Summer Externship 2021

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2021 Extern at the Nishnabotna Wildlife Unit in Riverton

Part I: Overview of Workplace

The Riverton Wildlife Area manages 23,000 acres of WMA in six counties of southwest Iowa. This includes 2,000 acres of Loess Hills prairie and woodland and 10,000 acres of Missouri river floodplain.

Stewardship of these acres includes maintaining seasonal wetland and controlling local flooding using water control structures, restoring native prairie and wetland species of plants, insects and animals, removing nonnative species of plants, insects, and animals, planting food plots to attract animals for hunting and to improve water quality.

Continued Part I: Overview of Workplace

Dikes that were once built to keep the Nishnabotna waters from flooding crop fields near Riverton, IA give the DNR the ability to direct water to specific sites by way of two large pumps and 37 water control structures. These structures recreate 2,100 acres of high quality habitat for wetland dependent wildlife and provides outdoor enthusiasts with the premiere duck marsh in the state of Iowa.

Part II: Workplace Focus

Many man hours are spent maintaining the seasonal wetland by keeping culverts free of debris and breaking up dams created by beavers.

My project was started last year and attempts to solve this problem by building a beaver management device that allows water to flow through a culvert that has been plugged by beavers, tricking them to stop building in that location. This year, the device was finished and installed as well as monitored for effectiveness. If the device continues to reduce the man hours required dealing with beavers, we would like to install more in other plugged waterways.

Part III: Introduce the Problem

Within the 23,000 acres that the Riverton DNR stewards there are 2,000 acres of Loess Hill remnant prairies; some of these prairies are miles apart from each other. Yearly rotations of burning and spraying in these areas attempt to beat back the persistent and invasive species that reduce the biodiversity necessary to support a prairie ecosystem. In order to be successful, land managers need to stay equally persistent by knowing when and where to act to apply pressure to invasive species. .

How could we use our knowledge of drones and other technology to build a system to keep track of the percentage of encroaching invasive species vs. native species present in each of the prairies in order help the DNR keep the invasive species at bay?

Part IV: Standards, Driving and Essential Questions

MS-LS2-5: Solutions for maintaining biodiversity and ecosystem services

MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved**.**

Driving Question:

Why are invasive species a danger to biodiversity?

Part V: Extern Host Role

Students will interview Riverton staff to see what all information will be helpful to obtain in their design.

Students will visit the prairies to

- Obtain drone footage
- Use inaturalist app to record native species
- Ask staff any stewardship questions
- Student could possible observe a prairie burn?

Staff will observe and grade the presentation of the final product.

Part VI: Student Learning

All members of the TEAM chooses a role based on their strengths

Groups choose which prairie they will be in charge of

Reflect and report:

- How you would build a better design next time?
- Any additional invasive species that were discovered and recorded along with suggestions on how to address them based on research.
- Any newly obtained ideas of how to increase biodiversity and reduce invasive species.