



“Fostering stewardship through outdoor experience, youth education and conservation.”

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LLF Examines Fish Community at Big Creek Mitigation Site

As part of our commitment to improve fish and wildlife habitat, The Land Learning Foundation (LLF) has started to conduct biological surveys at some restoration sites. In October, LLF board member Zach Morris surveyed the fish community at the Big Creek Mitigation site prior to the beginning of construction. A brief survey with a seine revealed 18 species present. Of these, one third of the species observed are considered intolerant of poor water quality, so baseline conditions on the site are fair. The streambank restoration performed at the Big Creek Mitigation Site will reduce sedimentation, and additional fish habitat structures were incorporated during construction. We expect to see an increase in fish diversity on site as a result, especially benthic invertivores like suckers and madtoms, which were present in very small numbers.

Zach Morris, LLF Board Member

Calendar of Winter and Spring 2019 Events

January 23

The Land Learning Foundation Board Meeting, Columbia

January 26

Stream Advocacy Workshop, Powder Valley Nature Center

February 5-7

Missouri Natural Resources Conference, Tan-Tar-A Resort

February 23

Quail Forever Mid-Mo Uplanders Chapter Youth Pollinator Event A. L. Gustin Golf Course, Columbia

March 8-10

Conservation Federation of Missouri Annual Convention, Jefferson City



CALENDAR OF EVENTS

landlearning.org



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MITICO is an In-Lieu Fee contract fulfillment company aiding The Land Learning Foundation in carrying out its mission.



Baker Wetlands Discovery Center in Lawrence, Kansas.



Three youth in a blind.

Attend Society of Wetland Scientists Stream Workshop

Scott Martin, Executive Director of The Land Learning Foundation (LLF), and Matt Roth of On-Site Soils attended a stream workshop hosted by the Society of Wetland Scientists (SWS; www.sws.org) on October 3rd and 4th, 2018. The workshop was held at Baker University Wetlands Discovery Center in Lawrence, Kansas. Potomologist and Vice-President of River Research & Design, Inc. (www.r2d-eng.com), Dave Derrick, led the workshop, discussing a variety of topics showcasing stream restoration projects.

In this workshop, attendees were introduced to the methodologies and procedures for initiating, planning, analyzing, and ultimately designing long-term, sustainable river and stream stabilization and restoration projects. Innovative, environmentally sensitive and cost-effective approaches to restoration were discussed. Derrick also presented comprehensive case studies supporting the science imparted to the group.

Scott and Matt are a part of the LLF team that identifies, analyzes, plans and builds the stream restoration projects which are the cornerstones of the Foundation's mitigation programs.

Youth Waterfowl Hunt

The Land Learning Foundation hosted its annual Youth Waterfowl Hunt on Saturday, October 22nd. It was a beautiful day, but not many ducks were found. In spite of the weather, the youth harvested three teal, one gadwall, and a large Canada Goose. LLF hosted seven hunting groups of three hunters plus two adults per group for a total of 17 hunters. The attendees were served breakfast at 5:30 a.m. and then received a safety briefing along with some hunting techniques by Clay Creech, local agent for the Missouri Department of Conservation. By 9:30 a.m. all attendees had returned to the site and a demonstration on cleaning birds taken that day. Young hunters attended from several North Central Missouri communities including Adair, Carroll, Saline, Macon and Livingston Counties. One group was led by avid duck hunter and LLF board member Zach Morris.

Foundation Partners with Quail Forever to Offer Youth Pheasant Hunt

On December 8th, 2018 LLF partnered with the Mid-MO Uplanders Chapter of Quail Forever, the Missouri Department of Conservation, Shirtworks & More (of Hallsville; midmohirtshack.com) and Heggemeier Game Farm west of Higbee (heggemeiergamefarmandkennel.com) to host a youth pheasant hunt. The Quail Forever chapter organized the hunt with LLF serving as the presenting sponsor.



A great turnout for a cold Saturday morning.

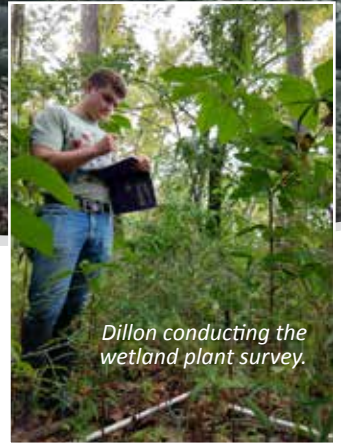


Young Adam Wallace with his first rooster.

Participants learned about gun safety, hunting ethics, dog handling and upland bird hunting. In addition, every youth received a Quail Forever Gamehide hunting vest which also bore The Land Learning Foundation logo. Prior to hunting, each participant took part in a mock hunt and trap shoot to prepare them for the real thing. Each participant had a chance at two roosters and many hunters were successful. Volunteers provided pheasant cleaning demonstrations, and everyone enjoyed a lunch of venison chili and hotdogs. Twenty young hunters were in attendance along with parents and sponsors. Many of these young shooters went home with their first pheasant.



John digging pitfall traps.



Dillon conducting the wetland plant survey.

College of the Ozarks Receives Grant from The Land Learning Foundation for Wetland Study

With the money granted to us from The Land Learning Foundation, our team of two students and two professors began research on a small wetland owned by College of the Ozarks in Taney County, Missouri. The first goal of the project was to characterize the plant ecology of the 2.6 hectares lowland area by taking diversity and cover data from the plants growing there. In the field, we found many plants that thrive in wetlands and some that were obligated to wetlands. This confirmed that, in fact, the area in question fits wetland classification. Our diversity and cover data showed that the most dominant understory plant in the area is *Arundinaria gigantea* (Giant Cane). This bottomland plant is communal and often grows in thick stands of many stems belonging to a single or a few individual plants. In southern Missouri these stands, which are often referred to as “canebrake” ecosystems, have been greatly reduced as a result of agriculture, urban development, and reservoir construction. Our data supports the fact that our study area has historically been a native canebrake ecosystem and

active management should be enacted to preserve it as such.

A secondary goal of our research was to test for the prevalence of *Batrachochytrium dendrobatidis* (Chytrid fungus) in the amphibian population of our study area. Chytrid fungus grows on the skin of frogs, limiting their ability to absorb water and oxygen through their skin. Chytrid has been attributed to large scale declines in frog populations globally. Amphibians within the Shepard of the Hills fish hatchery had previously tested positive for chytrid fungus only a few miles upstream on Lake Taneycomo from our study area. We caught and swabbed a total of 75 frogs from our study area and have been working on processing the PCR results to determine the occurrence of chytrid in this wetland.

Lynda Miller, M.S.
Field Biology & Ecology
Associate Professor of Biology

Board Member Attends Land Trust Alliance “Rally 2018”

Zach Morris, LLF board member attended “Rally 2018”, an annual gathering of land trust leaders from around the country, which was held in October 2018 in Pittsburgh, PA. The Land Trust Alliance (www.landtrustalliance.org) is a membership organization of land trusts from around the United States. This event offers a wide array of workshops and training opportunities that focus on best management practices for conservation groups. At Rally 2018, Zach attended three days of workshops focused on invasive species management and engaging the hunting and fishing community. LLF seeks to further fulfill its mission by giving landowners interested in preserving land in perpetuity a bona fide land trust option that promotes conservation and youth education.

The Land Learning Foundation Represented at the MASWCD Annual Training Conference

Zach Morris, Wally Iman, and Larry Pollard attended the 2018 Missouri Association of Soil and Water Conservation Districts (<http://www.maswcd.net/>) annual training conference at the Tan-Tar-A Resort on November 26-27th. Soil and Water Conservation District Supervisors, district staff personnel, a number of associated resource agencies and support entities meet annually at the lake to receive updates on soil and water quality programs and practices. LLF officers and partners look forward to this meeting each year to update themselves on current applications. We have a presence as a vendor at this trade show. While the conference is busy with associated business, and administrative and technical training sessions, it is well organized so that attendees can mingle with trade show vendors. We had a healthy set of visitors, inspiring some deeper conversations about our mission and work. LLF distributed information and became acquainted with several players related to our efforts. We also look forward to familiarizing and renewing contacts with the other participating vendors -- including those we do business with.

The MO SW Board held a session detailing opportunities for Streambank Protection and Streambank Stabilization on private ground and recent expansions in state cost share programs. Zach shared LLF’s work and experiences with the speaker and he was well received. Larry had become acquainted with and attended a session on the Envirothon program (www.envirothon.org). Envirothon is an environmental education program working with high school age youth. LLF is looking forward to learning more about this program, and we may want to work with them in the future.

Larry Pollard, President



LLF Completes Construction of the Big Creek Mitigation Site

Construction was completed December 1, 2018 on the Big Creek mitigation site located in Lincoln County, Missouri. The site protects the riparian corridor of over one mile of Big Creek. Prior to construction, the site experienced eroding streambanks that, at times, resulted in acres of farm ground being lost to the stream on an annual basis.

In addition to riparian restoration and protection, the site includes a total of 1,900 linear feet of streambank stabilization using a variety of techniques including longitudinal peak stone toe protection, rock weirs, brush layering, and live willow staking. This approach to streambank restoration directs flow away from actively eroding banks and helps the stream heal itself through deposition of sediment in areas that were once eroding. Rock weirs and brush layering also create fish habitat and will help restore the biotic integrity of the site. By restoring this portion of Big Creek, important fish and wildlife habitat have been protected, and valuable farm ground will be preserved for two landowners.

Scott Martin, Executive Director of The Land Learning Foundation

If you would like to learn more about LLF or opportunities to assist LLF in its efforts please visit us online at www.landlearningfoundation.org.



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