



Diadromous Fish Management Update - 2019

River Herring Network Meeting, Andover – November 2, 2019

Brad Chase – Mass. Division of Marine Fisheries

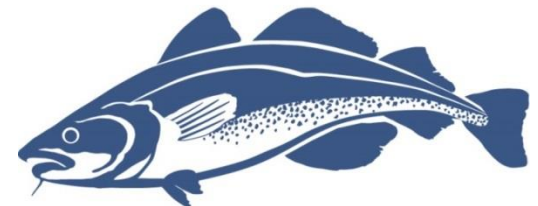
Bob Michelson

Presentation Outline

1. Interstate Updates
2. Fish Passage Restoration
3. River Herring Monitoring and Trends



Marine Fisheries
Commonwealth of Massachusetts





Diadromous Fish in Massachusetts



- rainbow smelt
- American eel
- alewife
- blueback herring
- American shad
- white perch
- sea lamprey
- Atlantic tomcod
- sea-run trout
- striped bass





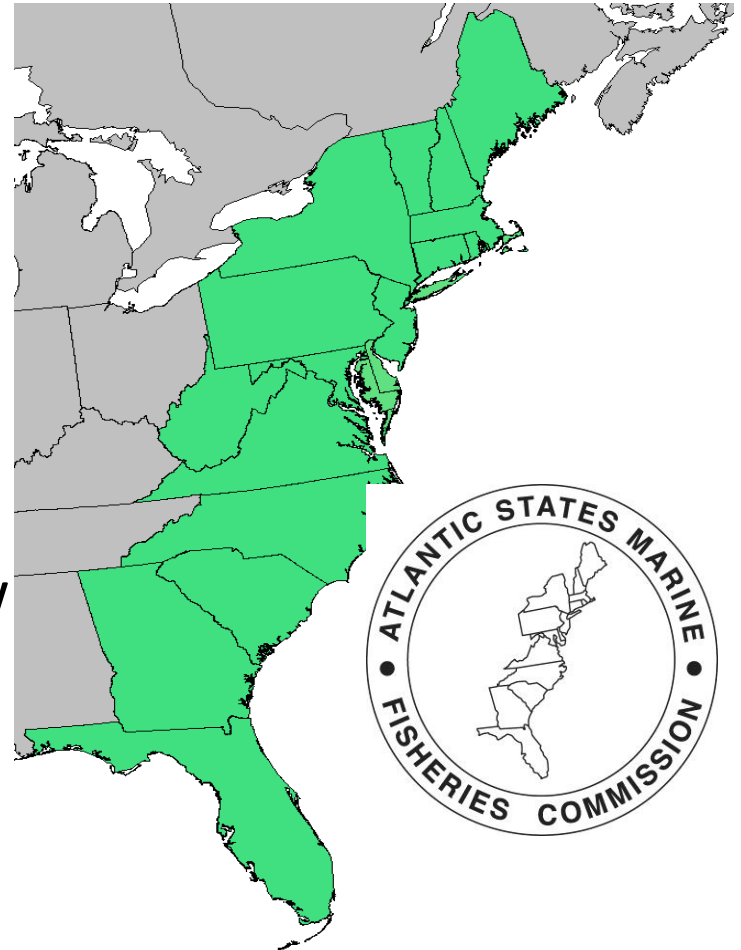
River Herring By-Catch

- **Buffer Zone:** NE Fishery Management Council voted in 2018 to restrict mid-water fishing for sea herring within 12 miles of shore year-round from the Canadian border to Connecticut border
 - And out to 20 miles east of Cape Cod
- **Acceptable Biological Catch:** changed formula to set annual catch limits to cap fishing mortality at 80% of sustainable levels. This allows some of the allocation to be set aside for forage

Must be approved by NMFS. Presently proposed under Amendment 8 to the Atlantic Herring FMP. Comment period closes October 21, 2019

Atlantic States Marine Fisheries Commission

- Interstate Coast-Wide management of migratory species
- **Sustainable Fishery Management Plans** for diadromous fish
- Stock assessment updates for Eel and river herring completed in 2017. American shad underway now
- Both updates found stocks to be depleted and with East Coast abundance near historic low levels



ASMFC Shad / River Herring TC

Sustainable Fishery Mgt Plan Task Group

East Coast States are required to monitor shad and river herring runs and report annually to ASMFC

Starting in 2012, ASMFC required States to develop sustainability targets as part of SFMPs. No approved SFMP – no harvest.

Growing Pains: some SFMPs were approved that are not consistent with ASMFC guidelines, and some States would like more flexibility in how they manage harvest

The ASMFC Board assigned a Task Group in 2017 to work on these issues

ASMFC Shad / River Herring TC

Sustainable Fishery Mgt Plan Task Group

ASMFC Shad and River Herring Board will review the Task Group recommendations on October 30th at the ASMFC Annual Meeting.

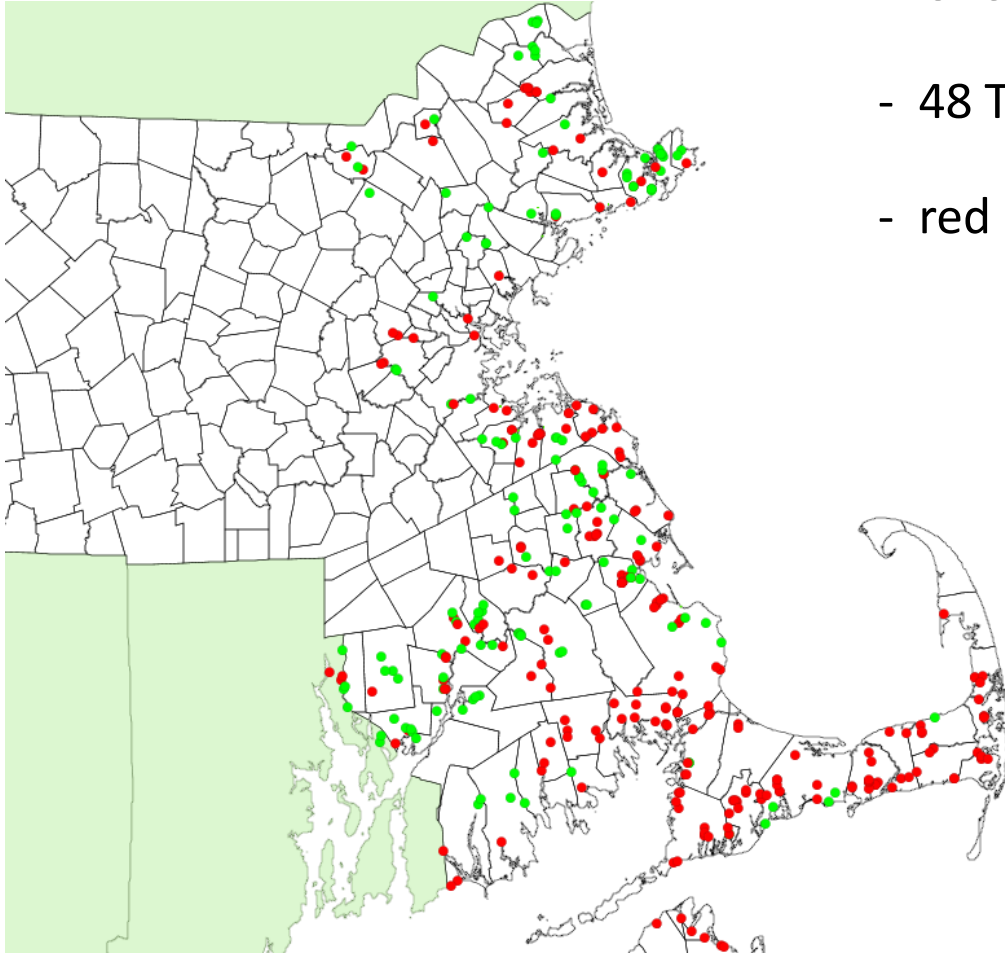
- standardization of SFMP metrics, mgt responses, and data requirements

- process for allowing harvest in rivers with low abundance and no monitoring

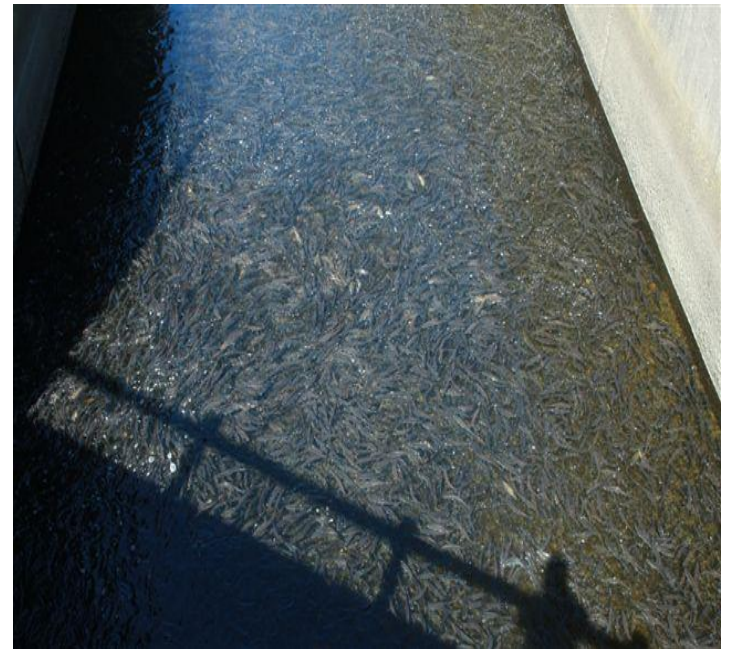
- clarifying conditions that would allow harvest under proxy metrics or require catch and release only

River Herring Runs

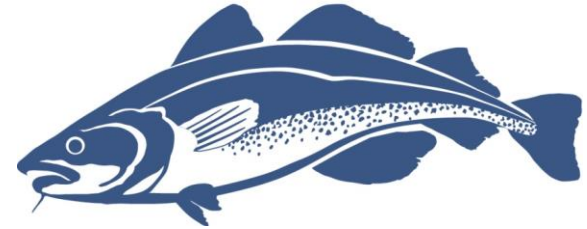
- Over 100 river herring runs
- 48 Towns have fish runs
- red dots show sites that need some work



GIS datalayer with >175 fishways



Migrating River Herring
Back River, Weymouth



Recreational and Diadromous Fisheries Program

- Diadromous Fish Passage and Habitat Restoration
- Diadromous Fish Biology and Management
 - MA General Laws in the 1930s and 1940s established DMF as the regulatory authority to manage coastal diadromous fish runs. Included the creation of the DMF Fishway Crew in 1934
 - Main focus of fishway construction from 1930s-1980s with a Fishway Crew of up to 8 staff

DMF Project Objectives

(1970s)

1. Maintain and enhance existing runs
2. Restore historically important runs
3. Create new runs where feasible
4. Conduct population monitoring and research to support resource management

Diadromous Fish Project Staff

Brad Chase , AB III - project leader

John Sheppard , AB II - river herring mo

Ben Gahagan, AB II - river herring moni

Sara Turner, Ph.D., AB II - river herring m

Ed Clark, Fishway Crew - fish passage cor

Jim Rossignol, Fishway Crew - fish passag



Fish Passage and Habitat Restoration

1. DMF Fishway Crew work on small fishways
2. Large fishway construction via contracts and collaborations
3. Eel passage, dam removal and channel improvements collaborations



Large Watershed Projects



Westport River



Fore River, Braintree



Jones River, Kingston

Fish Passage Responsibilities

- DMF Fishway Permit
 - Fishway O&M plans
 - Fishway MOUs
-
- River herring stocking
 - Habitat assessments
 - Fishway maintenance
 - Run channel maintenance



Stream Channel Maintenance

- DMF initiative to work with local groups using 2016 protocols
- Weir River, Hingham – maintenance plan approved
- Ongoing work:
 - Jones River, Kingston
 - Fore River, Braintree
 - Acushnet River, Acushnet
 - Island Creek, Duxbury



Fish in new places....2018



Forge Pond Dam, Kingston



Mill River, Taunton



Bourne Pond, Falmouth



Horn Pond Dam, Woburn - 2017

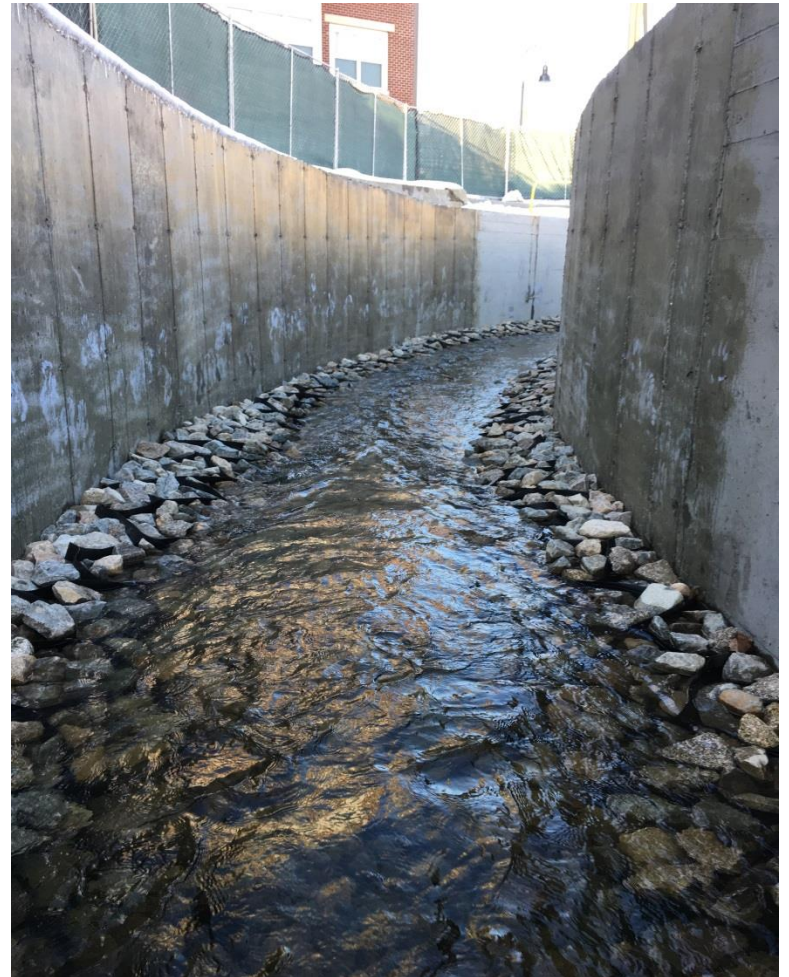
Parker River, Newbury



Ongoing efforts to improve fish passage at Woolen Dam

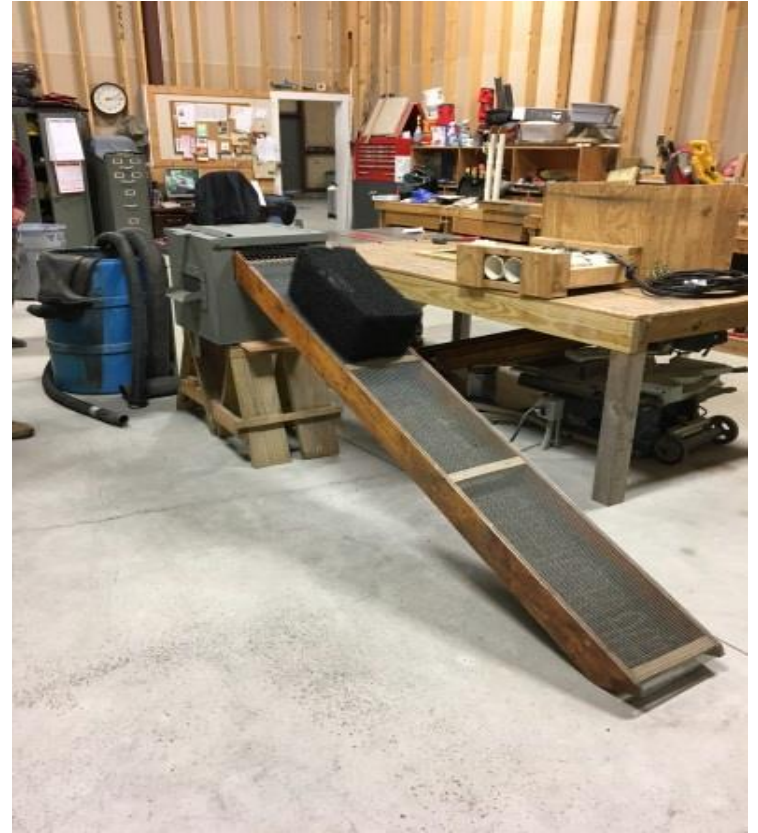


Smelt Brook, Weymouth



Smelt Spawning Habitat Daylighting Project

Smelt Brook, Weymouth



Eel Ramp at Pond Meadow Park Dam

Herring Brook, Pembroke



Invasive plant removal with Solitude harvester

Herring Brook, Pembroke



Cooperative project with Town of Pembroke

Herring Brook, Pembroke



Town Brook, Plymouth



Latest achievement in amazing run of dam removal projects in Town Brook

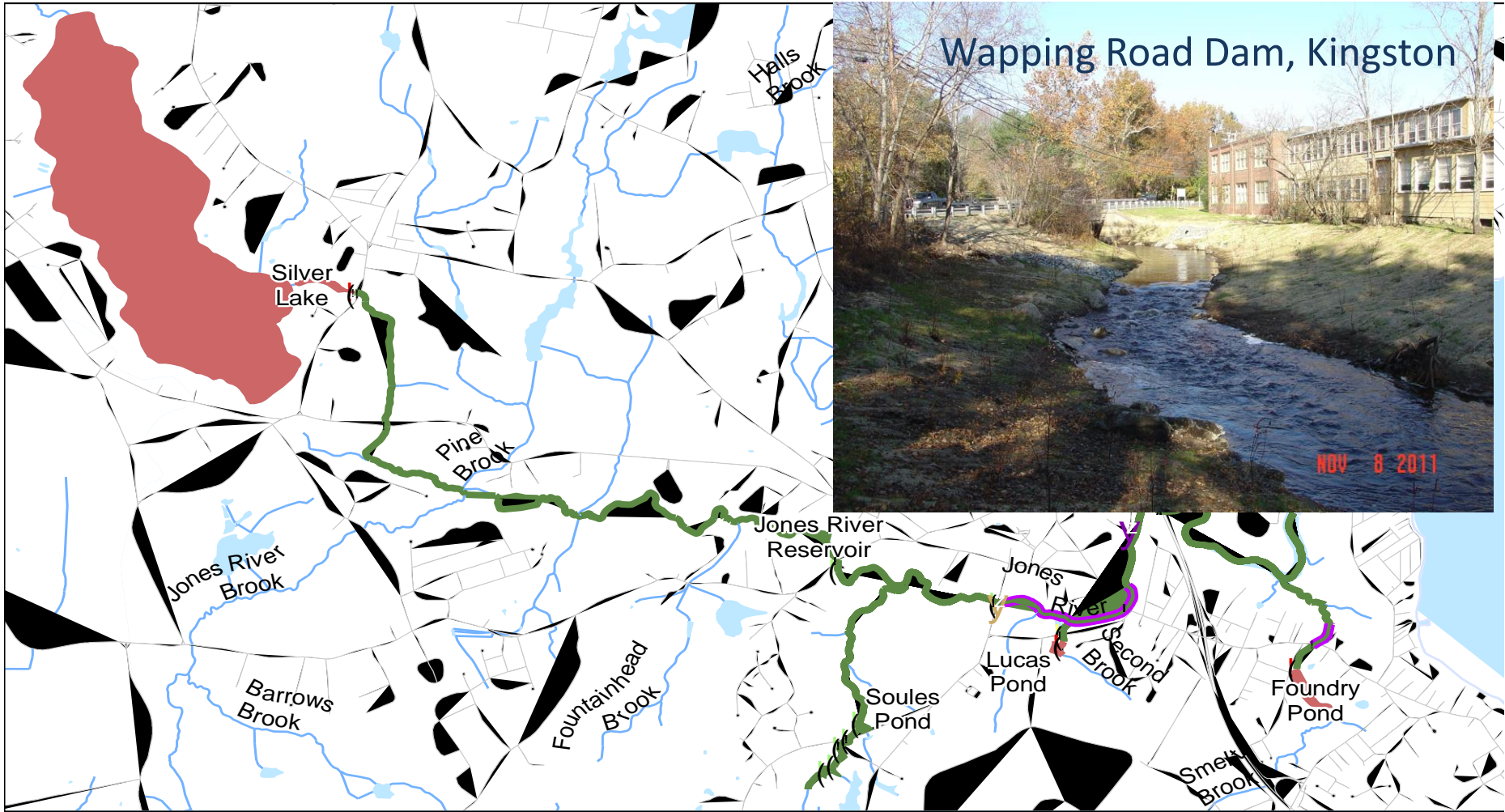
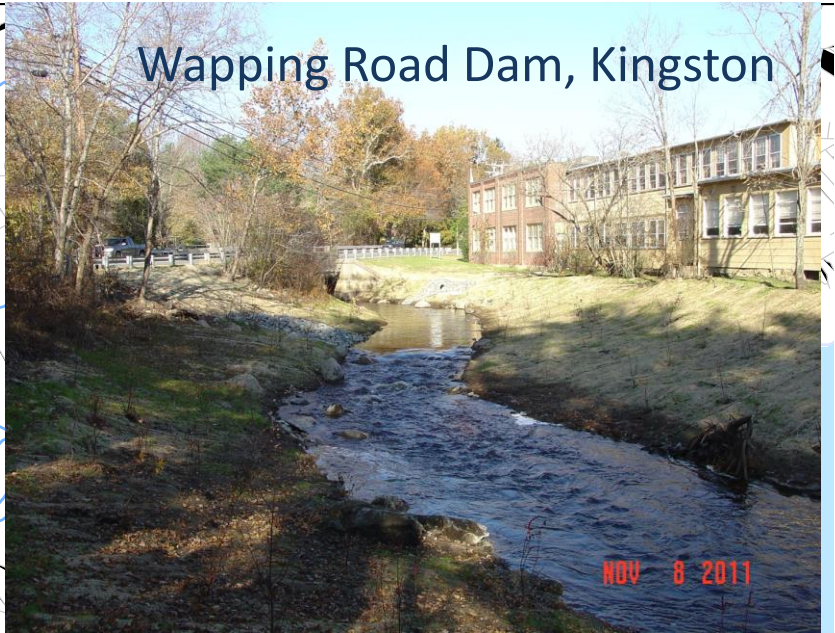
Town Brook, Plymouth Eel Ramp



Pump-supply eel ramp due to be installed at Jenney Grist Mill soon



Wapping Road Dam, Kingston



Smelt Spawning



River Herring Spawning/Nursery

accessible



No



Yes

Migratory

accessible



No



Yes

Road Crossings



Passage Projects



Limited Passage



Fishway



No Passage

Sampling Stations



River Herring



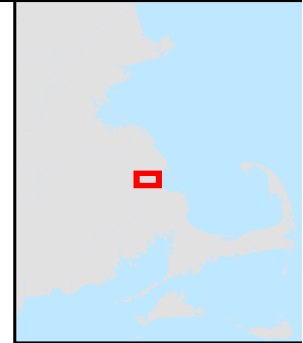
Smelt fyke net



YOY eel trap



eel ramp



Forge Pond Dam Jones River, Kingston



Elm Street Dam Removal, Kingston



NRCS / Cape Cod Conservation District

Cape Cod Water Resources Restoration Project



Second round of regional initiative to improve salt marsh habitat, fish passage and stormwater impacts



Projects underway at several Cape Cod Towns including the fishway reconstruction at the Baxter Grist Mill in Yarmouth

Monument River, Bourne



US Army Corps of Engineers – long-term maintenance project

Mass. Dept of Transportation (MassDOT)



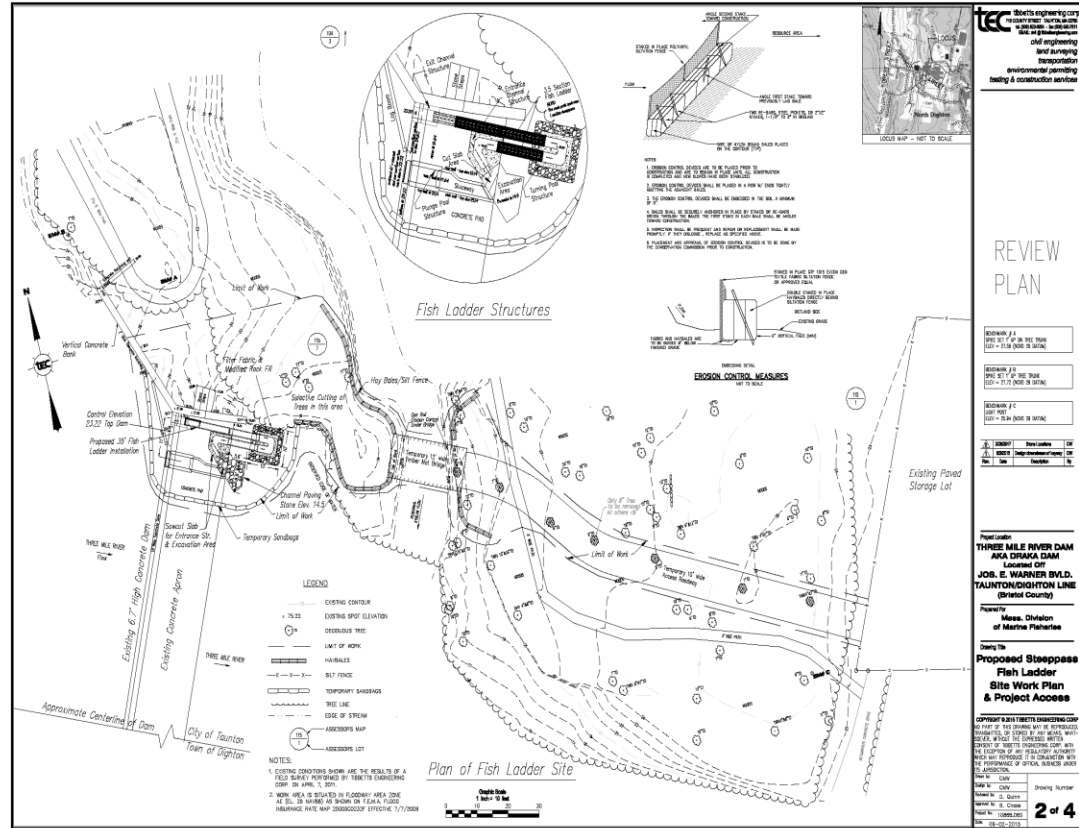
South River, Marshfield – Rt. 139 sand berm removal



Scargo Lake, Dennis – culvert replacement

Ongoing work with DMF on Diadromous Fish GIS Datalayer

Draka Dam, Three Mile River, Taunton



Draka Dam, Three Mile River, Taunton



Diadromous Fish Monitoring

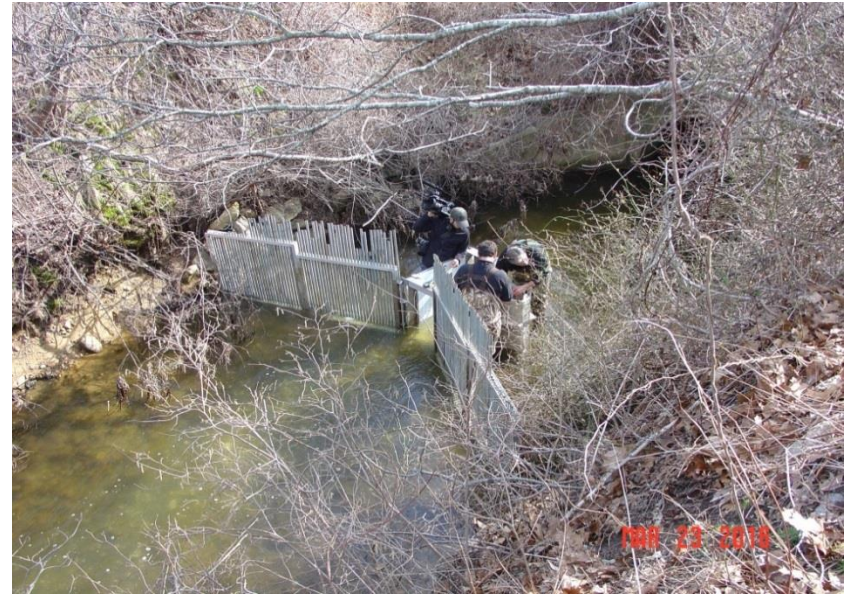
1. **River herring** - counting and biological sampling
2. **American shad** - tagging, lift counts, and electrofishing
3. **Rainbow smelt** - fyke net stations
4. **American eel** - trap and ramp stations

River Herring Counting



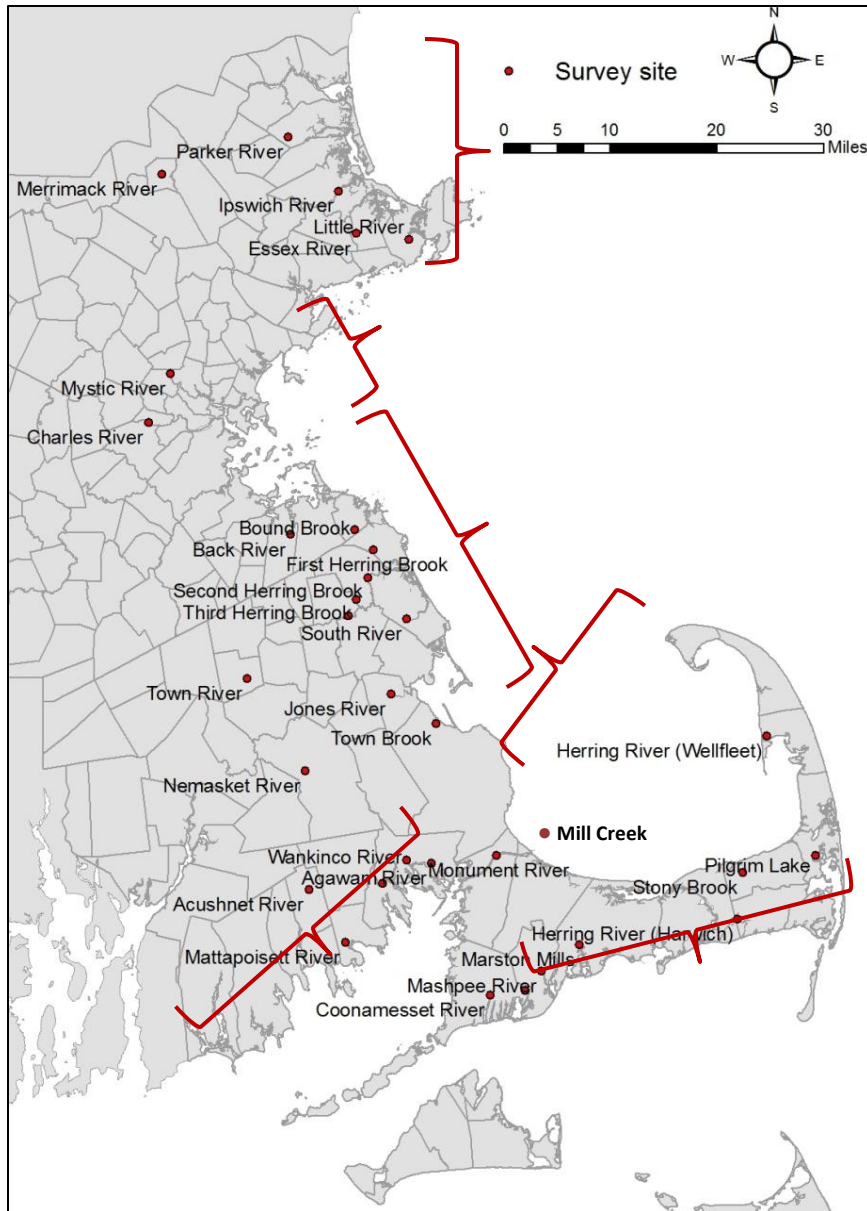
Herring River, Harwich

Herring Creek, Aquinnah



8- channel Smith Root counter

River Herring Counting Locations



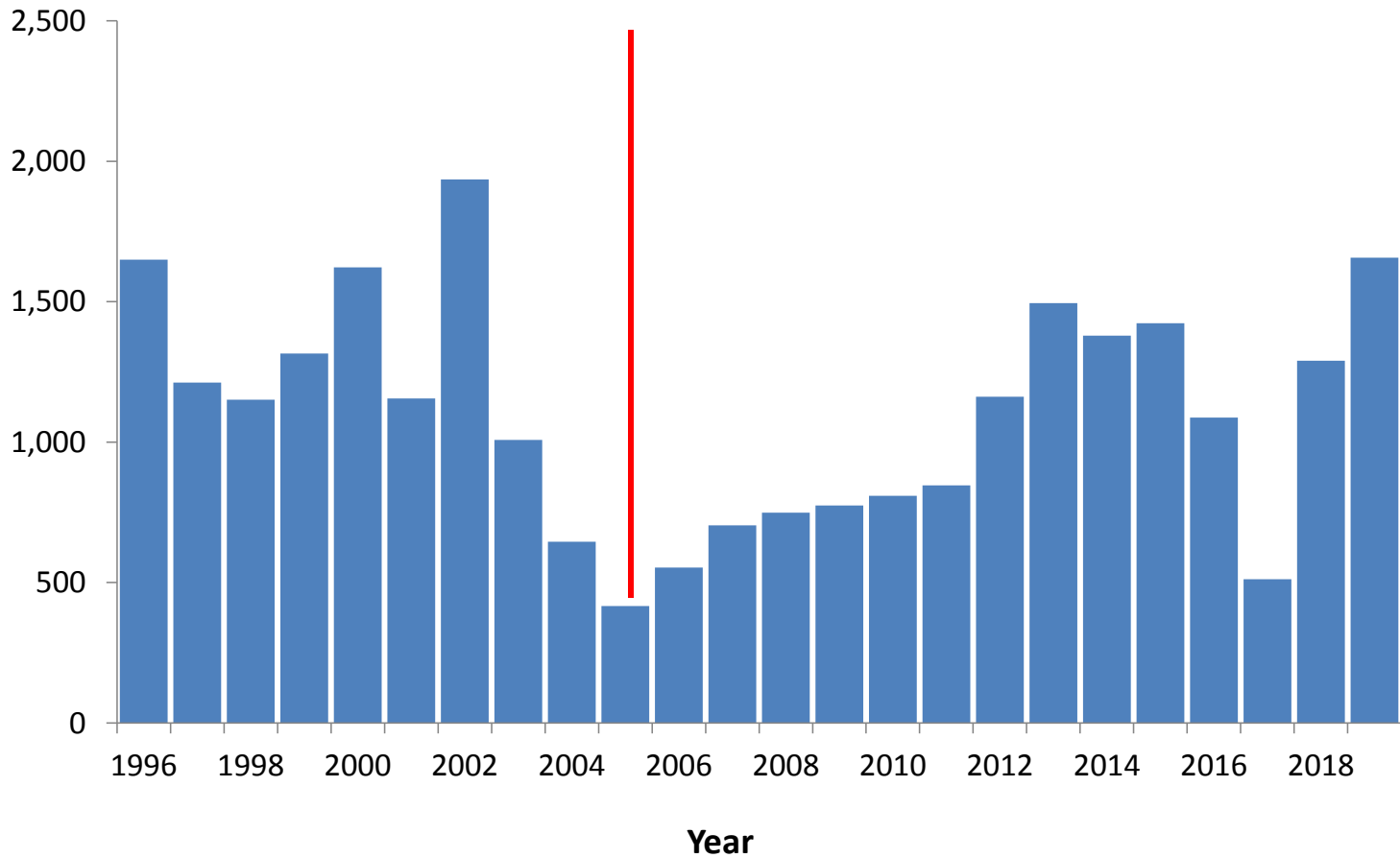
- About 43 river herring counting stations in MA
- 14 with 'census' level quality
- 8 stations sample biological data

What's next?..... Near capacity!

1. Larger run on Cape Cod
2. Long-term Boston Harbor station
3. Restoration response monitoring

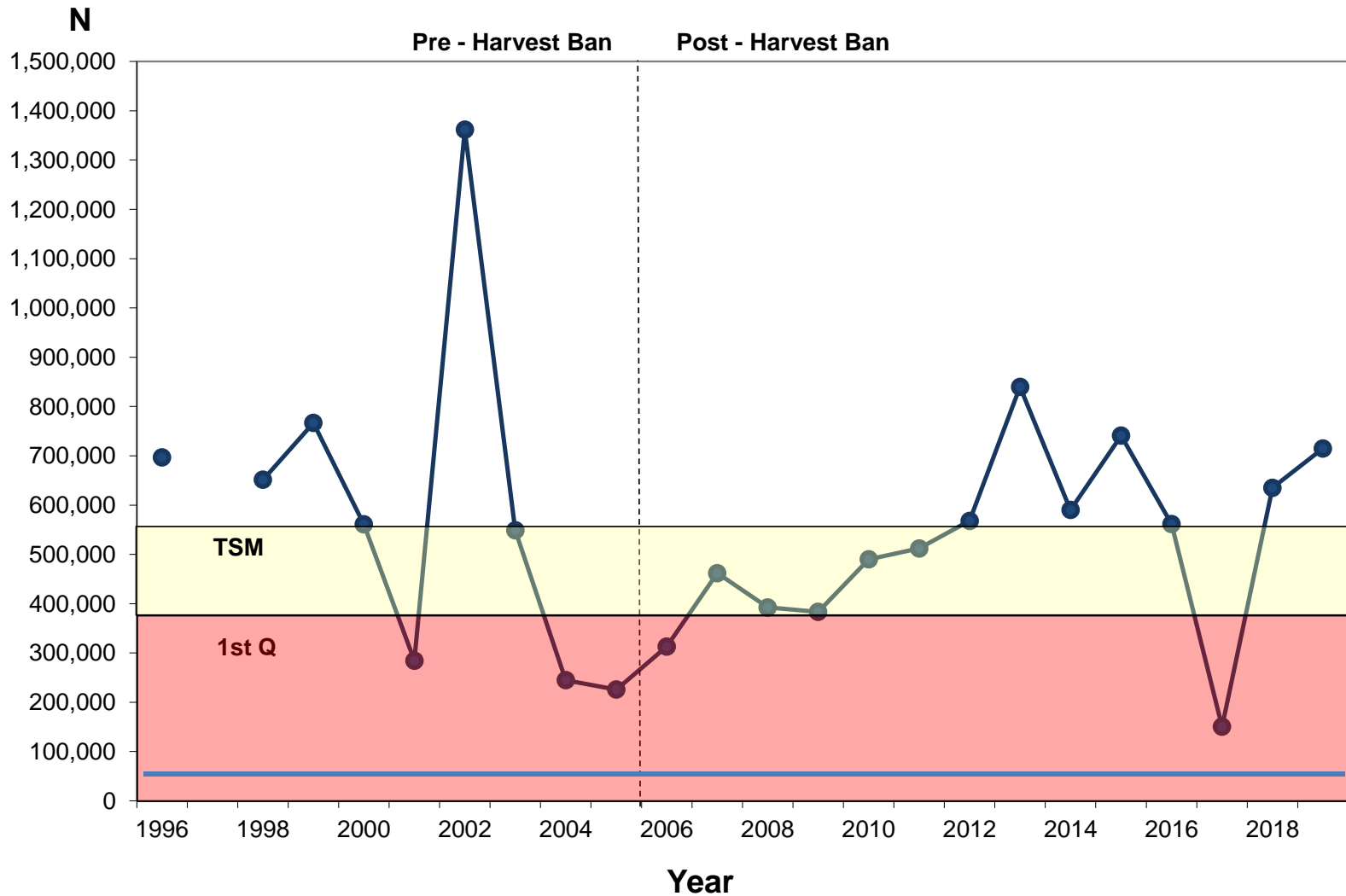
Massachusetts River Herring 20-Year Count Index: 1996 - 2019

Counts (1,000s)

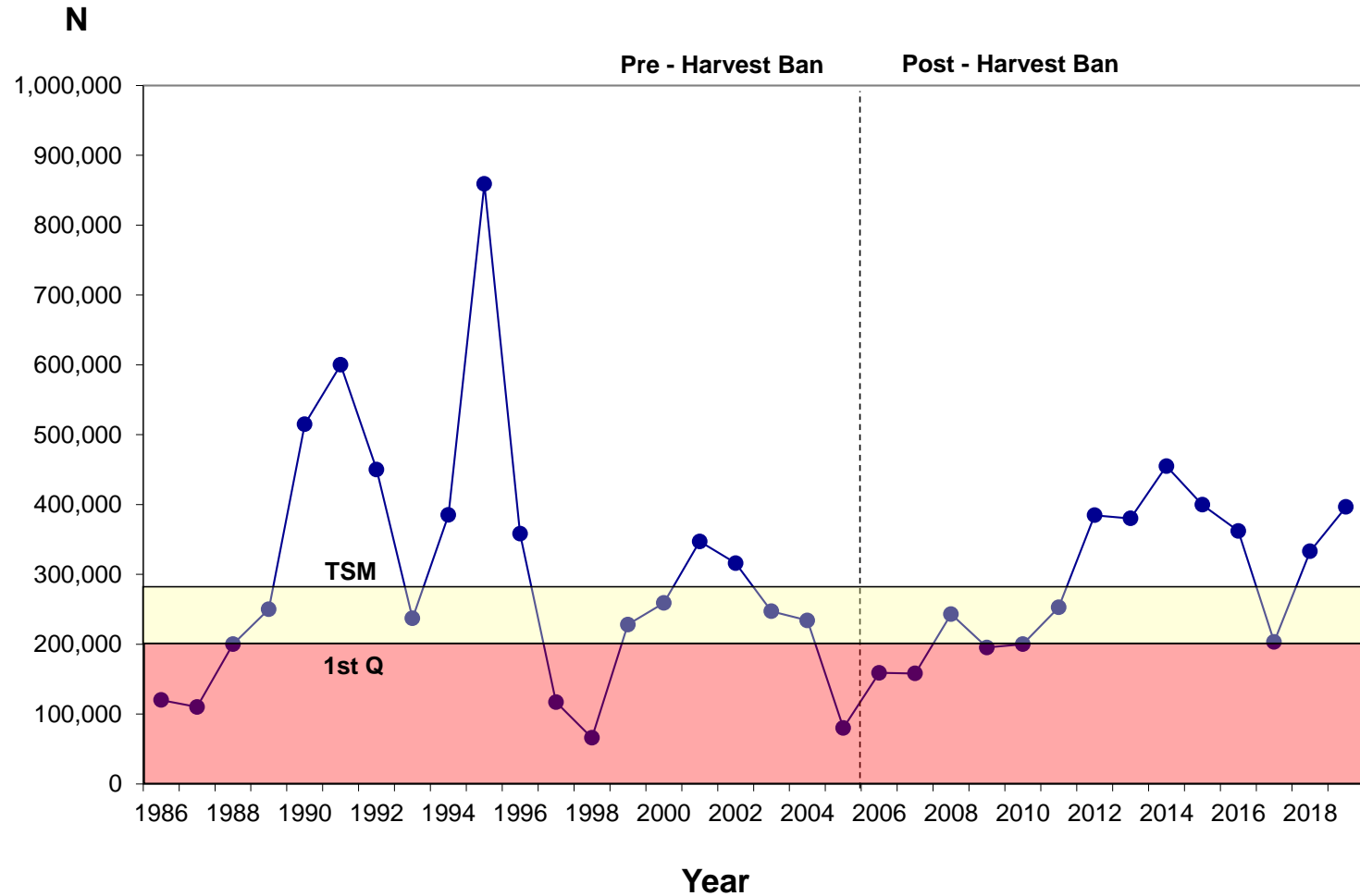


Nemasket River, Mattapoisett River, Monument River and Back River

Nemasket River - Visual Count: 1996 - 2019

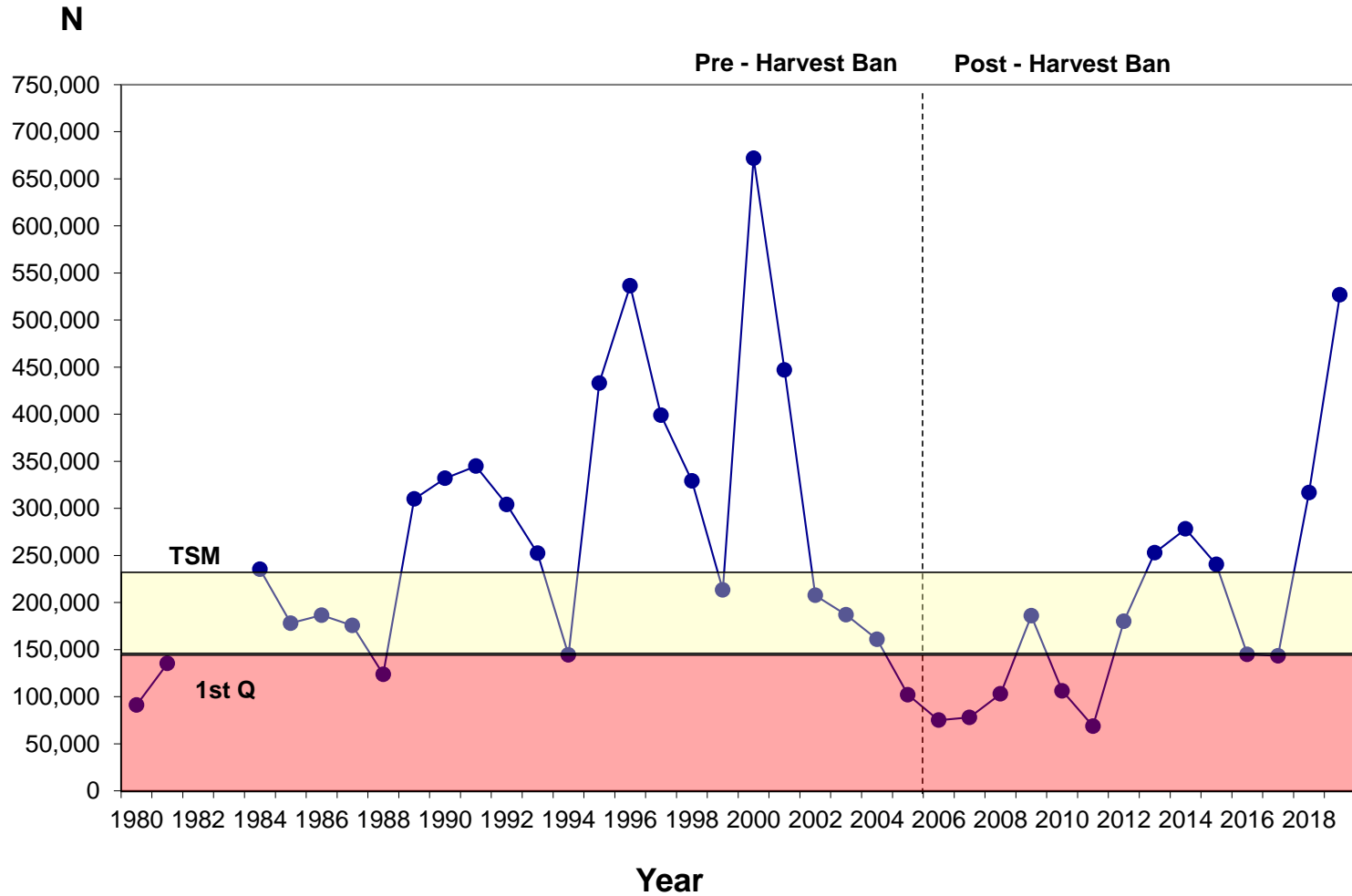


Weymouth Back River – Visual Estimate * 1986 - 2019



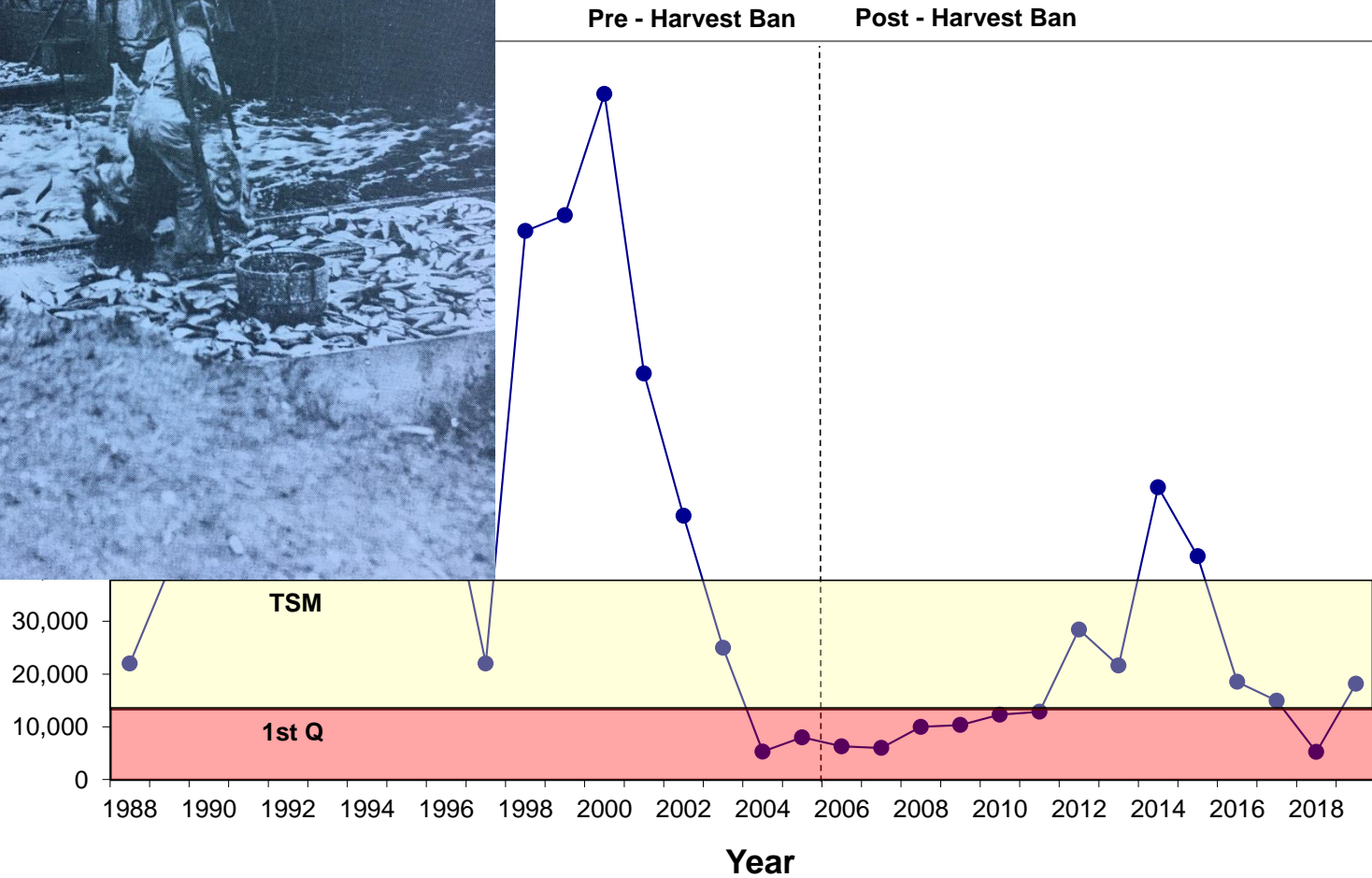
* Reporting electronic counter results since 2015

Monument River – Electric Count: 1980 - 2019





– Electronic Count: 1988 - 2019



Where are we going with all this counting?

- Valuable public education, outreach and stewardship
- Contributions to life history knowledge and resource management
- Standardized spawning run counts of 10+ years that can support stock assessment and sustainable fishery management plans
- Document increasing river herring biomass

Historical Herring Runs

Belding's surveys from 1912-1920

Survey Harvest

(0.5 – 1.0 million fish)

Agawam River

Bass River

Coonamesset River

Herring River, Harwich

Edgartown Great Pond

Tisbury Great Pond

Monument River

Taunton River (seining)

Prior Harvest

(> 0.5 million fish)

Essex River

Stony Brook

Palmer River

Mattapoisett River

Town Brook, Plymouth

Herring River, Wellfleet

North River, (mainstem/tribs)

Back River

Mashpee River

Present Herring Runs

Recent Spawning Run Counts

> 300,000 fish

Merrimack River

Charles River

Mystic River, Medford

Back River, Weymouth

Herring Brook, Pembroke

Herring River, Harwich

Nemasket River

Town River, West Bridgewater

Monument River, Bourne

Stony Brook, Brewster

Mashpee River, Mashpee

> 200,000 fish

Santuit River, Mashpee

Town Brook, Plymouth

Present Herring Runs

Recent Spawning Run Counts

> 300,000 fish

Merrimack River

Charles River

Mystic River, Medford

Back River, Weymouth

Herring Brook, Pembroke

Herring River, Harwich

Nemasket River

Town River, West Bridgewater

Monument River, Bourne

Stony Brook, Brewster

Mashpee River, Mashpee

> 200,000 fish

Santuit River, Mashpee

Town Brook, Plymouth

500,000 count club

Still Counting.....

> 10 Years

Wankinco River, Wareham
Stony Brook, Brewster
Marston Mills River, Barnstable
Herring Brook, Pembroke
Herring River (Hinckleys), Harwich
Town Brook, Plymouth
Pilgrim Lake, Orleans

> 15 Years

Agawam River, Wareham
Acushnet River, Acushnet
Jones River, Kingston
Herring River, Wellfleet

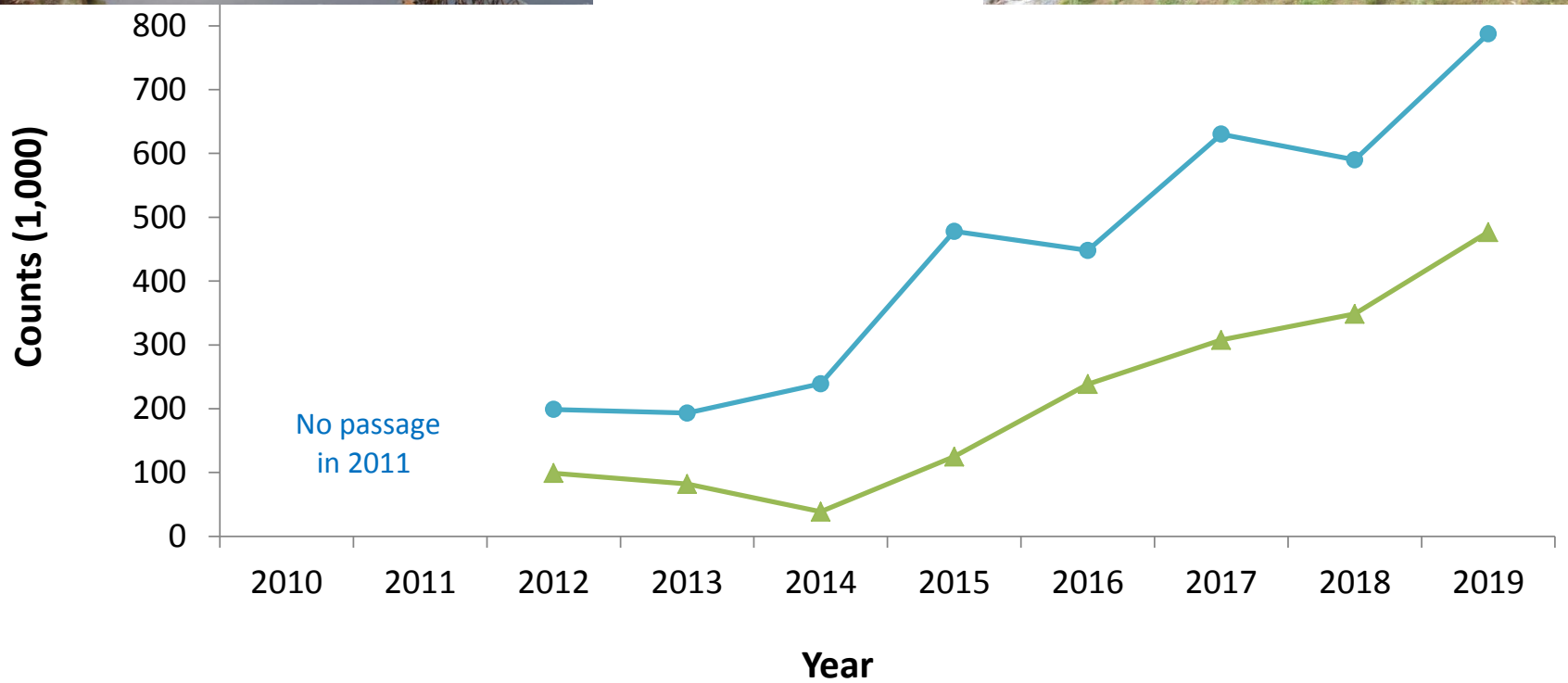
> 20 Years

Parker River, Newbury
Town River, West Bridgewater

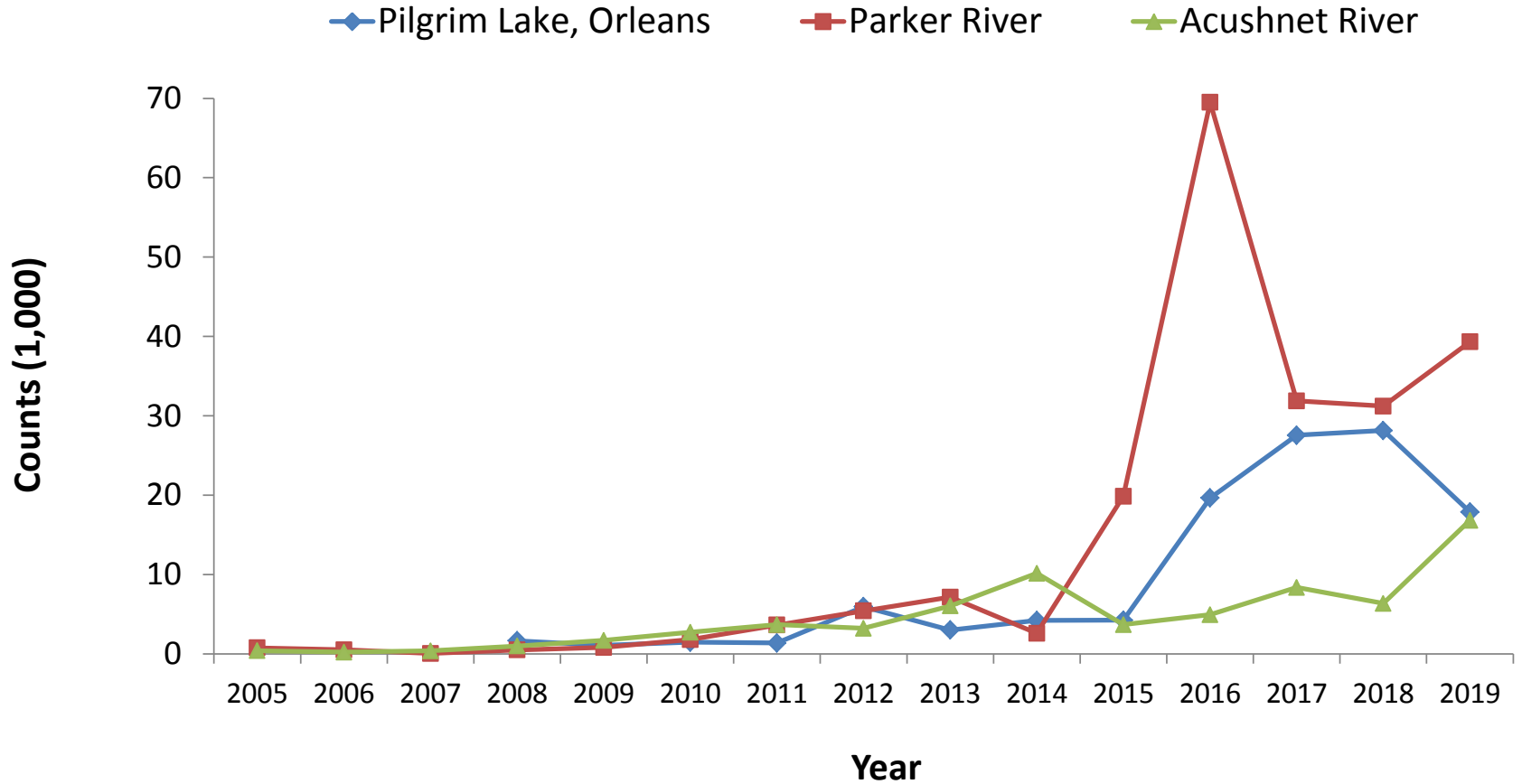
Operation – inc



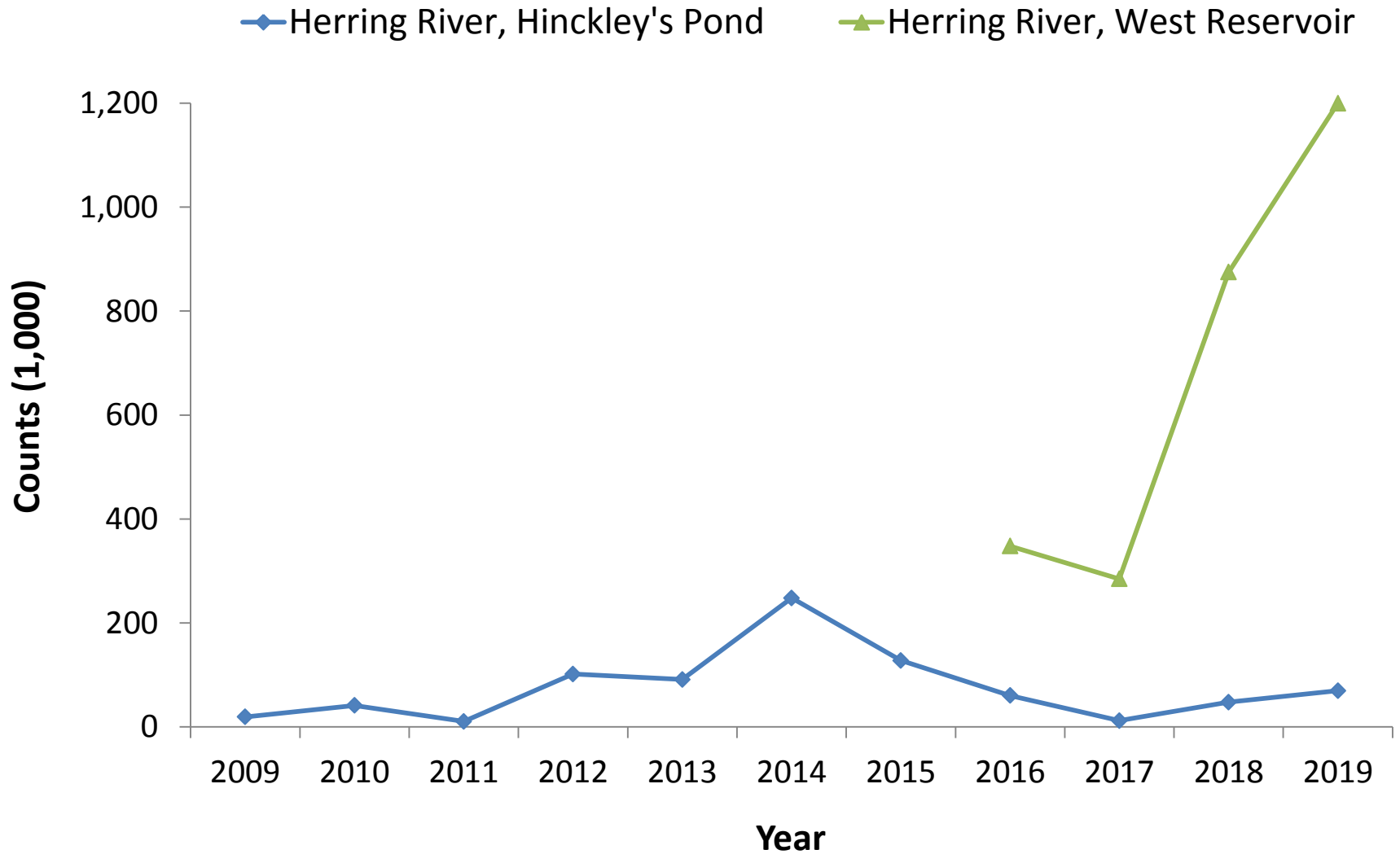
erring Brook



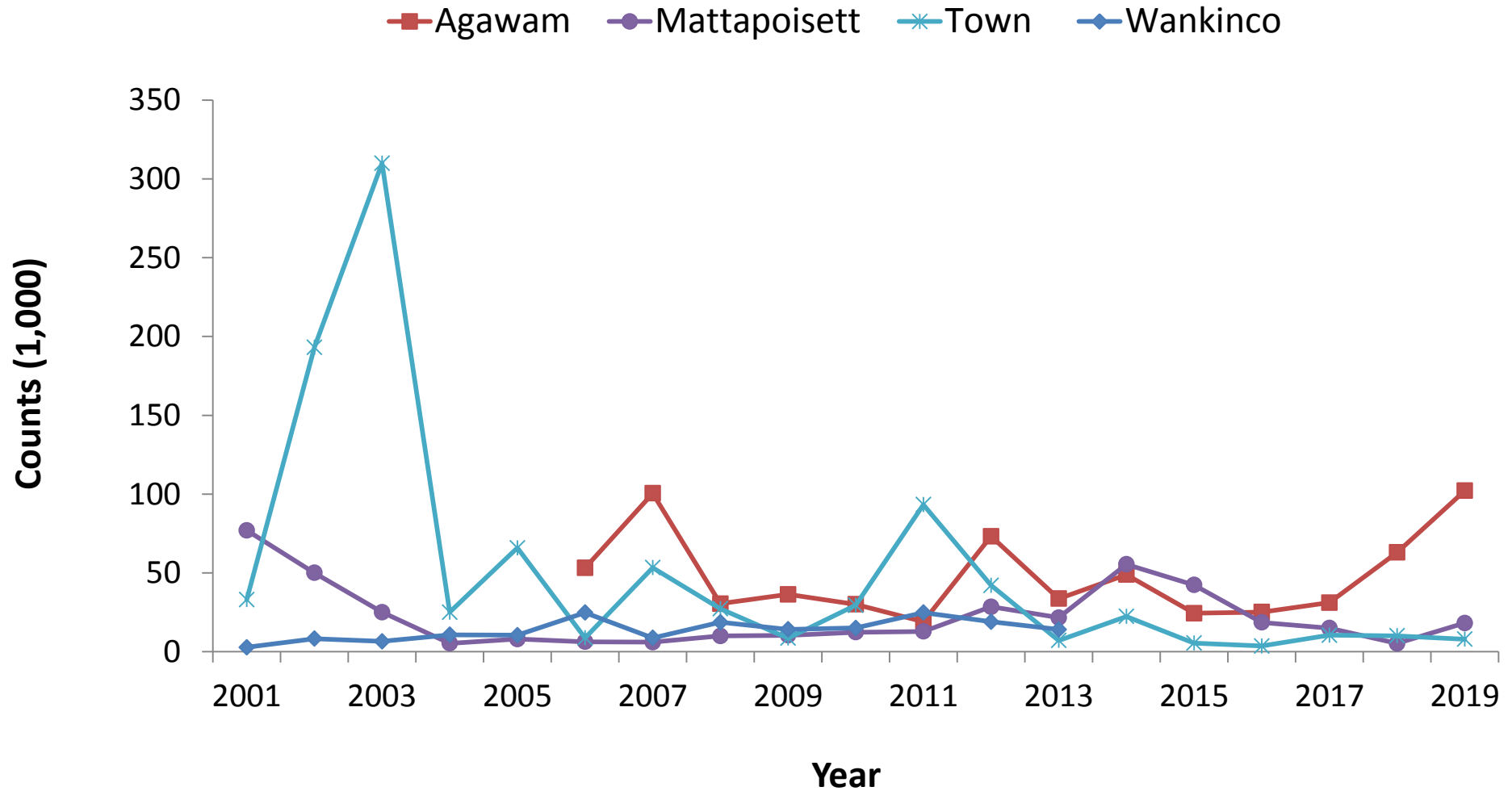
Recent Restoration – increasing runs



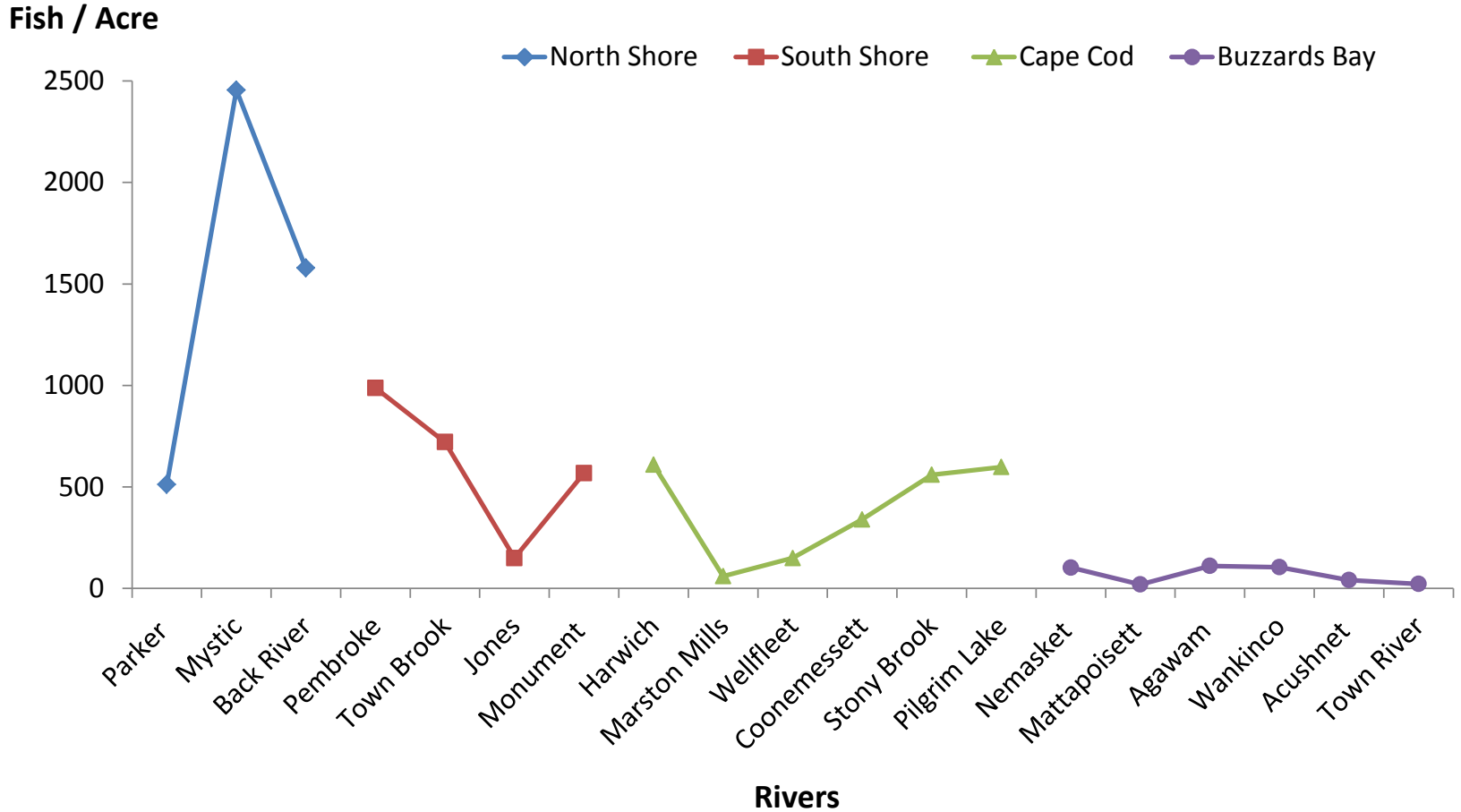
Herring River, Harwich



Narragansett and Buzzards Bay Runs



Spawning Run Counts per Acre





OCT 27 2015

Eel Passage Improvements

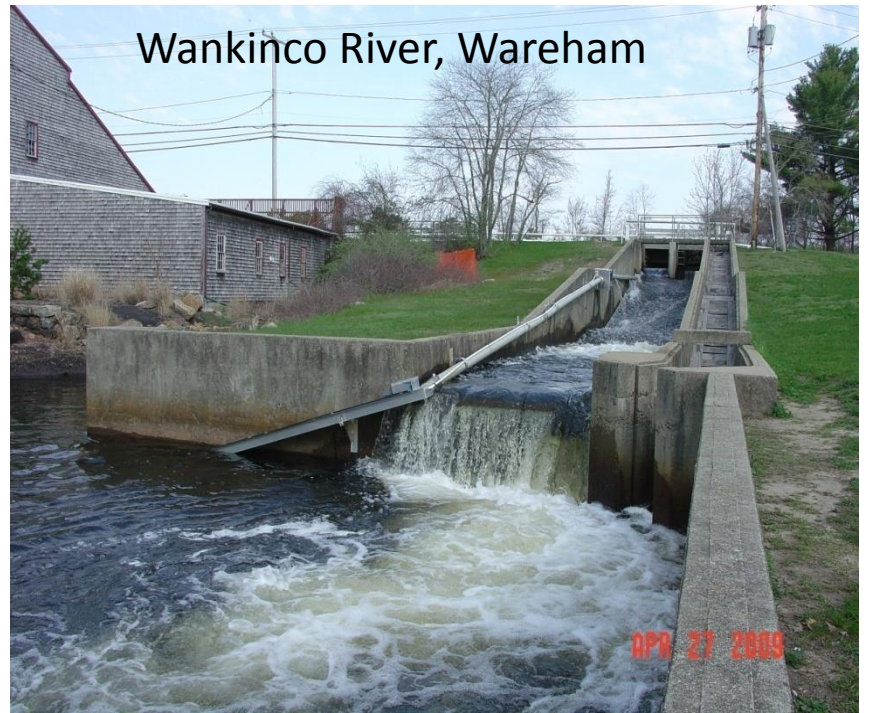
- Can climb wet, rough surfaces
- Poor swimming capability against higher velocity
- Installing eel passes in coastal rivers: 11 since 2007
- Dam removals increasing



Grassy Pond, Harwich



Wankinco River, Wareham



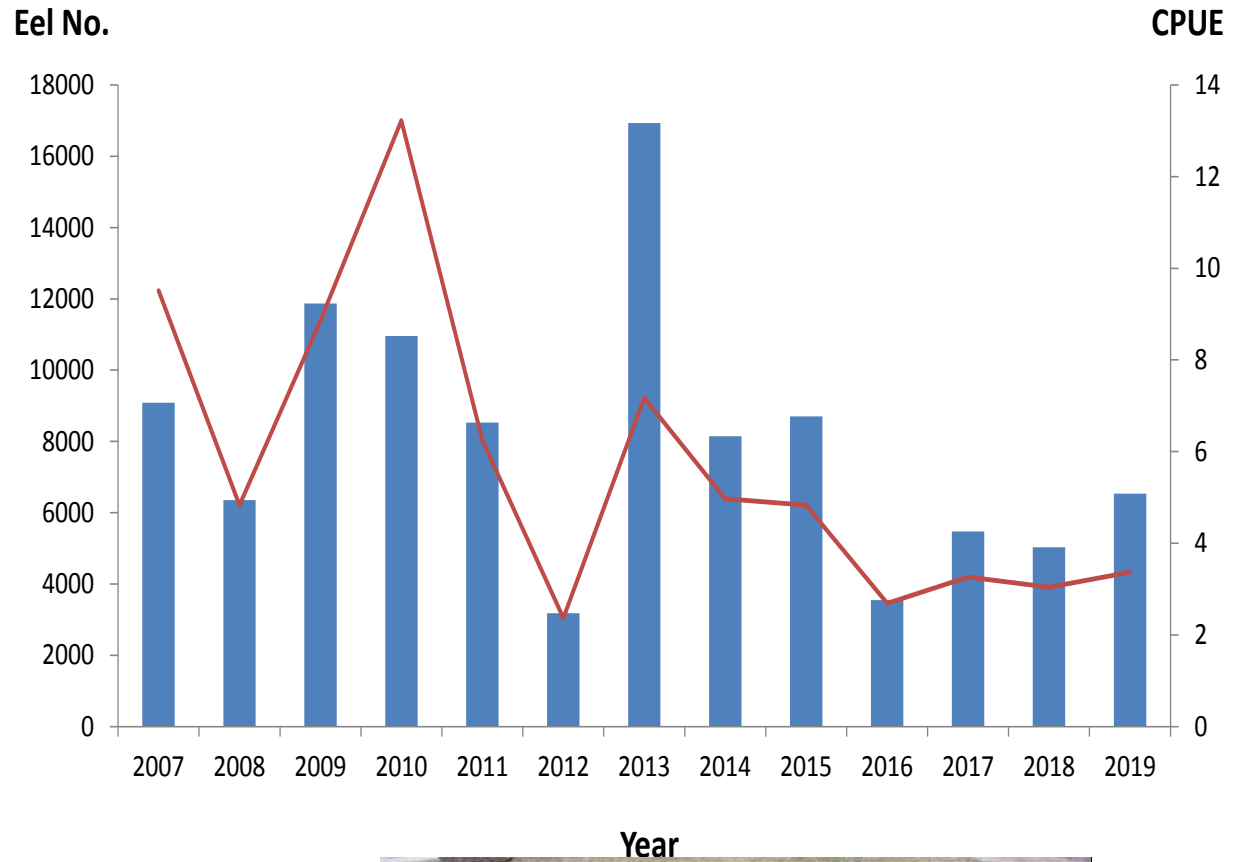
Pilgrim Lake, Orleans



Lake Sabbatia, Taunton



> 100,000 age-1+ eels passed during 13 years of monitoring by LWSC, SRWC, and DMF



Saugus River Eel Ramp



DMF Management Goals

- Gain more resources for Fishway Crew
- Develop Sustainable Fishery Management Plans for 3-4 herring runs
- Coordinate diadromous fish restoration priorities in MA coastal rivers
- Update coast-wide diadromous fish survey



Marine Fisheries
Commonwealth of Massachusetts

