



Telling the story of Indiana lake water quality with interactive web-based mapping and data visualization

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Indiana University Bloomington



INDIANA UNIVERSITY BLOOMINGTON

@TheCorySauve
@IndianaCLP

Indiana Clean Lakes Program



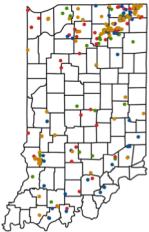
Background

1. Public outreach and education
2. Technical assistance
3. Volunteer lake monitoring
4. **Lake water quality assessment**
5. Coordination with other state and federal lake programs.



LWQA Timeline

Site Selection



Sampling



Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

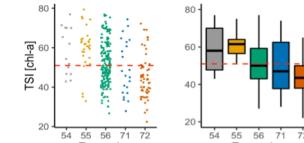
Nov

Dec

Jan

Feb

Data Analysis



Training



Data Entry

Fast-forward
4 years



Reporting

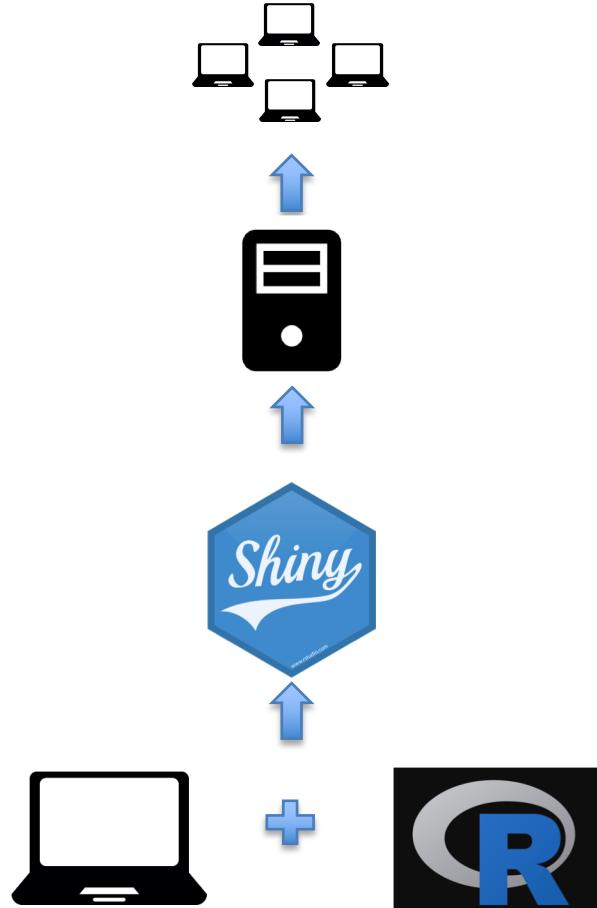


Interactive Figures with Shiny



R Shiny Basics

- R package from R Studio
- Free & Open-source!
- Make web apps, dashboards, and much more
- Find more info @ shiny.rstudio.com



Reports only go so far...

- 63 pages
- 12,000 words
- 35 figures

Indiana Lake Water Quality Assessment Report
For 2015-2018



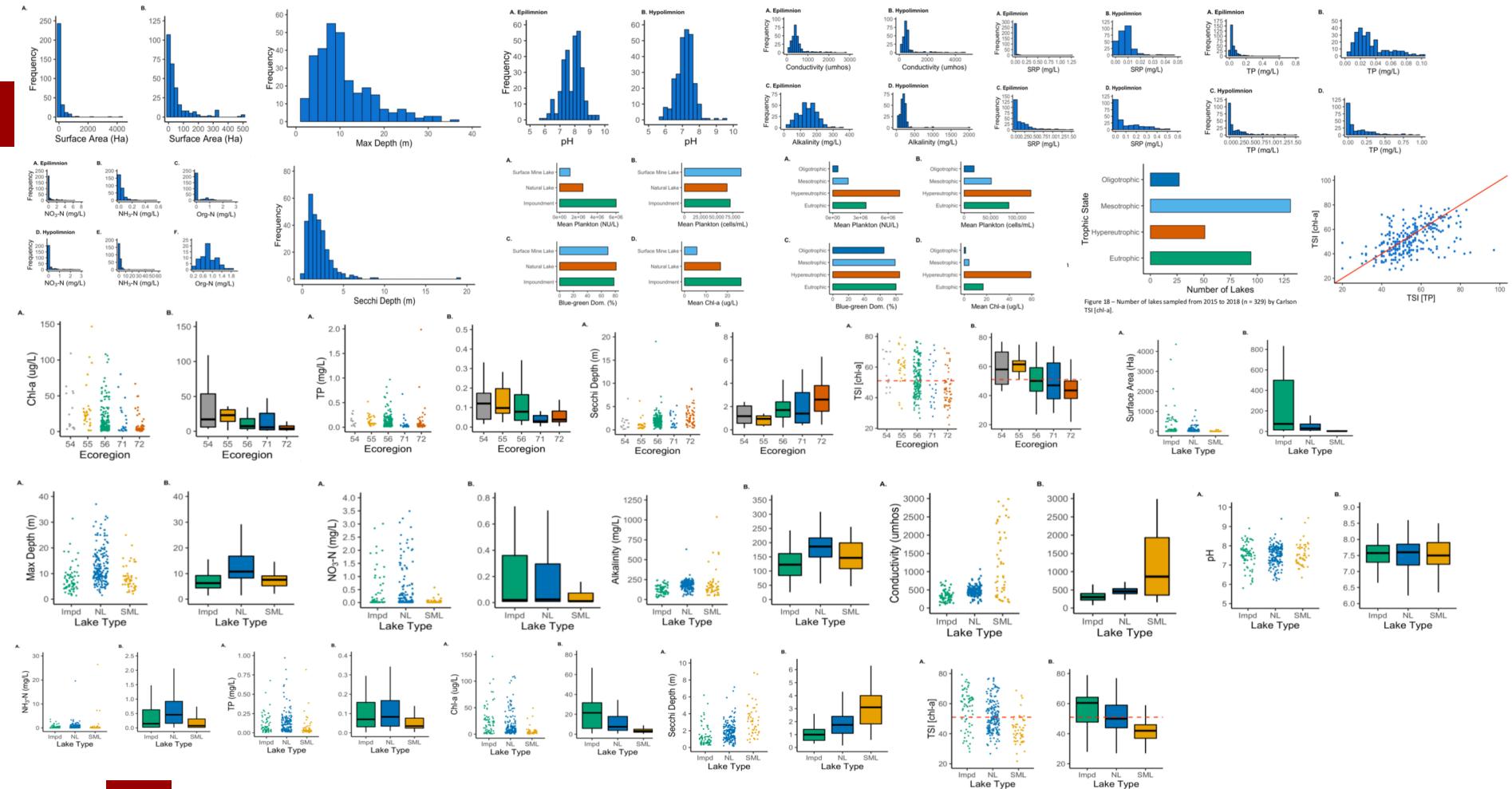
Prepared by:

Melissa Laney, Sarah Powers, Cory Sauvé
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Indiana University
Bloomington, Indiana

Prepared for:

Indiana Department of Environmental Management
Office of Water Quality
Indianapolis, Indiana

January 2019



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Individual Web Apps



Indiana Clean Lakes Program

Lake Water Quality Assessment: 2015-2018



Parameter:

Secchi depth (m)

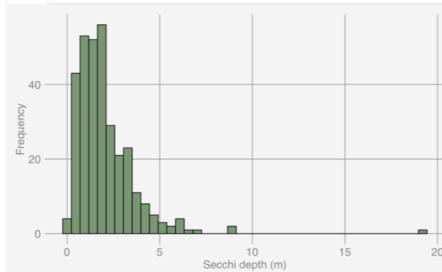
Sample Type:

Average

[Download Plot](#)

[Download Data](#)

Plot Summary Table



Indiana Clean Lakes Program

Lake Water Quality Assessment: 2015-2018



Parameter:

Max depth (m)

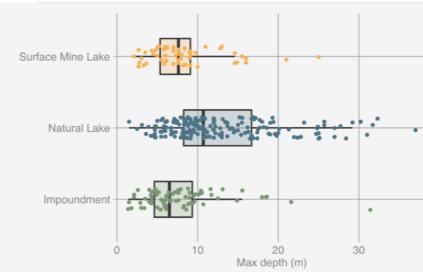
Lake Type

- Natural Lake
- Impoundment
- Surface Mine Lake

[Download Plot](#)

[Download Data](#)

Plot Summary Table



Indiana Clean Lakes Program

Lake Water Quality Assessment: 2015-2018



Parameter:

pH

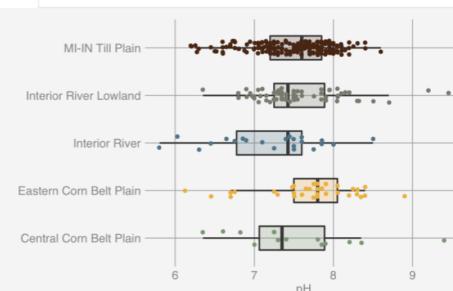
Ecoregion

- Central Corn Belt Plain
- Eastern Corn Belt Plain
- MI-IN Till Plain
- Interior River
- Interior River Lowland

[Download Plot](#)

[Download Data](#)

Plot Summary Table



Indiana Clean Lakes Program



Lake Water Quality Assessment: 2015-2018

Parameter:

pH

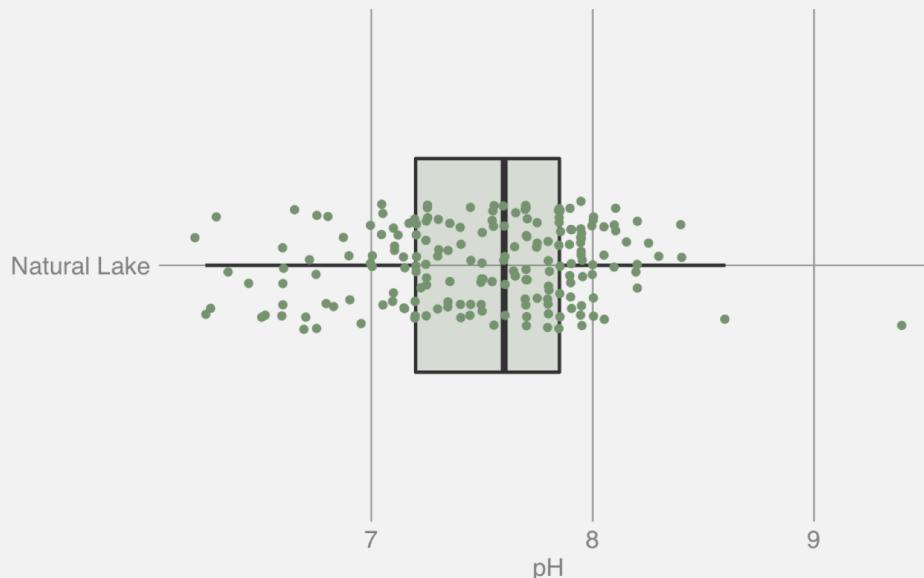
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 Download Plot

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Plot Summary Table



Indiana Clean Lakes Program
Indiana Lake Water Quality Assessment Report for 2015-2019

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Indiana Clean Lakes Program



Lake Water Quality Assessment: 2015-2018

Parameter:

pH

Lake Type

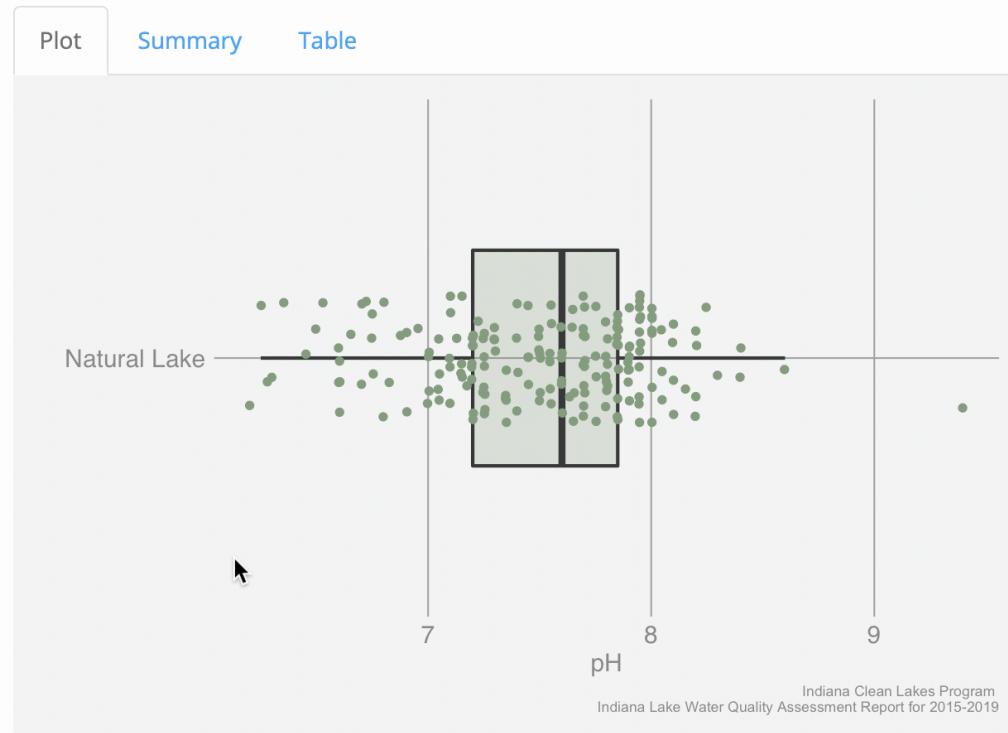
Natural Lake

Impoundment

Surface Mine Lake

[Download Plot](#)

[Download Data](#)



Shiny Dashboards

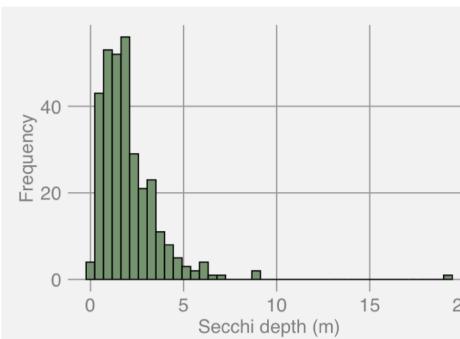
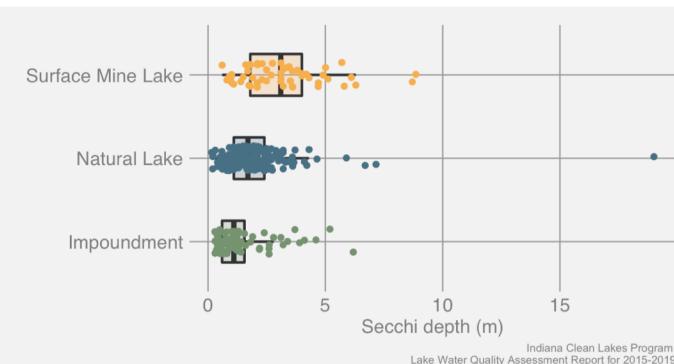
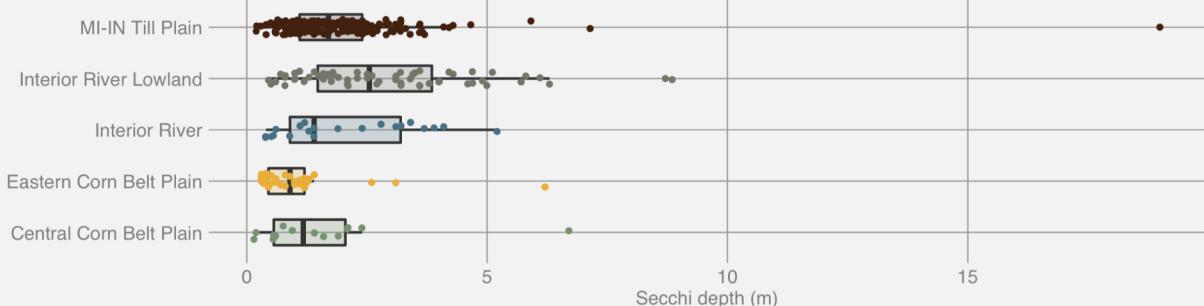


Dashboard Background Information Tables Lake Report**Parameter:**

Secchi depth (m)

Sample Type:

Average

Lake Type Natural Lake Impoundment Surface Mine Lake**Ecoregion** Central Corn Belt Plain Eastern Corn Belt Plain MI-IN Till Plain Interior River Interior River Lowland**Distribution****Lake Type****Ecoregion**

Dashboard

Background Information

Tables

Lake Report

Parameter:

Secchi depth (m)

Sample Type:

Average

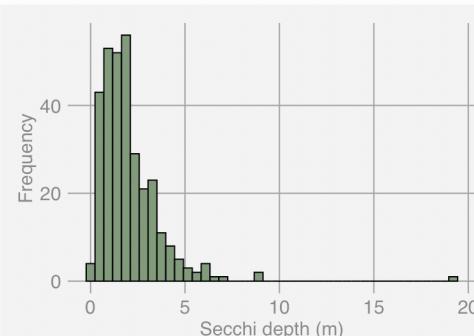
Lake Type

- Natural Lake
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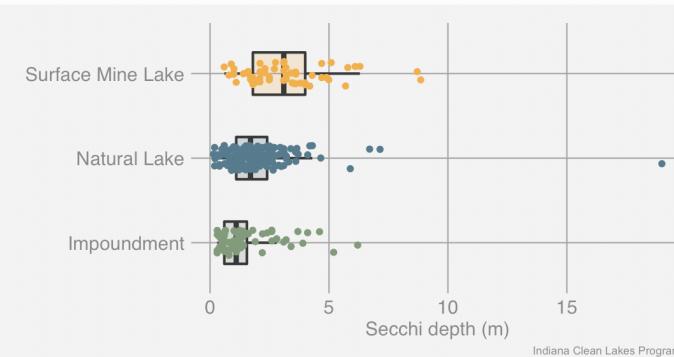
Ecoregion

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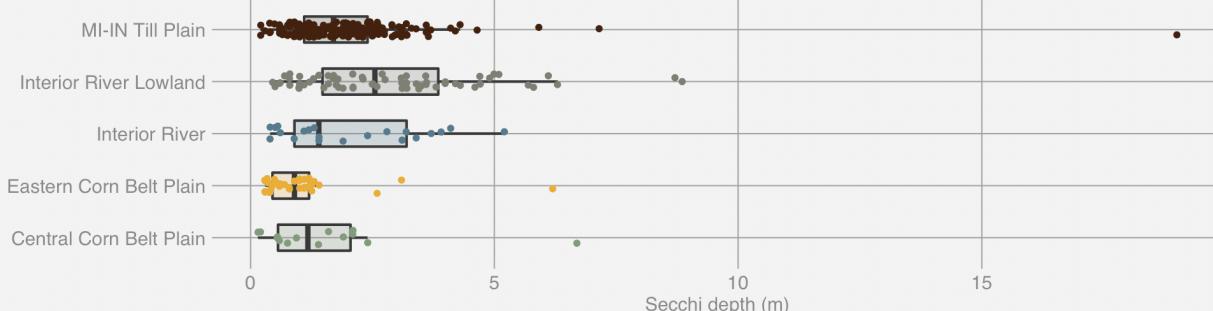
Distribution



Lake Type



Ecoregion



Interactive Reports with Story Maps



Map Tour

Esri Story Maps

- Combine mapping and reporting
- Wide variety of pre-made templates
- No knowledge of programming required
- Find more info @ www.esri.com

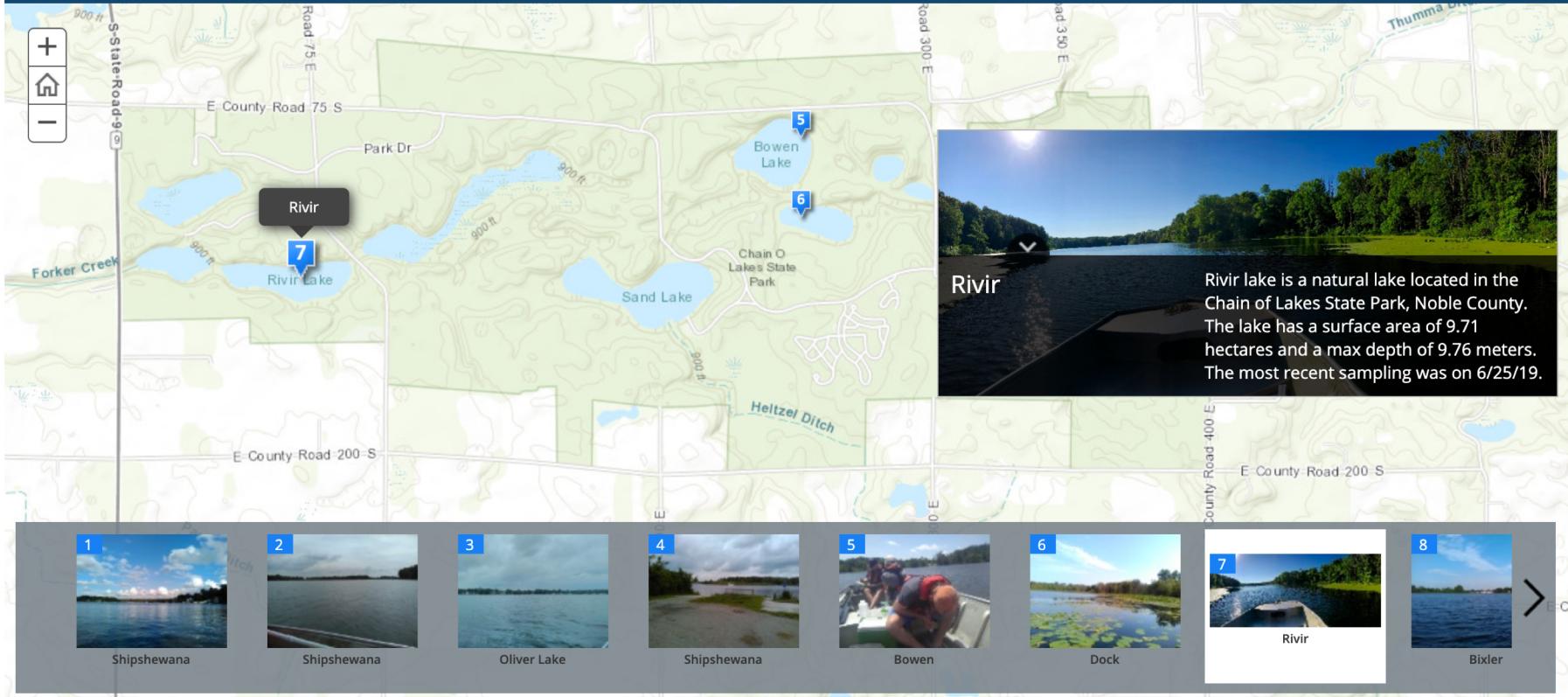


Map Cascade



Indiana Clean Lakes Program - 2019 Lakes

The Indiana Clean Lakes Program monitors lakes throughout the state every summer as part of the Lake Water Quality Assessment reporting. You can use this map to follow our field crew's journey across Indiana and see information about each lake we sampled!



Slides, code, and further questions

- Happy to provide my slides, code, or answer any questions relating to the talk:
 - Email: csauve@iu.edu
 - Website: corysauve.com
 - GitHub: github.com/corysauve
 - Twitter: [@TheCorySauve](https://twitter.com/TheCorySauve)



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- North American Lake Management Society
- Indiana Clean Lakes Program
- Indiana University - O'Neill School of Public and Environmental Affairs



Questions?



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