LANDSCAPE CONSERVATION COOPERATIVES

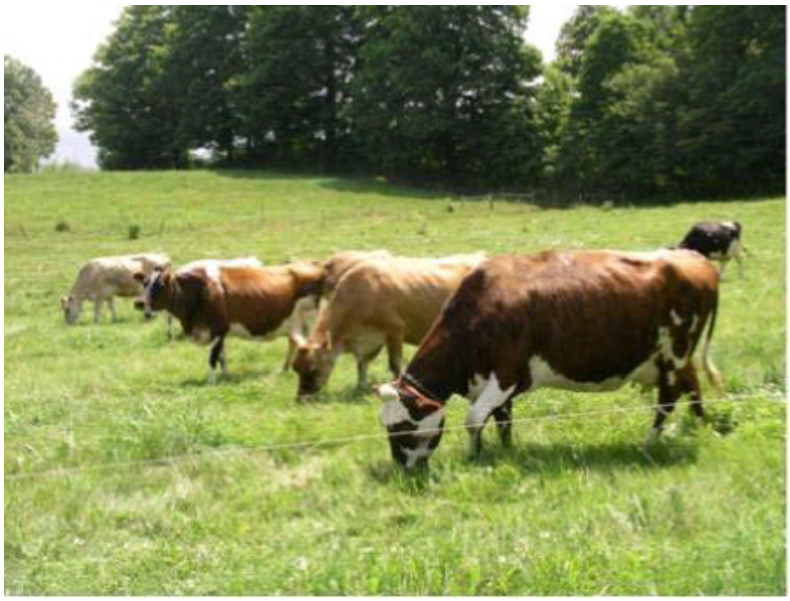
Multi-LCC Mississippi River Basin / Gulf Hypoxia Initiative
High Impact Conservation Practices – Fact Sheets

Suite #4 – Uplands Grazing

Updated 18 February 2016 (draft for review)

WHAT IS UPLAND GRAZING DESIGN?

Grazing can be one of the most impactful agricultural practices on a landscape. Improperly managed grazing by large ungulate species, particularly cattle, can negatively affect ecosystem productivity and vegetation structure and composition. If left unchecked, overgrazing can significantly damage entire landscapes and ecosystems. Alternatively, grazing can be an effective tool to alter grassland communities to benefit wildlife populations. This is especially relevant because the ecosystems and habitats that large grazing ungulates occupy are the same habitats and ecosystems that many declining species of grassland bird rely on for their continued success. Uplands grazing design is a conservation practice that focuses on managing these large ungulate species and the grazing lands they utilize in order to protect and enhance the ecosystem services that those grasslands ultimately provide.



Referred to interchangeably as grazing best management practices (BMP) or prescribed grazing, there are a variety of grazing management techniques and practices that are included in a conservation-oriented grazing design. While these practices have beneficial impacts on habitat, wildlife, water quality, and overall ecosystem health, they also provide benefits for the farmer (e.g., better maintained and more productive pasture land and, as a result, less need for inputs into producing hay). In general, there are several aspects of grazing that can be used to improve ecosystem health and services. These include, but are not limited to: the number of animals grazing on a given parcel of land (stocking rate) so as to not overuse the pasture; the timing and duration of grazing so as to accommodate wildlife nesting and allow for winter cover and early-spring residual for early nest initiation; minimizing animal impacts on stream banks and other surface waters; managing the vegetation and composition of a given grassland/pastureland to foster both plant and structural diversity (including the incorporation of native grasses and forbes into the grazing rotation); and utilizing prescribed grazing as a

pest/weed management technique. These general grazing regime categories, combined with others, can be used to develop a suite of conservation practices that can all be grouped under the broader heading of "conservation-oriented uplands grazing design."

WHY UPLAND GRAZING?

As already mentioned, grazing is one of the most common forms of landscape management in the Mississippi River Basin. As a result, it is also an agricultural practice that has a significant impact on a variety of ecosystem functions, including water quality and quantity. Prescribed grazing management, when executed appropriately, can have positive impacts on water filtration, streambank erosion, soil structure, water quality (specifically nutrients), riparian habitat, groundwater infiltration, and general ecological health.

Specific to the issue of Gulf hypoxia, grazing management can reduce the amount of nutrients and sediment entering waterways by mitigating stream bank disturbance and erosion (e.g., through the use of an alternative watering system) and ensuring that livestock waste is deposited away from surface water sources. Combined, these management techniques can greatly reduce the amount of nutrients (namely phosphorus) entering streams and ultimately contributing to the hypoxic zone in the Gulf of Mexico. Similarly, increased water filtration and healthier riparian habitat means that water soluble contaminants and nutrients are less likely to be flushed immediately into surface waters and instead are filtered through the soil profile or by riparian vegetation.

WILDLIFE BENEFITS

As with any practice that increases ecosystem health, grazing management and design can have a variety of beneficial impacts on wildlife. In general, careful management using any of the techniques described above ultimately results in greater food availability for wildlife through improved vegetative structure and diversity.. This enhancement of vegetative structure and diversity is especially important for a diverse community of nesting grassland birds (specifically songbirds) which require a variety of vegetative heights, litter depth, and plant species diversity in order to thrive. By managing grazing practices in such a way so as to increase and improve the vegetative structure and plant species composition of grasslands, grazing design and management can have a direct beneficial impact on the breeding success of declining grassland bird species such as bobolink, dickcissel, grasshopper sparrow, Henslow's sparrow, meadowlark, and upland sandpiper.

Similar to its positive benefits for grassland birds, grazing management can also have beneficial impacts on a variety of pollinator species, most notably monarch butterflies. When managed for native vegetative diversity and composition, these habitat benefits can be improved even further. In addition, the water quality benefits that managed grazing provide can lead to the improved success of many different aquatic communities such as macroinvertebrates, fish, and mussels.

One additional benefit of managed grazing is that it improves the "bottom line" for the livestock producer, thereby reducing the incentive to convert grazing lands into development or row crop monocultures, either of which would result in a significant reduction in value to wildlife in comparison to retaining a grassland landscape.

INSTALLATION & COSTS

The costs of upland grazing practices are dependent on a variety of factors, including the practices selected and the location and setting where those practices are utilized. However, as mentioned above, beyond the ecosystem and environmental benefits, managed grazing practices can have beneficial effects on the productivity and economic efficiency of an agricultural operation. In a properly designed system, the benefits of controlled grazing can outweigh the costs of the conversion to and operation of such systems.

MONITORING

Monitoring controlled grazing systems and their benefits can be linked to a variety of ongoing efforts, including those of the Audubon Society, state and local efforts, federal programs (including U.S. Fish and Wildlife Service initiatives and NRCS Farm Bill programs), and many university extension programs. In particular, the USFWS Joint Ventures have population estimates and targets that can be used to monitor and assess these practices.

LIMITATIONS/CONSIDERATIONS

The main limitation of these controlled grazing systems—as with most other approaches to agricultural management—is that they are reliant on site-specific information to be successful—in other words, grazing designs are going to look different in different places and in different situations. This makes setting specific, detailed standards for grazing design difficult at best and impractical at worst. However, a set of general guidelines can be extremely useful for informing the local design of grazing practices. In addition, grazing design relies on a variety of information (including soil/vegetation information, historical climate information, animal numbers, animal grazing characteristics, forage and food source inventories, and surface water source information) that may have to be collected and evaluated before a proper grazing management design can be created.

As with all voluntary practices, cost-share and/or incentives may be useful to help landowners establish controlled grazing systems and adjust operation to a point of profitability. These could be integrated with existing Farm Bill programs administered by the FSA and the NRCS, including the Environmental Quality Incentives Program (EQIP), Agricultural Conservation Easement Program (ACEP), and the Conservation Reserve Program (CRP) – Grasslands provisions; in addition, producers could seek support through the programs of other agencies, including the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program.

RESEARCH, PROGRAMS, AND MORE INFORMATION

Programs:

- USDA/NRCS – State conservationists - they will get you to the RCCP and Farm Bill Programs. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/contact/states/
- Wallace Pasture Project: http://www.wallacecenter.org/pastureproject/
- State Chapters of the Soil & Water Conservation Society: http://www.swcs.org/en/about_swcs/
- Kickapoo Grazing Initiative (NGO) - http://www.kickapoograzinginitiative.com/ http://www.kickapoograzinginitiative.com/uploads/2/5/6/6/25665665/toolkit_intro.pdf
- Grassworks (NGO) - http://grassworks.org/
- Dairy Grazing Apprenticeship: www.dairygrazingapprenticeship.org/
- Wisconsin Association of Land Conservation Employees - http://datcp.wi.gov/uploads/Environment/pdf/ConservationDirectory.pdf
- Trout Unlimited – Driftless Restoration Effort (provides funding for a grazing specialist) : http://www.tu.org/tu-projects/driftless-area-restoration-effort
- Minnesota Association of Soil and Water Conservation Districts: http://www.maswcd.org/index.htm
- University of Wisconsin – Extension: http://fyi.uwex.edu/grazres/grazing-management-toolbox/
- Missouri Department of Conservation: http://www.conservation.mo.gov/about-us/research-papers/patch-burn-grazing-cattle-prairie-management-tool-missouri-department-conse
    - Document of all practices they fund: contact Heidi_Keuler@fws.gov
- Sustainable Agriculture Research & Education (Kansas): http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=FNC92-023&y=1994&t=1
- Amazing Grazing (Kansas): http://www.kansasfarmersunion.com/amazing-grazing/
- Kansas Grazing Lands Coalition: http://www.kglc.org/
- University of Missouri—Extension: http://dairy.missouri.edu/grazing/
- WI DATCP funding program: http://datcp.wi.gov/Farms/Grazing/?AspxAutoDetectCookieSupport=1
- Indiana's Grazing Lands Conservation Initiative: https://www.agry.purdue.edu/ext/forages/pdf/2007Withextremedryweather-web.pdf
- Nebraska Grazing Lands Coalition monitoring program: http://www.nebraskagrazinglands.org/
- Ohio American Forage & Grassland Council: http://www.afgc.org/ohio.php

Researchers:

- Conor McGowan (USGS)—looking at Grassland Habitat Management for Diverse Taxa and Species— http://gcpolccapps.org/projects/ProjectPage.aspx?id=258
- There is a lot of research going on across TX and Oklahoma – might want to look at the Noble Foundation as they do research on this topic: http://www.noble.org/
- University of WI Forage Research & Extension: http://www.uwex.edu/ces/forage/

    - http://fyi.uwex.edu/grazres/research-updates/
- On Pasture: http://onpasture.com/
- Designing Grazing Systems: http://fyi.uwex.edu/grazres/fencing-lanes-watering-systems/spe
- Iowa State University: https://connect.extension.iastate.edu/grazing
    - http://www.leopold.iastate.edu/sites/default/files/pubs-and-papers/2014-08-grazing-native-plants-iowa-processes-and-experiences.pdf
- Purdue University:
    - https://www.extension.purdue.edu/dairy/forage/foragpub_graze.htm
- Missouri Department of Conservation: http://www.conservation.mo.gov/about-us/research-papers/patch-burn-grazing-cattle-prairie-management-tool-missouri-department-conse
- Purdue: https://www.extension.purdue.edu/extmedia/AY/AY-328.pdf
- http://www.jstor.org/stable/20456243?seq=1#page_scan_tab_contents
- http://grassland.unl.edu/documents/summer04.pdf
- http://ir.library.oregonstate.edu/xmlui/handle/1957/19879

OPPORTUNITY AREAS

(TBA)

SOURCES

NRCS. Prescribed Grazing (528). Retrieved from http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045100.pdf.

Johnson, Tracey N. 2010. Direct and indirect effects of livestock grazing intensity on processes regulation grassland bird populations. Doctoral dissertation, Oregon State University. Retrieved from http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/19879/JohnsonTraceyN2010.pdf?sequence=1.