

# Track 3: Resilience & Adaptation

Note to presenter: When you advance to the next slide, your presentation will appear.

## Track Subtopics

- Anticipating and Preventing Flooding Disasters
- Safeguarding human health and public safety from climate impacts
- Advancing resilient agriculture and land use practices
- Protecting at-risk species and habitat
- Advancing energy security in uncertain times
- Tailoring resilience solutions to rural communities
- Institutionalizing and supporting resilience planning and practices
- Incorporating green infrastructure in urban areas

# Resilience & Adaptation: Anticipating The Unknown

November 8<sup>th</sup>, 2019

Matthew Mitro

Wisconsin Department of Natural  
Resources (DNR)

Nadia Vogt

Milwaukee Metropolitan  
Sewerage District (MMSD)

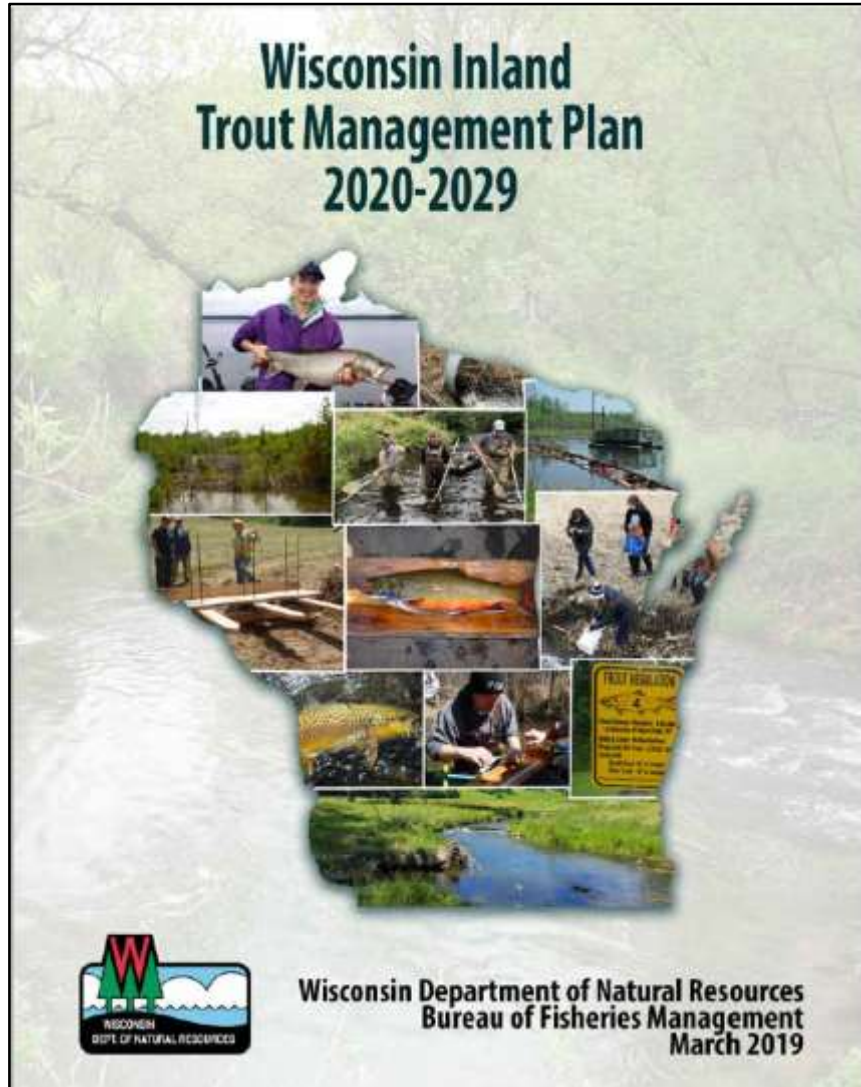
# The Foundation

- Things ARE changing
- Impacting quantity and quality of water resources (ice cover, runoff, rainfall)
- More extreme weather + warmer and wetter Wisconsin
- Different impacts on rural versus urban areas=different approaches
- Data is a moving target





# Perspectives: Wisconsin DNR · Trout Fisheries



Climate change and the impact  
on trout fisheries in Wisconsin



# Perspectives: MMSD

- Wastewater utility serving 1.1 million customers in southeastern Wisconsin
- Internal asset management vs. external stressors
- Climate Change Policy
- Resilience Plan
- 2035 Vision



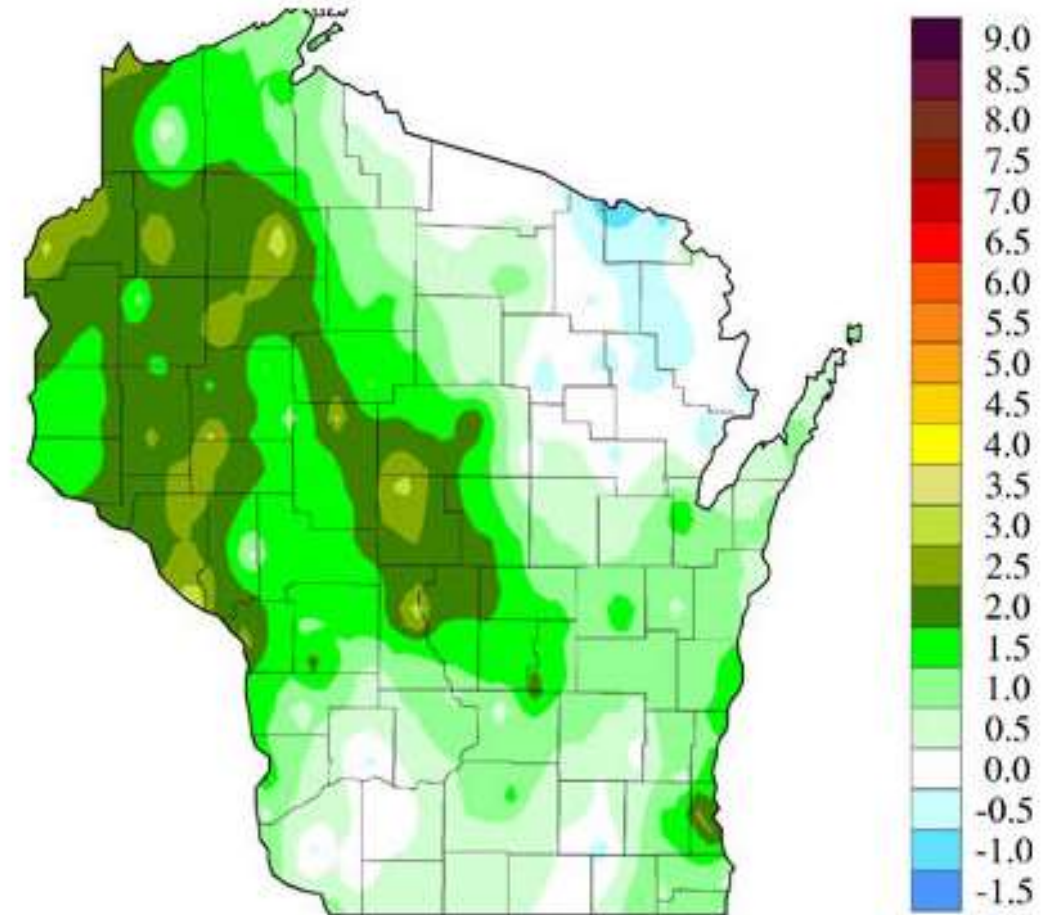


# What Does Climate Change Mean For Wisconsin?

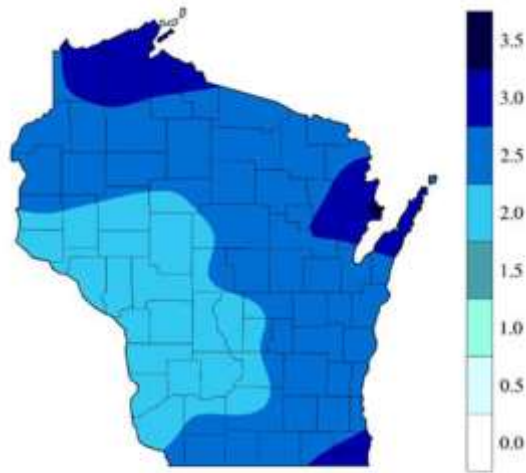
Temperature

+1.1°F averaged across the state

Wisconsin is becoming “less cold”



**Change in Annual Average Temperature (°F) from  
1950 to 2006**



Projected Change in the Frequency of 2"  
Precipitation Events (days/decade) from 1980 to  
2055



# What Does Climate Change Mean For Wisconsin?

---

## Precipitation

Increase in annual precipitation of 3.1 inches, primarily in south and west with some drying in north





# What Does Climate Change Mean For Wisconsin?

Seasons:

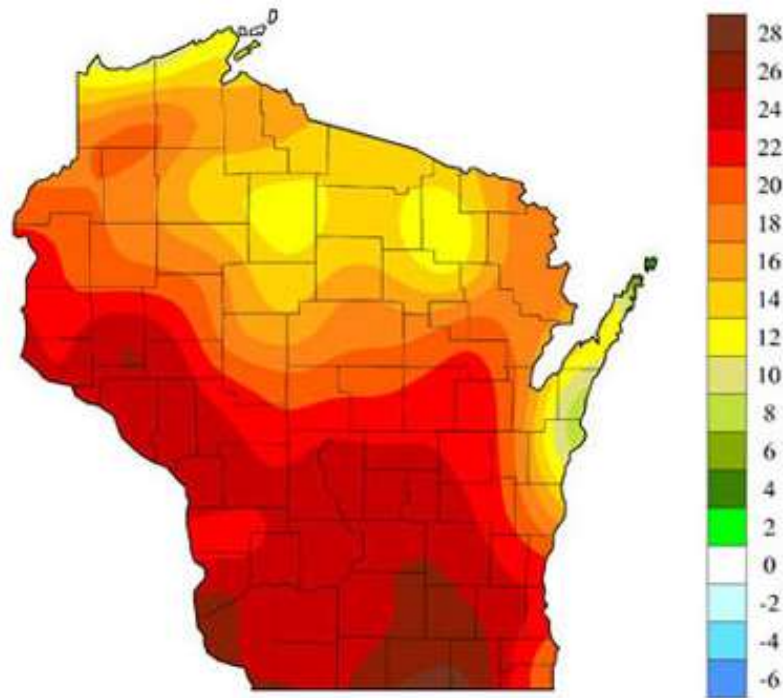
Greatest warming in winter-spring

Growing Season:

Length of growing season has increased in some areas by as much as four weeks



# What Does Climate Change Mean For Wisconsin?



Projected Change in the Frequency of 90°F Days  
Per Year from 1980 to 2055



# Climate Resilience & Adaptation

*Climate resilience is the ability to anticipate, prepare for, and respond to hazardous events, trends or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.*

*Climate adaptation is the “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.”*

# Climate Resilience: Anticipating Impacts

---

- Flooding
- Society & the built environment
- Agriculture
- Natural habitats
- Economic implications





# Climate Resilience: Anticipating Impacts

## Urban

- Increases in population shift land use from pervious to impervious
- Urban heat island effect
- Increased stress on aging and vulnerable critical infrastructure

## Rural

- Highly dependent on natural resources for livelihoods and economic activities
- Physical isolation, limited economic diversity, aging populations all increase vulnerability
- Rural government structures may not have the funding or capacity to plan for and respond to impacts of climate change

# Building Urban Resilience: Identifying Risks

Distribution Of Public Services

Social Equity

Ability To Adapt To Job Market Changes

Vulnerability Of Critical Infrastructure

Climatic Hazard

Financial Constraints



# Building Urban Resilience: Implementing Actions

Make the Milwaukee region a better place to live by improving the public's participation in decision making and their environment.

Boost the region's economic vitality through innovative job creation and access to equal opportunities.

Adapt infrastructure to the challenges of the 21<sup>st</sup> century.

## Action 3

Engage Stakeholders In Collaborative Decision Making And Implementation Of Watershed Restoration & Water Quality Plans

**STATUS**

- New Action
- To Be Scaled Up
- Ongoing

**LEAD**

- Municipalities
- Non-profit/Business Partner
- MMSD



CLIMATIC HAZARD

SOCIAL EQUITY



### RISK MITIGATION

From a financial perspective, identifying recommendations that meet multiple goals (e.g., habitat and recreational) provides an opportunity for the development of cost-effective projects that address climate change and can reduce overall project costs.

### OBJECTIVE

Engage stakeholders (both professional and public) in decision-making around the connections between land, water and people.

### DESCRIPTION

Watershed restoration plans provide comprehensive recommendations for watershed health that address four interrelated areas: flooding, habitat conditions, water quality and recreational use. Engaging stakeholders (both professional and public) in decision-making in plan development allows for recommendations to move beyond decisions around land and water. Understanding how land and water projects can be designed to incorporate more benefits (i.e., extension of trails, park improvements, acceleration of other capital projects in the neighborhood) can improve the quality of life for residents within the watershed and provide an opportunity for multiple stakeholders to benefit from these long-term plans.

Public and private partners are working together to develop water quality improvement plans that will provide additional guidance to delist impaired water bodies and identify actions to improve the overall quality of water resources. The water quality improvement plans will incorporate and dovetail with existing and future watershed plans.

### IMPLEMENTATION

- 1 Create engagement strategy and project milestones
- 2 Ensure stakeholders understand the problem
- 3 Present options and provide meaningful ways for decision making
- 4 Incorporate multi-faceted quality of life components

### REFERENCE

SEWRPC Community Assistance Planning Report No. 316, *A Restoration Plan for the Root River Watershed*

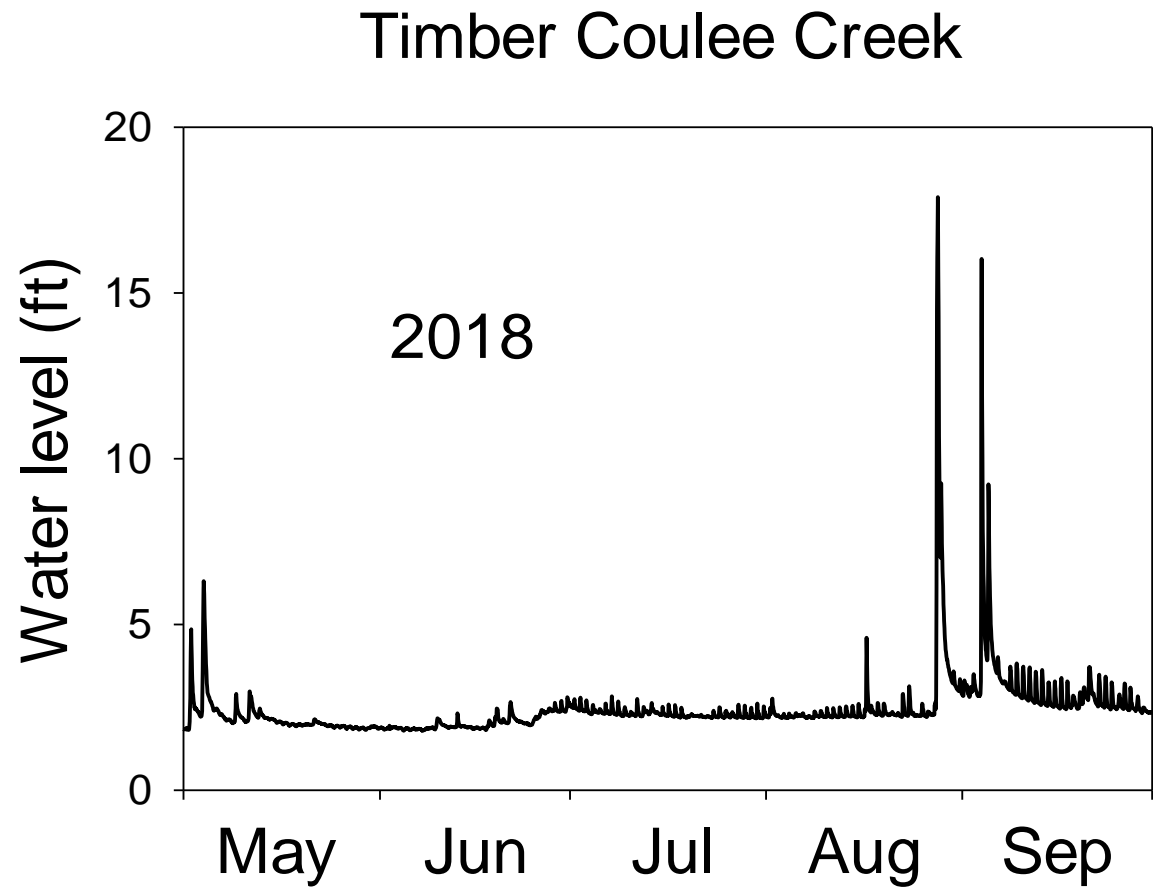
Using existing plans and recent scientific data from established sources, planners at the Southeastern Wisconsin Regional Planning Commission, working with an advisory group of experts and interested parties, developed specific, targeted recommendations to improve water quality, recreational access and use, habitat conditions, and to reduce flooding in the Root River Watershed. These water quality recommendations include measures to reduce the levels of phosphorus, bacteria, and pollutants and can be found at [www.sewrpc.org/SEWRPCFiles/Publications/CAPR/CAPR-316-root-river-executive-summary.pdf](http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/CAPR-316-root-river-executive-summary.pdf).



# What Is The **Big Audacious Goal** That Will Make A Difference In The Next Decade?

- Develop strategies and steps to build Wisconsin's capacity for community and ecological resilience and adaptation to climate change
- Identify, frame, and strategize approaches focused on anticipation and prevention-not just disaster recovery

# Anticipation & Prevention



Stream habitat development to reconnect stream to floodplain

# A Big Audacious Goal In 1933 ...



First watershed project in the U.S., to conserve soil and water

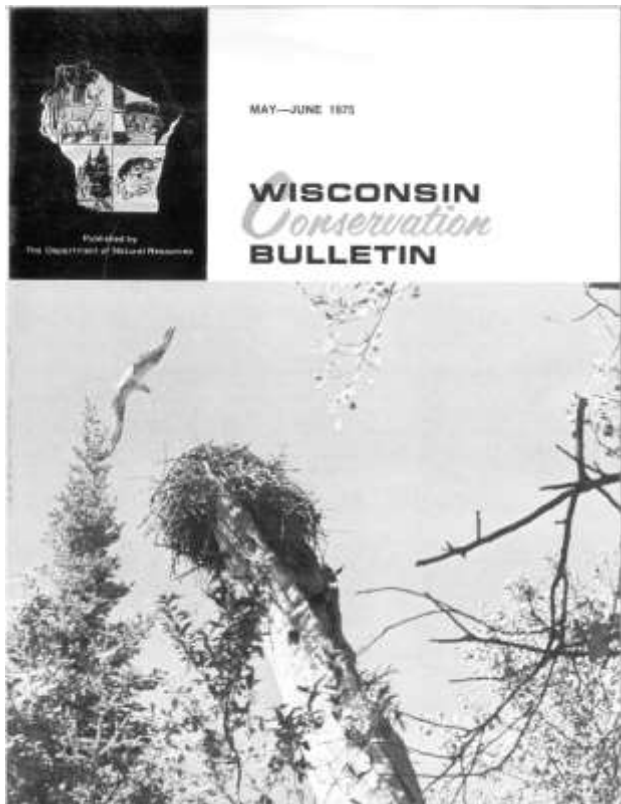
Coon Creek Watershed, Wisconsin



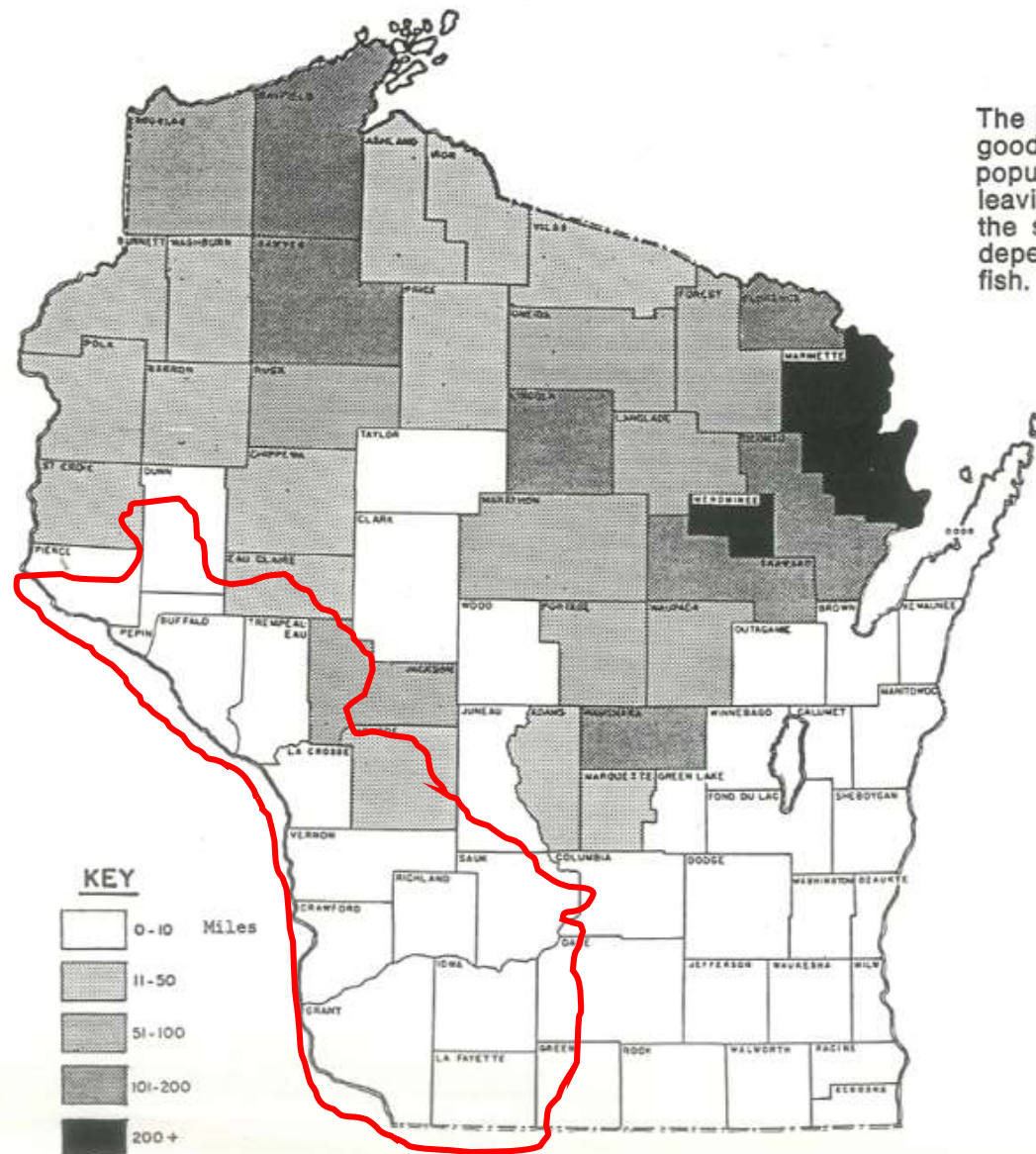
# A Big Audacious Goal Today...



Trout fisheries 100 years from now as good as or better than what we have in Wisconsin today



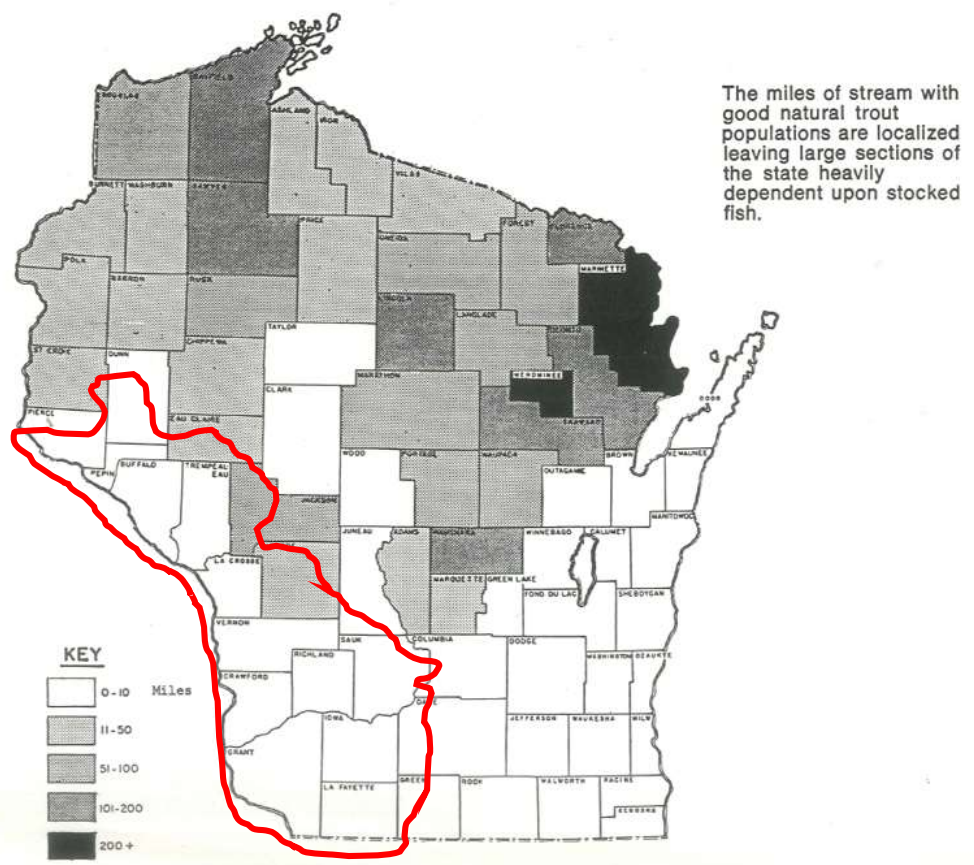
1975



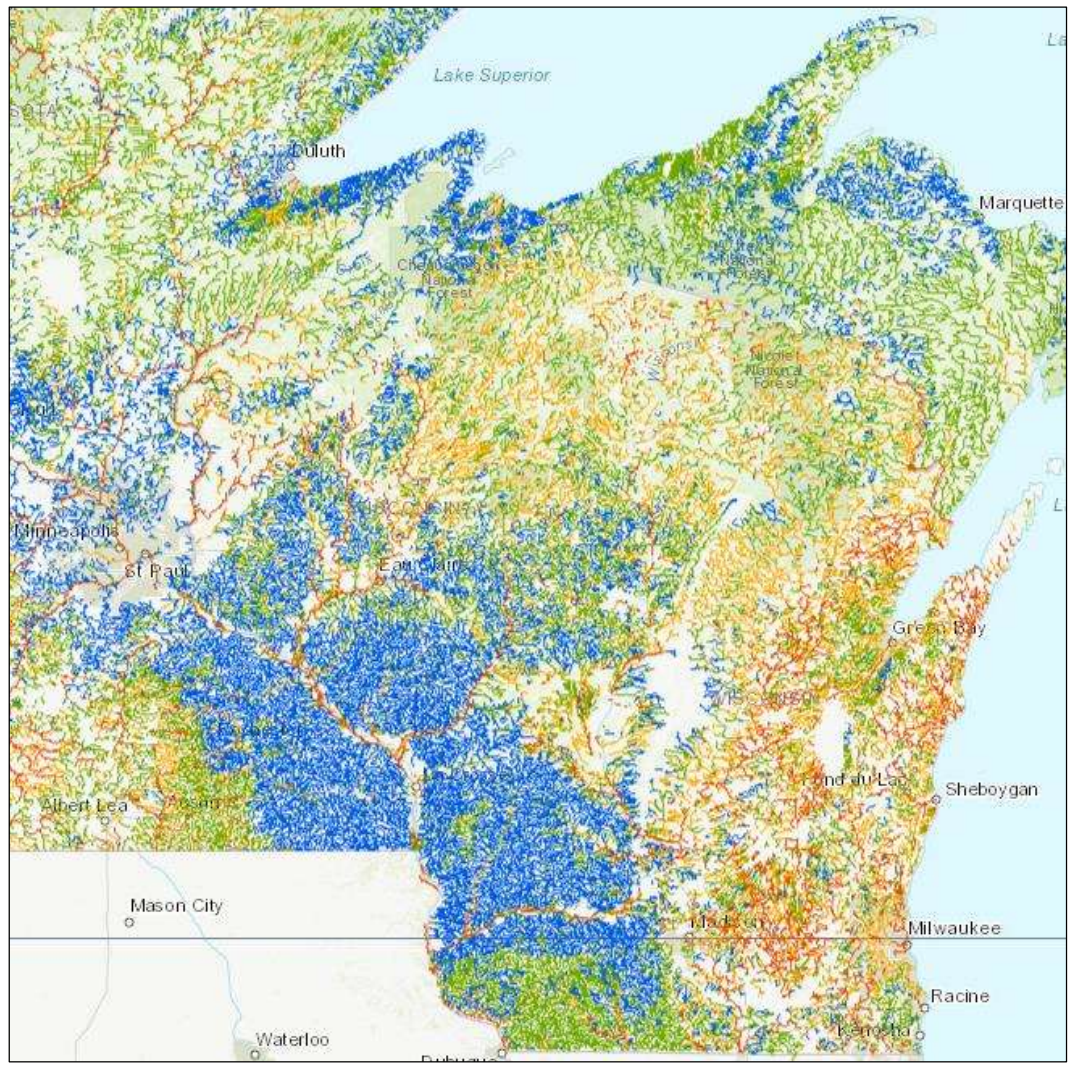
The miles of stream with good natural trout populations are localized leaving large sections of the state heavily dependent upon stocked fish.



# Water Temperature Cold Transition Transition Warm



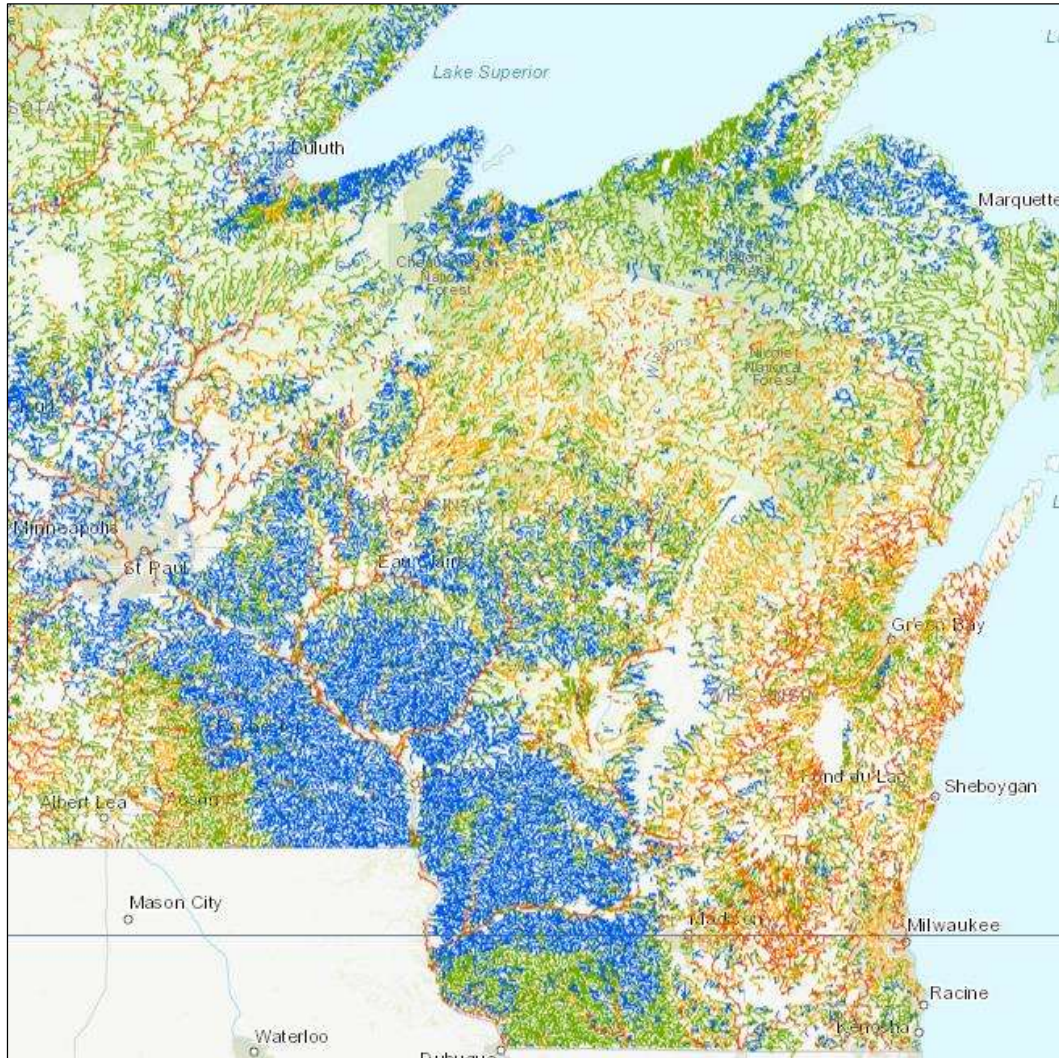
1975



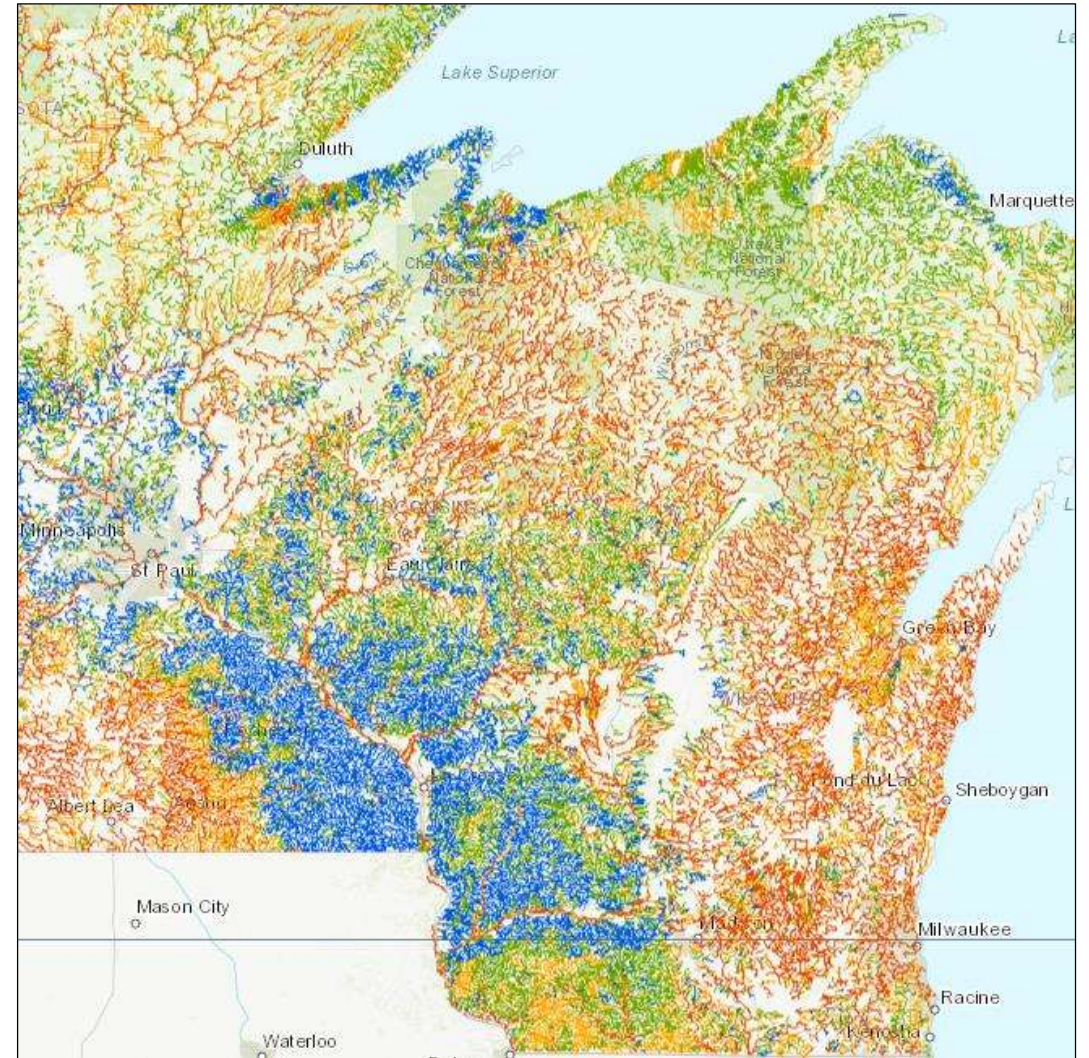
1990–2008



# Water Temperature Cold Transition Transition Warm



1990–2008



2046–2065



# How We Can Do It...



# Challenges & Barriers To Pursuing Solutions?

- A regulatory framework to advance and support resilience in the face of climate change in Wisconsin
- Coordination across agencies (local-county-state-federal)
- Capacity to develop and implement solutions
- Becoming proactive rather than being reactive
- Building public support



# We Need Your Input!



## Small group discussion topics

1. Flooding
2. Human health & safety
3. Agriculture & land use
4. At-risk species & habitat
5. Energy security
6. Resilience in rural communities
7. Institutions & support

*And other topics of your choosing*

Questions?