

4-10-2010

# The Effects of Water and Habitat Quality on Amphibians in the St. Joseph and Upper Big Walnut Creek Watersheds

Abel Castaneda

*Indiana University - Purdue University Fort Wayne*

Follow this and additional works at: [http://opus.ipfw.edu/stu\\_symp2010](http://opus.ipfw.edu/stu_symp2010)



Part of the [Biology Commons](#)

---

## Recommended Citation

Abel Castaneda (2010). *The Effects of Water and Habitat Quality on Amphibians in the St. Joseph and Upper Big Walnut Creek Watersheds*. [http://opus.ipfw.edu/stu\\_symp2010/4](http://opus.ipfw.edu/stu_symp2010/4)

This Presentation is brought to you for free and open access by the IPFW Student Research and Creative Endeavor Symposium at Opus: Research & Creativity at IPFW. It has been accepted for inclusion in 2010 IPFW Student Research and Creative Endeavor Symposium by an authorized administrator of Opus: Research & Creativity at IPFW. For more information, please contact [admin@lib.ipfw.edu](mailto:admin@lib.ipfw.edu).

The Effects of Water and Habitat Quality on Amphibians in the St. Joseph and Upper Big Walnut Creek Watersheds  
Abel Castaneda  
Dr. Mark Jordan  
Department of Biology  
Indiana University Purdue University Fort Wayne

Amphibians have declined dramatically in the United States and many other areas of the world. These declines seem to have worsened recently and amphibians are now more threatened than many other vertebrate taxa. Agricultural run-off is a possible cause of population decline in amphibians. The effects of agricultural run-off have been identified in many studies, but investigation on the community structure of amphibian populations in running water systems are quite minimal relative to ponds and wetlands. The purpose of the study is to examine the relationship between agricultural runoff and different indicators of health for amphibian species in a portion of the St. Joseph River watershed in Northeastern Indiana and the Upper Big Walnut Creek Watershed in Ohio. The study takes advantage of sophisticated water quality samplers that have demonstrated variation among sites in the levels of a range of pesticides. Both ditches and adjacent riparian zones were used for habitat characterization and instream surveys occurred along a 125 m distance downstream of the automated samplers to measure wet width, water velocity, substrate type, habitat structure, temperature, dissolved oxygen, pH and specific conductivity. Water quality measurements were taken in the spring, early summer, and late summer. Sampling of the amphibian larvae, metamorphs and aquatic adults occurred four times each year, over a two year period. I use principle component analysis which involves a mathematical procedure that transforms a number of possibly correlated variables into a smaller number of uncorrelated variables called principle components. The principal components are used to describe as much of the variability in the data as possible by revealing the internal structure of the data in a way that best explains the variance. These calculated values allow for us to correlate the amphibian data with the measured variables to best determine the factors affecting the amphibian populations. Preliminary analyses will show the relationship between composition of amphibian communities and habitat and water quality variables.