

## Harvesting vegetation for habitat management and bioenergy: a landscape-level experiment to understand ecological and social responses.

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### **BACKGROUND:**

The U.S. Fish & Wildlife Service Leopold Wetland Management District (District) manages more than 13,000 acres of Waterfowl Production Areas (WPAs) in 17 Wisconsin counties and is continually adding new properties and restoring additional habitat acreage. Fire is currently the preferred tool for managing grassland habitats in early successional states as it is cost effective, efficient, and emulates natural processes. However, the District is unable to apply prescribed fire at the scale desired (2,500-3,000 acres per year) to maintain WPA habitats in a healthy, diverse condition. Therefore, the District is exploring late or dormant season haying as an additional tool to make up acreage missed by prescribed fire. The District also sees potential for use of the haying byproducts (i.e., biomass) as a bioenergy source which can go towards meeting agency policies and directives to reduce reliance on fossil fuels and to reduce carbon footprint. Diverse perennial grasslands have the unique potential to both provide habitat suitable for grassland-dependent species and clean renewable energy. However there is a need to verify the ecological soundness and technical feasibility of WPA harvest and to determine if this habitat management tool meets management goals. The District has partnered with researchers and outreach specialists at University of Wisconsin–Madison to conduct the necessary research and to collaborate in demonstration activities.

### **Project goal:**

Evaluation of harvest on WPAs along with engagement of a wide group of stakeholder-collaborators forms the foundation for

understanding whether and how production and harvest of diverse perennial herbaceous plant communities within WPAs fulfills habitat management goals; the degree to which harvested materials are technologically and economically feasible for a variety of end-uses (including biopower and biofuel); whether and to what degree harvested materials contribute to formation of local value chains while delivering ecosystem service benefits across geographic and ecological scales; and the nature and extent of social and economic impacts.

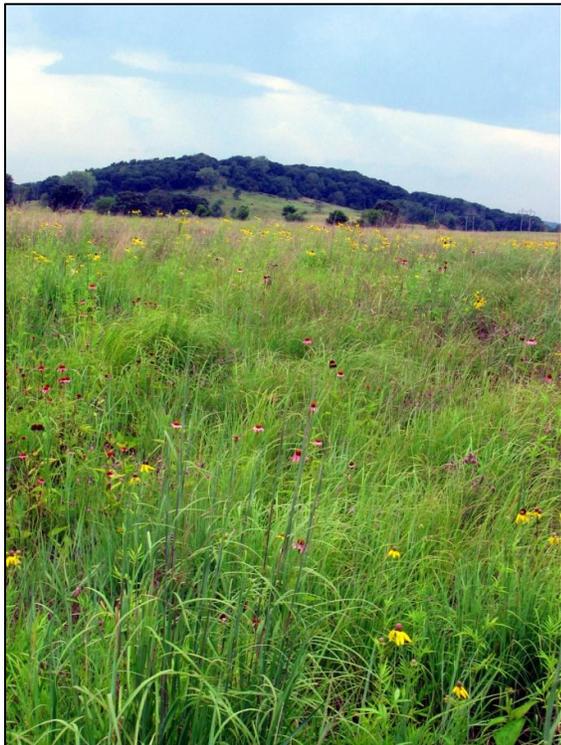


Hinkson Creek Waterfowl Production Area near Poynette, Columbia County, WI. Waterfowl Production Areas of the U.S. Fish and Wildlife Service Leopold Wetland management District are part of diverse and productive agricultural landscapes of southern Wisconsin.

A multi-scale study has been planned collaboratively among UW and District personnel. Twelve WPAs are included in the study, all within Columbia, Dane, Sauk, Jefferson & Rock counties. Six of the WPAs will be harvested, the other six will not be harvested. The 12 WPAs have been chosen according to a quantitative analysis of surrounding landscape context: four WPAs lie within row crop dominated landscape; four lie within landscapes that contain about equal proportions of row-crop agriculture, grasslands and forests; and four lie within landscapes that contain about equal proportions of row-crop agriculture, grasslands,

wetlands and forests. The study is designed to evaluate effects of harvest at the level of WPAs and at the level of surrounding landscapes, and to understand possible interactions of in-field and landscape processes.

Research studies include waterfowl production surveys (pair surveys and brood surveys); grassland bird surveys designed to evaluate relationships between grassland bird densities and vegetation/harvest, and to determine presence of all other species on WPAs; evaluation of impacts to native bee populations and those of natural enemy insects (e.g., insects that prey on other insects harmful to agricultural crops); analysis of soil biota, soil biogeochemical and plant community impacts of harvest; and harvest/landscape context interactions. Economic analyses are also planned to better understand costs of harvests (time/labor, fuel, etc.) and impacts of harvest on harvest equipment.



Becker Waterfowl Production Area near Pardeeville, Columbia County, WI. Waterfowl Production Areas provide nesting habitat for native duck species. These diverse grassland areas also support other species including grassland birds, herptiles, and beneficial insects such as pollinators.

## OUTREACH & EDUCATION:

In addition to scientific inquiry this project aims to support discovery processes that engage the public and the wider conservation and renewable energy communities. Graduate students are an integral part of research efforts of this project. Several opportunities for undergraduate education are also being planned. In addition to traditional demonstration projects and outreach communications, collaborators in this project will partner with local-level community leaders, industry leaders, state-level agency and non-profit organization leaders to facilitate discussions and other participatory processes in collaborative landscape design and planning, and for sustainability planning. The ultimate goal of outreach in this project, if WPA harvest is proven sound and feasible, is to promote the adoption of the WPA approach at other locales.

## CONTACTS:

Questions? Ideas?

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