the National Phenology Network and monitored the phenology of five dogwood trees on the property. Phenological data, such as the date of the first flower opening and date of fruit ripening, were submitted to the network this fall and will be available through the National Phenological Network website.

### **Christmas Bird Counts**

The annual Christmas Bird Count was held on January 3, 2009, in conjunction with the Greater Ozarks Audubon Society. Nancy and Hammonds Schanda (Master Naturalists) counted on the Drury area.

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

The bird surveys along Bee Creek were not conducted this year due to the study area being under water during the monitoring timeline. The cane restoration will continue in 2009 and surveys will take place from mid-May to mid-July as long as Bull Shoals Lake is not too high.

### **Goals for 2009 and list of needs for the future**

1. Seek funds for the renovation of the stone shed for laboratory space.
2. Seek funds for purchase of land.
3. In cooperation with the Greater Ozarks Audubon Society, we will be hosting the first Green Leadership Academy for Diverse Ecosystems (GLADE) from June 21-June 27, 2009. GLADE is a week-long academy for high school juniors and seniors where they will learn about local species, fragile Ozarks habitats, endangered species, riparian corridors and water quality. They will participate in hands-on habitat restoration and will design environmental projects for their communities.
4. Erica will continue to develop the Project WET facilitator network and increase the working relationship between DESE and Project WET.
5. 2009 is BSFS' 10<sup>th</sup> anniversary year. We will be planning one or more anniversary events.