U.S. Fish and Wildlife Service
Connecticut River Coordinator's Office
Adult River Herring Pre-Spawn Capture and Transfers in the Connecticut River Basin
December 2014

Goal

Capture a minimum of 8,000 pre-spawn blueback herring from Wethersfield Cove, Connecticut for restoration stockings in target tributaries of the Connecticut River to provide juvenile production for ecological benefits and in support of future adult returns to stocked areas, in coordination through the Connecticut River Atlantic Salmon Commission.

Objectives

1. Capture blueback herring once abundance levels in Wethersfield Cove are able to provide at least one full tank truck of fish (either 750 or 1,000) per day of effort;
2. Move fish to primary target restoration waters to achieve a stocking density of at least 8 fish per surface acre (e.g., area upstream of a barrier);
3. Time stocking to coincide with both favorable river flows and temperatures in target waters, and repeat stocking over time as bet hedging strategy for episodic environmental events;
4. Work cooperatively with Connecticut River Atlantic Salmon Commission state agency partners to capture and transport fish to agreed upon target areas; and
5. Conduct juvenile production surveys to document production and obtain juveniles for data on (e.g., length and relative abundance).

Methods

In 2010, the USFWS identified a capture area for blueback herring that can, on an annual basis, provide relatively high catch rates (numbers) from Wethersfield Cove, CT using large beach seines and or boat electrofishing gear. A 300x10 foot small mesh seine can be deployed by boat to encircle schools of bluebacks when visible on the boat launch shoreline or a 150 foot seine can also be deployed by wading to encircle bluebacks if observed along the shorelines in the same area. Fish are pursed into the bag area and then rubber mesh dip nets are used to move ~15 fish at a time to adjacent agency trucks with circular tanks ranging from 750 to 1,000 gallons in size.

The USFWS operates two trucks that carry a 750 gallon and a 1,000 gallon circular tank. Each tank has two water pumps and plumbing to provide both on-site water pick-up/filling and then switch to a closed/recycling flow, creating a circular flow in these tanks. Each truck also has oxygen that is applied at rate dependent on water temperature and fish density, generally at a rate of 4-6 mg/liter through fine grain air stones. Natural salt (water treatment brands) is applied prior to filling tanks with water to achieve approximately 10 ppt salt concentration when filled. A water quality multi-meter is used to monitor both salt concentration and dissolved oxygen levels. Data sheets to track number loaded, location, temperature, and other details are filled out on departure and also later at time of release.

The use of an electrofishing boat, SmithRoot model SR18 electrofisher, for collection requires reducing electrofisher power output to approximately 2-3 amps or approximately 50% of that used for assessment sampling. Other equipment settings may be left as typically used. Captured fish are placed in the live well and run back to shore side for offload based on fish density in the live well, water temperatures, and fish behavior. A supplemental air pump with stone is run for this activity and the regular live well pump is always left running.

Target Restoration Stocking Areas

Target areas for pre-spawn blueback herring transfers are determined by the Connecticut River Atlantic Salmon Commission's Subcommittee for River Herring. The USFWS consults and works with State of Connecticut and Massachusetts biologists as target restoration areas at this time are restricted to waters downstream of Turners Falls Dam, Massachusetts. Blueback herring have been documented to successfully utilize a wide range of lotic to lentic spawning and nursery habitat types to produce juvenile recruits (ASMFC 2009). The USFWS has documented this to be the case in its transfer stockings and later juvenile assessments in the basin, that are typically undertaken in the late summer and early fall.

In Connecticut and Massachusetts, the following waters have been identified for blueback restoration stockings by tiers. Tier 1 being largely accessible but under or not currently utilized and Tier 2 being currently largely inaccessible but providing spawning and nursery habitats:

Tier 1

1. Westfield River, Westfield, MA, upstream of the West Springfield Dam,
2. Farmington River, Farmington, CT, upstream of Rainbow Dam, CT
3. Manahan River, Southampton, MA, upstream of Easthampton Town Dam
4. Oxbow, Easthampton/Northampton, MA, at the Oxbow Marina
5. Stony Brook, Suffield, CT, upstream of Schwartz Dam, CT

Tier 2

1. Mill River, Hatfield/Whately, MA, upstream of Advocate Dam
2. Green River, Greenfield, MA, upstream of swimming area seasonal dam
3. Fort River, Amherst, MA
4. Scantic River, Enfield, CT, upstream of Springborn Dam, CT

Table 1. Select data from USFWS and CTDEEP blueback herring capture and transfers from Wethersfield Cove since 2010. In 2011 and 2012 a shad telemetry study eliminated the ability to conduct capture and transfer efforts.

Date	Capture Location	Capture Waterbody	Capture St	Destination	Destination Waterbody	Destinatic	Number Transported	Transport Mortalities	Number Released
4/28/2010	WTH COVE	CT RIVER	CT	RUSSELL	WESTFIELD RIVER	MA	70	0	70
5/5/2010	WTH COVE	CT RIVER	CT	RUSSELL	WESTFIELD RIVER	MA	800	0	800
5/5/2010	WTH COVE	CT RIVER	CT	RUSSELL	WESTFIELD RIVER	MA	1000	250	750
5/6/2010	WTH COVE	CT RIVER	CT	RUSSELL	WESTFIELD RIVER	MA	500	0	500
5/6/2010	WTH COVE	CT RIVER	CT	RUSSELL	WESTFIELD RIVER	MA	800	0	800
5/17/2010	WTH COVE	CT RIVER	CT	DUNNINGS POND	FARMINGTON RIVER	CT	750	0	750
5/17/2010	WTH COVE	CT RIVER	CT	DUNNINGS POND	FARMINGTON RIVER	CT	800	0	800
5/17/2010	WTH COVE	CT RIVER	CT	DUNNINGS POND	FARMINGTON RIVER	CT	300	0	300
5/17/2010	WTH COVE	CT RIVER	CT	DUNNINGS POND	FARMINGTON RIVER	CT	725	0	725
5/17/2010	WTH COVE	CT RIVER	CT	DUNNINGS POND	FARMINGTON RIVER	CT	1000	0	1000
5/17/2010	WTH COVE	CT RIVER	CT	DUNNINGS POND	FARMINGTON RIVER	CT	1000	0	1000
5/24/2010	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	480	0	480
5/2/2013	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	375	1	374
5/6/2013	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	500	5	495
5/7/2013	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	245	1	244
5/16/2013	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	508	5	503
5/17/2013	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	451	0	451
5/20/2013	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	285	0	285
5/22/2013	WTH COVE	CT RIVER	CT	EASTHAMPTON	MANHAN RIVER	MA	567	15	552
5/12/2014	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	480	5	475
5/14/2014	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	795	6	789
5/15/2014	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	840	0	840
5/15/2014	WTH COVE	CT RIVER	CT	FARMINGTON	FARMINGTON RIVER	CT	700	0	700
5/19/2014	WTH COVE	CT RIVER	CT	SOUTHAMPTON	MANHAN RIVER	MA	570	5	565
5/20/2014	WTH COVE	CT RIVER	CT	SOUTHAMPTON	MANHAN RIVER	MA	890	4	886
5/21/2014	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	340	0	340
5/21/2014	WTH COVE	CT RIVER	CT	FARMINGTON	FARMINGTON RIVER	CT	300	0	300
5/27/2014	WTH COVE	CT RIVER	CT	EASTHAMPTON/OXBOW	CT RIVER	MA	815	10	805

Literature Cited

ASMFC (Atlantic States Marine Fisheries Commission). 2009. Atlantic Coast Diadromous Fish Habitat: A Review of Utilization, Threats, Recommendations for Conservation, and Research Needs. Washington, D.C.