Best Management/Maintenance Practices Worksheet
For
Herring Run Management in Massachusetts

This document is intended to help herring wardens determine what information is known and unknown about their particular run(s). It could be used in several ways. It could serve as a tool for brainstorming in preparation for writing a more formal management or operations plan. Or, it could serve as a basic framework for recording information known about a run, so that a new herring warden would not have to start from scratch in learning about the run. Answers to the questions could be long or short, depending on the intended use of the information.

When people along the Atlantic Coast talk about "herring runs" they are referring to a natural resource that is made up on four components: Alewife and/or blueback herring, water, a migratory corridor, and spawning habitat. A herring warden has a working knowledge of the existence and status of all four of these components. A herring warden is also familiar with the factors that can affect these components such as water withdrawals, restrictions to passage, and harvest, and is responsible for the monitoring and maintenance required to be aware of and mitigate the effects of these factors. A herring warden is also aware of the interactions with other people and entities that are required to maintain the productivity of the run.

Work to create this document was begun at the first annual meeting (October 19, 2011) of the River Herring Network. Forty herring wardens, natural resource officers, herring count coordinators and volunteers, and state and town natural resource agents participated in a breakout session. Participants were asked to think about what information they would want to pass on to the next herring warden, or think about what information they wish the previous warden had told them. Six general topics were written on flip charts, and participants spent 6-8 minutes at each chart brainstorming within a group. The results were gathered and compiled into this list of questions.

Town Name: _____

River Name: _____

Worksheet Filled Out By: _____

Date: _____

Contents

Physical Description of the Herring Run

Type of Herring Run

1. Is the herring run a natural river or stream, or was the channel excavated at some point in the past?
2. Location and Length of Migratory Corridor
3. How many miles long is the run/river?
4. What is the size of the watershed (in acres) ?
5. Where are the headwaters of the run/river?
6. Is the river a tributary to another river system?
7. What body of salt water does the run/river discharge into?
8. How far upstream does tidal influence extend, based on salinity and/or changes in water level?
9. How much vegetation grows along the run, and does it provide shade and cover for fish, or not?
10. Is the stream bottom sandy, gravelly, muddy or all of the above?

Spawning Habitat

11. Where is the spawning habitat?
12. What type of water body is the majority of the spawning area (headwater ponds, marshlands, headwater stream)?
13. What is the available spawning acreage?
14. Is the spawning area a natural feature of the river, or is it created by a dam?
15. What is the spawning substrate? (for example, sand, gravel, mud, vegetation)

Herring Species and Migratory Behavior

16. Is the run primarily made up of alewives, blueback herring, or both?
17. What other migratory fish are present (e.g., American eels, rainbow smelt, American shad, white perch, brook trout, etc.)?
18. Were herring ever introduced from another river system? If yes, please provide details about when, from where, and how often.
19. Do the herring tend to run during the day, night or both?
20. When (in general) do the first herring start to migrate upstream? Do you consider your run to be an "early" or "late" run?
21. When (in general) do the adults start to migrate downstream after spawning?
22. When (in general) do the juvenile herring start to migrate downstream?
23. Have you observed any peculiar behaviors that you think are unique to your herring run?

Water Quantity

24. Is the stream flow and quantity of water generally consistent, or does it change periodically/seasonally?
25. Are there water withdrawals from the river? (If so, please fill out the section on Water Withdrawals)
26. When the river floods, does it affect built structures on town-owned or private land?

Water Quality

27. Are there water quality problems?
28. If yes, describe the problem(s): trash, sewage, high nutrient levels, invasive plants, toxic substances, other. suspended sediments via dredging
29. What are the cause(s) of the water quality problem(s)?
30. What is being done to improve water quality?

Factors that Can Affect Productivity of the Herring Run

Land/Water Ownership

31. Has the run been altered by humans and if so, how? Examples of alteration include riprapping the banks, lining the stream bottom with concrete, culverts under roads or railroad embankments or trails, dams, water control or water withdrawal structures, removing natural vegetation, treatment with chemicals or pesticides, etc. Please explain.
32. Is the land surrounding the river mostly publicly or privately owned?
33. Is any land along the river owned by the Town or by non-profit organizations (e.g., Conservation Trust, Mass Audubon, Trustees of Reservations, etc.)
34. Does the run (or portions of) lie within Tribal areas?
35. Is the run in close proximity to any residential areas?
36. Are any of the private landowners "river herring enthusiasts"?

Water Withdrawals

37. Do any of the following withdraw and/or release water and/or hold water rights?
    a. Cranberry Bog Operations
    b. Other Farming Operations
    c. Municipal or private drinking water supply operations
    d. Power generation companies (hydropower, or water for cooling)
    e. Golf courses

      f.   Lawn care companies

      g.   Industries other than power generation

If yes, for each entity:

38. Are data on water usage available?
39. How much water is withdrawn or discharged yearly?
40. Are copies of water withdrawal or discharge permits available?
41. Are water withdrawals/releases timed to avoid impacting the run?
42. Do any water withdrawals/releases conflict with upstream or downstream passage? (i.e. low flows through ladders, low water levels or dried up sections of rivers)?
43. Are fish screened from water intake valves?
44. Is the temperature of the water a concern?
45. Are groundwater withdrawals for lawn watering an issue?
46. If yes, does your municipality encourage conservation of water during a particular season?
47. Is the maintenance and regulation of pond levels an issue?
48. Does the operation of fish ladders impact water flow or levels in ponds?
49. Have you established a minimum instream flow for safe and effective upstream and downstream passage?
50. Do any inter-basin transfers of water occur along your run?
51. Is there a watershed or river-based water resources plan?
52. What about contaminants? (pesticides, fertilizers, untreated stormwater runoff, oil and salt from road surfaces, bacteria, etc.?)

Restrictions to Passage

53. Do you have an inventory of passage restrictions for the run?
54. Below is a list of structures/events that could cause passage restrictions. Are any of these present in the run? If so, how many?
      a.   Dams
      b.   Culverts
      c.   Dikes
      d.   Vegetation (invasive or native)
      e.   Sediment accumulation
      f.   Other (describe)
55. How do you determine when boards at dams need to be removed to allow passage of herring?
56. Do you coordinate with anyone before removing or adding boards?
57. Is air behind flashboards an issue?
58. Are there tidal restrictions along the run?

Fish Ladders, Notches, etc. (answer questions #59- 63 for each ladder)

59. How many fish ladders do the herring swim through from the ocean to their spawning ponds?
60. Who is responsible for maintaining the fish ladder?
61. Is there an Operations and Management Plan for the ladder?
62. What is the status of the ladder (leaking, crumbling, good repair, etc.)?
63. Do the herring move through the ladder quickly, or is there delay in entering or passing through?

Actions that are taken to maintain/improve the productivity of the Herring Run

Maintenance

64. Do you have a list or schedule of needed maintenance?
65. Who is responsible for the regular maintenance needed?
66. Are volunteer groups involved in maintenance?
67. Do you have an annual run cleaning event/effort?
68. Do you perform maintenance of the run for both upstream and downstream passage periods?
69. How is equipment needed for maintenance purchased?
70. What areas require the most maintenance (most amount of your time)?
71. Are any of the following maintenance issues? Is there a schedule for checking them?
    a. Beaver dams creating restrictions to passage
    b. Cleaning of stormwater drains
    c. Invasive plant species
    d. Dug channels or connections between ponds where banks tend to erode
    e. Maintenance dredging of outlets (to spawning impoundments or outlet to ocean)
    f. Stone and brush dams built by poachers and/or neighborhood kids
    g. Culverts
72. Is access to the river an issue for maintenance? Do you have a good relationship with abutters to the run?
73. Who do you notify before maintenance takes place (Conservation Commission, DMF, landowners, non profit groups)? Is the notification formal or informal?

Monitoring

74. Is there a herring count program for the run?
    a. In what year did it start?
    b. Who does the counting?
    c. What method is used?
    d. Who compiles the data?
    e. Where are the data stored?
    f. Do you have or want copies of the data?
75. Is there water quality testing performed anywhere along the river?
    a. Where are the sampling locations?
    b. What is tested?
    c. What are the data used for?
    d. Who conducts the testing?
    e. What method is used?
    f. Who compiles the data?
    g. Where are the data stored?
    h. Do you have or want copies of the data?
76. Is there monitoring of any of the following:
    a. Habitat suitability
    b. Pond levels
    c. Salinity
    d. Effects of climate change
    e. Temperature (when herring begin and end migration)
    f. Efficiency of passage at fish ladders

77. Is adaptive management used in the monitoring and maintenance of any aspect of the run?
78. Are there any other monitoring efforts along the river?
79. Is the Division of Marine Fisheries or any other state agency involved in monitoring?

Interaction with people to maintain improve the Herring Run

Permitting Issues
80. Do any state or federal listed endangered or threatened species reside in the waters or on the adjacent land of the run?
81. How are maintenance activities related to the Conservation Commission?
82. Do you have a clear idea of what permits are needed to do any type of work on the run?

Harvest
83. Before the Moratorium on harvest, did your municipality have regulations for the harvest of herring?
84. When was the last year herring were harvested from your city or town?
85. Does your municipality want to harvest fish in the future?
86. How has the run been affected by the river herring moratorium?
87. Does poaching occur?
88. Is there infrastructure associated with harvesting (piers, herring house, drying areas)
89. How are the harvesting regulations enforced?
90. Are records kept of how much fish is taken from the run?
91. How do you ensure that the harvest is sustainable?
92. Are permits required to harvest?
93. What kind of data do you collect on permit holders? (use of fish for example)
94. How are the citizens of the city or town informed of the harvest regulations?
95. Does harvesting by Native Americans occur? If so, do harvest records exist and how and where are these records kept?

Outreach
96. Are there any efforts in Town to educate citizens about the history of the run?
97. Are there any efforts in Town to educate citizens about the existence of the run?

Volunteers
98. Do you use volunteers to help complete work on the run?
99. What type of work do volunteers do?
100. Where do you recruit volunteers from?
101. How do you stay in touch with your volunteers? (email, phone, website)
102. Who coordinates their work?
103. How do you ensure that they come back year after year?
104. The Position of Herring Warden

Organization
105. Is the herring warden a volunteer, or paid for his or her work?
106. If paid, what town department is the warden a part of?
107. Does the herring warden have duties in addition to herring work?

Experience with and Observations of the Herring Run

108.   When did you first start observing the run?

109.   Have you noticed a change in the length of the herring over the years?

110.   Have you observed a change in the numbers of herring?

111.   Have you observed a change in the timing of the migration?

112.   How is the run different from when you first started observing it?

Historical Information

113.   What is your source of historical information about the herring run? (oral history, town records, books)

114.   Does the town or city's historical society hold records or exhibits that are related to the herring run?

115.   Is the history of the run documented within a single document?

116.   Do you keep records so future herring wardens can look back to see what has been done?

117.   Is the cause and effect of past management actions documented somewhere?

118.   Do you document your personal observations of the run?