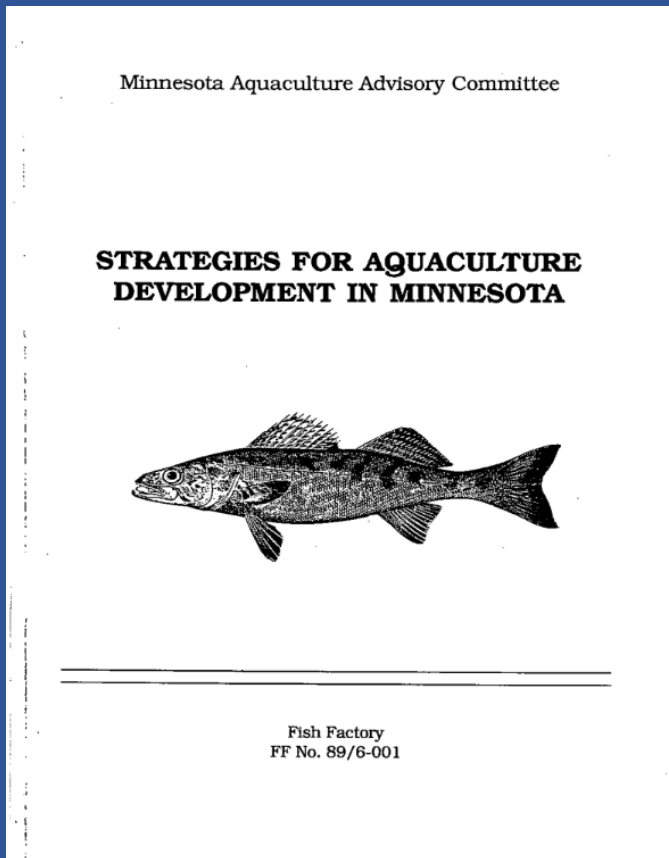


# Minnesota State Aquaculture Plan

## Introduction

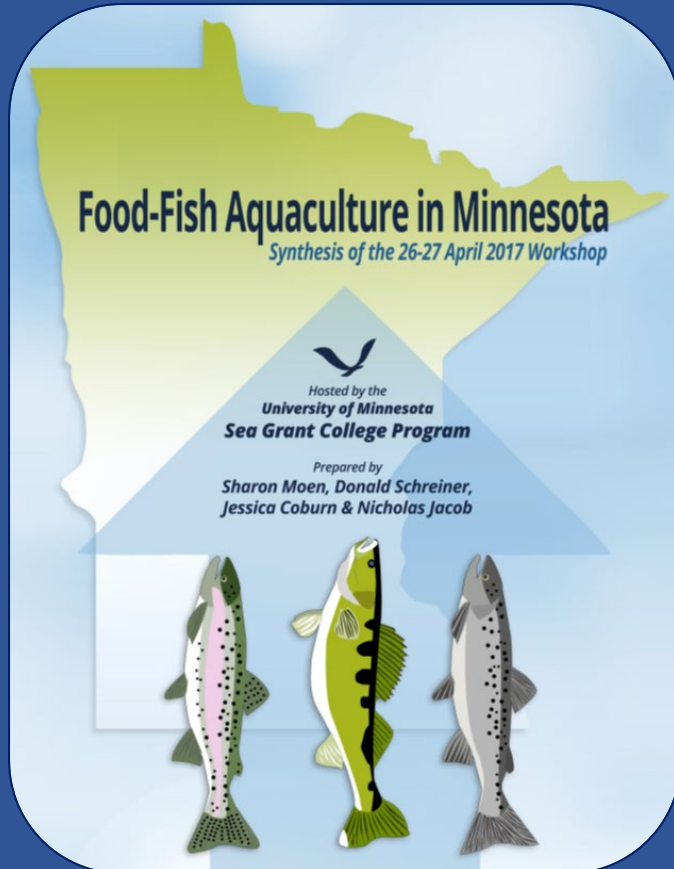
Wisconsin Aquaculture Association Conference  
February 21, 2025

Don Schreiner  
Minnesota Sea Grant  
Fisheries Specialist



# Food-fish aquaculture in MN – Workshop (2017)

“Can an environmentally responsible and sustainable food-fish aquaculture industry be established in Minnesota?”

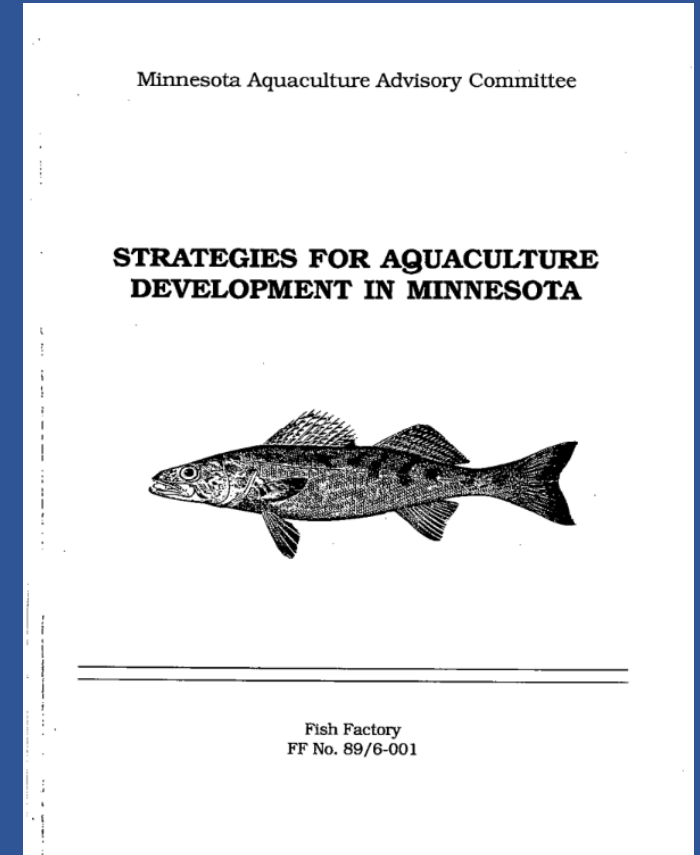


Participants identified major needs as:

- ✓ Reestablish a Minnesota Aquaculture Association
- ✓ Revise/Develop an Aquaculture Plan
- ✓ Communicate with state agencies and legislators on aquaculture

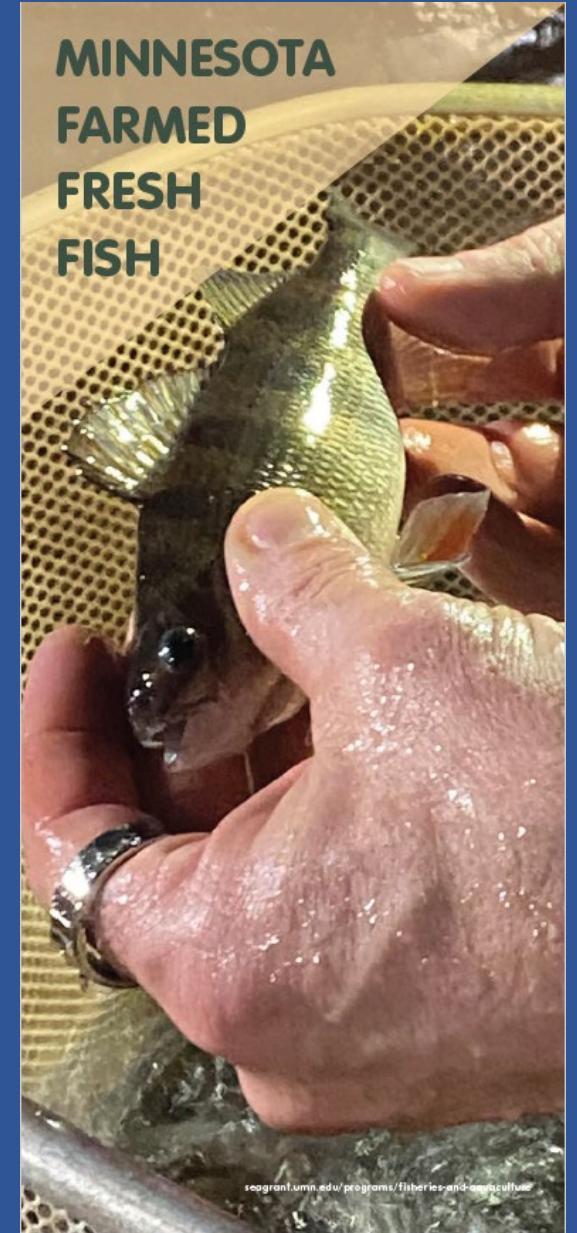
# Why Now?

- Last comprehensive MN Aquaculture Plan – 1989, over 35 yrs ago!
- The world is changing - food systems are evolving
- Aquaculture technology is expanding rapidly
- Bait availability continues as an issue in Minnesota
- Growing interest in food-fish in MN and GLs states
- Managed, transparent approach will help grow industry



# Aquaculture Objectives

- Profitable, Efficient, Innovative, Sustainable, Environmentally responsible
- 1998 -2023 value of aquaculture ~ \$5M
  - ~ 50% Bait
  - ~ 25% Stocking
  - ~25% Food-fish



# Funding the MN State Aquaculture Plan



Minnesota Aquaculture Association

- Provided legislative testimony on need for a plan – 2022-2023



MNAA



Gary Stockbridge

- Legislature appropriated \$50K + \$25K from DOA for plan development

# Development of the Plan

- DOA formed a steering committee Jan. 2023
- DOA developed RFP fall 2023
- Consultant chosen Jan 2024
- Draft Plan released in mid Nov. 2024
- Comments on draft plan due Dec. 18, 2024



# Final Plan

- Final plan completed Jan. 2025
- Available soon – DOA accessibility stds.
- Presented to state legislature Feb. 2025
- Work with legislature and decision makers
- Use a reference
- Minnesota State Aquaculture Plan – Department of Agriculture



# Clarence Bischoff

President Minnesota Aquaculture Association

CEO Bluewater Farms

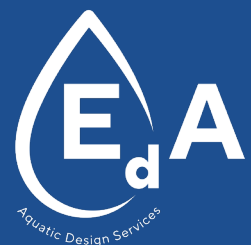


# WISCONSIN AQUACULTURE CONFERENCE



FEBRUARY 21-22, 2025

Marshfield, WI.  
Friday, Feb. 21<sup>st</sup>, 2025  
8:10-8:30 am



## MINNESOTA STATE AQUACULTURE PLAN

JANUARY 2025

PREPARED BY  
Steamboat Road Consulting

PREPARED FOR  
The Minnesota Department of Agriculture





-Aquatic Design Services, LLC.



# MINNESOTA AQUACULTURE PLAN

2025

The Minnesota Department of Agriculture is in the process of creating the State Aquaculture Plan.

The Plan will be presented to the Minnesota State Legislature in February of 2025 and will outline opportunities, needs, and challenges for a vibrant aquaculture industry in Minnesota.



PROJECT  
OBJECTIVES



INDUSTRY COLLABORATION  
& PUBLIC INPUT



EXPECTED  
OUTCOMES

# Introduction and Methodology

- **Foundational Information**

- 1989: Strategies for Aquaculture Development in Minnesota.
  - MN Aquaculture Advisory Committee
- 2017: Synthesis of Food Fish Aquaculture In Minnesota,
  - (University of MN Sea Grant Program)
- 2021: Assessment of Aquaculture Opportunities
  - (Agriculture Utilization Research Institute, AURI)
- 2024: National Aquaculture Development Plan
  - (USDA, NOAA,USFWS...)
- 2018-2023 USDA National Agriculture Statistics Service (NASS)
  - Census of Aquaculture, (approx. every 5 years)

- **Stakeholder Engagement**

- Website
- Conference attendance and presentations
- In person and phone Interviews
- Site Visits.

- **GOAL – Plan Should be Action Oriented!**



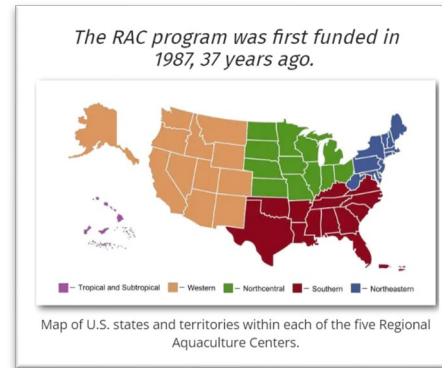
National



Regional



State



Fisheries and Aquaculture

Great Lakes Aquaculture Collaborative

# National Strategy

## A NATIONAL STRATEGIC PLAN FOR AQUACULTURE RESEARCH

PREPARED BY THE  
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL  
SUBCOMMITTEE ON AQUACULTURE

1. Develop economic growth through aquaculture.
2. Improve aquaculture production technologies and inform decision making.
3. Uphold animal well-being, product safety and nutritional values.

## A STRATEGIC PLAN TO ENHANCE REGULATORY EFFICIENCY IN AQUACULTURE

PREPARED BY THE  
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL SUBCOMMITTEE ON  
AQUACULTURE

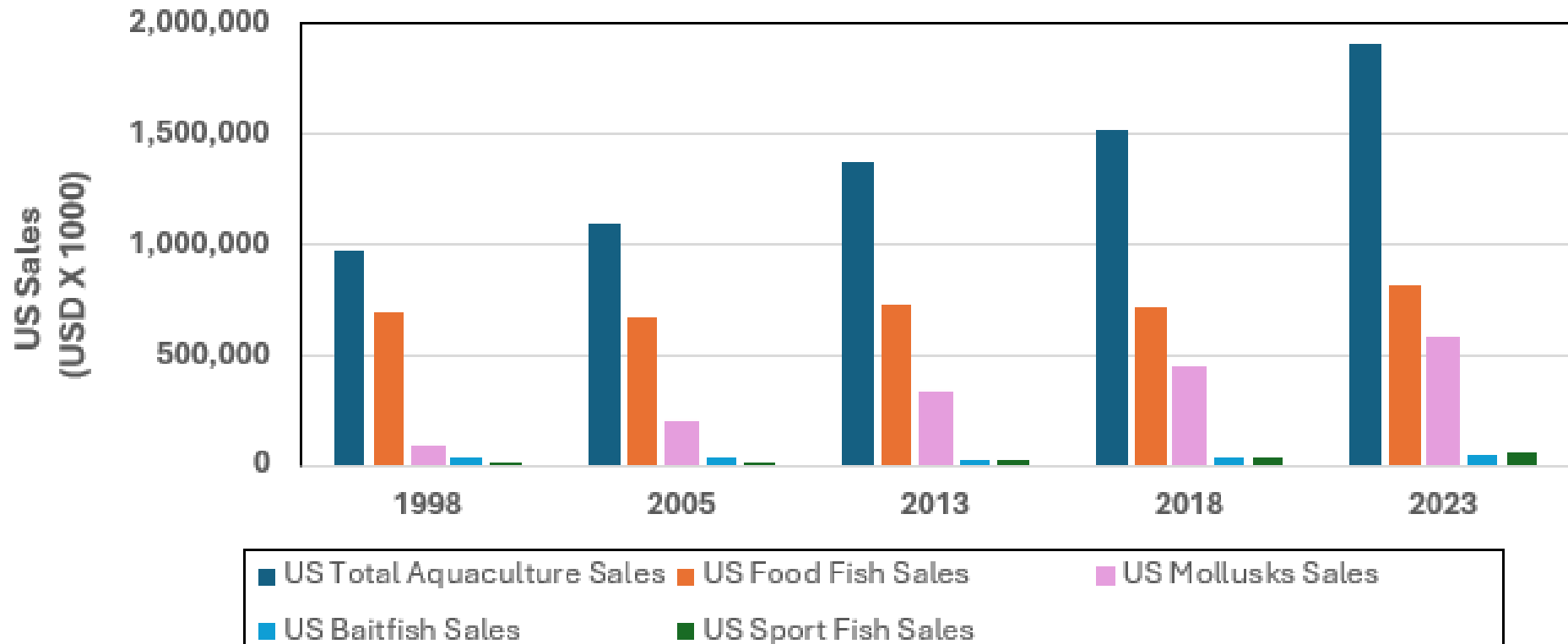
1. Improve efficiencies in aquaculture permitting and authorization programs.
2. Implement a national approach to aquatic animal health management on Aquaculture
3. Refine, develop and disseminate tools for Aquaculture regulatory management

## STRATEGIC PLAN FOR AQUACULTURE ECONOMIC DEVELOPMENT

PREPARED BY THE  
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL  
SUBCOMMITTEE ON AQUACULTURE

Public Comment Version – DRAFT

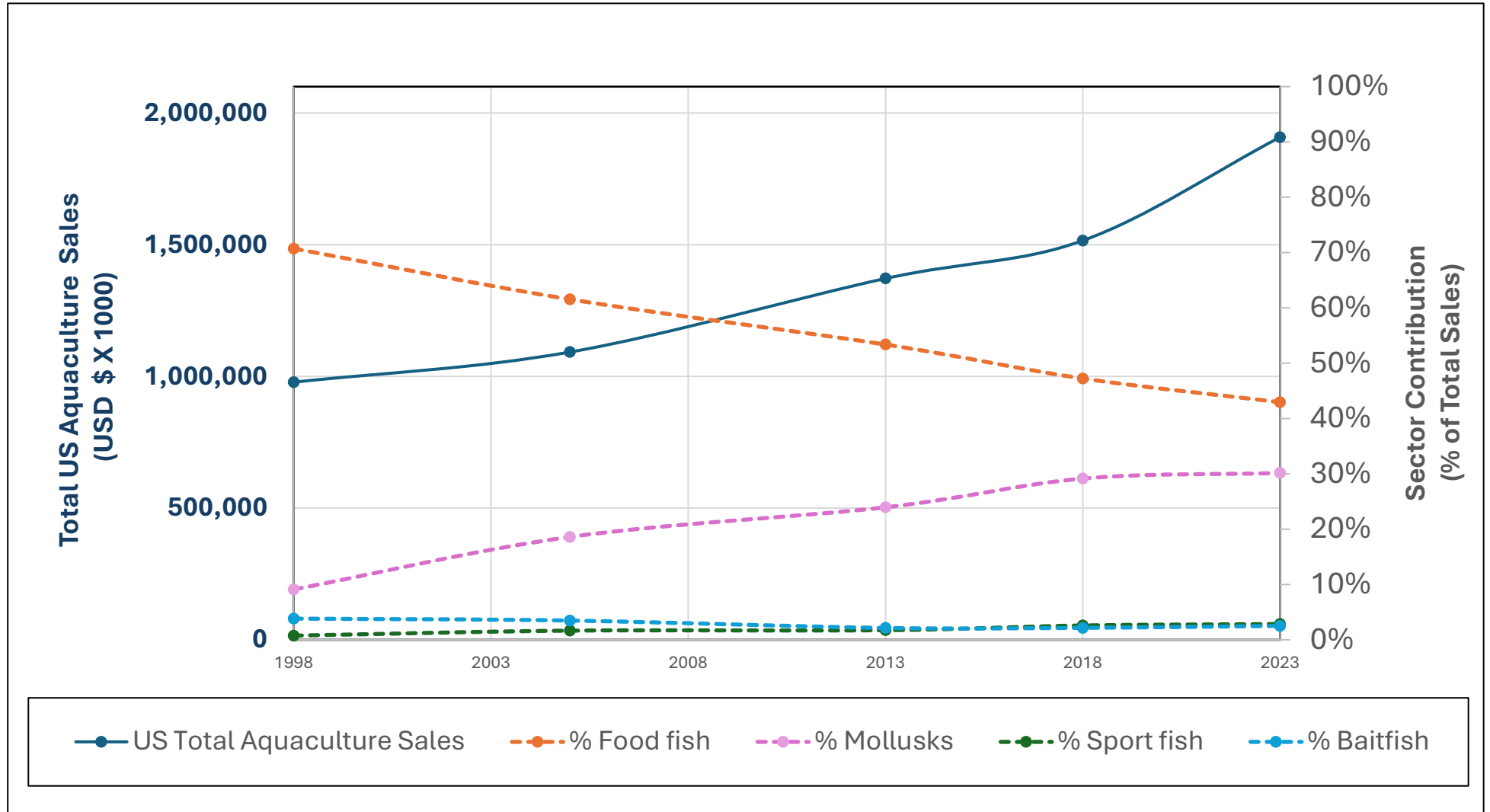
1. Encourage Industry Investment
2. *Support Infrastructure and Workforce Development*
3. *Expand Market Opportunities*
4. *Support aquaculture communication and literacy.*



Note. Data up to 2023 from USDA (2024)

USDA NASS DATA	US Sales (X \$1,000)					25 year Growth
(Census of Aquaculture)	1998	2005	2013	2018	2023	
Food fish	691,714	672,377	732,147	715,978	819,556	18%
Sport fish	7,390	18,126	23,849	39,350	54,390	636%
Baitfish	37,482	38,018	29,375	32,778	48,125	28%
Crustaceans	36,318	53,381	84,880	100,365	175,746	384%
Mollusks	89,128	203,183	328,567	441,801	575,455	546%
Ornamentals	68,982	51,297	41,485	43,534	77,095	12%
Misc.	46,734	56,003	131,400	141,875	157,655	237%
Total Aquaculture	978,012	1,092,386	1,371,707	1,515,680	1,908,022	95%

Note. Data from USDA (2024)

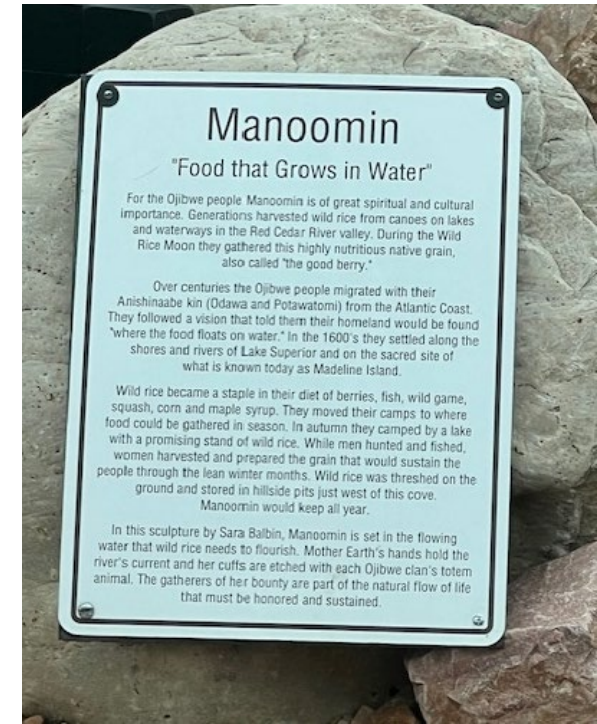


## Key is Understanding the Diverse Aquaculture Landscape in MN.



## Aquaculture Potential

- Walleye, Perch,
- Bass, Muskie
- Baitfish
- Salmonids
- Shrimp-Crayfish
- Aquaponics
- Ornamentals
- Turtles/Frogs
- Algae
- Wild Rice





## Unique Landscape of Minnesota

- Huge recreational fishing industry, some commercial fisheries.
- Native American Influences.
- Weighted concern for disease transmission and invasive species.
- Northern climate offers only seasonal outdoor production.
- Heavy Interest in finfish with an annual spawning cycle.
- Limited groundwater resources with some contamination concerns.
- Restrictive discharge regulations on Nitrogen and Phosphorus.

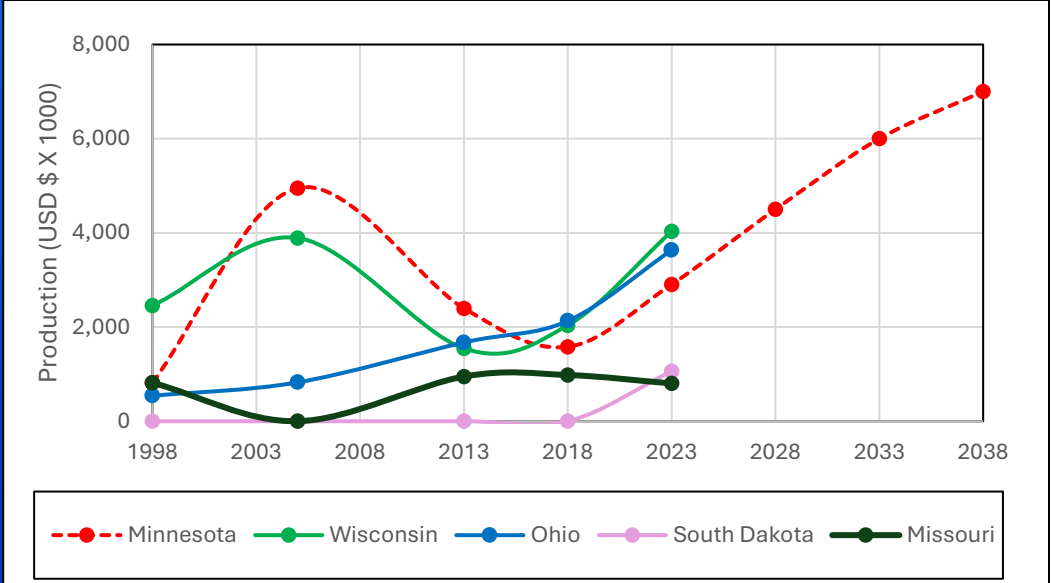
# Lead Agencies at the State Level



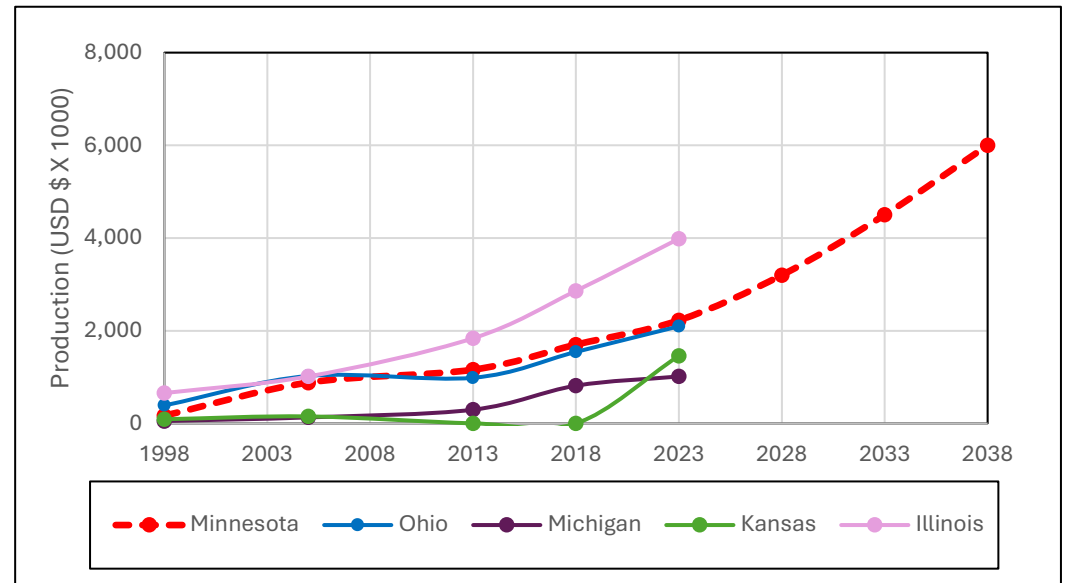
1. Responsible for Growing Aquaculture business in the state.
2. Responsible for developing a State Aquaculture Plan.
3. Responsible for providing business services, and Agriculturally based loans and grant programs.
4. Responsible for providing veterinary Services for Aquatic Species.
5. Requires access to water and discharge permits.
6. Promoting **COMMERCIAL** Aquaculture.
7. Business development Authority



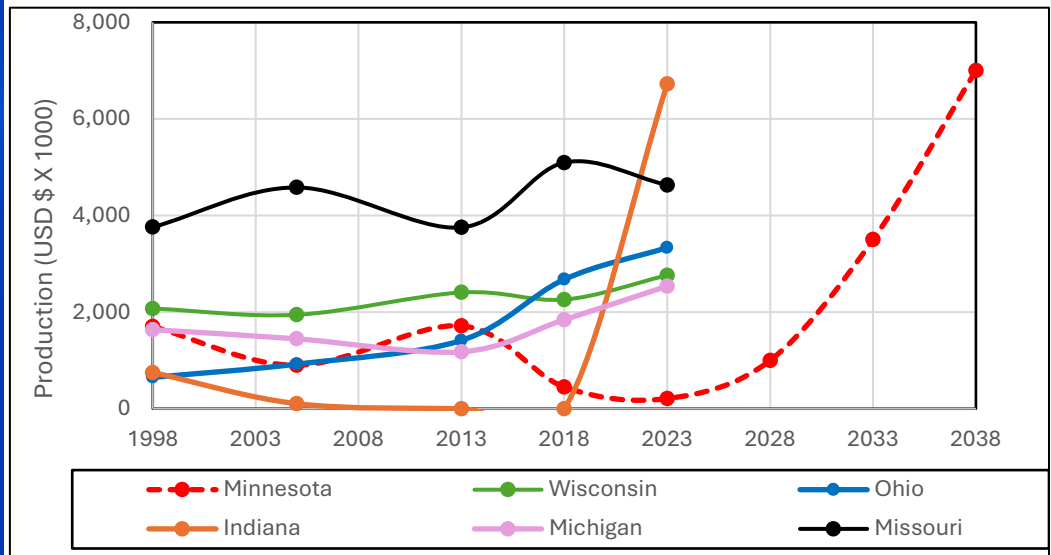
1. Responsible for permits and licensure of all aquaculture activities.
2. Responsible for safeguarding the natural resources of the State.
3. Has authority to shut down Aquaculture business operations based on threats to the wild fisheries.
4. Can limit the transportation of aquatic organisms into and within the state.
5. Managing the State's Water resources.
6. Managing **CONSERVATION** Aquaculture
7. Regulatory and Stewardship Authority.



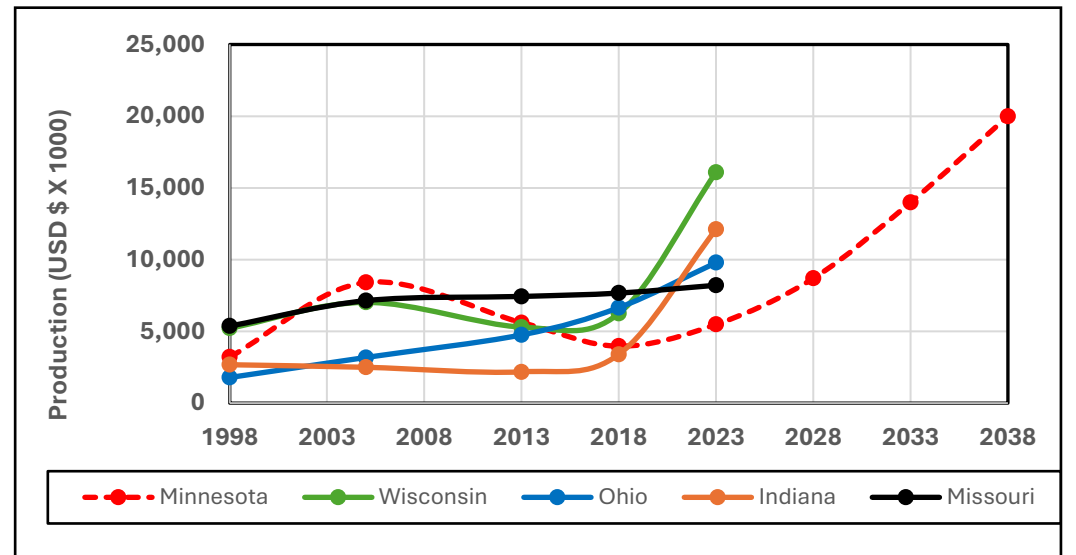
Baitfish



Sport Fish



Food Fish



Total Aquaculture



# Dual-Strategy Growth Agenda

## Traditional Growth Strategy

- All Three Sectors
- Diverse growth in all sectors
- Low Environmental impact
- Low Biomass
- Distributed Risk
- Marginal Growth Targets

State incentive Programs:

\$24 Million in incentives over 8 years.

- |              |                |
|--------------|----------------|
| -Baitfish-   | \$2.0 Million  |
| -Sport Fish- | \$3.4 Million  |
| -Food Fish-  | \$18.6 million |

**\$20 million per year in annual revenue by 2038.**

## Aggressive Growth Strategy

- Food Fish Sector Only
- Large Scale growth focused on (1) species
- Low environmental impact through application of technology.
- High standing biomass and daily feed load
- Higher investment risk

State incentive Programs:

\$98 Million in incentives over 8 years.

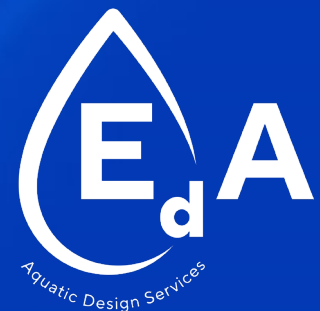
- Rural Development
- Regulatory Support
- Community Industry Services
  - Feed Supply, Nutrient Recovery
  - Marketing, Value add.

**\$ 133 million per year in annual revenue by 2038**

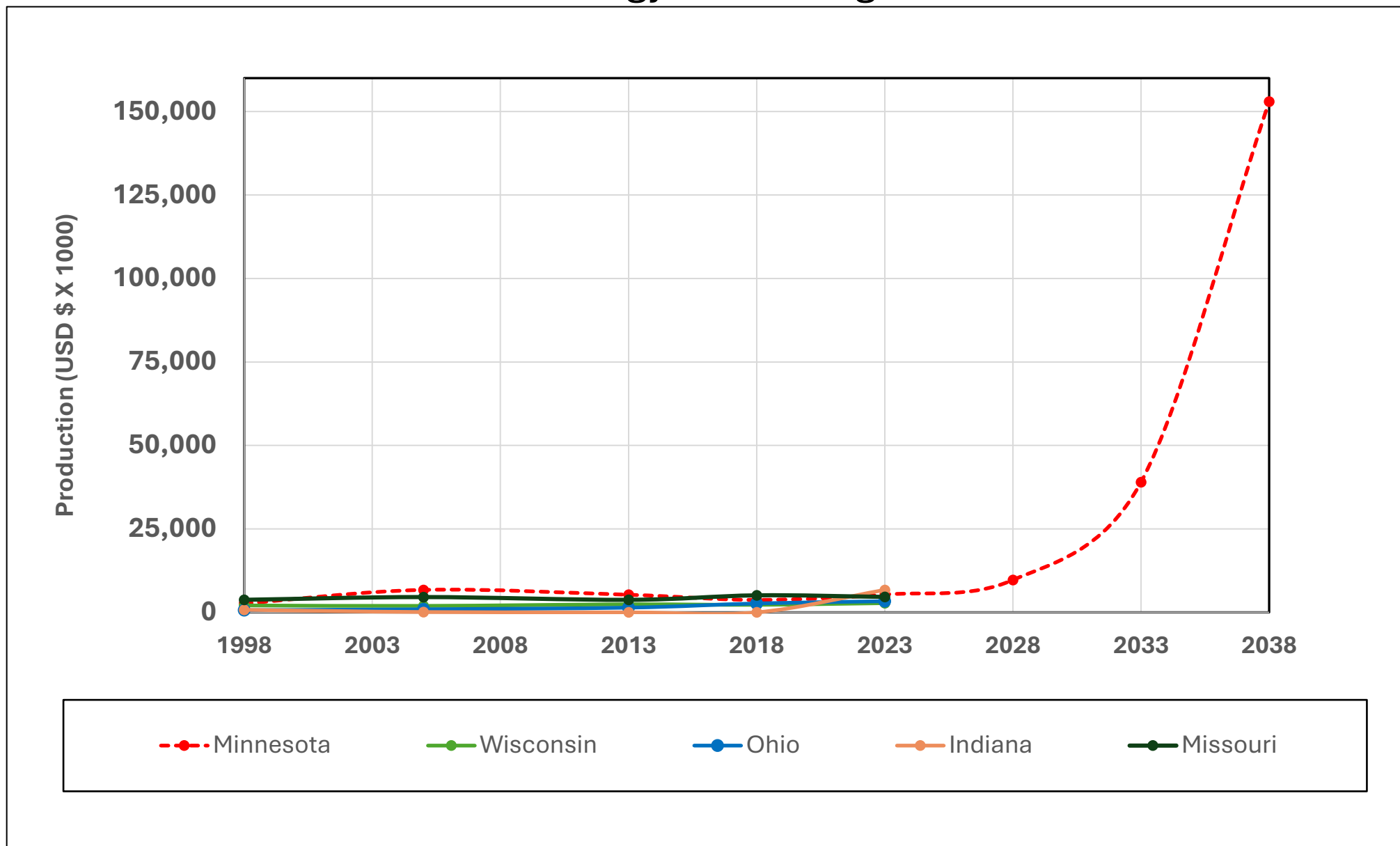


STEAMBOAT<sup>RD</sup>

CONSULTING



## Total MN Aquaculture Production with Dual-Strategy Growth Agenda



# Issues Affecting Aquaculture Expansion

- **Financial and Investment Challenges**
  - Access to credit financing and insurance limited in aquaculture.
  - Proven Business models, reliable returns minimize risk.
- **Production Constraints**
  - Feed Costs and sustainability
  - Disease Management
  - Water Quality and discharge
- **Processing, Distribution, and Market Accessibility**
  - Processing Challenges with diverse production.
  - Insufficient Market Data
- **Infrastructure Gaps**
  - Feed Supply Chain
  - Marketing Strategies
  - Water resources and treatments systems
  - High Construction costs
- **Regulatory and Environmental Barriers**
  - Complex Permitting Process
  - Water Resources
  - Discharge restriction on Nitrogen and Phosphorus
  - Additionally, competition for water resources and concerns about cumulative nutrient impacts further complicate site selection and permitting for aquaculture expansion.

# Issues Affecting Aquaculture Expansion

- **Labor and Education Needs**
  - challenges in recruiting and retaining skilled and unskilled workers, particularly in remote locations.
  - Need for enhanced training and education programs.
  - Public awareness and understanding of aquaculture practices are limited
- **Leadership and Coordination**
  - The lack of historical leadership and coordination in Minnesota's aquaculture industry creates fragmented efforts and inconsistent strategies.
  - Without a dedicated agency or representative to advocate for aquaculture, producers face challenges in navigating regulatory landscapes, securing funding, and accessing technical support.
- **Nutrient Discharge**
  - Food fish aquaculture can contribute to nitrogen and phosphorus nutrient loading in the region, raising concerns over water quality and environmental sustainability.
  - Strict discharge regulations require facilities to implement nutrient management strategies, including advanced filtration, water recycling, and effluent treatment systems.
  - These measures increase operational costs and present technical challenges, particularly for new entrants in the industry.
  - Additionally, competition for water resources and concerns about cumulative nutrient impacts further complicate site selection and permitting for aquaculture expansion.

# Minnesota Aquaculture Action Plan (Who, What, When and Where?)

## ⇒ **Governance and Strategic Planning**

- ⇒ A Legislative Directive to Establish a Minnesota Aquaculture Working Group
- ⇒ Formalize a 10-year Minnesota Aquaculture Development Plan
- ⇒ Expand Online Resources for Aquaculture Development

## ⇒ **Financial Support and Incentives**

- ⇒ Commit to Long-Term Incentive Program
- ⇒ Develop Funding Structures for Small Businesses

## ⇒ **Research, Development, and Innovation**

- ⇒ Create an Information and Technology Hub for Aquaculture.
- ⇒ Support Advancements in Aquaculture Feeds
- ⇒ Address Research Needs and Technology Gaps.

## Minnesota Aquaculture Action Plan (Who, What, When and Where?)

### ⇒ **Market Development and Consumer Engagement**

- ⇒ Fund and Conduct Market Research on Food Fish
- ⇒ Explore and Develop New Aquaculture Markets and Products
- ⇒ Develop Markets, Sales Strategies, and Value-added Aquaculture Products

### ⇒ **Infrastructure Development and Environmental Management**

- ⇒ Identify and Develop Sustainable Aquaculture Sites
- ⇒ Promote Ecologically and Economically Sustainable Commercial Aquaculture

### ⇒ **Regulatory Compliance and Policy Development**

- ⇒ Collaborate with MNDNR Aquaculture Efforts
- ⇒ Streamline Permitting Processes

**Contracting Officer:**

Jim Ostlie:

MN Dept. of Agriculture

**Steering Committee**

Sean Sisler:

MN Dept. of Natural Resources

Don Shriner

MN Sea Grant

Clarence Bischoff

MN Aquaculture Association

Harold Stanislawski

Agricultural Utilization Research

Institute

# Thank You!

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