

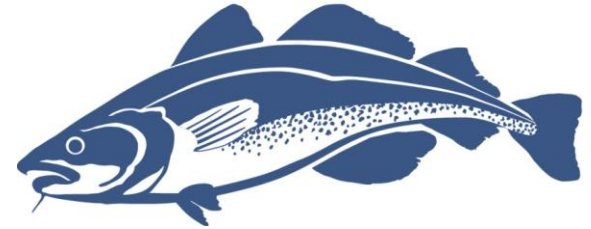
River Herring and American Eel Management Update: 2015



River Herring Network, Pembroke

October 15, 2015

Brad Chase -- Massachusetts Division of Marine Fisheries



Recreational and Diadromous Fisheries Program

- Diadromous Fish Passage and Habitat Restoration
- Diadromous Fish Biology and Management



Fore River, Braintree, 2015
Bob Michelson

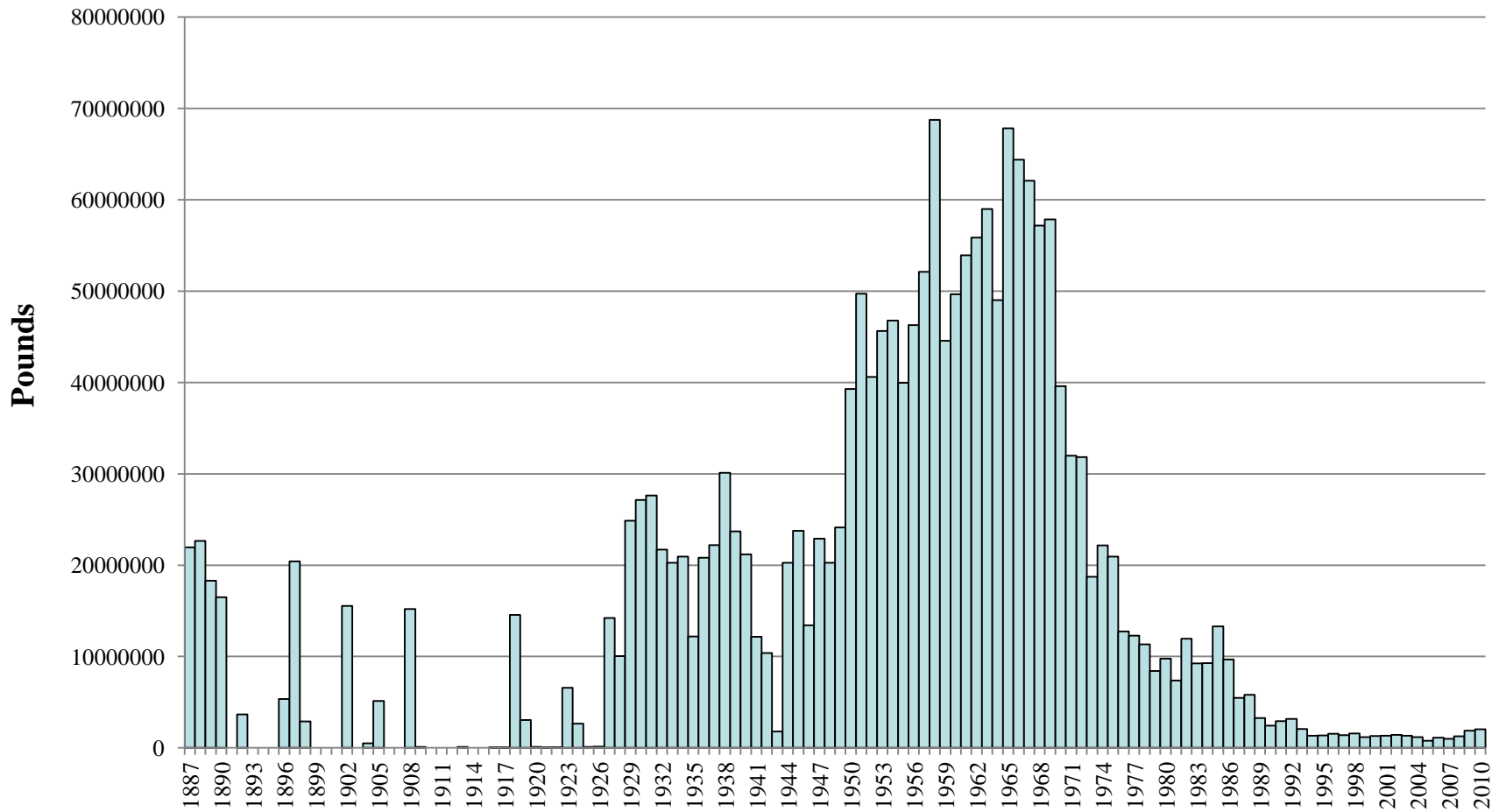
River Herring Management Update

- MA herring run status
- ASMFC coast-wide stock assessment, and Sustainable Fishery Plans
- Passage and Restoration Activity
- ESA review – 2013: NOAA/ASMFC river herring conservation plan
- Fishery Mgt Council's bycatch regulations, 2013-2015

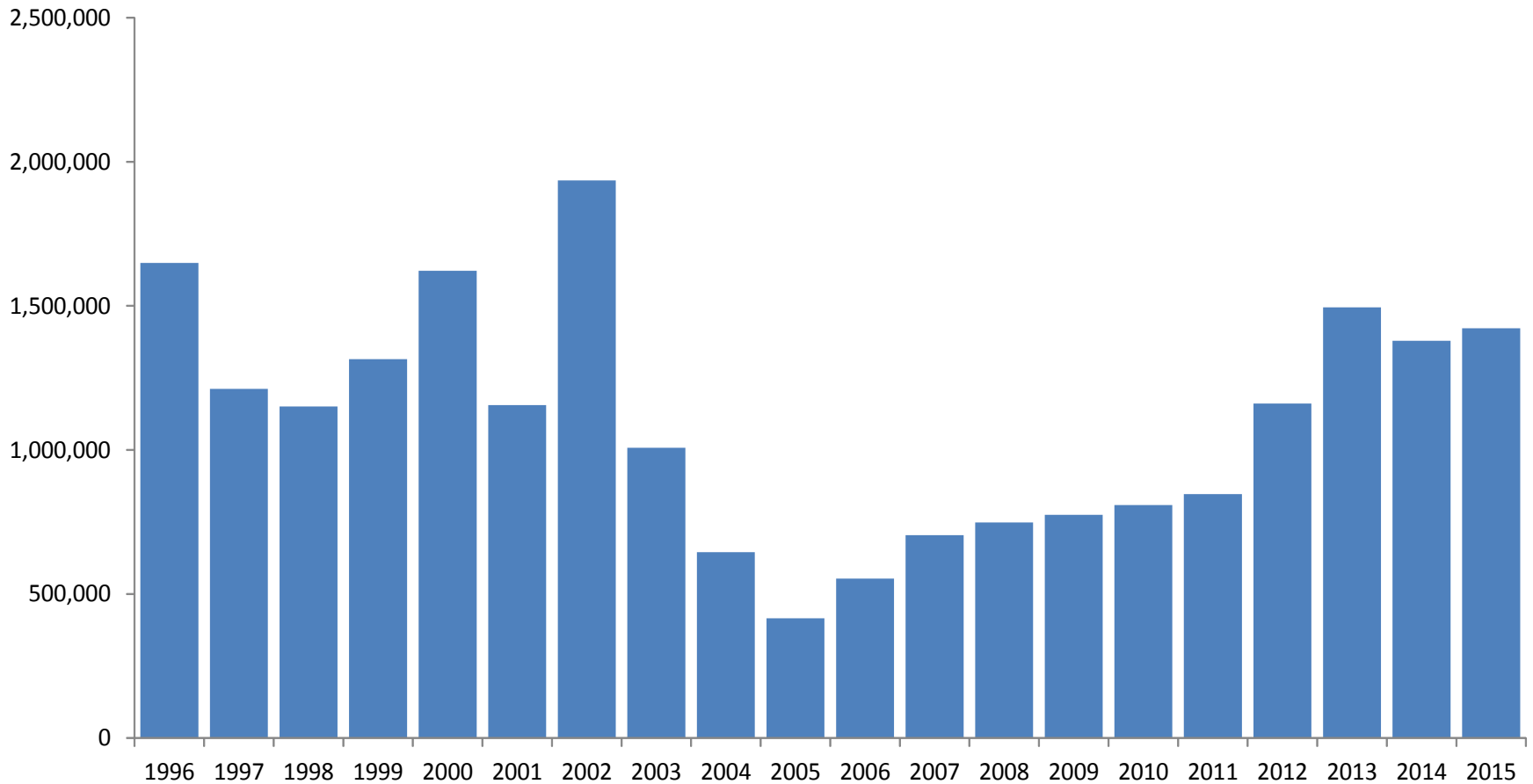


Shervin Arya

US Commercial Landings of River Herring, 1887 – 2010 (millions of pounds)



Massachusetts River Herring 20-year count index



Open Harvest for River Herring ?



Atlantic States Marine Fisheries Commission

ASMFC

- States are required to monitor river herring runs and report annually to ASMFC
- States are required to develop sustainability targets based on the best available science
- ASMFC closed state fisheries with no approved sustainable fishery plans on January 1, 2012

Sustainability Targets

“may include but not limited to....”

- Spawning stock biomass
- Fish passage counts
- Mortality rates
- Repeat spawning ratio
- Juvenile abundance indices

River Herring Sustainable Fishery Plans

Definition: “ *will not diminish potential future reproduction and **recruitment** of herring stocks* “

Management Units: state-wide, regional and river specific.

Five Plans approved during 2011-2012: ME, NH, NY, NC, SC

Bottom Line: ASMFC was flexible in approving plans. To date, the plans have depended on best professional judgment in relation to run count records.

States with Open Herring Fisheries

Maine: 19 runs open using escapement targets based on *run counts* and spawning acreage target

New Hampshire: estuary-wide plan based on *run counts* with escapement targets and exploitation rate (20%)

South Carolina: single open river using exploitation rate (18%) based on *run counts* and harvest history

New York: Hudson River rec. and commercial harvest with juvenile seine survey target (25th percentile)

North Carolina: minor commercial fishery for 20 permit holders with no metrics

Massachusetts River Herring Harvest

Marine Fisheries
Commonwealth of Massachusetts



Bank Building, 20 Centre Street, Middleborough, Massachusetts 02346

Nemasket River Sustainable Fishery Plan for River Herring

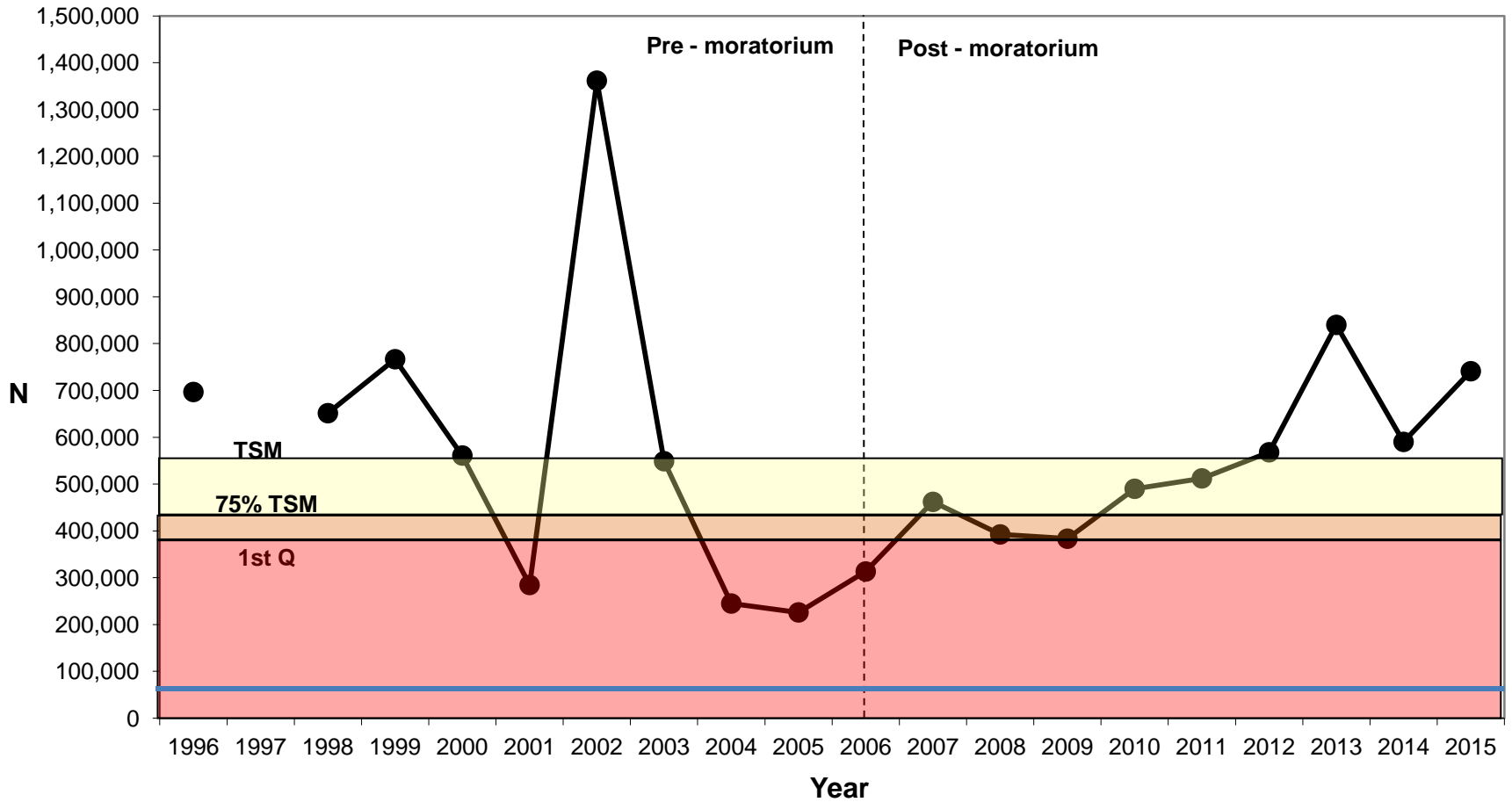
Developed Cooperatively by the Massachusetts
Division of Marine Fisheries and Middleborough
Lakeville Herring Fishery Commission

(1st Draft -- B.Chase, July 2015)



- Ban now in place for 10 years
- 4 Towns have expressed interest
- 2 Towns have made written requests to open harvest

Nemasket River Herring Count



NOAA / ASMFC River Herring Conservation Plan

A product of the 2013 ESA ruling on river herring

- A platform to coordinate river herring conservation, research and outreach
- Working on an integrated conservation restoration plan
- Established a Technical Expert Working Group (TEWG)
- 244K in grants awarded for research



2015

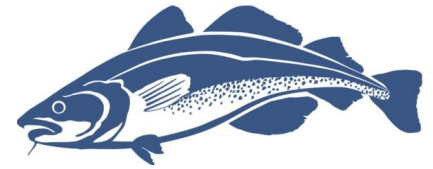
Pembroke, MA

Harsh Winter / Dry Summer



Fore River, Braintree

Diadromous Fish Passage and Habitat Restoration



2013 - 2014

Fishway Crew Construction:	9
Large Cooperative Fishways:	4
Eel Ramps:	3
Smelt Spawning Habitat:	1

2015

3 Fishway Crew jobs with several in development

Town River, Plymouth



Pilgrim Lake, Orleans

DMF Fishway Crew



Seymour Pond, Harwich



Herring Brook, Pembroke

Collaborative Fishway Projects



Center Falls Dam, Winchester

Draka Dam, Taunton



Great Pond Reservoir, Braintree

Stream Channel Maintenance

- Essex River, Essex
- Lake Rico, Taunton
- Herring Brook, Pembroke
- Jones River, Kingston
- Palmer River, Rehoboth
- Town Brook, Bridgewater



Stream Maintenance

- Essex River, Essex
- Lake Rico, Taunton
- Herring Brook, Pembroke
- Jones River, Kingston
- Palmer River, Rehoboth
- Town Brook, Bridgewater
- Mill Brook, West Tisbury



Large Watershed Projects



Westport River



Fore River, Braintree



Jones River, Kingston

Herring Run Parks

Herring Brook Park, Pembroke



Stony Brook, Brewster



Herring Run Parks

Oliver Mill Park, Nemasket River

Carter Beal Park, Bourne



Sara Turner is back in Town



Thanks, Ed



Herring Wardens



Discussion?

Where should limited monitoring funds go?

What restoration actions will be most successful?

Should we open herring runs to harvest?

Back River, Weymouth



American Eel

American Eel Management Update

- ASMFC Management Plan Changes
- Glass eel status
- USFWS decision on ESA petition
- International Eel Mgt.



American Eel Biology

- Catadromous (born at sea)
- Panmictic (no homing)
- Semelparous (spawn and die)
- Intersexual (environmental determined)

- High age of maturity (8-15 years old)
- High fecundity (3-10 million eggs)
- Geographic range (Greenland to Brazil)

Highly Successful Fish

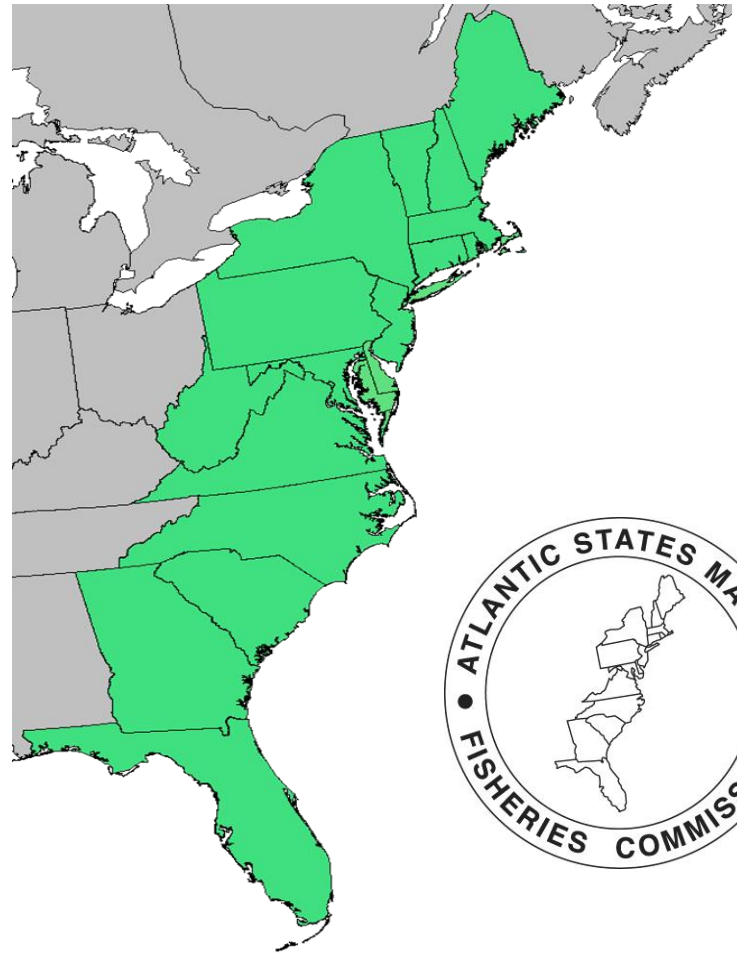
Silver Eels

- **Sexually dimorphic:** males <16", females >18"
- **Migration Triggers:** temp. 10-18 C, high flows, dark phase of moon
- **Spawn February through April in Sargasso Sea**
- **Random mating assumed for all American eel**
- **The relation of glass eels to parental region is unknown**



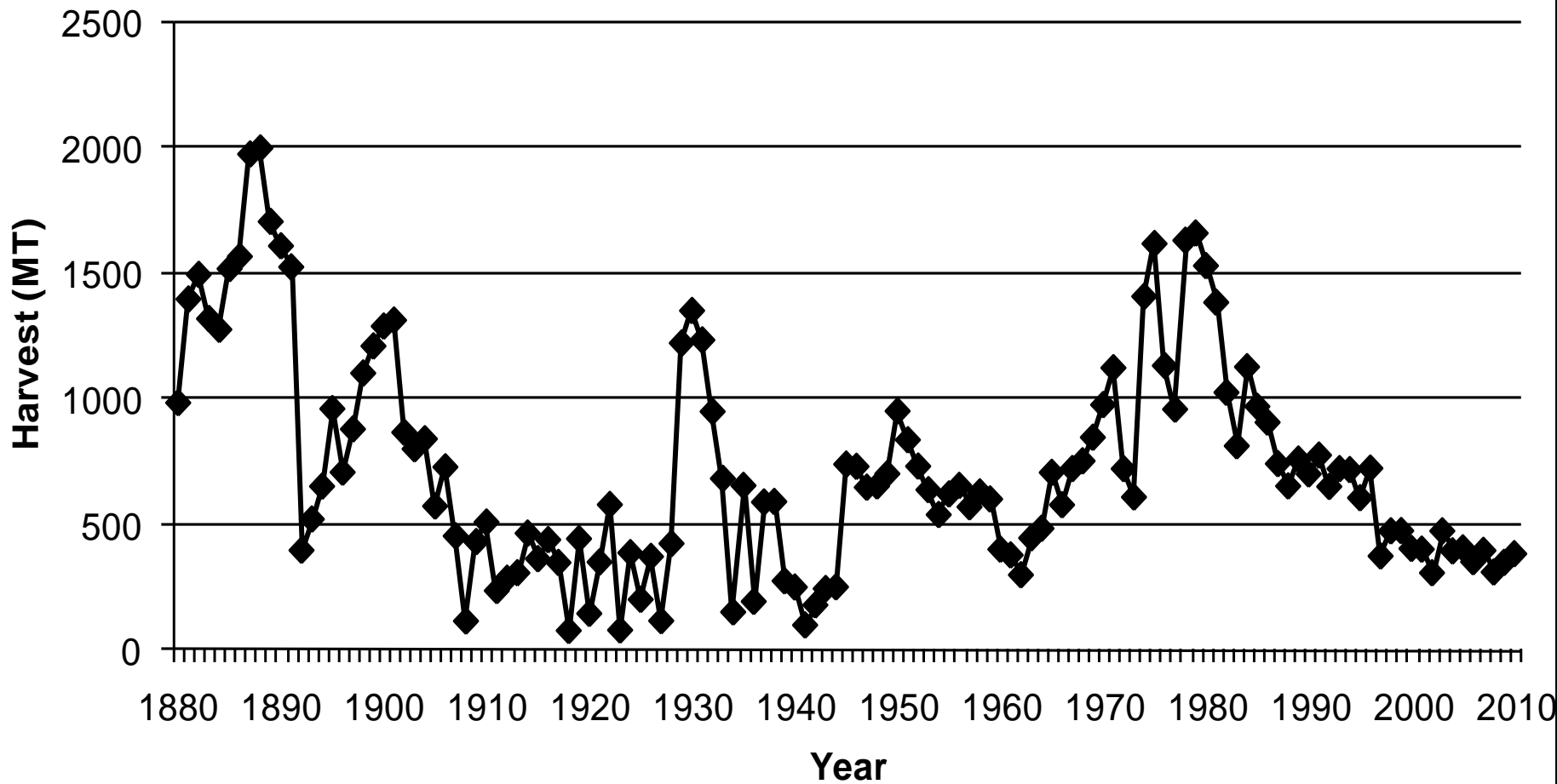
Atlantic States Marine Fisheries Commission

- Coast-wide American eel Fishery Mgt. plan: 2000
- Benchmark stock assessment: 2010 - 2012
- Amendments to FMP: 2013 - 2014



US harvest of American eel used in Stock Assessment DB-SRA, 1880-2010

US American eel harvest, 1880-2010

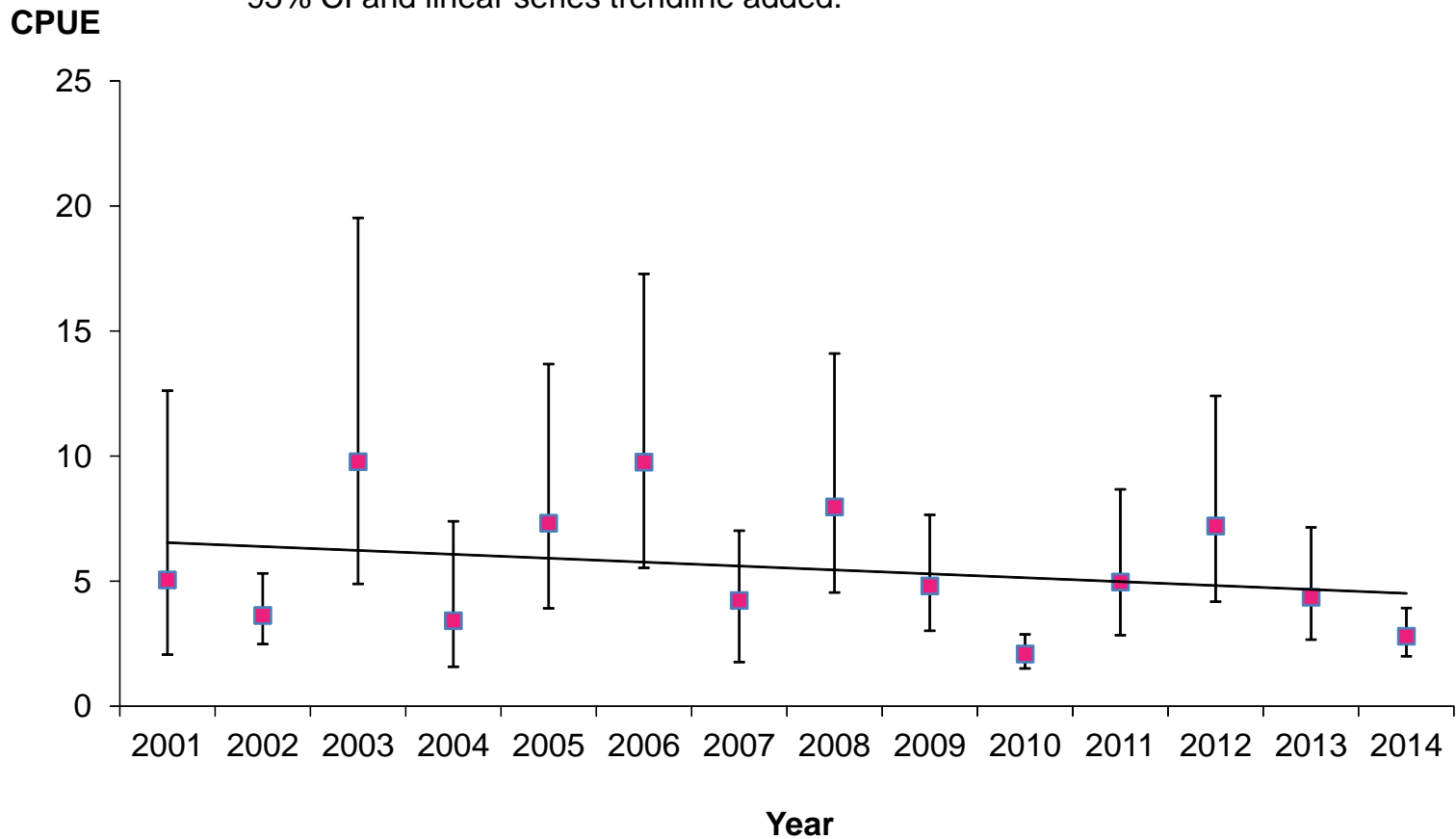


Stock Status

- Stock declared “depleted”
- Multiple sources of mortality have contributed to reduced biomass including, but not limited to
 - Substantial harvest in the 1970s
 - Loss of habitat
 - Passage mortality
 - Disease and parasites
 - Potentially shifting oceanographic conditions
- Reduction in mortality is needed

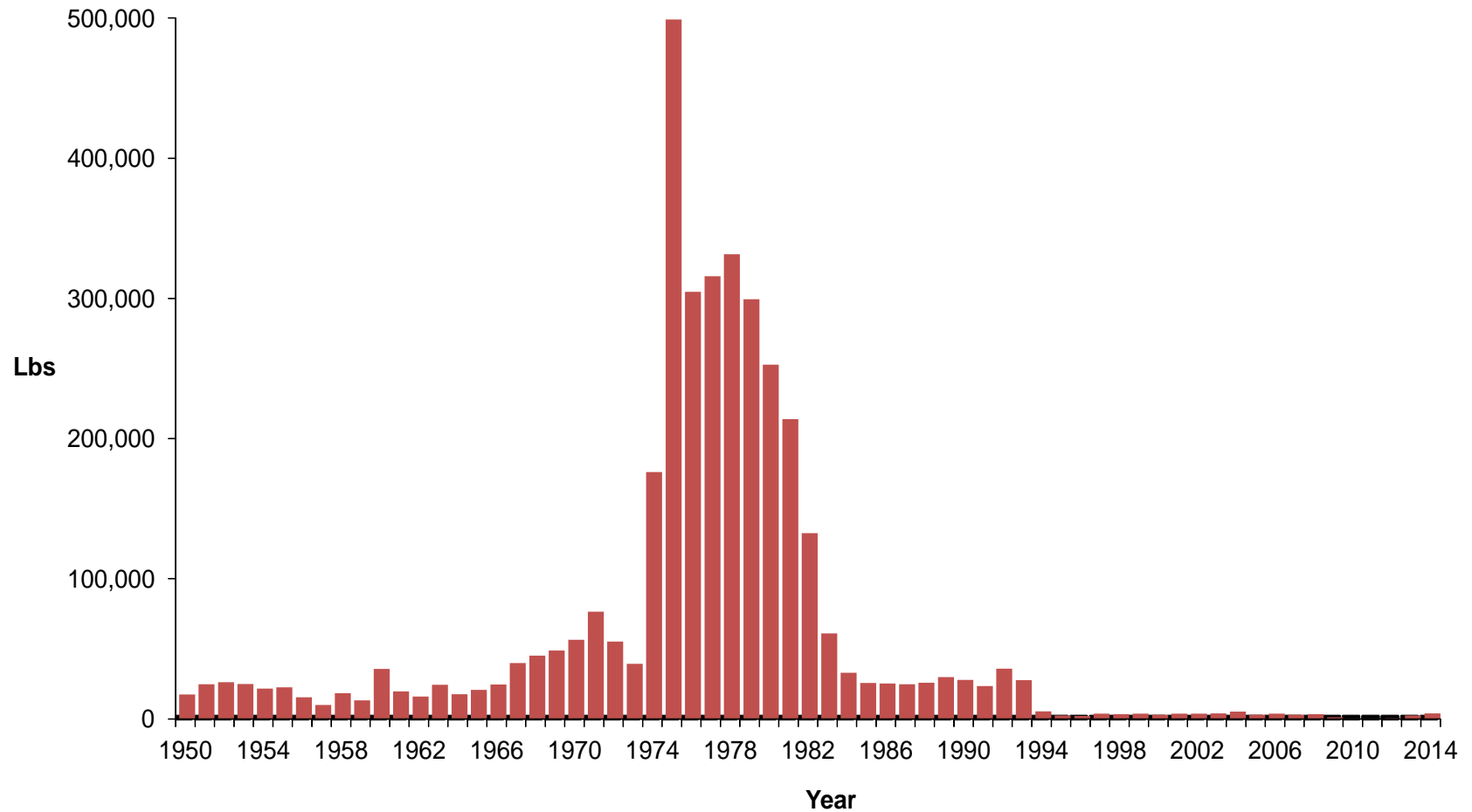
Jones River Glass Eel Trap

Figure 3. American eel YOY Sheldon trap catch in the Jones River, Kingston, MA, 2001-2014. Geometric mean catch per haul are shown for April and May hauls with 95% CI and linear series trendline added.



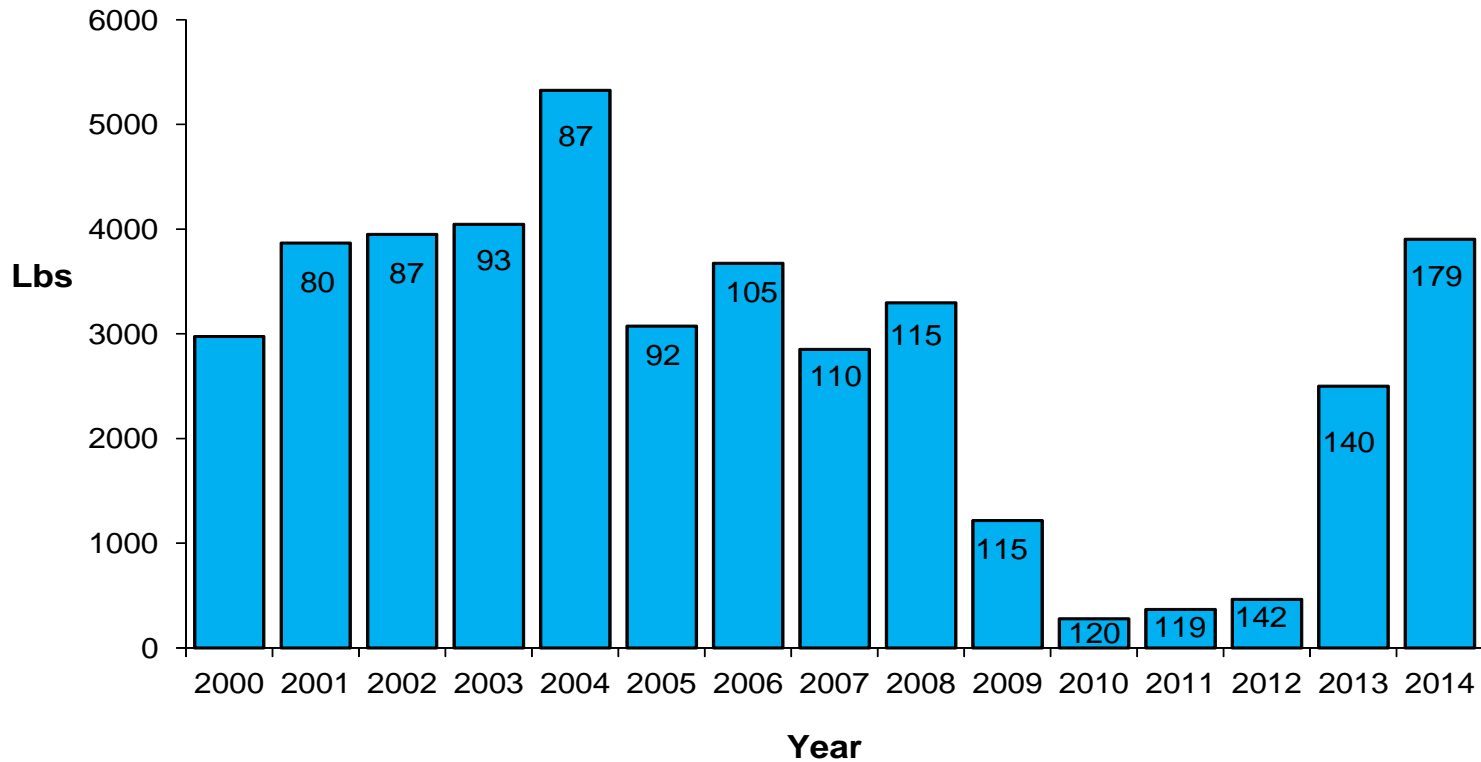
Massachusetts Commercial Eel Landings

Figure 1. Massachusetts commercial American eel landings reported for 1950 to 2014.



Massachusetts Commercial Eel Landings

Figure 2. Commercial harvest of American eel reported to MADMF, 2000-2014; with annual permit numbers in columns.



Eel Aquaculture

- Glass eels shipped live to Asian countries
- Culture eels to 12-18" in 1.5 years
- Global recruitment declines in temperate eels
- Turning to American eel.....



American Eel – ASMFC Addendum III

2013-2014

- Yellow Eel Fishery**
 - 9 inch minimum size
 - ½ x ½ minimum mesh size in pots
 - harvester and dealer trip level reporting
- Glass Eel Fishery**
 - 1/8 inch minimum mesh size
 - ≤ 25 pigmented eels per pound
- Silver Eel Fishery**
 - no harvest Sept. 1st – Dec. 31st
w/ exceptions
- Recreational Fishery** -- increase minimum size and reduce bag limit to 25 eels / day

Delaware is out-of-compliance: fishery due for March 18, 2016 closure

American Eel – ASMFC Addendum IV

2014-2015

Yellow Eel Fishery

- Start of commercial quota management.
Monitoring required with coastwide catch cap
- Sustainable Fishery Mgt Plan framework

Catch Cap for 2015: 907,671 lbs

Massachusetts share: 2,000 lbs

Glass Eel Fishery

- Landings-based quota ME and SC
- Allows new glass eel fisheries
- Allows harvest for research and aquaculture
- New fisheries must have fishery independent life cycle survey

Maine 2015-2017 quota: 9,688 lbs

Endangered Species Act Review

October 2015

- **Endangered Species:** in danger of extinction
- **Threatened Species:** likely to become an endangered Species

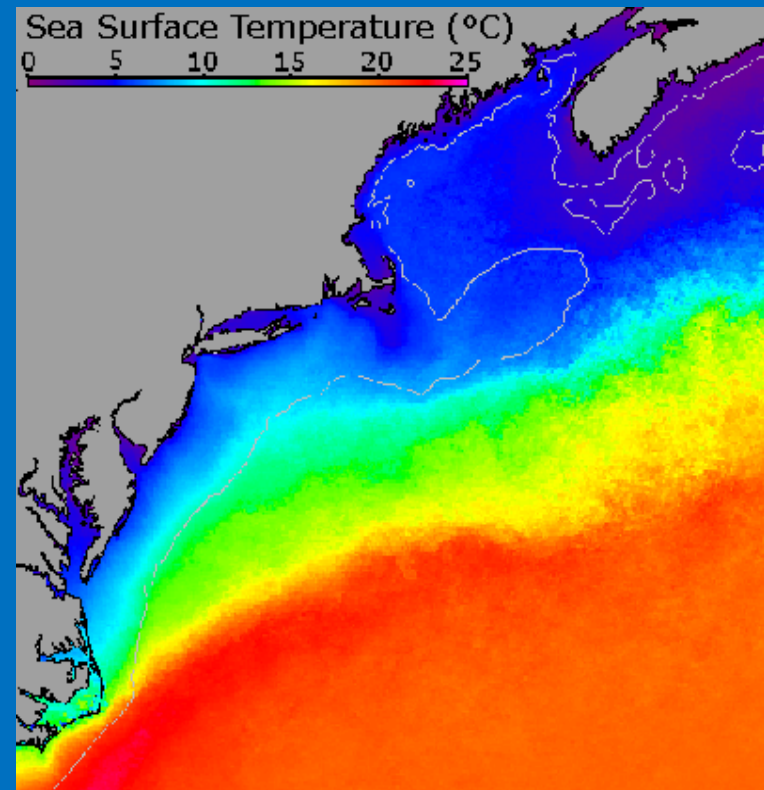
2007 ESA review: not warranted

2015 ESA review: same result



ESA Review

- Habitat loss from barriers is a historic effect with “population level effects likely already realized”
- No evidence of continued decline in glass eel recruitment
- No individual stressors that rise to the level of a threat to American eel
- American eel population appears to be stable



ESA Review

Next Steps

- Review does not support the assertion that existing threats put American eel in danger of extinction
- American eel will remain a *Species of Concern* under the Endangered Species Act and a coordinated process to improve conservation and outreach is expected

Canadian Species at Risk Act (SARA): *Threatened for Ontario, 2007*

Committee of the Status of Endangered Wildlife in Canada: *Threatened, 2012*

International Union for Conservation of Nature: *Threatened, 2014*

Eel Poaching



Addendum IV of the Eel FMP now allows for new glass eel fisheries



Fine increased to \$10,000 this year

Questions?



APR 28 2005