

A Primer on Inland Fisheries Management in Wisconsin



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Management of Fisheries and Aquatic Resources

- Science-based Management
- Optimum Use of Sport and Commercial Resources - Healthy Environment
- Both Nongame and Game Fish
- Work with Partners and Plan
- Financing through User Fees – When Beneficiaries are Broad Seek Other Fees
- Fish Management Shall Uphold the Public Trust Doctrine
- Acquisition and Development of Public Access to Lakes and Streams
- Special Management of Wilderness Lakes and Streams
- Manage Sportfishing such that:
 - Protection of Populations
 - Fishing effort and Exploitation can sustain quality Fisheries
 - Social, biological and economic values of all Recreational fishing recognized;
 - User Sense of Responsibility is shared and Conflicts Minimized,
 - Future Generations

Fish Management Tools

- Land Acquisition and Development
- Habitat Protection and Improvement
- Surveys and Research
- Propagation and Stocking
- Population Manipulation
- Sport and Commercial Fishing Regulations
- Trout Stream Classification

Partners and Planning
Land Acquisition
Habitat Protection and Improvement
Trout Stream Classification
Future Threats

Trout



Optimum=55.4°-60.8°
Upper Thermal Limit (MWAT)=72°-74°
Upper Thermal Limit (MDAT)=75 °

Planning and Partners

Brook Trout



Brown Trout



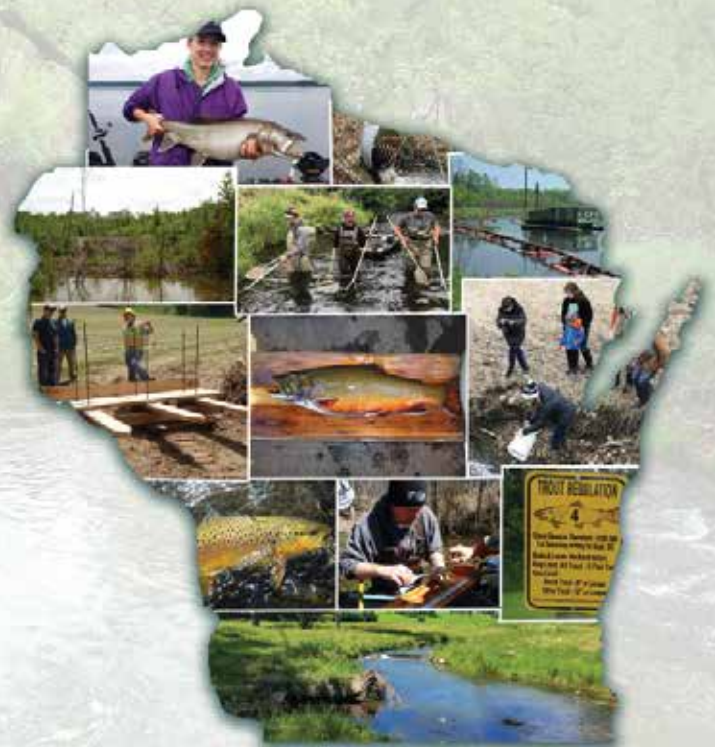
Rainbow Trout



Lake Trout



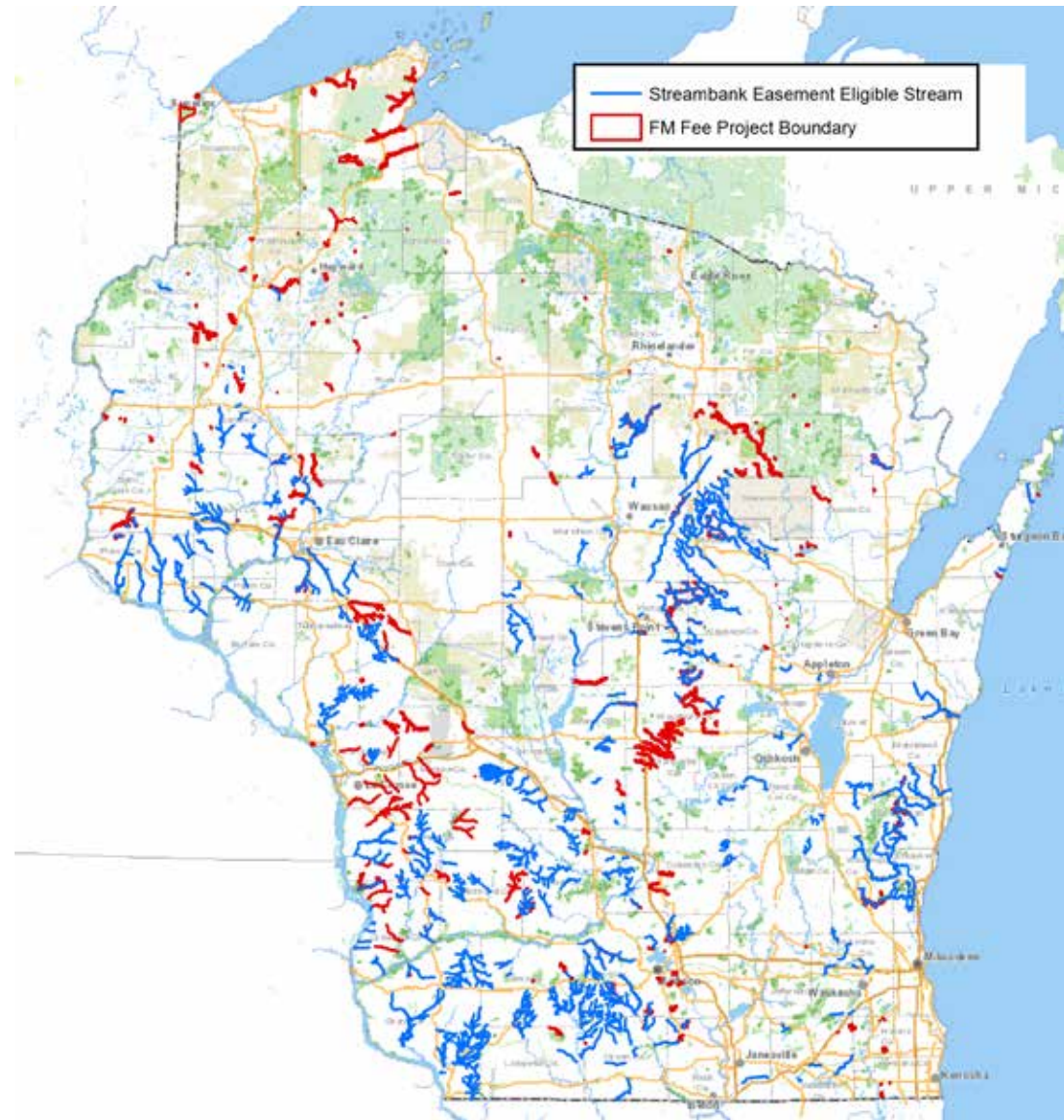
Wisconsin Inland Trout Management Plan



Wisconsin Department of Natural Resources
Bureau of Fisheries Management
March 2019

Land Acquisition

- State Fishery Areas
- Remnant Fishery Habitat
- Statewide Habitat (Fishery)
- Streambank Protection Program
- Statewide Public Access Program
- Spring Pond Acquisition
- Fish Hatcheries



Accomplishments

July 1, 1989 - June 30, 2018

All streams– 276 Miles

Classified Trout Water – 202 miles

Smallmouth Bass Water – 29 miles

Streambank Protection Program

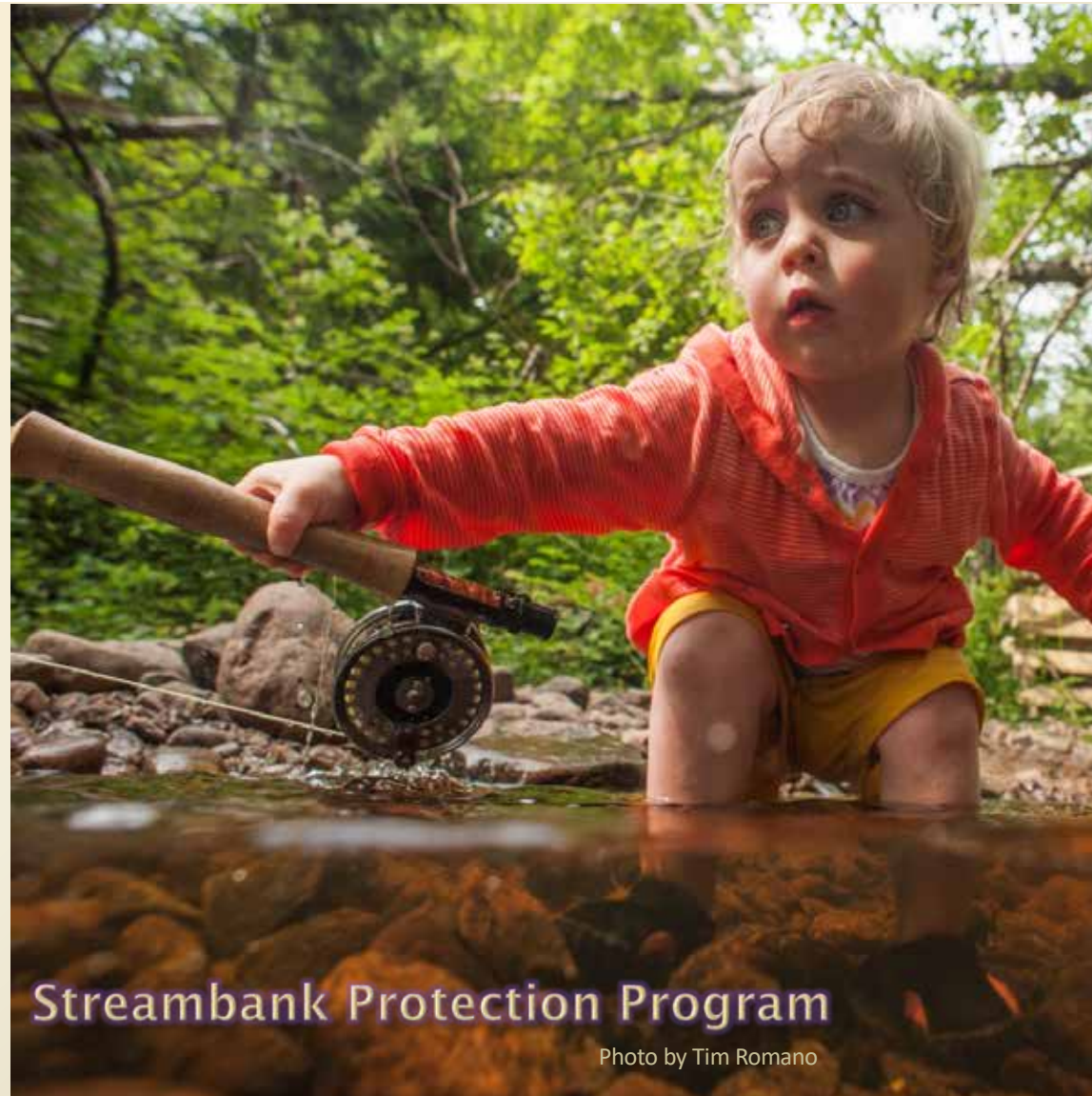
Providing angling access and protecting habitat
along premier streams in our State

Photo by Tim Romano



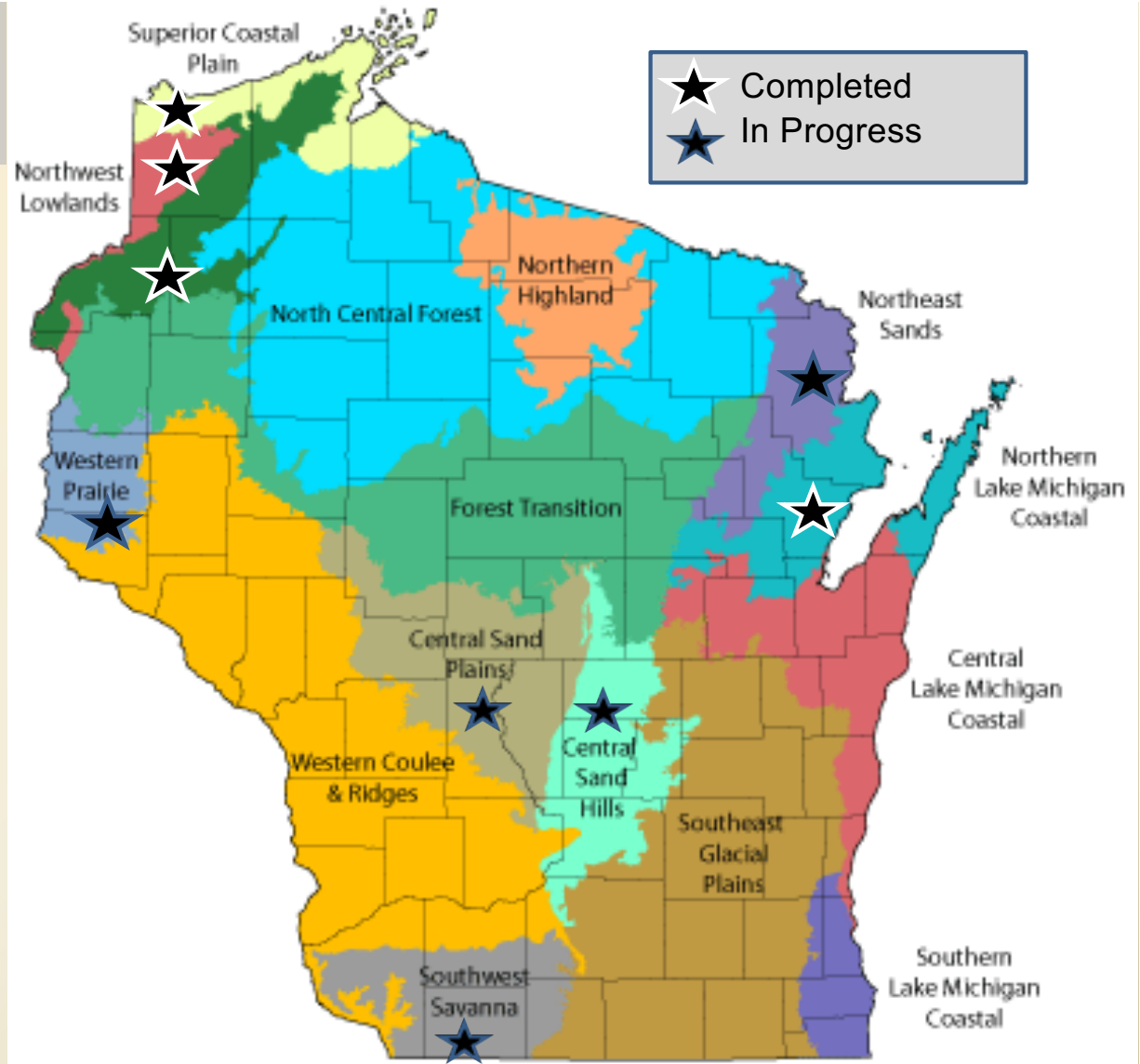
DNR buys rights to:

- 1) Manage vegetation along streambank
 - 2) Manage instream habitat
 - 3) Provide public access for fishing and hiking
- Easements are perpetual
 - Easement area is at least 66 feet from the stream bank

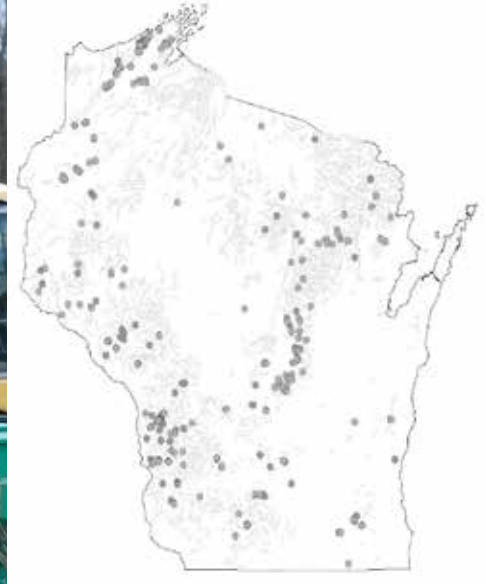


Master Planning

Resource Management
Recreational Use
Facilities and Infrastructure
Land Acquisition

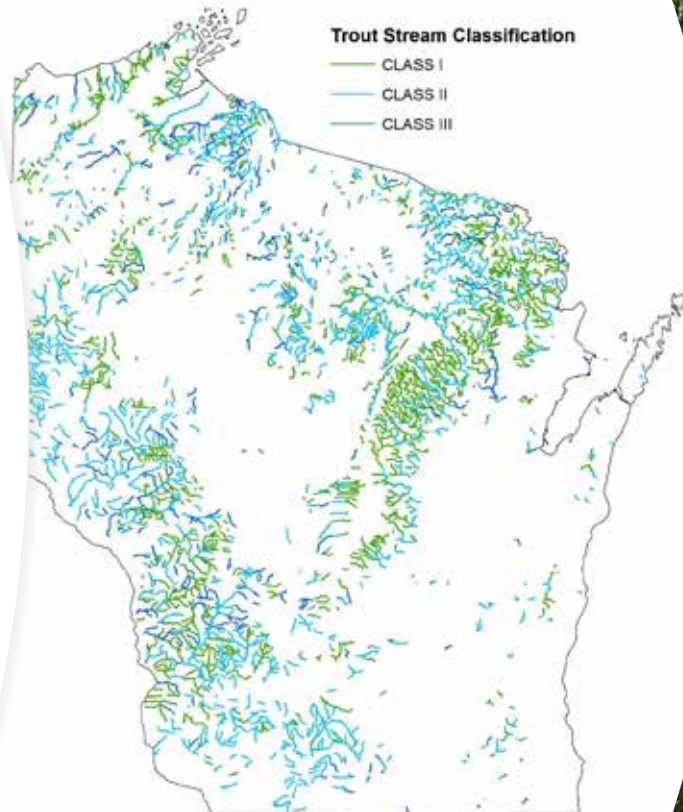


Habitat Protection and Improvement



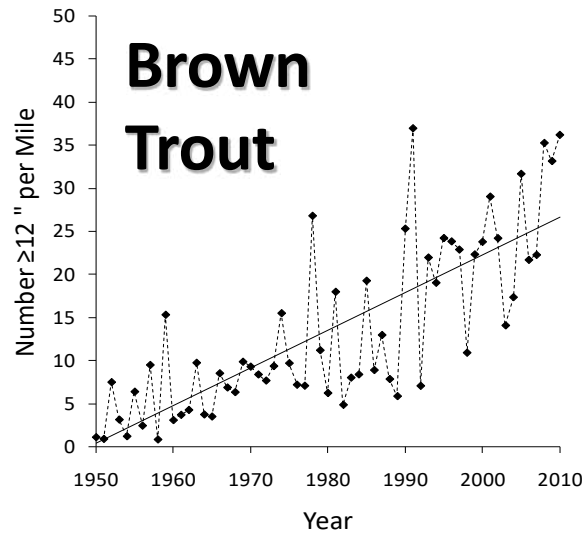
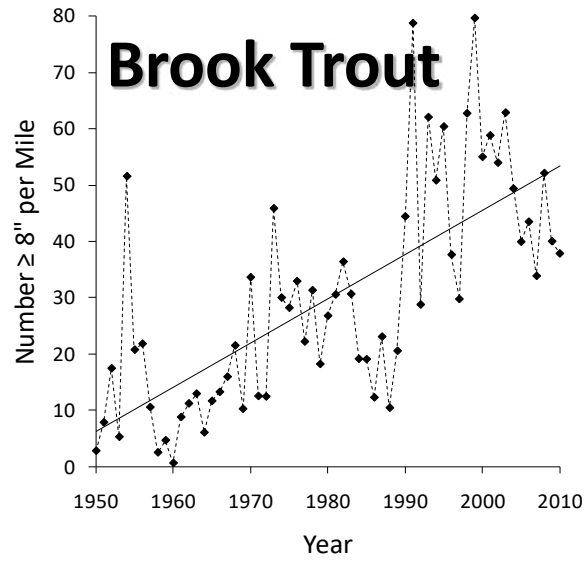
Trout Stream Classification; Special Protection

- Water quality standards for wetlands
- Groundwater quantity protection
- Placement of structures, dredging and similar activities
- WPDES Permitting



The Good Ole Days are Right Now

Partners, Planning & \$
Land Acquisition
Habitat Protection & Improvement
Trout Classification



Future Threats: Adaptation Strategies in the Face of Climate Change



¹ Bureau of Fisheries Management

² Bureau of Science Services

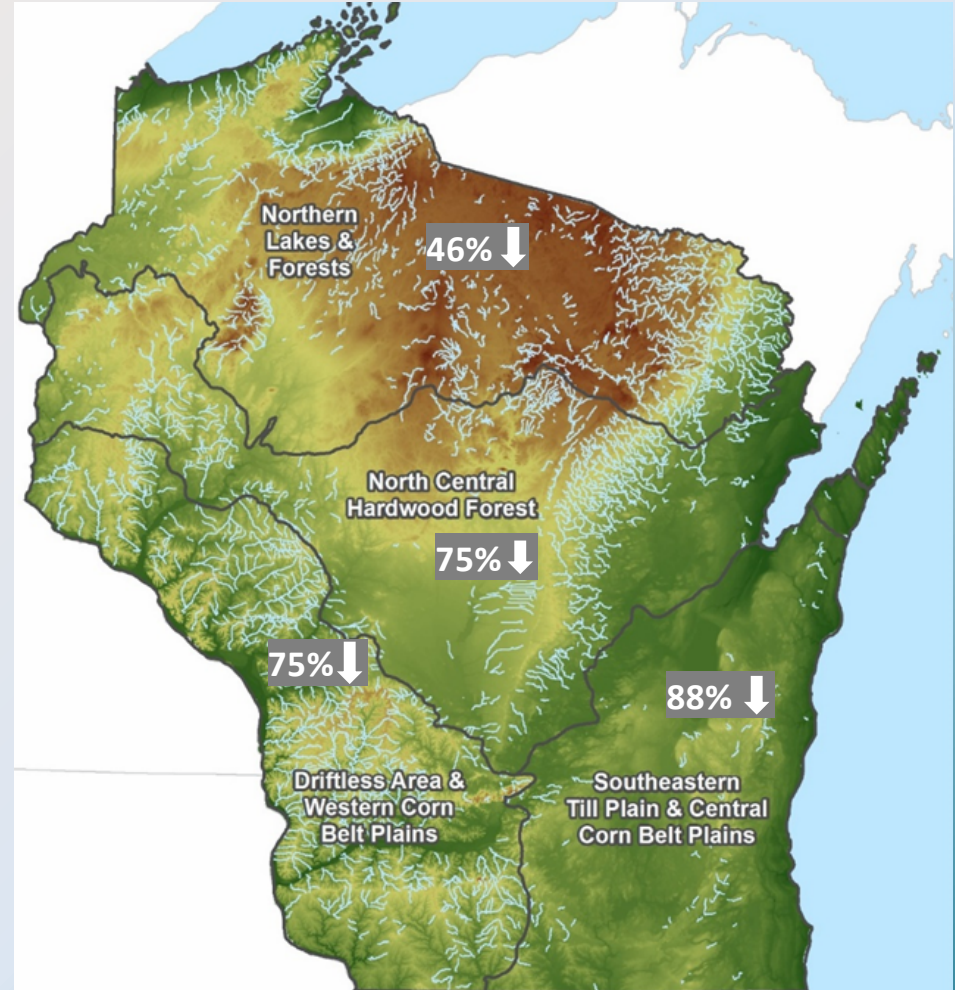
³ University of Wisconsin - Madison

Paul Cunningham¹, Joanna Griffin¹, Matt Mitro², and John Lyons³

Climate Effects on Future Brook Trout Distribution (2046-2065)

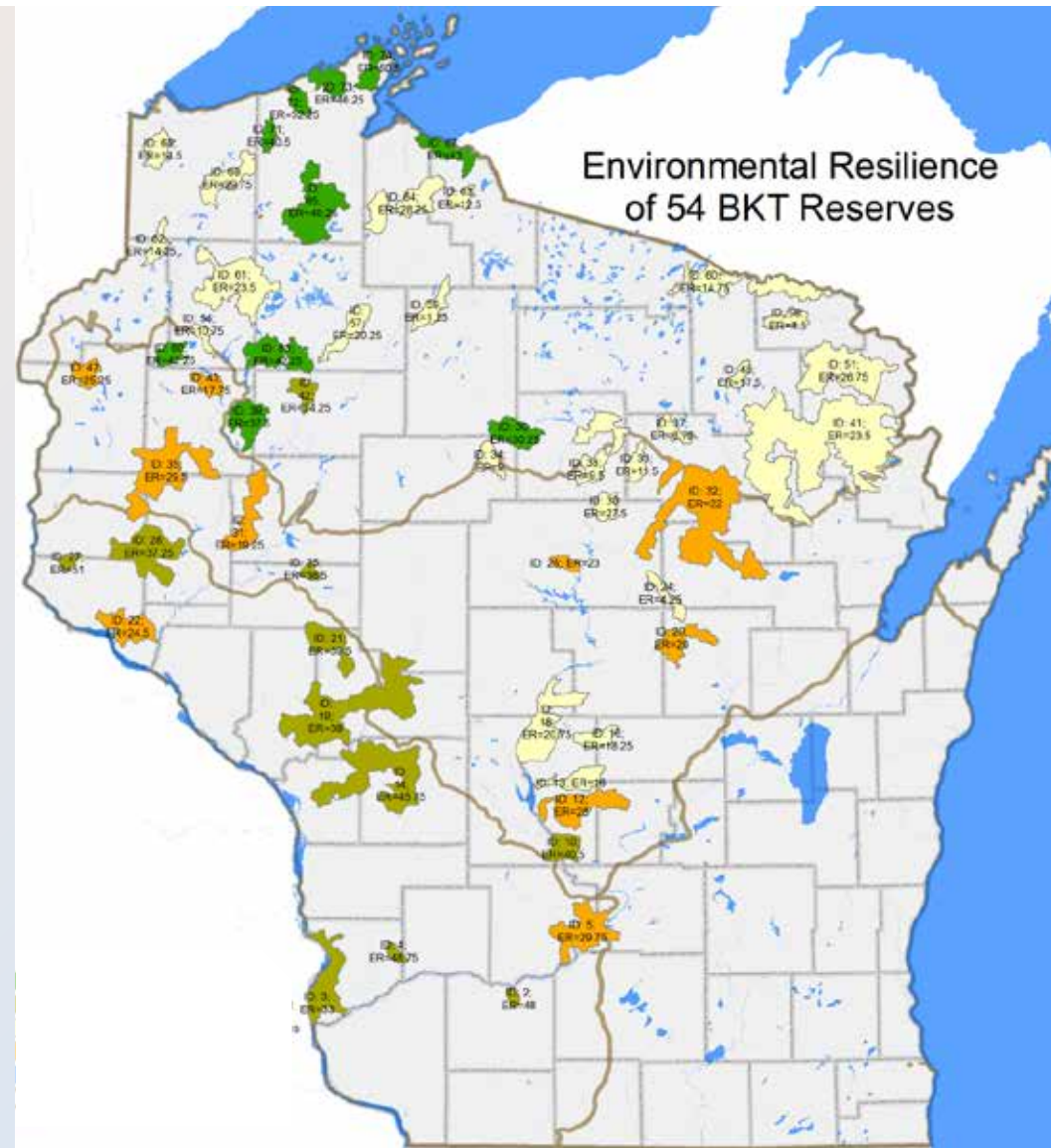


Ecoregion	Current Brook Trout Habitat (miles)	Future Brook Trout Habitat (Miles; 2046-2065)	Habitat Loss
Northern Lake and Forest	5,506	2,984	46%
Northern Central Hardwood Forest	3,720	928	75%
Driftless	9,167	2,302	75%
Southeast Glacial Till Plain	222	26	88%



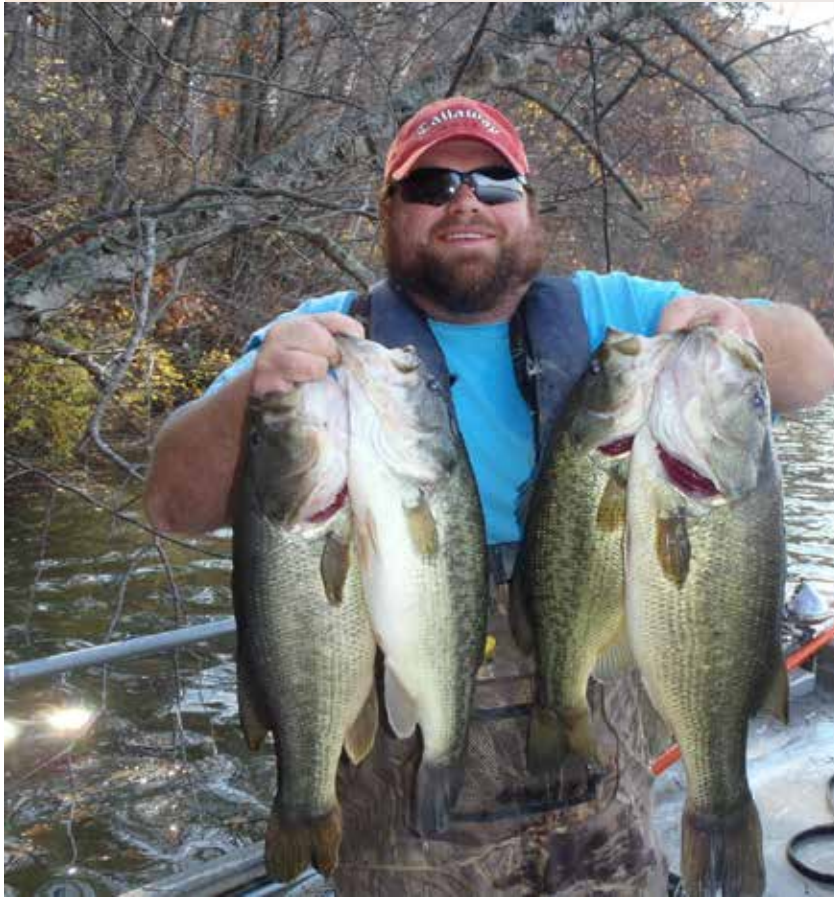
Brook Trout Reserves

“A selection of some of the places in Wisconsin where brook trout have the best chance of enduring the effects of climate change and other environmental perturbations. The designation of reserves enables the WDNR and its partners to focus their specific tools to ensure that brook trout remain viable in the state”.



Partners
Habitat Protection & Rehabilitation
Population Manipulation

Largemouth Bass and Bluegill





Habitat Rehabilitation



Building Community Capacity for Habitat Restoration

A Fisheries Perspective



FISH STICKS

Create fish and wildlife habitat.

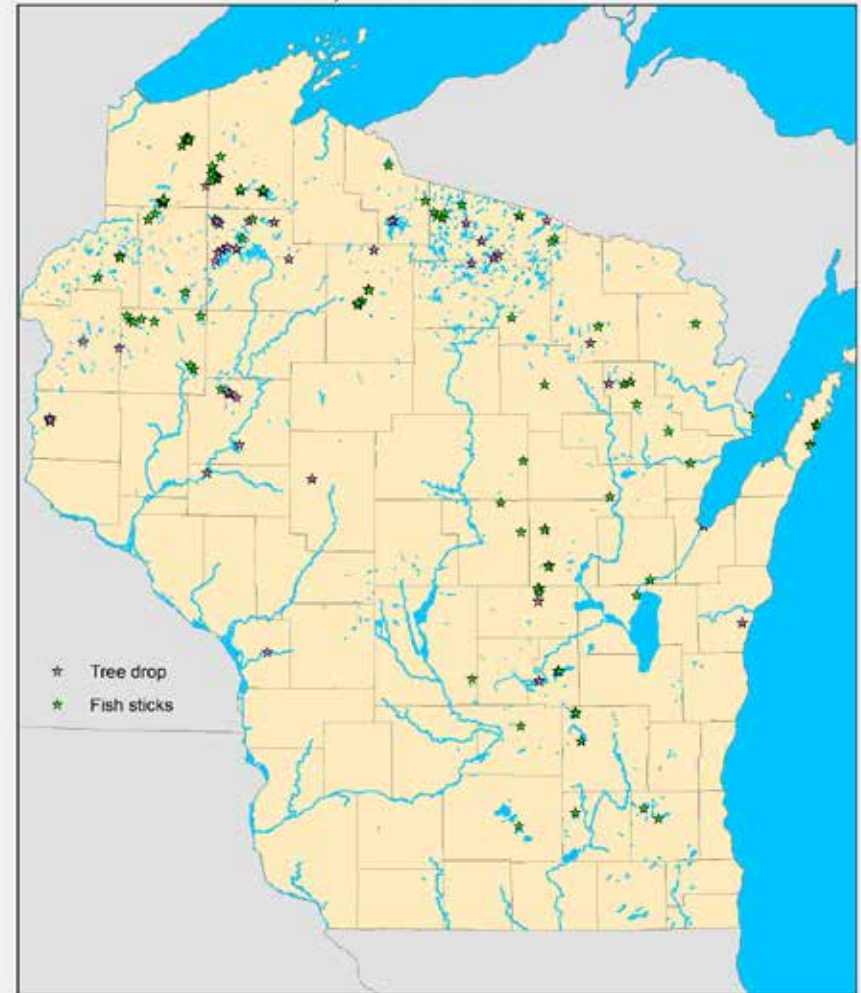
Fish Sticks are feeding, breeding, and nesting areas for all sorts of critters – from fish to song birds. They can also prevent bank erosion – protecting lakeshore properties and your lake.

LEARN MORE

- Healthy Lakes Grants
- Streamlined General Permits

Fish Stick & Tree Drop Habitat Projects

138 Fish Stick and 72 Tree Drop
Projects from 2007-2018



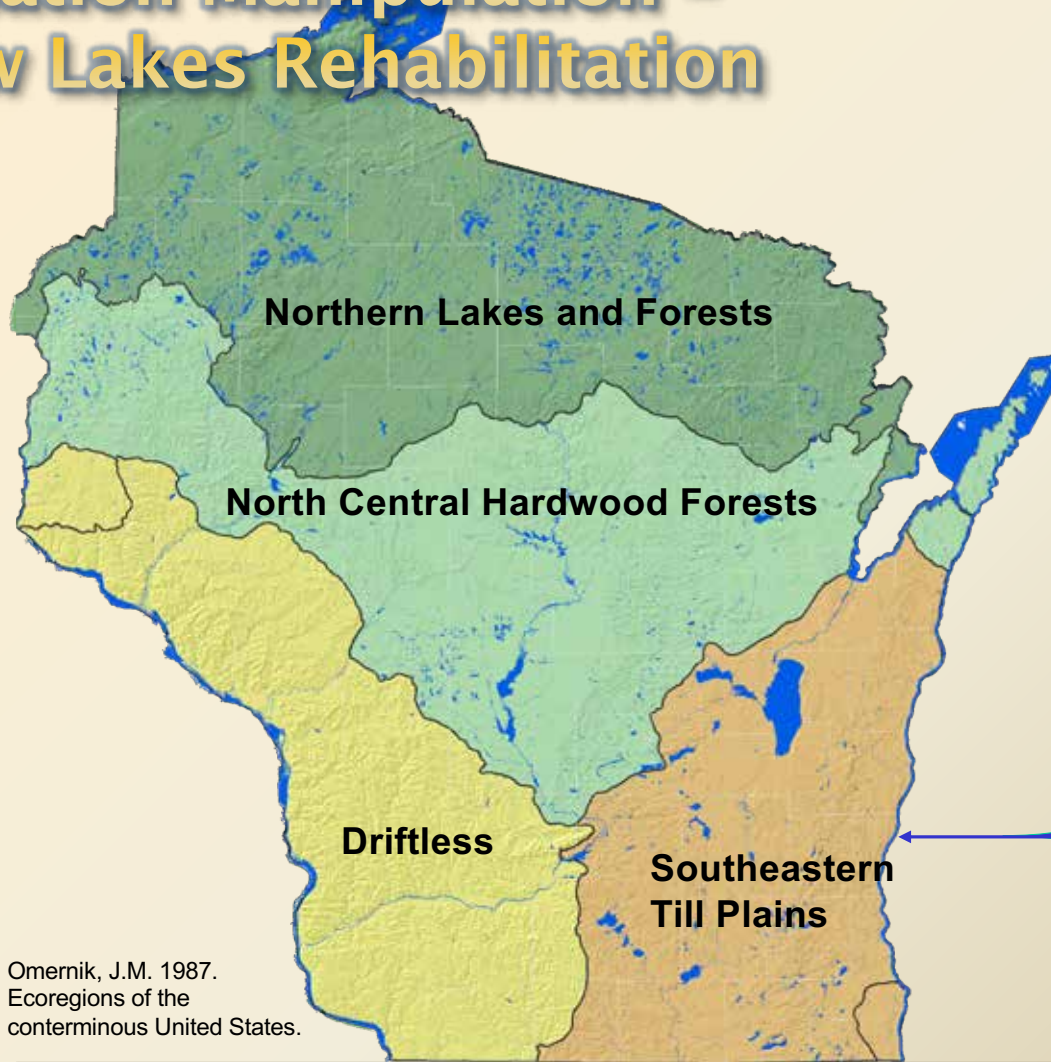
Habitat Protection

Critical Habitat Designation

- Plant Beds with High Species Richness
- Bulrush Beds
- Lakeshores with Riparian Wetlands
- Wetland Islands
- Tributary Areas
- Nearshores with Abundant Woody Habitat
- Fish Spawning Habitat (Mue, Wae, SMB)



Population Manipulation – Shallow Lakes Rehabilitation



Omernik, J.M. 1987.
Ecoregions of the
conterminous United States.

The Big C's of Fisheries Stressors



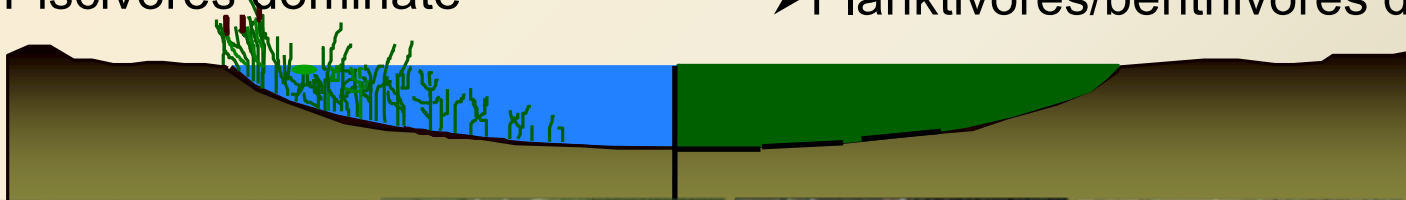
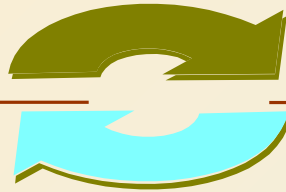
Stable States in Shallow Lakes

Clear State

- clear water
- low algal biomass
- high macrophyte biomass
- Piscivores dominate

Turbid State

- murky water
- high algal biomass
- sparse macrophytes
- Planktivores/benthivores dominate



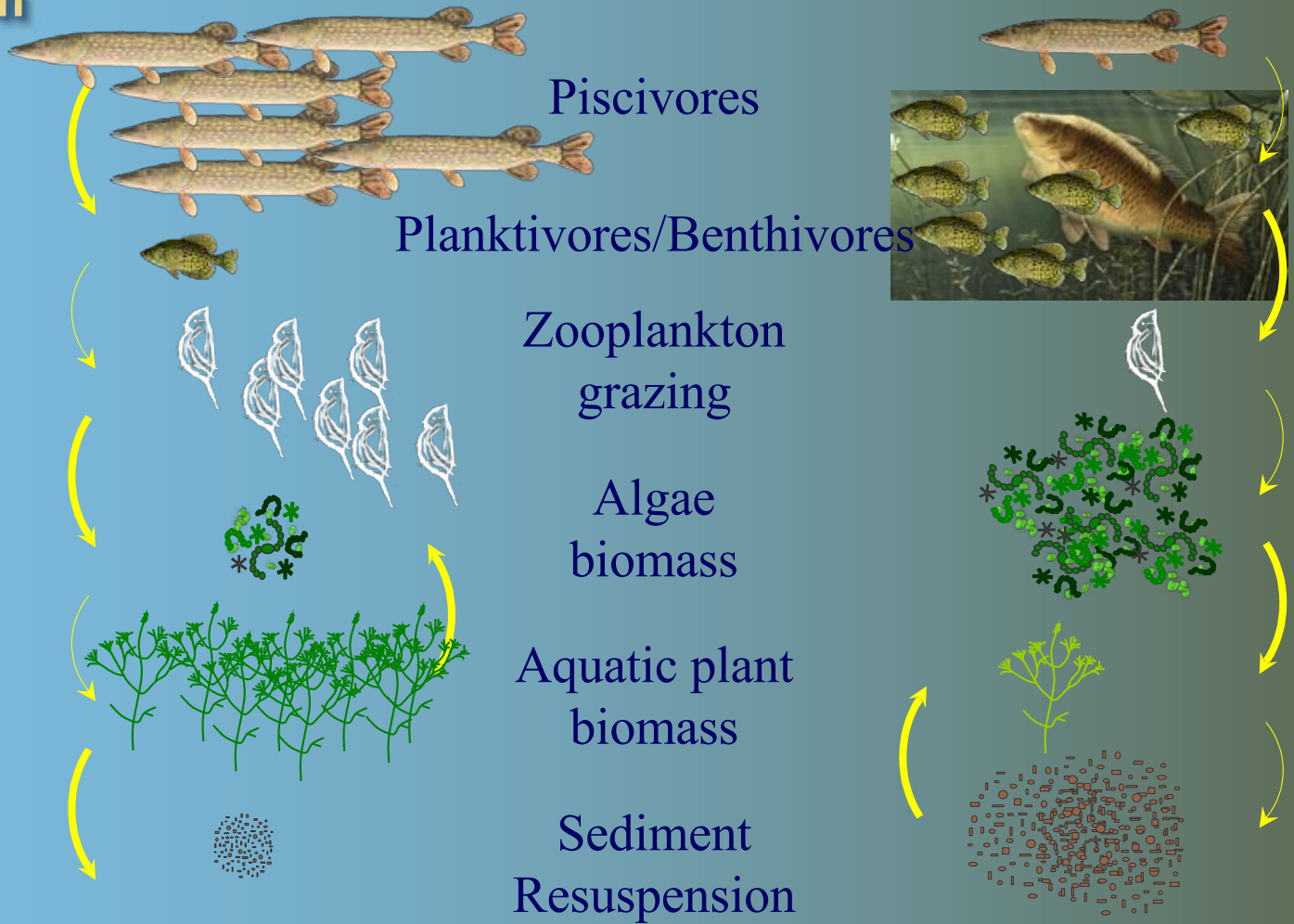
Population Manipulation – Aquatic Invasive Species



Population Manipulation

Clear-water State

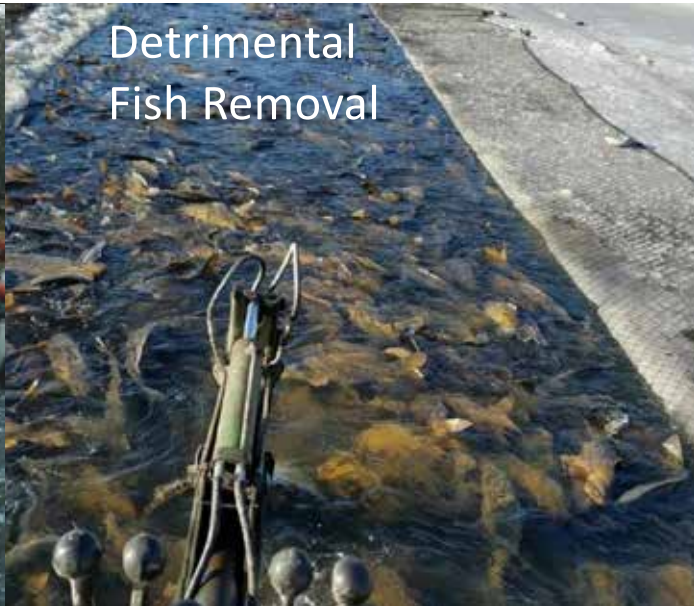
Turbid-water State



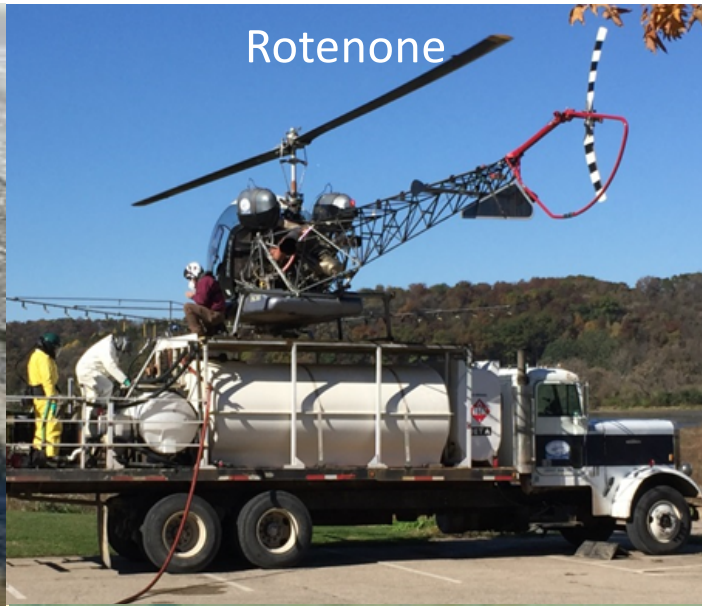
Drawdown



Detrimental
Fish Removal



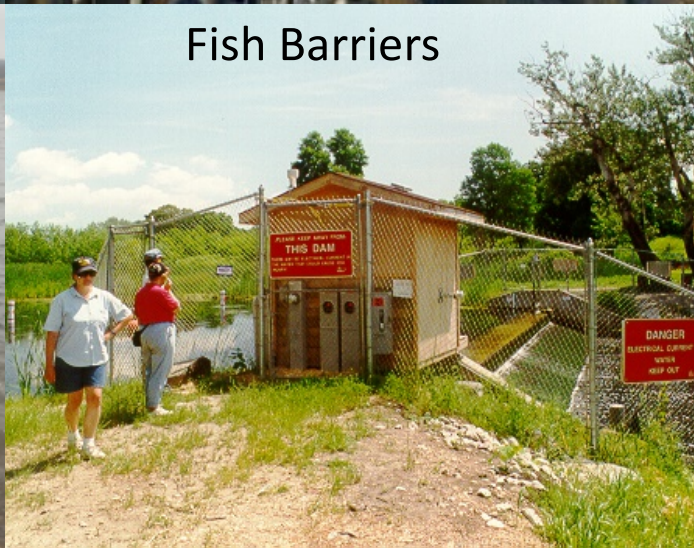
Rotenone



Fish Stocking



Fish Barriers



Winter Aeration



Muskellunge



Stocking
Sportfish Regulations
Social Values of Sportfishing Recognized

Northern Pike



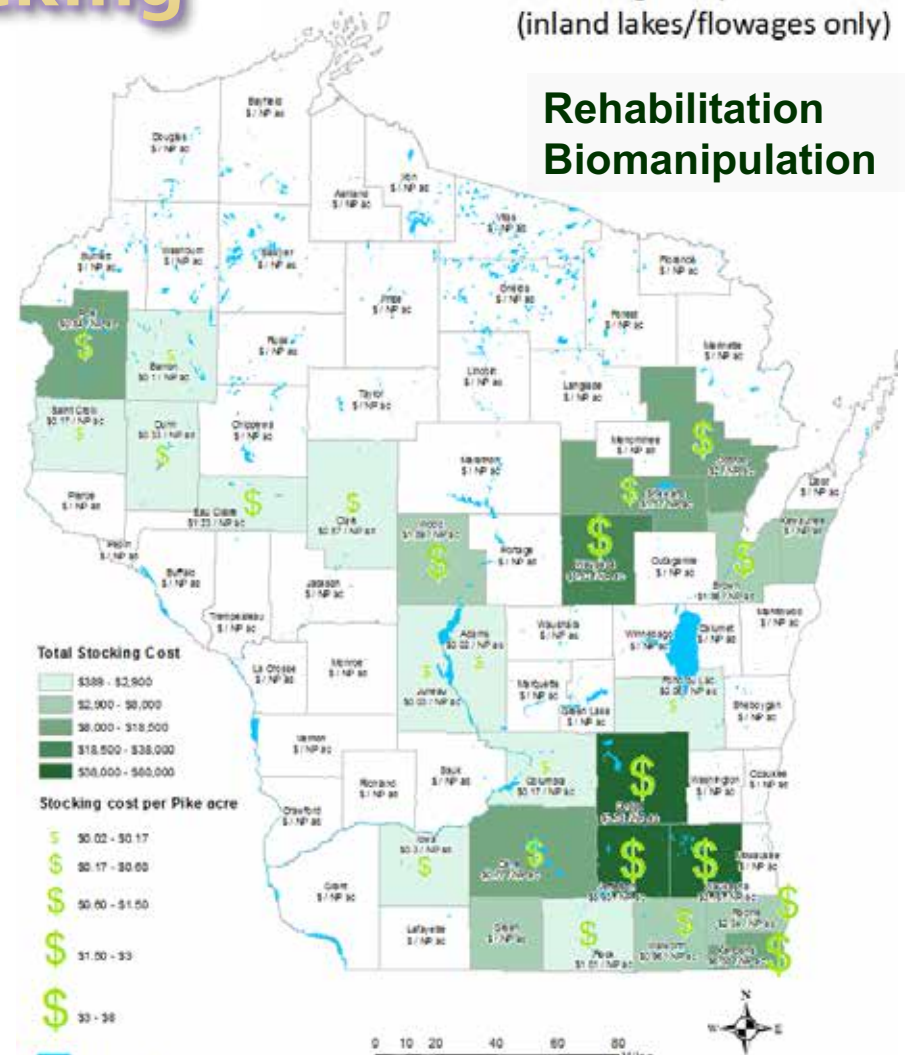
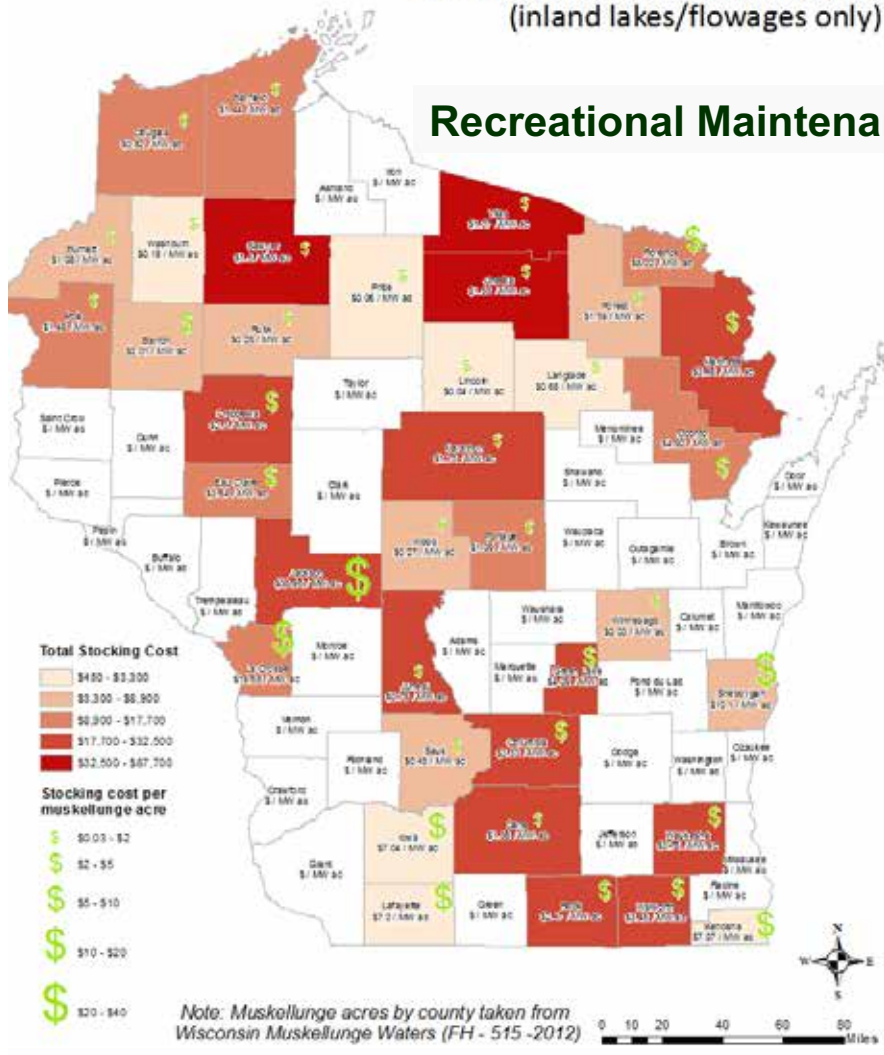
Stocking

Muskellunge stocking cost by county and stocking cost per muskellunge acre (inland lakes/flowages only)

Northern Pike stocking cost by county and stocking cost per Pike acre (inland lakes/flowages only)

Recreational Maintenance

Rehabilitation
Biomanipulation



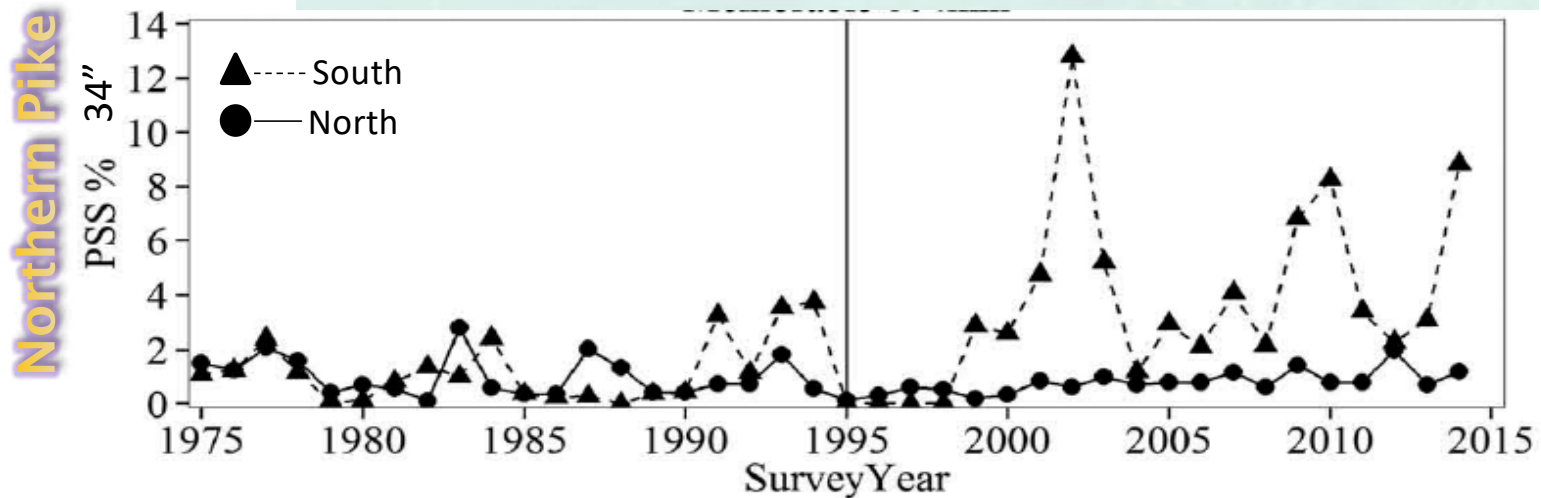
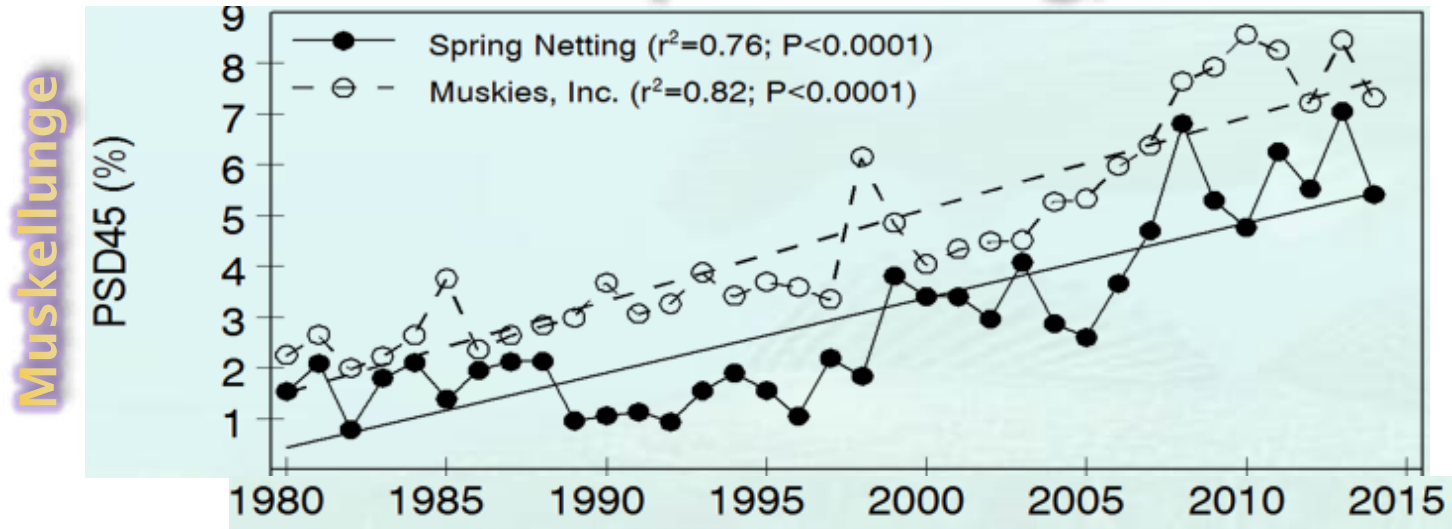
Social Values of Sportfishing

Muskellunge – Trophy

Northern Pike – Diversity (consumptive, quality, and trophy)

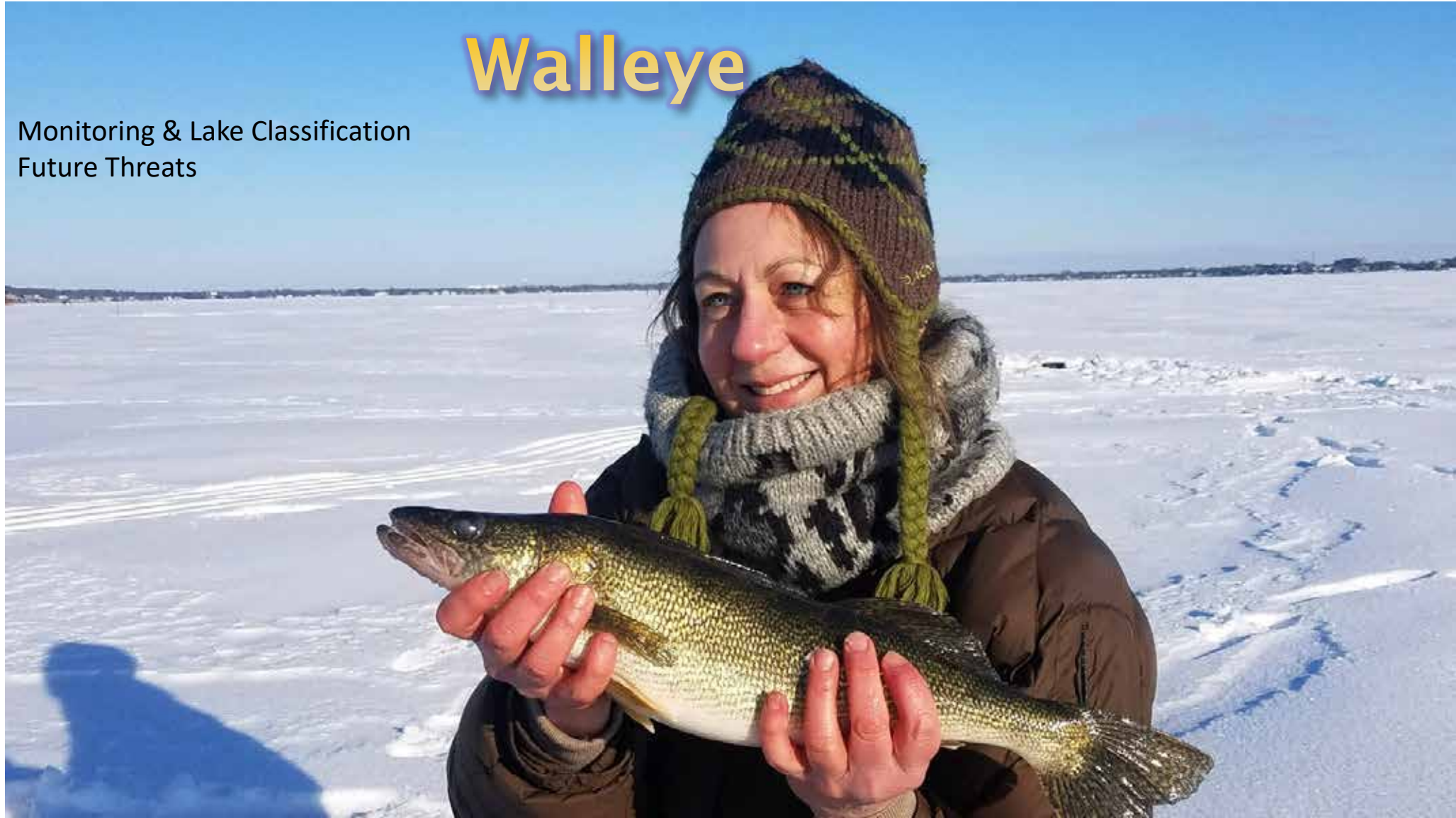
Species	<i>Fishery, Population, or Ecosystem-level Objective</i>			
	Consumptive Opportunity	Quality Opportunity	Memorable Opportunity	Trophy Opportunity or Biomanipulation
	Utilize self-sustained, high density, slow-growing populations; Maximize yield; Reduce predation/ Competition	Sustain/Increase Densities; Maintain current conditions	Maintain/increase density of moderate/large adults; improve reproduction; Increase predation beyond current conditions	Increase survival/density of large/old individuals; Maximize predation on smaller fishes
Northern Pike	No minimum length limit 5/day	26" minimum length 2/day 25-35" protected slot 2/day or 5/day	32" minimum length limit 1/day	40" minimum length 1/day
Muskellunge	No minimum length limit*	40" minimum	50" minimum	

Social Values of Sportfishing, The Esocids



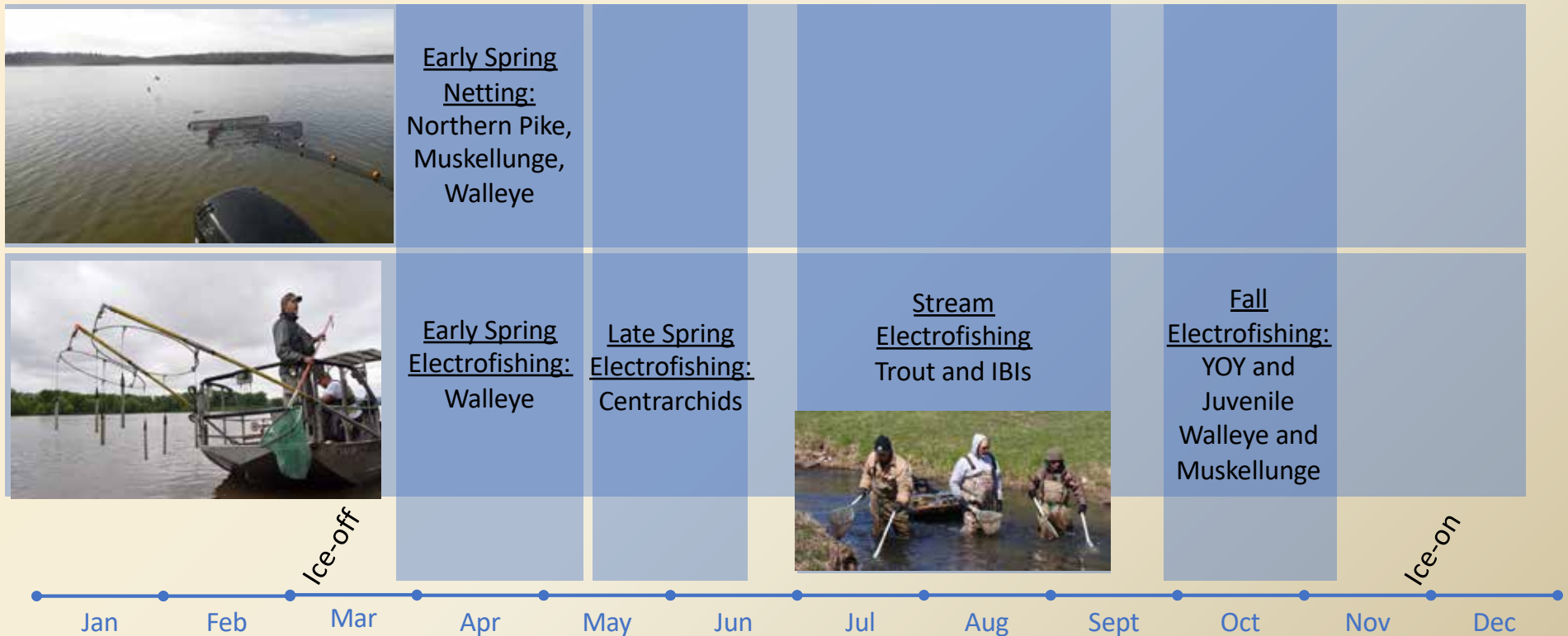
Walleye

Monitoring & Lake Classification
Future Threats



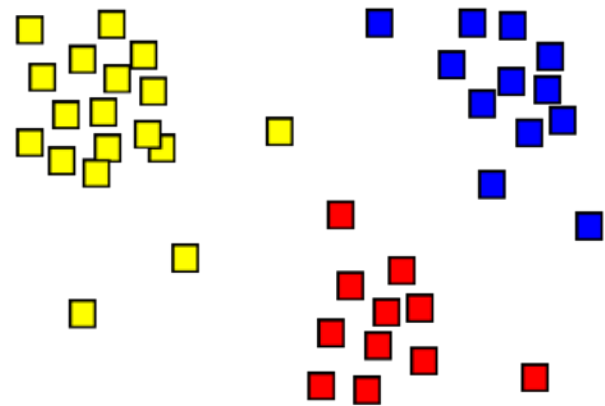
Annual Fisheries Monitoring

- Assess individual water bodies and evaluate whether management objectives are being met
- Assess fisheries across broad geographic areas to monitor for local, regional, and/or statewide trends



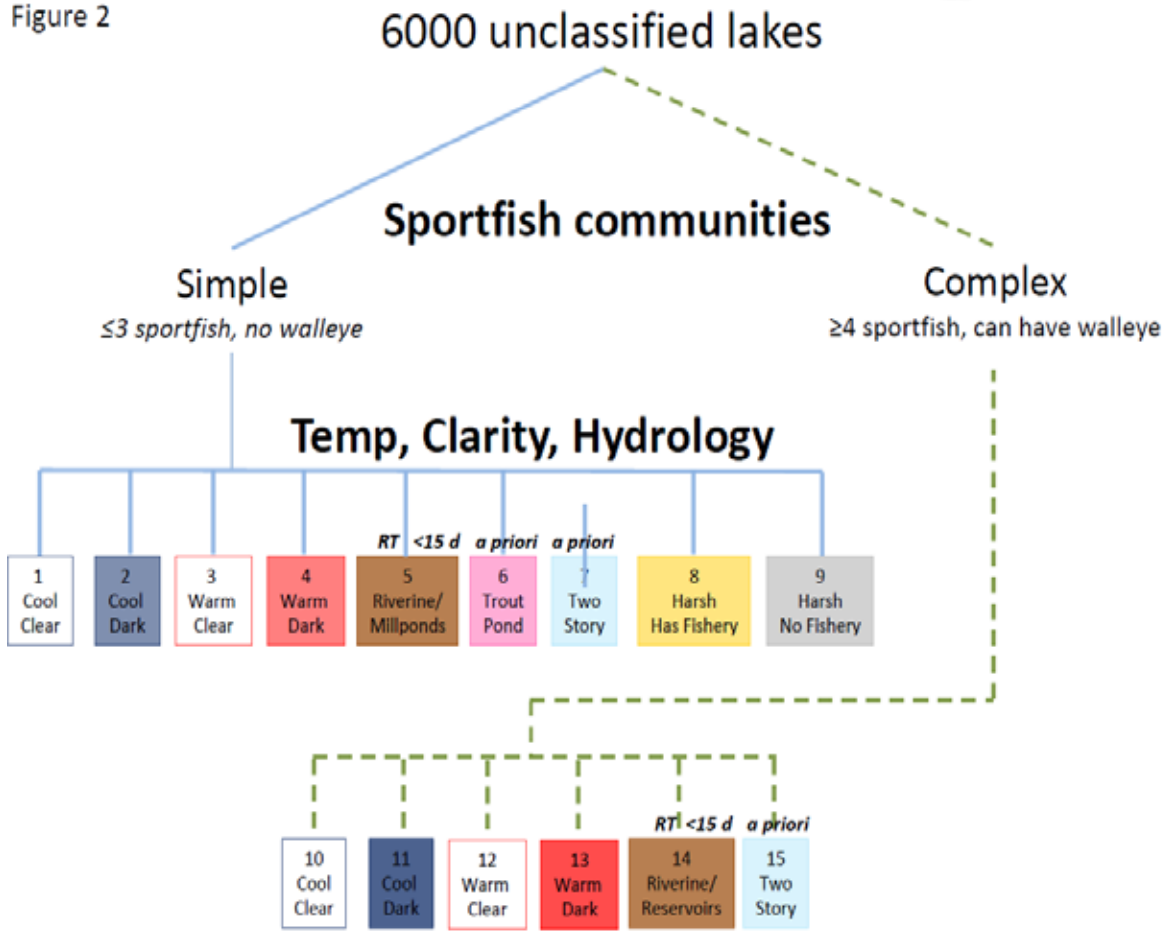
Fisheries Monitoring – Lake Classification

- Group similar lakes together – try to represent heterogeneity of WI fisheries & basic fish habitat in as few groups as possible
- Expectations for any lake within a class may be informed by other lakes in that class
- More easily communicate and educate public on differences among lakes



Fisheries Monitoring - Lake Classification

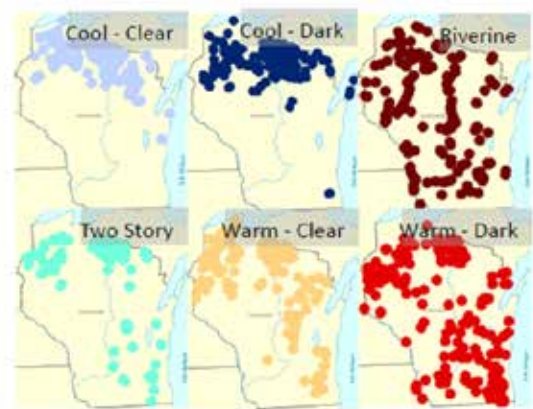
Figure 2



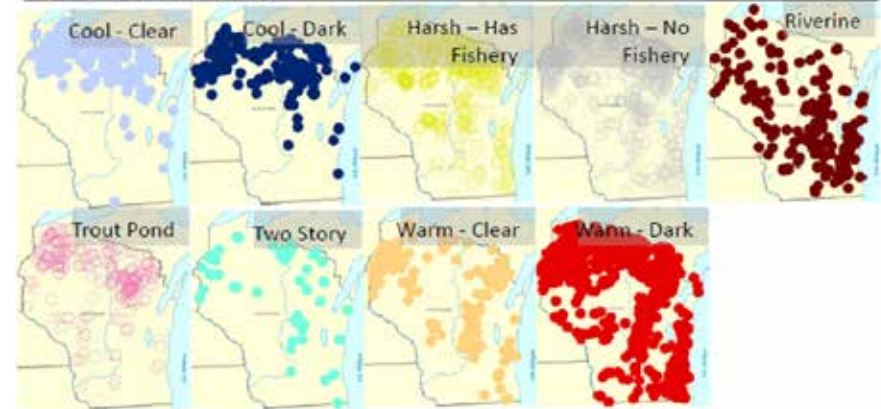
All Lakes



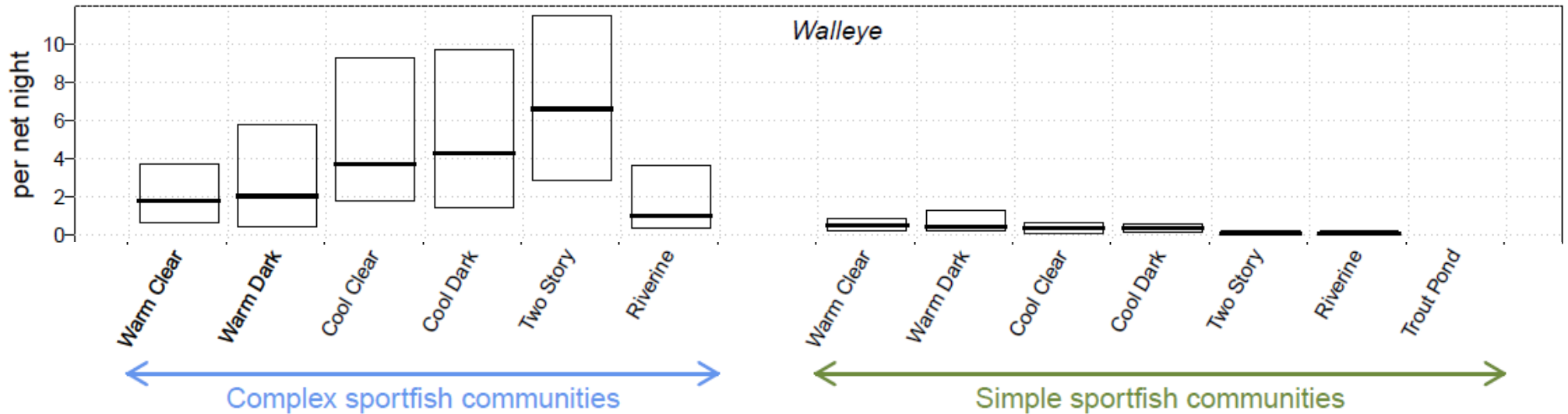
Complex Lakes



Simple Lakes



Lake Classification - Walleye Abundance



Future Threats - Variability and warming in lakes of the Upper Midwest and implications for sport fish

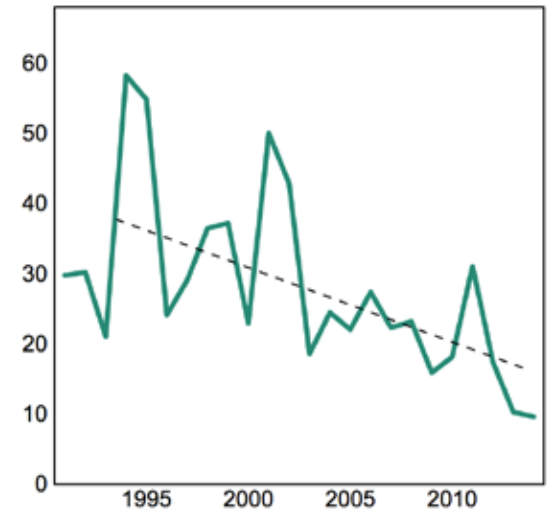
Jordan Read & Gretchen Hansen

USGS National Climate Adaptation Science Center

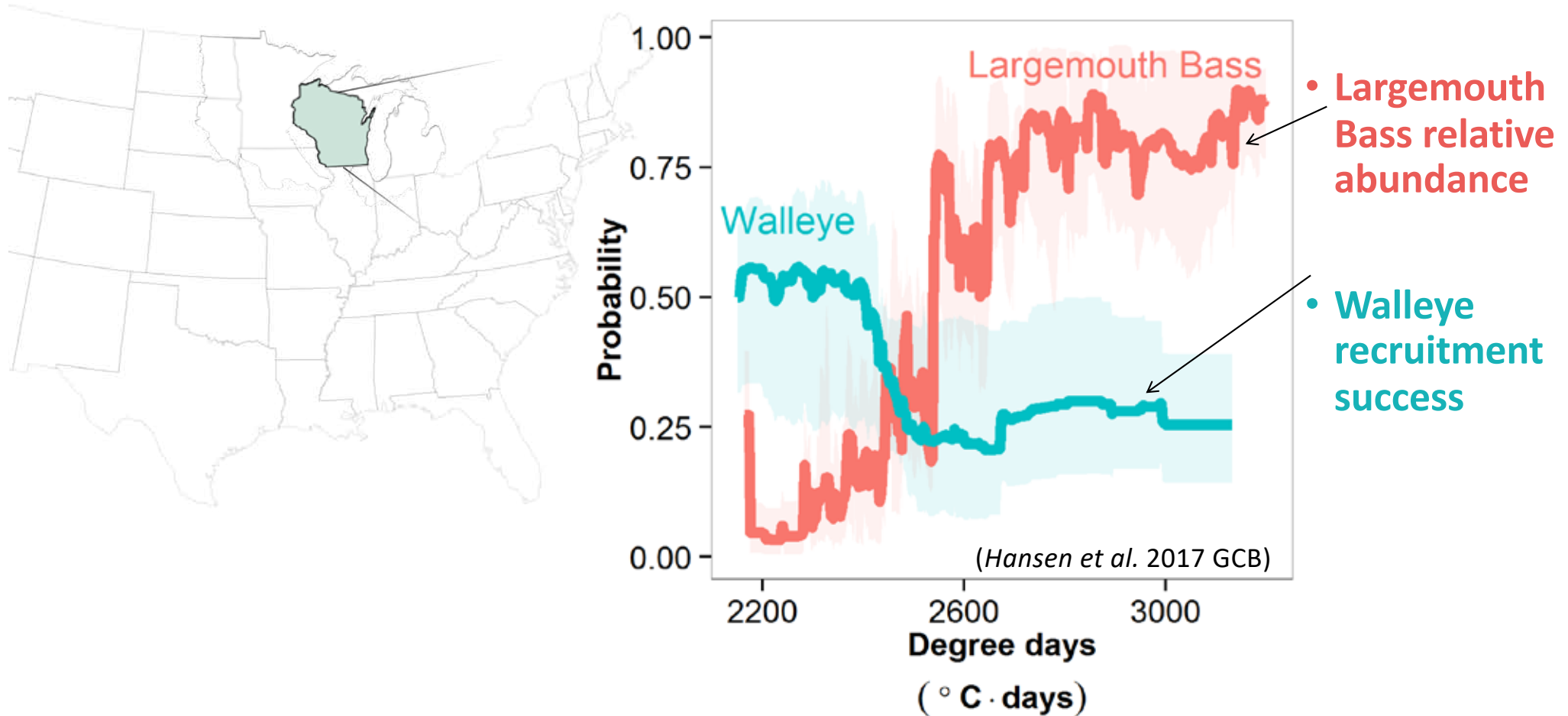
April 16, 2019

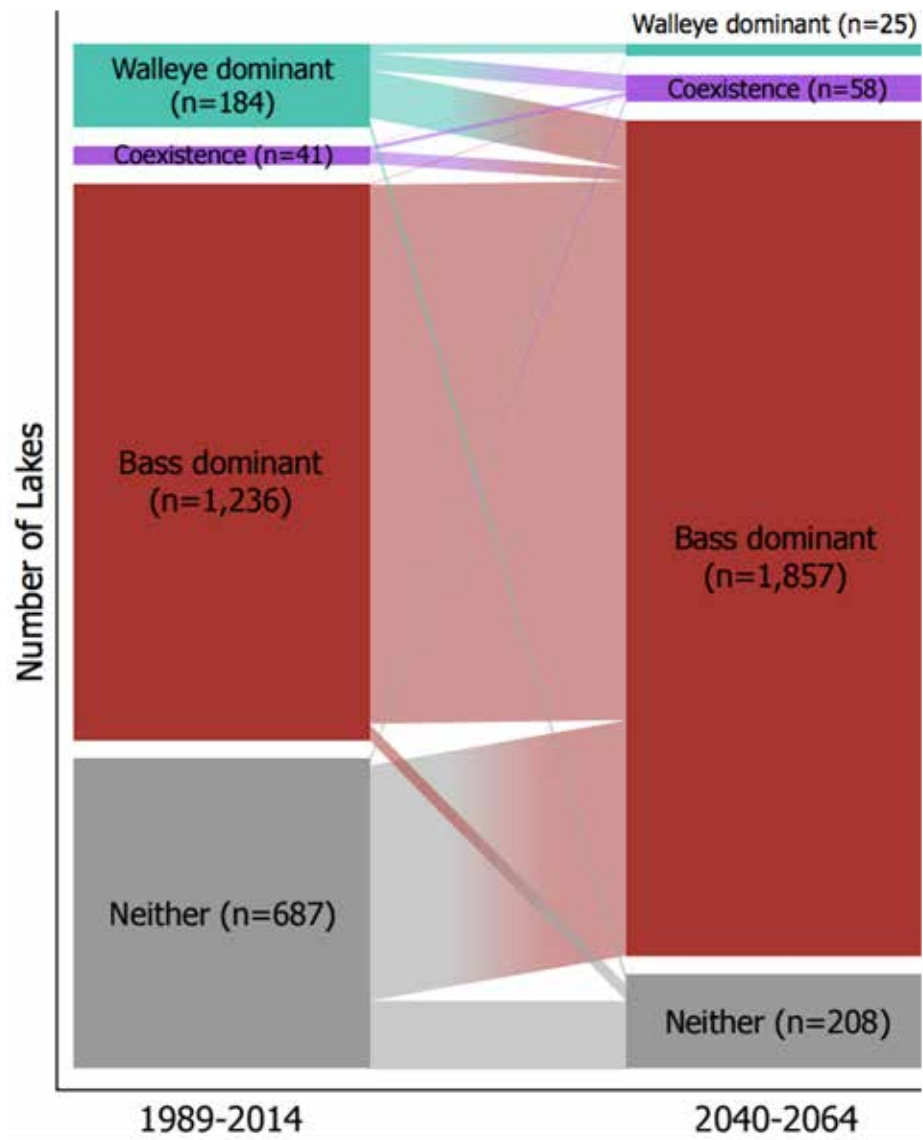


Walleye recruitment (#/mile)



Walleye and largemouth bass correlated with water temperature





<https://owi.usgs.gov/vizlab/climate-change-walleye-bass/explore/map.html>



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