

# 2017

## Inland Fisheries Program Notes & Updates (Fall)



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## News & Notes of Interest

**FISHERIES PROPOSED REGULATIONS UPDATE.** The regulation amendments proposed by the Fisheries Division that include establishment of a trout stamp are nearing the end of their path through the regulations-making process. On November 30 the proposed regulations and its associated documents were approved for legal sufficiency by the Office of the attorney general. They were then submitted to the Legislative Regulation Review Committee (LRRC) for review and are on the schedule for the January 23, 2018 LRRC meeting. Should the proposed regulations be approved by LRRC, they would likely become effective in early February.

Some other provisions of most interest in this regulations proposal include: 1) setting creel limits for catfish, 2) setting creel and length limits for Common Carp, 3) placing a short closed season on a 1.25 section of the Farmington River Trout Management Area (TMA) 4) extending the Mill river Wild Trout Management Area and changing the Mill River TMA to year-round catch-and-release, and 5) establishment of designated “Trophy Carp Waters”.

The full text of the proposed regulations (plus associated documents) can be found online via the eRegulations system (<https://eregulations.ct.gov>) on the Secretary of State’s website. Under “Quick links” go to “Regulations in Progress”, and scroll down to this regulation (tracking number PR2017-010) and click on the tracking number link.

**CT BASS NATION (CBN) BASS HABITAT ENHANCEMENT PROJECT.** The CBN’s Mossback Fish Habitat Enhancement project was completed in Lake Lillinonah on Saturday, November 4, under the direction of CBN Conservation Chair Dean Rustic, utilizing funding provided via the General Electric PCB-Contamination Natural Resources Damages Settlement Agreement. Similar work was completed by CBN at Lake Zoar and Lake Housatonic earlier this year using the same funding source.

On Lillinonah, seven “fish cities” were created in the lake at locations previously determined in consultation with Fisheries Division staff Don Mysling (retired) and Ed Machowski, comprising 105 individual habitat structures that were assembled at the “Steel Bridge” Boat Launch that same morning (November 4). Pete Aarrestad assisted CBN and other volunteers in assembling the fish habitat structures.



*CBN members and volunteers assembling fish habitat structures in the Steel Bridge launch on Lake Lillinonah.*

**Cover:** A joint work group of the Fisheries Division’s Diadromous Program and the U.S. Fish and Wildlife Service’s (USFWS) engineering staff complete modifications to the Versailles Pond Fishway. Dr. Brett Towler of the USFWS in the plaid shirt assesses the new hydraulics while Bruce Williams and Tim Wildman finish drilling a hole in the aluminum extension (see page 13 for more information).

# Inland Fish Management & Fish Culture

## COLDWATER FISHERIES

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### 2017 TROUT AND SALMON STOCKING

**Broodstock Atlantic Salmon.** Salmon stocking began during the second week of October (in Mount Tom Pond in the west and Crystal Lake in the east); later than anticipated because water temperatures were warmer and flows much lower than is typical during the early fall season. Additionally, a large catastrophic sewage spill in Waterbury delayed stocking in the lower Naugatuck (Waterbury – Beacon Falls). Fortunately, in late October two high flow events essentially flushed the river and measured bacteria levels returned to normal. Thus the lower Naugatuck River received its usual allotment of Broodstock salmon with the second fall stocking of these fish. This fall, the Fisheries Division will have stocked approximately 1,120 Atlantic Salmon broodstock when all is said and done in late December. The last 160 salmon were recently spawned and will be stocked into the Naugatuck and Shetucket rivers in mid-December. So far, the 2017 broodstock were released into the following waters: Crystal Lake (Ellington) and Mount Tom Pond each received 115 fish; the Naugatuck River (approximately 365 fish), and the Shetucket River (365 fish). The vast majority (958) of the salmon stocked so far this year were age 2+ weighing between 2-5 lbs. each, but nearly 50 salmon were age 3+ and averaged 10 lbs. apiece

**Trout Stocking.** Exceptionally low flows and warm water temperatures early this fall severely hampered trout stocking efforts in rivers and streams throughout the State. Nonetheless, approximately 57,405 trout were stocked this fall, including 1,000 trophy-size Survivor Brown Trout, 2,200 trophy-size Cortland Brown Trout, and 8,900 trophy-size Rainbow Trout (greater than 12 inches in length); 19,500 fingerling (< 7 inch) Cortland Brown Trout; 360 broodstock Brook Trout (average 3 lbs.); 3,000 large yearling (~ 10 inch fish) Survivor Brown Trout; and 8,000 fingerling (< 6 inch) Survivor Brown Trout. Stocking occurred in Trout Management Areas (TMA), Trout Parks, Trophy Trout Areas (TTA), Trout Management Lakes (TML) and heavily utilized lakes and ponds. Only one scheduled stream (the Pequonnock River TTA) could not be stocked due to a fallen tree blocking access to the area following the late October storms.

Brown Trout yearlings/fingerlings were stocked into 7 areas: Blackberry River (5,750); East Branch Salmon Brook (5,750); Hockanum River (4,000); the two TMA's on the Housatonic River (2,000 in the Bull's Bridge TMA and 3,000 in the Cornwall/Sharon TMA); Pequabuck River (4,000); and the Shepaug River (5,500).

*Locations and numbers of trout and salmon stocked this fall can be found on the fisheries website by going to [www.ct.gov/deep/fishing](http://www.ct.gov/deep/fishing) and clicking the **Current Stocking Reports** link.*

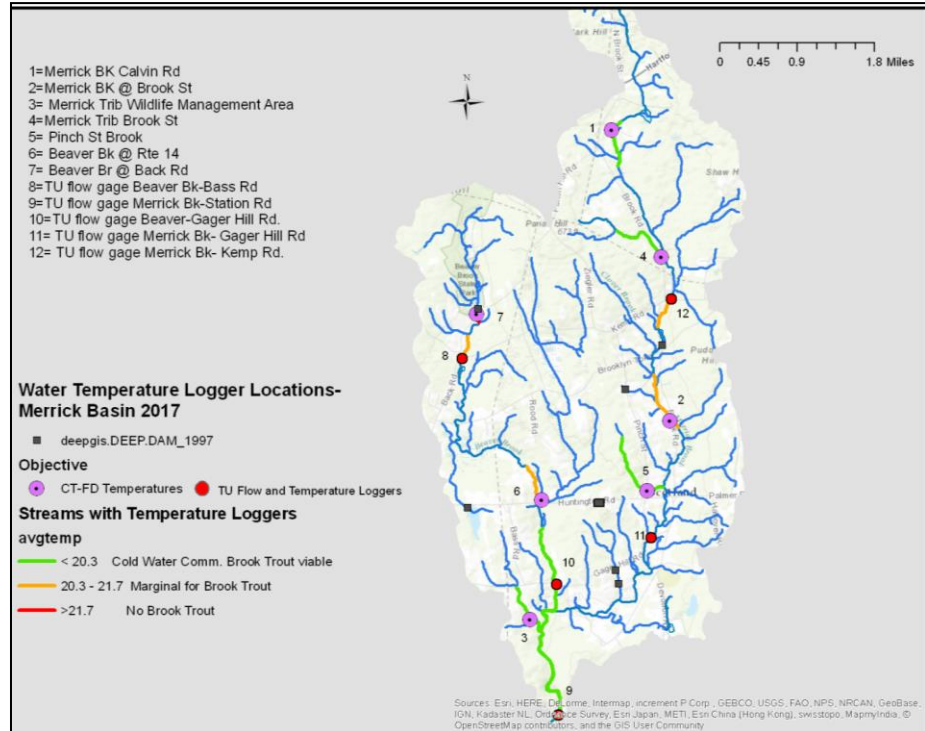
### STREAM MONITORING

**Stream sampling.** Summer fish population sampling was completed and the data for 190 sample locations (Fish management sites: 74 in the east and 94 in the west, Habitat Conservation sites: 22 in the east) was entered in IFD databases. The data are currently being proofed and edited.

**Water temperature monitoring.** Water temperature loggers from 40 locations throughout the state were retrieved. Water Temperature data collections focused on long term reference (LTR) streams (24 loggers), stream locations to support Thames Valley Chapter of Trout Unlimited's study of the Merrick Brook system

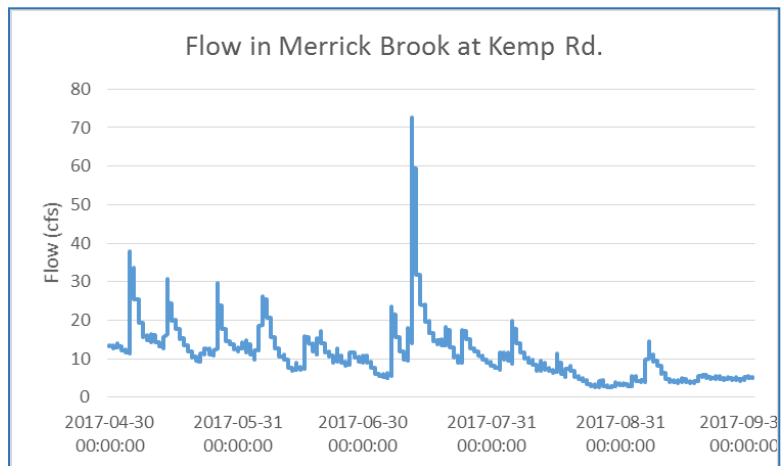
(8 loggers) funded by a Trout Unlimited (TU) “Embrace-a-Stream” grant, the Farmington River above the Collinsville Impoundment (1 logger), the Mattabeset River (1 logger), and to gather information on Little River system in Canterbury (6 loggers). All temperature data were proofed and uploaded into the ECOSHEDS.org website for easy public access.

*Location of water temperature loggers in the Merrick Brook basin.*



As part of the Cooperative TU study, continuous flow data as well as temperature data were collected from 5 locations on the Merrick Brook system. Merrick Brook is probably the best coldwater resource in eastern CT. Staff spent time with a USGS Hydrologist to ensure that the flow logger stations were properly set up and providing “good” data. After some initial problems, all gauges were calibrated and during August (3), September (2) and October (1) flows were measured to create rating curves for the sites. These data will greatly inform our understanding of how heat enters and is dissipated in the Merrick Brook system.

*Sample of initial flow information about Merrick Brook. Note the high flow event in July that significantly altered in-stream structure in the WTMA.*



**Stream substrate survey.** It has been ten years since the state discontinued the use of sand as part of winter road maintenance practices. Data has been collected at 30 locations this summer on stream sediment particles size and embeddedness of substrates. The data was collected at locations where the same type of sediment and embeddedness quantification had been completed as part of the stream survey project during 1988-1994. Data entry and proofing was completed this fall and statistical analysis of the dataset is being conducted. Comparison of pre-data (sanded roads) and post-data (without sanding) was evaluated for changes to the overall composition of the substrate and whether the existing substrate has shown a change in the amount of sand embedding the streams. This factor is important to insect production and fish spawning success. The results were mixed. Of the 79 comparisons of embeddedness (before and after sanding) there was no statistical difference for the majority of sample sites. Of the 14 comparisons that were statistically significant, 7 showed an increase in embeddedness and 7 showed a decrease. So far it appears that the halting of the sand program did not change the degree to which Connecticut streams are embedded.

**WILD TROUT STREAM ASSESSMENT.** In late October, 29 water temperature loggers were retrieved from trout streams in Western Connecticut, and data were downloaded and analyzed. In sharp contrast to 2016, water temperatures were cooler during the summer of 2017 and flows in early summer were higher than average, which helped some stream trout populations begin to recover from the devastating drought of 2016.

In September, the wild trout populations in Salmon Creek in Salisbury were sampled for the fifth consecutive year to assess changes resulting from substantial habitat restoration projects funded in part by a General Electric Natural Resources Damages Fund grant awarded to Trout Unlimited. On-going habitat work on Salmon Creek required moving and filling a section of stream channel after all fish (and a beaver!) were relocated outside of the work area. Wild Brown Trout were found to be using cover installed in previous years.

A section of the Pootatuck River within the Class 1 Wild Trout Management Area was electrofished to assess wild trout populations before proposed habitat restoration work begins. This work, which is being funded by an anonymous donor, involves a combined effort by the Housatonic Valley Authority (HVA), the Candlewood Valley Chapter of Trout Unlimited, and the Pootatuck Watershed Association. Wild Brown Trout were present in low numbers in this stream section. It is anticipated that the population will respond favorably to improved habitat.

In September, six wild Brook Trout sites were sampled in Kent and Sharon in an effort to characterize brook trout populations above and below barrier culverts. This sampling was done in conjunction with on-going HVA efforts to identify the most detrimental barrier culverts for native Brook Trout in Northwestern CT. HVA is focusing on seven towns to identify the two worst culverts in each town, and to provide engineering plans and funding assistance to town public works departments for culvert replacement.

For the first time, fall Brown Trout fingerlings (3,700 4-7 inch fish) were stocked in the upper Shepaug River above the Bantam River confluence. This section of the Shepaug remains colder than other sections due to a cold tailwater release from Lower Shepaug Reservoir. Since the implementation of substantially higher summer minimum releases at the dam beginning in 2009, very limited experimental spring Brown Trout fry

stocking has shown promising results. Growth and survival of the new fall fingerlings will be assessed in summer 2018.

2017 data from 67 wild trout stream samples in western CT, and 13 sites in eastern CT, have been error-checked and entered into the centralized stream database.

**FISH KILL INVESTIGATION.** On October 11, the Fisheries Division received a call regarding dead fish observed in the lower Naugatuck River in the vicinity of Naugatuck and Beacon Falls. Follow-up investigations on October 11 and October 13 pointed to the Waterbury Municipal Wastewater Treatment Facility as a possible source of the kill, which extended for at least several miles downstream. It was later determined that a power outage at the Waterbury facility had resulted in a release of approximately 5 million gallons of untreated sewage to the river on October 9. It appears likely that this rare event had a significant negative impact on resident fish populations, however a large rain event in November has flushed away residue from the spill, and water testing has determined that human health issues have abated and Atlantic Salmon broodstock were stocked into the lower Broodstock Area downstream of Waterbury.

**TROUT IN THE CLASSROOM.** We had ‘Egg Day’ on Nov. 17<sup>th</sup> this year. A total of 106 sets of fall spawned Cortland eggs were delivered to the 9 Trout Unlimited chapters across the state from the Kensington Hatchery. It was estimated that approximately 7,000 students benefitted from this program last year.

**FARMINGTON RIVER UPDATE.** We collected 96 Survivor Brown Trout broodstock in mid-September. These fish were transported to the Burlington Hatchery where they were spawned during October and November. Prior to spawning 10 of these fish were taken for fish health evaluations. To maximize the “wild gene component” of the Survivor strain, Hatchery staff made as many crosses as possible with at least one wild brown adult in the spawn pair. This year wild fish were used in 62% of the 34 breeding crosses. From these crosses, a total of 66,390 eggs were collected. In the end, 85 brood stock were stocked back into the Farmington River on Nov 22, 2017. There was only one spawning mortality.

Due to little to no precipitation, Farmington River water levels fell quickly in August of 2017 and stayed low through much of October. While low water condition in September necessitated the FD to augment flow releases from Goodwin Dam using water from the “Fisheries Pools” assigned to DEEP in Colebrook River Lake, rains in late October and November and the annual Otis Lake (MA) drawdown have made additional augmentations unnecessary.

## **COLDWATER LAKES**

**Kokanee Salmon.** Fall trap netting for the collection of Kokanee salmon broodstock was completed at East Twin Lake during October. Typically, East Twin Lake is only used as a back-up source of Kokanee broodstock if West Hill Pond does not produce sufficient numbers of spawning adults. However, in the fall of 2017 major repairs to West Hill’s dam and gatehouse necessitated a deep water drawdown which prevented FD personnel from setting trap nets there. Due to warmer than normal fall air/water temperatures, the length of time needed to capture sufficient numbers of salmon was protracted. A total of 889 (417 females and 472 males) salmon were brought to the Burlington Fish Hatchery of which 398 male/female pairs were used to produce 240,686 green eggs. The fish captured this year were smaller than usual (average length 11 – 12 inches) so more Kokanee were required to obtain the necessary number of eggs and also have enough spawning adults to maintain genetic integrity. Spawning went well and egg numbers met the goal for production of next years’ fry for the late spring stocking.

**Fall Electrofishing.** The trout population in Highland Lake (Winchester) was sampled via night electrofishing in October. Three standard locations in the lake are historically known to attract spawning adult trout and all of these were sampled. The total number of Brown Trout captured was 22, out of which 11 were considered to be holdover fish. Five of the eleven holdovers were Seeforellen strain Brown Trout (no longer stocked by the FD). Overall, considerably fewer Brown Trout were captured this fall than compared to the average over the past 9 years (2017 = 22 Brown Trout vs. 2007-2015 avg. = 175 Brown Trout). Unseasonably warm air/water temperatures most likely delayed the timing of the spawn which accounted for the reduced number of trout sampled.

*A large, holdover Seeforellen brown trout captured by night electrofishing from Highland Lake in October, 2017.*



**Broodstock Brook Trout Lakes.** For the third year, an experimental initiative was undertaken where broodstock Brook Trout (average weight of 3 lbs.) were stocked into two waterbodies, Mohawk Pond (Goshen) and Black Pond (Woodstock). Each lake received nearly 200 fish to provide anglers the opportunity to catch very large brookies in a “remote, rural, northern New England-like” setting. Following stocking in mid-October, anglers reported seeing numerous large dead Brook Trout in Mohawk Pond. FD biologists investigated and found approximately a dozen Brook Trout dead around the lake. Conditions seemed favorable at time of stocking (water temperature = 15°C) and there was no reason to assume poor dissolved oxygen levels. Discussions with hatchery personnel indicate that the large broodstock Brook Trout are sensitive to handling and transport stress. It is plausible that these fish experienced post-stocking mortality from the stress of the long travel distance between the Quinnebaug Hatchery and Mohawk Pond. Attempts will be made to reduce/eliminate this stress for future stockings.

## **WARMWATER FISHERIES**

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**WALLEYE.** A total of 27,900 walleye fingerlings was stocked into state-owned management waters on October 20, 2017. Similar to last year, 12% of the fingerlings the Fisheries Division (FD) purchased were larger than the typical size fingerlings (averaging 7 inches instead of the typical 5 inches in length). These larger fingerlings have been stocked into Mashapaug and Gardner lakes for the last three years because the adult walleye populations had been declining in the two lakes since 2009. As a result of this experiment, spring electrofishing catch rates of yearling walleye have more than tripled in both lakes, suggesting improved overwinter survival of the larger fingerlings. Based on walleye growth rates these fish should be reaching legal size (18 inches) in spring of 2018 in Mashapaug Lake (3.4 years to reach 18”) and 2019 in Gardner Lake (4.3 years to 18”).

The remaining standard 5-inch size fingerlings were stocked into Batterson Park Pond, Beach Pond, Cedar Lake (Chester), Coventry Lake, Lake Zoar, Mount Tom Pond, Squantz Pond, and for the first time,

Long Pond in North Stonington. Stocking in West Thompson Reservoir was discontinued this year because it did not meet expectations; after 5 years of stocking only one Walleye was ever sampled via nighttime boat electrofishing. Standard size fingerlings were also purchased by Aquarion Water Company and by South Central Connecticut Regional Water Authority, and stocked into Saugatuck Reservoir and Lake Saltonstall respectively. Due to budget constraints, fish were not purchased by the Town of East Hampton this year for stocking into Lake Pocotopaug.

**LAKE ANGLER SURVEYS.** Open water angler surveys were conducted on **Amos Lake** (Preston), **Beach Pond** (Voluntown, CT/Exeter, RI), and **Pachaug Pond** (Griswold) this year. As with all of our angler surveys, these data will be used to identify overarching trends in angler catch, effort and opinions of FD management efforts. These data will also be used for special management programs such as bass management (Amos Lake), trout management (Amos Lake), Walleye management (Beach Pond) and Northern Pike management (Pachaug Pond). Currently the Fisheries Division is planning an ice fishing angler survey for this coming winter on the three ponds.

**LAKE AND POND ELECTROFISHING MONITORING.** Fall monitoring of fish populations by night boat electrofishing was conducted on 26 sites during October and November. Sampling was done to collect information on relative abundance and growth rates of fish populations. The sites included special management lakes for Bass, Trout, Catfish and Pike, as well as some general survey sites and a few Connecticut River sites. Some noteworthy observations were:

- 1) Hydrilla (*Hydrilla verticillata*), a highly invasive aquatic plant, which was first discovered in the Connecticut River system in 2016 in both Keeney Cove and in the mainstem in the Glastonbury area, has now spread throughout the northern river (at least from Glastonbury to Enfield). A relative new infestation of Hydrilla, first reported in 2015, is present in Coventry Lake.
- 2) Bowfin are still on the rise and large fish (to 9 pounds) are becoming more common throughout the Connecticut River.
- 3) Although rare, White Crappie are still present in the Hartford area of the Connecticut River.
- 4) Brook Silverside were found for the first time outside of the Housatonic River system proper (Tobys Pond). They first showed up in Lake Lillinonah in 2014 and are thought to have originated from Woodridge Lake (Goshen), where Brook Silversides were reported several years earlier (Woodridge Lake eventual drains into the Shepaug River and then into Lake Lillinonah).

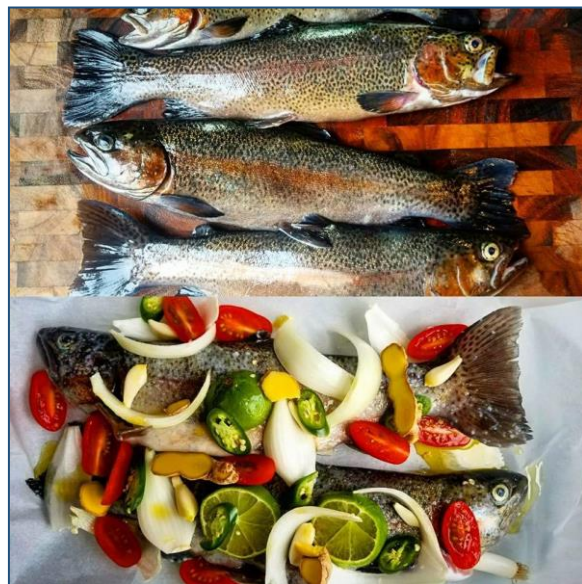
**CATFISH.** Lower Bolton Lake (Bolton) is a Catfish Management Lake; however, stocking yearling Channel Catfish was suspended in 2013 at the request of the town. Earlier this year the Fisheries Division received anecdotal reports of “small” size Channel Catfish being caught from Lower Bolton Lake. We were curious to see if these catfish may have begun to naturally reproduce. In mid-September, biologists set an array of baited hoop nets in the lake. The smallest catfish captured was 35 cm (13.8 inches). Eight of the smallest catfish caught were retained for aging. Spines and otoliths will be extracted and mounted to confirm the age of these fish so we can determine if these small fish are simply slow growing “runts” from earlier stockings, or if there is indeed some natural reproduction occurring in the lake.



## CARE & Constituent Services

**FALL CLASSES.** Conducted fourteen CARE classes for over 700 students this fall. Highlights include:

- An “**Introduction to Trout Fishing**” course – the first of a series of specialized classes held at the CARE Center in Killingworth for 22 students. This course consisted of a two-hour classroom session on a Friday evening that included a student gear check and repair. A fishing trip the following morning to Chatfield Hollow (designated Trout Park) concluded the course. Students were emailed and asked to complete a brief survey 45 days after taking the class, and 100% of respondents indicated that expectations were exceeded or greatly exceeded and that they actually went trout fishing again this fall.



**Introduction to Trout Fishing:** The first in a series of specialized fishing courses was completed this fall. Shown here on the left is Todd, a happy angler who was rewarded with a nice rainbow trout. Todd and his girlfriend, Daisy, caught their “limit” and shared on our CT Fish and Wildlife Facebook page a picture (on right) of their bounty ready for the grill.

- Family Fishing Courses were conducted in Newtown, Killingworth (CARE Center) and Hampton. All courses consisted of a two-hour classroom session and an Instructor lead fishing trip.
- Hosted two field trips at the CARE Education Center for 1) Westbrook High School Ecology Club and 2) Wallingford Elementary School.
- Volunteer Instructors participated in three “Take a Vet Fishing” fishing days.
- Staff led an ecology day that included electrofishing and fish identification and ecology lesson on the Pequonnock River at Beardsley Zoo for Bridgeport High School students. Students also released trout they had raised “in the classroom” at the zoo over the past year.

**INSTRUCTOR TRAINING.** CARE annual In-service training was conducted for 26 active certified Instructors at DEEP Marine HQ, Old Lyme. Staff introduced, reviewed, and discussed with Instructors:

- CARE 2017 courses and students;
- New interactive fisheries applications (Fishy in CT, Interactive Trout Stocking Maps, Interactive Saltwater Fishing Resource Map);
- New class curriculum for specialized classes (trout fishing 101, women's only, locavore, bass, saltwater, and fly-fishing);
- Recent efforts and future direction on Increasing Angler participation in CT;
- Introduction of Michael Jasensky as CARE representative on FAC;
- Strategic Tools for Effective Angler Recruitment, Retention and Reactivation.



***In-service training.*** Attendees at the annual in-service training held at DEEP's Old Lyme Headquarters earlier this fall. Volunteer Instructors for the CARE program donated the time equivalent of two fulltime employees in 2017. A recent in-service training allowed staff and volunteers to discuss new initiatives and future direction of angling education in CT.

**HUNTING AND FISHING DAYS.** Connecticut Hunting and Fishing Day was celebrated at Cabela's in East Hartford this fall. CARE staffed and coordinated fisheries involvement which included our setup of the Inland Fisheries Outreach and Education trailer, live fish tank and touch tank, kid's backyard bass casting activity, and fisheries program displays. Over 1,000 people attended this event.

**ICE FISHING.** Scheduled ten Family Ice Fishing Classes for this January in Trumbull, Glastonbury, West Hartford, Oxford, Farmington, Coventry, Litchfield, Ansonia, and Killingworth (2). The annual *No Child Left Inside*® Winter Festival will be February 3<sup>rd</sup> from 10am to 3pm at Burr Pond State Park in Torrington.

**PROGRAM NUMBERS.** Completed the 2017 CARE student and Instructor reports, documenting over 7,500 students taught. A total of 200 volunteer Instructors contributed over 3,500 hours of volunteer time. The monetary equivalent of Instructor volunteer time used as State match for federal dollars has surpassed \$4.6 million dollars over the last 31 years.

# Diadromous Fisheries Restoration

## FISHWAY OPERATIONS

- The **Rainbow Dam Fishway** (Farmington River, Windsor) was operated during the fall from October 5 to November 15. Extremely low flows in early October and extremely high flows in November reduced the effectiveness of this fishway.
- Due to extremely low river flows in early October the **Leesville Fishway** (Salmon River, East Haddam) and the **StanChem Fishway** (Mattabasset River, Berlin) were not operated during the fall season.
- Assisted many partners around the state in opening fishways for fall operation and then closing them for the winter.

## FISHWAY REPAIR AND MAINTENANCE / FISH PASSAGE ENHANCEMENT

- Completed maintenance on the **Mary Steube Fishway** (Mill Brook, Old Lyme), including repairing the grate supports at the exit pool where the electronic fish counter is located.

*The new oak (from our state saw mill) cross members support the grey fiberglass grates at the Mary Steube Fishway.*



- Improved Alewife passage by moving existing stones at the first barrier on **Falls River** (Essex).

*Tim Wildman, Sally Harold (TNC), and Dave Ellis use a grip hoist and iron bars to move boulders at the former Falls River Dam site to enhance passage for the local river herring runs.*



- Assisted The Nature Conservancy with a project to remove a section of a previously breached **Papermill Dam** (Hammonasset River, Madison) to improve fish passage for river herring, American Shad, sea-run trout, and American Eel. Some fish were able to surmount this obstacle at certain flow levels but by removing about 20 inches of a residual sill, more fish will pass at more times. The

dam is owned by the Madison Land Trust and the work was permitted by the town inland wetlands commission.

*The Papermill Dam is now much easier for fish to swim over after the project lowered the breach.*



- Staff installed seasonally removable flashboards to the **Konolds Pond** (West River, Woodbridge) dam to improve anadromous fish passage. The dam is about a half mile upstream from where Save The Sound (STS) recently removed the **Pond Lily Dam** in New Haven and this past spring STS documented alewives at the base of this low dam. Shallow flows over the dam prevent many fish from getting over it and accessing the pond, which is crucial spawning habitat. The installation of the flashboards and rock placement downstream of the dam with the permission of the dam owner will allow fish to get over the dam

*Bruce Williams drills holes in the Konolds Pond Dam to set pins while Tim Wildman holds the flashboard. The boards will be installed each spring to divert flow to the gap in the foreground, providing sufficient water depth to allow river herring to swim over the low dam and reach the pond.*



- Construction of the **Scotland Dam Fishlift** (Shetucket River, Windham)- work continues on the construction of what will be the fourth fishway on the Shetucket River designed to pass shad, river herring, and eels. Components of the downstream fish passage devices and part of the release pipe for the fishlift have been completed as has the footings for the lift. Much work remains to be done on the lift superstructure and the entrance. The provision of the fish passage facilities is a condition of the FERC relicensing of this First Light hydro project. First Light expects the facilities to be operational by April.

*This photo shows one of the entrances for the downstream passage pipe in the middle of the Scotland Dam's hydro intake. FirstLight has since re-filled the reservoir and this entrance is now submerged. Fish that enter that entrance will pass through a pipe and avoid the turbines. The intake grating was replaced with new, more narrowly gapped grating to prevent silver eels from passing through the grating.*



- Improvements to the **Versailles Pond Fishway** (Little River, Sprague)- The entrance of this fishway was not performing well. Staff had previously installed an entrance extension to address the perched nature of the entrance but was dissatisfied with the resultant hydraulics. A joint work exercise was organized between the Division's Diadromous Fish Program and the hydraulic engineers of the U.S. Fish & Wildlife Service's Region 5 staff. The exercise was developed as a training and team-building exercise between the two programs. The combined group met one day to diagnose the problem, design a solution, and implement it. The addition of a weir and modification of baffles greatly improved the entrance's hydraulics. The Division greatly appreciates the assistance of the USFWS with many fish passage issues year after year and hopes to repeat this team-building in the future.
- **Springborn Dam Removal** (Scantic River, Enfield) - As previously reported, the dam is now gone and the contractor is finishing bank stabilization while it waits for lifting towers to be delivered. The last remaining task is to jack up a railroad bridge in the middle of the former impoundment so a stable new support pier can be constructed. The existing pier is not pinned to bedrock and could wash away and collapse during flood events. This unexpected task will take another few months to complete.

*Workers form a wall for a concrete pour. The wall will protect the foundation of the old mill to the left. The railroad bridge and its inadequate support pier can be seen in the background. The Springborn Dam was located off the photo to the right. Before it was removed, the level of the pond came up to the faint white line on the support pier of the bridge. The streambed that had been full of contaminated sand and mud is now clean bedrock.*



## FUTURE FISH PASSAGE PROJECTS

- Staff continued to work on the development of new fish passage projects including: modifications to the **Tingue Fish Bypass Channel** (Naugatuck River, Seymour), design of a fishlift at the **Rainbow Dam** (Farmington River, Windsor), **Aspinook Dam** fish passage as part of an upcoming FERC relicensing (Quinebaug River, Griswold), **Upper Collinsville Dam** fish passage as part of an upcoming FERC relicensing (Farmington River, Canton), **Old Papermill Pond Dam Removal** (East Aspetuck River, New Milford), **Picker Pond Dam Removal** (Oxoboxo Brook, Montville) and **Broad Brook Dam Eel Pass** (Broad Brook, East Windsor).

## RIVER HERRING

- Staff attended a Connecticut River Atlantic Salmon Commission (CRASC) River Herring Subcommittee meeting. Discussion topics included river herring research on the Connecticut River.

The group is particularly interested in the use of habitat in the river by Blueback Herring. Ideas on how to answer these questions were considered and feasibility studies were discussed for the spring of 2018.

- The National Oceanic and Atmospheric Administration (NOAA) announced a comment period for a new Status Review for river herring, prompted by a court order in respect to the listing of Blueback Herring under the federal Endangered Species Act. Staff provided extensive comments and additional data from Connecticut streams to assist NOAA in its review.

## SEA-RUN TROUT

- Clipped (left pelvic fin removed) 12,271 sea-run Brown Trout being raised at the Burlington State Fish Hatchery (BSFH). All of these fish were then moved into three ponds where they will reside until they are stocked in March, 2018 as two-year old smolts. The purpose of the fin clip is to allow identification of the fish when they return as adults in the future. This allows evaluation of the program.

*Fisheries Biologist Bruce Williams (left) and seasonal resource assistant Kirk McPherson (right) help clip sea-run brown trout at the Burlington State Fish Hatchery.*



- Electrofished the Farm and Shunock rivers to assess Sea-Run Brown Trout stockings. Survival of Sea-Run Brown Trout 0+ parr stocked (fall 2016) in the Shunock and Farm rivers was estimated to be 2.9% and 1.2%, respectively. Less than 1% of the Sea-Run Brown Trout 0+ parr stocked in the fall of 2015 remained in either the Shunock or Farm rivers indicating, perhaps, that most of that age class emigrated to salt water.
- Stocked 11,713 Sea-Run Brown Trout parr into the lower sections of the Farm (4,803) and Shunock (6,910) rivers. These were fish that had been graded-out of 2019 smolts (eggs imported in 2017) being reared at BSTH. Based on the electrofishing results from last year's fall Sea-Run Brown Trout parr stockings, these fish will be smolts and emigrate to salt water in the spring, 2019.

*One of the 6,910 Iijoki strain Brown Trout parr stocked into the Shunock River in October, 2017.*



## ATLANTIC SALMON

- Staff completed the annual electrofishing survey of juvenile Atlantic Salmon populations within the Farmington and Salmon River watersheds. Due to program reductions, the number of electrofishing sites sampled has been greatly reduced. This year only 13 sites were sampled, compared to 37 in 2016. Growth and survival of young-of-the-year salmon stocked as fry was excellent. Growth and survival in most sites was higher than the long-term average. In all sites, the survival of yearling salmon stocked as fry in the spring of 2016 was poor. This was probably due to the combined effects of the drought Connecticut experienced in 2016 and incubation problems that occurred at the Kensington State Fish Hatchery in the 2015-2016 season.
- Staff assisted in the spawning of Atlantic Salmon at the Kensington State Fish Hatchery (KSFH). Between November 3 and November 27, approximately 590,000 eggs were taken. The eggs will be 'eyed' at KSFH and used for the Connecticut River Salmon Association's Salmon-in-Schools program, future broodstock at KSFH, production of fish for the recreational salmon fishery, streamside incubators at the Tributary Mill Conservancy, and fry to be stocked for the Legacy Salmon program.

## AMERICAN EEL

- Monitored the silver eel migration at two locations (Rainbow and Bunnells Pond fishways) utilizing digital imaging equipment. The number of silver eels counted at Rainbow Fishway (13) decreased from last year's counts; most likely due to the opening of the Farmington River Power Company's floodgates during the peak of the silver eels run. These floodgates are located at the base of the dam and when open can be an attractive emigration route for silver eels. Due to staff reductions, data generated from the Bunnells Pond Fishway imaging equipment have not yet been reviewed.

*A large (42") female silver eel migrating out to sea was captured on video at the Rainbow fishway in the early morning hours.*



- Closed eel passes for the season across the state (Occum, Greeneville, Hallville, Fishing Brook, Chapmans Pond, Mill River and Kinneytown).
- Staff helped operate the Silver Eel Airlift system for downstream passage at the entrance of the Groton water supply treatment plant in a partnership with Groton Public Utilities (GPU) and U.S. Geological Survey (USGS). Young eels can enter this water supply reservoir in the spring but adult eels cannot safely emigrate to the sea to spawn in the fall because the water level is always below the spillway level. This results in all silver eels entering the water treatment plant and dying (see last year's report for a description and schematic of the air lift system). The trap is checked daily and any trapped eels are documented and released downstream of the dam. To date (11/28), the airlift has captured 458 Silver Eels. This is the second season of operation of this 'first of its kind'

prototype. Off season modifications have improved the performance of this device. Silver eels are the adult phase of American Eel, migrating out to sea to spawn in the Sargasso Sea.

*Silver eels awaiting release below the Groton Utilities Water Treatment Plant. These eels were captured by the air lift in a single night. There were numerous nights when over 50 silver eels were captured in the reservoir.*



## MISCELLANEOUS ACTIVITIES AND PUBLIC OUTREACH

- Assisted Fisheries staff to collect Farmington River Brown Trout broodstock for the Survivor Program.
- Assisted Marine Fisheries staff with the Long Island Sound Trawl Survey.
- Staff participated in a celebration of the removal of the Norton Mill Dam on the Jeremy River at a special event in Colchester sponsored by The Nature Conservancy, which managed the project.

*Steve Gephard points to young salmon parr in the Jeremy River as Rick Bennett of the U.S. Fish & Wildlife Service nets more parr from a cooler for release. Gephard and Bennett were among the speakers at the Norton Mill Dam removal celebration hosted by The Nature Conservancy.*



- Staff assisted Yale University with a project involving interactions between landlocked and sea run Alewife as well as a fish aging project being conducted.
- Steve Gephard and Tim Wildman were presented with a Special Merit Award by the Connecticut River Coastal Conservation District (CRCCD) at its annual meeting. The award was granted for the work the two biologists did to support CRCCD's project of designing and building the Chapmans Pond Fishway and Eel Pass (Menunketesuck River, Clinton).
- Staff participated in the annual Teachers Orientation workshop for the Salmon-in-Schools program by the Connecticut River Salmon Association, October 19, at the Eversource Headquarters in Berlin.
- Steve Gephard was a guest on the Colin McEnroe Show (WNPR Radio, Hartford) to discuss dams and the need to provide fish passage.



## Habitat Conservation and Enhancement

### MOOSUP RIVER, BRUNSWICK MILL DAM #1 REMOVAL

American Rivers, in partnership with the HCE program and the USDA Natural Resources Conservation Service, continue to work on the Moosup River dam removal project. This project, being implemented over a ten-year period, includes the removal of five dams, two of which have been removed since 2013. When completed, the project will reconnect fish habitats to over 6.9 miles of the mainstem Moosup River. Brunswick Mill Dam # 1 was successfully removed in late September. With this most recent dam removal completed, project partners are now focusing on the removal of the remaining two dams on the former Kaman Aerospace property.



*Photos upstream of the Brunswick Mill Dam # 1 pond before (left) and after dam removal (right).*

### CTDOT CULVERT PROJECTS, FISH PASSAGE AND INSTREAM HABITAT ENHANCEMENTS

HCE staff review all Connecticut Department of Transportation (DOT) bridge and culvert replacement projects as well as many locally regulated projects. Staff ensure that such projects are designed to allow the unrestricted movement of fish upstream and downstream and do not degrade aquatic and riparian habitats. In addition, instream habitat structures are often recommended to restore/enhance instream habitat features or to mitigate unavoidable habitat losses. Permit conditions require HCE staff to assist project contractors during construction to ensure the proper installation of fish passage and habitat structures. Onsite construction management services were provided for the following projects:

- **TRIBUTARY to LYMAN BROOK, Marlborough (Route 66) – Fish Passage Monitoring**

The second year of a three-year monitoring project has been completed by HCE staff to evaluate native Brook Trout passage performance at a culvert slipline project that was retrofitted with an outlet fishway and culvert baffles. Project equipment was funded by DOT. Passage is being assessed with the use of a passive integrated transponder (PIT) tag monitoring system. The system monitors Brook Trout movement before, during and after the October spawning period. Study results indicate that Brook Trout can successfully pass upstream through the fishway and culvert. While movement is most often associated with increasing streamflow in October when fish are actively seeking

suitable spawning locations, low flow conditions in the fall of 2017 resulted in reduced system-wide movements. This led to some tagged fish actually spawning within the fishway which contains suitable spawning substrates. Other project highlights include: (1) test installation of a solar panel power system which was designed and installed with technical assistance from staff from the Diadromous Fish program, and (2) completion of system wide mobile PIT tag searches to locate Brook Trout within the mainstem Lyman Brook and its tributary.



(left) Brook Trout redd found within fishway holding pool #6 below culvert outlet.



(right) Photo showing the solar power system installed adjacent to culvert outlet.

- **BRANFORD RIVER ROAD CROSSING, Branford**  
The DOT replaced a bridge where Route 139 crosses the Branford River and staff set as permit conditions the protection of habitat at this popular angling location. Habitat enhancement included the installation of boulder cluster to provide velocity refugia and increase diversity of instream habitats. Staff provided on-site oversight during the placement of the boulders.

*View of excavator installing large boulders into the Branford River.*



- **TERRY BROOK CULVERT MODIFICATION, Enfield**  
DOT designed and recently constructed modifications to a culvert slipline project conveying Terry Brook under Route 190 in Enfield. HCE staff worked closely with the DOT on this project to require and review the design to ensure stream connectivity for fish. Terry Brook is a coldwater tributary to

the Scantic River, joining just below the recently removed Springborn Dam. The perched culvert at this location blocked upstream fish passage for a fairly robust native Brook Trout population that resides below the culvert and other fluvial species such as White Sucker, Fallfish and the catadromous American Eel. Due to traffic closure concerns, the existing perched culvert could not be replaced with a clear span bridge or culvert sunken below stream grade. Thus, a creative design was developed that included a total of 6 concrete weirs installed at the outlet to overcome the 2 ft. change in elevation and serve as a modified fishway to convey fish into the sliplined culvert. The culvert was modified with a series of v-notch concrete baffles to provide suitable water depth and water velocities for passage. In addition, a boulder rock weir was installed below the concrete weirs to serve as a holding pool for fish and also to create a backwater into the first weir/pool. The provision of fish passage at this location will restore connectivity to over 0.6 miles of stream habitats for the fish community.



(left – before modifications) *The Terry Brook Culvert outlet, perched over 2 ft. in height above the brook, blocked upstream fish passage*



(right – after modifications) *Upstream view of notched concrete weirs installed at outlet to provide upstream fish passage. Natural stream habitats were restored between the weirs.*

- **TOMS BROOK RELOCATION, Newtown**

Decades ago, DOT relocated Toms Brook (a tributary of the Pootatuck River) when Interstate 84 was constructed. This resulted in an unnatural zigzag course and poor fish habitat. A developer sought to relocate the stream again to maximize the available land for development. During the permit process, the HCE Program recognized the opportunity to correct some of the past mistakes and create a new channel section that would provide better fish habitat than what currently existed. Staff worked with the consulting engineer and wetlands scientist to fine-tune the design and provided on-site supervision during the one day construction project. Activities included the creation and maintenance of a silt trap to prevent temporary loads of sediment from being transported down to the Pootatuck River. The new stream channel is performing well but the entire project including designed floodplain wetlands and riparian plantings will not be completed until next summer.



(left) Prior to the project, Toms Brook flowed between the two silt fences at the upper right corner, toward the gas station, behind the excavator and to the left of the camera. The new channel cuts the corner and will be located where the orange-flagged stakes are located.



(right) Same area as the photo above but taken from the opposite side. Large rock weirs (like one in bottom of photo) act as grade controls. The boulder/cobble substrate will provide good habitat for fish. Final streambank grading and riparian plantings will be done next year.

## PERMIT REVIEW

- **COASTAL.** Staff reviewed two dredging projects in tidal waters and two bridge/culvert projects that ranged from repairs to full replacements. Measures were recommended, as needed, to maintain fish migratory corridors, avoid interference with river herring spawning migrations, and avoid impacts to winter flounder reproduction. One application for deploying aquaculture gear in Long Island Sound was reviewed for potential conflicts with recreational fishing. Three dock construction projects were reviewed, one on the Long Island Sound shoreline and two in the Connecticut River.
- **INLAND DISTRICT.** Staff reviewed fourteen permit applications for DOT bridge and culvert replacement projects, one municipal bridge project, one forest management plan, one water diversion project, and one emergency roadway repair.

## STREAM SAMPLING

Staff completed an electrofishing survey of Coppermine Brook in Bristol in the area of a proposed municipal flood control project. Wild Brook Trout densities were found to be in the top 20% and wild Brown Trout were found to be in the top 25% of all wild trout streams in Connecticut. The density of Slimy Sculpin, a Connecticut listed species of special concern, was found to be in the top 20% of all known occurrences in Connecticut. These data helped support conditions placed upon the permits issued to the Town for its project and can be used as a baseline for evaluating the impact of the instream work that will be done.

## HABITAT PROGRAM PUBLIC OUTREACH

Loss and degradation of aquatic habitats are important factors contributing to the long-term health and abundance of fishery resources. The HCE Program often fulfills an active role in educating the public,

NGOs and students of all ages to help prevent further habitat degradation along with help promote active aquatic habitat restoration efforts in Connecticut. Most recently presentations were provided at a Stream Ecology Class, University of Connecticut, Storrs and Riverine Geomorphology Class at Yale University, New Haven. Presentations focus on relative principles/benefits of habitat restoration and provide an overview of several case histories outlining a diversity of successful habitat restoration and fish passage projects in Connecticut.

*And a thank you from **HCE** to Diadromous Program Seasonal Resource Assistant Kirk McPherson, who filled in admirably as a substitute to manage the Grass Carp program this summer. As happens with "seasonals" Kirk's time has run out for this year.*



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