



# The Economic Value of Michigan's Inland Lakes

by

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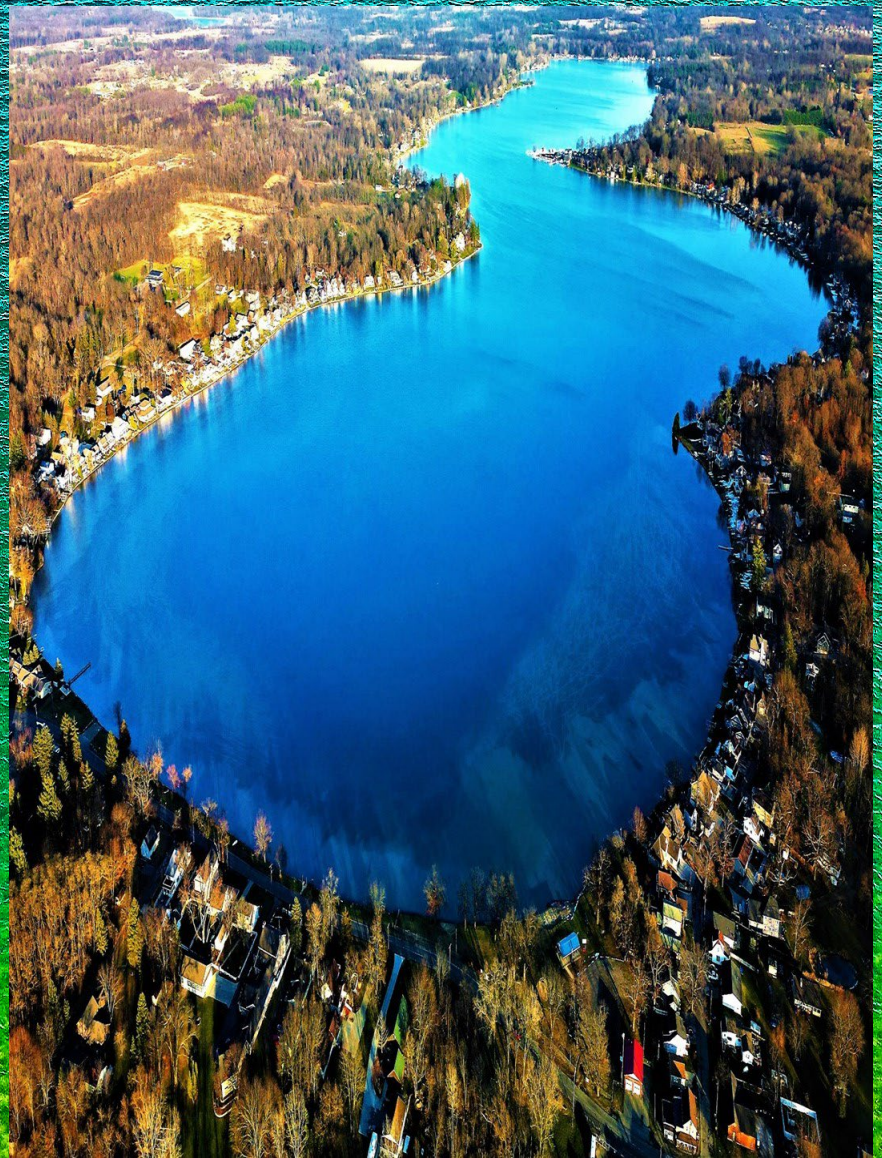
Michigan Chapter,

North American Lake Management Society

“The lakes are the brightest gems in the corona of the State. They are the most beautiful and expressive features of the landscape in the region wherein they abound.”

Source: THE LAKES OF NORTHERN INDIANA  
AND THEIR ASSOCIATED MARL DEPOSITS

BY W. S. BLATCHLEY & GEORGE H. ASHLEY,  
1897



# The Economic Value of Michigan's Inland Lakes

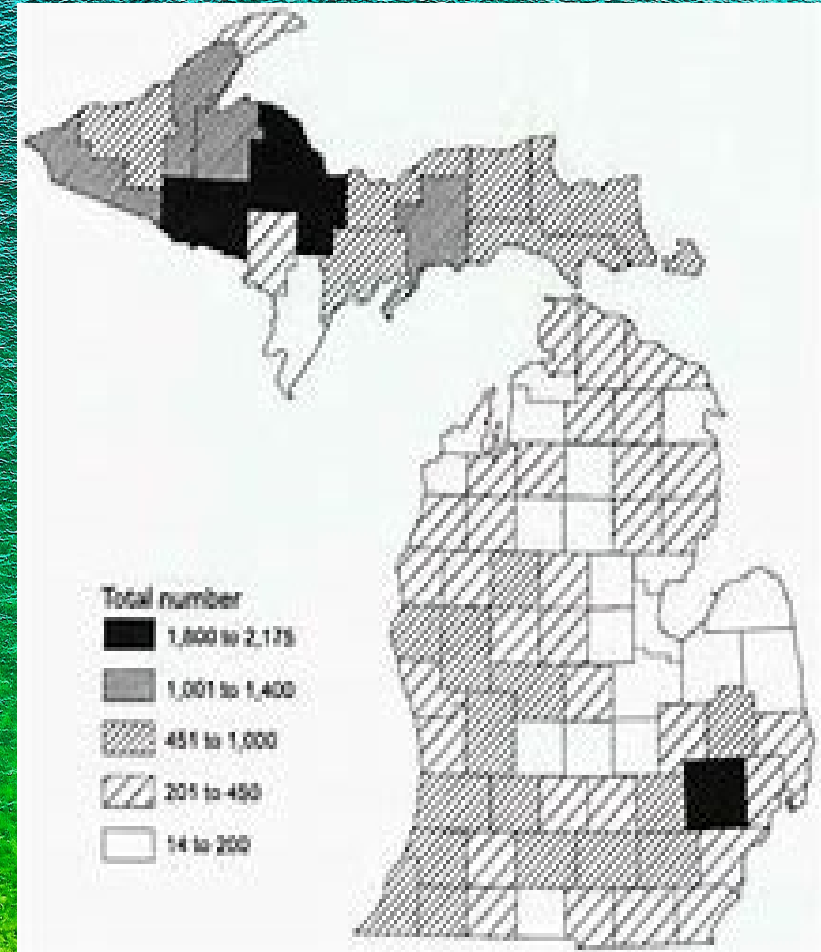
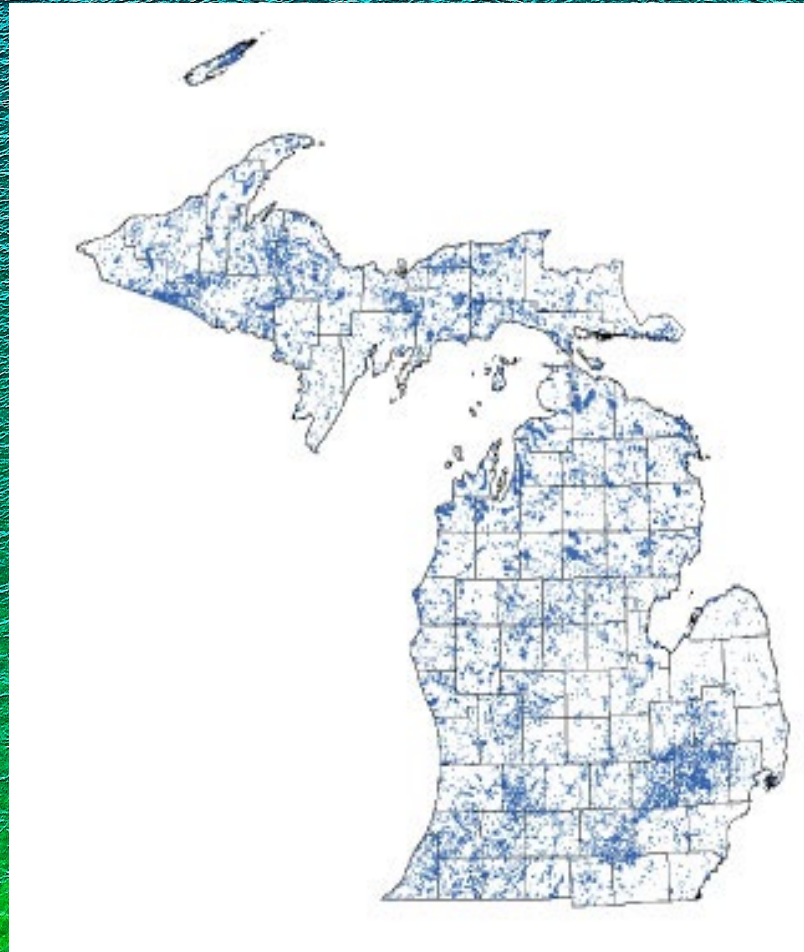
## MICHIGAN INLAND LAKE FACTS

- ❑ There are 62,798 inland lakes in Michigan with a surface area of at least 0.1 acres or larger.
- ❑ Michigan enjoys 1,300 square miles of inland lakes or 1.3 % of total area.
- ❑ Michigan hosts a total of 11,037 inland lakes of five acres or more in size.
- ❑ Michigan is graced with 6,516 inland lakes of 10 acres or more in size.
- ❑ Michigan has 1,148 lakes exceeding 100 acres, 98 lakes exceeding 1,000 acres, and 10 lakes over 10,000 acres.
- ❑ Michigan's inland lakes provide critical aquatic habitat for 154 freshwater fish species.

Source: Breck, 2004

# The Economic Value of Michigan's Inland Lakes

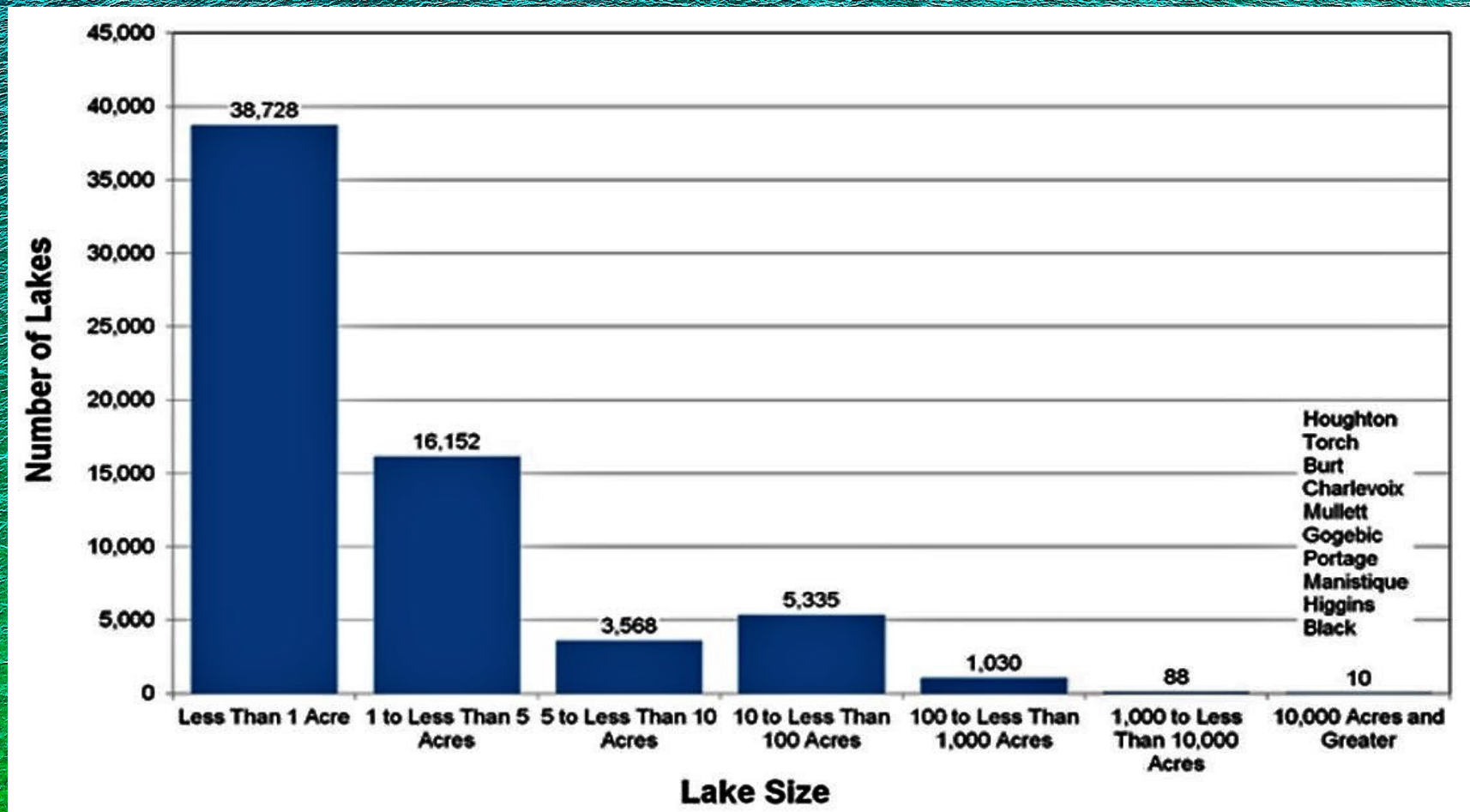
## Distribution of Michigan's Inland Lakes



Source: Michigan GIS Open Data

# The Economic Value of Michigan's Inland Lakes

## Michigan's Inland Lakes: Lake Size



Source: <https://www.michiganlakeinfo.com/11-000-lakes-in-michigan>

# The Economic Value of Michigan's Inland Lakes

“Inland lakes are valuable ecological resources (that) provide tremendous aesthetic, economic, and recreational value for the people of Michigan.”

Source: Michigan Department of the Environment, Great Lakes, and Energy





Waterfront property owners, other citizens, and our communities benefit socially and economically from healthy lake ecosystems. Michigan lakes are vast and provide significant recreational benefits, economic value, and ecological services for the citizens of the state and provide important habitat for many animals and plants.

# The Economic Value of Michigan's Inland Lakes

## Factors Contributing to Enhanced Lakefront Property Values: Water Clarity

- ❑ Lakefront homes situated on lakes with good water clarity appraised at a much higher level than homes located on lakes characterized by relatively poor water clarity;
- ❑ Loss of assessed property value due to lake water clarity decline below the regional average was estimated to be \$256 to \$512 million for 191 Maine lakes.

Source: Maine Department of Environmental Protection, 2005

- ❑ 37% of residents living on Delavan Lake (WI) indicated they would move off the lake in response to a decline in water clarity from three meters to one meter.

Source: Eiswerth *et al.*, 2005



# The Economic Value of Michigan's Inland Lakes

## Factors Contributing to Enhanced Lakefront Property Values

- ❑ Lake view increases property values by an average of 56% (Seiler, 2001);
- ❑ Private lake access, lakefront location, scenic view, recreation, and aesthetic component (Lansford & Jones, 1995);
- ❑ Distance to urban areas, retailers, hospitals, social and cultural amenities, airports, and major highways
- ❑ Job market, commuting distance, median family income

# The Economic Value of Michigan's Inland Lakes

## Factors Contributing to Enhanced Lakefront Property Values: Restrictive Zoning

- ❑ Restrictive shoreland zoning has a positive influence on property values.
- ❑ Lakefront homeowners value environmental preservation by showing a willingness to exchange rights and money to live on a healthier lake.
- ❑ Value of shoreline frontage located in Vilas and Oneida Counties (WI) increased an average of 7-12% when zoning required a minimum 200 feet of water frontage for lots.
- ❑ More restrictive zoning requirements serve to preserving clean water, natural scenic beauty and peace and quiet and therefore generating an economic gain that more than offset the economic loss resulting from the constraints of development.

Source: Papenfus and Provencher, 2005.

# The Economic Value of Michigan's Inland Lakes

## Gentrification of Michigan Lake Fronts

- Accelerated trend toward larger more expensive lake homes
- Trend toward affluent, professional class of lakefront residents
- Lakefront homes more likely to be second, holiday/summer homes
- Larger residential lots tend to degrade larger areas of natural features
- Larger homes more likely to have more than one boat and dock
- Dramatic increase in the popularity of wake boat supported water sports has increased the demand / price for lakefront homes
- Townships and school districts benefiting from gentrified property tax base
- Local units of government not investing additional tax revenue in lake conservation efforts

# The Economic Value of Michigan's Inland Lakes

## “Living Larger on Michigan Lakefronts”

- Pronounced trend of constructing increasingly larger homes at the lakefront
- Associated destruction of natural nearshore habitat to make room for larger homes, driveways, and out buildings
- Increased impervious surface areas and potential for storm water runoff
- Larger, elaborate docks, boats, and boat hoists at the waters edge
- Typically requires zoning board of appeals application; usually approved by townships seeking enhanced property tax valuations



# The Economic Value of Michigan's Inland Lakes

## Gentrification of Michigan Inland Lake Fronts



# The Economic Value of Michigan's Inland Lakes

## The Steadily Escalating Value of Michigan's Lakefront Homes

	<u>Lake</u>	<u>County</u>	<u>Avg. List Price</u>
1.	Orchard Lake	Oakland	\$2,197,854
2.	Upper Long Lake	Oakland	\$1,820,090
3.	Walloon Lake	Charlevoix	\$1,776,961
4.	Upper Straits Lake	Oakland	\$1,735,752
5.	Lake Michigan	Leelanau	\$1,272,473
6.	Spring Lake	Ottawa	\$1,253,800
7.	Lake Michigan	Emmett	\$1,173,463
8.	Lake Michigan	Van Buren	\$1,151,259
9.	Glen Lake	Leelanau	\$1,138,766
10.	Lake Macatawa	Ottawa	\$1,110,487

Source: LakeHomes.com, Lake Market Report for September 2018

# The Economic Value of Michigan's Inland Lakes

## “Lakefront Home For Sale or Rent”

- 15% - 20% of lakefront homes “for sale” at any given time in Michigan;
- Trend moving away from full-time residences to weekend “get away” second homes;
- Weekends and holidays only lakefront residents;
- Rental services such as Airbnb enable the capacity to easily rent on a weekly or monthly basis in summer in order to help afford larger mortgages.

# The Economic Value of Michigan's Inland Lakes

## Revenues Generated by Valuation Dependent Tax on Inland Lakefront Homes and Property

- ❑ Study conducted by the Michigan Chapter, North American Lake Management Society (McNALMS) in order to help state policy makers understand the full value of our inland lakes;
- ❑ Findings of the study derived from market value of shoreline property only;
- ❑ Study included data from small, medium, and large lakes located in both rural and urban areas;
- ❑ Inland lake shoreline property value: > \$200 billion
- ❑ Assessed taxable value > \$113 Billion
- ❑ Generates > \$3.5 billion in revenue for local units of government and public school districts throughout the state

Source: Dr. Niles Kevern, MSU, McNALMS (2008)

# The Economic Value of Michigan's Inland Lakes

## What Role do Inland Lakes Play in Supporting Tourism – A Major Contributor to Michigan's Economy?

- ❑ 113.4 million visitors in 2014
- ❑ 58% daytrips to attractions in MI – including inland lakes
- ❑ Inland lakes in southeast Michigan visited primarily by Ohio residents
- ❑ Inland lakes in southwest Michigan visited primarily by residents of Indiana and Illinois
- ❑ Spent \$22.8 Billion – food, lodging, beverage, recreation
- ❑ Generated \$2.4 Billion in state and local tax revenue
- ❑ Generated \$2.5 Billion in federal tax revenue

## The Economic Value of Michigan's Inland Lakes

Michigan has more than 11,000 inland lakes. These resources provide numerous recreational opportunities and are a major **tourist and recreation** attraction that supports a recreational industry in Michigan valued at **15 billion per year** (Stynes, 2002).

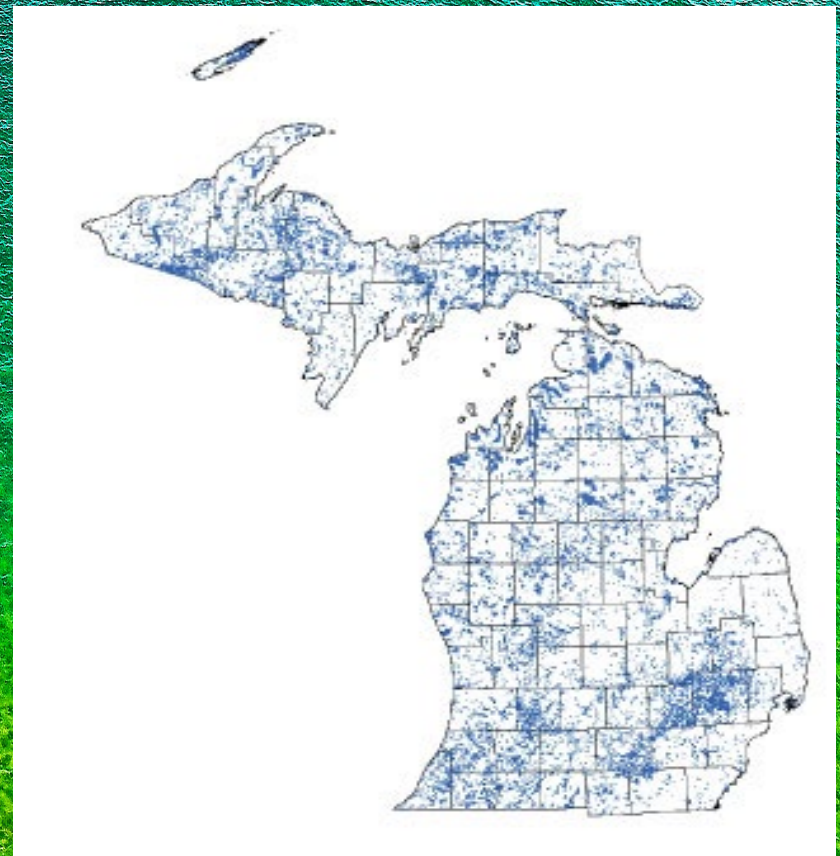
Source: Fuller, L.M., and Minnerick, R.J. (2008) State and regional water-quality characteristics and trophic conditions of Michigan's inland lakes, 2001–2005: U.S. Geological Survey Scientific Investigations Report 2008–5188, 58 p.



“...the value of our lakes can be measured by more than lakefront property values, tax bases, or fishing license revenue. Lakes provide value to all of us, whether we live on them or never even visit them.” Source: Bill Jones, “The Economic Value of Lake Ecosystem Services, NALMS Water Column, Spring 2010, Vol. 22, No. 1

# The Economic Value of Michigan's Inland Lakes

How many counties, townships, cities and towns, and public school districts benefit - and what is the direct and in-direct economic value they derive - from the existence of inland lakes in their area, or in their region?



# The Economic Value of Michigan's Inland Lakes

MI Government Entities and Public Schools  
Directly Supported by Property Tax Dollars

83 counties

1,102 townships

138 charter townships

881 cities and towns

895 public schools

56 Intermediate School  
Districts

Source: Michigan Townships  
Association





Wildlife-related recreation (like fishing, birdwatching, hunting, etc.) is a \$22 billion industry in Great Lakes states; \$3 billion in Michigan for fishing alone. In 2001, there were an estimated 16.6 and 0.6 million days of fishing and migratory bird hunting at lakes, with associated economic values of \$712.3 million and \$39.1 million (U.S. Department of the Interior 2002). An estimated 1.1 million people participated in wildlife viewing away from home (non-residential) and associated with a waterbody; this wildlife viewing had an estimated value of \$276.4 million (O'Neal and Soulliere 2006).



# The Economic Value of Michigan's Inland Lakes

## Michigan's Recreational Boating Economy

- ❑ Boating has a **\$7.8** billion economic impact on Michigan's economy each year;
- ❑ Michigan is **3rd** largest marine market in the United States;
- ❑ **950,000** to **1,000,000** boats registered in Michigan at any given time
- ❑ **8,066** registered boats per **100,000** Michigan residents in 2021 (Source: United States Coast Guard)
- ❑ Boating industry supports more than **1,500** businesses and **58,000** jobs;
- ❑ Nearly **50** percent of Michigan's population get on the water each year to boat and fish.

Source: Michigan Boating Industry Association, 2020

# The Economic Value of Michigan's Inland Lakes

## Michigan's Recreational Boating Economy

- ❑ 95% of mechanically propelled boats are less than 26 feet in length
- ❑ 54% are between 16 and 25 feet in length
- ❑ 66% of mechanically propelled boats are outboard motor boats
- ❑ vast majority of boats registered in Michigan operate on inland lakes via MI DNR or local government owned public access boat launch sites; and are towed by their owners

# The Economic Value of Michigan's Inland Lakes

## Recreational Fishing

- ❑ In-state and visiting anglers spent **\$2.3B** in Michigan on fishing tackle, bait, and equipment, buying meals, and renting fishing trip associated hotel rooms (MUCC, 2019).
- ❑ Approximately **48%** of all **recreational fishing** in Michigan occurs on **inland lakes** (Lupi & Hoehn, 1997).
- ❑ **1.13 million** fishing licenses sold in Michigan in 2021 (MDNR)

# The Economic Value of Michigan's Inland Lakes

## Recreational Fishing

“While economic value seems to be the most popular method for determining how important a resource is to a region, the value of inland fisheries transcends economic statistics. Inland fisheries also serve a crucial non-monetary role by contributing to the overall well-being of individuals by providing opportunities for forming connections between humans and nature.” – Sundmark, 2019



# The Economic Value of Michigan's Inland Lakes



“The mere mention of the familiar water sports should be sufficient to emphasize the appeal of lakes to our physical natures. But the appeal is deeper. Lakes are attractive not alone for their beauty but to a larger extent because they portray so faithfully our own emotions and intensify the conditions of our physical environment.” - **Dr. I. D. Scott, Inland Lakes of Michigan, 1920**

# The Economic Value of Michigan's Inland Lakes

## Michigan's Recreational Boating Economy

- ❑ marinas
- ❑ rental shops
- ❑ charter services
- ❑ boat sales
- ❑ boat maintenance
- ❑ restaurants and bars
- ❑ gas stations
- ❑ bait and tackle shops
- ❑ party / convenience stores



\$7.4 Billion Total Impact on Michigan's Economy

# The Economic Value of Michigan's Inland Lakes

What is the economic value of the important role that inland lakes play in supporting hunters by providing critical habitat that promotes waterfowl diversity and abundance?

- ❑ Number of Hunters: 700,000
- ❑ No. of Jobs: 136,000
- ❑ Total Expenditures: \$8.9 Billion
- ❑ Hunting license fees generate \$62M annually for wildlife and natural resources conservation projects

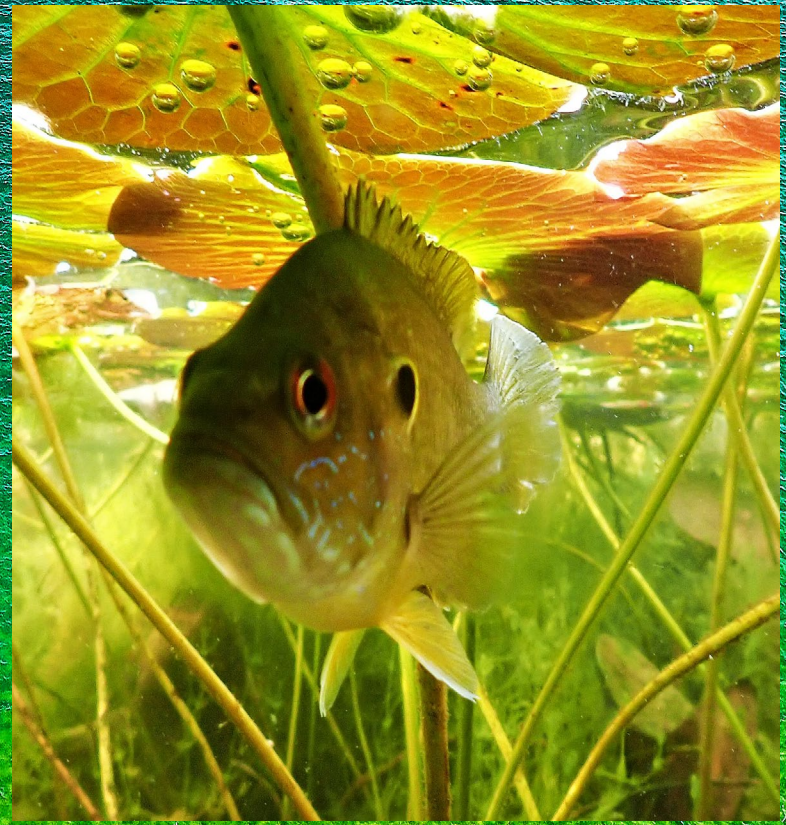


Source: Michigan United Conservation Clubs, 2019

# The Economic Value of Michigan's Inland Lakes

What is the economic value of the plethora of critical ecosystem services provided by natural shorelines?

- ❑ Protect shorelines from erosion;
- ❑ Provide optimal habitat for fish and other freshwater species;
- ❑ Improve water quality, water clarity, and store nutrients;
- ❑ Contributes to overall aquatic ecosystem health and sustainability;
- ❑ Substantially outperform hardened shorelines in a storm;
- ❑ Attract and help sustain a plethora of aquatic and terrestrial wildlife.



# The Economic Value of Michigan's Inland Lakes

What is the economic value of the critical ecosystem services provided by native aquatic plant communities?

- ❑ Promote and sustain moderate biological productivity, good water clarity, and aquatic ecosystem health, stability, and bio-diversity by:
  1. Preventing the resuspension of sediment and facilitating sedimentation;
  2. Utilizing and storing nutrients that would otherwise be available to support the growth of undesirable algae;
  3. Providing optimal habitat for phytoplankton consuming zooplankton.

Source: Scheffer *et al.*, 1993

- ❑ Providing a protective nursery to young-of-the-year fish, aquatic species such as turtles, frogs, and many other aquatic organisms;
- ❑ Support optimal habitat for fish growth and sustainability by providing a rich foraging environment for aquatic insects, small fish, and minnows;
- ❑ Providing complex habitat that helps achieve and sustain the ecosystem services derived from bio-diversity.

Source: Petr, 2000

# The Economic Value of Michigan's Inland Lakes

What is the Value of the Myriad of Ecosystem Services Provided by *Chara vulgaris*?



# The Economic Value of Michigan's Inland Lakes

## What Value Do We Place on Regulating Ecosystem Services?

- ❑ What is economic value of the non-use, no market category of ecosystem services provided to our inland lakes, and indirectly to humans by *Chara vulgaris*, for example, that helps achieve and maintain moderate trophic status, water clarity, and bio-diversity in many of our inland lakes by:
  1. Preventing the resuspension of sediment, and facilitating sedimentation;
  2. Utilizing and storing nutrients that would otherwise be available to stimulate and sustain undesirable algae growth;
  3. Providing optimal habitat for phytoplankton consuming zooplankton;
  4. Producing allelopathic chemicals that suppress phytoplankton growth;
  5. Providing protective habitat and an excellent food foraging environment for young-of-the-year, small fish, and many other aquatic organisms.

Source: Kufel and Kufel, 2002

# The Economic Value of Michigan's Inland Lakes

What Economic Value Do We Place on the High Level of Bio-Diversity that is Present in Many of our Inland Lakes?



## The Economic Value of Michigan's Inland Lakes

What Economic Value Do We Place on the High Level of Bio-Diversity that is Present in Many of our Inland Lakes?

“Biodiversity requires our attention for two reasons. First, it provides a wide range of indirect benefits to humans. Second, human activities have been contributing to unprecedented rates of biodiversity loss, which threaten the stability of ecosystems in terms of their capacity to provide goods and services to humans.” Nijkamp *et al.*, 2008

# The Economic Value of Michigan's Inland Lakes



“The ecosystem services concept makes it abundantly clear that the choice of “the environment versus the economy” is a false choice. If nature contributes significantly to human well-being, then it is a major contributor to the real economy, and the choice becomes how to manage all of our assets, including natural and human-made capital, more effectively and sustainably.” Costanza, 2000

# The Economic Value of Michigan's Inland Lakes



“Freshwater lakes support a variety of recreation and tourism activities. Such activities are sources of enjoyment and satisfaction while supporting employment, outdoor exposure, social interaction, and other activities (Sterner *et al.*, 2020).

# The Economic Value of Michigan's Inland Lakes

## Assessing the Value of our Inland Lakes

“Lakes provide optimal social benefits only if those making management decisions recognize the full set - ecological, economic, cultural and social - of potential contributions that lakes make to society, and management decisions are integrated to provide balanced attention to all values that lakes provide.” Klessig, 2001



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