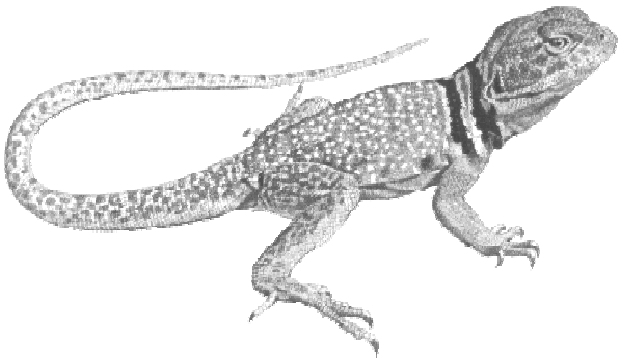

The Glade

The Newsletter of the Missouri Chapter of the Society for Conservation Biology

Volume 14, Numbers 1 & 2 December 2011

Society for Conservation Biology

Contents

Join the MOSCB

Can just one person advance the science of conservation in Missouri? **Yes!** You can help MOSCB encourage and reward quality student research in the field of conservation biology by making a dues donation. Membership in MOSCB is a mere $5. (Dues for students and retirees are waived, but we will accept your money if you send it our way). We pay no portion of our dues to the larger Society for Conservation Biology. Dues and proceeds from our silent auction fundraiser at the Missouri Natural Resources Conference support activities such as the student poster contest at Missouri Natural Resources Conference. At MNRC 2012 , we plan to award $500 to the winner of the contest.

Please send a check made out to MOSCB to the attention of Amy Buechler, Treasurer, MOSCB, 2101 Marilyn Dr, Jefferson City, MO 65109. Contact Amy (amy.buechler@mdc.mo.gov, 573-751-4115) with questions. Thank you for supporting your society.

The annual membership meeting for MOSCB will be held on Thursday afternoon, February 2, at Tan-Tar-A Resort in Osage Beach, during the Missouri Natural Resources Conference. The annual membership meeting for MOSCB will be held at 4 pm on Thursday Feb 2 in room 70/71at Tan-Tar-A Resort in Osage Beach, during the Missouri Natural Resources Conference.

SILENT AUCTION—CALL FOR ITEMS

We are collecting items for the MoSCB silent auction, held annually at the MNRC. If you have nature-themed or other objects just certain to bring in funds for our organization, please contact Stephanie Schuttler sgschuttler@mizzou.edu about making your donation to this fun event.

Bridging the Gap: Connecting People, Nature, and Climate

The Society for Conservation Biology North America Congress for Conservation Biology (NACCB) will be held July 15-18 2012 in Oakland, CA. This is the North American Section Meeting for SCB; it is held every other year, when International SCB meetings are not scheduled. Attendees are scientists, students, managers, decision-makers, writers and other conservation professionals from throughout the world.

The Congress will feature symposia, concurrent sessions, workshops, short courses and field trips. Symposia topics will include topics such as: protected area planning for climate change resilience; Landscape Conservation Cooperatives; freshwater conservation; bridging the implementation gap; decision support tools for policy evaluation; employing traditional ecological knowledge; and marine protected area planning.

SCB is currently accepting abstracts for oral, poster, and speed presentations. Abstracts must be submitted electronically by January 30, 2012. See http://www.scbnacongress.org/registration-participation/call-for-abstracts.html

Your photo could be here.
"The Glade" welcomes photos relevant to your writings.

Papilio glaucus nectars at *Liatris pycnostachya*.
Photo by James C. Trager

The Missouri Chapter of the Society for Conservation Biology announces the
Eighth Annual Student Poster Competition

$500 for the winning student

Missouri Natural Resources Conference
6:30 – 8:30 p.m. Wednesday, February 1, 2012

The Missouri Chapter of the Society for Conservation Biology wants to encourage and recognize quality student research, especially that which has conservation applications. For the past seven years (well, we got snowed out last year), we have sponsored a student poster competition at the Missouri Natural Resources Conference.

The competition is open to all undergraduates, graduate students, or recent graduates whose posters are accepted for MNRC 2012. Judges will rate each poster during the Wednesday evening poster session.

Posters will be evaluated on research quality, presentation quality, and conservation relevance. The student must be the first author and the designer of the poster. The poster should explicitly state the conservation significance of the research.

This year, the winning student will receive $500. The second-place winner will receive a one-year membership in the Society for Conservation Biology, including a subscription to an SCB journal, either *Conservation Biology* or *Conservation* (student's choice). Both students will be invited to write an article for *The Glade*.

PUBLISH IN The Glade—CALL FOR ARTICLES

Volume 14 of *The Glade* appears! This is your newsletter, so take the opportunity to inform the *Glade*'s readership about your conservation biology activities in the next issue. If you have conservation biology research notes, announcements, relevant musings, or other "newslettery" materials that will be of interest to conservation and field biologists, please contribute by sending your manuscript as a Word .doc, to the editor, james.trager@mobot.org

I'll be looking forward to the flood of manuscripts! Send them in now, before the weather gets nice and you are all back with your beloved study organisms in the wonderful places they inhabit.

Missouri Premiere of Green Fire, a documentary about Aldo Leopold

On April 7th, 2011, MOSCB joined with seven other organizations to sponsor of the Missouri premiere of the new documentary film about the life and work of Aldo Leopold. The film is first full-length, high-definition documentary about legendary conservationist Aldo Leopold and the environmental legacy of his "Land Ethic." The film was produced by the Leopold Foundation.

The film screened in Conservation Hall on the University of Missouri campus; this 499-seat theatre was nearly full. The idea to show the film evolved during discussions of the MU Conservation Biology Reading Group, and this group helped with logistics in securing co-sponsors, publicity, and setting up tables.

Leopold biographer and MU Professor Emerita Susan Flader, who is shown in the film, introduced the documentary and answered questions from the audience afterwards. Prior to the film, local conservation groups staffed tables in the foyer with materials on their organizations. A reception following the film featured cookies imprinted with a photograph of Aldo Leopold and his wife, Estella.

For more information about the film, or to watch the trailer, visit http://www.greenfiremovie.com/

Other sponsors of the event included: MU Libraries, MU School of Natural Resources, MU History Department, Missouri River Relief, Columbia Audubon Society, Columbia Center for Urban Agriculture, and Missouri River Communities Network.

MOSCB bought screening rights for the film and is able to show the film multiple times. We will screen it again at 1 pm on Thursday, February 2nd at the Missouri Natural Resources Conference.

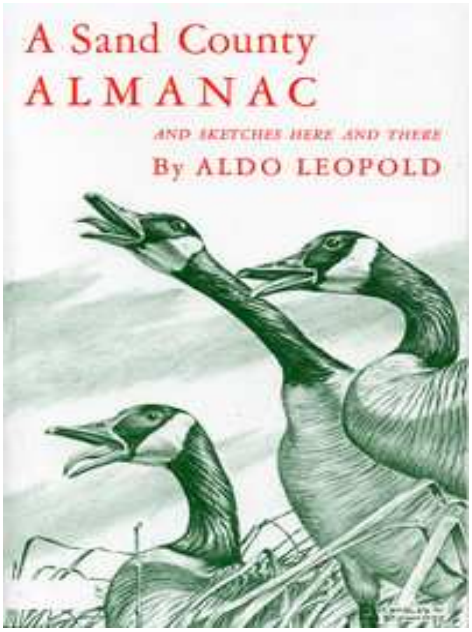

Image from Wikimedia.org

2012 Missouri Natural Resources Conference—Student Job Fair

February 1, 2012
4:30-6:30 pm
Steven LaVal, MDC Resource Forester

Dear Educator, Student, or Resource Professional:

As part of the Missouri Natural Resources Conference at Tan-Tar-A (February 1 – February 3, 2012), the Missouri Chapters of The Wildlife Society, Society of American Foresters, Soil and Water Conservation Society, and American Fisheries Society will once again host the 15th Annual Student Job Fair (Wednesday, February 1, from 4:30 to 6:30 pm). We are seeking Students and Employers to participate in the job fair, either by direct attendance or by sharing job announcements. If you know of a student who is looking for employment or an employer that might be hiring next year, we hope you will pass this information along to them.

Individual interaction with employers will provide information to students about hiring trends in the Forestry, Fisheries, and Wildlife disciplines. Don't miss this opportunity to learn about the latest information on gaining employment in the conservation field.

The Job Fair will begin at 4:30 pm and will conclude at the start of the Conference Mixer at 6:30. Representatives from several resource agencies, not-for-profit organizations and businesses who have jobs currently open will be present. NEW THIS YEAR: we will have a "Speed Networking" session in Room 74/75. We will also continue the popular resume critique booth so that participants can have their resumes polished up by resource professionals. Information on specific jobs will be available, as in past years.

STUDENTS
All you have to do is show up at Tan-Tar-A. No registration is required and you do not have to attend the conference to attend the Job Fair. It is suggested that you bring copies of your resume for review and to hand out. A Student Job Fair Advertisement to share with your friends and fellow students is available at: http://www.mnrc.org/2012%20forms/2012%20Poster%20Advertisement.pdf

RESOURCE PROFESSIONALS, GRAD STUDENTS, AND PROFESSORS
Are you seeking employees with natural resource backgrounds? Then the Student Job Fair is the opportunity for you. In years past we have had over 140 students ranging from high school graduates to people with masters degrees, and current resource professionals, attended the Job Fair. Employers will offer full- and part-time positions, along with temporary positions. No job is too big or too small. The Student Job Fair is free.

Please pass on this e-mail to other people/companies who may be interested in participating in the job fair, or conference, as our contact list may be limited. Or send me their contact information (especially e-mail) so that I may forward them this message. We wish to offer the student participants as many opportunities as possible.

If you have any questions, feel free to contact me. We hope to see you at this year's conference! STUDENT JOB FAIR WEB PAGE: http://www.mnrc.org/students.html

Steven LaVal, MDC Resource Forester
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Reintroducing North American River Otters to Missouri

By Stephanie Schuttler

When an animal is extirpated from its natural habitat, it is often with great difficulty to reintroduce them, as they often face the same challenges that played a role in their local extinction. It is then a great conservation success, when an animal does recover and become abundant once again. Such is the case for the North American river otter (*Lontra canadensis*) in Missouri.

Missouri was once abundant with river otters, but the species was almost extirpated from the state by the 1930s, mostly due to overhunting for their pelts. As part of a state-wide reintroduction effort, the Missouri Department of Conservation (MDC) brought 845 otters from Louisiana, Arkansas, and Canada and reintroduced them into 43 sites throughout Missouri. The reintroduction program turned out to be a huge success, with high otter numbers in some watersheds and evidence that otters are dispersing into other rivers. In order to evaluate exactly how successful the reintroduction had been, now recently graduated Masters student Rebecca Mowry, along with field support, advisement, and funding from MDC, conducted the research to try to understand exactly how many otters Missouri had.

Mowry performed all of the research necessary without ever even seeing a single otter herself. Instead, she developed a method of counting otters based on scat. Scat is commonly used by scientists to study animals, especially elusive animals that are difficult to see. After the animal poops and departs, the scat remains, and scientists can easily collect it without ever disturbing the animal. Mowry, under the advisement of Drs. Lori Eggert and Matthew Gompper of the University of Missouri in Columbia, used Eggert's lab techniques to amplify genetic material from the scat to be able to count individual otters. The idea was to amplify enough segments of very fast-mutating DNA, called microsatellites, so that each scat sample could be used to identify a single otter. She would then use this information, along with data collected along the rivers, such as the number of scat per km, or the number of latrines (areas where otters defecate) per km, to use in a model which identifies the characteristics of data collection that are the most informative to relating to actual number of otters.

Scat samples were collected by MDC employees along eight rivers in Missouri at over 200 latrine sites. For the entire study, over 1,400 scat samples were collected. Out of those samples, Mowry was able to get 370 to work successfully with all or most of the DNA segments. As scat samples are lower-quality sources of DNA, more samples are lost compared to DNA that would be obtained from blood or tissue, and samples also vary according to different conditions. For example, Mowry found that scat samples that were slightly older worked (collected 1-6 days after defecation) worked better than those that were very fresh (collected within a day of defecation). Those samples then equated to at least 63 unique individual otters in the population. The model showed that the number of latrines per km, combined with the average number of scats per latrine, were the most informative characteristics predicting otter numbers. MDC can now use this information to extrapolate how many otters there are in the Missouri population, which is more precise information for management decisions on this species.

Lontra canadensis loafs on the ice at Busch Conservation Area in St. Charles Co. MO.

Photo and copyright: Danny Brown 2011

Extensive surveys throughout the rest of the recovery area for application of this genetic-based model have not yet occurred, so population estimates currently remain unknown. However, the most recent estimate, based on harvest and reproduction rates, places the population size at around 10,000 individuals. Controlled trapping seasons, initiated in 1996, do not appear to be substantially impacting the population, and otters are continuing to expand into new watersheds, which is all supporting evidence that the otter population is thriving. In fact, several sources claim that the Missouri otter reintroduction was one of the most successful carnivore recovery programs in U.S. history.

VIEWPOINT

Why Patch-Burn Grazing is Not an Evil Scheme to Destroy Prairies

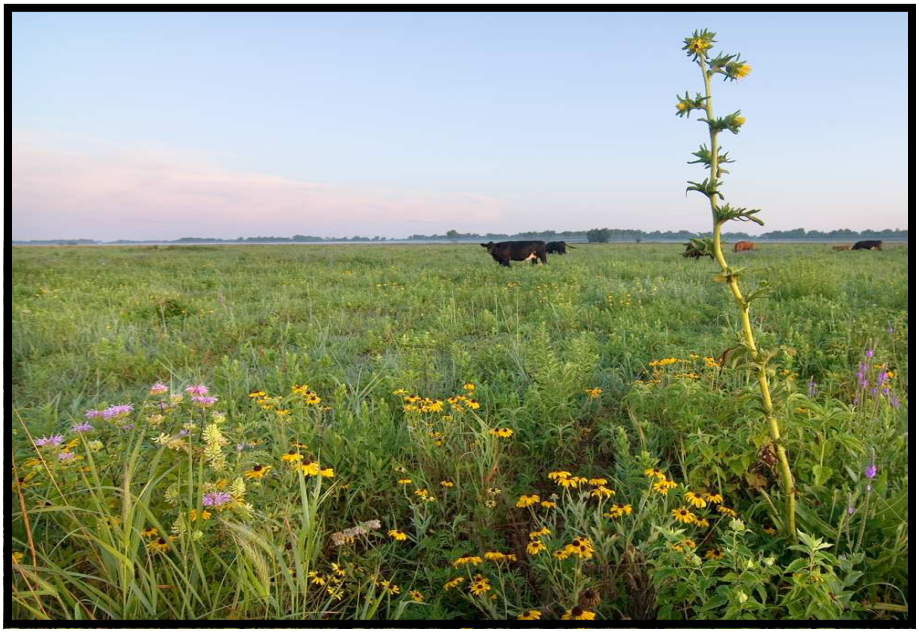
By Chris Helzer

I'd like to establish two things right up front. First, I'm an ecologist who has dedicated my career to restoring and maintaining biological diversity and ecological resilience in prairie ecosystems. I spend most of my time developing and testing strategies to do that successfully. I'm also a nature photographer, and I use my photography to explore and raise awareness of the incredible diversity of life in prairies.

The necessity of standardizing variables for research on patch-burn grazing has given many people the idea that patch-burn grazing is a rigid system in which a third of a prairie is burned each year and cattle (or bison) are grazed for most or all of the grazing season across the entire prairie. In fact, the sole key attribute of patch-burn grazing is that recently-burned prairie attracts grazing animals. When a new patch is burned, grazing intensity shifts away from other locations and into that new patch. Beyond that, there are no rules about stocking rate, grazing season length, or when/how often grazing is applied to a prairie. Exploring the various impacts of countless variations on those themes is one of the most interesting parts of the work I do.
I think it's important to consider grazing as a tool for maximizing and sustaining biological diversity in some prairies. I'm well aware that many people see a direct conflict between cattle grazing and prairie diversity. Clearly there are many prairies that have lost their diversity and resilience through chronic overgrazing. However, saying that grazing destroys prairies is like saying eating makes people fat. What I like about grazing is its flexibility. I can alter the timing, duration, frequency and intensity of cattle grazing to achieve objectives that I don't know how to achieve in any other way.

So why even consider grazing a prairie? In my view and experience, it's largely about providing a broad range of conditions that allow as many prairie species to thrive and survive as possible. Whether it's birds, insects, or plants, management treatments such as haying and burning create wide swaths of fairly uniform habitat and growing conditions that favor some species and exclude others. When those treatments are repetitively applied (such as prairies that are annually hayed or burned every other year, etc.) species that do not tolerate either the treatment itself, or the conditions provided under that management, decline in abundance, disappear, or move away. Shaking up the timing and frequency of those treatments, and applying each treatment to only a portion of the prairie each year can help maintain species diversity. However, even then, burning and haying have some limitations, particularly because they are non-selective and (typically) only occur once per growing season.

Grazers, on the other hand are selective feeders. Their selection of which plants to eat, how much of each plant to eat, and which parts) of the prairie to focus grazing in, creates a patchiness of habitat structure that I've not been able to replicate in other ways. Their degree of selectivity is largely regulated by stocking rate. Higher stocking rates force the animals to eat a higher percentage of plant biomass and plant species. Lower stocking rates allow them to eat only the plants they really want – primarily grasses, in my experience (more on this later). From a pure habitat-structure standpoint, grazing can create patchiness at a small scale - by locally diminishing some plants and not others - that is difficult or impossible to obtain in other ways. That patchiness can be very beneficial to both vertebrates and invertebrates that need to thermoregulate, feed in open areas close to protective cover, and/or have difficulty living in or moving through consistently dense vegetation. On the other hand, more intense grazing can also maintain fairly uniform short vegetation for entire growing seasons – something that is valuable to bird species such as upland sandpipers and grasshopper sparrows, along with other vertebrate and invertebrate species (certain grasshoppers are a documented example, but there are probably others as well). This contrasts with treatments such as haying and burning that are one-time defoliation events, followed by long periods of regrowth. (Continued > > >)



Cattle grazing a restored prairie in Nebraska. Under a light stocking rate, the cattle are primarily grazing Andropogon gerardii. The resulting habitat structure – sparse, patchy, and forb dominated – is difficult or impossible to create without grazing.

Photo by Chris Helzer

The more controversial aspects of prairie grazing, of course, are the impacts on plant species – particularly conservative plants. From what I've seen of conservation-focused grazing in Nebraska, Iowa, Missouri, and other states, there are a couple things we know about this topic and plenty of remaining questions. First, I've not yet seen evidence that a year or two of intensive grazing eliminates any conservative plant species from a prairie. Prairie plants are tough – they're adapted to prairies where fires, herbivory, droughts, and now haying/mowing have long been part of the ecosystem. I have abundant data from my own prairies showing the persistence of conservative plant species through time – even in prairies where we have perennial grazing – and my colleagues around the country report similar findings. Second, cattle and bison make their living by eating grass, and grazing systems like patch-burn grazing that provide them with free choice of where to go and what to eat (as opposed to rotational grazing systems that lock them into small areas) tend to optimize their grass consumption. Forb grazing appears to be a secondary and opportunistic feeding strategy, and is highly tied to stocking rate. Under high stocking rates, grazers will eat lots of forbs they wouldn't eat (or would graze less intensively) under lighter stocking rates. However, both cattle and bison will also pick the flowers or other tender portions of some plant species at certain times of year or under some conditions. In my sites, I most often see this with species such as *Astragalus canadensis, Silphium integrifolium* and *Asclepias* spp. Providing years of complete rest from grazing is important to ensure that those species are allowed to complete their life cycle periodically. However, periodic grazing does not eliminate those plants or (apparently) cause any long-term damage. In fact, I've had bumper seed harvest crops from *A. canadensis* the year after grazing because grazing broke the cycle of the seed-eating insects that typically get most of those seeds.

All that being said, we have a lot to learn about the long-term and complex interactions between grazing and plant communities. In some prairies, including most that I manage, I've seen a temporary increase in small-scale plant species density (e.g. the number of plant species per meter) following intensive grazing, such as that in the burned patch of patch-burn grazing. This appears to result from plants taking advantage of weakened dominance by grasses that were repeatedly and intensively grazed the prior year. The long list of species I've seen increases from includes conservative plants in genera such as *Dalea* and *Silphium* spp., along with less conservative species in the genera *Verbena* and *Ambrosia*. However, I'm not sure why some prairies respond that way and others appear not to. There are also clearly questions about how to regulate and mitigate potential negative impacts from cattle and bison grazing, including soil compaction and soil erosion that can result from high concentrations of animals . (Continued > > >)

– particularly along trails and in wet and shaded areas. Bison tend to behave differently than cattle in terms of their tendency not to cluster around water or shade, but these differences are most pronounced in prairies of thousands of acres in size. In most cases, periodic grazing alternated with one or more years of rest - and/or temporary or permanent exclosures - will prevent long-term negative impacts from grazers. In smaller prairies, however, these impacts can be difficult to manage, and there many small prairies where I would never advocate grazing because of the combination of potential impacts and the cost of infrastructure (fence and water) per acre.

I know that grazing in prairies makes many people uncomfortable, to say the least. In my own development as an ecological manager of prairies, I've been there. However, having watched prairies across the country recover and respond favorably to periodic grazing (intensive and otherwise), and to a variety of other, high-impact practices, I've greatly increased my respect for the resilience of grassland ecosystems. If there are prairies being grazed near you, I'd encourage you to visit them multiple times to see how plant and animal communities are responding during and after grazing events. We've still got a lot to learn about how best to manage and conserve the prairies we have left. The more people involved in evaluating our efforts so far and providing input into the development of future strategies, the better.

Chris Helzer is an ecologist and Eastern Nebraska Program Director for The Nature Conservancy. He supervises the management and restoration of approximately 5,000 acres of land in central and eastern Nebraska - primarily along the central Platte River. Chris is also the author of "The Ecology and Management of Prairies in the Central United States", published by the University of Iowa Press.

Membership information — Missouri Society for Conservation Biology

In order to be a voting member of the Missouri Chapter of the Society for Conservation Biology, you must join the larger Society for Conservation Biology (SCB). Join the global community of conservation professionals at: https://www.conbio.org/join/. Annual dues are $80 for working professionals and $20 for students/retirees.

The goal of MOSCB is to promote communication among conservation biologists throughout the state of Missouri. Membership in the Missouri Chapter is $5.00. Please send a check made out to MOSCB to the attention of Amy Buechler, Treasurer, MOSCB, c/o MDC, PO Box 180, Jefferson City, MO 65102. Contact Amy (amy.buechler@mdc.mo.gov, 573-751-4115) with questions."

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