

2016

Inland Fisheries Division Program Notes & Updates (Fall)



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Special Thanks!

GERALD “Jerry” LEONARD RETIRES

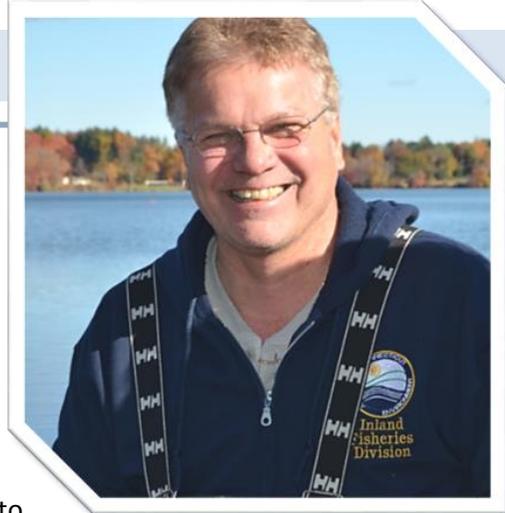
Jerry started with the DEP Fisheries Division in the Eastern District working for Chuck Phillips as a seasonal Resource Assistant in 1984.

Shortly thereafter (1985) he secured a full-time position as a Fisheries Technician in the Western District working for Bob Orciari on a project assessing Atlantic salmon smolts on Sandy Brook in Colebrook. It was during this time that Jerry was able to begin his mentoring career by “teaching” a few high school students how to maintain smolt traps, measure and fin clip smolts, and perform the “Winkler” method for measuring dissolved oxygen. He was a natural teacher, exhibiting great patience over the fumbling wide-eyed students. One of these students in particular, Mike Beauchene (currently supervisor of IFD’s CARE program), says that this experience was extremely formative in choosing his life path and he’s forever grateful for the opportunity.

During this period Jerry and Bob won an award for a peer reviewed manuscript on their work in Sandy Brook. They received the “Best paper of the Year Award” from the American Fisheries Society for a 1996 paper titled *“Length Characteristics of Smolts and Timing of Downstream Migration among Three Strains of Atlantic Salmon in a Southern New England Stream”* published in the North American Journal of Fisheries Management.

In the 1990’s Jerry was promoted to a Fisheries Biologist and over the next 20 years he worked on other successful statewide projects, including trout stocking, Lake and Pond Monitoring, Bass studies, and the new Walleye project. Jerry was also a key player in hundreds of fish community samples for both the Inland Fisheries Division as well as the Bureau of Water Protection and Land Reuse (WPLR) where he continually asked WPLR staff, “Why do we have to measure all these Blacknose Dace?” This collaborative work between IFD and WPLR was instrumental in the development of various peer reviewed and published fish community assessment tools like the CT Coldwater and CT Mixed Water Multi-metric Indices, *A Coldwater and a Cool water Biological Condition Gradient for Fish Communities*, Connecticut specific temperature thresholds for fish communities, and *Characteristics of Biological Communities in Least Disturbed Small Streams*.

Jerry always had a very “keen eye” for organization, scheduling, and determining the most efficient way to get multiple tasks accomplished in a timely manner. He was especially adroit (and frugal) at being able to figure out a never ending scheme for other staff to “pick him up” close to his home, somewhere in the course of getting to a meeting or a field sampling assignment. **Jerry and his organizational talents and good humor will be greatly missed.**



Cover: Farmington River stream electrofishing photo from the IFD archives (Circa 1999). Identifiable staff include Rick Van Nostrand (far left), the late Eric Schluntz (to left wearing white shirt with shad), Bob Orciari (center of photo with erect net), a much younger Jerry Leonard (far right), and Chris McDowell (between Bob and Jerry).

News & Notes of Interest – Fall Happenings

2016 CONNECTICUT CARP OPEN. The second annual CT Carp Open was held over 5 days in October on the CT River. This large scale carp fishing tournament is a “pegged” 100 hour fishing event that was organized by David Moore (OK) and his team from CARP Tournament Series. Fishing began at 10:00 am on Monday, October 10 (Columbus Day) and ended at 2:00 pm on Friday October 14. Forty seven anglers fished either solo or on teams of two (compared to 29 total anglers in 2015). Anglers traveled from a variety of other states to participate, including FL, GA, IL, NJ, NY, OH, PA, SC, and WV. Several of the anglers were originally from other countries including Great Britain, Romania, and Poland, while one angler currently from the Netherlands participated. The registration fee was \$300 per Angler and \$400 if participants also wanted to be considered for the Grand Prize of \$100,000 for setting a new State Record (the current state record, held by Mike Hudak is 43 lbs, 12 oz).

The number of pegged fishing locations was expanded this year both upstream and downstream, with 66 total pegged locations (50 pegs in 2015) on municipal and state-owned properties from Enfield downstream to Hadlyme (Gillette Castle State Park). Special thanks go to DEEP’s Parks and Boating Divisions, the riverside municipalities of Hartford, East Hartford, Wethersfield, Rocky Hill, Glastonbury, Cromwell, Middletown and East Haddam, Riverfront Recapture, and the CT DOT for allowing anglers to fish 24/7 on the lands under their control during this 100 hour event.

The payout for the “Biggest carp” was \$1,500, and the payout for the “Biggest 4” Carp was \$3,500. The payout for the biggest carp caught each day was \$500 and there were additional prizes for the largest



Philip Nathan (NY) with his best of tournament 37 lb., 4 oz., Carp, which he caught at Peg # 48 at Hurd State Park in East Hampton. Phil also won in the “Biggest 4” category, with a total weight of 127 lbs., 14 oz. (combined weight of his four heaviest carp). This surpassed the winning team from the CT Carp Open 2015, which won that event with a “Biggest Carp” at 36 lbs., 6 oz. and for the “Biaaest 4” at 124 lbs., 6 oz.



Marcin Targonski (CT), with the largest Mirror Carp (a carp with random patches of large scales) taken in the Tournament. Marcin was fishing at Peg # 45 at Harbor Park in Middletown on October 13. This fish weighed 25 lbs., 0 oz., when caught by Marcin. Another angler had caught the same fish (as determined by pattern) several hundred yards downstream at Peg #46 three days earlier on October 10. The fish had apparently gained several ounces of weight by the time it was caught again by Marcin, having weighed 24 lbs., 6 oz., when first caught.

Mirror and Fantail Carps landed. A total of thirteen Carp that weighed at least 30 lbs were landed by tournament participants. Carp provide a great opportunity to grow a niche fishery here in CT, and to also generate excitement for recreational fishing in our state. The CT Carp Open attracted a significant amount of attention from the media, including TV coverage. It is hoped that the event will continue in future years.

*The largest fantail Carp of the tournament, taken by **Chris Jackson** (PA) while fishing at Peg # 29, located on the fishing pier at Rocky Hill's Ferry Park. This beauty weighed in at 20 lbs., 9 oz.*



HYDRILLA UPDATE. Until recently, hydrilla was found at only a few locations in CT. This invasive aquatic plant can spread aggressively (it can grow up to a foot a day), form dense mats of vegetation and can be very difficult to control. In about a year's time it was found in two publicly accessible waterbodies:

Coventry Lake. In the fall of 2015, hydrilla was found in Coventry Lake (Coventry) and DEEP had arranged with Aquatic Control Technologies (ACT), a lake management contractor, for an extensive survey to determine the extent of the hydrilla infestation. ACT's survey in early November located one area (a nine acre cove) in the lake with several small patches of hydrilla.

This year, following review of a management plan developed by SOLitude Lake Management (formerly ACT) and consultations with the Town of Coventry, DEEP funded management efforts (including a series of surveys and a herbicide treatment) with the goal of eradication hydrilla in Coventry Lake. The cove where hydrilla was present was successfully treated with an aquatic herbicide (Aquathol-K) on August 10 & 11. It is expected that management (surveys, possible herbicide treatments) with the goal of eradication will be ongoing for several more years.

Connecticut River. In early June, hydrilla was found in a difficult to access portion of Keeney Cove by botanists participating in a "Bioblitz" conducted around the Two Rivers Magnet School, East Hartford. In mid-September DEEP staff observed several patches of hydrilla mixed in among the aquatic plants growing in the river at Glastonbury's Riverfront Park and Boathouse. Based on the observed current growth, it appears that hydrilla has been in the river for a couple of years and it is likely to be dispersed downstream of Hartford. As a result eradication is likely not practical.

Diadromous Fisheries Restoration

FISHWAYS & DAMS

- The **Norton Mill Dam** (Jeremy River, Colchester) was removed this fall by The Nature Conservancy with strong support from the Division. This dam that was visible from the Route 149 bridge, was one of the last remaining significant dams in the Salmon River watershed and its removal opens up 17 miles of upstream habitat that will help support Atlantic Salmon, Sea Lamprey, American Eel and trout. Division staff rescued fish that were stranded when the pond was drained and also supervised the placement of rock and other streambed material to assist with fish passage and enhance the habitat. The Town of Colchester razed the old brick mill and will continue to remediate the site prior to using the sediment excavated from the old pond bed to cap the mill site and create a streamside Town Park.



(left) Norton Mill Dam prior to removal.



(right) Norton Mill Dam site after removal.



(left) IFD biologist Tim Wildman leads effort to rescue stranded fish.



(right) IFD biologist Steve Gephard oversee the placement of rocks in the upstream portion of the former pond bed.

- **Chapmans Pond Dam Fishway** (Menunketesuck River, Clinton). Construction of a fishway at this State-owned dam at the head-of-tide was mostly completed in November (a short punch list remains). The Connecticut River Coastal Conservation District (CRCCD) received a grant from DEEP to

design and build this fishway. The CRCCD hired Nathan Jacobson Associates to design the fishway and Schumack Construction to build it. IFD staff assisted throughout the process and will operate the fishway, which was constructed to support runs of Alewife and sea-run trout. The fishway will be operational by next March. The project included a steep pass fishway with an underground window to allow video counting of migrating fish, a trapping area, a separate eel pass, and a downstream passage chute at the spillway. It is located at the newly designated Menunketesuck Wildlife Management Area.

The Chapman Pond Fishway includes an underground video window and a trap for retaining, sorting and examining fish.



- **Hanover Pond Dam** (Quinnipiac River, Meriden) was opened and the headpond drained this fall as construction of North America’s first Archimedes Screw Generator began. Division staff were present to monitor the draw down and rescue any mussels and fish that were stranded by the draw down. Mortality of fish was very minor. The project does not include a fishway since there already is a fishway at this dam but staff have been working with the hydro developer to develop plans and evaluation studies to minimize the impact of the hydro operation on the fishway. Additional eel passes will be installed as part of the project. The pond will remain low all winter. It is hoped that construction will be completed by April, the pond refilled, and the fishway opened for operation.
- Phase two of the **Lee’s Pond Fishway** (Saugatuck River, Westport) upgrades were completed. The foot bridge leading to the fishway was previously constructed of oak planking, which has a short life span. One third of the bridge decking was removed and replaced with aluminum grating in the summer of 2015 and the next third was replaced this past fall. The last of the project is expected to be completed in the summer of 2017. This grating should prevent further repairs for years to come.
- The Thames Valley Chapter of Trout unlimited had received a federal grant for \$22,402 to renovate the **Versailles Pond Fishway** (Little River, Sprague). The project was completed in November and the fishway will be fully operational for the spring 2017 season. Staff provided technical support for the design and installation of the new baffles, trash racks, and educational kiosk. Asnuntuck Community College assisted with the fabrication of the baffles. International Paper (the dam’s previous owner) provided \$5,000 of non-federal match to complete the project.

Renovation of the Versailles fishway. This project was completed, November 6, 2016.



- Provided technical assistance to the owners of the **Hummers Pond Dam Fishway** (Fence Creek, Madison). The dam is the site of a small fishway and the pond has been experiencing problems with aquatic weed growth and increased sedimentation and the fishway has been affected by fluctuating water levels.
- Completed maintenance on existing fishways, including repairing the walkway at the **Trading Cove Brook Fishway** (Trading Cove Brook, Montville) and patching concrete at the **Jordan Millpond Fishway** (Jordan Brook, Waterford).
- Continued to work with partners to develop, design, and plan a number of fish passage projects including: **Scotland Dam Hydro relicensing** (also involving flow issues), **Springborn Dam removal** (Enfield), **Blackledge Dam removal** (Glastonbury), **Papermill Dam removal** (New Milford) and a number of projects that are not yet ready for public discussion.
- The **Rainbow Dam Fishway** (Farmington River, Windsor) was operated during the fall from October 3rd to November 10th. Juvenile American shad and 74 silver eels were documented passing through the fishway. Due to extreme low flows on the Farmington River the downstream bypass facility at the dam was not operated during the fall season.
- Due to extreme low flows, the **Leesville fishway** (Salmon River, East Haddam) and the **StanChem Fishway** (Mattabasset River, Berlin) were not operated during the fall season.

RIVER HERRING

- Staff attended the Atlantic States Marine Fisheries Commission's (ASMFC) Shad and River Herring Data Workshop. Discussion topics included state summaries of data available for both American shad and river herring, data gaps, analyses to be completed, how to proceed with a stock assessment update, and steps for the next full stock assessment. Participation in ASMFC activities are essential to maintaining both recreational and commercial fisheries for shad in the Connecticut River.

ATLANTIC SALMON

- Completed the annual electrofishing survey of juvenile Atlantic Salmon populations within the Farmington and Salmon River watersheds. The work was conducted at 37 sites between September 9th and October 6th. Growth and survival of all age classes was poor, probably the result of severe drought conditions experienced in 2015 and 2016. East Branch Salmon Brook in Granby was not stocked with salmon fry in 2016, but one young-of-the-year salmon was found in the area where staff documented salmon redds in the fall of 2015.

Hatched in the wild young-of-year salmon parr believed to have originated from sea-run salmon released at the Rainbow dam in 2015.



- Assisted in the spawning of Atlantic Salmon at the Kensington State Fish Hatchery (KSFH). Between October 28th and November 15th a total of 535,198 eggs was 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.



IFD staff rinse salmon eggs prior to incubation.

SEA-RUN TROUT

- Clipped (left pelvic fin removed) 12,000 sea-run Brown Trout being raised at the Burlington State Trout Hatchery (BSTH). All of these fish were then moved into the three smolt ponds where they will reside until they are stocked in March, 2017 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.



A Sea-Run Brown Trout receives a fin clip. This fish was imported as an eyed egg in January, 2015 and will be stocked as a smolt in 2017.

- Electrofished the Farm and Shunock rivers to assess Sea-Run Brown Trout stockings. Survival of Sea-Run Brown Trout 0+ parr stocked (fall 2015) in Shunock River was estimated to be 6.3%. Approximately 1% of the Sea-Run Brown Trout 0+ parr stocked in the fall of 2014 remained in the Shunock River indicating, perhaps, that most of that age class immigrated to salt water. Survival of Sea-Run Brown Trout 0+ parr stocked (fall 2015) in the Farm River was estimated to be 0.4%. No fish that were stocked in the fall of 2014 in the Farm River were captured during the sample.



Diadromous staff measuring a 2+ Sea-Run Brown Trout during the Shunock River electrofishing sample. This fish could have been ready for salt water in the spring, 2016 but did not leave the river. It is possible that it will migrate to saltwater next spring.

- Stocked nearly 12,000 Sea-Run Brown Trout parr into the lower sections of the Farm (6,660) and Shunock (5,343) rivers. These were fish that had been graded-out of 2018 smolts 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, 2018.

AMERICAN EEL

- Monitored the silver eel migration at three locations (Rainbow, Moulson Pond and Bunnells Pond fishways) utilizing digital imaging equipment. The number of silver eels counted at two of the sites (Rainbow and Moulson Pond) increased from last year’s counts. Bunnells Pond Fishway was added to the fall silver eel monitoring effort this year and staff from Beardsley Zoo are performing all of the required duties including the review of the image files. StanChem was not operational for fall silver eel monitoring due to the persistent low water conditions.
- Helped design and oversaw the installation of an eel pass at the top of Cargill Falls (Quinebaug River, Putnam), which was a requirement of the permits for the hydroelectric project under construction in the old mill adjacent to the falls.
- Helped design and oversaw the installation of an eel pass at the base of the Chapman Pond Dam (Menunketesuck River, Clinton). This is part of the larger project to build a steeppass fishway at this State-owned dam (see second bullet under “Fishways and Dams”, above).
- Helped install and operate a 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. Staff have been working with GPU staff for several years to address this problem and proposed a new “airlift system” that had previously been successfully tested in the experimental flume at the USGS’s Conte Anadromous Fish Research Center in Turners Falls, MA. A 10” diameter PVC pipe was mounted vertically against a wall of the intake structure with the bottom (entrance) resting on the floor of the water supply intake structure – about 10 feet below the surface of the reservoir—and the top (exit) about 9” above the water surface. A large compressor pumps air into the base of the pipe and forces the water inside to rush upward and out of the top of the pipe like a drinking fountain. This creates an attractive current to the eels, which enter and are pushed up the pipe with the water. The top of the pipe is encased in a screened cage to trap the eels but all the water is returned to the reservoir, with no lost water to the GPU. The trap is checked daily and any trapped eels are documented and released downstream of the dam. To date, the airlift has captured close to 50 Silver Eels. Dr. Alex Haro of the USGS lab has been instrumental in the first field trial of this new passage technology (a schematic of the system and photos can be found on the next page).

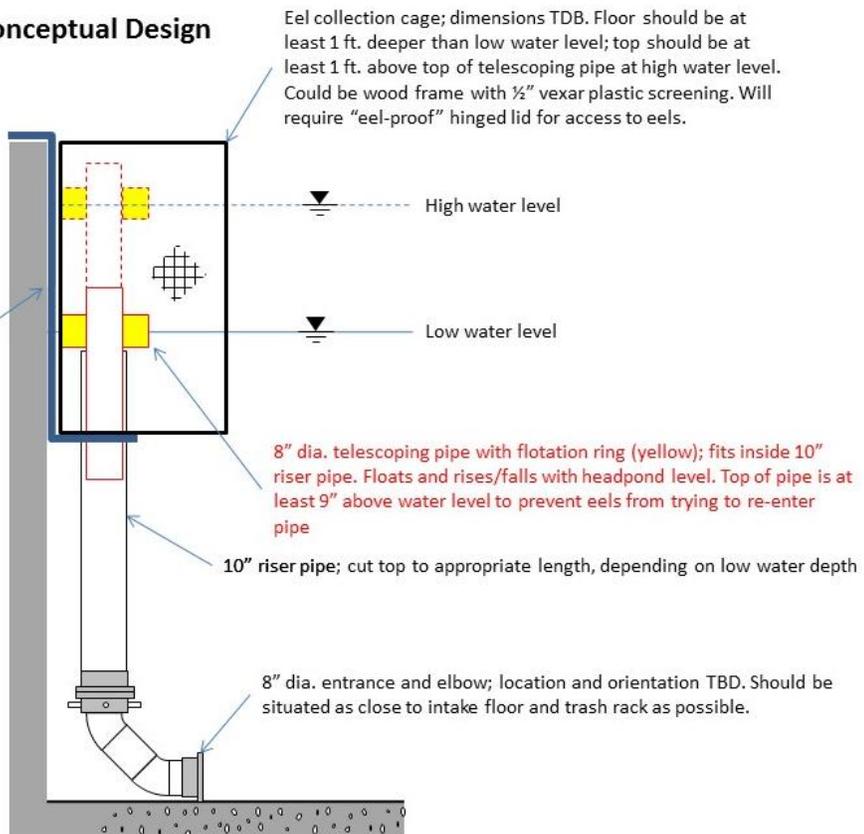
Groton Eel Airlift Conceptual Design

9-1-16 by A. Haro



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Steel or sturdy wood mounting bracket attached to cage and riser pipe, anchored to top of wall; facilitates attachment of pipe and cage to wall without having to make attachments to wall underwater



(above) Conceptual design of the Groton Eel Airlift.



(left) The Groton Silver Eel Airlift and trap is positioned in front of the water treatment plant's intake grate.



(right) One of the Silver Eels captured with the Groton airlift. Large female Silver Eels like the one being held in the photo are capable of producing thousands of eggs and are therefore critical to stock recovery.

MISCELLANEOUS ACTIVITIES

- Assisted Marine Fisheries staff with the annual juvenile shad and river herring index seine survey.
- Assisted Marine Fisheries staff with the Long Island Sound Trawl Survey.

PUBLIC OUTREACH

- Staff were interviewed by The Hartford Courant, WSFB-TV and a private journalist about the Norton Dam Removal Project.
- Spoke at The Nature Conservancy's ribbon cutting and volunteer tree planting event at the former Ed Bill Dam site following the removal of the dam earlier in the year.
- Staff led tours of dam and fishway sites and discussed the Division's fish passage program to Federal-Aid Coordinators from the Northeast attending an annual meeting in Mystic, CT.
- Led a tour of downstream fish passage facilities in the state for biologists visiting from Finland who are planning to improve downstream fish passage for salmon and trout in Finnish rivers.
- Represented the Division at a testimonial event in Westbrook for Tom O'Dell, a prominent conservationist that was instrumental in securing the land for the new Menunketesuck Wildlife Management Area and the Chapmans Pond Dam Fishway, among other things.
- Gave a talk in Old Lyme about the fishes of the Connecticut River for Connecticut Audubon as part of its Roger Tory Peterson Lecture series.

Habitat Conservation and Enhancement

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:

- **Bungee Brook, Eastford**

This project included installation of three separate groups of large boulders within the footprint of the bridge crossing to provide velocity refugia and increase diversity of instream habitats.

View of excavator installing large boulders into Bungee Brook.



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

This project is part of a three year study funded by DOT to evaluate native Brook Trout passage performance at a culvert slipline project that was retrofitted with an outlet fishway and culvert baffles. Passage will be assessed with the use of a passive integrated transponder (PIT) tag monitoring system. The system was installed and 61 Brook Trout tagged prior to the 2016 fall Brook Trout spawning season. Monitoring of the movement of tagged trout began before the spawning period and continued after spawning was concluded. Preliminary results indicate that some fish successfully passed upstream through the fishway and culvert.



(left) IFD fish habitat biologist Brian Murphy conducting a mobile PIT tag search for Brook Trout in Lyman Brook.



(right) Brook Trout redd found within fishway entrance holding pool.

■ **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. Work was recently initiated to remove Brunswick Mill Dam # 1. Initial site work by the project consultant, Princeton Hydro, involves sediment sampling, topographic survey, wetland survey and preliminary design and engineering.

INSTREAM FLOW COUNCIL MEETING

Attended the biennial Instream Flow Council meeting held at Penn State University. The Instream Flow Council (IFC) is a non-profit organization made up of state, provincial, and territorial fish and wildlife agencies working to improve the effectiveness of instream flow programs and activities for conserving fish and wildlife and related aquatic resources. Attendance at this meeting is critical for understanding new and emerging instream flow science and policies. Instream flow issues highlighted during the meeting included flow management during droughts and a training session on an EPA/USGS document, *“Protecting Aquatic Life from Effects of Hydrological Alteration”*.

PERMIT REVIEW FOR ACTIVITIES IN TIDAL WATERS

Staff reviewed six dredging projects in tidal waters and eight 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. Two applications for deploying aquaculture gear in Long Island Sound were reviewed for potential conflicts with recreational fishing.

Staff continued to provide guidance to the City of New Haven’s design consultant working on the replacement of the Fort Hale Fishing Pier in New Haven. Suggestions were made to include railing features that will enable most people to comfortably fish from the pier as well as various amenities such as cutting boards and running water. Once the plans are completed the City will submit an application to replace the damaged pier to DEEP’s Land and Water Resources Division (LWRD).

As a result of severe damage caused by storms Irene (2011) and Sandy (2012), the Fort Hale Fishing Pier was closed to the public. The former 350 foot long pier will be entirely replaced with a 333 foot long pier with a 140 foot “T” head. The pier is being designed primarily for the purpose of fishing.



GRASS CARP PERMITTING

The Division received 17 permit applications during the last quarter for the liberation of triploid grass carp. Of those, seven 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 11/30), 131 of the 148 applications have been permitted for the liberation of triploid grass carp, with fish being released into ponds in 60 towns across the state. Included in the new applications were several public and private lakes across the state, requiring more research, meetings with lake association members, extensive site visits, and collaboration with DEEP's Dam Safety unit.

NORTH ATLANTIC AQUATIC CONNECTIVITY COLLABORATIVE (NAACC)

The Division received a grant through the Department of the Interior Hurricane Sandy Recovery funding and the North Atlantic Landscape Conservation Cooperative to assist with surveying culverts in Connecticut. There is growing concern about the role of road crossings – and especially culverts – in altering habitats and disrupting river and stream continuity. The NAACC seeks to inventory, and more effectively address, barriers to fish movement and river and stream continuity throughout the Northeast.

With the NAACC grant funding, IFD was able to hire two resource assistants to perform site surveys of road/stream crossings and add the data to the project's database. There are over 30,000 road and stream crossings in Connecticut and to date approximately 5,000 have been surveyed (this was the second year of the grant). During this past quarter, more than 150 crossings were surveyed, completing approximately 20% of the Little River Sub-Regional Watershed. Due to the significant drought this year, many stream crossings were low or had no water. A list of dry streams was provided to DEEP's Land & Water Resources Division and other agency staff. The information collected by the stream crossing surveys will be used to assess priorities for towns or watersheds regarding the status of fish passage and stream connectivity, and to provide data for use in prioritizing future mitigation projects.

This is an example of a culvert that is severely rusted, allowing the stream to flow underneath the pipe. This information has been forwarded to the appropriate town.



CARE & Constituent Services

INSTRUCTOR TRAINING. After experiencing a summer of above normal temperatures and prolonged drought, CARE staff decided to focus this year's in-service training on the effects of these two factors on trout populations in Connecticut, both hatchery and wild, as well as how drought has effected hatchery productivity. After lining up expert speakers on these subjects we conducted an in-service training for 32 certified CARE Instructors at Burlington Trout Hatchery and Sessions Woods Wildlife Management Area.

Inland Fisheries Supervisor of Fish Culture Rick VanNostrand led a tour of the Burlington Trout Hatchery while providing a history of the facility and information on current salmonid production in Connecticut. Rick explained how the drought affected water availability in the hatchery systems and how water saving measures had been implemented.

After the hatchery tour, Instructors traveled to Sessions Woods WMA where Supervising Fisheries Biologist Tim Barry presented a case study of East Twin Lake and the effects of introduced species over the last 20 years, and Supervising Fisheries Biologist Mike Beauchene spoke on wild brook trout populations and their habitat requirements, gave an in-depth lesson on distinguishing wild trout from hatchery trout, and discussed the current status of Didymo (an invasive algae that can be found in coldwater streams) in Connecticut. Both Tim and Mike described how this year's drought impacted trout populations in the Farmington and Housatonic river systems.



***In-service Training.** IFD Supervisor of Fish Culture Rick VanNostrand discusses kokanee salmon hatchery production as CARE Instructors gather around tanks full of adult kokanee at Burlington State Fish Hatchery.*

These educational in-service trainings are extremely valuable as CARE Instructors speak to thousands of constituents every year. By increasing Instructor knowledge of fisheries programs they are able to share this information when fielding questions and teaching lessons during Family Fishing Courses.

FALL CLASSES. Conducted twelve CARE classes for 1,205 students in Bozrah, Branford (3), Burlington (2), Franklin, Hamden, Guilford, Killingworth, New London and Portland.

ICE FISHING. Scheduled eight Family Ice Fishing Classes for this January in Coventry, Farmington, Glastonbury, Hampton, Killingworth, Litchfield, New Haven and Oxford. The annual CARE Ice Fishing events have been scheduled: the Family Fishing Derby will be held on January 28th from 9 am to 12 pm on Coventry Lake in Coventry, and the *No Child Left Inside*[®] Winter Festival will be February 4th from 10 am to 3 pm at Burr Pond State Park in Torrington.

PROGRAM NUMBERS. Completed the 2016 CARE student and Instructor reports, documenting over 7,500 students taught. A total of 102 certified Instructors and 80 teaching team members contributed

over 3,500 hours of volunteer time. The monetary equivalent of Instructor volunteer time used as State match for federal dollars has surpassed \$4.4 million dollars over the last 30 years.

INSTRUCTOR SURVEY. Staff surveyed all certified volunteer Instructors using Survey Monkey. Two unique surveys were developed and emailed to volunteer Instructors; one for “active” volunteers and one for “lapsed” volunteers. A total of 40 responses were collected from active volunteers (38% response rate) and 28 responses from lapsed volunteers (13% response rate). Response data will be used to develop an Instructor recruitment and retention strategic plan.

HUNTING AND FISHING DAYS. Connecticut Hunting and Fishing Day was celebrated at two locations this year in honor of the 150th Anniversary of the Bureau of Natural Resources: September 10 at Franklin Wildlife Management Area (WMA) in North Franklin and September 24 at Sessions Woods WMA in Burlington. CARE staffed and coordinated fisheries involvement for both events; which included our setup of the Inland Fisheries Outreach and Education trailer, a live fish tank and touch tank, kid’s backyard bass casting activity, and fisheries program displays. Nearly 1,600 attendees came and celebrated these two events. At the Sessions Woods Event, Channel 30 (NBC) and Channel 3 (CBS) had live reports starting at 5:00 am and repeated these live reports multiple times throughout the morning. Each also played a longer story during their evening news casts.

The touch tank, or pool, proved to be the most popular attraction at the Inland Fisheries Display at each of the Hunting and Fishing Days held in September. Thank you to Andrea Repko (in photo) for coming out and volunteering to help educate youth and families about Connecticut’s fish.



Inland Fish Management & Fish Culture

COLDWATER FISHERIES

2016 FALL STOCKING

Broodstock Atlantic Salmon. Due to an ongoing drought that caused record low flow conditions in many Connecticut rivers this fall, Connecticut lakes were stocked in early Oct. with slightly more fish than in the past. Riverine habitat (both flows and temperatures) wasn't suitable for standard allotments earlier in the fall but by mid-October water temperatures in the Shetucket and Naugatuck Rivers had reach safe levels for ATS broodstock stocking. This fall, IFD stocked approximately 1,740 Atlantic Salmon broodstock (with the last 21 salmon stocked into the Upper Naugatuck River on Tuesday, 12/6). The 2016 broodstock were released into the following waters: Crystal Lake-Ellington and Mount Tom Pond each received 500 fish; 250 of which were smaller 1 + aged adults; the Naugatuck River (approximately 375 fish), and the Shetucket River (365 fish). The vast majority (1,070) of the stocked salmon this year were age 2+ weighing between 2-5 lbs. each. In addition, nearly 170 salmon were age 3+ and averaged 10 lbs. apiece



IFD seasonal resource assistant Mike Steeves stocking an Atlantic Salmon that weighed approximately 25 lbs into the lower Nauaattuck River.

Trout Stocking. Exceptionally low flows and warm water temperatures this fall severely hampered trout stocking efforts in rivers and streams throughout the State. Nonetheless, approximately 53,800 trout were stocked this fall, including 1,000 trophy-size Cortland Brown Trout and 8,400 trophy-size Rainbow Trout (greater than 12 inches in length); 26,000 fingerling (< 7 inch) Cortland Brown Trout; 800 broodstock (average 3 lbs.) Brook Trout and Cortland Brown Trout; 4,600 large yearling (~ 10 in.) Survivor Brown Trout; and 13,000 fingerling (< 6 inch) Survivor Brown Trout. Stocking occurred in TMAs, Trout Parks, and heavily utilized lakes and ponds. Unfortunately, most rivers and streams that typically receive a fall stocking were unable to be stocked due to the ongoing drought conditions. Consequently, nearly 15,000 standard-size (10 inch) Rainbow Trout and 7,000 fingerling (6-9 inch) Cortland Brown Trout were not stocked as usual during this fall. Instead these fish were held in the hatchery system to grow to larger size and help make up for an anticipated shortfall of adult-size hatchery production trout this coming spring (2017).

*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 and clicking the **Current Stocking Reports** link.*

For the second year, a new experimental initiative was undertaken where broodstock Brook Trout (average weight of 3 lbs) were stocked into two waterbodies, Mohawk Pond and Black Pond (Woodstock). Each lake received nearly 250 fish with the intensions of providing anglers the opportunity to catch very large "brookies in a rural New England-like" setting.

Brown Trout yearlings/fingerlings were stocked into 10 areas: Blackberry River (5,000); East Branch Salmon Brook (5,000); Farmington River (7,000); Hockanum River (5,000); the Housatonic River TMA's (2,500 in the Bull's Bridge TMA and 3,100 in the Cornwall/Sharon area); Roaring Brook (Glastonbury, 6,000); Pequabuck River (5,000); Shepaug River (2,500), and the Willimantic River TMA (2,500). It is anticipated that the yearling and fingerling stockings will provide fishing opportunities for fish that are "wild" in appearance when they reach adult size. As well, several of these stockings helped to replace fish that suffered mortalities during the hot, dry summer, especially in waterbodies such as the Farmington and Housatonic Rivers where die-offs were documented.



A broodstock Brook Trout stocked in 2015 caught from Mohawk Pond. Photo taken by Melissa Cherniske.

BROODSTOCK SEEFORELLEN BROWN TROUT. Plans are underway to stock approximately 500 broodstock Seeforellen strain Brown Trout into Highland and Crystal (Ellington) lakes in late December. These fish have an average weight of 3.5 pounds each. This stocking will be announced via Facebook and the weekly Fishing Report. This will be the last year that these fish will be available for stocking due to fiscal cutbacks at Kensington Hatchery.

FARMINGTON RIVER UPDATE. The drought CT is experiencing has led to an extended period of river flows well below typical levels throughout the state and the Farmington River is no exception. Very warm water temperatures combined with low flows had led to the loss of an undetermined number of fish, especially below Collinsville, in August. At the beginning of August IFD began augmenting flow releases from Goodwin Dam using water from "fisheries pools" assigned to DEEP in Colebrook River Lake and in mid-August, DEEP established closed thermal refuges at the mouths of eight tributaries to protect fish congregating in cooler water (*for additional detail on summer flow issues and management, please see pages 3-5 of the September, 2016 Quarterly Report*).

Although flows remained very low this past September, conditions improved as air temperatures and water temperatures moderated. The emergency thermal refuge closures established in mid-August were allowed to expire in mid-September.

Farmington River flows have continued to be well below typical levels this fall. The Metropolitan District Commission has maintained its required 50 cfs minimum flow release from Goodwin Dam. Water levels at West Branch Reservoir and Colebrook River Lake had continued to drop through the end of October. In late October when water temperatures had cooled sufficiently, and several rain events improved inputs from the Still River, DEEP terminated its augmentation of flows in order to conserve water should flows need to be augmented during the winter. Since then several additional rain events and drawdowns of Highland Lake and Otis Reservoir have resulted in somewhat higher flows in the Still River and allowed water levels to rise some in both West Branch Reservoir and Colebrook River Lake.

One of the concerns this fall has been the effect of the low flows on trout spawning in the river. Flows were not adequate to allow spawning to occur in the most productive side channel spawning areas of the West Branch Farmington River. Most of these side channels were completely dry. However, a redd survey

conducted on November 4th in the section of river from the Goodwin Dam to Satin's Kingdom found redds scattered throughout the main channel of the river. Additionally, redds were observed in locations where they have not previously been seen, including several locations above the confluence with the Still River. Hopefully flows can remain consistent through the hatching period and the redds can remain underwater. If there are sudden high flow events, these redds may be destroyed, if flows drop too low these redds may freeze as the winter encroaches (thus the need to conserve fisheries pools noted above).

This fall however, the Farmington River was one of the few rivers stocked. In early September, DEEP stocked 1,450 12-14 inch Brown Trout into the upper West Branch Farmington (from Goodwin Dam down to the upper boundary of the year-round catch-and-release area), in early October the Farmington River Anglers Association stocked 650 Rainbow Trout and 450 Brook Trout into the upper West Branch above Whittemore Pool, and in early November 1,700 12-14 inch browns were stocked between Goodwin Dam and Whittemore Pool by MDC. Additionally, from September to early November, a total of 7,000 yearling trout (survivor strain & Cortland strain Brown Trout) were stocked into the West Branch Farmington River and Farmington River from the Route 219 Bridge to the route 177 bridge in Unionville. The smaller fish in the lower river should help rebuild the trout population, while the larger fish stocked in the upper river are supplying much desired fishing opportunities.

STREAM MONITORING. 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 loggers from 24 location in Eastern and Central Connecticut were retrieved. Water Temperature data collections focused on long term reference streams (12) and stream systems with little available information (12). All temperature data are to be proofed and uploaded into the ECOSHEDS.org website for easy public access. Summer water temperatures were higher than normal and remained high for extended periods. Streams in ground water dominated basins had cooler than average temperatures, but a substantially smaller size. Wild Brook trout were often found to be congregating in isolated, cool, deep pools. These areas were their only refuge from the drought.

As might be expected, numerous streams went completely dry and these were documented as they were encountered over course of the summer. Streams that were normally 10-20ft wide were often reduced to stagnant pools or completely dry. Not all portions of the state were effected the same. The southeast corner was dry in early summer. The area between New Haven and the Connecticut River and the northwest corner were also hit hard throughout the summer and well into the fall. The conditions this summer will likely result in a substantial contraction of most stream fish communities in these areas. It will probably take several years of normal flows for populations to recover.

TROUT IN THE CLASSROOM. We had 'Egg Day' on Nov. 18th this year. A total of 113 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.

KOKANEE SALMON. Fall trapnetting for the collection of Kokanee salmon broodstock was completed at West Hill Pond and East Twin Lake during October. While broodstock fish were fewer in number in West Hill this year, the average size was well above normal with most fish averaging 17' total length. As we fell slightly short of the requisite number of spawning pairs out of West Hill the decision was made to do some

additional trapnetting in East Twin Lake. Broodstock fish were plentiful in this location but the average size was noticeably shorter than the West Hill Pond fish with most sexually mature fish averaging 11-12" in length. Spawning went well and egg numbers met the goal for production of next years' fry for the late spring stocking.

WARMWATER FISHERIES

WALLEYE. A total of 31,400 walleye fingerlings were stocked into state-owned management waters on October 31, 2016. Similar to last year, 11% of the fingerlings IFD purchased were larger than the typical size fingerlings (averaging 7 inches instead of the typical 5 inches in length). These larger fish were stocked into Gardner and Mashapaug Lakes because the adult walleye populations in these lakes have been declining over the last several years. One hypothesis for this decline is that the 5-inch fingerlings are not surviving due to predation. Larger fingerlings should be less susceptible to predation and thus have a higher survival to adulthood. The remaining fingerlings were the standard 5-inch size and were stocked into Batterson Park Pond, Beach Pond, Coventry Lake, Squantz Pond, Lake Zoar, Cedar Lake (Chester), Mount Tom Pond and West Thompson Reservoir. Larger size fingerlings were also purchased by Aquarian Water Company and stocked into Saugatuck Reservoir. Standard size fingerlings were stocked into Lake Saltonstall (fish purchased by South Central Connecticut Regional Water Authority) and into Lake Pocotopaug, (fish purchased by the Town of East Hampton).

IFD's Jerry Leonard (now retired) stocking Walleye fingerlings at Batterson Park Pond.



LAKE ANGLER SURVEYS. Angler surveys were conducted on **Coventry Lake** (Coventry), **Moodus Reservoir** (East Haddam), **Pickerel Lake** (Colchester/East Haddam) and **Lake Zoar** (Monroe/Newtown/Oxford/Southbury). As with all of IFD's angler surveys, these data will be used to identify overarching trends in angler catch, effort and opinions of IFD management efforts. These data will also be used by IFD's species-specific management programs such as bass management (Moodus Reservoir, Coventry Lake, and Pickerel Lake), and walleye management (Coventry Lake and Lake Zoar). Currently the IFD is planning an ice fishing angler survey for this coming winter on all or some of the following lakes Coventry Lake, Moodus Reservoir, Pickerel Lake and Mansfield Hollow Reservoir.

LAKE AND POND ELECTROFISHING MONITORING. Fall monitoring of fish populations by night boat electrofishing was conducted in 20 lakes during October and November. Among these lakes were five Bass Management Lakes, two Walleye Lakes, two Connecticut River sites, one Channel Catfish Lake and one water supply reservoir that is closed to fishing. Sampling was done to collect information on relative abundance and growth rates of fish populations. Some observations for this fall's data are:

- Due to severe drought conditions this year, lake water levels were very low this fall and several sites could not be accessed and had to be postponed until next year.
- Bowfin are still expanding in the Connecticut River ranging in size from 9 – 25 inches.
- Northern Pike were sampled at record high numbers during the two Connecticut River samples.

BASS TOURNAMENTS. Bass tournaments have been a very efficient method of collecting data on bass populations in Connecticut over the past 30 years. In 2016, six Lake Zoar bass tournaments were sampled in conjunction with an angler survey and night-time electrofishing. Tournament angler catch rate for quality size bass (≥ 12 inches), including both weighed-in and released fish, was 0.35 bass/hr for Largemouth Bass and Smallmouth Bass combined. Overall, 22% of the > 12 inch bass caught during the tournaments were “culled” (not brought in to be weighed in at the end of the tournament). These data along with angler survey, electrofishing catch effort and historical data will be used to identify any changes in this lake's bass population.

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