

Illustration by: Ted Walke

The Stonecat in the Upper LaPlatte

Champlain Valley Union High School, Mari Caminiti and Mary Rutenbeck

Introduction

The Champlain Valley Union team collected data at the Upper LaPlatte stream in Shelburne, Vermont. The Upper LaPlatte is one of the two stream locations in Vermont where one can find the Stonecat (*Noturus flavus*). The other location is the Missisquoi River in Missisquoi, Vermont. Because of this unique connection, we focused our research on potential habitat components that could explain why this species is only found in these two areas.

Our Hypothesis: If a species is limited to specific fragmented habitats, then those fragmented habitats share similar environmental characteristics.

This hypothesis was tested by researching and evaluating environmental characteristics of both sites. Some of the physical characteristics of the LaPlatte River site including water quality samples were taken to observe amounts of phosphorous, nitrogen, and TSS (total suspended solids) in the water. Additionally, macroinvertebrates were collected from the LaPlatte River site and later identified. Finally, data from previous studies was used to increase the variety of comparable site characteristics. These data and observations were then compared with the same statistics collected from the Missisquoi River.

Results and Observations

- Riffles were observed at the Upper LaPlatte River stream site.
- Both sites were classified as riffle-type streams in the 2006 land use study.
- Both sites have fast moving, shallow water in some areas during particular seasons.
- The Upper LaPlatte and Missisquoi have rocky bottoms.
- Bridges are present at both stonecat locations.
- The three most common types of macroinvertebrates were *Ephemeroptera baetidae* (59), *Diptera cdhironomidae* (80), and *Trichoptera hydropsychidae* (40). *Ephemeroptera baetidae*, also known as Mayflies, is one of the main components of a stonecat's diet.
- An assessment done in 2006 reported the percent catchment data for both sites. We compared the results, referenced in Figure 1.



Illustration by: Mari Caminiti

Figure 2:

Phosphorous & Nitrogen Levels

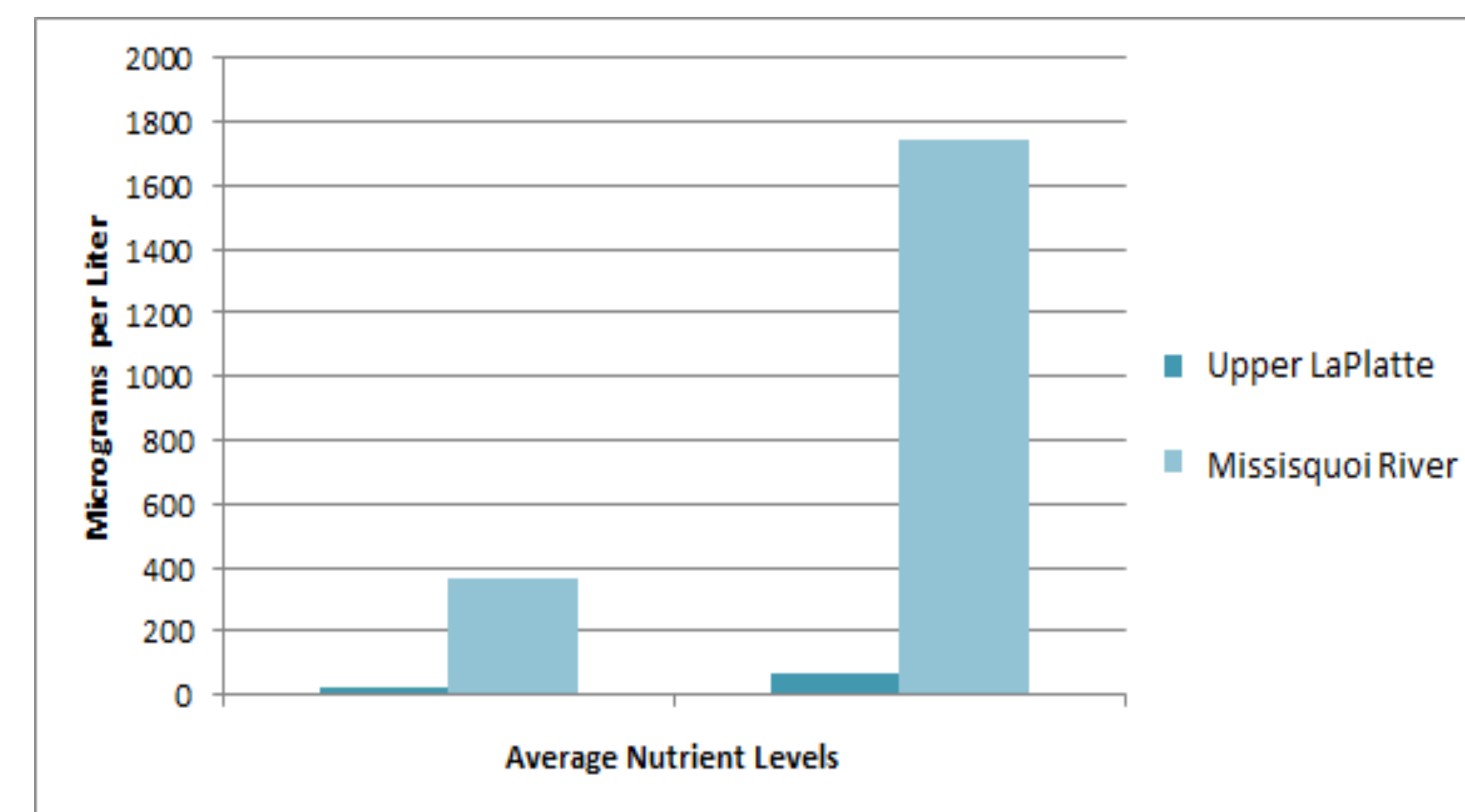
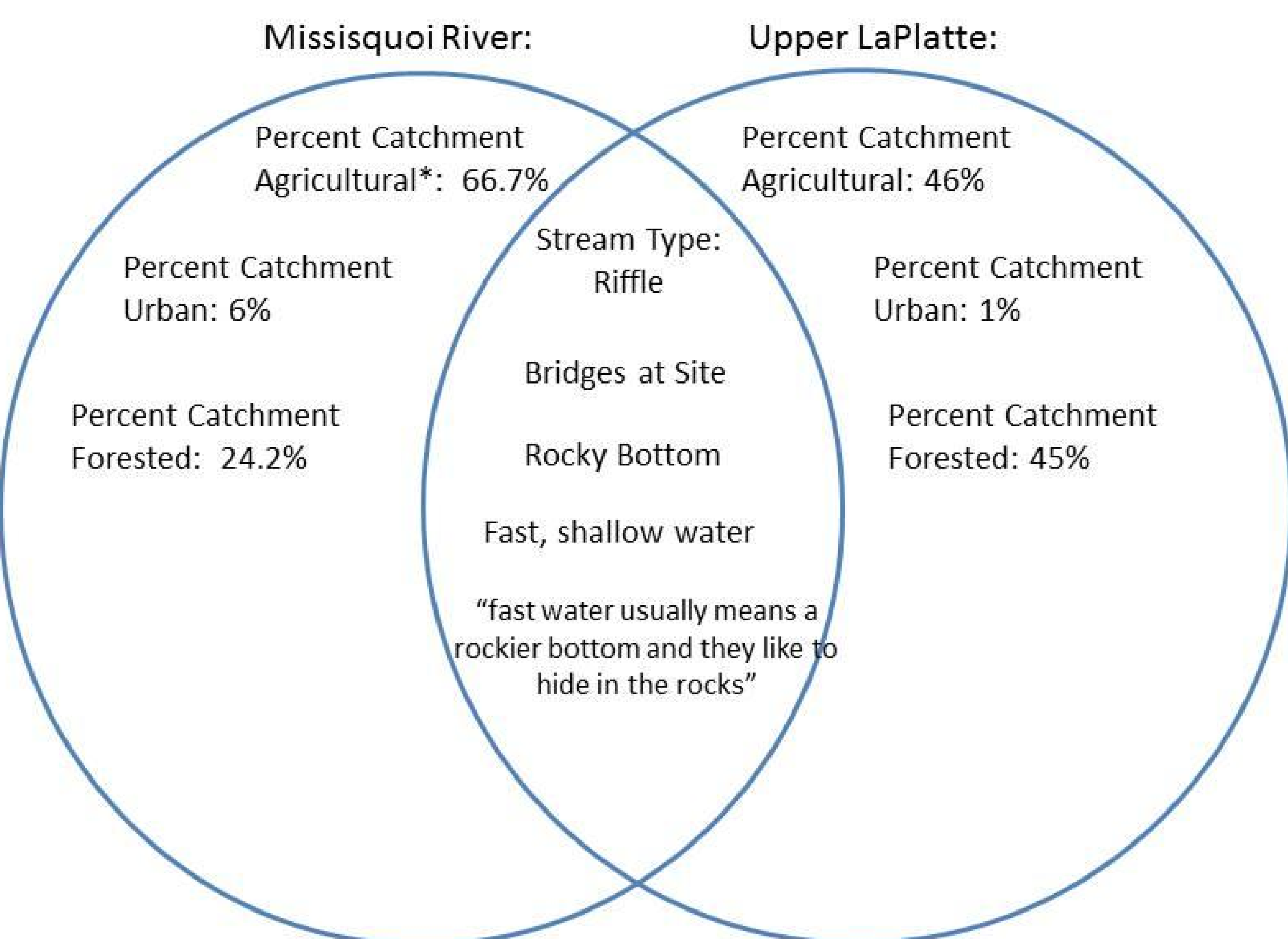


Figure 1:

Habitat Comparison



*Percentage of the monitoring site's catchment area that is in agricultural land use. These values were derived from 2006 land use data provided by NOAA. (Type - Ratio)

Conclusion

Our findings do not support our hypothesis. Although the stonecat is limited to the Upper LaPlatte River and Missisquoi River, the two sites do not share habitat components.

Discussion and Analysis

We looked at multiple components of the two Vermont habitats where the stonecat has been found. We found the stream type and river bottom characteristics were the same (Figure 1). However, the percent catchment area varied between the sites (Figure 1). The dramatic differences in phosphorus and nitrogen in the two streams lead to the conclusion that water quality is not a crucial factor of a stonecat's environment (Figure 2). For part of our research, we met with Vermont Fish and Wildlife staff to discuss the research they have been doing with the stonecat. We discovered that they have come to similar conclusions that the two streams are not remarkably similar. They brought up the possibility that the stonecat is present but has not been captured in other locations in Vermont due to surveying techniques. Additional habitat analysis should be conducted in order to continue to explore the possibility that similar environmental characteristics have led to the limited presence of the stonecat at these specific test sites.

Further Information

The stonecat (*Noturus flavus*) is a freshwater species of catfish. In the LaPlatte River, they have been found in sizes ranging from 52 to 192 millimeters (Barrett). They eat many different varieties of macroinvertebrates, specifically mayflies. They have poisonous glands that are used for protection against predators. Some of their predators include bass, racoons, and great blue herons (Pientka).

In other parts of the United States, stonecats are not an endangered species. In fact, sometimes they are so plentiful that they are used for bait to fish for bass. Even as close by as on the New York shores of Lake Champlain, a lot of stonecat are found (Pientka).

The stonecat has only been found in two Vermont locations in and therefore is listed as an endangered species. In 2012, there were 412 stonecats found in the LaPlatte, and 64 were found in the Missisquoi. Those found in the Missisquoi were slightly larger (ranging from 56-202 millimeters)(Barrett).

Stonecats spawn in in streams or shallow rocky areas of lakes in the spring and summer when water temperatures reache 25°C. Female stonecats may produce between 200 and 1,200 eggs per year. The spawning area is 1 – 2 ft. (0.30 – 0.61 m) in diameter near middle of stream. Eggs are laid in compact clusters under flat rocks or other similar object on the bottom.

Resources & Acknowledgements

- "AWAKE." *Stonecat*. Tracy Farmer Institute for Sustainability and the Environment, 2011. Web. 17 Mar. 2014.
- Barrett, D. 2006. "Noturus flavus" (On-line), Animal Diversity Web. Accessed March 17, 2014 at http://animaldiversity.ummz.umich.edu/accounts/Noturus_flavus/
- Pientka, Bernie, and Elizabeth Puchala. "Vermont Fish and Wildlife." Personal interview. 16 Jan. 2014.
- Katherine Chang, Miranda Lescaze, Declan McCabe, and Lindsay Wieland

