Lake Winnibigoshish - Times, they are a-changin’ (Bob Dylan)

1926 – First year of Cut Foot Walleye spawn take
1935 – First netting assessment
1937 – First Walleye mark recapture study
1938 – First creel survey
1978 – Yellow Perch possession limit established, 100 fish
1983 – Annual large lake assessments begin
1985 – Walleye catch and release program
1987 – First fisheries RIM project, Highbanks stabilization
2000 – Yellow perch daily limit changed to 20
2000 – 17 to 26 inch Walleye slot limit implemented
2007 – Thousands of ducks die due to parasites
2012 – Zebra mussel veligers discovered
2015 – 18 to 23 inch Walleye slot limit implemented
2016 – Starry stonewort discovered
2017 – Zebra mussel cover nearly every hard surface
• Zebra mussel invasion and changes in water quality

• Status of the Winnie Walleye population

• Winnie building blocks needed to support a Walleye population

• Management changes to help support the Walleye population

• Other species
Terms used in this presentation

Spawning stock biomass = pounds of adult female walleye
Recruitment = survival of a year class of fish past their first winter
Total dissolved solids = Minerals dissolved in the water
Veliger = Immature zebra mussel
Lake Winnibigoshish zebra mussel development
Most MN zebra mussel invasions are in clustered lake regions

Zebra mussel live 3-5 years.

Produce up to 1 million eggs per year.

Can filter the entire water volume of a lake in 2-3 days.

As many as seven hundred thousand mussels can occupy one square meter of substrate.

2. Local spread
Brainerd Lakes: 1 invasion from outside, local spread

Sand/Little Sand lakes: independent invasion from afar

Spread from Brainerd Lakes to Cass and Winnibigoshish

Invasions in Cass and Itasca Counties
Lake Michigan changes associated with mussel introduction

Zebra Mussel
Get very abundant
Filter feeders
Feed on plankton
Biological energy sink
Few predators
Status of the Winnie Walleye population
Walleye catch per Lake Winnibigoshish gill net, 1983-2017

- 1st quartile
- 3rd quartile

- 18-23 inch protected slot started
- 17 to 26 inch protected slot started
Walleye population data has been collected through annual population assessments since 1983. This data shows that, as in other large lakes, walleye recruitment is variable. What set Winnie apart from most other natural walleye lakes was longer periods of poor recruitment and larger extremes in the walleye population. This resulted in less walleye in the system and poor fishing for anglers.
Index of Walleye year-class strength, Lake Winnibigoshish, 1985-2015

17 to 26 inch protected slot started
Comparison of Cass Lake and Lake Winnibigoshish Walleye year class strength, 2005-2015

Lake Winnibigoshish

Cass Lake
Average Walleye growth rates for Cass Lake and Lake Winnibigoshish

- Winnie through 2015
- Winnie post 2015
- Cass Lake 2012-2017
Comparison of 1983-2016 average and 2017 Walleye catch by length

![Graph showing comparison of 1983-2016 average and 2017 Walleye catch by length.]
Building blocks needed to support a Winnie Walleye population
Lake Winnibigoshish pounds of mature female Walleye, 1999-2017

- Fall
- 3yr average
Walleye fry a few hours after hatching
Lake Winnibigoshish Zooplankton densities, 2012-2017
Seine catch of minnows and young of the year perch
Lake Winnibigoshish perch statistics

Catch per net less than 7 inches

Catch per net > than 9 inches
Management changes to help support the Walleye population
Lake Winnibigoshish north shore spawning habitat
Comparison of Walleye year class strength and Winnie elevation at ice out

The graph shows the relationship between Walleye year class strength and Winnibigoshish elevation at ice out. The data points are distributed across different elevation levels, with notable percentages indicated:

- 33% at a certain elevation
- 83% at a different elevation
- 66% at another level
- 17% at yet another level

These percentages may indicate the proportion of Walleye year classes that are stronger or weaker at specific elevation levels at ice out.
Example of a strong Walleye year class and water elevation at ice out
Example of a weak Walleye year class and water elevation at ice out.
Winnibigoshish summer year class strength vs total fry/acre, 1997-2016
Other Fish Species
Average catch of NOP per Lake Winnibigoshish gill net, 1983-2017
Lake Winnibigoshish Northern Pike statistics

- Pike longer than 30 inches
- NOP catch rate
Lake Winnibigoshish perch catch per gill net, 1983-2017
Percent of Lake Winnibigoshish perch longer than 9 inches
Questions

Gerry Albert
Contact Information
E-mail gerry.albert@state.mn.us
Phone (218) 328-8837

David Weitzel
Contact Information
E-mail David.weitzel@state.mn.us
Phone (218) 328-8835
Winnie gill net catch curve for walleye caught between 1984 and 2011
Lake Winnibigoshish Summer fishing effort, 1939-2013
Lake Winnibigoshish Walleye catch and harvest rates, 1939-2013