

**Jennifer Curry**

**(Submitted for approval by Doug Wilcox)**

Undergrad research internship summer 2014 proposal info

18 February 2014

**GPA in major:** 3.12

**Title:** "Faunal Indicators of Hydrologic Change in Restored Wetlands Related to Climate Change"

**Explain how this internship fits into educational objectives:**

As both a wetland ecology major and a chemistry minor, I believe learning all I can about the systems I work on and everything that depends upon them will better equip me to manage them in the future. I would like to use this internship to research a method of utilizing muskrat and other potential indicator species to detect and monitor hydrologic change related to climate change. I will then use my collected data to expand a graduate study entitled "Predicting Potential Effects of Climate Change on Existing WRP Wetland Restoration Projects". I am the current research assistant to this project, and this internship will allow me to supply a separate faunal component to augment the ongoing hydrological study. The data will support better management practices to prepare and protect Wetland Restoration Project (WRP) sites in the face of climate change.

**Detailed Project Plan:**

**Goal:** To use muskrat and other potential indicator species such as snails as mechanisms to detect and manage hydrologic change related to climate change on USDA Natural Resources Conservation Service (NRCS) WRP Wetland Restoration Project sites.

**Hypothesis:** Muskrat abundance, den elevation, and presence indicate hydrologic conditions.

**Research Question:** Can we provide a reliable observational method for the use of muskrat and other species as indicator species for hydrologic conditions related to climate change?

**Purpose:** To research a method of utilizing muskrat and other potential indicator species to detect and monitor hydrologic change related to climate change in order to perfect the method and offer a separate faunal component to the hydrological study already in progress.

**Background:** Ms. Stetz's (Molly Stetz, Grad student in charge of hydrological study I work on) research is to identify at-risk wetlands by determining the main source of water (groundwater, surface run-off, or precipitation) for each site, in order to provide the data needed by NRCS to develop adaptive management procedures to supplement water supplies or alter plant communities such that they might survive future climate change related conditions. The collected data will provide a basis on which to make predictions to ensure survival of other sites such as these, or potentially augment best management practices already in place on agricultural and rural land, thereby eliminating the need for cost-intensive hydrologic studies and labor in the future.

**Work plan:** Weekly monitoring of established WRP restoration sites to document evidence of muskrat presence, abundance, and bank den elevation heights as related to water levels. Data will be analyzed and used to provide a mechanism for predicting hydrologic conditions of each site based upon observed faunal indications.