

# Status of the Lake Michigan Salmon Fishery

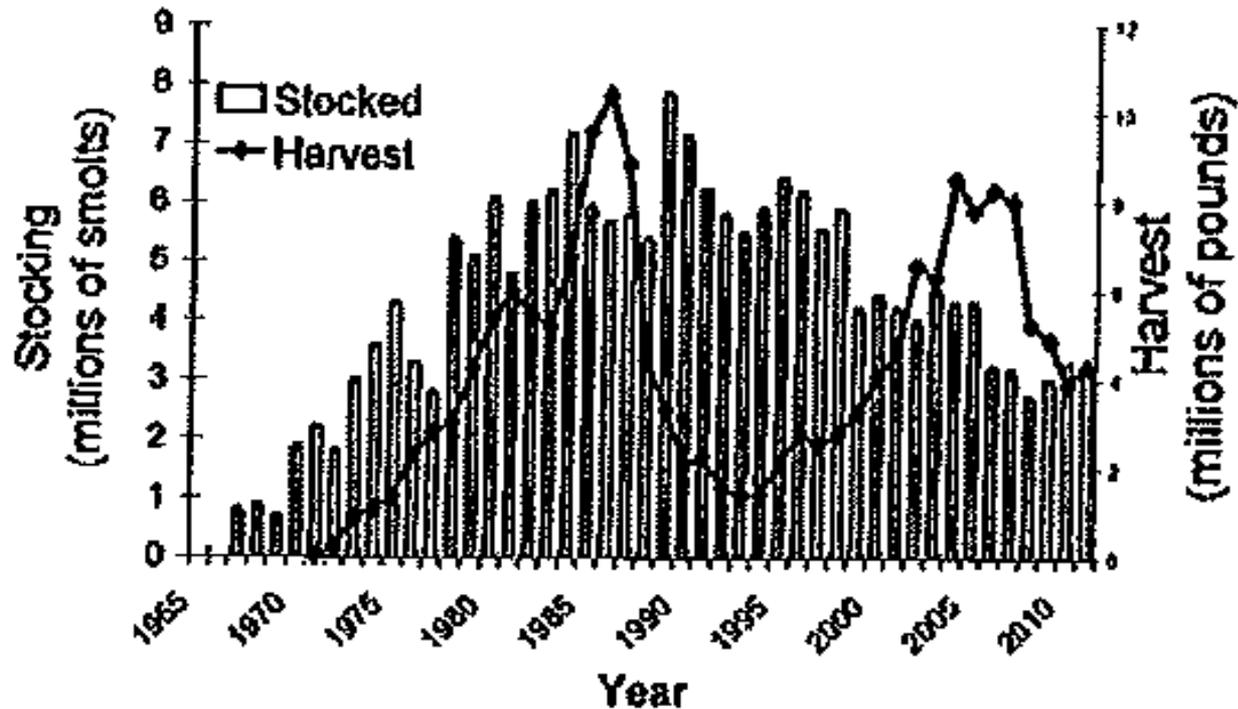
Brian Gunderman  
November 12, 2015





# Lake Michigan Salmon Fishery

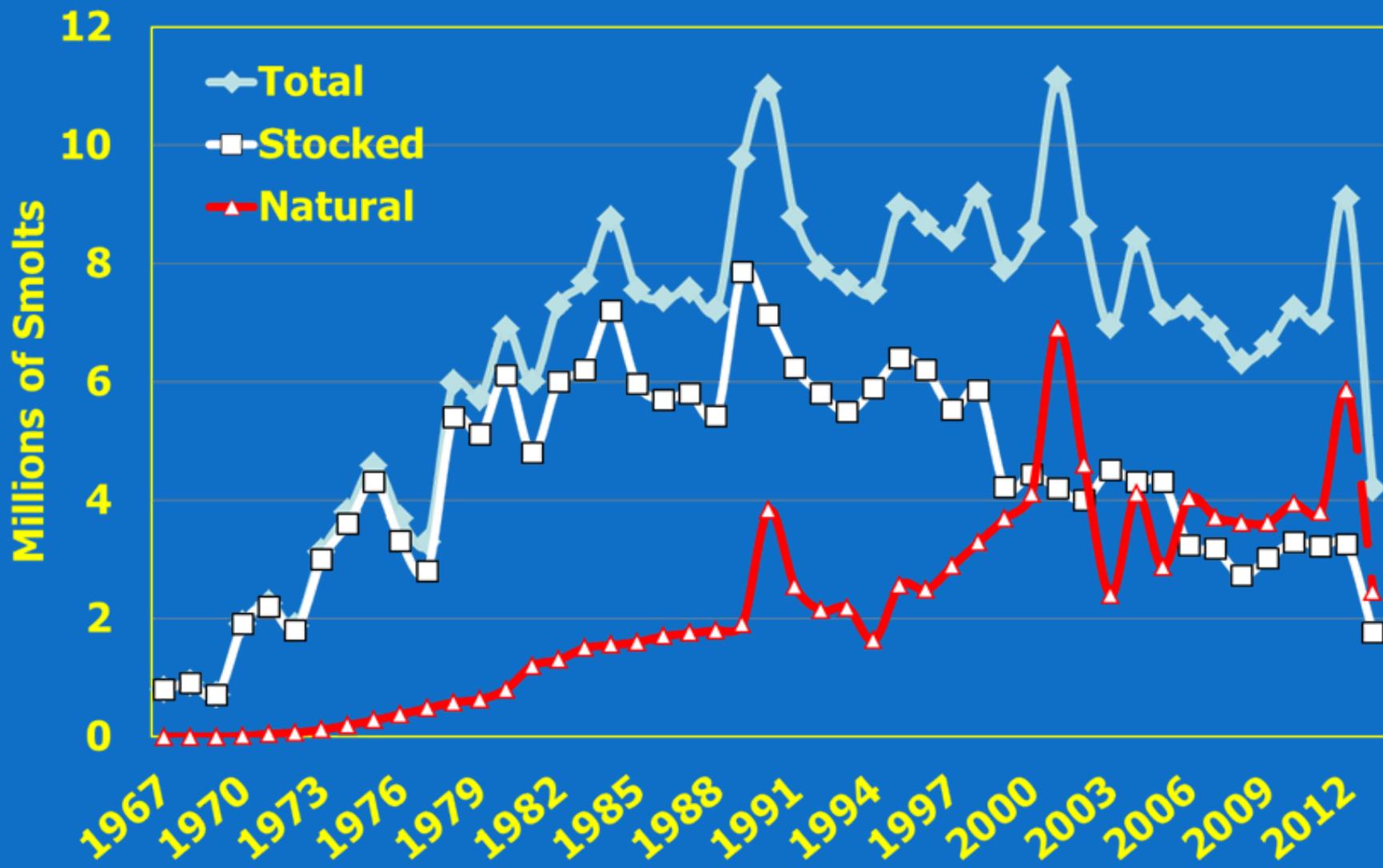
Figure 1. Chinook salmon stocking and harvest

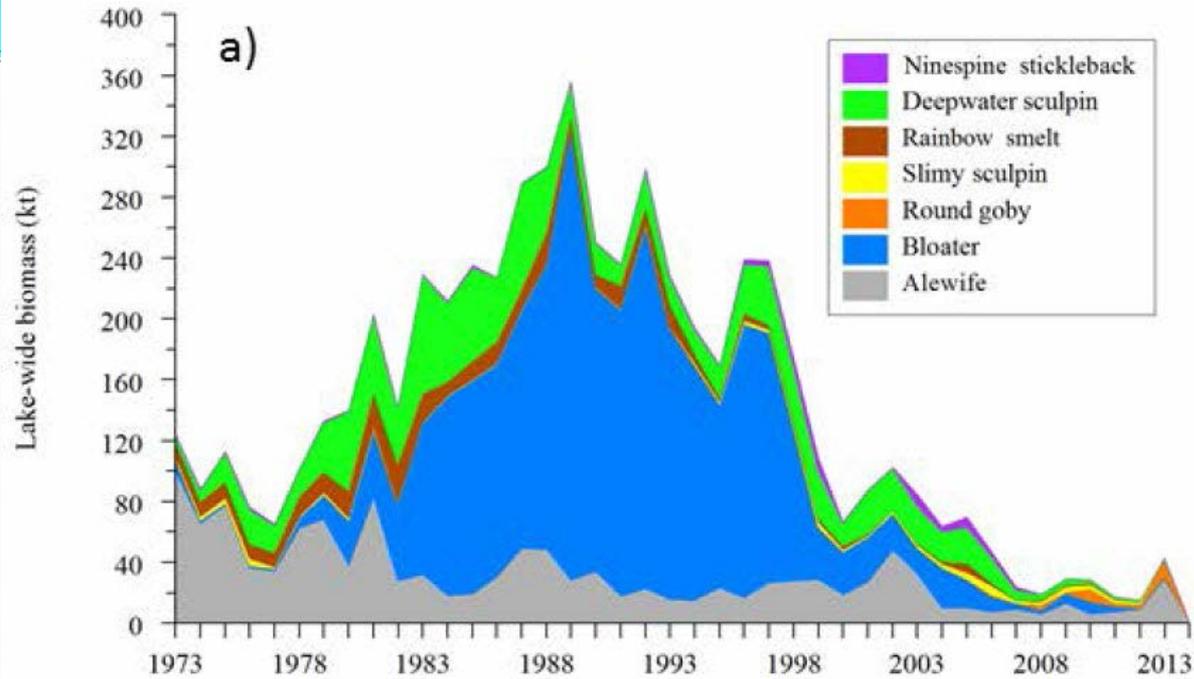


Claramunt et al. 2013

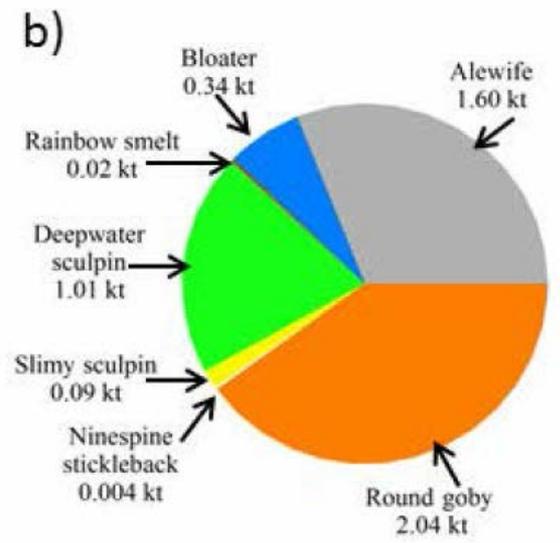


# Chinook Salmon Population





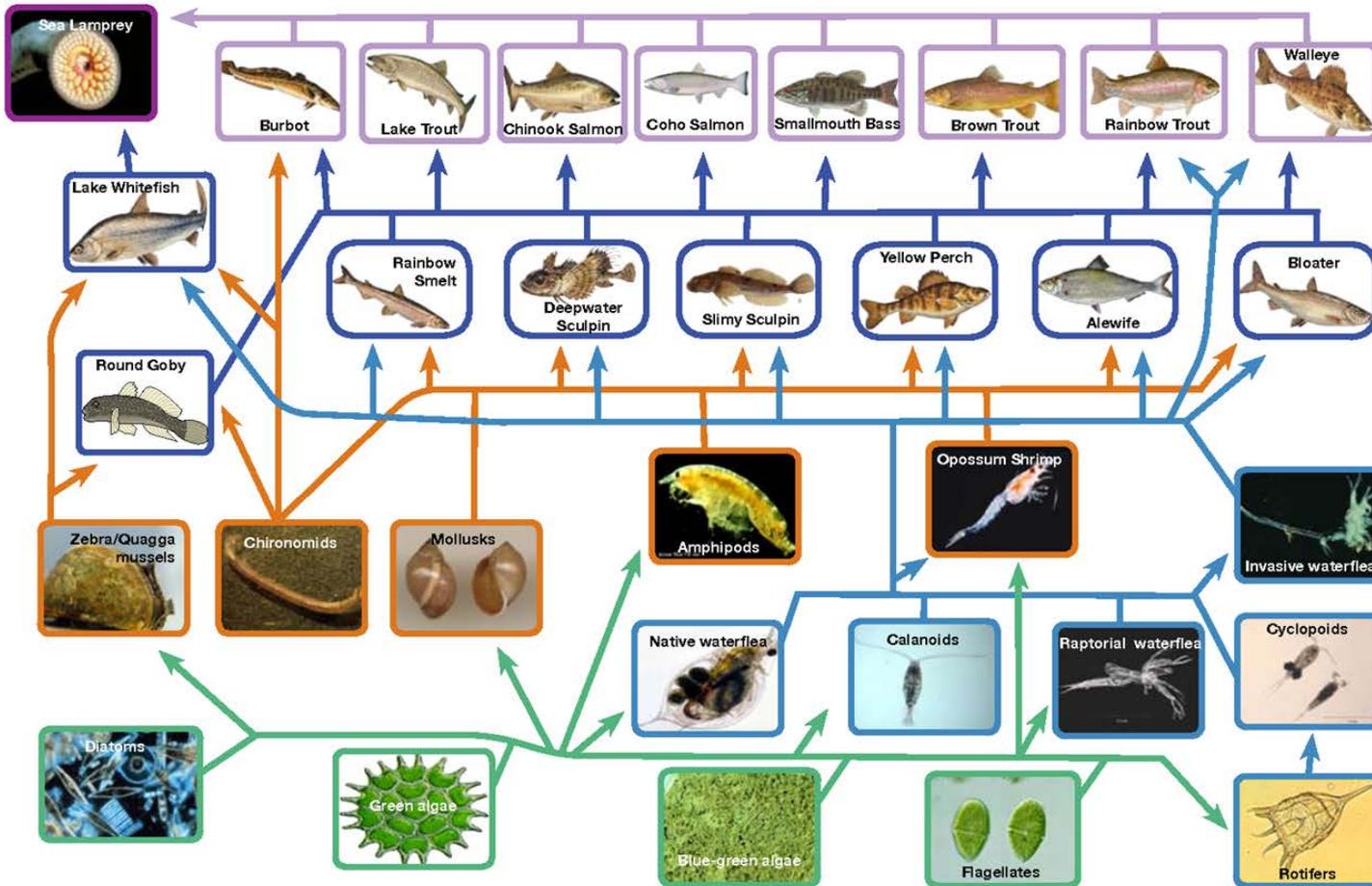
# Prey Abundance on Decline

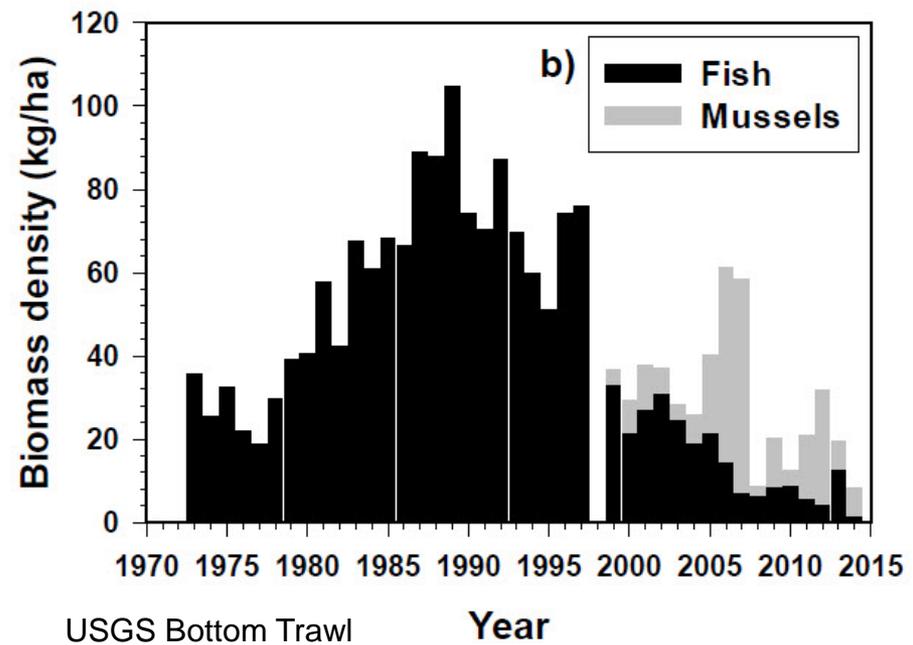
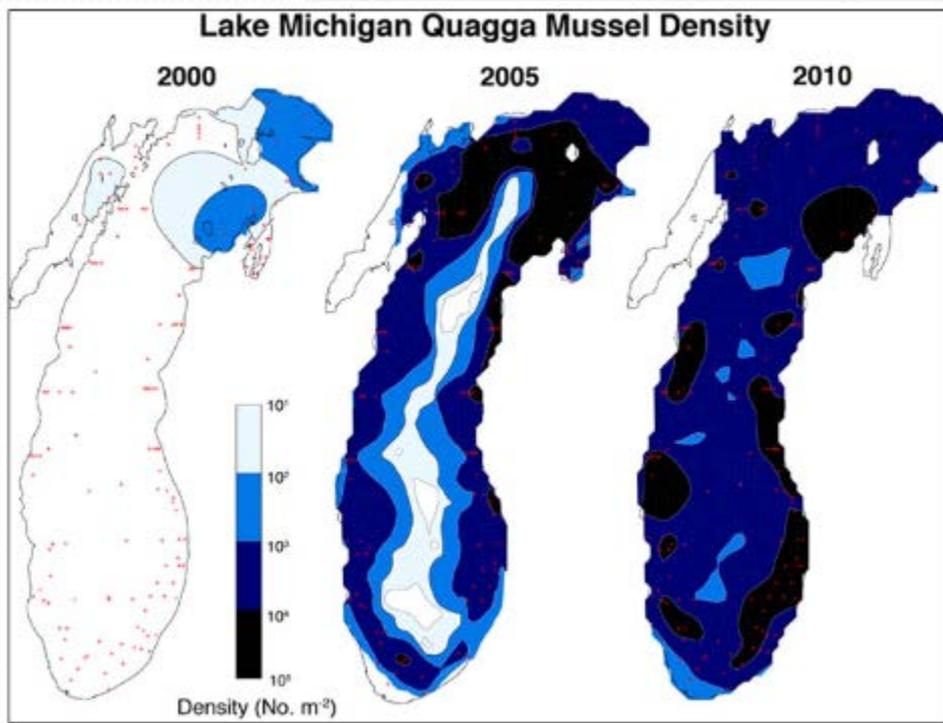
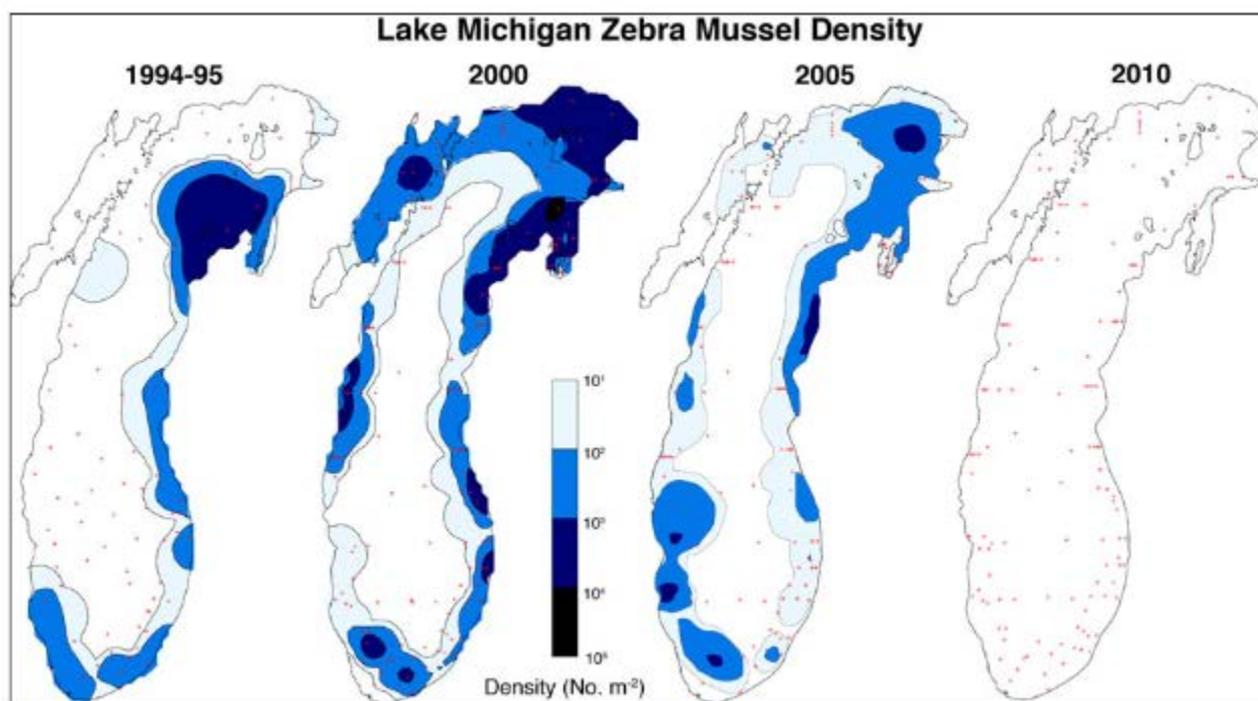


# Zebra and Quagga Mussels Disrupt Food Chain

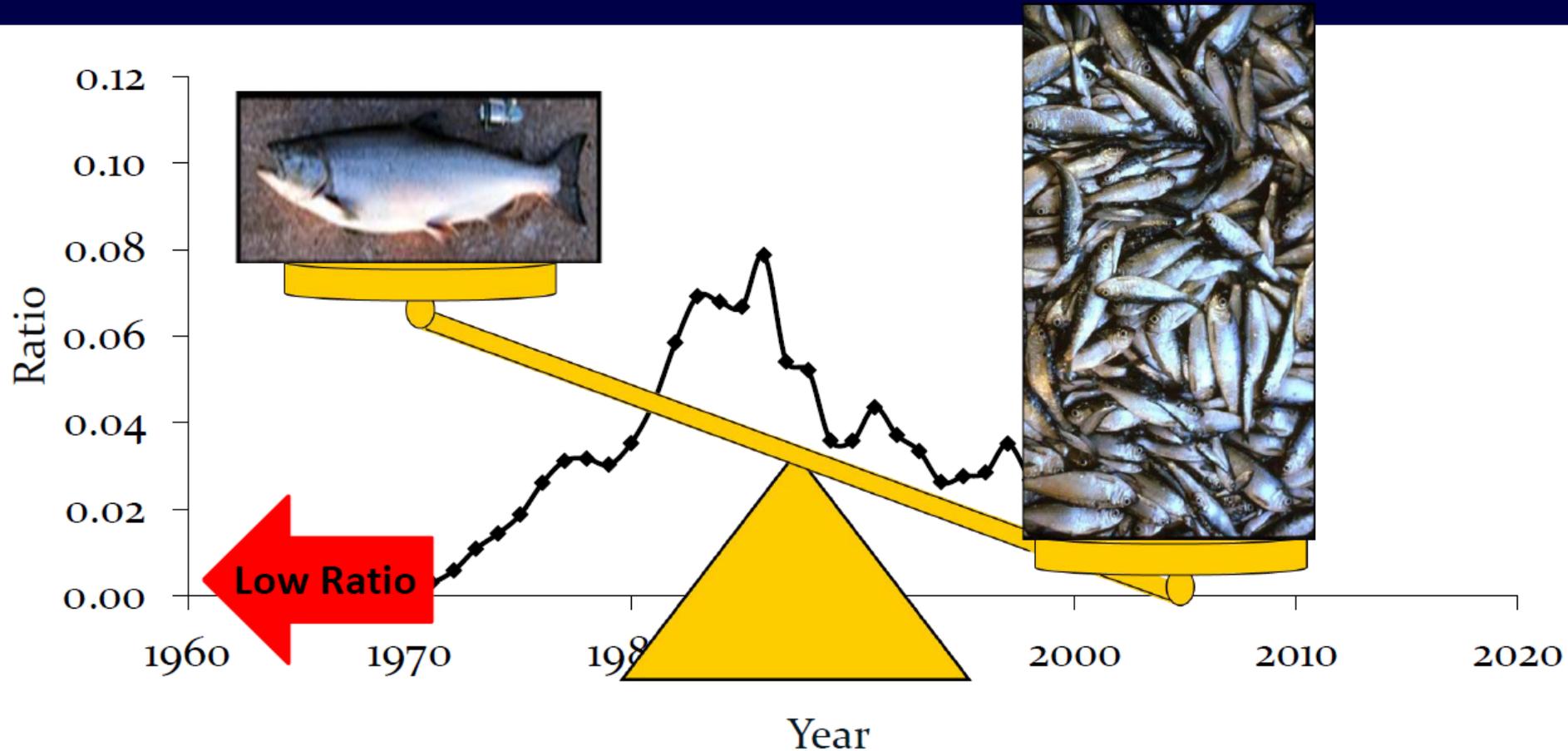


## Lake Michigan Food Web



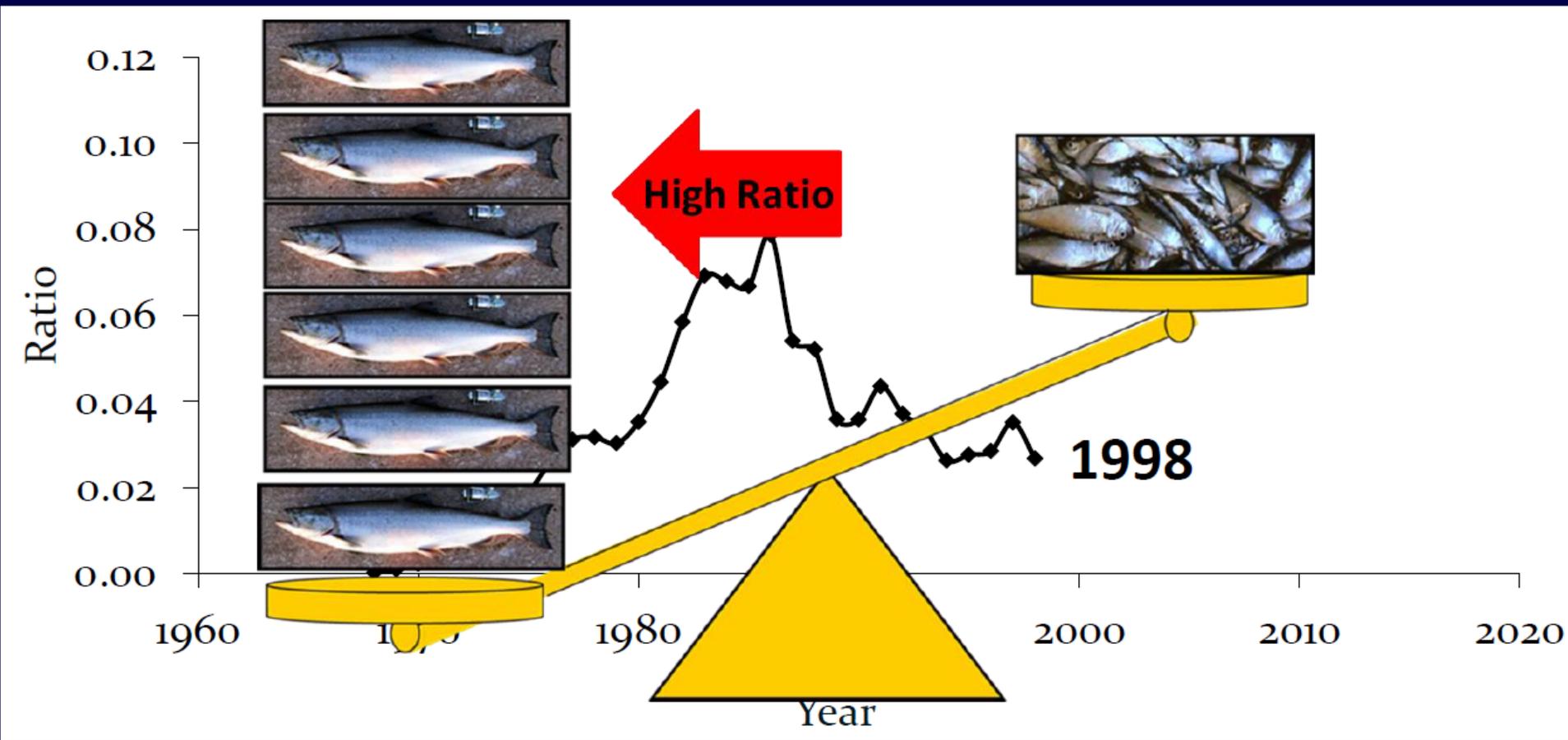


# Basic Concepts & Methods



- Low ratio indicates Lake Michigan is unbalanced, with a low predator biomass & relatively high prey biomass.

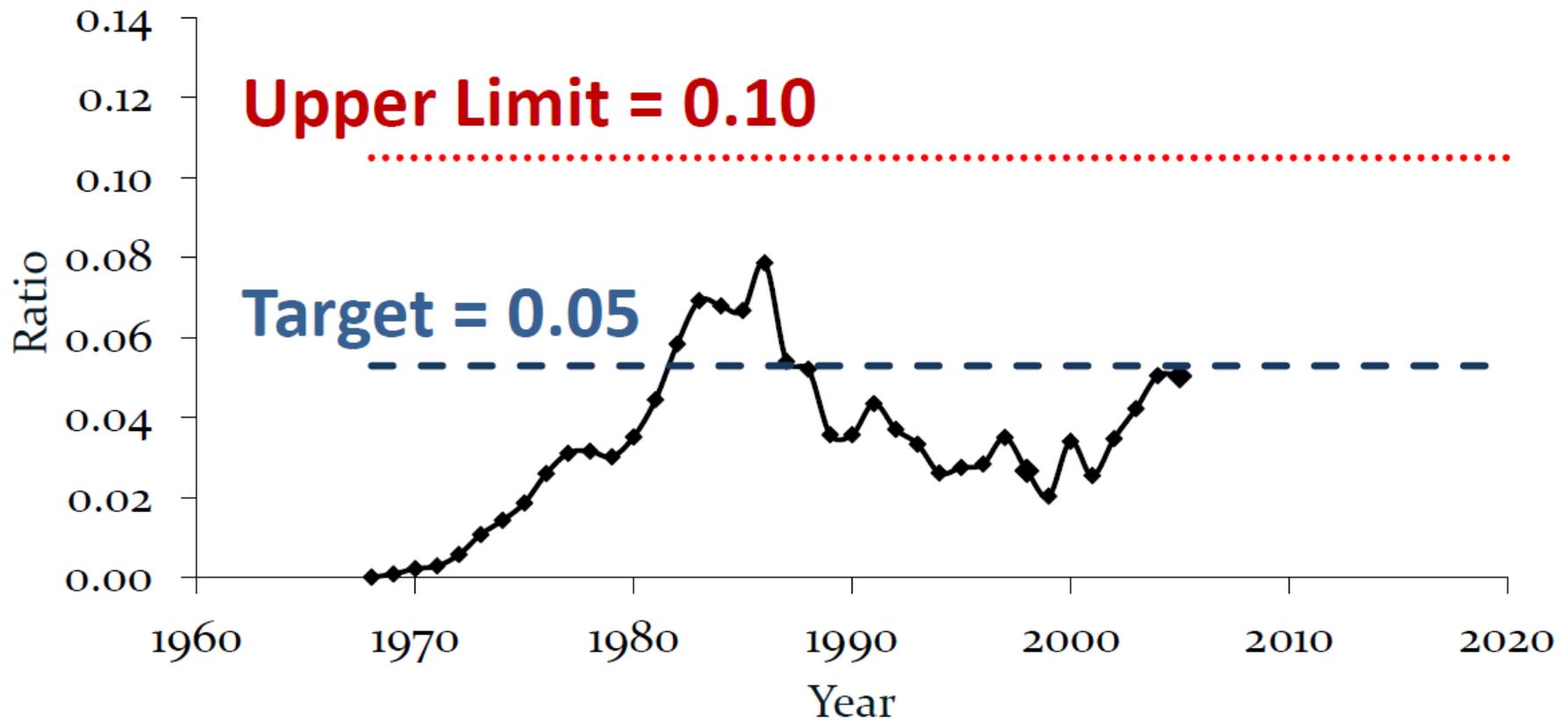
# Basic Concepts & Methods



- High ratio indicates Lake Michigan is unbalanced, with a high predator biomass & relatively low prey biomass.

# Predator/Prey Ratio Reference Points

Chinook Biomass (ages  $\geq 1$ ) / Alewife Biomass (ages  $\geq 1$ )

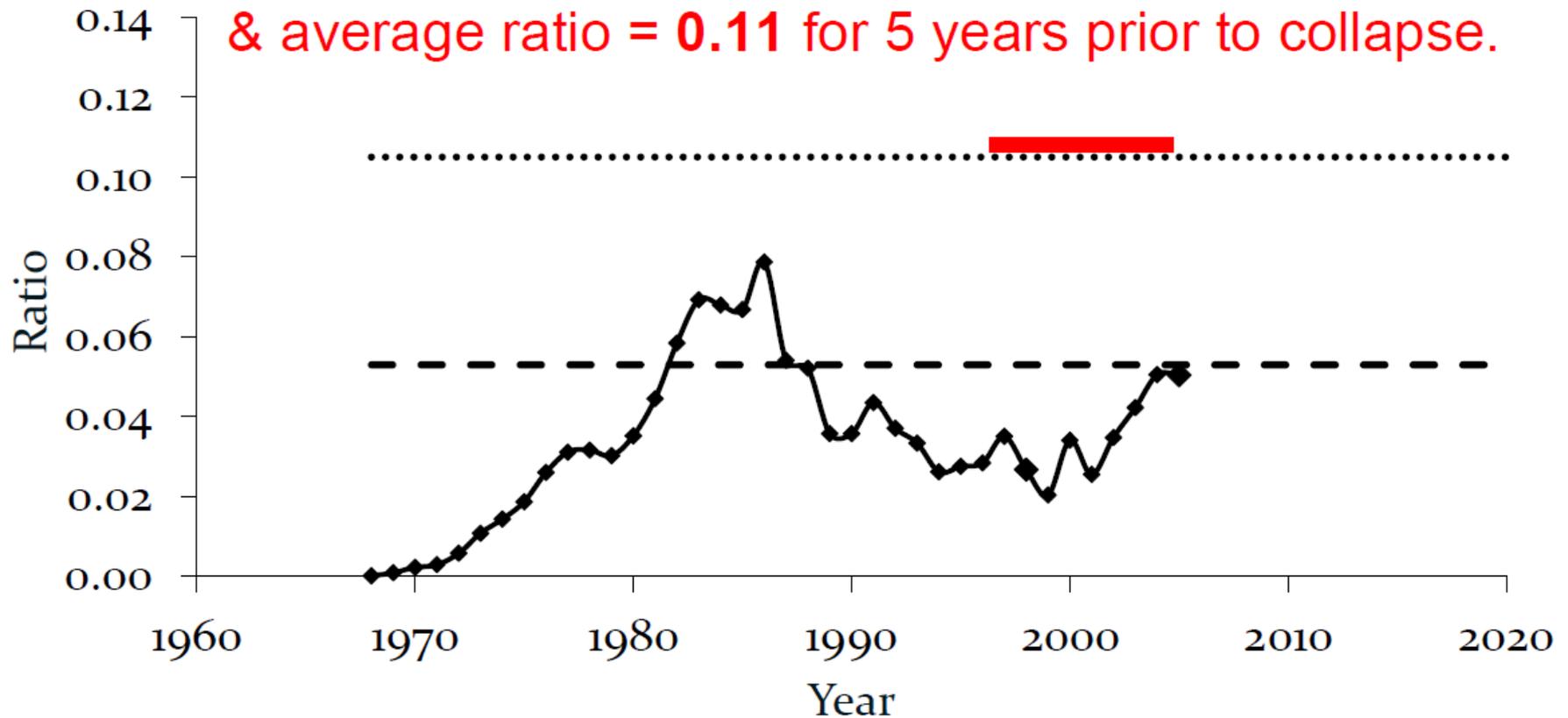


Literature reviews, risk assessment models, and comparisons with ratios from Lakes Huron & Ontario

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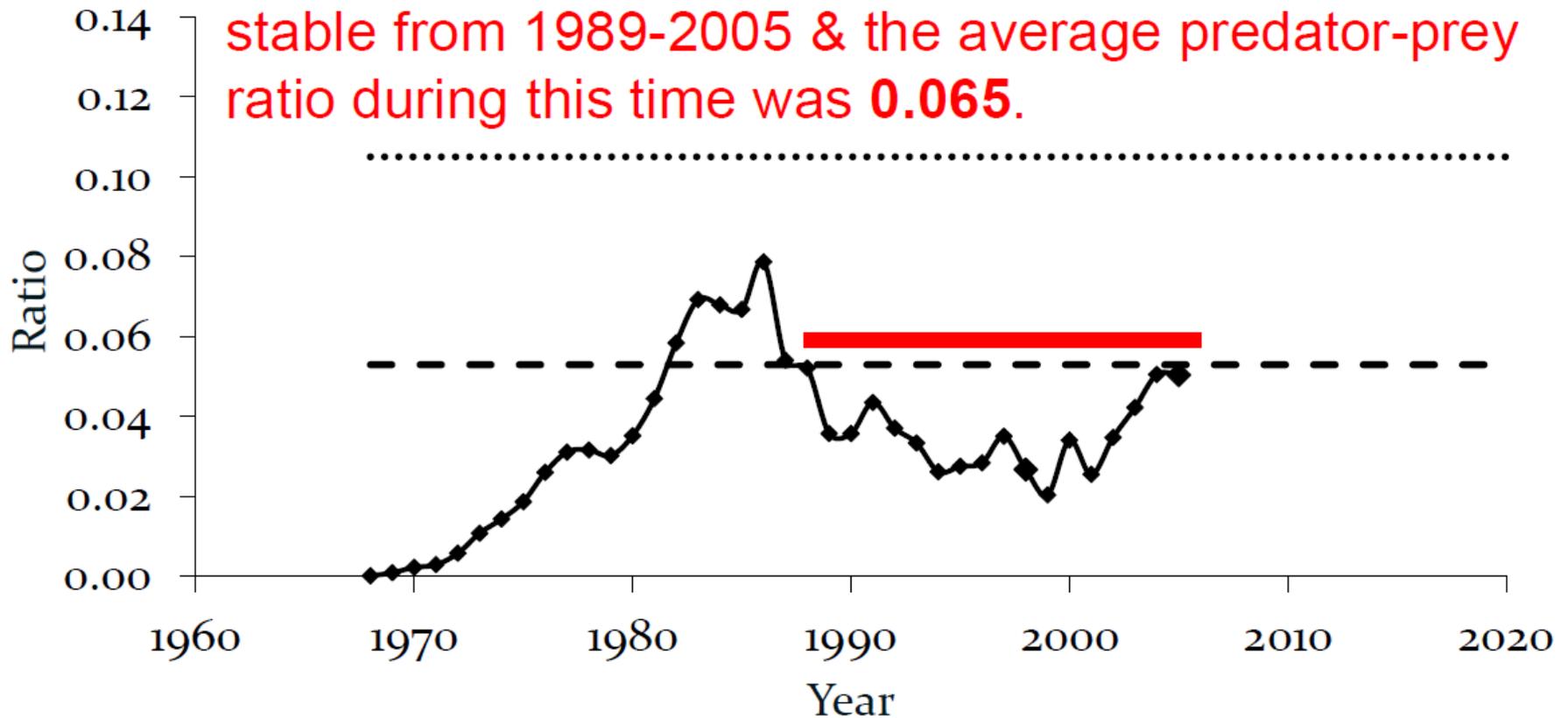
Chinook population collapsed in **Lake Huron** in 2006, & average ratio = **0.11** for 5 years prior to collapse.

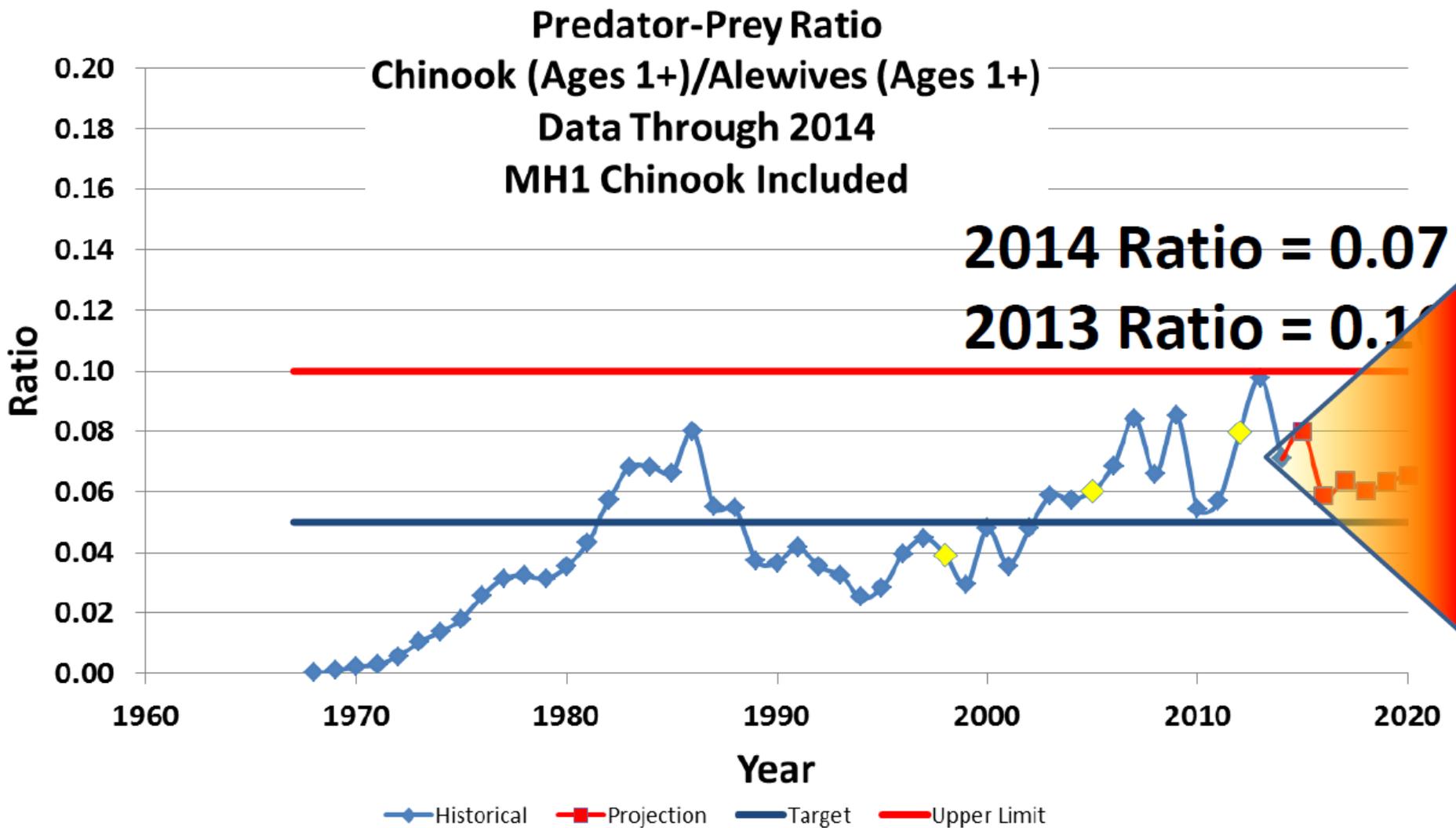


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**Lake Ontario's Chinook population was relatively stable from 1989-2005 & the average predator-prey ratio during this time was **0.065**.**





Predator/prey ratio with projects updated through 2014. Ratios from 1990-2014 include a proportion of MH1 Huron Chinooks traveling to Lake Michigan. Projections come down, but remain above target.

# Thank You



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