



Bull Shoals Field Station Newsletter

Winter 2010-11

Director's Notes



Janice Greene

When I was an undergrad here at, then, Southwest Missouri State University, I had a class called Field Zoology. I was a little scared of the course. I had heard the Professor, Dr. Bob Wilkinson or "Wilk" was tough, and to make matters worse, I was starting the semester with a cast up to my knee because of a broken foot. In the first class, he announced that we were going on a full weekend field trip that very first weekend. Back then I was obsessed

about grades and a little on the competitive side, so I was going to show Wilk that I could go on this field trip even with a cast on my leg.

There were lots of funny things that happened because of that cast: the guys offering to carry me across the creek, showing up at a site when others were turning back, Wilk "ordering" me to the van after I hurt my broken foot and almost fell down the hill, having several ticks under my cast when I got it off several days later, etc. (I don't think I have ever had so many ticks and chiggers before or since that field trip, and I had a lot of ticks this summer at the field station.)

But the most important thing about that field trip was that it opened my eyes to the natural world and in all honesty changed my life. Before that trip, I had a very simple knowledge of the diversity of life in the world i.e., I knew what the textbooks said about diversity. I did not know that there were so many types of "mice", salamanders, snakes, birds, etc. The different colors and varieties were amazing to me. The fact that a person could identify all these was impressive. There was a whole world out there that I didn't know about and wanted to learn.

How many of you had an experience in the outdoors like this? Maybe it was with a parent when you were young. Maybe it was in a high school or college class. These are the types of experiences we want to be able to give to students at the Bull Shoals Field Station. If they've already had that "eye-opening" experience, we want to provide additional opportunities to explore/examine our natural world in-depth through classes or research. If they haven't had it yet, we want the opportunity to give that to students.

In this newsletter, you will see some of the ways that we are trying to reach students and trying to learn more about our beautiful Ozarks.

Class/Events in 2010

- Winter Ecology, Jan. -Feb.
- Sustainability Task Force Meeting, Mar.
- Wildlife Society Meeting April
- GLADE, June 20-26
- Riparian Ecology, July
- Plants & Ozarks Culture, July
- Woody Plant ID, Sept.
- Mammalogy Class, Sept.
- Plant Ecology, Sept.
- AmeriCorps Training, Sept.
- OBGS Meeting, Oct.

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GLADE — Green Leadership Academy for Diverse Ecosystems

Habitat restoration is a dirty job and the 2010 GLADE cohort was up to the task! We're now preparing for the third year of GLADE in 2011.

Enjoy more pictures and story on page 3.



GLADE 2010 participants and staff

Coordinators' Corner



Erica Cox, MO Project WET coordinator

In the last year, there have been 22 Project WET workshops in Missouri, led by a dedicated group of WET workshop facilitators. With roughly 20 participants per workshop, over 440 educators have been trained and have the potential to reach many students.

January 2010 started with a New Facilitator Training, held in conjunction with Project WILD and Project Learning Tree. Fourteen new facilitators were trained in all 3 programs and 9 of those 14 have co-facilitated at least one Project WET workshop already this year.

Water Education for Teachers— Missouri Project WET's second year under leadership of Erica Cox

Project WET worked with 5th graders at numerous county Watershed Festivals, sponsored by the James River Basin Partnership, and provided materials for teachers to use with students upon returning to the classroom. A similar field day event was held in May at Alley Spring near Eminence for 4th and 5th graders. Project WET worked with the City of Springfield and Greene County to provide storm water and water conservation information to area teachers and students, as well as working with many student groups at the Watershed Center area of Valley Water Mill. Project WET also worked with K-5 students in Springfield after school programs during the spring months.

Project WET was also involved with various workshops and course offerings held at the BSFS this year—Riparian Ecology was offered at BSFS as a two-day course for MSU credit. The AmeriCorps Clean Water Assistants spent a week at the BSFS for training in September which included Project WET. This fall, a workshop for volunteers who work with student groups was held at Valley Water Mill.

In November 2010, Project WET teamed up with Projects WILD and Learning Tree to offer a 3 Project workshop for MSU credit on campus. Twenty-two participants spent a weekend experiencing the activities from all 3 Projects. Education students and teachers in the classroom, representing elementary through high school attended, as well as a few non-formal educators, who routinely work with children also participated. It was a great group! Additionally, I work with professors in science education by speaking to their middle and high school methods classes on occasion and for outdoor education classes as part of the Department of Recreation and Leisure Studies.

Project WET is also involved with the Missouri Envirothon competition for high school students each fall and helps with the state competition in the spring. Missouri Project WET has national involvement with Project WET USA as part of the Storm Water and Instruction and Training committees and a role in the National Project WET Coordinators Advisory Council. I expect another busy and productive 2011 for Project WET!

Leopold Education Project (LEP) in Missouri

The mission of the Leopold Education Project is to create an ecologically literate citizenry so that each individual might develop a personal land ethic. LEP's primary objective is to teach conservation and a respect for natural resources through hands-on activities in the outdoors using *A Sand County Almanac* as a foundation.

This year's highlights include a \$500 award from Pheasants Forever's Grants for Community Projects. Though not a large sum, the award allowed the project titled, "A Model for LEP Integrating Home Schooling Parents and Education Majors" to reach a non-traditional audience for LEP workshops. Phase 1 provided training to Dr. Gigi Saunders and her class of nine MSU pre-service high school "ed" majors in the use of the LEP activities from "Lessons in a Land Ethic" which targets middle and high school students.

Phase II provided LEP training using "Exploring the Outdoors with Aldo Leopold" to 9 home-schooling parents. In prior discussions with this audience, the primary hurdle identified that prevents their participation in educational workshops such as offered by LEP and the other "Projects" is

the parents' need to bring the children along but very few of the workshops offer a way to integrate the children into the training. This project offered a model to remove this barrier to participation by the home schooling parent through the involvement of education majors. By training the majors in the use of LEP activities, they would be more likely to incorporate these lessons into their own classroom curriculum when they advance to teaching positions in the community. With both target audiences experiencing LEP activities in the training sessions and having the opportunity to conduct the activities with children, we projected a higher probability that these trained persons would use the LEP lessons with their charges.

The national LEP conference offered training to become a "Land Ethic Leader", a program of the Aldo Leopold Foundation (ALF). In 2011 workshops will be offered in Missouri to assist adults to explore their own relationship with the land through reading and discussion of the writings of Leopold and others who wrote about the Land Community concept.

If you know anyone interested in attending an LEP workshop using the new activity guides or the original, "Lessons in a Land Ethic," don't hesitate to contact me to schedule a workshop or find one already scheduled:

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*Celeste Prussia, BSFS Manager
& MO LEP coordinator*

GLADE at BSFS

Green
Leadership
Academy for
Diverse
Ecosystems



The Bull Shoals Field Station hosted its second week-long residential program June 20-26, 2010 with 12 motivated southwest Missouri high school students who desired to impact their communities in the areas of environmental sciences and conservation leadership. The GLADE project, a collaborative effort between the Greater Ozarks Audubon (GOAS) and Missouri State University, was the recipient of one of 48 nationwide innovative grants awarded by TogetherGreen, a National Audubon Society program funded by Toyota Motors. The GLADE grant funds an Ozark ecology-centered educational academy and efforts to restore Giant River Cane to the White River Glades and Woodlands Important Bird Area (IBA) within the Drury-Mincy Conservation Area.



Veronica & Kelsey—Soil Invertebrates

"A primary goal of GLADE is that each academy participant develop the leadership skills and ecological knowledge to reach others and to make a positive difference in our natural environment," said Greg Swick, Director of GLADE. Celeste Prussia, BSFS manager, served as assistant director for the academy and contributed to the program curriculum. Every aspect of the curriculum was designed to highlight an ecological issue specific to the Ozarks ecosystem with an underlying mission to restore habitat for endangered

Missouri species such as Swainson's Warbler and Bachman's Sparrow. During the academy, students 1) surveyed summer birds through mist-netting, banding, and birding excursions; 2) examined the effects of prescribed burns on Ozark ecosystems through vegetative inventory and invertebrate investigations; 3) monitored water quality of Ozark lakes and streams; 4) learned about the unique Karst topography of caves, sink holes, and other geological formations; 5) restored Giant Cane stands in an effort to attract Swainson's Warblers and other songbirds; and 6) engaged in activities designed to develop leadership and effective communication skills.



Michael and Stuart—Fire Ecology

Greg Swick builds a scenario for leadership skills building



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Thank you for your ongoing support!



Ruby-crowned Kinglet
Regulus calendula

Winter Ecology Led by Dr. Janice Greene

On cold (and rainy) weekends in January and February, 20 hardy graduate and undergraduate students participated in the winter ecology class at the field station. Over the two weekends, students learned about how plants and animals adapt to colder tempera-

tures. Did you know that kinglets have four times more feather mass for insulation than for flight or that they must eat three times their body weight every day to survive the cold temperatures? Did you know that plants start acclimating to

colder temperatures starting in late summer? Students participated in bird and overwintering insect surveys and in winter twig identification as examples of a few activities.

Plants and Ozarks Culture Led by Celeste Prussia



Shining Sumac seed head
Rhus copallina

BSFS offered a four-day class in July to provide insight into the various ways native Ozarks plants are used for food, shelter, art, medicine, fabric or fiber, and inspiration.

Six MSU graduate and undergraduates selected Ozark plants for their class presentations and independent culminating projects. They gathered plants to study the potential for allelopathic effects of leaves, stems, roots, or flowers on

the germination and growth of test seeds. We made cordage or string with plant fibers, made stationary by printing with plants paper, and made stone-like hypertufa or containers for growing plants in a composite of peat, cement, and perlite.

The students mixed essential oils and carriers to make herbal first aid kits. Two lessons appeared to be student favorites: making cosmetics with plant

extracts and bees wax, and weaving a basket with a variety of plant fibers—a first time experience for all but one class member.

Students collected their experiment data and interpreted results in an attempt to determine the effects of their treatments. They presented their independent research via PowerPoint to the rest of the class and shared Pourquoi stories.

BSFS Hosts the Missouri River Communities Network AmeriCorps Training by Kellie Herman, James River Basin Partnership & AmeriCorps



AmeriCorps trainees removed weeds and applied mulch to garden beds at BSFS Mincy House

BSFS donated an invaluable experience for a full week of training Missouri River Communities Network (MRCN) AmeriCorps volunteers! In years past we trained at Camp Red Bud nestled around Lake of the Ozarks. Although the primitive log cabins were memorable with creepy cots and spiders in the public showers, the Field Station was enriching on many levels!

The Mincy house provided not only a clean, worry free place to sleep, but also a great place to learn! We took advantage of the air conditioning while enjoying environmental education presentations. It was a great place for me to hold a Project WET (Water Education for Teachers) facilitators workshop! We had so much fun playing "Incredible Journey" in the front yard and performing "Drop in the Bucket" in the front room. The front porch was

great to relax on after a full day!

We would not have been able to train nine AmeriCorps volunteers in Stream Team Macro-invertebrate identification without being so close to a little creek. It was so helpful to have been within walking distance to the creek. We gathered around Priscilla Stotts as she explained how to use a kick net to gather and identify various stream aquatic bugs. Everything we need to pull off a successful training seemed to be at the end of our fingertips! The training was much more effective than ever before. The field station is an environmental educators dream come true!

After three days of logistic training plus Project WET and Stream Team, we had the opportunity to give back, it's what

we do best! We met with BSFS Manager, Celeste Prussia, and enjoyed a day of gardening. The team weeded all the mulched areas and then laid down new mulch. When we started we thought it would take forever, but with all the helping hands we were a powerful and effective crew!

The training at the field station was unforgettable and invaluable! The Field Station gave us the ability to train water quality principles to students at ease! The donation of the Field station allows MRCN AmeriCorps to use funds in education and provide training that didn't exist before. We AmeriCorps volunteers greatly appreciate the knowledge gained during our time at the Bull Shoals Field Station.

Sustainability in the Curriculum Workshop



Alexander Wait and the Sustainability in the Curriculum Workshop in the BSFS Classroom

Alexander Wait (Biology) and Lora Vess (Sociology) held an all-day “Sustainability in the Curriculum” workshop at BSFS on a Saturday in March 2010 for 13 MSU faculty from 11 departments. The BSFS was the perfect setting for the multi-disciplinary workshop, as one of the core concepts for integrating sustainability into curriculum is “a sense of place”. The BSFS provided this “sense of place” to faculty from a diverse range of fields of study: Agriculture, Anthropology, Biology, English, German, Hotel Restaurant Administration, Physics, Psychology, Religious Studies, Sociology and Theater. Each of the faculty explored their fields of

study through the lens of sustainability in a setting that provided all of them a sense of place – from the history of the land, to the use of water, to solar panels, to invasive species, to the historic and new structures at the BSFS. Participants worked in large groups, small groups and individually to explore the three pillars of sustainable development: Social Equity, Economic Prosperity and Ecological Integrity. As a result of the workshop four new courses were developed and five courses were significantly changed to explicitly and implicitly incorporate sustainability into the course.

Shed-to-Laboratory Renovation Completed in 2010



The shed at BSFS in pre-renovation condition

BSFS has a new wet lab thanks to funding from the National Science Foundation. Construction, that converted the stone shed next to the Drury House, was completed in October. The laboratory will be used for research and teaching. The original stone walls for the shed were kept intact to maintain the historic beauty of the structure. We are now working on stocking the laboratory with glassware, equipment, and supplies. The lab will provide faculty and students, as well as outside researchers, new opportunities for research at the field station.



BSFS shed remodeled as a wet lab for classes and research– with open doors and before the final coat of white paint covered the bare wood

Water Quality Sampling by Beth Bowles

BSFS is embarking on the fourth year of water quality analysis for the Upper White River Basin Foundation. The Year 3 analysis report was completed by Beth Bowles and submitted to the Foundation in September. The results of the analysis were similar to those of the last two years and found that most of the major tributaries have moderate water quality impacts, including high nutrients, spikes of *E. coli*, and low diversity of stream fauna. However, many of these concentrations have been stable over time or have improved, while a few are getting worse. Ten new sites in the watershed will be monitored this year, and several of these have no prior sampling data.

BSFS staff (Beth Bowles and Celeste Prussia) completed a third year in the long term monitoring program on upper Bull Shoals Lake. The monitoring includes phytoplankton and zooplankton collection, as well as other measurements such as dissolved oxygen and water clarity. In addition to the valuable long-term monitoring data, we are also gaining the benefit of data on an exotic *Daphnia* species, early detection of toxic algae growth, and an understanding of the plankton ecology of the very dynamic upper lake ecosystem.



Beth Bowles sampling zooplankton

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Visit us on the web...
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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.

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Prescribed burning effects on forest plant diversity and oak regeneration

Alexander Wait continues monitoring of overstory leaf production, oak regeneration, and understory species diversity in burned and unburned plots at Drury Conservation Area. Alexander's monitoring program is supported by the Missouri Department of Conservation. Two Biology graduate students, Mary Ann Blinkhorn and Brad Culberson have been

helping collect data. This long-term monitoring will provide useful information to managers – in this case – these forests are being managed for wildlife. This research will be presented at the 4th annual Fire in Eastern Oak Forests Conference, which will be held May 17 to 19, 2011 at the University Plaza Hotel in Springfield, Missouri.



New Bird Banding Station Established at BSFS

While on sabbatical in 2009, Janice Greene helped at bird banding stations on the Welder Wildlife Foundation's Refuge and was able to help at a bird banding demonstration at the GLADE Academy (see story). She enjoyed it so much, she went back to the Welder Foundation in April 2010 and took a bird banding class taught by the Institute for Bird Populations. In conjunction with Andrew Kinslow, a licensed bird bander and teacher at Logan-Rogersville, they established a bird banding station at the field station. This project can provide information on population trends of songbirds through long-term monitoring. It is part of a national (and international) MAPS program (Monitoring Avian Productivity and Survivorship).

During the breeding season of our birds (May-August), 10 mist nets were set up and monitored every 40 minutes. Data were gathered on each bird caught including species ID, size, mass, age, breeding status, and general health assessments. Seventy-one birds were caught with Kentucky Warblers, Black and White warblers and Indigo Buntings being the most numerous. Some interesting catches were the American Redstart, Northern Parula, and Yellow-throated Vireo. We are looking forward to the 2011 banding season.

Janice bands a male Indigo Bunting



Chase Studio

Missouri State University signed a Memorandum of Understanding (MOU) with Chase Studio in the summer of 2010. Chase Studio is a world renowned creator of natural history museum displays. They have displays in the Smithsonian Museum of Natural History, Naturhistorisches Museum in Vienna, Austria, and in many National Park Visitor Centers just to name a few. This MOU will provide opportunities for students and the field station to work cooperatively with Chase Studio in a variety of ways including offering future museum studies classes, joint research and education projects, and others. This summer the GLADE Academy students (see related article) toured Chase Studios in obvious amazement at the realistic hand-made fabricated articles modeled by nature. They made a model of a small artifact and Dr. Terry Chase gave a lesson about some of the karst topography features on the Chase Studio lands. Last winter, Dr. Lynn Robbins and his students conducted a bat survey of a cave on the property as well.

GLADE students and staff at Chase Studio, Inc. (photo by Janice Greene)