



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

A prospective talk

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2017-02-24

MSU Fisheries and Wildlife Graduate Symposium

Where does phosphorus come from?



Natural Sources



Mining



Agriculture



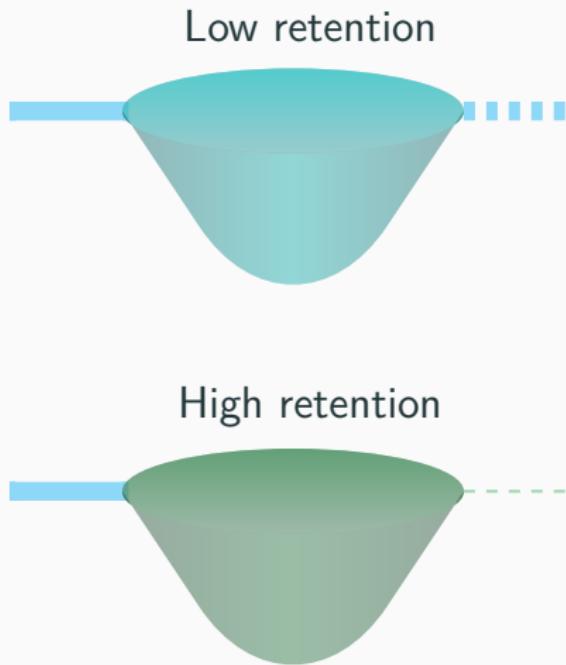
Stormwater runoff

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?

What is water residence time?

How long would it take to fill up an empty lake?

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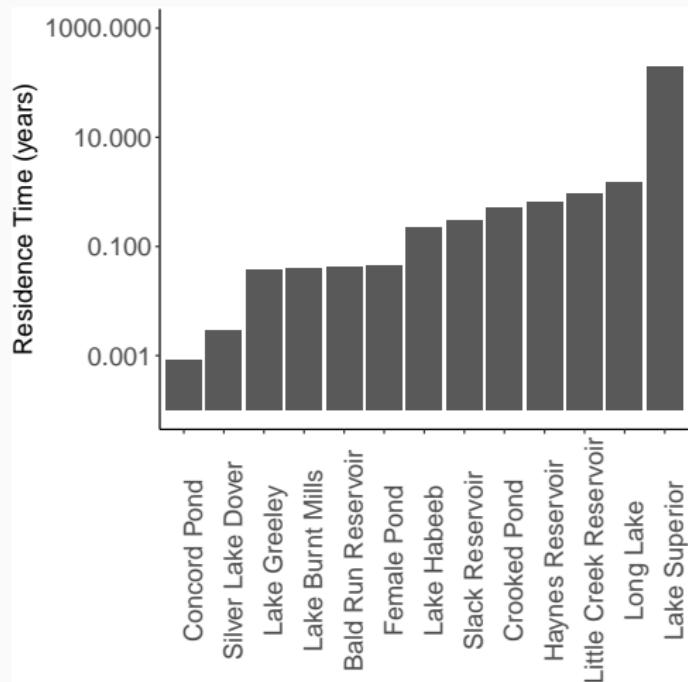
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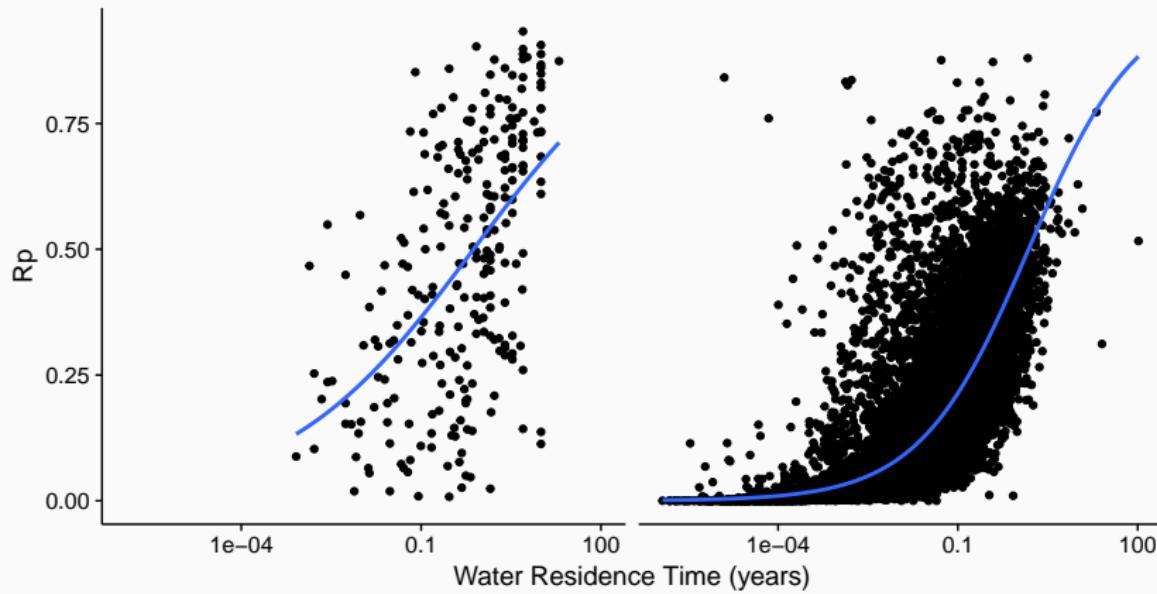
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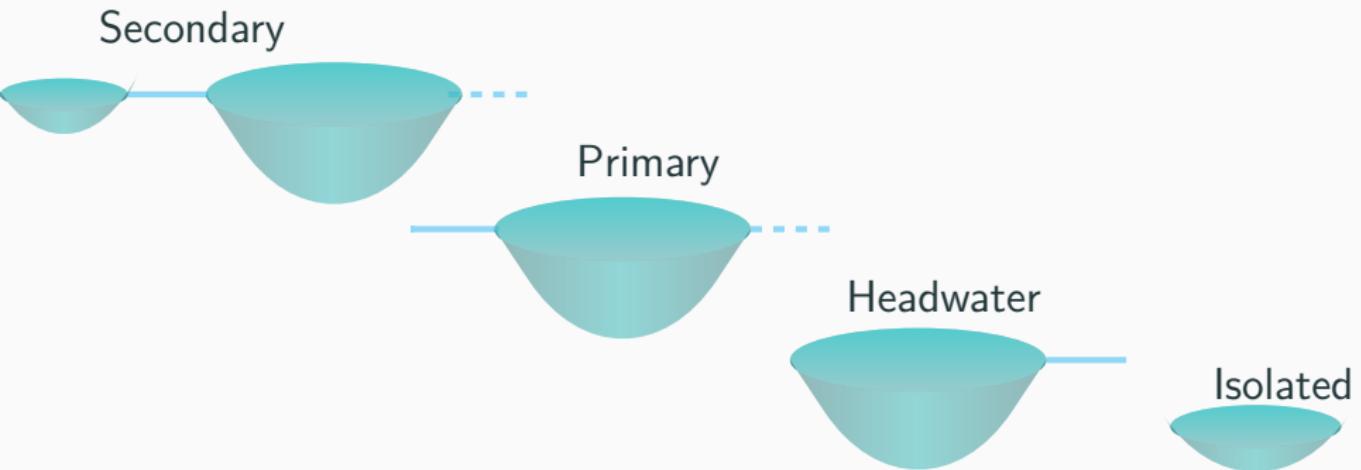
How does residence time relate to nutrient retention?

Brett and Benjamin (2008)

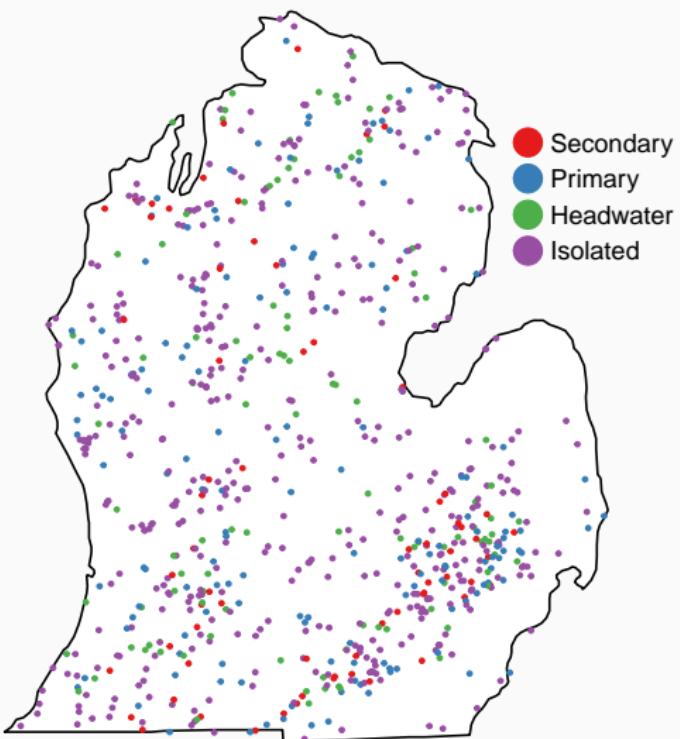
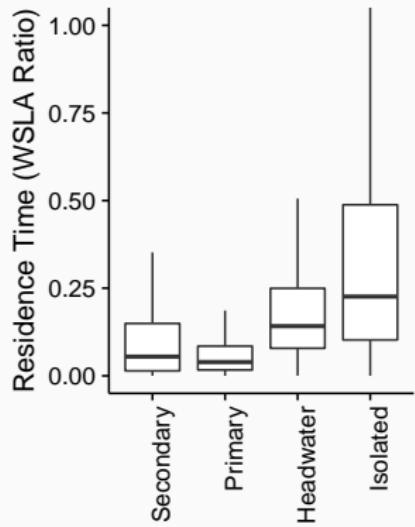
Milstead et al. (2013)



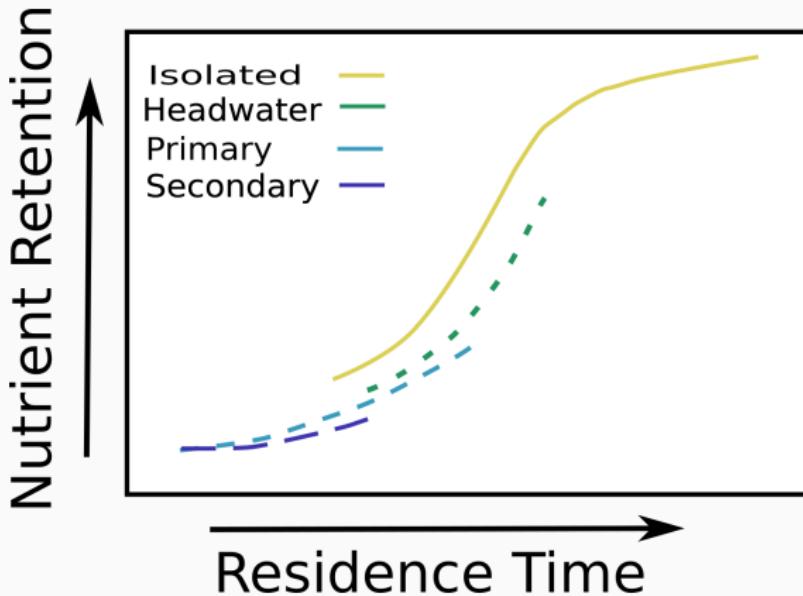
What is lake connectivity?



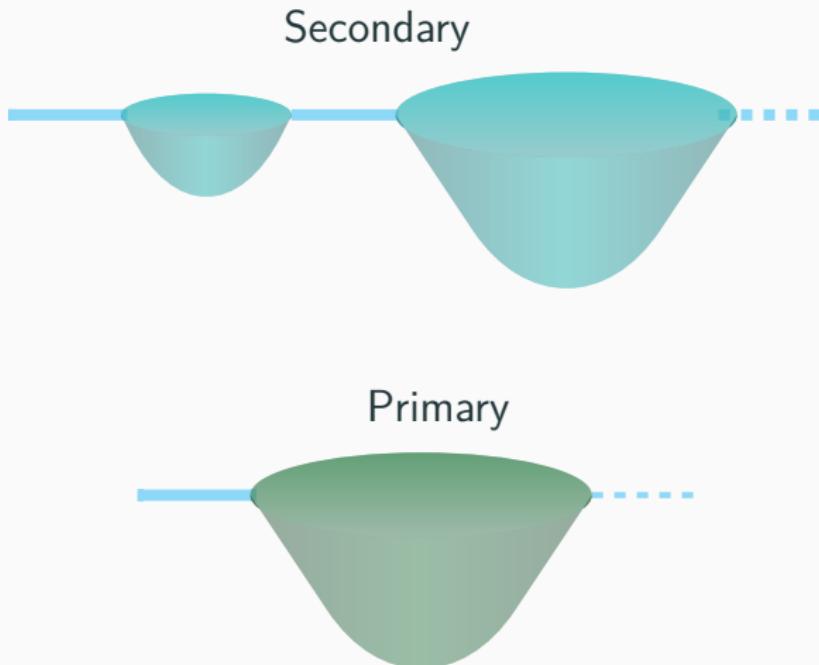
Connectivity versus residence time



What are my predictions?



Nutrient retention predictions



How I will test my predictions

Calculate water residence time in 50,000 lakes

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Calculate nutrient retention

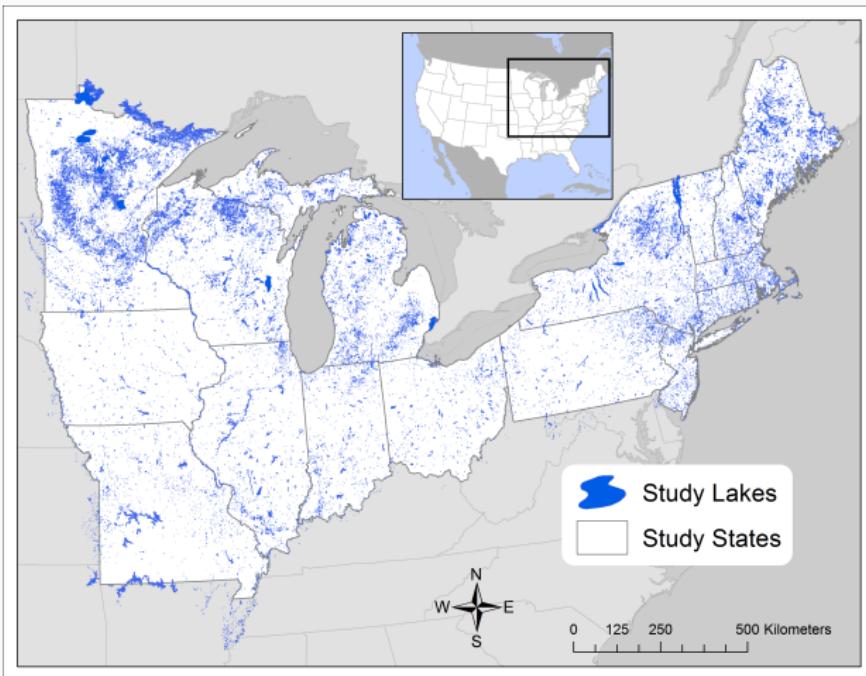
How I will test my predictions

Calculate water residence time in 50,000 lakes

Calculate nutrient retention

Relate retention, residence time, and connectivity

How I will test my predictions





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LAGOS

<http://csilimnology.org/>

References