



Diadromous Fish Management Update - 2017

River Herring Network – November 2, 2017

Brad Chase – Mass. Division of Marine Fisheries

Bob Michelson

Presentation Outline

1. River Herring ESA Review
2. ASMFC Stock Assessments
3. MA Mgt. Updates
4. DMF Fish Passage Work
5. Diadromous Fish Priority List



Bob Michelson - Fore River, Braintree

Marine Fisheries
Commonwealth of Massachusetts



NOAA Endangered Species Act Review 2017

- Previous ESA review in 2013 determined that a threatened or endangered status for blueback herring and alewife was not warranted
- 2015 Lawsuit: NRDC and Earthjustice sue NOAA
- NOAA and plaintiffs negotiate an agreement to have NOAA revisit the ESA review and publish the results by Jan-2019

NOAA Endangered Species Act Review 2017

Two Main Topics to Review:

- 1.) **Determination of Listing based on 5 factors:** loss of habitat or range, overutilization, disease or predation, inadequate regulation, and other natural or manmade threats
- 2.) **Distinct Population Segment.** Are any parts of the blueback stock discrete from conspecific populations?

NOAA Endangered Species Act Review

Next Steps

-- NOAA will assemble comments and available data sources and conduct their review

-- Comment Deadline October 16, 2017:

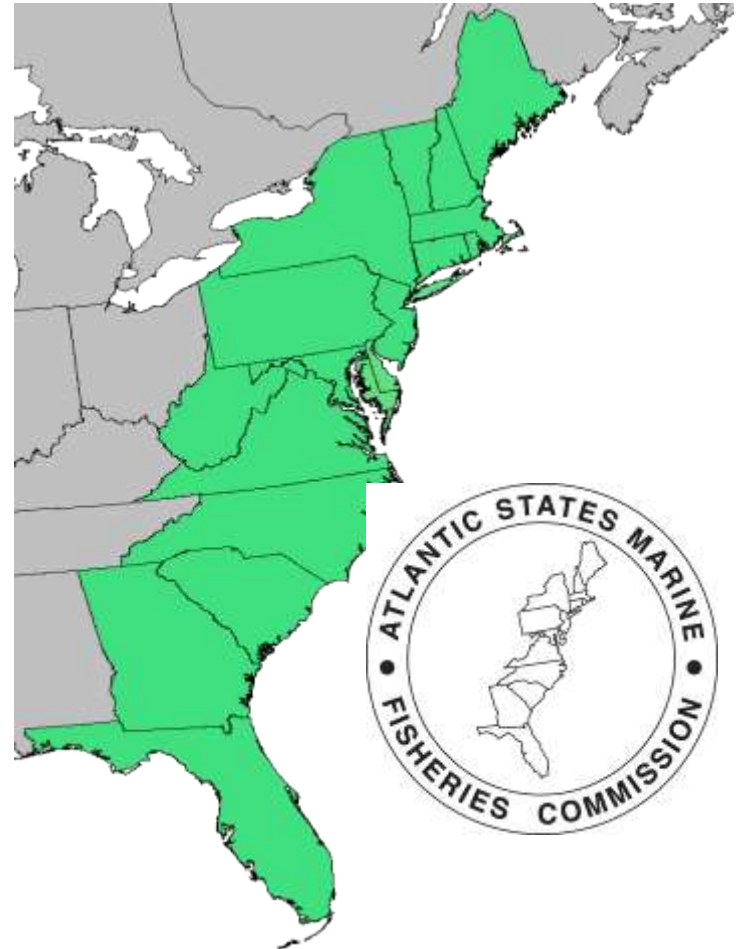
Tara Trinko - NOAA Federal tara.trinko@noaa.gov

-- Information on 2013 and present ESA process:

https://www.greateratlantic.fisheries.noaa.gov/protected/pcp/soc/river_herring.html

Atlantic States Marine Fisheries Commission

- Interstate Coast-Wide management of migratory species
- **Sustainable Fishery Management Plans** for diadromous fish
- Conduct stock assessments
- Closed river herring and shad fisheries in 2012 with no approved **SFMP**



ASMFC - River Herring Benchmark Stock Assessment - 2012

- Complex life history for a U.S. Atlantic coast-wide assessment
- Evaluated data up to 2010 for 57 river systems: only 26% had complete or usable data
- Categories of FI and FD data: by species, Harvest, CPUE, Age, Length, Weight, Repeat Spawner ratio, juvenile abundance indices
- Most monitored runs occurred in NE states

ASMFC - River Herring Stock Assessment Update, 2017

- Benchmark data updated with 2011-2015 data
- No new data sets: except those identified in the Benchmark as too brief but had reached ≥ 10 years by 2015
- Several data sets discontinued following the benchmark assessment due to management actions, unreliability, or lack of returning fish
- 54 rivers had suitable data to update trend analysis for 2006-2015.

River Herring Assessment Update - Abundance Trends

- Updated trends for River-Specific Stocks (2006-2015)
 - 17 increasing
 - 2 decreasing
 - 8 stable
 - 10 experienced no discernible trend (high variability)
 - 17 did not have enough data to assess recent trends

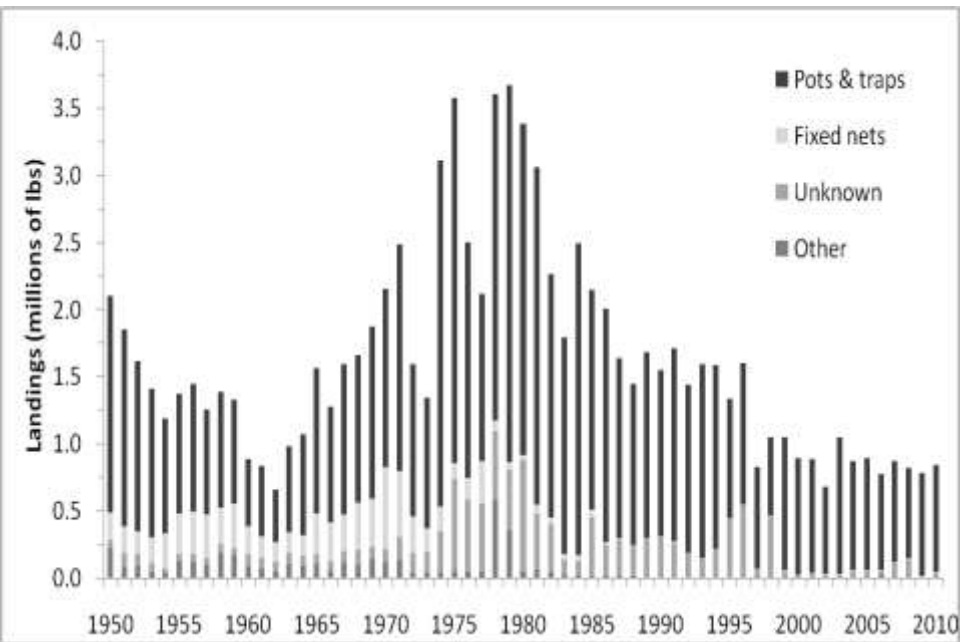
Coast-wide meta-complex of river herring stocks are still **depleted** and near historic low levels

ASMFC – American Eel Stock Assessment Update, October 2017

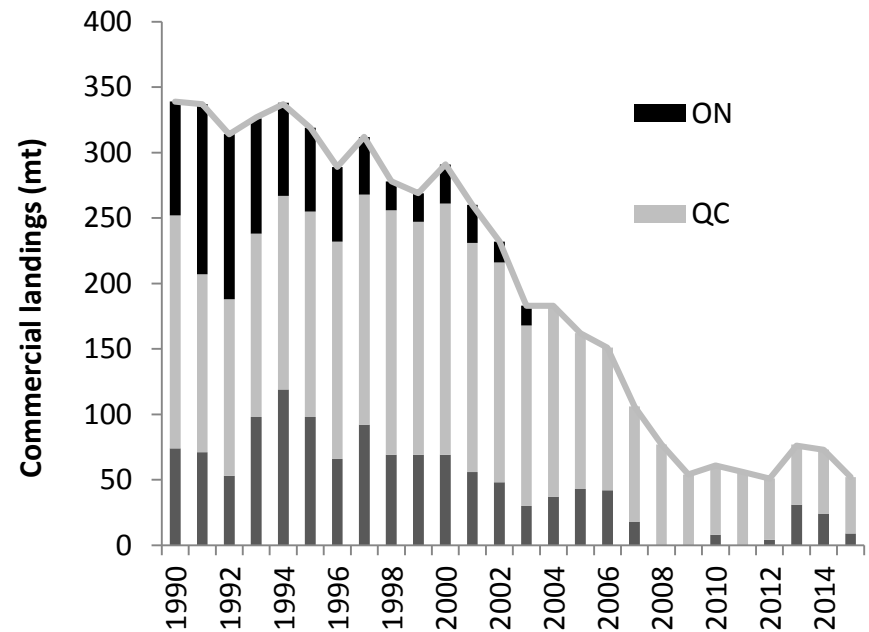
- 2012 Benchmark assessment resulted in changes to the Eel Mgt. Plan designed to reduce mortality for all life stages
- Benchmark data updated with 2010-2016 data
- No age-structure analysis and commercial CPUE not included
- Used several trend analysis methods with data grouped by life stage and region.

Commercial Landings of American Eel

United States

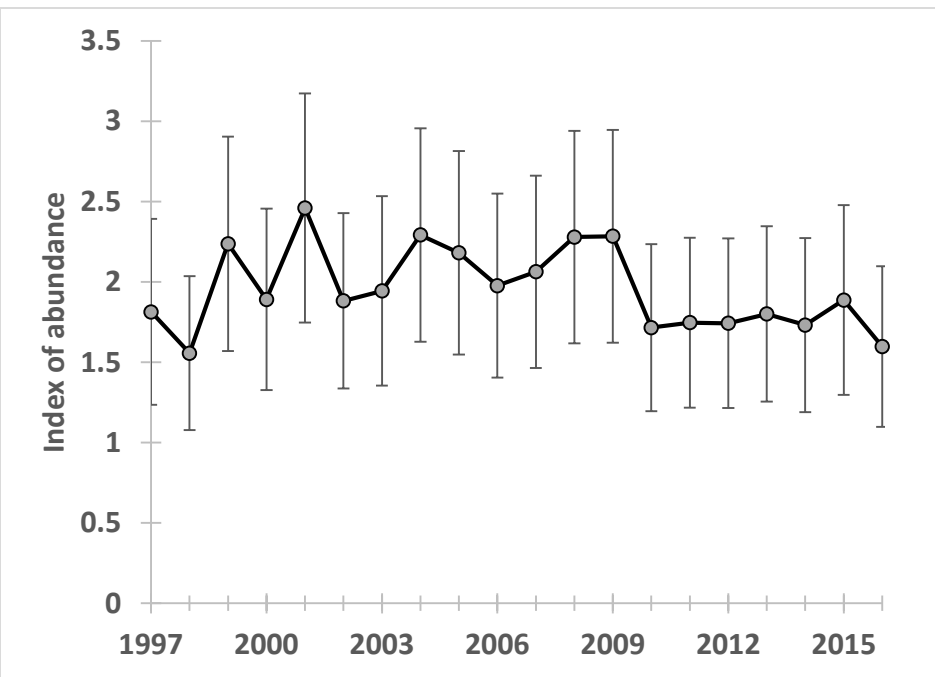


Canadian Maritime Provinces

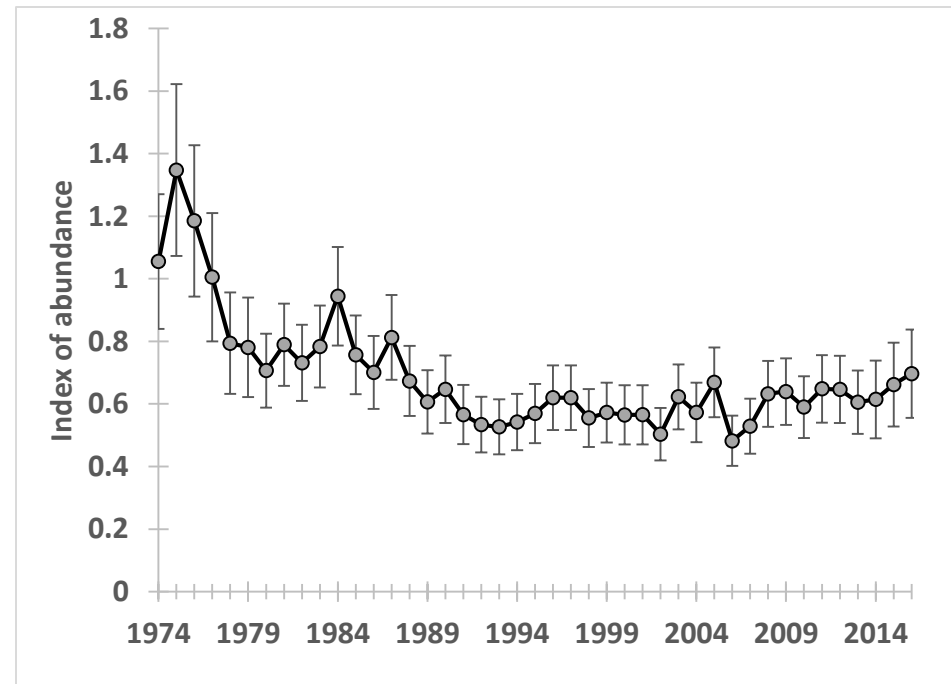


ASMFC Yellow Eel standardized index of abundance for the Atlantic Coast

20-Year Index



40-Year Index



Jones River YOY Abundance Index

Figure 3. American eel YOY Sheldon trap catch in the Jones River, Kingston, MA, 2001-2016. Geometric mean catch per haul are shown for April and May hauls with 95% CI and linear series trendline added.

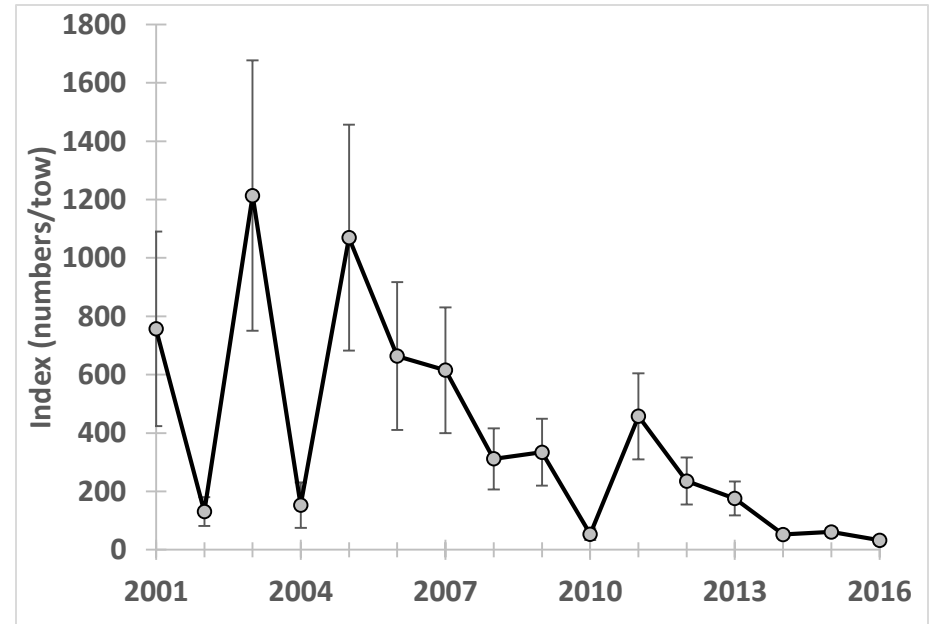
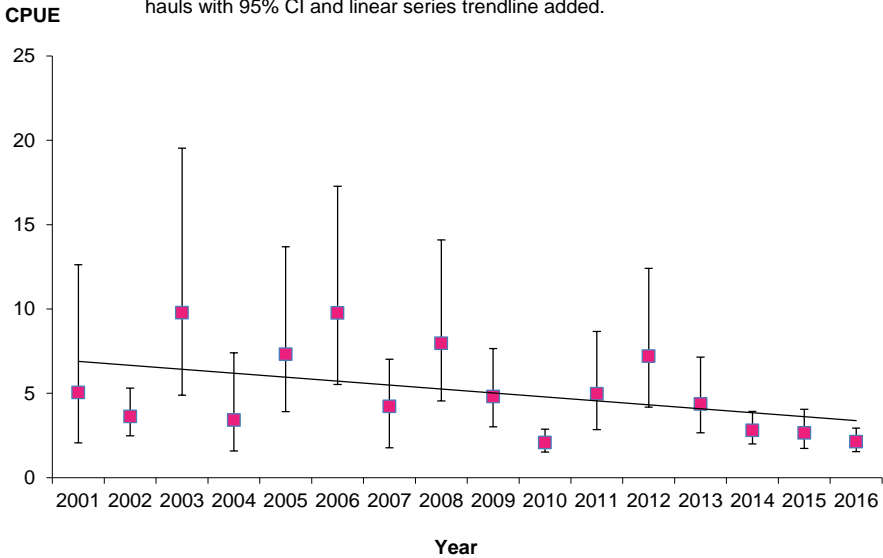


Figure 5.20. GLM-standardized index of abundance for YOY American eels, Jones River, MA, 2001-2016.

American Eel Assessment Update - Results

- Updated trends for available time series with 2010-2016 data
- Remains a data-poor assessment. No silver eel indices
 - 6 of 22 individual YOY indices were declining
 - 4 of 15 individual yellow eel indices declining; 1 increasing
 - The 30 and 40-year coast-wide indices were both declining
 - Regional yellow eel index for Chesapeake Bay was increasing
 - Stable but low commercial landings

Continued finding of multiple surveys with significant declining trends resulted in confirmation of **Depleted** status determined in the Benchmark



Recreational and Diadromous Fisheries Program

- Diadromous Fish Passage and Habitat Restoration

- Diadromous Fish Biology and Management
 - 48 Towns with river herrings runs
 - 100 river herring runs
 - >150 fishways

Fish Passage and Habitat Restoration

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



Fish Passage Responsibilities

- DMF Fishway Permit
- Fishway O&M plans
- Fishway MOUs

- Fishway maintenance
- River herring stocking
- Habitat assessments
- Run channel maintenance



Stream Channel Maintenance for Diadromous Fish Runs



Growing concerns on both impacts to migratory habitat in era of closed harvest *and* conflicts with other aquatic life

History: Common practice led by Towns throughout 20th century and likely well before. DMF becomes active in 1930s as state laws develop to reverse impacts of herring run privatization

Stream Maintenance Plans: First prepared for the Essex River in 2007 in response to beaver issues. 10 plans drafted for Towns with 7 now approved by Conservation Commissions

Stream Channel Maintenance

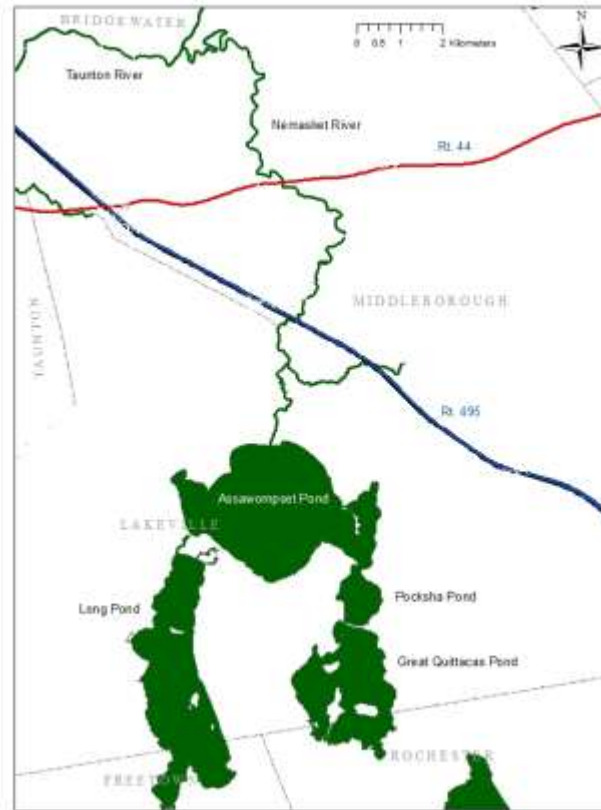
- Fore River Watershed, Braintree
- South River, Marshfield
- Acushnet River, Acushnet

2015/2016 low stream flow



Nemasket River Sustainable Fishery Management Plan for River Herring

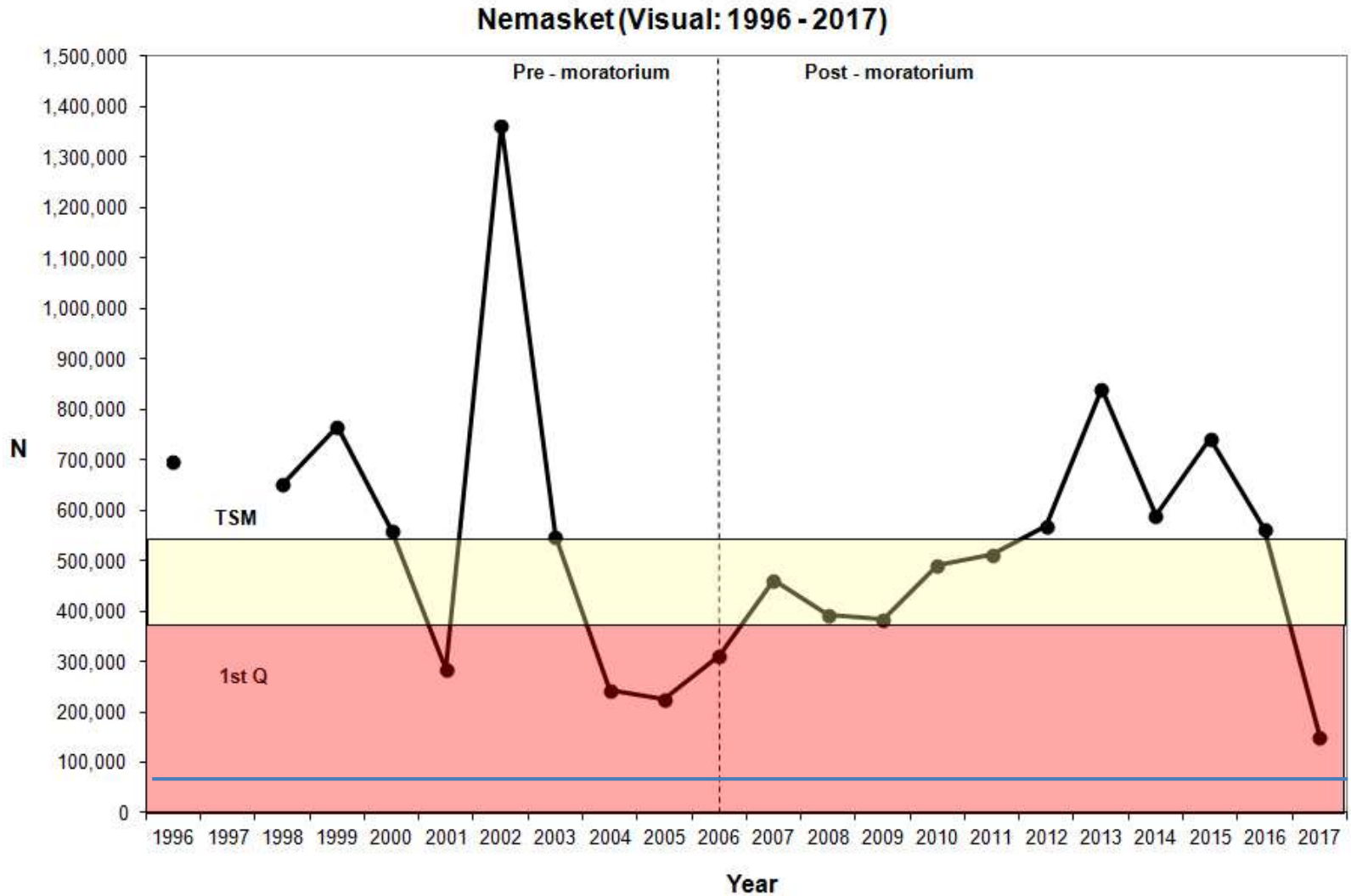
Marine Fisheries
Commonwealth of Massachusetts



Bank Building, 20 Centre Street, Middleborough, Massachusetts 02346

Approved by the ASMFC Shad and River Herring Mgt. Board
Bar Harbor, ME, October 25, 2016

Nemasket River Herring Count: 1996-2017



2016 Recap: 3 new fishways with no prior passage



Center Falls Dam, Aberjona River, Winchester

Bourne Pond, Falmouth



Looks Pond Dam, West Tisbury

Bourne Pond, Falmouth - 2016



Bourne Pond, Falmouth



New fish ladder



Dam removal



April 2017

Long Pond outlet, Harwich



Innovative fishway exit chute designed by Fishway Crew to address long-term problem of water management and sediment filling the fishway

Mill Creek, Sandwich



Fish ladder replacement
in winter of 2016/2017
funded by the Town of
Sandwich



Low flow - 2016



2017 Fishway Crew jobs



Marston Mills River, Barnstable



Parkers River, Yarmouth



Town Brook, Plymouth

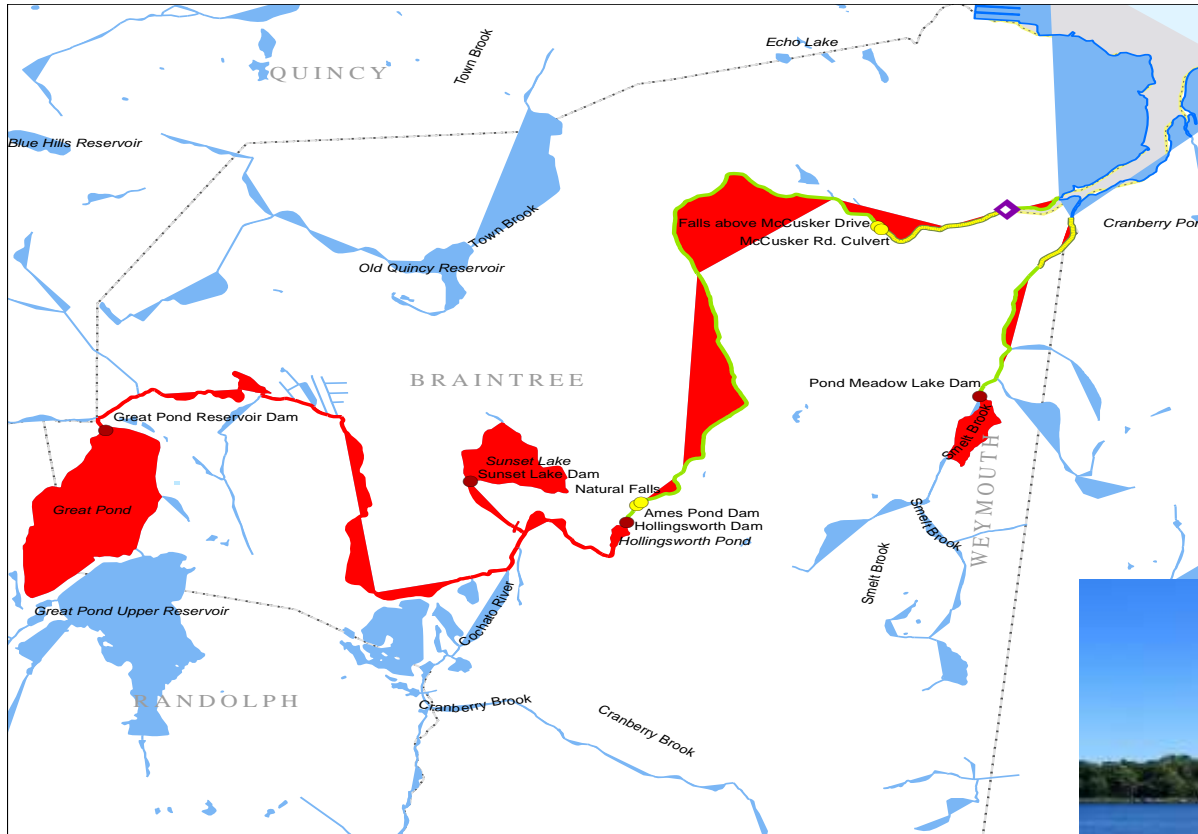
Gorman Mill Pond, Herring Brook, Pembroke



South River, Marshfield



Fore River Watershed Restoration Project



Fore River Watershed Restoration - 2017



- DER and NOAA join the project partners
- Stream maintenance with U-Mass intern
- Volunteer assistance at Natural Falls



New Steeppass Fish Ladders



Little River, Gloucester



Great Pond Reservoir, Braintree

Dam Removal Projects - 2017



Cotton Gin Mill, Satucket River



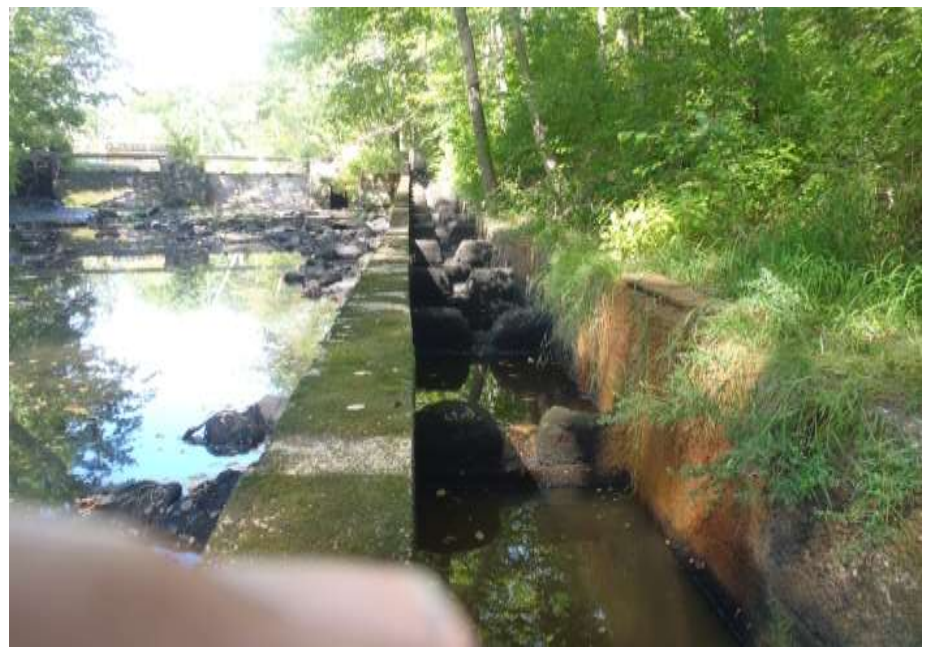
Shawsheen River, Andover



Hunters Pond Dam, Bound Brook, Scituate



Coonamessett River, Falmouth



High Street Dam, Town River, Bridgewater



Reed and Barton Dam, Mill River, Taunton



Elm St. Dam, Jones River, Kingston

Diadromous Fish Monitoring

1. River herring counting and biological sampling
2. American shad (Charles River/Merrimack River)
3. Smelt fyke net stations
4. Glass eel trap stations and ramps

American Shad electrofishing, South River, Marshfield



- Pilot project in 2016/2017 at South River and Indian Head River
- Compliments long-term shad stocking effort in the Charles River

Diadromous Fish Restoration Priority List

Fish Passage Surveys

Population Monitoring

Regulatory Process

Habitat Assessments

Diadromous Fish Restoration Priority List

Fish Passage Surveys

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Institutional Knowledge

MassDOT/
DMF GIS
Data layer

MASSACHUSETTS DIVISION OF MARINE FISHERIES

Diadromous Fish Habitat Restoration Priority List: **Parameter Table**

Parameter	Description	Value
Obstruction Number	Number of obstructions in river system of the proposed project.	per unit
Acreage	Of potential spawning/nursery habitat available.	0 - 15
Existing Population	Ranking of status of existing fish run.	0 - 10
Passage	Rank project by existing passage.	0 - 10
Stream Flow	Rank the status of stream flow to support life history stages	-10 - 0
Public Access	Rank the status of public access	0 - 5
Water Quality	Tiered approach depending on available data	-7 - 0
Water Conflict Use	Rank competing water uses.	-5 - 0
Project Feasibility	Rank factors that influence construction or implementation feasibility.	-5 - 0
Environmental Benefits	Rank factors that relate to improvements other than river herring	0 - 5
Existing Funding	Rank the availability of committed funds for project.	0 - 5
Local Support	Rank the interest and support of municipality and local NGOs.	0 - 5
Cost	Rank project by cost.	-5 - 0

Origin - NRCS Cape Cod Water Resources Restoration Plan

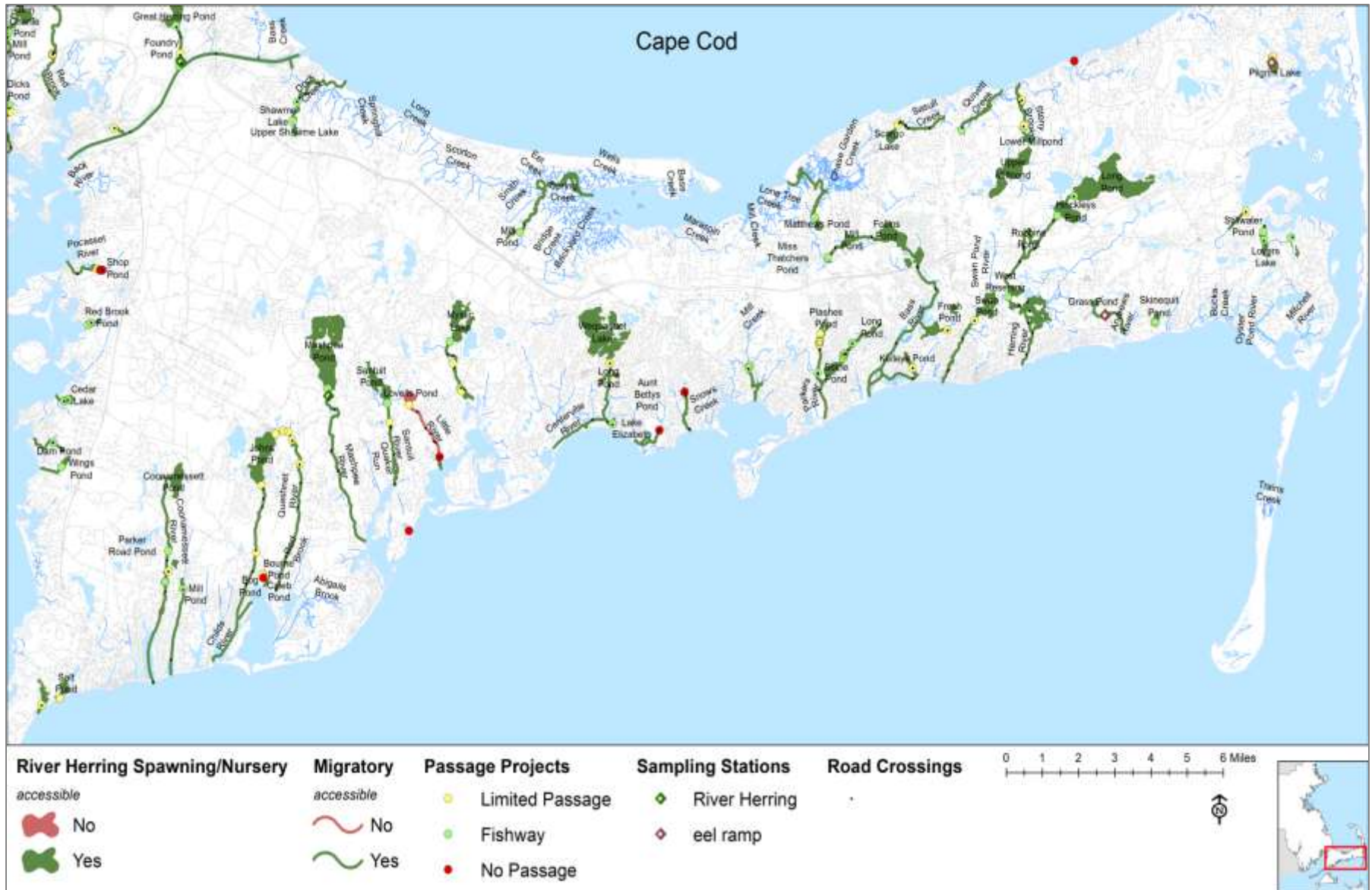
MASSACHUSETTS DIVISION OF MARINE FISHERIES

Diadromous Fish Habitat Restoration Priority List

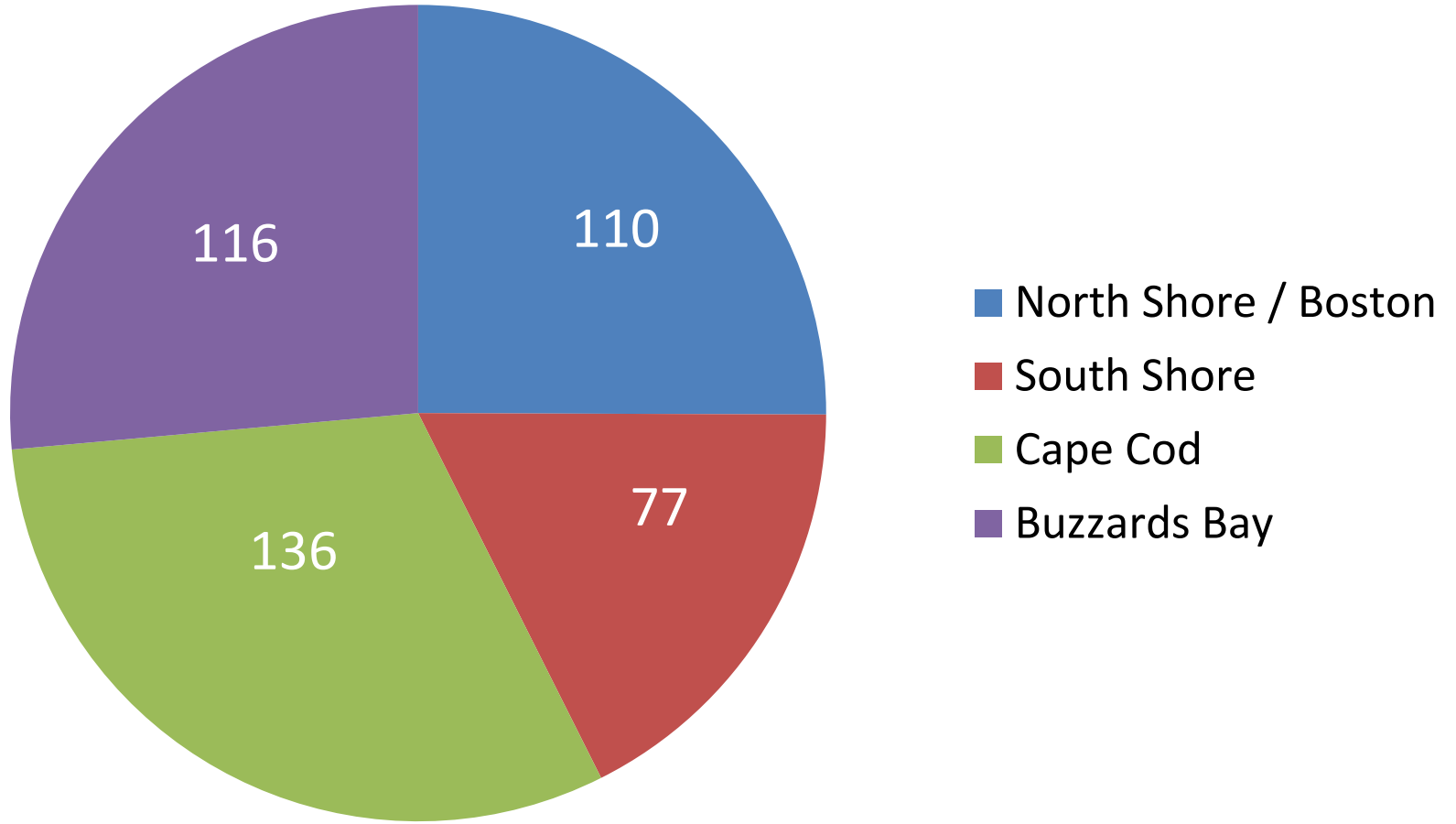
Attribute Categories

Region	Watershed	Species	Condition	Project Type	Project Status	Project Scope
1 = TR-18	Merrimack River	alewife	channel limitation	fish ladder	conceptual	cooperative
2 = TR-17	Parker River	blueback herring	culvert limitation	channel improvement	planning	DMF
3 = TR-16	Ipswich River	American shad	existing fishway	fishway improvement	construction	private
4 = TR-17	North Coastal	rainbow smelt	fish lift	passage improvement	complete	
	Boston Harbor	American eel	degraded habitat	culvert improvement	dormant	
	South Coastal	white perch	no present passage	fishway maintenance	maintenance	
	Cape Cod	lamprey	passage limitation	stream maintenance		
	Islands		water diversion	dam breach		
	Buzzards Bay		sedimentation	dam removal		
				water management		
				operational		
				eel pass		
				smelt spawning riffle		
				tidegate		
				limited potential		
				channel daylighting		

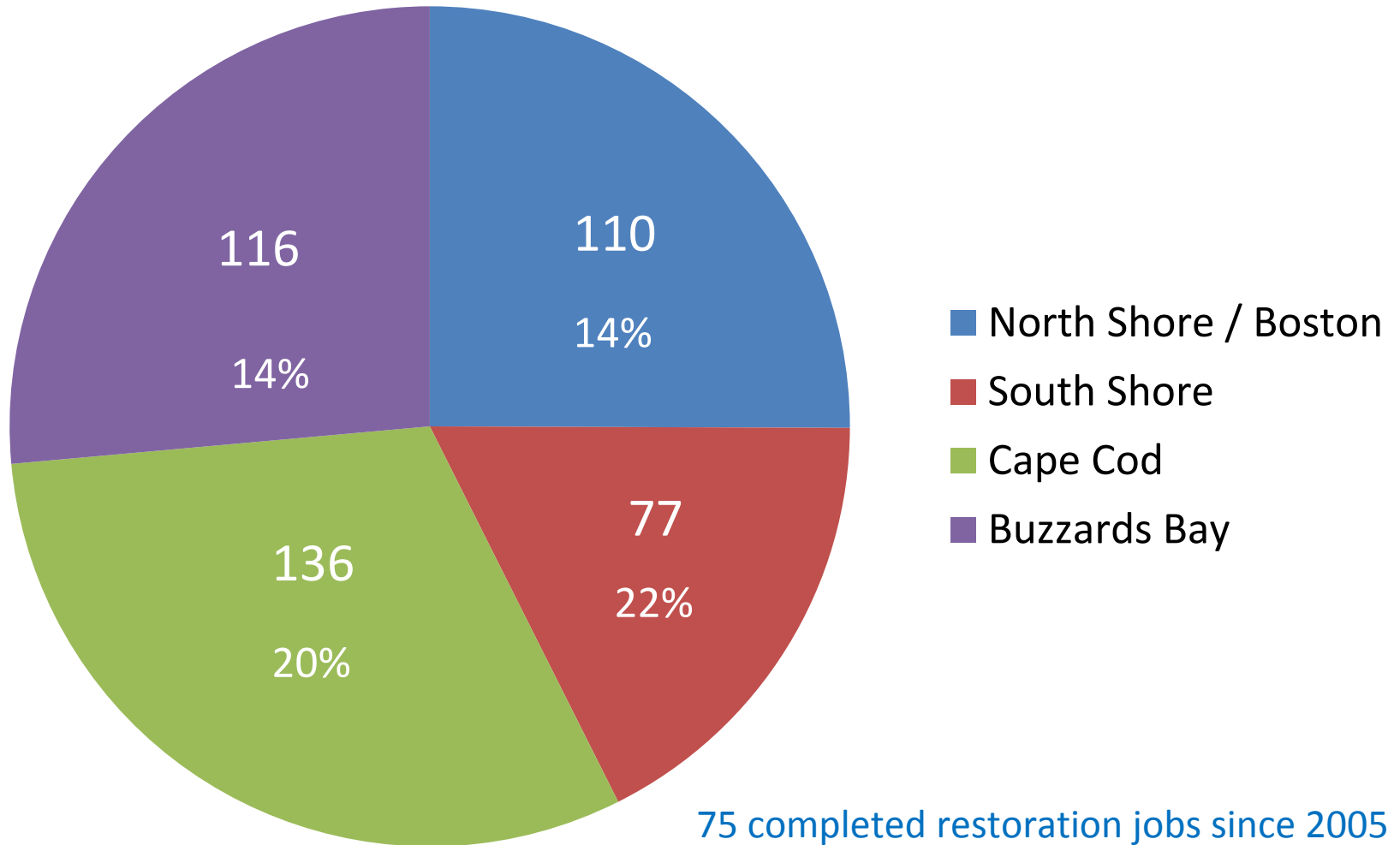
Diadromous Fish – GIS Transportation Datalayer



Diadromous Fish Restoration Sites



Diadromous Fish Restoration Sites



75 completed restoration jobs since 2005

More on the way for the Cape.....

Next Steps



- Integrate Priority List and Habitat Assessments to DEP's CWA processes



- Update and improve these tools for wider use
- Contribute to process for selecting restoration priorities

What can we do?

- Reduce eutrophication
- Improve surface water and groundwater
- Include habitat restoration as part of infrastructure improvements
- Improve restoration planning coordination