



## Maumee AOC Advisory Committee

May 25, 2023 9:30am – 11:30am

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Audio Call in [+1 614-721-2972](tel:+16147212972) Phone Conference ID: 457 625 685#

### AGENDA

- **Welcome & Meeting/Call Logistics** (Mike Pniewski, Chair) (5 mins)
- **Vote: Minutes** (Chair) (5 mins)
- **Update from BUI 3a, 6, 14a Biological subcommittee** (Beth Sparks-Jackson, USGS) (10 mins)
  - Update on lower Ottawa River TBD projects
- **MAP Spotlight**
  - Chlorides project highlight (Bill Hintz) (20 mins)
- **BUI 11 Removal Update** (Cherie Blair, Ohio EPA) (10 min)
- **Vote (proposed): BUI 11 Removal Letter** (Chair) (5 min)
- **US EPA Task Force Leader Report** (Leah Medley, GLNPO) (5 mins)
  - AOC Conference Sept 12-14, 2023
  - GLRI Action Plan IV
- **Ohio EPA AOC Coordinator Report** (Cherie) (15 mins)
  - MAP Updates
  - Funding Updates
  - Upcoming Activities
    - Knowledge Sharing Session about permitting – June 5
    - Maumee River Feasibility Study public meeting – August 10
- **Facilitating Organization's Report** (Kris) (10 mins)
  - Financial update
  - Future activities
    - August boat tour on the Maumee River– TBD
    - New & improved maumeeaac.org website – mid summer
- **Partner Updates** (10 mins)
- **Public Comments & Adjourn** (5 mins)
- **Next meetings for 2023** – hybrid format, Ohio EPA NWDO plus Teams  
*August 10 (it might be a boat trip!), December 14 at 930am*



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### MINUTES

**Attendance:** Cherie Blair, Mike Pniewski, Beth Sparks-Jackson, Kris Patterson, Lynne Parsh, Jenny Carter-Cornell, Scott Butterworth, Jim Carter, Liv Simkins Bullock, DJ Mears, Patti Donnellan, Sara Guiher, William Hintz, Archie Lunsey, Edith Kippenhan, Corey VanStratt, Mark Schwab, Andrew Sankowski, Amanda Kovach, Joshua J Miller, Ryan Allison, Zuri Carter, Amber R Bellamy, Leah Medley, Sally Gladwell, Andrew Timmis, Vanessa Steigerwald Dick, Deanna Bobak, Kennedy Okioghene Doro, Alexis Sakas, Ashlee Decker

- Mike Pniewski welcomed everyone to the meeting.
- **Vote:** to approve the meeting minutes from 2-09-23

Mike Pniewski motioned to approve minutes. Kris Patterson clarified that Jenny Carter-Cornell corrected two minor typos in the minutes but the minutes were otherwise unchanged from what was sent out via email. Moved by Sally Gladwell, and seconded by Jenny Carter-Cornell. Minutes were approved unanimously.

- Beth Sparks-Jackson, USGS, gave an update from **BUI 3a, 6, 14a Biological Subcommittee**. She informed the MAAC that the subcommittee reconvened to meet in March. The subcommittee started with nine potential project locations for lower Ottawa River projects and visited seven in-person last week. They determined that some locations have logistical access/landowner willingness concerns, and between 2-4 locations look feasible for projects. The subcommittee will meet in May to determine next steps for how they will move forward on the feasible locations. The subcommittee's goal is to develop concept plans for any feasible sites that remain, and is on-track to present to the MAAC either at the August or December meetings on their final project recommendations.
- **Map Spotlight:** Bill Hintz, University of Toledo, presented on chloride pollution in the Maumee Area of Concern. He presented specific research findings from chloride concentration sampling of Maumee AOC waterways as part of MAP 2.0 Fish and Benthos Improvements Urban Chloride Reduction, as well as an overview of the causes and effects of excess road salt on freshwater ecosystems. He concluded with salt use best management practices and steps to reduce road salt use currently underway in the Maumee AOC.
- Cherie Blair, Ohio EPA, gave an update on **BUI 11 Removal**. Cherie thanked everyone on the MAAC who provided comments on the BUI 11 draft document, and said she incorporated many comments into the draft that went out for public comment. There was only one public comment during the public comment period, which pertained to a topic that the Maumee AOC does not address, so no further revisions were made following the public comment period. Cherie requested a letter of support from the MAAC, and Mike asked for any questions or comments. The MAAC had none.
- **Vote:** for the MAAC to offer a signed letter of support for the removal of BUI 11.



Mike Pniewski asked for the motion, moved by Jim Carter, and seconded by DJ Mears. The motion carried unanimously.

- Leah Medley, GLNPO, offered a US EPA Task Force Report. She noted that the AOC Conference will be held Sept 12-14, 2023. Registration is currently open. The link is available in written OEPA AOC coordinator report. Regarding the GLRI Action Plan IV, it is anticipated to be out for public comment in Spring 2024. The nearest public engagement session to the Maumee AOC is planned for Cleveland on June 7. It will be in-person only, but there will be future public participation and comment opportunities with options for hybrid or virtual-only. Leah concluded by stating that the quarter three approval meeting was held, and the AOC's \$5 million Delaware/Horseshoe Island Restoration project was approved for GLRI funding.
- Cherie reviewed her written **Ohio EPA AOC Coordinator Report**. See meeting handouts for the full report. Major updates on Management Action Projects include:
  - WildMAPs – Only four projects are left to complete, and 3 of those 4 are expected to complete this calendar year.
  - AquaMAPs – Many AquaMAPs are getting underway. Many have released RFPs for engineering and design in the last 3-4 months. There will be another round of federal tribal consultation letters sent out this summer. Cherie asks that if MAAC partners are involved with a project that plans to go to construction this fall, make sure Cherie has state SHPO determination application and response letter by June 30.
  - SedMAPs – Ohio continues to work with federal partners for make progress on sediment projects. Work is underway on the Lower Maumee River Focused Feasibility Study as well as the Swan Creek Focused Feasibility Study, with public meetings for both occurring this year.
  - MiscMAPs – BUI 4 – US FWS conducted bullhead liver tumor sampling in April on Toussaint River, but the boat broke down and Otter Creek still needs to be sampled. Turtle Creek and a portion of the Ottawa River will be sampled for fish community and habitat (BUI 3a, 14a) this summer.
- Cherie informed the MAAC about upcoming activities, including a hybrid-meeting knowledge sharing session about restoration project permitting on June 5, 12:30-2:30pm. It will be followed by an in-person only Q/A and networking session from 2:30-3:30pm. On August 10, there will be a GLAA Maumee River Feasibility Study public meeting at Glass City Metropark.
- Kris Patterson, Partners for Clean Streams, offered the **Facilitating Organization's Report**
  - Financial update: PCS's grant from Ohio EPA is 30% spent, which is underbudget for where PCS would normally be at this point, but the organization didn't start spending this pot of grant money until the last grant one was expended. PCS will probably be revising the budget formally with Ohio EPA because they've been asked to take on some additional activities, like supporting Ottawa River conceptual design and project determination.
  - Future activities:
    - PCS is working on coordinating an August boat tour on the Maumee River. Right now, the tentative plan is an abbreviated virtual MAAC meeting in the morning on August 10, and then doing a cruise on the Sandpiper. Ideally, the cruise may get to look at future GLLA work along Maumee River. That afternoon is GLLA public meeting downtown. After we get logistics worked out, we will be reaching out via email.
    - PCS is working with web developers on a new and improved Maumee AOC website. They are looking at the website both as a repository of information and a resource both for the MAAC and for the public. Looking to have this site fully launched before September. Hoping to do a soft launch and share with the MAAC before August meeting.



- **Partner Updates**

- Sara Guiher, TMACOG, updated the MAAC that TMACOG has developed policy boilerplate language for reducing road salt use for both local level and state level. It has been sent out to the Stormwater Coalition for review and they plan to ask the coalition to give feedback and formally endorse at the July meeting. She also stated that TMACOG is planning a larger training for the Student Watershed Watch with new teachers participating. The Summit will be November 15.
- Corey VanStratt, Ducks Unlimited, updated the MAAC that Navarre at ONWR is moving along and pool project pump permits are currently under review by FWS. The Camp Sabroske acquisition is underway; DU recently sent an updated purchase/seller agreement.
- Scott Butterworth, Division of Wildlife, informed the MAAC that they are looking for H2Ohio projects, and that if MAAC members know of willing landowners, the Division of Wildlife is currently working on a riparian corridor projection project.
- Ashlee Decker, The Nature Conservancy, said that TNC is moving ahead with Blue Creek restoration project. There were quite a few proposals submitted and they are currently under review.

- **Public Comments & Adjourn:** There were no comments given. Mike adjourned the meeting.

- **Next meetings for 2023** – hybrid format, Ohio EPA NWDO plus Teams  
*August 10 (it might be a boat trip!), December 14 at 9:30am*

**Maumee AOC Coordinator Report  
for the Maumee AOC Advisory Committee  
May 25, 2023**

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- **WildMAPs** (*BUI 14b: Wildlife Habitat*)
  - There are 4 WildMAPs left to complete; 3 of which should be completed this calendar year.
  - ODNR Division of Forestry has been asking for assistance to find replacement properties for their acreage shortage. Since our last meeting they have been able to identify a potential replacement 75-acre property. Once the ODNR Real Estate section has appraised the property, a purchase agreement can be negotiated with the landowner.
  - An updated Summary Table of the WildMAPs was provided with this report.
  - A detailed narrative tracking of the WildMAPs is available upon request.
- **AquaMAPs** (*BUI 3a, 6, 14a: Fish Pops, Benthic Pops, Fish Habitat*)
  - Lots of AquaMAPs are getting underway. Many have released RFPs in the last 3-4 months or will be in the next 3-4 months.
  - The Delaware/Horseshoe Islands project was allocated \$5,080,000 of GLRI-AOC funding for implementation. The workplan is almost ready for GLNPO review, with the hopes of an award in early August.
  - The last of the TBDs are in development. The MAAC should expect a list of potential projects in August with a final list for recommendation/approval at the December meeting.
  - There will be another round of federal tribal consultation letters sent out this summer. If you are involved with a project that plans to go to construction this fall, please make certain I have your state SHPO determination application and response letter by June 30.
  - An updated Summary Table of the AquaMAPs was provided with this report.
  - A narrative tracking of the AquaMAPs is available upon request.
- **SedMAPs** (*BUIs vary by project site, GLLA contaminated sediment*)
  - Ohio continues to work with federal partners to make progress on these sediment projects.
  - The Lower Maumee River (LMR) Focused Feasibility Study (FFS) is finalizing the remedial alternatives for cleaning up the WWTP and Sway Bridge sites. The draft LMR FFS report is expected to be out for public comment in August. A LMR FFS public meeting is scheduled for August 10 from 4 – 6pm at the Glass City Pavilion in the Glass City Metropark (note: this is the same day as our next MAAC meeting).
  - The Swan Creek Focused Feasibility Study (FFS) is slightly behind the LMR FFS. The draft Swan FFS report is expected to be out for public comment in Nov/Dec. The Swan FFS public meeting is expected to occur in early to mid-Dec. (note: around the time of our Dec MAAC meeting). Stay tuned for more info on this project.
  - The Ohio AOC Program is working to secure non-federal matching funds for the next step in the GLLA process, which is Remedial Design (RD). The Ohio EPA anticipates preparing an application the Fall, so to be able to begin this next step in early 2024.
  - An updated Summary Table of the SedMAPs was provided with this report.
  - A narrative tracking of the SedMAPs is available upon request.
- **Misc. MAPs** (*BUIs 4, 7, 8, 10, 11*)
  - **BUI 4: Deformities & Tumors** – US FWS conducted bullhead liver tumor sampling (BUI 4) in April on the Toussaint River, then the boat broke down. Otter Creek still needs to be sampled. Turtle Creek and a portion of the Ottawa River will be sampled for fish community and habitat (BUI 3a, 14a) this summer.

- **BUI 7: Dredging** – Ohio EPA personnel are reviewing the sediment data collected in 2021.
- **BUI 10a: Beach Closings (advisories)** – Project is in progress.
- **BUI 8b: Eutrophication** – I will update the committee at a future meeting.
- **BUI 11: Aesthetics** – The BUI removal document received only 1 public comment. The comment was related to CAFOs in the Maumee River watershed, which is not applicable to the AOC Program. The removal document that was shared for Public Comment is the version that is being prepared as the full Removal Recommendation package from Ohio. The document will have the public comment/response and MAAC letter of support added as appendices. The recommendation is expected to go to GLNPO in early June.
- **AOC Program Updates**
  - US AOC Conference registration is open. It will be held on Sept 13-14, 2023 in Green Bay, WI, with pre-conference events on Sept. 12. Limited scholarships will be available. Stay tuned for more info. <https://www.uwgb.edu/great-lakes-areas-of-concern-conference/>
  - Knowledge Sharing Session will be held for MAAC Implementers on June 5 from 12:30 – 2:30pm at Ohio EPA NWDO or via Teams. Following the Sharing Session will be a Knowledge Networking Session from 2:30 – 3:30pm. This networking session will only be available in person. An email with more details and an agenda was sent to all MAAC members. If you didn't get it, and want a copy/invitation, please let me know.

# SALT POLLUTION IN THE MAUMEE AREA OF CONCERN

Dr. Bill Hintz

Department of Environmental Sciences  
and Lake Erie Center



THE UNIVERSITY OF  
TOLEDO

# A collaboration to address salt pollution in northwest Ohio

MAP AOC-2.0: Fish and Benthos Improvements with Urban Chloride Reduction



THE UNIVERSITY OF  
**TOLEDO**







**What is salt pollution and what causes it?  
Often referred to as secondary “salinization”**



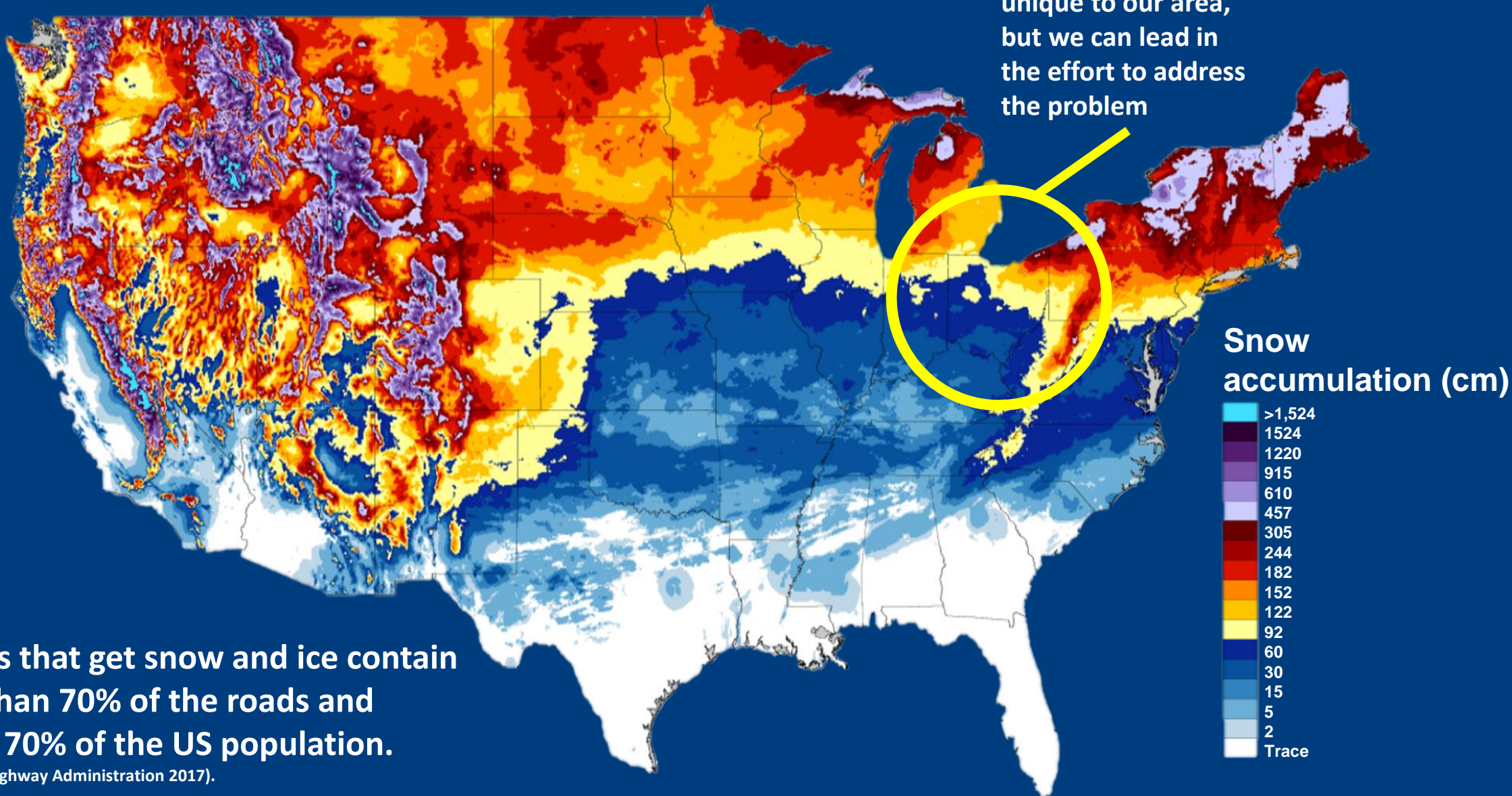


## **R O A D   S A L T S   A R E   V E R Y   N E C E S S A R Y F O R   H U M A N   S A F E T Y**

Road salts reduce accident rates on average by 87% and 78% on two-lane and multi-lane highways, respectively

# The need for road salts in the US

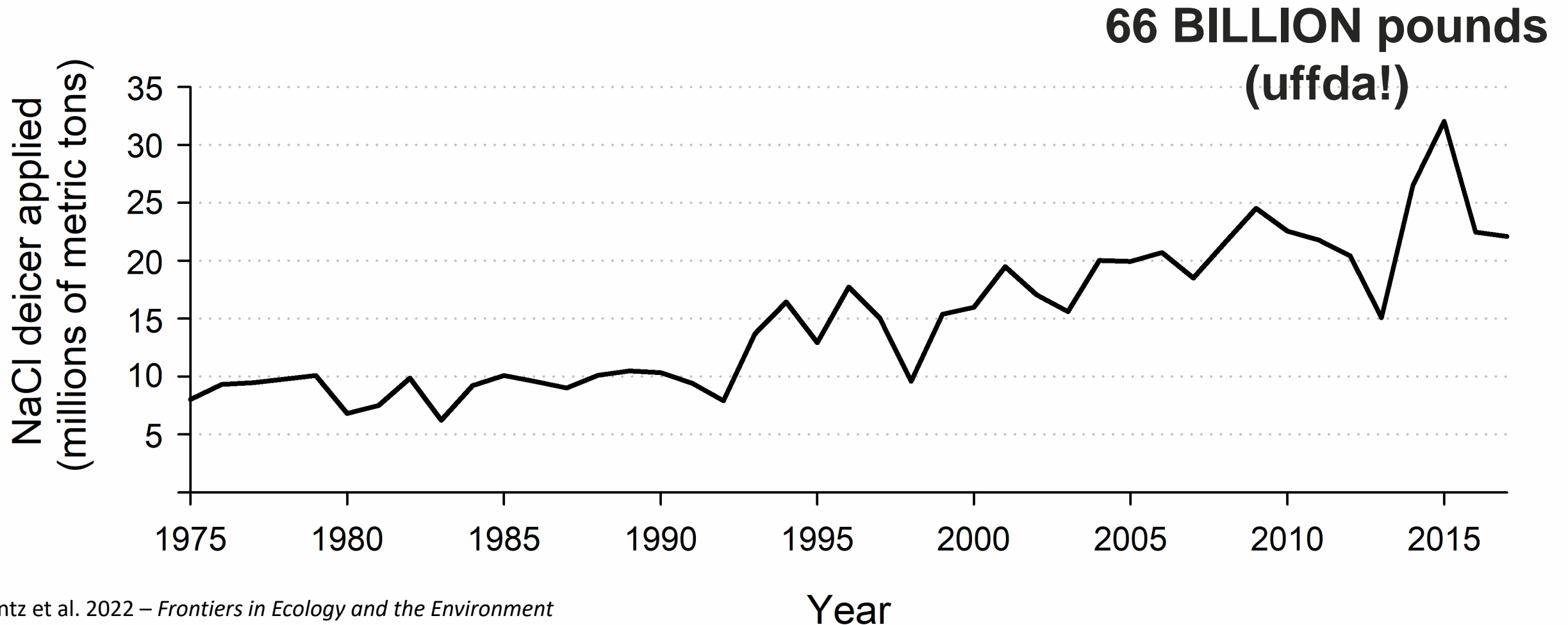
Not a problem unique to our area, but we can lead in the effort to address the problem



Regions that get snow and ice contain more than 70% of the roads and almost 70% of the US population.

(US Federal Highway Administration 2017).

# How much road salt is applied?



# How much road salt is applied?

Annual application rates of deicing salts in many states and other countries range from 12–75 metric tons/km of two-lane highway

That's 2.9 – 18.2 lbs/m<sup>2</sup>

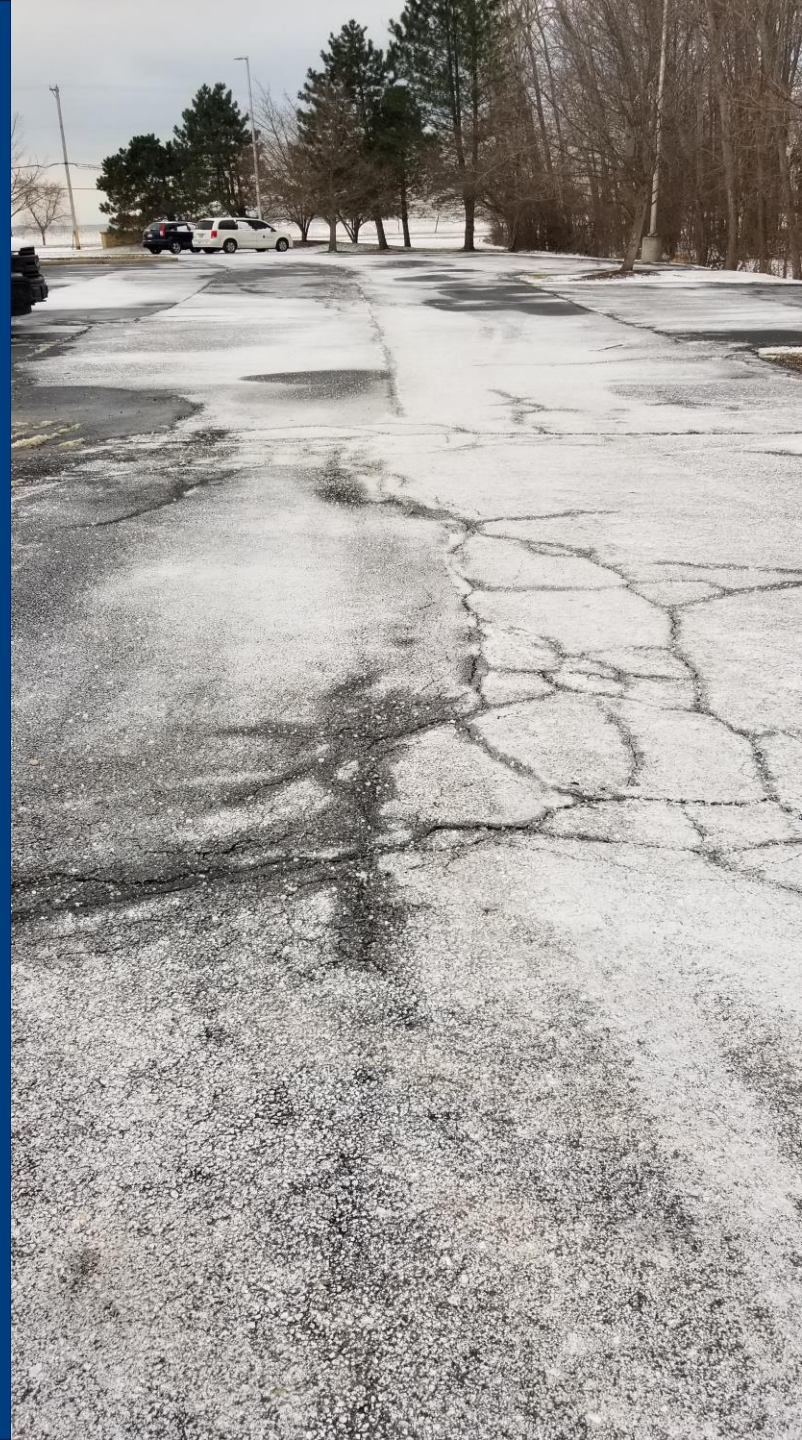
(Environment Canada and Health Canada; Langen et al. 2006).



# How much salt is applied?

The white on the sidewalk and parking lot is not snow... it's salt

Photo: B. Hintz





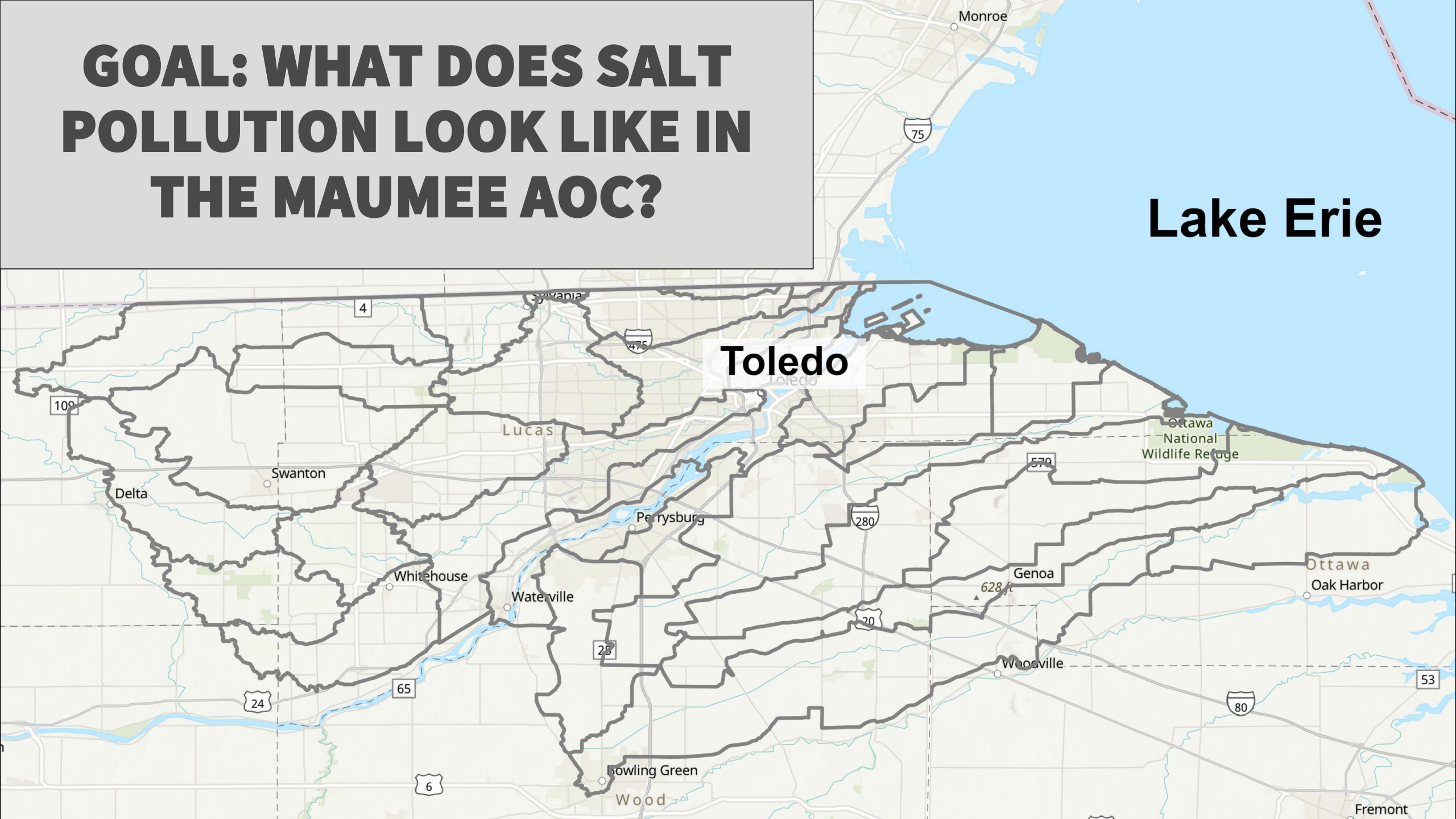
# OHIO RANKS # 3 IN ROAD SALT USE

1,526,000,000 pounds

2017 Clear Roads Survey

Rank	State	Metric tons
1.	New York	758,677
2.	Pennsylvania	746,160
<b>3.</b>	<b>Ohio</b>	<b>692,760</b>
4.	Tennessee	482,685
5.	Massachusetts	445,540

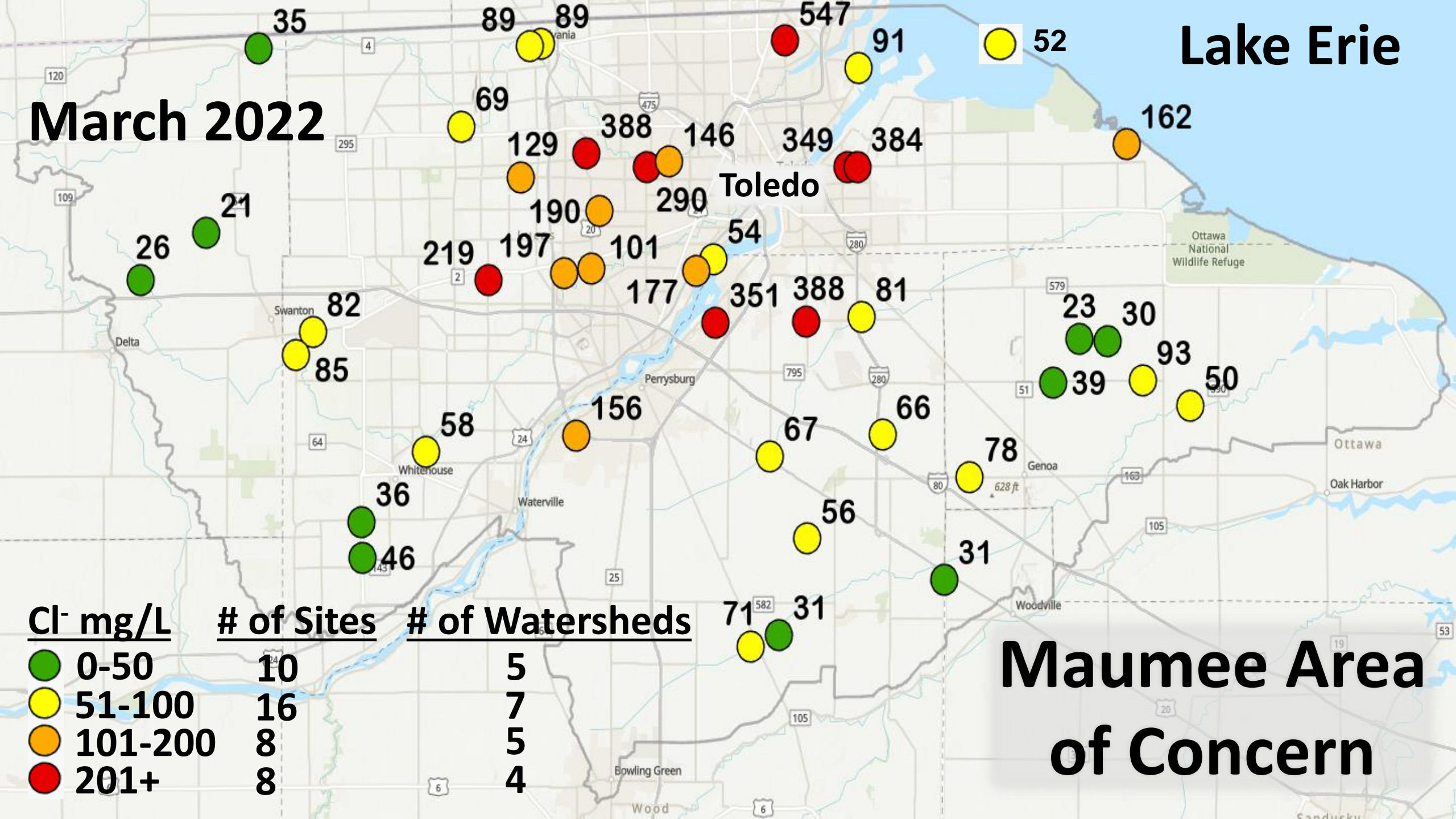
# GOAL: WHAT DOES SALT POLLUTION LOOK LIKE IN THE MAUMEE AOC?





# March 2022

# Lake Erie



<u>Cl<sup>-</sup> mg/L</u>	<u># of Sites</u>	<u># of Watersheds</u>
0-50	10	5
51-100	16	7
101-200	8	5
201+	8	4

# Maumee Area of Concern

# June 2022

Toledo Water Intake

## Lake Erie

## Maumee Area of Concern

0 4 8 16 Kilometers

### Chloride (mg/L)

0-20	<u>6</u>	201-300	<u>3</u>
21-50	<u>23</u>	301-400	<u>1</u>
51-100	<u>21</u>	401-500	<u>0</u>
101-200	<u>12</u>	501-680.1	<u>0</u>

# November 2022

Lake Erie

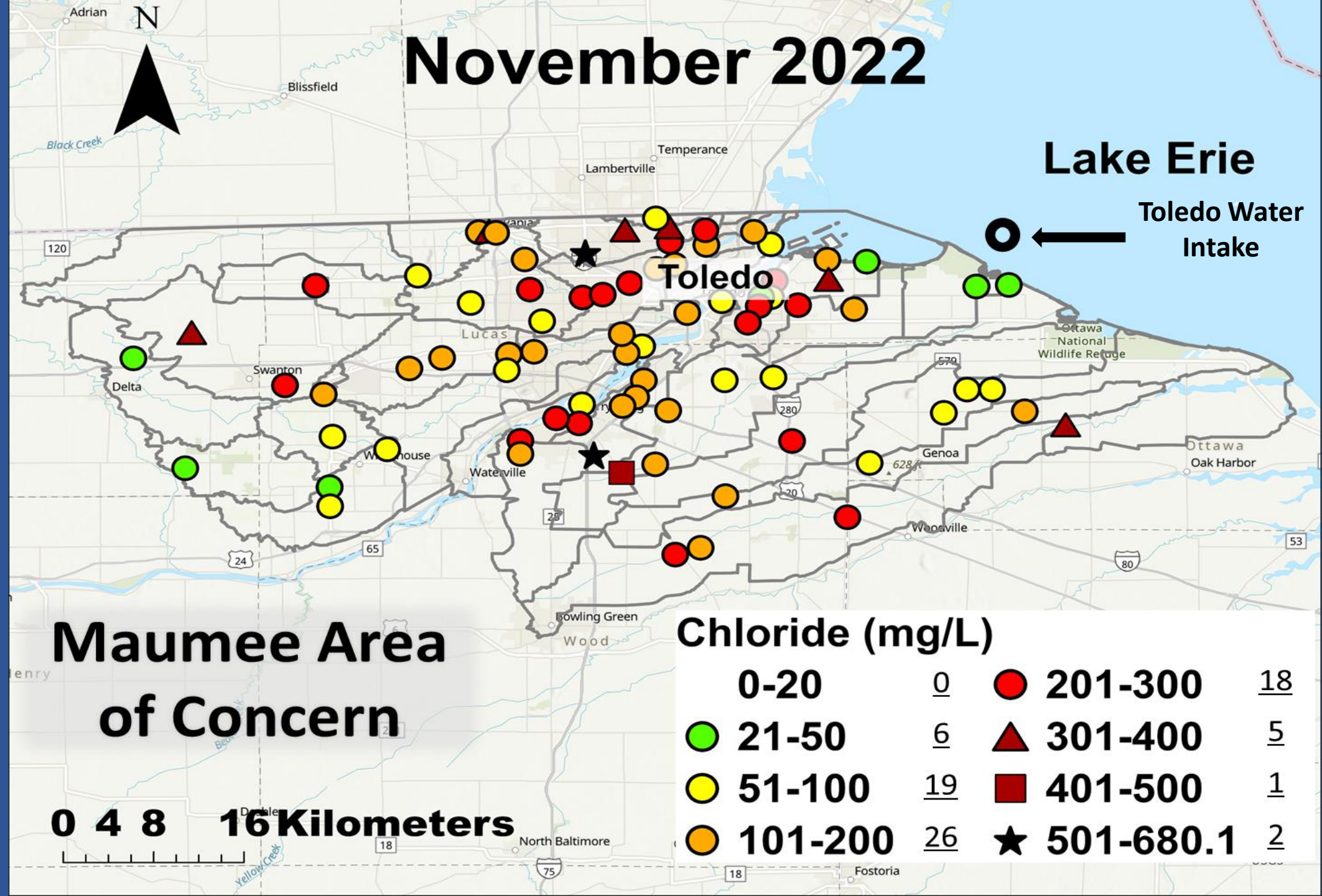
Toledo Water Intake

Maumee Area of Concern

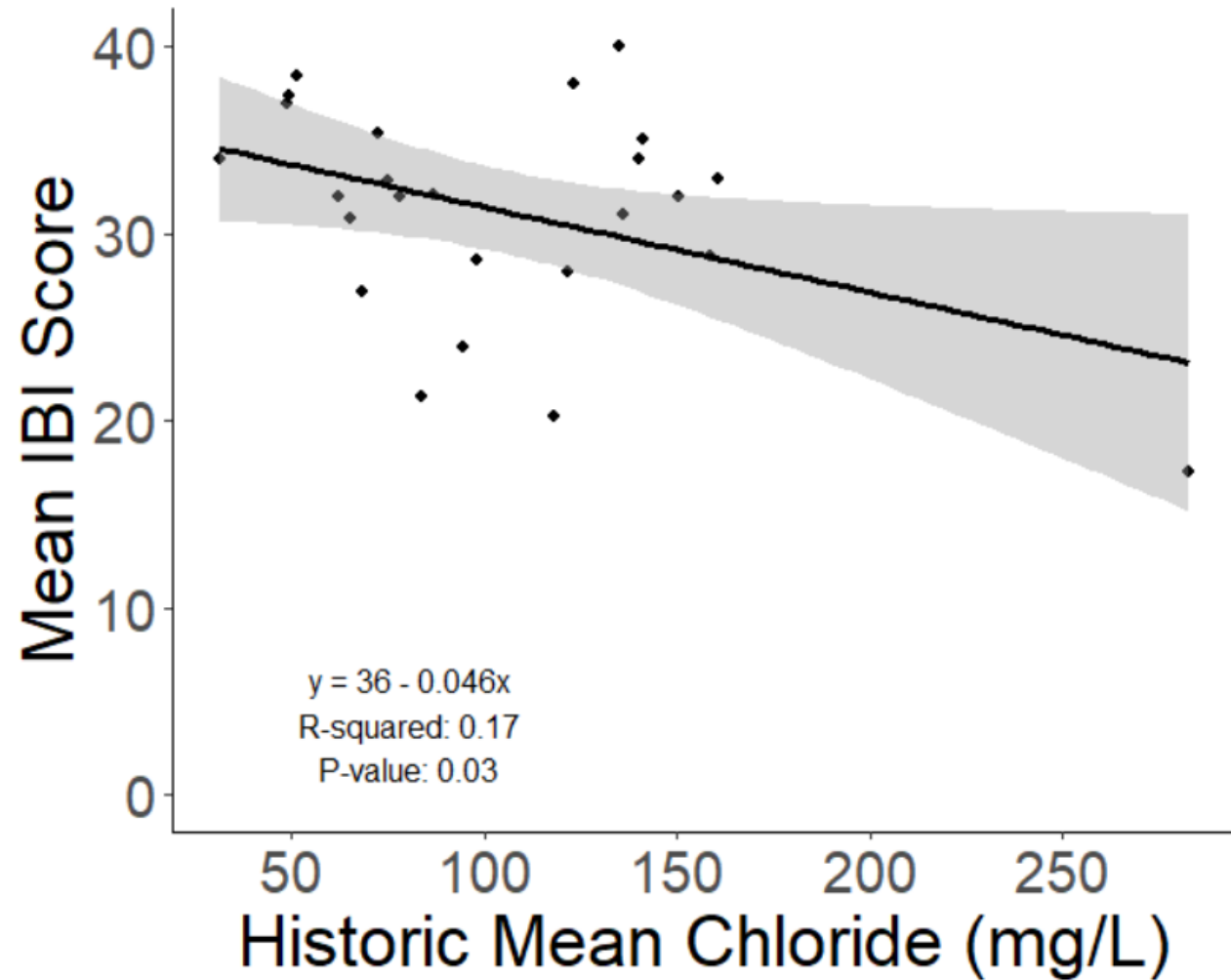
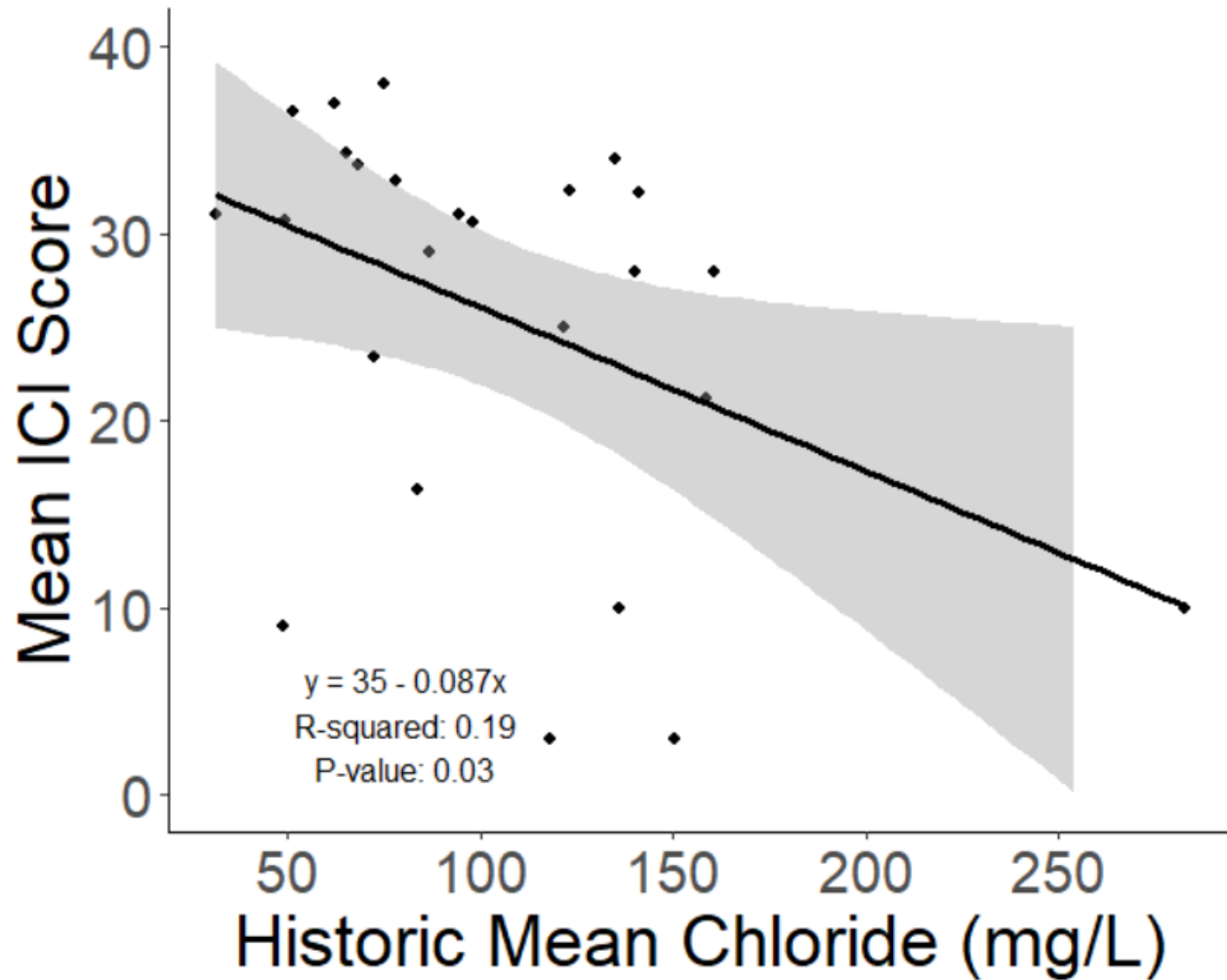
Chloride (mg/L)

0 4 8 16 Kilometers

0-20	<u>0</u>	●	201-300	<u>18</u>
21-50	<u>6</u>	▲	301-400	<u>5</u>
51-100	<u>19</u>	■	401-500	<u>1</u>
101-200	<u>26</u>	★	501-680.1	<u>2</u>



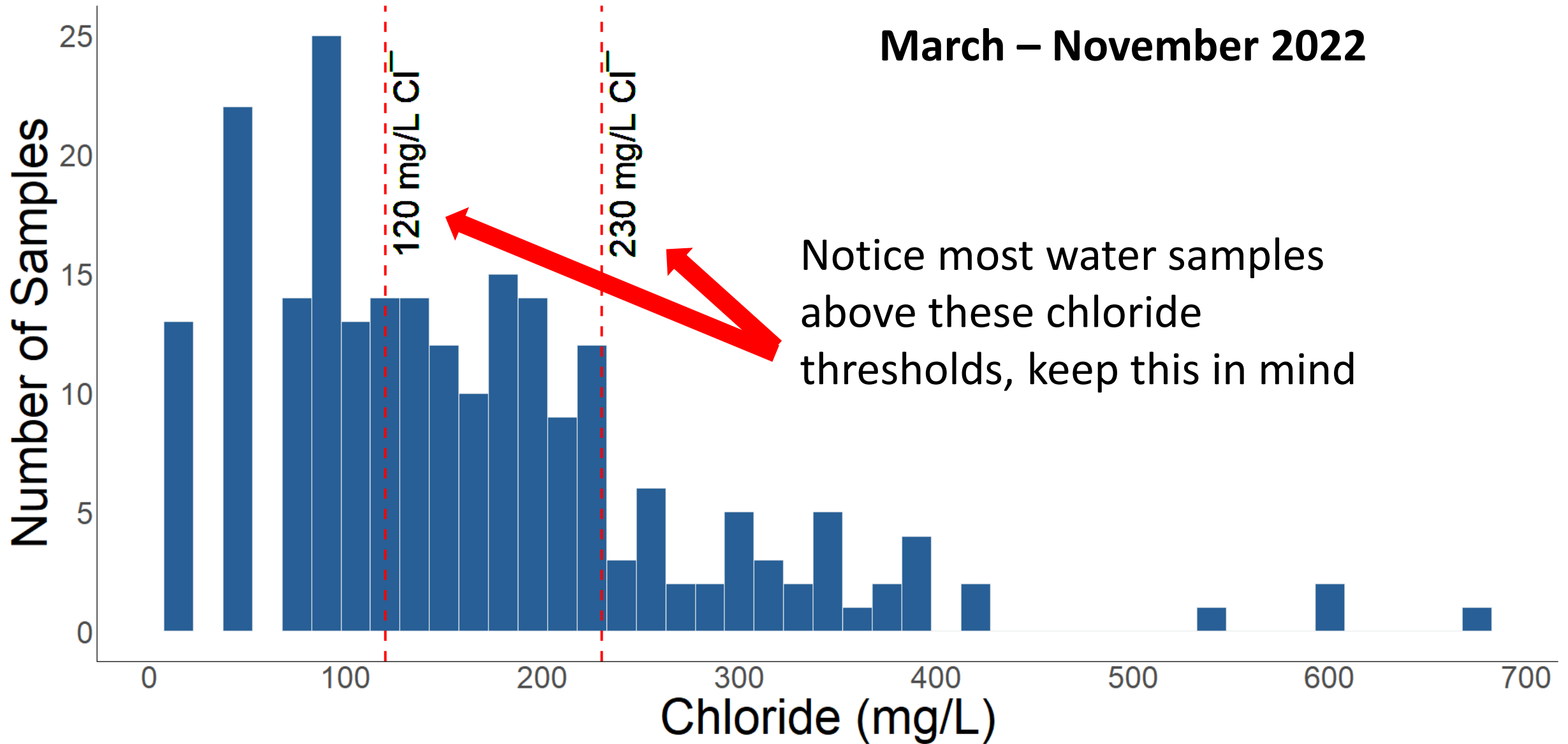
# Higher chloride associated with lower scores in AOC



Data from Ohio EPA, also see Miltner 2021 (*Water*) for data from around the state

# Frequency of samples with chloride concentrations above and below thresholds

March – November 2022



# DO WATER QUALITY GUIDELINES PROTECT FRESHWATER ORGANISMS?

## CANADA

Chronic: 120 mg Cl<sup>-</sup>/L

## UNITED STATES

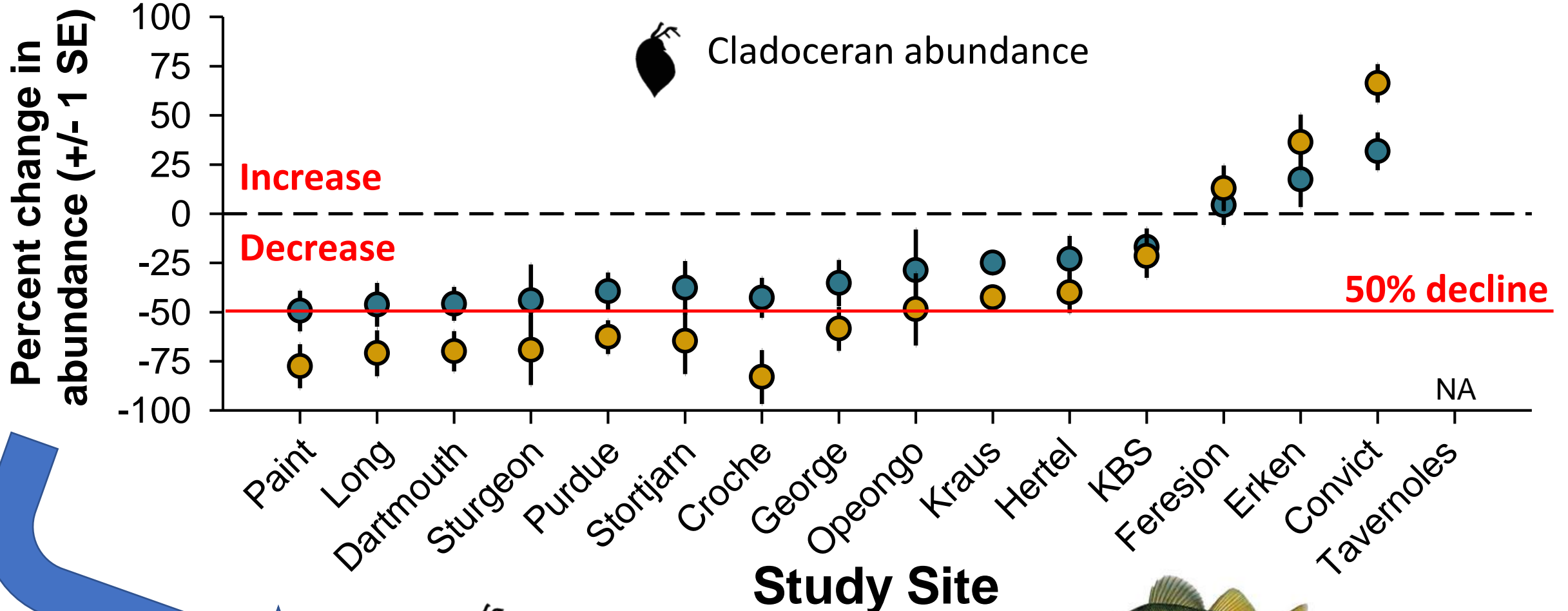
Chronic: 230 mg Cl<sup>-</sup>/L

# WATER QUALITY GUIDELINES

Chloride (Cl<sup>-</sup>) thresholds applicable to protecting freshwater environments from road salt pollution



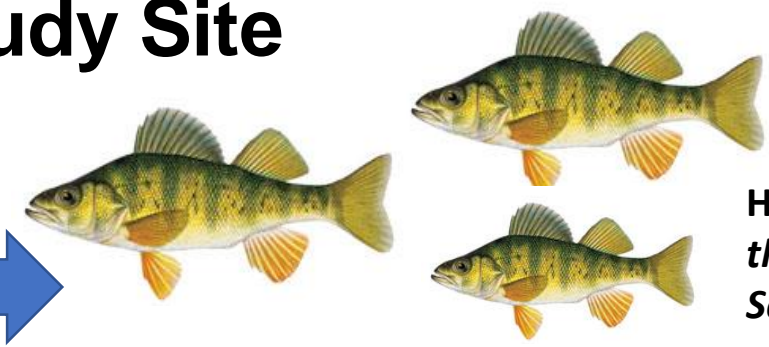
● Canadian threshold 120 mg Cl<sup>-</sup>/L      ● US threshold 230 mg Cl<sup>-</sup>/L



Major decline in ...



Eaten by

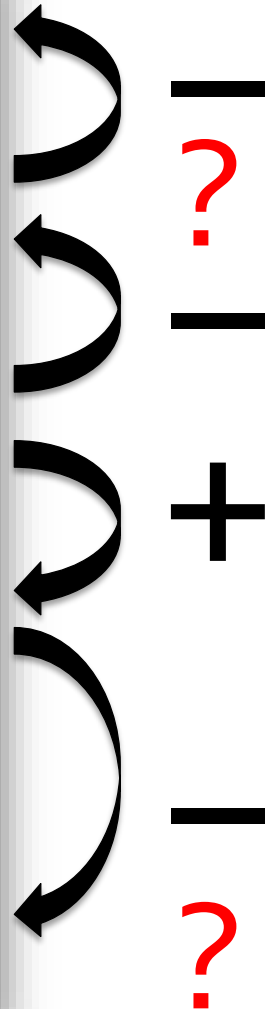
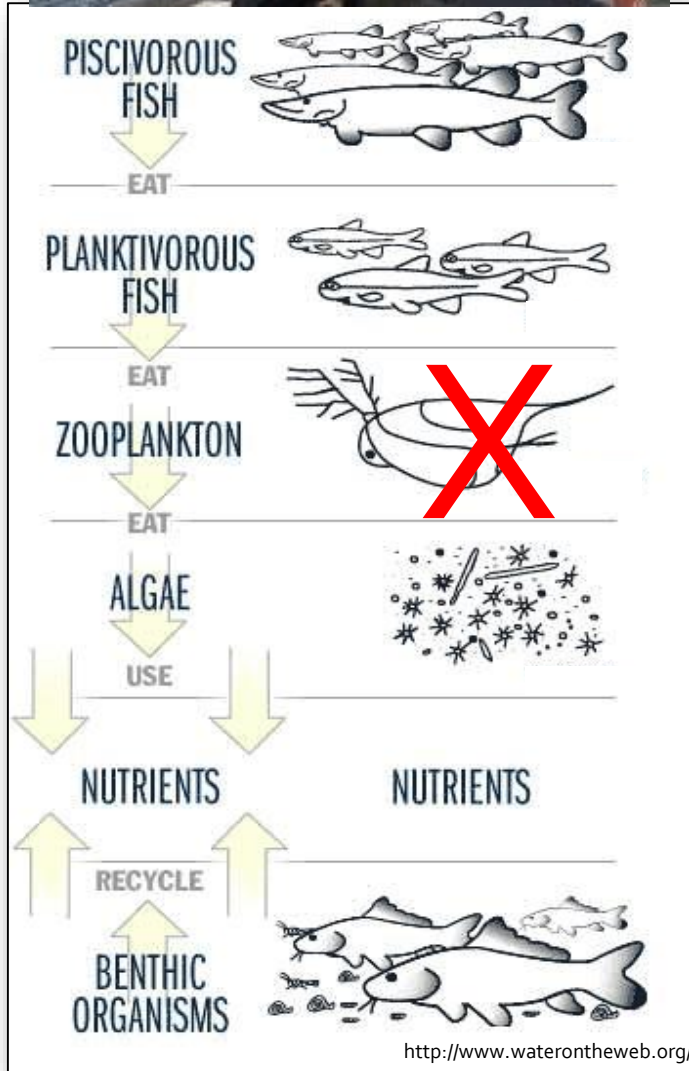


Hintz et al., *Proceeding of the National Academy of Sciences* (2022).

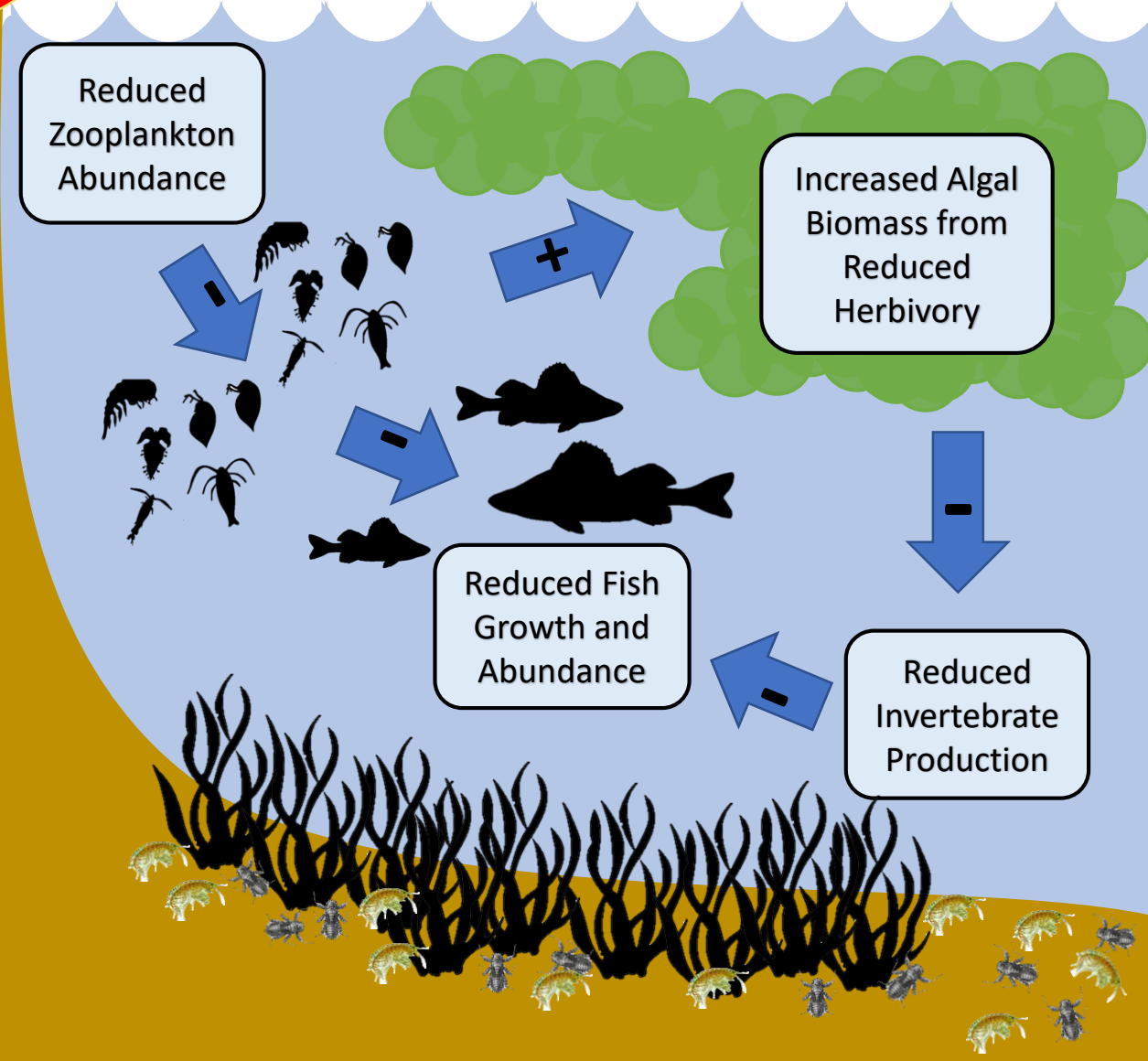
# More algae due to the loss of zooplankton grazers (less fish food, more algae)







# Impacts on food webs

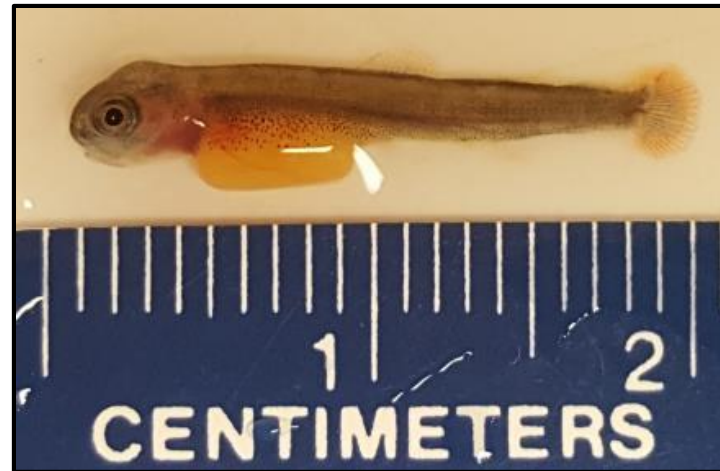
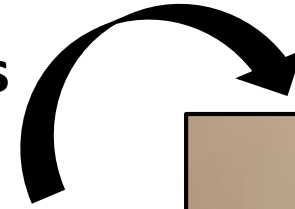


# Road salt effects on trout growth



What will/could/has happened over the long-term to our fisheries?

After 25 days



Hintz and Relyea 2017  
*Environmental Pollution*

# Stream Conductivity: Relationships to Land Use, Chloride, and Fishes in Maryland Streams

Raymond P. Morgan II,\* Kathleen M. Kline, Matthew J. Kline,  
Susan F. Cushman,<sup>1</sup> Matthew T. Sell, Roy E. Weitzell Jr., and John B. Churchill

*Appalachian Laboratory, University of Maryland Center for Environmental Science,  
301 Braddock Road, Frostburg, Maryland 21532, USA*

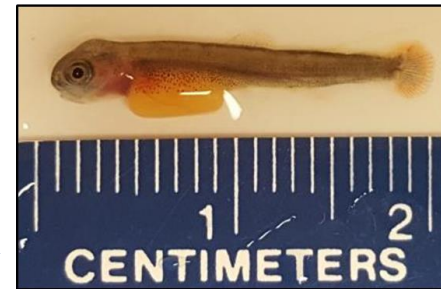
*North American Journal of Fisheries Management 32:941–952, 2012*

For the Maryland Piedmont species assemblage, observed conductivity values between 230 and 540  $\mu\text{S}/\text{cm}$  caused important alterations in the biotic community as measured by the series of fish metrics, and thus affected fish species assemblages associated with chloride concentrations between 33 and 108 mg/L.

**Between 33 and 108 mg Cl<sup>-</sup>/L, changes in fish assemblages**

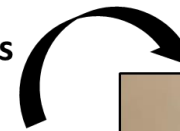
**Behavioral changes? Avoidance?**

Not always about this



Hintz and Relyea 2017  
*Environmental Pollution*

After 25 days

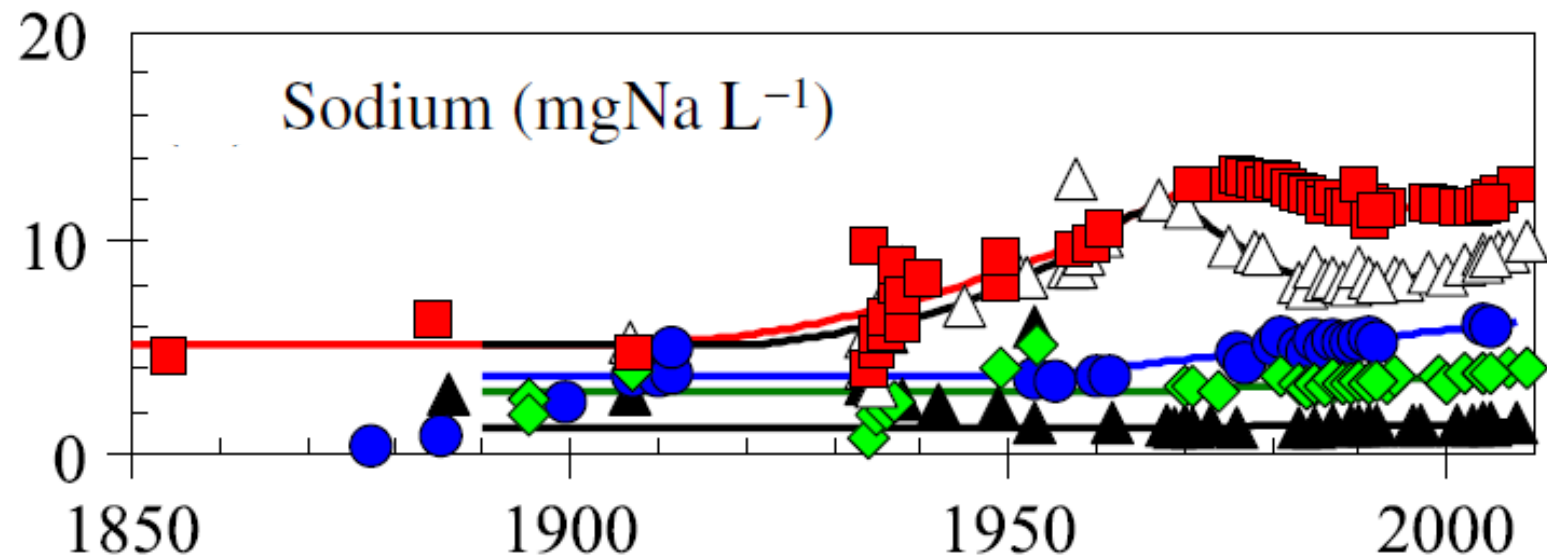
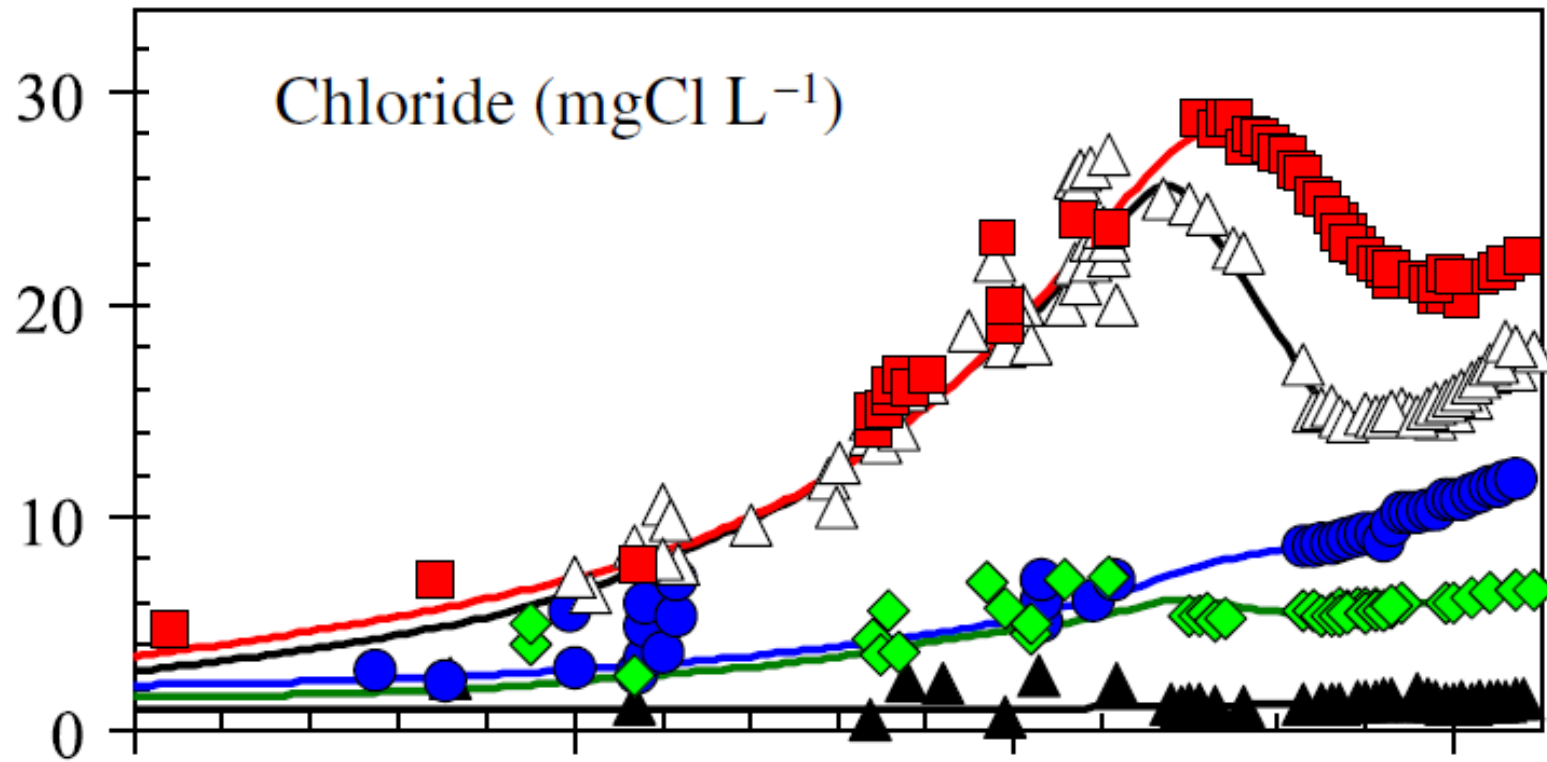
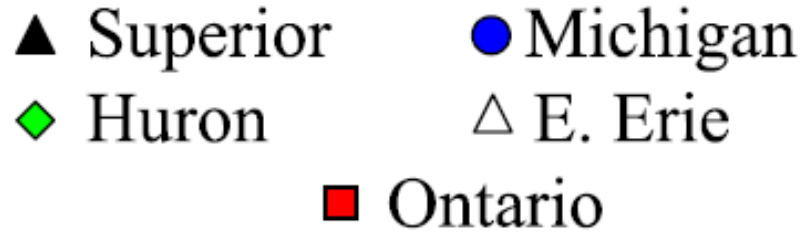




**Everything is interconnected**



# Beyond the AOC: Lake Erie



Contents lists available at [SciVerse ScienceDirect](http://SciVerse ScienceDirect)

Journal of Great Lakes Research

journal homepage: [www.elsevier.com/locate/jgl](http://www.elsevier.com/locate/jgl)

Long-term trends of Great Lakes major ion chemistry




Steven C. Chapra <sup>a</sup>, Alice Dove <sup>b,\*</sup>, Glenn J. Warren <sup>c</sup>

<sup>a</sup> Civil and Environmental Engineering Department, Tufts University, Medford, MA 02155, USA

<sup>b</sup> Water Quality Monitoring and Surveillance, Environment Canada, Burlington, ON, Canada L7R 4A6

<sup>c</sup> U.S. EPA Great Lakes National Program Office, 77 W. Jackson Blvd., Chicago, IL 60604, USA

## Tributary chloride loading into Lake Michigan

Hilary A. Dugan <sup>1\*</sup> Linnea A. Rock <sup>1</sup> Anthony D. Kendall,<sup>2</sup> Robert J. Mooney <sup>1</sup>

<sup>1</sup>Center for Limnology, University of Wisconsin-Madison, Madison, Wisconsin; <sup>2</sup>Department of Earth and Environmental Sciences, Michigan State University, East Lansing, Michigan

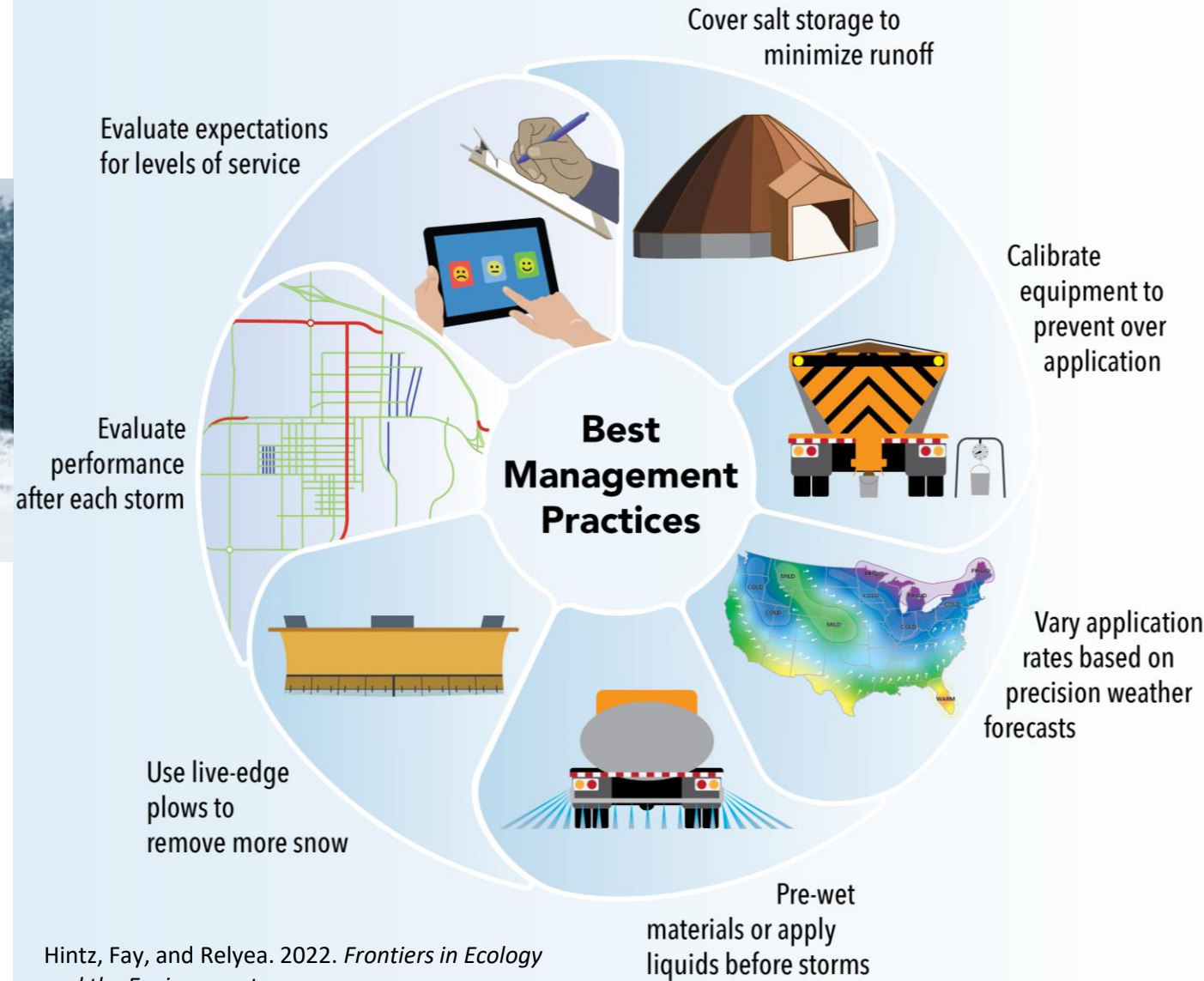
- 1.08 Tg/yr = **2,380,992,431 pounds per year of chloride**
- Year after year
- Other stressors
  - Invasive species
  - Climate change
  - Other contaminants



# How will we help address the issue in the AOC?



**Road salts reduce accident rates on average by 87% and 78% on two-lane and multi-lane highways, respectively**



Hintz, Fay, and Relyea. 2022. *Frontiers in Ecology and the Environment*

# How will we address the issue in the AOC?

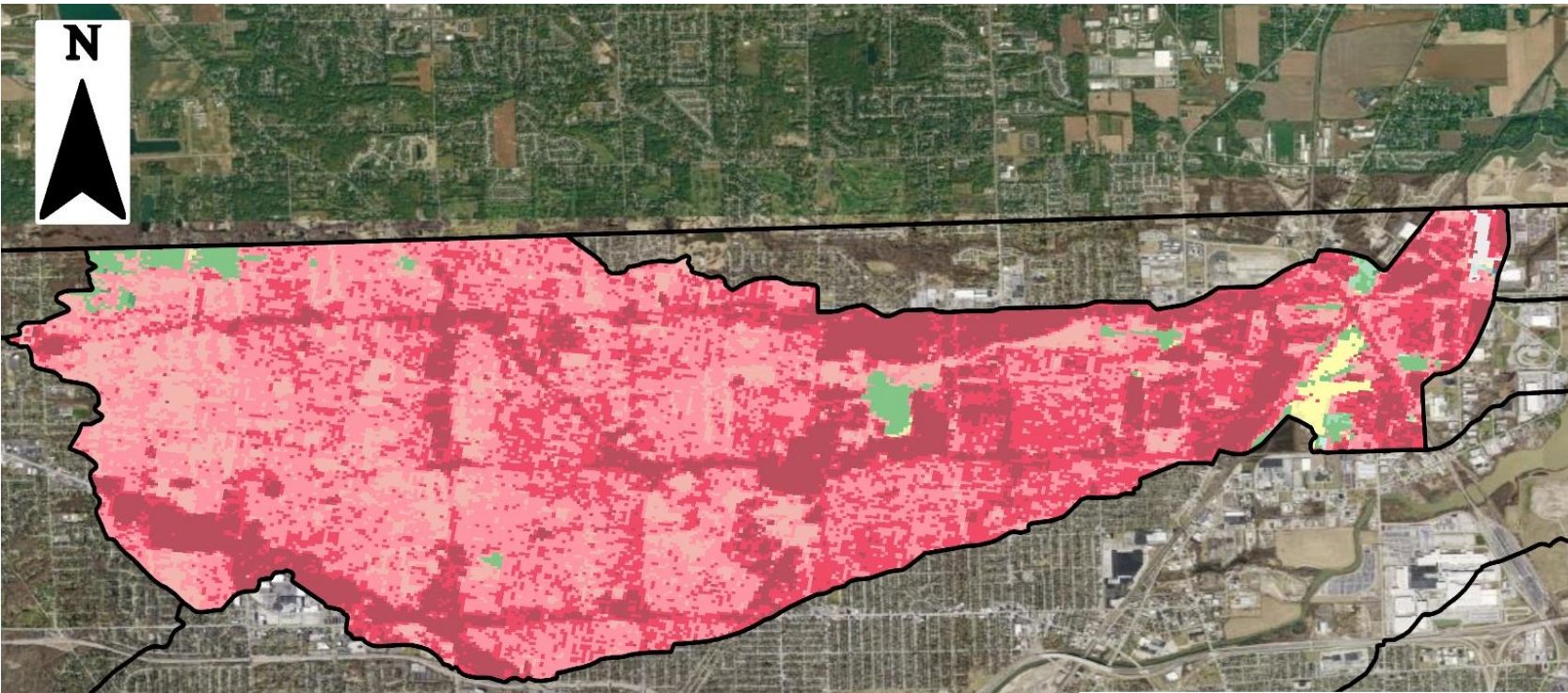






# Sources and solutions

Highly developed areas (more intense red)



## Legend

Shantee Creek

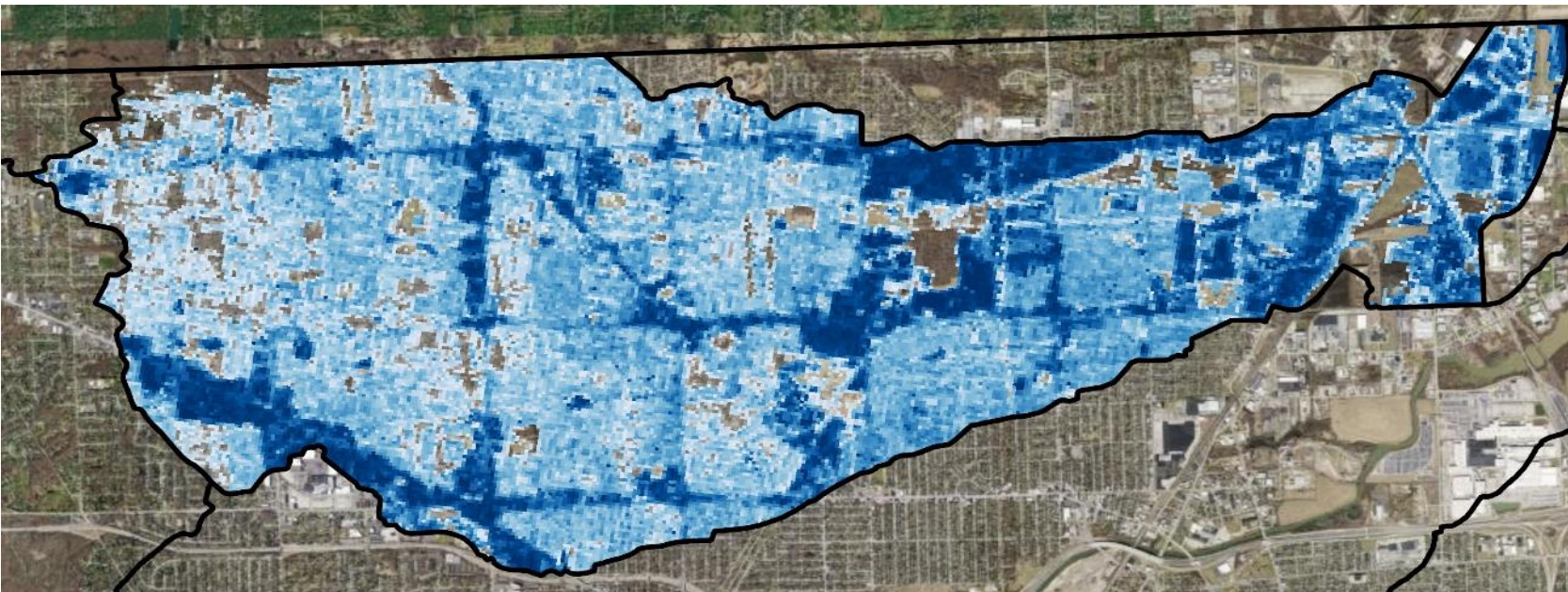
Imperviousness

100%



0%

Impervious surface area



**Beyond the ecological and environmental costs...**

## **ECONOMIC COSTS TO OUR ROADS, INFRASTRUCTURE, CARS**

- ✓ \$1,320 to \$3,000 per ton of road salt applied
- ✓ > 15 million tons applied each year
- ✓ Estimates: \$19.8 - \$45 billion
- ✓ \$1 road salt, \$10 in damage



# **COSTS TO OUR DRINKING WATER QUALITY**

---

**In southern New York, 25 – 50% of wells surpass drinking water guideline of 250 mg Cl/L**

**Costs to fix:**

**\$4.7 million (20 homes)**

**\$13.2 million (500 homes)**

# Thank you for your time!

Contact: [William.Hintz@utoledo.edu](mailto:William.Hintz@utoledo.edu)

*We can be leaders  
in finding and  
implementing  
solutions that  
facilitate  
recovery*



This project was financed in part through a grant from the US Environmental Protection Agency (US EPA) through an assistance agreement with the Ohio Environmental Protection Agency (Ohio EPA). The contents and views, including any opinions, findings, conclusions, or recommendations, contained in this product or publication are those of the authors and have not been subject to any Ohio EPA or US EPA peer or administrative review and may not necessarily reflect the views of the Ohio EPA or the US EPA and no official endorsement should be inferred.