

# BULL SHOALS FIELD STATION 2018 NEWSLETTER

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## 2018 Classes/Events

- Herptology (B Greene) 4/21
- Plant Taxonomy (Bowe) 5/5
- Kirbyville MS Summer School  
(Prussia) 5/30
- Bird Banding (J Greene) 6/4
- GLADE (Trantham) 6/17-23
- BIO 436 (Wait) 9/18
- Bio 436/636 (Wait) 10/18
- Mammology (Maher) Fall
- BIO 339 (Bowe) 10/20
- CBC/GOAS (J Greene) 12/21

## BSFS Notes

2018 was a year of transition at the field station. We said goodbye to our former station manager and welcomed a new one. We started focusing in on our upcoming 20<sup>th</sup> Anniversary and the potential for expansion. Overall, it was another great year, so thank you to all our supporters and friends.

As usual, we are always happy to show the field station to you if you're in the area. Just send us an email or give us a call.

## Goodbye

At the end of May, Celeste Prussia, officially retired as Manager of the field station after 15 years. During her time, several facilities projects were completed such as the Drury House renovations, pavilion and classroom building construction, and renovation of the old shed into a laboratory, office, and storage. Her education and outreach activities included supporting the GLADE Academy as a planning committee and staff member, bringing her enthusiasm for nature to the program. She also served as State Coordinator for the Leopold Education Project and offered alternating summer courses for MSU students in Lichen Ecology and Plants in Ozark Culture. Celeste is a talented artist and lives on a farm, so she will have plenty to keep her busy along with her husband and dogs. We wish her well and hope she enjoys her retirement!



## Welcome



Patricia Reed was brought on board in November to serve as the new BSFS manager. With degrees in Environmental Science and Environmental Management, experience working at other field stations, and her varied work background ranging from consulting to non-profit to a handyman business she will be a welcome addition to the field station staff. Although she plans to spend as much time as possible down at Bull Shoals, she can usually be found on the MSU campus (King Street Annex 214) on Fridays. Feel free to stop by and say hello.

## BSFS Outreach

Not only does BSFS provide facilities for classes and events, its staff, primarily Erica Cox, provides environmental education outreach throughout the state. Last year's work included:

- **Storm Water Management for Educators—SU 2018:** Five students took the Storm Water Management for Educators course—a two-day field and lecture experience in the Springfield and Greene County area. Erica Cox worked cooperatively with Carrie Lamb, City of Springfield Storm Water specialist, Tim Davis, Greene County, Storm Water Services, and Tyler Goodwyn, Greene County, Storm Water Engineer. Participants wrote either a storm water management plan for an area or a unit plan for the classroom.
- **Project Learning Tree (PLT):** In 2017 and 2018, we made a conscious effort to promote and conduct more PLT workshops, statewide. Last year we held 20 workshops for about 200 participants.
- **Project WET:** We held 15 workshops for about 200 participants.
- **Project WILD and Flying WILD:** January 2018, we officially started offering Project WILD workshops as State Coordinators for Project WILD. Janice Greene and Erica Cox are designated Missouri Co-Coordinator for Project WILD. We held 11 workshops for 130 participants.
- **Growing up WILD/Early Childhood PLT:** We held 2 workshops for 35 participants.
- **Conferences:** We sponsored an exhibit booths for Projects WET, WILD and Learning Tree at the Missouri Natural Resources Conference and the Interface A/B Conference. We also provided a yearly update about MO PLT to Missouri Society of American Foresters meeting at MNRC; and, facilitated a PLT Secondary Module session at the Interface B conference.



2018 was the 10<sup>th</sup> year for GLADE at the field station. The GLADE project was developed as a collaborative effort between the Greater Ozarks Audubon (GOAS) and Missouri State University. The week long residential program was held on June 17-23, 2018 with 17 motivated southern Missouri high school students who desired to impact their communities in the areas of environmental sciences and conservation leadership.

## BSFS Research

This past year researchers studied everything from owls to insects to small mammals to salamanders. For example:

- Ben Dalton, MSU Staff, studied field activity across Ozark zigzag salamander (*Plethodon angusticlavius*) populations and activity correlation across life stages in ringed salamanders (*Ambystoma ambystoma*);
- Graduate student Megan Mosier examined the effects of gravity and predation on *P. angusticlavius*;
- For a group project undergraduate students Sarah White and Jami Baker worked to determine the effects of time of day and predator activity on salamander behavior;
- Graduate Student Casey Adkins researched tick occurrence and environmental predictors; and,
- Undergraduate students Alexis Vonbokel and Regan Carter studied: The effects of prescribe fire history on decomposition rates in Oak woodlands: A test of the mesophication hypothesis.

In this year's research spotlight we wanted to highlight a long-term study conducted by Dr. John Heywood. In his write up below, he describes the:

## Effects of Prescribed Fire on an Old-Growth Post-Oak Savanna in the Drury Conservation Area.

John Heywood, MSU Professor of Biology

In the southeastern corner of the Drury Conservation Area, the flooded mouth of Mincy Creek is separated from Bull Shoals Lake by a high ridge with extremely shallow soils and steep sides. Although it is a bit of a hike to this peninsula, it is well worth the effort for the spectacular views it affords. When the Missouri Department of Conservation (MDC) acquired the land for the Drury-Mincy Conservation Area in 1987, this peninsula was identified as one of a handful of sites particularly worthy of restoration efforts. All eastern red cedars were cut down in 1990, and the site has been burned continuously since 1988 at 2-5 year intervals. The peninsula now supports a post-oak/black-hickory savanna on the ridgetop and a dolomite glade on the western slope, facing Mincy Creek.

In 1999, MSU graduate student Shanda King and I mapped and measured 440 trees within the restored savanna. Over the past 20 years, I and several other students (especially Will McClain and Joey Michalski) have cored many of these trees to document their recruitment history, and we recorded mortality following prescribed fires. The age distribution for post oaks (*Quercus stellata*) is bimodal, indicating two distinct periods of recruitment, one dating from 1763 to 1821, and the other dating from 1877 to the present (but with a large decline after about 1950). The age of the older cohort came as a surprise, given the relatively small sizes of these trees, and indicates that MDC's intuition about this site was correct – it harbors a relictual tract of old-growth savanna that was spared from clear-cutting in the 19<sup>th</sup> and 20<sup>th</sup> centuries, unlike the vast majority of Ozarks woodlands. It is possible to go to this savanna and fully wrap your arms around a tree that was already standing before the American Revolution! About 44% of the trees in this Savanna are black hickories (*Carya texana*), but they are relatively young, with birth years ranging from 1897 to 1955 (mostly 1913-1948). The age distributions for both species are far from what would be expected for a population at equilibrium, indicating that rates of recruitment and mortality have varied significantly over time. This undoubtedly reflects changes in human land-use practices over the past two centuries. The ownership and management history of the Drury Area from 1929 to the present are known. Prior to 1929 the peninsula was part of a mule farm operated by Frank Drury, but details of how Mr. Drury may have managed the land, or of any land-use practices prior to that, appear to have been lost.



Prescribed burns have been successful at removing most fire-sensitive species, but 22% of the post oaks and 41% of the black hickories also succumbed. Although mortality was higher for smaller size classes, there was mortality in all size classes for these species, including some of the oldest post oaks. Many of the post oaks are hollow, and these are particularly susceptible to fire. When fires are so frequent that fire scars fail to heal over between fires, the fire scar continues to grow until it burns through to the hollow center which then acts like a chimney and draws the fire into the crown of the tree, which is almost always fatal. Thus, although the appearance of such communities may be restored most rapidly with frequent prescribed fires, the restoration of a natural age distribution may require less frequent fires with a high variance in burn interval.

## BSFS Long-Term Monitoring

BSFS long-term monitoring datasets exist for a number of parameters; however, currently only the weather station and phenocam have provided consistent information. This coming year BSFS staff will work towards getting the buoy deployed at the K-Dock Marina and re-invigorating several other monitoring programs such as lake water quality.

## BSFS – Then and Now

2019 marks the 20<sup>th</sup> anniversary of the signing of the long-term lease with the U.S. Army Corps of Engineers and the start of the Bull Shoals Field Station. Since its inception, the field station has grown in facilities, environmental monitoring, research projects, and education activities. BSFS staff plan to offer several activities throughout the year to celebrate. Stay tuned on our website and on our Facebook page (MSU Bull Shoals Field Station) for details. In the meantime we thought we'd start the celebration in this newsletter with a then-and-now look at how far the field station has come; from the exterior, to the interior, to the addition of the pavilion, classroom, and the purchase of the Mincy House.



## Upcoming Projects and Events

Our initial focus at the field station has been at the Drury House site getting the house, classroom, and outbuildings functional. Now that these activities are complete, we plan to turn our attentions to the Mincy House property. Plans for the upcoming year include:

1. Removing the dilapidated pigeon coop.
2. Reducing red cedars where appropriate. (Historic aerials display just over 1/2-acre that has filled in with cedars over the last five years in an area that is categorized as dry-mesic oak forest.)
3. Mapping habitats throughout the five-acre property and inventorying trees to establish a baseline.
4. Planning and starting the installation of a small trail network throughout the five-acre property.

If you are interested in helping out with any of these tasks, as a class or group project, please get in touch with either Dr. Janice Greene ([JaniceGreene@missouristate.edu](mailto:JaniceGreene@missouristate.edu)) or Patricia Reed ([PCReed@missouristate.edu](mailto:PCReed@missouristate.edu)).