

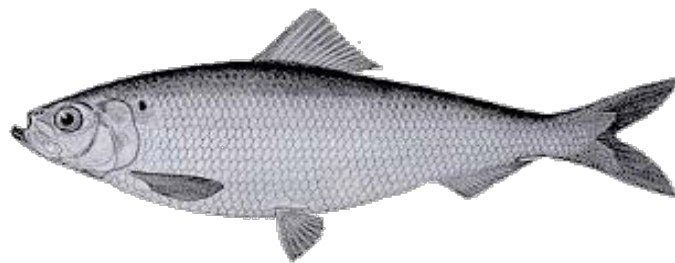
**The Massachusetts Division of Marine Fisheries**

**2012 River Herring Count Summary Results**

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March 22, 2013



***MarineFISHERIES***

A Commonwealth of Massachusetts Agency

River herring have experienced declining populations across their native range in recent decades, causing widespread concerns over their status. In Massachusetts, the Division of Marine Fisheries (*Marine Fisheries*) has implemented a harvest ban since 2006 in order to reduce fishing mortality. On a wider scale, river herring are presently under Endangered Species Act review following a petition to list them as threatened species. *Marine Fisheries* is responsible for the management and investigations regarding the diadromous fish resources of the Commonwealth (MGL Chapter 130), including interstate management under the Atlantic States Marine Fisheries Commission (ASMFC). In addition, *Marine Fisheries* has broad legal authority within the Commonwealth to provide suitable passage for diadromous fish coming into fresh water to spawn. Today more than 100 coastal rivers and streams are the sites of active herring runs (Reback *et. al.* 2004a,b,c,d). Interest is high among state and federal agencies as well as private organizations and cities and towns to assist river herring monitoring and restore populations. The following is a summary of results from river herring counting efforts conducted by various groups in 2012.

In 2012, a total of 33 rivers were monitored in Massachusetts. Monitoring occurred in 29 towns representing eight major drainage areas. The number of streams monitored and percent coverage by watershed is shown in Figure 1. Coverage was highest in Cape Cod in which 13 rivers (41%) were monitored and in the South Coastal watershed in which 7 rivers (22%) were monitored.

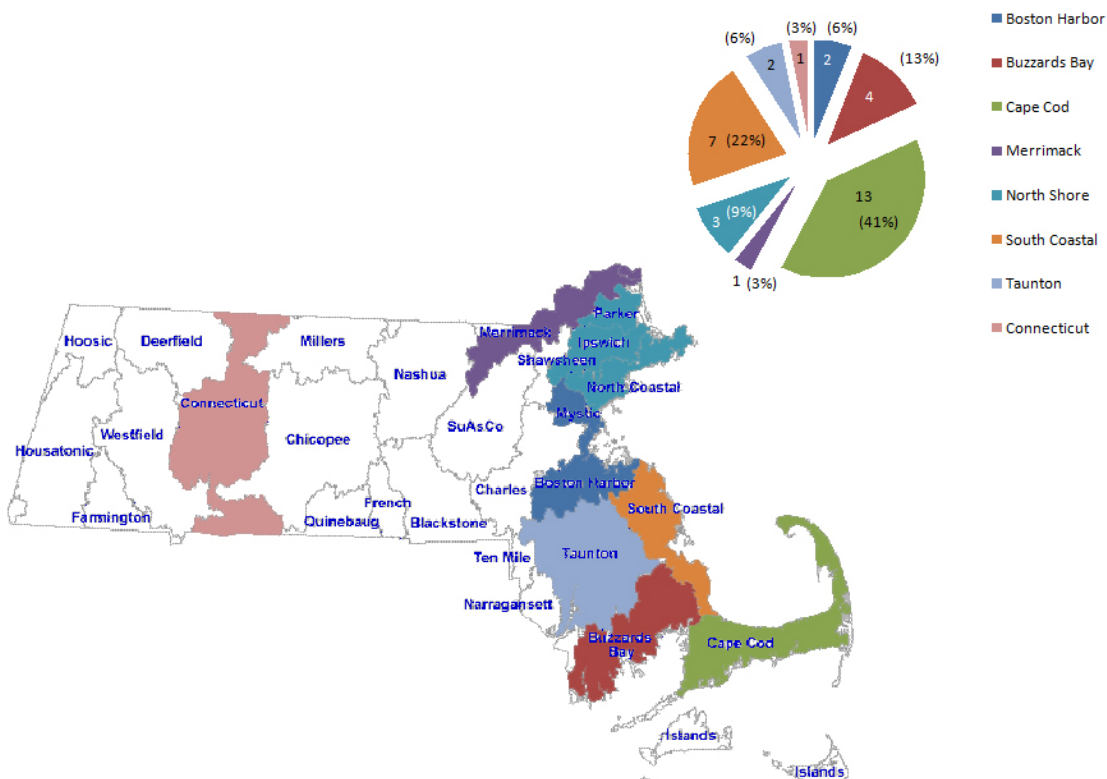


Figure 1: Number of rivers and percent coverage by major drainage area by river herring monitoring groups in Massachusetts in 2012.

Population estimates, monitoring methods, monitoring effort and duration of spawning runs per each system is listed and summarized in Table 1. The majority of runs (16) were monitored using a stratified random visual counting system established by Nelson (2006). Seven runs were monitored using electronic counting systems, 2 runs were monitored using fish lifts (one in combination with a video system) and one run (Back River, Weymouth) was monitored using a one-person visual counting method.

Table 1: Population estimates, method, effort and run duration for each river monitored in Massachusetts in 2012.

River	Method	Pop. Estimate	Start Date	End Date	N days	N counts	N counters	Increase/ Decrease
Merrimack	Fish Lift/Video	8,992		7/13/2012				I
Monument R.	Counter	180,082	3/15/2012	6/11/2012	90	164	3	I
Back River	1 man visual	384,650	3/21/2012	5/10/2012	51		1	I
Mill Creek	Visual / Counter	<sup>1</sup> 8,756 (4,089)	4/3/2012	5/17/2012	45	39	8	N/A
Mattapoisett R.	Counter	28,447	3/11/2012	5/26/2012	71			I
Parker River	Multi-man Visual	<sup>3</sup> 4,700	3/23/2012	4/30/2012	39			I
Nemasket R.	Multi-man Visual	567,952	2/18/2012	5/19/2012	92	464		I
Marst Mills	Multi-man Visual	87,308	3/21/2012	5/19/2012	60	479	34	N/A
Town R.	Counter	42,038	3/12/2012	6/5/2012	86			D
Agawam R.	Counter	73,186	3/9/2012	6/4/2012	88	70	4	I
Wankinco R.	Counter	24,764	3/15/2012	6/4/2012	82	51	3	I
Acushnet R.	Fish trap/Counter	3,220	3/14/2012	5/30/2012	78	78	3	D
Herring R. (Wellfleet)	Multi-man Visual	11,653	3/17/2012	5/24/2012	69	465	26	I
Jones R.	Multi-man Visual	1,596	3/22/2012	5/31/2012	71	451	18	D
Town Brook	Counter/Visual	<sup>2</sup> 171,141	3/22/2012	6/1/2012	72	339	18	I
Herring R. (Harwich)	Multi-man Visual	101,624	3/24/2012	5/31/2012	69	483		I
Little R.	Multi-man Visual	2,018	3/22/2012	5/27/2012	67	263	24	I
Stoney Brook	Multi-man Visual	41,028	3/21/2012	5/30/2012	71	172	14	I
Ipswich R.	Multi-man Visual	756	3/25/2012	6/2/2012	70	328	44	I
Mashpee R.	Multi-man Visual	226,754	3/21/2012	5/27/2012	68	193	10	I
South R. (Marshfield)	Multi-man Visual	1,200	3/31/2012	5/30/2012	61	359	55	N/A
Herring B. (Pembroke)	Multi-man Visual	99,035	3/21/2012	5/31/2012	72	346	58	N/A
Mystic River	Multi-man Visual	198,932	4/1/2012	6/22/2012	83	685	92	N/A
1st Herring B (Sciuate)	Multi-man Visual	61	3/29/2012	5/31/2012	57	326	57	N/A
Bound Brook (Dennis)	Multi-man Visual	34,580	3/30/2012	5/21/2012	53	84	7	N/A
Pilgrim Lake (Orleans)	Multi-man Visual	5,931	3/26/2012	5/30/2012	66	496	87	I
Connecticut	Fish Lift	42						D

<sup>1</sup> Mill Creek: Estimate from Lower Mill Pond - visual; (estimate from Upper Shawme Lake - electronic counter)

<sup>2</sup> Town Brook: 2012 estimates from counter were not reliable due to maintenance issues; Counter to be sent to S-R for maintenance

<sup>3</sup> Parker River: PRELIMINARY estimate of population size, further analysis and interpolation is ongoing

N/A: First year of counting (or first year under new counting program) in which comparisons to previous years cannot be made

Twenty-seven rivers are included in the summary table. Six rivers (Trunk River, Falmouth, Coonamessett River, Falmouth, Cedar Lake, Falmouth, Santuit River, Mashpee, Upper Shawme Pond, Sandwich, and 3<sup>rd</sup> Herring Brook Norwell) were excluded from the table either due to insufficient monitoring effort or incompatible counting methodologies. Counts were conducted for the first time on seven rivers whereas counts conducted on the balance of

ivers are a continuation of their existing time series. For these systems, the populations estimates in 2012 indicate either an increase or decrease from the population estimate in 2011.

Results indicate that several spawning runs started earlier than in previous years. River herring were first observed at the Wareham Street counting station on the Nemasket River on February 18, 2011. The average duration of spawning runs in 2012 was 69 days with the final counts recorded from the Merrimack River on July 13, 2012. Results indicated increases in run size of sixteen rivers compared to estimates in 2011. Four runs (Acushnet River, Acushnet, Town River, Bridgewater, Jones River, Kingston, and the Connecticut River, Holyoke) experienced decreases in run size compared to estimates in 2011.

In addition to population estimates, *Marine Fisheries* collects information on river herring demographics including age structure, growth rates, mortality and survivorship. This information is vital for assessing the status and management of river herring populations state-wide (Nelson *et. al.* 2011) and for conducting coast-wide stock assessments. Given the numerous coastal and inland streams in the Commonwealth that contain river herring populations, a goal of *Marine Fisheries* is to establish long-term monitoring stations or “sentinel systems” to represent the status of river herring populations in each major coastal drainage area.

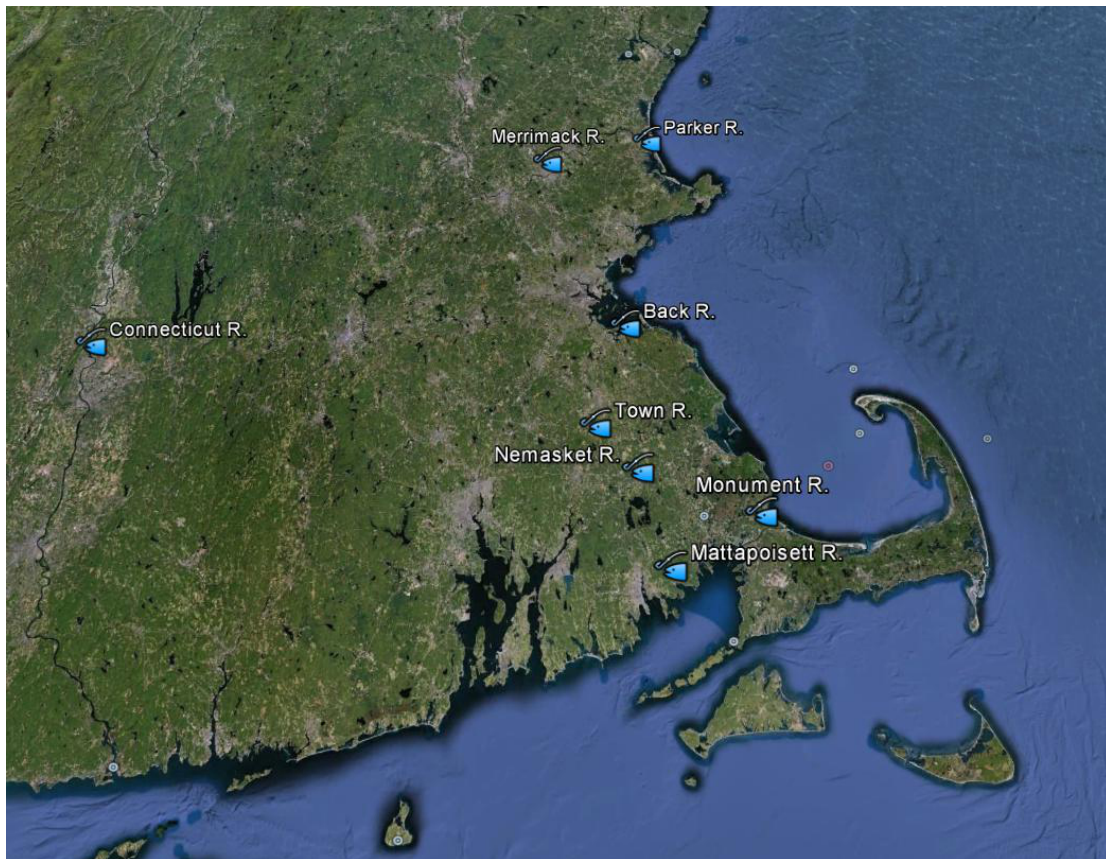


Figure 2: Locations of designated sentinel systems in coastal and inland Massachusetts.

A map showing the locations of designated sentinel systems is shown in Figure 2. A stream can be designated a sentinel system based on a long-term time series of population estimates collected in a scientifically valid manner. In addition, biological information is collected from several of these sites as well. Currently, each major coastal drainage system is represented by at least one sentinel system. However, the Cape Cod, Mt. Hope Bay and Narragansett Bay watersheds currently lack sentinel systems and it has become a priority to establish representative systems in these coastal drainage areas.

Table 2: Information on participating organizations conducting river herring counts in 2012.

Watershed	Rivers	Organization	Website
North Coastal	Ipswich	Ipswich River Watershed Association	<a href="http://ipswichriver.org/">http://ipswichriver.org/</a>
Buzzards Bay	Mattapoissett	Alewives Anonymous	<a href="http://www.plumblibrary.com/alewives.html">http://www.plumblibrary.com/alewives.html</a>
Buzzards Bay	Acushnet, Agawam, Wankinco	Coalition to Save Buzzards Bay	<a href="http://www.savebuzzardsbay.org/">http://www.savebuzzardsbay.org/</a>
Boston Harbor	Mystic River	Mystic River Watershed Association	<a href="http://mysticriver.org/">http://mysticriver.org/</a>
Cape Cod	Marston Mills	Marston Mills Herring Counting Project	<a href="http://marstonmills herringtoncount.blogspot.com/">http://marstonmills herringtoncount.blogspot.com/</a>
South Coastal	Jones	Jones River Watershed Association	<a href="http://jonesriver.org/">http://jonesriver.org/</a>
South Coastal	South, Herring Brook, 1st Herring Brook	North and South River Watershed Association	<a href="http://www.nsrwa.org/">http://www.nsrwa.org/</a>
Cape Cod	Multiple rivers	Association to Preserve Cape Cod	<a href="http://apcc.org/">http://apcc.org/</a>

*Marine Fisheries* would like to thank the many agencies and organizations for their assistance in coordinating volunteer counting groups as well as for data acquisition and delivery. Contact information for each of these organizations is listed in Table 2. In addition, many thanks to the towns of Weymouth and Gloucester, the Middleborough-Lakeville Herring Fishery Commission, the West Bridgewater Town Fisheries Committee, the Natural Resource Departments of Bourne, Sandwich and Plymouth for the collection of count data from rivers within their jurisdiction. In addition, special thanks to the US Fish & Wildlife Service, the Natural Resource Conservation Service, the Massachusetts Bays Program and the Cape Cod Commercial Hook Fisherman's Association for their assistance in coordinating multiple volunteer groups and monitoring multiple systems.

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