St. Louis Audubon Society

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February 10, 2011

Robert Ziehmer, Director
Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 65102-0180

Dear Mr. Ziehmer:

Executive Summary

High-quality tallgrass prairies in Missouri are some of the most endangered ecosystems in the world. This natural assemblage of intact soils, plants, and animals (including several endangered species) is unique to Missouri, distinctly different from prairies in surrounding states, and not found anywhere else in the world. However, these high-quality Missouri prairies have been severely reduced to only a relatively few remnants. For the last three decades, these prairie remnants have prospered with fire management. The St. Louis Audubon Society (SLAS) is opposed to the experimental prairie management technique called Patch Burn Grazing with Cattle (PBGC) that has been recently used by MDC on these high-quality prairie remnants. We are quite skeptical of the findings from the four-year PBGC study conducted by MDC because of its limited scope and questionable data interpretations. Therefore, the SLAS has formulated seven recommendations regarding prairies for MDC to implement, including the immediate discontinuation of PBGC on all high-quality Missouri prairies.

Discussion

Our St. Louis Audubon Society (SLAS) Conservation Committee has been studying the highly controversial issue of Patch Burn Grazing with Cattle (PBGC) on MDC-managed properties for many months. We have gathered together many scientific studies on PBGC from across the Midwest and the one study conducted here in Missouri. We have also enlisted the assistance of additional biologists from academia, public agencies (non-MDC) and NFP conservation organizations to help us analyze and interpret the information in those studies.

To help us objectively analyze the MDC report to NRCS titled "Evaluation of a Grazing System for Maintaining Grassland Integrity and Improving Upland Bird Habitat" (hereafter referred to as the NRCS Report), our committee member Dave Tylka sent you a letter last December requesting the criteria that MDC used to select which MDC-managed lands were grazed for the PBGC study and copies of raw botanical and ornithological data that was collected by MDC biologists. In your response, you offered a meeting with Norman Murray. I would like to invite Mr. Murray to meet with our committee, interested board members and other people in St. Louis at a mutually agreed time and place. However, before our meeting, we would like to express the current results of our analysis of PBGC on **Missouri** Prairies (**not** the significantly different types of prairies in Kansas and Oklahoma). At the end of this letter, we would like to respectfully submit some recommendations regarding prairie ecosystems and their management, to be considered for implementation now and in the future.

Although we in the SLAS often focus on the habitat requirements of various bird species, we understand that it is paramount to conserve entire ecosystems that furnish habitat for a full array of native plant and animal species and to protect the ecosystems from unnecessary ecological stresses such as invasions of exotic plants and animals. Realizing that Missouri's high-quality tallgrass prairie remnants are some of the most endangered natural communities or ecosystems in North America and quite possibly on Earth, it is illogical to risk the integrity of this ecosystem by deliberately introducing exotic species (cattle along with their exotic biological symbionts and associated synthetic chemicals that have been injected into their bodies) onto endangered Missouri prairie natural areas to potentially benefit but just a few bird species.

As stated in the NRCS Report, the primary goal of managers who use PBGC on Missouri prairies was to increase habitat heterogeneity for a suite of grassland birds such as greater prairie chickens, upland sandpipers and northern bobwhites. As you well know, increasing habitat heterogeneity simply means providing different heights of vegetation without regard to plant specificity (although wildflower/forb species are preferred by cattle compared to native grazers such as bison, which prefer grasses/graminoids). However, as pointed out by the TNC Director of Conservation Science, Doug Ladd, in his January 2011 report, "Patch Burn Grazing and Missouri Tallgrass Prairies—The Nature Conservancy's Perspective" (hereafter referred to as the TNC Report), "Embedded in the discussion is the erroneous assumption that optimum grassland bird management is by definition optimum prairie management, despite clear data demonstrating that grassland birds can thrive on effectively managed non-prairie habitat. . . . the fact that grassland bird viability is more keyed to structure than dependence on intact prairie habitats creates tremendous opportunities [on areas other than high-quality prairie natural areas]." In other words, if grassland habitat heterogeneity is the key for a suite of declining grassland birds, there is a tremendous potential for rallying cattle producers and private land managers to help rejuvenate bird populations on their grasslands at a scale that far exceeds the size of our few existing prairie remnant natural areas.

Therefore, without a valid ecological reason to use PBGC on MDC prairie natural areas, the only other reason to use PBGC on these lands is to produce pounds of beef. Although there are grazing practices such as PBGC that potentially would benefit wildlife conservation on grassland pastures, we have to ask these questions: How involved does MDC have to be with the grazing industry? Should these types of activities fall primarily under the auspices of the Missouri Department of Agriculture and not MDC? This is probably a policy issue that has been or will be taken up by the Conservation Department Commissioners. Fat cattle, bare ground and heavily browsed forbs on PBGC lands may be a welcome sight for some cattle producers, but when MDC natural areas such as Niawathe Prairie take on this appearance, the result is not generating any positive PR for MDC (*Joplin Globe*, January 8, 2011).

Most of the PBGC studies have been done in Oklahoma and Kansas on lands that have significantly different soils and receive significantly different amounts of rainfall from the high-quality prairie remnants found in Missouri. These lands in Oklahoma and Kansas have been continually grazed by cattle for probably over 150 years, and broad-leaf herbicides have been applied to many of these grasslands for decades to kill wildflowers/forbs and promote grasses. Therefore, these PBGC lands west of Missouri lack any pre-grazing baseline data for what forbs were actually found there before widespread grazing was initiated. Furthermore, any claims from these western studies that PBGC has actually improved floristic diversity has to be met with a degree of skepticism.

With this in mind, the NRCS experimental study conducted for four years in Missouri (2005-2008) takes on more importance. Therefore, we would like to know if this Missouri experiment was correctly conducted and the results were accurately interpreted. That is why we asked to see the raw data. The TNC report cited floristic data of questionable quality and utility and identified a "lack of botanical expertise or attention to quality control for sampling identification." Without raw data to analyze, we too are skeptical of claims in the NRCS Report that "more plant species were documented in grazed treatment plots than ungrazed control plots" and that there were "no significant differences in species richness or FQI among burn patches." We have information that other non-MDC scientists have also verbally asked for the botanical data directly from the state botanist (especially from the Niawathe Prairie Natural Area) and she has refused to release this data. Our committee also has other questions about the determination of grazing rates, the sizes of control and test plots, the site randomization process that required nearby water sources for cattle, the inclusion of water-related birds such as green and great-blue herons adding to the increased bird diversity, etc., but the botanical data and interpretation loom heavily on the accuracy of this experimental study. Perhaps these and other questions could be addressed in our meeting with Mr. Murray.

When MDC undertook the PBGC study on Missouri prairie natural areas, the agency decided to study only the potential effects of PBGC upon beef production, vegetation structure and composition, and bird composition without regard to how this management technique would affect other organisms or the overall integrity of the entire prairie ecosystem. Why didn't MDC address high-quality prairies in the same manner it addressed high-quality forests in the MOFEP program?

At the end of this letter, our organization recommends that MDC immediately discontinue all cattle grazing and studies associated with PBGC on any high-quality prairies and natural areas. Several other conservation organizations have already called for stopping PBGC on prairie natural areas. We understand that now three years after the initial PBGC study was concluded, MDC is planning to measure the effects of cattle grazing on prairie headwater stream systems this year. If PBGC is not significantly benefitting grassland birds on Missouri prairie natural areas and these prairies are too small anyway (discussed later), why not relocate the water quality studies to a PBGC grassland or save money by canceling the study altogether? If MDC decides to ignore our recommendations and the suggestions of these other conservation organizations, we strongly suggest that MDC also study the effects of PBGC on small mammals, prairie amphibians and reptiles, suites of pollinators (not just butterflies), suites of prairie obligate herbivorous invertebrates, the ecological impacts of cattle grazing upon exotic plant invasions, cowbird parasitism, nest predation, the trampling of grassland bird nests by cattle, the effects of exotic microbes introduced from exotic cattle on native soil inhabitants (microbiota), etc. MDC (and non-MDC) biologists should be collecting more baseline data on what diversity of prairie organisms we have and how they biologically interconnect before subjecting any of our high-quality Missouri prairies to unnecessary risks such as PBGC that are appropriate only on the large, heavily grazed lands to our west.

As previously mentioned, without the site-selection criteria from MDC, we have to question why prairie natural areas were initially chosen to do experimental PBGC studies in Missouri and why they continue to be chosen for future PBGC experimental studies. Without criteria, we can only assume that MDC did not place a very high priority on high-quality prairie ecosystems here in Missouri when deciding which areas to carry out PBGC experiments.

Missouri's high-quality tallgrass prairies are unique. According to the MDC Natural Heritage Program database, there are only 8,000 acres of prairie designated as natural areas scattered in Missouri. This number represents only a small percentage of prairies that were found here in pre-settlement times. Today, our high-quality Missouri prairies are generally found only in patches of 100 or 200 acres in size, mere remnants of what used to be. Although somewhat resilient to prescribed fires (and limited haying in earlier times), these small prairie remnants are the last vestiges of this extremely endangered natural community, and we, as a society, should not use any unproven management techniques such as PBGC that could jeopardize the integrity of this valuable ecosystem.

According to Hobbs and Huenneke in a 1992 study, "Preserves should be large enough to allow for the natural disturbance regime to operate and to support a mosaic of patches in different stages of disturbances, successional recovery and community recovery." We believe that the sizes of these Missouri remnant high-quality prairies are not large enough to sustain PBGC without potentially disastrous impacts. If MDC unnecessarily degrades these widely scattered prairies for questionable bird benefits (previously discussed), biological recruitment would probably take decades to accomplish, if even possible. Once lost, these high-quality prairies may be irreplaceable with our current recolonization mechanisms and technologies. We are sure that MDC, as a responsible steward, wants to manage these areas using sustainable strategies to conserve their natural biodiversity.

Recommendations

1. MDC should immediately stop PBGC on all MDC high-quality prairies and natural areas.
2. To demonstrate respect and appreciation of Missouri's high-quality prairies and natural areas, MDC should sponsor in-depth research on the biological baseline of these endangered prairie ecosystems so the effects of any future management techniques and stresses can be scientifically measured and analyzed.
3. MDC should actively recruit private landowners to help the suite of grassland birds previously described by educating and providing incentives to increase vegetative heterogeneity on their pastures and grasslands, perhaps with management techniques such as PBGC. Financial incentives could even include monetary rewards for the number of leks or breeding pairs nesting on their properties.
4. If MDC decides to continue using PBGC on any high-quality prairie or natural area, it should consider authorizing an independent collaborative group of ecologists to develop standards of vegetation sampling design, stratification and methodologies and to monitor these grazed lands independently from MDC. This will help MDC to regain trust.
5. MDC should hire at least one well-qualified prairie ecologist or a community ecologist specializing in prairie ecosystems that can identify at least **95% of all** common and endangered native plant species within quadrant samples found on Missouri prairies, understand the ecological interactions of these native prairie plants and native grassland animals, and gather fact-based biological information on Missouri prairies.
6. Before considering implementing management techniques such as PBGC on any other high-quality lands or natural areas (such as woodlands, savannas, forests, riparian corridors, etc.), MDC should sponsor in-depth research on the biological baseline of these

special natural communities so the effects of any future management techniques and stresses can be scientifically measured and analyzed.

7. MDC has made great strides in the last two decades to promote the importance of conserving and re-introducing native species on our public and private lands and eradicating/controlling exotics or non-native species. We sincerely appreciate educational outreach programs like the Grow Native! Program and applaud any efforts to expand this and other low-cost, but highly valuable conservation programs.

Sincerely,

Craig Lanham

Vice President of Conservation
St. Louis Audubon Society

CC: St. Louis Audubon Board of Directors
Audubon Chapters in Missouri
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Missouri Botanical Garden
Missouri Coalition for the Environment
Missouri Conservation Commission
Missouri Native Plant Society
Missouri Prairie Foundation
North American Butterfly Association, St. Louis Chapter
The Nature Conservancy, Missouri Chapter
Sierra Club, Missouri Chapter
St. Louis Community College at Meramec, Biology Department
St. Louis University, Department of Biology
University of Missouri—St. Louis, Department of Biology
Washington University in St. Louis, Department of Biology
Webster Groves Nature Study Society
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ROBERT L. ZIEHMER, Director

February 25, 2011 **RESPONSE BY EMAIL**

Craig Lanham
Vice-President of Conservation
St. Louis Audubon Society

Dear Mr. Lanham:

Thank you for your letter regarding concerns of using patch-burn grazing with cattle (PBGC) as a prairie management tool. Director Bob Ziehmer asked that I respond to your letter, and I am pleased to do so.

We recognize that some questions remain unanswered concerning PBGC. MDC will continue to learn while we apply this tool, and adjust how PBGC is applied based on the latest available information. It is impossible to have answers to all potential questions prior to taking action, so we commonly use this adaptive approach as we learn from new research, from experience, and as circumstances change. It is notable that for other "accepted" management practices, such as prescribed fire, there remains disagreement and questions about effects on invertebrates, small mammals, reptiles and amphibians. However, we carefully and cautiously deploy fire based on the best science available. We deploy PBGC similarly.

Because we do remain committed to learning about PBGC as a scientifically valid tool for prairie management, we will continue our ongoing research of evaluating the effects of PBGC on prairie streams as well as continue performing justified research on additional PBGC sites to investigate specific questions/unresolved issues. However, at the discretion of The Nature Conservancy (TNC), PBGC practices on some property owned by TNC (Niawathe and Pawnee) will be deferred indefinitely. In addition, except where research justifies additional PBG sites to investigate specific questions or unresolved issues, PBGC will not be expanded on natural areas or other Department areas.

Mr. Lanham, our initial research into PBGC was a solid study done by Jamison and Underwood (2008) and was designed by an array of biometricians, ornithologists, botanists, range scientists, and wildlife biologists from within and outside of MDC. We will continue to discuss concerns internally as well as with partners. For instance, we will coordinate a meeting with partners that will discuss concerns with PBGC that will allow us to come to an understanding of how best to use PBGC as a prairie management tool.

Our invitation of January 12, 2011, to meet with Dr. Tylka to review and discuss the scientific findings with MDC staff still stands. We remain open to exploring other research questions about PBGC.

In the next several weeks we will invite representatives from partner/stakeholder groups to discuss what each believes to be the highest priority research needs regarding PBGC, and how best to accomplish those needs. We will ensure that Audubon is represented at that discussion.

We appreciate your commitment to ensure that Missouri's natural resources are conserved. Please don't hesitate to contact me or other MDC staff if we can provide further information to you at any time.

Sincerely,

TOM A. DRAPER
DEPUTY DIRECTOR

C: Conservation Commissioners
Director Robert L. Ziehmer
Resource Science Division Chief Mike Kruse
Wildlife Division Chief DeeCee Darrow
Doug Ladd, The Nature Conservancy
Dave Murphy, Conservation Federation of Missouri