Diadromous Fish Updates - 2023







Brad Chase, Mass. Div. of Marine Fisheries, Orleans Town Hall, November 1, 2023 *River Herring Network*



Diadromous Fish Monitoring and Restoration Updates

- River Herring Counting
- **DMF Fishway Crew** Stocking and Fishway jobs
- Large Watershed Restoration Projects
- Taunton River Shad Stocking and Monitoring





Diadromous Fish Management Activities

Stream Maintenance Policy – New DMF / DEP policy for stream work and small fishways

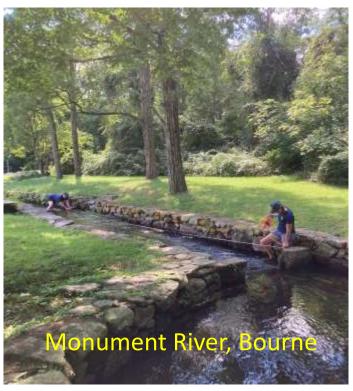
GIS Datalayer – Completed GIS datalayer that integrates fish passage survey and DMF Diadromous Restoration Priority List

Fish Passage Survey - Updating coastwide survey last done in 2000-2002

ASMFC Stock Assessment – Eel completed and river herring underway

River Herring SFMP — Updated MA plan for ASMFC in 2022





River Herring Stocking

- Bourne Pond, Falmouth
- Tom Matthews Pond, Yarmouth
- Little Sandy Pond, Yarmouth
- Mill Pond, Barnstable
- Island Creek Pond, Duxbury





Stream Channel Maintenance

- Increasing problem of low-flow plant encroachment in addition to natural debris jams
- DMF prepared guidelines in 2016
- MassDEP/DMF policy in 2022 (BWR/WP 22-1) to guide actions under Wetlands Protection Act
- 13 Town maintenance plans have been approved
- https://www.mass.gov/servicedetails/diadromous-fisheriesproject





Native and Invasive Plant Encroachment



Swamp Loosestrife Herring River, Harwich

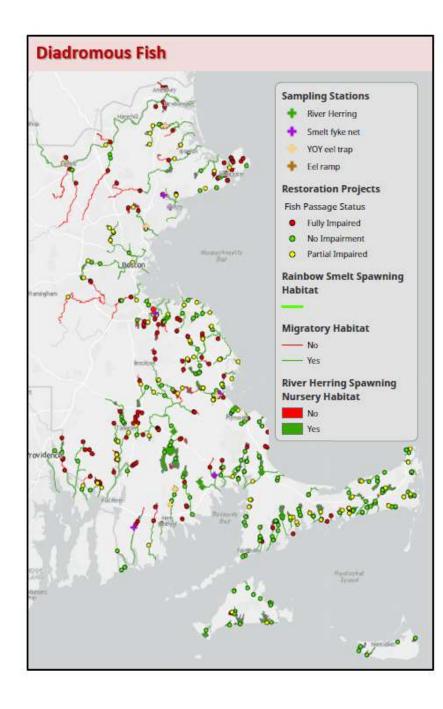
Water Willow Weir River, Hingham

Phragmites
Island Creek, Duxbury

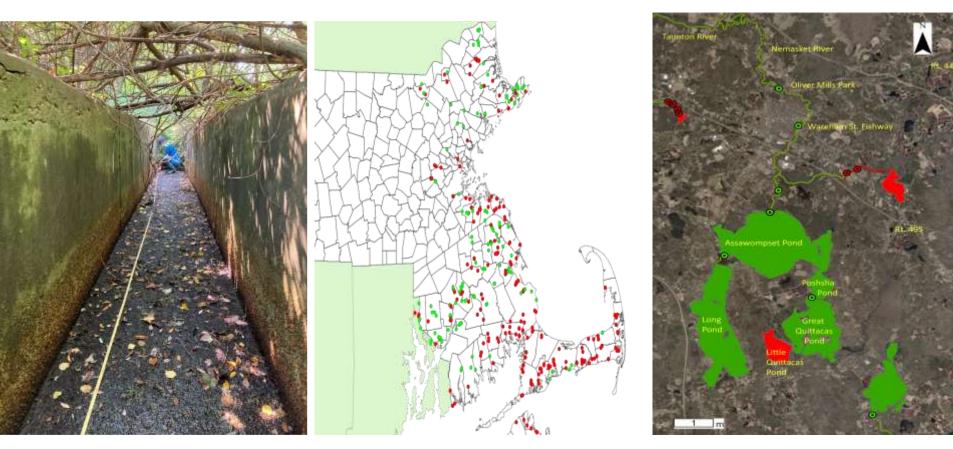
Diadromous Fish GIS Data Layer

- Data on 490 fish passage locations in coastal Massachusetts
- Each Restoration Project has species presence, passage status, and restoration priority ranking
- Includes Time-of-Year recommendations for river reaches based on species presence
- Location data on river herring, eel and smelt sampling stations

Published by MassGIS, January 2023



Diadromous Fish Passage Survey Fish GIS Datalayer Restoration Priority List



GIS Data layer integrates fish passage site data from DMF survey and Restoration Priority List. The 1st priority list was prepared in 2005 directly from the 2000-2001 survey.

Diadromous Fish Monitoring

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

Atlantic States Marine Fisheries Commission

- Interstate Coast-Wide management of migratory species
- Sustainable Fishery Management
 Plans for diadromous fish

River Herring – Stock assessment update in 2017 and new benchmark due in 2024

American Eel – Benchmark stock assessment issued in 2023. Stock remains depleted with need to reduce yellow eel harvest



Spring 2023 – Large Run of Glass Eels

 Large numbers of glass eels seen in 2022 repeated this year in some rivers

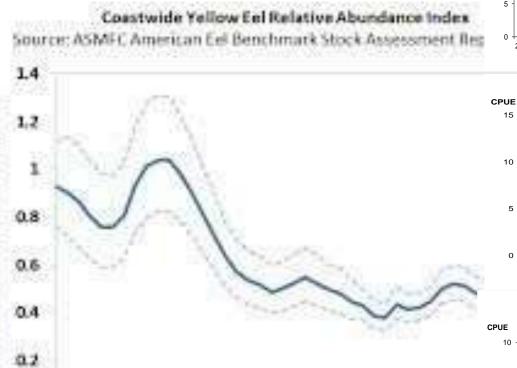
 Some monitored MA runs were well above average





ASMFC Eel Stock Assessment - 2023

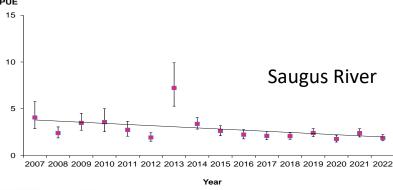




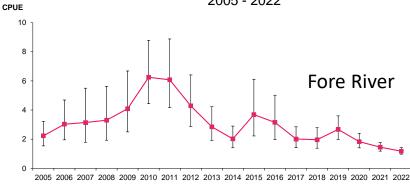
sestwide Yellow [e] Relative Abundans

CPUE 20 Jones River 15 10 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 Year

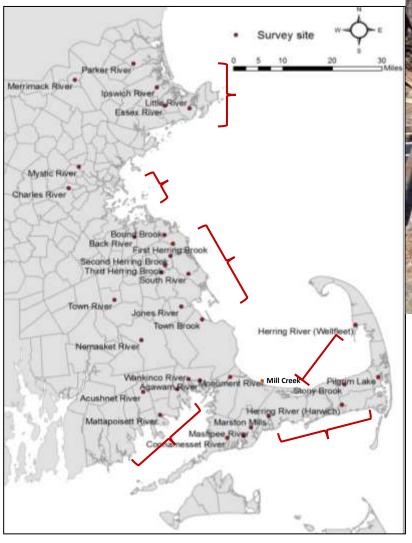
Saugus River Eel Ramp Elver Index 2007 - 2022



Fore River Smelt Fyke Net, Yellow Eel Bycatch Index 2005 - 2022



River Herring Counting Locations









- 45 rivers with river herring counting
- 14 with 'census' level quality
- 8 stations sample biological data

Stream Drainage Method Count CT CT Lift 2,173 Merrimack Merrimack Video 6,129 Shawsheen Merrimack Visual 0 Concord Merrimack Visual 0 Parker North Coast Video 88,334* Little North Coast Visual 99 Ipswich North Coast Visual 733 Essex North Coast Counter 33,562 Morring Boston HBR Visual 12,059 Back Boston HBR Counter 254,111 Charles Boston HBR Counter 254,111 Jones South Coast Visual 43,587 Monument South Coast Visual 279 Town Brook South Coast Visual 290 Herring Brook (Pembroke) South Coast Visual 2,390 Furnace South Coast Visual 2,390 Her	_			
Merrimack Shawsheen Merrimack Merrimack Misual 2,585 (Concord Merrimack Visual 0 (Concord Merrimack Visual 1 (Concord Merrimack Visual Maj.587 (Counter 1 (Concord Merrimack Visual Merrimack Merrimack Merrimack Visual Merrimack M	Stream	Drainage	Method	Count
Shawsheen Concord Merrimack Visual O Parker North Coast Uideo Bas,334* Little North Coast Visual Jpswich North Coast Visual Parker North Coast Visual Jpswich North Coast Visual Pssex North Coast North Coast Visual Pssex North Coast North Coast Visual Pssex North Coast Visual Asp,992 Horn Pond (Aberjona R.) Back Charles Boston HBR Visual Boston HBR Visual L12,059 Back Counter Charles Boston HBR Visual Jose Counter South Coast Visual Jones South Coast Visual Jones Town Brook South Coast Visual Jones South Coast Visual Psize Herring Brook (Pembroke) South Coast Visual Psize Beaver Dam Brook Furnace South Coast Visual Mill Creek Cape Cod N Visual Furning R (Wellfileet) Herring R (Wellfileet) Cape Cod N Visual Stony Cape Cod N Visual Does Stony Cape Cod N Visual Does Cape Cod S Visual Does Cape Cod S Visual Cape Cod				
Concord Merrimack Visual 0				· ·
Parker Little North Coast Visual Jpswich North Coast Visual Jpswich North Coast Visual P99 North Coast Visual P133,562 Mystic Boston HBR Visual A69,922 Horn Pond (Aberjona R.) Back Charles Boston HBR Counter P154,111 Charles Boston HBR Visual P169,222 Boston HBR Visual P170,59 Back Counter P181,041 P199 P199 P199 P199 P199 P199 P199 P1				•
Little North Coast Visual 733 Essex North Coast Visual 733 Essex North Coast Counter 33,562 Mystic Boston HBR Visual 469,922 Horn Pond (Aberjona R.) Boston HBR Visual 12,059 Back Boston HBR Visual 12,059 Back Boston HBR Visual 43,587 Monument South Coast Counter 181,041 Jones South Coast Visual 79 Town Brook South Coast Visual 235,291* Herring Brook (Pembroke) South Coast Visual 235,291* Beaver Dam Brook South Coast Visual 2,390 Furnace South Coast Visual 2,390 Furnace South Coast Visual 2,390 Herring R (Wellfleet) Cape Cod N Visual 532 Herring R (Eastham) Cape Cod N Visual 3,476 Herring B (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 1,32,389 Boat Cove Creek Cape Cod N Visual 1,769 Marstons Mills (Mill) Cape Cod S Visual 0 Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Visual 55,926* Herring R (Harwich, Hinkleys) Cape Cod S Visual 51,692 Mashpee Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 4,757 Quashnet Cape Cod S Visual 4,377 Red Lily Pond Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 4,050	Concord	Merrimack	Visual	
Ipswich	Parker	North Coast	Video	88,334*
Essex North Coast Counter 33,562 Mystic Boston HBR Visual 469,922 Horn Pond (Aberjona R.) Boston HBR Visual 12,059 Back Boston HBR Counter 254,111 Charles Boston HBR Visual 43,587 Monument South Coast Visual 79 Town Brook South Coast Visual 79 Town Brook South Coast Visual 235,291* Herring Brook (Pembroke) South Coast Visual 235,291* Beaver Dam Brook South Coast Visual 2390 Furnace South Coast Visual 235,291* Merring Brook (Pembroke) South Coast Visual 235,291* Herring Brook (Pembroke) South Coast Visual 235,291* Herring R Charman Coape Cod N Visual 23,290 Herring R (Wellfleet) Cape Cod N Visual 3,476 Herring R (Eastham) Cape Cod N Visual 1,769	Little	North Coast	Visual	99
Mystic Boston HBR Visual 469,922 Horn Pond (Aberjona R.) Boston HBR Visual 12,059 Back Boston HBR Counter 254,111 Charles Boston HBR Visual 43,587 Monument South Coast Counter 181,041 Jones South Coast Visual 79 Town Brook South Coast Visual 235,291* Herring Brook (Pembroke) South Coast Visual 190,177* Beaver Dam Brook South Coast Visual 2,390 Furnace South Coast Visual 2,390 Mill Creek Cape Cod N Visual 24 Mill Creek Cape Cod N Visual 532 Herring R (Wellfleet) Cape Cod N Visual 3,476 Herring R (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 1,769 Stony Cape Cod N Visual 1,769 Marstons Mills (Mill) Cape Cod S Visual 92,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, Hinkleys) Cape Cod S Visual 55,926* Conamessett Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 44,757 Red Lily Pond Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 40,250 Herring Creek Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Visual 40,250 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 713	Ipswich	North Coast	Visual	733
Horn Pond (Aberjona R.) Back Back Boston HBR Counter Charles Boston HBR Visual A3,587 Monument Jones South Coast Form Brook Beaver Dam Brook Beaver Dam Brook Furnace Herring R (Pembroke) South Coast Furnace South Coast Furnace South Coast Wisual Furnace South Coast Wisual A3,597 Herring R (Pembroke) South Coast Wisual Beaver Dam Brook Furnace South Coast Wisual A3,490 Furnace South Coast Wisual A3,490 Furnace South Coast Wisual A4,766 Furnace South Coast Wisual A4,377 Aashpee Coape Cod N Arstons Mills (Middle) Cape Cod N Arstons Mills (Middle) Cape Cod S Herring R (Harwich, Hinkleys) Mashpee Cape Cod S Counter Cape Cod S Counter South Cape Cod S Wisual A3,476 Cape Cod S Wisual A3,476 Cape Cod S Wisual Marstons Mills (Middle) Cape Cod S Wisual Marstons Mills (Middle) Cape Cod S Counter South Coape Cod S Wisual Connamessett Cape Cod S Wisual Connamessett Cape Cod S Wisual A3,032 Centerville Cape Cod S Wisual A4,757 Quashnet Cape Cod S Wisual A4,757 Aged Lily Pond Cape Cod S Wisual A4,757 Aged Cod S Ag	Essex	North Coast	Counter	33,562
Back Charles Boston HBR Visual 43,587 Monument South Coast Counter 181,041 Jones South Coast Visual 79 Town Brook South Coast Visual 235,291* Herring Brook (Pembroke) South Coast Visual 190,177* Beaver Dam Brook South Coast Visual 2,390 Furnace South Coast Visual 24 Mill Creek Cape Cod N Visual 532 Herring R (Wellfleet) Cape Cod N Visual 65,529* Herring R (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 1,769 Stony Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod S Visual 5,52,62* Herring R (Harwich, West) Cape Cod S Visual 5,52,62* Herring R (Harwich, Hinkleys) Cape Cod S Visual 5,52,64* Conoamessett Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 37,348 Trunk Cape Cod S Visual 40,250 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 713	Mystic	Boston HBR	Visual	469,922
Charles Boston HBR Visual 43,587 Monument South Coast Counter 181,041 Jones South Coast Visual 79 Town Brook South Coast Visual 235,291* Herring Brook (Pembroke) South Coast Visual 190,177* Beaver Dam Brook South Coast Visual 2,390 Furnace South Coast Visual 2,390 Furnace South Coast Visual 2,390 Furnace South Coast Visual 2,390 Herring R (Wellfleet) Cape Cod N Visual 532 Herring R (Eastham) Cape Cod N Visual 3,476 Herring B (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 1,769 Stony Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod N Visual 0 Marstons Mills (Mill) Cape Cod S Visual 92,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Visual 55,926* Herring R (Harwich, Hinkleys) Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 22 Nemasket Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 713	Horn Pond (Aberjona R.)	Boston HBR	Visual	12,059
Monument Jones South Coast Visual Town Brook Furnace Mill Creek Herring R (Wellfleet) Herring B (Eastham) Stony Marstons Mills (Mill) Marstons Mills (Middle) Herring R (Harwich, Hinkleys) Mashpee Coonamessett Coonamessett Coonamessett Coonamessett Cope Cod S Counter Cape Cod S C	Back	Boston HBR	Counter	254,111
Town Brook Town Brook South Coast Ferring Brook (Pembroke) South Coast South Coast Visual Beaver Dam Brook Furnace South Coast Wisual Pinnace South Coast Visual Pinnace South Coast Pinnace Pinnace South Coast Pinnace Pinnace Pinnace Pinnace Pinnace P	Charles	Boston HBR	Visual	43,587
Town Brook Herring Brook (Pembroke) Beaver Dam Brook Furnace South Coast Wisual Furnace South Coast Wisual Furnace South Coast Wisual Cape Cod N Wisual Herring R (Wellfleet) Cape Cod N Wisual Stony Stony Cape Cod N Wisual Stony Cape Cod N Wisual Stony Stony Stony Cape Cod N Wisual Stony Stony Stony Cape Cod N Wisual Stony	Monument	South Coast	Counter	181,041
Herring Brook (Pembroke) Beaver Dam Brook Furnace South Coast Visual 2,390 Furnace South Coast Visual 2,390 Mill Creek Cape Cod N Visual Herring R (Wellfleet) Cape Cod N Visual 3,476 Herring B (Eastham) Cape Cod N Visual Stony Cape Cod N Visual Boat Cove Creek Cape Cod N Marstons Mills (Mill) Marstons Mills (Midle) Herring R (Harwich, West) Herring R (Harwich, Hinkleys) Cape Cod S Cape Cod S Cape Cod S Cape Cod S Mashpee Cape Cod S Cape Cod S Counter Sound Cape Cod S Counter	Jones	South Coast	Visual	79
Beaver Dam Brook Furnace South Coast Visual Amill Creek Cape Cod N Visual Arring R (Wellfleet) Cape Cod N Visual Beaver Dam Brook Cape Cod N Wisual Arring R (Wellfleet) Cape Cod N Visual Beaver Dam Brook Cape Cod N Visual Arring R (Eastham) Cape Cod N Visual Arring B (Eastham) Cape Cod N Visual Arring B (Eastham) Cape Cod N Visual Arring B (Eastham) Cape Cod N Visual Arring R (Harwich (Mill) Cape Cod S Arring R (Harwich, West) Cape Cod S Arring R (Harwich, Hinkleys) Cape Cod S Counter Cape Cod S Arring R (Harwich, Hinkleys) Cape Cod S Conamessett Cape Cod S Conamessett Cape Cod S Conamessett Cape Cod S Conamessett Cape Cod S Arring Cape Cod S Arring Arring Cape Cod S Arring Arring Cape Cod S Arring Cape Cod S Arring Arring Arring Cape Cod S Arring Arring Cape Cod S Arring Arring Arring Cape Cod S Arring Arring Arring Arring Cape Cod S Arring A	Town Brook	South Coast	Visual	235,291*
Furnace South Coast Visual 24 Mill Creek Cape Cod N Visual 532 Herring R (Wellfleet) Cape Cod N Visual 65,529* Herring R (Eastham) Cape Cod N Visual 3,476 Herring B (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod N Visual 0 Marstons Mills (Mill) Cape Cod S Visual 92,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Counter 527,000(P) Herring R (Harwich, Hinkleys) Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 44,757 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Visual 40,250 Herring Creek Cape Cod S Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican	Herring Brook (Pembroke)	South Coast	Visual	190,177*
Mill Creek Cape Cod N Visual 532 Herring R (Wellfleet) Cape Cod N Visual 65,529* Herring R (Eastham) Cape Cod N Visual 3,476 Herring B (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 1,769 Stony Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod N Visual 0 Marstons Mills (Mill) Cape Cod S Visual 92,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Visual 55,926* Herring R (Harwich, Hinkleys) Cape Cod S Visual 161,962 Mashpee Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 75,348 Coape Cod S Visual 75,348 Copashnet Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Filgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Visual 137,304 Town River Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 68,716 Wankinco Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 713	Beaver Dam Brook	South Coast	Visual	2,390
Herring R (Wellfleet) Cape Cod N Visual 3,476 Herring R (Eastham) Cape Cod N Visual 3,476 Herring B (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod N Visual 0 Marstons Mills (Mill) Cape Cod S Visual 92,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Counter 527,000(P) Herring R (Harwich, Hinkleys) Cape Cod S Visual 161,962 Mashpee Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 44,757 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 713	Furnace	South Coast	Visual	24
Herring R (Eastham) Cape Cod N Visual 3,476 Herring B (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod N Visual 0 Marstons Mills (Mill) Cape Cod S Visual 52,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Visual 55,926* Herring R (Harwich, Hinkleys) Cape Cod S Visual 161,962 Mashpee Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 44,757 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 713	Mill Creek	Cape Cod N	Visual	532
Herring R (Eastham) Cape Cod N Visual 3,476 Herring B (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod N Visual 0 Marstons Mills (Mill) Cape Cod S Visual 52,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Visual 55,926* Herring R (Harwich, Hinkleys) Cape Cod S Visual 161,962 Mashpee Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 44,757 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 713	Herring R (Wellfleet)	Cape Cod N	Visual	65,529*
Herring B (Eastham) Cape Cod N Visual 1,769 Stony Cape Cod N Visual 132,389 Boat Cove Creek Cape Cod N Visual 0 Marstons Mills (Mill) Cape Cod S Visual 92,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Counter 527,000(P) Herring R (Harwich, Hinkleys) Cape Cod S Visual 161,962 Mashpee Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 44,757 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•	Visual	
StonyCape Cod NVisual132,389Boat Cove CreekCape Cod NVisual0Marstons Mills (Mill)Cape Cod SVisual92,723*Marstons Mills (Middle)Cape Cod SVisual55,926*Herring R (Harwich, West)Cape Cod SCounter527,000(P)Herring R (Harwich, Hinkleys)Cape Cod SVisual161,962MashpeeCape Cod SVisual75,348CoonamessettCape Cod SVisual7,100SantuitCape Cod SVisual44,757QuashnetCape Cod SVisual43,77Red Lily PondCape Cod SVisual22Pilgrim LakeCape Cod SVisual15,348TrunkCape Cod SVisual40,250Herring CreekCape Cod SVideo20,908NemasketTauntonVisual137,304Town RiverTauntonCounter6,155MattapoisettBuzzards BayCounter4,050AgawamBuzzards BayCounter4,050AcushnetBuzzards BayCounter713SippicanBuzzards BayCounter713		•	Visual	•
Boat Cove CreekCape Cod NVisual0Marstons Mills (Mill)Cape Cod SVisual92,723*Marstons Mills (Middle)Cape Cod SVisual55,926*Herring R (Harwich, West)Cape Cod SCounter527,000(P)Herring R (Harwich, Hinkleys)Cape Cod SVisual161,962MashpeeCape Cod SVisual75,348CoonamessettCape Cod SVisual7,100SantuitCape Cod SVisual7,100SantuitCape Cod SVisual44,757QuashnetCape Cod SVisual4377Red Lily PondCape Cod SVisual22Pilgrim LakeCape Cod SVisual15,348TrunkCape Cod SVisual40,250Herring CreekCape Cod SVideo20,908NemasketTauntonVisual137,304Town RiverTauntonCounter6,155MattapoisettBuzzards BayCounter4,050AgawamBuzzards BayCounter4,050AcushnetBuzzards BayCounter713SippicanBuzzards BayCounter53		•		
Marstons Mills (Mill) Cape Cod S Visual 92,723* Marstons Mills (Middle) Cape Cod S Visual 55,926* Herring R (Harwich, West) Cape Cod S Counter 527,000(P) Herring R (Harwich, Hinkleys) Cape Cod S Visual 161,962 Mashpee Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 4,377 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53	*			· · · · · · · · · · · · · · · · · · ·
Marstons Mills (Middle) Herring R (Harwich, West) Cape Cod S Counter S27,000(P) Herring R (Harwich, Hinkleys) Cape Cod S Mashpee Cape Cod S Counter S27,000(P) Herring R (Harwich, Hinkleys) Cape Cod S Mashpee Cape Cod S Visual T5,348 Coonamessett Cape Cod S Counter T5,348 Coonamessett Cape Cod S Counter T5,348 Coonamessett Cape Cod S Counter T5,348 Counter T100 Santuit Cape Cod S Visual T22 Sippican Sippican Cape Cod S Visual T101 Sippican Sippican Cape Cod S Visual Sippican Sippican Sippican Sippican Sippican Cape Cod S Visual Sippican Sippican Sippican Sippican Sippican Sippican Cape Cod S Visual Sippican Sippican Sippican Sippican Sippican Sippican Sippican Sippican Cape Cod S Visual Sippican Sippican Sippican Sippican Sippican Sippican Sippican Cape Cod S Visual Sippican Sippican Sippican Sippican Sippican Sippican Sippican Sippican Cape Cod S Visual Sippican Sippican Sippican Sippican Sippican Sippican Cape Cod S Visual Sippican Sippican Sippican Sippican Sippican Sippican Cape Cod S Visual Sippican Si		•		
Herring R (Harwich, West) Herring R (Harwich, Hinkleys) Mashpee Cape Cod S Cape Cod S Visual Mashpee Cape Cod S Conamessett Cape Cod S Conamesset Conam	` '	•		
Herring R (Harwich, Hinkleys) Cape Cod S Visual 161,962 Mashpee Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 44,757 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		
Mashpee Cape Cod S Visual 75,348 Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 4,377 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		
Coonamessett Cape Cod S Visual 3,032 Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 4,377 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		· · · · · · · · · · · · · · · · · · ·
Centerville Cape Cod S Visual 7,100 Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 4,377 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53	-	•		•
Santuit Cape Cod S Visual 44,757 Quashnet Cape Cod S Visual 4,377 Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		
QuashnetCape Cod SVisual4,377Red Lily PondCape Cod SVisual22Pilgrim LakeCape Cod SVisual15,348TrunkCape Cod SVisual40,250Herring CreekCape Cod SVideo20,908NemasketTauntonVisual137,304Town RiverTauntonCounter6,155MattapoisettBuzzards BayCounter4,050AgawamBuzzards BayCounter4,050AcushnetBuzzards BayCounter713SippicanBuzzards BayCounter53		•		
Red Lily Pond Cape Cod S Visual 22 Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		•
Pilgrim Lake Cape Cod S Visual 15,348 Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 68,716 Wankinco Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		
Trunk Cape Cod S Visual 40,250 Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 68,716 Wankinco Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53	-	-		
Herring Creek Cape Cod S Video 20,908 Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 68,716 Wankinco Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		-
Nemasket Taunton Visual 137,304 Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 68,716 Wankinco Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		•
Town River Taunton Counter 6,155 Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 68,716 Wankinco Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		•
Mattapoisett Buzzards Bay Counter 4,050 Agawam Buzzards Bay Counter 68,716 Wankinco Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53				•
Agawam Buzzards Bay Counter 68,716 Wankinco Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53				· ·
Wankinco Buzzards Bay Counter 4,050 Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53	-	•		
Acushnet Buzzards Bay Counter 713 Sippican Buzzards Bay Counter 53		•		=
Sippican Buzzards Bay Counter 53		•		
		•		
Cedar Lake Buzzards Bay Counter 428		•		
	Cedar Lake	Buzzards Bay	Counter	428

Massachusetts River Herring Count Summary - 2023

Total streams counted = 45

Total streams (drainage area):

```
CT = 1 Cape\ Cod\ (North) = 6

Merrimack = 3 Cape\ Cod\ (South) = 11

North\ Coast = 4 Buzzards\ Bay = 6

Boston\ Harbor = 4 Taunton = 2

South\ Coast = 6
```

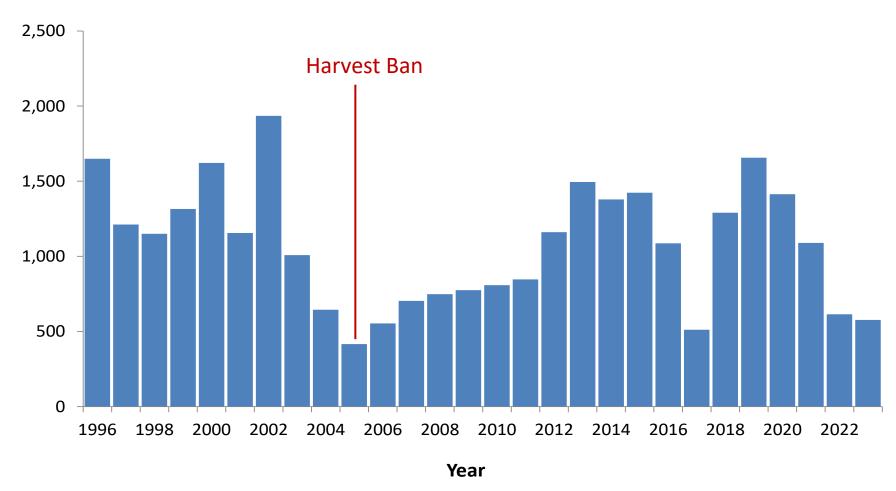
Counts omitted (insufficient data) = 3

*Time-series highs:

Parker River, Town Brook, Herring Brook, Pembroke, Herring River, Wellfleet, and Marstons Mills

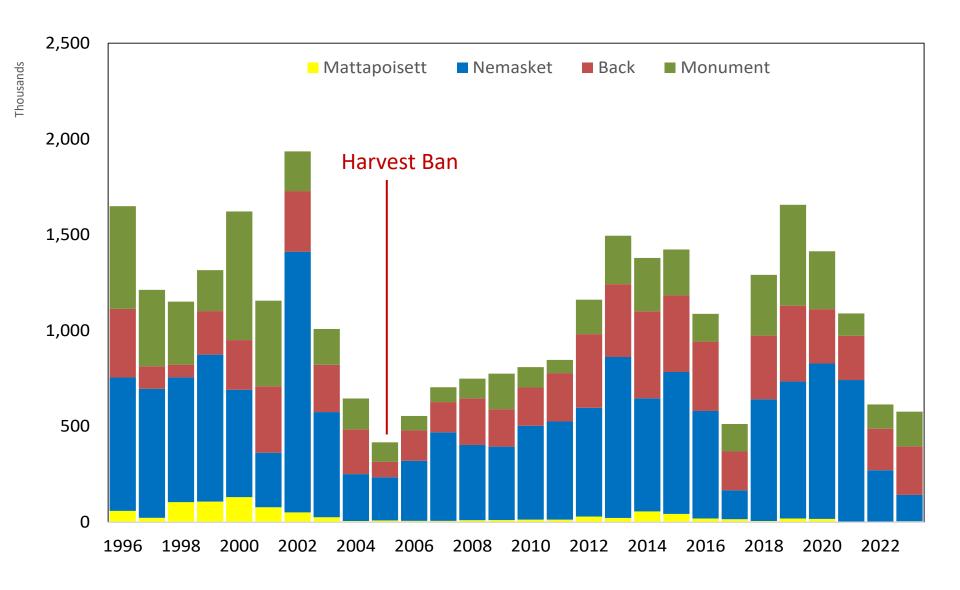
Massachusetts River Herring 20-Year Count Index 1996 - 2023

Counts (1,000s)

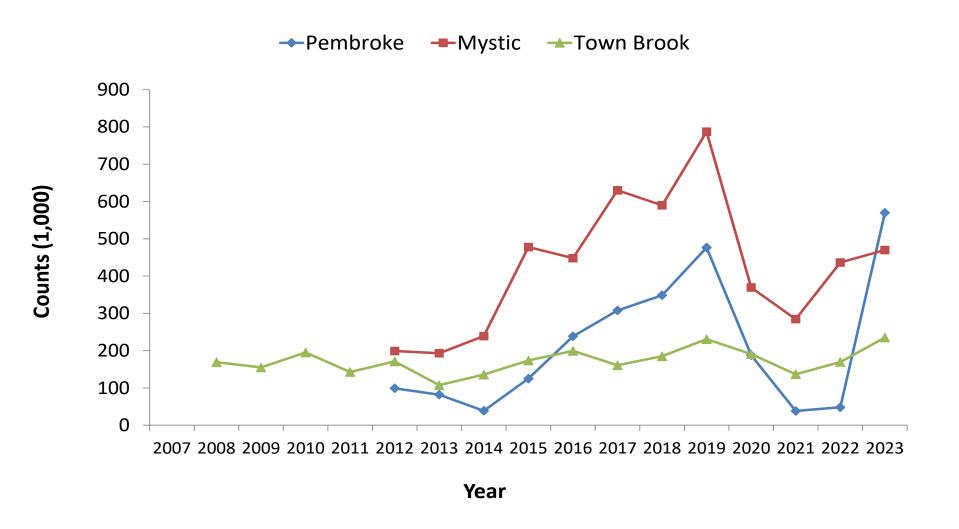


Nemasket River, Mattapoisett River, Monument River and Back River

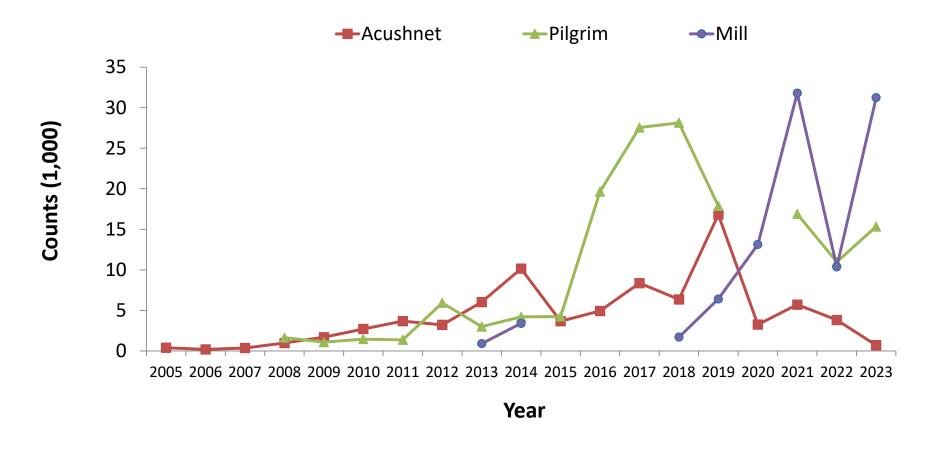
Massachusetts River Herring 20-Year Count Index 1996 - 2023



Restoration Response: Large River Herring Runs

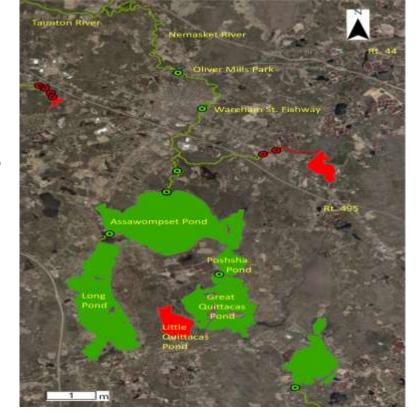


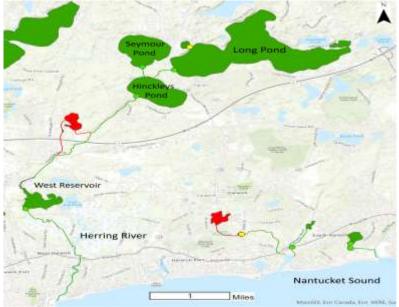
Restoration Response: Small River Herring Runs



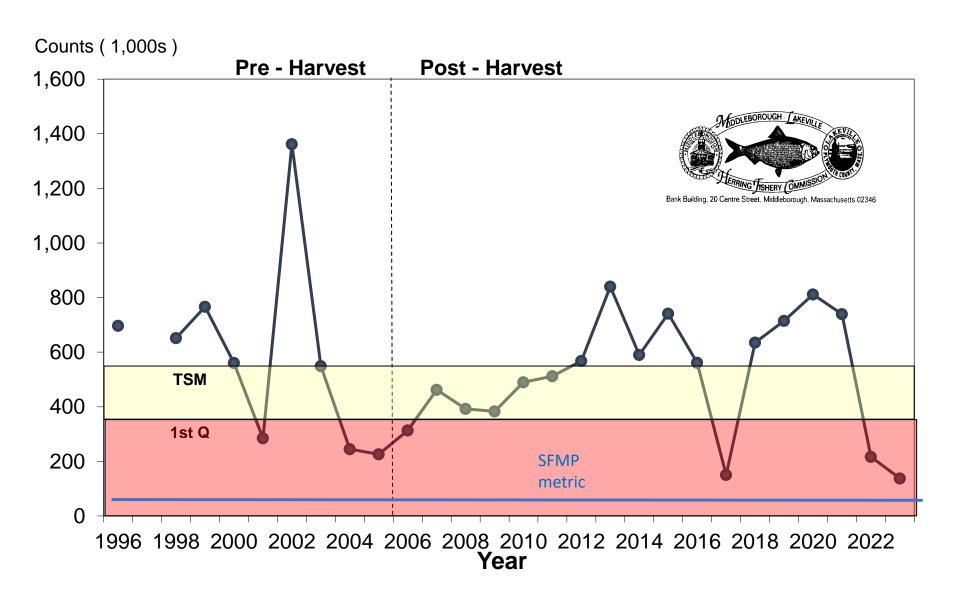
River Herring Harvest ASMFC Sustainable Fishery Mgt Plans

- Four Towns have requested DMF for harvest plans in the last 6 years
- Nemasket River plan renewed in 2022
- Herring River, Harwich, approved in 2022

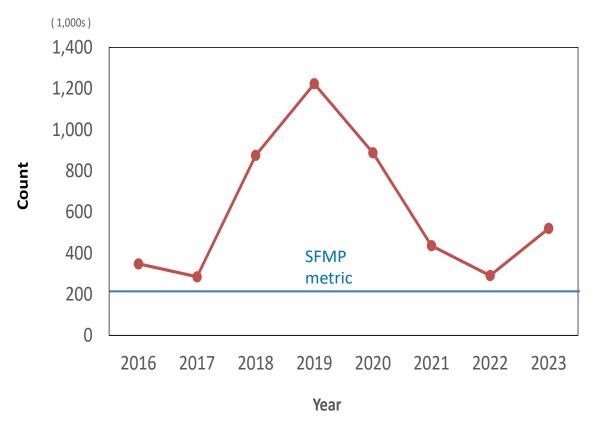


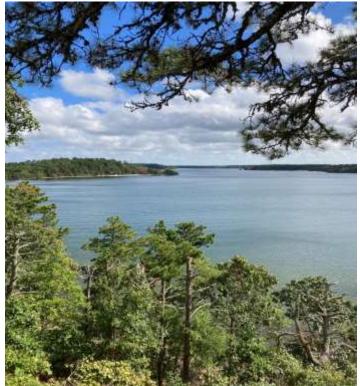


Nemasket River - Visual Count 1996 - 2023



Herring River, Harwich Electronic Count 2016 - 2023







Pilgrim Lake Orleans

- Herring Brook Road fishway 2010
- Gravity supply eel ramp 2011
- Repair 120 ft of fish ladder 2014/2015
- Pilgrim Lake outlet fishway 2018





Pilgrim Lake Orleans

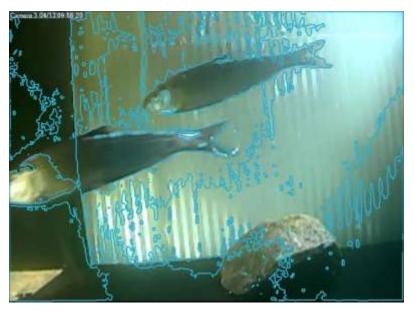
- Electronic counting station and new eel ramp installed 2019
- Video counting station installed in 2022

Town and CC Conservation
 District preparing for replacement of lower fishway





Pilgrim Lake Video Monitoring









Pilgrim Lake, Orleans





Large Watershed Restoration Projects

- NRCS Cape Cod Watershed Restoration Plan
- Herring River Restoration, Wellfleet
- Talbot Mills Dam removal, Concord River,
- War Memorial Park, fishway, Town River, West Bridgewater
- South River nature-like fishway, Marshfield
- Horn Pond fishway, Aberjona River, Woburn
- Town Brook, Plymouth (multiple sites)
- Ipswich River, Ipswich (multiple sites)
- Forge Pond Dam Fish Passage Improvements, Kingston
- Stump Brook fish passage improvement, East Bridgewater
- High Street Dam removal, Town River, Bridgewater
- Monatiquot River Restoration, Braintree
- Westport River, Westport

Large Watershed Restoration Projects

- NRCS Cape Cod Watershed Restoration Plan
- Herring River Restoration, Wellfleet
- Talbot Mills Dam removal, Concord River,
- War Memorial Park, fishway, Town River, West Bridgewater
- South River nature-like fishway, Marshfield
- Horn Pond fishway, Aberjona River, Woburn
- Town Brook, Plymouth (multiple sites)
- Ipswich River, Ipswich (multiple sites)
- Forge Pond Dam Fish Passage Improvements, Kingston
- Stump Brook fish passage improvement, East Bridgewater
- High Street Dam removal, Town River, Bridgewater
- Monatiquot River Restoration, Braintree
- Westport River, Westport

DMF Fishway Crew - 2023





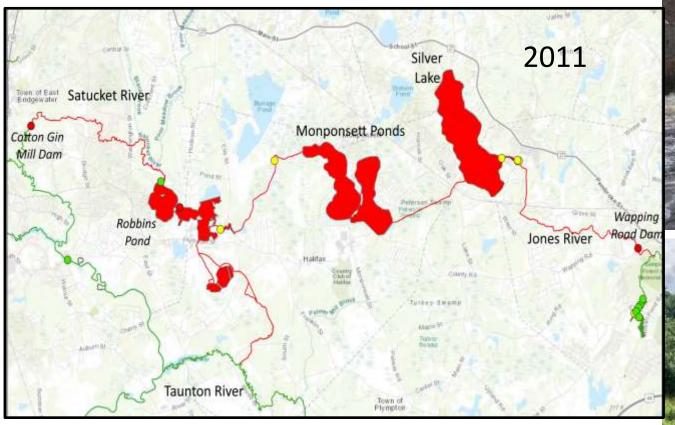


Great Herring Pond, Bourne

Indian Head River Dam, Pembroke/Hanover

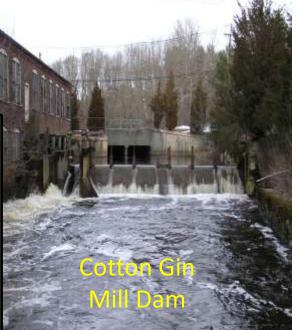
Soules Pond Dam, Kingston

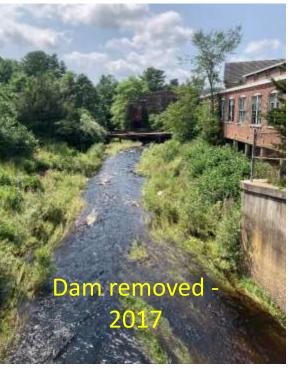
Stump Brook Bog Reservoir Dam, East Bridgewater



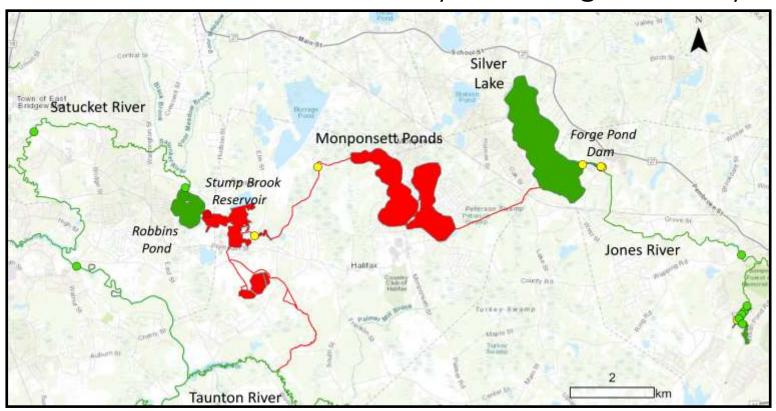
Cotton Gin Mill Dam removal in 2017 allowed fish passage to 124-acre Robbins Pond

Passage at bog dam gains passage to 168-acre Reservoir and the 528-acre Monponsett Ponds





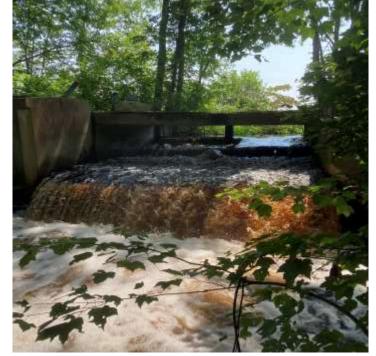
Reconnect Massachusetts Bay to Narragansett Bay



2019 – fish passage open for 764 acres

Stump Brook Bog Reservoir Dam, East Bridgewater

- DMF survey and scoping design 2019-2021
- Grant from Taunton River Stewardship Council for design/permitting
- DMF contracted GZA for final design and permitting
- Extensive fishway fabrication at DMF Fishway Crew shop





Stump Brook Bog Reservoir Dam, East Bridgewater



Cooperative project with DMF and cranberry bog farmer to install Alaskan Steeppass fishway. Recycled from Elm Street Dam removal project in Kingston

Gorham Mill Pond, Herring Brook, Pembroke

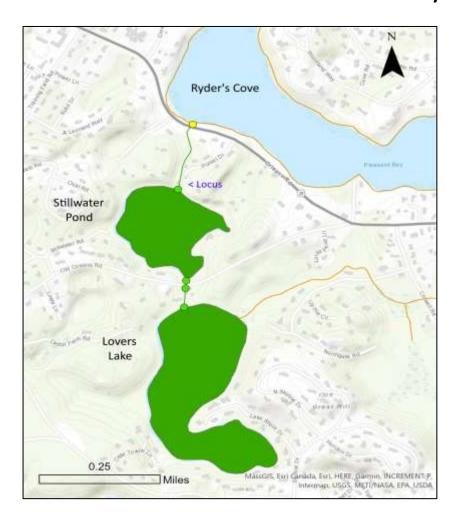






DMF and Pembroke Herring Fisheries Commission install Alaskan Steeppass fishway. Recycled from Elm Street Dam removal project in Kingston

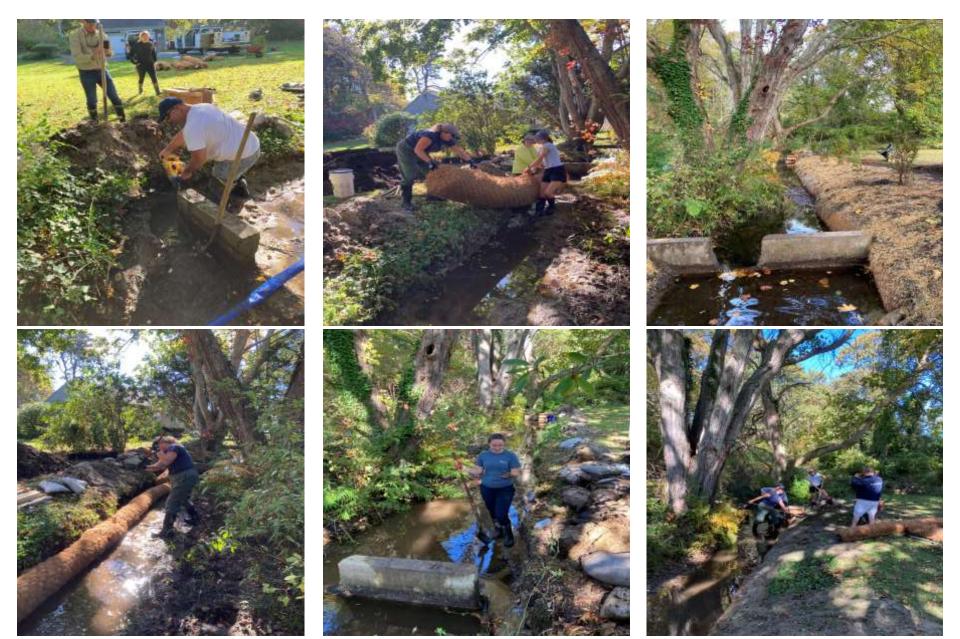
Stillwater Pond Fishway Channel Repair, Chatham





Cooperative project with DMF and the Town of Chatham to repair 4 concrete fishway channel weirs

Stillwater Pond Fishway Channel Repair, Chatham



Howlett Brook, Topsfield



Cooperative project with DMF development, NOAA funding, and IRWA leading contract with SumCo



Sesuit Creek Culvert Replacement, Dennis

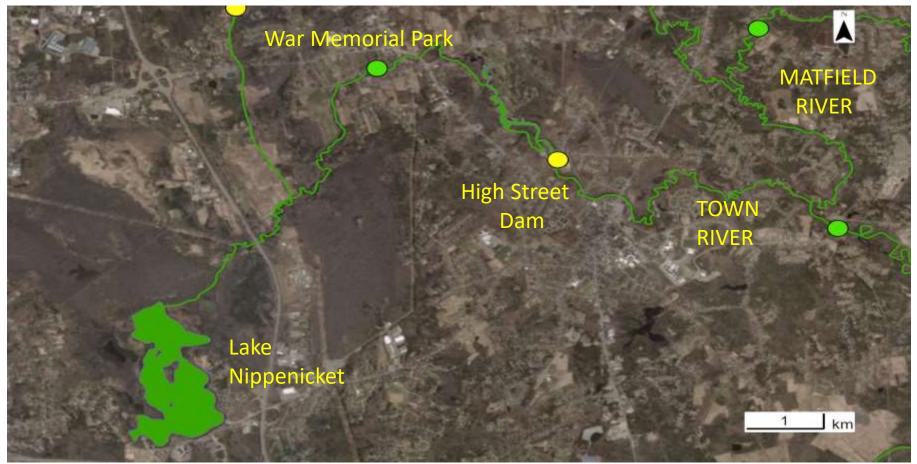






Mass DOT project contracted now to Robert Our Co. to replace two problematic culverts on Route 6A. Reoccurring passage blockages have caused significant impingement and predation mortality

High Street Dam, Town River, Bridgewater



- The dam and 212 ft concrete fishway built in 1919 were in disrepair
- DMF communications with dam owner during 2013-2015 led to approval letter to investigate dam removal feasibility

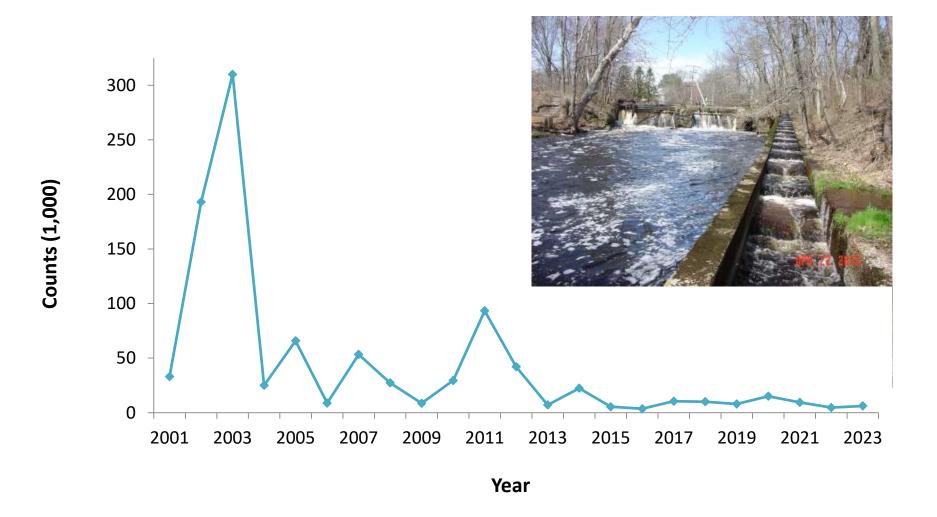
High Street Dam Removal, Town River, Bridgewater



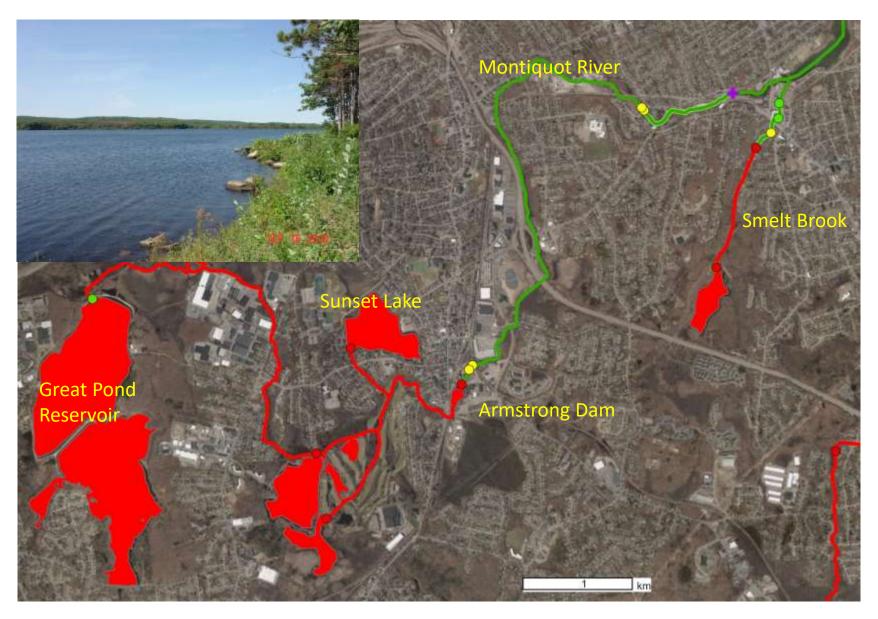
- Dam removal and bridge construction underway by Manafort
- Large cooperative project funded by Bipartisan Infrastructure Act

High Street Dam Fishway River Herring Count 2001-2023

Town River Fisheries Committee



Fore River Watershed, Braintree



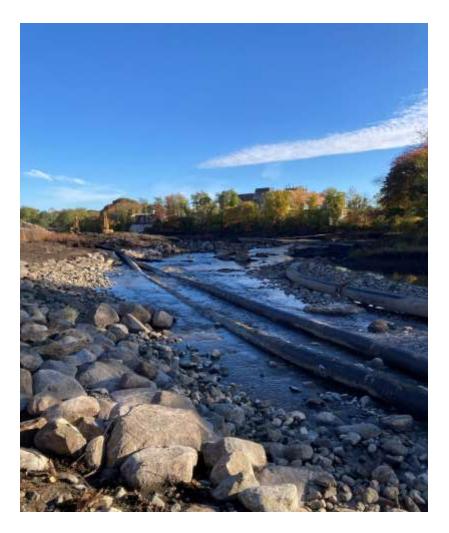
Fish Passage Barriers





Armstrong Dam Removal





Fore River Watershed – Stream Maintenance







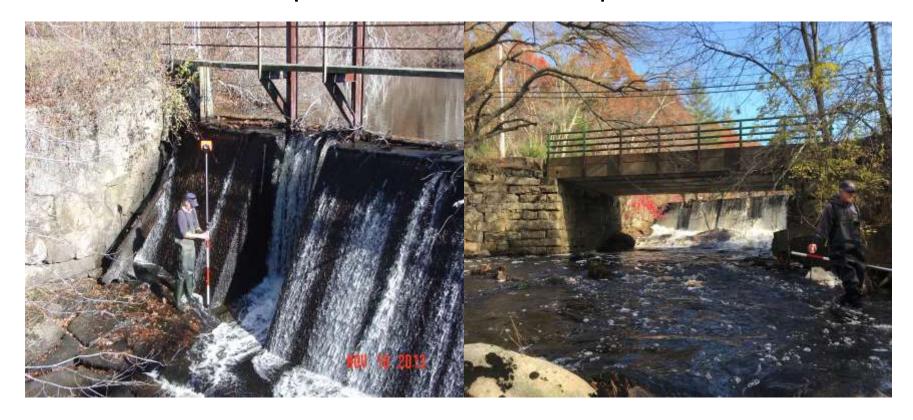


Westport River, Westport

- Two impassible dams on the Westport River
- 165 acre spawning and nursery habitat at Noquochoke Lake
- Fyke net monitoring found strong diadromous fish presence
- 3rd and 6th ranked projects on DMF Restoration Priority List for region
- 2013-2015 Habitat Assessment and USFWS survey followed by signing MOU with Forge Pond Dam owner

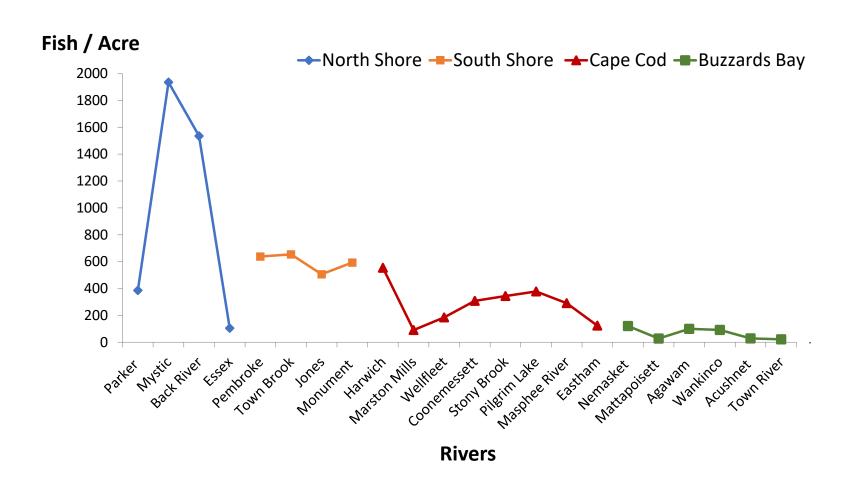


Westport River, Westport



- 2nd USFWS survey and DMF funds feasibility/design study by GZA in 2021
- DMF funds design/permitting project by GZA, October 2023
- Work starts on upstream Noquochoke Lake Dam with USFWS design and draft MOU with City of Fall River

Spawning Run Counts per Acre (2013 – 2022)



Positive Drivers for Improved River Herring Stocks

- 1. Clean Water Act
- 2. Reduced Harvest
- 3. Fishway Improvements
- 4. Dam Removals
- 5. Reduction in Cranberry Bog Production

Concerns with Early Life Stage Recruitment

- 1. Warming and Eutrophication impacts on freshwater spawning and nursery habitats
- 2. Warming and Eutrophication impacts on marine nursery habitats
- 3. Natural and Fishing Mortality
- 4. Reduced outflow for emigration

Management Actions to address Juvenile River Herring Recruitment Concerns

- 1. Case-by-case watershed management. Water Management Act and local water use
- 2. Stream maintenance
- 3. Apply knowledge of migration cues
- 4. Pond level management for fish emigration

Thank you for all that you do....

