

Michigan Steelhead Management - Large River Creel Surveys to Inform Status of the Fishery



Seth Herbst and Jay Wesley
NRC Fisheries Subcommittee Meeting
Sept. 14, 2023

2023 Michigan Fishing Guide

Rules apply from April 1, 2023 – March 31, 2024



Get the digital guide at Michigan.gov/DNRDigests

Steelhead Management Goal

Provide year-round Steelhead angling opportunities to diverse user groups with differing ability levels and preferred fishing methods in Michigan's Great Lakes and connected rivers.



Illustration provided by Joseph R. Tomelleri ©

Steelhead Regulatory Recommendation

- Retain existing Steelhead regulations
 - Continue to collect information and reassess as the 2027 regulatory sunset approaches
 - Perceived benefit of restricted seasonal harvest wouldn't be realized for several years
- Harvest is not perceived as high risk
 - High levels of voluntary release
- Primary mechanisms influencing population status
 - Ecological change
 - Predation
 - Access to suitable spawning habitat
- Some level of harvest is preferred



Habitats affect life history, maturity and population dynamics

Great Lake




Steelhead in Michigan's Great Lakes and Tributaries

- **Non-native species** that was introduced to the Great Lakes in late 1800s
- Stocking successfully led to naturalized Steelhead in select rivers
- Managed to create desirable and diverse fishery
 - Inter-jurisdictional management
 - Stocking by multiple jurisdictions
 - Mixed fishery with largescale movements



Steelhead Management in the West

- **Direct comparison is not appropriate**
 - Management goals and status drastically differs
- Primary goal is recovery of **native** species
- Management strategies to adhere to requirements under Endangered Species Act
 - Protection of genetically distinct populations
 - Abundance thresholds for viable populations




Steelhead Management Foundation

ODFW Mission: To protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations

◇ Guidance Documents:

- ◇ Endangered Species Act
- ◇ Recovery Plans
- ◇ U.S. vs. Oregon
- ◇ Program Goals
- ◇ Agency Policy
- ◇ Fisheries Management and Evaluation Plans



Conservation

Steelhead management

Connection

2023 ODFW

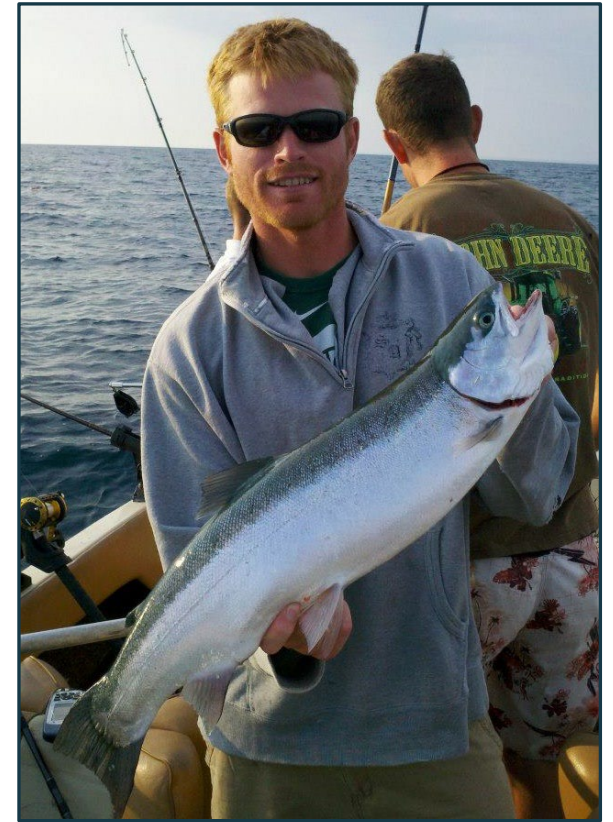
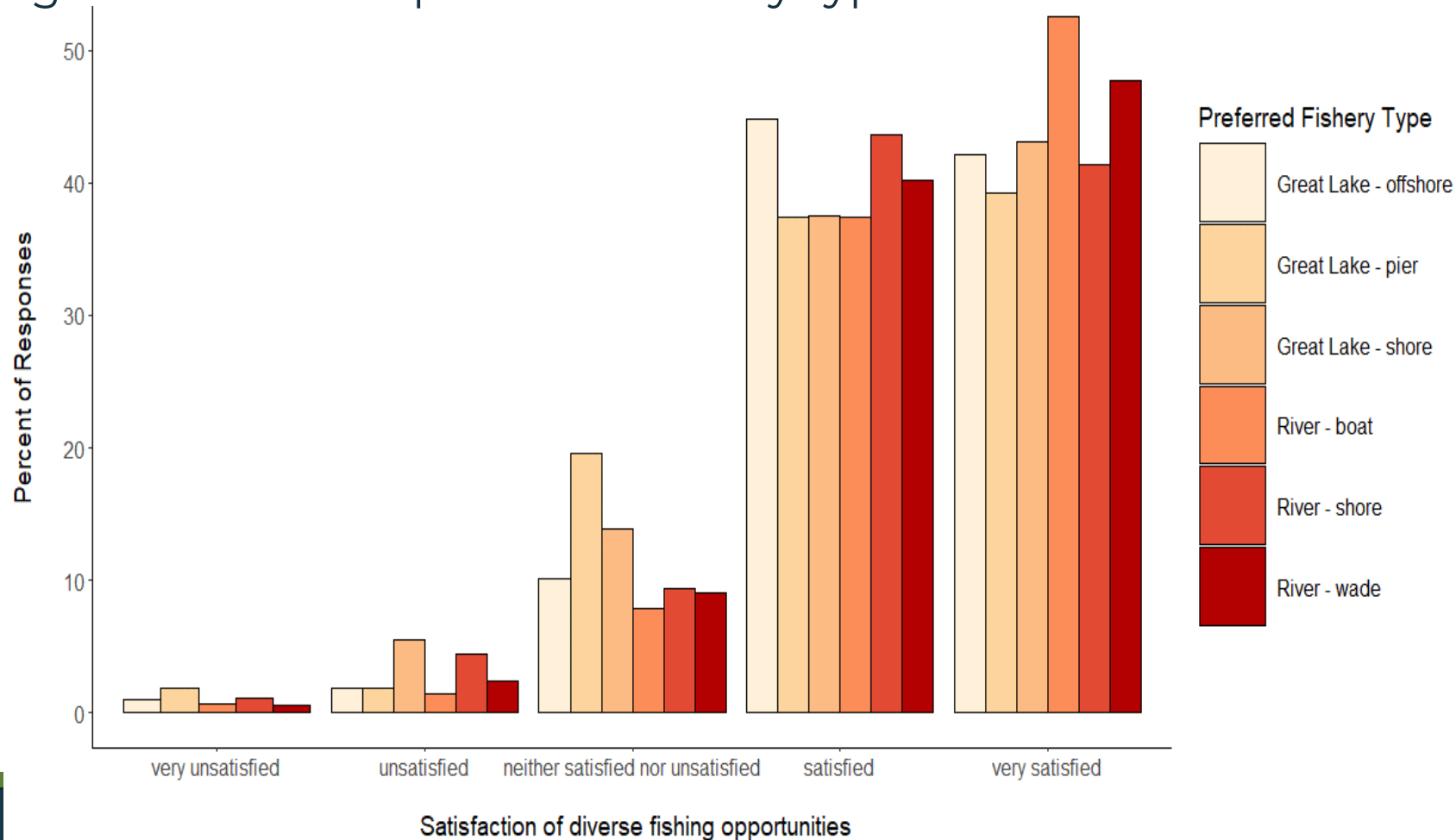
MDNR Steelhead Management & Research

- Egg collections - weir operations
- Stocking
- Fisheries assessments
- Habitat enhancements
- Understand angler use
 - Creel surveys
 - Angler surveys
 - Direct engagement
- Research to inform status
- Regulation recommendations



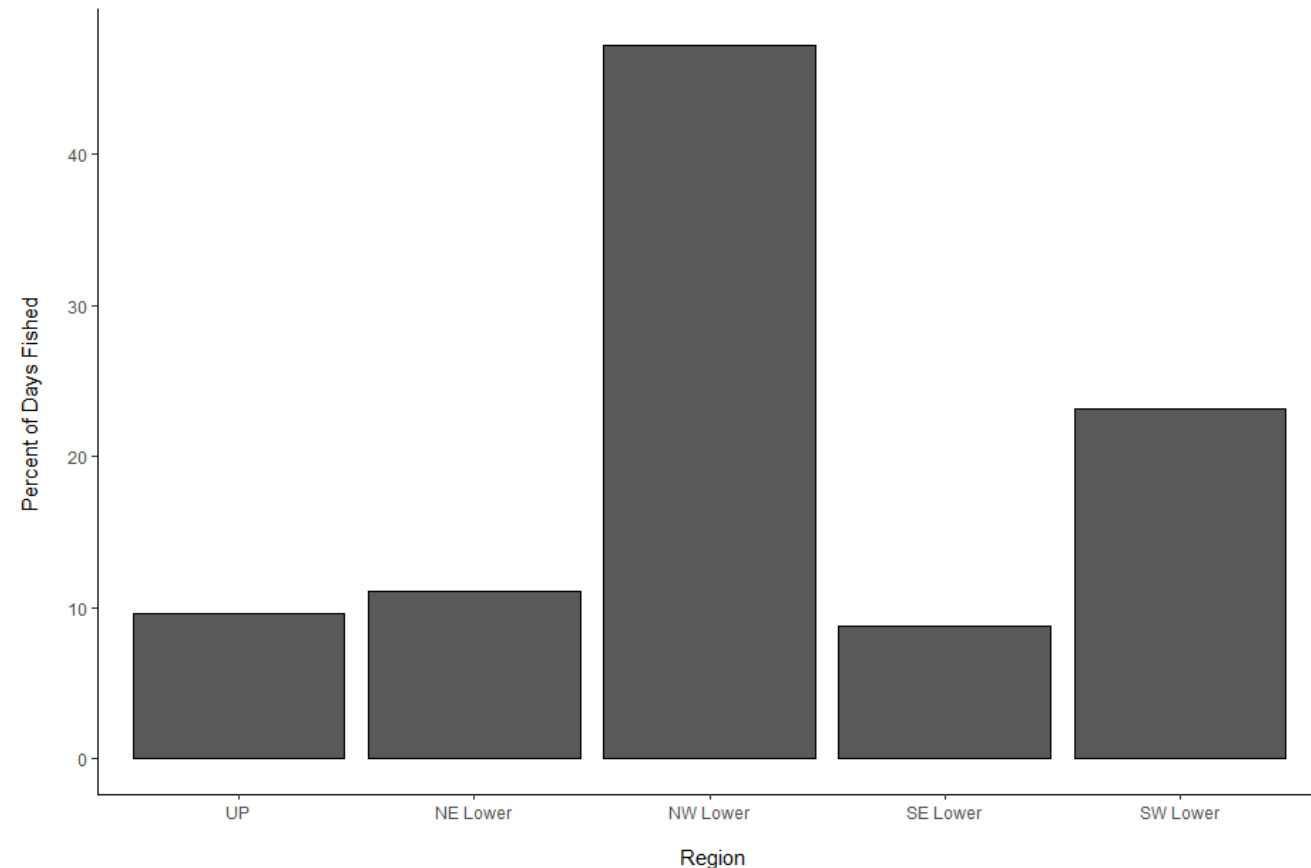
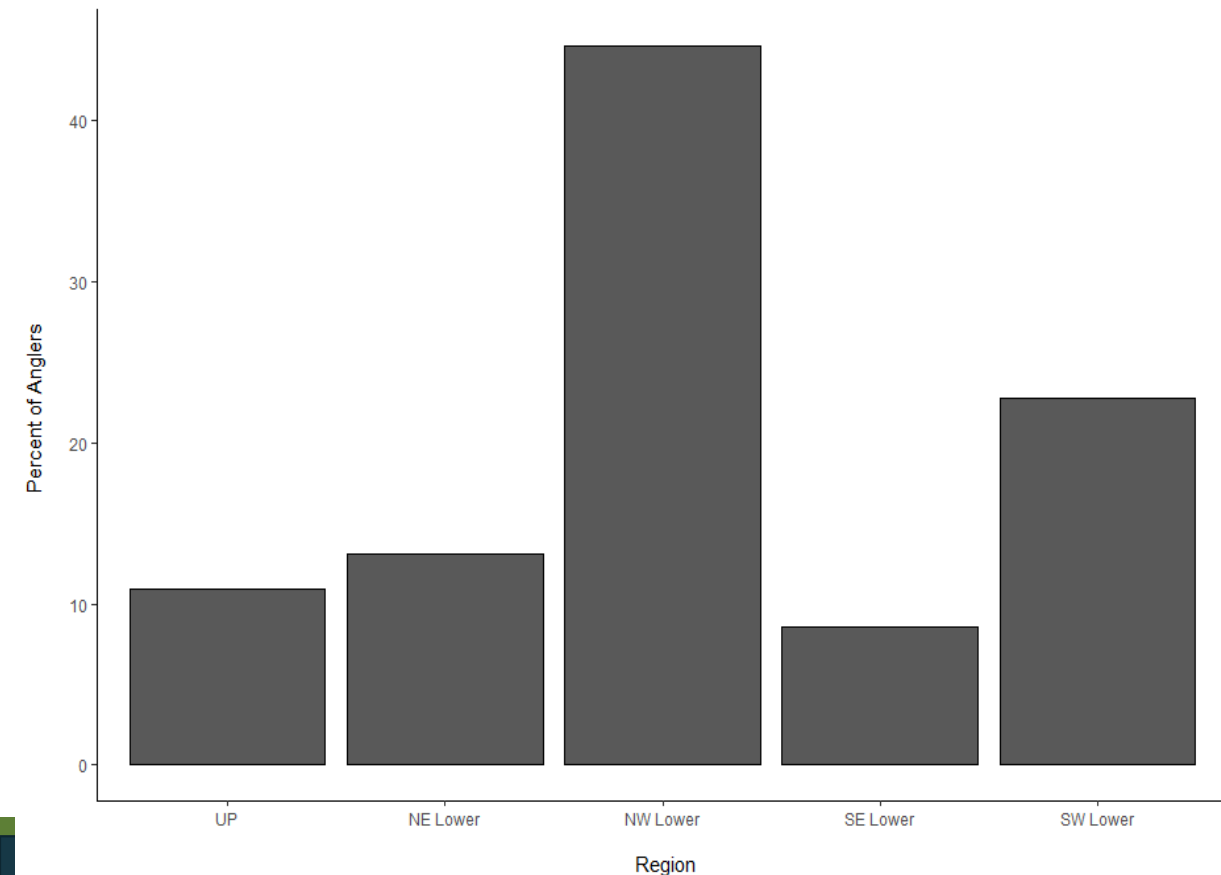
2022 Steelhead Angler Survey

- Anglers are satisfied with MI's diverse Steelhead fisheries, regardless of their preferred fishery type

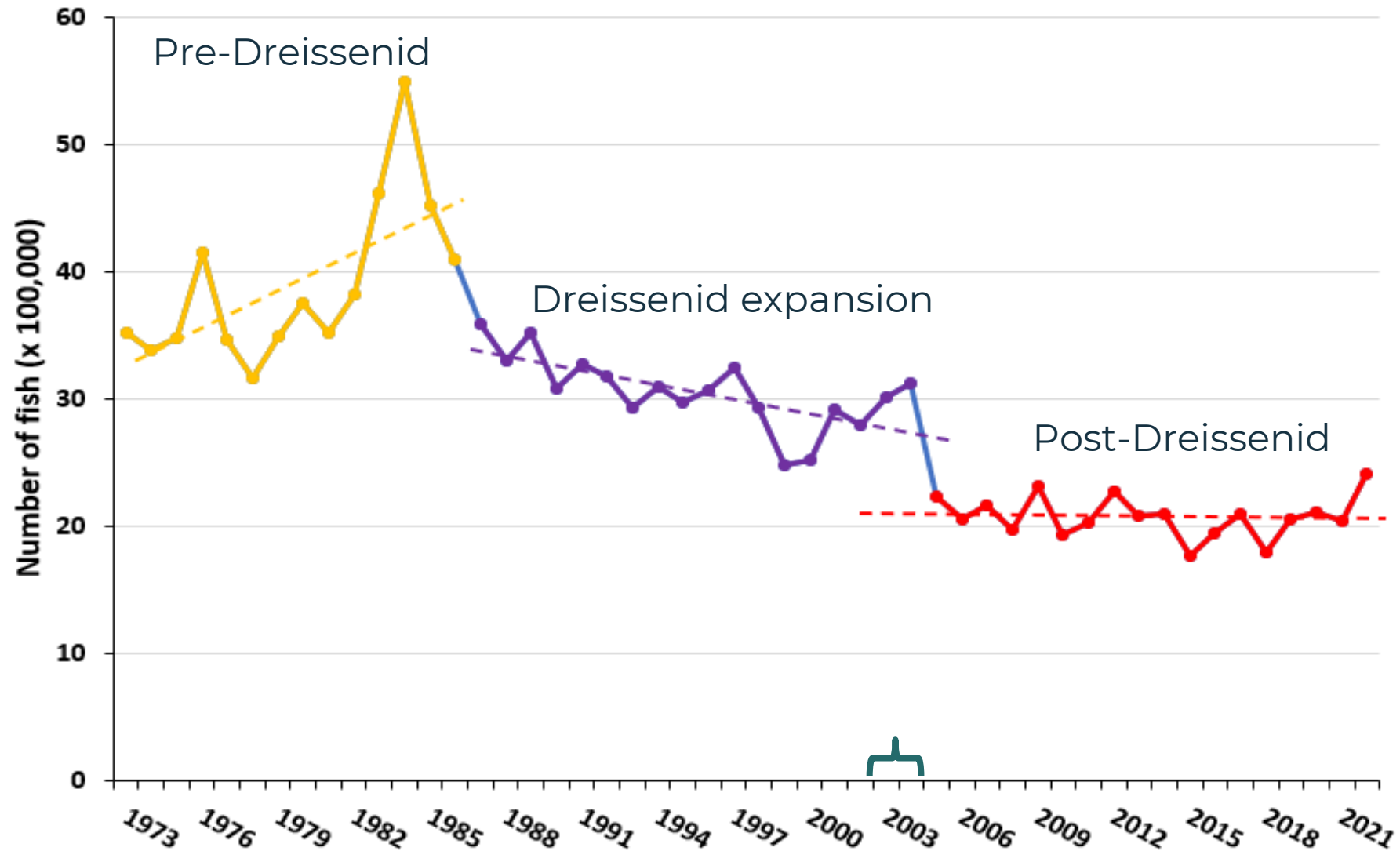


Regional Differences in Fishing Effort

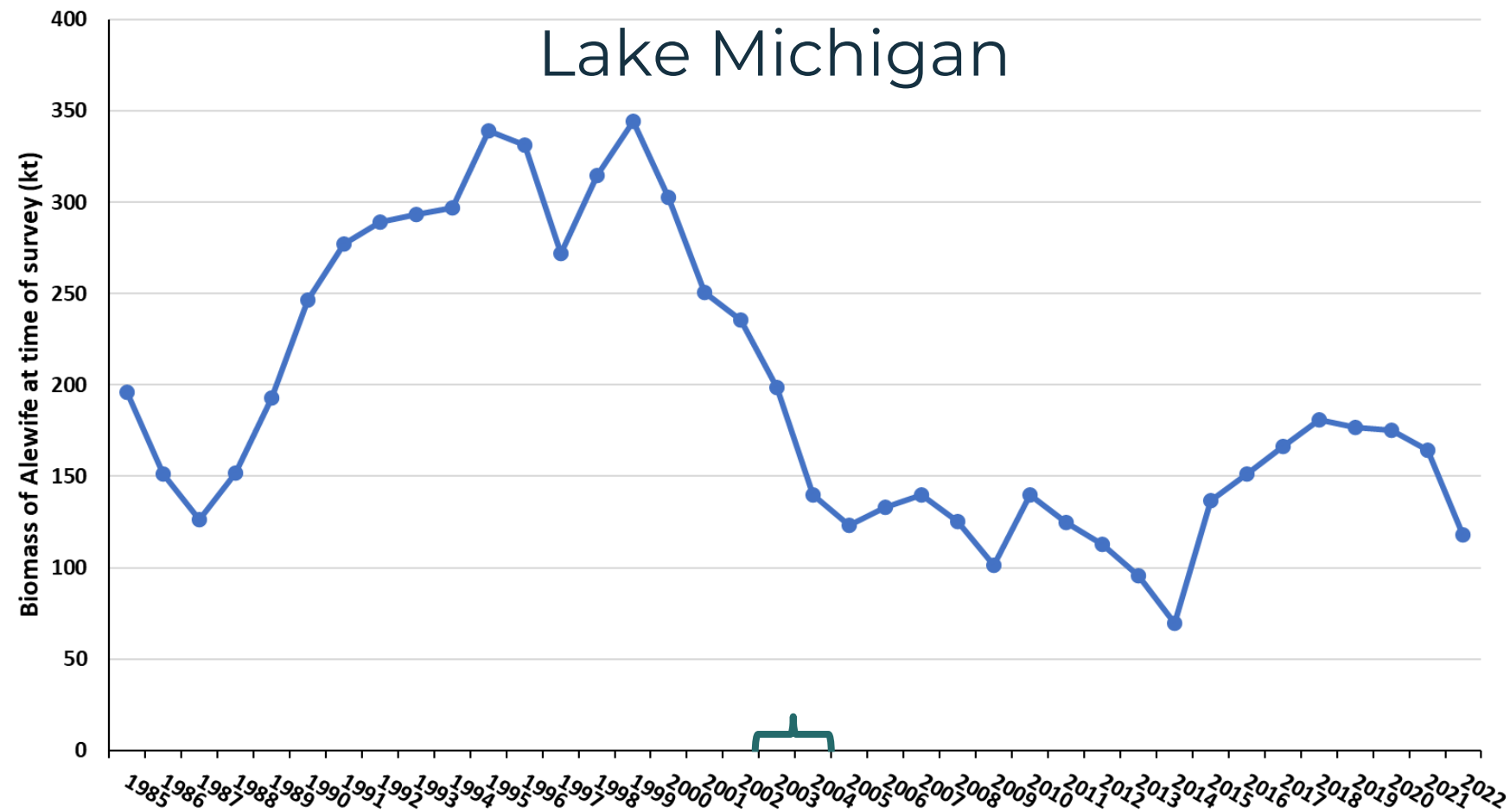
- More anglers and more fishing effort occurs in rivers in NW Lower Peninsula



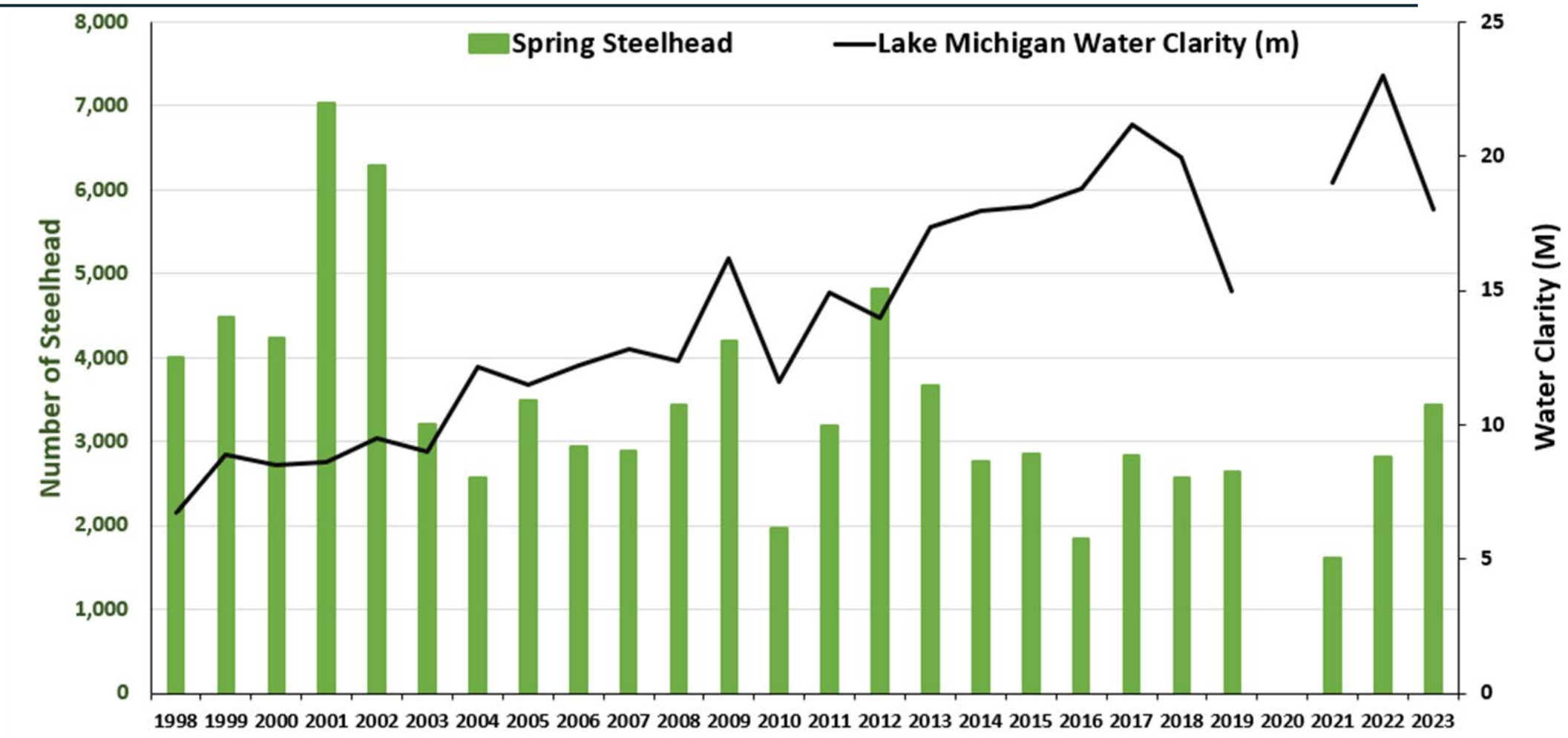
Status of Steelhead in Lake Michigan



Estimated Alewife Biomass – Surrogate for Prey Status



Little Manistee Weir Spring Steelhead



St. Joseph River – South Bend Fish Ladder Counts

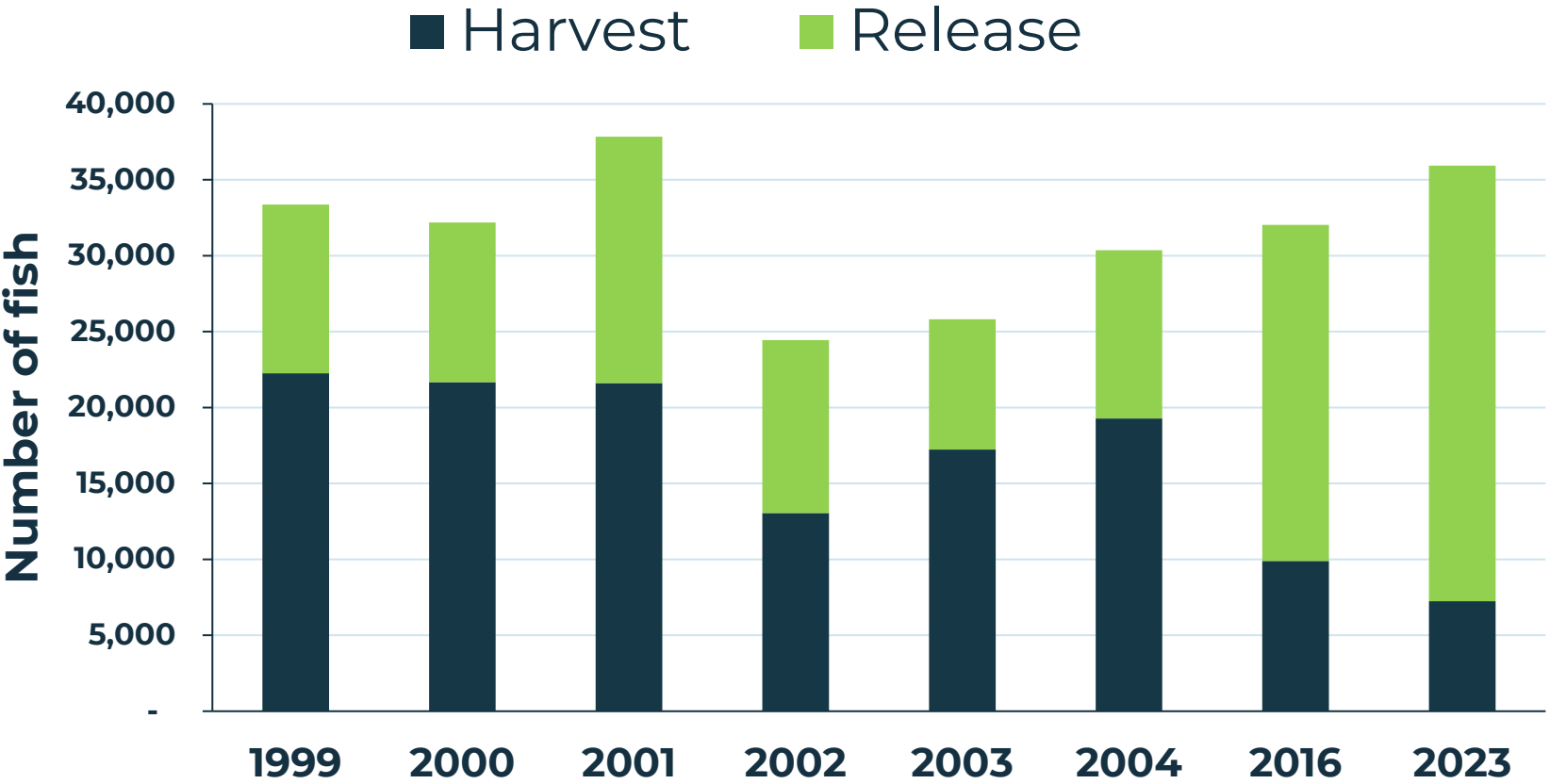


Creel Survey - Manistee and Muskegon Rivers

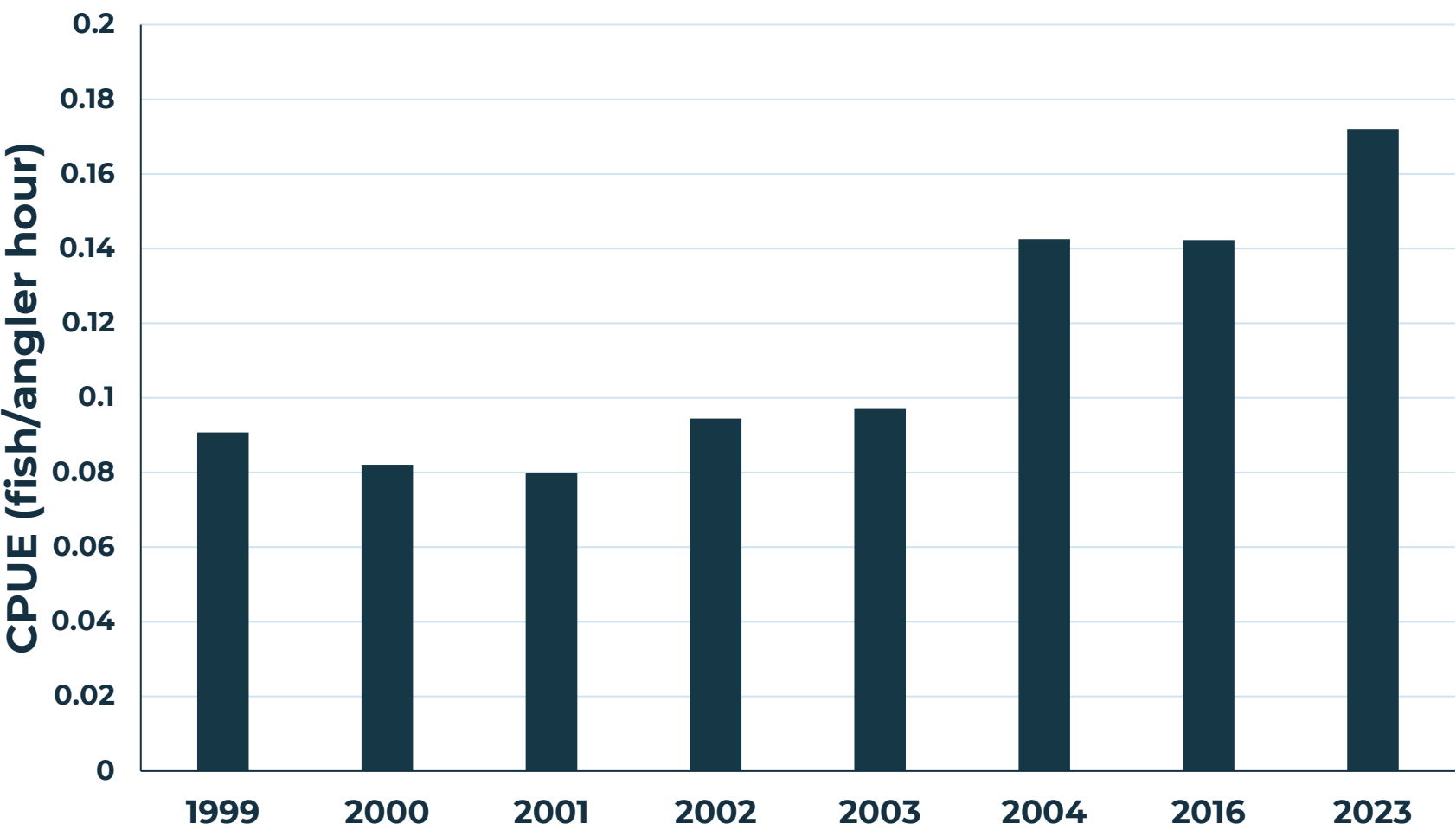
- Angler interviews conducted from Oct. 1, 2022 - May 31, 2023
- Provided estimates of fishing effort and harvest
- Collection of biological samples to assess age and growth
 - Samples will be processed and summarized this winter
- Increased understanding of localized angler preferences and behaviors



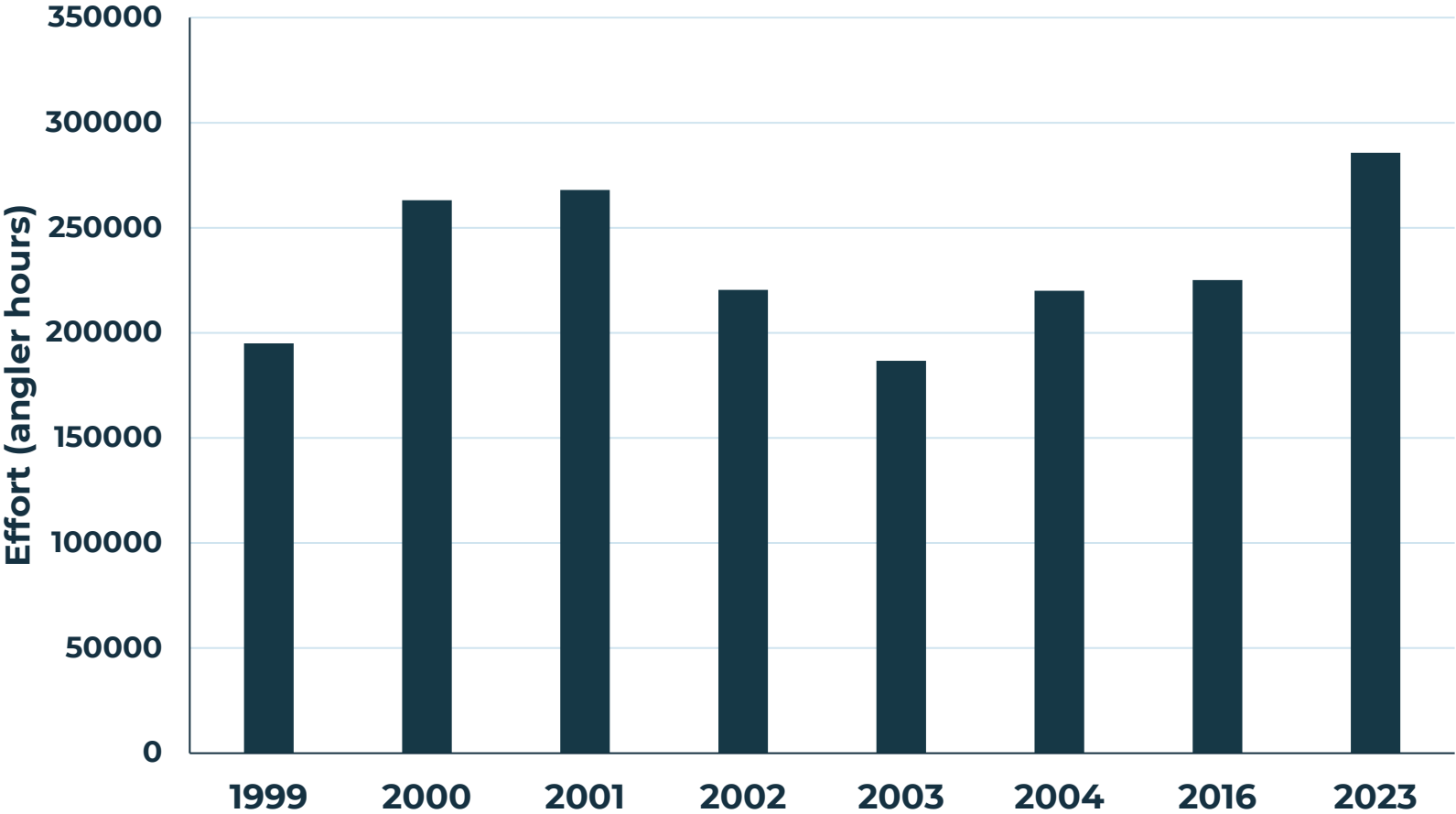
Manistee River – Total Catch



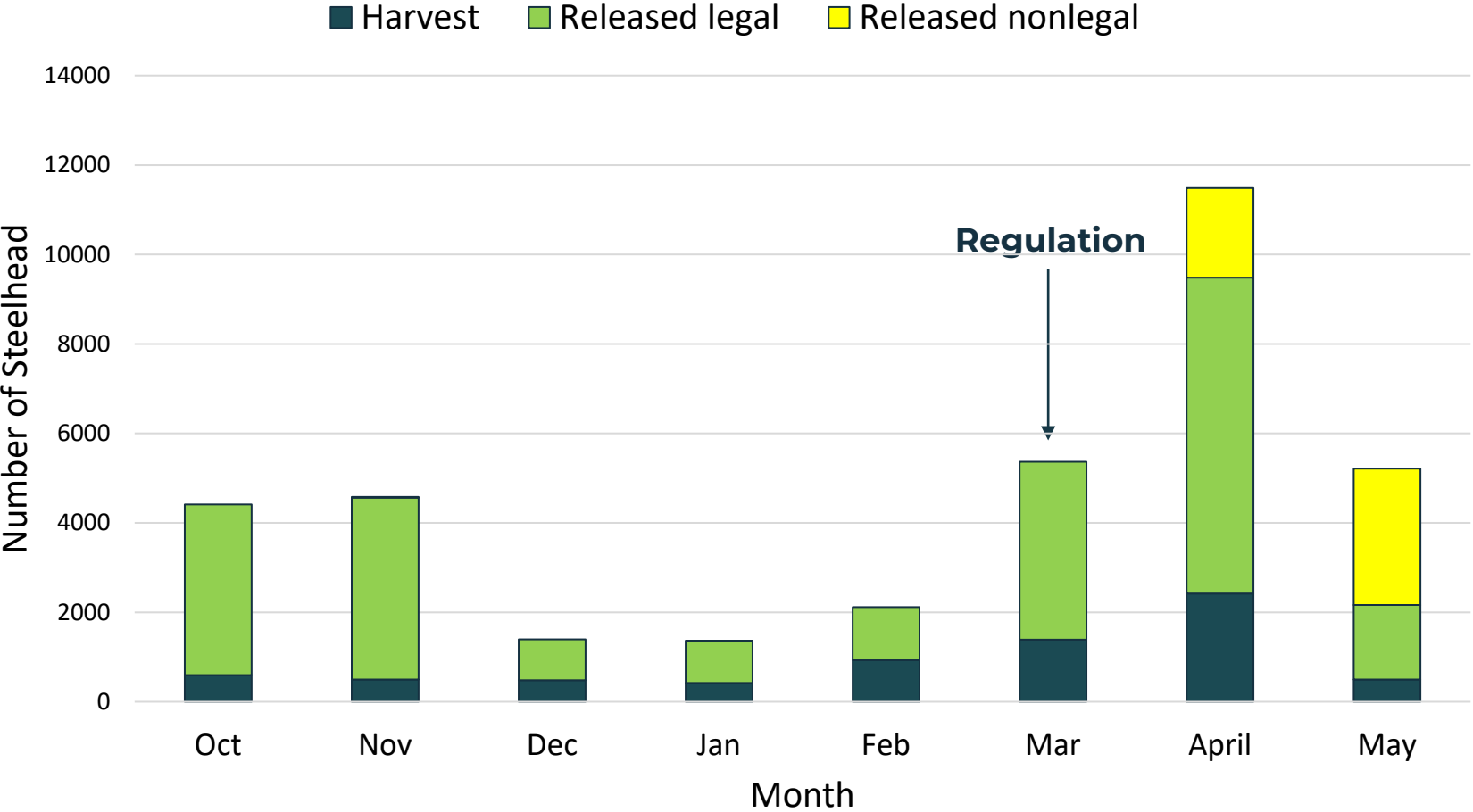
Manistee River - Catch Rates



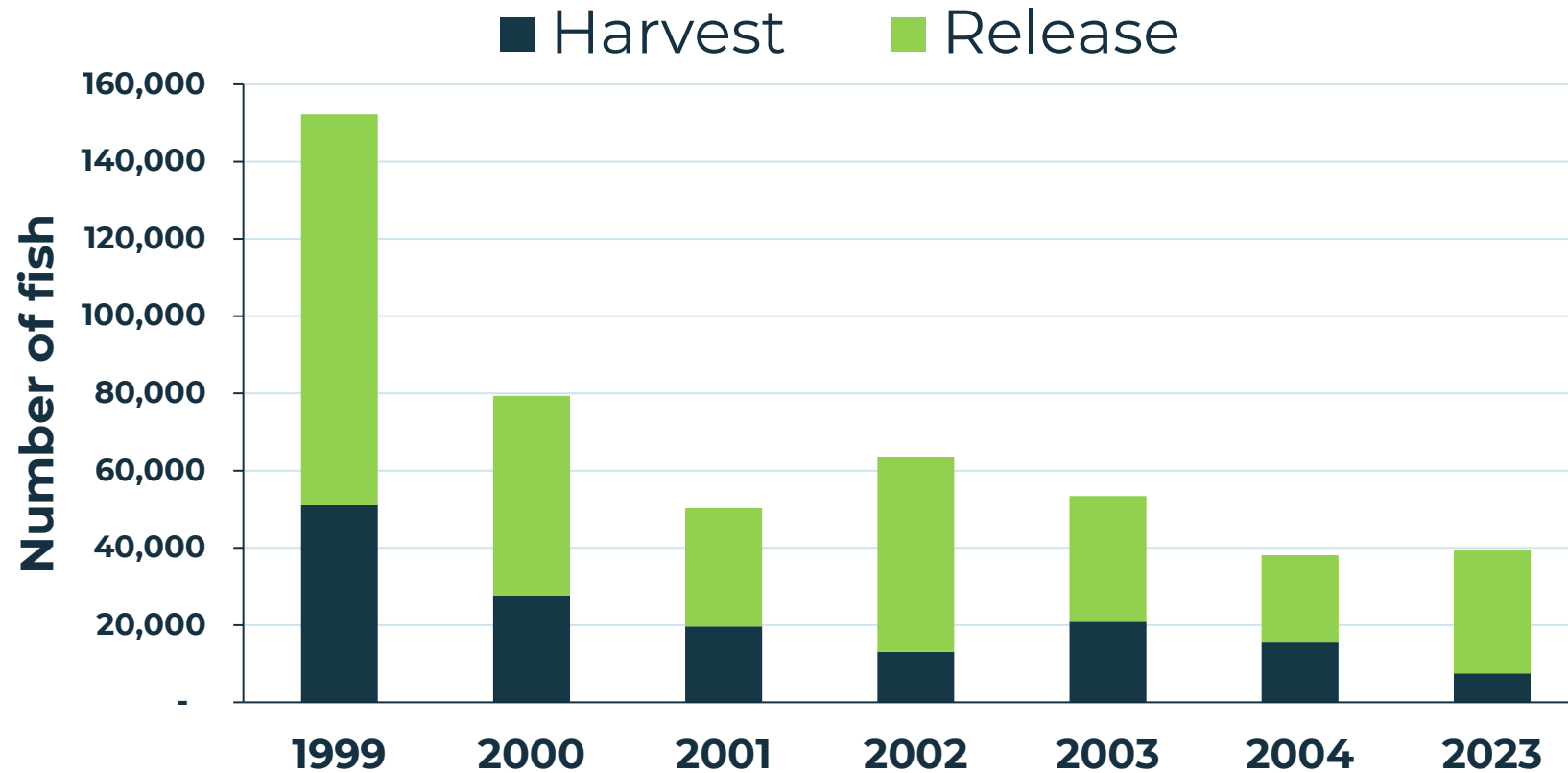
Manistee River – Total Effort



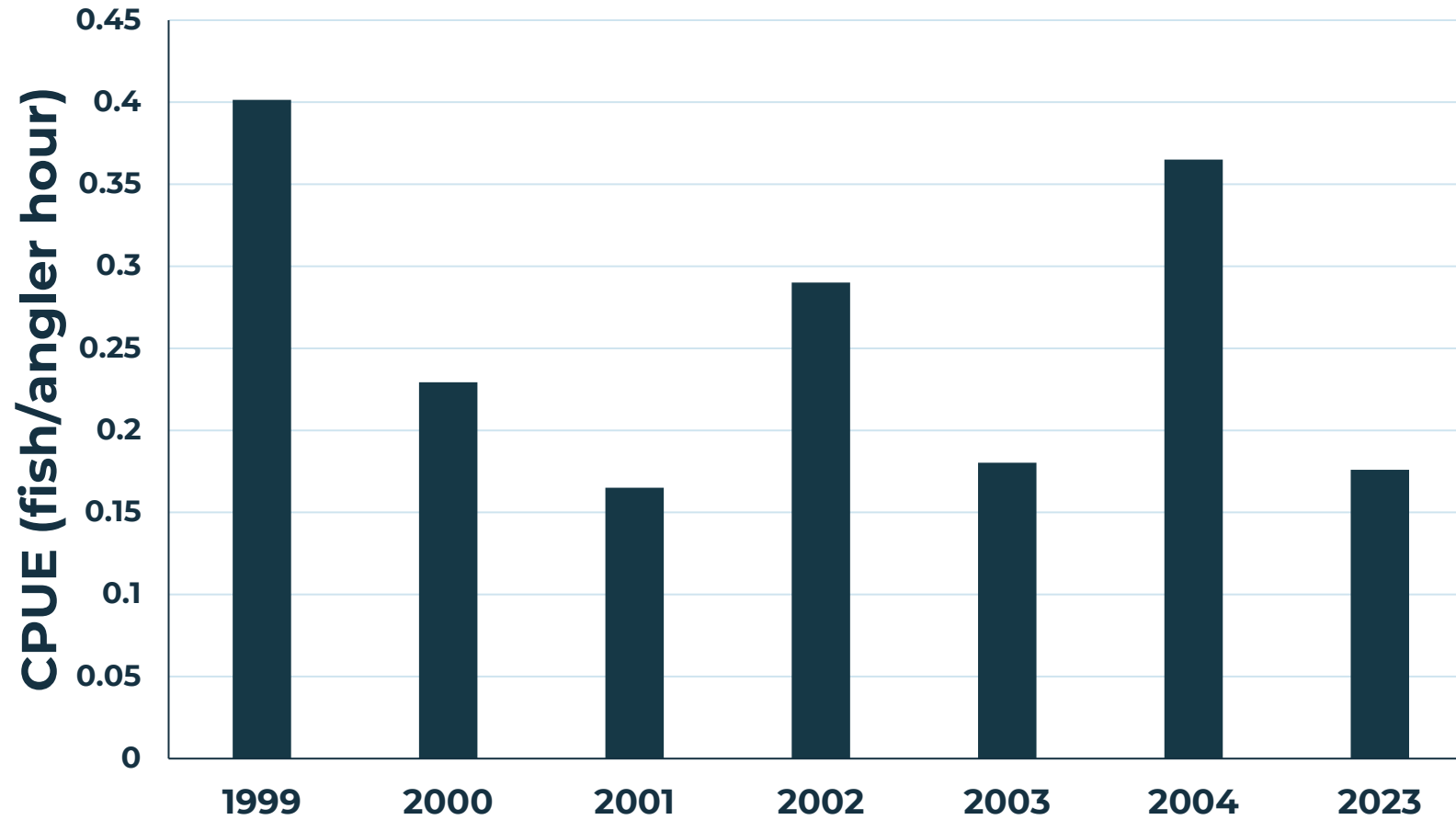
Manistee River- Monthly Catch (2023)



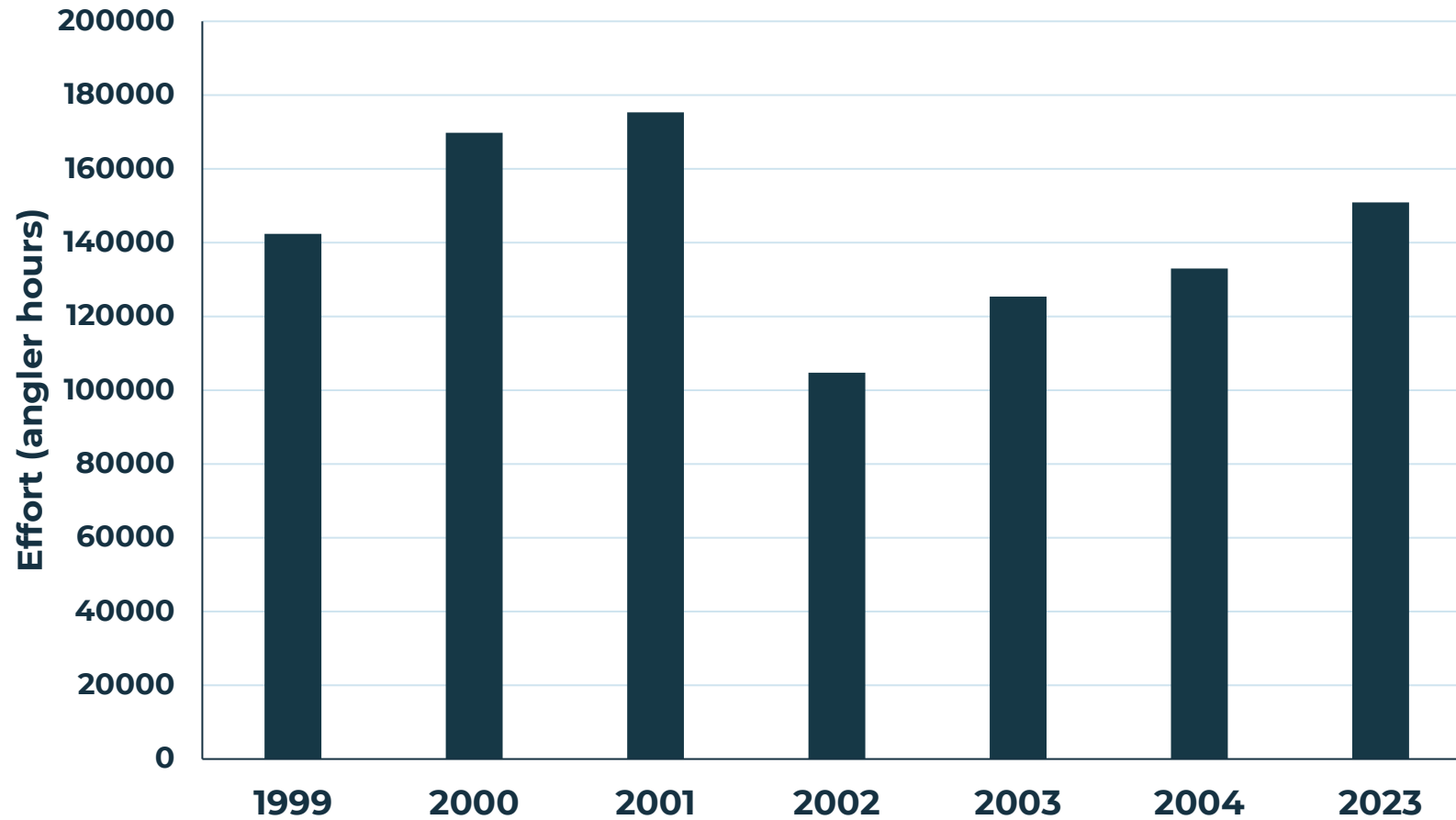
Muskegon River – Total Catch



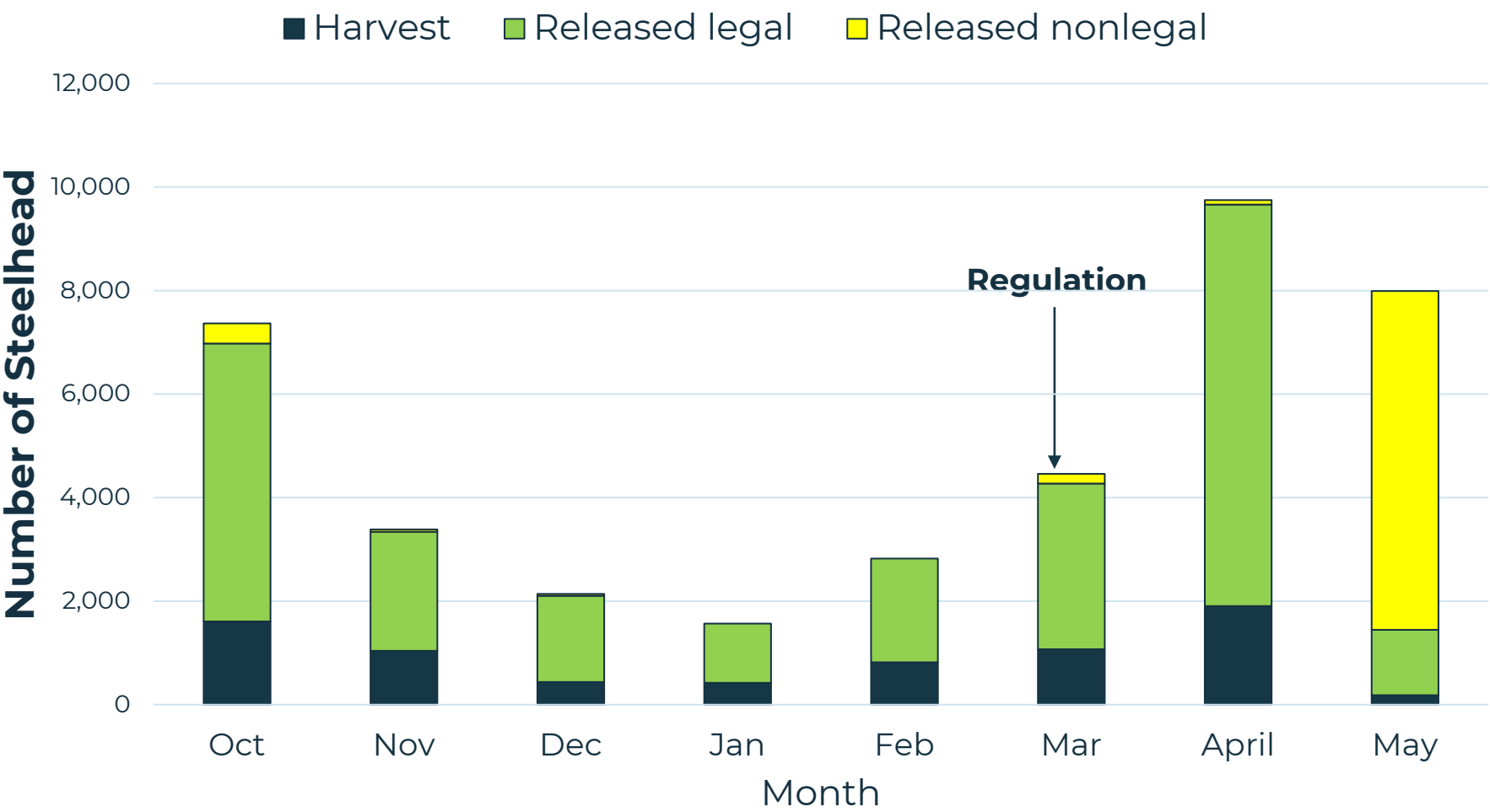
Muskegon River - Catch Rates



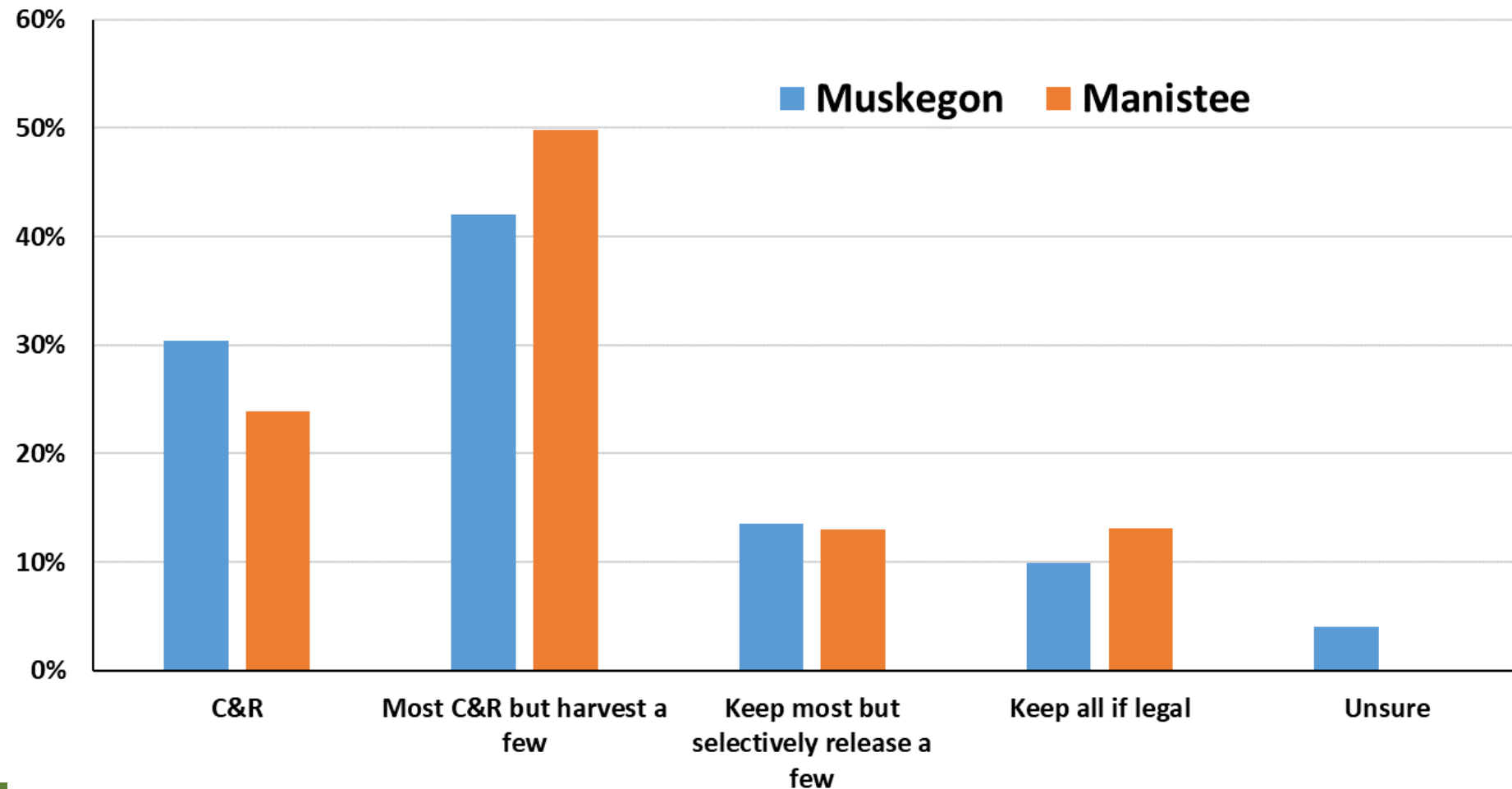
Muskegon River – Total Effort



Muskegon River- Monthly Catch (2023)

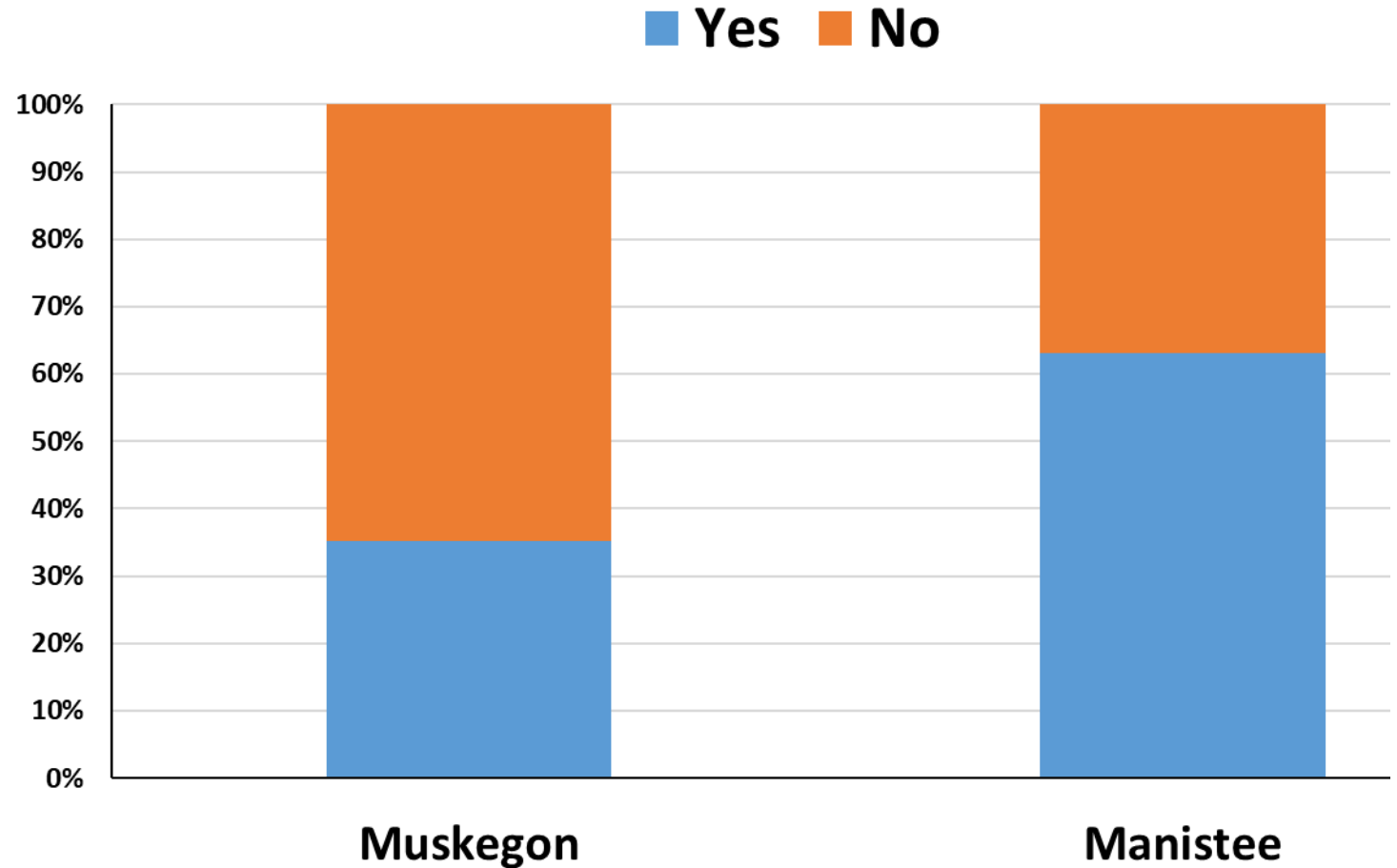


Personal Approach to Steelhead Fishing – Creel Survey

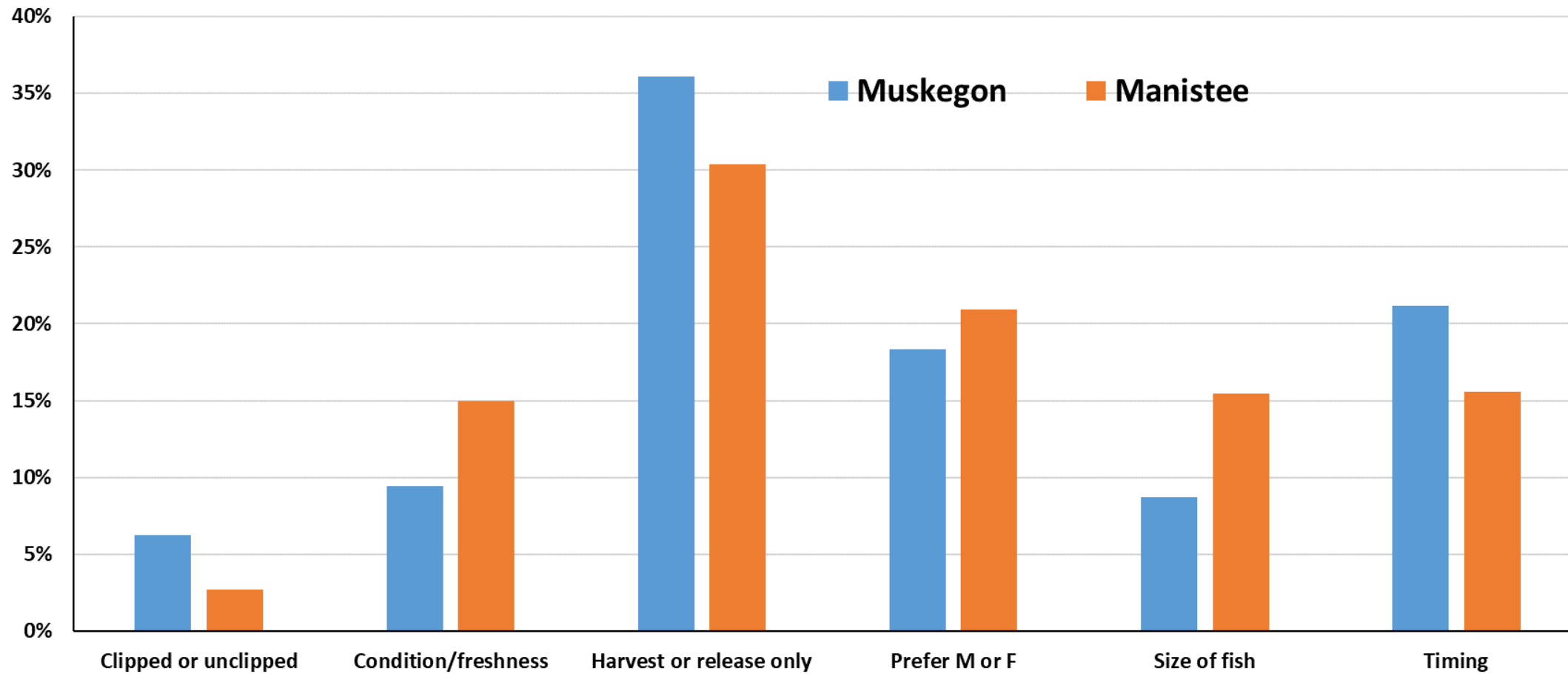


Do you look for fin clips in your catch?

- Differing levels of awareness or interest in deciphering between naturalized and stocked Steelhead
- Increased education would be necessary if clip status is considered within regulatory framework



Reason for Selective Harvest?



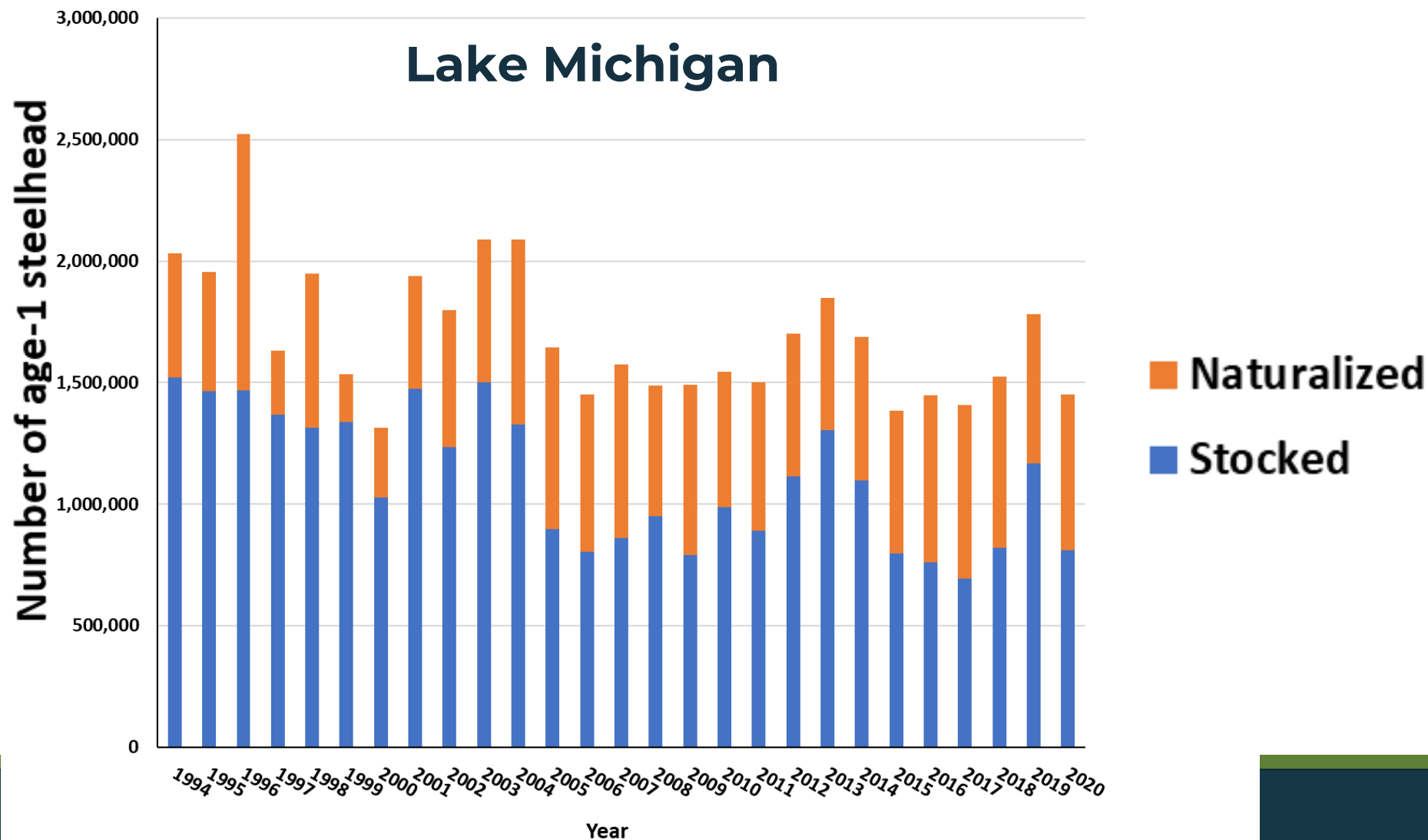
Creel and Angler Surveys – Harvest Preference

- ~70% of anglers practice CIR with some level of harvest or CIR
- Creel surveys on Manistee, Muskegon, Grand, St. Joseph and Dowagiac indicate relatively high percentages of CIR
 - Release ranged from 38% on St. Joseph to greater than 60% on other rivers
 - Highest CIR on Manistee River in 2022-23 (~80% released)
- Low proportional harvest rates pose reduced risk to Steelhead
- Origin of fish had limited influence on harvest preference

Naturalized Steelhead – Summary of Status

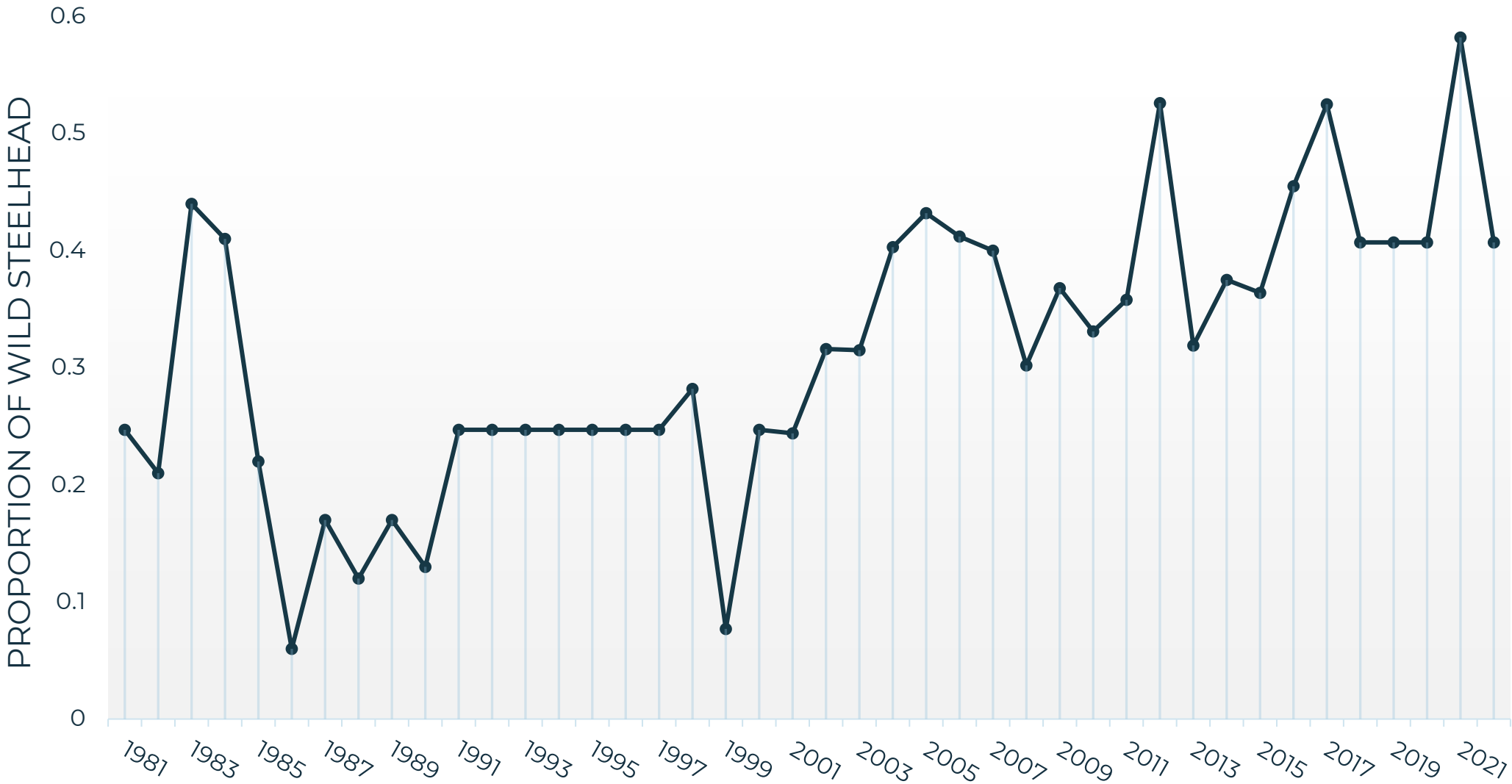
- NRC expressed interest for increased protections for naturalized populations

Estimated Number of Stocked vs Naturalized Age-1 Steelhead





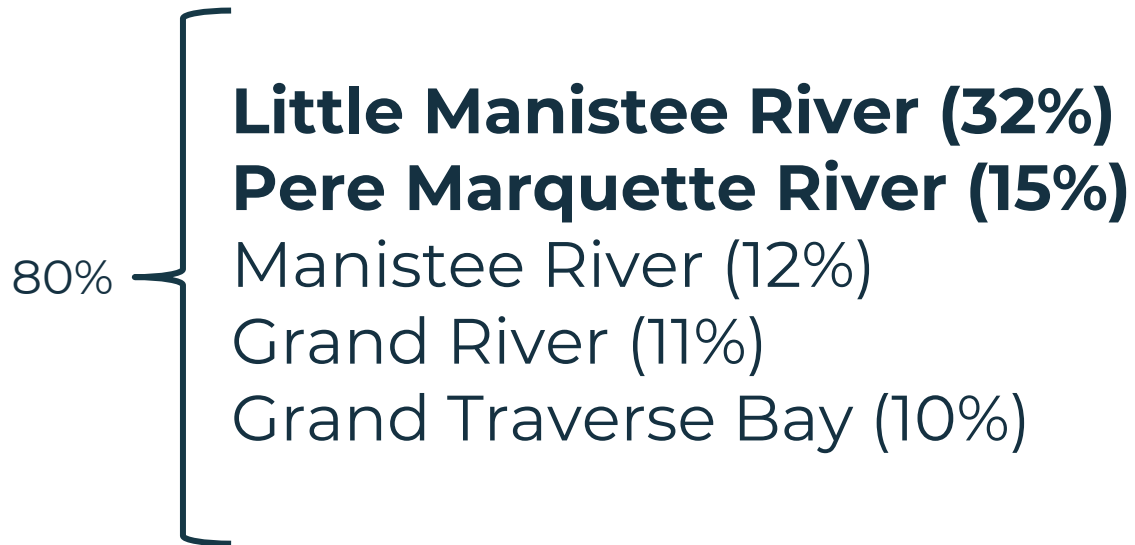
Proportion of Naturalized Steelhead-Lake Michigan Creel



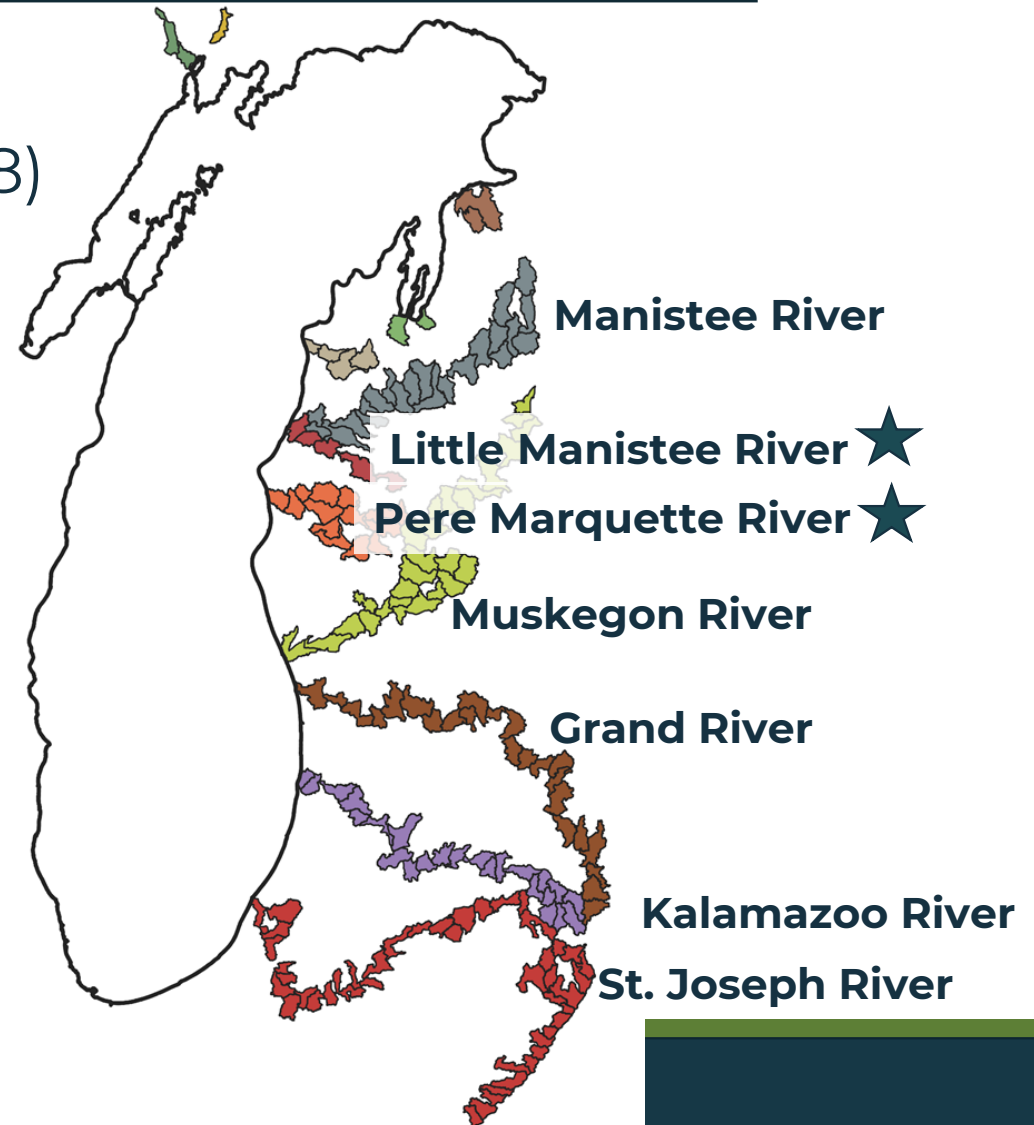


Sources of Naturalized Steelhead Caught in Lake Michigan

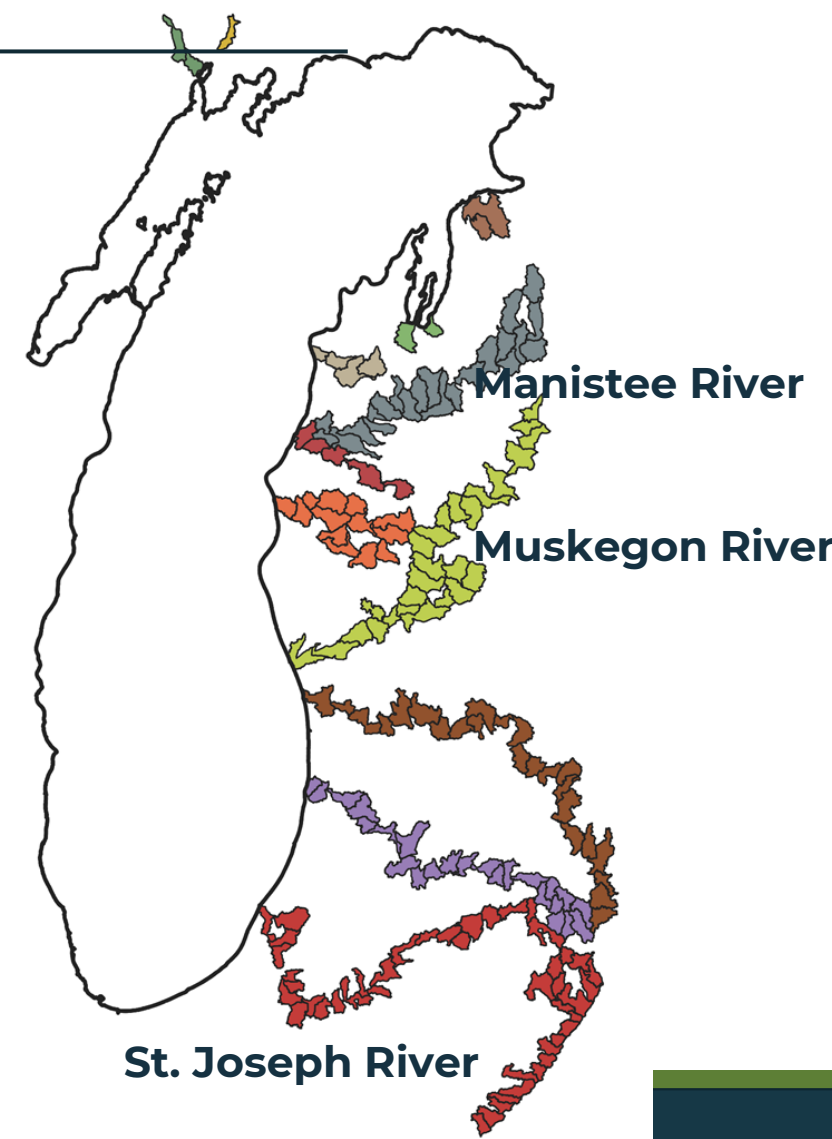
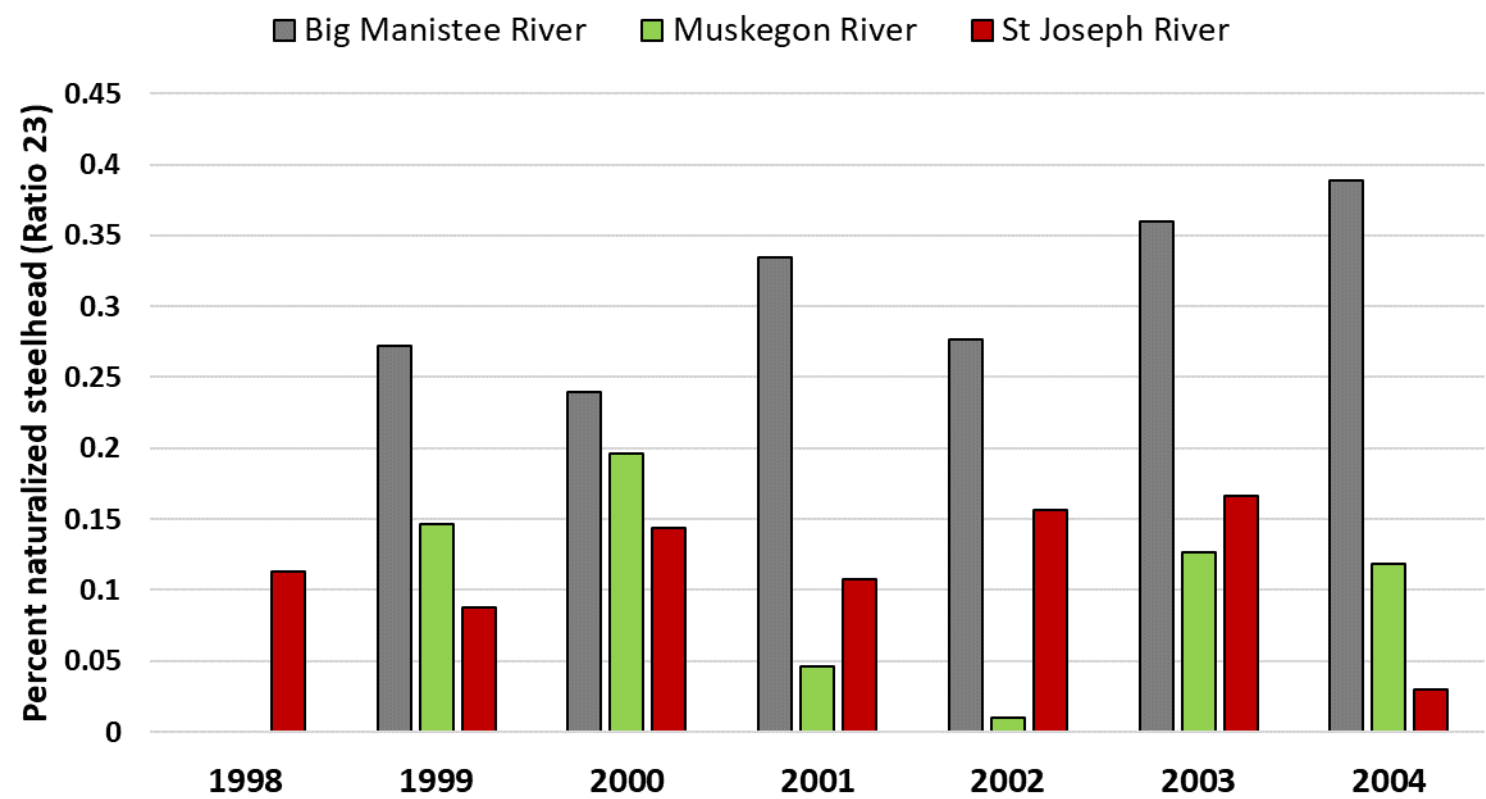
- 30-40% of Steelhead caught in Lake Michigan were naturalized (2016-2018)



- Negligible contribution from Muskegon River (< 1%)



Percent of Naturalized Steelhead Caught in Rivers

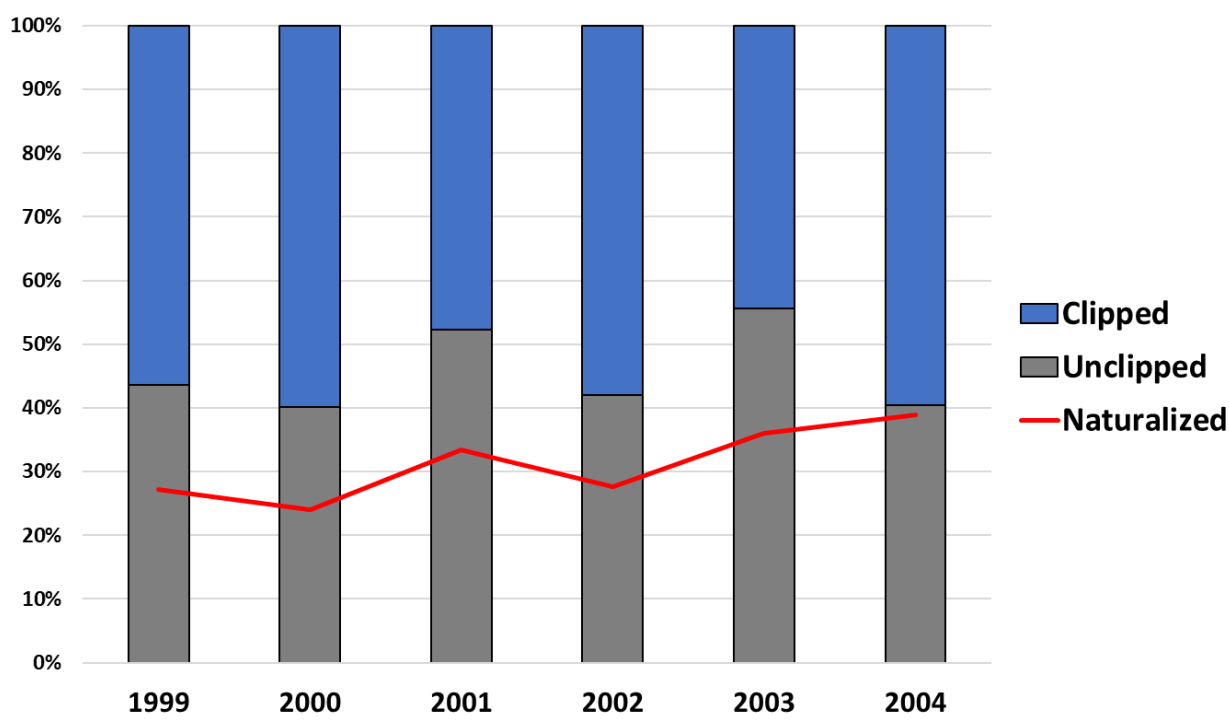




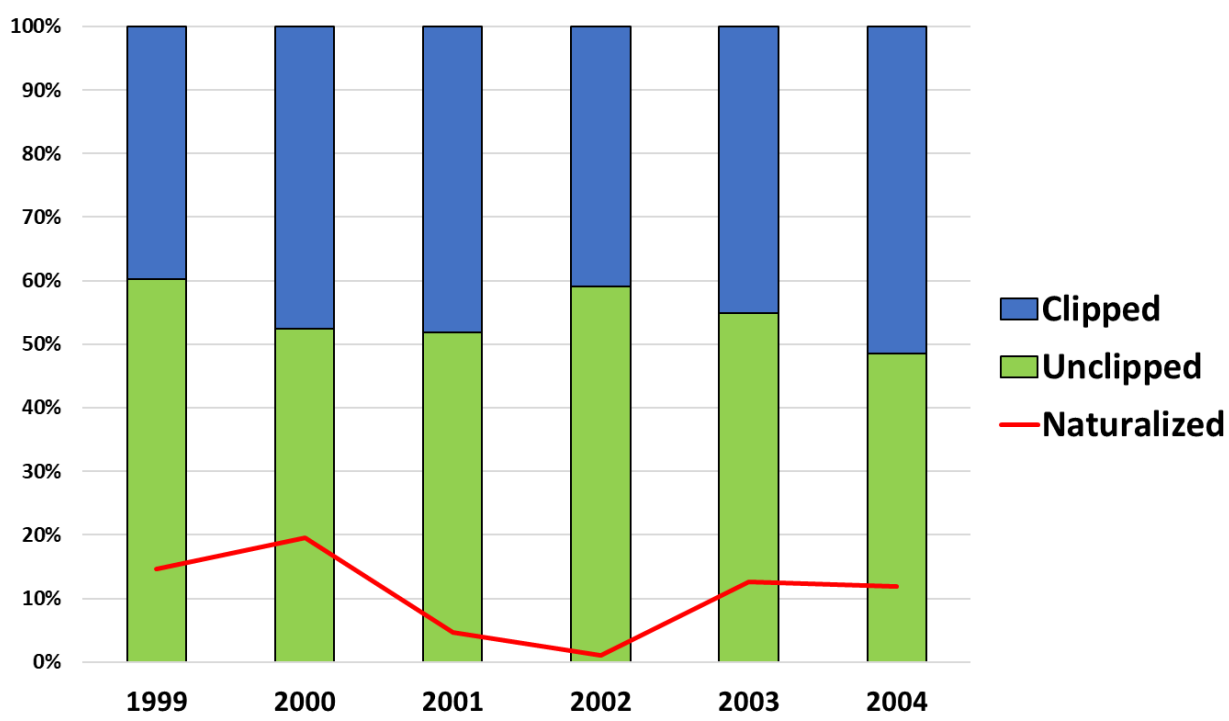
Percent of Naturalized Steelhead Caught in Rivers

- Presence of some unmarked stocked fish

Big Manistee River

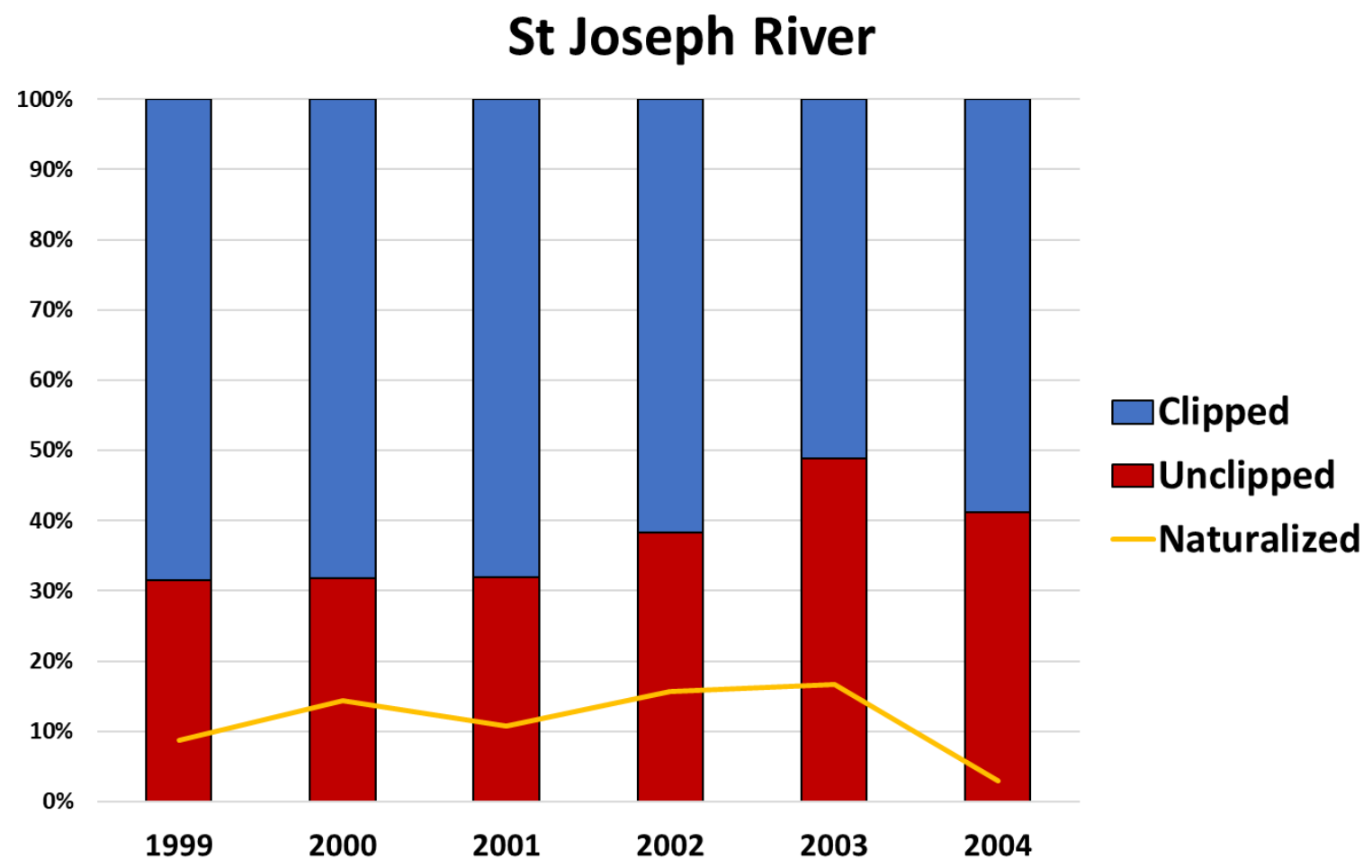


Muskegon River



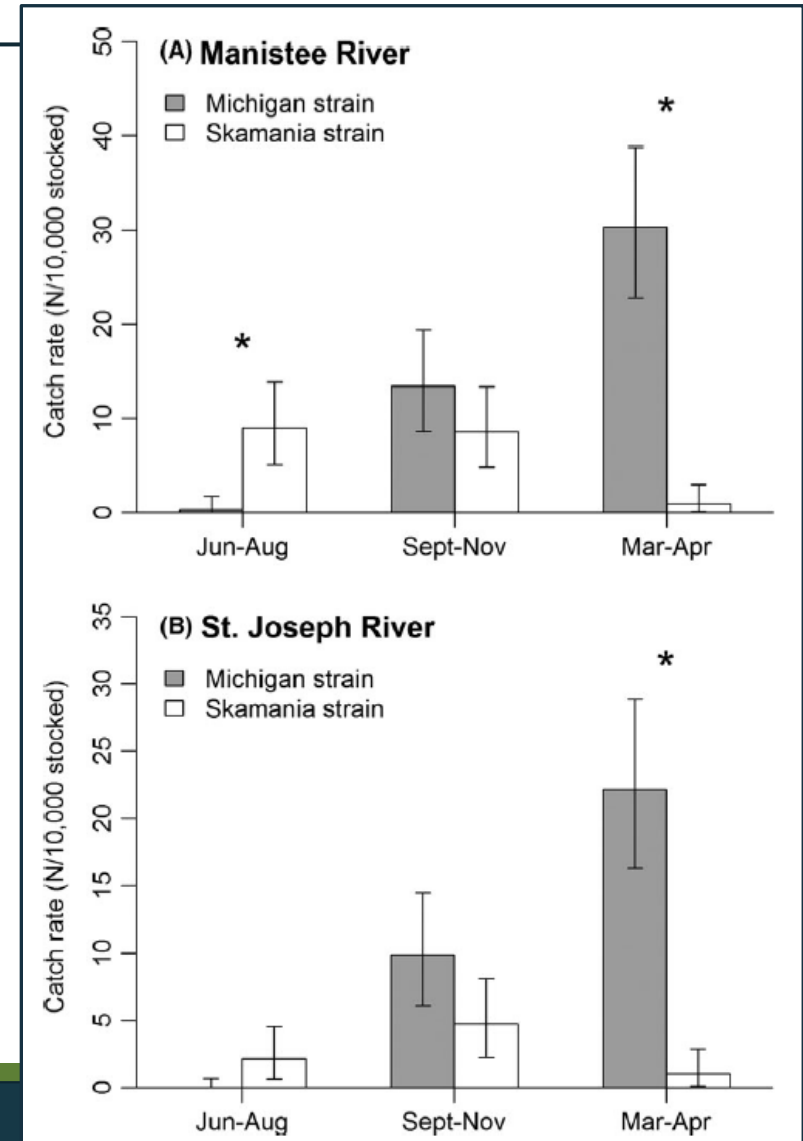


Percent of Naturalized Steelhead Caught in Rivers



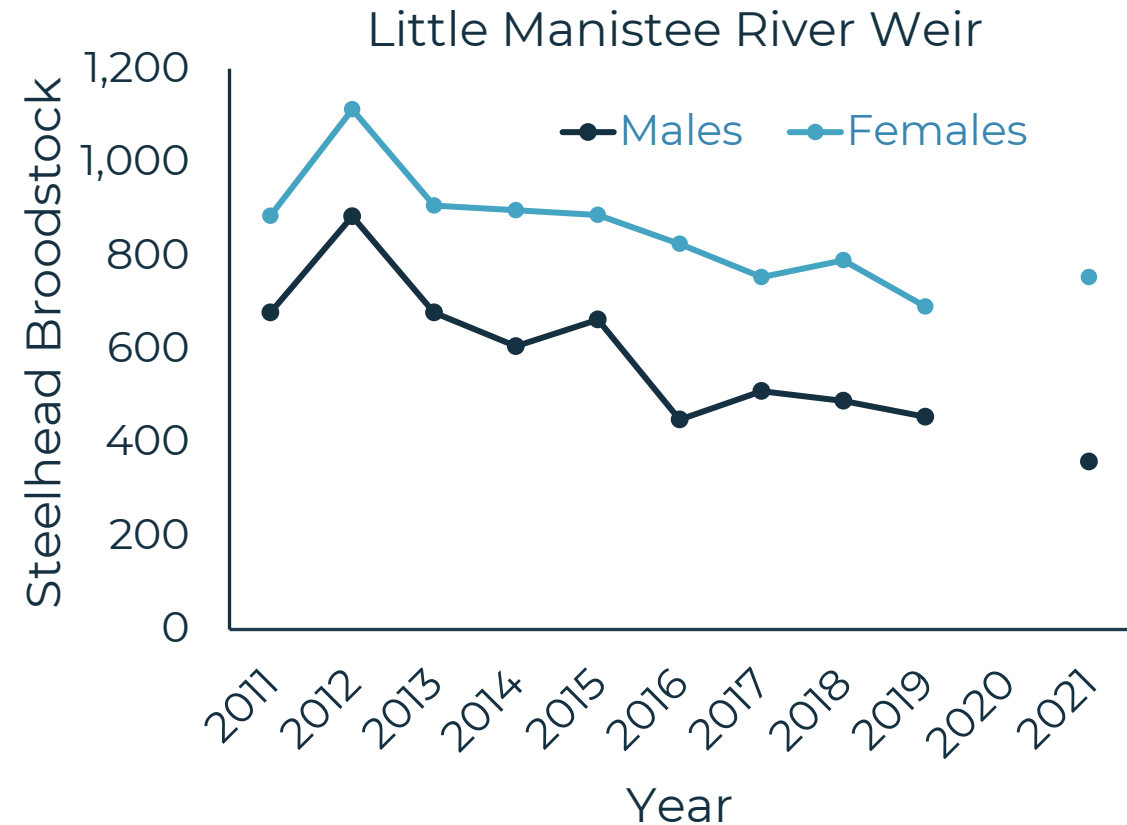
Steelhead Straying in Lake Michigan

- Rivers that support naturalized populations also contain hatchery strays
 - Evidence of hatchery and naturalized origin fish interbreeding (Barton and Scribner 2004)
 - Evidence of seasonal co-existence of multiple strains within the same river (Prichard et al. 2018)
- Straying reduces ability to achieve a management goal focused solely on protecting naturalized populations



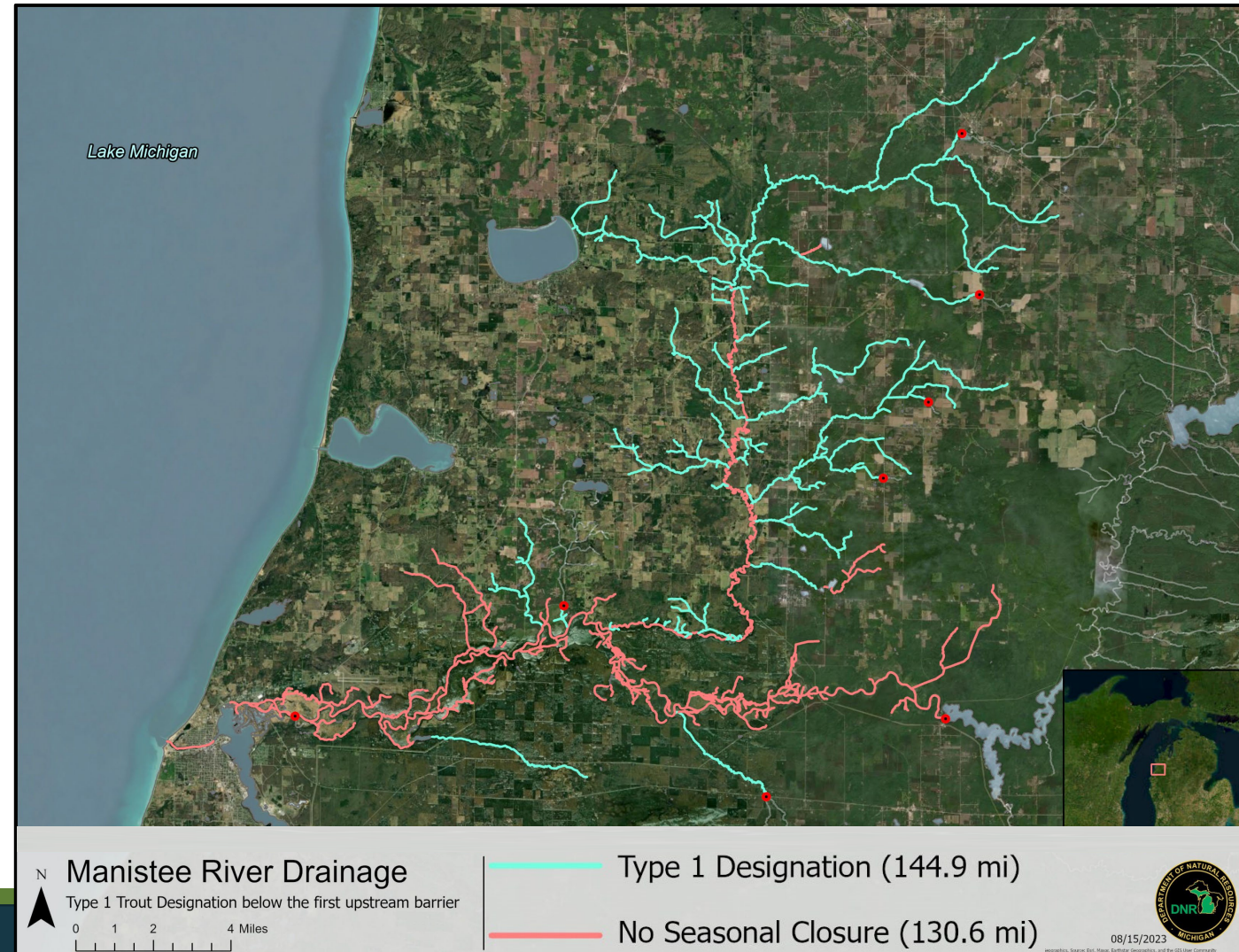
Steelhead Wild Broodstock Management

- Protocols in place to reduce genetic concerns
 - No stocking in Little Manistee River
 - No captive brood
 - Avoid using stocked fish during egg collections
 - Use fish from across entire spring run
 - Strive for 1:1 male to female spawning ratio
 - Don't use fish exhibiting signs of disease



Spawning Steelhead Protections - Type 1 Regulations

- Steelhead natural reproduction occurs in several rivers
 - Many rivers (~8,300 miles) with suitable spawning and juvenile habitat conditions are classified as Type-1 trout waters
 - Closed to fishing from Oct. 1st to last Friday in April



Pucker Street Dam Removal

- Dowagiac River (Berrien Co.)
- Dam removed during 2020-2021
- Opened 28 miles of mainstem and 131 miles of tributaries to Steelhead
- Natural recruitment already documented in 2 tributaries since removal
- Guides report good fishing for Steelhead upstream of former dam



Photos courtesy of Jeff Dunlap – City of Niles

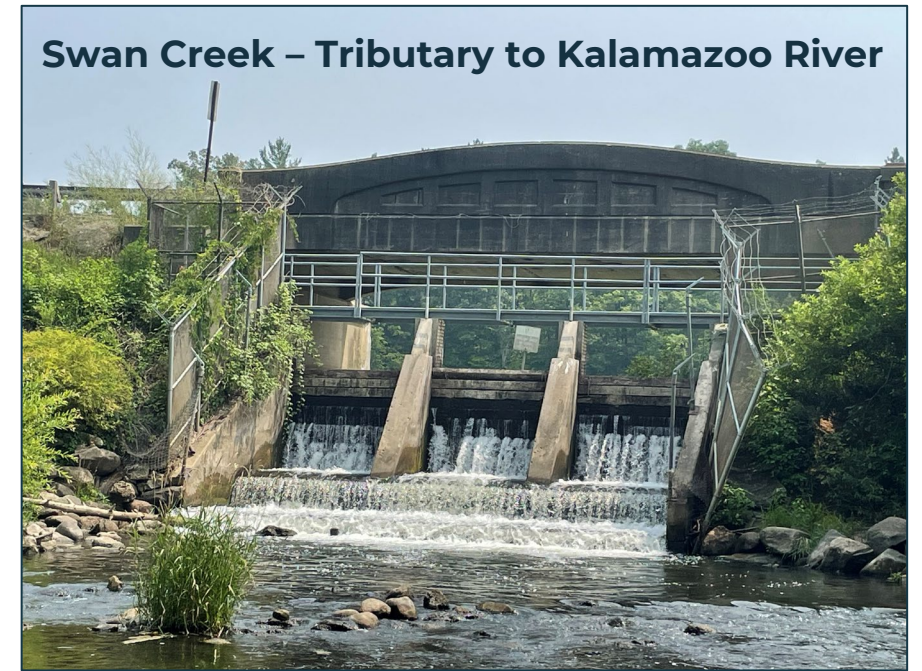
Steelhead Management - Summary

- Anglers are highly satisfied with MI's Steelhead fisheries and regulatory complexity
- Assessments indicate Steelhead are relatively stable after ecological changes
 - Abundance metrics
 - Catch rates metrics
- Harvest is not perceived as primary factor for previous population declines
 - CIR continues to be practiced by many
 - Select anglers appreciate opportunity for harvest



Steelhead Management - Summary

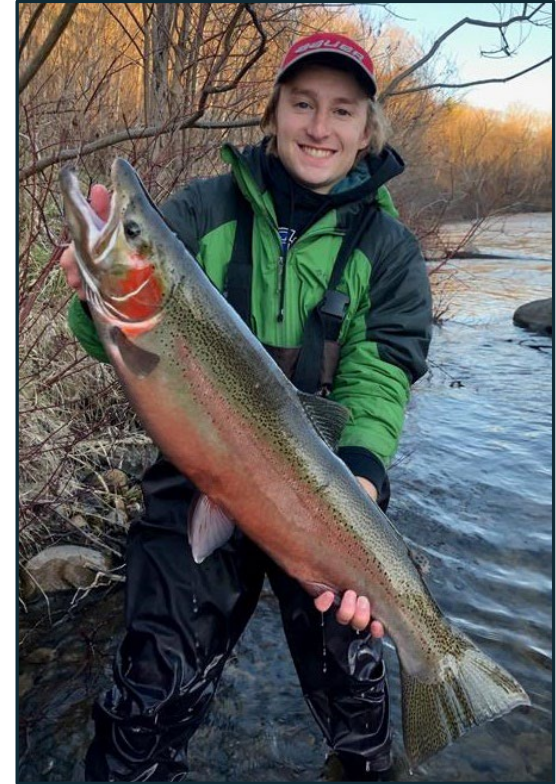
- Type-1 regulations provide protections during spawning season
- Dedicated to habitat improvement projects to increase connectivity
- Steelhead mass marking is unlikely past 2024
 - Lake Trout, Coho, and Chinook Salmon mass marking has been prioritized in future years
 - Marking additional species would require increased funding for USFWS



Swan Creek – Tributary to Kalamazoo River

Steelhead Regulatory Considerations

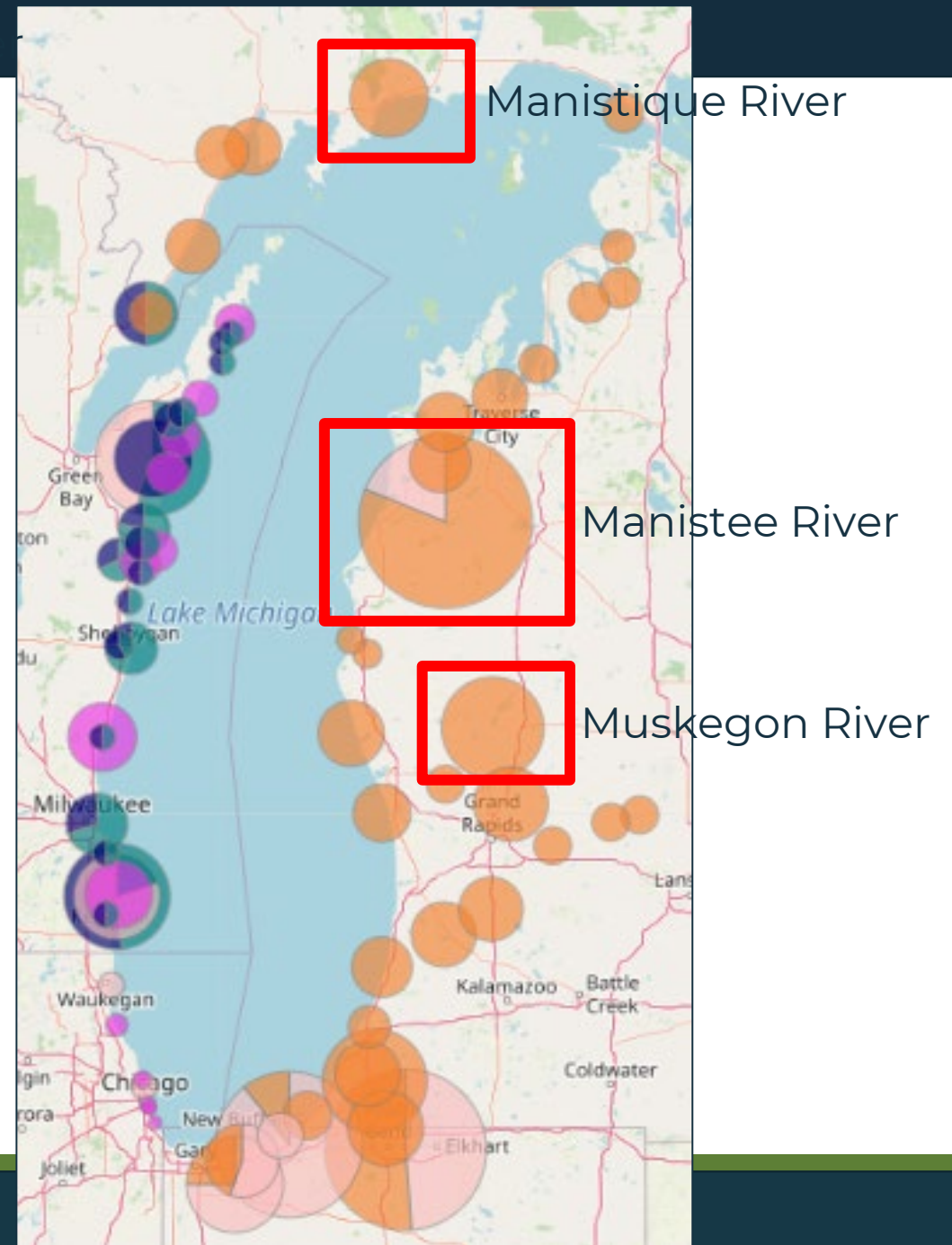
- Limited biological or fishery-based evidence to support regulatory changes
- If there is a values-based (social) interest in further protecting naturalized Steelhead, there are complex implications
 - Straying and existing predominance of CIR will reduce likelihood of desired benefits
 - Potentially conflicts with current stocking strategies
 - Some anglers highly value harvest opportunities



Comprehensive Review and Deliberation is Warranted

- Conceptual change in management that puts increased emphasis on protecting naturalized fish creates complex implications
 - Review and collect data to assign reproductive classification to specific rivers
 - Assess influence on stocking strategies
 - Assess angler support and enforceability

 Locations with 1 fish bag limit



Steelhead Regulatory Recommendations

- Retain existing Steelhead regulations
 - Desired benefit of restricted seasonal harvest wouldn't be realized for several years
 - Provide time to assess fishery dynamics
 - Biological evidence does not indicate changes are warranted
- Summarize and present regulatory options for NRC consideration prior to 2027 regulatory sunset





Questions

