

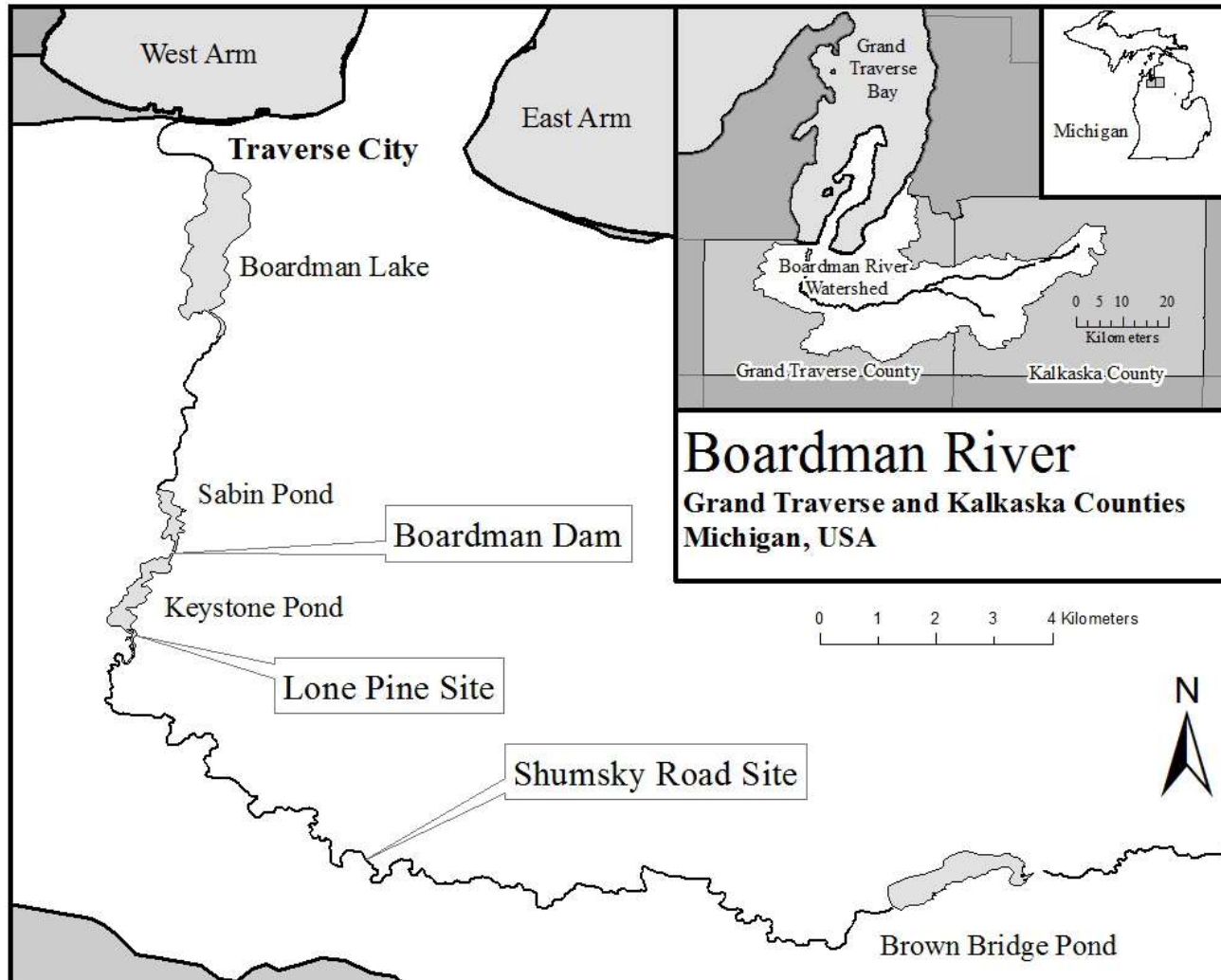
Effects of reservoir drawdown on riffle macroinvertebrate communities



(CRA 2013)



Boardman Dam



Boardman Dam

- 1894 Built as Keystone Dam
- 1930 Rebuilt as Boardman Dam
- 2007 Keystone reservoir drawdown
- 2008-2013 ASI macroinvertebrate surveys



Goals

- Quantify the effects of reservoir drawdown on benthic macroinvertebrate communities above the Boardman Dam
- Determine if a newly formed test site has recovered to resemble an upstream control site



Hypothesis

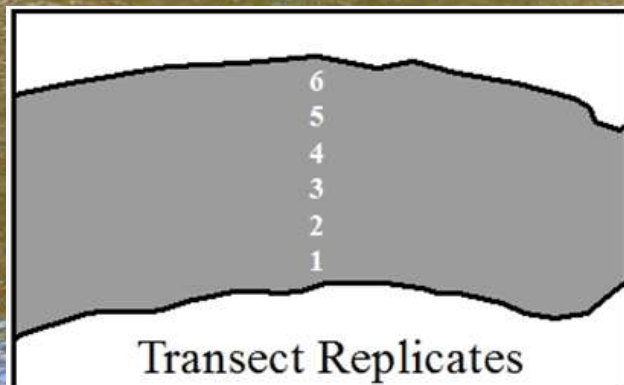
The drawdown of Keystone Pond will increase macroinvertebrate community similarity between an upstream control site and the newly formed test site as the river recovers to a more natural condition.



Methods

Riffle Sampling

- Six replicate samples of macroinvertebrates communities in riffle habitats
- 500 μ m Surber sampler
- Three pronged agitator
- 1 Minute



Macroinvertebrate Sorting and I.D.



Methods

Data Analysis

- EPT/C and %EPT
- Sensitive/Tolerant



<http://www.west-fly-fishing.com/entomology/stonefly/little-yellow.shtml>

http://aquaticinsectsofcentralvirginia.blogspot.com/2011_05_01_archive.html

<http://www.pbase.com/tmurray74/image/111100589>

Methods

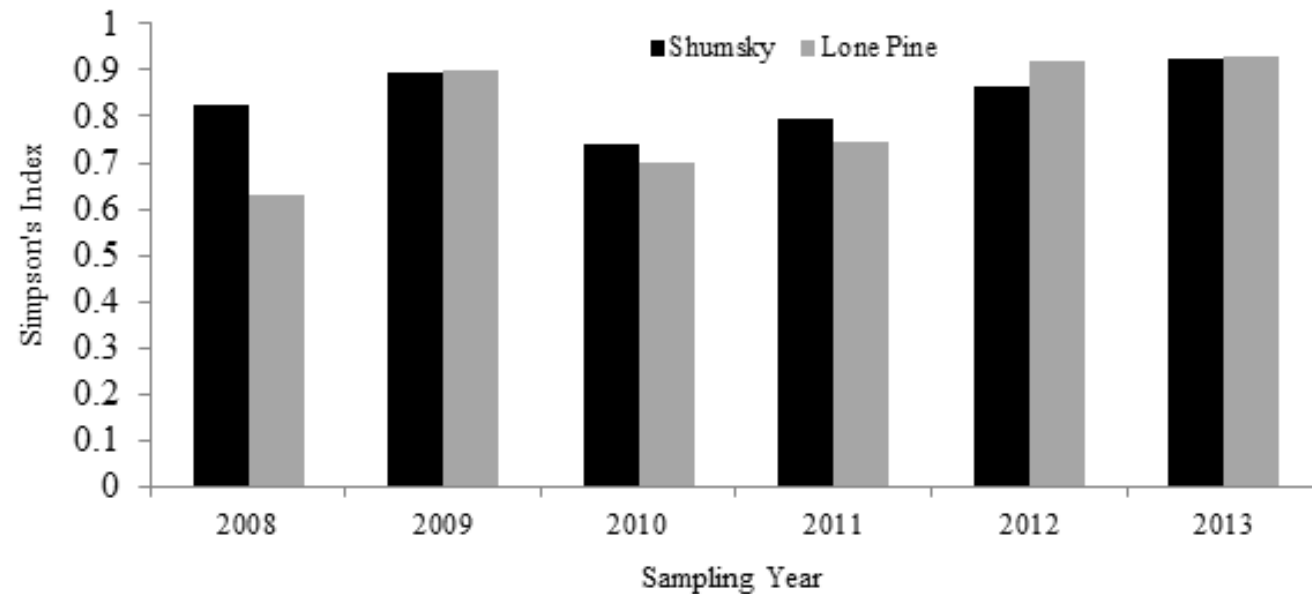
Data Analysis

- Simpson's Diversity Index (0-1)
- Sørensen's Quotient of Similarity (%)
- Chi-Square comparison



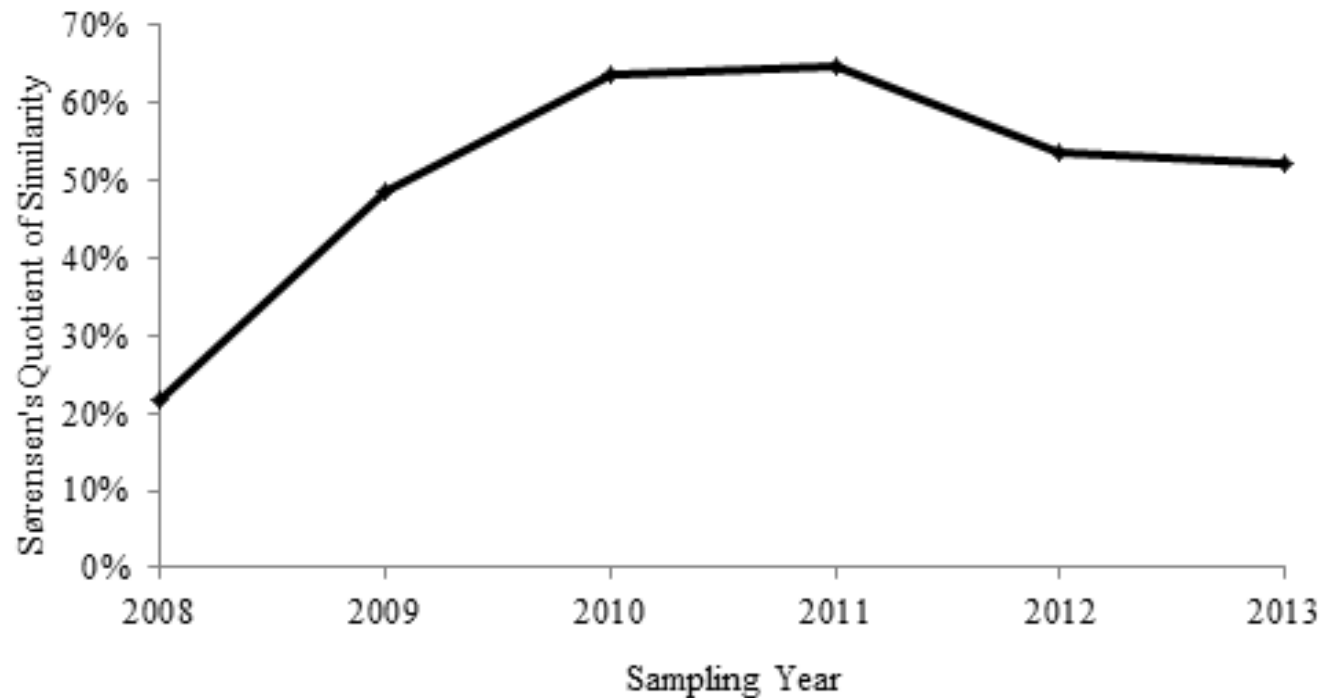
Results

- High diversity for both sites through time (2013: $D = 0.92$, $D = 0.93$)



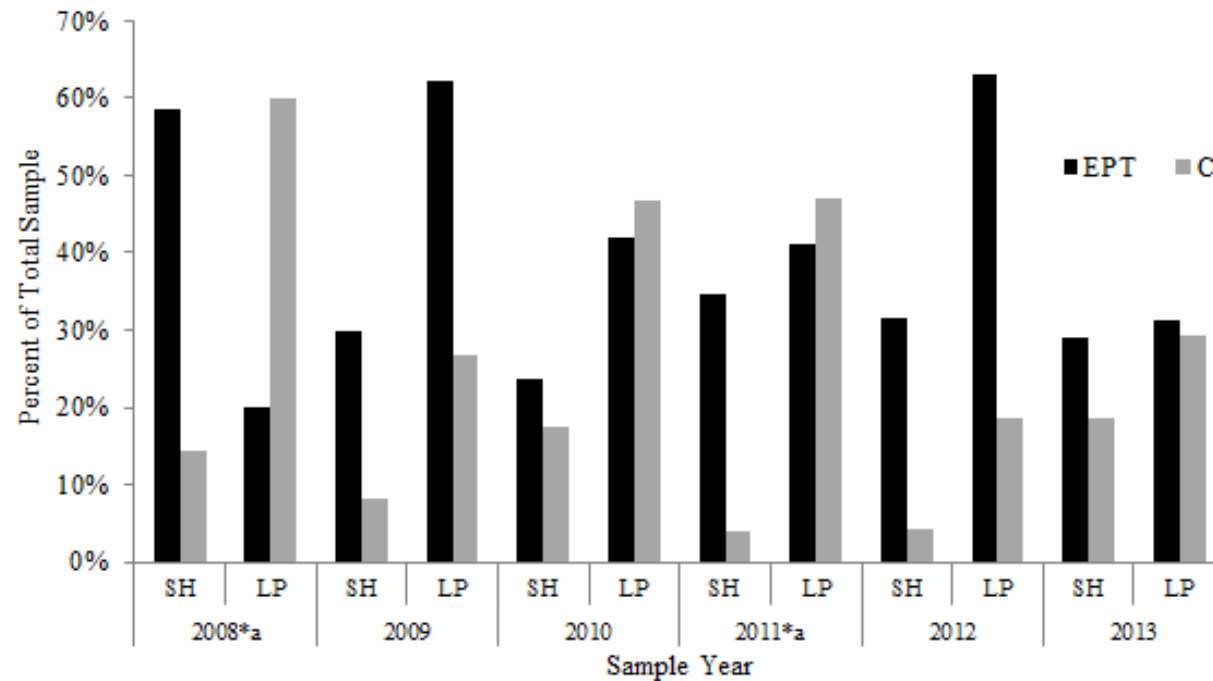
Results

- Increase in site similarity over time
(2013: QS > 50%)



Results

- Increase in EPT/C similarity over time
(2013: $P = 0.34$)



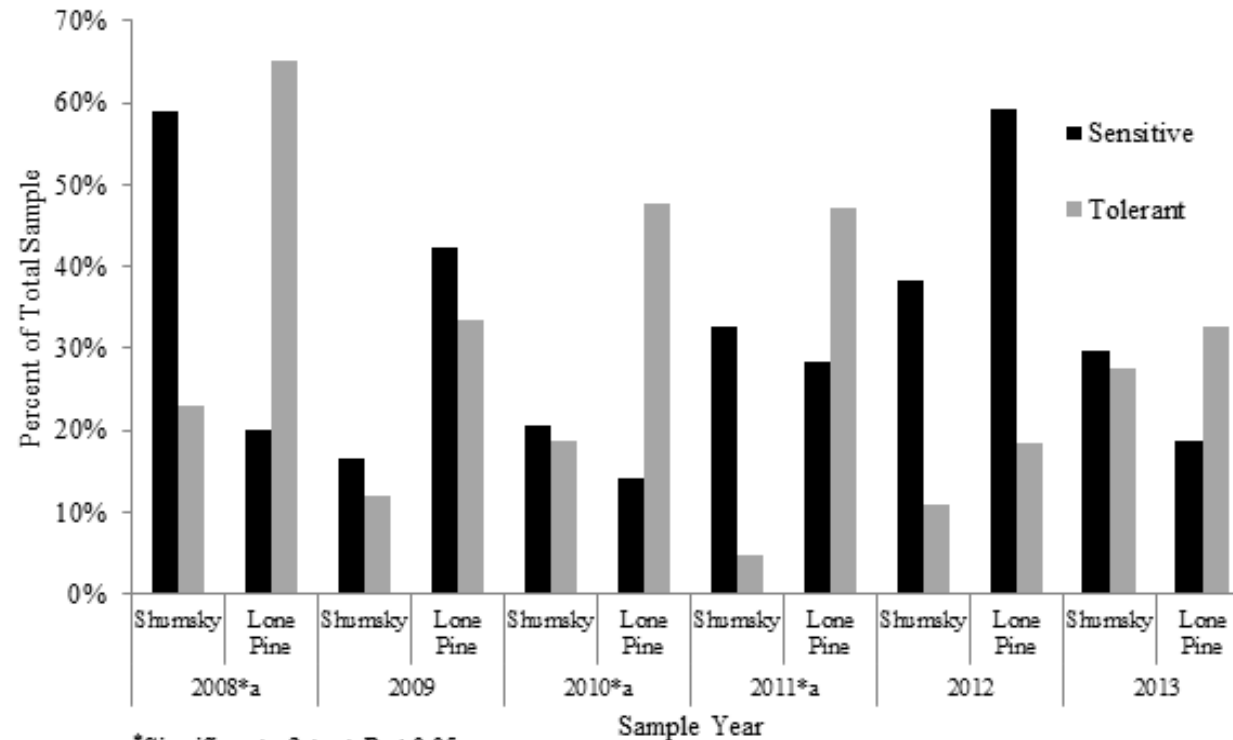
*Significant χ^2 test, $P < 0.05$

^aYates Correction Applied



Results

- Increase in sensitive/tolerant similarity over time (2013: $P = 0.13$)



*Significant χ^2 test, $P < 0.05$

^aYates Correction Applied



Conclusion

Macroinvertebrate communities in the new channel show increasing similarity to the upstream control site indicating ongoing recovery to a more natural stream condition.

