



Phosphorus in 1,000s of Lakes:

A prospective talk

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MSU Fisheries and Wildlife Graduate Symposium

Where does phosphorus come from?



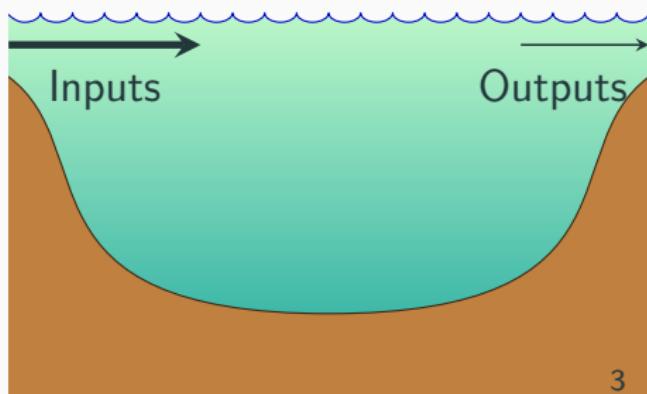
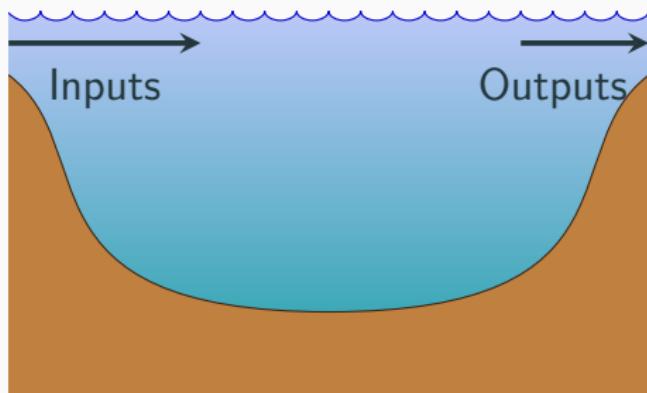
Natural Sources

Agriculture

Stormwater runoff

Where does phosphorus go? Why do we care?

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

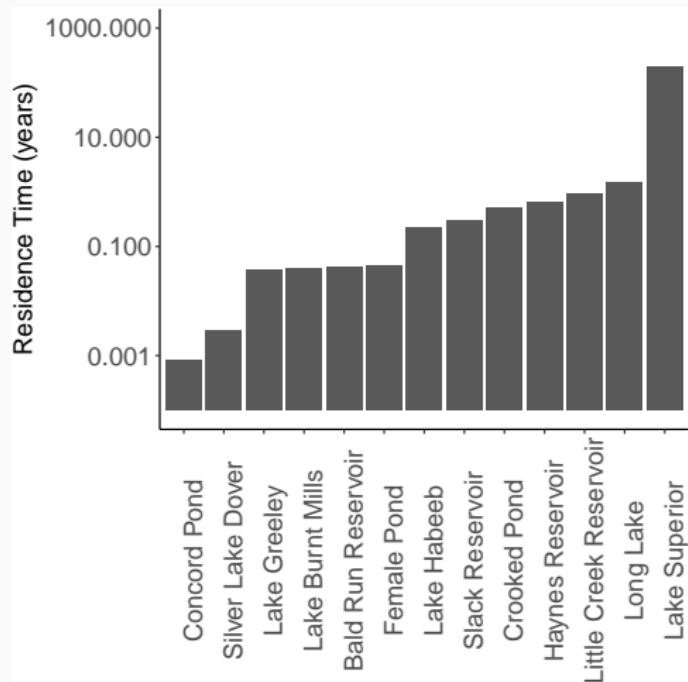


What is water residence time?

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

$$t_w = \frac{V_L}{Q}$$

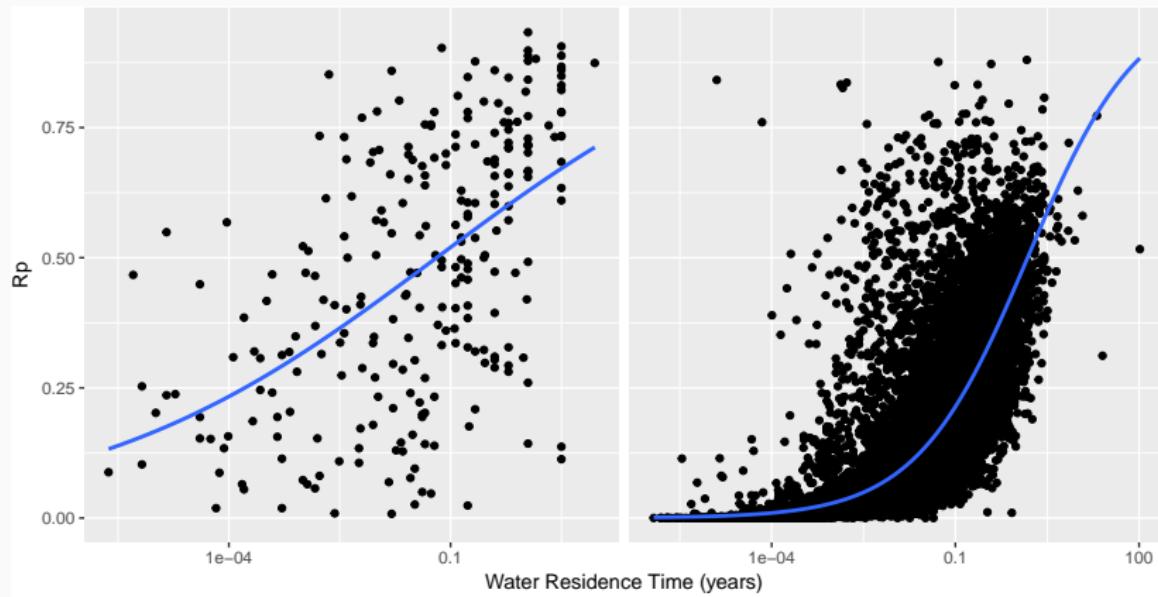
$$y = \frac{m^3}{1} * \frac{y}{m^3}$$



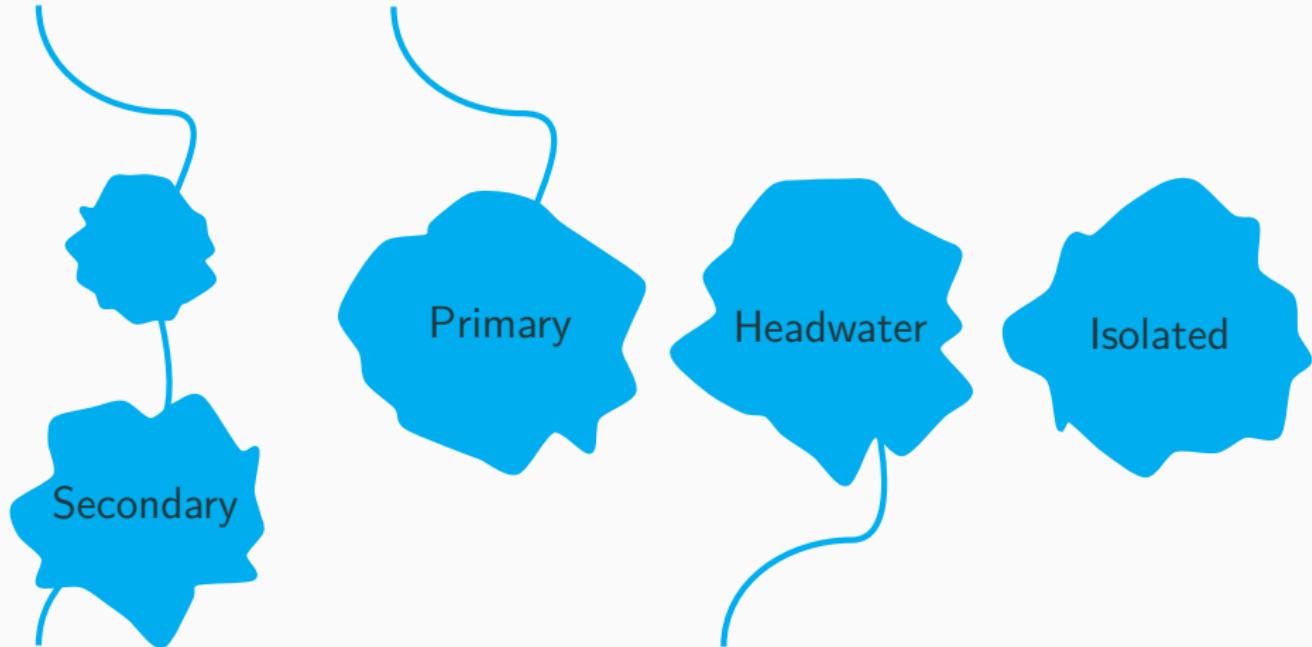
How does residence time relate to nutrient retention?

Brett and Benjamin (2008)

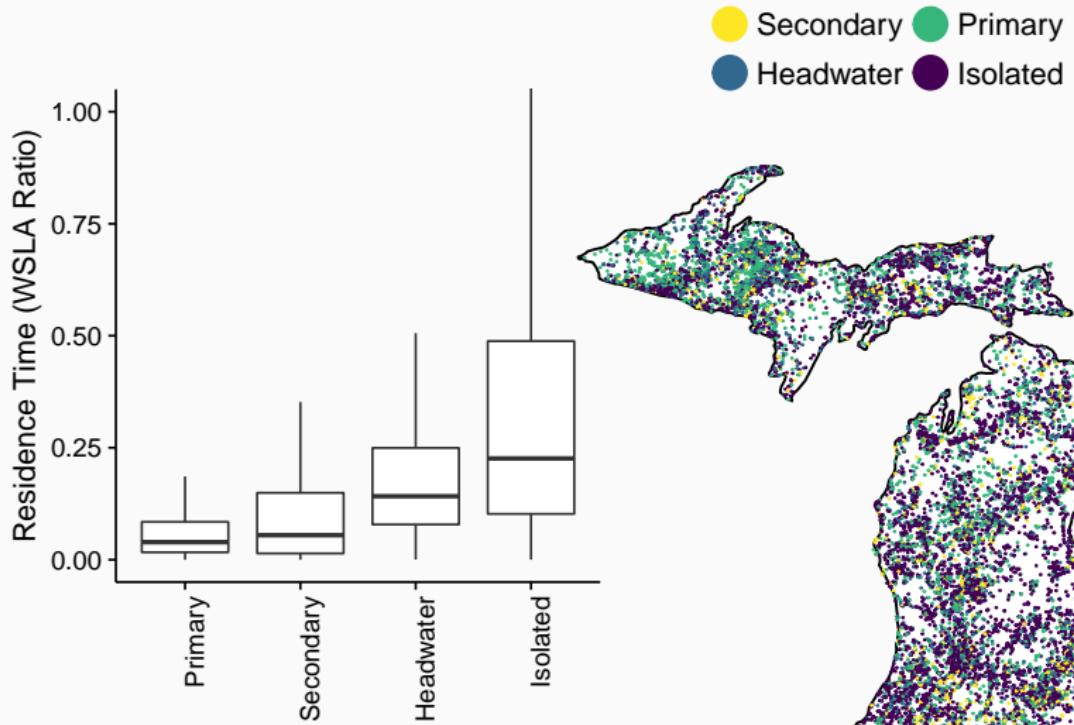
Milstead et al. (2013)



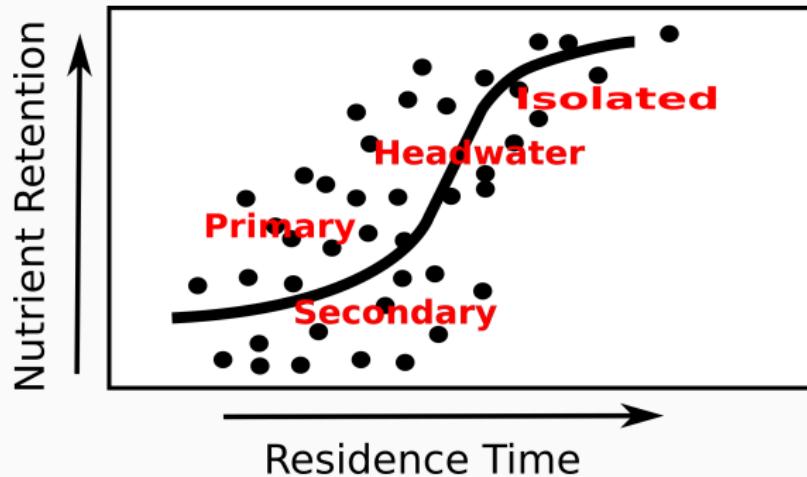
What is lake connectivity?



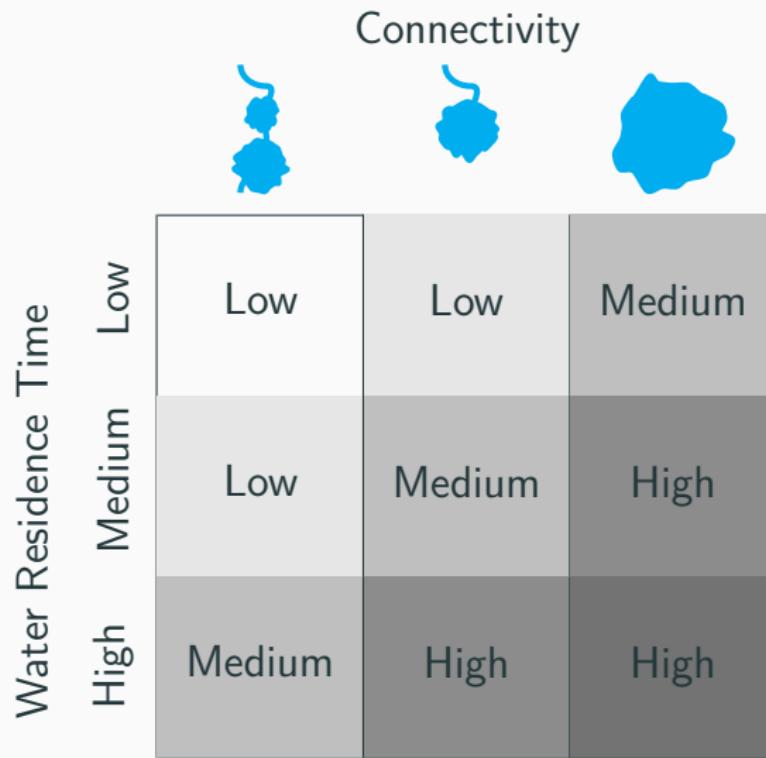
Connectivity versus residence time



What are my predictions?



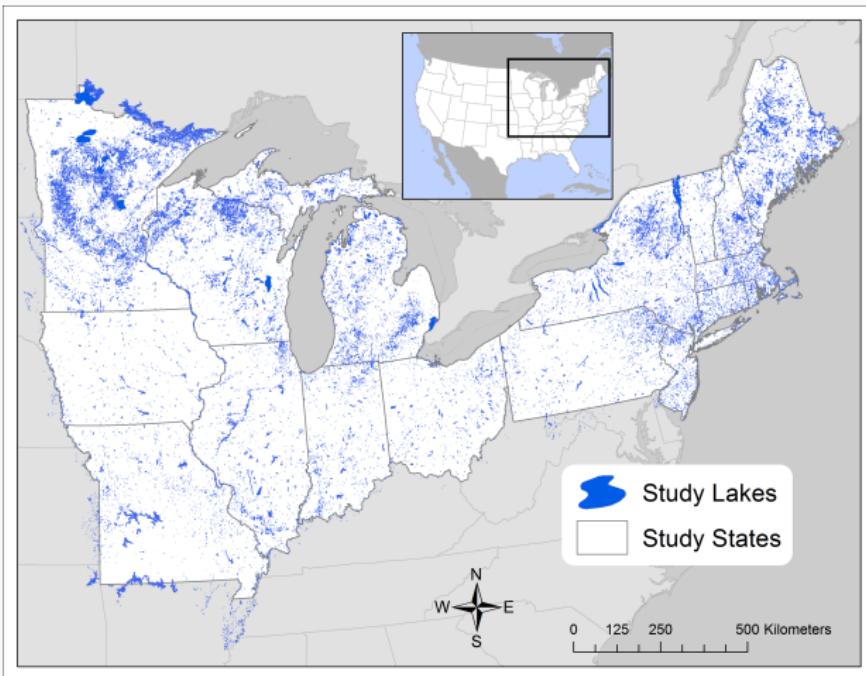
Nutrient retention predictions



How I will test my predictions

1. Calculate water residence time in 50,000 lakes
2. Calculate nutrient retention
3. Relate retention, residence time, and connectivity

What are the implications of this work?





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<http://csilimnology.org/>

References