

Mystic Monitoring Network

Herring Monitoring Manual



1st Edition

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Mystic Monitoring Network

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Abstract

This year, 2012, will be the MyRWA's inaugural season of Herring Monitoring. Since the Mystic Lakes dam in Medford and Arlington was rebuilt in 2010-2011 to include a fish ladder, this is the first time that an accurate count of herring can occur on the Mystic.

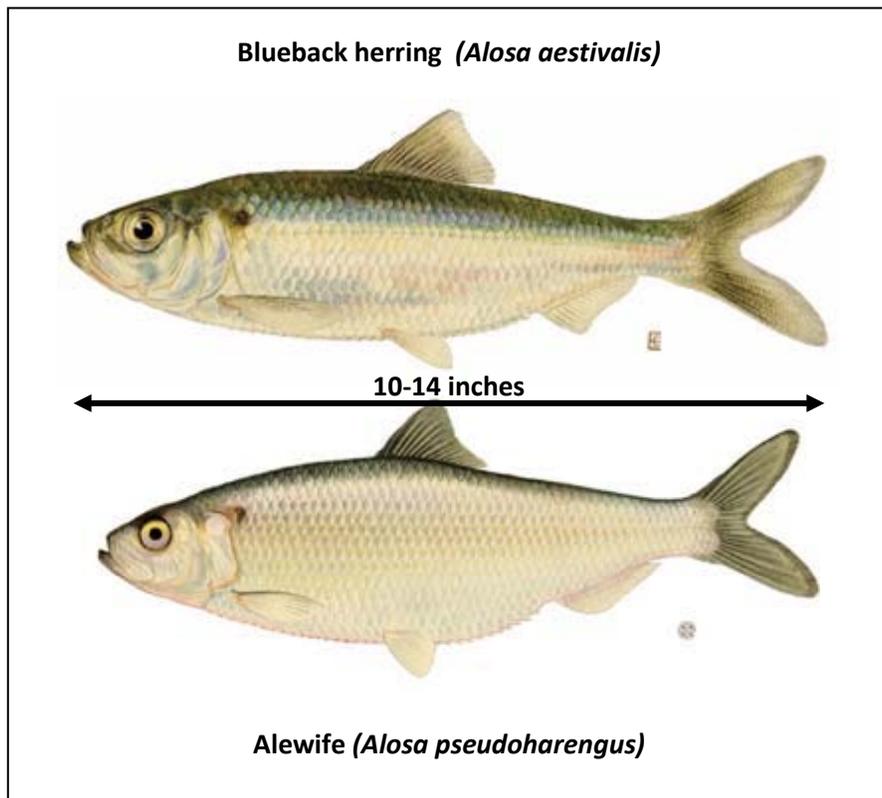
The Mystic River, despite polluted waters, boasts one of the largest herring runs in the state. In November 2011 the Natural Resources Defense Council proposed to list river herring as "threatened" under the Endangered Species Act. Population decline may be associated with numerous factors including habitat loss and degradation, water pollution, poaching, access to spawning habitat, by-catch, and natural predators. The goal of the herring monitoring program is to collect valuable data about herring populations in the Mystic while educating the public about river herring. This document will provide instructions and resources for herring monitors.

Introduction

What are herring?

A herring is a type of fish. The Mystic River Watershed supports two species of herring: Alewife (*Alosa pseudoharengus*) and Blueback Herring (*Alosa aestivalis*). Both species, collectively called river herring, are anadromous. This means they spend most of their lives at sea and return to rivers, like the Mystic River, to spawn or lay their eggs.

Figure 1: Identification of river herring species



Why monitor herring?

In colonial times and earlier, herring in the Mystic River were extraordinarily abundant. But from the 1900's until today a much smaller population of river herring is present. Since the dam at the Mystic Lakes has been rebuilt this is the first time that a fish ladder will be in place to allow an accurate count of herring.

According to the Herring Alliance some river herring runs on the Atlantic Coast have declined by 95% or more over the past 20 years. In 2006 the National Marine Fisheries Service designated river herring as a species of concern. Population decline may be associated with numerous

factors including by-catch, habitat loss and degradation, water pollution, poaching, access to spawning habitat, and natural predators. The goal of the herring monitoring program is to collect valuable data about herring populations in the Mystic and to educate the public about river herring. We hope that through participation, volunteers will increase their understanding and stewardship of the Mystic River and the watershed.

Monitoring Protocol

MyRWA uses the monitoring protocol (Nelson 2006) developed by the Massachusetts Department of Marine Fisheries (MA-DMF) as the framework for the Mystic Herring Monitoring Program. This document contains condensed version of the protocol with specific information relevant to monitoring in the Mystic River Watershed. This document was developed to assist volunteer fish monitors in the Mystic Herring Monitoring Program.

Schedule of program

- Counting will occur from the first herring sighting, or from April 1st through mid June, or until no herring are observed for two consecutive weeks
- The counting day is divided into three time periods with three ten-minute counting events within each period.
 - 3 counts, 10 minutes each, in three time periods
 - 7:00 – 11:00 am [Morning]
 - 11:00 – 3:00 pm [Mid-day]
 - 3:00 – 7:00 pm [Afternoon]
- We will assign four observations during each time period. For example, in the morning period, we will assign a 7:00- 8:00am slot for a 10-minute observation. We will also assign an 8:00-9:00am slot 9:00-10:00am and finally a 10:00-11:00 AM slot.
- Observers count at **random** times during the one hour time slot.
- Observers may choose to perform two counting efforts in a single day **but** cannot do two 10 minute shifts, back to back (i.e. cannot count 9:00-9:10am and 9:10-9:20am on the same day).

Data Collection

- Data will be collected using a datasheet at the site and electronically (optional)
- Using this data, we will be able to estimate run size for the herring, which will allow us to better understand their status in the Mystic River as well as inform trends for Massachusetts
- We need a minimum of 6 counts a day for statistical significance. 9 counts is ideal.

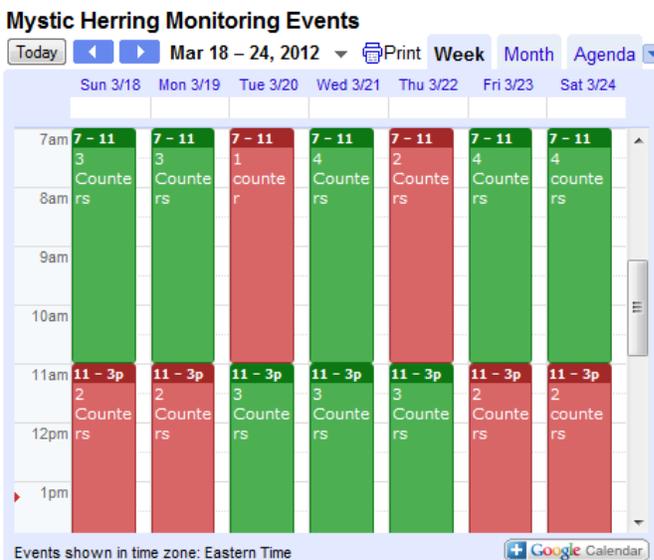
Practical Information

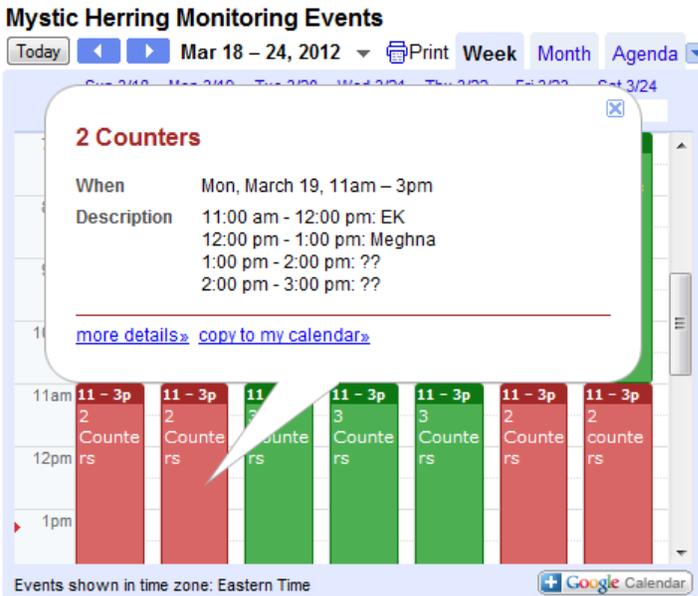
When should I go?

On a day that you are counting you will be self-assigned a 60 minute time slot to visit the ladder. Arrive at any time within your time slot.

The **Google Calendar**, which is located on the Herring Monitoring page on the MyRWA website, indicates the times of the day when Herring Monitors are needed. Time slots are color coded. Red time slots do not have enough counters. Green time slots have sufficient counters. Click on the calendar event on the website to see who is counting at what time. If you find yourself with free time during a red time slot, feel free to count. If you are at the site and it is a Green time slot, there is still value in additional counts, so feel free to perform a count. The statistical analysis is strongest if we avoid keeping a strict schedule (e.g. 8:10 AM every morning). Please float around your 1 hour time slot.

Figure 2: Counting Calendar





How do I sign up?

On **Thursday** of each week counters will receive an e-mail reminding them about their counting commitment for the following two weeks. Monitors should report any conflicts as soon as possible and latest by **Sunday** of the following week. Each **Tuesday** monitors will receive an e-mail with a schedule of their counting shifts and a list of open shifts for the following week commencing on Sunday.

If something comes up and you are unable to attend your counting session please email herring@mysticriver.org or contact the MyRWA office as soon as possible at 781.316.3438.

Safety Protocol

MyRWA has been granted the privilege of access to the dam. Our access is contingent on responsible use of the dam. Given this, we ask that monitors adhere strictly to safety protocols and rules. If MyRWA and MyRWA's fish monitors do not follow these rules, MyRWA risks losing access to the dam, resulting in the end the Herring Monitoring Program.

1. The maximum number of people allowed in the counting area is 6.
2. If minors are present, one adult must be on site for every 2 youth.
3. Please **do not** bring people beyond the locked gate.
4. Failure to comply with any rules may result in a volunteer losing counting privileges or MyRWA may lose access to the counting area.

What should I bring?

- A watch
- Polarized sunglasses
- A camera (Optional)
- A hat
- Smartphone for online reporting
- Lock box code
- Your keen observation skills!

What should I do when I get there?

1. Review identification and protocol information.
2. Wear polarized glasses.
3. Set stop watch for 10 minutes.
4. Find a spot where you have a clear view of the fish in the ladder and observe for 10 minutes.
5. Look for herring that are traveling in the fish ladder.
 - a. If a herring travels up the ladder it is counted as a +1, if a herring swims down the ladder, please subtract 1 (-1). We are looking for the net increase of fish to Upper Mystic Lake during observation. If you see 12 go up and 4 go down, then the count is 8.
6. Stop counting when the stop watch runs out. Do not add any fish to the count that you saw just after the counting period.
7. Fill out the herring count reporting form available at the site and include the herring count, time of observation, your name and weather conditions. If you are the first observer of the day, please record water temperature.
8. Send in your data via the electronic reporting form (optional)
9. Return all materials to lock box and make sure to lock it.

If you see a river herring after the ten minute period put the sighting in the comments section of the reporting form. If you witness species other than herring, please report them in the comments section of the reporting form. If you are unsure about the identification of a fish take a picture and send it to us (herring@mysticriver.org).

Example of Data sheet:

Herring Monitoring Data sheet:

Name of Monitor _____ Time started _____ Time ended _____ Date _____

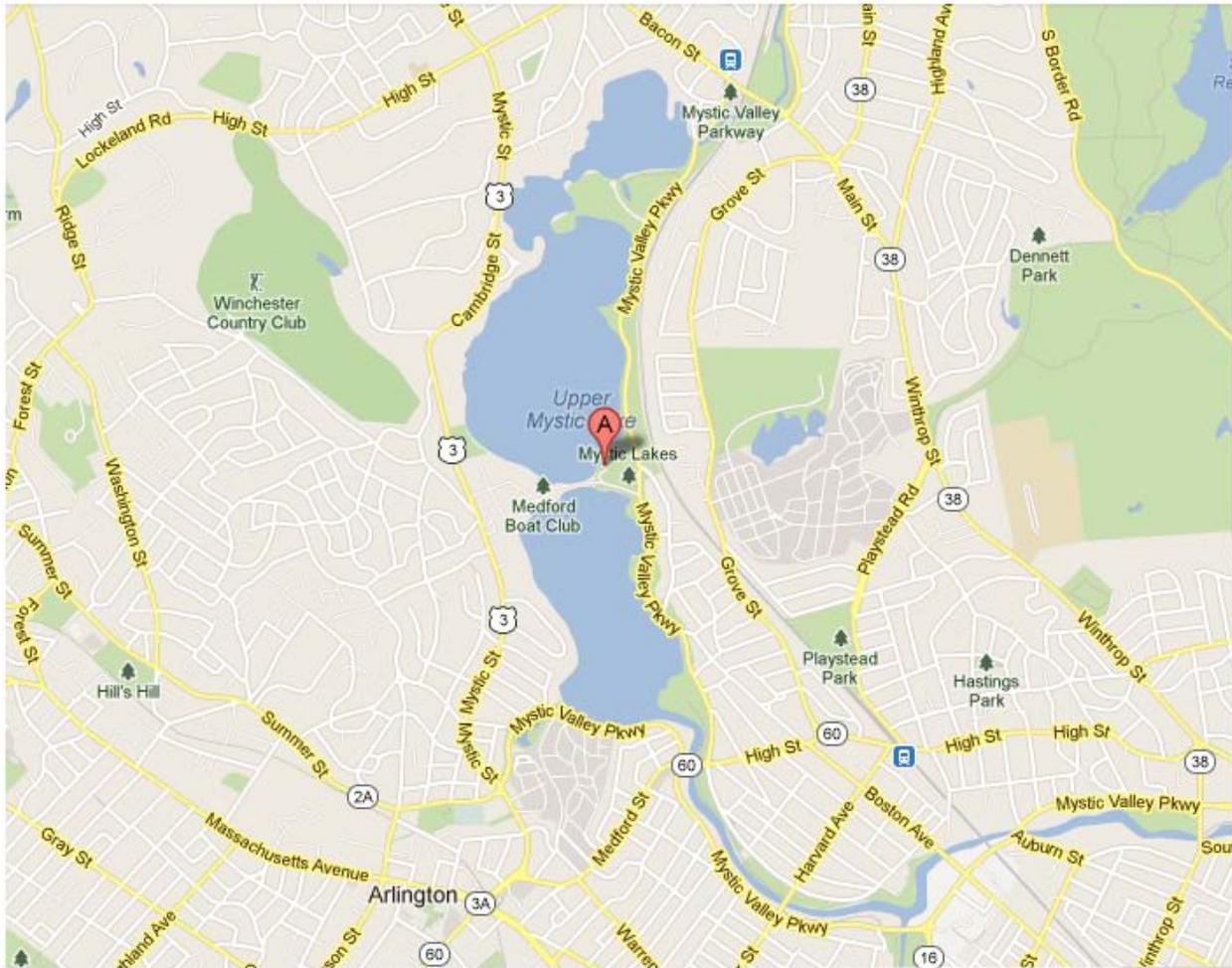
Weather condition (Circle one): sunny/clear partly cloudy cloudy raining

Herring count (passed through ladder) _____ Water Temperature: _____

Comments (other species, fish seen after counting period)

Thank you so much for your help!

Figure 3: Map of Upper and Lower Mystic Lakes



Counting will occur at the fish ladder located at the dam between Upper and Lower Mystic Lake. Parking is available at the dam. Access to the dam is available via Mystic Valley Parkway in Medford.

References:

Nelson, G.A. 2006. A Guide to Statistical Sampling for the Estimation of River Herring Run Size Using Visual Counts (http://www.mass.gov/dfwele/dmf/publications/tr_25.pdf)