Title: River Herring and Shad Runs in the Northeast United States

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1. INTRODUCTION

The NROC Tribal Caucus is interested in aggregating information on river herring runs. In addition to river herring, we found that information is available on other diadromous species such as American shad and American eels. As a result, this data layer is currently dominated by information on river herring but is designed to include other diadromous species in future updates as data are available.

River herring are culturally, ecologically, and commercially important species with declining population numbers along the east coast. The term "river herring" refers to two species of diadromous forage fish, alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*). Many state governments, non-profit organizations, and community science groups conduct surveys of herring runs to document location and/or assess population size.

The River Herring and Shad Runs layer provides point locations of runs throughout the Northeastern US with links to additional information on managing entities and fish counts. The data were aggregated from a number of sources, including the Massachusetts Division of Marine Fisheries (MA DMF), the Peconic Estuary Partnership (PEP), and the ECOFish Shad and River Herring Run Data Portal (created by the Gulf of Maine River Herring Network and the Mid-Atlantic Fishery Management Council, hosted by Manomet). The development of this dataset was funded by the Northeast Regional Ocean Council (NROC).

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2. PURPOSE

Stemming from conversations about species loss and aquatic connectivity, this dataset fills a specific need identified by the Northeast Regional Ocean Council's Tribal Caucus to centralize information on herring runs and their health. As forage fish, river herring are keystone species and critical food sources in a variety of ecosystems from oceans and estuaries to rivers and inland lakes and ponds. Their populations have been declining for many years due to habitat loss, barriers to upstream habitat (e.g., dams, culverts) and bycatch in the Atlantic herring fishery, prompting numerous initiatives to assess river herring populations and to restore and protect their habitat. Many of these challenges are shared by other diadromous species in the Northeast US, though conservation and population assessment initiatives vary by species.

By providing an accessible, comprehensive map of diadromous fish runs in the Northeast US, this data layer is beneficial to a variety of users. It can serve as a useful tool to inform decision-making processes and/or improve scientific understanding throughout the Northeast in order to support protection and restoration of diadromous fish habitats and populations.

3. SOURCES AND AUTHORITIES

- "A Guide to Viewing River Herring in Coastal Massachusetts", Massachusetts Division of Marine Fisheries, July 2017 https://www.mass.gov/files/2017-07/river-herring-viewing-guide.pdf
- East Coast River Herring Weekly Report email newsletter
- Cape Cod River Herring Monitoring Dashboard, Association to Preserve Cape Cod, 2025 https://apccorg.shinyapps.io/herring_monitoring/
- "2022 Maine Alewife Trail Map", Maine Rivers, 2022 https://mainerivers.org/wp-content/uploads/2023/03/2022-maine-alewife-trail-final.pdf
- ECOFish, Shad and River Herring Run Data Portal. 2025. River herring and shad data collected by various entities across the East Coast of the U.S. Manomet Conservation Sciences. https://manomet.shinyapps.io/shad-river-herring/
- River Revival Map, Peconic Estuary Partnership (PEP), 2023 https://arcg.is/1mOr5q0
- Diadromous Fish, Massachusetts Division of Marine Fisheries, 2024 https://www.arcgis.com/home/item.html?id=055c9aee46bc428abcc51ae6ea047383
- "Trap Count Statistics", Maine Division of Marine Fisheries, 2025 https://www.maine.gov/dmr/fisheries/sea-run-fisheries/programs-and-projects/trap-count-statistics
- Herring Atlas, Buzzards Bay National Estuary Program, 2008 https://buzzardsbay.org/living-resources/herring-runs/herring-atlas/
- "Bringing Back Alewives to Seal Cove Pond", Maine Coast Heritage Trust, 2021 https://www.mcht.org/story/bringing-back-alewives-to-seal-cove-pond/
- Chris Petersen, Gulf of Maine River Herring Network

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- "Maine River Herring Sustainable Fishery Management Plan", Atlantic States Marine Fisheries Council, 2024 https://asmfc.org/wp-content/uploads/2025/01/ME_RiverHerringSFMP_2024.pdf
- "Connecticut Weekly Diadromous Fish Report: April 22, 2014", Connecticut River Salmon Association, 2014 https://www.ctriversalmon.org/runs_2014/4-22-14.pdf
- Wild RI Journal, Winter 2022, Volume 15 Issue 1, Rhode Island Department of Environmental Management, 2022 https://www.ctriversalmon.org/runs_2014/4-22-14.pdf
- "The Disappearing Fish", Save the Sound, 2022 https://www.savethesound.org/2022/05/20/the-disappearing-fish/
- "After 150 years…", Save the Sound, 2015 https://www.savethesound.org/2015/12/02/after-150-years-mystics-whitford-brook-flows-free-again/

4. DATABASE DESIGN AND CONTENT

Feature types: Fish Run Point Locations

Data Dictionary:

Line	Name	Definition	Type	Size
1	FID	Automatically generated	ObjectID	*
2	Shape	Geometric representation of the feature	geometry	*
3	State	State in which the fish run is located	text	8000
4	Town	Town in which the fish run is located	text	8000
5	River	Name of river of fish run location	text	8000
6	Secondary_Name_ waterbody_or_dam	Additional location information of waterbody or dam name	text	8000
7	Species	Species of fish located at run	text	8000
8	Latitude	Latitudinal coordinate	double	*
9	Longitude	Longitudinal coordinate	double	*
10	Counts	Y, U, N indicate data on run counts: Yes, Unknown or No	text	8000
11	Active	Y, U and N indicate if the fish run is Active: Yes, Unknown and No	text	8000
12	Location_Type	Are the coordinates based on a specific or approximate location	text	8000
13	Source	Name of data source	text	8000
14	Link	URL link to the data source	text	8000
15	Contact	Contact information if given	text	8000

16	Additional_Information	Any additional fish run information	text	8000

Feature Class Name: DiadromousFishRunLocations_Northeast_26

Total Number of Unique Features: 260

Dataset Status: Complete

5. SPATIAL REPRESENTATION

Geometry Type: point
Reference System: Geographic Coordinate System WGS_1984
Datum: WGS 1984
Spheroid: WGS 1984

XY Resolution: XY Scale is 0.000000000000088817841970012 5 Degree

Tolerance: 0.0000000089831528411952 1 Degree

Geographic extent: -79.930320 to 70.823128, 45.267458 to 33.426605

IS0 19115 Topic Category: environment, inland waters, oceans, biota

Place Names:

Atlantic Ocean, Boston Harbor, Buzzards Bay, Cape Cod Bay, Chesapeake Bay, Connecticut, Connecticut River, Gulf of Maine, Long Island Sound, Maine, Maryland, Massachusetts, Massachusetts Bay, Nantucket Sound, Narragansett Bay, New Hampshire, New York, Penobscot Bay, Rhode Island, South Carolina, Vineyard Sound, Virginia

Recommended Cartographic Properties:

(Using ArcGIS ArcPro nomenclature)

Point Marker Fill: 7 point, color model: RGB 68-137-112, outline width: 0.6 point, outline color model: RGB 158-215-194

6. DATA PROCESSING

Data were collected from a variety of source types including GIS map layers, brochures, news articles, emails, and websites. These data were compiled into a single spreadsheet that was used to develop this layer. The spreadsheet recorded the following information on runs: state, town, river, secondary name(s) for the run (e.g., the name of a dam/fishway that fish must pass or pond that the run feeds into), species present in the run, latitude, longitude, if there is a counting effort (yes/no), if the counting effort is active (yes/no/unknown), location type (specific/approximate), source of data, link to data source, contact information for data, if applicable, and additional information about the run.

State, town, river, secondary name, latitude, longitude: Initially, only information on the runs' state, river, and data source were collected. Some data sources, such as the "2022 Maine Alewife Trail Map" and "A Guide to Viewing River Herring in Coastal Massachusetts", provided descriptions of run location. Based on this information, "Satellite View" in Google Maps was used to identify fishways where runs could be counted. By clicking on the feature, information on town, latitude, and longitude were obtained. Secondary names were obtained by visual inspection of map features. From GIS map layers, such as MA DMF's "Diadromous Fish" and PEP's "River Revival Map" datalayers, the attribute table was used to collect latitude, longitude, and secondary names. When data were not available, town and secondary names were obtained by visual inspection of map features.

Location type: Locations are listed as either specific or approximate and describe the coordinates provided. Specific locations indicate the coordinates of the run itself where fish can be seen/counted. Approximate locations provide coordinates for the mouth of the river where there is a run. This is used primarily in large waterbodies such as a major river or bay where there may be multiple runs or runs are difficult to see or count on maps.

Counting effort and active status: There are several groups, often run by volunteers, non-profits, or state organizations, that collect data on the number of fish that pass through each run. Based on information found through Google searches for "[species] run [pond/dam/river name] counts" (e.g., conservation group websites, state websites and publications, facebook groups), it was determined if runs had been counted and if there were ongoing efforts to continue counting. A "Y" is listed under "counts" if there was data on run counts, (this includes runs that were historically counted but do not have current run data), and an "N" is listed if there was no data on run counts.

The "active" column indicates if there is an existing counting effort at the time this datalayer was compiled. If it was clear that a website had not been active in several years, it was marked as not active ("N"). If counts were up to date to spring 2025, they were marked as active ("Y"). However, the active status is not always clear. Many counts are not updated frequently or count data is not reported until several months after the fact. Additionally, many volunteer-based groups were significantly impacted by social mandates during Covid-19 and are currently rebuilding their volunteer base and may resume counting in the future.

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In cases where it was uncertain if counting efforts were still occurring and/or being planned for spring 2026, the active status was marked as unknown ("U").

Data source, contact information, and additional information: Data sources are listed by name followed by a link or contact information. "Additional Information" provides additional details on the run itself (found in the data source), how to get involved with that run, and/or names supplementary sources and where to find them.

7. QUALITY PROCESS

Attribute accuracy: Original content was acquired from authoritative sources. Any attribute editing was informed by specific information in the metadata. Due to ongoing changes in diadromous fish passage (such as restoration efforts or the construction of new barriers) and overall declining population trends, data points should be considered to reflect a snapshot in time and should not be interpreted to definitively depict historical areas and past trends, or to predict future conditions.

Logistical consistency: This dataset integrates the locations of diadromous fish runs from 16 separate sources. Each source presents similar information but in slightly different formats and visualizations. Common attributes were identified across datasets to unify and display the information from all sources into one layer consistently on the map.

Completeness: Because this data layer was initially focused solely on river herring runs, it is — at the time of first publishing— lacking data on other species. This database also only reflects data and information that was publicly available at the time it was gathered. Hence, it may not be an exhaustive record of all fish runs in the area. The dataset only represents areas that are monitored by state or non-profit organizations. Completeness may be especially patchy in states where local organizations are the primary data source since there are geographic areas in which no organizations operate, resulting in a lack of data.

Positional accuracy: The positional accuracy of the points varies depending on the data source. Most points were either directly obtained from GIS datasets (e.g., MassGIS) or manually identified using written descriptions and visual identification of fish passage structures on satellite imagery. For large rivers, points are marked at the mouth of the river, but fish runs may continue further upstream to one or more tributaries (e.g., Taunton River, Chesapeake Bay, Kennebec River).

Timeliness: This dataset was aggregated in 2025 and reflects best available fish run information available at the time. Due to the biological characteristics of fish populations and changes in the physical landscape (due to human or natural impacts), the user should not assume that all sites are up to date and should consult each source for more detailed information as to the timeliness of the data.

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Use restrictions: Data is provided as is. NROC is not liable for any interpretations, assumptions, or conclusions based on these data. Users are responsible for understanding the metadata prior to use and must establish proper permission to access herring runs as required (e.g., contacting property owners if fish runs are on private property).

Distribution liability: All parties receiving these data must be informed of caveats and limitations.

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