2019

FISHERIES DIVISION
Notes & Updates (Fall)

Connecticut Department of Energy & Environmental Protection
Bureau of Natural Resources
Fisheries Division
79 Elm Street, Hartford, CT 06106

860-424-3474 www.ct.gov/deep/fishing www.facebook.com/ctfishandwildlife

Inland Fish Management & Fish Culture

TROUT AND SALMON STOCKING

- **BROODSTOCK ATLANTIC SALMON.** Salmon stocking began during the third week of October (in Mount Tom Pond in the west and Crystal Lake in the east); later than anticipated because water temperatures were too warm during September and early October. This fall, the Fisheries Division will stock close to 1,020 Atlantic Salmon broodstock (up from 852 in 2018).

  The last of the post spawn stockings (approximately 220 salmon in all), will be completed in mid-December. These later stocked fish were all be stocked into the Naugatuck and Shetucket rivers and they average 7-10 lb./fish with some even larger (up to 15 lbs. Most of the 799 salmon stocked earlier this fall were age 2+ weighing between 2-5 lbs. each. In total this fall, Crystal Lake (Ellington) and Mount Tom Pond each received 50 fish; and close to 460 salmon will be stocked into both the Naugatuck Shetucket rivers.

- **TROUT STOCKING.** Low flows and warm early fall water temperatures hampered fall stocking efforts in rivers, streams, lakes, and ponds throughout the State. Nonetheless, approximately 79,500 (compared to 55,700 last fall) trout were stocked this fall; including 1,000 trophy-size Survivor Brown Trout, 2,250 trophy-size Cortland Brown Trout, 12,000 trophy-size Rainbow Trout, 3,000 fingerling (7 inch) Survivor Brown Trout, 700 trophy-size Brook Trout (average 3 lbs.), 3,000 adult Survivor Brown Trout, 57,550 adult Rainbow, and a mix of 36 large Broodstock rainbows and browns (approx. 10 lb. avg.). Stocking occurred in Trout Management Areas (TMA), Trout Parks, Trophy Trout Areas (TTA), Trout Management Lakes (TML), Community Fishing Waters (CFW), Wild Trout Management Areas (WTMA), and heavily utilized lakes and ponds. Due to the increase in hatchery production, 13 new waterbodies were stocked this fall, and several waterbodies received multiple stockings to increase catch rates and satisfaction.

  A large Rainbow Trout from the Kensington Fish Hatchery. 36 broodstock Rainbow & Brown Trout were stocked this fall.

  Based on the request from a Housatonic fishing tackle shop owner and a private land owner who owns land along the Housatonic River TMA in Sharon, staff met to discuss stocking additional locations in the upper portion of the TMA. Based on the discussion and the increase in angler effort over recent years in this section, the Fisheries Division will resume stocking a few locations within the upper portion of the existing TMA that have not been routinely stocked for over a decade.

Cover: *An Atlantic Salmon (held by fisheries Biologist Brian Eltz) being stocked into the Naugatuck River earlier this fall (Friday, October 4). See above for more information on salmon stocking.*

RIVERS & STREAMS

- **STREAM MONITORING.** Summer fish population sampling was completed and the data for 329 sample locations was entered into a Fisheries database (Microsoft Access). The data management system houses all Inland Fisheries data (lake and pond as well as river and streams), which will make dissemination of data quick and efficient. In addition, fish sampling at five sites was conducted in collaboration with the CT DEEP Bureau of Water Protection & Land Reuse (WPLR).
- **GENERAL WATER TEMPERATURE MONITORING.** Water temperature loggers from 41 locations throughout the state are being retrieved. Water Temperature data collections focused on long term reference (LTR) streams. All temperature data will be proofed and uploaded into the ECOSHEDS.org website for easy public access.

  New this fall was the use of Survey123 for ArcGIS. This new tool allows Fisheries staff to collect data in the field with the use of a tablet or phone (we've gone paperless!). The data collected goes directly into the "cloud" and is downloadable immediately after being entered. Thus far, all data regarding thermograph site description has been captured via Survey123.

  All of the water temperature collected by the Fisheries Division from 1998-2018 has be reviewed, quality checked, and uploaded into the ECOSHEDS website. This website compiles water temperature data from across New England and makes this data readily available for anyone.

FARMINGTON RIVER

- **BROODSTOCK COLLECTION.** This year the annual "Survivor" broodstock collection was moved up to the last week in August in anticipation of the draw down of the West Branch Reservoir (aka Hogback). The drawdown was to facilitate repairs and inspections being conducted at the Colebrook River Lake Dam. Over two days of sampling, August 28th and 29th, 148 broodstock were collected and brought back to the Burlington State Fish Hatchery for spawning. Once completed with spawning, all collected broodstock will be safely returned to the Farmington River by hatchery staff.
- **POPULATION ESTIMATE.** In addition to broodstock collection, a population estimate was carried out in the West Branch Farmington River Trout Management Area. Preliminary data analysis shows that the trout population (all trout) is up despite recent droughts and flooding conditions last fall.

ATLANTIC SALMON ANGLER SURVEY

- An angler survey was initiated on October, 12th of this year. The creel was designed to capture opinions regarding the change in the Atlantic salmon catch-and-release period on the Naugatuck and Shetucket rivers that was made earlier this year. The catch-and-release period was extended two weeks from its typical November 30th last day and will now end December 15th. Thus far preliminary data suggests that most anglers are in favor of the change. In addition, nearly half of all anglers interviewed were unaware of the change despite it being in the 2019 Fishing Guide plus announcements on Facebook, Twitter, and in a press release. This survey will also capture catch data on fishing license and Trout and Salmon Stamp compliance and is expected to run through January 15th.

The new Survey123 for ArcGIS app (see Temperature Monitoring section above for more information) was also used for this survey. Thus far uses of the application has been limited, but its use on this survey shows that most angler surveys can be conducted via an electronic devise.

TROUT AND SALMON PUBLIC DISCUSSIONS

- To obtain angler preference and input on the future of trout and salmon management in Connecticut, six face-to-face meetings and one webinar were held during October and November. In total, 158 people participated in one of the discussions, with an additional 200 plus folks offering their trout and salmon fishing preferences via an online questionnaire. A summary of this input is forthcoming and will help to inform our Salmonid action plan (also forthcoming).

  Staff ALSO attended a public meeting held in Newburgh New York by the NY Dept. of Environmental Conservation to present and discuss their new statewide trout stream management plan. The New York experience may prove useful during the further development of our Salmonid Action Plan.

SPEAKING ENGAGEMENTS

- Fisheries staff spoke at meetings of the following CT chapters of Trout Unlimited: Northwest, Hammonasset River, Thames Valley, and Farmington Valley.

KOKANEE SALMON.

- At East Twin Lake, trap netting for the collection of broodstock salmon was completed during October, 2019. Nets were fished from 10/15 through 10/25 and a total of 1,286 adult salmon (630 females; 656 males) was captured and transported to the Burlington Fish Hatchery. The average size of salmon for both sexes combined was 12 inches and was very similar to the size of adult salmon captured from East Twin in 2018. A total of 1,114 was spawned (557 female and 557 male), producing 321,150 green eggs (an additional 6,680 eggs were discarded due to poor quality) equating to 588 eggs/female. The percent eye-up of the eggs at Burlington Hatchery was extremely high at 87% resulting in 280,000 eyed eggs. This will yield plenty of fry for stocking both Kokanee management lakes (West Hill Pond and East Twin Lake) and one experimental Kokanee lake (Beach Pond) in the spring of 2020.

  The FD chose to only set nets in East Twin Lake this year because of low numbers of salmon being reported by anglers in West Hill Pond. The reason for low abundance in West Hill again this year is unknown, but West Hill Pond's Kokanee population has a history of being very cyclic, sometimes experiencing 2 to 3 straight years of very low abundance.

Some of the nearly 1,300 Kokanee Salmon trap-netted from East Twin Lake this fall.

CHANNEL CATFISH

- Beginning in August, 2019 efforts were made by the FD to assess population size and structure of our yearling-stocked Channel Catfish management lakes. The reason for this assessment was largely due to the fact that catfish management changed course in 2019 when the decision was made to move to stocking adults only in all Channel Catfish management waters. So, in the spring of 2019 all management waters were stocked with adults except for three waterbodies (Batterson Park Pond, Burr Pond and Black Pond (Meriden)) that were not stocked at all. These lakes along with one former management lake (Lake Kenosia – no longer stocked) were chosen for population assessment using baited hoop nets.

  Netting efforts in August/September proved difficult due to severe drops in overnight dissolved oxygen levels in near shore areas in both Black Pond and Lake Kenosia. Nets were pulled in both locations to avoid undue fish mortality. During this same timeframe, overnight oxygen levels were seemingly favorable in Batterson Park Pond, however capture of Channel Catfish was extremely low (only 13 Catfish over a 16-day netting period), so efforts were curtailed to avoid wasting personnel time.

  At Burr Pond, habitat conditions were very favorable with cooling water temperatures so a total of 5 nets were set beginning on 9/23 through 10/23. During this time period a total of 265 Channel Catfish was captured ranging in size from 9” to 24” (Avg Length = 14”). Total captures, along with a good number of recaptured (98) marked fish lead to a very tight population estimate of 309 catfish in Burr Pond.

  The success at Burr Pond seemed to correspond to dropping temperatures so the decision was made to revisit Batterson Park Pond beginning at the end of October. There was early success in a short time span where 49 catfish were captured ranging in size from 16” to 30” (Avg Length = 22”). However, we were forced to end the netting efforts early due to very cold weather conditions. If time permits, we will revisit Batterson Park Pond in the spring of 2020 to complete the population estimate.

Seasonal Resource Assistant Tom Schultz holding one of the Channel Catfish netted at Batterson Park Pond this fall. More catfish can be seen in the tub to the left.

LAKE AND POND MONITORING

- Fall monitoring of fish populations by night boat electrofishing was conducted during October and early November on eleven of twelve scheduled waterbodies: Bigelow Pond (Union), West Hill Pond (New Hartford-Barkhamsted), Batterson Park Pond (Farmington), Billings Lake (North Stonington),

Ball Pond (New Fairfield), Bashan Lake (East Haddam), Lake Lillinonah (Brookfield-Bridgewater-Newtown-Southbury-New Milford), Mamanasco Lake (Ridgefield), Roseland Lake (Woodstock), Burr Pond (Torrington), East Twin Lake (Salisbury). One waterbody, Highland Lake (Winchester) was cancelled due to weather and could not be rescheduled. Sampling was done to collect information on relative abundance and growth rates of fish populations. A University of Connecticut doctoral candidate (Chris Sullivan) attended sampling at six waterbodies (Batterson Park Pond, Billings Lake, Ball Pond, Bashan Lake, Mamanasco Lake, and East Twin Lake) to collect tissue samples from sampled fish for a third statewide assessment of mercury in fish tissue.

WALLEYE STOCKING

- A total of 27,900 Walleye fingerlings (24,400 "small" 4-6 inch and 3,500 "large" 6-8 inch) were stocked into ten state managed Walleye Management waters on October 28, 2019. Additionally, 9,975 Walleye fingerlings were purchased by three private entities (two water companies [the South Central Connecticut Regional Water Authority that oversees Lake Saltonstall (Branford/East Haven) and Aquarion Water Company that oversees Saugtuck Reservoir (Easton/Redding/Weston)] and one town [East Hampton that oversees Lake Pocotopaug]) were delivered on the same truck and distributed to them by DEEP FD staff. This year South Central Regional Water Authority opted to stock a mixed load of "small" and "large" Walleye fingerlings into Lake Saltonstall totaling 1,825 fingerlings (800 "large" and 1,025 "small"). The other two private entities opted to stock the "small" fingerlings. Transport and handling related mortality was low at ~2% for the State purchased fish. Once lake (Beach Pond) however, did experience slightly higher mortality at the time of stocking than any of the other waters for an unknown reason. Approximately 300 of 3,700 fish slated to be stocked here (~8%) died at the time of stocking. FD is still assessing possible causes. As in previous years the Fisheries Division (FD) purchased 12.5% of their fingerlings in the "large" category. These fingerlings averaged 6.7 inches as opposed to the "small" fingerlings that averaged 5 inches in length. These larger fingerlings have been stocked into Mashapaug and Gardner lakes for the last five years as part of an ongoing experiment to see if stocking larger sized Walleye will create more adults in future years because in both of these lakes the adult Walleye populations had been in decline since 2009. Depending on staff availability, we may be able to sample these two lakes through night time boat electrofishing and trap netting in late-March/early April 2020.

One of the 2019 fingerling Walleye just prior to stocking

The remaining standard 5-inch size fingerlings were stocked into Batterson Park Pond (Farmington), Beach Pond (Voluntown/Rhode Island), Cedar Lake (Chester), Coventry Lake (Coventry), Lake Zoar (Monroe/Oxford/Newtown/Southbury), Mount Tom Pond (Morris/Litchfield/Washington), Squantz Pond (New Fairfield/Sherman), and Long Pond (North Stonington).

BURLINGTON STATE FISH HATCHERY

- **WELL FIELD PROJECT 2019 UPDATE.** The Burlington Hatchery gets over half of its well water from the upper and lower well fields. These wells are all artesian wells which are free flowing out of the ground with water flowing through a series of pipes and junction boxes to get to the hatchery. There are currently 12 well points up in the upper and lower well fields, 2 of these were recently discovered.

  The well field consisted of well casings with well points which flowed into old metal banded wooden pipes as well as old clay tile pipes. Most of these old-style pipes were leaking badly or not working at all. The project started in the upper well field back in 2010 when two of the pipes were replaced and a third one replaced in 2012. All of the pipes in the lower well field that came directly from well points were replaced in 2015. In September 2019, the remainder of the clay tile and wooden pipes were replaced in the upper and lower well fields which was just under 400 feet of new pipe. In addition to the pipes, one junction box was replaced in the lower well field and one new structure was put over a well point that was there but buried under ground and not working to its full potential. In addition, another well point (I) was discovered while digging up a pipe. It was flowing water into an old wooden pipe but most of the water was leaking into the ground. As a result of the recent work in the well fields the hatchery gained at least 100 gallons per minute of water. This project was completed by the wetlands excavating crew and the western district support services excavating crew and the Burlington Hatchery staff. The excavated area has been reseeded and is already starting to grow back. This project was completed for under $2,500.00

Banded wooden pipe removed (and replaced) from the well field at Burlington Hatchery.

Marine Fisheries Program

ATLANTIC STATES MARINE FISHERIES COMMISSION (ASMFC) UPDATES.

ASMFC held its fall meeting in Newcastle, NH on October 28 through October 30. Important outcomes from this meeting include:

- **Striped Bass**: The Striped Bass Management Board finalized Addendum 6 to the Striped Bass Fishery Management Plan (FMP). Addendum 6 was initiated earlier in 2019 to address the overfished condition of the Atlantic striped bass stock, with the goal of reducing fishing mortality via new regulations for the 2020 fishing season. The Board voted to implement the following measures for 2020:
  - An equal 18% reduction in removals for the recreational and commercial sectors. Commercial quotas will be reduced by 18% for all states in 2020.
  - **A coast-wide recreational 28-35" slot limit (one-fish bag limit) for all areas excluding Chesapeake Bay**.
  - A minimum length of 18" and a one-fish bag limit for the Chesapeake Bay recreational fishery.
  - **All states will be required to adopt regulations mandating the use of circle hooks when bait fishing for striped bass by January 1, 2021**.
  - **States have the option of submitting a "conservation equivalency" proposal to adopt alternate recreational regulations (length, bag, or season), provided those proposed regulations are projected to achieve an 18% reduction in that state's removals**. Conservation equivalency proposals will be reviewed by the ASMFC Striped Bass Technical Committee (TC) to assure they meet technical standards, and then will be subject to review and approval by the Board.
  - All states must submit their plans to implement 2020 striped bass regulations (including any conservation equivalency proposals) to ASMFC by November 30. The Board will vote on any conservation equivalency proposals at the February 2020 ASMFC Meeting. All states must implement their approved regulations by April 1, 2020 (with the exception of circle hook regulations, which do not have to be in place until January 1, 2021).
- **Atlantic Menhaden**. The ASMFC Menhaden Management Board and the **ASMFC Interstate Fisheries Management Policy (ISFMP) Board voted to find the Commonwealth of Virginia out of compliance with the Atlantic Menhaden Fishery Management Plan (FMP)**.

  Amendment 3 to the Menhaden FMP, passed in 2017, instituted a reduced 51,000 metric ton harvest cap for the menhaden reduction fishery in Chesapeake Bay (the "Bay Cap"). The reduction fishery in Chesapeake Bay is prosecuted by a single company, Omega Protein, which operates out of Reedville, VA.

  The Virginia General Assembly, which has management authority for menhaden in VA, failed to pass legislation in early 2018 to implement the new Bay Cap.

The ASMFC Menhaden Board deferred on finding VA out of compliance with the Menhaden FMP at its May and August 2018 meetings, attempting to give the VA General Assembly an opportunity to pass the necessary legislation (which to-date it has failed to do).

At the February 2019 ASMFC meeting, in light of the facts that a) Omega did not exceed the Bay Cap in 2018, and b) the Board is planning to initiate a new Amendment to the Menhaden FMP in 2020 that could potentially change the Bay Cap, the Menhaden Board voted to indefinitely postpone finding VA out of compliance, as long as the Bay Cap was not exceeded in 2019.

On September 3, 2019, **Omega Protein notified ASMFC that they intended to exceed the 51,000 mt Bay Cap, and then proceeded to do so, over the objections of ASMFC and the VA Marine Resources Commission. Omega indicated that they would adhere to a self-imposed cap of 67,000 mt, which at the time of the October ASMFC meeting they had nearly achieved**.

In response to Omega's actions, the ASMFC Menhaden and ISMFP Boards voted to find VA out of compliance with the Menhaden FMP at the recent October meeting. In accordance with the Atlantic Coastal Fisheries Cooperative Management Act, the non-compliance recommendation will now be forwarded to the U.S. Secretary of Commerce, who will have 30 days to review the recommendation and determine appropriate action, which may include a federal moratorium on fishing for or possessing Atlantic menhaden in VA state waters.

The ASMFC Summer Flounder/Scup/Black Sea Bass and Bluefish Management Boards met jointly with the Mid-Atlantic Fisheries Management Council in Durham, NC on October 7through October 9. Notable outcomes from the meeting include:

- **Bluefish.** A recently completed stock assessment concluded that the **bluefish stock is overfished. In response, states will be required to reduce harvest by approx. 30% in 2020**.
- **Summer Flounder** Comparison of projected 2019 total harvest to the 2020 recreational harvest limit (RHL) suggests that **status quo recreational measures are likely for 2020**. However, MAFMC staff are expected to present slot limit options at the next joint meeting.
- **Scup** A recently completed stock assessment concluded that scup are at 200% of target biomass. However, a recent **re-configuration of the Marine Recreational Information Program (MRIP), the coast-wide survey that estimates annual recreational harvest, has resulted in a 3-4 fold increase in the magnitude of harvest estimates for many species, including scup**. The dramatic increase in scup recreational harvest estimates resulted in a recommendation from the MAFMC Monitoring Committee that, despite the high abundance of the scup stock, **recreational harvest should be reduced by approx. 60% in 2020**.
- **Black Sea Bass** Similar to scup, a recent stock assessment concluded that the stock is at 240% of target biomass, but due to the **MRIP re-estimation, the MAFMC Monitoring Committee recommendation is to reduce recreational harvest by approx. 30% in 2020**.
- **Next meeting.** The next joint ASMFC-MAFMC meeting will be held in Annapolis, MD on December 10 through December 11. At this meeting, MAFMC staff will present 2020 regulation options for these four species. As you can imagine, there is almost unanimous sentiment amongst ASMFC and MAFMC representatives that the proposed cuts for scup and black sea bass are completely

unreasonable and un-needed, given the robust status of both stocks**.** ASMFC and MAFMC leadership are actively working with NOAA National Marine Fisheries Service (NMFS) to attempt to find a solution to this situation. We will know more after the December meeting.

LONG ISLAND SOUND TRAWL SURVEY (LISTS)

- The 40 tows for the September 2019 cruise were conducted Sept 5 – Sept 26 in 12 days underway.
- The 40 tows for the October 2018 cruise were completed Oct 8 – Oct 30 in 10 days underway. Five days were lost to poor weather and one day was lost to electronics work on the boat.
- With the conclusion of the October survey, all survey data collected throughout 2019 was done using the electronic data acquisition system. The system performed very well during both the September and October cruises.

The fall data are not currently available for analysis, therefore the following trend discussions are anecdotal.

- Overall, **catches this fall were very light**. The weather may have been a factor in October, since the majority of sampling occurred after a series of small craft advisory weather days.
- **Scup and Butterfish adult and juvenile abundance seemed to be below average when compared to the fall time series**.
- **Bluefish adult and juvenile abundance seemed below average when compared to the fall time series**.
- Weakfish juvenile abundance seemed below average when compared to the fall time series.
- **Smooth Dogfish abundance was above average this fall**.
- Some important species were at record low levels of abundance this fall based on LISTS sampling: including Winter Flounder, American Lobster and Little Skate.
- Summer Flounder were seen through October in moderate abundance which is somewhat unique.
- In both the September and October surveys, Spanish Mackerel abundance was high relative to recent years.
- One new species, Smooth Puffer, was caught during the October survey.
- Staff are currently spending time processing data requests, aging fall fish samples and working on data analysis.

Sturgeon Research & Monitoring

- **UConn Marine Sciences Prof. Hannes Baumann will work with three fisheries biologists with the state Department of Energy and Environmental Protection to confirm the existence of a re-emergent spawning population of Atlantic sturgeon in the Connecticut River**. Spawning populations of this endangered species were thought to have been extirpated in the Connecticut River after overfishing in the late 19th century. In 2014, the discovery and analysis of tissue samples from several 1-year-old sturgeon found in the lower river indicates they were the offspring of

sturgeon that spawned there in 2013. A **Master's degree program student of Baumann, along with DEEP staff, will analyze an archived collection of sturgeon pectoral fin spines and acoustic tagging data collected since 1998 and 2012, respectively, to extract insights into the age, growth and behavior of sturgeon in the Connecticut River**. The results could help determine whether the juveniles found in 2014 were the result of a one-time event or evidence of a recolonization of the river by spawning sturgeon. It will also help identify spawning hotspots and inform protection efforts to further the restoration of this species.

- **Marine Fisheries Program staff are conducting a 3 year National Marine Fisheries Service Section 6 funded study on Sturgeon in Connecticut Waters**. Our Connecticut proposal was selected out of numerous submissions and resulted in an award of $543,900 from July 1, 2018 to June 30, 2021. Among the three objectives of the study, Objective 3 is to **Investigate Habitat utilization of juvenile Atlantic Sturgeon in the Connecticut River**. **Collection efforts in the Connecticut River in 2019 yielded over 500 Atlantic Sturgeon, the highest abundance ever noted**. Atlantic sturgeon collected ranged from 47.8 to 160.6 cm Fork Length (18" to 60"). NMFS considers all Atlantic Sturgeon under 100 cm as juveniles, as these fish have not yet begun to sexually mature. As such **77% of our 2019 catch were juveniles**. We do not believe all of these fish were born in Connecticut waters as previous research efforts documented Atlantic Sturgeon in Connecticut waters originated from rivers all along the East Coast of the US. We were unsuccessful in capturing any very small age 0 or 1 Atlantic Sturgeon (under 45.0 cm FL (18")) in 2019, but did recapture a few of the small sturgeon collected and tagged back in 2014 (CT River progeny). These fish are now around 100 cm.

MARINE RECREATIONAL FISHING

Marine Recreational Information Program (MRIP). National Oceanic and Atmospheric Administration (NOAA) Fisheries conducts a survey of marine recreational anglers to obtain information about their fishing effort, catch, and participation in marine recreational fishing, and about the demographic, social, and economic characteristics of those who participate in saltwater recreational fishing in United States waters. These data for marine recreational fisheries had been collected through the Marine Recreational Fisheries Statistics Survey (MRFSS) from 1979 until 2008; wherein, it was replaced by the Marine Recreational Information Program (MRIP). The MRIP was created in order to continue improving the collection, analysis, and use of fishing data.

The Access-Point Angler Intercept Survey (APAIS) is conducted at public marine fishing access points (i.e., boat ramps, piers, beaches, jetties, bridges, marinas, etc.) to collect individual catch data, including species identification, total number of each species, length and weight measurements of individual fishes, as well as angler-specific information about the fishing trip and the anglers' fishing behavior. This field intercept survey is conducted by each of the 13 Atlantic states extending from Maine to Georgia. **See next page for 2016-2019 APAIS estimates.**

APAIS Estimates CATCH & HARVEST from fishing INTERVIEWS (2016-19):

Year	Wave	Sum of CH Intercepts	Sum of PR Intercepts	Sum of SH Intercepts	Sum of All Intercepts	Total # of Assignments	Num Asn Zero Intercepts	% Zero Intercepts
2016	*2*	*0*	*14*	*60*	*74*	*47*	*28*	
2016	*3*	*26*	*451*	*135*	*612*	*97*	*33*	
2016	*4*	*62*	*1,110*	*138*	*1,310*	*106*	*21*	
2016	*5*	*24*	*446*	*136*	*606*	*89*	*29*	
2016	*6*	*9*	*80*	*45*	*134*	*81*	*44*	
Total		***121***	***2101***	***514***	***2736***	***420***	***155***	***37%***
2016		4%	77%	19%				
*2017**	*2*	*0*	*10*	*18*	*28*	*64*	*53*	
*2017**	*3*	*71*	*513*	*96*	*680*	*97*	*43*	
*2017**	*4*	*52*	*1,231*	*229*	*1,512*	*106*	*13*	
*2017**	*5*	*80*	*446*	*76*	*602*	*89*	*30*	
*2017**	*6*	*0*	*125*	*73*	*198*	*81*	*44*	
Total		***203***	***2325***	***492***	***3020***	***437***	***183***	***42%***
2017		7%	77%	16%				
2018	*2*	*3*	*177*	*128*	*308*	*61*	*28*	
2018	*3*	*36*	*436*	*307*	*779*	*95*	*33*	
2018	*4*	*99*	*953*	*179*	*1,231*	*117*	*27*	
2018	*5*	*152*	*581*	*123*	*856*	*110*	*31*	
2018	*6*	*0*	*213*	*149*	*362*	*86*	*27*	
Total		***290***	***2360***	***886***	***3536***	***469***	***146***	***31%***
2018		8%	67%	25%				
2019	*2*	*0*	*206*	*172*	*378*	*63*	*26*	
2019	*3*	*84*	*321*	*178*	*583*	*110*	*36*	
2019	*4*	*73*	*830*	*259*	*1,162*	*115*	*17*	
2019	*5*	*137*	*583*	*140*	*860*	*110*	*31*	
2019	*6*	*0*	*36*	*9*	*45*	*74*	*27*	
Total		***294***	***1976***	***758***	***3028***	***472***	***137***	***29%***
2019		10%	65%	25%				

Wave = 2 Month Period. 2 = March/April, 3 = May/June, 4=July/August, 5=Sept/Oct, 6=Nov/Dec.
CH=CHARTERBOAT, PR=PRIVATE BOAT, SH=SHORE ANGLER, (Interviews=Intercepts)

			CT PARTYBOAT FOR-HIRE FISHING	SURVEY	2016-2019
Year	Wave	Month	Intercepts	Completed	Productivity
2016	3	5	**36**	6	18
2016	3	6	**114**	6	19
2016	4	7	**80**	7	16
2016	4	8	**63**	7	12.6
2016	5	9	**64**	6	16
2016	5	10	**31**	6	10.33
2016	6	11	**36**	6	18
			424	**44**	

Year	Wave	Month	Intercepts	Completed	Productivity
2017	3	5	**55**	5	11
2017	3	6	**77**	6	12.83
2017	4	7	**124**	7	17.71
2017	4	8	**143**	5	28.6
2017	5	9	**65**	6	16.25
2017	5	10	**65**	6	16.25
2017	6	11	**61**	4	15.25
			590	39	

Year	Wave	Month	Intercepts	Completed	Productivity
2018	3	5	**91**	6	15.17
2018	3	6	**126**	6	21
2018	4	7	**119**	7	17
2018	4	8	**144**	7	20.57
2018	5	9	**135**	6	22.5
2018	5	10	**65**	4	16.25
2018	6	11	**20**	2	10
			700	38	

Year	Wave	Month	Intercepts	Completed	Productivity
2019	3	5	**110**	6	18.33
2019	3	6	**113**	6	18.83
2019	4	7	**128**	7	18.29
2019	4	8	**187**	7	26.71
2019	5	9	**112**	6	18.67
2019	5	10	**64**	6	10.67
2019	6	11	**50**	4	12.5
			764	42	

CT MRIP STAFF INTERVIEWING MARINE FISHERMEN IN 2019
Observed Fish Harvested during Waves 2-5 (March - Oct)

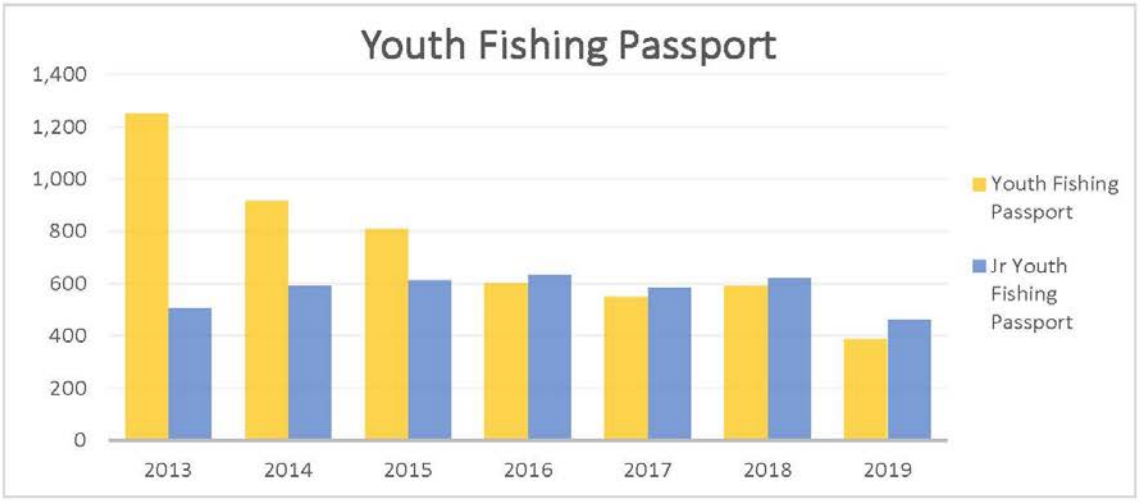
Common Name	*# Fish Observed*	*Fish Weight (kg)*		*Fish Length (mm)*		
		#	Avg	#	MIN	MAX
Black Sea Bass	708	201	1.07	669	279	573
Bluefish	**193**	**98**	**1.08**	**161**	**156**	**875**
Scup	3,398	354	0.45	3,331	198	430
Summer Flounder	**121**	**84**	**1.71**	**109**	**360**	**719**
Striped Searobin	97	33	0.52	89	240	410
Striped Bass	**55**	**41**	**5.05**	**47**	**550**	**1130**
Tautog	179	81	1.90	169	341	658
Little Tunny	**1**			**1**	**332**	**332**
Total	**4,752**	**892**		**4,576**		

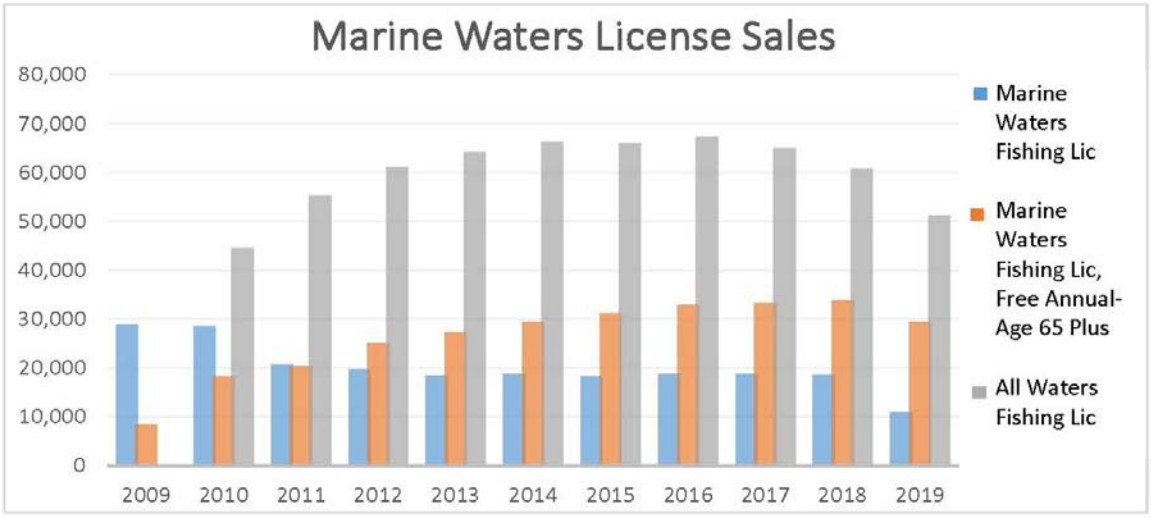
APAIS MARINE FISHING SURVEY

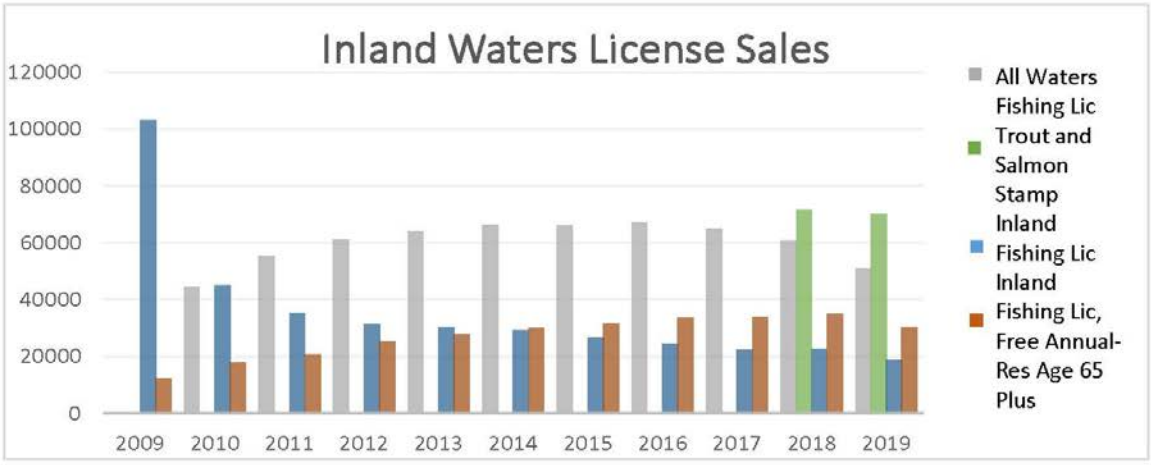
Recreationally Important Species Discarded & Measured,
Waves 2-5 (N=38), Partyboat (For-Hire Survey) in 2019

Common Name	# of Fish	Fish Length (mm)			
		#	AVG	MIN	MAX
Black Sea Bass	507	494	**315**	127	475
Bluefish	3	2	**324**	301	347
Scup	162	156	**246**	146	380
Summer Flounder	49	45	**394**	300	480
Striped Searobin	40	39	**312**	173	409
Striped Bass	51	49	**553**	380	667
Tautog	**88**	**87**	**325**	**201**	**401**

LICENSE SALES & PARTICPATION FOR 2019







NOTICES TO ANGLERS

11/19/2019 **Commercial Fishery Possession Limit Adjustment**

Effective 0001 hours Sunday, November 24, 2019, the summer flounder commercial fishery possession limit will be 1,200 pounds per week (0001 hours on Sunday through 2359 hours the following Saturday). (N19-15

10/18/2019 **Commercial Fishery Possession Limit Adjustment**

Effective 0001 hours Sunday, October 20, 2019, the black sea bass commercial fishery possession limit will be increased to 200 pounds. (N19-13)

10/1/2019 **Commercial Fishery Possession Limit Adjustment**

Effective 0001 hours Tuesday, October 1, 2019, per NOAA Fisheries, the commercial fishery possession limit for scup will be 27,000 pounds for the Winter 2 Period (October 1 - December 31). (N19-12)

9/25/2019 **Commercial Fishery Possession Limit Adjustment**

Effective 0001 hours Wednesday, September 25, 2019, the commercial fishery possession limits have been adjusted. (N19-11)

9/24/2019 **DEEP Marine Fisheries Public Hearing**

The DEEP Marine Fisheries Program is holding a public hearing on a proposed addition to the Regulations of Connecticut State Agencies concerning commercial fishery possession limits. (N19-10)
:Public Hearing to be held October 16, 2019
Written comments due by October 16, 2019

PUBLIC OUTREACH

2019 MARINE FISHERIES TROPHY FISH AWARD PROGRAM SUMMARY

Total Trophy Fish Awards	***85***	*Male Participants*	*34*
Number of Different Species	***17***	*Female Participants*	*7*
		Youth Participants	*7*

NEW STATE RECORDS

Harvested
Summer Flounder
Squid *broken 3 times in 2019
Scup
Tilefish

Catch & Release
Chub Mackerel
Weakfish
Pinfish
Snake Mackerel

NEW TROPHY FISH RECORDS

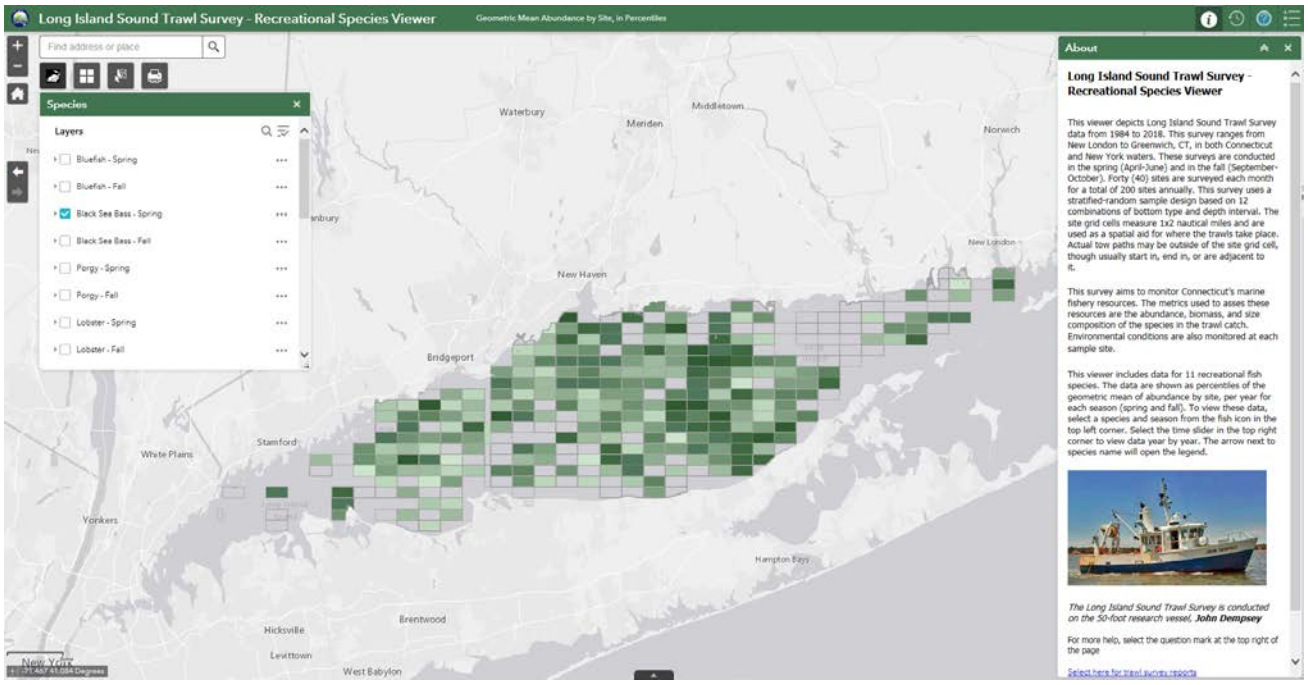
Tautog – Women's Category
Spanish Mackerel, Lizardfish Youth Category

2019 TROPHY FISH AWARDS- MARINE

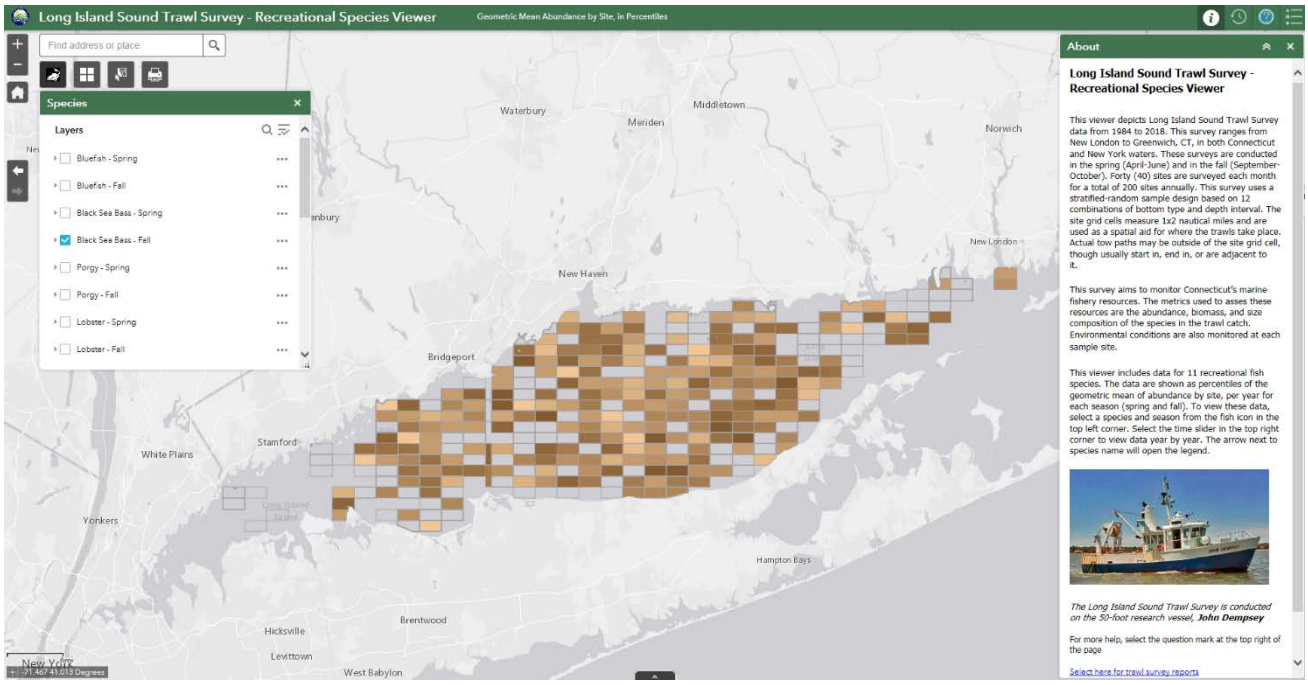
Species	*Adult Male*	*Adult Female*	*Youth*	*Total*
1 ***Summer Flounder***	*23*	*4*	*0*	***27***
2 ***Tautog***	*9*	*3*	*0*	***12***
3 ***Striped Bass***	*11*	*0*	*0*	***11***
4 ***Scup***	*5*	*3*	*2*	***10***
5 ***Squid***	*6*	*1*	*0*	***7***
6 ***Black Sea Bass***	*3*	*1*	*3*	***7***
7 *Chub Mackerel*	*1*	*0*	*0*	*1*
8 *Smooth Dogfish*	*1*	*0*	*0*	*1*
9 *Weakfish*	*1*	*0*	*0*	*1*
10 *Striped Searobin*	*1*	*0*	*0*	*1*
11 *Oyster Toadfish*	*1*	*0*	*0*	*1*
12 *Northern Puffer*	*0*	*0*	*1*	*1*
13 *Spanish Mackerel*	*0*	*0*	*1*	*1*
14 *Inshore Lizardfish*	*0*	*0*	*1*	*1*
15 *Pinfish*	*1*	*0*	*0*	*1*
16 *Snake Mackerel*	*1*	*0*	*0*	*1*
17 *Tilefish*	*1*	*0*	*0*	*1*
17 Species	***65***	***12***	***8***	***85***

MARINE GIS

- The **Popular Places to Fish** spatial layer has been well received since the updated version was published on CT DEEP websites for the Saltwater Fishing Resource Map and Blue Plan Map Viewer earlier this year. As updates in previous quarterly reports have described, a significant amount of effort was put into updating a map layer depicting areas in Long Island Sound that are important to saltwater recreational fishing (see FAC reports from September 2019, June 2018, December 2017, September 2017, June 2017, March 2017, and December 2016, for details on the process). The **updated version will be helpful to recreational anglers using this information to plan a fishing trip, as well as anyone evaluating the potential impacts of activities, or proposed activities, in the vicinity of these areas**. Despite numerous calls for public review and comment directly related to release of the Blue Plan materials, the fact that no additional angler edits for specific areas were submitted is seen as endorsement of the layer by this important constituency. We sincerely appreciate all the assistance from FAC members and avid anglers who contributed to improving the spatial depiction of these areas. Of course, anyone who is still interested in providing feedback is welcome to contact the CT DEEP Marine Fisheries Program.
- A **new map viewer showing fish distribution and abundance for eleven (11) of the most popular recreational species monitored by the Long Island Sound Trawl Survey since 1984 is currently being developed**. The viewer will display site summary data by season (spring or fall) and year (1984-2018). Users will have the ability to isolate data for any individual year or use a "time slider" to play an animation to view the change in distribution for the entire 34-year time-series of the Trawl Survey. The Recreational Species Viewer passed internal review from Marine Fisheries Program staff with very positive feedback and is currently being reviewed by the Agency's webmaster prior to public release on an Agency website. ***See next page for sample maps.***
- GIS staff have provided comment related to coastal projects under review by CT DEEP Fisheries HCE staff. Recent requests for comment dealt with a range of proposals from large-scale dredging operations, to smaller-scale aquaculture proposals. Spatial layers developed in-house, such as layers of Long Island Sound Trawl Survey towpaths and Popular Places to Fish, have proven to be effective tools to efficiently screen a variety of proposals for potential impacts.
- GIS staff attended a one-day workshop on new ArcGIS StoryMaps capabilities presented by Environmental Systems Research Institute (ESRI), the vendor providing GIS software and services to CT DEEP. ArcGIS StoryMaps have already proven to be an effective mechanism for Marine Fisheries Program staff to create custom GIS applications of fisheries information for use by both staff and public, so staying abreast of current software capabilities will pay dividends as new fisheries applications are developed in-house.



Map 1: Screenshot from Long Island Sound Trawl Survey – Recreational Species Viewer showing a composite of black sea bass spring distribution and abundance, 1984-2018. Once review by the Agency webmaster is complete, the map viewer will be publicly available on a CT DEEP website.



Map 2: Screenshot from Long Island Sound Trawl Survey – Recreational Species Viewer showing a composite of black sea bass fall distribution and abundance, 1984-2018. Once review by the Agency webmaster is complete, the map viewer will be publicly available on a CT DEEP website.

CARE & Constituent Services

FALL CLASSES. Thirteen CARE classes were offered for 844 students this fall. Highlights include:

- *Discover Outdoor Connecticut Day* was celebrated at Hammonasset State Park this September. The Fisheries Outreach and Education trailer was setup with freshwater fish taxidermy and posters highlighting a variety of fisheries programs. CARE volunteers and staff provided a kid's backyard bass casting activity and beach fishing for snapper bluefish and scup. This year's event attracted over 1,500 attendees that participated in a variety of outdoor activities!

***Discover Outdoor CT Day**: Discover Outdoor Connecticut Day, held at Hammonasset State Park this past fall, was a great success. Beach fishing was one activity offered to participants. Luckily, the snapper bluefish had schools of peanut bunker trapped against the beach providing some fantastic fishing!*

- Hosted three field trips at the CARE Center on Forster Pond for Westbrook High School, Madison High School, and Hamden Hall Academy students.
- Volunteer Instructors participated in three "Take A Vet Fishing" fishing days.
- Introduction to Fishing Courses were conducted in East Hampton, Killingworth (CARE Center), Manchester, Middlefield and Monroe for 146 students. All courses consisted of a two-hour classroom session and an Instructor led fishing trip.

***Introduction to Fishing:** Elena and Koen, Yale graduate students, attended an Introduction to Fishing Course at the CARE Center this fall. After a few hours of persistence during the fishing trip, Elena was rewarded with catching the first fish of her life!*

RECRUITMENT, RETENTION, AND REACTIVATION ACTIVITES.

- Started CT Fish Blog as an additional method to distribute fish and fishing related information in a relevant and efficient manner.
- Added Google Analytics to the Licensing Sales system and made UTM (Urchin Traffic Monitor) naming conventions document. This provides DEEP with the capability to track where and how license purchases originated from various campaigns.
- Improved access to licensing data via acquisition of the data from the system vendor (Aspira).
- Met with "Trout-In-the-Classroom" President, Jim Woodworth, and a participating school teacher to incorporate fishing education into the classroom. Field experiences and lesson plans are in development for spring 2020.
- Formed partnership with Big Brothers Big Sisters for CARE classes.

Nutmeg chapter of Big Brother Big Sisters *had a great Introduction to Fishing Class at Center Springs Pond in Manchester. Big Brothers Big Sisters will now be invited to future public fishing events as well as the classes planned specifically for the organization's members.*

- Formed partnership with UCONN chapter of the American Fisheries Society for CARE classes.
- Developed Take a Friend Fishing contest for 2020, where a person can take a friend fishing (who has not fished prior) and by submitting a short essay about their fishing trip, will be eligible to win a prize.
- Developed a Trophy Fish Award Leaderboard App and online submission form. This functionality provides near real-time access to Trophy Fish submissions. The intent is to motivate people to fish more and to share their great catches with DEEP more.
- Captured raw video footage to create a "catch and cook trout fishing" video with CARE and French Chef Arno Jullien and recruited an intern to edit and publish a series of educational fishing content videos.

ICE FISHING. Scheduled Introduction to Ice Fishing Classes for this January in Bristol, Coventry, Farmington, Glastonbury, Killingworth, Litchfield, Monroe, Oxford and West Hartford,. The annual *No Child Left Inside*® Winter Festival will be February 1st from 10 am to 3 pm at Burr Pond State Park in Torrington.

INSTRUCTOR TRAININGS.

- The annual CARE Certified Instructor In-service training was held in October at Winding Trails Inc. in Farmington. Thirty-three active volunteers attended a day of learning and networking. Presentations were delivered to Instructors by the new Fisheries Biologist R3 coordinator Andrew Bade, new Fish

Culture Program Supervising Biologist Tom Chairvolotti, and acting Environmental Conservation Police Colonel Keith Williams.

CARE In-Service Training: *Thirty-three volunteer CARE Instructors attended this fall's In-service Training. These environmental stewards played a role in teaching nearly 7,500 students about fishing in 2019!*

- The next New Instructor Certification Training has been scheduled for February 29th, 2020 at Keney Park Pond House in Hartford. The CARE program is seeking motivated and enthusiastic individuals who would like to share their passion for fishing with others. Call the CARE Center for more information on becoming a volunteer Instructor (860) 663-1656.

PROGRAM NUMBERS. Completed data entry for 2019 CARE student and Instructor reports, documenting over 7,481 students taught. A total of 198 volunteer Instructors contributed 3,760 hours of volunteer time. The monetary equivalent of Instructor volunteer time used as State match for federal dollars has surpassed $5 million dollars over the last 33 years.

BIG BASS*: One of the perks of teaching and taking new people fishing is seeing smiles like this! While on a field trip to the CARE Center in Killingworth, this boy hooked and landed a trophy largemouth bass that measured over 23" long. A memory he will not soon forget.*

Diadromous Fisheries Restoration

FISHWAY OPERATIONS

- The Rainbow Dam fishway and bypass (Farmington River, Windsor) were operated October 4 - November 19 for the downstream passage of silver eels and juvenile shad and river herring.
- Most coastal fishways were not opened for the fall but the Chapmans Pond Fishway (Menunketesuck River, Clinton) and the Latimer Brook Fishway (Latimer Brook, East Lyme) were operated with traps to monitor for sea-run brown trout returns (see below).

FISHWAY REPAIR AND MAINTENANCE / FISH PASSAGE ENHANCEMENT

- Replaced the wooden walkway, attraction water supports and baffles, and fishway entrance sign at the Rainbow Fishway.
- Removed accumulated sediment and cleared large tree limbs from the Latimer Brook Fishway (Latimer Brook, East Lyme) exit channel to enhance passage.
- Built and replaced 18 of the 28 wooden baffles in the Leesville Dam Fishway (Salmon River, East Haddam).

These baffles create suitable hydraulic conditions to allow fish to ascend a Denil fishway like at Leesville. The oak lumber is milled at the DEEP sawmill in Portland, for which the Fisheries Division is very grateful.

- Provided technical assistance and guidance for the Millpond Dam Fishway project (Falls River, Essex). This project, managed by The Nature Conservancy (TNC), built a steeppass fishway at the third dam on the Falls River (the lower two dams also have fishways) and will target alewives. The dam and fishway, to be called the Wiederhold Family Fishway, is owned by Centerbrook Architects. It was funded by a grant from the National Fish and Wildlife Foundation and a mitigation fund established by the DEEP. The fishway was completed on November 29 and will be operated for the first time in April of 2020.

The Weiderhold Fishway (Millpond) is a steep pass fishway. There is a turn pool by the orange ladder (upper left) that has a viewing window.

- Built and replaced the failing exit gate on the River Road Fishway (Saugatuck River, Weston).
- Replaced the failed concrete weirs at the Clarks Pond Fishway (Indian River, Milford).
- Built and installed weir boards for Aspetuck Reservoir American Eel downstream passage facility (Aspetuck River, Easton).
- Built and installed new weir boards and anti-theft guards, removed large wooden debris from the spillway/downstream passage, and replaced the broken walking grate brackets at the Branford Water Supply Ponds Fishway (Queach Brook, Branford).
- Built a stone guidance structure to prevent fish from over-shooting the Capello Pond Fishway entrance (East River, Guilford).
- Worked with TNC to widen a breach in the Bulkley Pond Dam (Sasco Brook, Westport-Fairfield) to expedite fish passage. A larger project to enlarge the breach will be launched in the future.

More work is needed to open up this breached Bulkley Pond Dam but alewives will be able to pass this coming spring thanks to the work by the Fisheries Division and The Nature Conservancy.

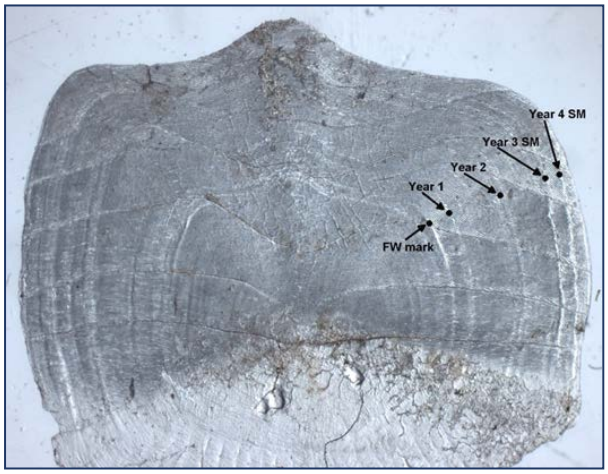
- Construction began on the Kensington Pond Dam Fishway (Mattabeset River, Berlin), a steeppass fishway at Town-owned dam. This fishway, targeting Alewife and Sea Lamprey, will complete the reconnection of habitat on the Mattabesset River. Fisheries Division staff helped design and plan the project, which was funded by a National Fish & Wildlife Foundation grant. More information will be provided in future reports when the fishway is completed early next year.

SEA-RUN TROUT

- Fin-clipped (left pelvic fin removed) 10,278 sea-run Brown Trout being raised at the Burlington State Fish Hatchery (BSFH). These fish were then moved into the three smolt ponds where they will reside until they are stocked in March, 2020 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.
- Stocked 17,366 sea-run Brown Trout parr into the lower sections of the Farm (8,714 fish) and Shunock (8,652 fish) rivers. These were fish that had been graded-out of 2020 smolts (eggs imported in 2018) being reared at BSTH.
- Operated fishway traps at Chapmans Pond Fishway and Latimer Brook Fishway to capture sea-returning trout. As of December 5, no returning trout have been captured.

RIVER HERRING

- Opened, monitored, and adjusted downstream flow through our coastal fishways to aid in the safe downstream passage of emigrating juvenile Alewives. After the migratory period was over, these fishways were closed for the winter.
- "Read" scale samples taken weekly during the spring Alewife run at Bride Lake to assess adult year class age structure and repeat spawning trends for the 2019 Alewife season.



An image of a scale collected from an age 5 Alewife sampled in Connecticut. Note the yearly annuli and spawning marks indicated by the arrows.

- Performed necessary maintenance of the fish transport systems on the so-called "Shad Truck" which has a 1,100 gallon fish transport tank and life support systems. Tasks included cleaning and prepping for painting the fiberglass tank, rebuilding the water pump brackets and replacing the oxygen lines.

ATLANTIC SALMON

- Staff assisted in the spawning of Atlantic Salmon broodstock at the Kensington State Fish Hatchery (KSFH) between October 28 and November 22. Approximately 718,740 eggs were taken, compared to 738,071 in 2018. 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, and fry to be stocked for the Legacy Salmon program, including some to be hatched at the streamside incubators at the Tributary Mill Conservancy (Mill Brook, Old Lyme).
- Conducted electrofishing surveys of Dickinson Creek in Colchester to determine the survival of juvenile Atlantic Salmon stocked as fry that were hatched at the Tributary Mill Conservancy in Old Lyme. Survival of 1+ parr was comparable to the long-term average of 8% for Dickinson Creek. Survival of 0+ parr was much lower than the long-term average with only 12% of fry surviving to the end of the first growing season, compared to an average rate of 25%.

AMERICAN EEL

- Closed eel passes across the state (Chapmans Pond, Fishing Brook, Greeneville, Hallville, Kinneytown, Mill River and Occum) for the season.
- Helped operate the Conte Airlift Bypass (CAB) for downstream passage of out-migrating adult silver phase American Eel at the entrance of the Groton water supply treatment plant (Poquonnock River, Groton) in a partnership with Groton Public Utilities (GPU) and U.S. Geological Survey (USGS). The trap is checked daily and any trapped eels are documented and released downstream of the dam. To date (11/30), the airlift has captured 1,227 silver eels, the highest number of the four years the CAB has operated. Two-hundred of the captured eels were provided to the University of Rhode

Island for a behavioral study testing the effects of the Cross Sound Cable on silver phase eel migration. All of the remaining eels were released downstream of the water plant.

- Helped operate the CAB for silver eels at the entrance of the water supply treatment plant at Kelseytown Reservoir (Menunketesuck River, Clinton), in a partnership with the Connecticut Water Company and USGS (Dr. Alex Haro). This was the first year of operation for this facility. As of November 30th, the airlift has captured 259 silver eels. Most of these eels were released downstream of the facility, however 50 eels were used to help determine the efficacy of recent downstream eel bypass measures constructed at the Aspetuck and Hemlocks reservoirs.

Seasonal employees Charlie Dykes (left) and Jake Rawlings(right) remove a silver eel from the Kelseytown CAB, seen in the background along with the on-site holding pen (green mesh).

- Partnered with Aquarion Water Company (AWC), USGS, The Nature Conservancy, and Sacred Heart University to evaluate a new silver eel bypass system at the Aspetuck and Hemlocks reservoirs in Easton. Like the previous locations, silver eels have been drawn into AWC's water treatment plant and killed. AWC installed bright lights to repel eels from the entrance to the Hemlocks Reservoir and a new gate on the Aspetuck Reservoir dam as an alternative route for eels to pass over and descend the Aspetuck River where there are no intakes or turbines. The eels from the Kelseytown CAB were outfitted with PIT tags and receivers were stationed at three locations to document where the eels passed. Data are still being reviewed but to date, no eels passed into the Hemlocks Reservoir, indicating success.

PUBLIC OUTREACH

- Led a tour of the Blackledge River Dam removal site on the Blackledge River in Glastonbury for the New England Chapter of the Society for Wetland Scientists.
- Made a presentation on dam removals in Connecticut at the annual meeting of the New England Chapter of the Society for Wetland Scientists at Central Connecticut State University.
- Made a presentation at the annual Teachers' Orientation for the Salmon-in-Schools program of the Connecticut River Salmon Association.
- Represented the Division at the annual National Fish and Wildlife Foundation's Long Island Sound Future Funds grant awards ceremony at the University of Bridgeport.
- Presented a guest lecture at a Yale University seminar entitled "The Ecology of Food".
- Attended a special screening of the film "Artifishal" about the use of salmon hatcheries and presented some remarks after the show.
- Made a presentation about the Division's fish passage program at the Connecticut Agricultural Experimental Station in Hamden.

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 for installation to restore/enhance instream habitat features or to mitigate unavoidable habitat losses. Permit conditions require project contractors to be assisted by HCE staff during construction to ensure the proper installation of fish passage and habitat structures. During the last quarter our program reviewed twenty-one Connecticut Department of Transportation bridge and culvert replacement projects, eight municipal bridge projects, five dock and pier projects, one shoreline restoration project, four dredge projects, two aquaculture projects, three water diversion projects, and seven forest management plans.

- **FARMINGTON RIVER BRIDGE REPLACEMENT PROJECT (Old Farms Road, Avon)**
  Engineers often prescribe riprap for scour protection at erosion-prone areas such as the interface of bridge abutments and the stream bed. While the interstitial spaces and irregular surface of riprap may provide cover for some small fish, riprap is generally not considered a habitat enhancing feature. At the Old Farms Road bridge replacement project over the Farmington River, HCE staff recommended and oversaw the installation of 'sawtooth deflectors' as a scour protection alternative to standard riprap that would also enhance fish habitat along the new bridge abutments. Sawtooth deflectors consist of a series of triangular boulder deflectors that serve to enhance instream habitat by providing cover and low velocity refuge areas outside of the main channel. Other fisheries enhancements that will be incorporated into the project include the placement of instream boulder clusters and the installation of a car top boat launch at the location of the existing bridge.

(Left) *A contractor works to install the first "tooth" of a sawtooth deflector along the western bank abutment during low water conditions.*

(Right) *Post-construction view of a recently completed sawtooth deflector along the eastern bank abutment.*

- **PARMALEE BROOK (Durham)**
  When road crossings are replaced, Fisheries Division biologists look for opportunities to improve fish habitat including having the contractor place large boulders in pools for cover, like this one at the outlet pool of Parmalee Brook, Durham.

Placement of several boulders within outlet pool of Parmalee Brook, Durham.

- **CHALKER BROOK CULVERT REPLACEMENT PROJECT (Cream Pot Road, Durham)**
  In bridge and culvert replacement projects, a goal of the HCE program is to have new stream crossings appear as a seamless transition between upstream and downstream habitats to fish and other aquatic organisms. Site constraints, cost and other factors often limit the type of structures that can be put in at a new stream crossing. Such was the case at the intersection of Chalker Brook and Cream Pot Road, where a 13-foot wide by 3.5-foot high box culvert was installed to replace a pair of failing culverts. The new culvert was designed to increase hydraulic capacity and preserve the character of an abutting property, however the culvert's length, slope, and smooth concrete floor would not provide effective fish passage. HCE staff worked with the project's design engineer to develop an experimental fish passage solution that consisted of a series of cobble weirs to provide grade control within the culvert, as well as a grouted-in surface of cobble and gravel to add channel roughness and provide some of the benefits of a natural stream bottom. HCE staff will be periodically monitoring Chalker Brook over the next few years to determine how effectively wild Brook Trout and other resident species are able to move upstream through the culvert.

(left) *Longitudinal view of the culvert at Chalker Brook after installation of the cobble weirs and grouted substrate.*

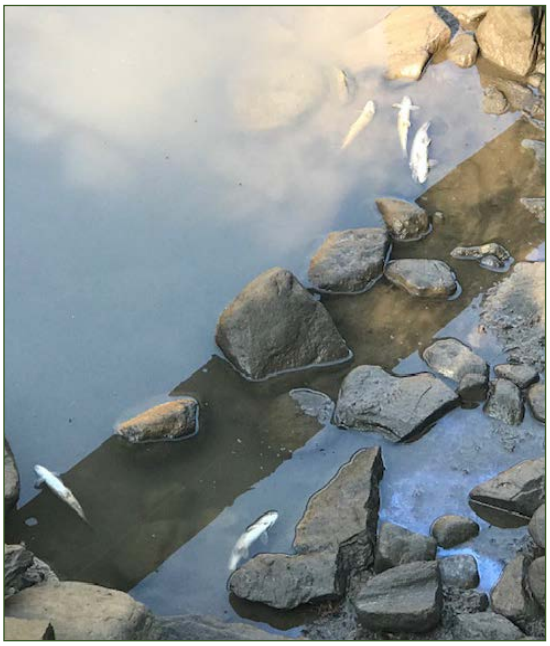
(Right) *Enlarged view of one of the cobble weirs*

- **SMOKEY HOLLOW ROAD BRIDGE (Morris)**
  Staff provided guidance on the installation of boulder clusters at the reconstructed Smokey Hollow Road Bridge (Bantam River, Morris). The boulders will function as scour control and fish habitat along the newly reconstructed riverbank.

Installation of the Smokey Hollow Road boulder clusters.

ENFORCEMENT ACTION, FOX BROOK CULVERT REPLACEMENT PROJECT (Montville).

As a result of improper water handling at a culvert replacement project on Old Colchester Road (Fox Brook, Montville), approximately 400 feet of the mainstem of Fox Brook was completely de-watered. This illegal action resulted in the mortality of 13 adult wild Brook Trout prior to spawning in October. All waters from Fox Brook were redirected over to an adjacent tributary to Fox Brook. This water handling plan was not in compliance with the original permitted plan. A public complaint of the fishkill to the Fisheries Division led to the initial investigation of this violation. DEEP enforcement action led to the Town of Montville being fined a total of $10,000 dollars, $5,000 of which was placed within the DEEP Supplemental Environmental Project (SEP) Fund. At this time, it appears this SEP payment will be used to help build a fishway.



Photograph of dead adult wild Brook Trout stranded due to streamflow not being bypassed to Fox Brook, downstream of the culvert replacement. Fish died due to lack of oxygen.

POMPERAUG RIVER LARGE WOODY DEBRIS PROJECT (Woodbury).

Safety concerns prompted the Town of Woodbury to reach out to HCE staff for advice on removing a log jam that obstructed the Pomperaug River channel just downstream of Judson Avenue. Large woody debris accumulations like this are a natural occurrence in rivers and provide beneficial habitat for many fish and wildlife species. However, the tight log jam across the Pomperaug River had the potential to block the stream and divert flow, which could undermine banks and send the river in different directions. If this was 400 years ago, a diverted river that cut a new channel 100 feet to one side would not make much difference. But in the present day, it could damage and destroy property: homes, roads, bridges, and even parks and open space. This jam also blocked all recreational paddling on the river and reduced fishing opportunities. Over the course of two days, HCE staff assisted the Town of Woodbury

with a clearing project that balanced the need to restore an open, unobstructed channel with the reality that large woody debris is good for a river. A key component of the project was that none of the woody debris was actually removed from the river. Much of the woody debris was cut and pulled to the inside of a bend and left in the river to serve as valuable habitat. Other large logs were left in place, under five to seven feet of water. In the end, the project was successful in opening up the stream channel to restore access and prevent a destructive river bank "blow out", while also preserving beneficial large woody debris habitat for fish and wildlife.

Downstream (left) and cross-stream (right) views of the log jam that obstructed the channel of the Pomperaug River just downstream of Judson Avenue in Woodbury.

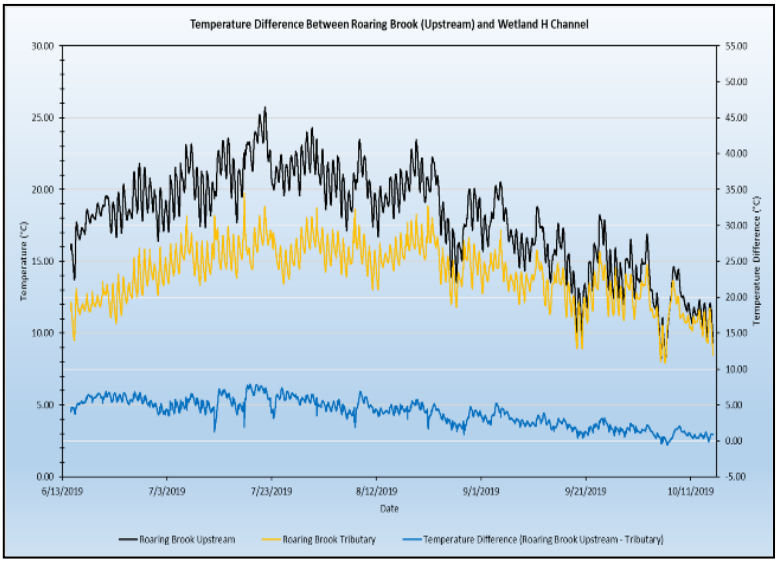
Downstream (left) and cross-stream (right) views of the reconfigured log jam.

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, students and making presentations at professional conferences to exchange technical information and promote active aquatic habitat restoration efforts in Connecticut. Most recently fish habitat presentations were made at a stream ecology class at the University of Connecticut (Storrs) and at the Connecticut Association of Conservation and Inland Wetland Commissions, where the program's Stream Crossing Guidelines were discussed.

COMMERCIAL DEVELOPMENT PROPOSAL, WILLINGTON

HCE staff provided pre-construction 2019 water temperature data collected in Roaring Brook to Town of Willington land use commissions. The commissions are considering an application by Loves Travel Stop and Country Store to develop land adjacent to Roaring Brook. The proposed development will include the installation of a subsurface wastewater absorption system next to an unnamed tributary to Roaring Brook which has been found to support a Wild Brook Trout population. Results of 2019 data confirm 2018 data that this tributary provides very cold, ground water, with temperatures around 10 degrees colder than observed within the mainstem of Roaring Brook.



Example of water temperature data collected in Roaring Brook and an unnamed tributary. Roaring Brook water temperatures are in black and the temperatures for the unnamed tributary are in yellow (water temperature scale on left axis). The temperature difference between the two streams is in blue (temperature difference scale on right axis).