Restoring native fish migrations

Peter B. McIntyre, Allison T. Moody, Mark Holey, Thomas M. Neeson, Margaret Q. Guyette , Matthew W. Diebel, Matthew Herbert, Mary Khoury, Eugene Yacobson, Patrick J. Doran, Michael C. Ferris, Steve Wangen, Jeff Dischler, & Jesse R. O'Hanley

Great Lakes barriers

Pressures to keep

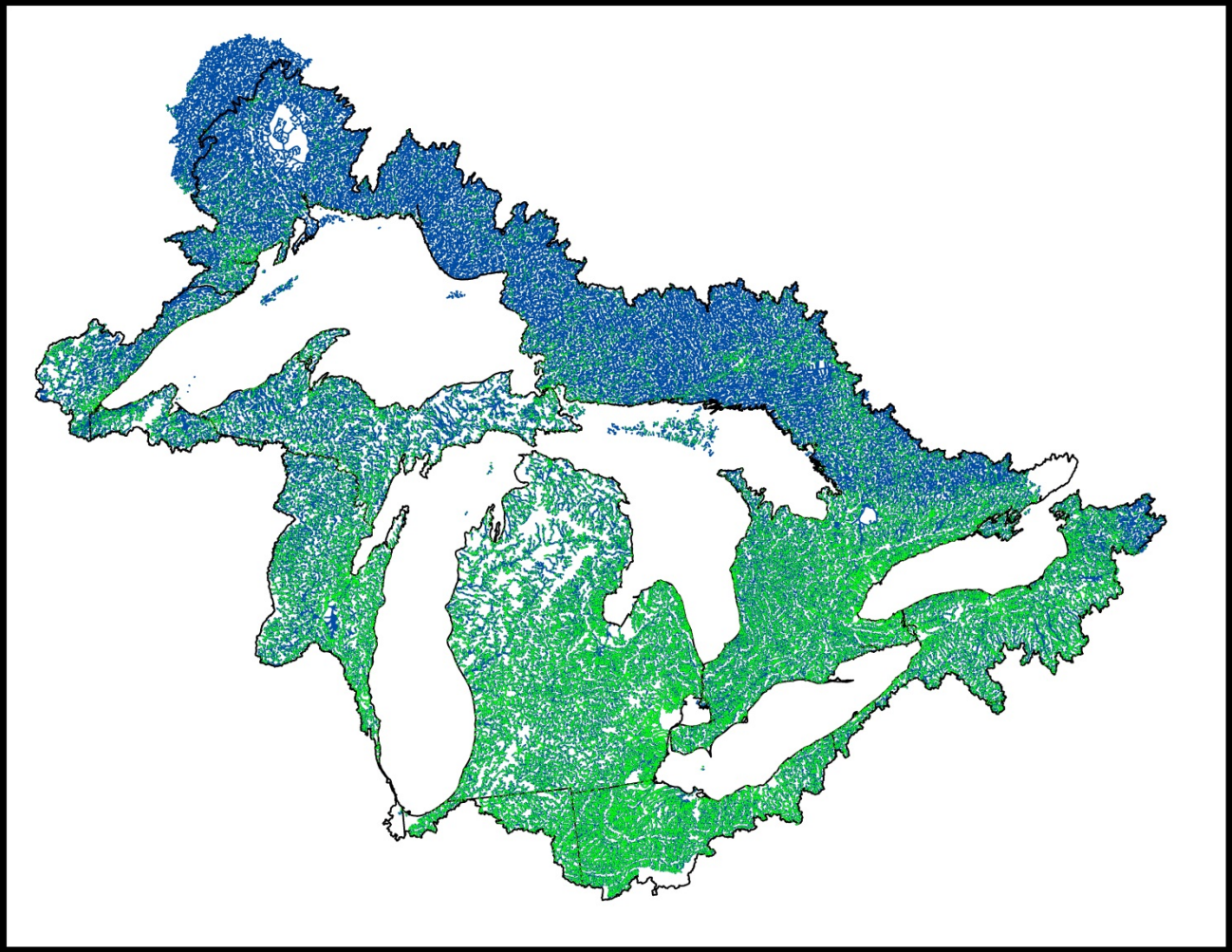
- Hydropower, irrigation, recreation
- Transportation
- Invasive species
- Contaminated sediments

Pressures to remove

- Restore fish migrations
- Human safety
- Cost of upkeep

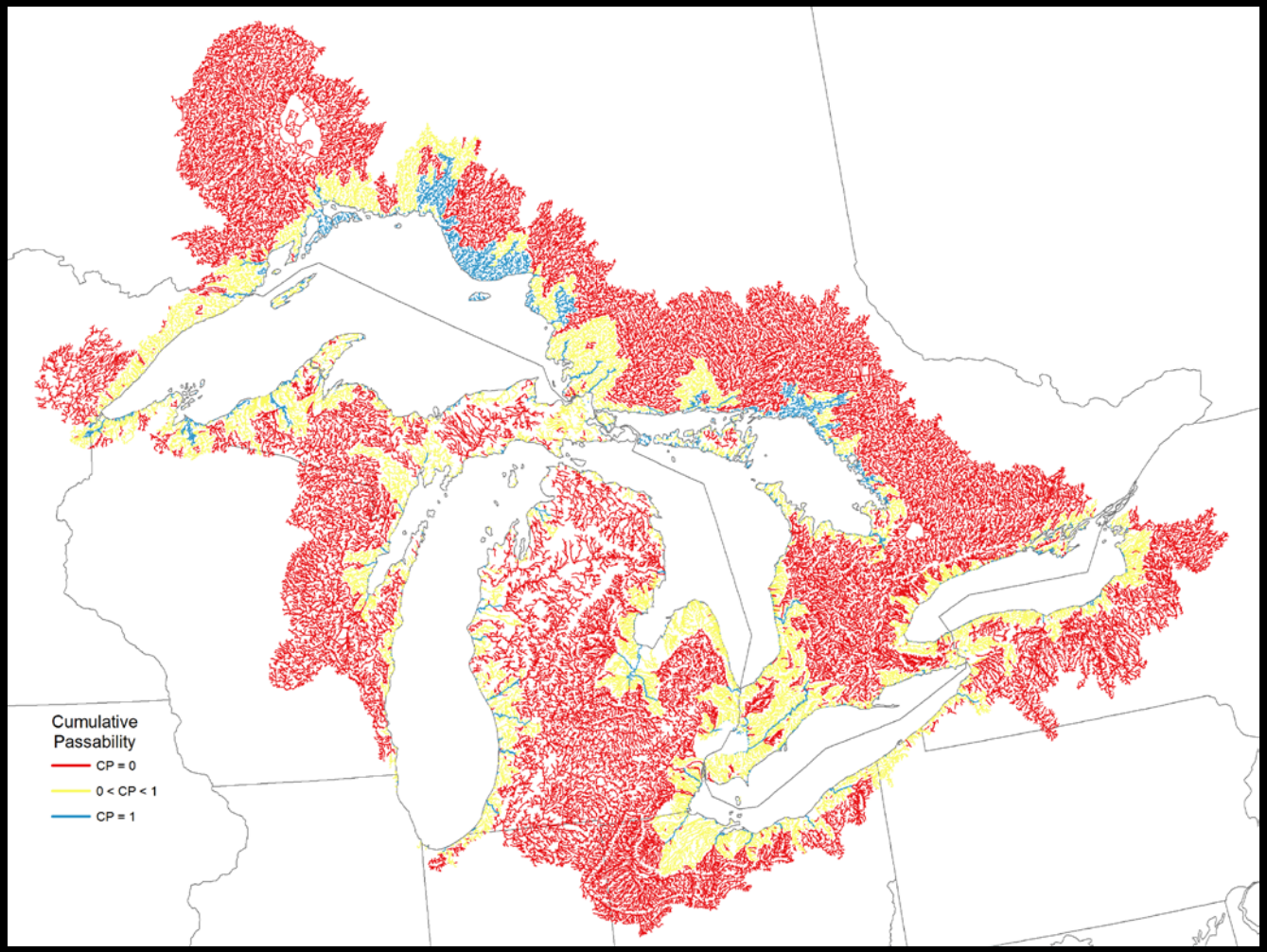
James Snitgen , Duck Creak Dams, WI

Dams and road crossings



Januchowski-Hartley et al. 2013

Barrier impact

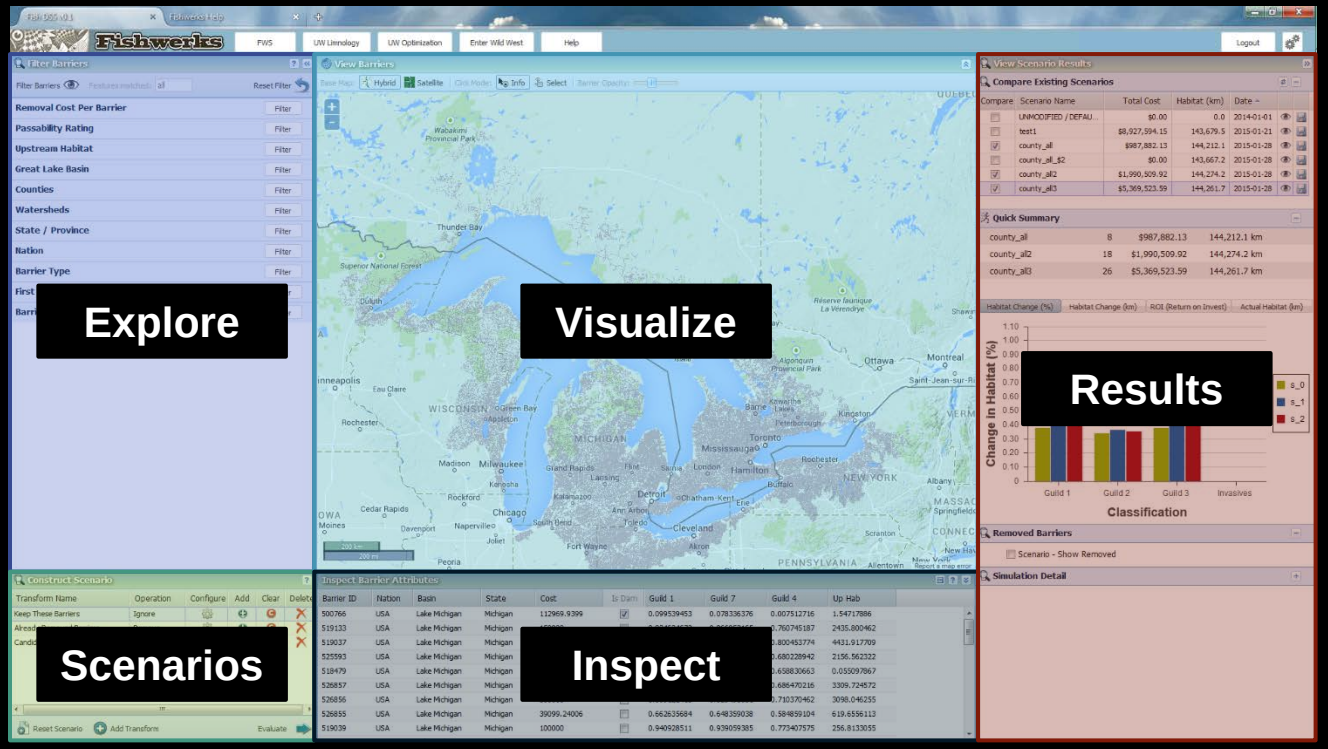


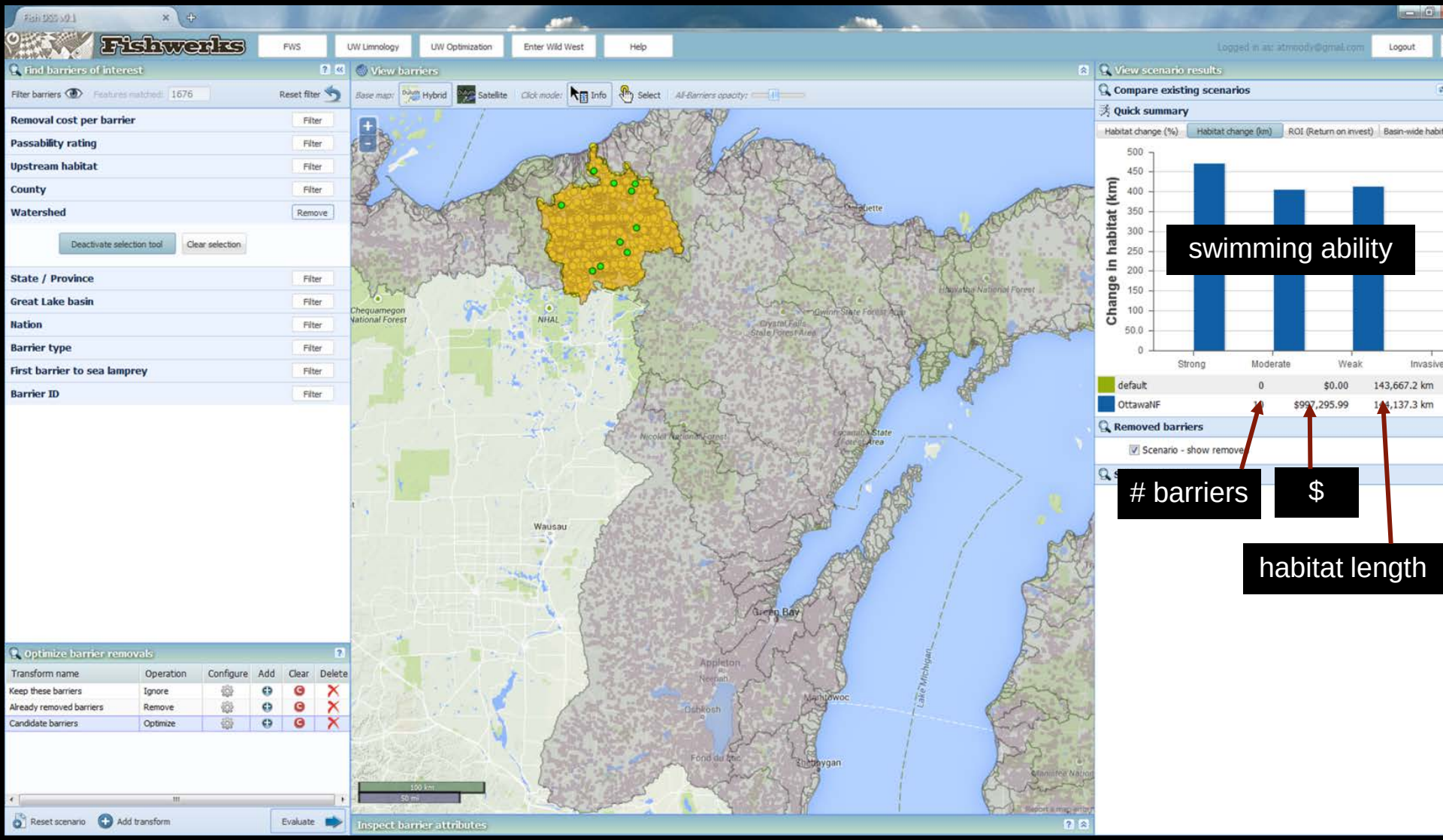
Januchowski-Hartley et al. 2013

Online decision support tool

1. visualize barriers
2. user-submitted edits
3. optimization of barrier removal

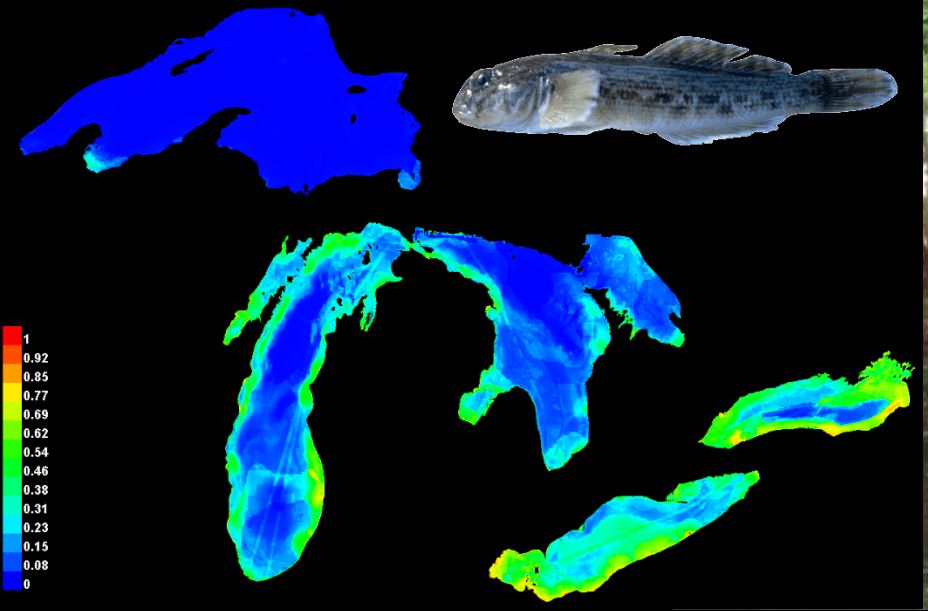
greatlakesconnectivity.org



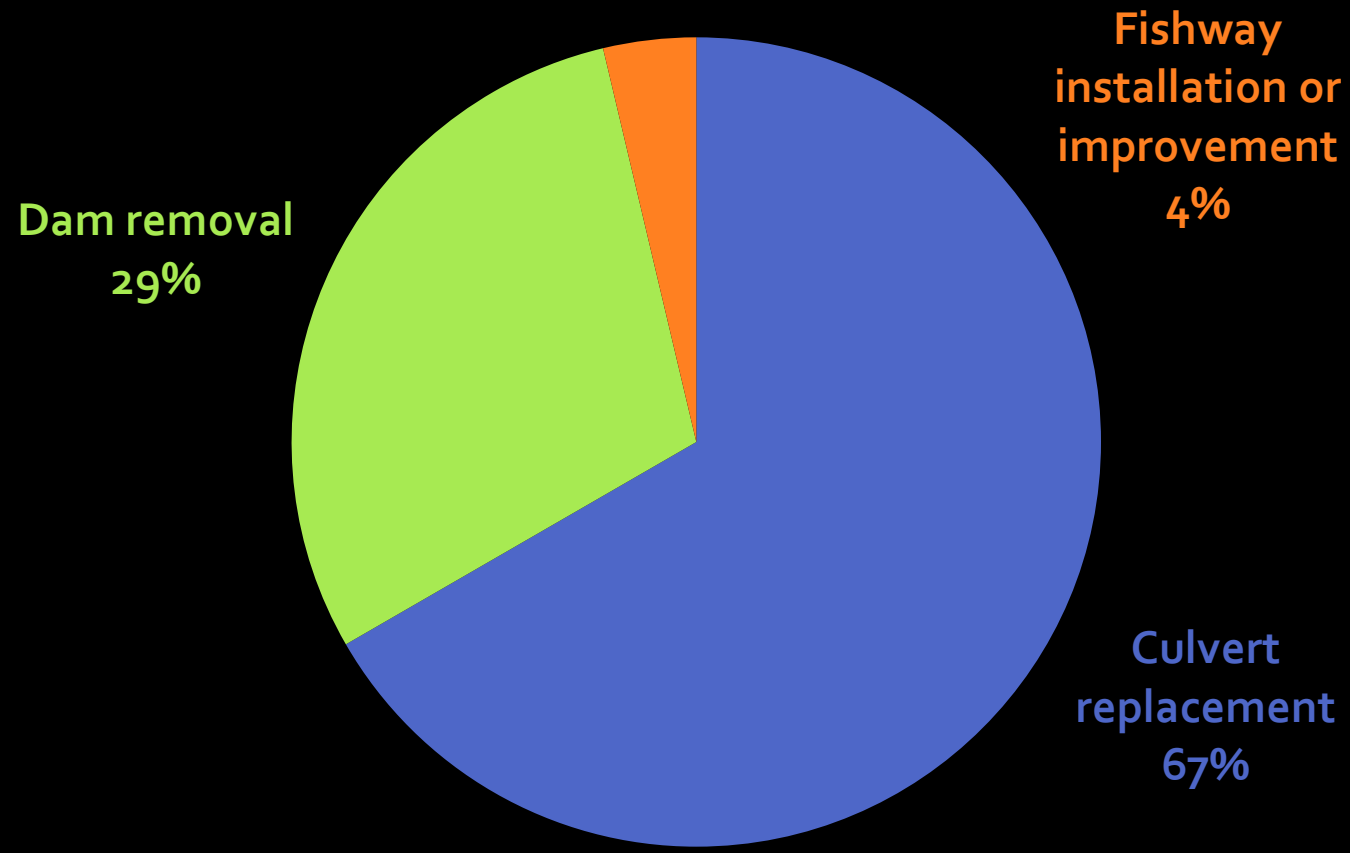

Fishwerks
FWS
UW Limnology
UW Optimization
Enter Wild West
Help
Logout
Find barriers of interest
Filter barriers
Features matched: 1676
Reset filter
Removal cost per barrier
Passability rating
Upstream habitat
County
Watershed
Filter
Remove
Deactivate selection tool
Clear selection
State / Province
Great Lake basin
Nation
Barrier type
First barrier to sea lamprey
Barrier ID
Optimize barrier removals
Transform name
Operation
Configure
Add
Clear
Delete
Keep these barriers
Ignore
Already removed barriers
Remove
Candidate barriers
Optimize
Reset scenario
Add transform
Evaluate
View barriers
Base map:
Hybrid
Satellite
Click mode:
Info
Select
All-Barriers opacity:
Chequamegon National Forest
NHAL
Nicolet National Forest
Wausau
Green Bay
Appleton
Neenah
Oshkosh
Manitowoc
Sheboygan
Fond du Lac
Lake Michigan
100 km
50 mi
Inspect barrier attributes
View scenario results
Compare existing scenarios
Quick summary
Habitat change (%)
Habitat change (km)
ROI (Return on invest)
Change in habitat (km)
500
450
400
350
300
250
200
150
100
50.0
0
Strong
Moderate
Weak
Invasive
swimming ability
default
0
$0.00
143,667.2 km
OttawaNF
$997,295.99
144,137.3 km
Removed barriers
Scenario - show remove
barriers
$
habitat length

Improvements

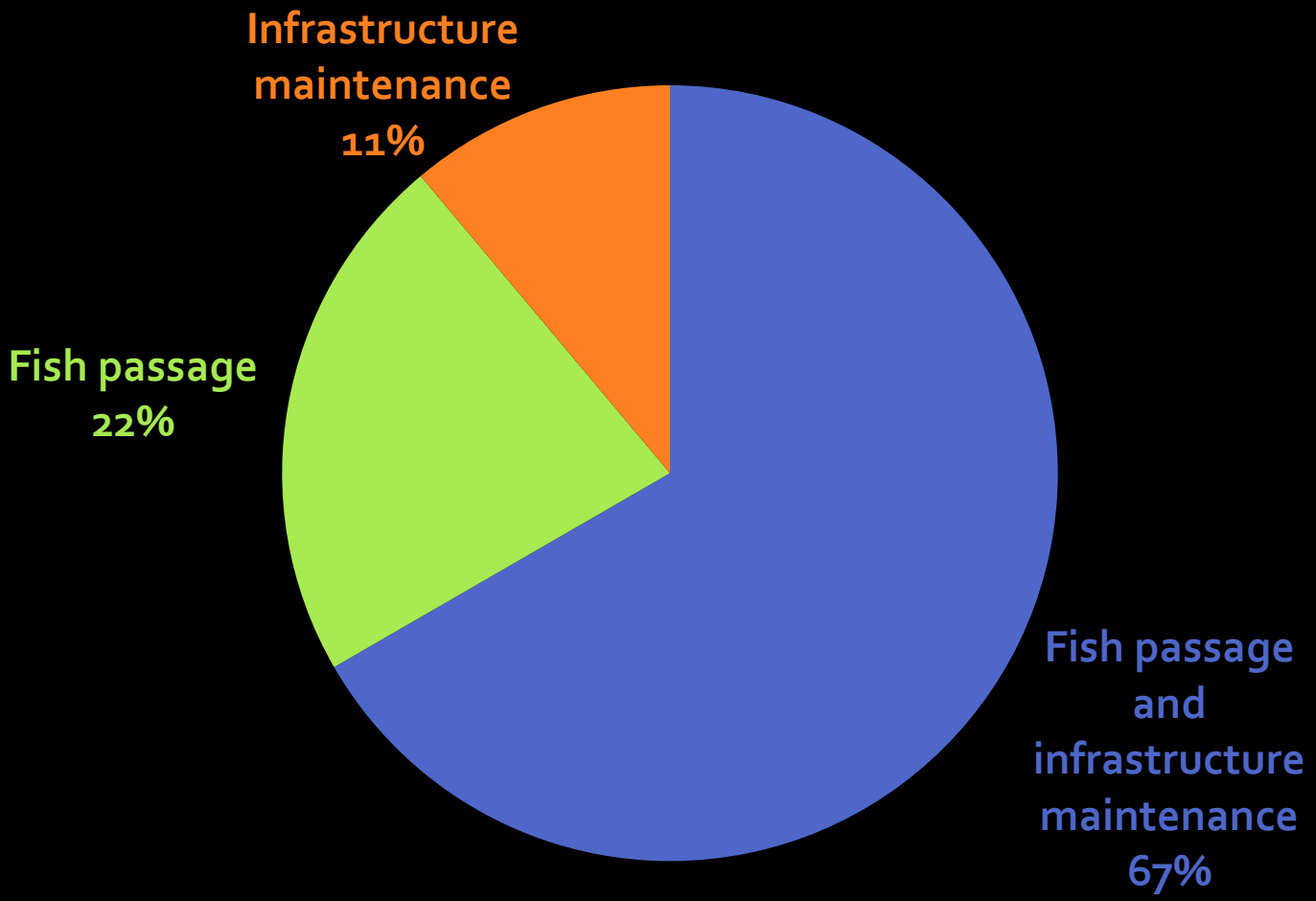
1. barrier database
2. native species ranges
3. stressor map
4. round goby invasion potential



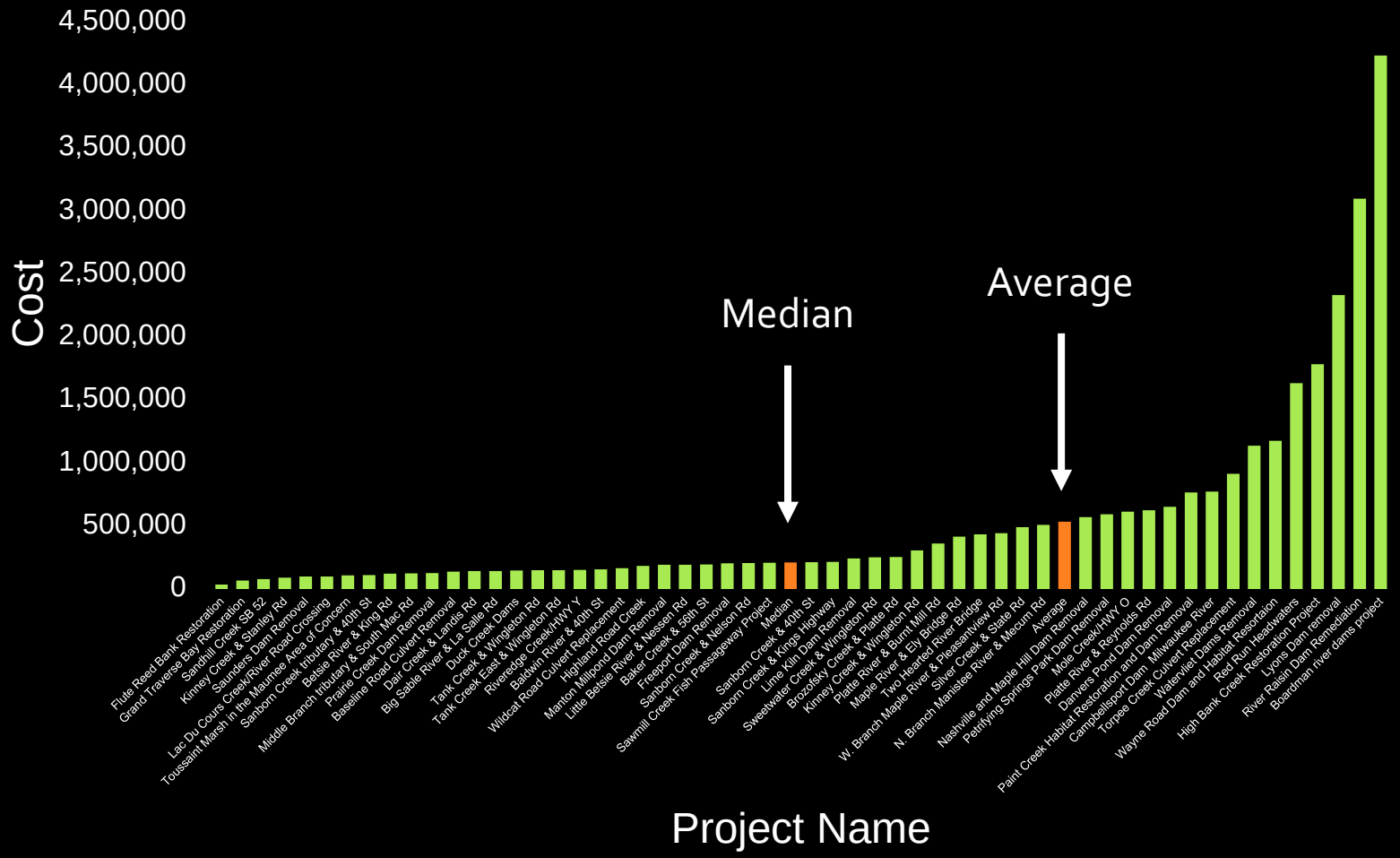
Barrier removal dataset - what?



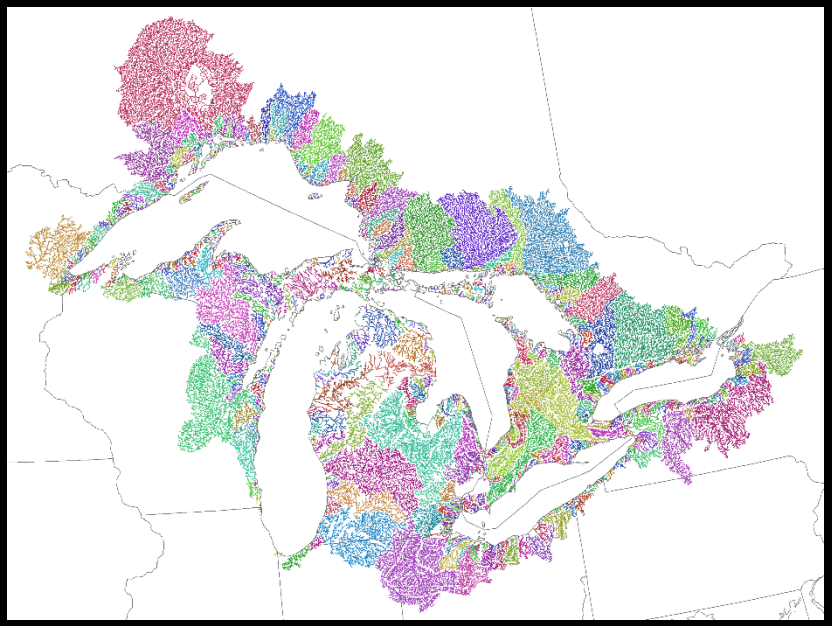
Barrier removal dataset - why?



Barrier removal database - $$$?



Native species distributions



- 2881 tributaries
- 61 species
- average 3.5 species per tributary
- median 0 (0-50)

Most widely distributed

Catostomus commersonii
White sucker (29%)

Oncorhynchus mykiss
Steelhead (19%)

Rhinichthys cataractae
Longnose dace (17%)

Rules of thumb

not proportional to no. barriers

prioritize barriers with lots of upstream habitat

overall, so much habitat is inaccessible to fish - many opportunities!

Thanks

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GLEAM Team