

Status of Lake Trout in the Main Basin of Lake Huron: A Summary of (SCAA) Models and Projections



Aaron Woldt--MDNR Alpena

Background

- Lake Huron lake trout stocks crashed due to overfishing and mortality due to sea lamprey in the 1940's
- Rehabilitation efforts started in the 1970's and consisted primarily of:
 - » supplemental stocking
 - » lamprey control
 - » fishery regulation
- Lake trout stocks are monitored annually by MDNR, CORA, USGS BRD, OMNR, and USFWS

We developed 2 types of models

- 1) SCAA model--uses user supplied inputs and iteratively solves for population parameters like M, F, Z, abundance, SSB....
- 2) Projection model--uses last year's output from SCAA model to predict population parameters into the future (2020 in our case). Also allows user to alter projection parameters (i.e. effort).

We developed both model types for each modeled area

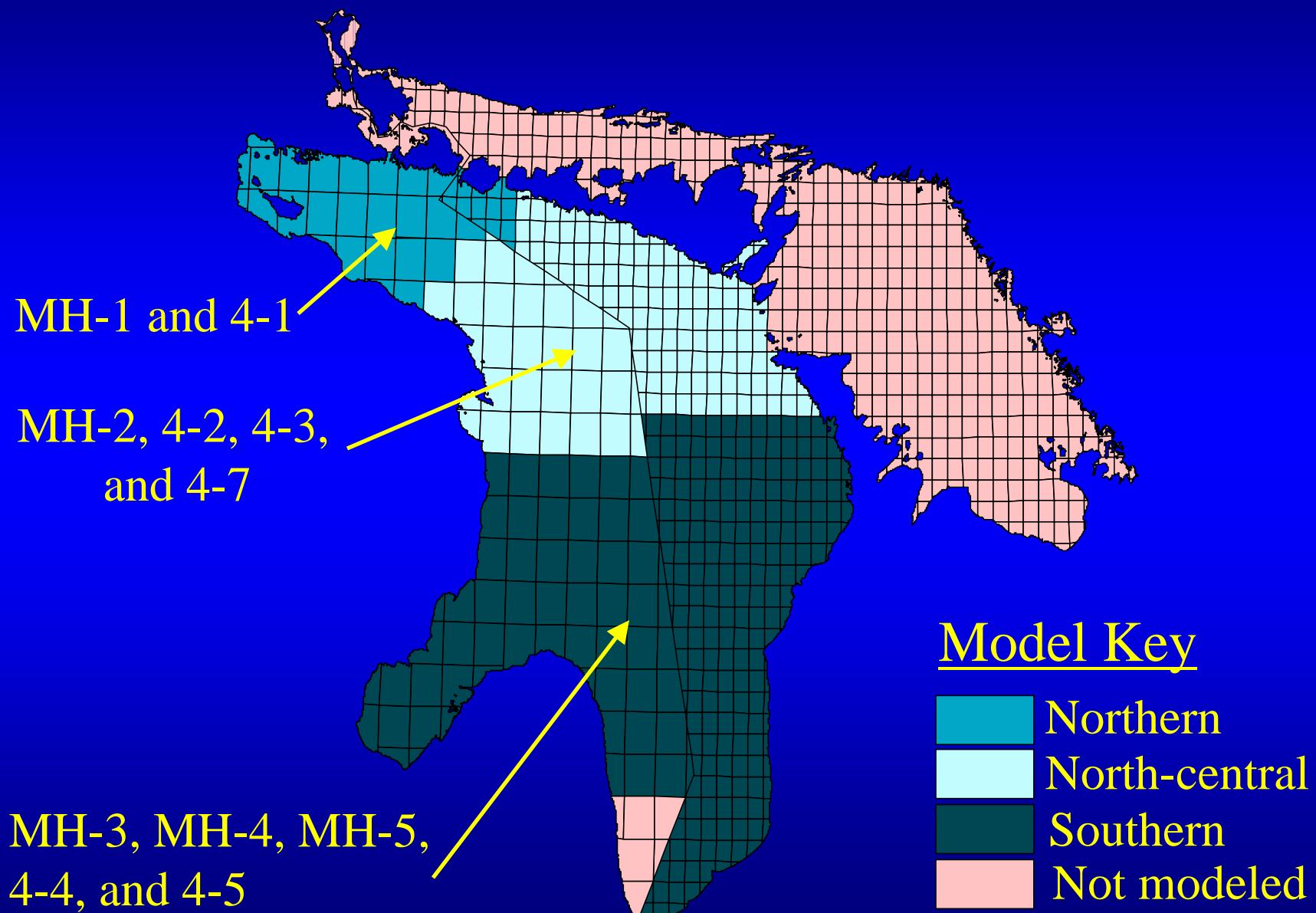
Inputs to SCAA model

- Stocking (w/ movement matrix)
- Commercial fishery effort and yield (state licensed, tribal, and Canadian) from LMGN, SMGN, and trap nets
- Recreational fishery effort and harvest
- Commercial and recreational harvest age compositions
- Mean weight of lake trout harvested by each gear (LMGN, SMGN, trap net)

Inputs to SCAA model (cont.)

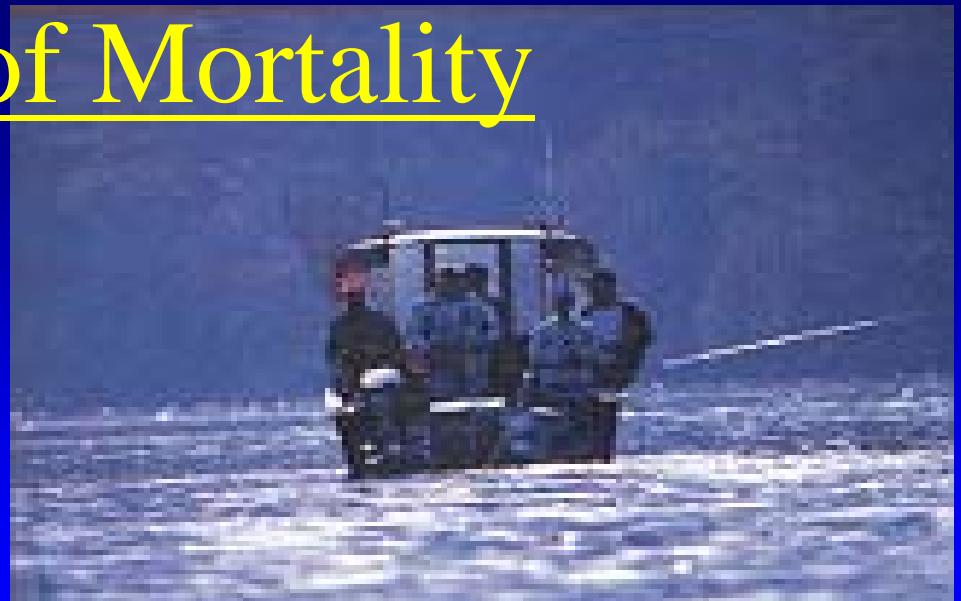
- Estimate of under-reporting or discards
- Survey catch, CPE, and age compositions
- Estimate of natural mortality
- Estimate of sea lamprey mortality rates at age by year
- Estimate of trap net by-catch mortality
- Estimate of lake trout weight at age
- Estimate of lake trout maturity at age
- Estimate of fecundity

Areas modeled using SCAA

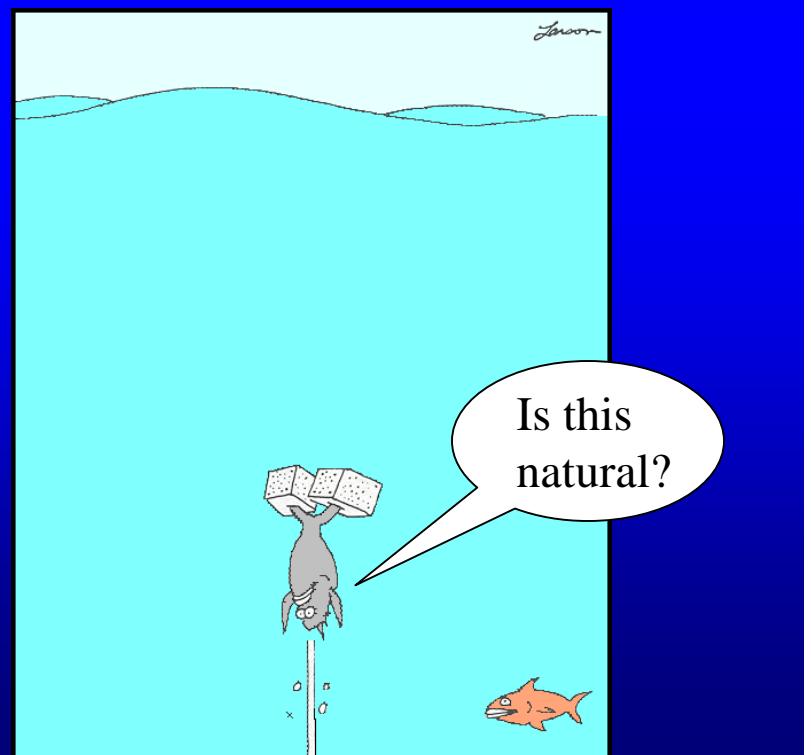




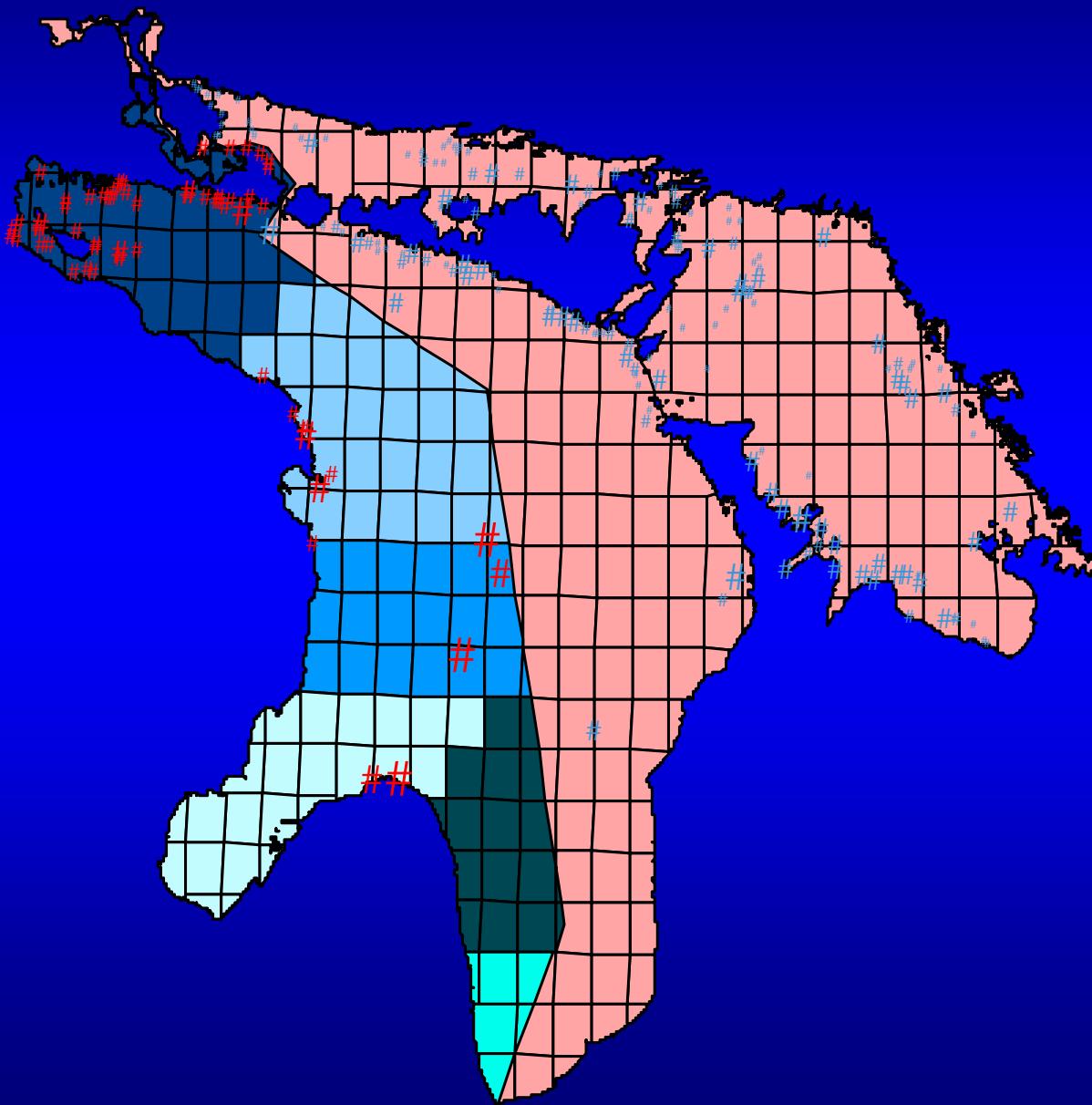
Sources of Mortality



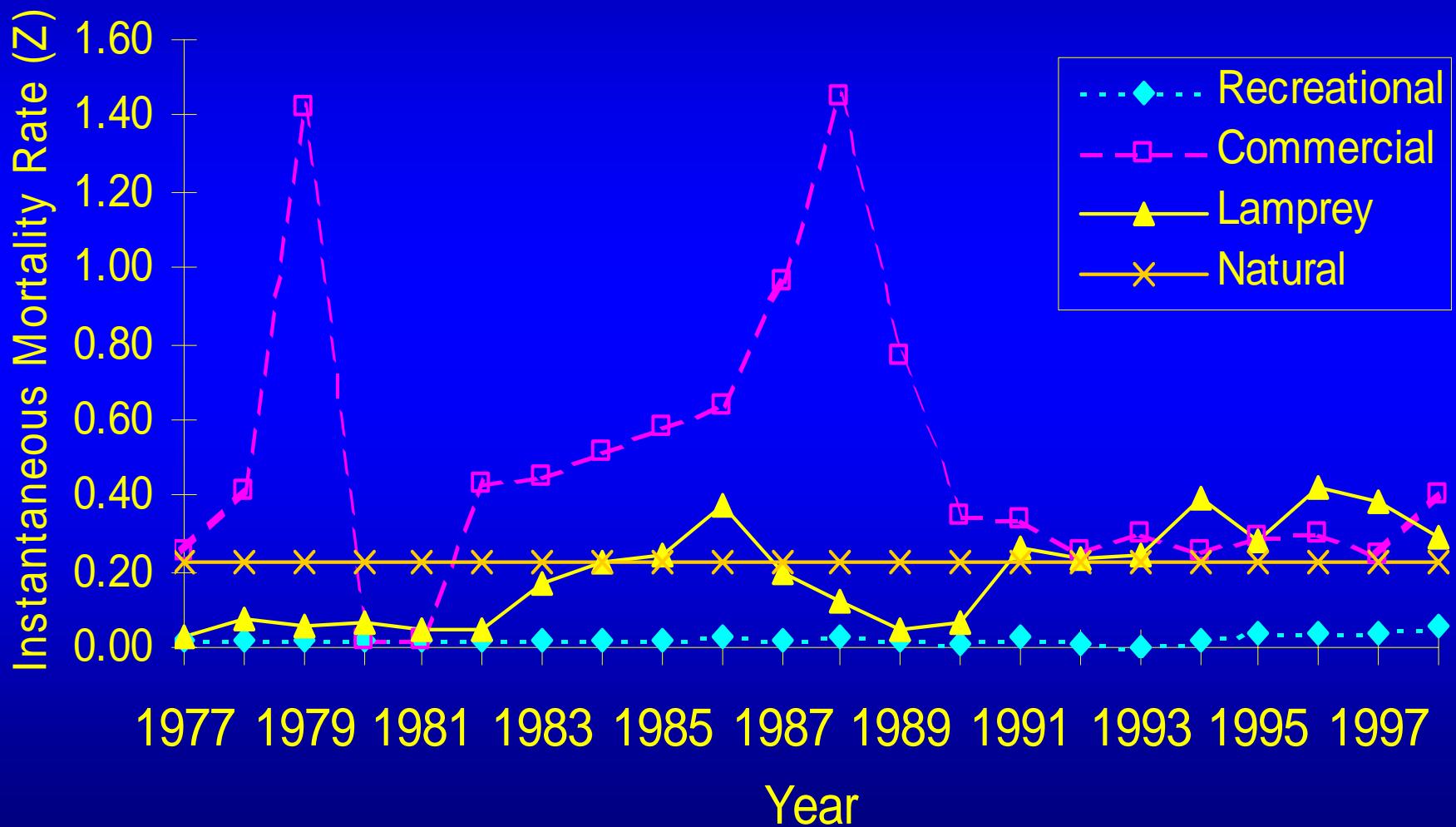
Credit:GLFC



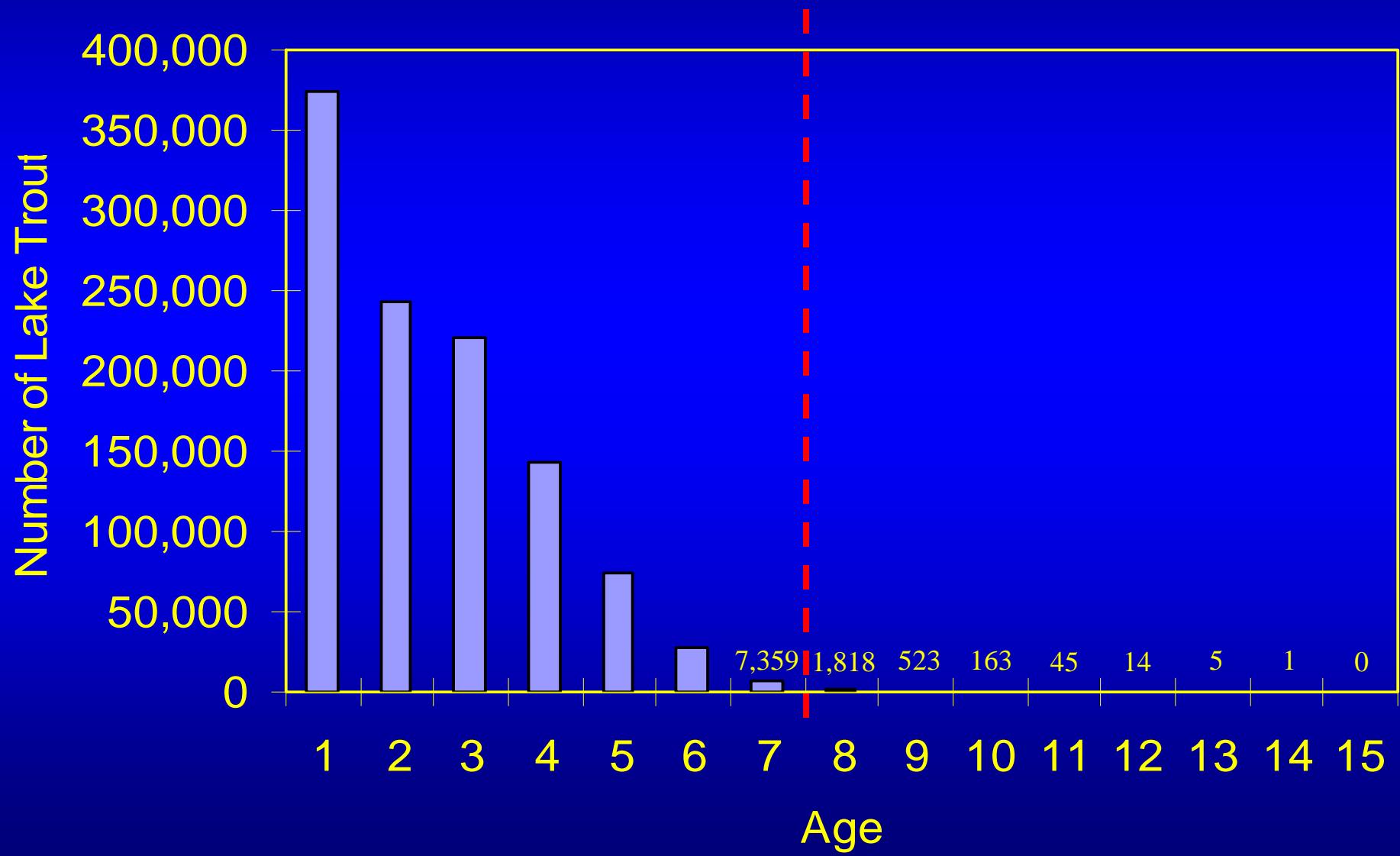
Historic lake trout spawning reefs



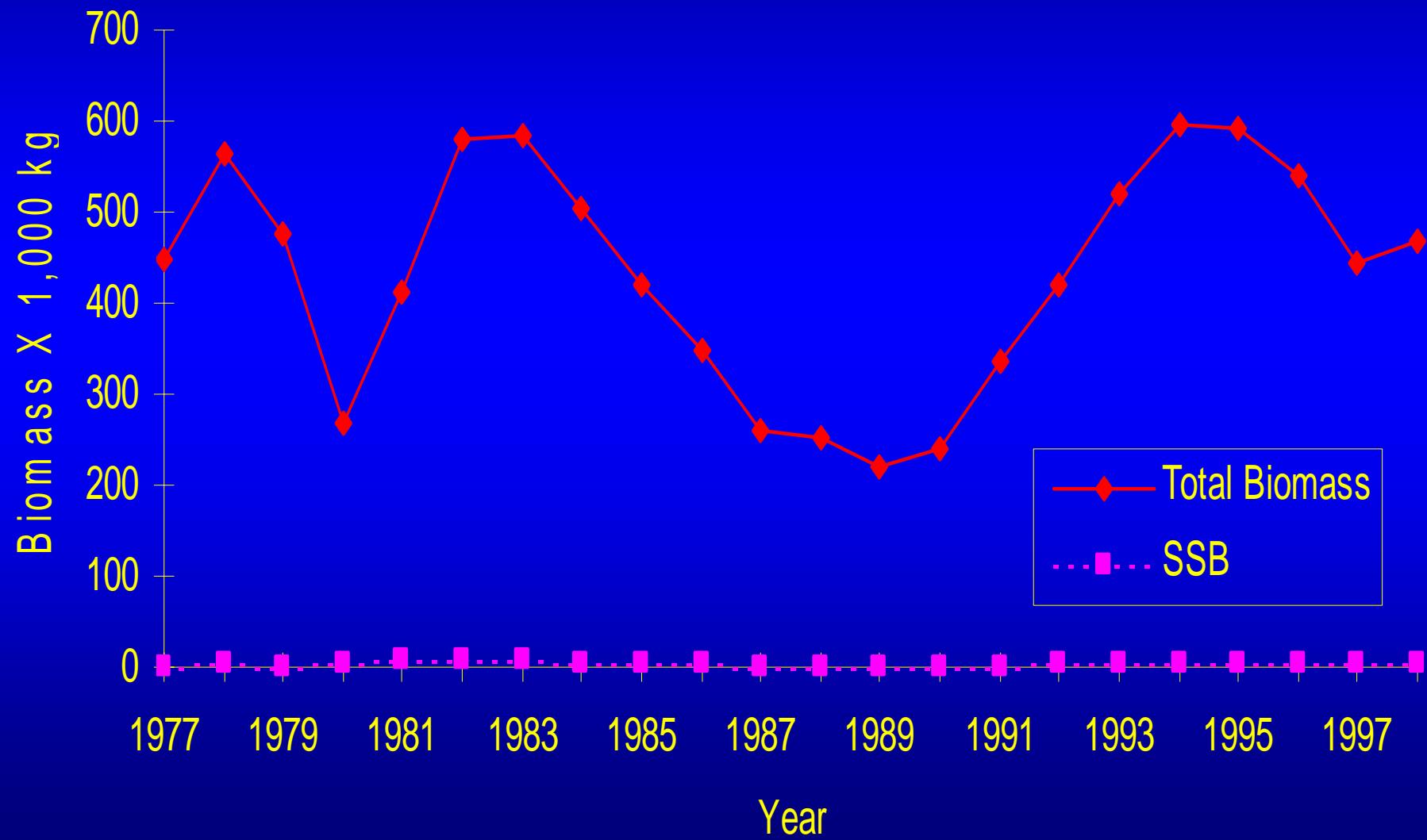
Average instantaneous mortality rates for ages 3-13 lake trout in N. L. Huron



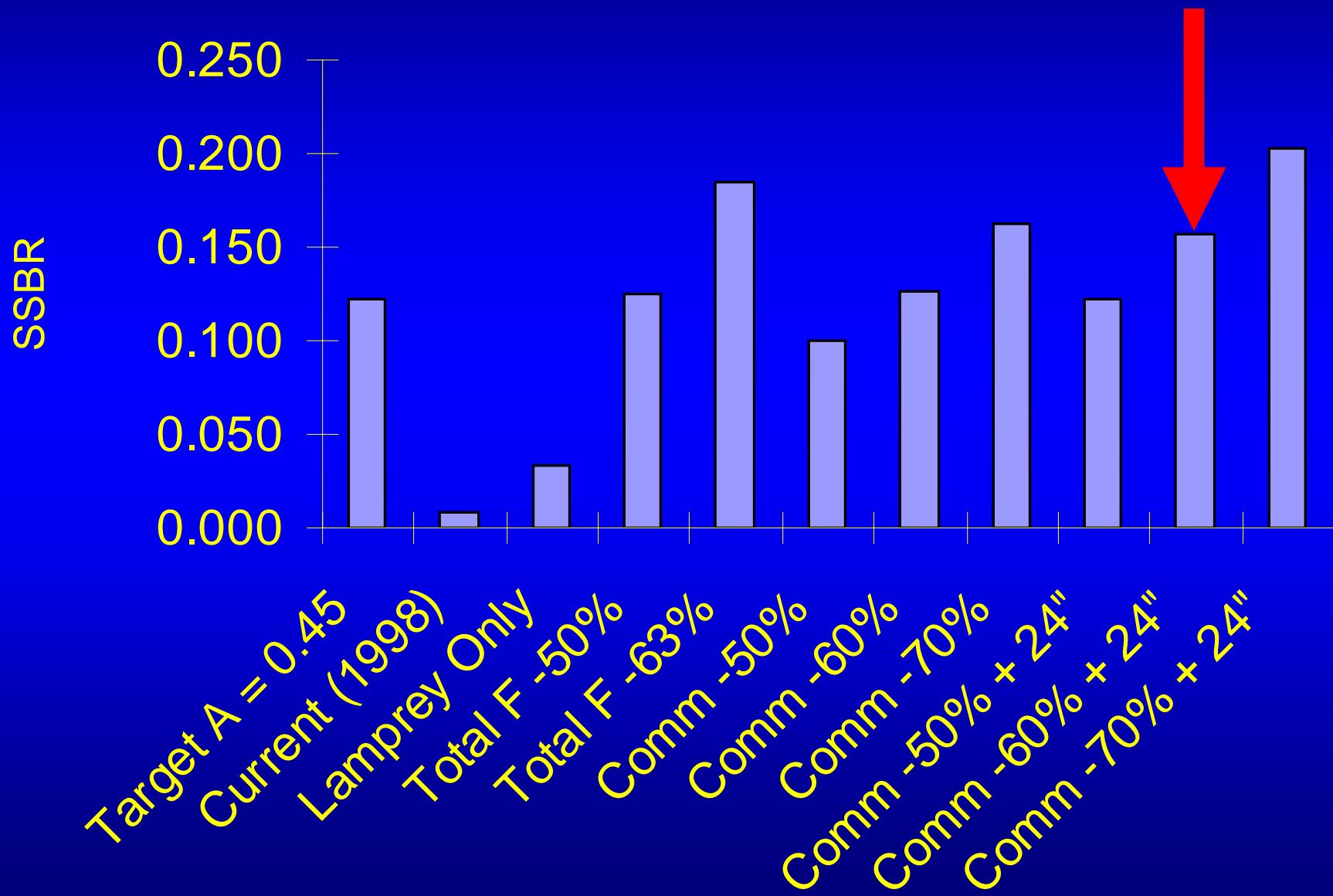
1994-98 average lake trout population age structure in N. L. Huron



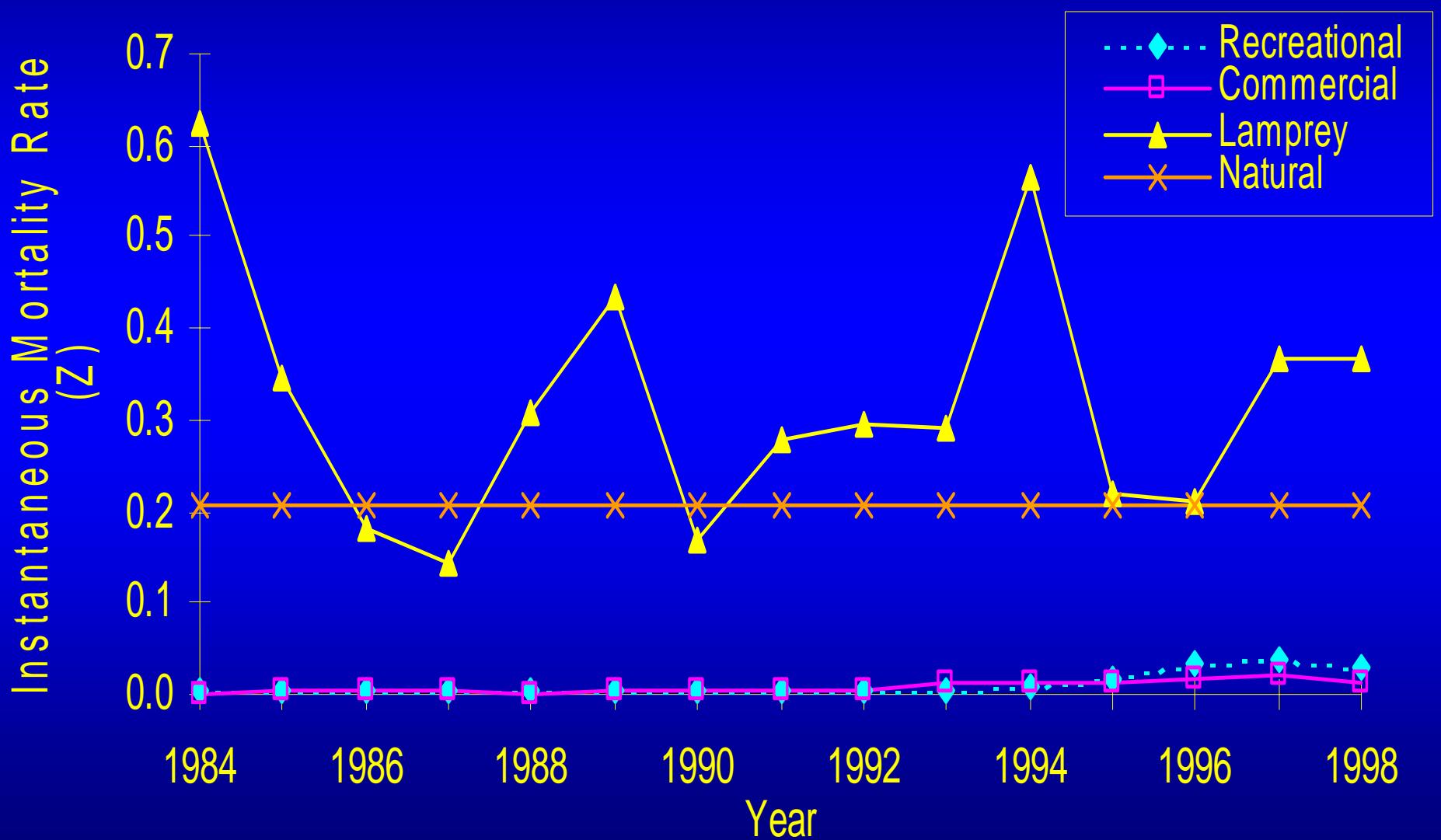
SCAA model estimates of lake trout biomass and SSB in N. L. Huron



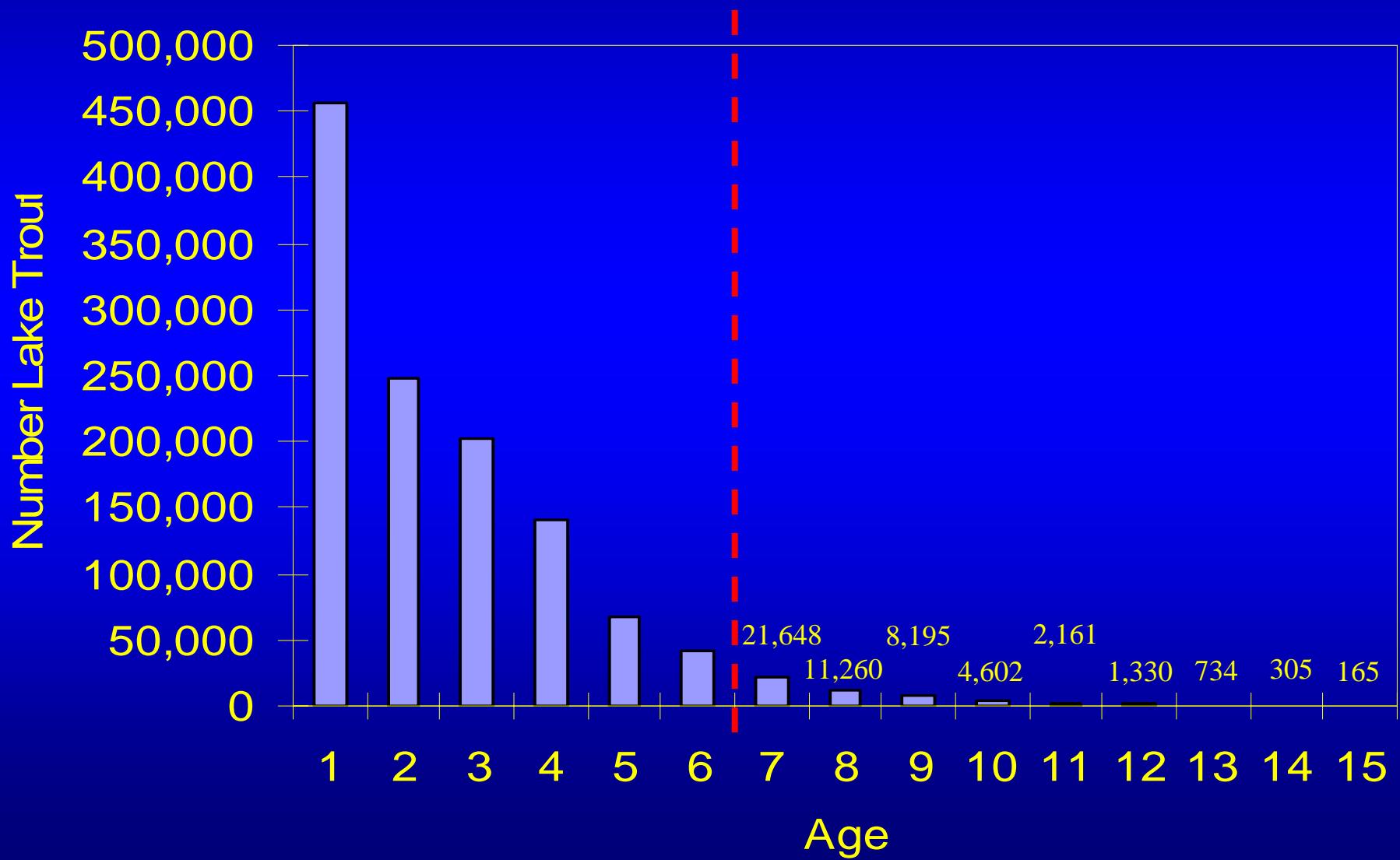
N. L. Huron Projection Scenarios



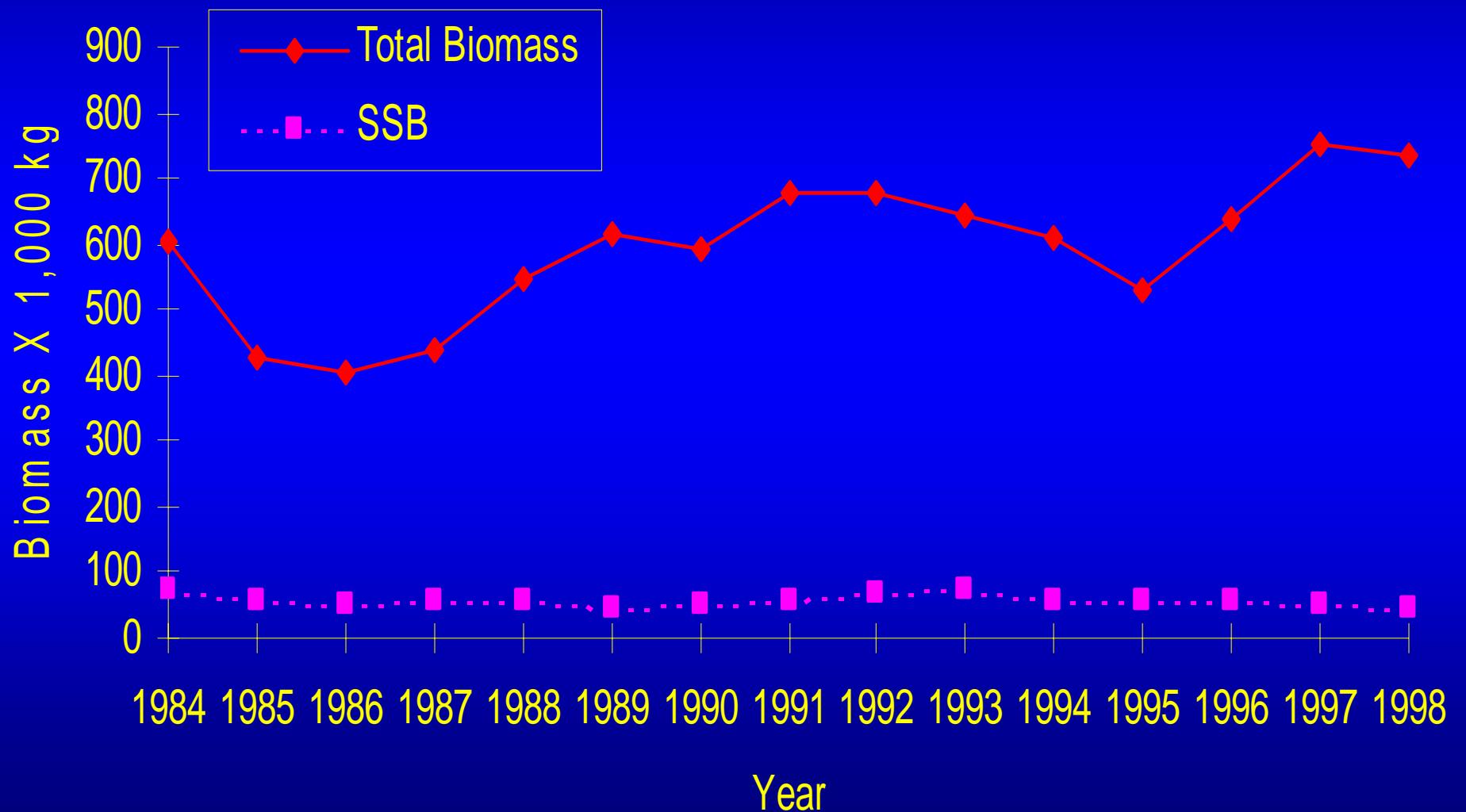
Average instantaneous mortality rates for ages 3-13 lake trout in N.C. L. Huron



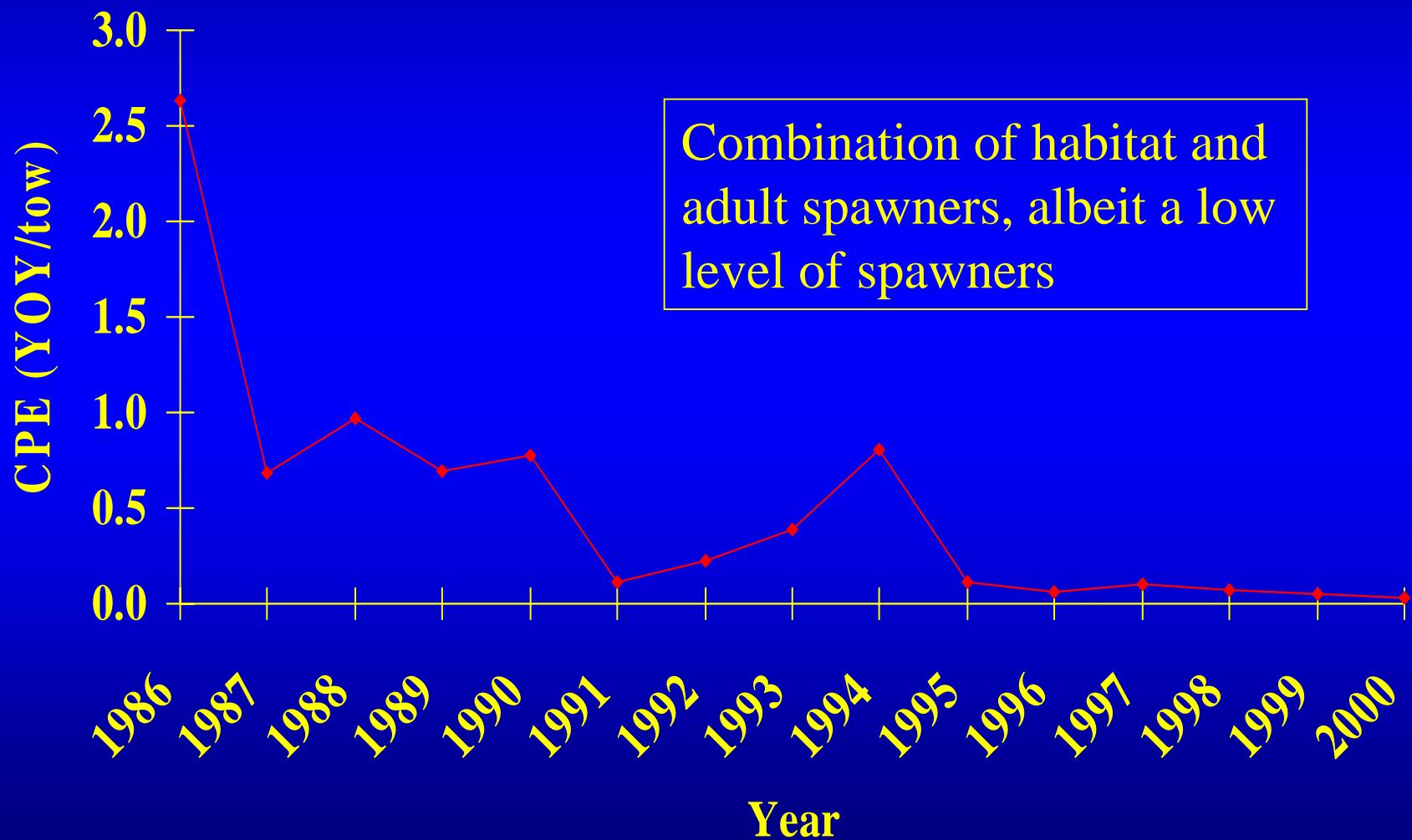
1994-98 average lake trout population age structure in N.C. L. Huron



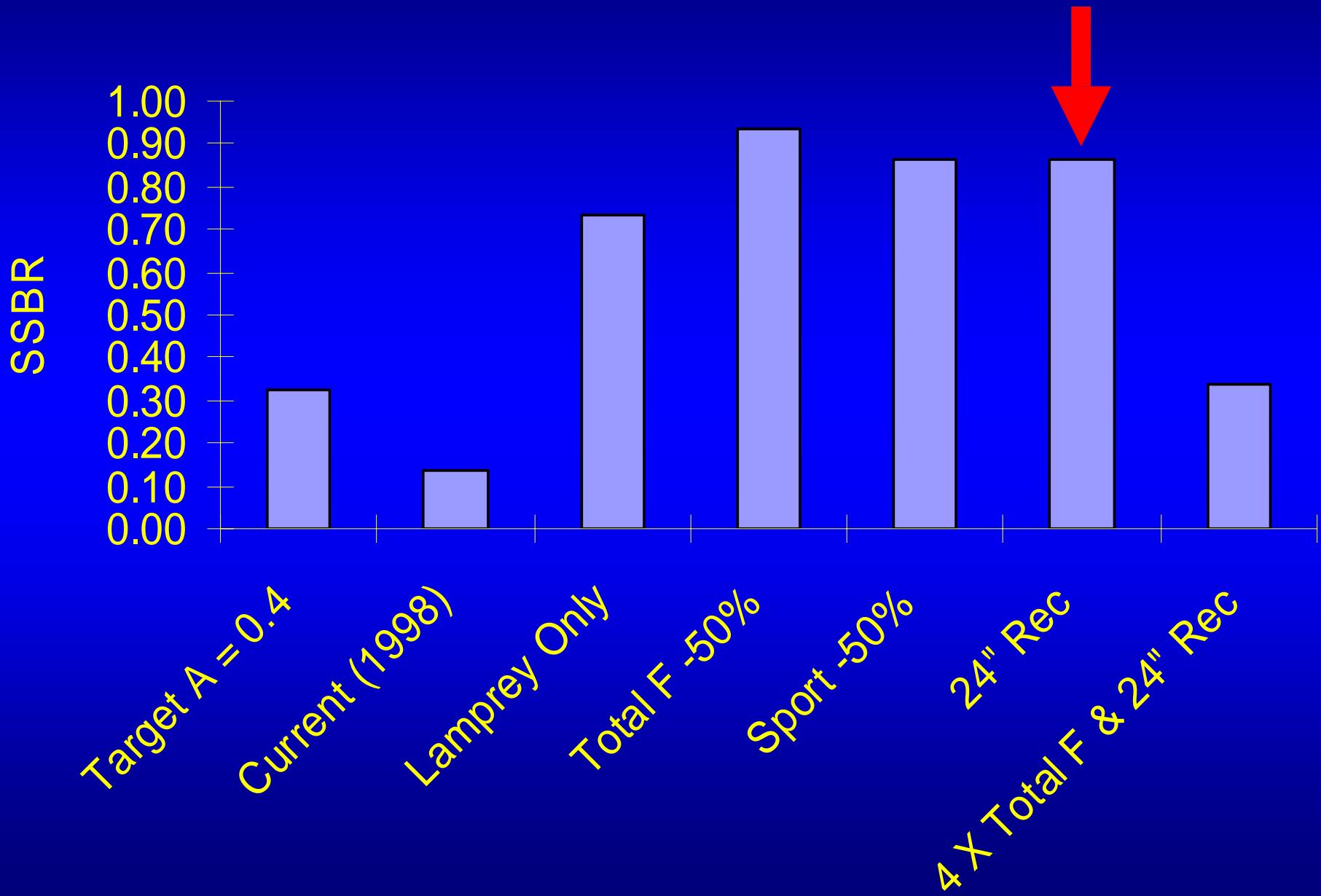
SCAA model estimates of lake trout biomass and SSB in N.C. L. Huron



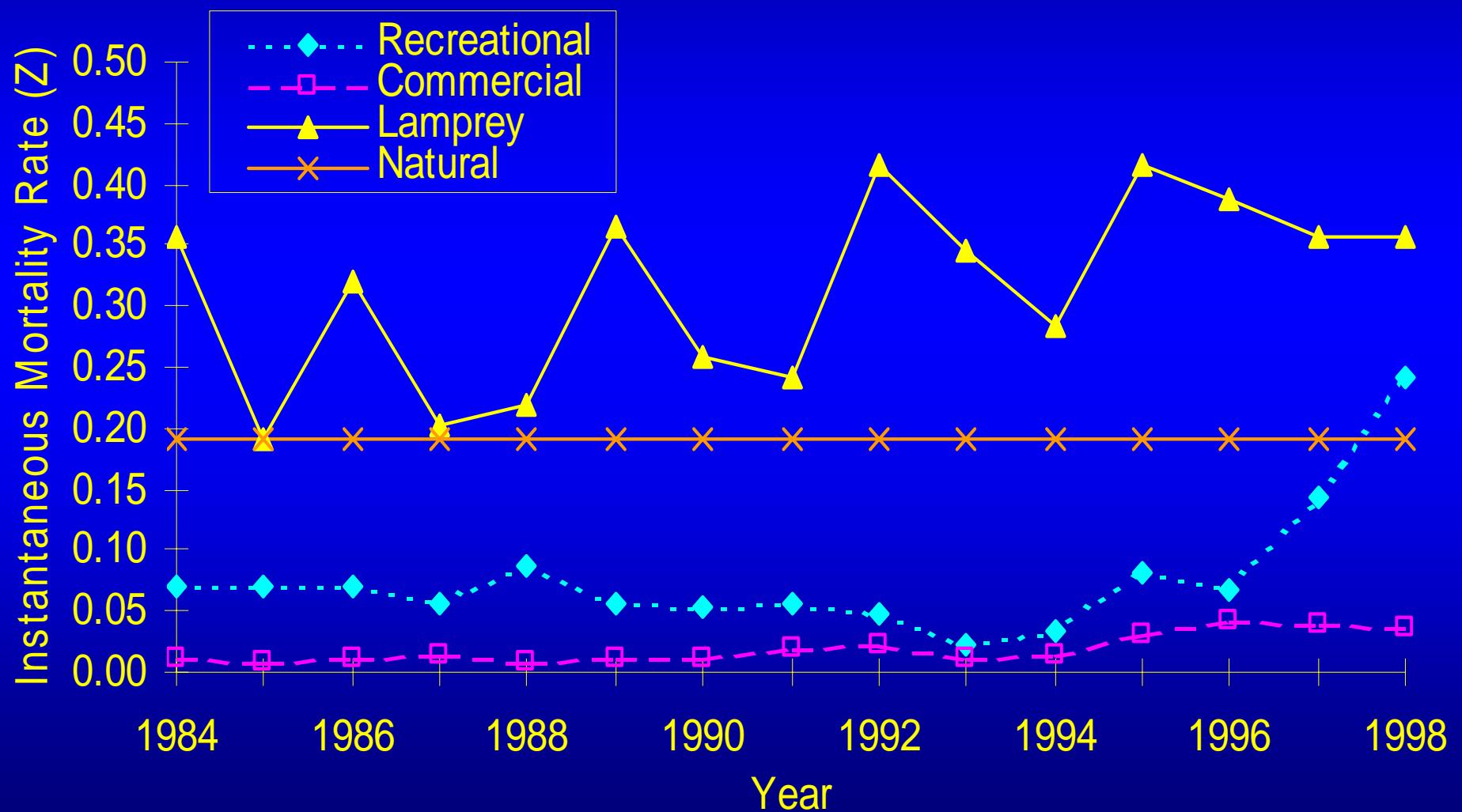
CPE of YOY lake trout at North Point Thunder Bay



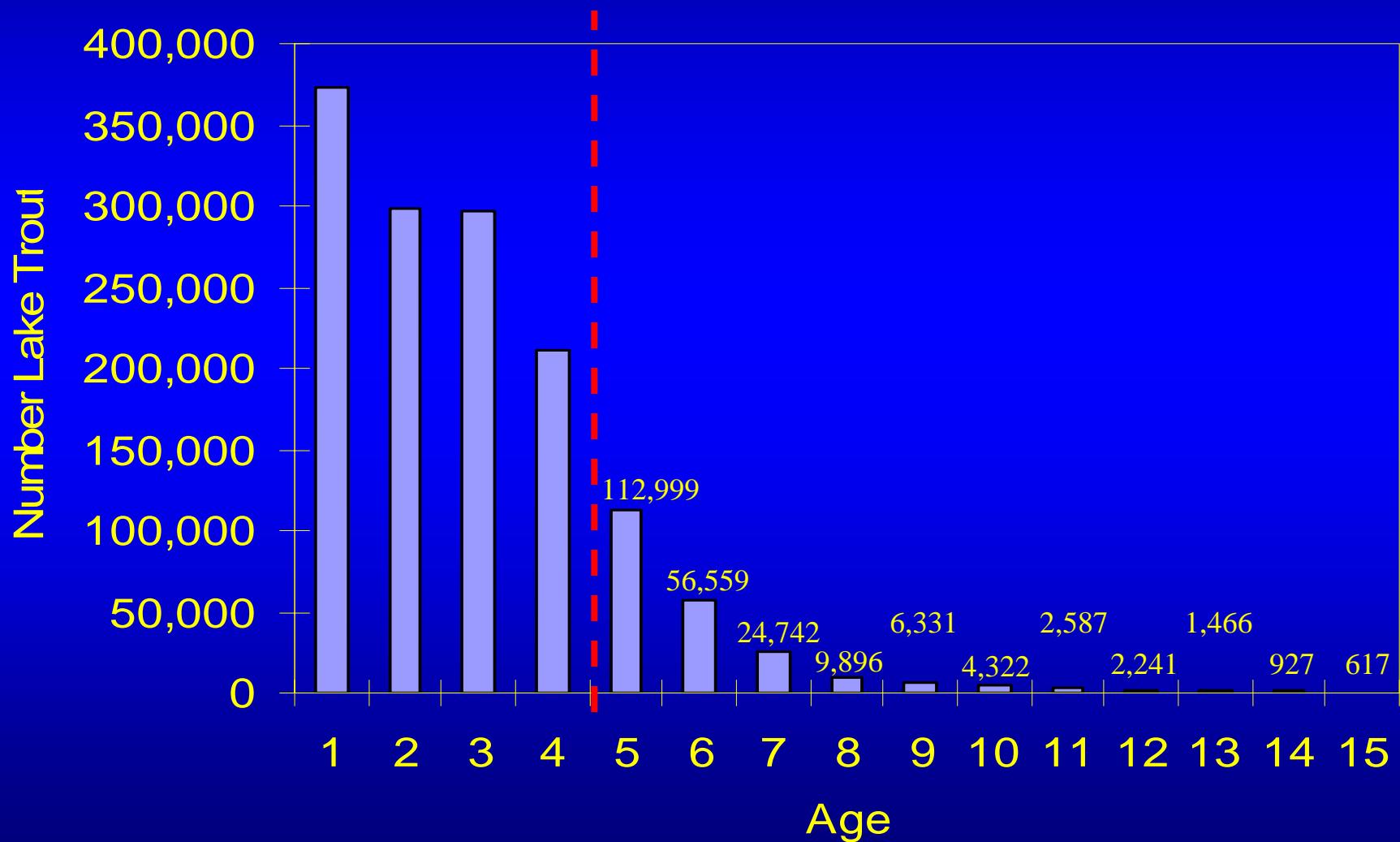
N.C. L. Huron Projection Scenarios



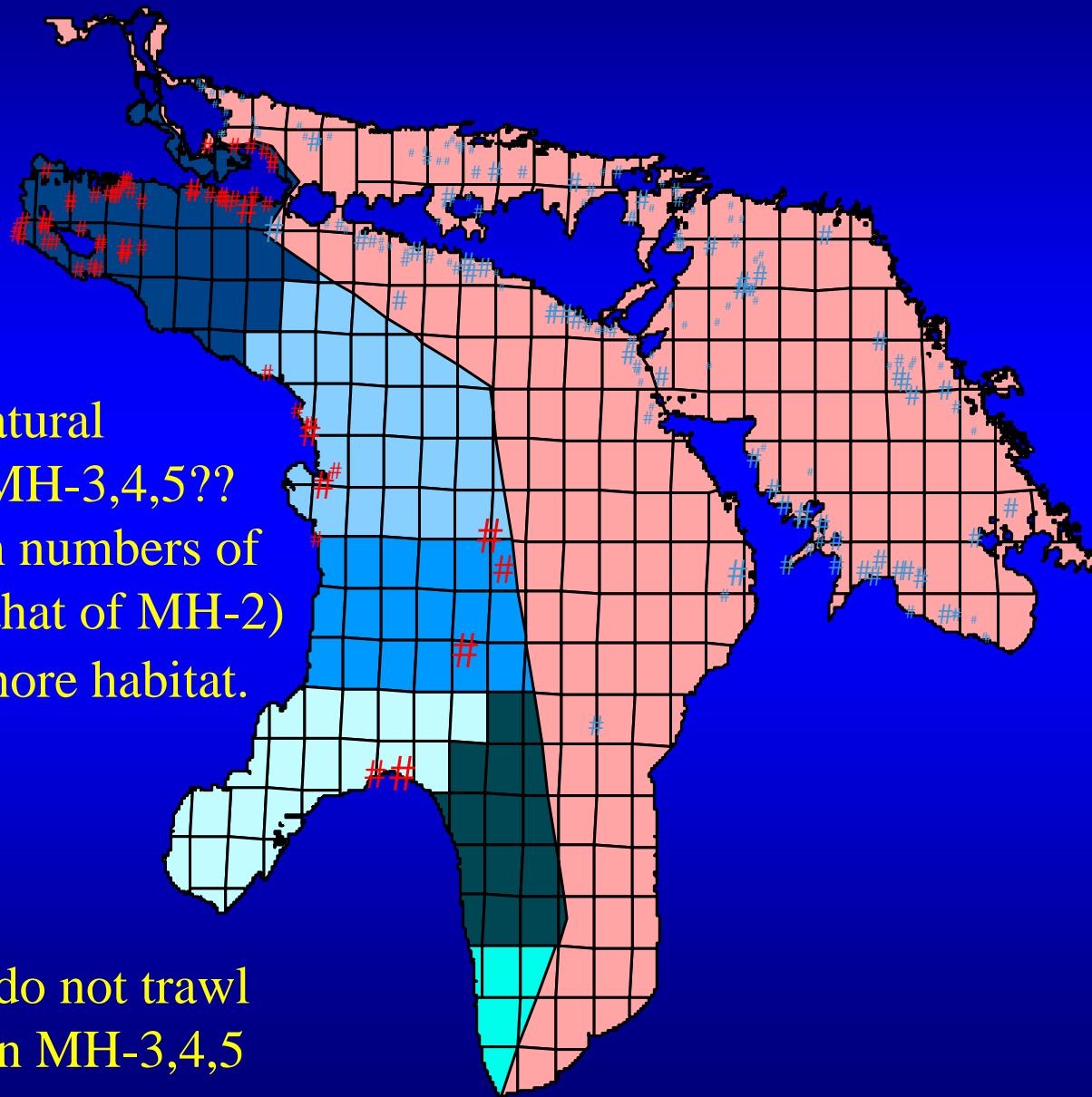
Average instantaneous mortality rates for ages 3-13 lake trout in S. L. Huron



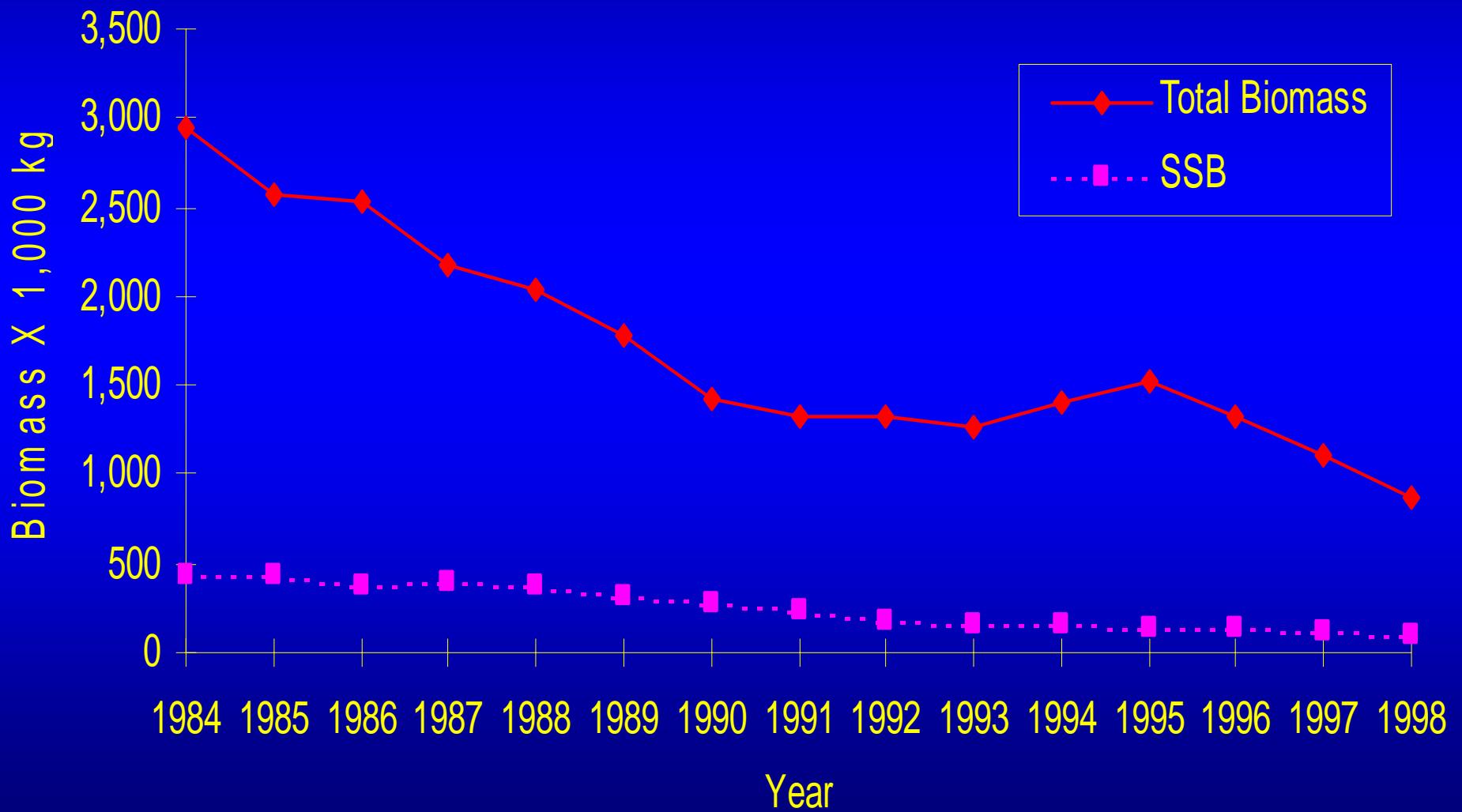
1994-98 average lake trout population age structure in S. L. Huron



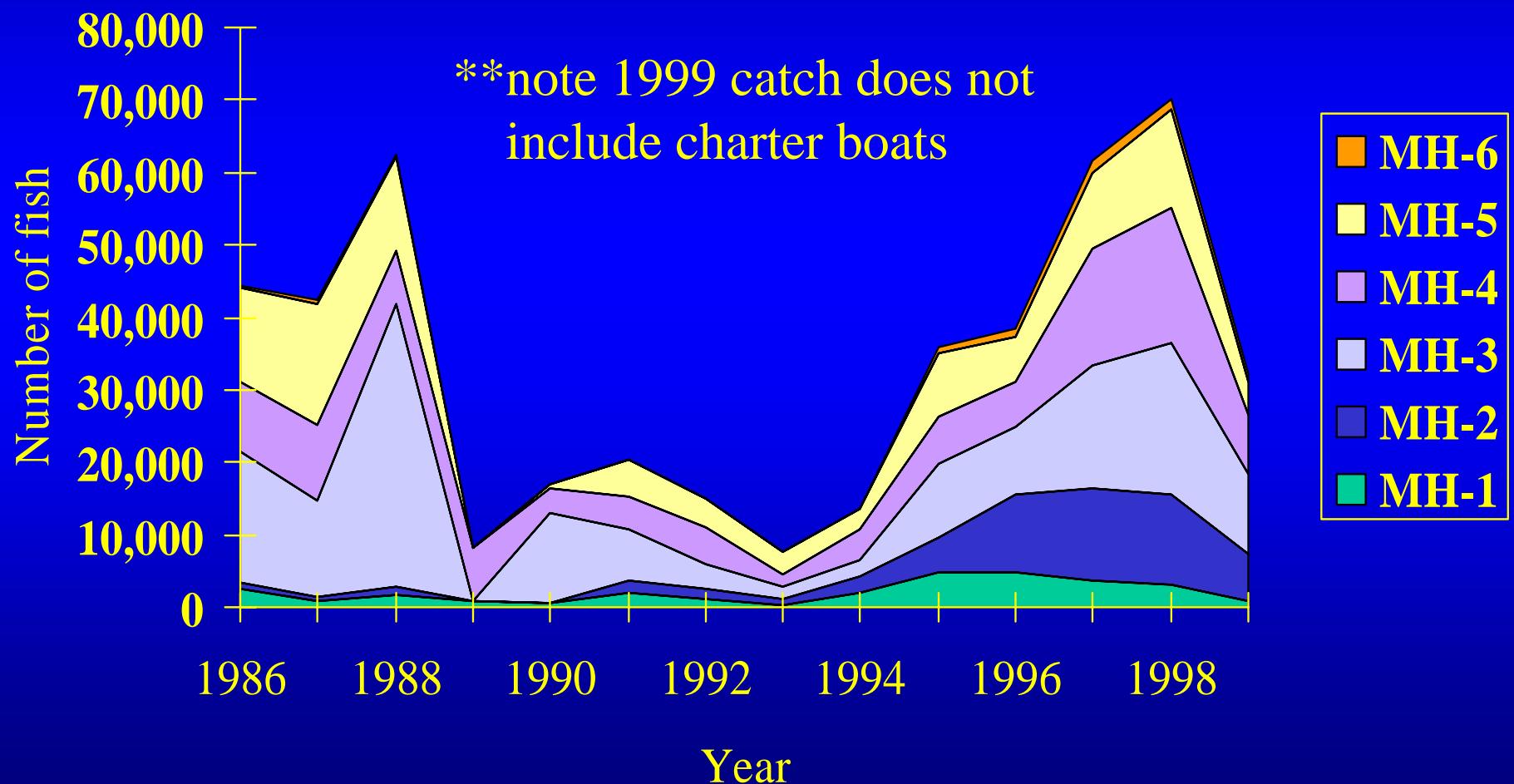
Historic lake trout spawning reefs



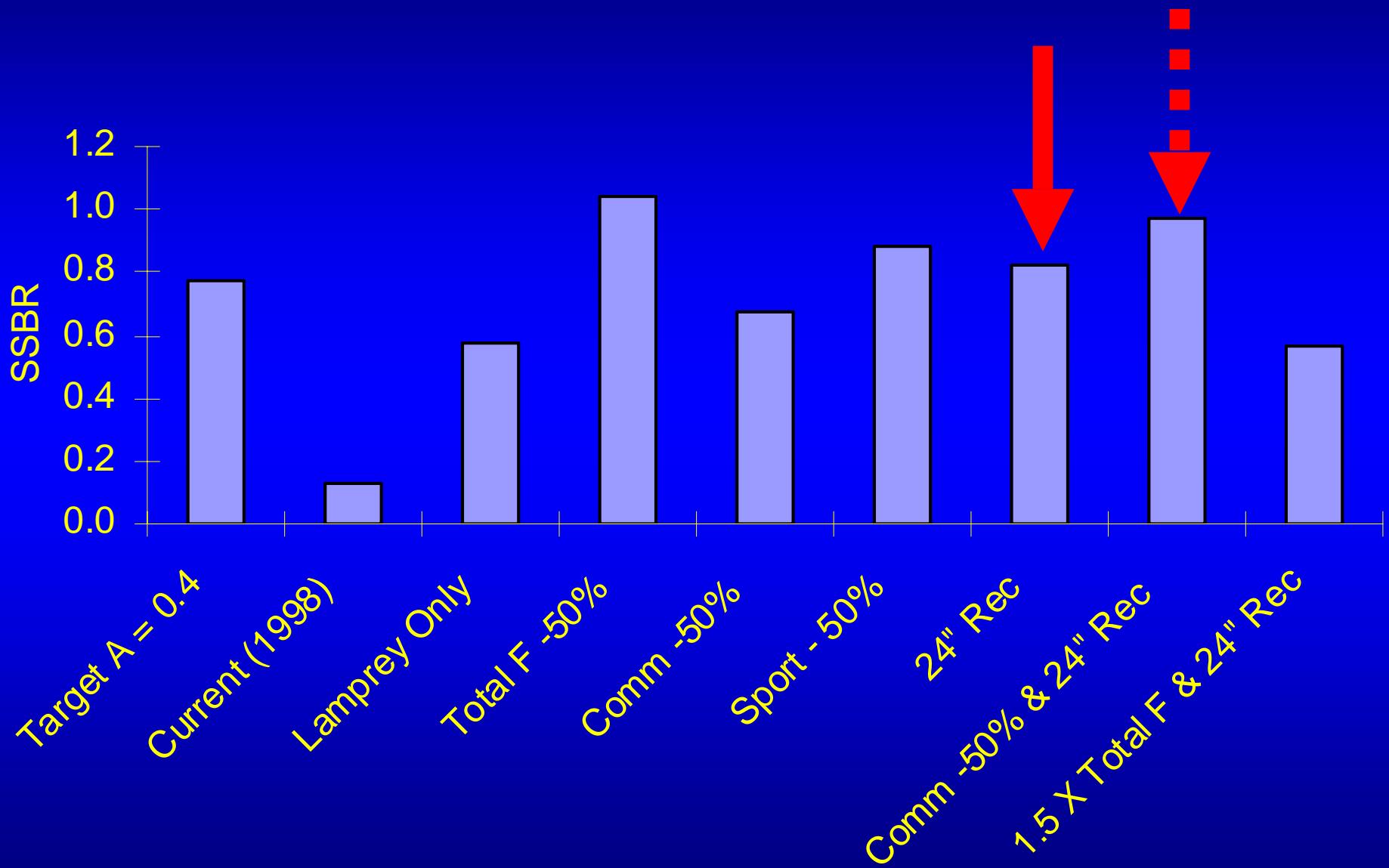
SCAA model estimates of lake trout biomass and SSB in S. L. Huron

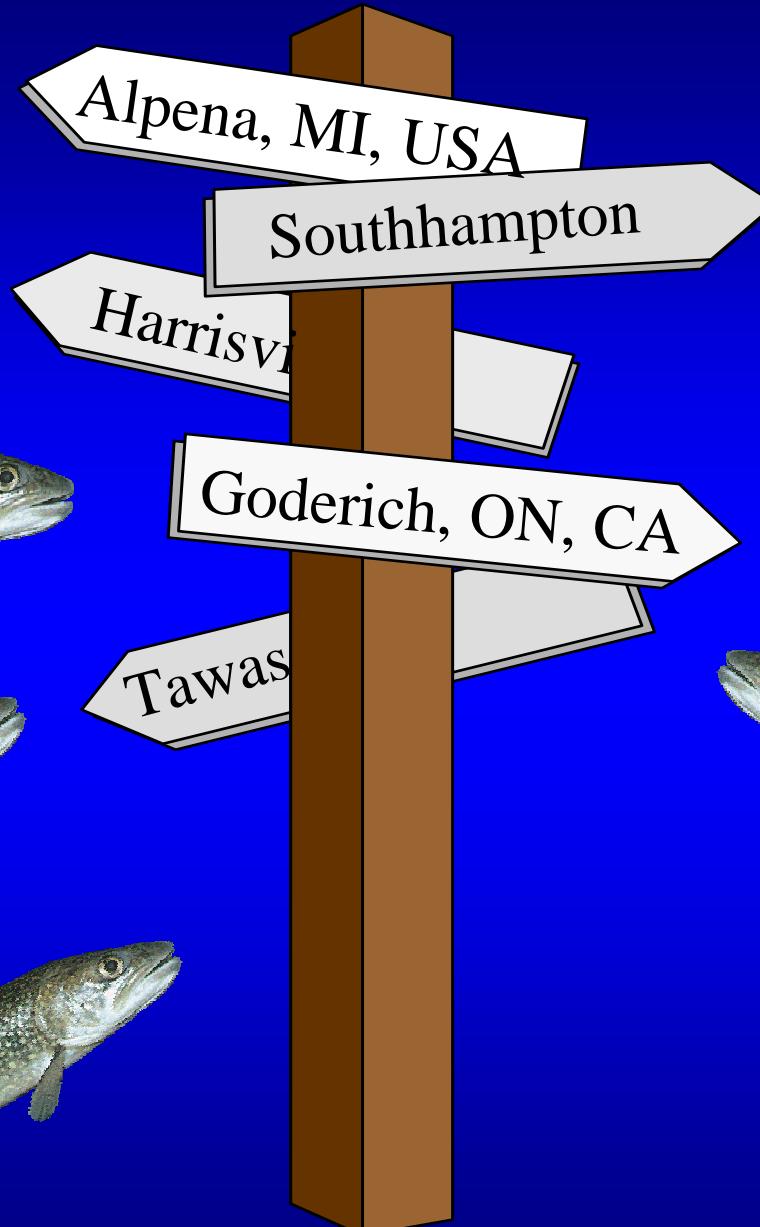
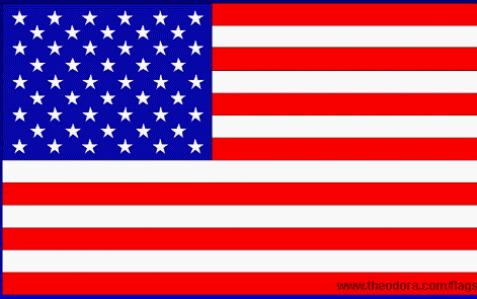


Estimated lake trout sport catch, Michigan waters of Lake Huron



S. L. Huron Projection Scenarios

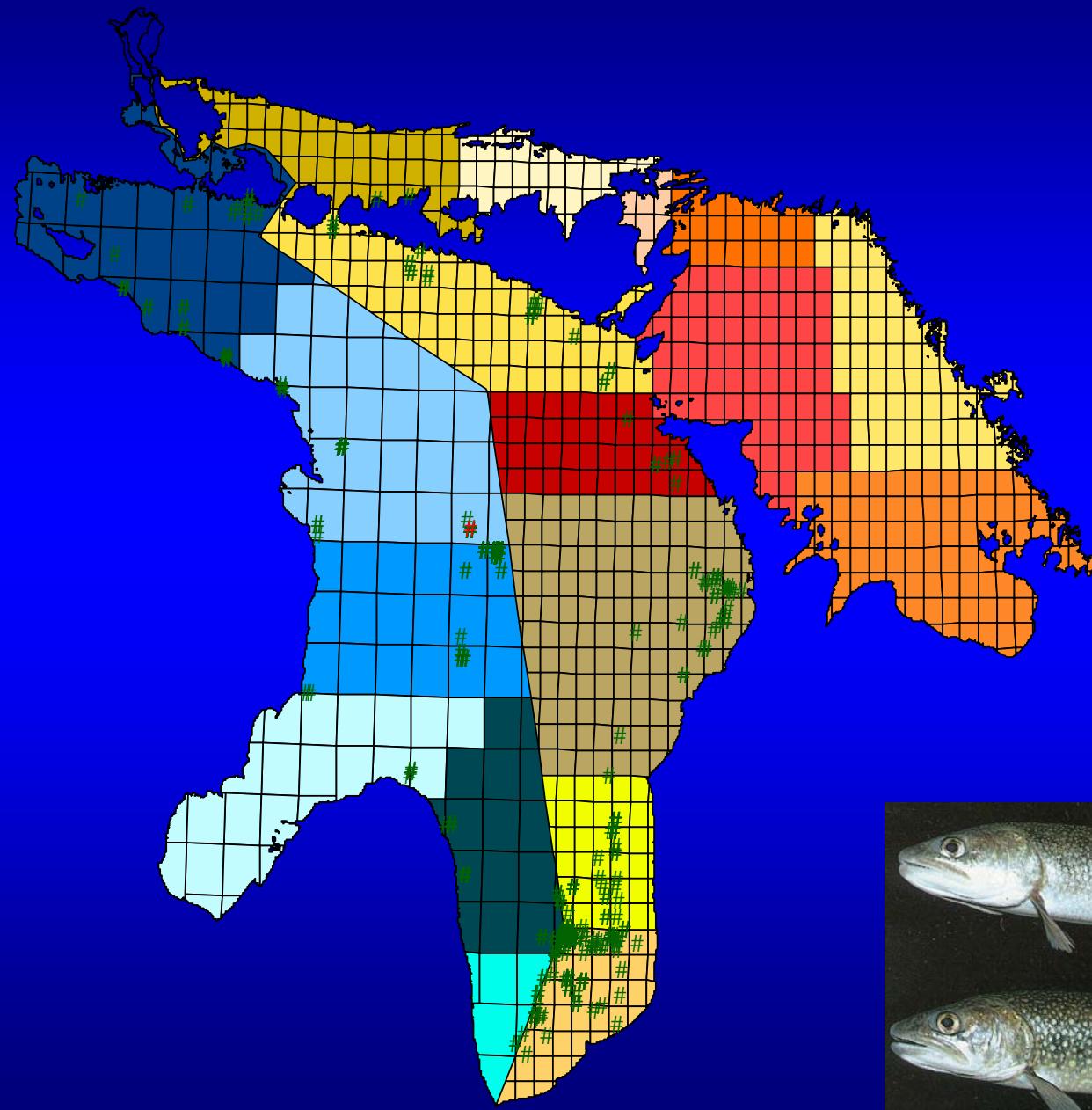




NFL or NHL??
Bud or LaBatt's??
So many choices.



Gillnet returns of CWT LT from Six Fathom Bank



Summary

- 1) The management strategy now in place in the main basin of Lake Huron may allow for the rehabilitation of lake trout stocks by 2020.
- 2) Control of sea lamprey and fishing mortality is necessary for rehabilitation to progress.
- 3) Cooperative management between USA, 1836 tribes, and Canada is needed to control lake trout mortality in the main basin of Lake Huron.

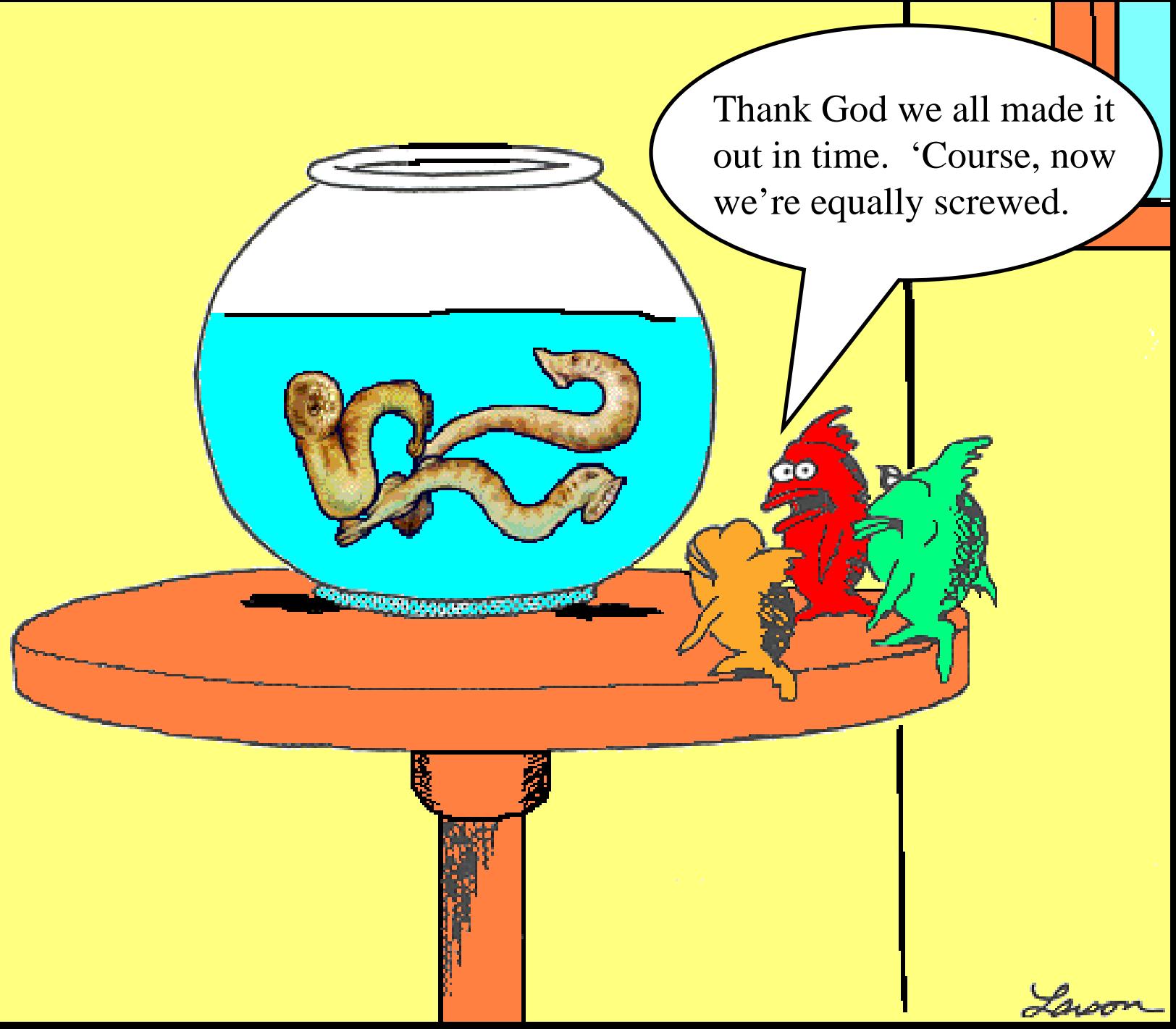
Summary (cont.)

- 4) The modeling subcommittee of the Technical Fisheries Committee will update the SCAA models yearly to set TAC's and monitor progress towards rehabilitation.

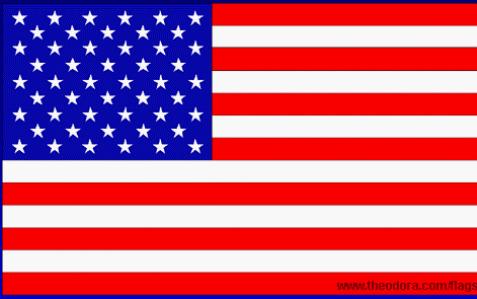
We are updating models with data through the year 2000 right now. Preliminary TAC's are due next week.



Larson



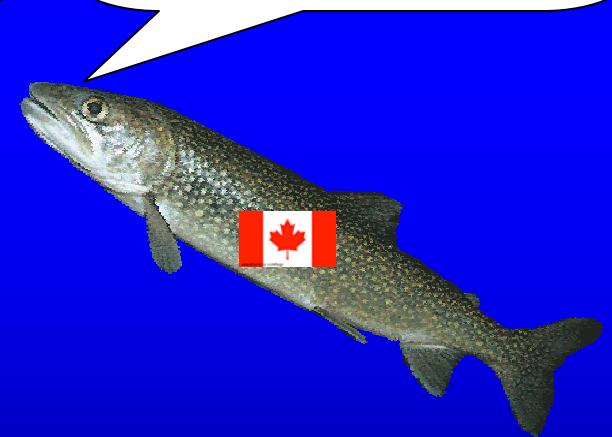
Larson



www.theodora.com/flags



ANY
QUESTIONS?



www.theodora.com/flags