

Great Lakes Basin Road-Stream Crossing Inventory



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Managing By Network Case Study





Credit: Patrick Ertel, MiDNR

What are Road-Stream Crossings (RSX)?

- Stream crossings, where roads and railroads cross running water
- Frequently unseen barriers to the movement of aquatic organisms like fish, turtles, freshwater mussels, and other species
- Often become barriers because they are perched above the riverbed, or water flow is too low or too fast to allow passage





What is Aquatic Organism Passage (AOP)?

- The ability of fish or other aquatic species to move throughout a system and access all habitats necessary to complete their life cycle
- Removing barriers to reopen access to stream and wetland habitat

Examples of RSX with poor AOP



Credit: Conservation Resource Alliance



Credit: Tammie Paoli/WDNR



Credit: Laura MacFarland, Trout Unlimited



Credit: Kristin Thomas/Michigan Trout Unlimited



Why is this bad?

Blocked AOP means species can not migrate or access important habitat

- Can not reproduce or build sustainable populations
- Lower genetic diversity in isolated populations
- Extirpation and extinction
- Compounds impact of climate change

Restoration in Action

We can restore aquatic organism passage by removing in-stream barriers or replacing them with better structures that allow access and connectivity

BEFORE



AFTER



Credit: Laura MacFarland, Trout Unlimited

Why do these RSXs matter?

- **Safety**
- **Infrastructure**
- **Connectivity**
- **Stream Health**

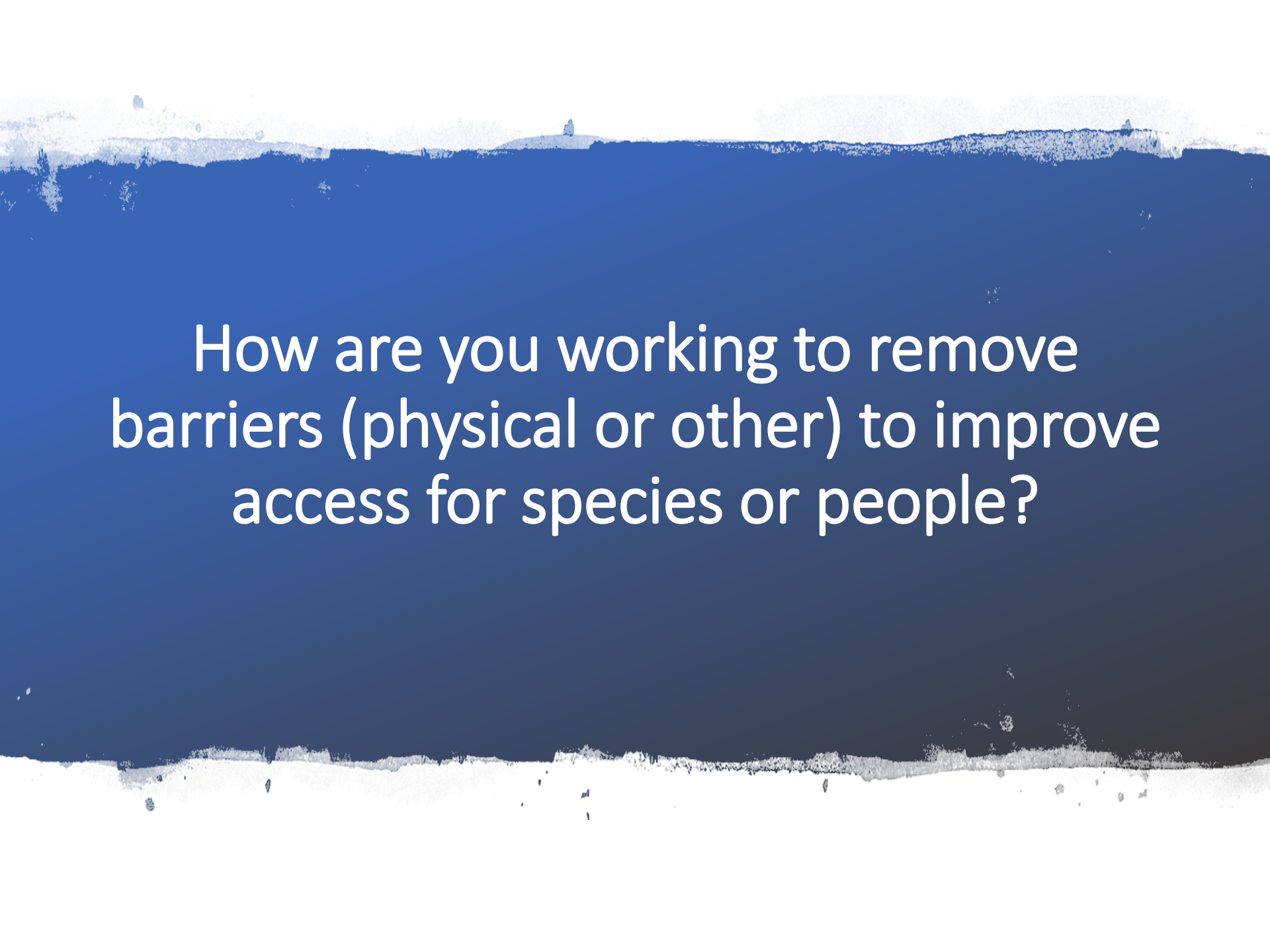




Good for Species
and People

Barrier removal and reconnecting AOP means:

- Improving recreational and commercial fishing
- Supporting and enhancing cultural resources and traditions
- Flood resiliency
- Better infrastructure to reduce storm impacts
- Increased recreational opportunities and safety



How are you working to remove
barriers (physical or other) to improve
access for species or people?

Our Geographic Area of Responsibility is Big

- Lake Michigan is the third largest Great Lake by surface area
 - Sixth largest freshwater lake in the world
- Lake Michigan Basin covers 45,600 mi² (118,095 km²)
- Includes 36 HUC 8 watersheds
- Variety of aquatic habitats
 - Ephemeral headwater streams
 - Glacial lakes and spring ponds
 - Large, National Wild & Scenic Rivers
 - Critical wetlands and coastal marshes
 - Open-lake reefs and shoals




Great Lakes Basin RSX Inventories

Tens of thousands of road-stream crossings exist throughout the Great Lakes Region and most have not been assessed for effects on stream health, stability, aquatic organism passage, erosion related issues or water quality.

- Overwhelming number of inventories to conduct – data collection, synthesis, tracking and sharing
- Some data exists, but scattered and difficult to find
- Previous data is not comparable – collected differently

Challenges – thousands of RSXs, huge area, multiple stakeholders, data everywhere, how to coalesce



What examples of big
data or complex
datasets come to mind
in your work?

The Founding Partners



Michigan
Technological
University



The Nature
Conservancy



Huron
Pines



Conservation Resource Alliance



Great Lakes Road Stream Crossing Inventory Instructions

5/6/2011



How to
collect the
data?

This protocol was developed, reviewed, and tested by the following organizations:
U.S. Forest Service, U.S. Fish & Wildlife Service, Michigan DNR, Wisconsin DNR, Huron
Pines, Conservation Resource Alliance, Michigan Technological University, and road
commissions.

Funding for development and testing was provided by the U.S. Forest Service, U.S. Fish &
Wildlife Service, and The Nature Conservancy.

A Growing Partnership



Michigan
Technological
University



Huron
Pines

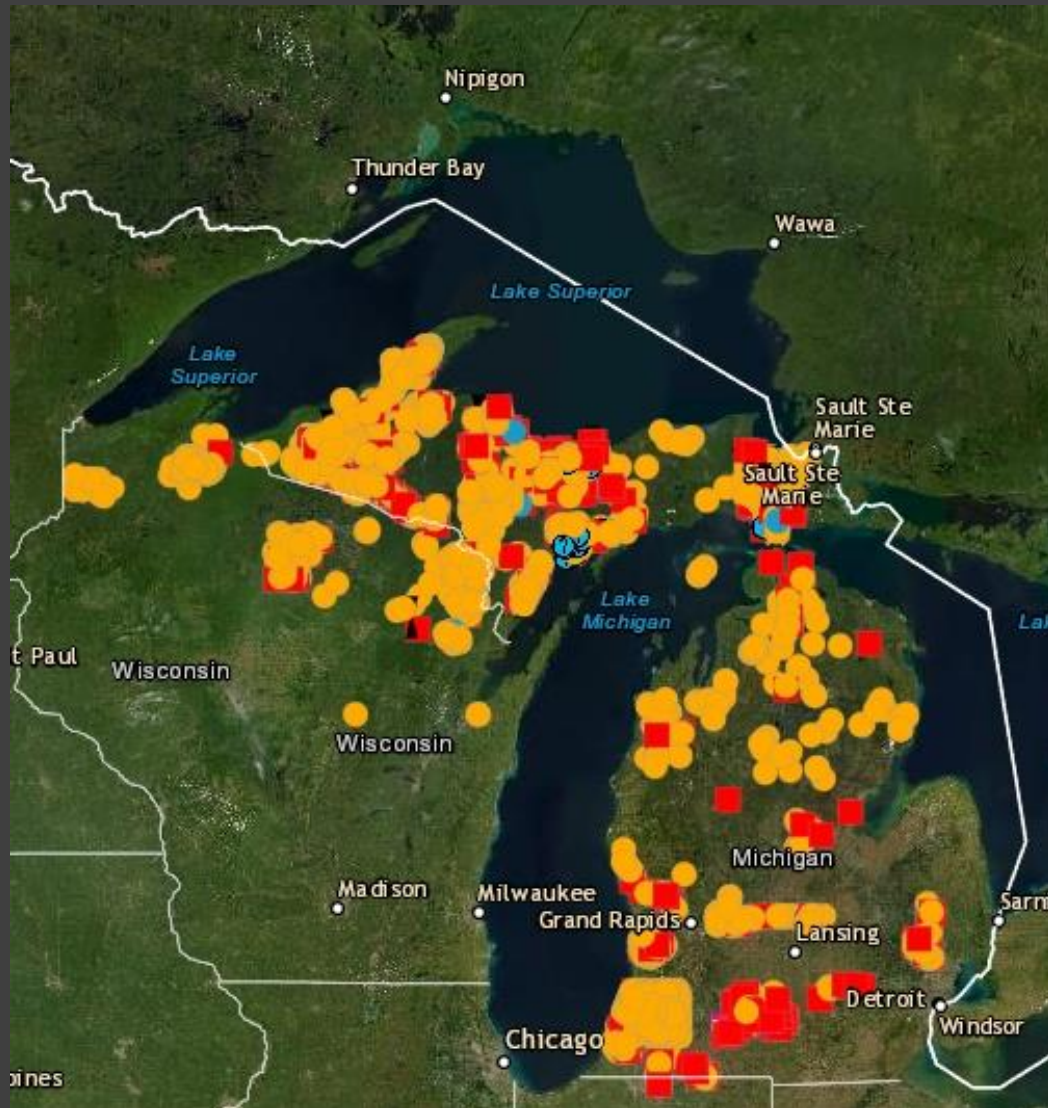


Conservation Resource Alliance

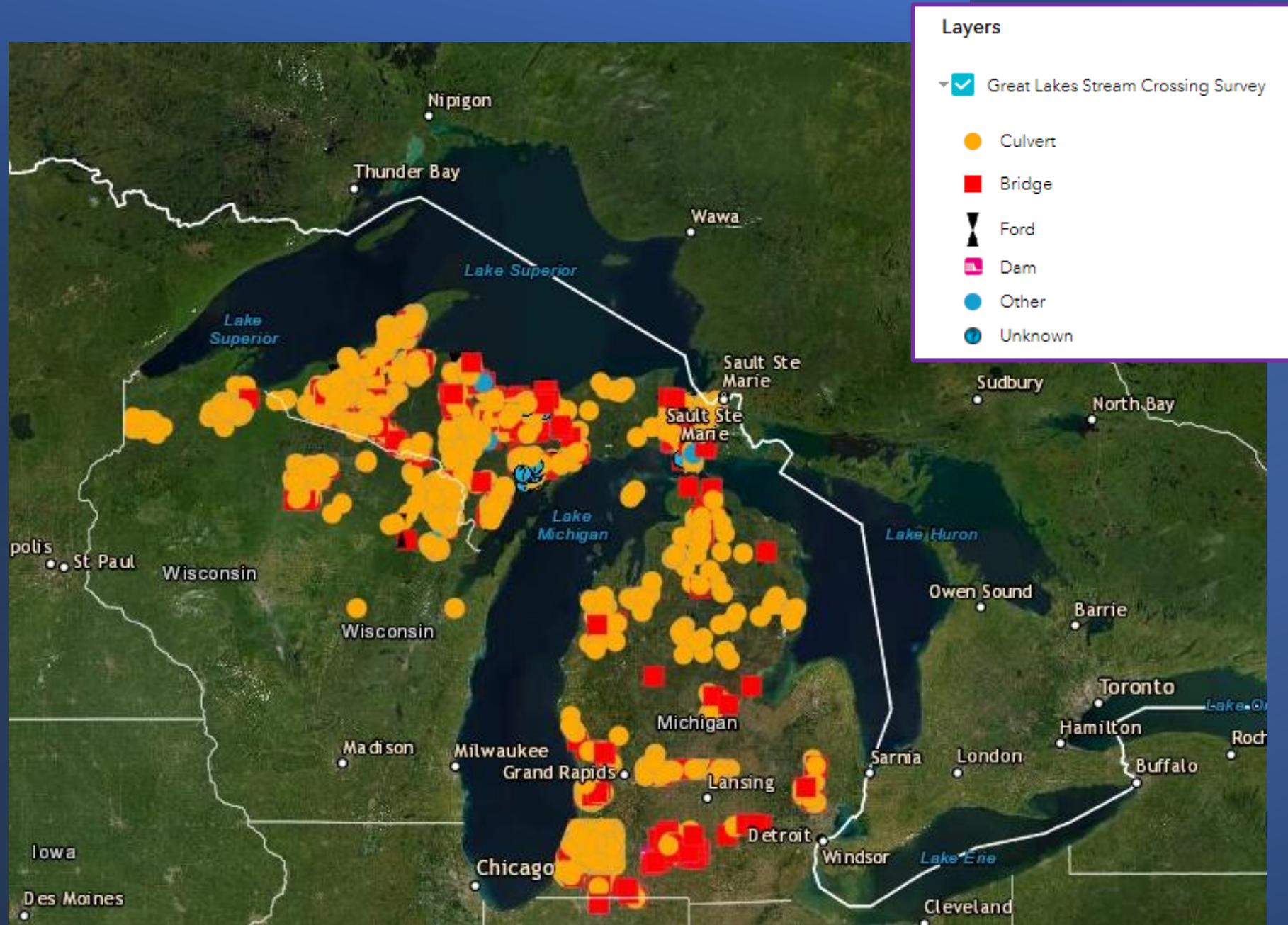


Road
Commissions





How to
store the
data and
make it
accessible?





How to
tackle the
number of
inventories?

Creative Solutions



PARTNERSHIPS!



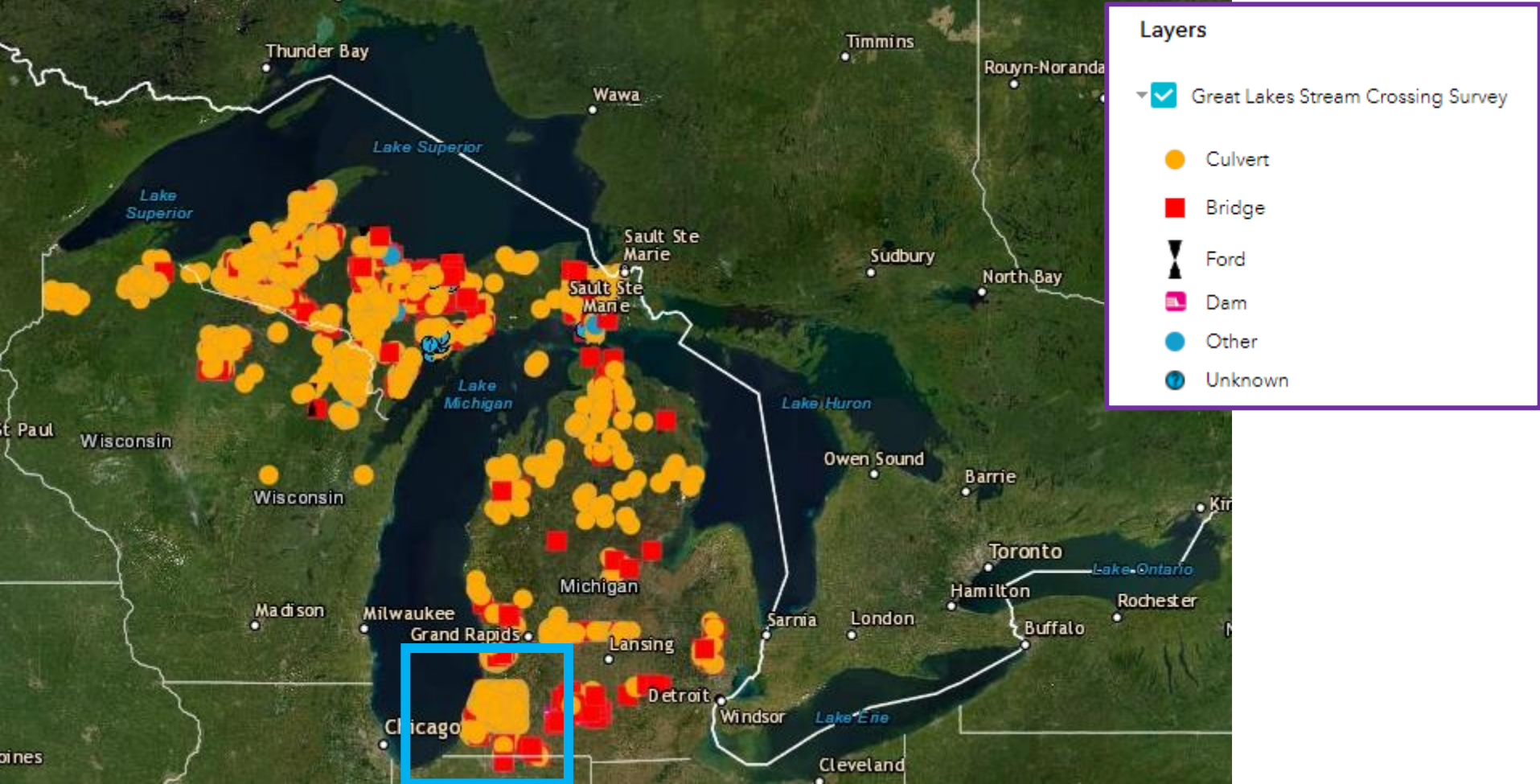
**BUILDING CAPACITY
IN OUR OFFICE**



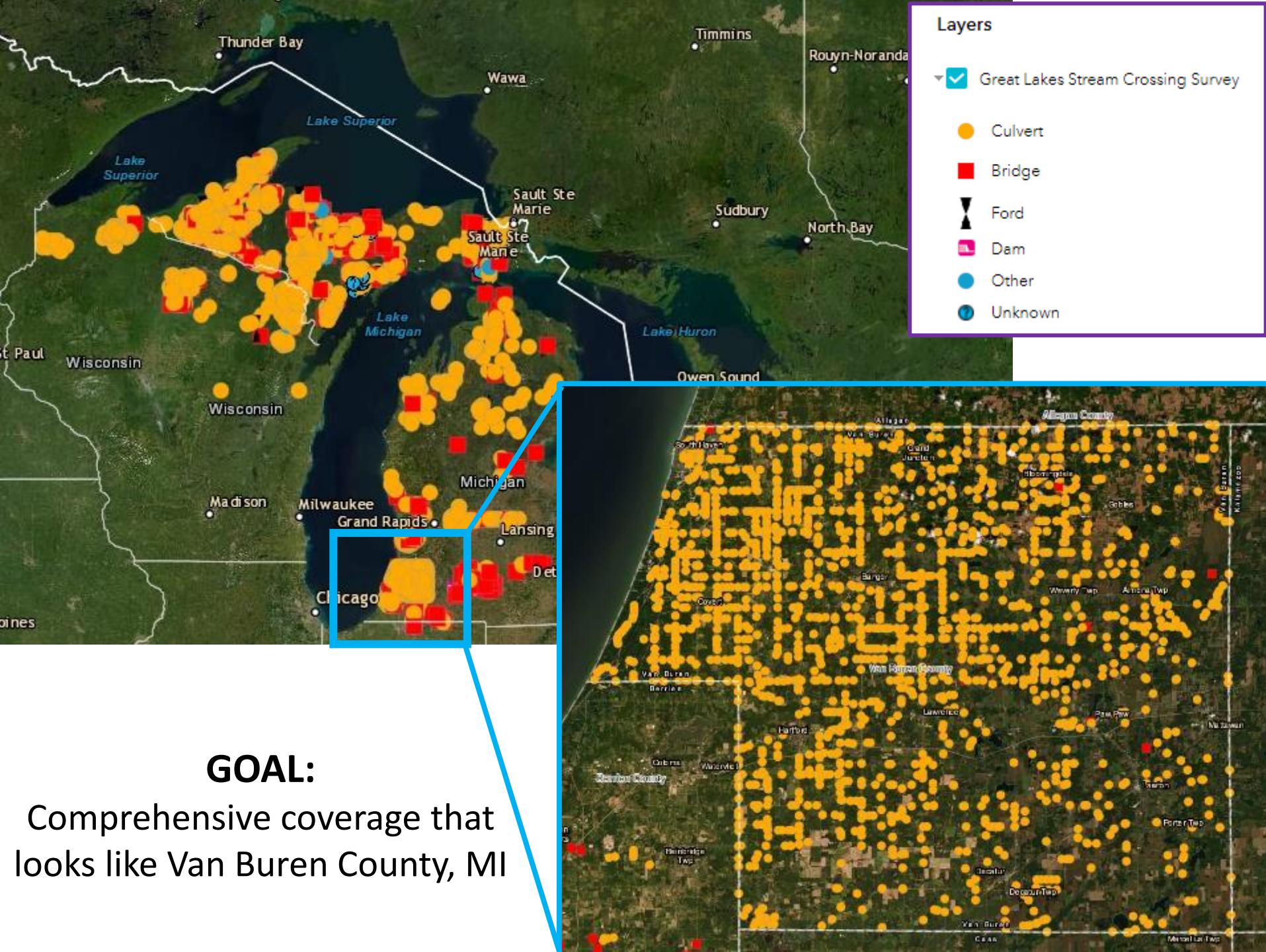
**STRATEGIC
PLANNING AND
PRIORITIZING**



**BOOTS ON THE
GROUND!**



<https://great-lakes-stream-crossing-inventory-michigan.hub.arcgis.com/>





YOU ARE HERE

Reflections

- We are in the Building Phase
 - Adding capacity
 - Resource sharing
 - Creative problem solving
- And the Maintaining & Sustaining Phase
 - Expanding connectivity
 - Scale

What do we do
next?

How would you
prioritize restoration
and aquatic
organism passage?



THANK YOU!

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“We can never solve fisheries problems by employing the same methods we used to create them!

Complete commitment to habitat is the single piece of the puzzle that has never been employed.

Now it's time.”

Flip Pallot