**PROJECT TITLE:** Impacts of Conservation Grazing on Greater Prairie-chickens

**I. PROJECT STATEMENT**

Conservation grazing is a prairie management tool developed in western landscapes, but applying this tool in Minnesota where <1% of prairie remains may produce different outcomes than out west where large, continuous grasslands still exist and nearby, ungrazed areas are in abundant supply for breeding birds. The limited prairie that does remain needs to be managed with the needs of sensitive wildlife in mind. This study will provide much needed information to understand those needs and communicate them to public land managers and conservation organizations working with private landowners. Our study will determine whether grazing to meet conservation objectives has trade-offs for ground-nesting birds, like Greater Prairie-chickens, and if so how best to mitigate any negative trade-offs via planning and implementation. This information will help meet the ENRTF mission to protect, conserve, preserve, and enhance natural resources in Minnesota.

We propose to examine the impacts of site size and timing of grazing to identify grazing scenarios that produce favorable outcomes for Greater Prairie-chickens, a Species of Special Concern, and other ground nesting birds like waterfowl. Greater Prairie-chickens rely on large, intact grasslands and are considered a good indicator species for other grassland-dependent species. We will examine habitat use, nest survival, and brood survival before, during, and after grazing in pastures grazed at different times (May-Jun and Jul-Aug) and at ungrazed pastures at the same sites.

We will investigate whether grazing smaller, fenced pastures in a landscape surrounded by row-crop agriculture:

●Could intensify cattle activity around fences and create trails for predators of nests and broods.

●Could provide perch sites for raptors on fence posts in landscapes otherwise lacking trees.

●Could reduce habitat while cattle are present, if hens avoid pastures with cattle.

●Could delay nest initiation, reduce nest success, and reduce brood survival.

By addressing these questions, we will gain important insights to inform grazing plans and their implementation so that any unintended consequences to ground-nesting birds are avoided and mitigated.

**II. PROJECT ACTIVITIES AND OUTCOMES**

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| **Activity 1:** *Determine if cattle and fencing impact nest success of Greater Prairie-chickens and other ground-nesting birds like waterfowl.* We will find nests, measure vegetation at nests, and identify causes of nest failure. **ENRTF BUDGET: $316,871** |
| **Outcome** | **Completion Date** |
| *1.* Nest locations (<100/year) & nest site characteristics of Greater Prairie-chickens & other birds | 31 Jul 2022 |
| 2. Nest fates relative to grazing treatments (early, late, or not grazed) and fencing | 31 Jul 2022 |
| 3. Complete data analysis and make recommendations to public land managers and conservation organizations working with private landowners  | 31 Jul 2023 |

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| **Activity 2:** *Determine if Greater Prairie-chicken broods have lower survival in grazed pastures or if hens avoid pastures with cattle compared to ungrazed pastures.* We will trap 100 hens/year and attach 50 GPS transmitters and 50 non-GPS (VHF) transmitters to monitor hen and brood habitat use, movements, and survival relative to 12 marked cattle in grazed pastures. We will compare data for grazed and ungrazed pastures. **ENRTF BUDGET: $204,839** |
| **Outcome** | **Completion Date** |
| 1. 100 Greater Prairie-chicken hens marked per year to obtain hen and brood locations  | 31 Jul 2022 |
| 2. Habitat use and survival of broods in grazed and ungrazed pastures in relation to cattle | 31 Aug 2022 |
| *3.* Complete data analysis and make recommendations to public land managers and conservation organizations working with private landowners | 31 Aug 2023 |
| **Activity 3:** *Determine whether predators use fences as perch sites and travel corridors.*We will place 36 trail cameras (1 camera/pasture at 12 sites divided into 3 pastures) to view predators that use fence lines as travel corridors or perch on fence posts. Cameras will be moved periodically to capture different perspectives within pastures.**ENRTF BUDGET: $38,334** |
| **Outcome** | **Completion Date** |
| *1.* Trail cameras (36) placed to photograph predators associated with fences & pastures | 31 Aug 2022 |
| *2.* Predators identified in photos and associated with infrastructure and site attributes | 31 Jun 2023 |
| *3.* Complete data analysis and make recommendations to public land managers and conservation organizations working with private landowners | 31 Aug 2023 |

**III. PROJECT PARTNERS:**

**A. Partners receiving ENRTF funding**

**Name Title Affiliation Role**

Dr. Joseph Knight Director & Associate Professor UM Twin Cities Oversee spatial analysis

Daniel Heins Research Fellow, UAS Coordinator UM Twin Cities Pilot & Spatial analysis

**B. Partners NOT receiving ENRTF funding**

**Name Title Affiliation Role**

Brian Winter President MN Prairie Chicken Society Review sites

M. Mecklenberg, T. Issendorf Biologists The Nature Conservancy Identify sites

**IV. LONG-TERM IMPLEMENTATION AND FUNDING:** This research will help identify pasture sizes and the timing of grazing that will produce the most favorable outcomes for Greater Prairie-chickens and other ground-nesting birds like waterfowl. Better information will help land managers reach wildlife habitat and population goals and will help guide investment of infrastructure (fence and water source installation). We will share findings and recommendations to public land managers and conservation organizations working with private landowners (e.g., MNDNR, The Nature Conservancy, US Fish and Wildlife Service, Natural Resources Conservation Service).

**V. TIME LINE REQUIREMENTS:** We will collect field data for 3 years (spring/summer 2020, 2021, and 2022) at 12 sites divided into 3 pastures/site in western Minnesota (Clay, Polk, Becker, Wilkin, Mahnomen, Otter Tail, Norman counties). We will compare grazing treatments in 2021 to pre- and post-grazing data in 2020 (initial year pending funding from MN DNR Wildlife Research) and 2022, respectively. During the grazing year, we will sample pastures grazed during May-Jun to sample during the nesting period, pastures grazed during July-Aug to sample during brood-rearing, and pastures that have not been grazed to serve as controls. In 2023, we will analyze data and make recommendations for conservation grazing that will benefit ground nesting birds.

**VI. SEE ADDITIONAL PROPOSAL COMPONENTS:**

**A. Proposal Budget Spreadsheet**

**B. Visual Component or Map**

**C. Project Manager Qualifications and Organization Description**

**D. Letters of Support**