



The Commonwealth of Massachusetts

Division of Marine Fisheries

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FISHWAY OPERATIONS AND MAINTENANCE PLAN

Location: Bourne Pond and Bog Pond, Falmouth, MA

Latitude / Longitude: 41.5828° N; -70.5208 °W

Property Owner:

Mr. Robert Simpson
26 Takemmeh Way
East Falmouth, MA 02536
508-495-1818

Town of Falmouth Contact: Chuck Martinsen, Deputy Director, Mar. and Environ. Serv., 508-457-2550

Watershed Information. Bourne Pond is a natural 10-acre pond in Falmouth with no freshwater tributaries. Bourne Pond outflow passes through Bog Pond and the tidal Caleb Pond before discharging to Waquoit Bay. Bog Pond was part of Bourne Pond before the construction of an earthen dyke in 1916. A concrete control box at the outlet of Bourne Pond connects to a 73 ft, 12" diameter pipe that passes through the dyke to Bog Pond. Prior to 2016, the outlet of Bog Pond had an impassible concrete control structure with weir boards. The stream connecting Bog Pond to Caleb Pond had a concrete dam in poor condition that also impeded fish passage. Information on the status of diadromous fish at Bourne Pond is limited. Prior DMF surveys and records did not record the presence of a river herring run. However, local knowledge indicates that American eel and river herring runs have occurred and that a former wood fishway at the Bog Pond outlet was adjusted to allow fish passage. All three fish passage obstructions and all of Bog Pond are contained on the Simpson property. The Town of Falmouth contacted DMF in 2009 on the feasibility of providing fish passage in the Bourne Pond watershed. DMF conducted a habitat assessment on the suitability of the ponds for spawning and nursery habitat during 2010-2011. The favorable results of the assessment led to a cooperative restoration project with the Town, DMF and property owner.

Fishway Specifications. The Bog Pond fishway design occurred during 2011-2015 and included DMF survey and water level logger data collections and a contract with the U.S. Fish and Wildlife Service fish passage engineers to prepare a scoping design. The fishway dimensions are 16 ft in length, 2 ft in width (internal), with 8 pools and 9 weir slots formed into the concrete wall for installing boards to regulate flow. The initial weir notches were set at 4x4 in. to regulate flow. The relative elevation of the fishway entrance is 93.40 ft and the exit elevation is 96.40 ft. The fishway slab has a zero slope with stop-log board regulated drop of 6 in. per pool. The fishway design provided by the USFWS was included in a design narrative prepared by DMF for the project and approved by the Falmouth Conservation Commission on September 28, 2016 under a Negative Determination of Applicability. The project was also authorized by DMF Fishway Construction Permit No. 02-16 on October 24, 2016.

The DMF Fishway Crew worked cooperatively with Town of Falmouth staff to install the weir and pool fishway at Bog Pond in October and November 2016. During construction, the concrete dam downstream of the fishway was fully removed.

After 3 years of fishway monitoring, several modifications were deemed necessary in 2020. Weir notch dimensions were increased to 6x6 in. after staff gauge monitoring demonstrated a stable Bog Pond level during spring migrations. Secondly, channel substrate scouring uncovered a concrete entrance pool of a former fishway at the entrance of the new fishway. This entrance was repaired in the summer of 2020 to restore suitable water depth at the entrance and improve passage for river herring and American eel.

Regulatory Authority. The owner of the fishway is responsible for repairing, operating, and maintaining fish passage facilities as prescribed in M.G.L. Chapter 130§19. The Town of Falmouth has an agreement with DMF for local management of Falmouth river herring runs pursuant to M.G.L. Chapter 130 §94.

Water Withdrawal Permissions. None

Water Discharge Data. None. Water depth loggers were deployed to support the fishway design and staff gauge data recorded at Bourne Pond and Bog Pond have allowed the development of pond level targets for fish migration periods used in the O&M plan.

Fishway Operation

- 1.) During the spring migration period of March 15th to June 15th the outflow from Bourne Pond should be managed with a stop log boards at the outlet to provide a relative pond level staff gauge measurement (notch at top of river right headwall to water surface) of 12-14 inches. This level was achieved during 2016-2020 with a single 11.5 inch board in the stop log slot. Also, during this period, the Bog Pond Fishway should be operated with 6x6 in. weir notches to regulate flow and stop logs can be used as needed at the entrance box to raise water depth in the box or to narrow outflow.
- 2.) Staff gauge monitoring has demonstrated stable groundwater driven outflow for spring adult river herring and juvenile American eel migrations. Based on three years of staff gauge monitoring, the target Bog Pond water level for this period is 2.20 to 2.30 (ft., at relative staff gauge). During March 15th to June 15th no board adjustments at either pond should be made to lower Bog Pond below 2.00.
- 3.) During the summer and fall emigration period of July 1st to October 15th, staff gauge monitoring has found low but stable outflow to allow juvenile river herring and adult American eel to migrate to tidal waters. Minimal management will be needed to adjust natural outflow. During this period, boards should not be raised at either pond to cause outflow to cease.

Fishway Maintenance

- 1.) Weekly visits should be made by the property owner and/or Town of Falmouth staff during March 15st to June 15th to inspect the Bourne Pond outlet, Bog Pond fishway and channel to Caleb Pond; and to remove debris from these location and record staff gauge data.
- 2.) During the juvenile river herring and adult American eel migration period of July 1st to October 15th visits should be made to check on the fishway and outflow, as necessary.

Monitoring & Reporting. The property owner and Town of Falmouth are encouraged to maintain annual records that document events related to the river herring run and fishway O&M to assist future efforts to manage fish passage in the Bourne Pond watershed. If issues occur that could impact successful fish passage, contact MA DMF for assistance: Brad Chase, 508-742-9747, brad.chase@mass.gov.

Prepared: August 31, 2020

By: Bradford C. Chase, MA DMF

Approved: 

Daniel J. McKiernan, Director