



Lake Connectivity Effects on Phosphorus in 1,000s of Lakes:

A prospective talk

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MSU Fisheries and Wildlife Graduate Symposium

Where does phosphorus come from?



Natural Sources

Mining

Agriculture

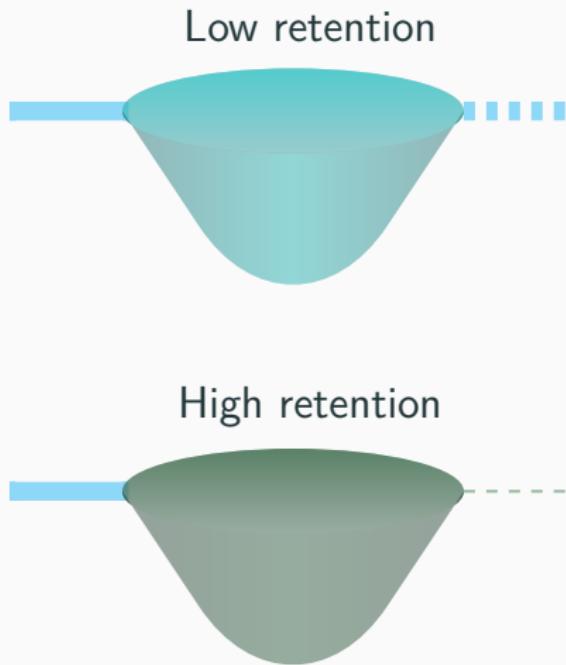
Stormwater runoff

Where does phosphorus go?

- Plant and animal biomass
- Particle settling
- Outflow / Export

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Why do we care?

- Watershed sensitivity to loading



- Too broad? Too narrow? How to target?

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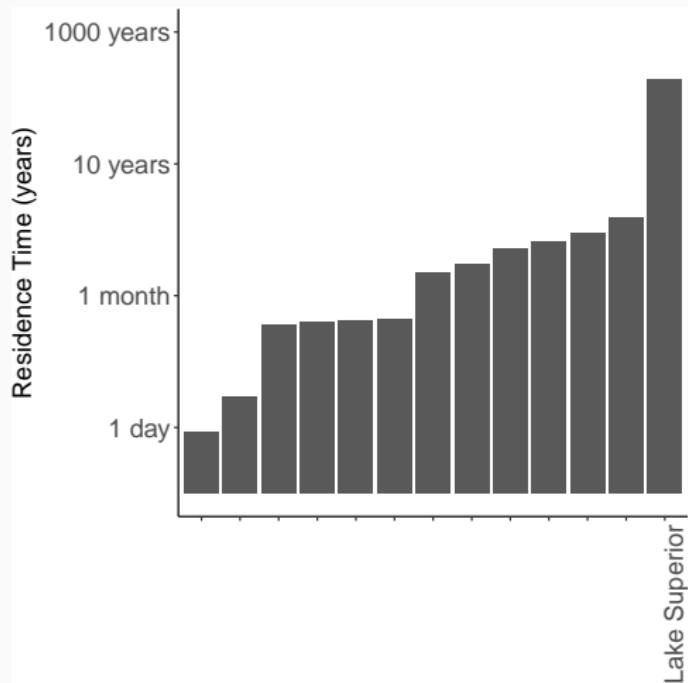
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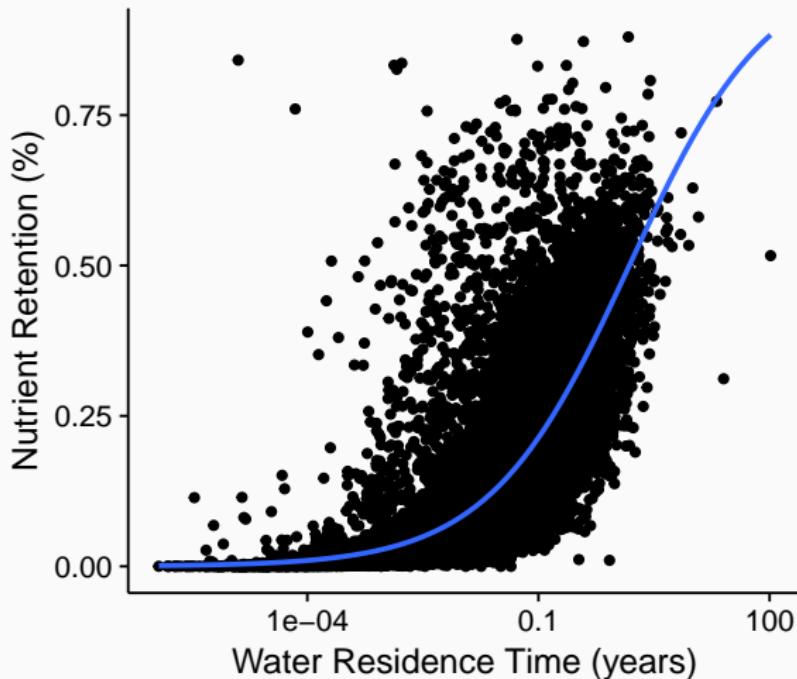
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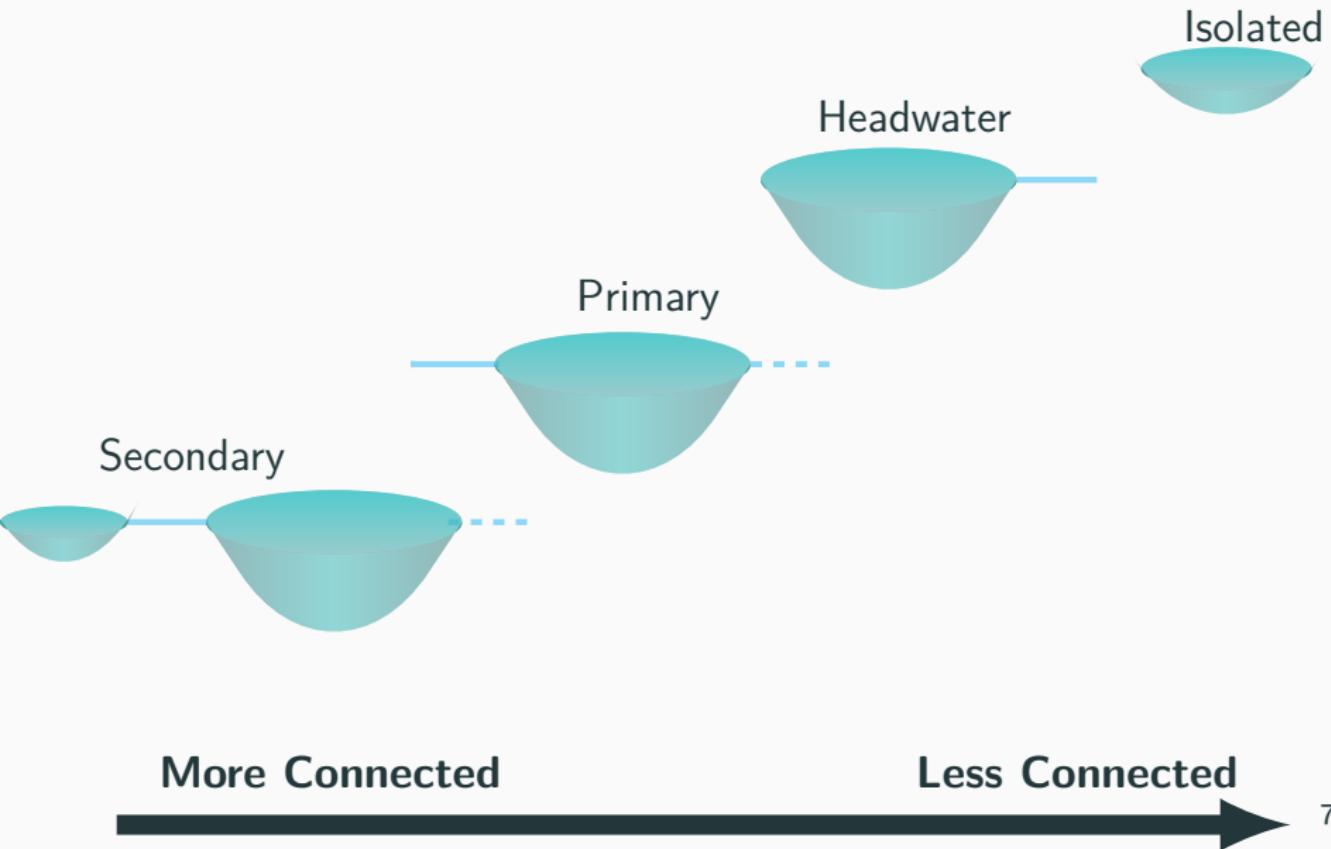


How does residence time relate to nutrient retention?

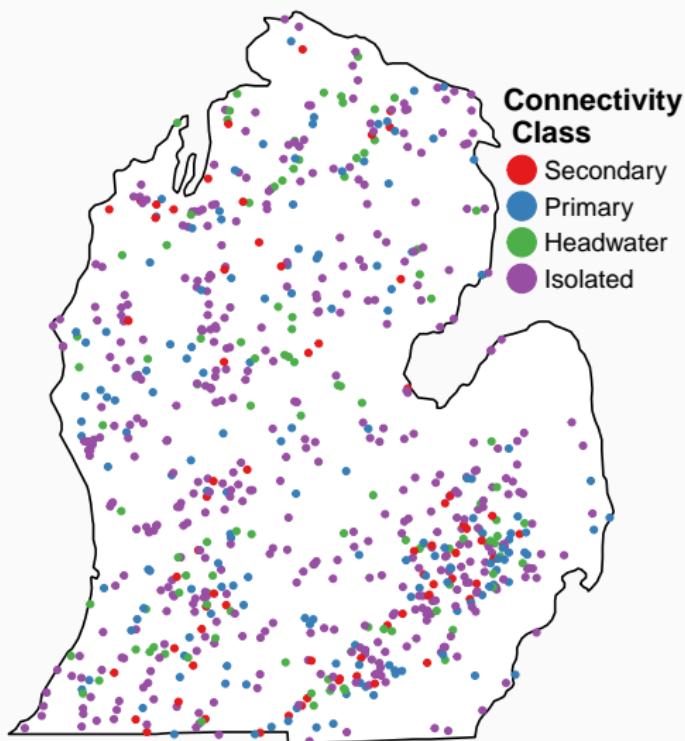
Milstead et al. (2013)



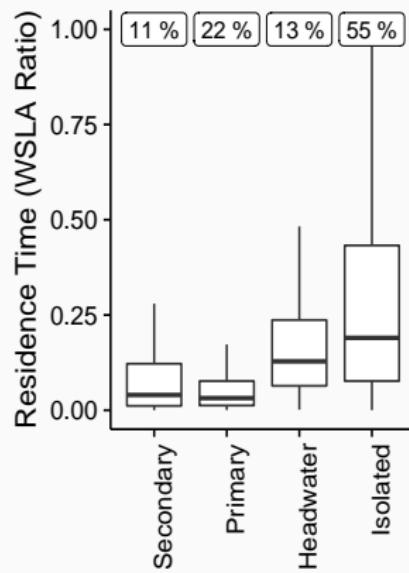
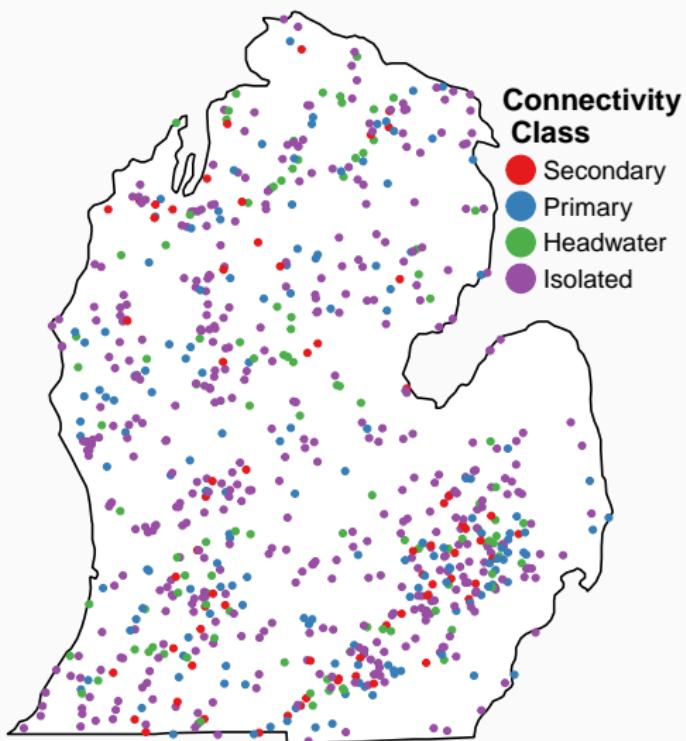
What is lake connectivity?



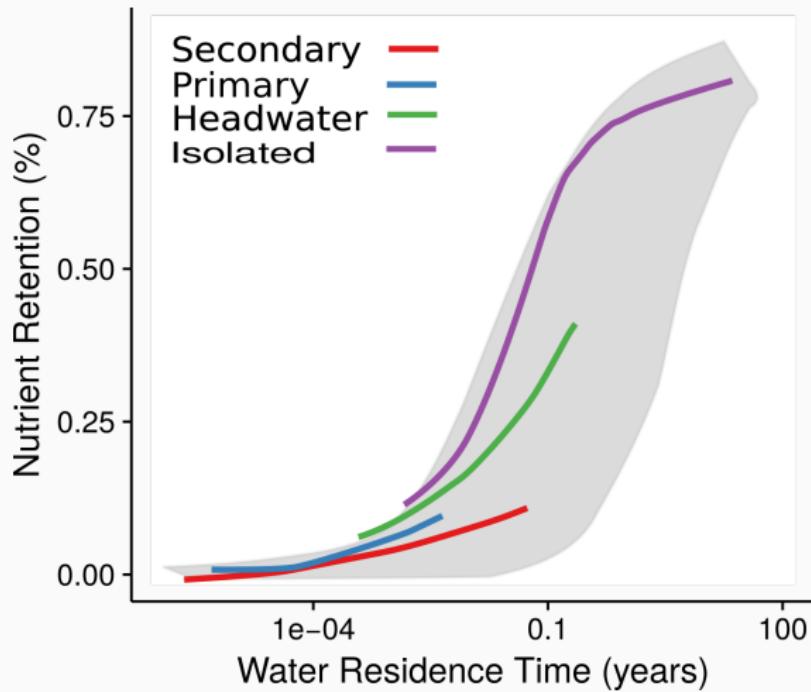
Connectivity versus residence time



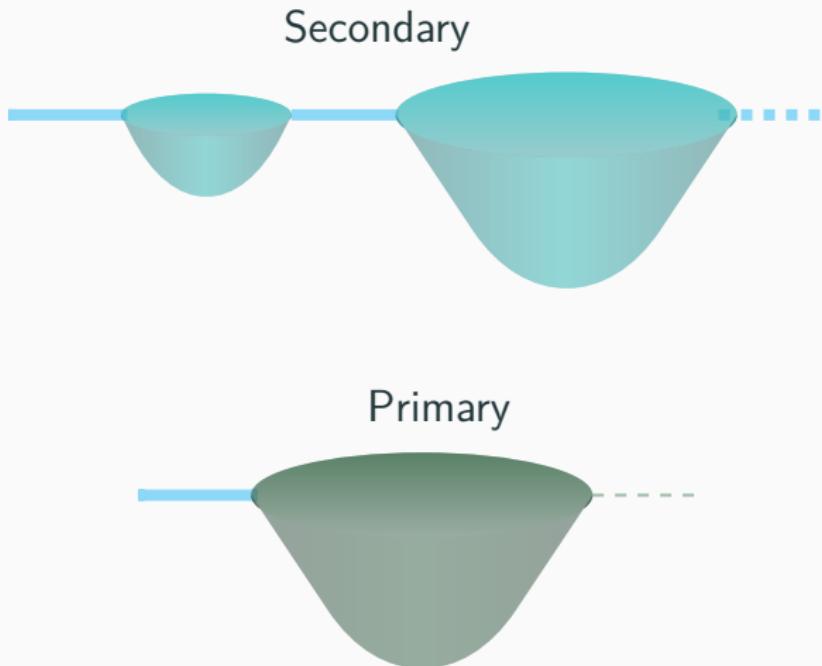
Connectivity versus residence time



How does connectivity influence retention?



Nutrient retention predictions



How I will test my predictions

Calculate water residence time in 50,000 lakes

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Calculate nutrient retention

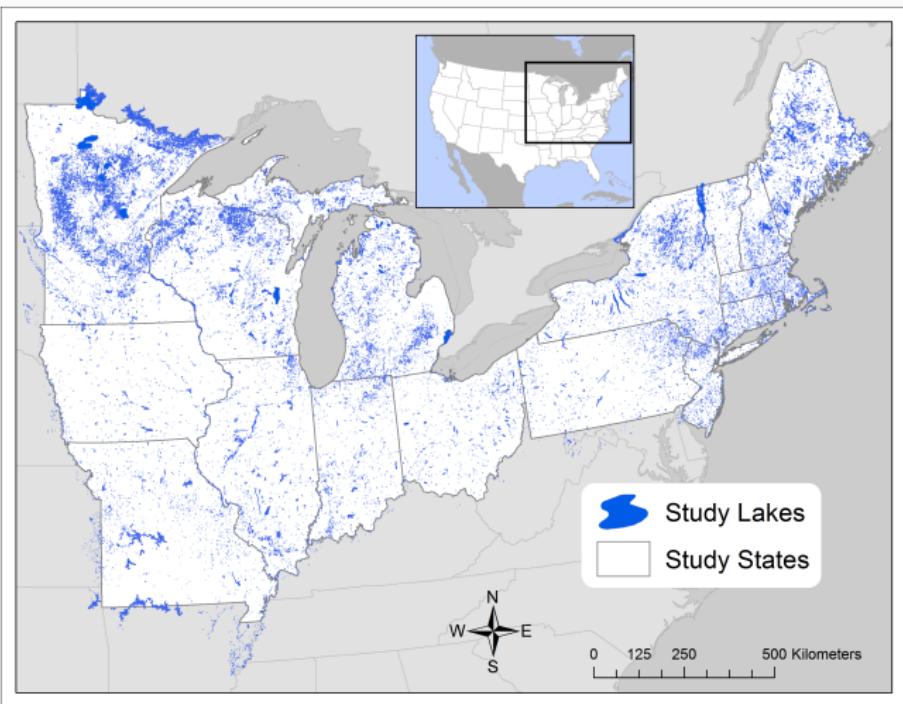
How I will test my predictions

Calculate water residence time in 50,000 lakes

Calculate nutrient retention

Relate retention, residence time, and connectivity

Testing predictions with LAGOS-NE



Contact

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LAGOS

<http://csilimnology.org/>

References

-  Milstead, W.B., Hollister, J.W., Moore, R.B. and Walker, H.A., 2013. Estimating summer nutrient concentrations in northeastern lakes from SPARROW load predictions and modeled lake depth and volume. *PLoS one*, 8(11).