



Tallgrass Prairie

CENTER

Restoring a National Treasure

The Tallgrass Prairie Center restores native vegetation for the benefit of society and environment through research, education, and technology.



New Roles at the Tallgrass Prairie Center

AUTUMN 2013

Laura Jackson, Director - laura.l.jackson@uni.edu

Daryl Smith, Advocate - daryl.smith@uni.edu

On October 15, Dr. Daryl Smith, founder and first Director of UNI's Tallgrass Prairie Center, turned over the (mostly) ceremonial ball-peen hammer of Directorship with genuine grace and good humor, and embraced his new role as Advocate. Over the next two years he will focus on outreach, establishment of an endowment, and the creation of a new group, the Friends of the Tallgrass Prairie Center.

Laura Jackson, Professor of Biology and well-known Conservation Biologist, assumed the role of Director of the Tallgrass Prairie Center on October 15. As one examines her credentials, it appears her career path has been converging with the mission of the Tallgrass Prairie Center for some time. She views this position as an opportunity to make contributions of utmost importance to UNI and the state of

Dr. Smith grew up on a farm in Lee County near Donnellson. His father had an interest in birds, and as a boy he enjoyed scouring the woods for morels. He began his career as a high school teacher in 1960, and in 1963 began graduate studies at the University of South Dakota. His awareness of the prairie, and its loss as a primeval landscape in North America, was first triggered on trips in South Dakota with graduate professor Ted Van Bruggen. At the time, awareness of prairie was mostly limited to academic botanists and a very small tribe of prairie enthusiasts. Communicating the broad historical significance of this lost landscape to students and the general public became his mission.



Iowa in the coming decades as native ecosystems and the services they provide to society are critical to the future of our state with climate change increasing the probability of extreme floods and droughts, soil degradation and worsening water quality.

In 1967 he completed his PhD in Science Education and Plant Physiology at U of I. The 1970s saw the birth of the prairie restoration movement in Illinois and Wisconsin, and young Iowa biology professors Paul Christiansen (Cornell College) and Daryl Smith (UNI) would be swept away in the heady atmosphere. Dr. Smith's interest in restoration was piqued by Paul Sheppard from Knox College, who was invited to UNI to speak at the first Earth Day celebration in 1970. In the spring of 1973 Dr. Smith planted one of the first reconstructed prairies in the state, the Tallgrass Prairie Preserve on the UNI Campus (he credits Paul Christiansen with the first Iowa prairie restoration, but we think he is just being modest).



Dr. Jackson's family was part of the "back to the land movement" of the early 1970s. She grew up near the Smoky Hill River in north-central Kansas near Salina while her parents were establishing the Land Institute. Consequently, her formative years were spent in a landscape matrix of native ecosystems and agriculture with grazed remnant prairie on the uplands and row crops on the bottomland adjacent to streams. She was accustomed to her father slamming on the auto brakes to examine a roadside plant, helping her mother with gardening to feed a growing family and assisting her father with materials for building construction. Furthermore, the Land Institute was a magnet for individuals at the cutting edge of environmental thinking, creating an intellectually stimulating atmosphere for a developing young mind with an ecological inclination.

Forty-six years (and counting) is too long a career to summarize in a newsletter article, but **(continued on next page, Jackson on Smith)**



She first ventured to Iowa in 1979 as a student at Grinnell College and graduated with a BA in Biology with Honors. In 1990, she completed her PhD. in Ecology and Evolutionary with a minor in Agronomy at Cornell University. She spent 3 years as a research ecologist at the Desert Botanical Garden in Phoenix, AZ working on restoration of desert ecosystems before coming to UNI. **(continued on next page, Smith on Jackson)**

(continued from first page, Jackson on Smith)

here are some highlights: hosting the North American Prairie Conference in 1990 and again in 2010; starting the Integrated Roadside Vegetation Management program in 1988, dedicating the Tallgrass Prairie Center in 2002, the 2004 UNI debut of the feature-length documentary film, "America's Lost Landscape: the Tallgrass Prairie" in the Gallagher Bluedorn Performing Arts Center with 1500 people in attendance; and getting untold numbers of students and individuals excited about prairie.

In his plenary address to the 23rd North American Prairie Conference in Winnipeg, Manitoba last summer, Dr. Smith expressed his conviction that this century will become known as the Restoration Century. He cited a number of far-reaching, long view projects: development of perennial polycultures of grain crops mimicking the prairie; large scale restoration of natural area networks, the strategic use of prairie vegetation to restore hydrological resilience and soil health to watersheds, and development of prairie for biomass energy production.

I would add something more. Today, because of the partnerships that Dr. Smith and his 1970s cohort have built, the general public sees prairie without realizing it: in decorative planters, parking lots margins, bike paths, stormwater infiltration basins and public landscaping projects. The public sees prairie in their small town's "gateway" plantings, and along the county and state roadsides. While deliberate education efforts have built rational, conscious awareness of prairie and its significance, the presence of prairie reconstructions, and the protection and restoration of remnants, has left a less tangible and more profound mark: a deep, subconscious, comfortable familiarity with prairie, the sense that this is what home feels like.



(continued from first page, Smith on Jackson)

In the past twenty years at UNI, she has been an active faculty member teaching and publishing while generating and managing grants. Her numerous publications range from journal articles to book chapters to co-editing a book, *The Farm as a Natural Habitat: Reconnecting Food Systems with Ecosystems* (Island Press 2002), with her mother. She developed, initiated and managed a successful applied graduate program, the Professional Science Masters in Ecosystem Management. She is widely sought as an invited speaker at conferences and seminars across the country.

Many of Laura's efforts have been directed toward integrating prairie with the agricultural landscape. She feels we need the prairie for its roots, for healing the land and for the benefit of society to restore soil quality, retain soil and nutrients, resist flooding and counteract climate change. One can gain an understanding of her perspective from the following quotes in "The Farm, the Nature Preserve, and the Conservation Biologist" (2002). First, she summarizes the current condition of the land, "In the last century of farming, Midwesterners have hastened to purchase and preserve remnants of forests and grasslands. ...Once sprinkled with pastures, hay meadows, grassy fencerows, hedgerows, wetlands and riparian areas, the working farm landscape was adequate to serve as stepping stones between preserves. Now the matrix of working farmland has become a forbidding ocean separating distant nature preserves and threatening their existence." Then she articulates the challenge we face, "The task before us then is to integrate, in our minds and in our farming landscape, the wild and the willed. We need to devise ways of reconciling the needs of wild animals and plants with a working landscape full of human cultigens, boundaries and institutions."

As the mission of the Center is to restore native vegetation for the benefit of society and environment through research, education, and technology, it would appear that her career path and the mission of the Tallgrass Prairie Center have indeed converged.



UNI Roadside Program Takes Storm Lake by Storm: 27th Annual Roadside Conference Marks "A Watershed Year"

Rebecca Kauten - rebecca.kauten@uni.edu

Iowa's 27th Annual Roadside Conference took place Thursday and Friday, September 19 and 20 at King's Pointe Resort in Storm Lake, Iowa. The conference is organized by the Roadside Program at the University of Northern Iowa and the Association for Integrated Roadside Management (AFIRM). It attracts county roadside managers, engineers, weed management experts and prairie enthusiasts from throughout the Midwest for training and networking with other professionals in the industry. Nationwide, Iowa is a recognized leader in the use of native vegetation for roadside management.



Storm Lake Watershed Project field tour.

With the conference theme of watersheds and watershed-based planning, the two-day event featured a watershed tour of community-based stormwater management practices within the City of Storm Lake, as well as a number of related speakers. Keynote speaker

was Dr. David Biesboer from the University of Minnesota, who spoke on the nutrient cycle and the role plants play in nutrient management. Additional topics included partnerships with local soil and water conservation districts, the Conservation Corps of Iowa and a role they can play for IRVM, as well as safety in IRVM when working around utilities.

As a traditional element of the conference, a field tour showcased local projects that incorporate native vegetation with transportation infrastructure and rights-of-way. This year's tour revolved around the community-based watershed project to improve the quality of the city's namesake. Several locations where natives take runoff from roadways, parking lots and other hard surfaces to infiltrate, treat and slowly release cooler, cleaner water downstream.

More than 100 people attended the conference, including a dozen commercial vendors in erosion and sediment control, stormwater management, vegetation management and native vegetation production industries. A grant from Iowa Living Roadway Trust Fund provided major support as well.

The Association for Integrated Roadside Management elected its new officers during the business meeting on Wednesday, September 18. President: Josh Brandt (Cerro Gordo County), Vice President: Denise Straw (Chickasaw County), Secretary: Tyler Kelley (Story County), Treasurer: Ben Hoskinson (Mahaska County), At Large: Matt Purdy (Benton County) and Rose Danaher (Iowa County).

For more information on IRVM in Iowa, or on the 2014 Roadside Conference in Fayette County, contact Rebecca Kauten, IRVM program manager, UNI Tallgrass Prairie Center, at 319-273-3856 or rebecca.kauten@uni.edu. Also visit www.uni.edu/irvm.

Volunteer Tree Control

Dave Williams - dave.williams@uni.edu

Volunteer trees are a pesky nuisance in prairie plantings. Doesn't matter whether a planting is a multiple acre field or a backyard prairie, trees will find their way in. Here are a few management options for dealing with volunteer trees.

Prescribed fire is a popular management technique used to control volunteer trees in prairie plantings. Many trees are suppressed with burning, however research suggests that burning every 2, 3, or 4 years is not very effective in controlling trees (Briggs et al. 2002). Researchers found that more frequent annual summer burning was what really suppressed density of trees (Briggs et al. 2002). In theory, annual summer burning may be the best approach but in reality, limitations such as the availability of burn personnel, weather, and smoke management make it difficult for resource managers to employ annual summer burning as a long term strategy to control trees. If burning is your primary management strategy to reduce volunteer tree density, eventually you'll be out there either cutting or mowing!

Frequent mowing without herbicide treatment is another method for control of volunteer trees. One advantage of using a rotary brush mower is that if the planting is large and volunteer tree density is high, a lot of area can be covered in a short amount of time. The best time to cut the trees is when they are in flower when their root reserves are at the lowest. Trees also need to be mowed more than once in a growing season (Wisconsin Dept. of Natural Resources 2013). Unfortunately, mowing when trees are flowering typically coincides with nesting activities and the flowering of many species of forbs. Even when trying to minimize the impact to the flora and fauna by selectively mowing only the highest density areas of volunteer trees, I've personally found it difficult to rid plantings of trees by this kind of mowing.



Figure 1. Stump stick used for applying herbicides to cut stumps.

A third technique to remove volunteer trees is by hand cutting and treating the cut stump with an appropriate herbicide listed for that use on the label. Tree size will determine what piece of equipment to use. Loppers and hand pruners can be used for trees < 0.5" in diameter, a gas weed whip with a brush blade can handle trees up to 2" in diameter and a chain saw should be used for anything larger than 2" diameter. It's a labor intensive activity but it is highly effective and minimizes negative impacts to surrounding flora and fauna. To precisely apply herbicide to the cut stump and minimize off target movement of herbicide, the Tallgrass Prairie Center has developed the "stump stick" (Figure 1). The stump stick has many advantages: it is made entirely of PVC so it's resistant to herbicides that are acid and salt formulations, it is simple to construct and materials to make it cost less than \$10.00. The stump stick is easy to handle and applies herbicide on the cut surface of a plant without over-application to non-target plants (Figure 3). The best part is that you don't have to bend over to apply the herbicide -saving a backache after a full day of cutting trees!

Whatever method(s) you employ to get rid of those unwanted trees, keep in mind that for every tree that is cut, chances are there will be a new germinant taking its place somewhere else in the planting. Battle on!

For more information on the stump stick or to request a schematic contact Dave Williams at (319) 273-7957 or email dave.williams@uni.edu.

Briggs J, Knapp A, and Brock B. 2002. Expansion of woody plants in tallgrass prairie: A fifteen-year study of fire and fire-grazing interactions. *American Midland Naturalist* 147:287-294.

Wisconsin Department of Natural Resources. 2013. Invasive species control Factsheet. <http://www.dnr.wi.gov/topic/invasives/control.html>. Accessed 10/31/13.



Figure 2. Cutting volunteer cottonwood trees in a 6-year old UNI campus prairie planting. Trees were cut with hand pruner shears and herbicide applied to the cut stem with the stump stick.



Figure 3. Closeup of the herbicide applied on the cut stem with the stump stick.



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Tallgrass Prairie CENTER

NEWSLETTER

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Tallgrass Prairie Center, 2412 W 27th Street
University of Northern Iowa
Cedar Falls, Iowa 50614-0294*

www.tallgrassprairiecenter.org



To what forb does this seed pod belong?

Answer on back page
(Photo was taken in early November at Raymond outcrop in Black Hawk County Iowa.)

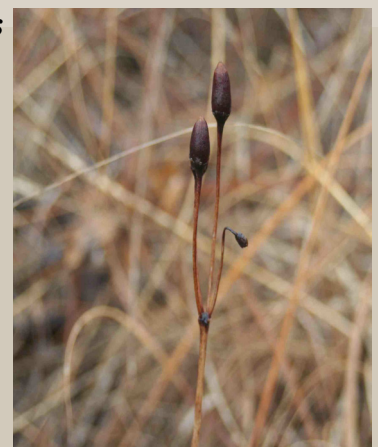


Photo by Dave Williams



Milkweeds for Monarchs and Other Native Pollinators

Greg Houseal - gregory.houseal@uni.edu

The Tallgrass Prairie Center (TPC) is partnering with the Iowa DNR's Prairie Resource Center (PRC) and the Monarch Joint Venture (MJV) to produce milkweed seed to enhance pollinator habitat in wildlife plantings across the state. The Monarch Joint Venture provided a grant to the PRC for seed purchase and restoration of milkweed and other nectar-providing species in prairie restorations throughout Iowa. A small portion of the grant helps to fund development of foundation seed of *Asclepias tuberosa* and *A. sullivantii* at the Tallgrass Prairie Center. Seed from foundation plots will be utilized to enhance both PRC and TPC restoration projects, and will also be available for release to qualified native seed producers for commercial production.

Another great resource for boosting milkweed production for monarchs is just over the horizon. The Xerces Society has been working diligently on a comprehensive publication that includes information on milkweed ecology, the plants' value to monarchs, pollinators, and other beneficial insects, and detailed guidelines for milkweed seed production. *Milkweeds: A Conservation Practitioner's Guide* is expected to be completed, reviewed, and release as early as spring of 2014. The Tallgrass Prairie Center has been a resource for consultation and review of milkweed seed production, as well as photo documentation of various harvest and cleaning techniques utilized at the Center. Once finalized, this document will be freely available for download from the Xerces website.

Read more: Monarch Joint Venture, U of MN, St. Paul, MN. <http://monarchjointventure.org/>
 Xerces Society, Portland, OR. <http://www.xerces.org/>



Butterfly milkweed (*Asclepias tuberosa*) in flower (banner photo) and cleaned seed (above).



Photo by Dave Williams

Answer to forb pod question on page 3: Shooting star- *Dodecatheon meadia*

(In flower. Photo was taken in early May at the Raymond outcrop in Black Hawk County Iowa.)

Featured Student Employees/Interns

Dylan Rusher, Roland, IA
B.A. Business Management, Dec 2013.

Dylan has been employed as Marketing Coordinator Intern for Plant Iowa Native since May. He met with over a dozen retail seed and nursery businesses doing market research. His work will culminate in a market research report with recommendations for developing marketing tools for educating consumers and promoting Iowa native plants in the retail nursery marketplace.

"I would like to move back to central Iowa and enter a career where I am interacting with people and where I can become a leader."



Derek Byrnes, Fairfield, IA
B.S. Biology, May 2014

Derek began in September setting up and recording data on germination trials of several native sedge (*Carex*) species desirable for ecosystem restoration, using an environmentally controlled germination chamber. Derek will also have the opportunity to contribute toward the publication of results in a national journal, and is receiving education coop credits for the work.

"I enjoy being outside. Last year I worked for Cedar Valley Arboretum, and the summer before that with a landscaping company back home. I'm also playing in the ultimate Frisbee club here at UNI."



Jessica Abernathy, Dover, MN
B.S. Biology with emphasis in Ecology, Winona State University, Winona, MN
M.S. in Biology, 2015

Jess graduated from Winona State University in May of 2012. She worked as a biological science aid at Iowa DNR Prairie Resource Center this past summer assisting with both native seed production and prairie management activities. Jess's graduate thesis project will be a continuation of on-going research on biomass production and use of diverse plantings of natives as feedstock for bioenergy production (Prairie Power Project, see Spring 2012 TPC e-newsletter @ <http://www.tallgrassprairiecenter.org/newsletters>).

"After graduation, I would like to work as a wildlife biologist or land manager helping restore native landscapes."

