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A Changed River's Effects on Native Turtle Distribution

The Missouri River has a long history of heavy modification including channelization, and most notably damming. False Map Turtles (*Graptemys pseudogeographica*), have specific and unique habitat requirements that are frequently lost through such modifications. River modification has been shown to have negative effects on turtle populations by restricting habitat available.



Despite this, few studies have been conducted which highlight False Map Turtle distribution along the Upper Missouri River and ask what makes them the way they are. To fill this research gap my project looks to understand and investigate where false map turtle populations are highest and what ecosystem characteristics most heavily influence false map turtle populations.



Utilizing Esri's ArcGIS software, various ecosystem elements are layered with United States Army Corps of Engineers (USACE) presence data of false map turtles along the Missouri River.

I compared deadwood presence, water temperature, water depth and water flow to understand what is influencing false map turtle populations the most. Most of these elements other than the deadwood presence which were collected from Google Earth satellite imagery, were collected by myself and other students in the Kerby Lab along a stretch of the Missouri River, south of Clay county. Deadwood was selected as an ecosystem element due to the high level of importance they hold for basking areas, an activity which is important for the prosperity of most turtle species including false map turtles.



These ecosystem elements are meant to represent habitat suitable for false map turtles that still remain following modification of the Missouri River. The ecosystem elements will be analyzed and compared with where the highest concentrations of false map turtles have been spotted since 2011. The project investigates if deadwood abundance or one of the other ecosystem elements, could be the main factor in creating habitat for false map turtles. Due to the fact that the amount of habitat remaining after modification is a significant predictor of species health, this project will help to make predictions about how much remaining habitat is available despite modification. Furthermore, this project could inform the state how to better manage for false map turtles.

Hypothesis: There is an anticipated correlation between the presence of deadwood and the density of false map turtles. I predict that there will be higher densities of false map turtles in areas where there are higher levels of deadwood, therefore creating higher quality habitat.

Favorite Memory: Learning about and working closely with turtles all summer under the hot sun and camping in Lake Oahe collecting setting turtle traps and eating camp food!

