

# 2016

## Inland Fisheries Division Program Notes & Updates (Summer)



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## ***Special Thanks!***

### ***Tight Lines – Al Sonski!***

#### **After dedicating 31 years to rearing salmonids, Al has retired.**

Al began his career with the DEP back in 1985 at the Quinebaug Valley Trout hatchery as a Fish Hatchery Supervisor. In 1989 he transferred to the Kensington Hatchery in the same position, at a time when the hatchery was used solely for the production of Atlantic Salmon as part of the cooperative multi-state Connecticut River Atlantic Salmon restoration project. Al's keen intellect and overall knowledge base allowed him to assess, diagnose and solve any problem regarding the fish he was raising or the operation of the Kensington facility. His career spanned over 31 years. Al's experience, dedication to his profession and keen sense of humor will be sorely missed by the Inland Fisheries Division and especially those who worked closely with him over these many years.

The millions of fish that Al produced over his 31 years undoubtedly have made great fish stories and memories for Connecticut's Anglers, helped to raise awareness of trout and salmon for hundreds of thousands of Connecticut's youth (through supporting school-based fish programs), and gave hope for many that Atlantic Salmon could one day return to the Connecticut River after being driven to extinction in the late 1700's.

**Al, we and the sportsmen of Connecticut are grateful for your professionalism and service, best of wishes and tight lines in your retirement!**

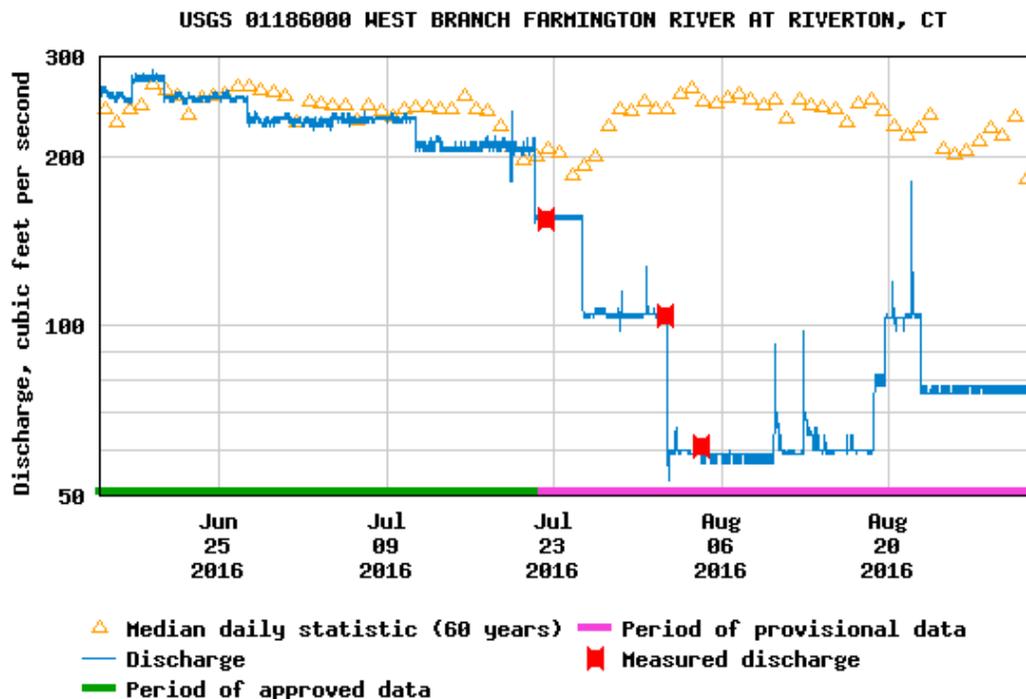


*Cover: Al Sonski, long-time (27 years) hatchery supervisor at the Kensington State Fish Hatchery with one of his prized Seeforellen-strain Brown Trout. Al retired in June after 31 years of dedicated service.*

# Inland Fish Management & Fish Culture

## COLDWATER FISHERIES

**HISTORIC LOW FLOW CONDITIONS.** Flow issues this summer have not only impacted small streams but have also had a deleterious effect on larger rivers as well. Flows in the Naugatuck River were down to historic low flows, the Housatonic River was reduced to exceptionally low levels through early August and again at the end of the month, and the upper West Branch Farmington River has been at approximately 75 cfs since August 22 (as of September 8) out of the Goodwin Dam (median flows for August should be 200-300 cfs). Little to no water is entering the river from Massachusetts and reserve water that IFD controls is being used to augment flows and protect cold water species in the upper river below the dams (see more on IFD releases on page 4). This is the earliest we have seen the river at these levels in the last 30 years. We are hoping that the rains move in before the fall salmonid spawning begins. as the current conditions will stress fish and increase bird related mortality.



*West Branch Farmington River flows as measured at the Riverton gauge from June 15, 2016 through August 31, 2016. DEEP augmentation of flows began on August 1 and are ongoing (as of September 8). Graph courtesy of USGS.*

Unfortunately, conditions lower in the Farmington River (from below the confluence of the East and West Branches) have not fared well. In mid-August the combination of low flows and extended high air temperatures caused trout to seek out thermal refuges at the mouths of tributary streams. Based on visual observations by IFD many of these fish succumbed to the diminished habitat conditions (see photos). Conditions since then have improved moderately (cooler water temperatures, but still extremely low flows) and the large aggregations of trout appeared to have moved back out into the mainstem river.



*Dead and dying trout in front of Burlington Brook, Burlington, CT, during the mid-August heat spell.*

#### **MORE ON DEEP'S AUGMENTATION OF FARMINGTON RIVER FLOWS.**

Under a set of agreements and special acts following construction of Colebrook River Lake, DEEP was allocated two pools of water for use to augment West Branch Farmington River flows for management of the river's fisheries. These two fisheries pools when full add up to approximately 3.26 billion gallons (BG). DEEP used some water in 2015 to augment flows but the pools never reset to completely full as Colebrook River Lake's pool elevation never reached the trigger point (714.5 feet above sea level) to reset pool volumes this year, so we started the season with 3.23 BG. As of September 7, we have approximately 2.74 BG remaining due to our augmentations of flows.

Whenever inflows to Colebrook River Lake drop below 50 cfs, the Metropolitan District Commission is required to maintain a minimum flow release of 50 cubic feet per second (cfs) from West Branch Reservoir. MDC went to the required minimum flow release on August 1, 2016, approximately six weeks after inflows to Colebrook River Lake had dropped below 50 cfs. Here's a summary of our actions since then:

- DEEP first decided to augment flows on 8/1 when MDC's releases dropped to the required minimum. Due to long range concerns (including winter flows) we started out conservatively (at 10 cfs).
- Once reports surfaced of distressed/dead fish (8/17) and fish stacked up at Burlington brook, staff checked various sites for fish and water temperatures. Following staff reports DEEP releases were increased to 30 cfs (on 8/18). Concurrently DEEP established eight thermal refuges closed to fishing at the mouths of tributaries where fish were stacking up.
- On 8/19, in light of the forecasted heat and warm nights for the upcoming weekend, DEEP releases were increased further to 50 cfs (note that at 50 cfs, 1% of our water is released daily).
- On 8/22, in light of somewhat cooler weather and improved water temperatures, DEEP releases were cut back to 25 cfs).

- As of 9/8, MDC continues to maintain their required release and DEEP continues to release 25 cfs to augment flows.

Note that with the current minimal inflows to Colebrook River Lake (approximately 5 cfs) and the current MDC required and the DEEP fisheries pool releases, both Colebrook River Lake and West branch Reservoir are dropping. Additionally, at the current fisheries pools release rate (25 cfs), both fisheries pools would be depleted in late February, 2017. There are however several upcoming drawdowns of lakes in the Farmington river watershed that will likely add a month or two to the fisheries pools. The drawdown of Otis Reservoir (MA) typically starts in mid-October and influences flows into December (although they might be a bit low this year). Highland (Still River) and West Hill Pond (Morgan Brook) also are drawn down and provide some relief.

DEEP continues to monitor conditions and will manage pool releases to best serve the river's fisheries and conserve resources.

### STREAM MONITORING

- **Fish population sampling.** Stream electrofishing was completed on 140 sites statewide (as of September 1) as part of the cold water monitoring project. A directed focus of this summer's sample was resampling streams where historic fish population data had not been collected since the original Stream Survey study over 20 years ago (41 sites); and sampling of smaller, previously un-inventoried, headwater streams (59 sites) to expand baseline data on fish species distributions. The resampling of old Stream Survey sites should allow IFD to determine broad-based population shifts occurring over a 10-20 year time frame. Assistance was given to the HCE project that had 19 stream locations needing fish community data. This summer has been hot and dry with 20 days over 90°F. Rain has been sparse, and over three dozen stream sampling sites were found to be completely dry, or down to isolated pools when visited. A few localized, heavy thunderstorms provided very minimal relief for a small number of streams but all returned to very low flow conditions within a few days following these events.



*Wild Brown Trout from Merrick Brook*

- **Water temperature logger deployment.** Water temperature data loggers were again placed in a number of Connecticut streams this spring. The focus was on long term reference streams. Fish data were collected from most of these temperature sites and will be used in development of regional water temperature/fish population models.

**LAKE & POND MONITORING.** Dissolved oxygen (DO) and temperatures were measured from surface to bottom in July and August at 12 lakes (including many important coldwater lakes). Thermoclines (the depth with the greatest temperature decrease within the narrowest band of water) were detected at

typical depths this summer. Even with the harsh summer and drought conditions, a layer of cold oxygenated “trout water” (dissolved oxygen concentrations  $\geq 4.0$  mg/l and temperatures  $\leq 19.0$  °C) persisted through August in Colebrook Reservoir, Crystal Lake (Ellington), East Twin Lake, Highland Lake, Mohawk Pond, Mount Tom Pond, West Branch (Hogsback) Reservoir, West Hill Pond, and Lake Wononskopomuc. Measurements will be taken again from Crystal and Highland lakes in September as time permits.

**2016 SUMMER/FALL TROUT STOCKING.** The West Branch Farmington River Trout Management Area (TMA) was stocked with 2,000 large (>12 inches) Brown Trout prior to the July 4<sup>th</sup> holiday. The typical Labor Day stocking (with ~1,500 >12 inch fish) of the upper Farmington River was conducted the week prior to Labor Day, despite low flow conditions (all fish released into the West Branch Farmington from the Goodwin Dam down to the upper end of the year-round catch & release area). However, much of the Farmington River, from below the confluence of the East and West branches and downstream, were deemed too warm and flows are too low for late season stocking. IFD would have preferred to hold the Labor Day fish until such time as the entire river’s conditions improve, but because of the ongoing drought, flows from wells are diminished at the Burlington State Fish Hatchery as well as the other two state fish hatcheries (Kensington and Quinebaug). Water and adequate space to accommodate the production fish for later this fall and next spring is very limited at this time. In addition, Survivor strain broodstock trout are scheduled to be collected in the next few weeks and additional space will be required to hold these fish until spawning. The 2016 statewide fall trout stocking schedule is being delayed until conditions begin to improve.

**2016 FALL BROODSTOCK ATLANTIC SALMON STOCKING.** As in past years, approximately 1,400 Atlantic Salmon (1,200 2-5 lb. fish and 200 fish averaging 10 lbs. apiece) will be stocked later this fall. These salmon are produced at the Kensington State Fish Hatchery and will be stocked into Crystal Lake and Mount Tom Pond, and the Naugatuck and Shetucket rivers if flows allow. Should we not be able to stock the Naugatuck or Shetucket rivers (or both) due to conditions, possible alternative locations to stock salmon would include Highland Lake, Squantz Pond, Mashapaug Lake, Long Pond, and Beach Pond.

## WARMWATER FISHERIES

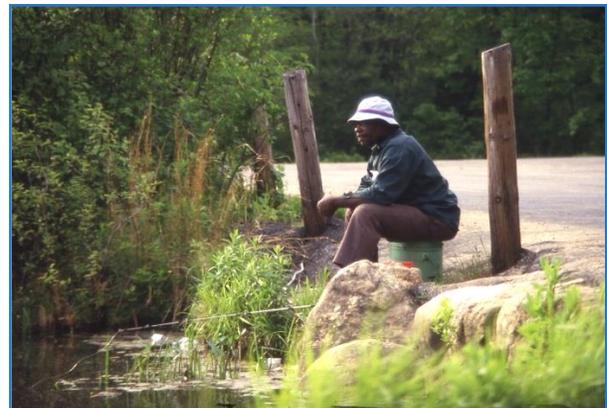
**NORTHERN PIKE.** The statewide Northern Pike production from DEEP managed marshes in 2016 was 7,074 fingerlings, which was short of the project goal of 12,864 fingerlings. As a result, only Mansfield Hollow Reservoir and Winchester Lake were stocked with their target number of fingerlings. All other Pike Management Lakes were stocked with reduced numbers except for Quaddick Lake which was not stocked this year (see table below for locations and numbers stocked). Possible reasons for the production shortfall include: 1) a cold spring that led to likely higher than normal mortality, 2) the Upper Haddam, Experimental and Cemetery marshes were not used for pike production during 2016 because of various water control/drawdown issues.

<i>Number of Northern Pike fingerlings stocked into Connecticut's Pike Management Lakes and the Lower Connecticut River.</i>		
<i>Lake</i>	<i>Number Stocked</i>	<i>% of Target Number</i>
<b>Bantam Lake</b>	513	27
<b>Lower Connecticut River</b>	1,323	110
<b>Mansfield Hollow Reservoir</b>	2,395	104
<b>Pachaug Pond</b>	1,658	39
<b>Quaddick Reservoir</b>	0	0
<b>Winchester Lake</b>	1,185	96



*Northern Pike fingerlings.*

**LAKE & POND ANGLER SURVEYS.** Year-round angler surveys are being conducted in 2016 at four lakes: **Coventry Lake** (Coventry), **Moodus Reservoir** (East Haddam), **Pickerel Lake** (Colchester) and **Lake Zoar** (Monroe). Surveys will assess angler catch, effort and opinions of IFD management of these lakes. Data obtained will be used by a variety of IFD management projects, including the Bass, Northern Pike and Walleye Management Projects. The open-water portion of these surveys will conclude on October 31.



*Shore angler at Moodus Reservoir.*

**LAKE & POND MONITORING.** Bass lengths and numbers were recorded at six bass tournament weigh-ins on Lake Zoar between May and August 2016. In addition to the number of bass brought to the weigh-in, we asked each angler how many bass they culled (released). These data will be used to assess angler catch rates of quality size bass from Lake Zoar.

## CARE & Constituent Services

**SUMMER FISHING CLASSES.** The CARE *Summer Fishing* crew conducted 54 classes for 1,421 day campers around the state. Each class consists of learning how to setup a rod and reel, how to tie the improved clinch knot, a fish ID and ecology lesson, and concludes with an hour of fishing. The target audience for this program is urban youth. This is the first year in 26 years that heat related weather concerns caused cancellations of some classes.

*Summer Fishing* – Interpretive guide Keith Syrett teaches fish identification at Batterson Pond during a Summer Fishing class.



**FAMILY FISHING COURSES.** CARE Instructors hosted 30 Family Fishing Courses this summer for over 400 students. These courses consist of 2 hours of classroom lessons and conclude with an instructor lead fishing trip. Included in these Family Fishing Courses was a “Women Only” class held at the CARE center in Killingworth. This class was open only to women ages 16 and up, and was very well received by the twelve ladies that attended! Staff will work to expand and build upon this pilot project in 2017.

*For Women Only!* – Instructor Tom Megargee demonstrates filleting techniques to women’s only class attendees.



**¡VAMONAS a PESCAR!** CARE is pleased to announce that after working with a diverse team of talented native Spanish speaking DEEP employees, two educational brochures (freshwater and marine) have been developed. These simple, easy to understand, brochures were designed to be educational by; introducing some of Connecticut’s most popular recreational fish species, providing information on how to get a fishing license, family friendly locations to fish, and species specific tips and pointers. These brochures are the first step in the development of fishing materials to encourage Connecticut’s Hispanic community to make fishing a family activity of choice.

**SPECIAL FISHING EVENTS.** Over 1,000 people attended a variety of special fishing events that CARE offered this summer. Highlights include:

- **SALT WATER FISHING DAY:** Partnered with State Parks Division and No Child Left Inside® to host the 5th annual Saltwater Fishing Day at Fort Trumbull State Park. The day was planned to coincide with FREE Fishing License Day. Roughly 300 participants attended and enjoyed the beautiful weather and good fishing. A variety of marine fish species were caught by participants!

**Right in our backyard** - While being asked by Mike Beauchene about how their fishing was going at the **CARE Saltwater Fishing Event** at Fort Trumbull this proud Father said, "I have lived in New London for over 40 years. I never knew how beautiful this park is and the great fishing opportunity. We are definitely going out to buy some fishing gear." His son added, "I am hooked!"



- **COPS AND BOBBERS:** Partnered with the US Fish and Wildlife Service, Hartford Police Department, and Riverfront Recapture Inc. to host 60 Hartford youth for a morning of angling education and fishing on the Connecticut River. Best of all, Hartford Police officers were able to connect with youth through a casual outdoor experience. CARE staff plan to conduct a special training for Hartford police officers so that this program will be led on a continual schedule.

**Cops and Bobbers, Hooks and Ladders** - The goal of the event was to connect public safety employees (Police and Fire) with the children in the community they protect. CARE was instrumental in helping facilitate this connection by bringing all of the fishing gear, bait, as well as running several stations designed to educate participants on Connecticut's gamefish, how to rig a fishing rod, and how to cast accurately and safely. All kids left with their own fishing rod, complements of Bass Pro Shop.



- **FAMILY NIGHT OUT:** Chief CARE Instructor Dave Connelly coordinated a fishing activity as part of national "Family Night Out" at Great Hollow Park in Monroe. Over 100 participants spent time catching bluegills and bullheads on this hot August evening.
- **HAMDEN FAMILY FISHING NIGHT:** A follow up fishing experience was offered to 6<sup>th</sup> grade students in Hamden and their families after attending a field trip to the CARE center on Forster Pond this spring. A total of 45 students joined CARE staff for an evening of fishing on Lake Wintergreen. Hopefully, this additional fishing experience will increase student's desire and confidence to fish together as a family.

**FREE FISHING LICENSE DAY #2:** 546 people took advantage of the opportunity to obtain a free 1-day fishing license. A survey was sent to all who provided an email (just over 300). Initial review of the responses indicated people wanted to fish with family or friends, went fishing in freshwater, and had been fishing before (in the past). This was the fourth time over the past two years where a free 1-day fishing license has been available.

**FOLLOWUP ON THE 2015 FREE FISHING LICENSE DAYS:** Using the conservation ID numbers for those who participated in one or both of the 2015 free fishing license days, the type of licenses acquired in 2016 was determined. A total of 206 2015 participants (of 1,034) obtained sporting licenses in 2016, including 124 licenses with a heavy fishing focus were purchased (all waters, inland only, or marine only). Based on the responses from a number of surveys (4 total), most of the participation is the reactivation of a former license buyer. Below are the number and types of 2016 fishing privileges acquired by the 206 people who participated in one or both of the Free Fishing License Days during 2015. Bold indicates the primary fishing license types traditionally sold to Connecticut Residents (All waters, inland only, or marine only).

<b>LICENSE NAME</b>	<b>NUMBER ACQUIRED</b>
<b>ALL WATERS SPORT FISHING LICENSE</b>	<b>78</b>
<b>INLAND FISHING LICENSE</b>	<b>31</b>
<b>RESIDENT MARINE FISHING LICENSE</b>	<b>15</b>
FREE ONE-DAY SPORT FISHING LICENSE-2ND	21*
FREE ONE-DAY SPORT FISHING LICENSE-1ST	15*
ANNUAL RESIDENT INLAND FISHING LICENSE-AGE 65 PLUS	10
ANNUAL RESIDENT OVER 65 FREE MARINE FISHING LICENSE	10
ALL WATERS SPORT FISHING AND FIREARMS HUNTING LICENSE	8
3 DAY INLAND FISHING LICENSE (NON-RESIDENT ONLY)	6
INLAND FISHING LICENSE (NON-RESIDENT)	6
NON-RESIDENT MARINE FISHING LICENSE	5
1 DAY MARINE SPORT FISHING LICENSE	3
3 DAY MARINE SPORT FISHING LICENSE (NON-RESIDENT ONLY)	2
ALL WATERS SPORT FISHING LICENSE (NON-RESIDENT)	2
FIREARMS SS WATERFOWL LICENSE-ALL WATER FISH;FIREARMS HUNT;MIG DUCK STAMP;HIP PERMIT	2
ALL WATERS SPORT FISHING AND FIREARMS HUNTING LICENSE 16-17	1
ALL WATERS SPORT FISHING LICENSE AND ARCHERY DEER/SMALL GAME	1
ANNUAL RESIDENT MARINE FISHING LICENSE-CODE 9	1
ARCHERY SUPER SPORT LICENSE: ALL WATERS FISH; SMALL GAME DEER ARCHERY; PRIVATE LAND SPRING TURKEY	1
FIREARMS HUNTING AND INLAND FISHING LICENSE (NR)	1
FREE INLAND FISHING - CODE 9	1
MARINE WATERS SPORT FISHING AND FIREARMS HUNTING LICENSE	1
<b>GRAND TOTAL</b>	<b>221</b>

*\*33 people who obtained a free 1-day license in 2015 did so again in 2016. Three of these participated in both of the 2016 days.*

# Diadromous Fisheries Restoration

## SPRING DIADROMOUS FISH RUNS

The spring fish runs ended in June with the following highlights:

- A strong run of **American shad in the Connecticut River**, with 386,000 fish passed over the Holyoke Dam in Massachusetts. This is less than the 412,355 passed last year but better than the 369,000 in 2014.
- A fair run of **American shad in the Shetucket River** with 2,669 fish passed at the Greeneville Dam compared to 1,919 last year.
- The return of adult **Atlantic salmon** to the Connecticut River totaled 6 fish, down from the low level of 20 last year. A drop off was expected due to the reduction of stocking numbers with the termination of the restoration program, but this low number reflects exceptionally poor sea survival that may be occurring throughout New England. One salmon was captured below the Leesville Dam on the Salmon River and transported upstream to cooler, safer water.

*Steve Gephard (left) and Bruce Williams (right) of IFD's Diadromous Fisheries Restoration program releasing the salmon upstream of the Leesville dam.*



- Runs of **alewife** were once again very poor. Not as uniformly bad as 2015 but runs decreased in many locations. The run to Bride Brook has been over 300,000 but this year it dropped for the third straight year with 148,000 fish counted.
- Runs of **blueback herring** were also very poor everywhere and continued to drop in the Connecticut River based on sampling in places like Wethersfield Cove and the lower Farmington River.

## FISHWAY OPERATIONS & MAINTENANCE

- Most fishways were closed for the summer in July [*Rainbow closed on July 8<sup>th</sup>, Leesville closed on July 21<sup>st</sup>*]. Each summer when the Rainbow fishway is closed, a portable eel pass is set up inside the fishway. This year the eel pass was set up on July 15<sup>th</sup>, and as of August 22<sup>nd</sup> has passed 673 eels.
- Staff performed various maintenance tasks at the Rainbow and Leesville fishways (painting the blockhouse and installing new dam flashboards at Leesville and building new wooden lead fences inside the Rainbow fishway).

- Greenville Dam Eel Lift**- This typically operates from late spring through the fall but experienced mechanical failure in early June. Staff responded quickly by replacing the hoisting mechanism so that operation of this eel lift could continue through the critical summer months.

*Staff at the Greenville eel lift replacing the electric hoist which enables the collection bucket to be raised and lowered.*



- Leesville Dam Eel Pass**- The existing Delaware style eel pass was redesigned to improve upstream passage. Improvements include new concrete weirs to control flow and an exit channel extending underneath the flashboards of the dam.

*The exit of the improved eel pass at Leesville Dam uses chains to allow juvenile eels to pass upstream underneath the flashboards of the dam.*



- Versailles Pond Fishway**- In 2015 the Thames Valley Chapter of Trout Unlimited received a grant to renovate the Versailles Pond fishway and staff have been assisting with the project. In August, new trash racks for both the fishway and attraction water channel were installed and an informational kiosk was erected. Approximately half of the fishway baffles have been replaced and the project is scheduled to be completed in the fall of 2016.

*Seasonal Resource Assistants Pat Wendt (standing in the water) and Nate Rocha installing the new trash racks at Versailles Pond.*



## FISH PASSAGE PROJECTS

While most of these projects are funded and sponsored by others, the Inland Fisheries Division provides important leadership, coordination, and technical assistance to all.

- **Clarks Brothers Dam Removal** (Quinnipiac River, Southington). This is one of two dams removed from the river as part of a project (see Carpenters Dam, below) sponsored by Save the Sound (STS) and funded by the U.S. Fish & Wildlife Service (US F&W) through a mitigation settlement originating from the old Southington Solvents contamination issue. The Clark Brothers Dam was removed first on August 2, and the event got good press coverage, including a photo of IFD staff at the dam on the front page of The Hartford Courant. Together with the Carpenters Dam removal, 9.2 miles of the Quinnipiac River were opened for fish migration. Fish can now swim from New Haven nearly to I-84 in Plainville. Species that will benefit include American shad, alewife, blueback herring, sea lamprey, and American eel.

*An excavator operated by RiverLogic begins to dismantle the 150 year old stone Clark Bros Dam. There was very little concrete used to build the dam and it was removed in the course of a few hours.*



- **Carpenters Dam Removal** (Quinnipiac River, Meriden). The second of two dams removed from the river as part of a project (see Clark Bros Dam, above) sponsored by STS and funded by the US F&W, was removed on August 15 and 16, 2016. This dam was partially breached but still blocked fish runs at some flows and represented a public safety risk. An abandoned water pipe just upstream of the dam will be removed in the coming months by Save the Sound.

*RiverLogic uses a hoe ram to batter apart the concrete spillway of the Carpenters Dam.*



- **Chapmans Pond Dam Fishway** (Menunketesuck River, Clinton). This state-owned dam on recently acquired property cannot be removed so a steep pass fishway has been fully designed and is now ready to be built to restore runs of river herring and sea-run trout. The Connecticut River Coastal Conservation District received a grant from the DEEP to design and build this fishway. IFD staff worked to secure funding and assist with aspects of the design phase. Construction began in July and should be completed by fall and operational by March.

- **Upper Pond Dam Fishway** (Goodwives River, Darien). This is the second dam on the Goodwives River at the head of Gorhams Pond. Alewives reach the base of the dam now and will be able to continue upstream following project completion. The project, sponsored by the Town of Darien, included dam repair, dredging, and a steep pass fishway. The fishway was completed by August but the rest of the project won't be completed until September.

*The Upper Pond Fishway under construction.*



## AMERICAN EEL

- **Yellow eel survey**- Electro-fished yellow eel index sites in the Blackledge, Pomperaug, Natchaug, and Scantic river drainages. Sampling at these sites allow staff to compare local American eel densities with the number of dams above Long Island Sound to where each site is located. It will also allow staff to monitor the progress of re-colonization as improved passage at dams for American eel is provided.

## SEA-RUN BROWN TROUT

Work continued on monitoring the **Iijoki strain of Sea-run Brown Trout** at Burlington State Fish Hatchery (BSFH):

- The trout imported last year as eggs (2015 cohort) are now parr residing in outside raceways at BSFH and they were sampled in August to evaluate growth and fin condition. Studies suggest that anadromous salmonids stocked as smolts with good fin condition have a higher rate of return as adults compared to those that are stocked as smolts having poor fin condition. Data are currently being analyzed, but preliminary results indicate that fin condition is very good and the average length and weight are the same for these fish as was measured for the 2014 cohort on the same date last year.
- All of the remaining 2015 year class fish at BSFH (approximately 12,000 – 14,000) will be stocked as smolts in the spring of 2017.
- The fish that were imported as eyed eggs this year (2016 year class) continue to do well at BSFH. Of the 40,460 eggs imported, 29,605 remain (73% rate of survival compared to 79% last year). Approximately 15,000 of these fish will be clipped and stocked this fall. The remaining fish will be transferred to outdoor raceways to be held for smolt production for 2018.

## OUTREACH & COLLABORATION

- On June 4<sup>th</sup> conducted a **tour of the Rainbow Dam fishway** for the Windsor Historical Society. This was one of the Historical Society's Open House events and was attended by 40 people.

- Staff attended the **International Conference on River Connectivity**, held in Amherst MA from June 20<sup>th</sup> – 22<sup>nd</sup>.

*DEEP Inland Fisheries Division staff at the river connectivity conference, from left to right: Dave Ellis, Bruce Williams, Brian Murphy, Tim Wildman, Steve Gephard.*



- Gave a **talk** aboard the RiverQuest excursion boat about the fishes of the Connecticut River. Another presentation and **electrofishing demonstration** was given to a summer camp at The Bent in the River Nature Center (Audubon Connecticut, Southbury). The crew was there to conduct annual sampling for American Eel (Diadromous program) and to evaluate the project that placed large woody debris in the stream (Habitat Conservation and Enhancement program) and added this presentation to the daily activities.
- Staff were interviewed for a story on WNPR radio about **electrofishing** (at The Bent in the River, above), and by The Hartford Courant and Meriden Journal-Recorder for the removal of the **Clark Brothers Dam**, and by Channel 8 TV news for the removal of the **Carpenters Dam**.
- Assisted the Farmington River Chapter of Trout Unlimited in investigating the possibility of the removal of a dam on **Thompson Brook in Avon**. Field measurements were taken to develop a report to submit to the Town of Avon that owns the dam and will ultimately decide whether or not to allow the partners to pursue this project.
- Removed stands of the invasive **water chestnut** from sites on the Connecticut River, on July 22. Sites included Selden Cove and Salmon River Cove. Many truckloads were hauled away for disposal. This work is part of a collaborative approach between the DEEP, the USFWS (Silvio Conte Fish & Wildlife Refuge) and volunteers. Also removed water chestnut from the headpond above the Clarks Pond Dam and Fishway (Milford) in August.

*Dave Ellis taking a boat load of water chestnut from Selden Cove along the CT River.*



## MISCELLANEOUS ACTIVITIES

- **Shetucket River.** Division staff have worked with others in the Department and the U.S. Fish & Wildlife Service to establish certain conditions as part of the new FERC license for the Scotland Dam on the Shetucket River. A key provision is that the project must be operated as ‘run-of-river’, meaning that what flows out of the powerhouse must equal what is flowing into the top of the impoundment

on an instantaneous basis—no more ‘pond-and-release’ operation. There has been some controversy over this transition during the past two years but after long last, the project shifted to true run-of-river on September 1. At that time, the owner, FirstLight Power Resources, took its generator off line so that it can replace it and the turbine with a more efficient, adaptable unit. From now until April of 2017 when the new unit goes on line, all river flow will spill over the dam’s spillway at the natural rate. Beginning in April, the flow will again pass through the project’s turbine but at a run-of-river rate. The rapid rise and fall of the Shetucket River that has plagued anglers for many years is a thing of the past. FirstLight will be building a fishlift at this dam during the summer of 2017.

- During the spring fish runs, staff **transplanted** pre-spawned shad and river herring from streams with strong runs and released them into streams in which we are promoting run restoration (typically above dams with new or planned fishways). River herring transfers for 2016 have been reported previously but American shad transplants occurred in June. This year, three streams were stocked: Mattabeset River- 93 fish, Farmington River- 976 fish, and Naugatuck River- 72 fish. U.S. Fish and Wildlife Service staff assisted with moving the majority of fish into the Farmington River (big thanks to them).
- **Lamprey nest surveys** are conducted in stream sections upstream of fishways where we lack the ability to count migrating lampreys. Nest surveys allow us to estimate the number of fish that created them and allow year-to-year comparisons. This year we estimated 669 lampreys ascended the Salmon River via the Leesville Fishway (up from 2015= 545). The Eightmile River watershed was estimated to have 109 lampreys nesting in it this year. The Eightmile River was enumerated using video counts at the Moulson Pond Fishway while the East Branch Eightmile River was surveyed by both Project staff and staff and volunteers from The Nature Conservancy.

*Staff counted sea lamprey nests such as this one.*



- Assisted with the CT River Seine survey on a weekly basis since mid-July. This survey is conducted annually to generate an index of abundance of both juvenile American shad and blueback herring.
- Assisted Yale University on multiple occasions on Rogers Lake (Lyme) sampling juvenile alewife. Purse seines were used to collect alewife samples for monthly indexing of abundance and also for genetic analysis.
- Participated in an American Shad and River Herring joint stock assessment meeting hosted by the Atlantic States Marine Fisheries Commission. This meeting was held to discuss how to proceed with update assessments of both shad and river herring. The follow up to this meeting will be an in person data workshop held this fall.
- Staff provided 15 live sea lamprey from the Rainbow fishway to researchers at Wesleyan University for use in medical research.

# Habitat Conservation and Enhancement

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

HCE staff review all Connecticut Department of Transportation 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:

- **Great Brook, Haddam (Route 9)**

Provision of fish passage enhancements at this culvert sliplining project involved construction of an outlet concrete pool & weir fishway, installation of alternating v-notch baffles inside the culvert and diversion walls at the top end to convey all low flows into only one of the three culverts. (High flows can still pass through the other two culverts but this helps funnel suitable flows into the one culvert that has baffles during lower flow periods. It also included the construction of a boulder pool below the fishway. Providing fish passage at this location added over 1.3 miles of upstream connectivity.

*Great Brook - View of outlet pool designed for fish to enter concrete pool/weir*



- **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 with HCE technical assistance. This project, to be implemented over a 10 year period, includes the removal of five dams. When completed the project will reconnect fish habitats to over 6.9 miles of the mainstem Moosup River. The partnership recently received approval by the owner to remove Brunswick Mill Dam # 1 and is currently developing a detailed project Scope of Work (SOW) with its consultant, Princeton Hydro.

*Moosup River - Remnants of Brunswick Mill Dam #1, constructed of timber and rock.*



- **Hilliard Pond Dam Removal, Bigelow Brook, Manchester**

Remnants of the partially breached Hilliard Pond Dam were removed by the Town of Manchester. HCE staff assisted the town with various aspects of project planning and restoration design that incorporated fish habitat enhancements. Bigelow Brook below the dam supports a “wild” or naturally reproduced brown trout population, a host of fluvial dependent fish species and the catadromous American eel. The removal of this fish passage barrier restored stream connectivity to over 1.2 miles of upstream habitats up to the base of the Center Springs Pond.



*Left. Hilliard Pond Dam pre-removal.*



*Right. Post dam removal and channel restoration.*

- **Fish Passage Monitoring, Tributary to Lyman Brook, Marlborough (Route 2)**

This project is part of a three year study by HCE/Diadromous staff to evaluate native brook trout passage performance at a culvert slipline project that was retrofitted with an outlet fishway and culvert baffles. Passage is being assessed with the use of a passive integrated transponder (PIT) tag monitoring system. A total of 61 native brook trout was tagged and PIT tag reader antenna arrays were installed in anticipation of monitoring trout movement before, during and after the October spawning season. Study findings will be used to facilitate fish passage design for future culvert sliplining or culvert modification projects.



*Above. Insertion of 12 mm in length pit tag into native brook.*



*Right. Installation of antenna at culvert outlet.*

### GRASS CARP PERMITTING

The Division received 60 permit applications during the last quarter for the liberation of triploid grass carp. Of those, 48 were new applications that required a site inspection and the remaining applications were for the restocking of previously permitted ponds. All applications were checked through the DEEP Natural Diversity Database for locations of threatened or endangered species. To date this year (as of 8/31), 82 of the 130 applications have been permitted for the liberation of triploid grass carp, with fish being released into ponds in 54 towns across the state. Included in the new applications were several for public and private lakes across the state requiring more research, meetings with lake association members, extensive site visits, and collaboration with DEEP's Inland Water Resource Division (especially the Dam safety unit).

### CANDLEWOOD LAKE TRIPLOID GRASS CARP MONITORING STUDY

A study documenting the post-stocking movements of triploid grass carp in Candlewood Lake is currently underway by the Candlewood Lake Authority (CLA), DEEP, Western Connecticut State University and other interested parties. The movements of 50 triploid grass carp that were tagged with radio transmitters and stocked into Candlewood Lake are being monitored. This study is the first of its kind in Connecticut and will provide valuable information for future permitting decisions.



*Surgical implantation of the radio tag for the telemetry study of triploid grass carp movements around Candlewood Lake. The vial portion slides into the body cavity with the antenna extending out and back along the fish's body. Two stitches were then placed to close the insertion site and the fish were given several days to recover prior to stocking*

### **BALL POND GRASS CARP STUDY**

Assisted the Town of New Fairfield with two vegetation surveys, adding an additional survey to the annual vegetation survey that has been performed since 1996. Although the data from this year's surveys are not yet available, data from previous years indicated that approximately 85% of the vegetation is now coontail and 15% is other plant species such as *Elodea*, *Chara* and *Naiad*. Previous stockings of triploid grass carp include 401 stocked in 1997, 175 in 2004, 70 in 2006, 75 in 2008, 2010 and 2011, 175 in 2013, 150 in 2015, and 75 in 2016. The success of the Ball Pond experiment will help inform HCE reviews of future applications for stocking grass carp in other public lakes. A report prepared by a private consultant summarizing the 20+ years of data is expected to be released in the near future.

### **COASTAL HABITAT**

Staff reviewed six dredging projects in tidal waters, and six 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.

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