Connecticut Fisheries Division

Inland Fisheries Research and Management

Federal Aid in Sport Fish Restoration F-57-R-42

Grant F24AF01138. Performance Period: April 1, 2024 – March 31, 2025.

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Katie S. Dykes, Commissioner

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title: **Inland Fisheries Research and Management**
Study 1: **Coldwater Fisheries Management**
Study 2: **Warmwater Fisheries Management**
Study 3: **Inland Fisheries Coordination and Administration**

Project Personnel: William Foreman, Environmental Analyst
Joseph Cassone, Fisheries Biologist
Matthew Devine, Fisheries Biologist
Brian Eltz, Fisheries Biologist
Spencer Mallette, Fisheries Biologist
Christopher McDowell, Fisheries Biologist
Andrew Ransom, Fisheries Biologist
Lillian Glynos, Fisheries Technician
Joshua Mouser, Post-Doctoral Scholar
Jason Vokoun, Professor
Laura Fontanella, Secretary
Madeline Ortiz, Secretary
Andrew Bade, Supervising Fisheries Biologist
Mike Beauchene, Supervising Fisheries Biologist

Approved by: Peter Aarrestad, Director

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State of Connecticut
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Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 1:	Coldwater Fisheries Management
Job 1:	Monitoring Fish Populations in Streams

Report Prepared by:	Brian Eltz & Andrew Ransom
Job Personnel:	Brian Eltz & Andrew Ransom, Co-job Leaders
	Matthew Devine, Primary Staff
	Andrew Bade, Program Coordinator

Overview: The Connecticut Department of Energy and Environmental Protection (DEEP) Fisheries Division primarily uses electrofishing equipment to monitor fish populations in streams and wadable rivers. These are dynamic systems that are subject to both natural variation (e.g., flood, drought, and natural changes in temperatures on a temporal and spatial scale) and anthropogenic factors (e.g., industrialization, impoundment, flow diversion, pollution [including thermal], agriculture, development, urban sprawl, and climate change). Annual fish population data collection using standardized methods is important to make informed management decisions.

Staff conducting a backpack electrofishing sample.

Objectives of the stream monitoring job are:

1. Monitor streams where water quality or physical habitat has been improved or has become degraded.
2. Assess fish populations of long-term reference streams.
3. Conduct water temperature mapping of stream networks to locate sources of thermal loading.
4. Develop systems to map water temperature and other stream data including barriers/obstructions to fish movement.
5. Assess short- and long-term environmental trends by sampling a variety of reference streams on a regular basis and by re-sampling selected historical stream survey sites.

6. Assess important riverine trout fisheries on a rotational basis.
7. Standardize and archive stream survey data and make information available to the division's Habitat Conservation and Enhancement program, other divisions within the DEEP, town land use commissions, and the public.

This report describes efforts related to these objectives during the study year. Under this Job, the Fisheries Division collected data on 210 sites, via electrofishing, during 2024 (Table 1 and Figure 1).

Brook Trout, a core member of Connecticut's coldwater fish community.

Key Findings

Table 1. *Count of sample events by purpose for stream locations sampled with electrofishing in 2024. Note that several locations were sampled for more than one purpose and are sorted accordingly. See Appendix in Study 1, Job 2 for list of streams and locations sampled in 2024.*

Sample Purpose	Count
Fry/Fingerling	43
General Survey	23
HCE	9
Headwaters	3
Long-Term	6
Old Stream Survey	5
Special Study	14
Species Specific	12
TMA	11
Wild Trout	73
WTMA	10
WTMA/Old Stream Survey	1
Total	**210**

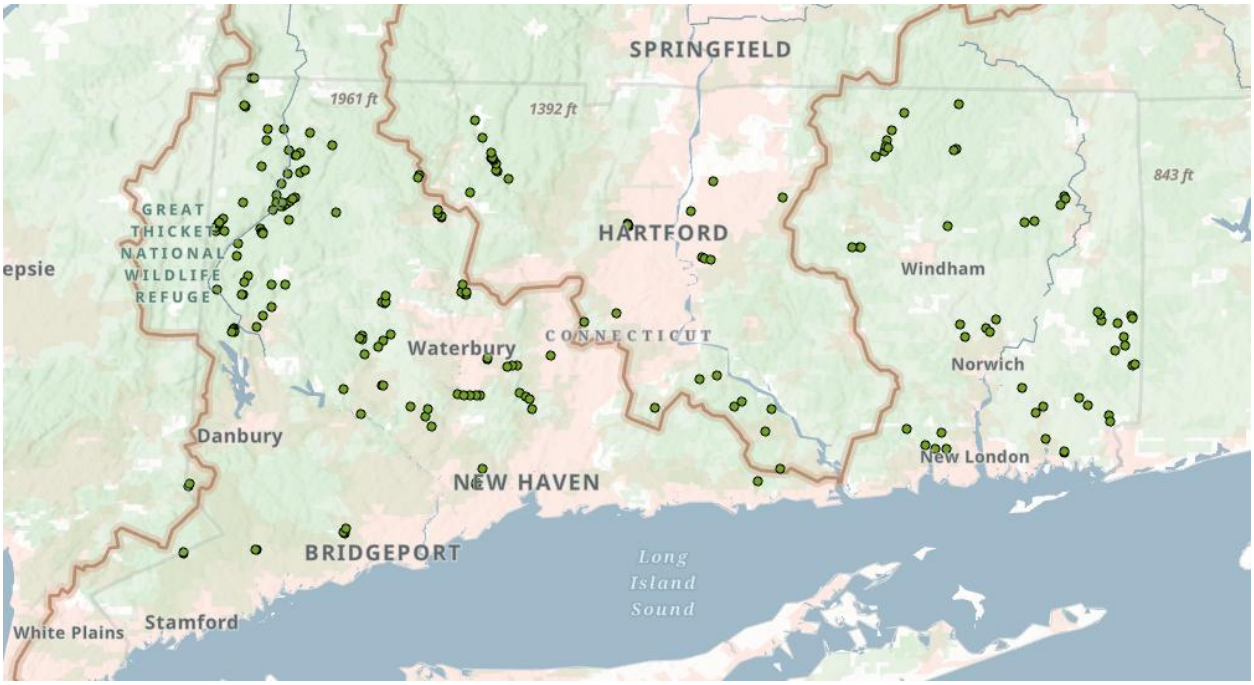

***Figure 1**. Locations of 210 streams sections sampled in 2024 in support of this job.*

Objective 1: Monitor streams where water quality or physical habitat has been improved or has become degraded.

- One site was sampled in collaboration with the Habitat Conservation and Enhancement program where instream habitat work was previously completed during 2019 in the Norwalk River (Wilton) at Schenck's Island Park. The habitat project improved pool and spawning habitat for Brown Trout in nearly an 800m stretch of river.
  - Only one stocked Brown Trout and one stocked Rainbow Trout was observed in a 300m sample location within the habitat improved area.
  - In a previous sample conducted at this location in 2019, prior to instream habitat work, 41 Brown Trout (mix of stocked adults (n=11, range= 27-37 cm) and fry-stocked origin (n=30, range= 6-11 cm)) and one stocked Rainbow Trout were documented in a 371m sample.
  - This location is annually stocked with adult trout during spring for catch and keep and prior to 2023 also received springtime stockings of Brown Trout fry for grow out.
  - It is recommended that fry stocking resume in 2025 to improve densities of Brown Trout in this stretch of river.
- Three sites in the Mill River (Fairfield) were sampled in 2024 prior to instream habitat work that is slated for 2025 and aimed at improving pool and spawning habitat for Brown Trout.
  - The Mill River Fairfield, a Class 1 Wild Trout Management Area (catch-and-release only year-round with no stocking), was sampled at three sites from just below Congress Street to just above Sport Hill Road (RT 59). Flows at the time of the sample were elevated (~ 31 CFS) due to a drawdown of the Easton Reservoir, and wild Brown Trout densities were moderate to high (131.6 – 422.8/km) while wild Brook Trout densities were low (3.8/km, only detected at the uppermost sampling

location). In 2023, three standard sites were sampled upstream of this stream reach and wild Brown Trout densities ranged from 217 – 658/km, and wild Brook Trout densities ranged from 15 – 592/km. Typically, wild Brook Trout densities increase in the upper reaches of this WTMA (closer to the reservoir) while Brown Trout densities decrease. Sampling is slated to occur again in 2025.

Objective 2: Assess fish populations of long-term reference streams.

- Fish populations were assessed in six long-term reference streams where both all-species data and water temperatures (Hobo thermographs) are typically collected. Highlights include:
  - In the Conginchaug River, wild Brook Trout densities (5.1/km) were low in 2024 compared to previous years while Brown Trout densities (18.5/km) were near the highest ever recorded (Figure 2). Recent clearing of riparian habitat along the stream bank may have altered stream temperatures and habitat. Thermograph logger history (Hobo Pro v2) will be investigated to determine temperature trends. In addition, more frequent sampling may be required to document changes in the wild trout community.

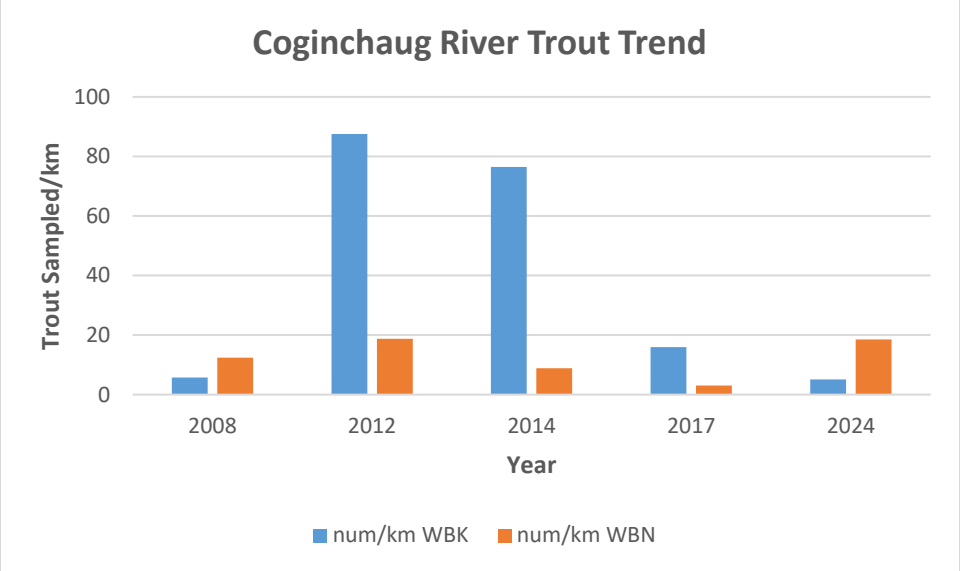

Figure 2. *Densities of wild Brook Trout and Brown Trout sampled from 2008-2024.*

  - In Salmon Brook (a WTMA Class 2), Brown Trout numbers remain low (0-28.6/km) across three sample locations where experimental Brown Trout fry stocking has occurred since 2021 because the population crashed. No fry stocking occurred in 2023 but resumed in 2024. It is hoped that fry stocked Brown Trout will survive to reproductive age and initiate a self-sustaining population.
  - Sages Ravine continues to produce some of the strongest Brook Trout populations in the state (1,020/km). This stream will become a WTMA Class 1 in 2026 due to its strong wild trout population and good angler access along trails that connect to the Appalachian Trail.

Objective 3: Conduct water temperature mapping of stream networks to locate sources of thermal loading.

- Twenty-seven thermographs (Figure 3) were deployed in 2024. Most thermographs were slated to be recovered/replaced after April 1, 2025. Once recovered, temperature data will be uploaded to the SHEDS website (http://ecosheds.org/) for long term data storage and public access.
    - In addition, mean July temperatures, mean summertime temperatures (July-August), and the daily maximum temperature will be calculated to determine the extent of coldwater habitat present in logger locations and adjacent stream reaches.

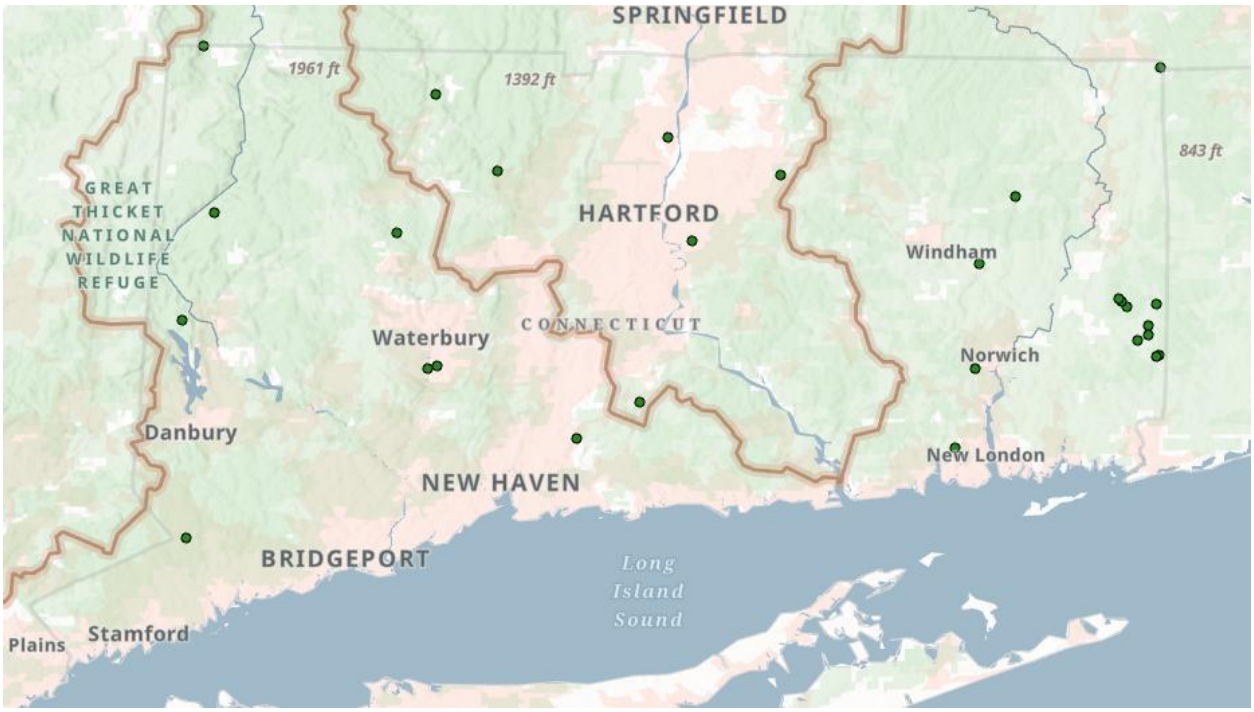

Figure 3. *Locations of the 27 thermographs deployed by project staff in 2024.*

- Nine of the thermographs deployed and retrieved in 2024 were paired with air temperature loggers to discern which tributaries had higher inputs from groundwater. Temperature regimes in groundwater dominated streams are typically more stable throughout the year and may provide thermal refugia for coldwater species. Air temperatures were included to compare stream temperatures with changes in ambient temperature.
    - Cold groundwater inputs ranged from dominant (NNT Mount Misery Brook; Figure 4) to marginal (Mount Misery Brook; Figure 5) or nonexistent (NNT Denison Brook), where the stream went dry during a drought period.

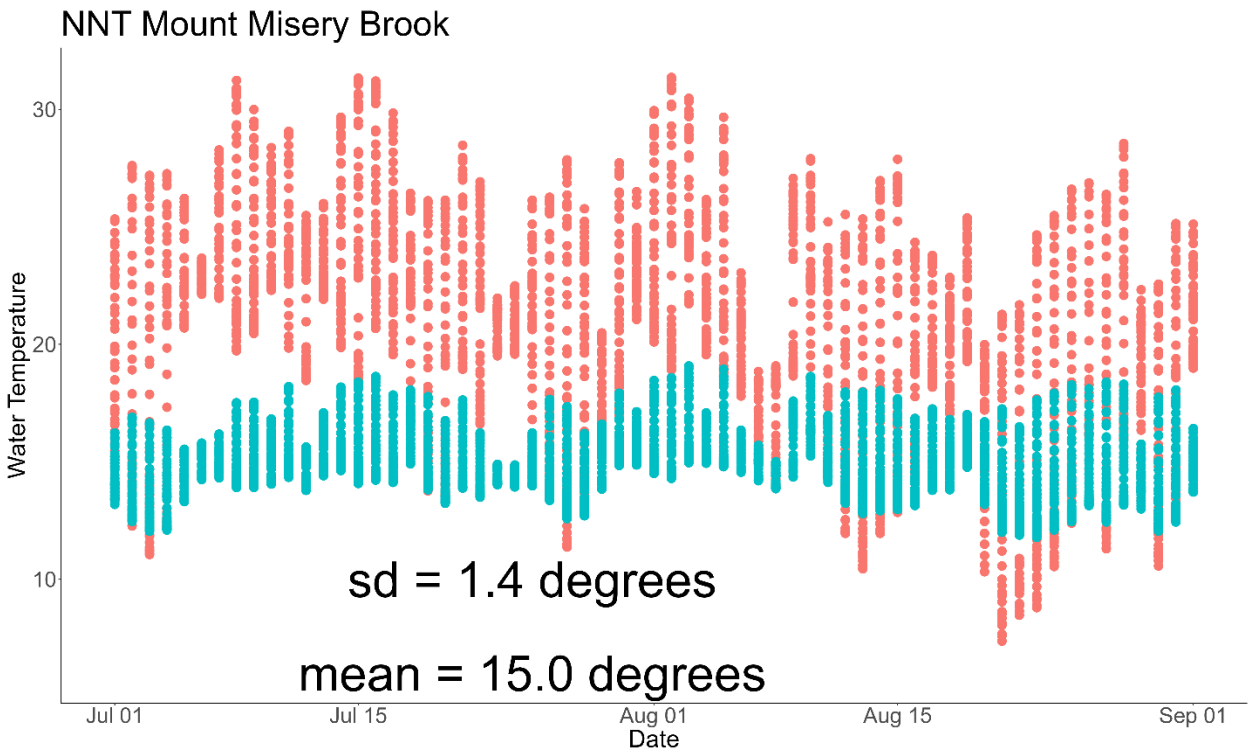

Figure 4. *Paired air (red) and water (blue) temperatures (degrees Celsius) recorded from No Name Tributary (NNT) to Mount Misery Brook during July and August of 2024.*

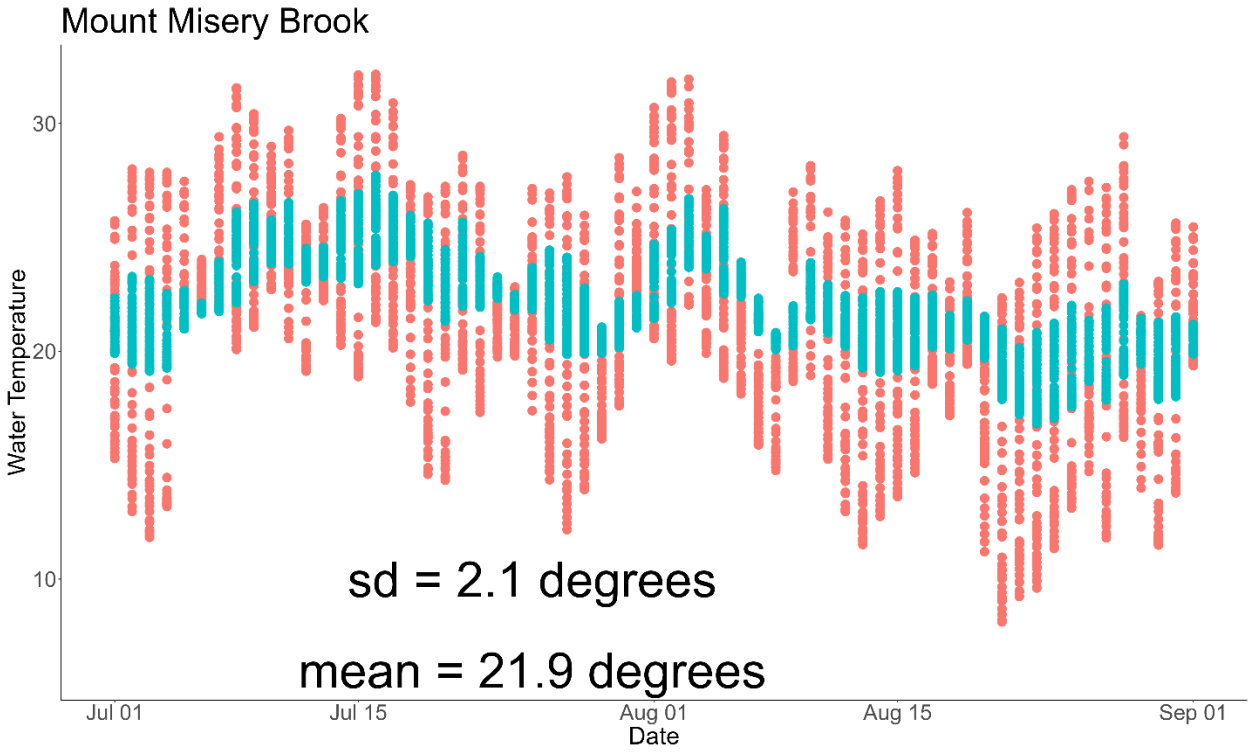

Figure 5. *Paired air (red) and water (blue) temperatures (degrees Celsius) recorded from Mount Misery Brook during July and August of 2024.*

- Survey123 was utilized to collect site information regarding location of thermograph placement. Use of the application improved data collection, data entry, and data storage capabilities.

Objective 4: Develop systems to map water temperature and other stream data including barriers/obstructions to fish movement.

- The use of drone cameras with thermal imaging is being investigated to help identify coldwater habitat in the riverine environment. In addition, drones could be utilized to help inform identification of potential barriers/obstructions to fish movement.
- In 2024, twelve Fisheries Division staff completed online culvert survey training through the North Atlantic Aquatic Connectivity Collaborative (NAACC). Staff completed the required field training and shadowing to become lead observers in 2024 and conducted surveys and guided volunteer groups utilizing a new culvert survey priority list. Culverts were prioritized for assessment using the State's Coldwater Stream Habitat Map (CT Cold Water Streams). In addition, staff also created a priority list of culverts previously surveyed using the NAACC culvert survey protocol (and scored as significant or severe barriers to fish passage) within the Coldwater Stream Habitat Map. This priority culvert replacement list will guide future restoration efforts to improve connectivity to coldwater habitat.

Objective 5: Assess short- and long-term environmental trends by sampling a variety of reference streams on a regular basis and by re-sampling selected historical stream survey sites.

- Five sites from the original Stream Survey (1988-1995; OSS) were randomly selected and sampled during 2024.
  - Wild Brook Trout were sampled in three sites, and Wild Brown Trout in one.
  - Wild Bowfin were documented for the first time at one of the sites (Podunk River).
  - A large rain event during August prevented the continued sampling of large OSS sites scheduled for 2024.
- Nine streams were sampled to assess fish communities in the Pomperaug River and its tributaries where Knobfin Sculpin (*Cottus immaculatus*) have invaded or may colonize in the future.
  - Only one Knobfin was sampled above a previous movement barrier, and the sculpin was removed from the area.
  - No Knobfin were observed in streams adjacent to previously documented distribution extent (Figure 6).
  - A subset of 24 Knobfin collected in Sprain Brook were aged by two independent readers using thin-sectioned otoliths. Ages ranged from 1 to 3 years (Figure 7).

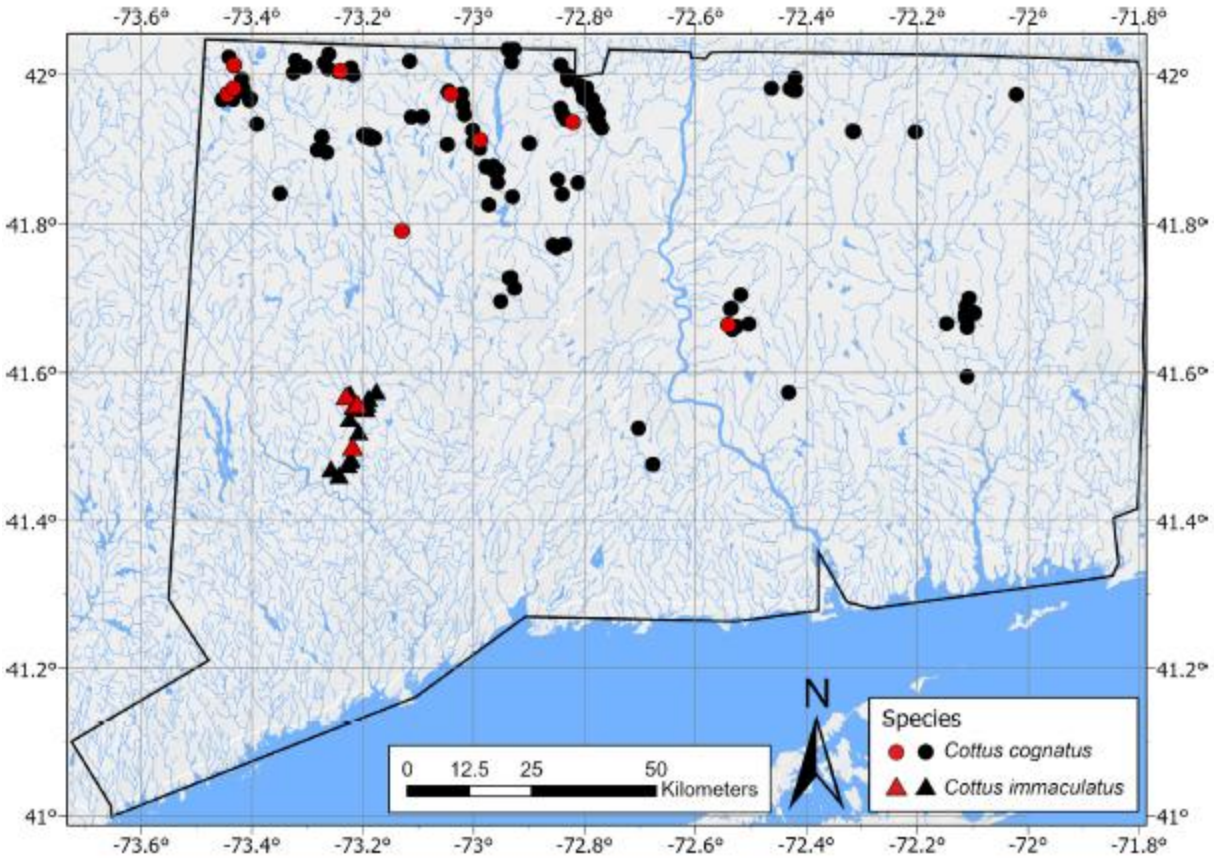

Figure 6. *Distribution of Knobfin and Slimy sculpin within Connecticut. Map was previously published in Tellier et al. 2023.*

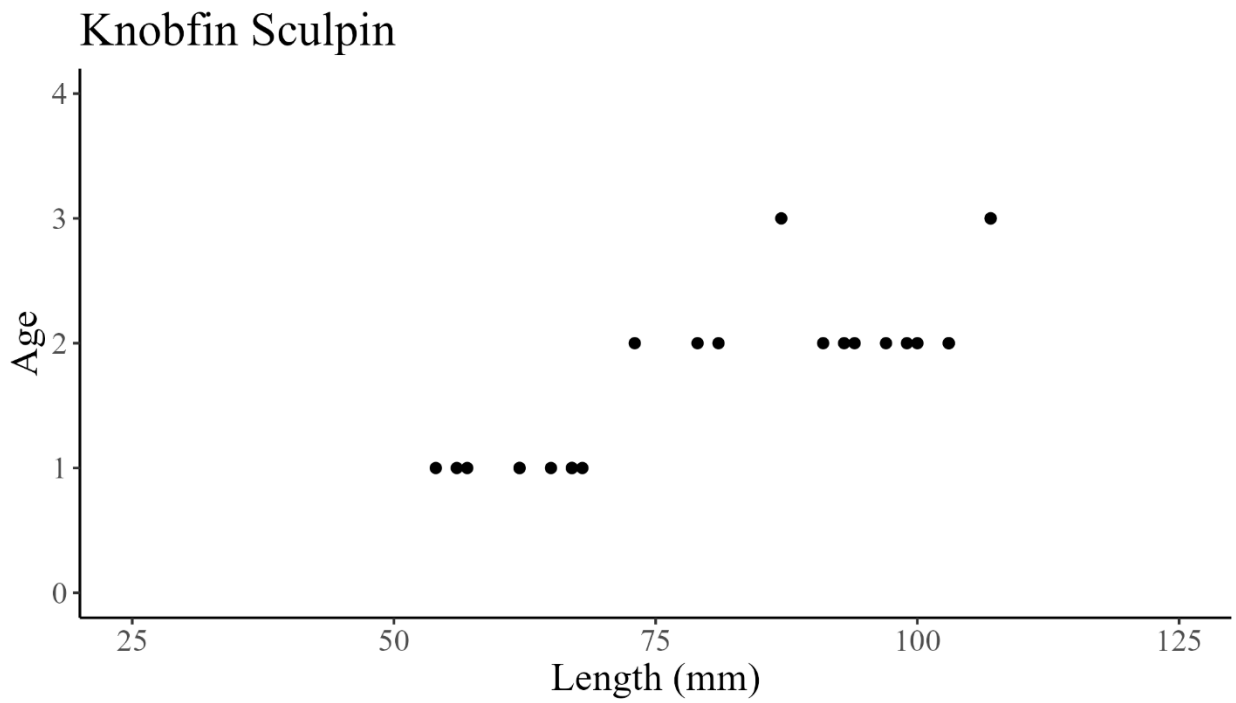

Figure 7. *Length (mm) at age plot of Knobfin Sculpin captured in Sprain Brook during 2024.*

- Brown Brook, a tributary to the Hollenbeck River, was sampled for wild trout and Burbot. Brook and Brown trout were found in low densities; 19.2 and 12.8 trout/km, respectively. Zero Burbot were documented.

Objective 6: Assess important riverine trout fisheries on a rotational basis.

- Nine standard sites within the year-round catch and release section of the West Branch Farmington River Trout Management Area (TMA) and two seasonal catch and release sections within the Farmington River TMA (above and below the year-round TMA) were sampled to characterize the trout population and for broodstock collection (See Broodstock Salmonid Management report for more detail).
  - Forty-five percent of all Brown Trout sampled in the year-round TMA were of wild origin.
  - One wild Rainbow Trout was detected in the year-round TMA.
  - In 2024, the second highest catch rates of trout (464/km; average 340/km 1995-2024) were recorded within the standard sampling areas of the year-round TMA (Figure 8).

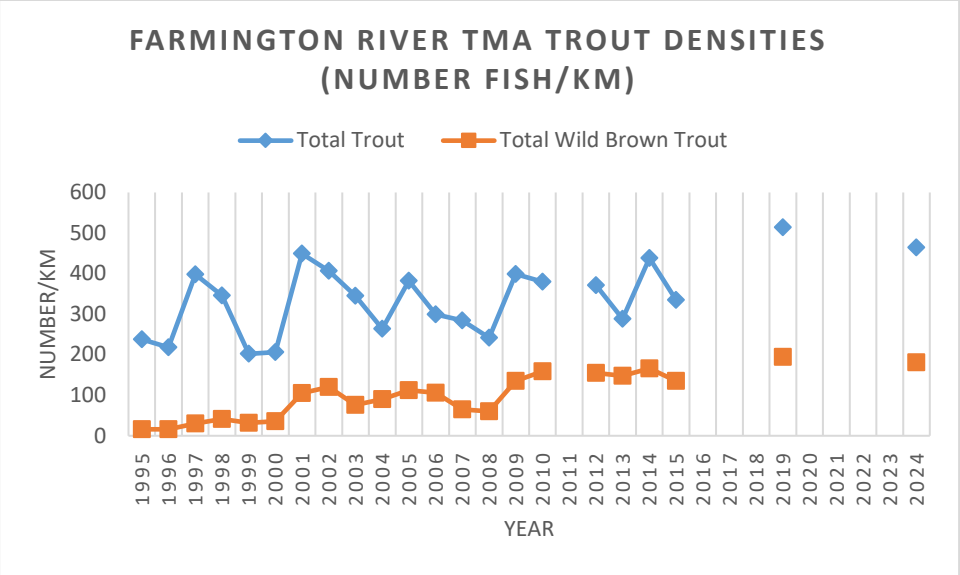

Figure 8. *Single-pass electrofishing catch rates (trout/km and wild Brown Trout/km) during late summer/early fall in standard sections of the year-round catch and release area of the West Branch Farmington River TMA, 1995-2024. Note that no population sampling occurred in years where datapoints are absent.*

- Wild Brown Trout catch rates were the second highest ever recorded (181/km, average 99 fish/km 1995-2024) (Figures 8 and 9). As seen in Figure 9, the wild

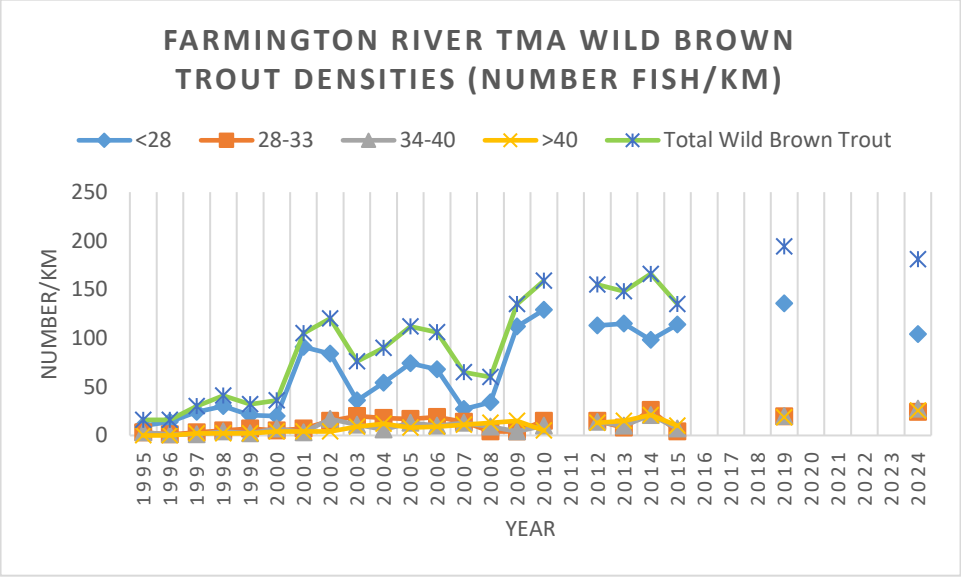

Figure 9. *Single-pass electrofishing catch rates (trout/km) during late summer/early fall in standard sections of the year-round catch and release area of the West Branch Farmington River TMA, 1995-2024. Note that no population sampling occurred in years where datapoints are absent.*

Brown Trout population is largely made up of fish smaller than 28 cm, but numbers of fish > 28 cm are increasing.

- The estimated trout biomass in 2024 was the second highest ever observed in the year-round TMA (Figure 10).

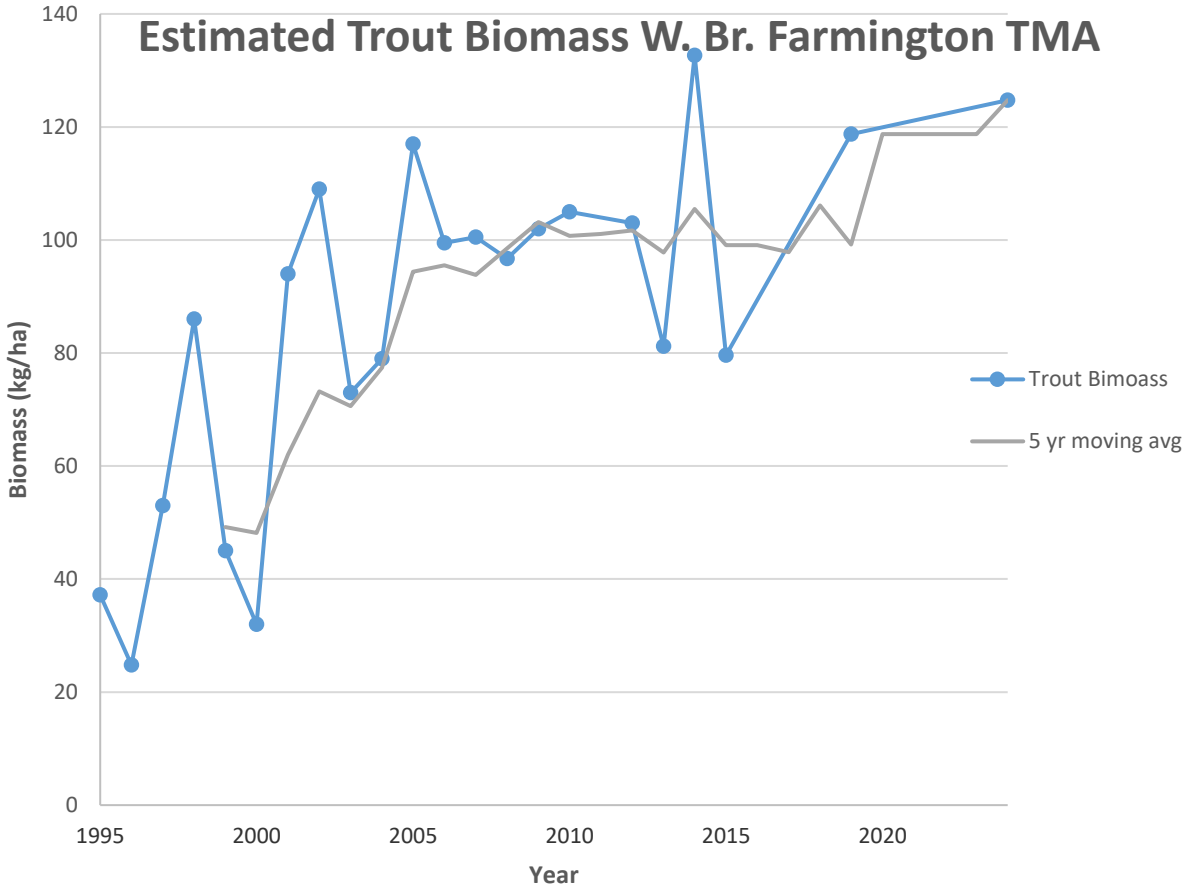

Figure 10. *Estimated trout biomass in the year-round TMA since 1995. The blue line represents estimated biomass, and the gray line represents the five-year moving average.*

- The estimated total number of trout was the second highest ever recorded in the year-round TMA (Figure 11).

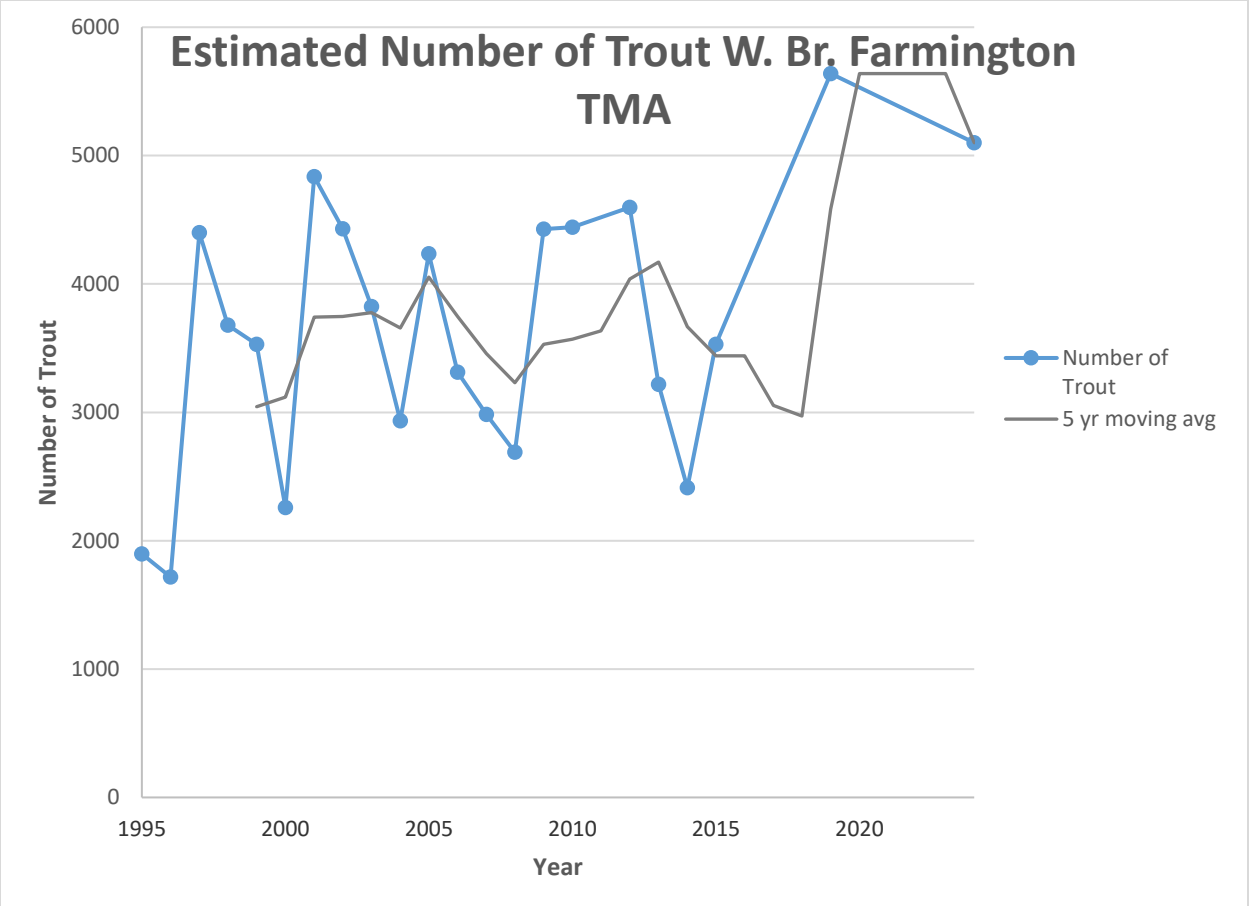

Figure 11. *Estimated number of trout in the year-round TMA since 1995. The blue line represents estimated number of trout, and the gray line represents the five-year moving average.*

- The estimated numbers of large trout were the highest recorded since 2012 (Figure 12) and are approaching historic levels.

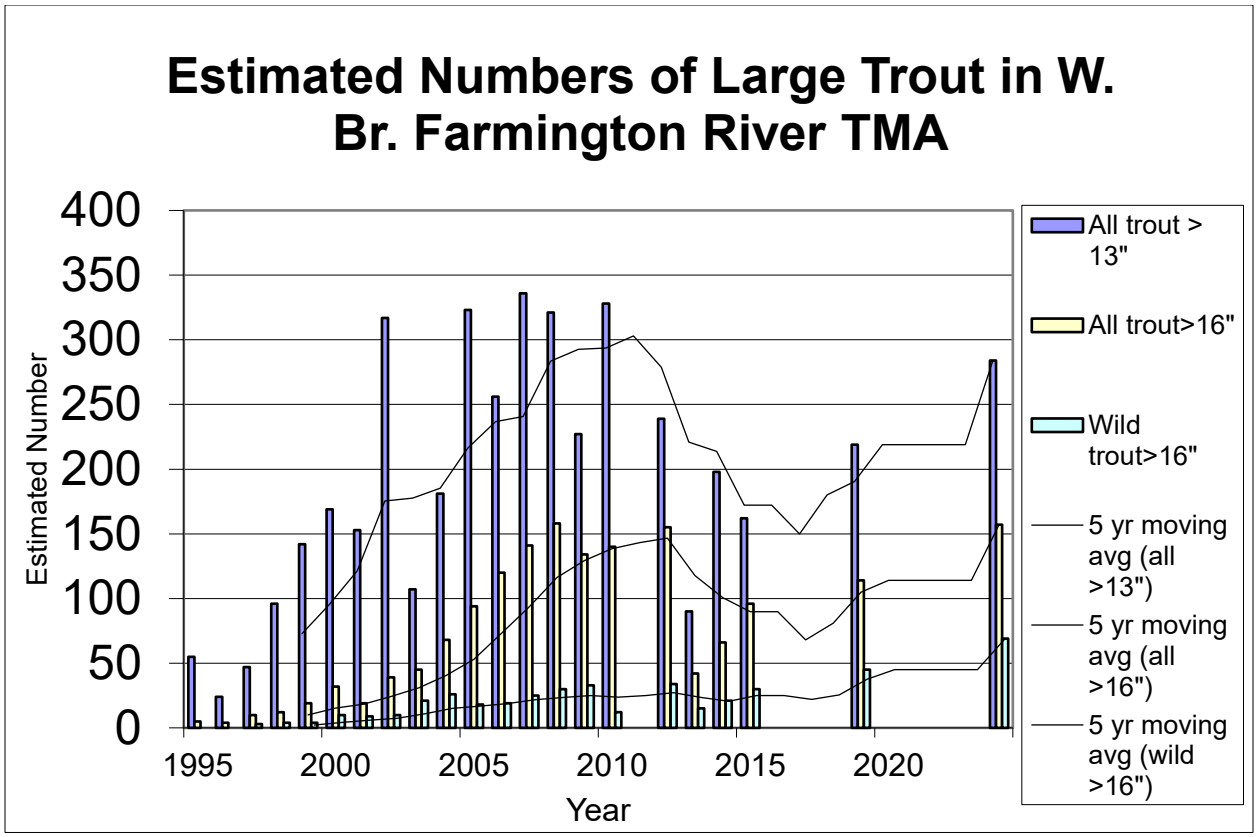

Figure 12. *Estimated number of large trout (> 13") in the year-round TMA since 1995. Note the five-year moving averages for each size class.*

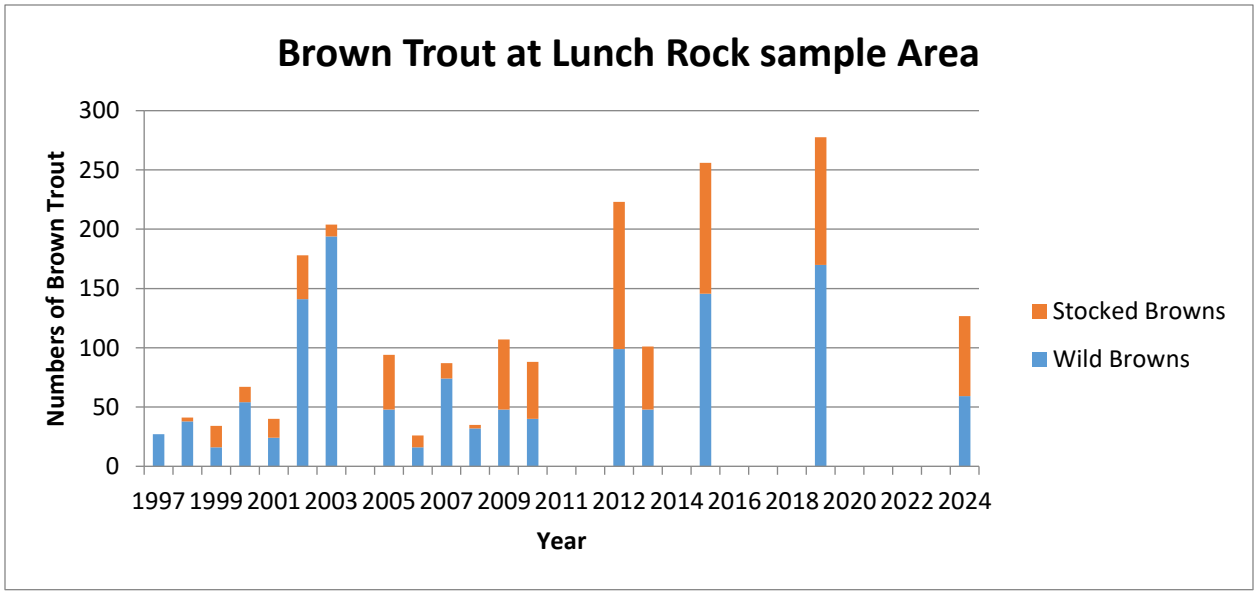

Figure 13. *Numbers of Brown Trout sampled in the newest section of the Farmington River year-round TMA. Note the origin of trout broken down by stocked vs. wild.*

- Numbers of Brown Trout were down in the newest expanded section of the year-round TMA, which occurred in 2012 (Figure 13). This area is tough to sample, and

efficiency was low in 2024 compared to previous years. It is recommended to sample this location more frequently.

Trout numbers were down in the upper Seasonal TMA when compared to recent samples (Table 2). Flows at the time of sampling were more than favorable and efficiency was high. It is recommended this area is sampled at a higher frequency than was done in the past.

Table 2. *Number of trout/km in the upper Seasonal TMA (Canoe Launch).*

Year	Stocked Brown Trout Size class (cm)				Wild Brown Trout Size class (cm)				Rainbow Trout Size class (cm)			Brook Trout	**Total Trout**
	<28	28-33	34-40	>40	<28	28-33	34-40	>40	<34	34-40	>40	All Sizes	
2003*	26	36	7	0	0	3	0	0	3	7	0	7	**89**
	New regulations 2012												
2012*	0	7	0	3	13	0	7	0	7	3	0	39	**79**
2013*	62	124	26	3	42	3	3	0	29	3	3	59	**357**
2015	10	13	7	0	59	3	7	3	13	7	0	82	**204**
2024	0	0	0	0	18	13	0	13	9	9	4	17	**83**

*Fall stocking prior to smapling

- Trout numbers were similar to previous samples in the lower Seasonal TMA (Table 3). It is recommended this area is sampled at a higher frequency than was done in the past.

Table 3. *Number of trout/km in the lower Seasonal TMA sampling location (Condos).*

Year	Stocked Brown Trout Size class (cm)				Wild Brown Trout Size class (cm)				Rainbow Trout Size class (cm)			Brook Trout	**Total Trout**
	<28	28-33	34-40	>40	<28	28-33	34-40	>40	<34	34-40	>40	All Sizes	
New regulations 2012													
2012	7	13	3	0	39	7	29	7	26	20	3	0	**154**
2015	13	29	16	3	69	10	0	10	16	10	0	23	**199**
2024	0	3	3	0	63	3	25	22	8	11	6	6	**150**

Objective 7: Standardize and archive stream survey data, and make information available to the HCE program, other divisions within the DEEP, town land use commissions and the public.

- All DEEP Fisheries Division data are compiled and entered into a centralized Microsoft Access database.
  - Data was provided to Trout Unlimited, Eastern Brook Trout Joint Ventures, Universities, private consultants, and DEEP's Bureau of Water Protection and Land Reuse.
- An agreement with the University of Connecticut to employ a post-doctoral researcher was initiated in 2024. This researcher will compile all historical and contemporary data collected by the coldwater and warmwater programs and populate relational databases to optimize data accessibility.

Moving Forward

- Revisit a subset of the streams that were documented as dry in 2016 to determine the long-term effects of droughts on fish communities.
- Finish the remaining randomly chosen historic Stream Survey (1988-1995) sites started in 2023.
- Assess wild trout reproduction in formerly Brown Trout fry stocked rivers and streams.
- Develop a long-term monitoring strategy for the State endangered Burbot, a coldwater sensitive species.
- Finalize priority culvert surveying and replacement lists and make them public.
- Monitor stream temperatures in systems to identify thermal loading.
- Work to develop the use of drones to aid in water temperature and stream barrier mapping.
- Determine feasibility of using ESRI products to record stream fish sampling data collected in the field.
- Work with the UConn researcher to combine recent and historical stream monitoring data (among other data types) into user-friendly data products for staff and the public.
- Add an objective to identify and remove Knobfin Sculpin populations to mitigate their negative impacts on the resident fish community.

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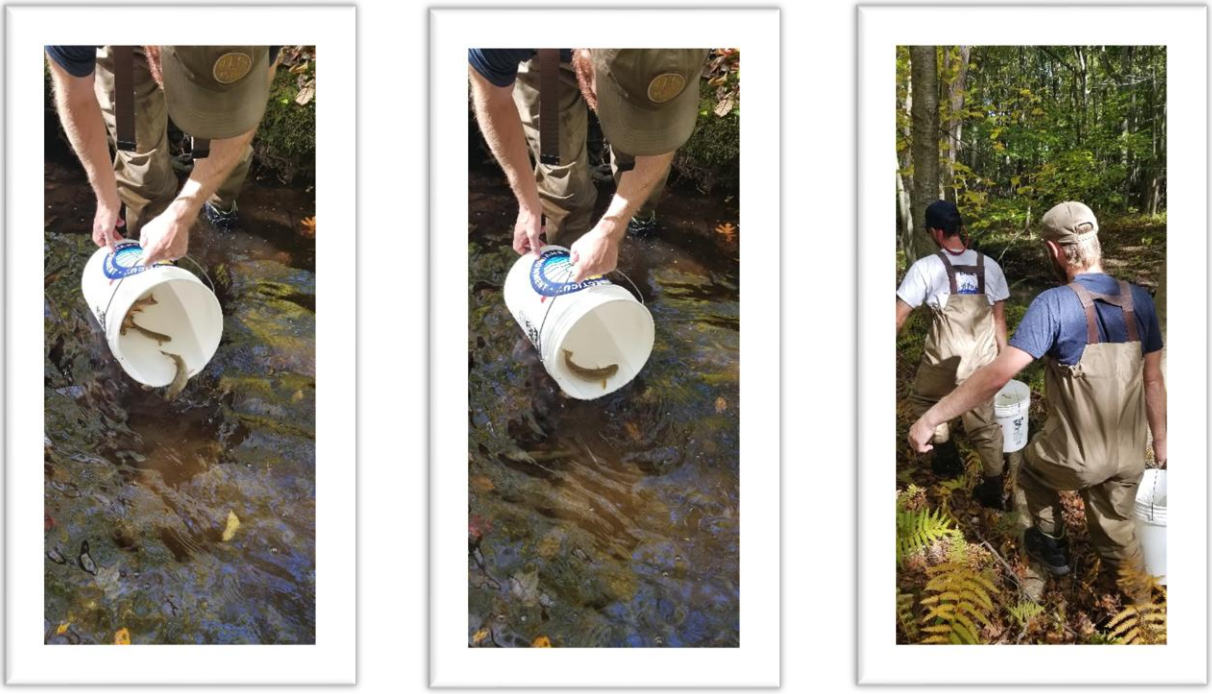


Photos of Turkey Hill Brook repopulation of Brook Trout in 2024.

Overview: Wild Brook Trout and Brown Trout populations are important sustainable resources that add quality and diversity to Connecticut fisheries. The iconic Brook Trout is the only native trout (technically a char) historically found in Connecticut. Brown Trout, introduced to

Connecticut waters over 100 years ago, have also established self-sustaining populations within rivers and streams. Continued sampling of the State's rivers and streams, coupled with routine monitoring of key sentinel streams, is necessary to document the effects of a changing environment and recreational fishing pressure on wild trout populations.

There are an estimated 4,000 miles of streams and rivers within Connecticut that contain self-sustaining populations of wild trout that are regulated by statewide trout fishing regulations (5 trout per day, no size limit, no gear restrictions, season is from Opening Day of Harvest [2nd Saturday in April at 6am] until the last day of February and Catch and Release only from March 1st through Opening Day of Harvest). A subset of these waterbodies are classified into one of three types of Wild Trout Management Areas (WTMAs), each differentiated by regulation:

- **Class 1:** Catch and Release only year-round, use of a single barbless hook, artificial lure or fly only. These receive no stocking of hatchery fish. Monitoring and assessment are part of this job.
- **Class 2:** Two trout per day limit, 12-inch minimum size harvest season is from Opening Day of Harvest until the last day of February and Catch and Release only from March 1st through Opening Day of Harvest. These may receive fish stocked as juveniles or adults. Reporting on fry/adult stocking is part of the trout stocking job.
- **Class 3:** Five trout per day limit, 9-inch minimum size harvest season is from Opening Day of Harvest until the last day of February and Catch and Release only from March 1st through Opening Day of Harvest. These may receive fish stocked as juveniles or adults. Reporting on fry/adult stocking is part of the trout stocking job.

The objectives of the wild trout job are:

1. Monitor and assess fish populations in sentinel wild trout streams.
2. Assess fish populations of headwater streams, with emphasis on documenting previously un-sampled populations of native, wild Brook Trout, naturalized, wild Brown Trout, and other sensitive cold and/or coolwater fish species.
3. Systematically re-sample former Statewide Stream Survey sample sites that supported viable wild trout populations.
4. Re-introduce wild Brook Trout to sections of streams where local extirpation has occurred via natural or human-related causes.

Key Findings

Objective 1: Monitor and assess fish populations in sentinel wild trout streams.

- Electrofishing sampling (single pass) occurred in six sentinel wild trout stream reaches (typically referred to as Long-term sites) during 2024 (Appendix 1). Some highlights include:
    - In the Conginchaug River, wild Brook Trout (5.1/km) were low in 2024 compared to previous years while Brown Trout densities (18.5/km) were near the highest

ever recorded (Figure 1). Recent clearing of riparian habitat along the stream bank may have altered stream temperatures and habitat. Thermograph logger history (Hobo Pro v2) will be investigated to determine temperature trends. In addition, more frequent sampling may be required to document changes in the wild trout community.

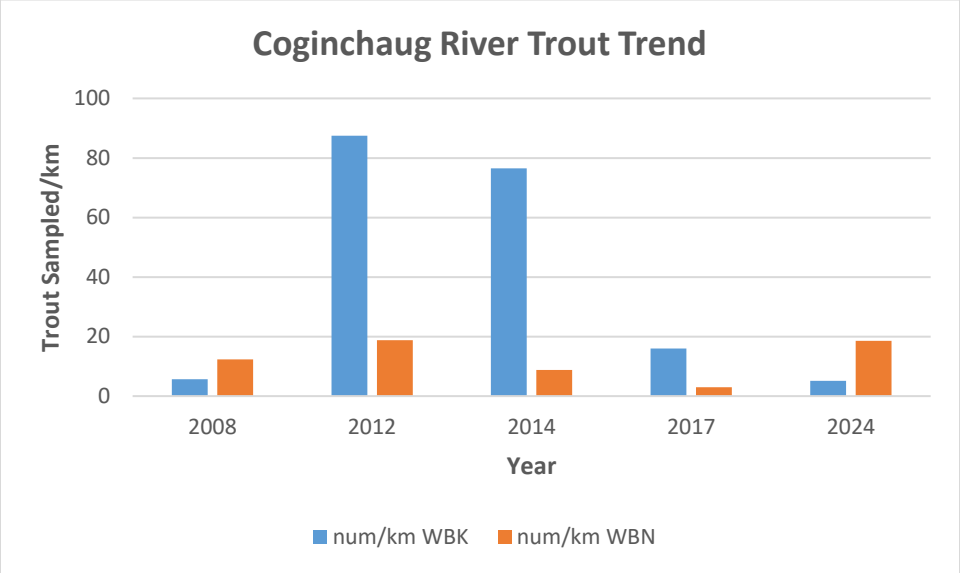


Figure 1. *Densities of wild Brook Trout and Brown Trout sampled from 2008-2024.*

- In Salmon Brook (a WTMA Class 2), Brown Trout numbers remain low (0-28.6/km) across three sample locations where experimental Brown Trout fry stocking has occurred since 2021 because the population crashed. No fry stocking occurred in 2023 but resumed in 2024. It is hoped that fry stocked Brown Trout will live to reproductive age and initiate a self-sustaining population.
- Sages Ravine (sample 36095) continues to produce some of the strongest Brook Trout populations in the state (1,020/km). Although not a Long-term site, another sample location on Sages Ravine (36096) downstream of the aforementioned site had even stronger numbers of wild Brook Trout present (1,501/km). This stream will become a WTMA Class 1 in 2026 due to its strong wild trout population and good angler access along trails that connect to the Appalachian Trail.
- The Little River in Oxford (sample 36086) was sampled in 2024. Wild Brook Trout densities remain high (434.8/km in 2024 vs 560.8 in 2023) while wild Brown Trout numbers are low (12.4/km in 2024 vs. 6.8/km in 2023). Overall, densities of wild Brook and Brown trout have fallen sharply since 2010 (Figure 2), and continued monitoring is suggested to track this wild trout population. Brown Trout densities likely have decreased since Brown Trout fry stocking ceased in 2022 from a point starting ~ 0.8 km downstream of this sampling location (Figure 3). Due to a damaging flood that occurred in August 2024, the Little River will be sampled again in 2025 to determine if the wild trout population was affected at this site.

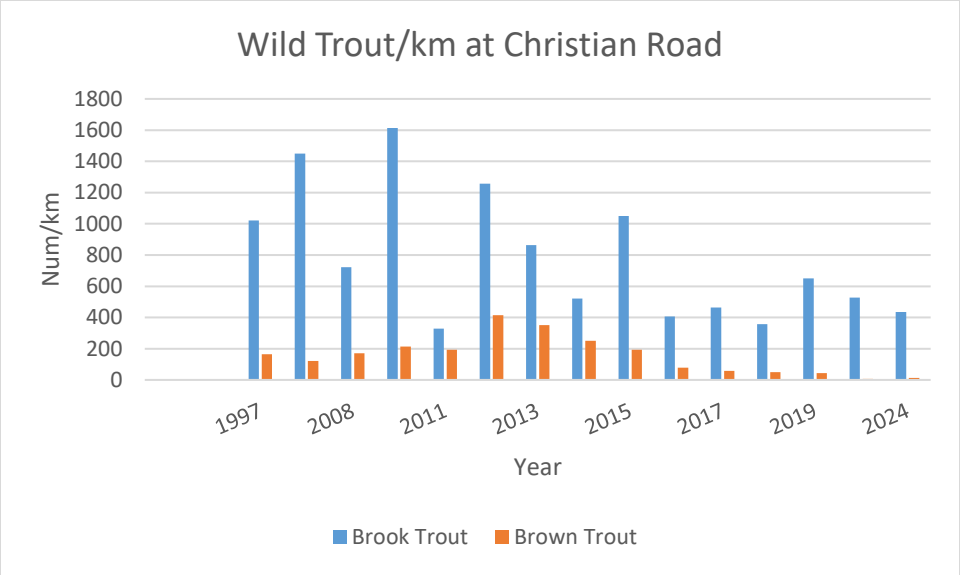


Figure 2. *Densities of wild Brook Trout and Brown Trout sampled at Christian Road from 1997-2024.*

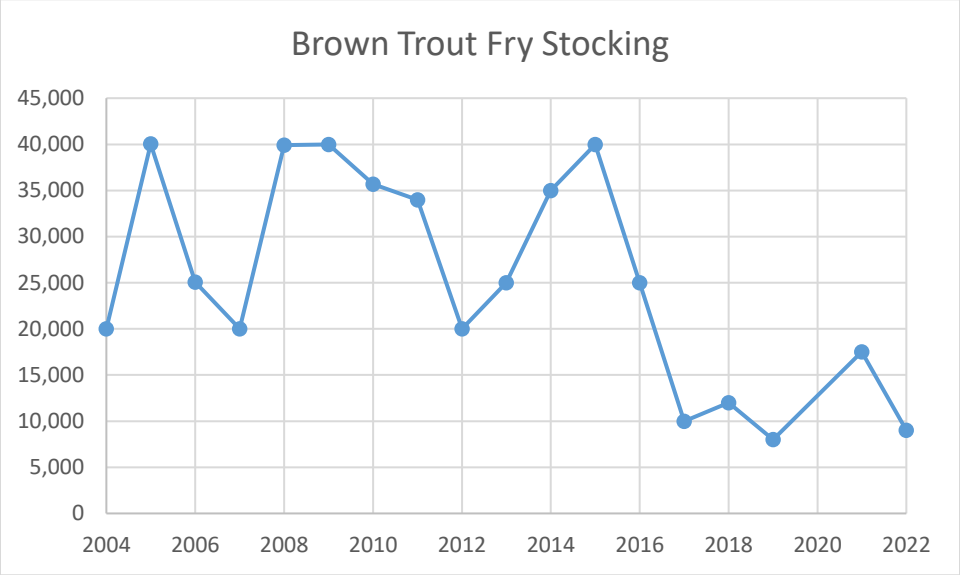


Figure 3. *Historic Brown Trout Fry stocking numbers downstream of the Christian Road sampling location from 2024-2022.*

- Eleven WTMA (Class 1 and 3) stream sections were sampled in 2024.
    - Two sample locations on Wachocastinook Creek that were sampled in 2023 during a high flow period were resampled in 2024 under more suitable flow conditions. The lowermost site (sample 36075) had low numbers of wild Brook Trout (28.5/km) and high numbers of wild browns (689/km). An adjacent sample site just upstream (sample 36094) had slightly stronger densities of Brook (53.6/km) and Brown trout (757.3/km). Both sites are heavily fished by anglers as

they are close to parking and hiking trails. Despite this, wild trout numbers remain high.

- Five stream reaches of Roaring Brook (Willington-Stafford) within the WTMA 3 designation, and one stream reach outside of the WTMA were sampled in 2024. This WTMA was last stocked with Brown Trout fry in 2021. No wild trout were detected at the upper two sampling locations (samples 36122 & 36123). Site 36122 within the WTMA historically held low densities of wild Brook Trout, but did support fry stocked Brown Trout. At site 36123, two Brook Trout were documented in a previous sample in 2007. Moderate numbers of wild Brook Trout (72.1/km) were detected at the middle sampling location (sample 36121), where no wild browns were observed, but two browns ≥ 21 cm were detected that could have been of wild or fry-stocked origin (fin quality is high in both wild and fry-stocked origin fish and distinction between the two is difficult). At the three lowermost locations (samples 36124, 36128, and 36129), Brook Trout densities were low and ranged from 24.4 – 43.7/km; wild Brown Trout densities were generally higher and ranged from 12.9 – 243.8/km, with most observed in an area of low fishing pressure along Interstate 84 (sample 36128). In the three lowermost areas, densities of possible fry-stocked origin Brown Trout ranged from 34.3 – 204.2/km. Cutoffs of ≥ 18 cm between wild vs. fry stock designation were utilized in these areas because there was a clear distinction between year-classes of what could have been deemed wild vs. fry-stocked after three possible years of growth since stocking. Cutoffs were conservative and future sampling will help to better characterize the true contribution of wild Brown Trout in this system since fry stocking has ceased. Only numbers of true wild Brown Trout were reported in the Appendix except for Salmon Brook due to ongoing experimental fry stocking.
- The Mill River, Fairfield, Class 1 WTMA, was sampled at three sites from just below Congress Street to just above Sport Hill Road (RT 59) in advance of stream habitat enhancement work that is set to take place in 2026. Flows at the time of the sample were high (~ 31 CFS) due to a drawdown of Easton Reservoir, and wild Brown Trout densities were moderate to high (131.6 – 422.8/km) while Brook Trout densities were low (3.8/km, only detected at the upper location). In 2023, three standard sites were sampled upstream of these locations and wild Brown Trout densities ranged from 217 – 658/km, and wild Brook Trout densities ranged from 15 – 592/km. Typically, wild Brook Trout densities increase in the upper reaches of this WTMA while Brown Trout densities decrease. Sampling is slated to occur again during the summer of 2025 in advance of the habitat enhancement work.
- Moving forward, historic WTMA Class 1 sites may be sampled on a rotational basis as opposed to annually. This will allow for increased manpower allocation to monitoring and restoration efforts for wild Brook Trout (transfers from donor populations), and possible wild Brown Trout removals where sympatric Brook and Brown trout populations occur.
- One of three standard sampling sites on the Tankerhoosen River WTMA, below the confluence with Railroad Brook, was sampled in 2024; densities of Brook

Trout were low (16/km) while Brown Trout densities were considerably higher (496/km). Brook Trout densities in the system have remain low since 2005 (Figure 4).

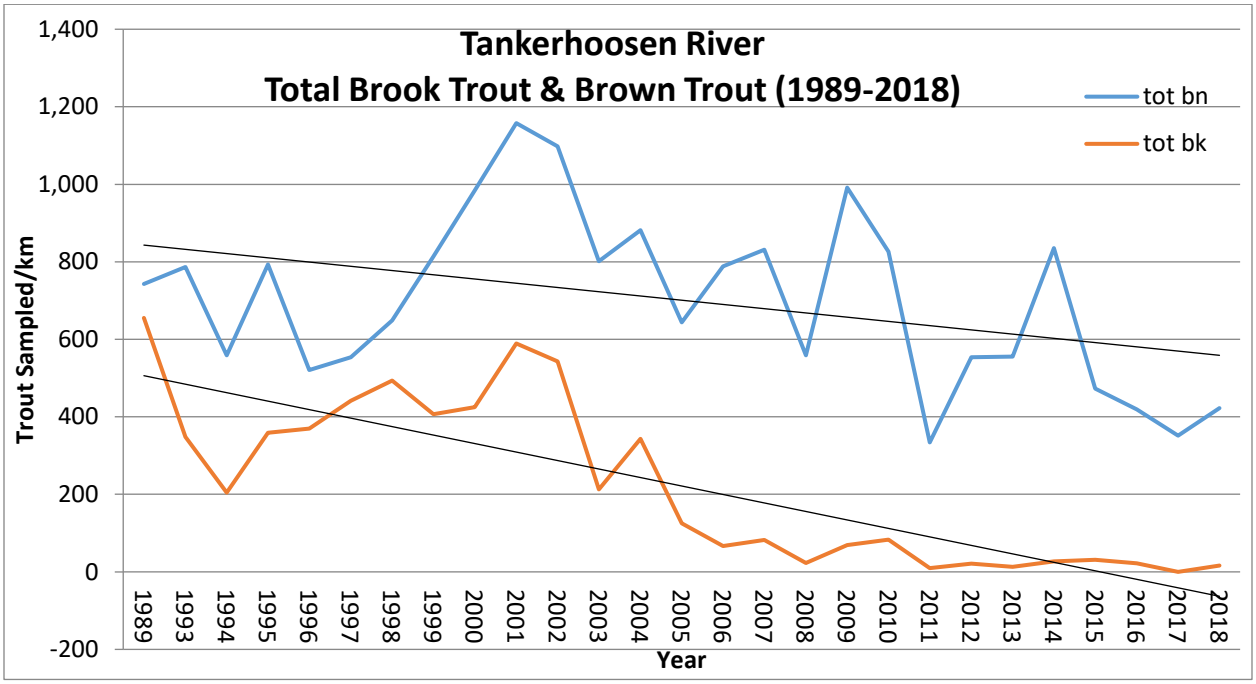


Figure 4. *Densities of wild Brook Trout and Brown Trout sampled across three standard sample sites from 1989-2018. Data from 2023 were not included because only two of the three sample locations were surveyed. Data from 2024 was not included because only one of three sites were sampled. The black lines represent trend lines where both show a decrease in trout over time.*

Objective 2: Assess fish populations of headwater streams, with emphasis on documenting previously un-sampled populations of native, wild Brook Trout, naturalized wild Brown Trout and other sensitive cold and/or coolwater fish species.

- To prioritize locations where headwater sampling occurred, the Fisheries Division utilized the Eastern Brook Trout Joint Venture's (EBTJV) catchment/habitat patch layer (Figure 5) for site selection. Sites were selected from patches where Brook Trout populations were predicted to occur and no sampling had previously taken place or sampling data are older than 10 years. Additionally, patches were given higher priority if they were near patches where wild Brook Trout were previously sampled. Data will be uploaded to update the EBTJV map.

- Three new headwater stream segments were sampled in 2024 (Appendix 1). Sampling took place in two sections of Preston Brook above and below a state forest road crossing with a perched culvert pipe and in a no-named tributary to Preston Brook downstream of the road crossing. A total of one new wild Brook Trout population was documented, and no wild Brown Trout were detected at any new locations. Zero Brook Trout were detected in the no-named tributary, but high densities were detected in Preston Brook below (566.7/km) and above (611.7) the road crossing. Additionally, no new Slimy Sculpin (a coldwater indicator species) populations were documented.

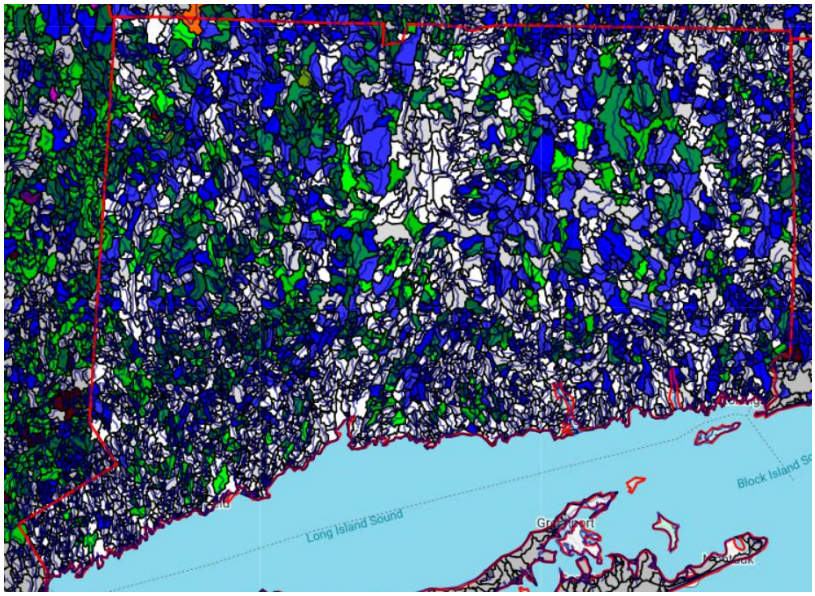


Figure 5. *Eastern Brook Trout Joint Venture catchment layer showing where wild trout have been sampled or are predicted to be found. The blue catchments indicate wild Brook Trout populations, the dark green catchments indicate a mix of wild Brook and Brown trout populations, and the bright green catchments indicate wild Brown Trout populations. The gray catchments indicate where no wild trout have been sampled or are predicted to not be found, and the white catchments indicate where no sampling has occurred. The orange catchment indicates where only stocked browns have been documented. Additional stream data evaluated annually for inclusion in this map.*

- Although not targeted as a headwater site, the Mill River in Stamford was sampled for Brook Trout after the Mianus Chapter of Trout Unlimited utilized eDNA to document their presence in 2023. Brook Trout were documented in two sample reaches 24.4/km (lower reach) and 101.6/km (upper reach) as well as Brown Trout in just the lower sampling reach (324/km). It appears that wild Brown Trout are limiting Brook Trout densities in the lower reach of the river.

Objective 3: Systematically re-sample former Statewide Stream Survey sample sites that supported viable wild trout populations.

- No targeted, systematic resample of wild trout populations was conducted in 2024, but sites where zero Brook Trout were detected in a survey by Eltz (2023) were resampled (20 of 30) along with adjacent reaches and close proximity tributaries (43). In all, 63 locations were sampled to detect if wild Brook Trout were present at sites sampled during 1988-1994 or present nearby within each system.
    - Four sites where wild Brook Trout were not detected in 2022 were found to have Brook Trout in 2024. One site, Theims Brook (sample 36058) was dry in 2022

and another, no-named tributary to Stonehouse Brook (36010) was near dry in 2022. This small tributary likely serves as a spawning/nursery stream for Stonehouse Brook due to its small size (1.1 meters wide). The other two sites, West Branch Leadmine Brook (36406) and Todd Hollow Brook (36415) had low numbers of Brook Trout present; therefore, they may have gone undetected in 2022.

- Brook Trout went undetected at all other locations that were resampled for Brook Trout in 2022 (16 of 20 sites).
- Systems where Brook Trout were detected in adjacent reaches or nearby tributaries, but not at the original sample locations include Stony Brook, Merryall Brook, a no-named tributary to the West Aspetuck River (the original site, a no-named tributary, was unsampleable due to a heavy understory), a no-named tributary to the East Branch Naugatuck River, Theims Brook, White Brook, McCarthy's Brook, Todd Hollow Brook, and Mountain Brook (Cheshire).
    - Opportunities for restoration will be investigated at all sites. Although no Brook Trout were present in the Bullymuck Brook (samples 36015-36019) system, it looks to be promising for restoration due to cold summertime water temperatures ($\leq$ 18.5 C) and appropriate instream habitat. A thermograph was placed in the stream in early July 2024 and will be removed in early 2025 to determine if water temperatures are suitable for restoration efforts. Suitable donor populations will be investigated in 2025.

Objective 4: Re-introduce wild Brook Trout to sections of stream where local extirpation has occurred via natural or human-related causes.

- Wild Brook Trout were transferred upstream of an impassable culvert on Turkey Hill Brook at Interstate Lane in Waterbury on October 2, 2023, and again on October 2, 2024.
    - Previous electrofishing sampling efforts in Turkey Hill Brook on June 16, 2021, and August 14, 2023, indicated that Brook Trout were not present above Interstate Lane but were present below (216/km) and in a no-named tributary (only sampled in 2021; one individual) that joins the brook below the road crossing.
    - On October 2, 2023, twenty-two pre-spawn Brook Trout adults (10 female and 12 male) were collected from downstream of Interstate Lane and stocked upstream of the road crossing to reestablish a self-sustaining population.
        - Pre-spawn adults were stocked at a rate of 50/km.
        - Females ranged in size from 17-25 cm and males from 16-25 cm.
        - Follow-up monitoring (electrofishing) took place in 2024, which determined that spawning was successful in 2023 after the transfer took place. On September 30th, six young-of-the-year (YOY) Brook Trout were sampled (12/km) in the reach above Interstate Lane; another YOY was observed, but not collected.

- On October 2, 2024, another seven pre-spawn Brook Trout adults (three males and four females) were collected from downstream of Interstate Lane and stocked upstream of the road crossing.
  - Females ranged in size from 18-22 cm and males from 19-25 cm.
  - A redd survey was conducted in Turkey Hill Brook above Interstate Lane on November 11th, and one fresh redd was observed.
  - Further sites for Brook Trout transfers are planned for 2025 provided suitable donor populations are documented.

Image of Brook Trout redd observed in Turkey Hill Brook, November 2024.

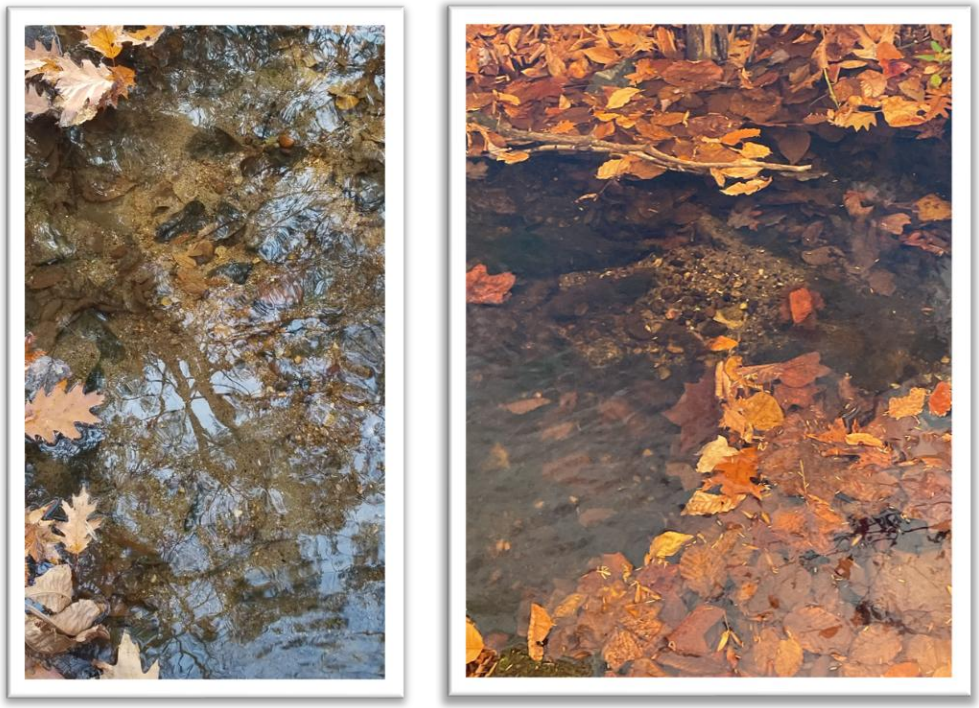
- A sympatric population of wild Brook and Brown Trout was noted in Kent Falls Brook on August 13, 2020, above the falls, which are impassable to fish, and where only Brook Trout were previously documented.
  - To improve conditions for Brook Trout survival, two stream segments above the falls (Dugan Road and Carter Road) were sampled with electrofishing gear on August 13-14, 2024 after a limited Brown Trout removal took place in 2023.
    - At Dugan Road (just above the falls) densities of Brook Trout improved in 2024 (162.4/km vs. 76.2/km in 2023) while Brown Trout densities decreased (135.3/km vs. 221.9/km in 2023). Twenty Brown Trout were removed from this site.
    - At Cater Road (~ 1 km upstream from Dugan Road) densities of Brook Trout (278.1/km in 2024 vs. 337.2/km in 2023) were still higher than Brown Trout (59.2/km in 2024 vs. 65.1/km in 2023). Ten Brown Trout were removed from this site.
    - Additionally, another ~ 1,500 m were sampled upstream of the falls (excluding the Dugan and Carter Road sites) solely to remove wild Brown Trout (Brook Trout numbers and sizes were not collected in these areas). A total of 173 Brown Trout were removed.

Image of Kent Falls. Brown Trout were removed upstream of the falls.

        - In all, 203 Brown Trout were removed from above the falls and transferred to suitable habitat below the falls in the Trout Park.
        - Another widespread removal is planned for late-summer 2025 to see how wild trout populations respond to the removal.
            - Additionally, a Hobo Pro v2 thermograph was placed in Kent Fall Brook upstream of the falls in early July 2024 to track water temperatures. The thermograph is slated to be removed and downloaded in early 2025.
        - Further sites for possible Brown Trout removals from sympatric populations with Brook Trout will be investigated in 2025.
- Previously, stocking of juvenile Brown Trout into WTMA 2s and WTMA 3s would have been recorded as part of the Wild Trout job with a target of stocking 20,000 individuals. While the Fisheries Division continues to stock juvenile Brown Trout in select locations, this is no longer considered part of our Wild Trout management strategy and is considered instead as part of our regular fish distribution. This change in management strategy will be reflected in future grant narratives.

Other important work done under the auspices of the Wild Trout Job in 2023-2024.

- Redd surveys were conducted collaboratively with Trout Unlimited (TU) members (Farmington Valley, Thames Valley, and Mianus Chapters, Eastern Region Staff, National Staff) and volunteers in 2024 from early September through mid-December. An electronic form developed by TU staff in ESRI Survey123 was utilized to capture data on specific redd locations. Data recorded included survey stream reach start and stop location (georeferenced), redd location (georeferenced), redd images, and general comments. CT DEEP Fisheries staff and TU Chapter members utilized the form to log redd data collected from more than 20 wild trout streams around the state into mid-December when conditions became unsuitable for surveying. A link to the interactive map can be found here (TU Redd Survey v1 web application). Fisheries staff will again work with TU to garner more interest and support from volunteers and conduct training with the intent of doing a statewide survey in the fall 2025 over an extended period of time (September-December). Redd survey data will be used to map spawning habitat, index the abundance of sexually mature trout, and help raise awareness and interest in wild trout within the State. Redd data will also be used to support Objectives 1 and 2 by providing insight into population status of sentinel wild trout streams and previously unsampled headwater sites.



Images of redds captured at Lievre Brook (left) and Gulf Stream (right) in fall of 2024.

Moving Forward

- Utilize recently developed Connecticut's Plan for Conservation and Management of Wild Trout to guide sampling and restorations efforts.
- Sample additional previously un-sampled headwater streams with priority on augmenting existing Eastern Brook Trout Joint Venture catchment mapping.
- Continue to monitor sentinel streams to maintain the lengthy period of record.
- Continue to participate in local, regional, and national workgroups focused on the management of wild trout.
- Collaborate with the DEEP's Water Quality Monitoring Program's to contribute to Connecticut's cold water stream habitat map.
- Continue to perform robust statistical analyses on long-term datasets.
- Perform in depth analysis on recently re-sampled historic Brook Trout sites to determine possible causes for losses in populations and densities.
- Determine next step(s) needed where wild Brook Trout populations are determined to be extirpated or at risk of becoming extiprated.
- Develop plan for re-sampling historic wild Brook Trout sites every 5 years.
- Continue to develop a statewide redd survey program in collaboration with Trout Unlimited.

- Continue to screen for gill lice, and other external parasites on all stocked and wild Brook Trout collected during fish community samples when encountered during the mid-summer to early fall period (Eltz 2020).
- Support regulation changes such as a statewide minimum length for trout and the creation of new WTMA Class 1 streams.
- Identify locations where sympatric populations of Brook and Brown trout populations occur and determine if Brown Trout removals are feasible and if they would improve conditions for Brook Trout. Consider adding this as a new objective to future Wild Trout Job reports.

References

Eltz, B. 2020. A Summary of the Initial Screening for the Presence of Brook Trout Gill Lice (*Salmincola edwardsii*) in Connecticut. Accessed at Brook-Trout-Gill-Lice-Sampling-Findings_Final.pdf (ct.gov)

Eltz, B. 2023. Inland Fisheries Research and Management Coldwater Fisheries Program Job 2: Wild Trout. Annual Performance Report – F22AF01153.

Appendices

Appendix 1. Most locations sampled in 2024 by the Inland Fisheries Division coldwater staff with stream electrofishing equipment (single pass) and number of wild brook and brown trout present. HCE are sites were sampled by the Habitat Conservation & Enhancement group. Headwaters are locations sampled to document new wild Brook Trout populations or sites where Brook Trout were previously documented, but a site hasn't been sampled in 10 or more years. Long-term sites serve as both sentinel wild trout sites and coldwater sites (coldwater habitat/coldwater spp. present). Old Stream Survey sites were randomly chosen for resampling to determine if stream fish communities have changed since the original samples from 1988-1994. All Fry/Fingerling sites were sampled to determine if Brown Trout numbers improved after experimental stockings. Brown Trout documented at Fry/Fingerling sites may be of wild or hatchery origin and are indistinguishable from wild browns, but size cutoffs were utilized to exclude fish possibly stocked as fry since fry stocking ceased in all areas (except Salmon Brook Glastonbury) by 2022. The Farmington River TMA was sampled to estimate the trout population and collect broodstock for the Survivor Brown Trout program. Wild trout sites were sampled to determine the status of wild trout populations. Special Study sites were sampled to remove Brown Trout from sympatric populations of Brook Trout or to monitor for Knobfin Sculpin. WTMA (Class 1, 2, or 3) sites were sampled as sentinel sites to monitor wild trout population trends. Species Specific samples targeted species such as Burbot. General Survey sites were sampled to characterize the fish community. NNT stands for no-named tributary. WBK = wild Brook Trout. WBN = wild Brown Trout. WRW = wild Rainbow Trout.

Sample Number	Waterbody	ylat	xlong	Sample Purpose	Sample Length (m)	Avg Sample Width (m)	WBK	WBN	WRW
36001	Hatch Brook	41.8334	-73.3834	Fry/Fingerling	131	2.5	0	4	1
36002	Bonney Brook	41.814953	-73.37541	Fry/Fingerling	N/A	N/A	0	0	0
36003	Bonney Brook	41.8133	-73.3733	Fry/Fingerling	100	4.4	20	0	0
36004	Gunn Brook	41.789	-73.361	Fry/Fingerling	100.6	4	31	0	0
36005	Bigelow Brook, NNT to	41.917933	-72.13353	Wild Trout	88	3.3	0	0	0
36006	Bigelow Brook, NNT to	41.9172	-72.1369	Wild Trout	107.8	2.9	0	0	0
36007	Stony Brook	41.7856	-71.9894	Wild Trout	101	2.8	0	0	0
36008	Stony Brook	41.784516	-72.007629	Wild Trout	97.6	2.3	31	0	0

36009	Stony Brook, NNT to	41.784462	-72.008059	Wild Trout	56.7	1.8	9	0	0
36010	Stonehouse Brook, NNT to	41.777384	-72.149563	Wild Trout	52	1.1	28	0	0
36011	Williams Brook, NNT to	41.447	-71.9728	Wild Trout	122.7	3	0	0	0
36012	Lee Brook	41.434351	-71.986428	Wild Trout	106.7	2.2	0	0	0
36013	Copps Brook	41.3611	-71.9341	Wild Trout	93.2	2.8	0	0	0
36014	Copps Brook	41.3645	-71.9351	Wild Trout	56.8	3.85	0	0	0
36015	Bullymuck Brook	41.5894	-73.4611	Wild Trout	103.7	3.35	0	0	0
36016	Bullymuck Brook, NNT to	41.5889	-73.4631	Wild Trout	55.3	1.5	0	0	0
36017	Bullymuck Brook, NNT to	41.583936	-73.461734	Wild Trout	46.6	2.3	0	0	0
36018	Bullymuck Brook, NNT to	41.582327	-73.466208	Wild Trout	82.5	3.6	0	0	0
36019	Bullymuck Brook	41.58229	-73.4663	Wild Trout	104.3	3.8	0	0	0
36020	Merryall Brook	41.6508	-73.4453	Wild Trout	100	2.5	0	0	0
36021	Merryall Brook, NNT to	41.651089	-73.446615	Wild Trout	116.7	2	0	0	0
36022	Merryall Brook	41.685775	-73.435876	Wild Trout	103	2.3	0	0	0
36023	West Aspetuck River, NNT to	41.67109	-73.393179	Wild Trout	70.2	1.6	1	0	0
36024	Powerhouse Brook	41.66164	-73.49382	Fry/Fingerling	103.7	2.2	1	0	0
36025	Cobble Brook	41.7217	-73.4572	Fry/Fingerling	101.8	2	7	0	0
36026	Cobble Brook	41.7454	-73.4542	Fry/Fingerling	201	2.3	0	0	0
36027	Guinea Brook	41.8144	-73.3769	Fry/Fingerling	150	5.5	22	28	0
36028	Guinea Brook	41.8208	-73.3831	Fry/Fingerling	161.7	5.9	28	3	0

36029	East Branch Naugutuck River, NNT to	41.8708	-73.1217	Wild Trout	103.2	2.6	0	0	0
36030	East Branch Naugutuck River, NNT to	41.870186	-73.122083	Wild Trout	68.1	2.1	1	0	0
36031	East Branch Naugutuck River, NNT to	41.866309	-73.123683	Wild Trout	99.1	2.8	7	0	0
36032	East Branch Naugutuck River, NNT to	41.867134	-73.124164	Wild Trout	56.8	1.7	22	0	0
36033	Bear Swamp Outflow	41.8022	-73.2742	Wild Trout	103.3	3.3	0	0	0
36034	East Spring Brook	41.6361	-73.1855	Wild Trout	102	4.4	0	0	0
36035	East Spring Brook, NNT to	41.63885	-73.189115	Wild Trout	50	1.5	0	0	0
36036	East Spring Brook, NNT to	41.637266	-73.181884	Wild Trout	32.3	1.3	0	0	0
36037	East Spring Brook	41.649845	-73.18383	Wild Trout	100.6	7	0	0	0
36038	East Spring Brook, NNT to	41.649747	-73.183818	Wild Trout	34.6	4.1	0	0	0
36039	Race Brook	41.30342	-73.01678	Wild Trout	101.3	4.6	0	0	0
36040	Race Brook, NNT to	41.30649	-73.015901	Wild Trout	103	3	0	0	0
36041	Race Brook	41.333153	-73.005391	Wild Trout	51.4	4.9	0	0	0
36042	Mattabessett River, NNT to	41.601907	-72.818131	Species Specific	110	5.7	0	0	0
36043	Belcher Brook	41.6165	-72.758	Species Specific	72	4.4	0	0	0
36044	Coginchaug River	41.4435	-72.6882	Long-Term	97.2	4	5	18	0

36045	Dry Brook	41.86	-72.5811	Species Specific	130.5	1.7	0	0	0
36046	Dry Brook	41.859832	-72.581537	Species Specific	60.5	2.25	0	0	0
36047	Mill River	41.1781	-73.5542	Wild Trout	157.4	7.3	4	51	0
36048	Mill River	41.179729	-73.555072	Wild Trout	68.9	7.7	7	0	0
36049	Reed Brook	41.9125	-73.3405	Fry/Fingerling	154.5	4.4	0	0	0
36050	Reed Brook	41.91732	-73.36058	Fry/Fingerling	N/A	N/A	2	0	0
36051	Mill Brook	41.872	-73.3634	Fry/Fingerling	149.3	4.9	1	7	0
36052	Mill Brook	41.874874	-73.341138	Fry/Fingerling	209.9	5	21	28	0
36053	Carse Brook	41.8552	-73.3755	Fry/Fingerling	100	4.1	0	6	0
36054	Gunn Brook	41.806	-73.3903	Fry/Fingerling	100	2.3	23	3	0
36055	Guinea Brook	41.82	-73.4453	Fry/Fingerling	55.9	2.6	0	0	0
36056	Mill Brook	41.8804	-73.331	Fry/Fingerling	100	2.7	0	0	0
36057	Carse Brook	41.8858	-73.41	Fry/Fingerling	103.3	3.9	0	0	0
36058	Theims Brook	41.738678	-72.310488	Wild Trout	100	3.1	11	0	0
36059	Theims Brook	41.738826	-72.310033	Wild Trout	55	2.9	2	0	0
36060	Rufus Brook	41.7393	-72.3242	Wild Trout	100	3.8	24	0	0
36061	Barrett Ledge Brook	41.83303	-71.93552	Wild Trout	100.9	1.9	49	0	0
36062	White Brook	41.826914	-71.933157	Wild Trout	100	3	0	0	0
36063	White Brook, NNT to	41.816665	-71.940708	Wild Trout	102	3	0	0	0
36064	Waccabuc River	41.3	-73.5456	Wild Trout	104.7	3.2	0	0	0
36065	Waccabuc River, NNT to	41.305336	-73.54327	Wild Trout	100	1.8	0	0	0

36066	Merryall Brook	41.675302	-73.44391	Wild Trout	102.5	3.4	27	0	0
36067	Beacon Hill Rrook	41.46657	-73.00875	Fry/Fingerling	100	N/A	0	21	0
36068	Beacon Hill Brook	41.466859	-73.016839	Fry/Fingerling	100	5.9	0	13	0
36069	Beacon Hill Brook	41.4675	-73.02861	Fry/Fingerling	150	6.9	1	48	0
36070	Beacon Hill Brook	41.4684	-73.0501	Fry/Fingerling	151	8.7	0	7	0
36071	Beacon Hill Brook	41.46639	-73.03944	Fry/Fingerling	175	7.5	0	35	0
36072	Preston Brook, NNT to	41.907965	-73.348843	Headwaters	55.3	0.3	0	0	0
36073	Preston Brook	41.907434	-73.348221	Headwaters	150	1.6	85	0	0
36074	Preston Brook	41.906308	-73.34689	Headwaters	103	1.8	63	0	0
36075	Wackocastinook Creek	41.9967	-73.4417	WTMA	175.6	0.7	5	121	0
36076	*Salmon Brook	41.7191	-72.602	Long-Term	210.1	9.2	0	6	0
36077	*Salmon Brook	41.71795	-72.597398	Long-Term	180.6	5.9	0	3	0
36078	*Salmon Brook	41.7167	-72.5851	Long-Term	156.7	5.5	0	0	0
36079	Shunock River	41.4497	-71.8911	Fry/Fingerling	111.5	7.5	0	0	0
36080	Shunock River	41.461744	-71.908559	Fry/Fingerling	139.4	3.7	0	0	0
36081	Shunock River	41.4304	-71.8526	Fry/Fingerling	100.7	9.8	0	0	0
36082	Shunock River	41.41789	-71.851165	Fry/Fingerling	100	8.1	0	0	0
36083	Macedonia Brook	41.787543	-73.484551	Fry/Fingerling	155	4.5	1	36	0
36084	Macedonia Brook	41.792018	-73.481698	Wild Trout	101.7	3.3	0	11	0

36085	Pond Mountain Brook	41.76717	-73.47932	Wild Trout	97	7.1	0	13	0
36086	Little River	41.44693	-73.13617	Wild Trout	161	4.15	70	2	0
36087	Little River	41.42921	-73.11102	Fry/Fingerling	152.9	4	5	1	0
36088	Little River	41.4098	-73.0985	Fry/Fingerling	114	6.2	2	3	0
36089	Towantic Brook	41.4408	-73.1044	Wild Trout	100.8	5.6	16	0	0
36090	Kent Falls Brook	41.772603	-73.413187	Special Study	147.8	10	24	20	0
36091	Kent Falls Brook	41.766379	-73.410651	Special Study	827	10	N/A	149	0
36092	Kent Falls Brook	41.765553	-73.40939	Special Study	169	10	47	10	0
36093	Kent Falls Brook	41.764498	-73.408382	Special Study	688	N/A	N/A	24	0
36094	Wachocastinook Creek	41.9983	-73.4436	WTMA	149.2	5.7	8	113	0
36095	Sages Ravine	42.0495	-73.4301	Long-Term	115.7	4.6	118	0	0
36096	Sages Ravine	42.0497	-73.4245	Wild Trout	101.9	3.6	153	0	0
36097	Hollenbeck River	41.94893	-73.321332	Species Specific	396	N/A	0	0	0
36098	Furnace Brook	41.8183	-73.3661	Fry/Fingerling	155	10.4	0	50	0
36099	Furnace Brook	41.823876	-73.357791	Fry/Fingerling	128.3	7.2	0	21	0
36100	Furnace Brook	41.83068	-73.34903	Fry/Fingerling	159.3	4.9	0	6	0
36101	Furnace Brook	41.82802	-73.35386	Fry/Fingerling	128.5	8.5	0	13	0
36102	Macedonia Brook	41.767	-73.495	Fry/Fingerling	315	N/A	20	102	0
36103	Macedonia Brook	41.7753	-73.4947	Fry/Fingerling	151	N/A	28	4	0

36104	Macedonia Brook	41.781389	-73.49055	Fry/Fingerling	150	N/A	3	30	0
36105	Macedonia Brook	41.7844	-73.4885	Fry/Fingerling	100	N/A	11	35	0
36106	East Aspetuck River	41.59277	-73.421092	Fry/Fingerling	153.1	8.1	0	3	0
36107	East Aspetuck River	41.613	-73.409	Fry/Fingerling	155	N/A	0	1	0
36108	East Aspetuck River	41.669472	-73.36694	Fry/Fingerling	500	8.8	0	1	0
36109	East Aspetuck River	41.62971	-73.393392	Fry/Fingerling	155	N/A	0	13	0
36110	West Branch Farmington River	41.87824	-72.977414	TMA	100	N/A	0	21	0
36111	West Branch Farmington River	41.879806	-72.978717	TMA	530	N/A	0	24	0
36112	West Branch Farmington River	41.891859	-72.98023	TMA	370	N/A	0	28	0
36113	West Branch Farmington River	41.897651	-72.98362	TMA	110	N/A	0	8	0
36114	West Branch Farmington River	41.899494	-72.986308	TMA	410	N/A	0	9	0
36115	West Branch Farmington River	41.902875	-72.988067	TMA	490	N/A	0	4	0
36116	West Branch Farmington River	41.903011	-72.987542	TMA	510	N/A	3	16	0
36117	West Branch Farmington River	41.912689	-72.987906	TMA	800	N/A	7	36	0
36118	West Branch Farmington River	41.939146	-73.003935	TMA	450	N/A	2	19	1
36119	West Branch Farmington River	41.970881	-73.018044	TMA	225	N/A	4	8	0
36120	Farmington River	41.864255	-72.956171	TMA	364	N/A	0	20	0

36121	Roaring Brook	41.9353	-72.2613	WTMA	152.6	5.4	11	0	0
36122	Roaring Brook	41.953109	-72.252193	WTMA	178.7	6.7	0	0	0
36123	Roaring Brook	41.9848	-72.2298	Wild Trout	150	7.4	0	0	0
36124	Roaring Brook	41.9047	-72.2825	Old Stream Survey/WTMA	137.15	10.4	6	19	0
36125	Mill River	41.2147	-73.2591	WTMA	298	7	0	126	0
36126	Mill River	41.215709	-73.26026	WTMA	114	9.7	0	15	0
36127	Mill River	41.2218	-73.2558	WTMA	260	11.1	1	65	0
36128	Roaring Brook	41.9152	-72.2656	WTMA	164.1	7.7	4	40	0
36129	Roaring Brook	41.924358	-72.263102	WTMA	233.3	8.1	6	3	0
36130	Brown Brook	41.9267	-73.2799	Species Specific	156	5.7	3	2	0
36131	Turkey Hill Brook	41.534219	-72.995906	Wild Trout	500	2.3	6	0	0
36132	Turkey Hill Brook	41.534396	-72.995906	Special Study	412	4.4	5	0	0
36201	Housatonic River	41.9554	-73.3696	Special Study	1000	50	0	0	0
36202	Housatonic River	41.91592	-73.36088	Special Study	3000	50	0	0	0
36203	Weekeepeemee River	41.5763	-73.2271	Species Specific	130	7.9	0	12	0
36204	Sprain Brook	41.5696	-73.2259	Species Specific	103.1	6.33	0	4	0
36205	Sprain Brook	41.571109	-73.231703	Species Specific	102.2	5.87	4	10	0
36206	Nonnewaug River	41.5783	-73.1745	Special Study	104.1	9.23	0	1	0
36207	Clark Brook	41.56813	-73.18764	Special Study	58	0.83	7	0	0
36208	East Meadow Brook	41.555091	-73.197062	Special Study	54.6	1.9	1	0	0
36209	Hesseky Brook	41.5411	-73.2228	Special Study	55	4.35	0	0	0

36210	Transylvania Brook	41.4794	-73.2603	Special Study	50	4.5	0	0	0
36211	Lee Brook	41.4334	-73.2289	Special Study	60	2.4	8	0	0
36212	White Hollow Brook	41.93564	-73.4024	General Survey	100	1.73	2	5	0
36213	Housatonic River	41.8211	-73.3715	Species Specific	40	4	0	31	0
36214	Bliven Brook	41.5733	-71.8244	Old Stream Survey	100.1	2.96	29	0	0
36215	Denison Brook, NNT to	41.55858	-71.82299	General Survey	102	2.23	0	0	0
36216	Denison Brook	41.5486	-71.8422	Old Stream Survey	100	3.5	61	0	0
36217	Green Falls River	41.522826	-71.809172	General Survey	125	3.75	4	0	0
36218	Peg Mill Brook	41.524567	-71.804752	General Survey	100	2.8	2	0	0
36219	Lowden Brook	41.602805	-71.865569	Old Stream Survey	109	3.27	46	0	0
36220	Mount Misery, NNT to	41.615005	-71.86927	General Survey	61.5	0.8	62	0	0
36221	Mount Misery Brook	41.619297	-71.87385	General Survey	54.5	2.05	0	0	0
36222	GREAT MEADOW BROOK	41.61101	-71.80967	General Survey	102.2	1.5	0	0	0
36223	Podunk River	41.805	-72.6211	Old Stream Survey	150	5	0	0	0
36224	Rose Brook	41.4797	-72.0119	Species Specific	73.6	2.5	11	0	0
36225	Haley's Brook	41.3867	-71.9681	Species Specific	50	5.2	1	0	0
36226	Salmonkill River	41.95553	-73.39878	General Survey	115.9	7.7	0	1	0
36227	Norwalk River	41.1831	-73.4199	Old Stream Survey	100	7.3	0	1	0
36228	Norwalk River	41.1831	-73.4217	Fry/Fingerling	300	7.3	0	0	0

36229	Tankerhoosen River	41.829893	-72.453675	Wild Trout	250	5.4	4	124	0
36401	Great Meadow Brook	41.614018	-71.812157	Wild Trout	85	3.5	0	0	0
36402	Great Meadow Brook	41.6	-71.8375	Wild Trout	123	8	0	0	0
36403	Great Meadow Brook	41.607384	-71.808668	Wild Trout	25	1.5	0	0	0
36404	Nepaug River	41.8382	-73.0271	Wild Trout	50	8	3	30	0
36405	Bakersville Brook	41.8385	-73.0278	Wild Trout	50	10	0	38	0
36406	Leadmine Brook	41.7942	-73.0797	Wild Trout	N/A	6	3	0	0
36407	Leadmine Brook, NNT to West Branch	41.796356	-73.080453	Wild Trout	3	3	0	0	0
36408	Leadmine Brook, NNT to West Branch	41.800683	-73.086071	Wild Trout	86	2	0	0	0
36409	Leadmine Brook, West Branch	41.806933	-73.087062	Wild Trout	15	2.5	0	0	0
36410	Cold Brook	41.590762	-72.07794	Wild Trout	50	2.2	0	0	0
36411	Byron Brook	41.583749	-72.070876	Wild Trout	56	3.2	0	0	0
36412	Byron Brook	41.6067	-72.0611	Wild Trout	50	5.3	0	0	0
36413	McCarthys Brook	41.5975	-72.1275	Wild Trout	100	1.5	0	0	0
36414	Elisha Brook	41.573793	-72.11637	Wild Trout	65	4	16	0	0
36415	Todd Hollow Brook	41.6522	-73.0361	Wild Trout	51	6.5	1	0	0
36416	Todd Hollow Brook, NNT to	41.652546	-73.034208	Wild Trout	35	1	0	0	0
36417	Todd Hollow Brook, NNT to	41.656714	-73.044701	Wild Trout	53	1.75	0	0	0
36418	Todd Hollow Brook, NNT to	41.65583	-73.03383	Wild Trout	66	3.2	73	0	0
36419	Todd Hollow Brook	41.6708	-73.0414	Wild Trout	50	4.5	0	0	0

36420	Mountain Brook	41.5214	-72.9419	Wild Trout	78	8	0	0	0
36421	Mountain Brook	41.5214	-72.9419	Wild Trout	47	4.1	0	0	0
36422	Honeypot Brook	41.5396	-72.8789	Wild Trout	87	4	30	0	0
36423	Mountain Brook	41.5226	-72.95027	Wild Trout	56	5.5	0	0	0
36424	Mountain Brook	41.519171	-72.958988	Wild Trout	78	5.5	0	0	0
36425	Bible Rock Brook	41.4975	-72.6064	General Survey	50	2	0	0	0
36426	Bible Rock Brook	41.50387	-72.57289	General Survey	82	6	3	2	0
36427	Pattaconk Brook	41.399922	-72.485392	General Survey	153	6.8	0	0	0
36428	Clark Creek	41.4425	-72.4735	General Survey	87	4.3	16	0	0
36429	Beaver Meadow Brook	41.4552	-72.5288	General Survey	62	2.5	9	3	0
36430	Beaver Meadow Brook	41.44734	-72.54157	General Survey	50	1	39	0	0
36431	Falls River	41.3322	-72.458	General Survey	175	8	0	0	0
36432	Plane Brook	41.31005	-72.4977	General Survey	50	1.5	9	0	0
36433	Stoney Brook	41.368992	-72.173108	General Survey	50	2.1	13	0	0
36434	Jordan Brook	41.3683	-72.1509	General Survey	225	9.5	45	0	0
36435	Cranberry Meadow Brook	41.405177	-72.225708	General Survey	125	4	35	0	0
36436	Oil Mill Brook	41.375558	-72.190655	General Survey	110	10	0	8	0
36437	Sanford Brook	41.4723	-72.9364	General Survey	97	2.5	10	0	0
36438	Brooksvale Stream	41.465494	-72.925023	General Survey	105	4.8	35	54	0
36439	Jepp Brook	41.442839	-72.913305	General Survey	111	5.5	0	0	0
36440	Willow Brook	41.4597	-72.9183	Wild Trout	110	12	3	63	0

36601	Jordan Brook	41.398107	-72.159576	HCE	50	2	1	0	0
36602	Jordan Brook	41.398883	-72.159803	HCE	250	1.5	28	0	0
36603	Bullet Hill Brook	41.485038	-73.188816	HCE	100	1.5	39	0	0
36604	Bullet Hill Brook	41.484494	-73.187717	HCE	100	1.5	3	0	0
36605	Trout Brook East	41.782137	-72.738223	HCE	70	2.5	0	0	0
36606	Ruby Brook	41.922053	-72.259408	HCE	112	2	6	2	0
36607	Bigelow Brook	42.001993	-72.128296	HCE	334	1	0	0	0
36608	Trout Brook East	41.777708	-72.736099	HCE	137	6.5	0	0	0
36609	Trout Brook East	41.780223	-72.737631	HCE	119	3	0	0	0

* Salmon Brook has been experimentally stocked with Brown Trout fry since 2021 to enhance/jump start the depressed population. No fry were stocked in late 2023. WBN numbers could be of hatchery, fry-stocked or wild origin.

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F22AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 1:	Coldwater Fisheries Management
Job 3:	Stream Angler Surveys

Report Prepared by:	Brian Eltz & Matt Devine
Job Personnel:	Brian Eltz, Co-Job Leader
	Matt Devine, Co-Job Leader
	Andrew Ransom, Primary Staff
	Andrew Bade, Program Coordinator

Overview: Connecticut's stream fisheries see continuous changes in angler participation, expectations, and attitudes towards these fisheries. New statutes, regulations, stocking policies, and varying levels of law enforcement have also affected Connecticut's stream fisheries. In addition, statewide angler demographics (age, race, ethnicity, gender) are also changing and will likely lead to shifting demands on fisheries over time. Angler surveys will be required to evaluate the effects of these changes on Connecticut stream fisheries and to provide important data to sustainably manage fishing participation.

Figure 1. *Proud angler with a Rainbow Trout.*

Standardization and coordination of survey methodologies is critical to ensure that data needs of stream management projects (see Projects 3-6) are met in an efficient manner. Development of alternative angler survey instruments, such as on-line surveys, trail cameras, self-reporting creel cards, and fishing show canvas surveys, may also be useful for evaluating statewide changes in angler attitudes and behaviors toward stream fishing. There is also a need to develop and implement expedient surveys that are capable of rapidly assessing ("rapid assessments") angler utilization over many streams. Rapid assessments can assess general levels of angler activity at multiple resources during a limited period. The difference between standard surveys and "rapid assessments" is that rapid assessments are providing a coarse-level assessment of a greater number of resources, during some short period of interest (i.e., "Opening Day" weekend) – as opposed to standard surveys,

which provide more detailed/precise information from a smaller set of resources over an extended period.

The increasing access to social media and computerized angler statistics (e.g., Connecticut's angler license database) affords the opportunity to solicit large numbers of constituents for the purpose of acquiring statewide angler attitude and use patterns.

Compilation and maintenance of historic survey information in a standardized, accessible format is needed to evaluate long term changes in angler usage and attitudes. A centralized angler survey database will also help streamline the process of evaluating public requests for changes to existing management policies. Finally, a centralized and easily accessible database will be particularly helpful in deciding where limited funds can be most efficiently spent to improve fishing quality.

Objectives of the stream angler surveys job are:

1. Develop and implement standardized survey methodologies for stream management needs.
2. Coordinate and conduct quantitative angler surveys (assessing catch, effort and angler attitudes) on important streams on an as-needed basis.
3. Develop a standardized quantitative methodology for "rapid assessment" of stream angler utilization and attitudes.

Figure 3. *Seasonal resource assistant interviewing an angler streamside.*

4. Evaluate the potential for collecting statewide angler information using alternative survey methods.
5. Maintain and archive stream angler survey databases and provide support to management projects.

This report describes efforts related to these objectives during the study year.

Key Findings

Objective 1: Develop and implement standardized survey methodologies for stream management needs.

- As angler participation, expectations, and behaviors evolve, and stocking regimes and regulations modified, it is critical to evaluate long-term changes in angler usage, catch, and stocking effectiveness. As a result, the Fisheries Division continues to employ short, quicker

angler surveys in non-management waterbodies; a different approach from longer durational surveys historically done in management areas. This allows for an assessment of a greater number of resources in a shorter period. These surveys are intended to collect angler use and catch data, along with evaluating public access and assessing stocking locations, ultimately leading to changes in stocking regimes and locations that maximize the return to creel and angler satisfaction.

These surveys began in 2017 and continue today (see Objective 2). Between 4-6 non-management rivers/streams are selected annually to be surveyed from March 1 to June 15. When possible, impoundments within a stream reach are also selected and surveyed. A survey "loop" is developed, based on relevant management questions and data gaps, and creel agents follow a stratified random design roving creel.

Objective 2: Coordinate and conduct quantitative angler surveys (assessing catch, effort and angler attitudes) on important streams on an as-needed basis.

- A stream angler creel survey was designed and performed at four trout stocked rivers/streams and two ponds: East Branch Salmon Brook (Granby), West Branch Salmon Brook (Hartland, Granby), Farmington River (Tariffville), Scantic River (East Windsor), Christensen's Pond (Granby), and Broad Brook Millpond (East Windsor) in the north-central part of the state during the spring trout fishing season in 2024. The creel survey (Appendix 1) is intended to provide empirical estimates about recreational trout fishing effort (hours of fishing), catch (numbers of fish caught), harvest (number of fish taken), catch rates (the total number of fish caught per hour), and perceptions about new and future regulations. These data will be used in part to optimize management goals for trout production and distribution, including the timing and frequency of stocking events, allotments for each waterbody, and selection of stocking locations within each waterbody.
    - We conducted angler counts and interviews using a stratified random design roving creel methodology (Malvestuto et al. 1978). The surveys began on 3/1/2024 (the start of statewide catch and release for trout) and finished on 6/15/2024 and included weekdays, weekends, and holidays. In total, 66 creel days were conducted (44 weekdays and 22 weekend days).
    - Defined strata included: 1) **Weekday/Weekend** and 2) **Early Spring** (3/1/2024 – 4/7/2024), **Opening Day for Harvest** (4/13/2024), and **Late Spring** (4/14/2024 – 6/15/2024).
    - Survey days and start times were selected using Microsoft Excel's random number generator function and the target was to capture 5% of the time in each stratum.
    - Each waterbody was stocked once in early spring and 2-3 times in late spring, and stocking events were spaced at minimum two weeks apart for all waterbodies.
    - The first creel was on 3/1/2024 and the last on 6/14/2024.

- 32% (n=21) of creels were conducted during the catch and release season (3/1/2024 – 4/12/2024) and 68% (n=45) were conducted during the harvest season (4/13/2024 – 6/15/2024).

- Across all waterbodies, stocking sites, and strata, 2,978 angler counts were recorded (including zeros) and 211 interviews conducted.
  - More interviews were conducted on weekends (108) than weekdays (103).
  - Median fishing start time for anglers was 12:10pm and median interview time for creel agents was 1:10pm (Figure 3).

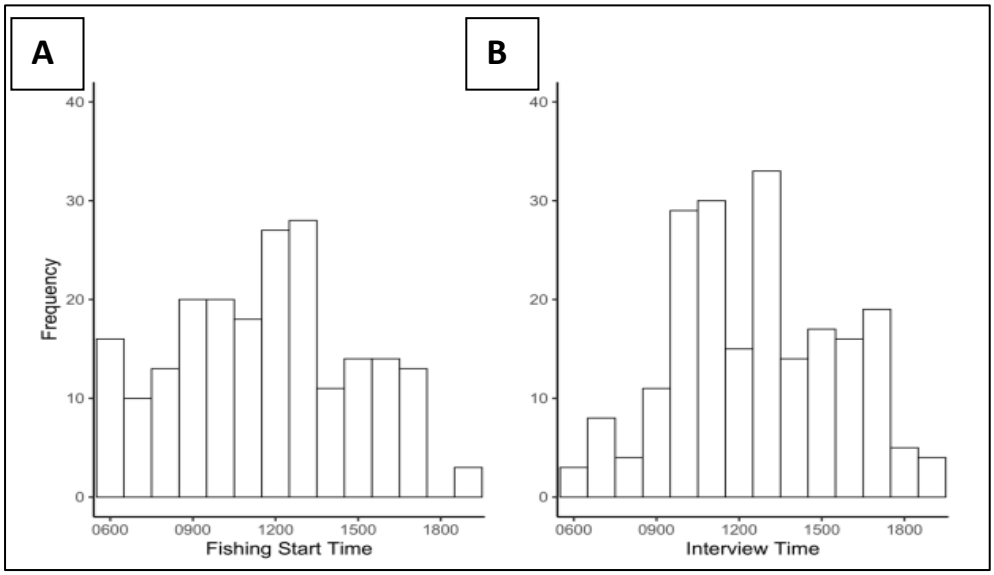


Figure 3. *Frequency histograms of a) time of day anglers started their fishing trip and b) time of day interviews were conducted. N = 211.*

- Of the 445 total anglers counted across all waterbodies, 47 (11%) fished in March, 188 (42%) in April, 163 (37%) in May, and 47 (11%) in June (Figure 4).

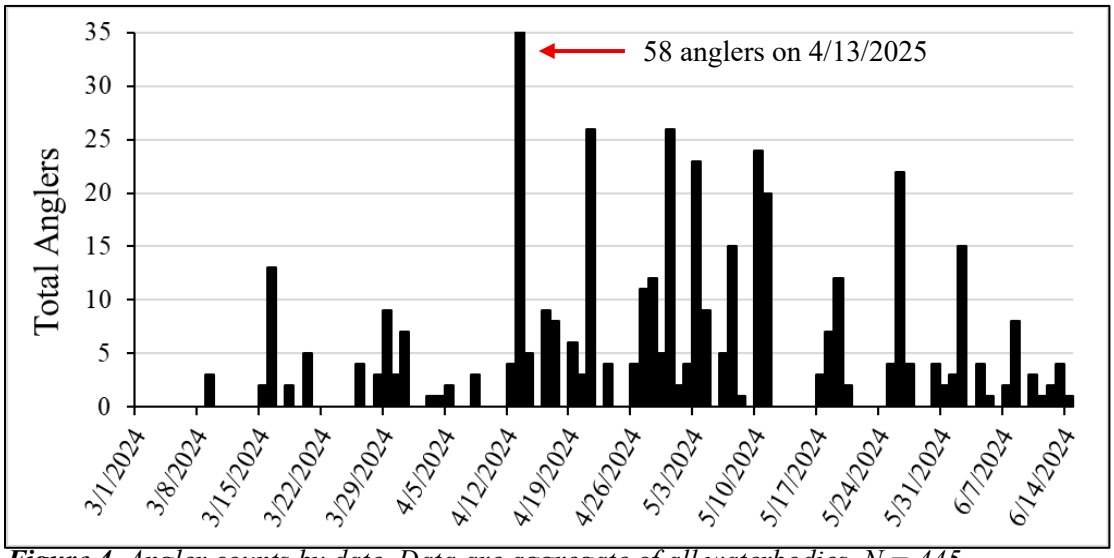


Figure 4. *Angler counts by date. Data are aggregate of all waterbodies. N = 445.*

- Interviewed anglers had been fishing between 0.01 – 6.1 hours (median = 0.75, sd = 1.25).

- Anglers reported catching 157 total trout during the survey: 13 (8%) Brook Trout, 34 (22%) Brown Trout, 100 (64%) Rainbow Trout, and 10 (6%) Tiger Trout (Figure 5).
  - ❖ These catches scale closely with and reflect stocking densities. For example, of the 11,170 trout stocked in 2024 into the surveyed waterbodies, 10% were Brook Trout, 27% were Brown Trout, 60% were Rainbow Trout, and 3% were Tiger Trout. It is worth noting that East Branch Salmon Brook only receives Rainbow Trout (n=3,700 in 2024), possibly contributing to inflated catches of this species.

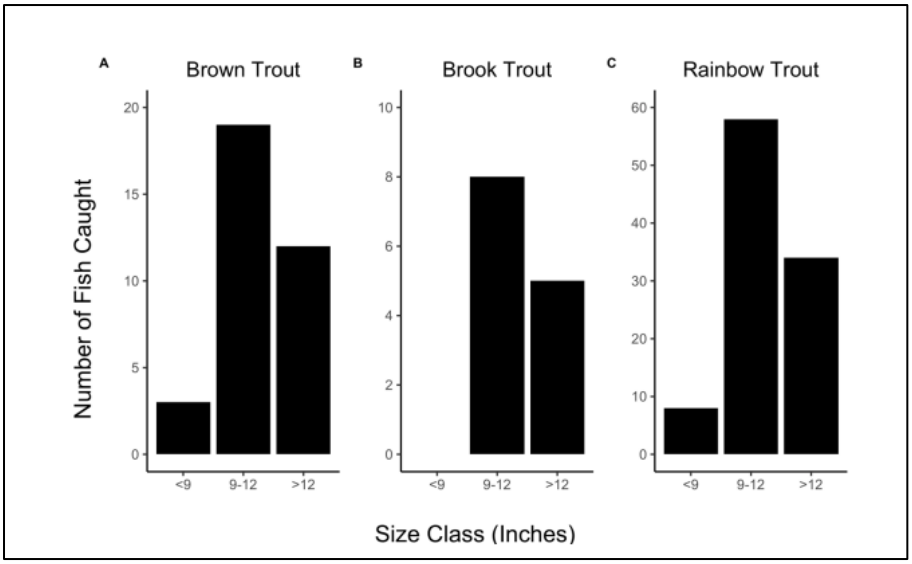


Figure 5*. Total number of trout caught by species and size class that were reported by anglers. Note y-axes are on different scales.*

  - ❖ Of the 211 anglers interviewed 156 (74%) had caught zero trout at the time of the interview.

- Of the total trout caught, 56 (36%) were harvested, and all were during the legal harvest season. Of these, three (5%) were Brook Trout, 10 (18%) Brown Trout, 38 (68%) Rainbow Trout, and 5 (9%) Tiger Trout.
  - ❖ Although poaching during the catch and release season remains a concern of many anglers, these data suggest it is not occurring in the surveyed waterbodies.

- Various bait/lure types were used by anglers including bait (47%), lures (33%), fly (6%), or a combination of types (14%). Bait included earthworms, mealworms, minnows, crayfish, and Powerbait.
  - ❖ The percentage of trout caught varied by bait/lure type with bait, lures, fly, or a combination making up 43%, 33%, 4%, and 20% of the total catch, respectively.
    - These data suggest that Connecticut anglers use a wide range of bait types and methods, particularly bait, lures, or a combination of the two.

- A zero-inflated negative binomial regression model showed there was a positive relationship between the total number of trout caught and hours fished ($p < 0.05$, $R^2 = 0.53$) (Figure 6).

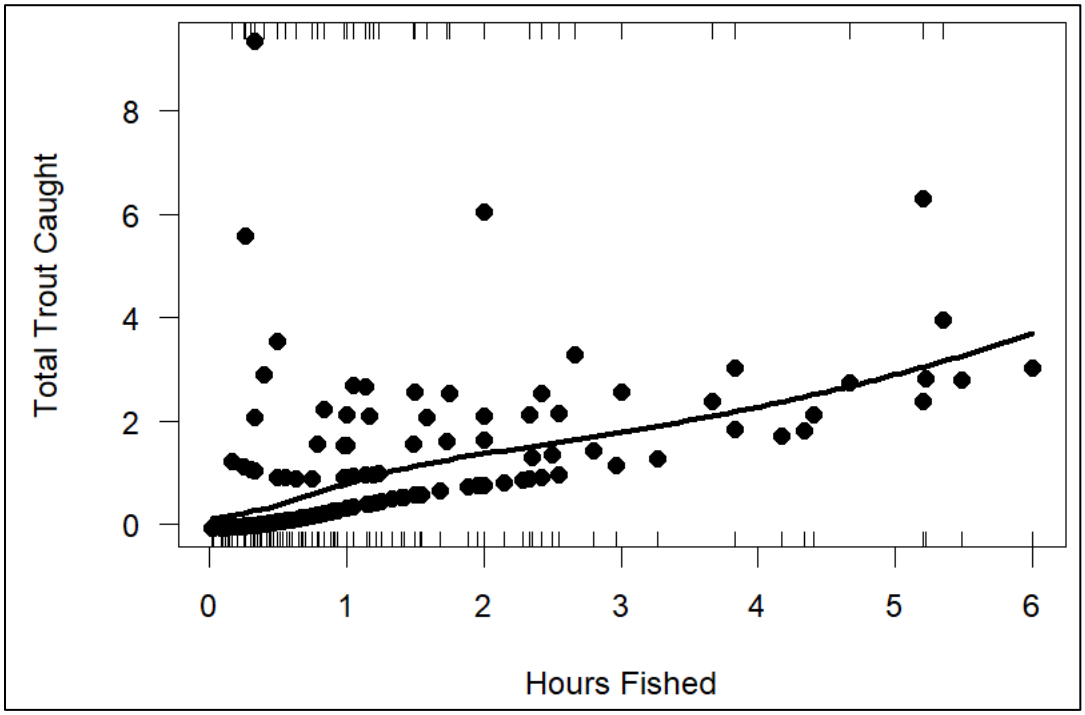


Figure 6. *The relationship between the total number of trout reported to be caught by interviewed anglers and the total hours fished by each angler. Data were fit using a zero-inflated negative binomial regression model. Points represent individual anglers (n = 204), tick marks identify where each point falls on the x-axis, and black line represents model fit.*

Expanded angler effort and catch data showed that spring angling effort was highest in Christensen's Pond and lowest in West Branch Salmon Brook (Appendix 1).

- More angling effort was observed during the late spring strata compared to the early spring strata in all waterbodies, and CPUE was higher in the early spring strata for all waterbodies (Appendix 1).
- The number of anglers counted was lowest prior to the first stocking event and highest in the days immediately after a stocking event at most waterbodies.
- Mean CPUE, and variation about the mean (standard deviation), across all waterbodies was highest in March and declined throughout the season (Figure 7).
- Mean CPUE was significantly higher during the catch and release season compared to the harvest season ($p < 0.05$; two-sample t-test), but not between bait type nor weekday/weekend strata.
- Across all waterbodies, most anglers (62%) either did not provide or did not know their conservation ID numbers when asked (Appendix 3).
- 80% of anglers interviewed across all waterbodies and strata combined had purchased a Trout and Salmon stamp (Appendix 4).

- Most anglers (59%) were aware of the catch and release season for trout (all waterbodies and strata combined, Appendix 5).
  - ❖ 51% were either in favor or highly in favor, 5% were either opposed or highly opposed, and 44% had no opinion (Appendix 6).
  - ❖ Common responses as to why anglers were in favor of the catch and release season included: they already practice catch and release, they support conservation measures, they don't eat fish, or it spreads anglers out and reduces crowds. Common responses as to why anglers were opposed included: concern about high poaching rates and post-release mortality, and a preference to return to a traditional opening day, and a desire to harvest more trout throughout the year.

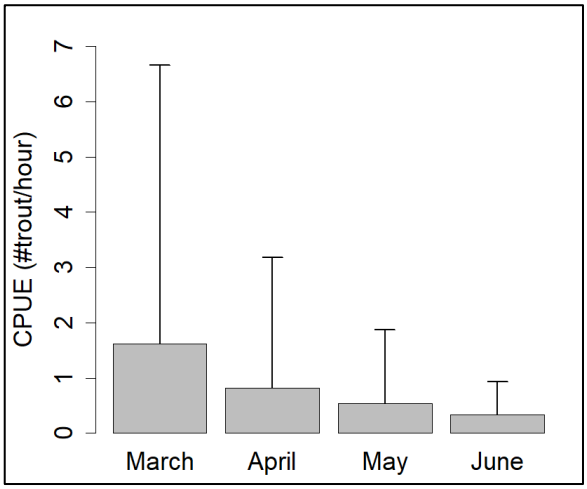


Figure 7. *Mean CPUE across all waterbodies by month. Mean values are the bars and vertical lines show standard deviations.*

- When asked how often they keep their catch during the harvest season, anglers responded they were more likely to release than harvest their catch across all waterbodies, and voluntary release rates derived from observed catch and harvest data from interviews suggests the percentage of anglers that always harvested their catch was relatively low (<15% for all waterbodies) (Appendix 7).
  - ❖ The likelihood of keeping their catch also varied by bait type with anglers using bait more likely to keep their catch compared to anglers fly-fishing or using lures.
  - ❖ Common responses from anglers releasing their catch included: they already practice catch and release, they don't eat fish, they lack fish processing skills, or they prefer larger fish. Anglers likely to keep their catch overwhelmingly reported they do so because it feeds them, and they enjoy the taste.
- 57% of anglers across all waterbodies and temporal strata were either highly in favor or in favor of a statewide 9" minimum length on all trout (Appendix 8).
  - ❖ Common responses from anglers highly in favor or in favor of a statewide 9" minimum length on all trout included: they support wild trout conservation, they don't keep trout, they believe a 9" is too small to keep, would like to let trout grow bigger. Interestingly, 14% of anglers would like a higher minimum length.

o Building on the 2024 spring angler survey, a stream angler creel survey was designed and started at four distinct sections of trout stocked rivers/streams and two ponds: Upper Scantic River (Somers, Enfield), Roaring Brook (Stafford), Furnace Brook (Stafford), Middle River (Stafford), St. Martha's Pond (Enfield), and Somersville Pond (Somers) during the spring

trout fishing season in 2025. Like the 2024 survey, the survey is intended to provide empirical estimates about recreational trout fishing.

  - A stratified roving creel design was employed (Malvestuto et al. 1978) starting 3/1/2025 (start of catch and release for trout) and finished on 6/15/2025.
  - Defined strata included: 1) **Weekday/Weekend** and 2) E**arly Spring** (3/1/2025 – 4/11/2025), **opening day for harvest** (4/12/2025), and **Late Spring** (4/13/2025 – 6/15/2025). The target was to capture 5% of the time in each stratum.
  - Survey days and start times were selected using Microsoft Excel's random number generator function and the target was to capture 5% of the time in each stratum.
  - Each waterbody was stocked once in early spring, and all but St. Martha's Pond and Somersville Pond were stocked twice in late spring.
  - The upper Scantic River (Somers, Enfield) was divided into and sampled as two discrete sections (upper and lower).
  - Results will be included in the following performance report (4/1/2025-3/31/2026).

- An angler survey was designed and completed on the Farmington River Trout Management Area (TMA) from the Goodwin Dam (Barkhamsted) down to the RT 177 bridge (Unionville) in 2024. The survey ran the entire calendar year and provided estimates of catch by species, angling effort (hours), and opinion data regarding a possible expansion of the year-round catch-and-release regulations in the Farmington River TMA. A total of 22.3 miles of river were surveyed and provided managers with useful data regarding current and future management decisions in the TMA.
  - A stratified roving creel design was employed (Malvestuto et al. 1978) starting January 1st and ran through December 31st of 2024.
  - The TMA was sectioned into five zones to replicate survey methods in 2012 (Hagstrom et al. 2012).
  - Temporal strata include: 1) Day Type; **Early/Weekday**, **Late/Weekday**, **Evening**, and **Weekend/Holiday**, and 2) Season; **Winter** (January 1st-February 29th), **Early Spring** (March 1st-April 12th), **Opening Day** (April 13th), which was included in the spring strata, **Spring** (April 14th-June15th), **Summer** (June 16th-Septemebr 2nd), **Fall** (September 3rd-October 31st), and **Late Fall** (November 1st-December 31st). The goal was to capture 5% of the time in each stratum.
  - Survey days, start times, start zone, and start direction were randomly selected using Microsoft Excel's random number generator function.
- The Farmington River is a Federally designated Wild and Scenic River and nationally recognized trout fishery. The coldwater releases (i.e., hypolimnetic waters) from Goodwin Dam create a tailwater fishery that supports trout throughout the year. In 1988, a TMA was designated for a 1.8 mile section of the river. Year-round catch-and-release trout fishing regulations were instituted to capitalize on this unique fishery resource. Since it's original inception, the TMA has expanded twice to accommodate angler demand and to reduce congestion. While the trout fishery has historically been supported by hatchery stockings,

during the last 25 years a wild Brown Trout population has become established within the year-round catch-and-release TMA. In 1994, a seasonal TMA (catch-and-release regulations in effect for only part of the year) was established in a downstream section of the river in Avon, Burlington, and Unionville. In 2012, the year-round TMA was expanded upstream and a seasonal TMA was created upstream of the year-round TMA in Colebrook, Hartland, and Barkhamsted. Over the subsequent years a variety of trout regulations have been used to manage different sections of the river including: catch-and-release, length and creel limits, as well as terminal tackle limitations (barbless hooks). Current work has focused on evaluating the effects of streamlined trout fishing regulations in the river above Unionville. Since 2012, the entire 22.3-mile river section from Goodwin Dam to Rte 177 in Unionville can be fished year round. This includes the 5.3 mile year-round TMA (Fig. 9 and Table 1 - Zones II & III) where no harvest is permitted, and the 17 miles of seasonal TMA (Fig. 9 and Table 1 - Zones I, IV, & V).

Table 1. *Current regulations in the West Branch Farmington River TMA and Farmington River TMA broken down by angler survey zone. Zone colors correspond with those in Figure 8.*

River Section	Angler Survey Zone	Regulation	Approx River Miles
Goodwin Dam downstream to the West Branch TMA (Abutments)	**Zone 1- 3.6 mile**	Seasonal TMA 12”MLL, 2/day Sept. 1-OD: C&R	3.6 miles
West Branch TMA (Abutments downstream to RT. 219)	**Zone 2- 2.8 miles**	Year-round TMA C&R only	5.3 miles
	Zone 3- 2.5 miles		
Route 219 to Upper Collinsville Dam	**Zone 4- 8.0 miles**	Seasonal TMA 12”MLL, 2/day Sept. 1-OD: C&R	13.4 miles
Upper Collinsville Dam downstream to Route 177 Bridge in Unionville	**Zone 5- 5.4 miles**		

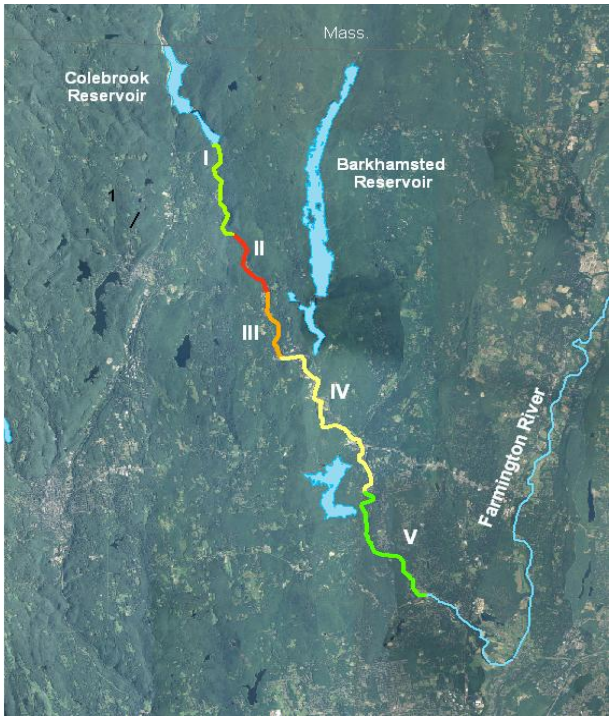


***Figure 8**. Angler Surveys were conducted in Five zones of the Farmington River from Jan. 1st- Dec. 31st, 2024. For a breakdown of management in each zone see Table 1.*

- Total estimated fishing effort throughout the 22.3-mile Farmington River TMA was lower in 2024 (90,038 hrs) when compared to a previous angler survey in 2012 (116,884 hrs). Note that no late fall stratum was employed in 2012.
  - High flows during the early spring and spring strata impacted angler effort and catch below zone 1 in 2024 (see effort and catch estimates in Appendix 9). Zones 2-5 are below the Still River confluence and are most influenced by high flows during rainy periods. Flows within Zone 1 are more regulated and stable from controlled releases through the West Branch (Hogsback) Reservoir dam.
- Most fishing effort occurred from "Opening Day" (4/13) through early September (Figure 9).
- Estimated catch of trout was lower in 2024 (66,527) when compared to 2012 (89,947). Despite lower estimated catch in 2024, TMA-wide catch rates across all five zones were like those found in 2012 (0.74 trout/hr in 2024 vs, 0.77 trout/hr in 2012).

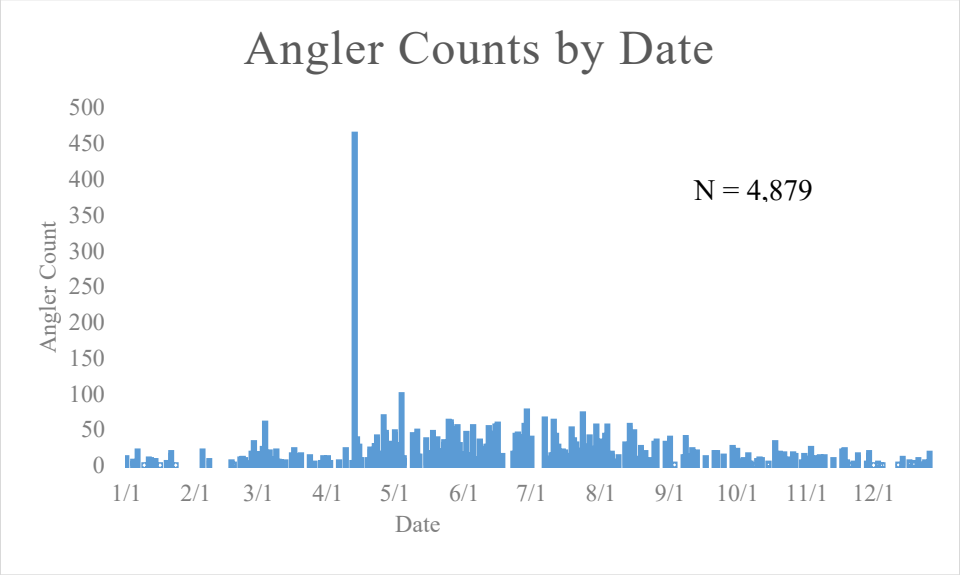


***Figure 9**. Count of anglers throughout the angler survey. Note the spike in anglers on "Opening Day" (4/13).*

- The majority (58%) of trout caught were between 12"-16" (Table 2) in length. Nearly 9% of all trout caught were >16".

***Table 2**. Actual catch of trout reported by anglers or observed by survey agents. Catch includes both kept and released fish.*

Species	<9"	9" - 11"	12" - 16"	>16"	Total
Brook Trout	11	15	40	1	67
Brown Trout	63	226	359	71	719
Rainbow Trout	27	108	395	45	575
Tiger Trout	0	0	2	0	2
Total	101	349	796	117	1363

- Brook, Brown, and Rainbow trout were caught at a proportion of 5%, 53%, and 42%, respectively, across all seasons and sections. Stocking rates for these species are 9.5% Brook Trout, 47% Brown Trout, and 44% Rainbow Trout. Although catch rates were similar to stocking rates for all species, the wild Brown Trout production in the river is likely contributing to increased Brown Trout catch relative to Brown Trout stocking.

- Nearly 50% of all estimated trout catch in 2024 was from within the year-round TMA. In 2012, 55% of all estimated catch was from within the year-round TMA.
- Only 12 Smallmouth Bass were reported being caught throughout the entire survey period.
- Eleven Atlantic Salmon were reported to be caught and released.
- A total of 1,092 anglers were intercepted and attempted to be interviewed by creel agents. Of those contacts, only 31 (3%) anglers refused to be interviewed. Of the 1,092 anglers, only 195 (18%) were previously interviewed. Responses to opinion questions were not recorded if an angler had been previously interviewed.
- The median start time for anglers was 11:00 am, with the plurality starting near 10:00 am (Figure 10).

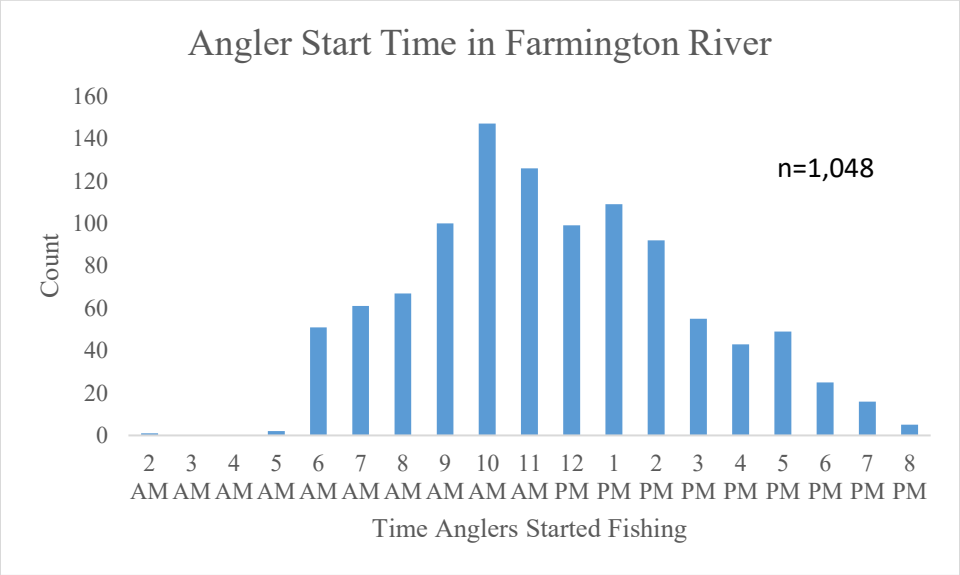


Figure 10. Count of angler start times rounded to the nearest hour. Not all interviewed anglers provided start times.

- Most anglers across all seasons and survey sections were fly anglers (59.8%), followed by bait (23.7%), and lure (15.8%). Fly anglers ranged from 65-76% within the year-round TMA, zones 2 & 3, respectively.
    - Bait use in the year-round TMA was similar to what was reported for the entire river. In zones 2 & 3 bait use was 17.9% and 24.5%, respectively, and lure usage was lower (zone 2 = 5.7% and zone 3 = 10.4%).
- Most (87%) anglers stated they had purchased a Trout and Salmon Stamp, which is required to fish in a Trout Management Area. Few anglers were unaware a stamp was required to fish in the TMA and were advised by survey agents they needed to purchase one.
- The median distance stated to have been traveled by an angler to fish in the section in which they were interviewed in that day was 25 miles (range = 1-2,500 miles).

- The estimated median number of annual trips to the zone in which anglers were interviewed was nearly 10 (range = 1-366 trips).
- Most anglers interviewed were from CT (82%) and MA (8%), with some traveling from as far away as Europe and the Caribbean to fish within the Farmington River TMA.
- The median dollars spent by anglers to fish on the day of being interviewed was $20.00 (range = $1-$2,000). Anglers were asked how much they spent to go fishing that day excluding the cost of major fishing equipment, but including items such as food, gas, minor fishing equipment, and hotels/motels. The effect of angler dollars passing through the local economy is called net economic impact and generates approximately 1.5 times the actual money spent (Hyatt, 1986).
- Opinion data were collected from anglers interviewed in the field in 2024. For responses to questions regarding current management practices within the TMAs, the possible expansion of the year-round TMA, or possible removal of the lower seasonal TMA regulations, please see Appendix 10. All anglers were asked the same questions based on the zone and TMA type (year-round vs. seasonal) in which they were interviewed.
  - Ninety-three percent of all anglers interviewed in the year-round TMA were in favor of the current year-round catch-and-release management regulations for trout.
  - Nearly 78% of all anglers interviewed in the year-round TMA were in favor of extending year-round catch-and-release trout regulations upstream from the abutments (the current upstream demarcation of this TMA) to the Still River confluence. This would be an approximate 1.4-mile increase in year-round catch-and-release regulations.
  - Nearly 73% of all anglers interviewed in the year-round TMA were in favor of extending year-round catch-and-release trout regulations upstream from the abutments to the Goodwin Dam. This would be an approximate 3.75-mile increase in year-round catch-and-release regulations.
  - Eighty-two percent of all anglers interviewed in the seasonal TMA sections were in favor of the current seasonal catch-and-release management regulations for trout.
  - Nearly 67% of all anglers interviewed in the seasonal TMA sections (above and below the current year-round TMA) were in favor of extending year-round catch-and-release trout regulations upstream from the abutments to the Still River confluence.
  - Nearly 63% of all anglers interviewed in the seasonal TMA sections were in favor of extending year-round catch-and-release trout regulations upstream from the abutments to the Goodwin (hogsback) Dam.
  - Only 24% of all anglers interviewed in the lower seasonal TMA were in favor of dropping the current seasonal catch-and-release regulations for trout.
- Opinion data were also collected from anglers via online submission (the public was notified of the survey by an email to license holders with freshwater fishing privileges and a Facebook post) in early 2025. The survey was open for responses for close to a month from January 28th through February 28th. For responses to online surveys (email or Facebook) regarding current management practices within the TMAs and possible expansion of the year-round TMA or removal of the lower seasonal TMA regulations, please see Appendix 11. All survey participants were asked the same questions as anglers were asked in the field portion of the survey in 2024 except the question regarding

current seasonal TMA regulations, which was modified to specifically gather opinion data on the upper seasonal TMA above the year-round TMA.

- Most responses were submitted via the email link (95.3%).
- Nearly 58% of all respondents fished the Farmington River TMA (seasonal or year-round) in 2024.
- Nearly 74% of all respondents fished the Farmington River TMA (seasonal or year-round) before.
- Nearly 76% of online respondents were in favor of the current regulations in the year-round catch-and-release TMA.
- Sixty-four percent of respondents were in favor of current regulations in the seasonal TMA above the year-round TMA.
- Sixty-four percent of respondents were in favor of extending the year-round TMA from the abutments up to the confluence with the Still River. Only 14.9% were against extending the year-round TMA to the Still River.
- Nearly 63% of online respondents were in favor of extending the year-round TMA from the abutments up to the Goodwin (Hogsback) Dam in Colebrook. Nearly 17% of respondents were against the extension.
- Only 32.2 % of online responses were in favor of removing the seasonal TMA regulations in the seasonal TMA below the upper Collinsville Dam. More (40.1%) were against removing seasonal regulations in the lower seasonal TMA.

Objective 3: Develop a standardized quantitative methodology for "rapid assessment" of stream angler utilization and attitudes.

- A limited rapid assessment on the Opening Day of trout harvest was conducted on 4/13/2024 at six waterbodies to evaluate usage in non-management waterbodies. Three counts were conducted at each waterbody with two hours in between each count. Note, road closures at Broad Brook Mill Pond limited access and resulted in a count of zero (Figure 11).

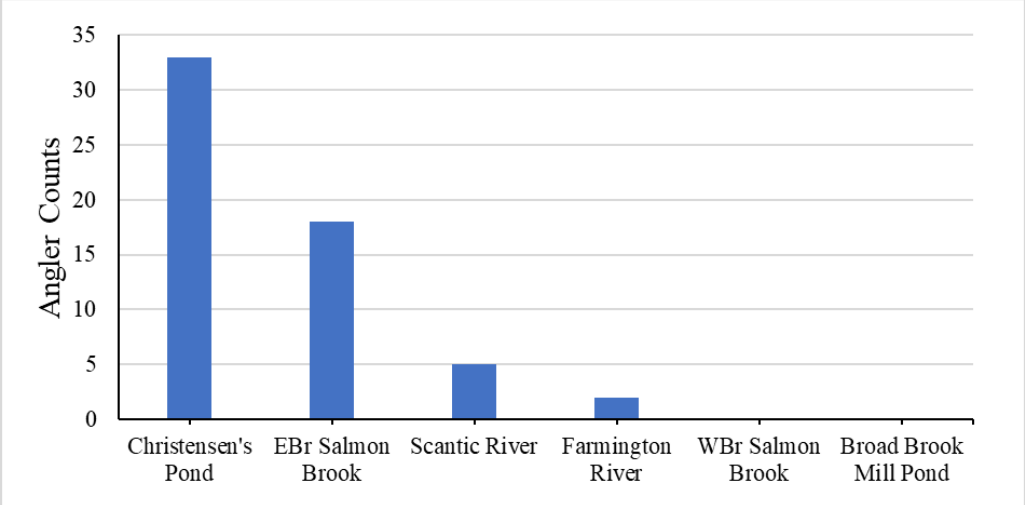


Figure 11. *Angler counts at six waterbodies conducted on the opening day of trout harvest, 4/13/2024.*

Objective 4: Evaluate the potential for collecting statewide angler information using alternative survey methods.

- A remote angler survey using trail cameras was initiated in February of 2025 on Sages Ravine (Salisbury) and Gulf Brook (Somers). This survey is a follow up to and an expansion of an experimental camera survey conducted by the FD in 2019 (Eltz 2020, Dutterer et al. 2020). Cameras were placed at popular angling areas or access trails where wade fishermen would be observed. In addition to the cameras used for monitoring effort, a sign with QR code link to an online survey prompting anglers to voluntarily report catch rates was stationed at each waterbody. Anglers can scan the code and follow the link to a series of questions where targeted species and catch data are reported using Survey123. This creel will be ongoing in 2025 and will be reported in detail in the next performance report.

Objective 5: Maintain and archive stream angler survey databases and provide support to management projects.

- Data contained within multiple Rbase software databases have been exported to Microsoft Excel to facilitate future development of a single angler survey database as resources permit. Additionally, old and historic data sheets are being scanned for preservation and data are being entered where needed.

Moving Forward

- Evaluate stream angler survey results and make modifications to trout stocking allocations and trout stocking locations as needed including:
  - Continue to only stock locations once prior to harvest season, and multiple times during the harvest season (higher and more steady catch rates during the catch and release season; significantly more angling pressure during harvest season).
  - Discontinue stocking, reduce the number of stockings, or reduce the number of trout stocked in West Branch Salmon Brook (extremely low angler effort observed and wild trout present).
  - Consider reducing the number of trout stocked into the upper sections of East Branch Salmon Brook (upstream of Mechanicsville Road) or designate it a Wild Trout Management Area Class 1 due to little observed use. Re-allocate those trout stocked into the lower section (below Rte. 20).
    - Continue to stock Rainbow Trout only.
  - Consider increasing the total number of trout stocked during the harvest season in the lower Scantic River, particularly along Rte. 191 below Broad Brook Mill Pond (higher angler counts and lower catch-rates observed during the harvest season).

    - Continue to provide a late spring stocking at Christensen's Pond to support angling pressure into June (recognizing that more angler counts were observed in May and June compared to counts in March and April.
    - Consider increasing creel survey efforts (in-person or trail camera) in late May and June to better characterize usage as trout fishing conditions deteriorate.
- Continue to evaluate alternatives or modifications to traditional survey methodologies to gain efficiencies.
- Utilize ESRI Survey123 to record angler survey data collected in the field.
- Develop SOP and long-term strategies for trail cameras to collect angler usage information.
- Research options for more sophisticated trail cameras to improve image capture and data retrieval.
- Continue to support a post-doc over a 2-year period to standardize and collate stream angler survey data into a relational database.
- Consider possible regulation changes to the year-round Farmington River TMA based on opinion responses gathered during the angler and online surveys.

References

Dutterer, A.C., J.R. Dotson, B.C. Thompson, C.J. Paxton, and W.F. Pouder. 2020. Estimating recreational fishing effort using autonomous cameras at boat ramps versus creel surveys. North American Journal of Fisheries Management, 40(6). pp.1367-1378.

Eltz, B. 2020. Inland Fisheries Research and Management: Stream Angler Surveys. Federal Aid in Sport Fish Restoration F-57-R-38, Coldwater Fisheries Program Job 3. Annual Progress Report. Connecticut Department of Energy and Environmental Protection.

Hagstrom, N., B. Eltz, E. Machowski, and M. Humphreys. 2012. Cold Water Management: Farmington River Management. Federal Aid to Sport Fish Restoration. F-57-R-31, Study 1 Job 5. Progress Report. Connecticut Department of Environmental Protection.

Hagstrom, N., E. Machowski, J. Davis, M. Humphreys, C. McDowell, and E. O'Donnell. 2012. Cold Water Management: Stream Angler Survey. Federal Aid to Sport Fish Restoration. F-57-R-31, Study 2 Job 2. Progress Report. Connecticut Department of Environmental Protection.

Hyatt, W.A. 1986. An angler survey and economic study of the Farmington River fishery resource. Connecticut Department of Environmental Protection, Final Project Report. 68 pp.

Malvestuto, S. P., W. D. Davies, and W. L. Shelton. 1978. An evaluation of the roving creel survey with non-uniform probability sampling. Transactions of the American Fisheries Society 107(2):255- 262.

Appendix 1. Creel interview form used during the 2024 stream angler survey.

Water body:_____ Date:_____ Count Time: _____ Agent:_____

Bait used: L) Lures W) Worms M) Minnows F) Fly O) Other

			Catch									Harvest									
			BN		BK		RW		UNK Trt		Other	BN		BK		RW		UNK Trt		Other					
Stocking Site (enter # from map)	Time started fishing	Time interviewed	<9"	9-12" >12"	<9"	9-12" >12"	<9"	9-12" >12"	<9"	9-12" >12"		<9"	9-12" >12"	<9"	9-12" >12"	<9"	9-12" >12"	<9"	9-12" >12"		Total Trt Caught	Total Trt Harvested	Trt/ATS Stamp? **Yes** or **No**	Town From	Consv ID Number

A) What are you fishing for? _____

If responded w/ trout is preference wild or stocked ? Don't care? Unknown?

B) Have you previously been interviewed on this river section since January 1st? **Yes** or **No** (circle one)

If angler was not interviewed before continue:

C) Are you aware of the new C&R period for trout from March1st through 6am of the 2nds Saturday in April (OD)?

Yes or No (circle one)

D) What is your opinion of the C&R season?

2) In favor 1) Highly in favor 4) Opposed 5) Highly opposed 3) No opinion

Why?

E) How often are you likley to keep "target" during the harvest period in this river?

2) Most of the time (>50%) 1) Always 4) Rarely (<10%) 3) Occasionally (<50%) 5) Never

Why?

F) What is your opinion of a proposed statewide minimum length of 9" on all trout (stocked or wild)?

2) In favor 1) Highly in favor 4) Opposed 5) Highly opposed 3) No opinion

Why?

Comments

Appendix 2. Expanded spring angler effort and catch at six (6) non-management waterbodies surveyed in 2024 in north, central CT.

Season	Effort (hrs)	SE	df	RSE	Trout Catch	SE	df	RSE	Catch/ Effort
Broad Brook Mill Pond									
Early spring	235	101.6	17	43.2%	250	161.1	5	64.4	1.06
Late spring	1,432	205.3	34	14.3%	429	138.1	36	32.1	0.29
Total	**1,667**				**679**				**0.41**
Christensen's Pond									
Early spring	207	108.1	6	52.1	300	298.9	1	99.6	1.44
Late spring	2,741	675.5	33	24.6	1,056	334.2	22	31.6	0.38
Total	**2,948**				**1,356**				**0.46**
East Branch Salmon Brook									
Early spring	282	130.7	14	46.3	579	324.1	3	55.8	2.05
Late spring	902	343.1	28	37.9	102	54.6	23	53.1	0.11
Total	**1,184**				**681**				**0.56**
West Branch Salmon Brook									
Early spring	37	26.1	17	69.4	0	-	-	-	0.00
Late spring	73	50.6	41	69.2	0	-	-	-	0.00
Total	**110**				**0**				**0.00**
Lower Scantic River									

Early spring	321	115.3	16	35.8	247	102.5	5	41.6	0.76
Late spring	1,185	215.8	39	18.2	225	85.1	42	37.7	0.18
Total	**1,506**				**472**				**0.31**
Farmington River (Tariffville)									
Early spring	53	37.3	9	69.9	840	-	-	-	15.8
Late spring	613	165.3	41	26.9	955	393.1	9	41.1	1.55
Total	**666**				**1,795**				**2.69**

Appendix 3. Angler response to providing conservation ID number during the stream angler survey.

	East Branch Salmon Brook		West Branch Salmon Brook		Farmington River		Lower Scantic		Christensen's Pond		Broad Brook Mill Pond	
All Anglers	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Yes	20	50%	1	50%	9	60%	14	25%	17	33%	19	38%
No	20	50%	1	50%	6	40%	41	75%	34	67%	31	62%

Appendix 4. Angler response to purchasing a Trout & Salmon stamp during the stream angler survey.

	East Branch Salmon Brook		West Branch Salmon Brook		Farmington River		Lower Scantic		Christensen's Pond		Broad Brook Mill Pond	
All Anglers	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Yes	33	85%	2	50%	12	87%	43	78%	42	80%	36	72%
No	6	15%	0	0%	3	13%	12	22%	9	20%	13	28%

Appendix 5. Responses from anglers when asked if they were aware of the statewide catch and release season for trout that extends from March 1st to 6:00am on the 2nd Saturday in April. These opinion questions were only asked the first time they were interviewed at a river/pond during the entire survey.

	East Branch Salmon Brook		West Branch Salmon Brook		Farmington River		Lower Scantic		Christensen's Pond		Broad Brook Mill Pond	
All Anglers	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Yes	34	85%	2	100%	11	73%	32	58%	27	53%	22	46%
No	6	15%	0	0%	4	27%	23	42%	24	47%	27	54%

Appendix 6. Responses from anglers when asked their opinion of the statewide Catch and Release season for trout. These opinion questions were only asked the first time they were interviewed at a river/pond during the entire survey.

	East Branch Salmon Brook		West Branch Salmon Brook		Farmington River		Lower Scantic		Christensen's Pond		Broad Brook Mill Pond	
All Anglers	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Highly in Favor	10	25%	0	0%	3	20%	9	18%	4	8%	11	22%
In Favor	12	33%	2	100%	6	40%	22	38%	17	32%	11	22%
No Opinion	10	25%	0	0%	5	33%	22	40%	28	56%	25	51%
Opposed	5	13%	0	0%	1	7%	1	2%	2	4%	2	4%
Highly Opposed	2	5%	0	0%	0	0%	1	2%	0	0%	0	0%

Appendix 7. Responses from anglers when asked how often they keep their catch during the harvest season, which extends from 6:00am on the 2nd Saturday in April to the last day in February. Note, these opinion questions were only asked the first time an angler was interviewed at a river/pond during the entire survey and were asked both during the catch and release season and harvest season.

	East Branch Salmon Brook		West Branch Salmon Brook		Farmington River		Lower Scantic		Christensen's Pond		Broad Brook Mill Pond	
All Anglers	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Always	1	3%	0	0%	0	0%	0	0%	1	3%	1	2%
Most of the Time	5	14%	0	0%	1	7%	4	9%	6	15%	1	2%
Occasionally	9	25%	0	0%	2	14%	10	23%	7	18%	8	16%
Rarely	11	31%	1	50%	3	21%	11	26%	8	20%	8	16%
Never	10	28%	1	50%	8	57%	18	42%	18	45%	14	29%

Appendix 8. Responses from anglers when asked their opinion of a proposed statewide 9" minimum length on all trout. These opinion questions were only asked the first time they were interviewed at a river/pond during the entire survey.

	East Branch Salmon Brook		West Branch Salmon Brook		Farmington River		Lower Scantic		Christensen's Pond		Broad Brook Mill Pond	
All Anglers	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Highly in Favor	15	38%	0	0%	7	50%	17	40%	9	23%	13	42%
In Favor	14	35%	1	50%	3	21%	17	40%	17	43%	9	29%
No Opinion	8	20%	0	0%	2	14%	5	12%	13	33%	5	16%
Opposed	3	8%	1	50%	2	14%	2	5%	0	0%	3	10%
Highly Opposed	0	0%	0	0%	0	0%	2	5%	1	3%	1	3%

Appendix 9. Expanded angler survey statistics by season for all surveyed zones of the West Branch Farmington River and Farmington River during 2024. SE = standard error; df = degrees of freedom; RSE = relative standard error. Catch/Effort = number of fish caught per hour.

Season	**Effort (hrs)**	SE	df	**RSE**	**Trout Catch**	SE	df	RSE	**Catch/ Effort**
Zone 1 - Whittemore Pool to Goodwin Dam									
Winter	1,566	405	25.1	25.9%	1,989	788	10.2	39.6%	1.27
Early spring	2,386	447	23.9	18.7%	2,224	736	10.1	33.1%	0.93
Spring	10,347	1,051	22.1	10.2%	6,137	1,480	15.9	24.1%	0.59
Summer	11,001	937	38.7	8.5%	6,790	1,605	31.1	23.6%	0.62
Fall	2,108	203	31.4	9.6%	1,607	852	9.7	53.1%	0.76
Late Fall	1,015	225	13.1	22.1%	697	341	4.5	48.9%	0.69
Total	**28,423**	3,267			**19,443**	5,802			**0.68**
Zone 2 - Upper section of the Year-round TMA									
Winter	597	179	19.9	30.0%	846	474	2.7	55.2%	1.42
Early spring	863	196	24.1	22.8%	956	578	5.8	60.5%	1.11
Spring	6,370	754	34	11.8%	7,159	1,880	6.6	26.3%	1.12
Summer	7,974	822	43.6	10.3%	4,547	1,431	18.8	31.5%	0.57
Fall	1,844	259	15.3	14.0%	462	213	7.2	46.1%	0.25
Late Fall	724	138	21.9	19.1%	630	363	4.0	57.6%	0.87
Total	**18,371**	2,349			**14,600**	4,939			**0.79**

Zone 3 - Lower section of the Year-round TMA									
Winter	1,366	311	20.7	22.8%	1,153	506	10.2	43.9%	0.84
Early spring	1,120	177	21.3	15.8%	738	314	8.2	42.5%	0.66
Spring	7,810	715	41.0	9.2%	3,823	666	19.8	17.4%	0.49
Summer	9,993	817	38.7	8.2%	8,088	1,871	16.5	23.1%	0.81
Fall	2,445	271	24.5	11.1%	678	206	17	30.4%	0.28
Late Fall	1,666	298	25.3	17.9%	1,722	427	5.1	24.8%	1.03
Total	**24,399**	2,590			**16,203**	3,990			**0.66**
Zone 4 - Rte 219 to Upper Collinsville Dam									
Winter	424	102	26.8	23.9%	1,323	1233	3	93.2%	3.12
Early spring	790	178	19.2	22.5%	178	177	1	99.2%	0.23
Spring	5,308	624	38.5	11.8%	5,962	2,190	13.3	36.7%	1.12
Summer	3,049	430	43.5	14.1%	2,329	698	13.5	30%	0.76
Fall	1,787	236	27.1	13.2%	928	367	6	39.5%	0.52
Late Fall	1,129	213	20.6	18.9%	1,281	493	9.5	38.5%	1.14
Total	**12,486**	1,782			**12,001**	5,157			**0.96**
Zone 5 - Upper Collinsville Dam to Rte 177 Unionville									
Winter	59	31	20	53.4%	0				0
Early spring	523	140	24.1	26.9%	540	281	5	52%	1.03

Spring	2,594	550	21.3	21.2%	1,830	644	8	35.2%	0.71
Summer	2,032	337	46.6	16.6%	487	243	10.3	49.9%	0.24
Fall	695	161	28.7	23.2%	552	273	2	49.4%	0.80
Late Fall	457	178	8.1	38.9%	871	776	1	89.1%	1.91
Total	**6,358**	1,398			**4,281**	2,217			**0.67**
Grand Total	**90,038**	**11,386**			**66,527**	**22,105**			**0.74**

Appendix 10. Opinion responses by management type from anglers intercepted (1,092) during on river interviews. Not all anglers responded to question as 31 declined interviews.

Question	Num of Responses	TMA Section	% In Favor	% Strongly In Favor	% No Opinion	% Against	% Strongly Against
“What is your opinion of the DEEP's Catch-and-Release management of trout in this YR TMA?”	379	Year-round (Zones 2 & 3)	53.0	40.6	5.3	0.3	0.8
"What would be your opinion of extending Year-round C&R regulations in the YR TMA from the abutments upstream to the Still River?"	375	Year-round (Zones 2 & 3)	44.5	33.6	14.1	5.6	2.1
"What would be your opinion of extending Year-round C&R regulations in the YR TMA from the abutments upstream to the Goodwin/Hogsback Dam?"	374	Year-round (Zones 2 & 3)	40.6	31.8	14.7	9.9	2.9
“What is your opinion of the DEEP's Seasonal Catch-and-Release management of trout in this TMA?”	480	Seasonal Zones 1,4, &5)	57.1	25.2	11.7	2.5	3.5
"What would be your opinion of extending Year-round C&R regulations in the YR TMA from the abutments upstream to the Still River?"	482	Seasonal (Zones 1,4, &5)	39.2	27.4	17.0	11.2	5.2
"What would be your opinion of extending Year-round C&R regulations in the YR TMA from the abutments upstream to the Goodwin/Hogsback Dam?"	481	Seasonal (Zones1,4, &5)	35.6	27.9	18.3	11.2	7.1
“What would be your opinion of removing the seasonal TMA (i.e., reverting to statewide regulations) in waters downstream of the Upper Collinsville Dam?”	838	All sections	19.9	4.1	34.5	27.7	13.8

Appendix 11. Opinion responses from online anglers (2,626). 2,761 anglers took online survey, but 135 were flagged and removed as likely duplicates. Three separate survey links (surveys were identical) were sent out via email to all anglers that had previously been issued a CT fishing license, on the CT Fish and Wildlife Facebook page, or directly to special interest groups via a separate email. Percent of surveys completed by survey medium (email, Facebook, or special interest) are presented below.

Question	Num of Responses	% Email	% Facebook	% Special Interest	% Yes	% No	% In Favor	% Strongly In Favor	% No Opinion	% Against	% Strongly Against
Survey Medium	2,761	95.3	4.7	0.04	--	--	--	--	--	--	--
Did you fish within the Farmington River Year-round TMA or Seasonal TMA sections in 2024?	2,755	--	--	--	57.7	42.3	--	--	--	--	--
Have you EVER fished within the Farmington River Year-round TMA or Seasonal TMA sections?	2,751	--	--	--	73.6	26.4	--	--	--	--	--
What is your opinion of the DEEP's Catch-and-Release management of trout in the Year-round TMA? The current regulation is Catch and Release only year-round from the old footbridge abutments (Barkhamsted downstream to the Route 219 bridge (New Hartford))	2,739	--	--	--	--	--	26.6	49.4	15.4	5.5	3.2

What is your opinion of the DEEP's Seasonal Catch-and-Release management of trout in the Farmington River TMA from the Abutments to the Goodwin Dam? The current regulation is Catch and Release Only from September 1 to 6:00 a.m. 2nd Saturday in April. Daily creel limit—2, 12″ minimum length from 6:00 a.m. 2nd Saturday in April to August 31.)	2,732	--	--	--	--	--	34.6	29.9	20.3	9.3	5.8
What would be your opinion of extending Year-round C&R regulations in the Year-round TMA from the abutments upstream to the Still River?	2,736	--	--	--	--	--	25.1	39.3	20.7	8.8	6.1
What would be your opinion of extending Year-round C&R regulations in the Year-round TMA from the abutments upstream to the Goodwin/Hogsback Dam?	2,733	--	--	--	--	--	24.2	38.4	20.7	10.0	6.7

What would be your opinion of removing the seasonal TMA (i.e., reverting to statewide regulations) in waters downstream of the Upper Collinsville Dam? Current regulations are Catch and Release Only from September 1 to 6:00 a.m. 2nd Saturday in April. Daily creel limit—2, 12″ minimum length from 6:00 a.m. 2nd Saturday in April to August 31.)	2,722	--	--	--	--	--	20.1	12.1	27.7	19.9	20.2

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 1:	Coldwater Fisheries Management
Job 4:	Distribution of Hatchery Salmonids

Report Prepared by:	Matt Devine
Job Personnel:	Matt Devine, Co-Job Leader
	Brian Eltz, Co-Job Leader
	Andrew Ransom, Primary Staff
	Andrew Bade, Program Coordinator

Overview: Recreational fishing is a healthy outdoor experience that is important to the quality of life for many of Connecticut's residents and is beneficial to the State's economy. Trout anglers enjoy over 1.2 million days of fishing annually in Connecticut. These same anglers (approximately 109,000 adult anglers older than 16 years of age), spend roughly $30.00/day pursuing trout, which contributes around $36 million annually to the State's economy (USFWS 2013). Accordingly, a major objective of the Connecticut Department of Energy and Environmental Protection's (DEEP) Fisheries Division is to enhance and diversify recreational salmonid fishing opportunities. To support high-quality fishing experiences, the Fisheries Division's hatchery system annually stocks between 900,000 and 1.3 million salmonids (trout fry, fingerling trout [often called yearlings], adult trout, Atlantic Salmon [fry and adults], and Kokanee Salmon fry) that are reared at three State fish hatcheries. Currently, Brown, Brook, Rainbow, and tiger trout, along with Atlantic and Kokanee salmon (a landlocked form of the anadromous Pacific Sockeye Salmon) are raised for stocking in waters open to public fishing. Additionally, the USFWS somewhat regularly provides surplus broodstock Lake Trout.

Figure 1. *The Trumbull Connecticut Scout Group helps stock trout in the Pequonnock River.*

Objectives for the Distribution of Hatchery Salmonids are:

1. Continue using computer-based trout stocking schedules.
2. Distribute trout and salmon to areas that provide suitable habitat and are open to the general angling public.
3. Produce Annual Fish Stocking Report and construct a long-term database of annual allocations by site.
4. Continue to update electronic stocking maps.
5. Finalize and implement a systematic method for allocating trout in lakes and streams.
6. Improve stocking site information for anglers by posting maps of stocked streams on the DEEP website.

This report describes efforts related to these objectives during the study year.

Key Findings

Objective 1: Continue using computer-based trout stocking schedules.

- Microsoft Excel was used to organize all the trout and salmon stocking into pre-season, opening day of harvest for trout (4/13/2024), in-season, and late-season schedules. Fish allotments were sorted by hatchery, management type, and watershed, and hatchery staff performed stocking of the various waters within designated ranges of dates (1–2-week blocks) within each schedule.

Objective 2: Distribute trout and salmon to areas that provide suitable habitat and are open to the general angling public.

- In all, 102 lakes/ponds and 149 distinct riverine sections were stocked with catchable-size (> 6 inches) salmonids in 2024. Fulltime and seasonal staff from the inland fisheries management programs contributed to this activity.
    - One waterbody (Stanley Quarter Park Pond) was added back to the stocking program after extensive dredging and habitat work was completed.

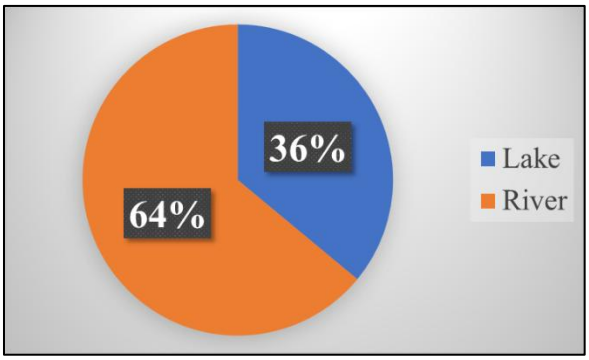


***Figure 2**. Percent of total catchable-size trout (> 6 inches) stocked in 2024 by habitat type.*

    - Significant cuts were made to the allocation at Wonoscopomuc (Lakeville Lake) due to reduced public access. In the fall of 2023, the Town of Salisbury closed their boat launch on Wononscopomuc Lake to all outside vessels to help prevent hydrilla, a fast-spreading invasive aquatic plant species, from becoming established within the lake. To offset the loss of angler access caused by the launch closure, the town provided boats with electric trolling motors for a rental fee. Fishing effort under this new regime was estimated to

be 1,550 angling hours, an ~80% reduction from historic levels (11,371 hours). As a result, the Fisheries Division elected to stock 1,500 Seeforellen Brown Trout yearlings (50% reduction) and 500 adult Rainbow Trout (80% reduction). The proposed stocking allocation is open to change should angler access and use increase in the future, as maintaining angler access to this unique fishery is important to both the DEEP and the Town of Salisbury

- Approximately 605,065 catchable-size trout, 1,987 catchable-size Atlantic Salmon, 391,034 Atlantic Salmon fry, and 180,000 Kokanee Salmon fry were stocked in 2024 (see the Annual Fish Stocking Report for location specifics).
- Of the total number of catchable-size trout stocked, 36% were released into lakes and ponds and 64% were released into rivers and streams (Figure 2). Size composition for catchable-size trout was 4% yearlings (6-9 inches), 59% adults (9-12 inches), 36% large-size trout (>12 inches), and <1% retired broodstock (> 16 inches). Species composition was approximately 37% Brown trout, 43% Rainbow trout, 18% Brook trout, and 2% tiger trout (Appendix 1).
- To take advantage of mild winter conditions in 2024, and in anticipation of Opening Day of Harvest (OD) slated for April 13th, 2024, DEEP began stocking Trout Management Areas on February 22nd and Trout Management Lakes on February 21st.
- Of the total allotment of catchable-size trout distributed, 47% were stocked prior to OD, approximately 44% were stocked from OD to May 31st, and 9% were stocked July through December.
- During fall 2024 (October – December), 1,987 broodstock Atlantic Salmon raised at the Kensington State Fish Hatchery (Berlin) were stocked into the following waterbodies: Naugatuck River (902 fish; 715 2-year-olds, 187 3-year-olds), Shetucket River from the Scotland Dam to Occum Dam (845 fish; 692 2-year olds, 153 3-year olds), Mount Tom Pond (120 2-year-olds), and Crystal Lake (120 2-year-olds).
- Tiger Trout were stocked into both lakes and ponds (56%) and rivers and streams (44%), with a total of 600 between 9-12 inches and 14,435 greater than 12".
- The Seeforellen strain Brown Trout stocking program continued in 2024.
    - Over 12,000 were stocked at yearling size at East Twin Lake, Lake Wononskopomuc, and Saugatuck Reservoir (see the Annual Fish Stocking Report for details).
    - 5,300 were stocked in the fall as >12 inches adults into select coldwater and Trout Management lakes.
    - 375 broodstock Seeforellen strain Brown Trout were stocked into 10 lakes (Mashapaug Lake, Crystal Lake, Squantz Pond, Black Pond (Meriden), Long Pond, Beach Pond, Cedar Lake, West Hill Pond, Highland Lake and East Twin Lake).
    - These fish were 2-3 years in age, and many were greater than 20 inches in length.

- Finally, no Brown Trout fry were stocked within Class 2 and Class 3 Wild Trout Management Areas (waters are listed in the Annual Fish Stocking Report) as the Fisheries Division restricted Brown Trout fry stocking to evaluate the success of establishing naturalized populations and developing a fishery. In 2024, 17 previously fry-stocked streams were sampled to assess the effectiveness of these stockings on species composition, density, and spatial extent.

Objective 3: Produce Annual Fish Distribution Report and construct a long-term database of annual allocations by site.

- The Annual Fish Stocking Report was completed and made available to the public in January 2024. This report includes stocking information for salmonids and all other fish species managed by the Fisheries Division (i.e., Walleye, Channel Catfish, Northern Pike, river herring, American Shad, sea-run Brown Trout, and Kokanee and Atlantic salmon) throughout the State.
- Design of a relational database continues. Currently all data are stored within Microsoft Excel, with separate worksheets for each year.
- A historical trout and salmon stocking database has been designed and is currently being updated. These data are sorted by waterbody, year, species, and fish size and will facilitate data visualization, summary reports, and review of how allocations have changed over time.

Objective 4: Continue to update electronic stocking maps.

- Public stocking maps (n = 13) were updated as needed and made available online including an interactive stocking map.
- In the interactive stocking map, modifications to color schemes for stream segments were made, locations no longer being stocked were removed, and both text and signage were updated on waterbody popups to reflect current regulations.
- Stocking maps for hatchery staff are being revised and optimized to improve navigation to stocking locations.
- Work continues to map easements with fishing access in ArcGIS and implement into the interactive stocking map.

Objective 5: Finalize and implement a systematic method for allocating trout in lakes and streams.

- Annual stocking densities for all lakes/ponds and rivers/streams were determined in 2020. Discrepancies in stocking rates (number trout/acre) were identified for all lakes/ponds and rivers/streams in 2021 and stocking densities were adjusted where needed.
- In summer 2023, fisheries staff began conducting a comprehensive statewide trout stocking site assessment to evaluate the suitability of current stocking locations. The most recent site assessment was done in 2014.
    - A rank and score model is being used to assess all statewide stocking locations (i.e., every stocked location within a river/stream) based on criteria

including angler access, stocking access, land ownership, and habitat conditions.

- A Survey123 form was developed to facilitate data collection in the field and to date 960 individual stocking locations have been assessed; 75 were assessed in 2024 (Figure 2).
- Once complete, fisheries staff will review and coupled with results from angler surveys and fish sampling data, modify stocking locations and allotments as needed.

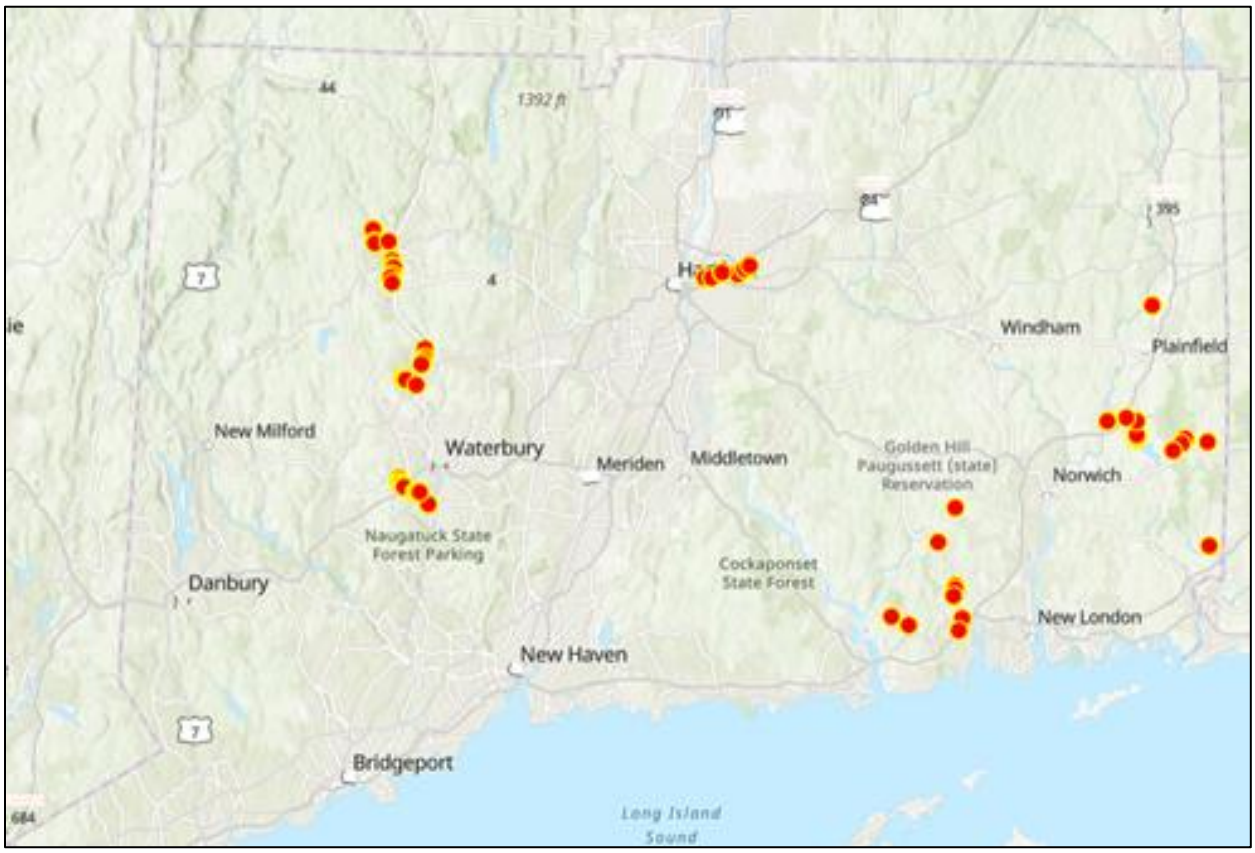


***Figure 3**. Individual stocking locations assessed during 2024 as part of the ongoing statewide stocking site assessment using Survey123.*

Objective 6: Improve stocking site information for anglers by posting maps of stocked streams on the DEEP website.

- To inform the public of catchable-size salmonid releases, stockings were advertised on Facebook (Wednesday and Friday) and both the interactive trout stocking map and the trout stocking report was updated daily for waterbodies that were open to fishing. Prior to removal of the closed season for trout fishing, stocked waterbodies were not advertised until close to Opening Day, which occurs on the 2nd Saturday in April. All lists and maps were updated as conditions changed.

Other Important Findings

- Several outside organizations assisted with trout and salmon stocking in 2024 including:
    - Eight (8) public school classes ranging from elementary school to high school.
    - Two (2) youth fishing clubs.
    - One (1) Cub Scout group.
    - Three (3) Trout Unlimited Chapters

- Seventeen (17) streams were sampled in 2024 to assess the effects of historic fry stocking. As a result, three (3) streams were identified as being warranted for fry stocking in 2025 (East Aspetuck River, Norwalk River, Blackberry River), as stocking will not impact wild Brook Trout and no wild Brown Trout were detected.

- An updated trout stocking operations directive is expected to be finalized by fisheries staff in 2025. The last trout stocking directive was completed in 1978.

Moving Forward

- Implement the Statewide Salmonid Action plan (Beauchene and Eltz 2021) and evaluate progress and additional needs for the upcoming Statewide Salmonid Action plan.
- Research current property ownership and public access of stocking sites where there is some level of uncertainty and quantify the amount of lost/changed access where records exist.
- In all locations, review past stocking practices along with angler survey information, and utilize data collected through online surveys and stocking site assessments to help determine appropriate trout stocking timings and allocations.
- Develop a classification/categorization system for all stocked waterbodies and determine best stocking practices for each waterbody. Utilize waterbody size, angler access, angler usage, distance from population source, management type, historical stocking practices, and all other relevant information during the process.
- Review and evaluate all individual river/stream stocking sites in CT once every 5-10 years and investigate changes in land ownership and public fishing access opportunities as information becomes available.
- Continue implementing an intensive statewide rotating stream creel survey on both management and non-management rivers/streams aimed at quantifying angler usage and optimizing trout hatchery production and distribution.

References

Beauchene, M., and B. Eltz. 2021. Connecticut's Salmonid Action Plan (2021-2025). Connecticut Department of Energy and Environmental Protection Bureau of Natural Resources, Fisheries Division, Hartford, CT. 41 pp.

Malvestuto, S. P., W. D. Davies, and W. L. Shelton. 1978. An evaluation of the roving creel survey with non-uniform probability sampling. Transactions of the American Fisheries Society 107(2):255- 262.

USFWS. 2013. 2011 national survey of fishing, hunting, and wildlife-associated recreation-Connecticut. U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Bureau of the Census. Washington, D.C. 172 pp.

Appendix 1. Summary of catchable trout (>9") stocked during the performance period, listed by habitat type, fisheries management type, species, and size.

By Management Type

	Adult-size Trout:				*Specialty trout:*						
	Brown Yearlng	**Brook Adult**	**Brown Adult**	**Rainbow Adult**	**Tiger Adult**	**Brook >12"**	**Brown >12"**	**Rainbow >12"**	**Tiger >12"**	**Brood-stock**	**Total Trout**
Community Ponds	0	4,930	3,380	6,285	0	450	440	1,200	750	0	**17,435**
Trout Management Lakes	8,350	1,500	25,110	10,850	0	5,950	6,800	12,550	0	530	**71,640**
Trout Park Ponds	0	4,000	6,085	12,370	350	2,955	1,000	8,050	6,045	110	**40,965**
Lakes with No Special Management	3,700	5,954	29,501	28,825	0	5,875	2,610	10,135	1,300	150	**88,050**
Pond Totals	**12,050**	**16,384**	**64,076**	**58,330**	**350**	**15,230**	**10,850**	**31,935**	**8,095**	**790**	**218,090**
Enhanced Wild Trout Streams	1,000	1,700	6,945	18,450	0	1,000	950	5,975	515	50	**36,585**
Trophy Trout Managed Streams	0	4,500	5,150	5,250	0	1,935	8,502	18,965	850	375	**45,527**
Trout Park Streams	0	2,045	1,925	1,575	250	1,725	750	4,250	850	55	**13,425**
Trout Management Areas (TMAs)	14,000	9,459	17,615	22,345	0	3,920	15,085	29,520	1,650	596	**114,190**
Rivers with No Special Management	0	27,430	59,140	36,925	0	15,005	7,255	28,710	2,475	308	**177,248**
River Totals	**15,000**	**45,134**	**90,775**	**84,545**	**250**	**23,585**	**32,542**	**87,420**	**6,340**	**1,384**	**386,975**
Total Trout	**27,050**	**61,518**	**154,851**	**142,875**	**600**	**38,815**	**43,392**	**119,355**	**14,435**	**2,174**	**605,065**

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 1:	Coldwater Fisheries Management
Job 5:	Broodstock Salmonid Management

Report Prepared by:	Brian Eltz and Andrew Ransom
Job Personnel:	Brian Eltz, Co-Job Leader
	Andrew Ransom, Co-Job Leader
	Matthew Devine, Primary Staff
	Andrew Bade, Program Coordinator

Overview: The West Branch Farmington River, below the Goodwin Dam, is a federally designated Wild and Scenic River (14 miles) and regionally recognized trout fishery. In addition, the cold, hypolimnetic water released from Goodwin Dam creates the best tailwater resource in the state of Connecticut that supports a sizeable stocked and wild trout population throughout the year. To capitalize on this unique fishery resource, a year-round catch-and-release Trout Management Area (TMA) was designated for a 1.8 mile stretch of the river in 1988. The TMA quickly became increasingly popular with anglers, so to accommodate angler demand and to reduce angler congestion, the year-round catch-and-release TMA has been expanded twice over the years to now cover a total of 5.6 miles. The DEEP Fisheries Division electrofishes portions of the river annually to monitor the trout population or capture select wild and holdover, stocked Brown Trout to use as broodstock for the "Survivor strain" Brown Trout program. Offspring from this selective breeding program are used to stock this TMA as well as other rivers in Connecticut. Since the inception of the TMA, the proportion of wild Brown Trout in fall population samples have increased (from 2% to 45%) and now also comprise a substantial component of the annual angler catch. Through this job, the Fisheries Division strives to

***Figure 1**. Sampling the West Branch Farmington River Trout Management Area to determine population estimates and collect broodstock.*

maintain the quality of this fishery to ensure future generations of anglers will be able to enjoy this incredible resource.

Landlocked kokanee salmon support a small but longstanding "niche" fishery in CT. These decades old, put-grow-and-take fisheries occur in our highest quality coldwater lakes and serve a small but avid group of dedicated anglers (kokanee fisheries generate an estimated 10 – 12K angler hours annually statewide). The continued success of these fisheries is dependent on the collection and manual spawning of holdover, sexually mature broodstock, raising fry at the Burlington State Fish Hatchery, and releasing fry into two to three lakes each spring.

Specifically, the objectives of the Broodstock Salmonid job are:

1. Improve survival of stocked/semi-domesticated Brown Trout (Survivor strain) in high quality trout fishing rivers and streams currently managed under special regulations (i.e., year-round or seasonal catch and release).
2. Continue to collect broodstock for the Survivor strain Brown Trout Program.
3. Provide quality fishing opportunities in special management areas for Brown Trout.
4. Continue to evaluate trout populations in a subset of TMAs containing Survivor strain trout to provide a better understanding of how to best manage stocked or mixed (stocked and naturally reproduced fish) trout populations and to improve the potential for natural reproduction of Brown Trout in these areas.
5. Continue to assess new rivers/stream areas for their value to be managed with Survivor strain Brown Trout populations.
6. Maintain kokanee fisheries in West Hill Pond and East Twin Lake by stocking approximately 50,000 fry per year in each lake; stock any surplus fry in Lake Wononskopomuc. Explore the possibility of introducing kokanee into a suitable coldwater lake in eastern CT (Beach Pond).
7. Explore possibility of introducing kokanee to another lake.
8. Continue the collection of Kokanee broodstock at West Hill Pond, and at East Twin Lake if needed to obtain adequate broodstock numbers.
9. Determine relative abundance and average lengths of mature Kokanee at West Hill Pond, East Twin Lake, and Lake Wononskopomuc.

Key Findings

Objective 1: Improve survival of stocked/semi-domesticated Brown Trout (Survivor strain) in high quality trout fishing rivers and streams currently managed under special regulations (i.e., year-round or seasonal catch and release)

Selective breeding and reintroduction of offspring from fish that grow and holdover in the river helps to conserve selection of wild adapted genes. Broodstock selection focuses on wild origin fish and fish with several years of riverine exposure as preferred brood animals, but fish stocked as little as 6 months prior to collection are often selected as brood as well.

Figure 2*. Brown Trout collected from the Farmington River during fall sampling.*

- In the Farmington River year-round TMA there is a protracted spawning season for Brown Trout (both wild and stocked holdovers), often lasting from late September through early January depending on stream conditions (water temperature and flow). This extended duration of spawning time is an adaptive trait of salmonids to protect the population against periodic fall drought and flood conditions that otherwise may wipe out an entire year class of wild fish. To mimic this process and maintain this genetically heritable trait, hatchery personnel spawn the selected broodstock over a 6-week period as fish ripen in the hatchery environment.
- In 2024, Survivor strain offspring were stocked into the following waterbodies with special regulations (Table 1) where they have demonstrated better holdover potential than the domestic strain Brown Trout reared in Connecticut's hatcheries.

Table 1. *Locations where Survivor strain Brown Trout were stocked in 2024.*

Date	Waterbody	Yearlings	Adults	Large Adults (>12")
4/24/2024	Farmington River (West Br. TMA)	0	0	1,300
5/1/2024	Housatonic River, Upper TMA	3,000	0	0
5/28/2024	Farmington River (West Br. TMA)	4,000	0	0
9/13/2024	Pequabuck River, RTS 229-177	3,000	0	0
9/17/2024	Hockanum River TMA	4,000	0	0
9/24/2024	Salmon Brook, WTMA 2	1,000	0	0
9/26/2023	Housatonic River, Upper TMA	0	0	3,000
9/27/2023	Housatonic River, Upper TMA	0	0	1,000
10/24/2024	Hockanum River TMA	0	0	450
	Total	**15,000**	**0**	**5,750**

Objective 2: Continue to collect broodstock for the Survivor strain Brown Trout program.

- Single pass electrofishing was used to collect 240 broodstock Brown Trout (100-125 is the target) from the year-round catch-and-release Trout Management Area (TMA) of the West Branch Farmington River, and two sections of the seasonal TMA (above and below the year-round TMA) between September 4th-6th. Additional fish were collected this year to

utilize smaller than typical wild males (<13") and to possibly improve genetic diversity by taking fish from different sections of the river; typically, brood are only collected from within the year-round TMA. The preferred candidate for broodstock is a wild fish (hatched within the river) that is several years old. Second preference is a multi-year holdover fish (determined by total length of the fish and year of elastomer tag or specific fin clip). Each spring (up until 2020), all Survivor Brown Trout received an adipose fin clip and unique elastomer tag color for future identification; now, only adult Survivors receive a unique annual fin clip (adipose, right pelvic, or left pelvic). The final preference is a fish that has been in the river at least 6 months (typically a spring stocked large adult Survivor). All fish are typically at least 13 inches in length and have evidence of viable gametes and strong secondary sex traits.

- The selected fish were transported to the Burlington State Fish Hatchery in a hatchery truck with aerated, insulated tanks. At the hatchery, the broodstock were isolated from other hatchery populations for fish disease/health measures.
    - Hatchery staff spawned 88 pairs (consisted of 88 females and 80 males; some males were used more than once) and collected 162,091green eggs from these fish. At least 86% of all crosses had one wild parent. Overall egg eye-up was determined to be 68%, which is lower than in previous years (by ~20%). All fish were spawned between October 8th and December 6th.
        - These crosses will produce enough fish to meet all the production needs for 2026 spring yearlings (8,000), 2026 fall adults (4,000), 2026 fall large adults (500), and 2027 spring large age-2 adults (1,100).
    - All collected brood are returned to the river after spawning is completed.

Objective 3: Provide quality fishing opportunities in special management areas for Brown Trout.

- The Farmington River TMA (year-round and seasonal) was stocked multiple times with Brook, Brown, Rainbow, and Tiger trout throughout the spring along with stocking events in July and September (Annual Fish Stocking Report). In addition to the State's stocking efforts, cooperating groups (Metropolitan District Commission, Farmington River Anglers Association, and Trophy Trout Club) received permits from the DEEP to stock additional trout within the West Branch Farmington River.
- Also, management areas such as Trophy Trout areas, other TMAs around the state, Trout Parks, Trout Management Lakes, and Community Fishing Waters receive prescribed allotments each year to provide unique fishing opportunities (Annual Fish Stocking Report).

Objective 4: Continue to evaluate trout populations in a subset of TMAs containing Survivor strain trout to provide a better understanding of how to best manage stocked or mixed (stocked and naturally reproduced fish) trout populations and to improve the potential for natural reproduction of Brown Trout in these areas.

- Nine standard sites within the year-round catch and release section of the West Branch Farmington River Trout Management Area (TMA) and two seasonal catch and release

sections within the Farmington River TMA (above and below the year-round TMA) were sampled to characterize the trout population (see *Monitoring Fish Populations in Streams* for more details*)* and for broodstock collection.

- In 2024, the second highest catch rates of trout (464/km; average 340/km 1995-2024) were recorded within the standard sampling areas of the year-round TMA (Figure 3).

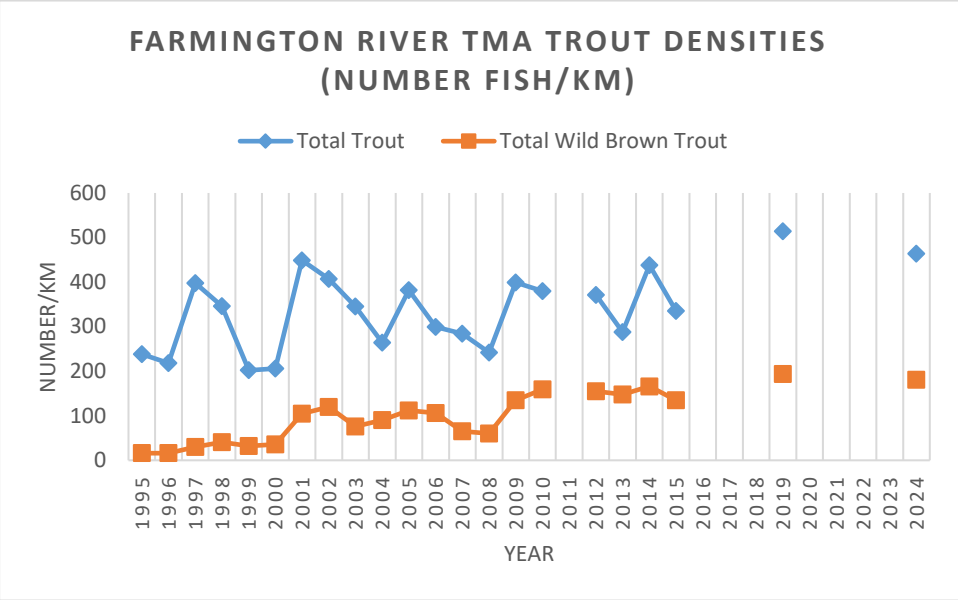


Figure 3. *Single-pass electrofishing catch rates (trout/km and wild Brown Trout/km) during late summer/early fall in standard sections of the year-round catch and release area of the West Branch Farmington River TMA, 2000-2024. Note that no population sampling occurred in years where no data points are presented.*

- Wild Brown Trout catch rates were the second highest ever recorded (181/km, average 99 fish/km 1995-2024) (Figures 3 and 4). As seen in Figure 4, the wild Brown Trout population is largely made up of fish smaller than 28 cm, but numbers of fish > 28cm are increasing.

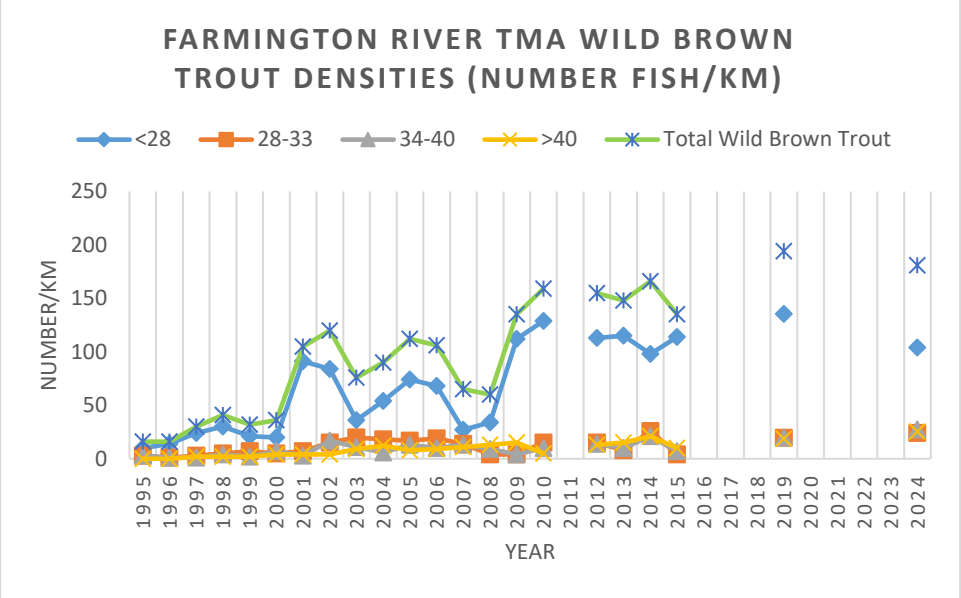


Figure 4. *Single-pass electrofishing catch rates (trout/km) during late summer/early fall in standard sections of the year-round catch and release area of the West Branch Farmington River TMA, 2000-2024. Note that no population sampling occurred in years where no data points are presented.*

- Seasonal flows and temperatures allowed graduate student Chris Sullivan of UConn to tag holdover Brown Trout in the Housatonic River TMA (Cornwall) on 7/17/2024. These tagged fish will be monitored for the duration of the summer and reported on in a future publication. See Disentangling effects of habitat on salmonid abundance in thermal refuges while accounting for imperfect detection for previous work in this TMA.
- Survivors stocked in the Pequabuck River TMA are scheduled to be assessed via electrofishing in 2025.

Objective 5: Continue to assess new rivers/stream areas for their value to be managed with Survivor strain Brown Trout populations.

- Survival of the 1,000 stocked Survivor yearlings into Salmon Brook Wild Trout Management Area will be assessed in 2025 with electrofishing equipment as this was the first time this waterbody was stocked with Survivor fingerlings.

Objective 6: Maintain Kokanee fisheries in West Hill Pond and East Twin Lake by stocking approximately 50,000 fry per year in each lake; stock any surplus fry in Lake Wononskopomuc. Explore the possibility of introducing kokanee into a suitable coldwater lake in eastern CT (Beach Pond)

- Developed and implemented Kokanee work plan in 2021.
- Kokanee fry were stocked by boat into: East Twin Lake, Salisbury (50,000), West Hill Pond, New Hartford/Barkhamsted (50,000), and Beach Pond, Voluntown, CT/Exeter, RI (80,000).

Retired Fisheries Division Biologist Edward Machowski holding a nice male Kokanee in full spawning color from East Twin Lake (Salisbury), 2018.

Objective 7: Explore the possibility of introducing Kokanee to another lake.

- At Beach Pond (Voluntown) 80,000 fry were stocked (9th consecutive year of stocking) to re-establish the Kokanee Salmon population that disappeared after the introduction of Alewives (1960's).
    - Alewives were last detected in Beach Pond in the early 2000's via boat electrofishing. In addition, no Alewife were collected in vertical gill nets set during August 2011 and 2018 or during purse seine sampling in 2024. A recent publication by Dougherty et al. (2025) also sampled Beach Pond for alewives and did not report any individuals captured.
    - Angler reports from summer of 2023 and spring of 2024 indicate large kokanee (18") are being caught recreationally. Kokanee size is inversely related to abundance (i.e., smaller population results in larger fish), and the large size reported suggests that the present population is low in density.

Objective 8: Continue the collection of Kokanee broodstock at West Hill Pond, and East Twin Lake if needed to obtain adequate broodstock numbers.

- At West Hill Pond, trap netting for the collection of broodstock salmon was completed during October 2024. Nets were fished from October 7th through October 13th and a total of 1,079 adult salmon (487 females; 592 males) were captured and transported to the Burlington Fish Hatchery. Of these fish, 865 were spawned (432 male/female pairs), producing 282,439 green eggs equating to 642 eggs/female. The percent eye-up of the eggs at Burlington Hatchery was high at 86.5% (similar to previous years) resulting in 237,114 eyed eggs. This will yield an ample number 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 2024.

- No broodstock netting was needed at East Twin because netting efforts at West Hill provided enough brood to meet production numbers.

Objective 9: Determine relative abundance and average lengths of mature Kokanee at West Hill Pond, East Twin Lake, and Lake Wononskopomuc.

- A subsample of 114 broodstock salmon from West Hill Pond (53 males and 61 females) were measured while being spawned at the Burlington Fish Hatchery. The average size of both sexes combined was 335 mm (males = 343 mm; females = 328 mm). The overall size of the Kokanee collected for spawning in 2024 was larger than in 2023 (307 mm).
- At West Hill Pond, two nets were fished for a total of eight days, however fish were only collected for the hatchery during the initial four. The required number of male-female pairs was met after the fourth day and nets were left in for several days if more were required.

Moving Forward

- Grow out Survivor Brown Trout for stocking in fall 2025 and spring 2026.
- Monitor angler feedback on the quality of fishing in the Farmington River through angler surveys (completed in 2024), public meetings, social media comments, and direct public interactions.
- Determine feasibility of utilizing Survey123 application to record fish sampling data collected in the field and as a means of electronic reporting by anglers catching kokanee, especially at Beach Pond.
- Closely monitor Alewife populations in both East Twin Lake and Lake Wononskopomuc via vertical gill netting and purse seining.
- Monitor size of Kokanee at East Twin Lake to assess effects of competition with Alewives.
- Collect broodstock Kokanee each fall from West Hill Pond and/or East Twin Lake.
- Maintain the State's Kokanee fisheries by the annual stocking of advanced Kokanee fry in East Twin Lake, West Hill Pond and Beach Pond.
    - No longer stock Kokanee fry into Lake Wononskopomuc unless Alewives go undetected for several years.
- Monitor the kokanee populations within each of the stocked lakes, especially Beach Pond. A secondary assessment in Beach Pond should occur in the fall of 2025 to reassess the developing fishery.
- Determine the best method for assessing the survival of June-stocked Kokanee fingerlings in West Hill Pond.

References

- Dougherty, M.M., MacDonald, A., York, G. and Post, D.M., 2025. Monitoring a keystone species (Alosa pseudoharengus) with environmental effects: A comparison with direct capture and environmental DNA. PLoS One, 20(5).

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F22AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 1:	Coldwater Fisheries Management
Job 6:	Coldwater Lakes Management

Report Prepared by:	Andrew Ransom & Brian Eltz
Job Personnel:	Andrew Ransom, Co-Job Leader Brian Eltz, Co-Job Leader Matt Devine, Primary Staff Andrew Bade, Program Coordinator

Overview: Though most of Connecticut's lakes and ponds are considered warmwater (dominated by sunfishes and bass), several locations in Connecticut support coldwater lake fisheries for holdover Brown Trout and stocked Brook Trout. These fisheries play an important role in adding to the diversity of fishing opportunities provided to Connecticut's anglers.

Figure 4. Photo of night boat electrofishing.

Over the past 30+ years, the Fisheries Division has studied various aspects of Brown Trout in many of the State's coldwater lakes. During this period, management efforts largely focused on sustaining and enhancing holdover Brown Trout in select lakes that maintain over summer coldwater habitat through size and timing of trout stocked, fishing regulations (e.g., length limits, slot limits, and season closures), and forage fish assessment (i.e., landlocked Alewife). Management efforts worked to produce viable and, in some cases, notable fisheries for trophy Brown Trout. Throughout this management history, both habitat and biological changes have occurred within Connecticut's Trout Management Lakes (TMLs). Data collected over the past ten years indicate that conditions in some of Connecticut's coldwater lakes have become less favorable for producing holdover trout (e.g., declines in over summer habitat and loss/fluctuations of forage base). Continual assessment and management of the limited number of Connecticut's coldwater lakes is crucial to adapt stocking strategies as adequate coldwater habitat changes.

In 2013, Fisheries Division biologists developed a classification system based on a lake's current potential for producing holdover Brown Trout and other coldwater fishes (e.g., Kokanee Salmon and Rainbow Smelt; Eltz and Machowski 2016). Parameters used in the classification system include over summer habitat (i.e., volume of late summer cold, oxygenated water), forage abundance, and availability of thermal refugia. This classification system is now being used as a guideline in determining appropriate stocking and management options for each coldwater lake.

The objectives of the Coldwater Lakes Management job are:

1. Continue to assess abundance and size distribution of Brown Trout and Alewives in Highland Lake and other important coldwater lakes as resources permit.
2. Determine the need for continuing or changing special regulations for trout at Highland Lake.
3. Assess other management options for producing quality Brown Trout fisheries in coldwater lakes, including stocking different sizes, strains and densities of trout.
4. Continue to obtain temperature and oxygen profiles on coldwater lakes.
5. Explore potential for forage fish introduction in a few selected coldwater lakes.

Key Findings

Objective 1: Assess abundance and size distribution of Brown Trout and Alewives in Crystal and Highland lakes, and other important coldwater lakes as resources permits.

- The relative population size of Alewives was assessed at Wyassup Lake (8/14/24; included in sampling because of an ongoing effort to reintroduce Smallmouth Bass), Beach Pond (8/21/24), Highland Lake (8/19/24-8/20/24), West Twin Lake (8/26/2024; included because of a direct connection to East Twin Lake), and East Twin Lake (8/27/24-8/29/24). Wyassup Lake, Beach Pond, Highland Lake, and West Twin Lake were all sampled using a purse seine (30m x 16m, 0.8mm mesh). Purse seining started at sunset and continued until the desired number of tows was completed each day. Number of tows was determined by the size of the waterbody based on recommendations by Devine et al. (2018), with 10-15 recommended for most lakes. East Twin Lake was also sampled using five vertical gillnets (9.5mm, 12.7mm, 15.9mm, 19.1mm, and 22.2mm bar mesh) that were set each sample date and retrieved the following day.

Photos of a vertical gillnet while fully deployed and while fish are being removed after a night of sampling.

- No Alewives were captured in Wyassup Lake, Beach Pond, or West Twin Lake. The population in East Twin Lake appears to have returned and stabilized after its resurgence in the late 2010s.
- Highland Lake had a relative density of 15.2 alewives per seine haul, whereas East Twin averaged 3.2 alewives. East Twin Lake also had an average density of 114/night with the vertical gillnets, which was an increase from 78 in 2023 but a decrease from the peak of 229 in 2003.
- An experimental electrofishing sample was conducted at the Saugatuck Reservoir on 10/29/24 to assess recent stockings of Seeforellen Brown Trout. Working under the thought process that Brown Trout are staging near tributaries prior to upstream migrations during the spawn period, this sample was conducted on the north end of the reservoir near inflow tributaries. This was the second time a trout specific sample has been conducted in this waterbody, and again zero trout were captured. Future efforts (i.e., trap netting) will be required to determine how to effectively assess this population.
- In East Twin Lake, trap netting was used to assess the holdover Brown Trout population using the Schnabel mark-recapture method (Everhart et al. 1975, Ricker 1975) from 10/21/24 until 11/22/24. This was the first sample event after a regulation change allowing harvest of only one brown trout over 22” per angler per day. Two nets were set and checked 2-3 times a week for the duration of the sample period. There were an estimated 394 Brown Trout, with a 95 % confidence interval of 258 – 486 (Figure 1). This is slightly lower than the population estimate of 416 (248-699 95% CI) from 2021. A total of 149 individuals were captured during netting, with the smallest fish being 342mm and the largest being 674mm. Forty-nine of these fish (31%) were larger than the 22” minimum size to be kept (Figure 2), and 33 of the 149 (22%) had fin clips indicating they were Seeforellen strain. The 2020-year class of Seeforellen’s were not fin clipped

due to constraints resulting from Covid-19, and it is possible they make up more of the current population than observed.

Examples of large Brown Trout captured during trap net sampling at East Twin Lake.

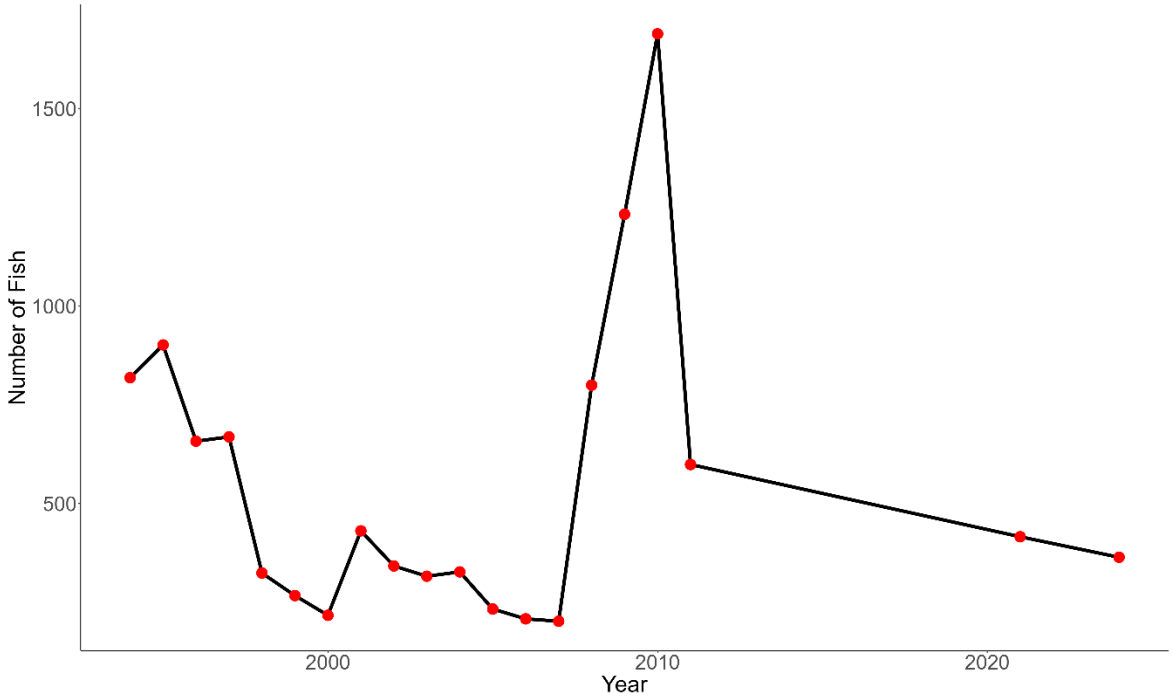


***Figure 1**. Estimated population sizes of Brown Trout in East Twin Lake from 1991 to 2024. Each year sampled is represented by a red circle. The population estimate for 2024 was 364 fish (95% CI: 258 – 486).*

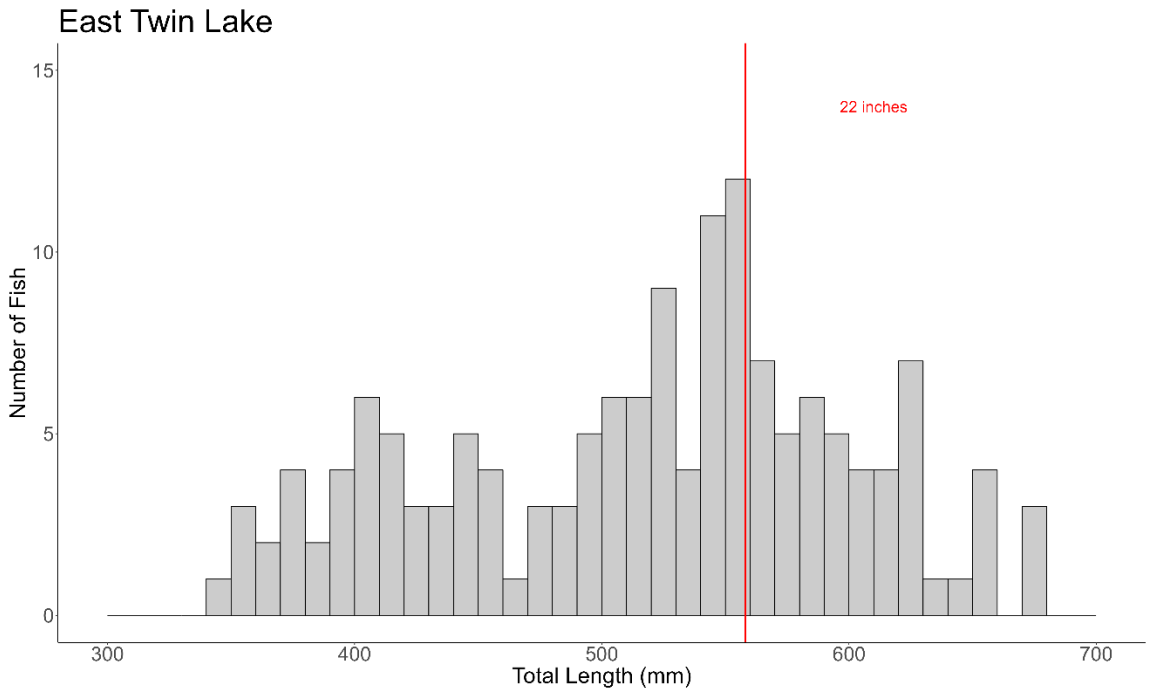


***Figure 2**. Measured lengths (mm) of Brown Trout captured in East Twin Lake in 2024.*

Objective 2: Obtain temperature and oxygen profiles on Connecticut's coldwater lakes to monitor potential changes in summer coldwater habitat (the season with the most severe/restrictive habitat conditions for coldwater fisheries resources in Connecticut).

- Single point temperature and oxygen profiles were conducted in East Twin Lake (8/27-28/24), West Twin Lake (8/26/24), Highland Lake (8/19/24), Beach Pond (8/12/24), and Wyassup Lake (8/14/24). Coldwater habitat (<20C and >4.5mg/L) was only observed at East Twin Lake (8 meters) and Beach Pond (10 meters). Repeated Temp/DO samples were also conducted in Colebrook River Lake to monitor coldwater resources available for the Farmington River tailwater fishery. Sample were taken on 7/18, 7/30, 8/16, 8/29, and 9/16. Results indicated that cold water (<20C) remained within the reservoir throughout the summer, however only three vertical meters of volume remained on 9/16.

Objective 3: Determine the need for continuing or changing special regulations for trout at Highland and Crystal lakes.

- Starting January 1, 2026, two thermal refuges have been officially designated in Highland Lake where trout concentrate at the mouths of small tributaries during summer months in years where coldwater habitat in the hypolimnion is depleted.

Objective 4: Assess other management options for producing quality Brown Trout fisheries in coldwater lakes, including stocking different sizes, strains and densities of trout.

- Work continued within the hatchery system to rear the Seeforellen strain of Brown Trout for stocking in 2024/2025. This trout strain was brought back into hatchery production in

2019 because it is especially suited to management in Connecticut's coldwater lakes. Its reported longevity and late maturity result in increased growth and overall size. A full plan for utilization of these Seeforellen Brown Trout has been created and was implemented beginning in 2021.

- For locations stocked with Seeforellen in 2024 and 2025, see Table 2.

***Table 1**. Numbers, sizes, and lakes stocked with Seeforellen-strain Brown Trout in the 2024/2025 reporting period.*

		Seeforellen-strain Brown Trout Stocked		
Lake	**Month of Stocking**	**> 6 inches**	**> 12 inches**	**> 16 inches**
Black Pond, Meriden	Dec./Jan./Feb.	0	350	30
Beach Pond	Nov./Feb.	0	600	30
Cedar Lake	Feb.	0	0	30
Crystal Lake	Nov./Jan.	0	800	30
East Twin Lake	May/Nov./Jan.	4175	1000	30
Highland Lake	Nov./Jan.	0	1300	30
Lake Wononskopomuc	May	4175	0	0
Long Pond	Nov./Feb.	0	600	30
Mashapaug Lake	Feb.	0	0	50
Saugatuck Reservoir	May	3700	800	0
Squantz pond	Nov./Feb.	0	800	30
West Hill Pond	Nov.	0	600	30
Total		12050	6850	320

Objective 5: Explore potential for forage fish introduction in a few selected coldwater lakes.

- Spawning populations of Rainbow Smelt were investigated during April of 2024 at West Hill Pond and Colebrook River Lake. There was no evidence that a spawning population of smelt persists at West Hill Pond, however a small number of individuals congregating near tributaries was observed at Colebrook River Lake. Future work should be conducted to assess population size and population metrics of smelt in this waterbody.

Moving Forward

- Continue to monitor the abundance and size distribution of Alewives in East Twin Lake via vertical gill net. Continue to evaluate the effects of Alewife competition with Kokanee by monitoring growth of the Kokanee.
- Continue to monitor temperature and dissolved oxygen during late summer in key coldwater lakes and adjust Brown Trout stocking numbers as needed.

- Assess newly initiated stockings of March season Trout Management Lakes with angler surveys or trail cameras including the two new Brook Trout Management Lakes.
- Add an objective to the current Sport Fish Restoration grant narrative; “Maintain quality fishing for Brook Trout in Mohawk Pond (Goshen) and Black Pond (Woodstock) by annually stocking adult Brook Trout into each location.”
- Revisit harvest regulations on Trout Management Lakes to support the potential fishery generated via the Seeforellen stocking and assessment plan.

References

Devine, M.T., Roy, A.H., Whiteley, A.R., Gahagan, B.I., Armstrong, M.P. and Jordaan, A., 2018. Precision and relative effectiveness of a purse seine for sampling age-0 river herring in lakes. North American Journal of Fisheries Management, 38(3), pp.650-662.

Eltz, B.E. and E.A. Machowski. 2016. Coldwater Fisheries Program, Coldwater Lakes Management – Job 7 Final Report, F57R-34. Connecticut Department of Energy and Environmental Protection. Hartford, Connecticut. 41p.

Everhart, H.W., A.W. Eipper, and W.D. Youngs. 1975. Principles of fishery science. Cornell University Press, Ithaca, New York.

Kilson, K. and Knoecklein, G. 2024. Highland Lake 2023 Water Quality Results. Northeast Aquatic Research. Mansfield, Connecticut.

Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Bulletin of the Fisheries Research Board of Canada, Bulletin 191, Ottawa. http://www.dfo-mpo.gc.ca/Library/1485.pdf

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title: Inland Fisheries Research and Management
Study 2: Warmwater Fisheries Management
Job 1: Monitor Warmwater Fish Populations in Lakes and Large Rivers

Report Prepared by: Christopher McDowell
Job Personnel: Christopher McDowell, Job Leader
Spencer Mallette, Primary Staff
Lillian Glynos, Primary Staff
Andrew Bade, Program Coordinator

Overview: Lake, pond, and large river monitoring is crucial to maintain up-to-date fish population data (e.g., population size structure and growth rates), identify changes in fish assemblages, and evaluate management strategies. Accordingly, the Fisheries Division has regularly monitored fish populations in Connecticut's lakes and large rivers. Nighttime boat electrofishing is the primary technique for assessing fish assemblages in these waterbodies. However, we have recently increased the scope of this program with daytime sampling in large rivers using a 14-foot raft with an ETS electrofishing system.

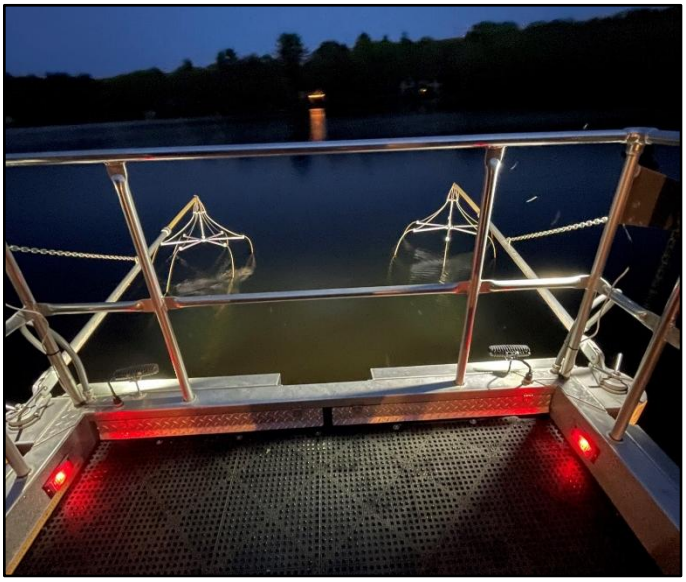


Figure 1*. Nighttime boat electrofishing to obtain various fish species data is a core function of the warmwater fisheries program.*

Our sampling regime involves visiting new locations annually and revisiting previously sampled locations on a rotational basis as lakes and large rivers are dynamic systems that are subject to both natural variation and anthropogenic influences (e.g., winter drawdowns, herbicide applications,

dredging, invasive species, shoreline development, changes in angler pressure, and climate change) that can alter their respective fisheries over time.

The objectives of the lake, pond and large river monitoring job are:

1. Regularly sample warmwater fish populations from a variety of waterbodies including special management lakes, waterbodies with a variety of angler usage and habitat types, and sites with known perturbations.
2. Monitor growth and population structure of important warmwater fish species in sampled lakes.
3. Evaluate the effects of introduced gamefish on resident fish populations.
4. Collect fish population data in previously unsampled lakes as resources permit.
5. Maintain warm water survey databases and provide support to special management projects.

Key Findings

Objective 1: Regularly sample warmwater fish populations from a variety of waterbodies including special management lakes, waterbodies with a variety of angler usage and habitat types, and sites with known perturbations.

- Forty-five nighttime boat electrofishing samples were carried out on 41 waterbodies between 4/1/24-11/19/24 (Table 1).
    - Samples were carried out for varied reasons, which include:
        - One trout and Alewife only sample.
        - One Walleye only sample.
        - Two all species samples with fish retained for pathology work.
        - Two Smallmouth Bass only samples.
        - Four black bass (i.e. Largemouth Bass and Smallmouth Bass) and Esocid (i.e. either Chain Pickerel and/or Northern Pike) only samples.
        - Thirty-four all species samples.
            - "All species" refers specifically to samples taken with the primary goal of lake and large river monitoring, as opposed to other project-specific samples (e.g., samples to generate bass population estimates, relative abundance estimates, or presence/absence).
            - Two waterbodies (Lower Bolton Lake, Bolton and Shuttle Meadow Reservoir, Southington) were sampled as part of an ongoing statewide lacustrine (i.e., "lake dwelling") Smallmouth Bass assessment. At these waterbodies all fish species were sampled and up to 30 Largemouth Bass, 30 Smallmouth Bass (when possible), and either 30 Bluegill or Pumpkinseed were retained and sent to the United States Department of the Interior Fish and Wildlife Service Lamar Fish Health Center in Lamar, PA for fish pathology testing. This testing was done as part of an ongoing study to assess Connecticut's lacustrine Smallmouth Bass populations. The pathology testing was done according to the protocols of the United States Fish and Wildlife

Service, Wild Fish Health Survey Protocols, which included: bacteriology, kidney tissues inoculated on BHIA slants with bio-chems run on bacterial growth and PCR confirmation; virology, cell culture of kidney/spleen/swim bladder samples homogenized, diluted and incubated for two weeks on CHSE, EPC, FHM, and BF-2 cell lines with PCR confirmation on any noted CPE) to look for Largemouth Bass virus and other fish pathogens.

- Two private waterbodies (Doolittle Lake, Norfolk and Indian Lake, Sharon) were sampled using nighttime boat electrofishing.
    - Appendix A contains detailed reports of the samplings that were provided to the respective lake associations and town authorities.
- Two waterbodies (Hammonasset Lake, Madison-Killingworth and Peat Swamp Reservoir, Seymour) that are owned and operated by the South-Central Regional Water Authority (SCRWA) were sampled using nighttime boat electrofishing. These two locations are not open to fishing.
    - Appendix A contains a report for Peat Swamp Reservoir that was provided to SCRWA.

Table 1. *List of waterbodies sampled using nighttime boat electrofishing. Sampling was carried out between April 1 and June11, 2024, and again between October1, 2024 and November 14, 2024. Note – '*' denotes first time being sampled by the DEEP Fisheries Division.*

Waterbody Name	Town	Sample Date	Sample Designation
Amos Lake	Preston	6/5/24	All species
Bashan Lake	East Haddam	5/20/24	All species
Beachdale Pond	Voluntown	11/5/24	All species
Birge Pond (2 times)	Bristol	5/8/24, 5/13/24	All species
Black Pond	Woodstock	4/30/24	All species
Black Rock Lake*	Thomaston	10/8/24	All species
Candlewood Lake (Lattins Cove launch)	New Milford-Danbury-Sherman-New Fairfield	6/10/24 & 6/11/24	All species
Center Springs Park Pond*	Manchester	10/15/24	All species
Day Pond*	Colchester	11/4/24	All species
Dodge Pond	East Lyme	10/21/24	All species
Doolittle Lake	Norfolk	5/30/24	All species
Eagleville Lake*	Mansfield-Coventry	11/6/24	All species
East Twin Lake (aka Washining Lake)	Salisbury	6/4/24	All species
Fisher Meadow*	Avon	11/12/24	All species
Freshwater Pond*	Enfield	10/10/24	All species
Halls Pond	East Hartford-Ashford	9/30/24	All species
Hammonasset Lake	Madison-Killingworth	11/13/24	All species
Highland Lake (3 times)	Winchester	4/26/24, 5/10/24, 5/24/24	Black bass & Chain Pickerel only (2 times) & all species (1 time)
Indian Lake*	Sharon	11/14/24	All species
Lakewood Lake (aka Great Brook Reservoir)	Waterbury	10/1/24	All species

Lake Saltonstall	East Haven-Branford	5/28/24	All species
Lake Wintergreen (2 times)	Hamden	5/9/24, 5/14/24	All species
Lower Bolton Lake	Bolton	4/29/24	All species & fish pathology
Malone's Pond (aka Pine Lake)*	Bristol	10/21/24	All species
Mansfield Hollow Lake (3 times)	Mansfield	5/3/24, 5/17/24, 5/31/24	Black bass/Chain Pickerel only (2 times) & all species (1 time)
Morey Pond	Union-Ashford	5/2/24	All species
Powers Lake	East Lyme	5/22/24	All species
Peat Swam Reservoir*	Seymour	10/9/24	All species
Rowans Pond (aka Butternut Park Pond)*	Middletown	10/17/24	All species
Saugatuck Reservoir	Easton-Redding-Weston	10/29/24	Trout & Alewives only
Shuttle Meadow Reservoir*	Southington	5/7/24	All species & fish pathology
Spaulding Pond (aka Mohegan Park Pond)	Norwich	10/7/24	All species
Squantz Pond	New Fairfield-Sherman	4/4/24	Walleye only
Stanley Quarter Park Pond	New Britain	10/22/24	All species
West Hill Pond	Barkhamsted-New Hartford	5/29/24	All species
West Twin Lake (aka Washinee Lake)	Salisbury	6/3/24	All species
Wyassup Pond (2 times)	North Stonington	10/2/24, 10/16/24	Smallmouth Bass only

Objective 2: Monitor growth and population structure of important warmwater fish species in sampled lakes.

- Catch per unit effort calculations were carried out for lakes surveyed for 2024 where "all species" samples were performed. See Appendix B for lake specific outputs.
- No scale samples were taken during the 2024-25 sampling season for this Job.

Objective 3: Evaluate the effects of introduced gamefish on resident fish populations.

- Work began in 2022 to develop a database of introduced gamefish stocking allocations, as well as collate historic and recent electrofishing data, to enable this type of analysis. Multiple samples have also been scheduled. Work is ongoing and additional progress will be reported as new advances are made.

Objective 4: Collect fish population data in previously unsampled lakes as resources permit.

- Ten previously unsampled waterbodies were sampled during 2024. These locations have an asterisk next to their name in Table 1.
    - In 2024 the FD began sampling Community Fishing Waters and some Trout Parks with an electrofishing raft. This raft was specifically designed and purchased to sample small lakes and ponds and medium-large rivers that our traditional electrofishing boats cannot access.

- Differences in pulsator technology, hull design, and characteristics of the sampled waterbodies limit the comparability of catch per hour between samples performed using the raft and other electrofishing vessels.

Objective 5: Maintain warm water survey databases and provide support to special management projects.

- All 2024 data collected during lake and pond sampling, as well as other warmwater sampling done to support special management projects (e.g., Walleye and Northern Pike relative abundance estimates and bass population estimates), have been entered into the fish community relational database.
- Progress was made to restore access to, and improve usability of, the fish community sampling data collected prior to 2018. More information on this effort can be found in Study 3, Job 2.
- The lake and large river survey also supported a special management project on Candlewood Lake by performing one night of boat electrofishing to assess the fish community response to recent changes in aquatic vegetation.
- Statistical programs using R have been created that automatically perform basic fish community analyses to help standardize and reduce the turnaround time for fish community reports prepared for external partners, as well as aid FD staff in having this information readily available.

Moving Forward

- Continue regular monitoring of Candlewood Lake to assess fish community responses to the loss of aquatic vegetation and inform further management actions.
- Continue the sampling plan that includes supporting special management projects, rotationally sampling waters without special management, and sampling new waters as time allows.
- Continue to explore options to improve database management, especially as it concerns using pre- and post-2018 fish community data in long term analyses given their different data structures. The onboarding of a post-doctoral fellow during the summer of 2024 to develop a complete and more user-friendly database is a major step forward in this effort.
- Increase focus on evaluating the impacts of introduced gamefish on resident fish species. (Data management improvements should facilitate this work.)
- Purchasing a new electrofishing boat.

Appendix A

Detailed Lake Reports Created for Specific Purposes

Indian Lake Electrofishing Report

CT DEEP Fisheries Division

March 5, 2025

Background:

Indian Lake is an approximately 200-acre private lake along the borders of Sharon, CT and Millerton, NY. The southern and eastern shores of the lake are bordered by paved roads and permanent homes while the western shore is less developed. Indian Lake is relatively shallow (maximum depth of 15 feet), of natural origin, and is fed by bottom springs and surface runoff. The carbonate bedrock that underlies much of the watershed leads Indian Lake to have relatively "hard" water. Indeed, with a pH of 7.3 and a calcium concentration of 29 mg/L, Indian Lake is one of the waterbodies most at-risk of zebra mussel infestation in Connecticut (Biodrawversity 2013).

Plant surveys have been conducted on Indian Lake since at least 1958 (Galligan 1958; Taub 1962; Soufrine et al., 2009). These surveys indicate a long history of extensive submerged aquatic vegetation, particularly in the shallow northern arm of the lake. While aquatic vegetation is natural and desirable up to a point, the large amount of vegetation observed in Indian Lake may be influenced by the large amount of agricultural activity in the watershed (King's Mark Resource Conservation and Development Area 1983). Also, the species composition of the submerged aquatic vegetation has unfortunately changed to include at least the following three invasive species: Eurasian watermilfoil (*Myriophyllum spicatum*), variable-leaf watermilfoil (*Myriophyllum heterophyllum*), and curlyleaf pondweed (*Potamogeton crispus*).

There have been at least three prior fish community samples at Indian Lake: electrofishing samples in 1965 and 1970 and a gillnet sample in 1970 (Connecticut Board of Fish and Game 1965, 1970A, 1970B). These samples suggest that Indian Lake had good populations of Largemouth and Smallmouth bass, Chain Pickerel, Bluegill, Pumpkinseed, Redbreast Sunfish, Golden Shiner, Creek Chubsucker, and Brown Bullhead. Black Crappie, Rock Bass, Yellow Perch, and Grass Pickerel were also present at lower abundance. The abundance and average sizes of these species suggest that Indian Lake has been a potentially valuable warmwater fishery resource for many years.

The Connecticut Department of Energy and Environmental Protection Fisheries Division samples a variety of freshwater lakes and ponds, which can include public waters, private water supply reservoirs and private lakes. Gathering data from different waterbodies allows the Fisheries Division to assess the State's freshwater resources and make comparisons of fish population size, fish age, and growth based on varying usage types. For example, public waters see far more angling pressure than private lakes and closed-to-fishing water supply reservoirs. Therefore, the fish populations can be markedly different in terms of size and age structure between these different types of waterbodies. The Fisheries Division sampled Indian Lake using

night boat electrofishing in 2024 because it had not been sampled in 54 years – before the modern iteration of the Lake and Large River Electrofishing Survey began.

Key Concepts:

The Fisheries Division samples lake fish communities using boat electrofishing following standardized sampling protocols. The electrofishing boat is deployed at night in the nearshore areas of a lake. The boat is piloted at slow speed (approximately one mile per hour or slower) and DC current is pulsed into the water from an onboard generator through special stainless-steel droppers that are suspended from two probes off the bow of the boat. Stunned fish are immediately netted, counted and measured, then released back into the lake (electrofishing is mostly non-lethal).

Throughout this document, fish are sorted into three categories that roughly correspond to their trophic level (i.e., their position within the "food chain"). "Top-Level" predators reach large sizes and prey primarily on other fish, "Mid-Level" species reach intermediate sizes and may consume fish prey, and "Low-Level" species are smaller and prey primarily on invertebrates.

The relative abundance of fish species is expressed as catch-per-hour (CPH) of electrofishing time. CPH provides a standardized index of abundance that facilitates comparison of species densities among lakes or over time within a lake.

For most species, CPH is calculated for four size-classes: "stock-size" or larger (stock-size is defined as the smallest size commonly caught by anglers), "quality-size" or larger (quality-size is defined as the size at which most anglers consider the fish desirable to catch), "preferred-size" or larger (preferred size is a larger size that anglers would actively prefer to catch), and "memorable-size" (a catch that is large enough to be noteworthy and likely to be remembered by an angler).

Proportional Size Distribution (PSD) is an index of size structure that describes the percentage of all stocksize or larger fish that are of quality-size or greater. PSD is considered an index of the percentage of "big" fish within a population. For several low-level fish species there is no stock-size designation, but there is a quality-size designation. PSD values are still calculated for these species, but, in this case, the PSD is a percentage of all the sizes of fish captured that are of quality-size or greater.

Hyperlinks attached to each fish species' name under the 'Key Findings' section have been provided. These hyperlinks will lead the reader to the online version of the 'Freshwater Fishes of Connecticut' book where more in-depth information can be reviewed regarding each fish species.

Key Findings:

Five Fisheries Division employees arrived at Indian Lake on November 14, 2024, around 4:30 PM. Tanya Riva of Millerton Road granted us access to the lake via the boat launch on her property. Sampling began at 5:07 PM and was completed at 8:17 PM. Six zones were sampled

around the lake, each taking between 21 and 29 minutes. Total "on-time" (i.e., the amount of time the boat was actively putting electricity into the water) was 1 hour.

The water temperature (8.1 C [46.6 F]) was colder than our standard sampling window (10 – 27 C). Typically, catch efficiency begins to decline below 10 ℃. However, the crew had good catch-efficiency across species and size classes. Water clarity, as determined by Secchi disk, was 2.5 meters (i.e., 8.2 feet). Conductivity was 208.3 µs/cm and specific conductance was 307.7 µS/cm. The crew achieved 4.1 amps output using 15% power at low range on the Smith-Root 5.0 GPP electrofishing control box. Wind conditions were calm, and it was partly cloudy. Overall, it was an effective sample conducted under appropriate sampling conditions. In total, ten different species of fish, two species of turtle, and five species of invertebrate were sampled. Total catch and catch per hour by size class can be found in Tables 1 and 2, respectively. Figure 1 shows length-frequency histograms sorted by species. Please see Table 3 for the lengths used to create size categories.

Top-Level Species:

- Largemouth Bass (*Micropterus nigricans*), a highly sought after sport fish within Connecticut and nationally, was above average abundance for stock-size and quality-size fish, relative to the state average from public lakes open to fishing. The PSD was also above average. In addition to the large proportion of quality-size Largemouth Bass, there were several very large individuals greater than 45 cm (17.7 inches). Indian Lake has excellent trophy potential for Largemouth Bass.
- Chain Pickerel (*Esox niger*), a native apex predator, was above average abundance for stock-size, quality-size, and PSD.

Mid-Level Species:

- Bluegill (*Lepomis macrochirus*) have been widely introduced in Connecticut and have the tendency to be extremely prolific, which can result in stunted growth of their populations and depressed numbers of other coexisting sunfish species. They are highly abundant in Indian Lake with all size classes being more abundant than the state average. Although the PSD is below the state average due to a large number of small individuals, there were several trophy fish in the sample with a remarkable number of Bluegill that were eight inches or larger.
- Pumpkinseed (*Lepomis gibbosus*) are one of Connecticut's native freshwater fish species. When cooccurring with Bluegill they tend to not be as abundant. In Indian Lake, Pumpkinseeds are below the statewide average at all size classes and the PSD is below the statewide average.
- Redbreast Sunfish (*Lepomis auritis*) are a native species that is typically common in rivers and large streams but usually uncommon to rare in lakes. They are native to Atlantic coastal areas from New Brunswick to central Florida, but in Connecticut, they have a patchy distribution across all the major watersheds. Redbreast Sunfish appear to be scarce in Indian Lake with too few caught to have an informative PSD.
- Hybrid Sunfish (*Lepomis spp*) are relatively more common in private waterbodies like Indian Lake. They also tend to reach larger average sizes than either parent species. Hybrid Bluegill

x Pumpkinseed sunfish were observed in the sample. There is not a statewide average calculated for comparison, but the number and size distribution is roughly in line with what would be expected of a private waterbody in Connecticut.

- Rock Bass (*Ambloplites rupestris*) are an introduced species in Connecticut that are typically common where found. Rock Bass abundance in Indian Lake was below the state average for both stock and quality sizes. PSD was also below the state average.
- Yellow Perch (*Perca flavescens*) are native and can be found in almost all lakes, ponds, and larger streams in Connecticut. They tend to be a schooling fish species and are one of Connecticut's most popular panfishes. At Indian Lake, Yellow Perch abundance was above the state average for all size classes and PSD was also above the state average.
- Black Crappie (*Pomoxis nigromaculatus*), also called "Calico Bass", are an introduced species that occurs within all drainages in Connecticut. At Indian Lake, they are above the statewide averages for stock and quality-size fish. The PSD is slightly below the state average.
- Brown Bullhead (*Ameiurus nebulosus*) are Connecticut's most widely distributed and only native catfish species. They can be difficult to sample with nighttime boat electrofishing unless in high abundance. From our sampling data, it appears that the population of stock and quality-size individuals in the lake is generally below average. However, too few individuals were sampled to categorize the PSD or make any definitive conclusions about the Brown Bullhead population in Indian Lake.

Low-Level Species:

- Golden Shiner (*Notemigonus crysoleucas*) are found in almost all lakes, ponds, and larger streams in Connecticut. This species is our most common lake and pond minnow species and tends to be the preferred prey species (when in high abundance) for predatory gamefish. There is not a statewide stock-size designation for this species, but there is a quality-size designation. When data are analyzed for the stock-size category, all sizes of fish captured are used. Golden Shiner were slightly below the state average abundance for all and quality-size and slightly below the state average for PSD.

Invertebrate Species:

- Chinese mystery snail (*Ameiurus nebulosus*) are a widely distributed invasive species in Connecticut that was found in Indian Lake.
- Banded mystery snails (*Viviparus georgianus*) are native to the southeastern and midwestern United States but not the northeast. They have previously been reported from at least East Twin Lake, Lake Waramaug, and Bantam Lake in Connecticut.
- Asian clam (*Corbicula fluminea*) are an invasive species that is widely distributed in Connecticut and globally.
- There were two additional specimens, a pea clam and a yellow mussel, that staff were not able to positively identify to species.

Table 1: The number of each organism caught by species and size class in Indian Lake on 11-14-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	2	1	0	0	0
Black Crappie	44	31	20	19	2
Bluegill	741	548	160	136	17
Hybrid Bluegill & Pumpkinseed	8	8	5	4	1
Chain Pickerel	64	34	16	6	0
Golden Shiner	19	19	5	NA	NA
Largemouth Bass	91	66	39	17	6
Musk Turtle	4	NA	NA	NA	NA
Painted Turtle	2	NA	NA	NA	NA
Pumpkinseed	53	43	4	1	0
Rock Bass	9	9	5	3	2
Redbreast Sunfish	6	6	0	0	0
Yellow Perch	332	280	179	70	6

Table 2: The catch per hour (CPH) of each organism caught by species and size class in Indian Lake on 11-14-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	43.8	30.9 (21.3)	19.9 (17.1)	18.9	2.0	64.5 (77.2)
Bluegill	737.9	545.7 (343.3)	159.3 (142.3)	135.4	16.9	29.2 (47.9)
Brown Bullhead	2.0	1 (11.7)	0 (10.6)	0.0	0.0	0 (91.1)
Chain Pickerel	63.7	33.9 (20.6)	15.9 (6.3)	6.0	0.0	47.1 (35.8)
Golden Shiner	18.9	18.9 (20.9)	5 (6.7)	NA	NA	26.3 (39.6)
Hybrid Bluegill & Pumpkinseed	8.0	8 (NA)	5 (NA)	4.0	1.0	62.5 (NA)
Largemouth Bass	90.6	65.7 (57.9)	38.8 (29.4)	16.9	6.0	59.1 (54.8)
Musk Turtle	4.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Painted Turtle	2.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Pumpkinseed	52.8	42.8 (59.3)	4 (23.5)	1.0	0.0	9.3 (42.3)
Redbreast Sunfish	6.0	6 (33.7)	0 (12.7)	0.0	0.0	0 (34.6)
Rock Bass	9.0	9 (38.9)	5 (24.4)	3.0	2.0	55.6 (67)
Yellow Perch	330.6	278.8 (102.1)	178.3 (48.2)	69.7	6.0	63.9 (53.5)

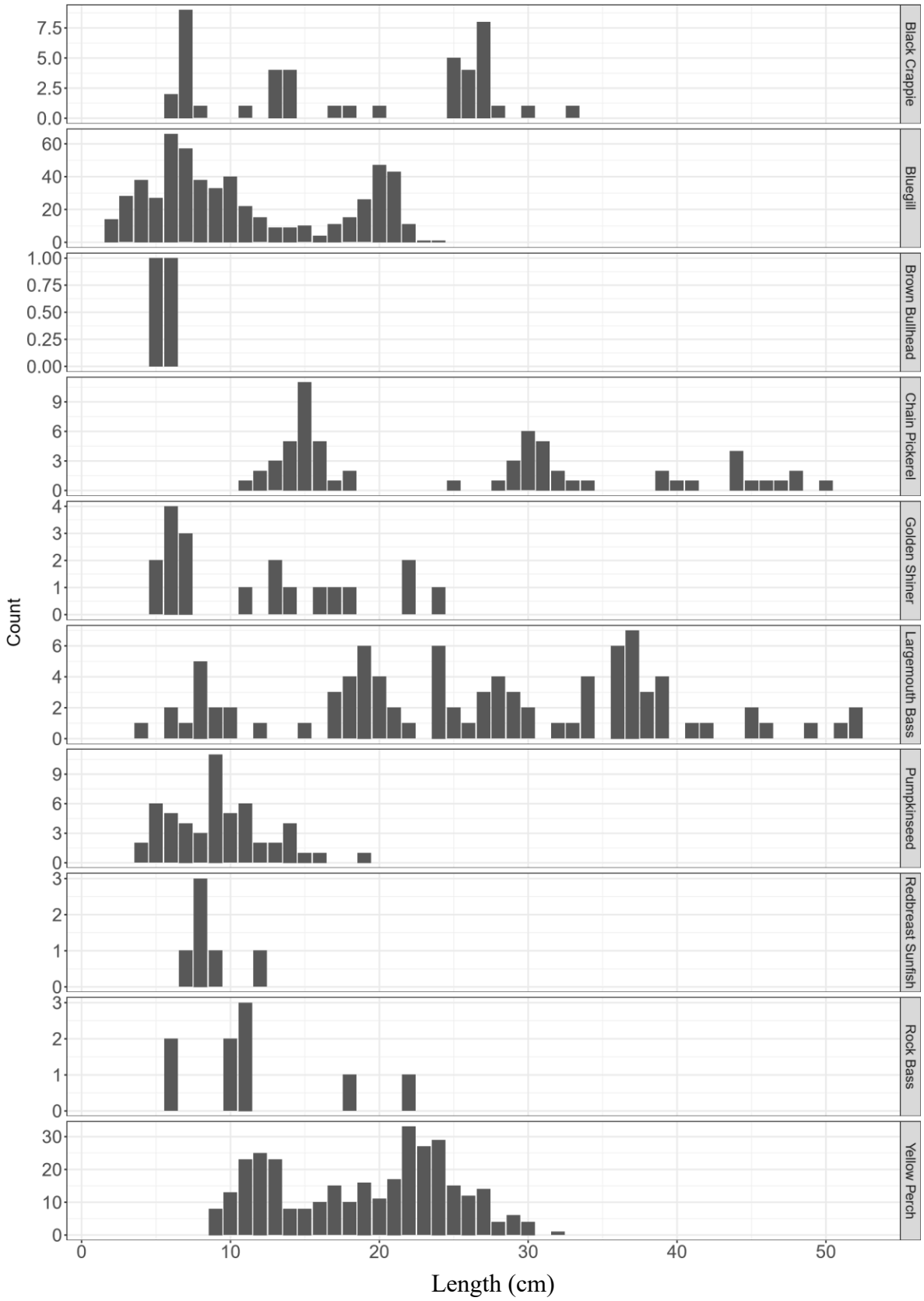


Figure 1. Length−frequency histograms by species for Indian Lake, 11−14-2024.

Discussion:

Our nighttime boat electrofishing sampling provides a single snapshot of a lake's fish population. It is not unusual for fish to experience strong year-classes when conditions are favorable and weak year-classes when conditions are unfavorable. Additionally, the time of year will affect when certain species are available for capture. That said, Indian Lake appears to have a healthy, diverse fish population overall. Interestingly, Smallmouth Bass were not observed in our 2024 sample but were previously common. Smallmouth Bass have become extirpated in many lakes and ponds in Connecticut. The shallow and heavily vegetated habitat of Indian Lake is likely better suited to Largemouth Bass, and Indian Lake had exceptionally large Largemouth Bass and Bluegill. There are several introduced plant, invertebrate, and fish species present in Indian Lake. Indian Lake is also among the most at-risk waterbodies for invasion by zebra mussels in Connecticut based on water chemistry. The lack of public access at Indian Lake is unfortunate given the high quality fishing opportunities present for several species.

If you have any questions, please feel free to contact Andrew Bade (phone: 860-490-0701; email: Andrew. Bade@ct.gov).

Appendix

Table 3. Size categories for sportfish in Connecticut. All lengths are expressed in centimeters.

Species	Stock	Quality	Preferred	Memorable
Largemouth Bass	20	30	38	45
Smallmouth Bass	20	30	35	43
Northern Pike	35	60	71	86
Chain Pickerel	25	38	45	53
Walleye	25	38	45	50
Brown Trout	20	33	40	50
Rainbow Trout	20	33	40	50
Brook Trout	20	33	40	50
Yellow Perch	13	20	25	30
White Perch	13	20	25	28
Black Crappie	13	20	25	30
Rock Bass	8	15	18	22
Sunfish	8	15	18	22
Channel Catfish	20	30	40	50
White Catfish	20	30	38	45
Brown Bullhead	15	23	30	35
Golden Shiner	0	15	NA	NA
Alewife	0	14	NA	NA
White Sucker	0	30	NA	NA
American Eel	0	38	NA	NA

Connecticut
Department of Energy &
Environmental Protection

Christopher P. McDowell
Fisheries Biologist 2
Connecticut Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division
Eastern District Headquarters
209 Hebron Road
Marlborough, CT 06447

January 28, 2025

Ms. Sally Thatcher
Doolittle Lake Company
Norfolk, CT 06058

Dear Ms. Thatcher:

Thank you for inviting us to sample the fish population in Doolittle Lake on May 30, 2024. Please find attached a brief summary report of our 2024 results.

Sincerely;

Christopher P. McDowell

Christopher P. McDowell
860-707-2767
christopher.mcdowell@ct.gov

Attachment: *Summary Report for the May 30, 2024, Fisheries Sample of Doolittle Lake, Norfolk, CT by the Connecticut Department of Energy and Environmental Protection Fisheries Division*

Summary Report for the May 30, 2024, Fisheries Sample of Doolittle Lake, Norfolk, CT by the Connecticut Department of Energy and Environmental Protection Fisheries Division

Background

- Doolittle Lake is in the town of Norfolk, Litchfield County, Connecticut. Controlled by the Doolittle Lake Company, the lake is private and not open to the public for fishing. The lake is natural in origin and had the water level raised by an eight-foot masonry dam and an earthen dike, creating a 190.4-acre impoundment. It has a maximum depth of approximately 60 feet, with an average depth of approximately 29.8 feet. The lake is thermally stratified with the deep water having abundant dissolved oxygen. There are two unnamed streams associated with the lake. One flows into the lake on the northern end, and one flows out of the lake at the dam.

- Pre-1959 historic stocking records indicate that Doolittle Lake was stocked with Lake Trout, Smallmouth Bass, salmon, catfish, Rainbow Trout, Chain Pickerel, and Yellow Perch ("A Fishery Survey of the Lakes and Ponds of Connecticut", 1959).

- As stated in "A Fishery Survey of the Lakes and Ponds of Connecticut" (1959), on October 8, 1957, biologists from the Connecticut State Board of Fisheries and Game reclaimed (eradicated and then restocked) the lake using the chemical Rotenone (a piscicide). After reclamation, Connecticut Department of Energy and Environmental Protection (CT DEEP) Fisheries Division's (FD) records that are on file at our Western District Headquarters located at 2065 Thomaston Road, Watertown, Connecticut 06795, show that the Doolittle Lake Company, working with State fisheries biologists, stocked various numbers, sizes, and strains of trout (i.e., Rainbow, Brown, and Brook Trout, and a Brown Trout x Atlantic Salmon cross) into the lake from 1958 into the 1990s. From these stockings, a lake spawning strain of Brook Trout became established that created an exciting, directed fishery for lake residents. It was determined through sampling and fly fishermen testimony that Hexagenia mayflies were the main source of food for the trout in the lake. Unfortunately, after a number of years of success, the Brook Trout population in the lake began to mysteriously decline, as did the population of Hexagenia mayflies. At this same time, it was found that Golden Shiners, Brown Bullhead and American Eel had made their way into the lake. Coinciding with the decline in the Brook Trout population, the Brown Trout population began to thrive with individuals growing quite large (19-21 inches). Research into why the Hexagenia mayfly and Brook Trout populations declined pointed towards winter drawdowns resulting in nearshore habitat loss during biologically important times of the year for both the Brook Trout and the Hexagenia mayflies. It was also hypothesized that the increasing population of Golden

Shiner could be impacting the Hexagenia mayflies as well. With the decline in Hexagenia mayflies the macroinvertebrate composition within the lake shifted to being dominated by phantom midges, which likely outcompeted any re-establishment attempts by Hexagenia mayflies and these phantom midges were readily eaten by Golden Shiners allowing for the Golden Shiner population to increase, but the phantom midges were less effectively foraged upon by the lake's Brook Trout. However, the Brown Trout population was able to thrive on the increasing Golden Shiner population. This simple fish community with a trophy Brown Trout fishery continued until the early 2000s when Yellow Perch were first discovered. Yellow Perch were able to outcompete the Golden Shiners and became established as the primary forage fish. As the Yellow Perch population increased, the Golden Shiner population decreased, as did the Brown Trout population due to the change in the forage base. Additionally, the number of trout that the Doolittle Lake Company stocked into the lake declined over time due to the increased cost per trout outpacing their allotted budget. At some point after 2009, Largemouth Bass were first observed which suggests a recent introduction.

- In 2023, a request to the CT DEEP FD to sample Doolittle Lake was made by Ms. Sally Thatcher (a member of the Doolittle Lake Company) to assess the status of the lake's fish population.

- The FD is continually trying to obtain an adequate "picture" of Connecticut's freshwater fisheries resources and therefore samples a variety of freshwater lakes and ponds, which
    - can include public waters, private water supply reservoirs and private lakes. Gathering data from different waterbodies allows the FD to assess the State's freshwater resources and make comparisons of fish population size, fish age, and growth based on varying usage types. For example, public waters see far more angling pressure than private lakes and closed-to-fishing water supply reservoirs. Therefore, the fish populations can be markedly different in terms of size and age structure between these different types of waterbodies.

Key Concepts

- The FD samples lake fish populations using boat electrofishing following standardized sampling protocols. The electrofishing boat is deployed at night in the nearshore areas of a lake. The boat is piloted at slow speed (approximately one mile per hour or slower) and DC current is pulsed into the water from an onboard generator through special stainlesssteel droppers that are suspended from two probes off the bow of the boat. Stunned fish are immediately netted, counted and measured, then released back into the lake (electrofishing is mostly non-lethal).

- Throughout this document, fish are sorted into three categories that roughly correspond to their trophic level (i.e. their position within the "food chain"):
    - "Top-Level": predators that reach large sizes and prey primarily on other fish.
    - "Mid-Level": species that reach intermediate sizes and may consume fish prey.
    - "Low-Level": smaller species that prey primarily on invertebrates.

- The relative abundance of fish species is expressed as catch-per-hour (CPH) of electrofishing time. CPH provides a standardized index of abundance that facilitates comparison of species densities among lakes or over time within a lake.

- For most species, CPH is calculated for two size-classes: fish that are "stock-size" or larger (stock size is defined as the smallest size commonly caught by anglers), and those that are "quality-size" or larger (quality-size is defined as the size at which most anglers consider the fish desirable to catch). See Appendix A for stock- and quality-size length values of popular Connecticut fish species.

- Proportional Size Distribution (PSD) is an index of size structure that describes the percentage of all stock-size or larger fish that are of quality-size or greater. PSD is considered an index of the percentage of "big" fish within a population. For several lowlevel fish species there is no stock-size designation, but there is a quality-size designation. PSD values are still calculated for these species, but, in this case, the PSD is a percentage of all the sizes of fish captured that are of quality-size or greater.

- Hyperlinks attached to each fish species' name under the 'Key Findings' section have been provided. These hyperlinks will lead the reader to the online version of the "Freshwater Fishes of Connecticut" book where more in-depth information can be reviewed regarding each fish species.

Key Findings

- Four FD employees arrived at Doolittle Lake on May 30, 2024, around 8:00pm. A member of the Doolittle Lake Company attended the sample. Sampling began at 8:58pm on May 30, 2024, and was completed at 12:24am on May 31, 2024. Six zones were sampled around the lake, taking between 23-31 minutes to sample each zone. Total "ontime" (i.e., the time when the boat was actively putting electricity into the water to stun and capture fish) was 1.10 hours.

- Sampling conditions were considered 'good' by the team leader.

- Water clarity, as determined by Secchi disk, was between 2-2.5 meters (i.e., ~6.6-8.2 feet). Water temperature was 20.5 ºC (i.e., ~68.9 ºF).

- Only five different fish species were captured (Appendix B).
- Appendix C contains a set of length-frequency graphs showing the size structure of each species captured during sampling.
- **Top-Level Fish Species (See Appendix B and C)**
    - Largemouth Bass (*Micropterus salmoides*), a highly sought after sport fish within Connecticut and nationally, was present in above average abundance for both stock- and quality-size fish relative to the state average from public lakes open to fishing. However, the PSD was below the state average.
- **Mid-Level Species (Appendix B and C)**
    - Brown Bullhead (*Ameiurus nebulosus*) is Connecticut's most widely distributed and only native catfish species. This species can be difficult to sample with nighttime boat electrofishing unless present in high abundance. As only three individuals were captured during this sample, no calculations could be carried out to determine CPH and PSD rankings because of too few individuals.
    - Yellow Perch (*Perca flavescens*) is found in almost all lakes, ponds and larger streams in Connecticut. It tends to be a schooling species and is one of Connecticut's most popular panfish. An impressive 793 Yellow Perch were captured during this sample. Compared to the state average from public lakes open to fishing, Yellow Perch in Doolittle Lake were above average in abundance for both stock- and quality-size fish. However, the PSD was below the state average.
    - Pumpkinseed (*Lepomis gibbosus*) is one of Connecticut's native freshwater fish species. Quite surprisingly, this was the only sunfish species captured during the sample, which is extremely rare as nearly every waterbody in Connecticut contains the State's most common sunfish species, Bluegill. Of the Pumpkinseed captured, the stock-size individuals were above the State average abundance. The quality-size individuals were average compared to the State average abundance and the PSD was below the State average when compared to public lakes open to fishing.
- **Low-Level Species (Appendix B and C)**
    - Golden Shiner (*Notemigonus crysoleucas*) can be found in almost all lakes, ponds, and larger streams in Connecticut. This species is Connecticut's most common lake and pond minnow species and is often the preferred prey species, when in high abundance, for predatory sport fish. There is not a statewide

stocksize designation for Golden Shiner, so all fish captured are used to calculate a stock-size value. There is, however, a quality-size designation (Appendix A). Very few (i.e., 13) individuals were captured, so interpretation of the stock, quality and PSD values should be made with caution. Stock-size individuals were below the state average, whereas quality-size individuals and PSD were above the state average for public lakes open to fishing.

Summary

The fish community in Doolittle Lake lacks the diverse assemblage of warmwater fish species typically found in Connecticut lakes and ponds. The reclamation of the lake 67 years ago and the strict focus of the past re-stocking program on trout only is likely responsible for the relatively low fish diversity. The below average PSD for all the sportfish sampled in Doolittle Lake shows there is a very simple fish community with very low population densities for these sportfish species. The current assemblage of fish species in the lake likely came from angler releases from other waterbodies and/or natural immigration through the unnamed feeder stream on the northern end of the lake.

Doolittle Lake is one of a small number of waterbodies that does not contain the nonnative sunfish species Bluegill, which are nearly ubiquitous throughout Connecticut's lakes and ponds. In fact, Largemouth Bass was the only non-native species present in the sample. One native species that occurred historically but was notably absent from the sample is Chain Pickerel.

Lakes and ponds are dynamic systems and fish populations can fluctuate in abundance from year-to-year due to habitat changes and/or climatic conditions. Because a single night sample is a "snapshot" in time, it may not provide a complete picture of the fish diversity in a lake or population size structure, especially if some fish species are in extremely low densities in the lake. It is not unusual for fish to experience strong year-classes when conditions are favorable and the reverse when conditions are unfavorable. This is why the FD tries to sample locations multiple times over multiple years to get a better handle on the status of fish populations.

Additionally, electrofishing catch efficiency varies by species and time of year. For example, at 68.9ºF (20.5 ºC), which was the water temperature at the time of the sample, coldwater-dependent fishes like trout and salmon would likely seek thermal refuge in deeper waters below the thermocline where they would not be sampled by night boat electrofishing. If we were to try to sample specifically for coldwater-dependant fishes using night boat electrofishing we would focus our efforts when water temperatures were between 50ºF-65ºF (10ºC-18ºC). Catfish species are also not sampled effectively by standard electrofishing approaches and can be better studied using low frequency pulse rates or baited hoop nets. For these reasons, complementary sampling approaches can give a fuller picture of the fish community in a waterbody like Doolittle Lake where there are habitats, and possibly species, that are not sampled effectively by electrofishing alone.

It would be the recommendation of the CT DEEP FD that, if the Doolittle Lake Company would like to enhance the fish community for its residents, it considers assessing various environmental aspects of the lake, such as dissolved oxygen, the plankton and invertebrate communities, and habitat types (i.e., vegetation diversity and substrate types). Additional fish community sampling, such as fishing logs from residents, could also help identify additional species that may be present. From there, recommendations could be made as to what type of fishery or fisheries would be best suited for the lake.

If you have any questions or would like to discuss any fisheries management options moving forward please feel free to contact Chris McDowell (phone: 860.707.2767; email: christopher.mcdowell@ct.gov) or Andrew Bade (phone: 860.490.0701; email: andrew.bade@ct.gov).

Appendix A. Stock-size and quality-size length cutoffs for various Connecticut fish species. Scientific names are listed in parenthesis next to the common name of the fish species.

	Metric (cm)			**English (inches)**	
Species	Stock Size	Quality Size		Stock Size	Quality Size
Top-Level					

Largemouth Bass (*Micropterus salmoides*)	20	30		8	12
Smallmouth Bass (*Micropterus dolomieu*)	20	30		8	12
Chain Pickerel (*Esox niger*)	25	38		10	15
Mid-Level					
Black Crappie (*Pomoxis nigromaculatus*)	13	20		5	8
White Perch (*Morone americana*)	13	20		5	8
Yellow Perch (*Perca flavescens*)	13	20		5	8
Brown Bullhead (*Ameiurus nebulosus*)	15	22		6	9
White Catfish (*Ameiurus catus*)	20	30		8	12
Channel Catfish (*Ictalurus punctatus*)	20	30		8	12
Bluegill (*Lepomis macrochirus*)	8	15		3	6
Pumpkinseed (*Lepomis gibbosus*)	8	15		3	6
Green Sunfish (*Lepomis cyanellus*)	8	15		3	6
Redbreast Sunfish (*Lepomis auritus*)	8	15		3	6
Low-Level					
Golden Shiner (*Notemigonus crysoleucas*)	-	15		-	6
White Sucker (*Catostomus commersonii*)	-	30		-	12

Appendix B. Total number of each fish species sampled, all-size catch-per-hour (CPH), stock-size CPH, and quality-size CPH and proportional size distribution (PSD) of captured fish species in Doolittle Lake, Norfolk, CT during the May 30, 2024, night boat electrofishing sample relative to the State average for public lakes. Entries of "Average" indicate CPH was within ± 10% or PSD was within ± 5 percentage points of the State average. Scientific names are listed in parenthesis next to the common name of the fish species.

			Stock-Size CPH			Quality-Size CPH			Doolittle Lake PSD Relative to State Average
Species	*# Sampled*	*All Size CPH*	*Doolittle Lake*	*State Average*	*StockSize CPH Ranking*	*Doolittle Lake*	*State Average*	*Quality-Size CPH Ranking*	
Largemouth Bass (*Micropterus salmoides*)	193	192.0	96.5	57.9	ABOVE	43.8	29.4	ABOVE	BELOW
Brown Bullhead (*Ameiurus nebulosus*)	3	TF[1]	TF	11.7	NC2	TF	10.6	NC	NC
Yellow Perch (*Perca flavescens*)	7933	788.8	676.4	102.1	ABOVE	98.5	48.2	ABOVE	BELOW
Pumpkinseed (*Lepomis gibbosus*)	171	170.1	152.2	59.3	ABOVE	22.9	23.5	AVERAGE	BELOW
Golden Shiner (*Notemigonus crysoleucas*)[4]	13	12.9	12.9	20.9	BELOW	11.9	6.7	ABOVE	ABOVE

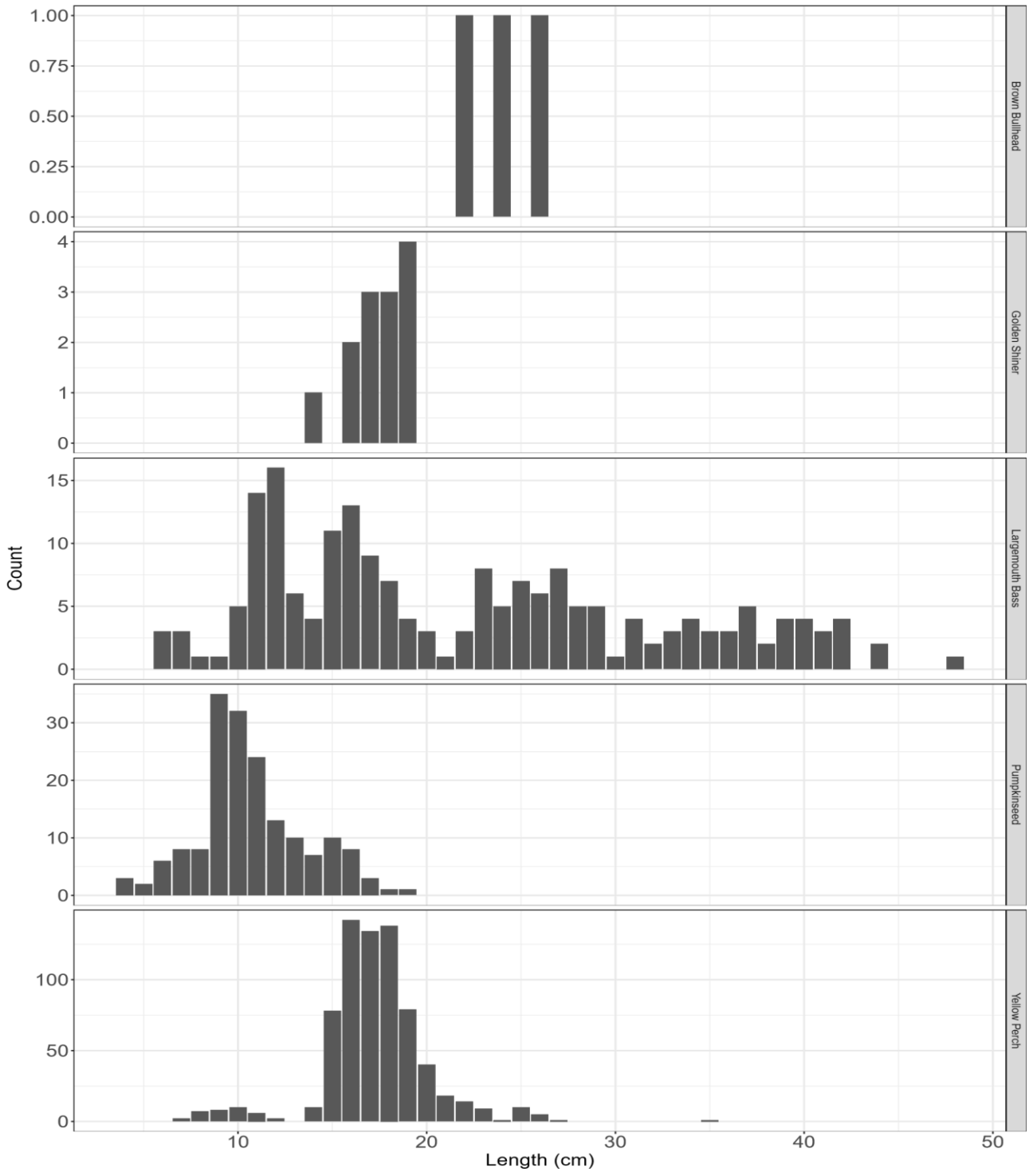
[1]TF = Too few individuals were caught to determine a meaningful ranking.

[2]NC = Not calculated.

[3]Seventy-eight Yellow Perch were counted but not measured. They are not included in the calculations of stock- and quality-size CPH.

[4]For Golden Shiner there is no specific stock-size designation. Instead, a value for the stock-size column is derived from all the size classes sampled. There are, however, specific quality-size values. PSD values are calculated for these species, but, in this case, the PSD value is a percentage of the all-size fish captured that are of quality-size or greater.

Appendix C. Length-frequency graphs for fish species sampled by the Connecticut Department of Energy and Environmental Protection Fisheries Division using nighttime boat electrofishing in Doolittle Lake, Norfolk, Connecticut on May 30, 2024. (**Note – the values for the x-axis [i.e. "Length (cm)" are the same for all graphs. The scaling value for the y-axis [i.e. "Count"] is different for each graph due to the number of individuals caught being widely different for certain species*.)


Brown Bullhead
Golden Shiner
Largemouth Bass
Pumpkinseed
Yellow Perch
Count
Length (cm)
1.00
0.75
0.50
0.25
0.00
4
3
2
1
0
15
10
5
0
30
20
10
0
100
50
0
10
20
30
40
50

Connecticut
Department of Energy &
Environmental Protection

March 5th, 2025

William Henley
Aquatic Resource Scientist
South Central Connecticut Regional Water Authority
90 Sargent Drive | New Haven, CT 06511

SUBJECT: Peat Swamp Reservoir Night Boat Electrofishing Summary Report

Dear Mr. Henley,

Thank you again for allowing us to sample the fish population in Peat Swamp Reservoir, which we did on the evening of October 9, 2024. Please find attached a summary report describing what was observed during the sample as well as background information to help contextualize the findings.

Sincerely,

Andrew Bade, PhD
Supervising Fisheries Biologist
Bureau of Natural Resources Fisheries Division
Connecticut Department of Energy & Environmental Protection
2065 Thomaston Road, Watertown, CT 06795

CC: Peter Aarrestad
Christopher McDowell
Spencer Mallette

Peat Swamp Reservoir Electrofishing Report

CT DEEP Fisheries Division

March 5, 2025

Background:

Peat Swamp Reservoir in Seymour, Connecticut is an impoundment of Beaver Brook that was created with the construction of the Peat Swamp Reservoir Dam in 1925. Peat Swamp Reservoir was created as a water supply reservoir and is owned by the South Central Regional Water Authority but is not currently an active source of drinking water. Other than a seine sample in 2024 to check for the presence of mosquitofishes (none were observed), little is known about the fish community in Peat Swamp Reservoir.

The Connecticut Department of Energy and Environmental Protection Fisheries Division conducted a night boat electrofishing sample at Peat Swamp Reservoir on October 9th, 2024. The Fisheries Division samples a variety of freshwater lakes and ponds, which can include public waters, private water supply reservoirs, and private lakes. Gathering data from different waterbodies allows the Fisheries Division to assess the State's freshwater resources and make comparisons of fish population size, fish age, and growth based on varying usage types. For example, public waters see far more angling pressure than private lakes and closed-tofishing water supply reservoirs. Therefore, the fish populations can be markedly different in terms of size and age structure between these different types of waterbodies. The Fisheries Division sampled Peat Swamp Reservoir using night boat electrofishing in 2024 because it has not been sampled yet and permission to do so was granted by the South Central Regional Water Authority.

Key Concepts:

The Fisheries Division samples lake fish communities using boat electrofishing following standardized sampling protocols. The electrofishing boat is deployed at night in the nearshore areas of a lake. The boat is piloted at slow speed (approximately one mile per hour or slower) and DC current is pulsed into the water from an onboard generator through special stainless-steel droppers that are suspended from two probes off the bow of the boat. Stunned fish are immediately netted, counted and measured, then released back into the lake (electrofishing is mostly non-lethal).

The relative abundance of fish species is expressed as catch-per-hour (CPH) of electrofishing time. CPH provides a standardized index of abundance that facilitates comparison of species densities among lakes or over time within a lake.

For most species, CPH is calculated for four size-classes: “stock-size” or larger (stock-size is defined as the smallest size commonly caught by anglers), “quality-size” or larger (quality-size is defined as the size at which most anglers consider the fish desirable to catch), “preferred-size” or larger (preferred size is a larger size that anglers would actively prefer to catch), and “memorable-size” (a catch that is large enough to be noteworthy and likely to be remembered by an angler).

Proportional Size Distribution (PSD) is an index of size structure that describes the percentage of all stocksize or larger fish that are of quality-size or greater. PSD is considered an index of the percentage of “big” fish within a population. For several low-level fish species there is no stock-size designation, but there is a quality-size designation. PSD values are still calculated for these species, but, in this case, the PSD is a percentage of all the sizes of fish captured that are of quality-size or greater.

Key Findings:

Four Fisheries Division employees and a South Central Regional Water Authority representative arrived at Peat Swamp Reservoir on October 9, 2024, around 6:00 PM. Staff accessed the lake by launching just west of the dam. Sampling began at 7:02 PM and was completed at 10:15 PM. Six zones were sampled around the lake, each taking between 23 and 35 minutes. Total “on-time” (i.e., the amount of time the boat was actively putting electricity into the water) was 1 hour.

The water temperature was (19.7 C). Water clarity, as determined by Secchi disk, was 2 meters. Conductivity was 89.4 µs/cm and specific conductance was 99.6 µS/cm. The crew achieved 3.8 amps output using 80% power at low range on the Smith-Root 5.0 GPP electrofishing control box. There was a light breeze and it was partly cloudy. Overall, it was an effective sample conducted under appropriate sampling conditions. In total, eight species of fish and one species of turtle were sampled. Please see Tables 1 and 2 for a summary of the count and CPH by species and size class. See Figure 1 for length-frequency histograms by species. See Table 3 for the lengths used to create size categories for popular Connecticut fish species.

Table 1. The number of each organism caught by species and size class in Peat Swamp Reservoir on 10-09-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	5	5	4	NA	NA
Brown Bullhead	1	0	0	0	0
Black Crappie	19	2	2	2	0
Bluegill	1259	267	71	61	5
Hybrid Bluegill & Pumpkinseed	3	3	2	2	0

Chain Pickerel	100	25	12	7	2
Largemouth Bass	158	57	49	19	0
Painted Turtle	1	NA	NA	NA	NA
Pumpkinseed	289	213	26	21	0
Yellow Perch	341	144	107	73	39

Table 2: The catch per hour (CPH) of each organism caught by species and size class in Peat Swamp Reservoir on 2024-10-09. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	5.0	5 (24.3)	4 (6.4)	NA	NA	80 (42.9)
Black Crappie	18.8	2 (21.3)	2 (17.1)	2.0	0.0	100 (77.2)
Bluegill	1247.9	264.6 (343.3)	70.4 (142.3)	60.5	5.0	26.6 (47.9)
Brown Bullhead	1.0	0 (11.7)	0 (10.6)	0.0	0.0	NaN (91.1)
Chain Pickerel	99.1	24.8 (20.6)	11.9 (6.3)	6.9	2.0	48 (35.8)
Hybrid Bluegill & Pumpkinseed	3.0	3 (NA)	2 (NA)	2.0	0.0	66.7 (NA)
Largemouth Bass	156.6	56.5 (57.9)	48.6 (29.4)	18.8	0.0	86 (54.8)
Painted Turtle	1.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Pumpkinseed	286.5	211.1 (59.3)	25.8 (23.5)	20.8	0.0	12.2 (42.3)
Yellow Perch	338.0	142.7 (102.1)	106.1 (48.2)	72.4	38.7	74.3 (53.5)

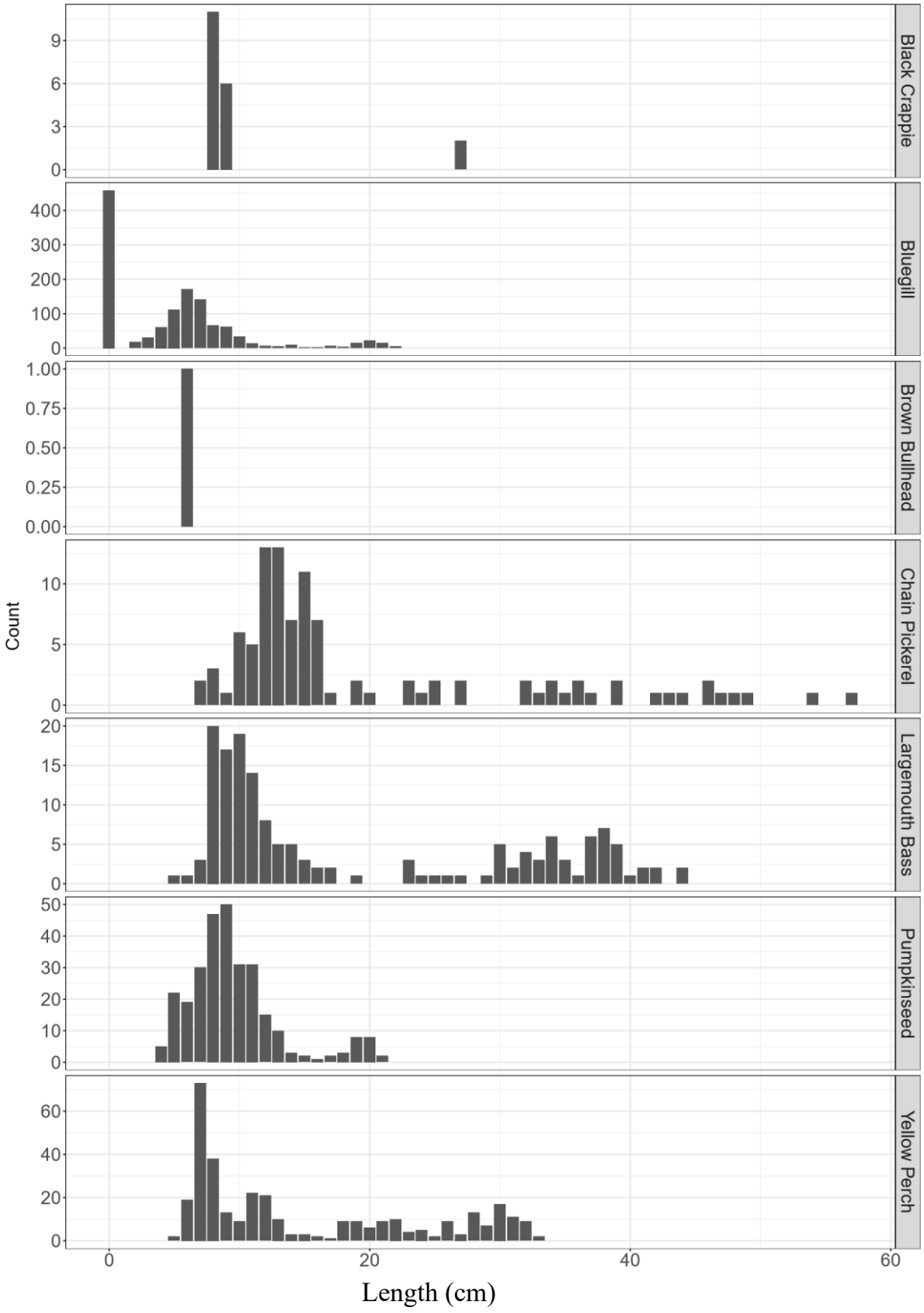


Figure 1. Length−frequency histograms by species for Peat Swamp Reservoir, 10-09-2024.

Discussion:

Our nighttime boat electrofishing sampling provides a single snapshot of a lake's fish population. It is not unusual for fish to experience strong year-classes when conditions are favorable and weak year-classes when conditions are unfavorable. Additionally, the time of year will affect when certain species are available for capture. That said, Peat Swamp Reservoir appears to have a healthy, diverse fish population overall.

Peat Swamp Reservoir has the potential to support strong fisheries for Yellow Perch, Chain Pickerel, and Largemouth Bass. Its proximity to urban centers in Ansonia and New Haven would make it a unique fishing opportunity for a large number of Connecticut anglers. The Fisheries Division encourages the South Central Regional Water Authority to consider granting public fishing access to Peat Swamp considering that it is not an active source for drinking water.

If you have any questions, please feel free to contact Andrew Bade (phone: 860-490-0701; email: Andrew. Bade@ct.gov).

Appendix:

Table 3. Size categories for sportfish in Connecticut. All lengths are expressed in centimeters.

Species	Stock	Quality	Preferred	Memorable
Largemouth Bass	20	30	38	45
Smallmouth Bass	20	30	35	43
Northern Pike	35	60	71	86
Chain Pickerel	25	38	45	53
Walleye	25	38	45	50
Brown Trout	20	33	40	50
Rainbow Trout	20	33	40	50
Brook Trout	20	33	40	50
Yellow Perch	13	20	25	30
White Perch	13	20	25	28
Black Crappie	13	20	25	30
Rock Bass	8	15	18	22
Sunfish	8	15	18	22
Channel Catfish	20	30	40	50
White Catfish	20	30	38	45
Brown Bullhead	15	23	30	35
Golden Shiner	0	15	NA	NA
Alewife	0	14	NA	NA
White Sucker	0	30	NA	NA
American Eel	0	38	NA	NA

Appendix B

2024 Catch Per Unit Effort and Length Frequency Histogram Reports for Lake and Pond Samples Where All Species Sampling Was Performed

AMOS LAKE (PRESTON)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Amos Lake on 06-05-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	39	39	3	0	0
Alewife	235	231	3	0	0
Brown Bullhead	21	21	18	12	0
Bluegill	830	712	151	43	0
Chain Pickerel	17	9	6	2	1
Golden Shiner	7	7	4	0	0
Largemouth Bass	53	25	13	5	3
Pumpkinseed	153	144	15	0	0
Redbreast Sunfish	3	3	0	0	0
Yellow Perch	47	45	16	2	1

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Amos Lake on 06-05-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Alewife	255.9	251.5 (53.3)	3.3 (6.9)	0.0	0.0	1.3 (23.4)
American Eel	42.5	42.5 (24.3)	3.3 (6.4)	0.0	0.0	7.7 (42.9)
Bluegill	903.8	775.3 (343.3)	164.4 (142.3)	46.8	0.0	21.2 (47.9)
Brown Bullhead	22.9	22.9 (11.7)	19.6 (10.6)	13.1	0.0	85.7 (91.1)
Chain Pickerel	18.5	9.8 (20.6)	6.5 (6.3)	2.2	1.1	66.7 (35.8)
Golden Shiner	7.6	7.6 (20.9)	4.4 (6.7)	0.0	0.0	57.1 (39.6)
Largemouth Bass	57.7	27.2 (57.9)	14.2 (29.4)	5.4	3.3	52 (54.8)
Pumpkinseed	166.6	156.8 (59.3)	16.3 (23.5)	0.0	0.0	10.4 (42.3)
Redbreast Sunfish	3.3	3.3 (33.7)	0 (12.7)	0.0	0.0	0 (34.6)
Yellow Perch	51.2	49 (102.1)	17.4 (48.2)	2.2	1.1	35.6 (53.5)

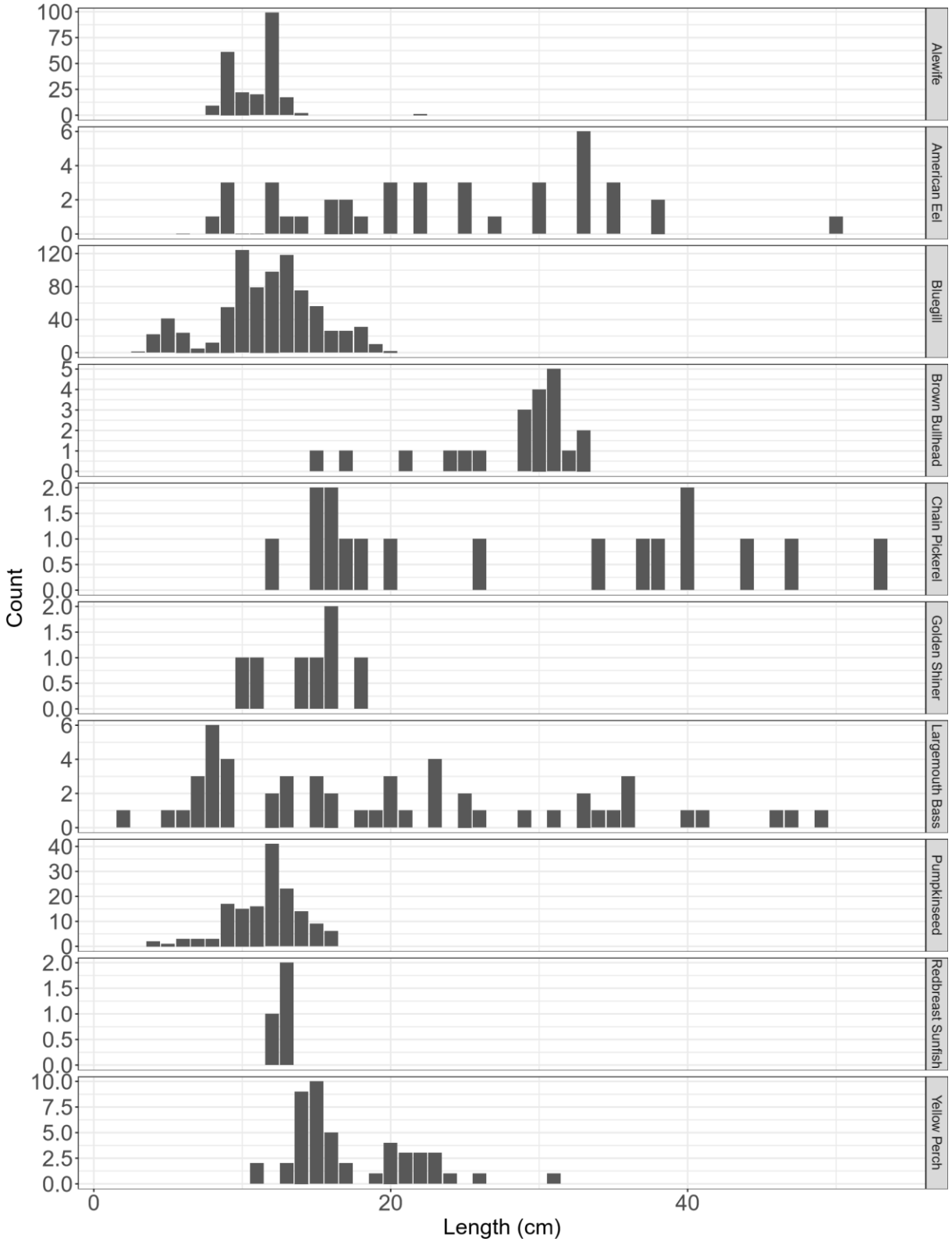


Figure 1. Length frequency histogram for Amos Lake (Preston), 06-05-2024.

BASHAN LAKE (EAST HADDAM)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Bashan Lake on 05-20-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	2	2	2	NA	NA
Brown Bullhead	1	1	1	1	0
Bluegill	354	321	111	85	47
Brown Trout, Stocked	1	1	0	0	0
Hybrid Bluegill and Pumpkinseed	1	1	1	1	0
Chain Pickerel	8	8	5	2	0
Banded Killifish	2	0	0	0	0
Largemouth Bass	67	59	55	40	12
Hybrid Pumpkinseed and Redbreast	1	1	1	1	0
Pumpkinseed	28	28	23	17	2
Hybrid Bluegill and Redbreast	2	2	2	2	1
Redbreast Sunfish	160	131	33	2	0
Rainbow Trout, Stocked	1	1	1	0	0
Smallmouth Bass	33	13	3	0	0
White Catfish	15	14	11	1	0
Yellow Perch	296	277	54	7	0

Table 2. The catch per hour of each organism caught by species and size class in Bashan Lake on 05-20-2024.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	2	2	2	NA	NA	100
Brown Bullhead	1	1	1	1	0	100
Bluegill	354	321	111	85	47	34.6
Brown Trout, Stocked	1	1	0	0	0	0
Hybrid Bluegill & Pumpkinseed	1	1	1	1	0	100
Chain Pickerel	8	8	5	2	0	62.5
Banded Killifish	2	0	0	0	0	NaN
Largemouth Bass	67	59	55	40	12	93.2
Hybrid Pumpkinseed & Redbreast	1	1	1	1	0	100
Pumpkinseed	28	28	23	17	2	82.1
Hybrid Bluegill & Redbreast	2	2	2	2	1	100
Redbreast Sunfish	160	131	33	2	0	25.2
Rainbow Trout, Stocked	1	1	1	0	0	100
Smallmouth Bass	33	13	3	0	0	23.1
White Catfish	15	14	11	1	0	78.6
Yellow Perch	296	277	54	7	0	19.5

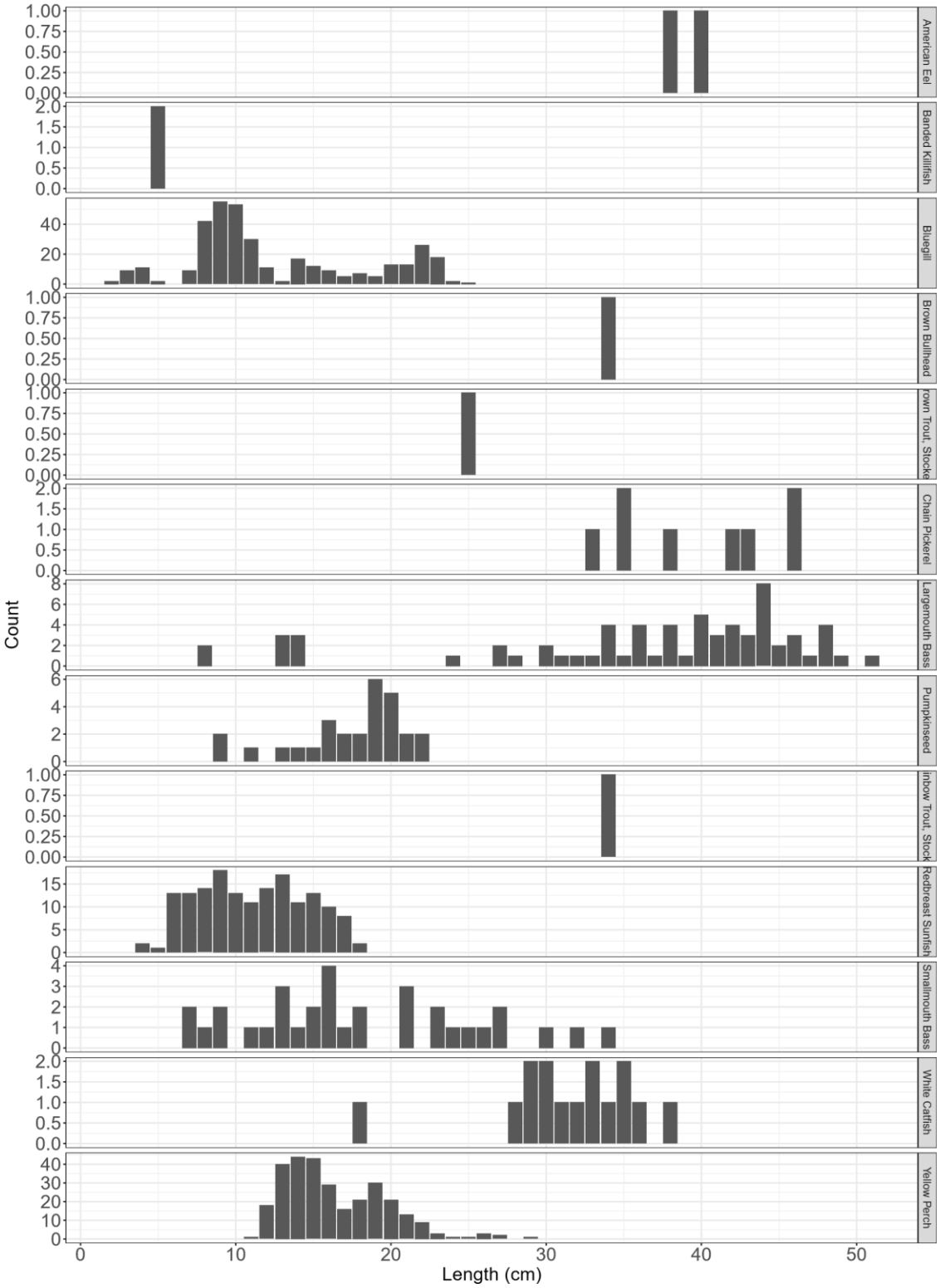


Figure 2. Length frequency histogram for Bashan Lake (Preston), 05-20-2024.

BEACHDALE POND (VOLUNTOWN)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Beachdale Pond on 05-11-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	3	3	3	1	0
Bluegill	18	18	14	6	0
Golden Shiner	24	24	15	NA	NA
Largemouth Bass	3	1	1	0	0
Pumpkinseed	2	2	1	0	0
Yellow Perch	9	9	9	7	1

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Beachdale Pond on 2024-11-05. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Bluegill	160.0	160 (343.3)	124.4 (142.3)	53.3	0.0	77.8 (47.9)
Brown Bullhead	26.7	26.7 (11.7)	26.7 (10.6)	8.9	0.0	100 (91.1)
Golden Shiner	213.3	213.3 (20.9)	133.3 (6.7)	NA	NA	62.5 (39.6)
Largemouth Bass	26.7	8.9 (57.9)	8.9 (29.4)	0.0	0.0	100 (54.8)
Pumpkinseed	17.8	17.8 (59.3)	8.9 (23.5)	0.0	0.0	50 (42.3)
Yellow Perch	80.0	80 (102.1)	80 (48.2)	62.2	8.9	100 (53.5)

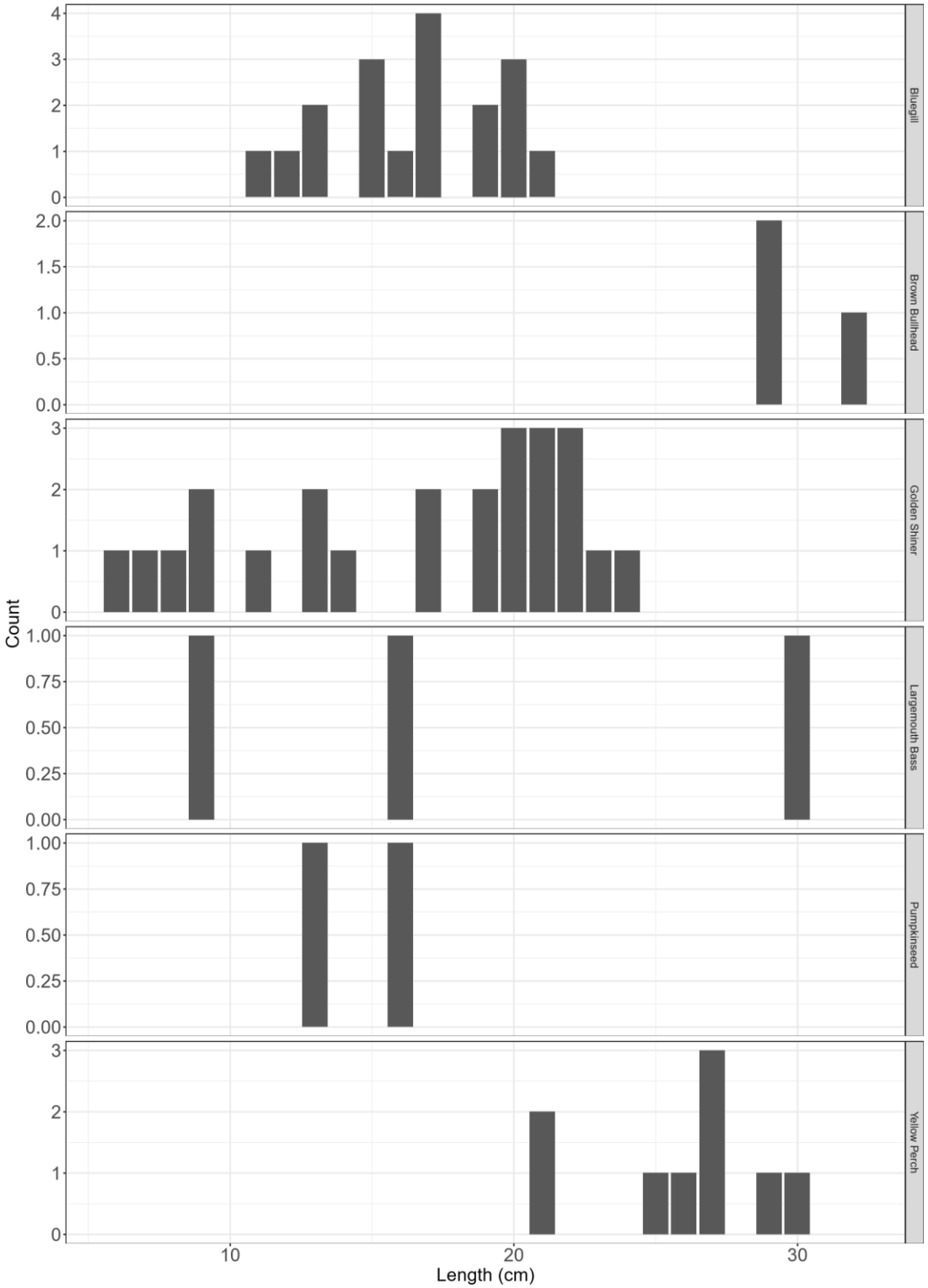


Figure 3. Length frequency histogram for Beachdale Pond, 05-11-2024.

BIRGE POND (BRISTOL)

(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1. The number of each organism caught by species and size class in Birge Pond on 05-08-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	142	136	9	0	0
Black Crappie	6	6	1	0	0
Bluegill	83	79	34	0	0
Brook Trout, Stocked	1	1	0	0	0
Common Carp	2	0	0	0	0
Channel Catfish	1	1	1	1	0
Golden Shiner	2	2	2	0	0
Largemouth Bass	3	3	3	1	1
Pumpkinseed	10	10	3	0	0
Rainbow Trout, Stocked	1	1	0	0	0
Yellow Perch	46	41	4	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Birge Pond on 05-08-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	9.7	9.7 (21.3)	1.6 (17.1)	0.0	0.0	16.7 (77.2)
Bluegill	133.8	127.3 (343.3)	54.8 (142.3)	0.0	0.0	43 (47.9)
Brook Trout, Stocked	1.6	1.6 (NA)	0 (NA)	0.0	0.0	0 (NA)
Brown Bullhead	228.8	219.2 (11.7)	14.5 (10.6)	0.0	0.0	6.6 (91.1)
Channel Catfish	1.6	1.6 (NA)	1.6 (NA)	1.6	0.0	100 (NA)
Common Carp	3.2	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Golden Shiner	3.2	3.2 (20.9)	3.2 (6.7)	0.0	0.0	100 (39.6)
Largemouth Bass	4.8	4.8 (57.9)	4.8 (29.4)	1.6	1.6	100 (54.8)
Pumpkinseed	16.1	16.1 (59.3)	4.8 (23.5)	0.0	0.0	30 (42.3)
Rainbow Trout, Stocked	1.6	1.6 (NA)	0 (NA)	0.0	0.0	0 (NA)
Yellow Perch	74.1	66.1 (102.1)	6.4 (48.2)	0.0	0.0	9.8 (53.5)

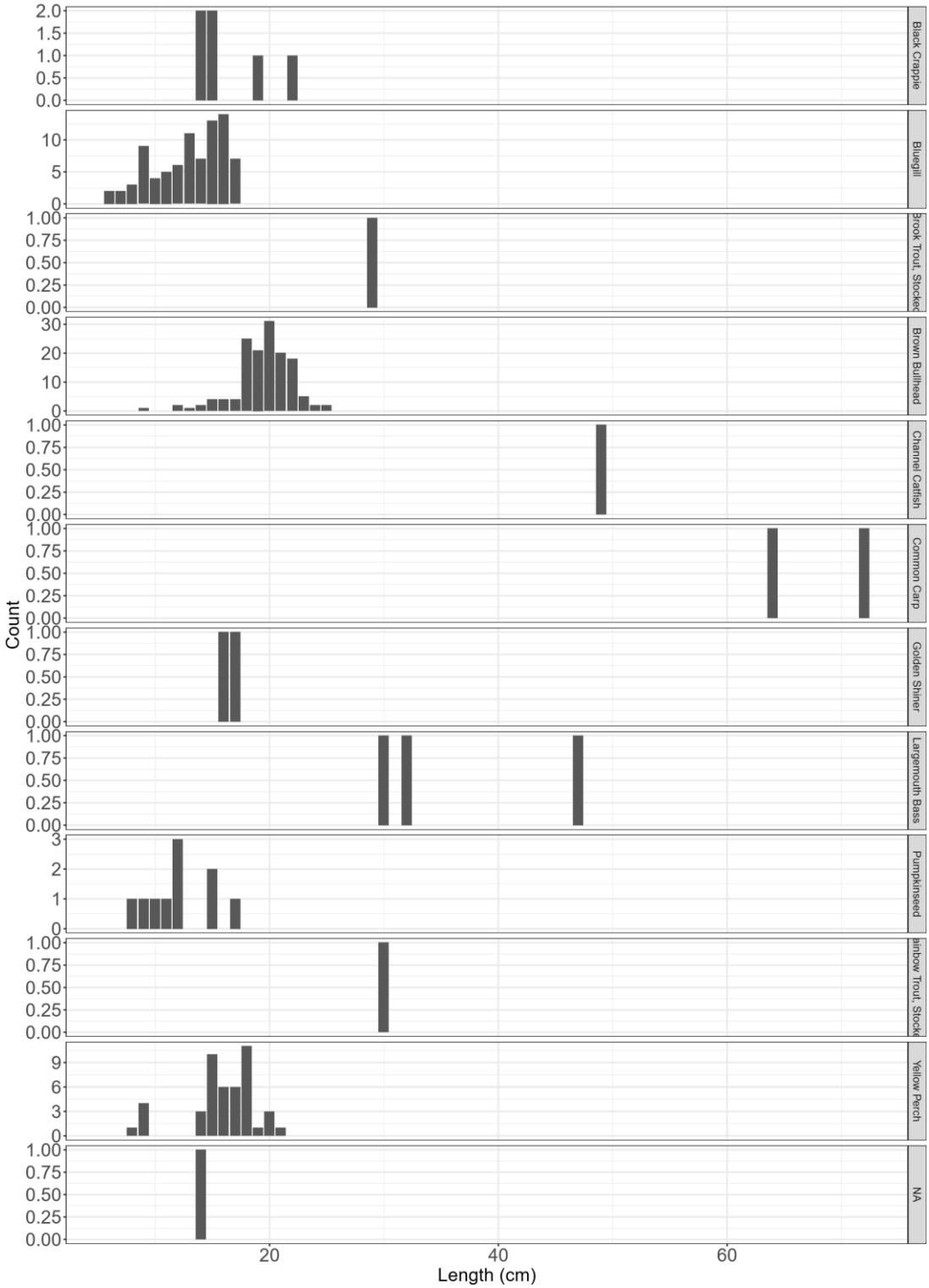


Figure 4. Length frequency histogram for Birge Pond, 05-08-2024.

BIRGE POND (BRISTOL)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Birge Pond on 05-13-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	117	114	3	0	0
Black Crappie	1	0	0	0	0
Bluegill	45	44	16	0	0
Brook Trout, Stocked	3	3	0	0	0
Brown Trout, Stocked	7	7	0	0	0
Hybrid Bluegill and Pumpkinseed	1	1	1	0	0
Golden Shiner	5	5	4	0	0
Largemouth Bass	11	10	8	2	1
Pumpkinseed	4	4	0	0	0
Rainbow Trout, Stocked	6	6	2	0	0
Yellow Perch	35	34	3	2	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Birge Pond on 2024-05-13. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	3	0 (21.3)	0 (17.1)	0	0	NaN (77.2)
Bluegill	135	132 (343.3)	48 (142.3)	0	0	36.4 (47.9)
Brook Trout, Stocked	9	9 (NA)	0 (NA)	0	0	0 (NA)
Brown Bullhead	351	342 (11.7)	9 (10.6)	0	0	2.6 (91.1)
Brown Trout, Stocked	21	21 (NA)	0 (NA)	0	0	0 (NA)
Golden Shiner	15	15 (20.9)	12 (6.7)	0	0	80 (39.6)
Hybrid Bluegill and Pumpkinseed	3	3 (NA)	3 (NA)	0	0	100 (NA)
Largemouth Bass	33	30 (57.9)	24 (29.4)	6	3	80 (54.8)
Pumpkinseed	12	12 (59.3)	0 (23.5)	0	0	0 (42.3)
Rainbow Trout, Stocked	18	18 (NA)	6 (NA)	0	0	33.3 (NA)
Yellow Perch	105	102 (102.1)	9 (48.2)	6	0	8.8 (53.5)

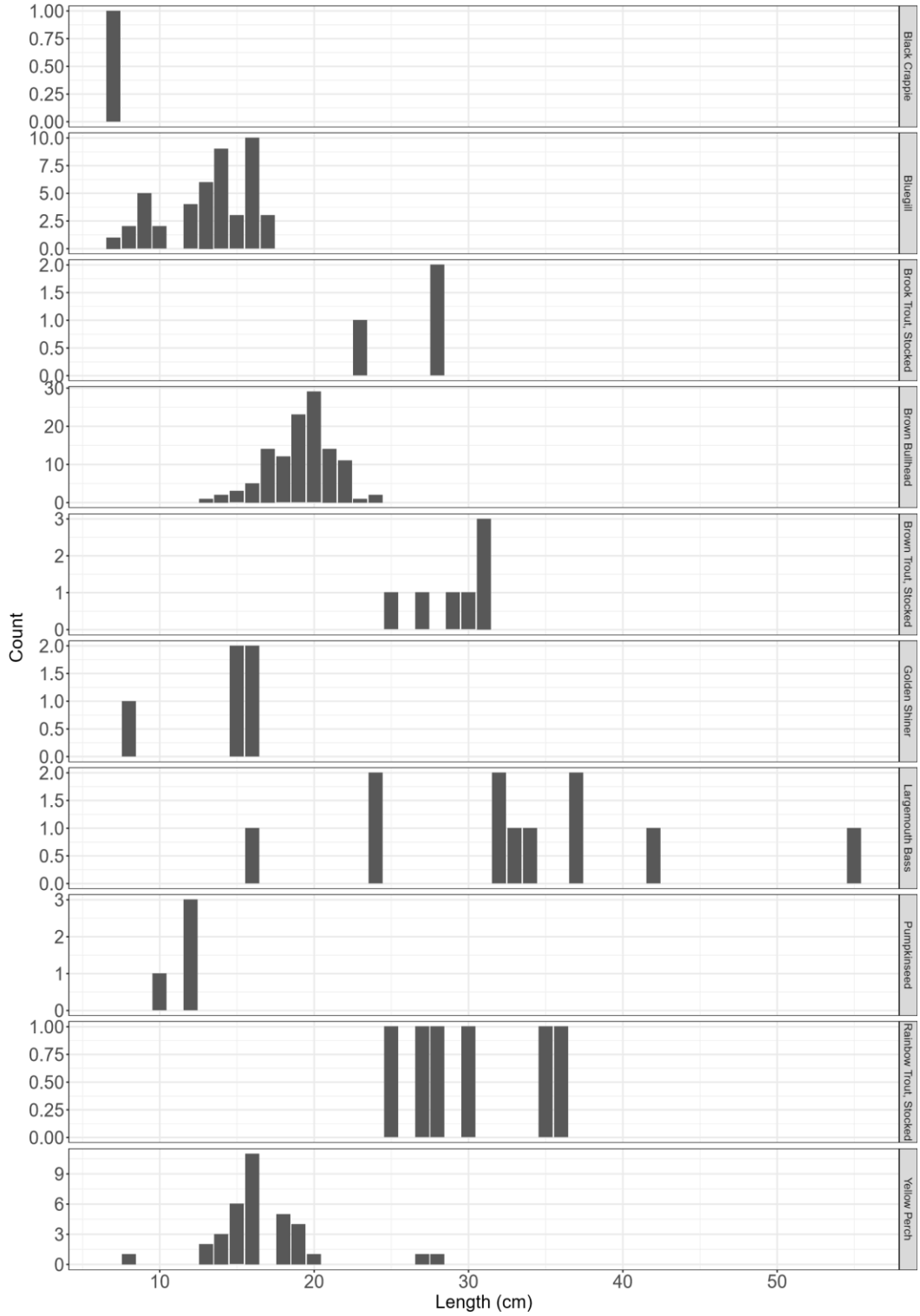


Figure 5. Length frequency histogram for Birge Pond, 05-13-2024.

BLACK POND (WOODSTOCK)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Black Pond on 04-30-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	6	6	6	3	0
Black Crappie	16	16	14	4	0
Bridled Shiner	5	0	0	0	0
Bluegill	446	390	234	80	0
Brook Trout, Stocked	29	29	20	5	0
Chain Pickerel	46	33	10	4	3
Golden Shiner	5	5	5	0	0
Largemouth Bass	125	89	36	8	3
Pumpkinseed	52	51	29	4	0
Hybrid Bluegill & Redbreast	1	1	1	1	0
Yellow Perch	50	50	40	13	1

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Black Pond on 04-30-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	24.8	24.8 (21.3)	21.7 (17.1)	6.2	0	87.5 (77.2)
Bluegill	691.2	604.4 (343.3)	362.6 (142.3)	124.0	0	60 (47.9)
Bridled Shiner	7.7	0 (NA)	0 (NA)	0.0	0	NaN (NA)
Brook Trout, Stocked	44.9	44.9 (NA)	31 (NA)	7.7	0	69 (NA)
Brown Bullhead	9.3	9.3 (11.7)	9.3 (10.6)	4.6	0	100 (91.1)
Chain Pickerel	71.3	51.1 (20.6)	15.5 (6.3)	6.2	4.6	30.3 (35.8)
Golden Shiner	7.7	7.7 (20.9)	7.7 (6.7)	0.0	0	100 (39.6)
Hybrid Bluegill and Redbreast	1.5	1.5 (NA)	1.5 (NA)	1.5	0	100 (NA)
Largemouth Bass	193.7	137.9 (57.9)	55.8 (29.4)	12.4	4.6	40.4 (54.8)
Pumpkinseed	80.6	79 (59.3)	44.9 (23.5)	6.2	0	56.9 (42.3)
Yellow Perch	77.5	77.5 (102.1)	62 (48.2)	20.1	1.5	80 (53.5)

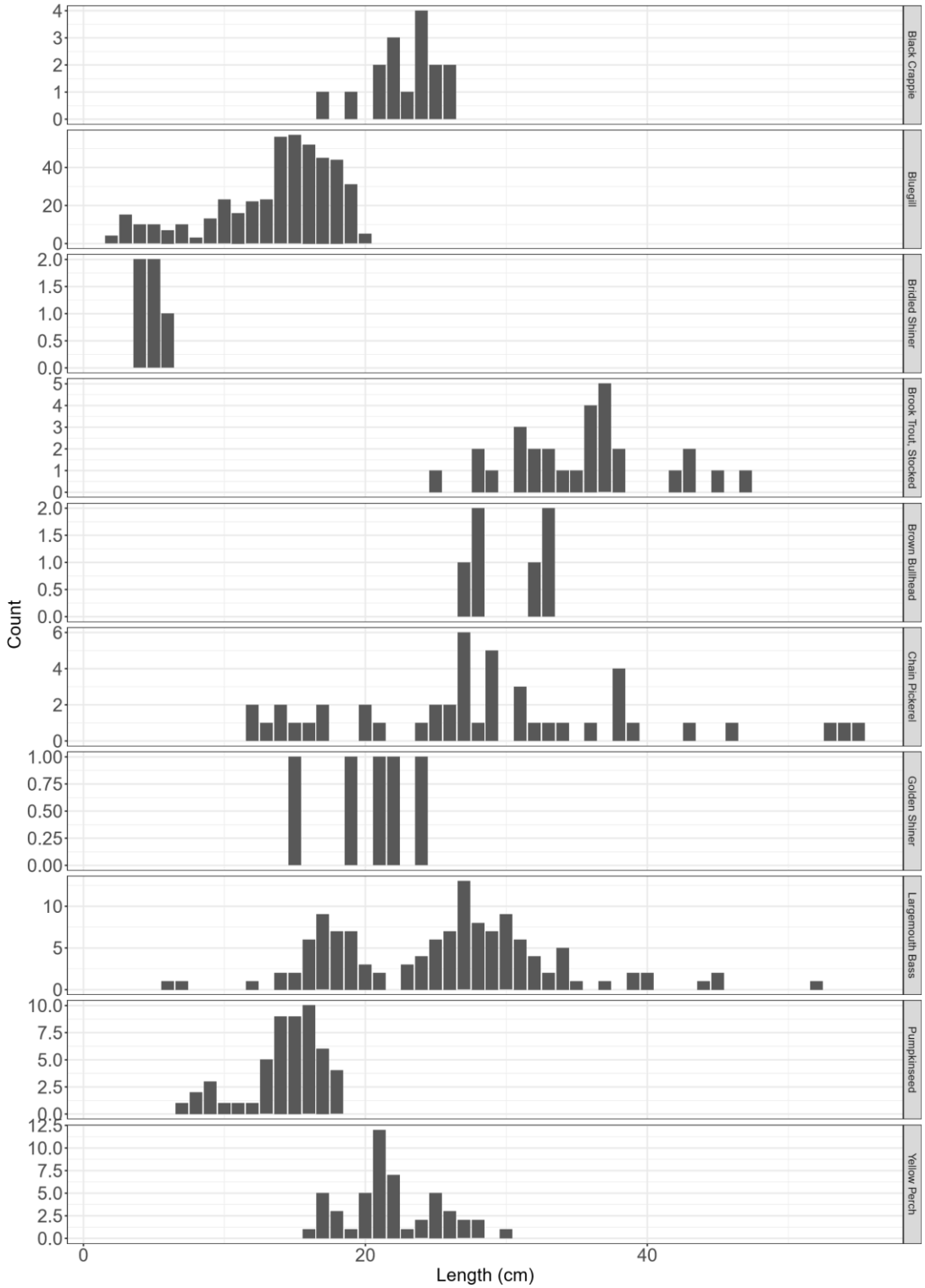


Figure 6. Length frequency histogram for Black Pond, 04−30-2025.

BLACK ROCK LAKE(WATERTOWN)

(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1. The number of each organism caught by species and size class in Black Rock Lake on 10-08-2024.

Species	All	Stock	Quality	Preferred	Memorable
Black Crappie	14	13	8	0	0
Bluegill	493	226	61	9	0
Hybrid Bluegill & Pumpkinseed	11	3	1	0	0
Brook Silverside	53	0	0	0	0
Chain Pickerel	18	9	4	2	0
Golden Shiner	1	1	1	NA	NA
Largemouth Bass	22	6	1	0	0
Pumpkinseed	32	26	3	0	0
White Sucker	4	4	4	NA	NA
Yellow Bullhead	14	0	0	0	0
Yellow Perch	1	1	0	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Black Rock Lake on 10-08-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	38.2	35.4 (21.3)	21.8 (17.1)	0.0	0	61.5 (77.2)
Bluegill	1343.5	615.9 (343.3)	166.2 (142.3)	24.5	0	27 (47.9)
Brook Silverside	144.4	0 (NA)	0 (NA)	0.0	0	NaN (NA)
Chain Pickerel	49.1	24.5 (20.6)	10.9 (6.3)	5.5	0	44.4 (35.8)
Golden Shiner	2.7	2.7 (20.9)	2.7 (6.7)	NA	NA	100 (39.6)
Hybrid Bluegill & Pumpkinseed	30.0	8.2 (NA)	2.7 (NA)	0.0	0	33.3 (NA)
Largemouth Bass	60.0	16.4 (57.9)	2.7 (29.4)	0.0	0	16.7 (54.8)
Pumpkinseed	87.2	70.9 (59.3)	8.2 (23.5)	0.0	0	11.5 (42.3)
White Sucker	10.9	10.9 (31.2)	10.9 (25.8)	NA	NA	100 (84.9)
Yellow Bullhead	38.2	0 (9.8)	0 (6.5)	0.0	0	NaN (72.1)
Yellow Perch	2.7	2.7 (102.1)	0 (48.2)	0.0	0	0 (53.5)

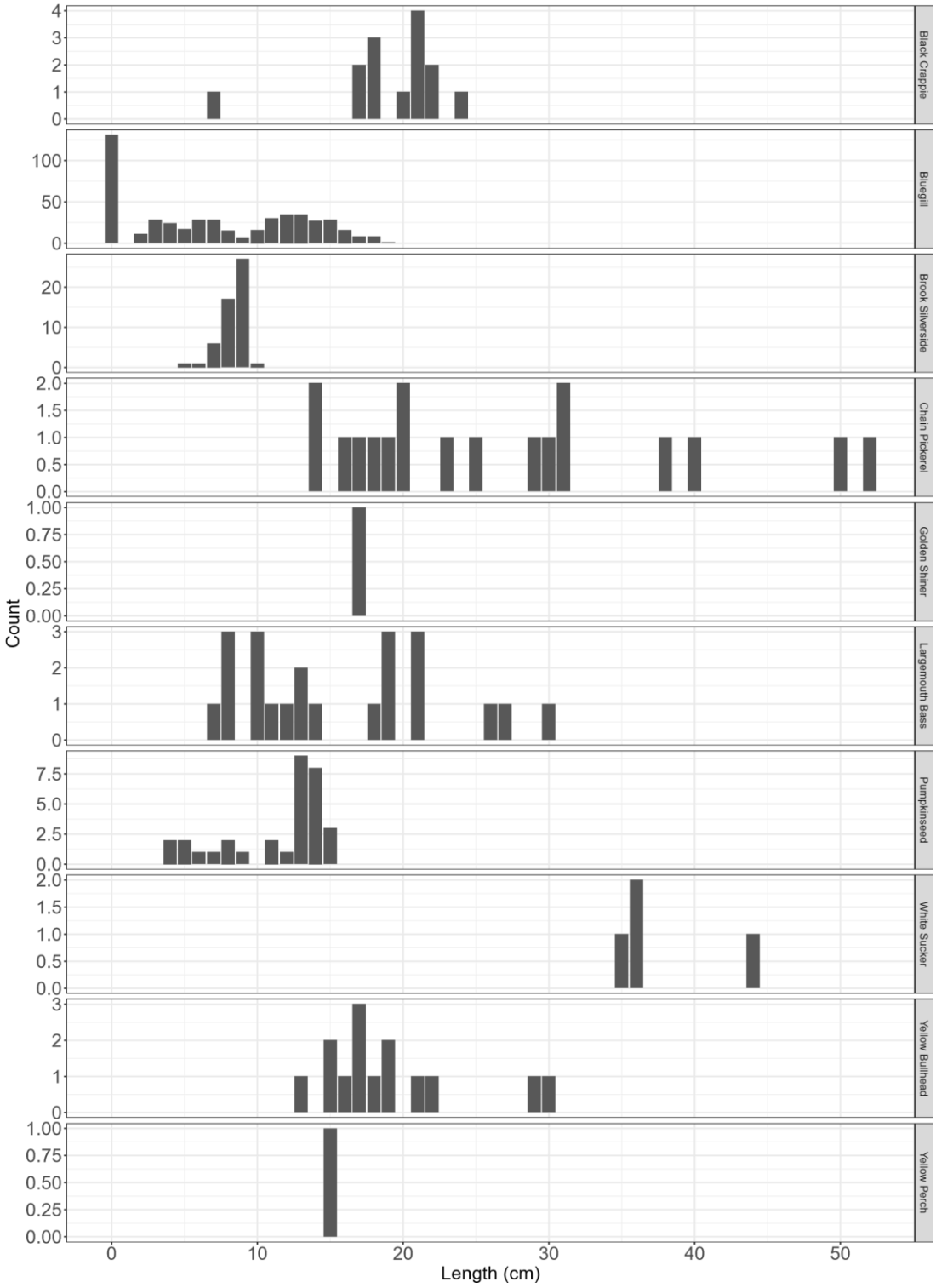


Figure 7. Length frequency histogram for Black Rock Lake, 10-08-2024.

CANDLEWOOD LAKE, LATTINS COVE LAUNCH

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Candlewood Lake on 06-11-2024.

Species	All	Stock	Quality	Preferred	Memorable
Alewife	81	81	10	NA	NA
Bluegill	304	294	102	15	1
Common Carp	4	0	0	0	0
Grass Carp	1	0	0	0	0
Largemouth Bass	12	12	10	4	0
Pumpkinseed	32	32	18	2	0
Rock Bass	14	14	12	5	1
Redbreast Sunfish	4	4	0	0	0
Smallmouth Bass	67	39	29	23	13
White Perch	50	50	45	2	0
Yellow Perch	1	1	1	1	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Candlewood Lake on 06-11-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Alewife	80.6	80.6 (53.3)	10 (6.9)	NA	NA	12.3 (23.4)
Bluegill	302.6	292.6 (343.3)	101.5 (142.3)	14.9	1.0	34.7 (47.9)
Common Carp	4.0	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Grass Carp	1.0	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Largemouth Bass	11.9	11.9 (57.9)	10 (29.4)	4.0	0.0	83.3 (54.8)
Pumpkinseed	31.8	31.8 (59.3)	17.9 (23.5)	2.0	0.0	56.2 (42.3)
Redbreast Sunfish	4.0	4 (33.7)	0 (12.7)	0.0	0.0	0 (34.6)
Rock Bass	13.9	13.9 (38.9)	11.9 (24.4)	5.0	1.0	85.7 (67)
Smallmouth Bass	66.7	38.8 (26)	28.9 (10.4)	22.9	12.9	74.4 (39.6)
White Perch	49.8	49.8 (127.6)	44.8 (48.9)	2.0	0.0	90 (66.7)
Yellow Perch	1.0	1 (102.1)	1 (48.2)	1.0	0.0	100 (53.5)

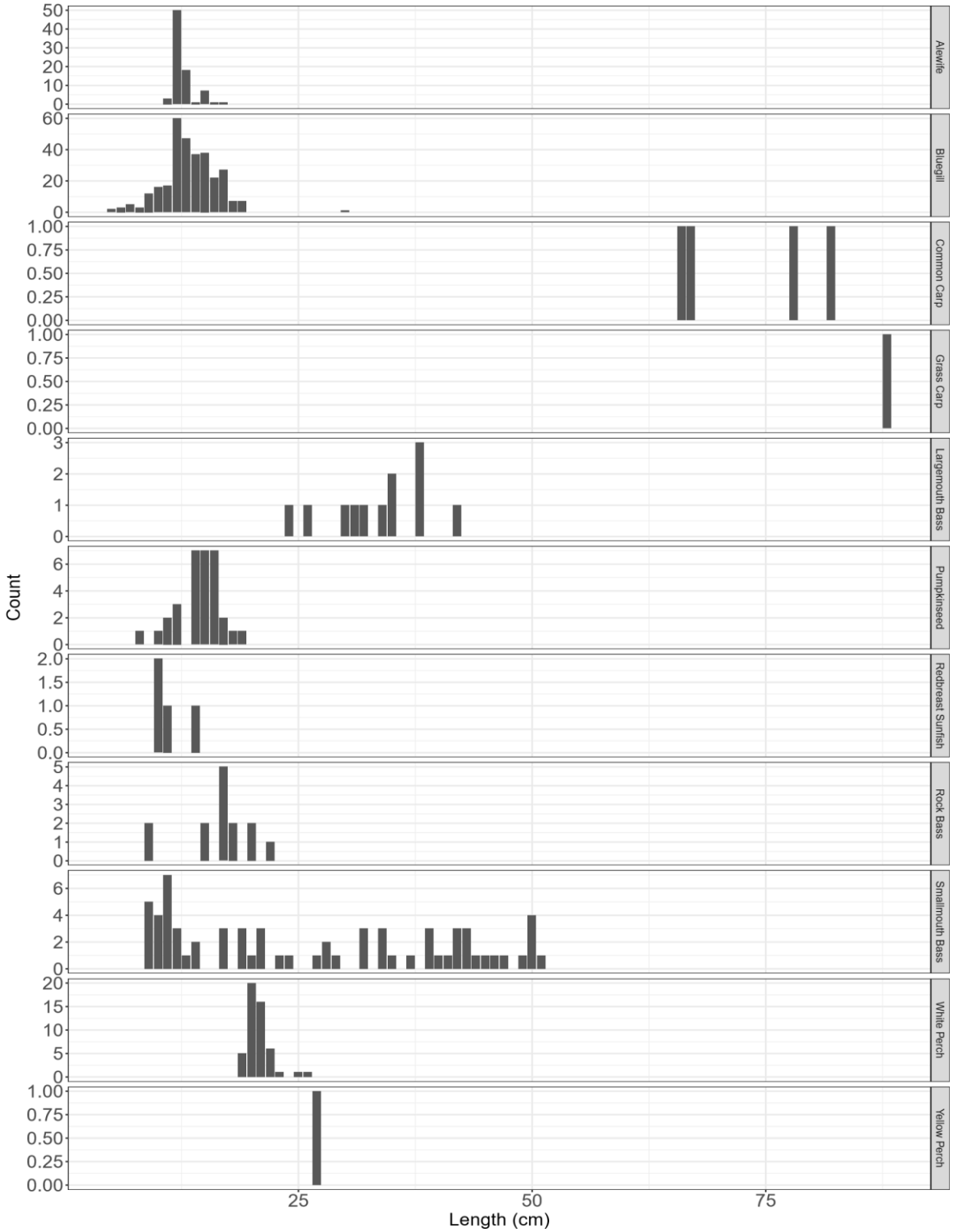


Figure 9. Length frequency histogram for Candlewood Lake, 06-11-2024.

CANDLEWOOD LAKE, SQUANTZ LAUNCH

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Candlewood Lake on 06-10-2024.

Species	All	Stock	Quality	Preferred	Memorable
Alewife	35	35	3	NA	NA
Brown Bullhead	1	1	1	1	0
Black Crappie	2	2	2	2	2
Bluegill	268	264	57	10	0
Bluntnose Minnow	2	0	0	0	0
Hybrid Bluegill & Pumpkinseed	15	15	9	0	0
Common Carp	1	0	0	0	0
Golden Shiner	1	1	1	NA	NA
Largemouth Bass	17	15	13	6	2
Hybrid Pumpkinseed & Redbreast	1	1	1	0	0
Pumpkinseed	61	61	7	0	0
Rock Bass	4	4	3	0	0
Redbreast Sunfish	2	2	2	1	0
Smallmouth Bass	15	9	5	4	1
White Perch	30	30	28	2	1
White Sucker	2	2	0	NA	NA
Yellow Perch	10	3	0	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Candlewood Lake on 06-10-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Alewife	35.2	35.2 (53.3)	3 (6.9)	NA	NA	8.6 (23.4)
Black Crappie	2.0	2 (21.3)	2 (17.1)	2.0	2	100 (77.2)
Bluegill	269.7	265.7 (343.3)	57.4 (142.3)	10.1	0	21.6 (47.9)
Bluntnose Minnow	2.0	0 (NA)	0 (NA)	0.0	0	NaN (NA)
Brown Bullhead	1.0	1 (11.7)	1 (10.6)	1.0	0	100 (91.1)
Common Carp	1.0	0 (NA)	0 (NA)	0.0	0	NaN (NA)
Golden Shiner	1.0	1 (20.9)	1 (6.7)	NA	NA	100 (39.6)
Hybrid Bluegill & Pumpkinseed	15.1	15.1 (NA)	9.1 (NA)	0.0	0	60 (NA)
Hybrid Pumpkinseed & Redbreast	1.0	1 (NA)	1 (NA)	0.0	0	100 (NA)
Largemouth Bass	17.1	15.1 (57.9)	13.1 (29.4)	6.0	2	86.7 (54.8)

Pumpkinseed	61.4	61.4 (59.3)	7 (23.5)	0.0	0	11.5 (42.3)
Redbreast Sunfish	2.0	2 (33.7)	2 (12.7)	1.0	0	100 (34.6)
Rock Bass	4.0	4 (38.9)	3 (24.4)	0.0	0	75 (67)
Smallmouth Bass	15.1	9.1 (26)	5 (10.4)	4.0	1	55.6 (39.6)
White Perch	30.2	30.2 (127.6)	28.2 (48.9)	2.0	1	93.3 (66.7)
White Sucker	2.0	2 (31.2)	0 (25.8)	NA	NA	0 (84.9)
Yellow Perch	10.1	3 (102.1)	0 (48.2)	0.0	0	0 (53.5)

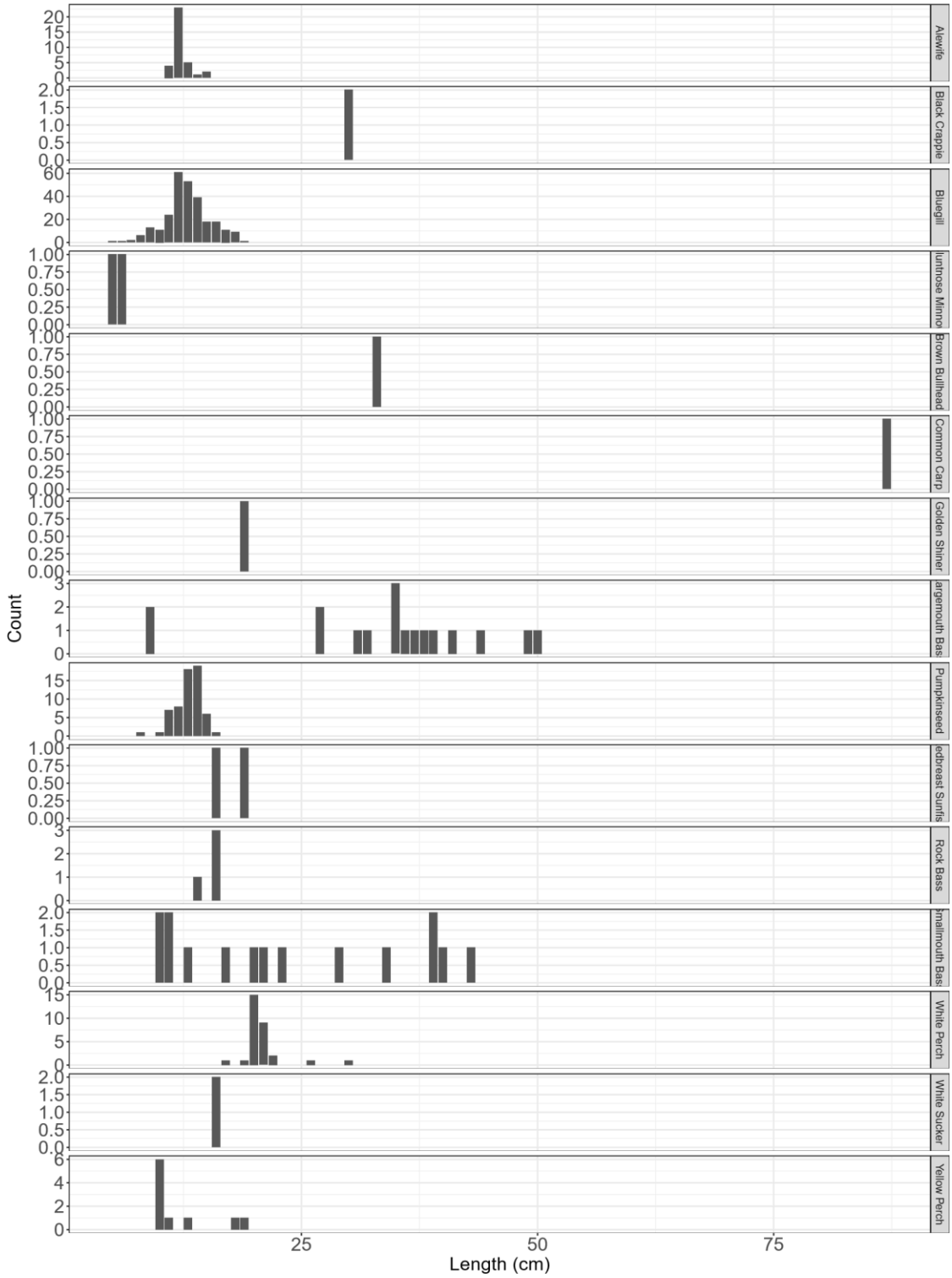


Figure 10. Length frequency histogram for Candlewood Lake, 06-10-2024.

CENTER SPRINGS PARK POND (MANCHESTER)

(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1. The number of each organism caught by species and size class in Center Springs Park Pond on 10-15-2024.

Species	All	Stock	Quality	Preferred	Memorable
Black Crappie	3	3	2	0	0
Bluegill	264	245	26	4	0
Channel Catfish	2	1	0	0	0
Green Sunfish	2	2	0	0	0
Golden Shiner	1	1	0	NA	NA
Largemouth Bass	40	24	7	0	0
Pumpkinseed	10	10	2	0	0
White Sucker	13	13	12	NA	NA
Yellow Perch	24	23	9	2	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Center Springs Park Pond on 10-15-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	8.3	8.3 (21.3)	5.5 (17.1)	0.0	0	66.7 (77.2)
Bluegill	730.5	677.9 (343.3)	71.9 (142.3)	11.1	0	10.6 (47.9)
Channel Catfish	5.5	2.8 (NA)	0 (NA)	0.0	0	0 (NA)
Golden Shiner	2.8	2.8 (20.9)	0 (6.7)	NA	NA	0 (39.6)
Green Sunfish	5.5	5.5 (NA)	0 (NA)	0.0	0	0 (NA)
Largemouth Bass	110.7	66.4 (57.9)	19.4 (29.4)	0.0	0	29.2 (54.8)
Pumpkinseed	27.7	27.7 (59.3)	5.5 (23.5)	0.0	0	20 (42.3)
White Sucker	36.0	36 (31.2)	33.2 (25.8)	NA	NA	92.3 (84.9)
Yellow Perch	66.4	63.6 (102.1)	24.9 (48.2)	5.5	0	39.1 (53.5)

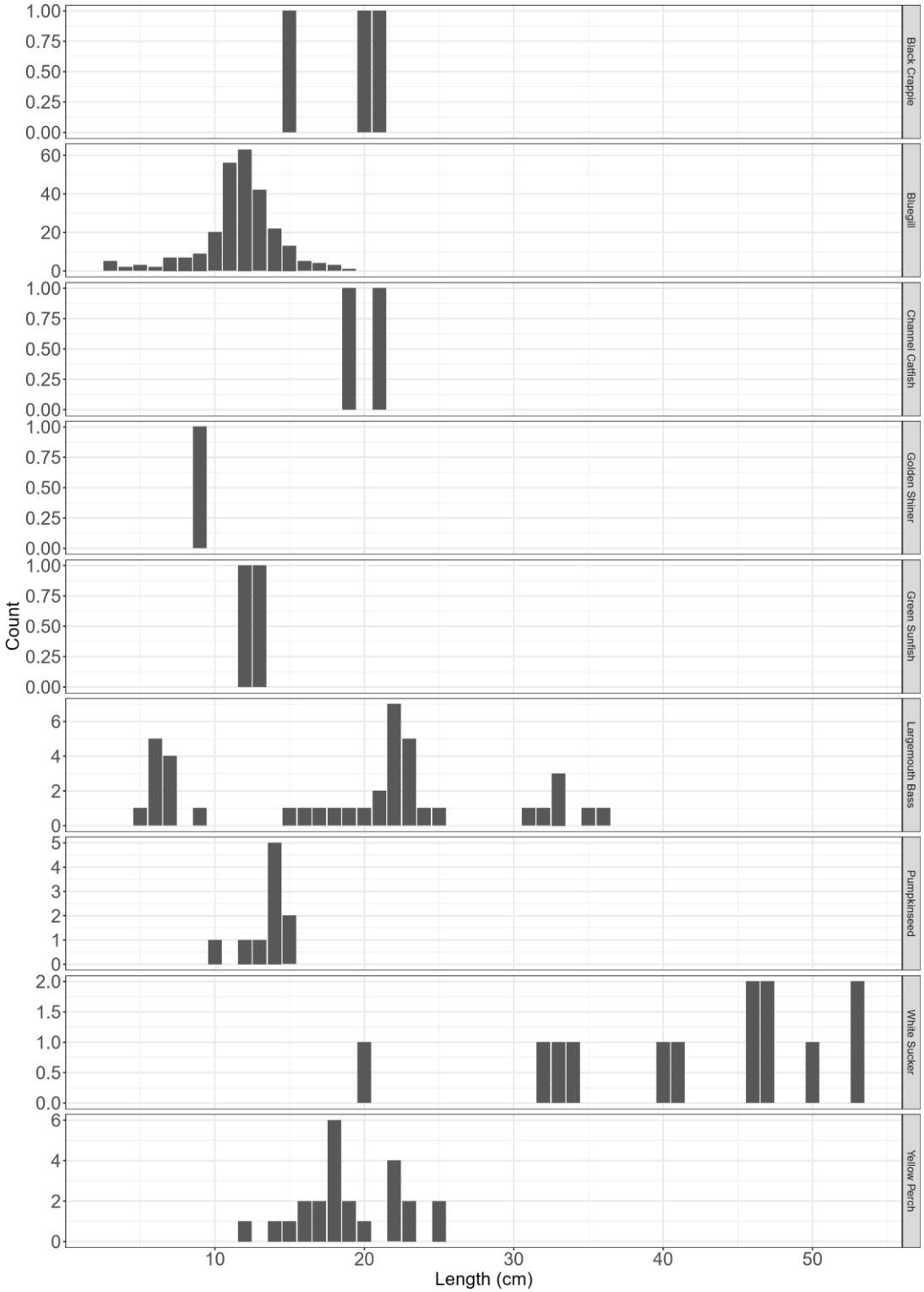


Figure 11. Length frequency histogram for Center Springs Park Pond, 10-15-2024.

DAY POND (COLCHESTER)

(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1. The number of each organism caught by species and size class in Day Pond on 11-04-2024.

Species	All	Stock	Quality	Preferred	Memorable
Black Crappie	7	7	5	1	0
Bluegill	52	46	12	1	0
Brown Trout, Stocked	1	1	1	0	0
Chain Pickerel	3	1	0	0	0
Golden Shiner	1	1	0	NA	NA
Largemouth Bass	8	7	6	5	3
Rainbow Trout, Stocked	28	28	17	1	0
Tiger Trout, Stocked	11	0	0	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Day Pond on 11-04-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	22.7	22.7 (21.3)	16.2 (17.1)	3.2	0.0	71.4 (77.2)
Bluegill	168.3	148.9 (343.3)	38.8 (142.3)	3.2	0.0	26.1 (47.9)
Brown Trout, Stocked	3.2	3.2 (NA)	3.2 (NA)	0.0	0.0	100 (NA)
Chain Pickerel	9.7	3.2 (20.6)	0 (6.3)	0.0	0.0	0 (35.8)
Golden Shiner	3.2	3.2 (20.9)	0 (6.7)	NA	NA	0 (39.6)
Largemouth Bass	25.9	22.7 (57.9)	19.4 (29.4)	16.2	9.7	85.7 (54.8)
Rainbow Trout, Stocked	90.6	90.6 (NA)	55 (NA)	3.2	0.0	60.7 (NA)
Tiger Trout, Stocked	35.6	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)

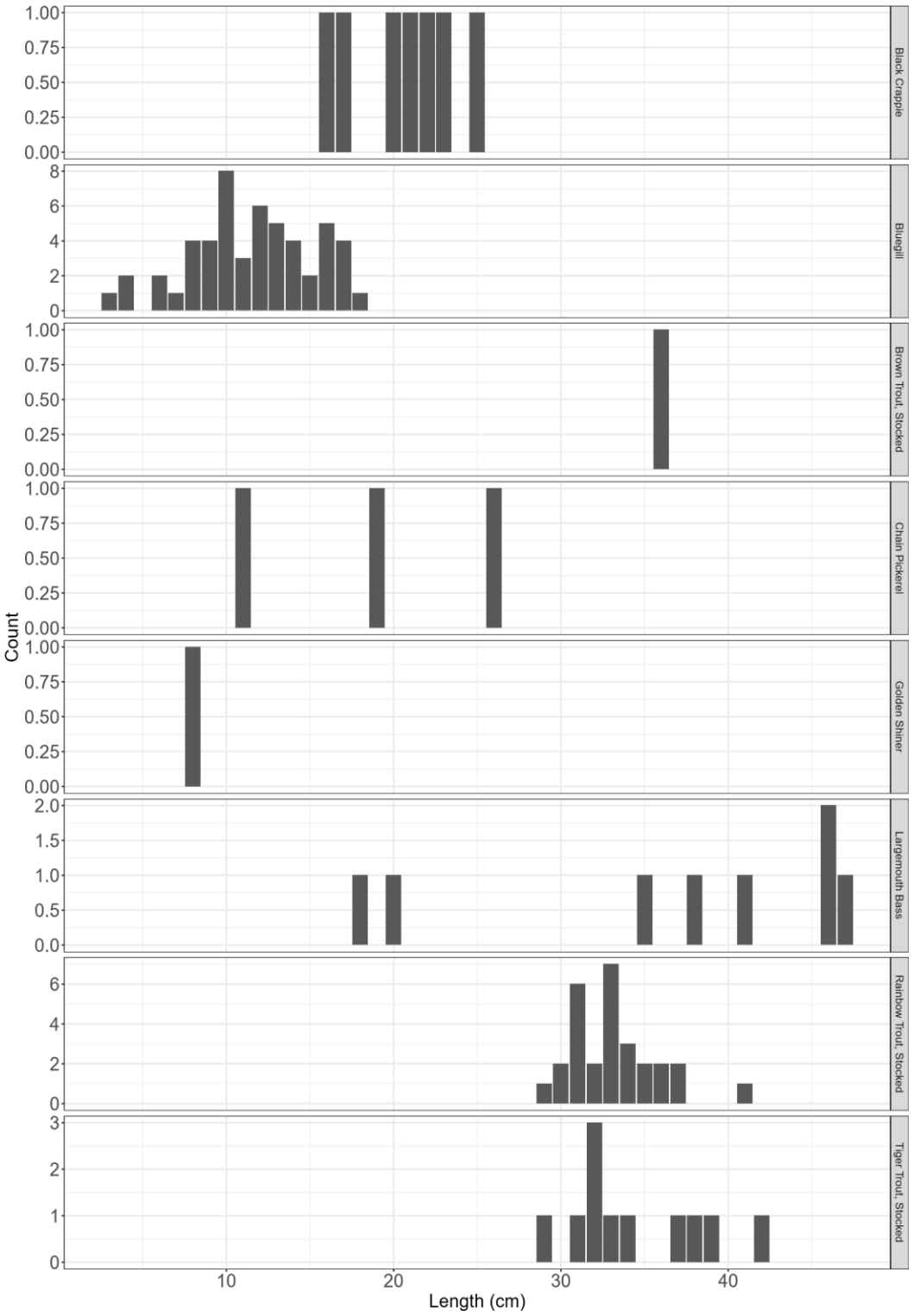


Figure 12. Length frequency histogram for Day Pond, 11−04-2024.

DODGE POND (EAST LYME)
(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Dodge Pond on 10-21-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	21	21	0	NA	NA
Alewife	90	90	0	NA	NA
Brown Bullhead	1	0	0	0	0
Black Crappie	2	1	1	1	1
Bluegill	574	320	53	9	0
Hybrid Bluegill & Pumpkinseed	3	2	1	1	0
Chain Pickerel	90	29	4	0	0
Golden Shiner	7	7	0	NA	NA
Largemouth Bass	89	67	35	15	6
Musk Turtle	19	NA	NA	NA	NA
Painted Turtle	4	NA	NA	NA	NA
Pumpkinseed	7	5	0	0	0
Snapping Turtle	4	NA	NA	NA	NA
Yellow Perch	1	1	1	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Dodge Pond on 2024-10-21. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Alewife	164.8	164.8 (53.3)	0 (6.9)	NA	NA	0 (23.4)
American Eel	38.5	38.5 (24.3)	0 (6.4)	NA	NA	0 (42.9)
Black Crappie	3.7	1.8 (21.3)	1.8 (17.1)	1.8	1.8	100 (77.2)
Bluegill	1051.1	586 (343.3)	97 (142.3)	16.5	0.0	16.6 (47.9)
Brown Bullhead	1.8	0 (11.7)	0 (10.6)	0.0	0.0	NaN (91.1)
Chain Pickerel	164.8	53.1 (20.6)	7.3 (6.3)	0.0	0.0	13.8 (35.8)
Golden Shiner	12.8	12.8 (20.9)	0 (6.7)	NA	NA	0 (39.6)
Hybrid Bluegill & Pumpkinseed	5.5	3.7 (NA)	1.8 (NA)	1.8	0.0	50 (NA)
Largemouth Bass	163.0	122.7 (57.9)	64.1 (29.4)	27.5	11.0	52.2 (54.8)
Musk Turtle	34.8	NA (NA)	NA (NA)	NA	NA	NA (NA)
Painted Turtle	7.3	NA (NA)	NA (NA)	NA	NA	NA (NA)
Pumpkinseed	12.8	9.2 (59.3)	0 (23.5)	0.0	0.0	0 (42.3)
Snapping Turtle	7.3	NA (NA)	NA (NA)	NA	NA	NA (NA)

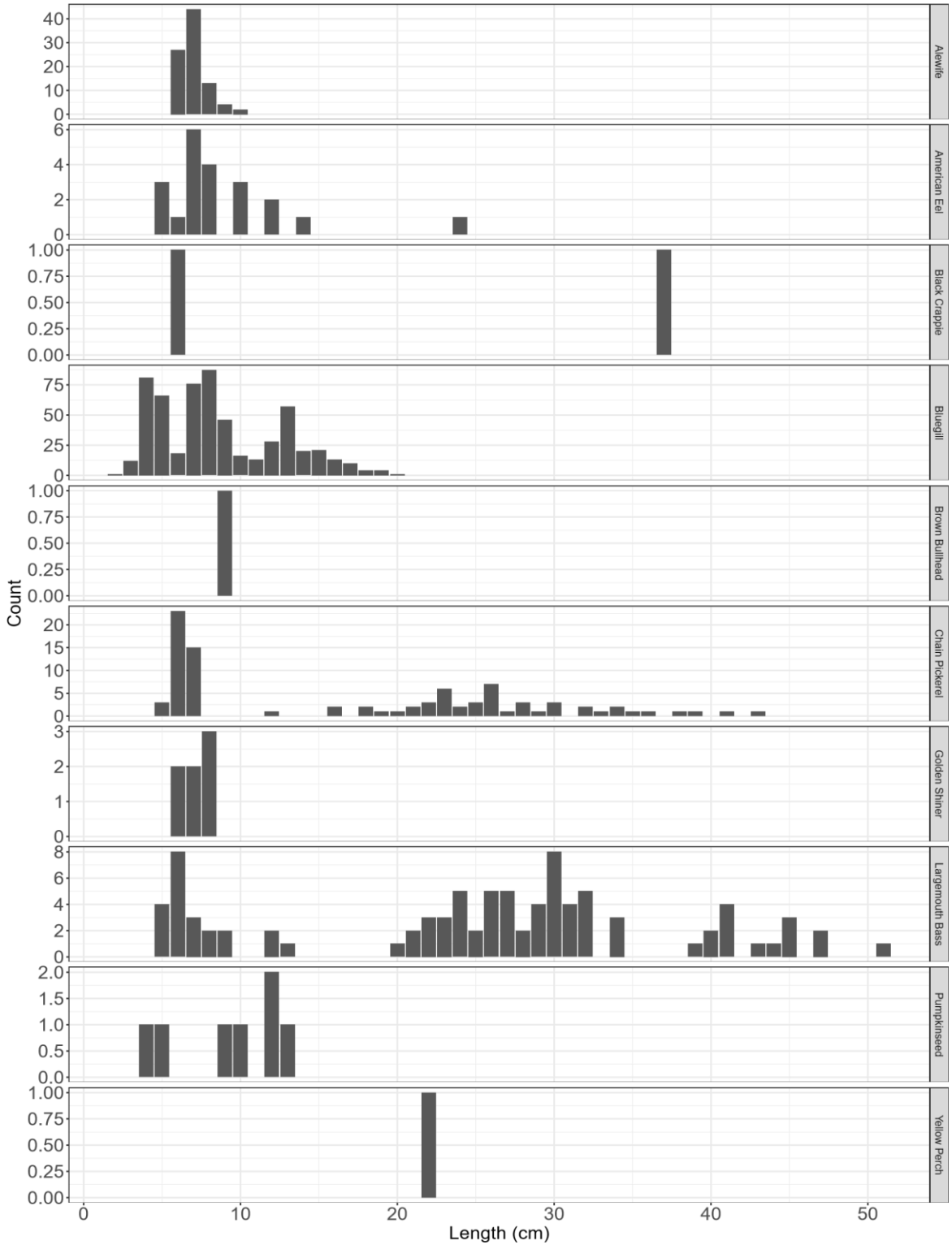


Figure 13. Length frequency histogram for Dodge Pond, 10-21-24.

DOOLITTLE LAKE (NORFOLK)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Doolittle Pond on 5-30-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	3	2	1	0	0
Golden Shiner	13	13	12	NA	NA
Largemouth Bass	193	97	44	19	1
Pumpkinseed	171	153	23	2	0
Yellow Perch	793	680	99	17	1

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Doolittle Pond on 05-30-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Brown Bullhead	3.0	2 (11.7)	1 (10.6)	0.0	0	50 (91.1)
Golden Shiner	12.9	12.9 (20.9)	11.9 (6.7)	NA	NA	92.3 (39.6)
Largemouth Bass	192.0	96.5 (57.9)	43.8 (29.4)	18.9	1	45.4 (54.8)
Pumpkinseed	170.1	152.2 (59.3)	22.9 (23.5)	2.0	0	15 (42.3)
Yellow Perch	788.8	676.4 (102.1)	98.5 (48.2)	16.9	1	14.6 (53.5)

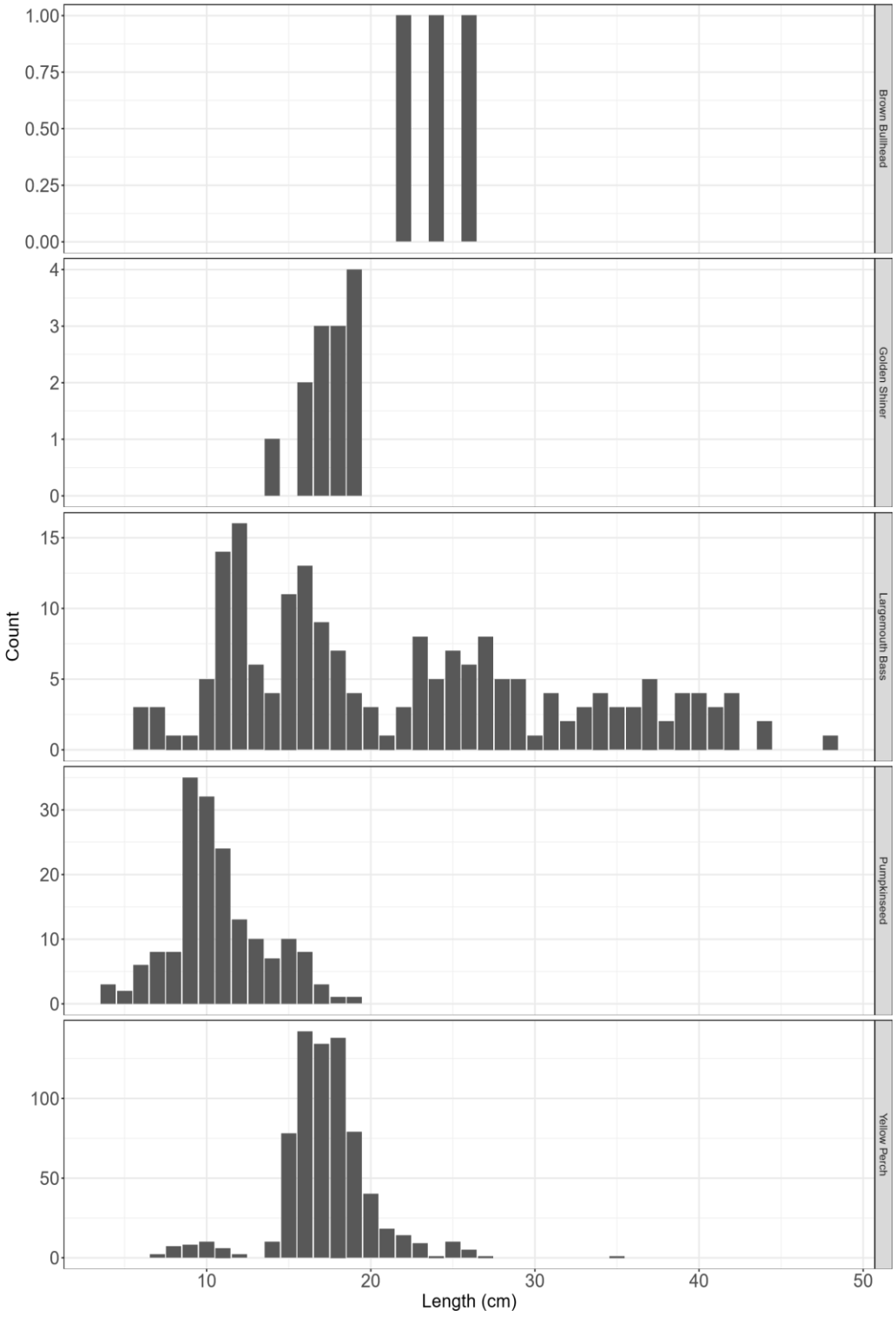


Figure 14. Length Frequency Histogram for Doolittle Pond, 05-30-2024.

EAGLEVILLE LAKE (MANSFIELD-COVENTRY)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Eagleville Pond on 11-06-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	1	1	0	NA	NA
Black Crappie	36	22	12	8	0
Bluegill	569	381	115	63	0
Hybrid Bluegill & Pumpkinseed	1	1	0	0	0
Chain Pickerel	1	1	0	0	0
Fallfish	21	0	0	0	0
Golden Shiner	15	15	6	NA	NA
Largemouth Bass	55	41	18	6	5
Musk Turtle	5	NA	NA	NA	NA
Pumpkinseed	208	150	50	11	1
Rock Bass	12	10	5	5	1
Redfin Pickerel	1	0	0	0	0
Smallmouth Bass	3	3	3	2	1
Tessellated darter	8	0	0	0	0
White Sucker	191	191	122	NA	NA
Yellow Bullhead	3	0	0	0	0
Yellow Perch	198	164	29	7	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Eagleville Pond on 11-06-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	1.0	1 (24.3)	0 (6.4)	NA	NA	0 (42.9)
Black Crappie	36.0	22 (21.3)	12 (17.1)	8.0	0	54.5 (77.2)
Bluegill	568.2	380.5 (343.3)	114.8 (142.3)	62.9	0	30.2 (47.9)
Chain Pickerel	1.0	1 (20.6)	0 (6.3)	0.0	0	0 (35.8)
Fallfish	21.0	0 (NA)	0 (NA)	0.0	0	NaN (NA)
Golden Shiner	15.0	15 (20.9)	6 (6.7)	NA	NA	40 (39.6)
Hybrid Bluegill & Pumpkinseed	1.0	1 (NA)	0 (NA)	0.0	0	0 (NA)
Largemouth Bass	54.9	40.9 (57.9)	18 (29.4)	6.0	5	43.9 (54.8)
Musk Turtle	5.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Pumpkinseed	207.7	149.8 (59.3)	49.9 (23.5)	11.0	1	33.3 (42.3)
Redfin Pickerel	1.0	0 (NA)	0 (NA)	0.0	0	NaN (NA)
Rock Bass	12.0	10 (38.9)	5 (24.4)	5.0	1	50 (67)

Smallmouth Bass	3.0	3 (26)	3 (10.4)	2.0	1	100 (39.6)
Tessellated darter	8.0	0 (NA)	0 (NA)	0.0	0	NaN (NA)
White Sucker	190.7	190.7 (31.2)	121.8 (25.8)	NA	NA	63.9 (84.9)
Yellow Bullhead	3.0	0 (9.8)	0 (6.5)	0.0	0	NaN (72.1)
Yellow Perch	197.7	163.8 (102.1)	29 (48.2)	7.0	0	17.7 (53.5)

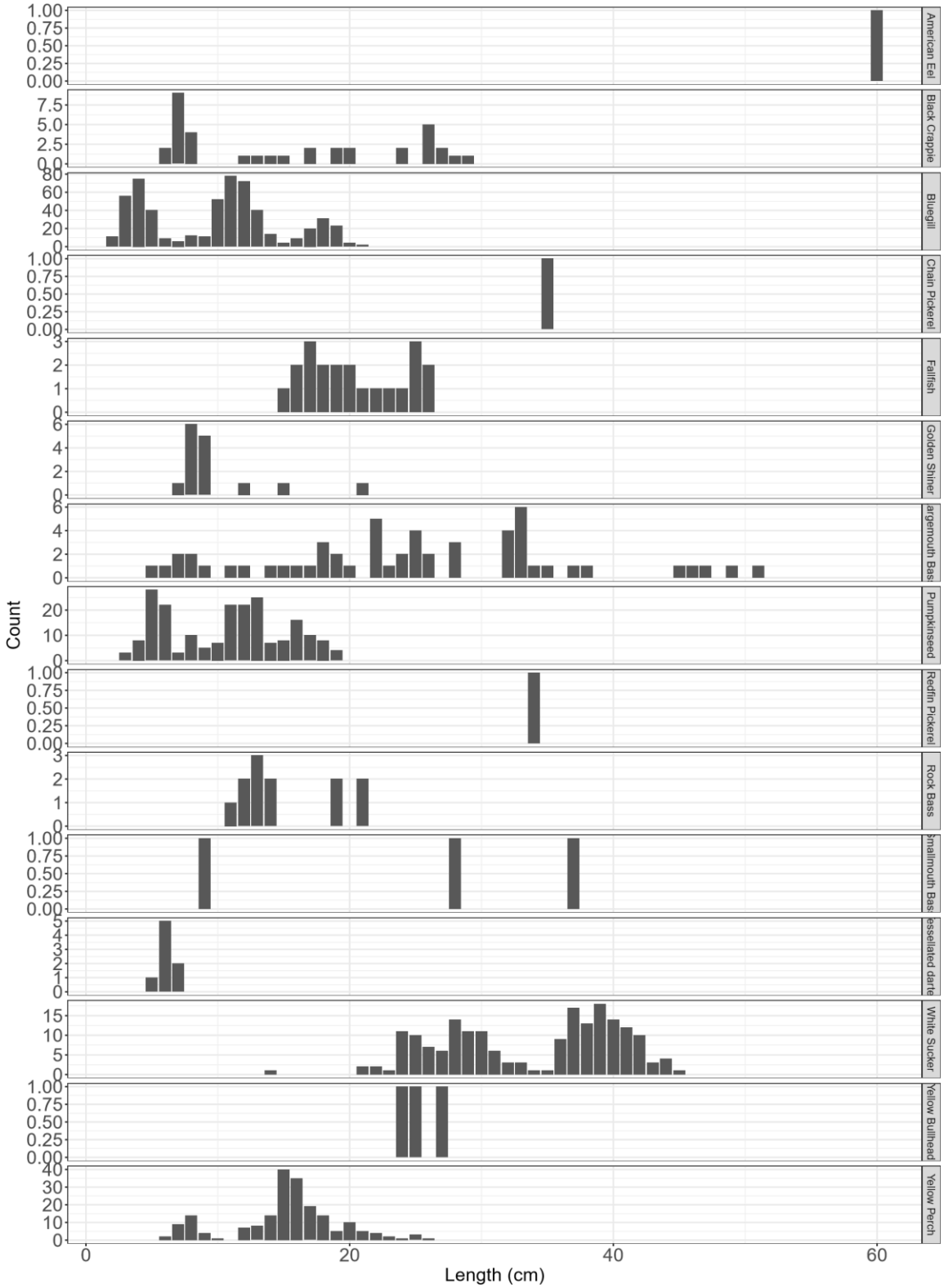


Figure 15. Length frequency histogram for Eagleville Pond, 11-06-2024.

EAST TWIN LAKE [AKA WASHINING LAKE] (SALISBURY)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in East Twin Lake (aka Washining Lake) on 06-04-2024.

Species	All	Stock	Quality	Preferred	Memorable
Alewife	170	170	1	NA	NA
Brown Bullhead	6	6	6	5	2
Bluegill	140	139	91	55	0
Chain Pickerel	6	5	4	3	0
Golden Shiner	6	6	0	NA	NA
Largemouth Bass	19	18	17	10	4
Pumpkinseed	90	88	49	17	0
Rock Bass	47	47	40	32	14
Redbreast Sunfish	13	13	1	1	0
Smallmouth Bass	6	5	4	1	0
Yellow Perch	441	437	140	51	6

Table 2. The catch per hour (CPH) of each organism caught by species and size class in East Twin Lake (aka Washining Lake) on 06-04-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Alewife	169.9	169.9 (53.3)	1 (6.9)	NA	NA	0.6 (23.4)
Bluegill	139.9	138.9 (343.3)	90.9 (142.3)	55	0	65.5 (47.9)
Brown Bullhead	6.0	6 (11.7)	6 (10.6)	5	2	100 (91.1)
Chain Pickerel	6.0	5 (20.6)	4 (6.3)	3	0	80 (35.8)
Golden Shiner	6.0	6 (20.9)	0 (6.7)	NA	NA	0 (39.6)
Largemouth Bass	19.0	18 (57.9)	17 (29.4)	10	4	94.4 (54.8)
Pumpkinseed	89.9	87.9 (59.3)	49 (23.5)	17	0	55.7 (42.3)
Redbreast Sunfish	13.0	13 (33.7)	1 (12.7)	1	0	7.7 (34.6)
Rock Bass	47.0	47 (38.9)	40 (24.4)	32	14	85.1 (67)
Smallmouth Bass	6.0	5 (26)	4 (10.4)	1	0	80 (39.6)
Yellow Perch	440.6	436.6 (102.1)	139.9 (48.2)	51	6	32 (53.5)

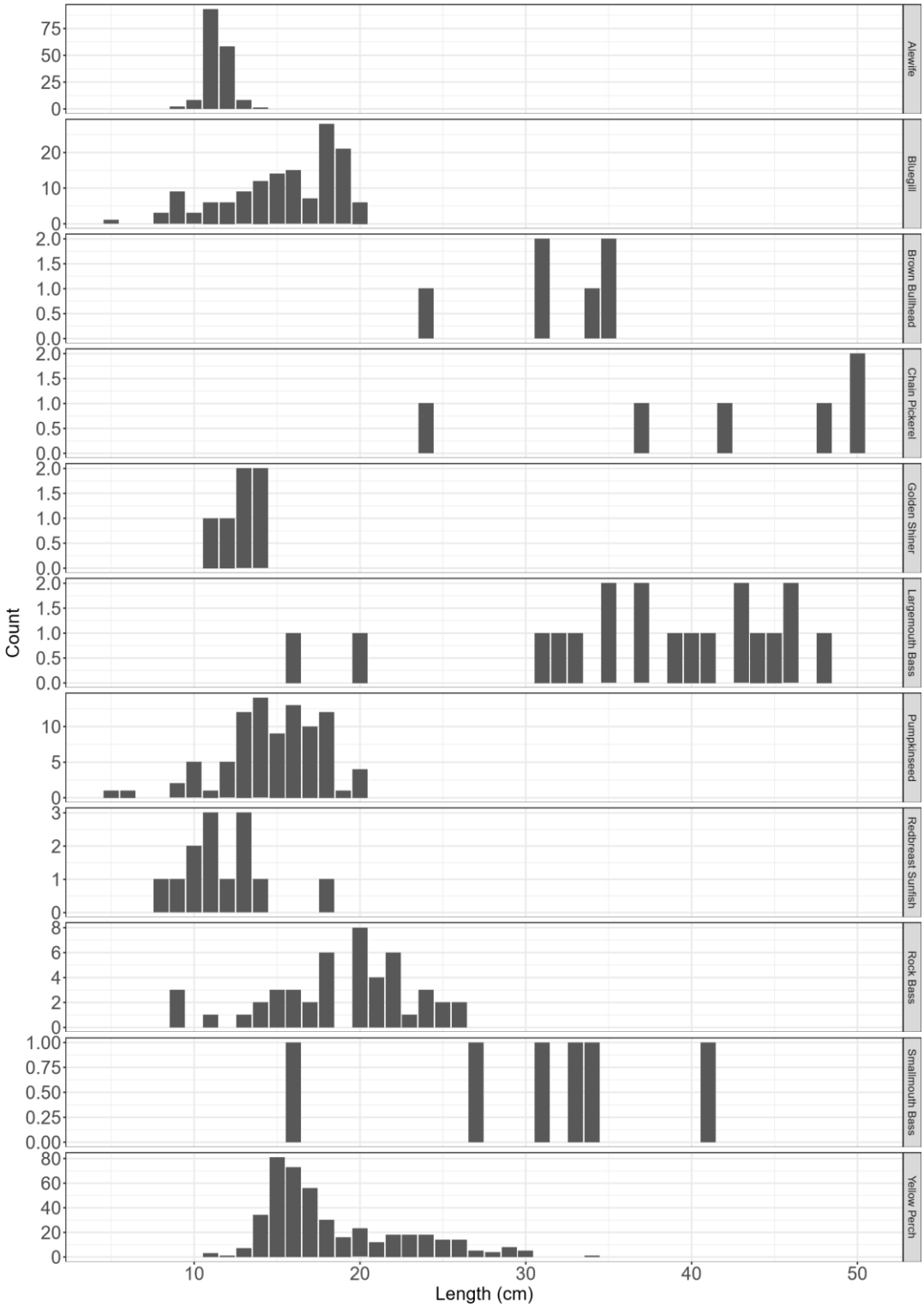


Figure 16. Length frequency histogram for East Twin Lake (aka Washining Lake), 06-04-2024.

FISHER MEADOW [AKA SPRING LAKE] (AVON)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Fisher Meadow (aka Spring Lake) on 11-12-2024.

Species	All	Stock	Quality	Preferred	Memorable
Black Crappie	338	17	13	8	1
Bluegill	583	284	90	70	0
Common Carp	3	0	0	0	0
Chain Pickerel	8	5	4	3	3
Golden Shiner	40	40	1	NA	NA
Largemouth Bass	40	14	13	2	0
Musk Turtle	6	NA	NA	NA	NA
Painted Turtle	1	NA	NA	NA	NA
Pumpkinseed	18	14	2	0	0
Tessellated darter	7	0	0	0	0
White Perch	66	2	2	2	2
White Sucker	64	64	61	NA	NA
Yellow Perch	266	70	40	7	1

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Fisher Meadows (aka Spring Lake) on 11-12-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	430.0	21.6 (21.3)	16.5 (17.1)	10.2	1.3	76.5 (77.2)
Bluegill	741.6	361.3 (343.3)	114.5 (142.3)	89.0	0.0	31.7 (47.9)
Chain Pickerel	10.2	6.4 (20.6)	5.1 (6.3)	3.8	3.8	80 (35.8)
Common Carp	3.8	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Golden Shiner	50.9	50.9 (20.9)	1.3 (6.7)	NA	NA	2.5 (39.6)
Largemouth Bass	50.9	17.8 (57.9)	16.5 (29.4)	2.5	0.0	92.9 (54.8)
Musk Turtle	7.6	NA (NA)	NA (NA)	NA	NA	NA (NA)
Painted Turtle	1.3	NA (NA)	NA (NA)	NA	NA	NA (NA)
Pumpkinseed	22.9	17.8 (59.3)	2.5 (23.5)	0.0	0.0	14.3 (42.3)
Tessellated darter	8.9	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
White Perch	84.0	2.5 (127.6)	2.5 (48.9)	2.5	2.5	100 (66.7)
White Sucker	81.4	81.4 (31.2)	77.6 (25.8)	NA	NA	95.3 (84.9)
Yellow Perch	338.4	89 (102.1)	50.9 (48.2)	8.9	1.3	57.1 (53.5)

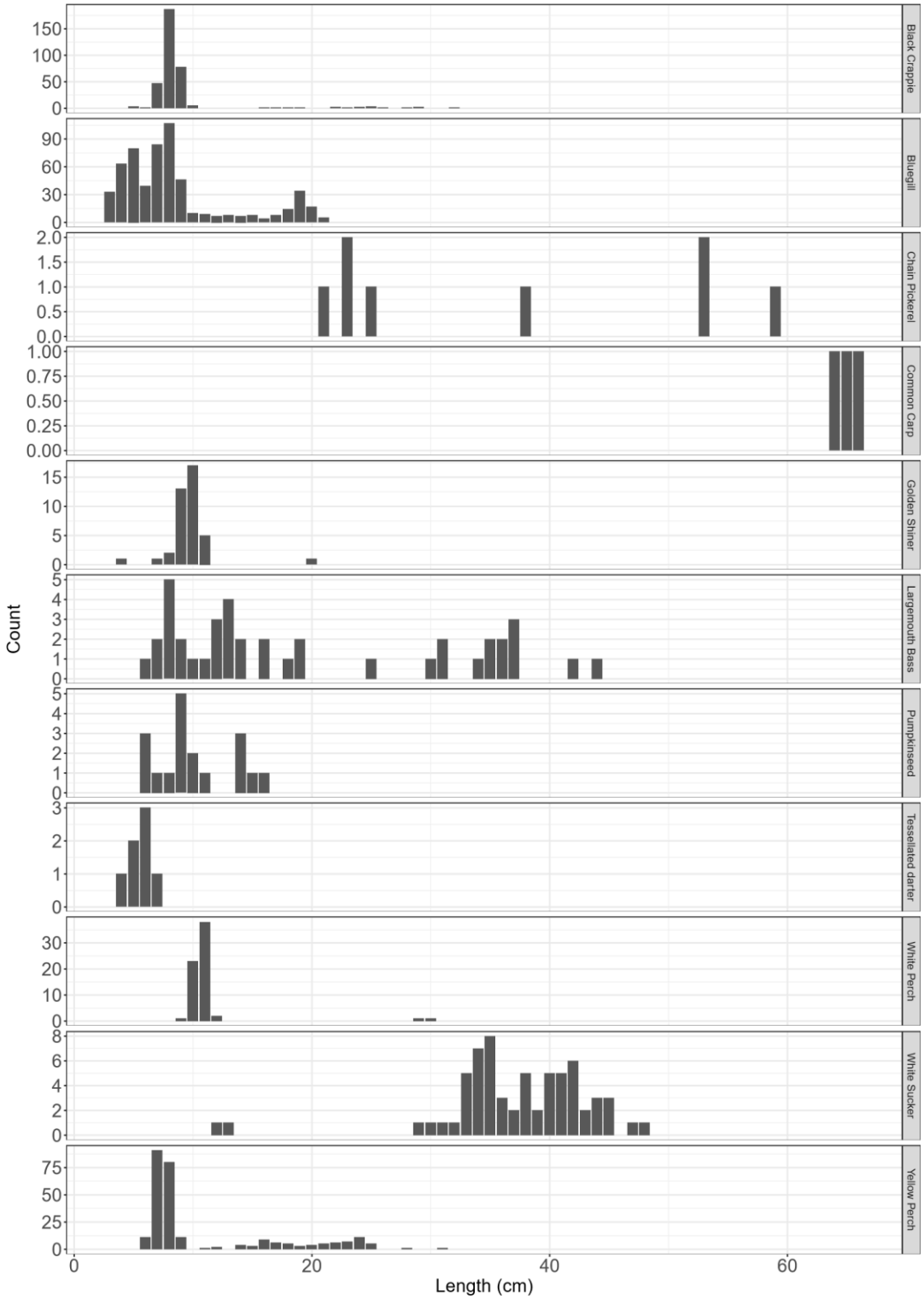


Figure 17. Length frequency histogram for Fisher Meadows (aka Spring Lake), 11−12-2024.

FRESHWATER POND (ENFIELD)

(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1. The number of each organism caught by species and size class in Freshwater Pond on 10-10-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	2	2	2	NA	NA
Bluegill	243	202	8	4	1
Fallfish	4	0	0	0	0
Green Sunfish	10	9	0	0	0
Largemouth Bass	22	13	5	1	0
Pumpkinseed	4	4	0	0	0
White Sucker	41	41	26	NA	NA
Yellow Perch	2	0	0	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Freshwater Pond on 10-10-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	8.1	8.1 (24.3)	8.1 (6.4)	NA	NA	100 (42.9)
Bluegill	981.8	816.2 (343.3)	32.3 (142.3)	16.2	4	4 (47.9)
Fallfish	16.2	0 (NA)	0 (NA)	0.0	0	NaN (NA)
Green Sunfish	40.4	36.4 (NA)	0 (NA)	0.0	0	0 (NA)
Largemouth Bass	88.9	52.5 (57.9)	20.2 (29.4)	4.0	0	38.5 (54.8)
Pumpkinseed	16.2	16.2 (59.3)	0 (23.5)	0.0	0	0 (42.3)
White Sucker	165.7	165.7 (31.2)	105.1 (25.8)	NA	NA	63.4 (84.9)
Yellow Perch	8.1	0 (102.1)	0 (48.2)	0.0	0	NaN (53.5)

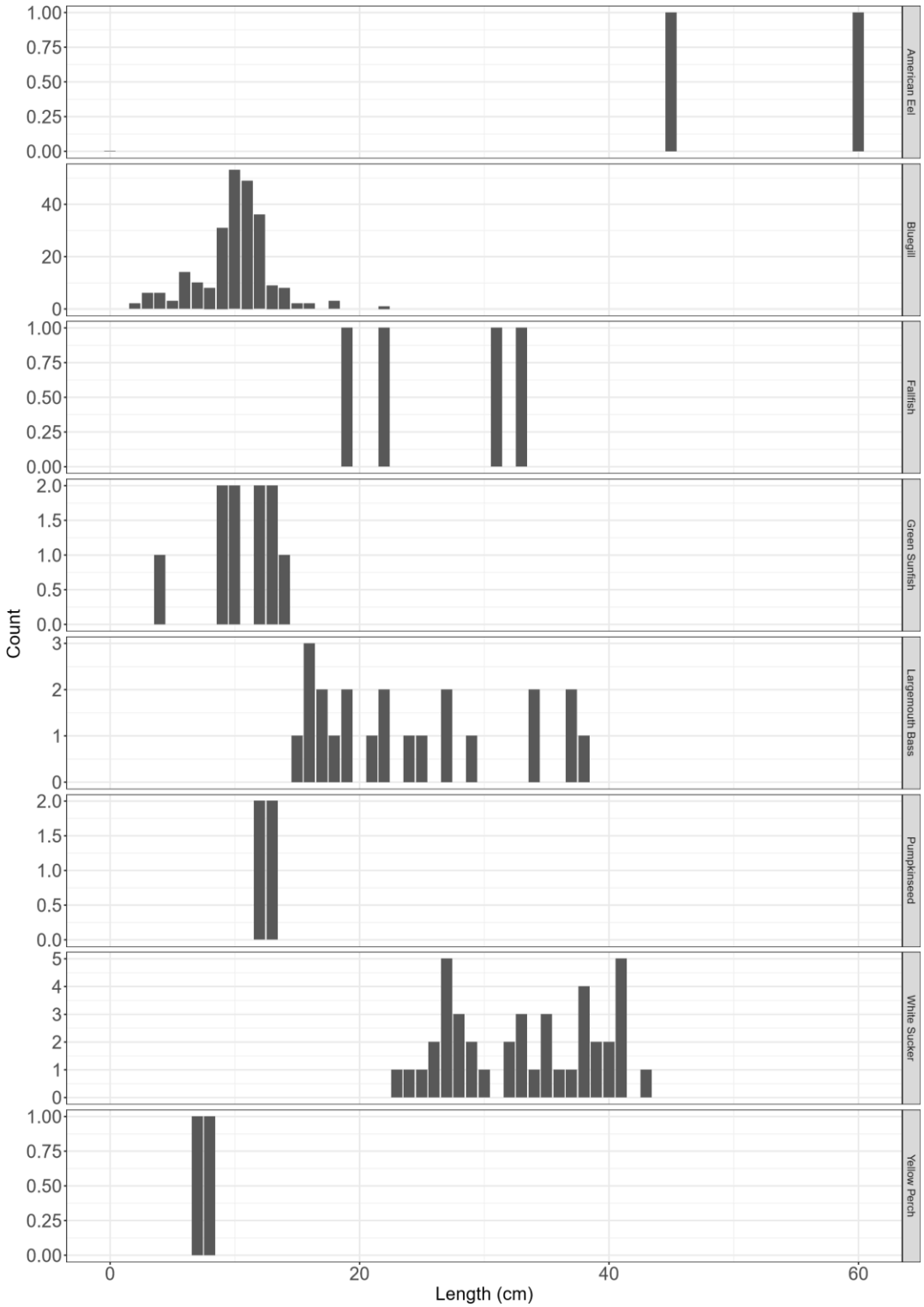


Figure 18. Length frequency histogram for Freshwater Pond, 10−10-2024.

HALLS POND (EASTFORD-ASHFORD)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Halls Pond on 09-30-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	1	1	1	NA	NA
Brown Bullhead	14	14	14	3	0
Black Crappie	5	5	5	4	1
Bluegill	1510	1136	109	10	0
Chain Pickerel	77	38	17	0	0
Golden Shiner	1	1	0	NA	NA
Largemouth Bass	151	47	40	12	0
Painted Turtle	26	NA	NA	NA	NA
Pumpkinseed	30	30	11	0	0
Snapping Turtle	1	NA	NA	NA	NA
Yellow Perch	26	24	22	16	1

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Halls Pond on 09-30-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	1.0	1 (24.3)	1 (6.4)	NA	NA	100 (42.9)
Black Crappie	5.0	5 (21.3)	5 (17.1)	4	1	100 (77.2)
Bluegill	1511.7	1137.3 (343.3)	109.1 (142.3)	10	0	9.6 (47.9)
Brown Bullhead	14.0	14 (11.7)	14 (10.6)	3	0	100 (91.1)
Chain Pickerel	77.1	38 (20.6)	17 (6.3)	0	0	44.7 (35.8)
Golden Shiner	1.0	1 (20.9)	0 (6.7)	NA	NA	0 (39.6)
Largemouth Bass	151.2	47.1 (57.9)	40 (29.4)	12	0	85.1 (54.8)
Painted Turtle	26.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Pumpkinseed	30.0	30 (59.3)	11 (23.5)	0	0	36.7 (42.3)
Snapping Turtle	1.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Yellow Perch	26.0	24 (102.1)	22 (48.2)	16	1	91.7 (53.5)

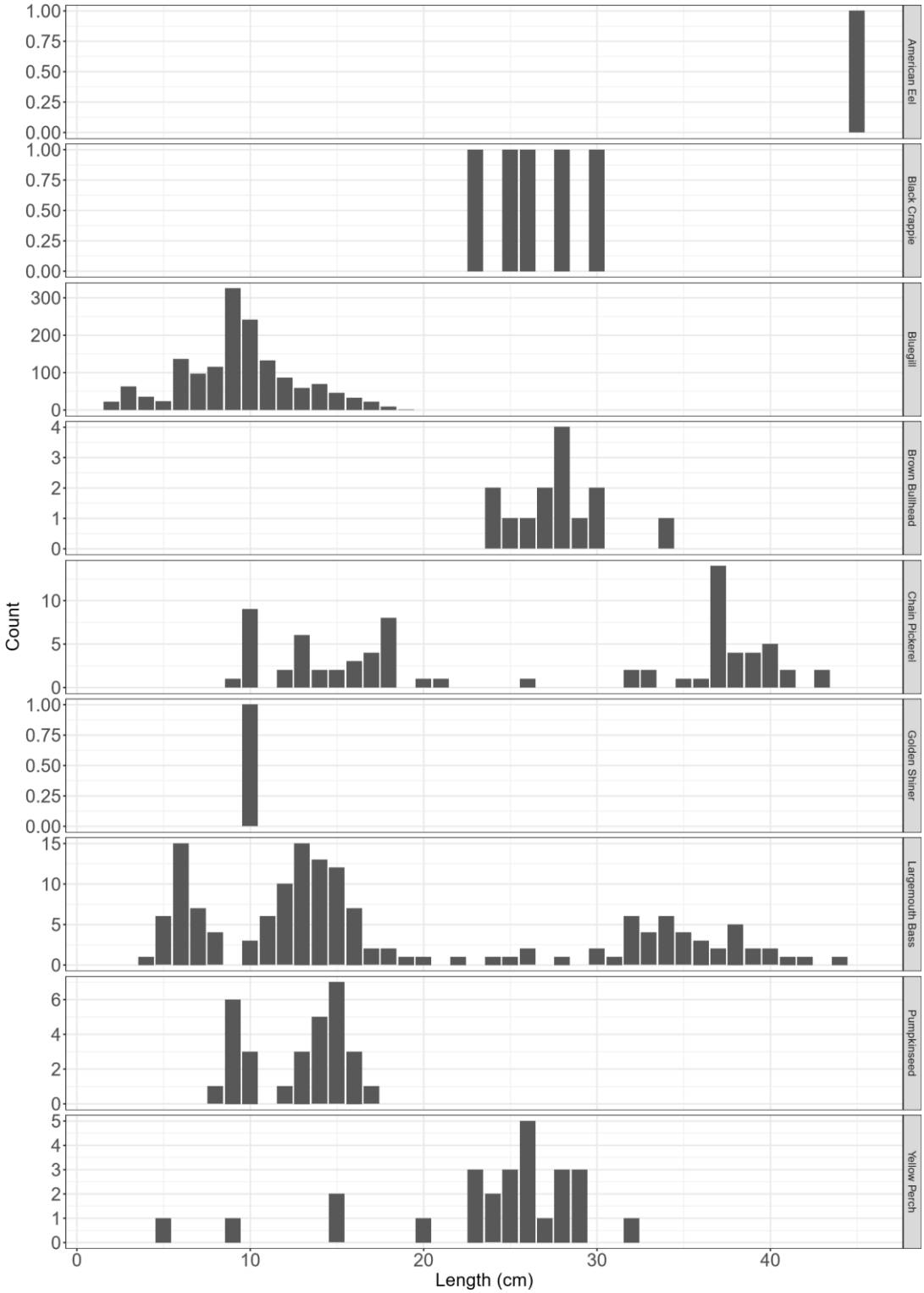


Figure 19. Length Frequency Histogram for Halls Pond, 09−30-2024.

HAMMONASSET LAKE (KILLINGWORTH)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Lake Hammonasset on 11-13-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	2	2	0	NA	NA
Black Crappie	24	2	2	0	0
Bluegill	2395	311	69	27	10
Chain Pickerel	51	41	23	10	3
Golden Shiner	150	150	7	NA	NA
Largemouth Bass	105	52	42	15	6
Redfin Pickerel	1	0	0	0	0
Yellow Perch	405	31	17	11	6

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Lake Hammonasset on 11-13-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	2	2	0	NA	NA
Black Crappie	24	2	2	0	0
Bluegill	2395	311	69	27	10
Chain Pickerel	51	41	23	10	3
Golden Shiner	150	150	7	NA	NA
Largemouth Bass	105	52	42	15	6
Redfin Pickerel	1	0	0	0	0
Yellow Perch	405	31	17	11	6

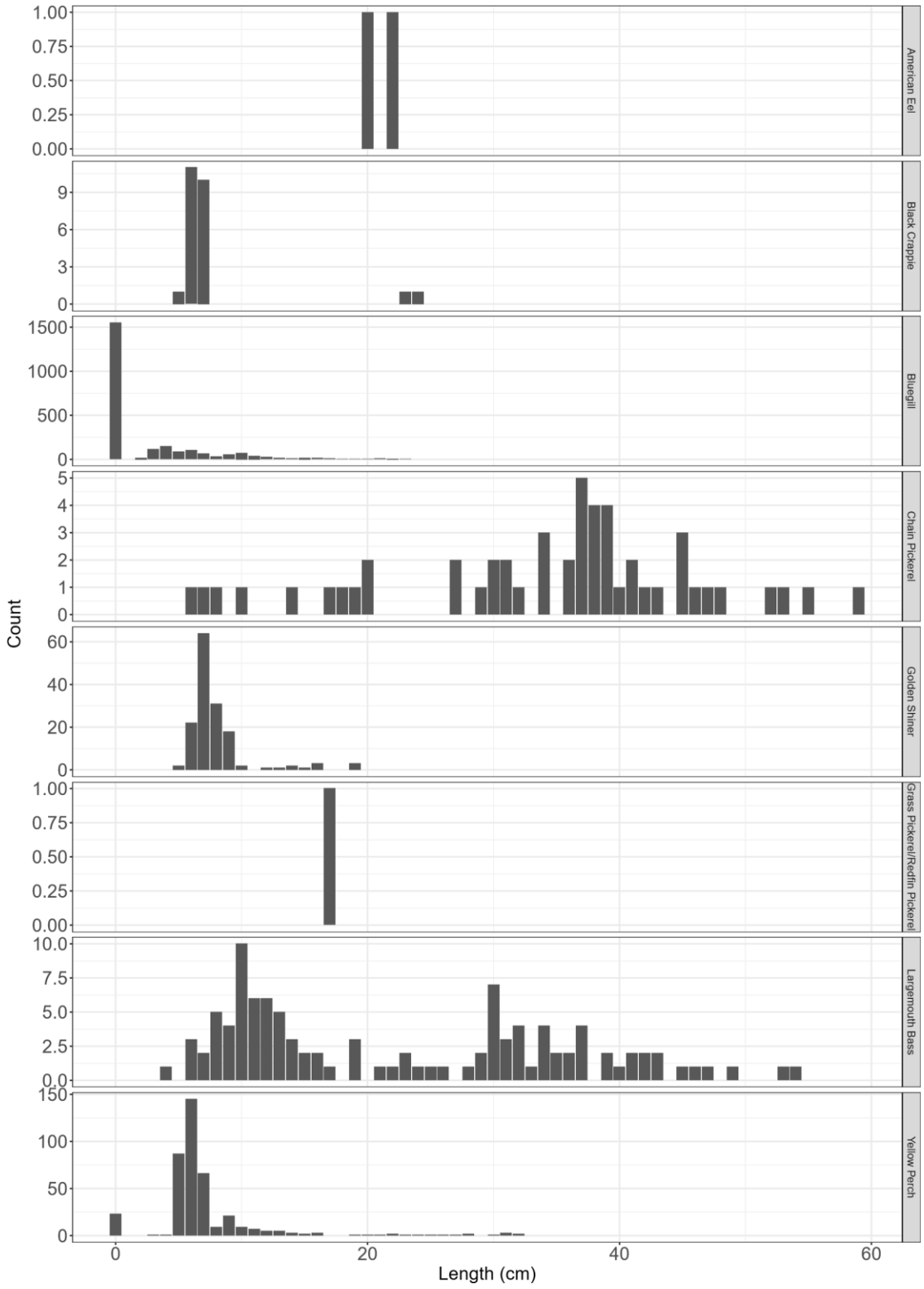


Figure 20. Length frequency histogram for Lake Hammonasset, 11−13-2024.

HIGHLAND LAKE (WINCHESTER)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Highland Lake on 05-24-2024.

Species	All	Stock	Quality	Preferred	Memorable
Alewife	177	177	2	NA	NA
Brown Bullhead	41	41	39	11	0
Black Crappie	4	4	4	2	1
Bridled Shiner	1	0	0	0	0
Bluegill	81	78	46	23	2
Hybrid Bluegill & Pumpkinseed	7	7	6	4	0
Chain Pickerel	3	2	1	0	0
Green Sunfish	1	1	0	0	0
Golden Shiner	6	6	5	NA	NA
Largemouth Bass	16	14	11	4	1
Pumpkinseed	76	72	46	12	1
Rock Bass	20	20	19	15	1
Smallmouth Bass	18	15	5	1	0
White Catfish	3	3	3	0	0
White Sucker	2	2	2	NA	NA
Yellow Perch	126	76	23	1	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Highland Lake on 05-24-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Alewife	177	177 (53.3)	2 (6.9)	NA	NA	1.1 (23.4)
Black Crappie	4	4 (21.3)	4 (17.1)	2	1	100 (77.2)
Bluegill	81	78 (343.3)	46 (142.3)	23	2	59 (47.9)
Bridled Shiner	1	0 (NA)	0 (NA)	0	0	NaN (NA)
Brown Bullhead	41	41 (11.7)	39 (10.6)	11	0	95.1 (91.1)
Chain Pickerel	3	2 (20.6)	1 (6.3)	0	0	50 (35.8)
Golden Shiner	6	6 (20.9)	5 (6.7)	NA	NA	83.3 (39.6)
Green Sunfish	1	1 (NA)	0 (NA)	0	0	0 (NA)
Hybrid Bluegill & Pumpkinseed	7	7 (NA)	6 (NA)	4	0	85.7 (NA)
Largemouth Bass	16	14 (57.9)	11 (29.4)	4	1	78.6 (54.8)
Pumpkinseed	76	72 (59.3)	46 (23.5)	12	1	63.9 (42.3)

Rock Bass	20	20 (38.9)	19 (24.4)	15	1	95 (67)
Smallmouth Bass	18	15 (26)	5 (10.4)	1	0	33.3 (39.6)
White Catfish	3	3 (NA)	3 (NA)	0	0	100 (NA)
White Sucker	2	2 (31.2)	2 (25.8)	NA	NA	100 (84.9)
Yellow Perch	126	76 (102.1)	23 (48.2)	1	0	30.3 (53.5)

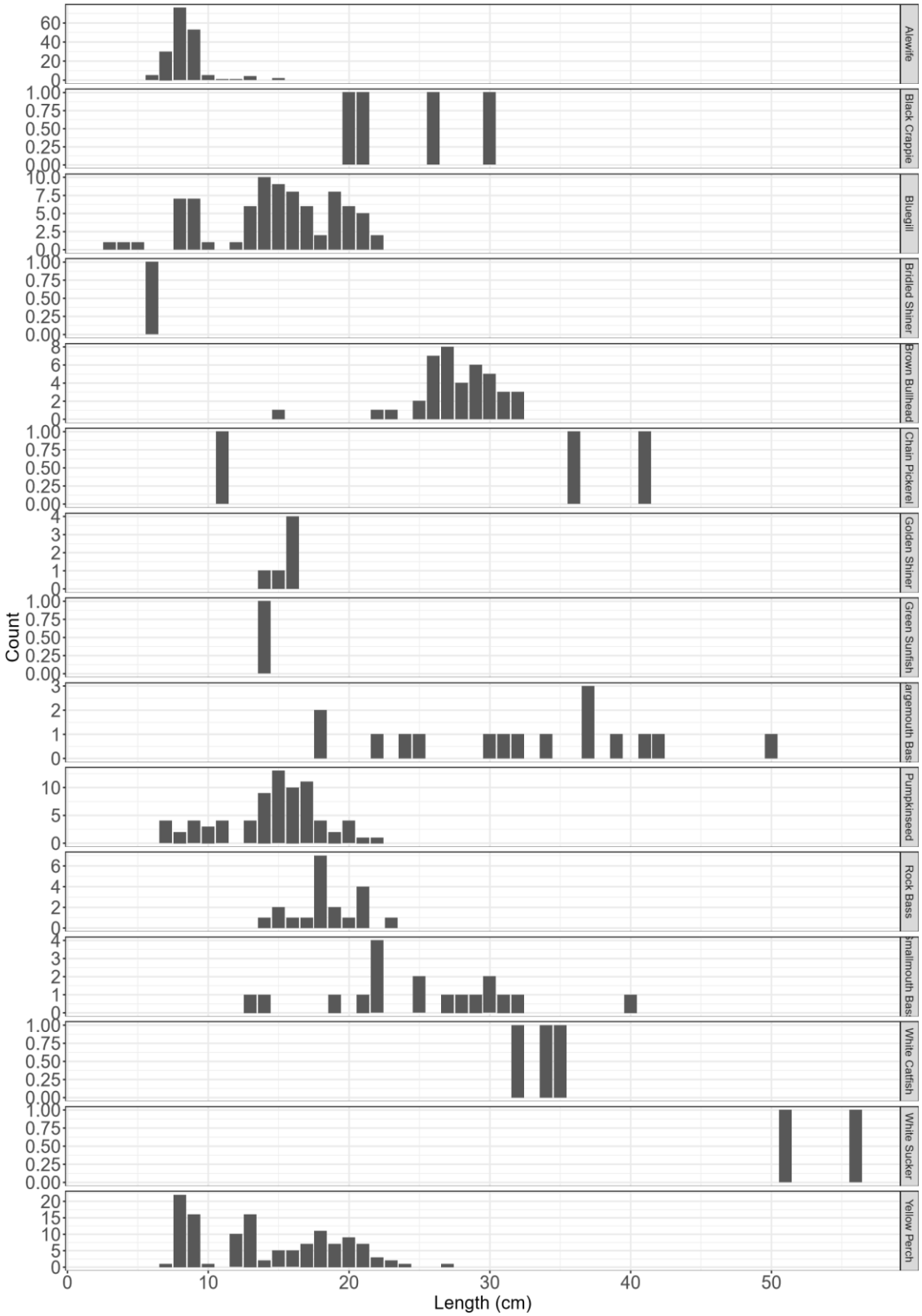


Figure 21. Length frequency histogram for Highland Lake, 05−24-2024.

INDIAN LAKE (SHARON/NEW YORK)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Indian Lake on 11-14-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	2	1	0	0	0
Black Crappie	44	31	20	19	2
Bluegill	741	548	160	136	17
Hybrid Bluegill & Pumpkinseed	8	8	5	4	1
Chain Pickerel	64	34	16	6	0
Golden Shiner	19	19	5	NA	NA
Largemouth Bass	91	66	39	17	6
Musk Turtle	4	NA	NA	NA	NA
Painted Turtle	2	NA	NA	NA	NA
Pumpkinseed	53	43	4	1	0
Rock Bass	9	9	5	3	2
Redbreast Sunfish	6	6	0	0	0
Yellow Perch	332	280	179	70	6

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Indian Lake on 11-14-2024 Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	43.8	30.9 (21.3)	19.9 (17.1)	18.9	2.0	64.5 (77.2)
Bluegill	737.9	545.7 (343.3)	159.3 (142.3)	135.4	16.9	29.2 (47.9)
Brown Bullhead	2.0	1 (11.7)	0 (10.6)	0.0	0.0	0 (91.1)
Chain Pickerel	63.7	33.9 (20.6)	15.9 (6.3)	6.0	0.0	47.1 (35.8)
Golden Shiner	18.9	18.9 (20.9)	5 (6.7)	NA	NA	26.3 (39.6)
Hybrid Bluegill & Pumpkinseed	8.0	8 (NA)	5 (NA)	4.0	1.0	62.5 (NA)
Largemouth Bass	90.6	65.7 (57.9)	38.8 (29.4)	16.9	6.0	59.1 (54.8)
Musk Turtle	4.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Painted Turtle	2.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Pumpkinseed	52.8	42.8 (59.3)	4 (23.5)	1.0	0.0	9.3 (42.3)
Redbreast Sunfish	6.0	6 (33.7)	0 (12.7)	0.0	0.0	0 (34.6)
Rock Bass	9.0	9 (38.9)	5 (24.4)	3.0	2.0	55.6 (67)
Yellow Perch	330.6	278.8 (102.1)	178.3 (48.2)	69.7	6.0	63.9 (53.5)

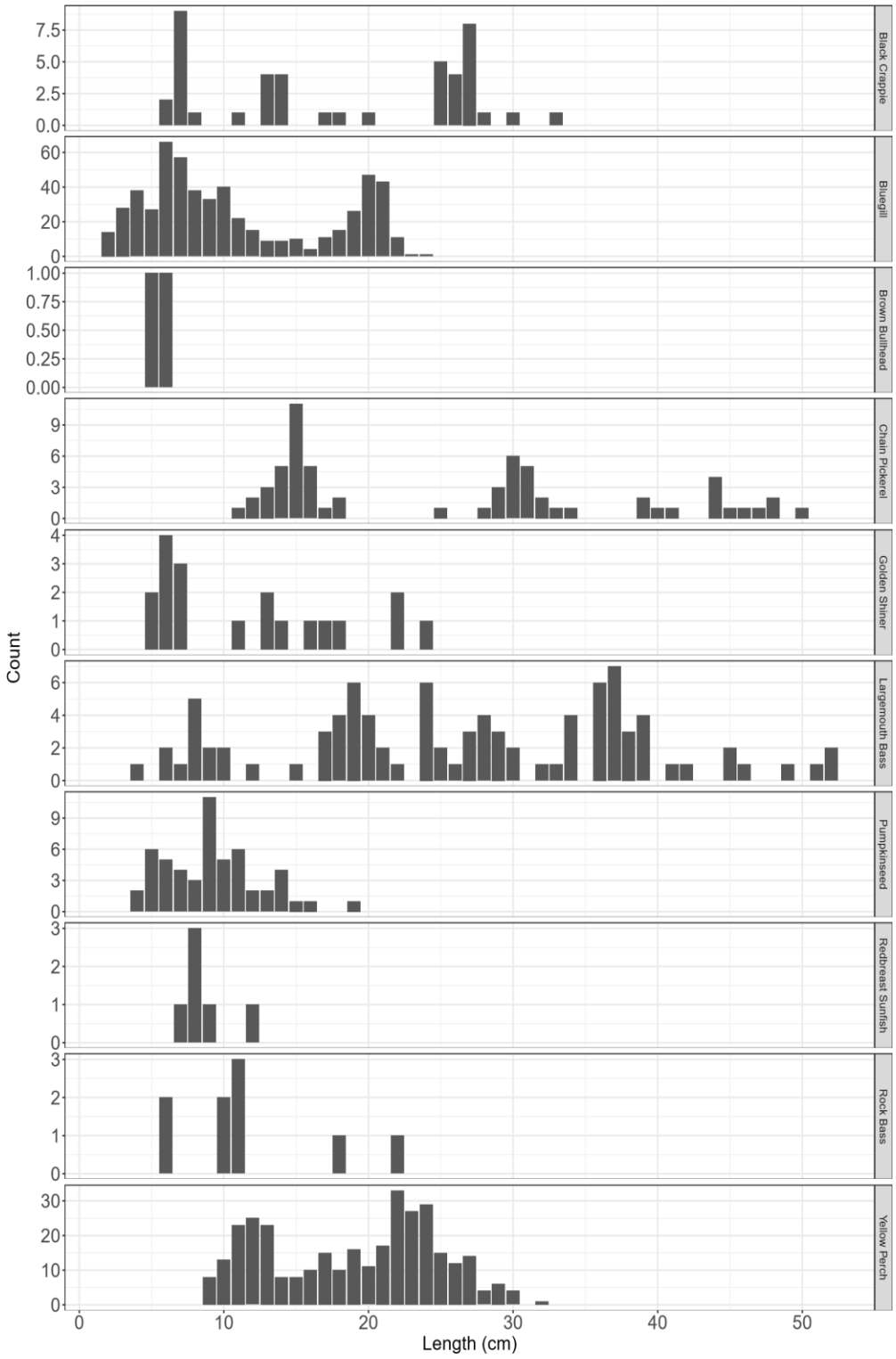


Figure 22. Length frequency histogram for Indian Pond, 11−14-2024.

LAKEWOOD LAKE [AKA GREAT BROOK RESERVOIR] (WATERBURY)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Lakewood Lake [aka Great Brook Reservoir] on 10-01-2024.

Species	All	Stock	Quality	Preferred	Memorable
Alewife	4	4	4	0	0
Brown Bullhead	1	1	1	1	0
Black Crappie	67	6	4	2	1
Bluegill	1063	395	109	53	0
Channel Catfish	9	9	9	8	2
Chain Pickerel	58	26	6	2	2
Golden Shiner	17	17	4	0	0
Banded Killifish	1	0	0	0	0
Largemouth Bass	112	38	25	3	0
Pumpkinseed	19	16	14	5	0
Rock Bass	9	9	9	9	1
Redbreast Sunfish	2	2	0	0	0
White Perch	97	6	6	6	5
Yellow Bullhead	18	0	0	0	0
Yellow Perch	297	86	56	9	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Lakewood Lake [aka Great Brook Reservoir] on 10-01-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Alewife	4.8	4.8 (53.3)	4.8 (6.9)	0.0	0.0	100 (23.4)
Banded Killifish	1.2	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Black Crappie	79.9	7.2 (21.3)	4.8 (17.1)	2.4	1.2	66.7 (77.2)
Bluegill	1267.6	471 (343.3)	130 (142.3)	63.2	0.0	27.6 (47.9)
Brown Bullhead	1.2	1.2 (11.7)	1.2 (10.6)	1.2	0.0	100 (91.1)
Chain Pickerel	69.2	31 (20.6)	7.2 (6.3)	2.4	2.4	23.1 (35.8)
Channel Catfish	10.7	10.7 (NA)	10.7 (NA)	9.5	2.4	100 (NA)
Golden Shiner	20.3	20.3 (20.9)	4.8 (6.7)	0.0	0.0	23.5 (39.6)
Largemouth Bass	133.6	45.3 (57.9)	29.8 (29.4)	3.6	0.0	65.8 (54.8)
Pumpkinseed	22.7	19.1 (59.3)	16.7 (23.5)	6.0	0.0	87.5 (42.3)
Redbreast Sunfish	2.4	2.4 (33.7)	0 (12.7)	0.0	0.0	0 (34.6)
Rock Bass	10.7	10.7 (38.9)	10.7 (24.4)	10.7	1.2	100 (67)
White Perch	115.7	7.2 (127.6)	7.2 (48.9)	7.2	6.0	100 (66.7)
Yellow Bullhead	21.5	0 (9.8)	0 (6.5)	0.0	0.0	NaN (72.1)
Yellow Perch	354.2	102.6 (102.1)	66.8 (48.2)	10.7	0.0	65.1 (53.5)

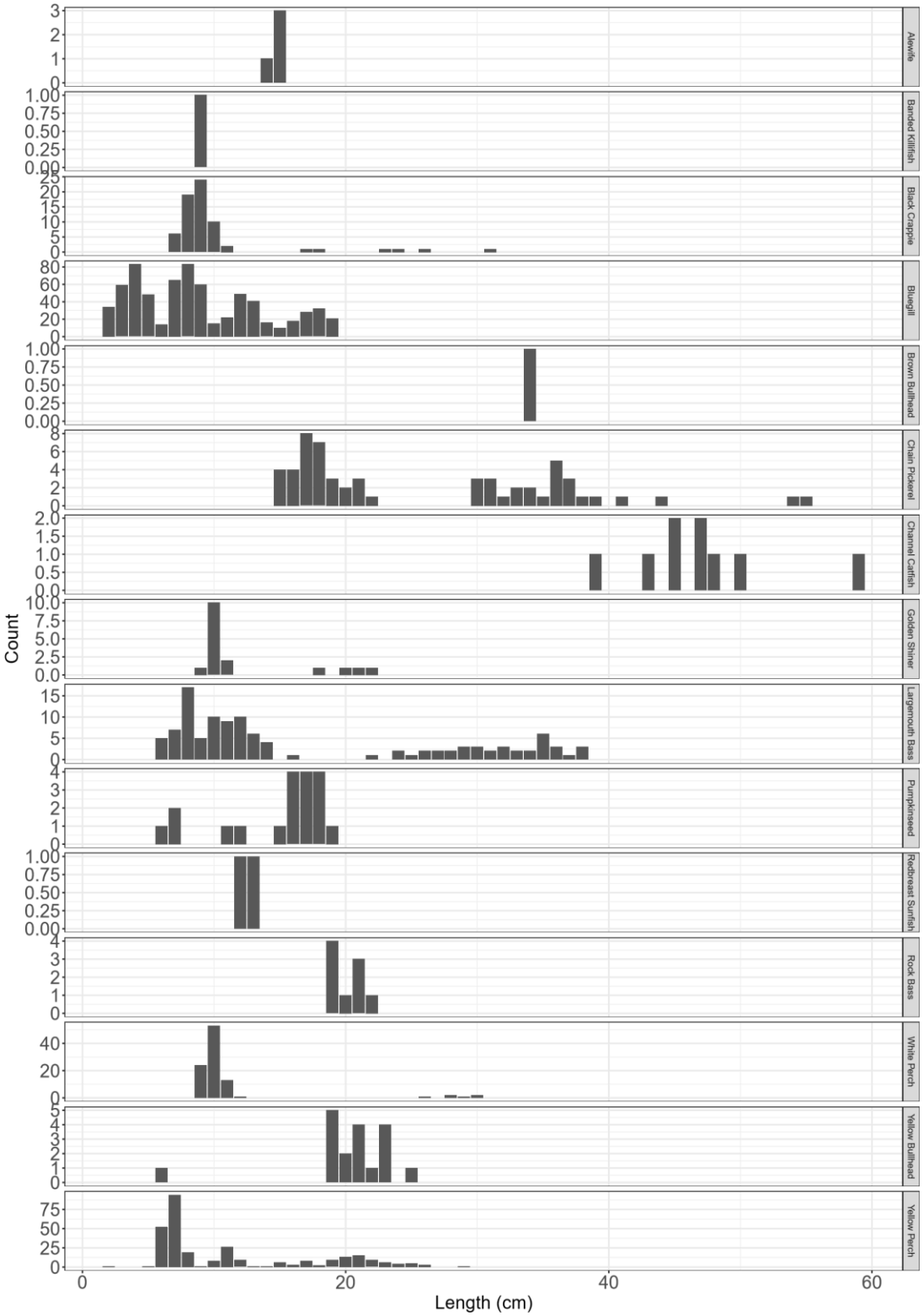


Figure 23. Length frequency histogram for Lakewood Lake [aka Great Brook Reservoir], 10-01-2024.

LAKE SALTONSTALL (EAST HAVE-BRANFORD)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Lake Saltonstall on 05-28-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	3	3	2	0	0
Alewife	98	98	0	0	0
Brown Bullhead	1	1	1	1	0
Black Crappie	11	11	11	10	2
Bluegill	898	673	90	21	0
Hybrid Bluegill & Pumpkinseed	2	2	2	2	0
Common Carp	1	0	0	0	0
Channel Catfish	2	2	2	2	2
Golden Shiner	19	19	7	0	0
Largemouth Bass	59	51	36	25	7
Musk Turtle	2	0	0	0	0
Pumpkinseed	63	57	9	1	0
Smallmouth Bass	21	16	6	3	1
Walleye	8	7	6	6	4
White Perch	6	6	3	3	3
White Sucker	11	11	6	0	0
Yellow Perch	12	12	6	3	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Lake Saltonstall on 05-28-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Alewife	97.9	97.9 (53.3)	0 (6.9)	0	0	0 (23.4)
American Eel	3.0	3 (24.3)	2 (6.4)	0	0	66.7 (42.9)
Black Crappie	11.0	11 (21.3)	11 (17.1)	10	2	100 (77.2)
Bluegill	897.3	672.4 (343.3)	89.9 (142.3)	21	0	13.4 (47.9)
Brown Bullhead	1.0	1 (11.7)	1 (10.6)	1	0	100 (91.1)
Channel Catfish	2.0	2 (NA)	2 (NA)	2	2	100 (NA)
Common Carp	1.0	0 (NA)	0 (NA)	0	0	NaN (NA)
Golden Shiner	19.0	19 (20.9)	7 (6.7)	0	0	36.8 (39.6)
Hybrid Bluegill & Pumpkinseed	2.0	2 (NA)	2 (NA)	2	0	100 (NA)
Largemouth Bass	59.0	51 (57.9)	36 (29.4)	25	7	70.6 (54.8)

Musk Turtle	2.0	0 (NA)	0 (NA)	0	0	NaN (NA)
Pumpkinseed	62.9	57 (59.3)	9 (23.5)	1	0	15.8 (42.3)
Smallmouth Bass	21.0	16 (26)	6 (10.4)	3	1	37.5 (39.6)
Walleye	8.0	7 (45.2)	6 (27.2)	6	4	85.7 (48.4)
White Perch	6.0	6 (127.6)	3 (48.9)	3	3	50 (66.7)
White Sucker	11.0	11 (31.2)	6 (25.8)	0	0	54.5 (84.9)
Yellow Perch	12.0	12 (102.1)	6 (48.2)	3	0	50 (53.5)

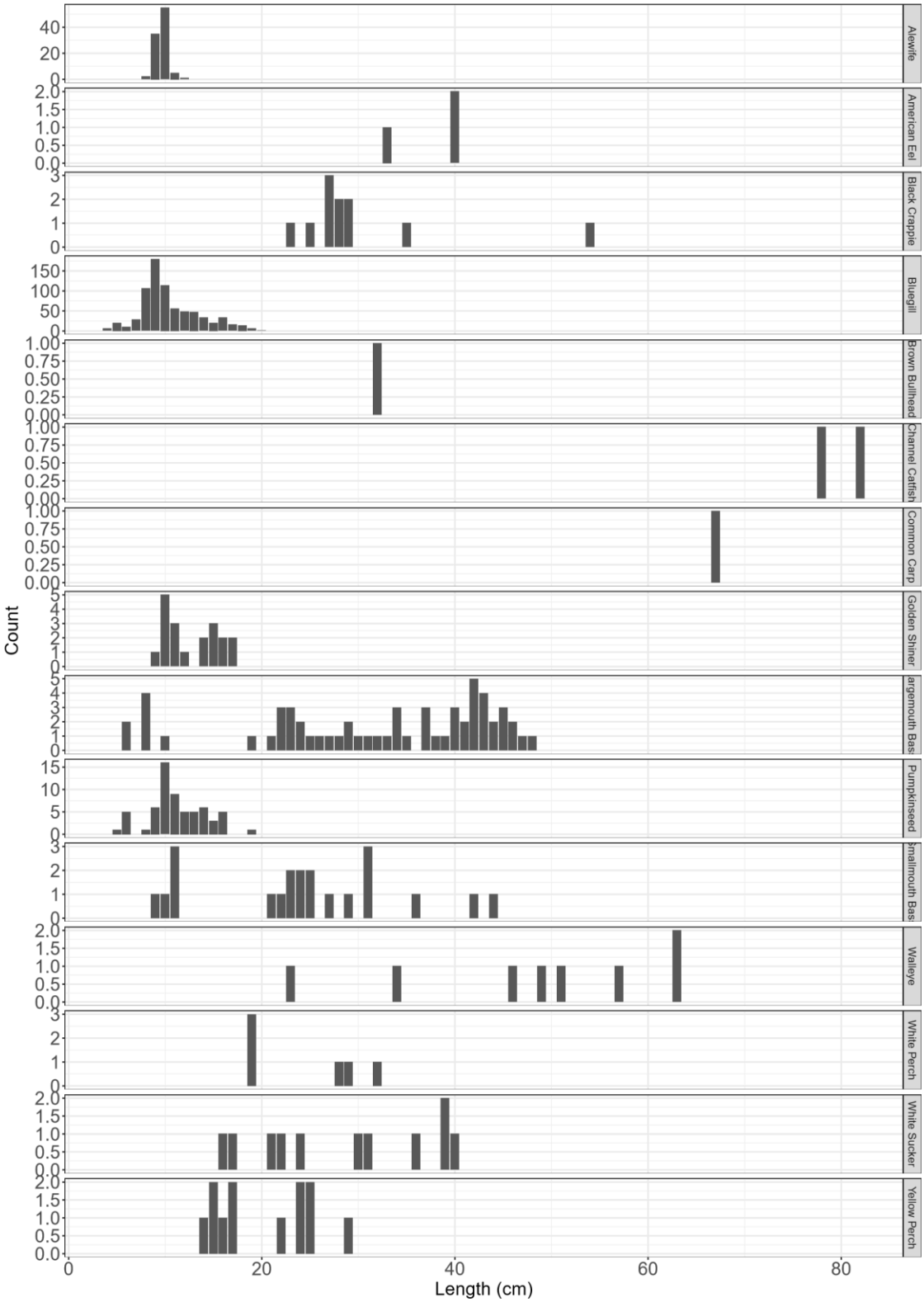


Figure 24. Length frequency histogram for Lake Saltonstall, 05-28-2024.

LAKE WINTERGREEN (HAMDEN)

(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1. The number of each organism caught by species and size class in Lake Wintergreen on 05-09-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	1	1	1	NA	NA
Black Crappie	8	8	7	7	1
Bluegill	66	44	24	14	0
Brook Trout, Stocked	2	2	0	0	0
Hybrid Bluegill & Pumpkinseed	1	1	1	1	0
Common Carp	1	0	0	0	0
Channel Catfish	7	7	7	6	0
Largemouth Bass	84	52	2	1	1
Pumpkinseed	5	5	5	3	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Lake Wintergreen on 05-09-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	0.8	0.8 (24.3)	0.8 (6.4)	NA	NA	100 (42.9)
Black Crappie	6.6	6.6 (21.3)	5.8 (17.1)	5.8	0.8	87.5 (77.2)
Bluegill	54.6	36.4 (343.3)	19.9 (142.3)	11.6	0.0	54.5 (47.9)
Brook Trout, Stocked	1.7	1.7 (NA)	0 (NA)	0.0	0.0	0 (NA)
Channel Catfish	5.8	5.8 (NA)	5.8 (NA)	5.0	0.0	100 (NA)
Common Carp	0.8	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Hybrid Bluegill & Pumpkinseed	0.8	0.8 (NA)	0.8 (NA)	0.8	0.0	100 (NA)
Largemouth Bass	69.5	43 (57.9)	1.7 (29.4)	0.8	0.8	3.8 (54.8)
Pumpkinseed	4.1	4.1 (59.3)	4.1 (23.5)	2.5	0.0	100 (42.3)

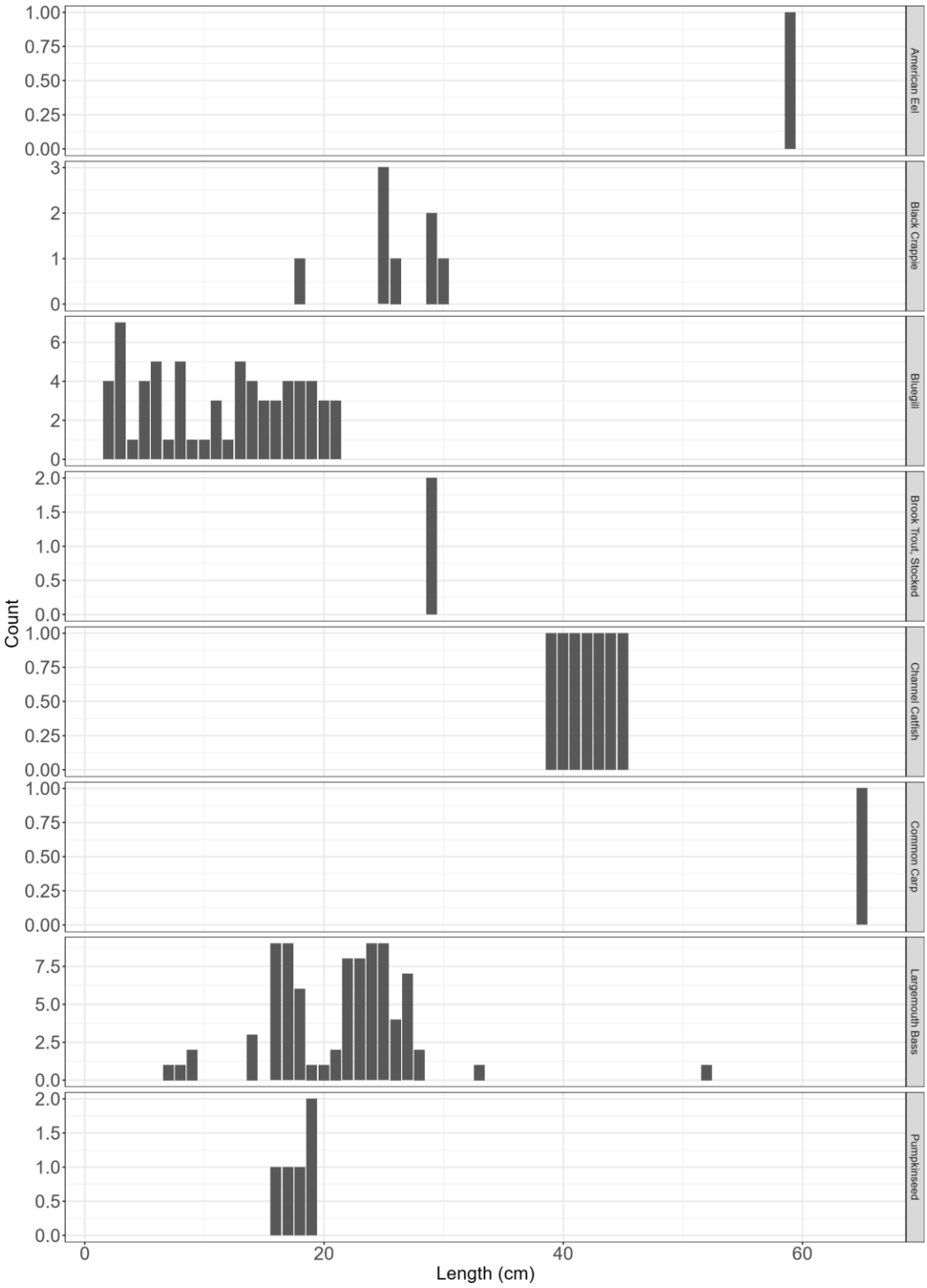


Figure 25. Length frequency histogram for Lake Wintergreen, 05-09-2024.

LAKE WINTERGREEN (HAMDEN)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Lake Wintergreen on 05-14-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	2	2	2	NA	NA
Black Crappie	2	2	2	2	0
Bluegill	71	50	38	19	0
Brown Trout, Stocked	3	3	2	1	0
Channel Catfish	13	13	13	5	0
Largemouth Bass	77	49	1	1	1
Pumpkinseed	13	12	5	4	0
Rainbow Trout, Stocked	2	2	0	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Lake Wintergreen on 05-14-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	3.0	3 (24.3)	3 (6.4)	NA	NA	100 (42.9)
Black Crappie	3.0	3 (21.3)	3 (17.1)	3.0	0.0	100 (77.2)
Bluegill	106.0	74.7 (343.3)	56.7 (142.3)	28.4	0.0	76 (47.9)
Brown Trout, Stocked	4.5	4.5 (NA)	3 (NA)	1.5	0.0	66.7 (NA)
Channel Catfish	19.4	19.4 (NA)	19.4 (NA)	7.5	0.0	100 (NA)
Largemouth Bass	115.0	73.2 (57.9)	1.5 (29.4)	1.5	1.5	2 (54.8)
Pumpkinseed	19.4	17.9 (59.3)	7.5 (23.5)	6.0	0.0	41.7 (42.3)
Rainbow Trout, Stocked	3.0	3 (NA)	0 (NA)	0.0	0.0	0 (NA)

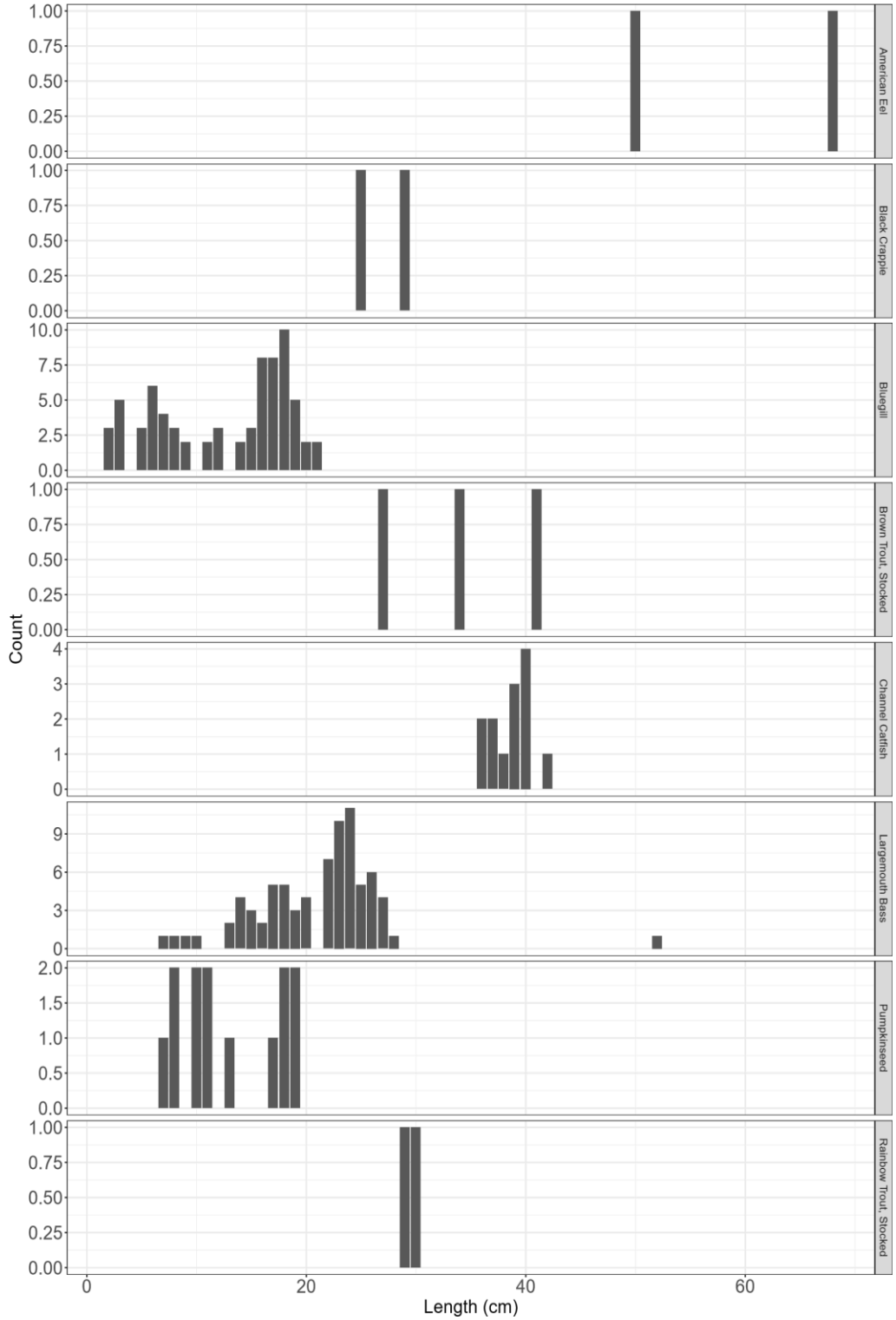


Figure 26. Length frequency histogram for Lake Wintergreen, 05-14-2024.

LOWER BOLTON LAKE (BOLTON)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Lower Bolton Lake on 04-29-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	2	1	1	1	1
Bluegill	67	55	12	10	2
Channel Catfish	26	26	26	26	12
Chain Pickerel	3	3	0	0	0
Green Sunfish	30	29	7	0	0
Golden Shiner	6	6	0	NA	NA
Hybrid Redbreast & Green	1	1	1	1	0
Banded Killifish	5	0	0	0	0
Largemouth Bass	67	67	58	22	8
Hybrid Pumpkinseed & Green	1	1	0	0	0
Hybrid Pumpkinseed & Redbreast	1	1	1	1	0
Pumpkinseed	81	81	52	16	0
Hybrid Bluegill & Redbreast	1	1	1	1	0
Redbreast Sunfish	3	3	3	3	0
White Sucker	89	89	66	NA	NA
Yellow Bullhead	17	0	0	0	0
Yellow Perch	495	127	50	3	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Lower Bolton Lake on 04-29-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Banded Killifish	6.0	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Bluegill	80.0	65.7 (343.3)	14.3 (142.3)	11.9	2.4	21.8 (47.9)
Brown Bullhead	2.4	1.2 (11.7)	1.2 (10.6)	1.2	1.2	100 (91.1)
Chain Pickerel	3.6	3.6 (20.6)	0 (6.3)	0.0	0.0	0 (35.8)
Channel Catfish	31.0	31 (NA)	31 (NA)	31.0	14.3	100 (NA)
Golden Shiner	7.2	7.2 (20.9)	0 (6.7)	NA	NA	0 (39.6)
Green Sunfish	35.8	34.6 (NA)	8.4 (NA)	0.0	0.0	24.1 (NA)
Hybrid Bluegill & Redbreast	1.2	1.2 (NA)	1.2 (NA)	1.2	0.0	100 (NA)
Hybrid Pumpkinseed & Green	1.2	1.2 (NA)	0 (NA)	0.0	0.0	0 (NA)
Hybrid Pumpkinseed & Redbreast	1.2	1.2 (NA)	1.2 (NA)	1.2	0.0	100 (NA)
Hybrid Redbreast & Green	1.2	1.2 (NA)	1.2 (NA)	1.2	0.0	100 (NA)

Largemouth Bass	80.0	80 (57.9)	69.3 (29.4)	26.3	9.6	86.6 (54.8)
Pumpkinseed	96.7	96.7 (59.3)	62.1 (23.5)	19.1	0.0	64.2 (42.3)
Redbreast Sunfish	3.6	3.6 (33.7)	3.6 (12.7)	3.6	0.0	100 (34.6)
White Sucker	106.3	106.3 (31.2)	78.8 (25.8)	NA	NA	74.2 (84.9)
Yellow Bullhead	20.3	0 (9.8)	0 (6.5)	0.0	0.0	NaN (72.1)
Yellow Perch	591.0	151.6 (102.1)	59.7 (48.2)	3.6	0.0	39.4 (53.5)

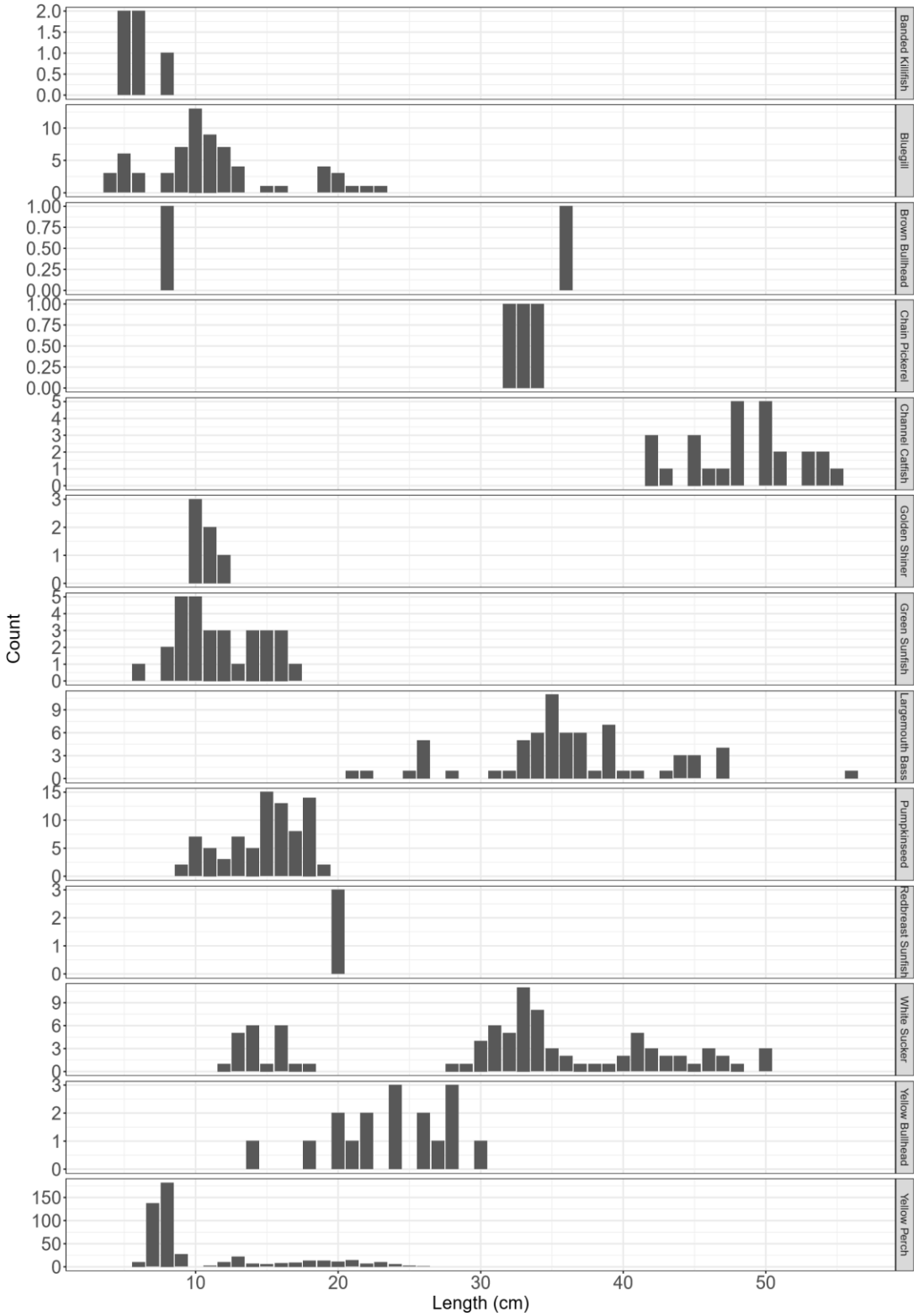


Figure 27. Length frequency histogram for Lower Bolton Lake, 04-29-2024.

MALONES POND [AKA PINE LAKE PARK POND] (BRISTOL)

(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1. The number of each organism caught by species and size class in Malones Pond (aka Pine Lake Park Pond) on 10-21-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	3	3	3	2	1
Black Crappie	3	2	0	0	0
Bluegill	550	190	49	0	0
Hybrid Bluegill & Pumpkinseed	2	2	0	0	0
Chain Pickerel	10	8	7	3	0
Golden Shiner	11	11	5	NA	NA
Largemouth Bass	49	39	26	5	0
Pumpkinseed	28	25	7	0	0
Yellow Perch	3	3	3	2	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Malones Pond (aka Pine Lake Park Pond) on 10-21-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	5.3	3.6 (21.3)	0 (17.1)	0.0	0.0	0 (77.2)
Bluegill	980.2	338.6 (343.3)	87.3 (142.3)	0.0	0.0	25.8 (47.9)
Brown Bullhead	5.3	5.3 (11.7)	5.3 (10.6)	3.6	1.8	100 (91.1)
Chain Pickerel	17.8	14.3 (20.6)	12.5 (6.3)	5.3	0.0	87.5 (35.8)
Golden Shiner	19.6	19.6 (20.9)	8.9 (6.7)	NA	NA	45.5 (39.6)
Hybrid Bluegill & Pumpkinseed	3.6	3.6 (NA)	0 (NA)	0.0	0.0	0 (NA)
Largemouth Bass	87.3	69.5 (57.9)	46.3 (29.4)	8.9	0.0	66.7 (54.8)
Pumpkinseed	49.9	44.6 (59.3)	12.5 (23.5)	0.0	0.0	28 (42.3)
Yellow Perch	5.3	5.3 (102.1)	5.3 (48.2)	3.6	0.0	100 (53.5)

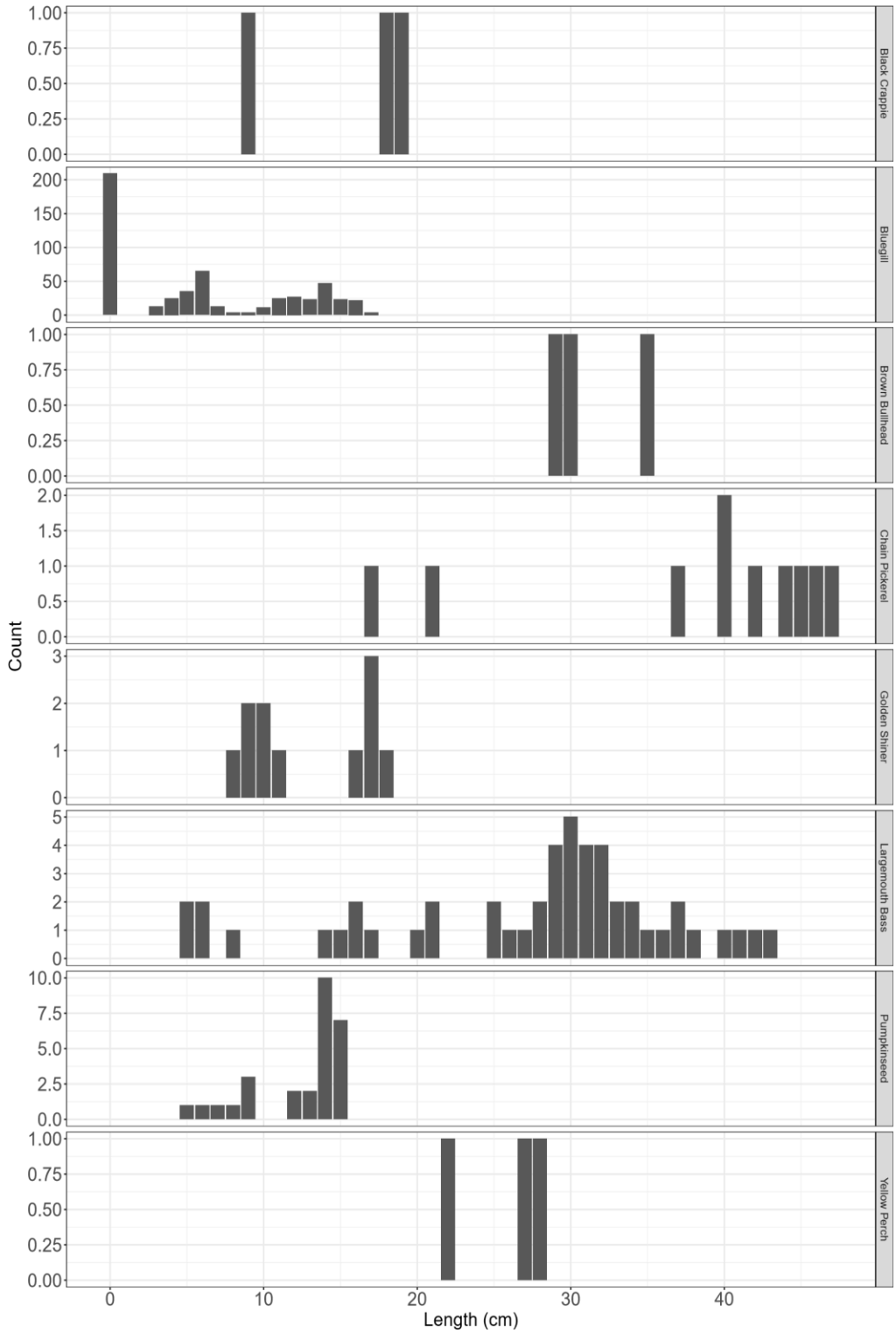


Figure 28. Length frequency histogram for Malones Pond (aka Pine Lake Park Pond), 10-21-2024.

MANSFIELD HOLLOW LAKE (MANSFIELD)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Mansfield Hollow Reservoir on 05-31-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	1	1	1	NA	NA
Brown Bullhead	12	12	12	9	3
Black Crappie	11	4	3	3	1
Bluegill	439	233	53	33	0
Channel Catfish	1	1	1	1	1
Chain Pickerel	10	8	6	3	1
Fallfish	5	0	0	0	0
Golden Shiner	42	42	4	NA	NA
Banded Killifish	3	0	0	0	0
Largemouth Bass	83	56	49	20	2
Pumpkinseed	211	187	101	32	0
Tessellated darter	16	0	0	0	0
White Sucker	29	29	15	NA	NA
Yellow Perch	533	171	50	12	2

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Mansfield Hollow Reservoir on 05-31-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	1.1	1.1 (24.3)	1.1 (6.4)	NA	NA	100 (42.9)
Banded Killifish	3.3	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Black Crappie	12.1	4.4 (21.3)	3.3 (17.1)	3.3	1.1	75 (77.2)
Bluegill	484.0	256.9 (343.3)	58.4 (142.3)	36.4	0.0	22.7 (47.9)
Brown Bullhead	13.2	13.2 (11.7)	13.2 (10.6)	9.9	3.3	100 (91.1)
Chain Pickerel	11.0	8.8 (20.6)	6.6 (6.3)	3.3	1.1	75 (35.8)
Channel Catfish	1.1	1.1 (NA)	1.1 (NA)	1.1	1.1	100 (NA)
Fallfish	5.5	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Golden Shiner	46.3	46.3 (20.9)	4.4 (6.7)	NA	NA	9.5 (39.6)
Largemouth Bass	91.5	61.7 (57.9)	54 (29.4)	22.1	2.2	87.5 (54.8)
Pumpkinseed	232.6	206.2 (59.3)	111.4 (23.5)	35.3	0.0	54 (42.3)
Tessellated darter	17.6	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
White Sucker	32.0	32 (31.2)	16.5 (25.8)	NA	NA	51.7 (84.9)
Yellow Perch	587.7	188.5 (102.1)	55.1 (48.2)	13.2	2.2	29.2 (53.5)

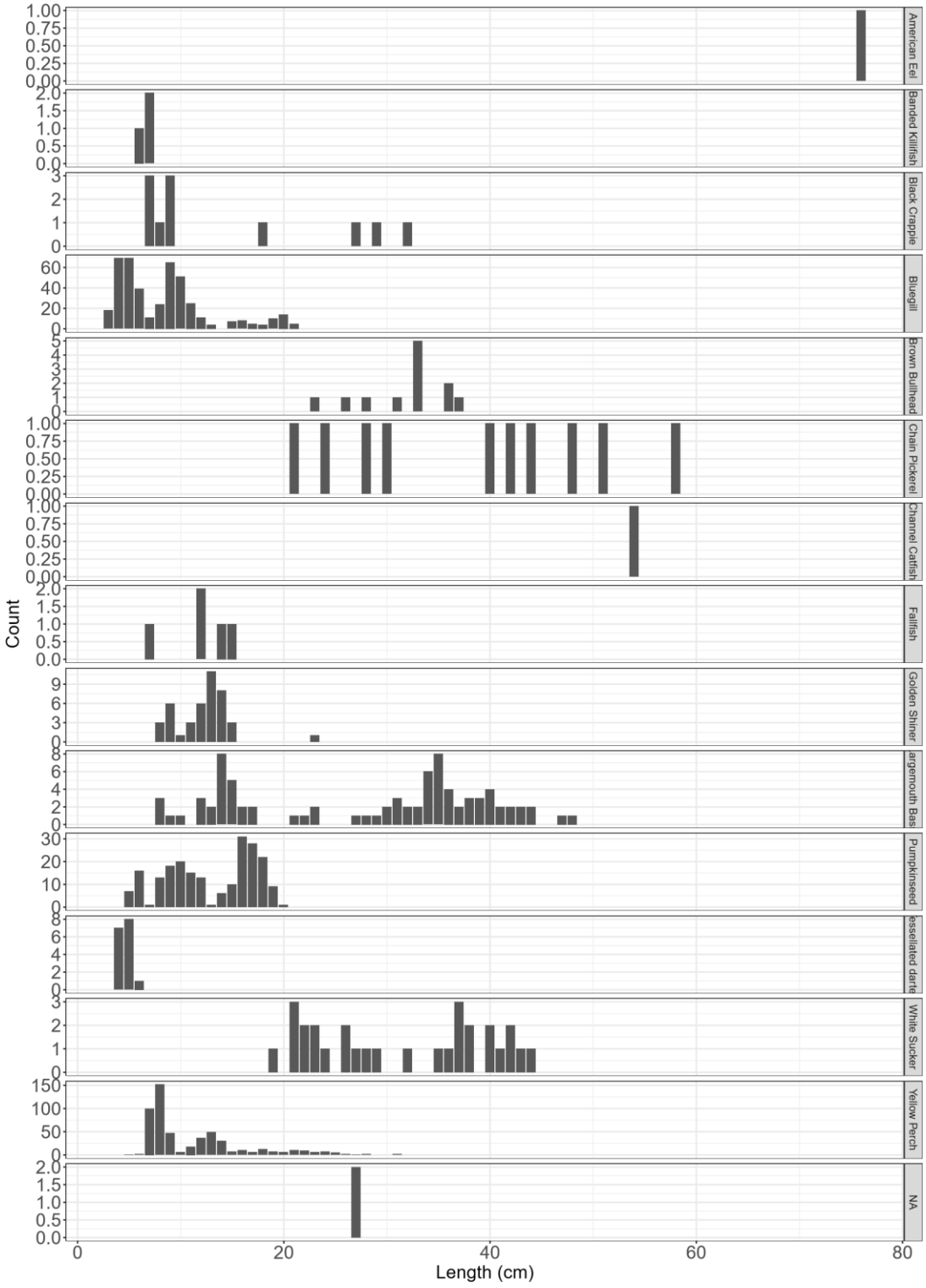


Figure 29. Length frequency histogram for Mansfield Hollow Reservoir, 05-31-2024.

MOREY POND (UNION)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Morey Pond on 05-02-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	2	2	2	2	0
Bluegill	128	97	13	1	0
Chain Pickerel	33	10	8	3	0
Golden Shiner	8	8	8	NA	NA
Largemouth Bass	10	7	5	3	0
Pumpkinseed	10	10	1	0	0
Yellow Perch	44	25	6	4	0

Table 2. The catch per hour of each organism caught by species and size class in Morey Pond on 05-02-2024.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Brown Bullhead	4.9	4.9	4.9	4.9	0	100.0
Bluegill	314.7	238.5	32.0	2.5	0	13.4
Chain Pickerel	81.1	24.6	19.7	7.4	0	80.0
Golden Shiner	19.7	19.7	19.7	NA	NA	100.0
Largemouth Bass	24.6	17.2	12.3	7.4	0	71.4
Pumpkinseed	24.6	24.6	2.5	0	0	10.0
Yellow Perch	108.2	61.5	14.7	9.8	0	24.0

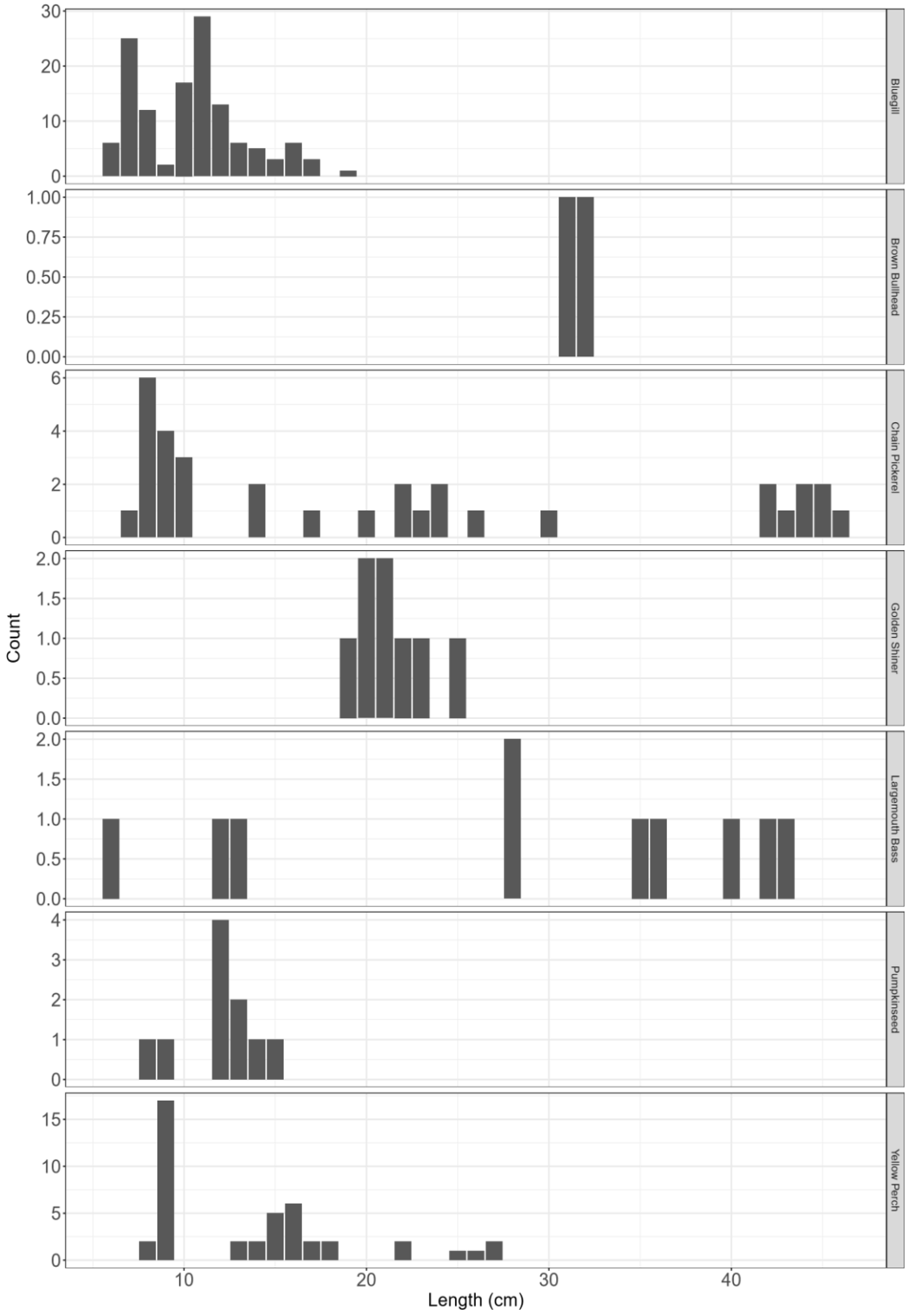


Figure 30. Length frequency histogram for Morey Pond, 05−02-2024.

PEAT SWAMP RESERVOIR (SEYMOUR)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Peat Swamp Reservoir on 10-09-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	5	5	4	NA	NA
Brown Bullhead	1	0	0	0	0
Black Crappie	19	2	2	2	0
Bluegill	1259	267	71	61	5
Hybrid Bluegill & Pumpkinseed	3	3	2	2	0
Chain Pickerel	100	25	12	7	2
Largemouth Bass	158	57	49	19	0
Painted Turtle	1	NA	NA	NA	NA
Pumpkinseed	289	213	26	21	0
Yellow Perch	341	144	107	73	39

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Peat Swamp Reservoir on 10-09-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	5.0	5 (24.3)	4 (6.4)	NA	NA	80 (42.9)
Black Crappie	18.8	2 (21.3)	2 (17.1)	2.0	0.0	100 (77.2)
Bluegill	1247.9	264.6 (343.3)	70.4 (142.3)	60.5	5.0	26.6 (47.9)
Brown Bullhead	1.0	0 (11.7)	0 (10.6)	0.0	0.0	NaN (91.1)
Chain Pickerel	99.1	24.8 (20.6)	11.9 (6.3)	6.9	2.0	48 (35.8)
Hybrid Bluegill & Pumpkinseed	3.0	3 (NA)	2 (NA)	2.0	0.0	66.7 (NA)
Largemouth Bass	156.6	56.5 (57.9)	48.6 (29.4)	18.8	0.0	86 (54.8)
Painted Turtle	1.0	NA (NA)	NA (NA)	NA	NA	NA (NA)
Pumpkinseed	286.5	211.1 (59.3)	25.8 (23.5)	20.8	0.0	12.2 (42.3)
Yellow Perch	338.0	142.7 (102.1)	106.1 (48.2)	72.4	38.7	74.3 (53.5)

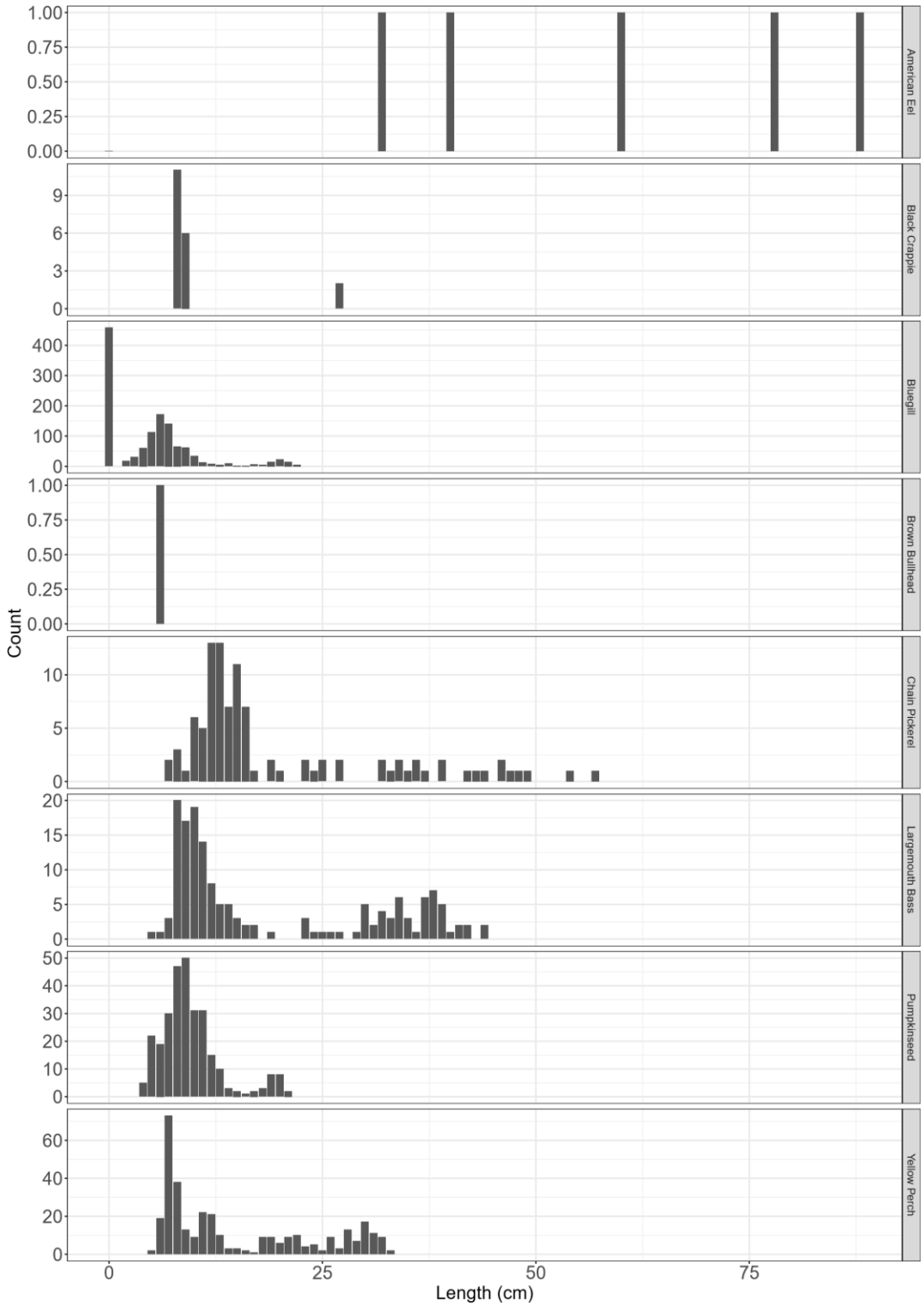


Figure 32. Length frequency histogram for Peat Swamp Reservoir, 10-09-2024.

POWERS LAKE (EAST LYME)
(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Powers Lake on 05-22-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	54	54	9	NA	NA
Brown Bullhead	2	2	2	2	0
Black Crappie	7	7	7	6	2
Bluegill	211	207	189	144	4
Hybrid Bluegill & Pumpkinseed	3	3	3	3	0
Chain Pickerel	34	34	6	0	0
Golden Shiner	42	42	23	NA	NA
Largemouth Bass	83	81	38	1	1
Newt	2	0	0	0	0
Pumpkinseed	25	25	25	24	0
Yellow Perch	74	71	65	35	2

Table 2. The catch per hour of each organism caught by species and size class in Powers Lake on 05-22-2024.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	53.7	53.7	8.9	NA	NA	16.7
Brown Bullhead	2.0	2.0	2.0	2.0	0	100
Black Crappie	7.0	7.0	7.0	6.0	2.0	100
Bluegill	209.7	205.7	187.8	143.1	4.0	91.3
Hybrid Bluegill & Pumpkinseed	3.0	3.0	3.0	3.0	0	100
Chain Pickerel	33.8	33.9	6.0	0	0	17.6
Golden Shiner	41.7	41.7	22.8	NA	NA	54.8
Largemouth Bass	82.5	80.5	37.8	1.0	1.0	46.9
Newt	2.0	0	0	0	0	NaN
Pumpkinseed	24.8	24.8	24.8	23.8	0	100
Yellow Perch	73.5	70.5	64.6	34.8	2.0	91.5

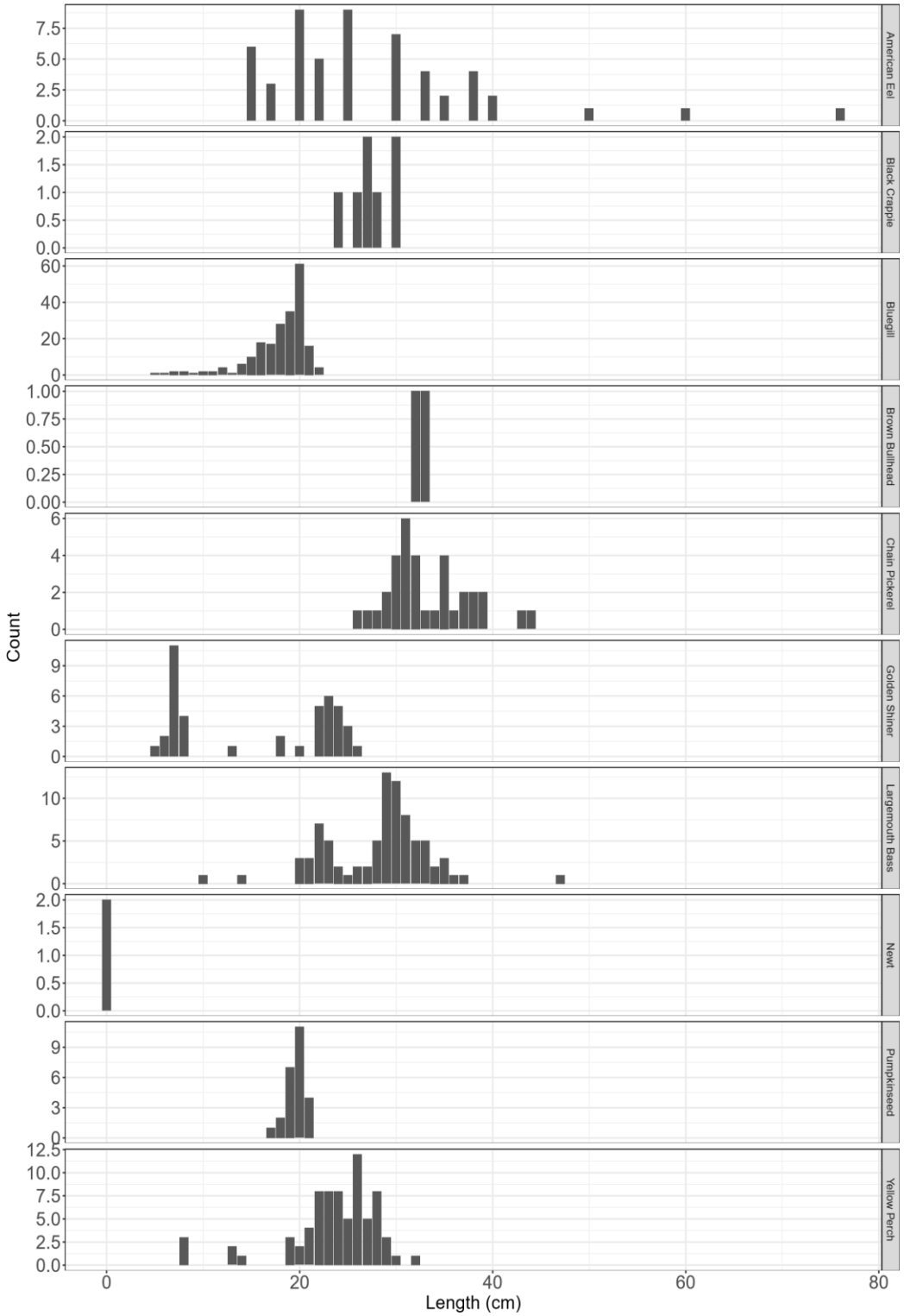


Figure 33. Length frequency histogram for Powers Lake, 05−22-2024.

ROWANS [AKA BUTTERNUT PARK POND] (MIDDLETOWN)
(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1. The number of each organism caught by species and size class in Rowans Pond (aka Butternut Pond) on 10-17-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	10	10	3	NA	NA
Black Crappie	14	3	2	2	0
Bluegill	406	109	26	1	0
Largemouth Bass	25	17	15	8	5
Pumpkinseed	44	36	0	0	0
Yellow Bullhead	1	0	0	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Rowans Pond (aka Butternut Pond) on 10-17-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	57.4	57.4 (24.3)	17.2 (6.4)	NA	NA	30 (42.9)
Black Crappie	80.4	17.2 (21.3)	11.5 (17.1)	11.5	0.0	66.7 (77.2)
Bluegill	2331.1	625.8 (343.3)	149.3 (142.3)	5.7	0.0	23.9 (47.9)
Largemouth Bass	143.5	97.6 (57.9)	86.1 (29.4)	45.9	28.7	88.2 (54.8)
Pumpkinseed	252.6	206.7 (59.3)	0 (23.5)	0.0	0.0	0 (42.3)
Yellow Bullhead	5.7	0 (9.8)	0 (6.5)	0.0	0.0	NaN (72.1)

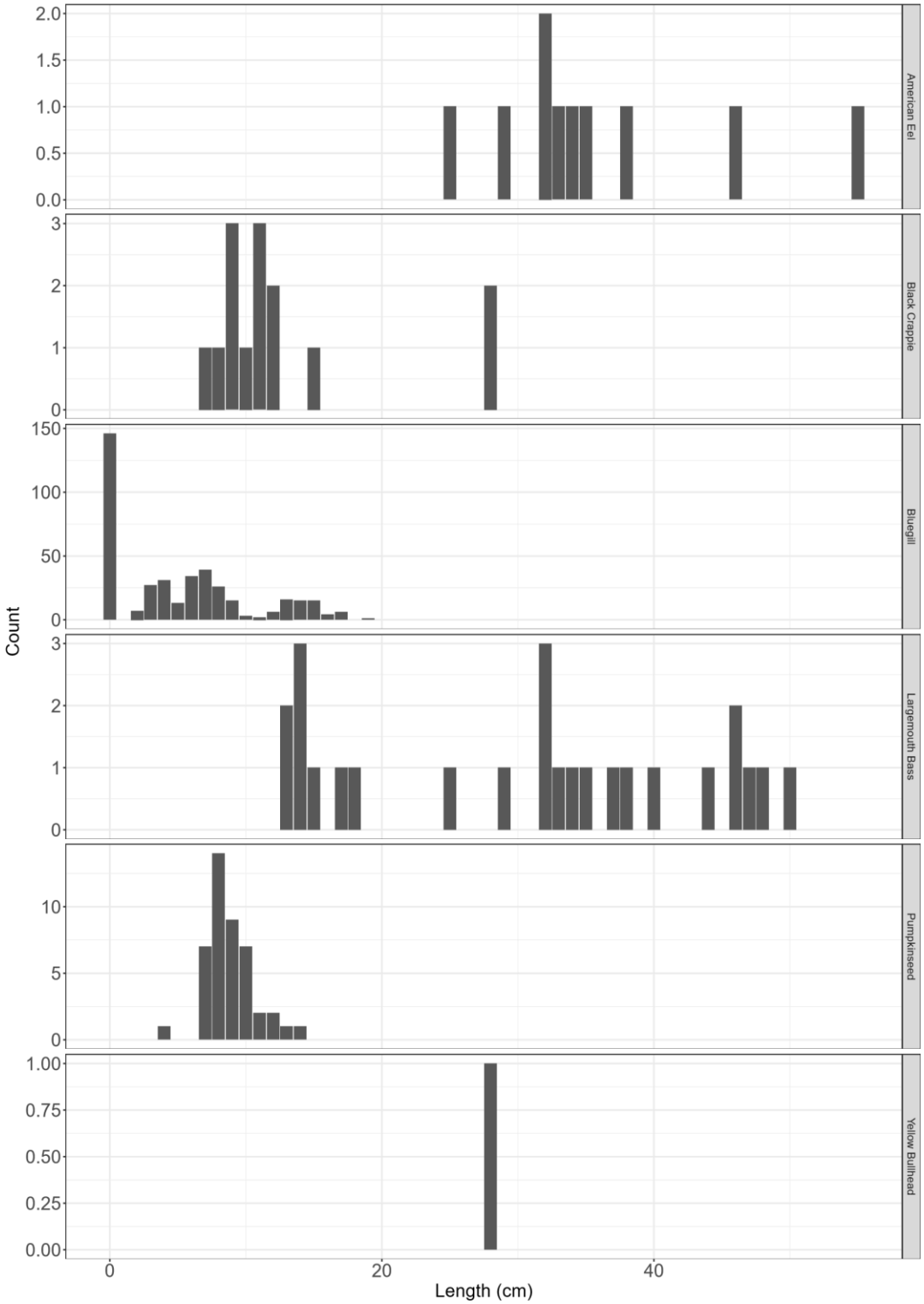


Figure 33. Length frequency histogram for Rowans Pond (aka Butternut Pond), 10-17-2024.

SHUTTLE MEADOW RESERVOIR (SOUTHINGTON)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Shuttle Meadow Reservoir on 05-07-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	2	2	2	NA	NA
Black Crappie	5	2	2	2	1
Bluegill	349	161	15	12	5
Hybrid Bluegill & Pumpkinseed	1	1	1	1	1
Chain Pickerel	17	13	6	6	3
Largemouth Bass	78	61	38	29	7
Pumpkinseed	13	13	1	1	1
Smallmouth Bass	13	9	7	6	1
Tessellated darter	10	0	0	0	0
White Sucker	1	1	1	NA	NA
Yellow Perch	135	112	105	102	41

Table 2. The catch per hour of each organism caught by species and size class in Shuttle Meadow Reservoir on 05-07-2024.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	2.0	2.0	2.0	NA	NA	100.0
Black Crappie	5.0	2.0	2.0	2.0	1.0	100.0
Bluegill	348.9	161.0	15.0	12.0	5.0	9.3
Hybrid Bluegill & Pumpkinseed	1.0	1.0	1.0	1.0	1.0	100.0
Chain Pickerel	17.0	13.0	6.0	6.0	3.0	46.1
Largemouth Bass	78.0	61.0	38.0	29.0	7.0	62.3
Pumpkinseed	13.0	13.0	1.0	1.0	1.0	8.0
Smallmouth Bass	13.0	9.0	7.0	6.0	1.0	78.0
Tessellated darter	10.0	0	0	0	0	NaN
White Sucker	1.0	1.0	1.0	NA	NA	100.0
Yellow Perch	135	112	105	102	41.0	94.0

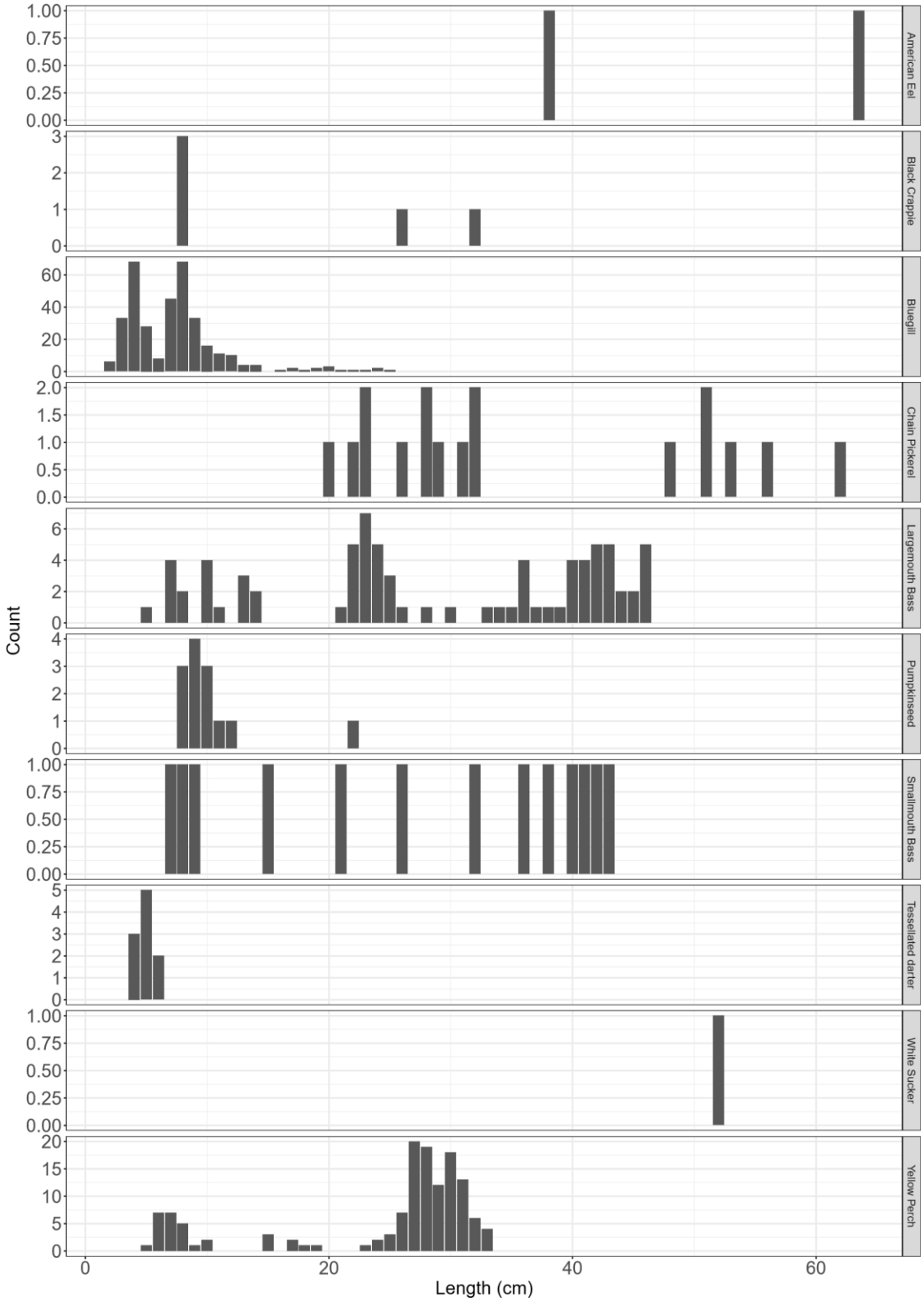


Figure 34. Length frequency histogram for Shuttle Meadow Reservoir, 05-07-2024.

SPAULDING POND [AKA MOHEGAN PARK POND] (NORWICH)

(Sampled using Smith-Root electrofishing boat.)

Table 1. The number of each organism caught by species and size class in Spaulding Pond (aka Mohegan Park Pond) on 10-07-2024.

Species	All	Stock	Quality	Preferred	Memorable
American Eel	1	1	0	NA	NA
Bluegill	292	220	52	8	0
Brook Trout, Stocked	1	1	1	1	0
Hybrid Bluegill & Pumpkinseed	2	2	1	1	0
Channel Catfish	4	4	4	2	0
Chain Pickerel	2	2	0	0	0
Green Sunfish	4	4	1	0	0
Largemouth Bass	71	22	3	0	0
Pumpkinseed	10	10	8	3	0
Rainbow Trout, Stocked	8	8	3	0	0
Snapping Turtle	1	NA	NA	NA	NA
Tiger Trout, Stocked	8	0	0	0	0
Yellow Perch	5	5	4	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Spaulding Pond (aka Mohegan Park Pond) on 10-07-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
American Eel	2.8	2.8 (24.3)	0 (6.4)	NA	NA	0 (42.9)
Bluegill	830.3	625.6 (343.3)	147.9 (142.3)	22.7	0	23.6 (47.9)
Brook Trout, Stocked	2.8	2.8 (NA)	2.8 (NA)	2.8	0	100 (NA)
Chain Pickerel	5.7	5.7 (20.6)	0 (6.3)	0.0	0	0 (35.8)
Channel Catfish	11.4	11.4 (NA)	11.4 (NA)	5.7	0	100 (NA)
Green Sunfish	11.4	11.4 (NA)	2.8 (NA)	0.0	0	25 (NA)
Hybrid Bluegill & Pumpkinseed	5.7	5.7 (NA)	2.8 (NA)	2.8	0	50 (NA)
Largemouth Bass	201.9	62.6 (57.9)	8.5 (29.4)	0.0	0	13.6 (54.8)
Pumpkinseed	28.4	28.4 (59.3)	22.7 (23.5)	8.5	0	80 (42.3)
Rainbow Trout, Stocked	22.7	22.7 (NA)	8.5 (NA)	0.0	0	37.5 (NA)
Snapping Turtle	2.8	NA (NA)	NA (NA)	NA	NA	NA (NA)
Tiger Trout, Stocked	22.7	0 (NA)	0 (NA)	0.0	0	NaN (NA)
Yellow Perch	14.2	14.2 (102.1)	11.4 (48.2)	0.0	0	80 (53.5)

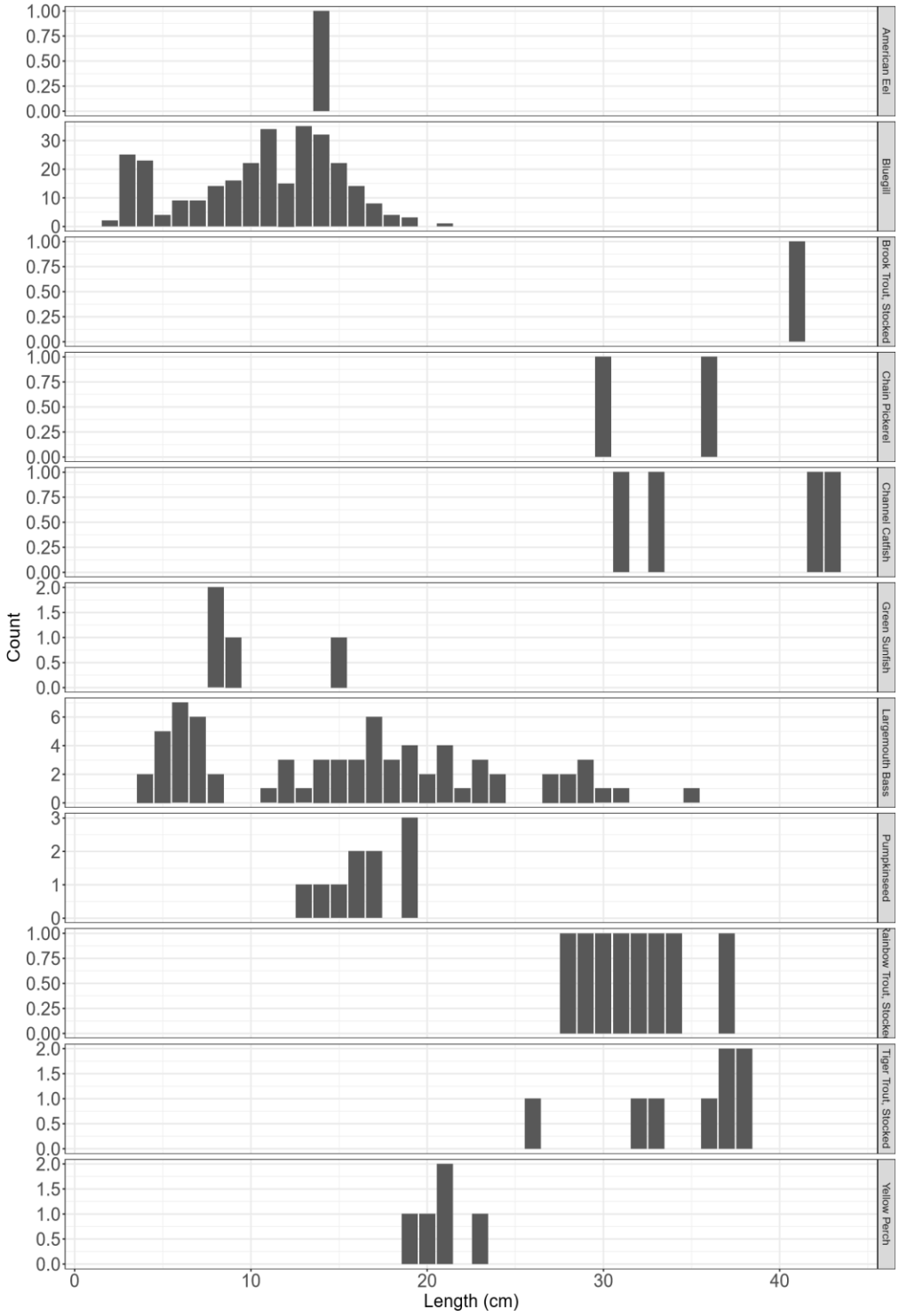


Figure 35. Length frequency histogram for Spaulding Pond (aka Mohegan Park Pond) 10-07-2024.

STANLEY QUARTER PARK POND (NEW BRITAIN)
(Sampled using NRS 14-foot Expedition series electrofishing raft.)

Table 1: The number of each organism caught by species and size class in Stanley Quarter Park Pond on 10-22-2024.

Species	All	Stock	Quality	Preferred	Memorable
Black Crappie	75	1	1	0	0
Bluegill	704	158	3	1	0
Common Carp	7	0	0	0	0
Channel Catfish	13	13	1	0	0
Golden Shiner	10	10	0	NA	NA
Largemouth Bass	35	4	2	2	1
Pumpkinseed	160	97	0	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in Stanley Quarter Park Pond on 10-22-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Black Crappie	236.0	3.1 (21.3)	3.1 (17.1)	0.0	0.0	100 (77.2)
Bluegill	2215.4	497.2 (343.3)	9.4 (142.3)	3.1	0.0	1.9 (47.9)
Channel Catfish	40.9	40.9 (NA)	3.1 (NA)	0.0	0.0	7.7 (NA)
Common Carp	22.0	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Golden Shiner	31.5	31.5 (20.9)	0 (6.7)	NA	NA	0 (39.6)
Largemouth Bass	110.1	12.6 (57.9)	6.3 (29.4)	6.3	3.1	50 (54.8)
Pumpkinseed	503.5	305.2 (59.3)	0 (23.5)	0.0	0.0	0 (42.3)

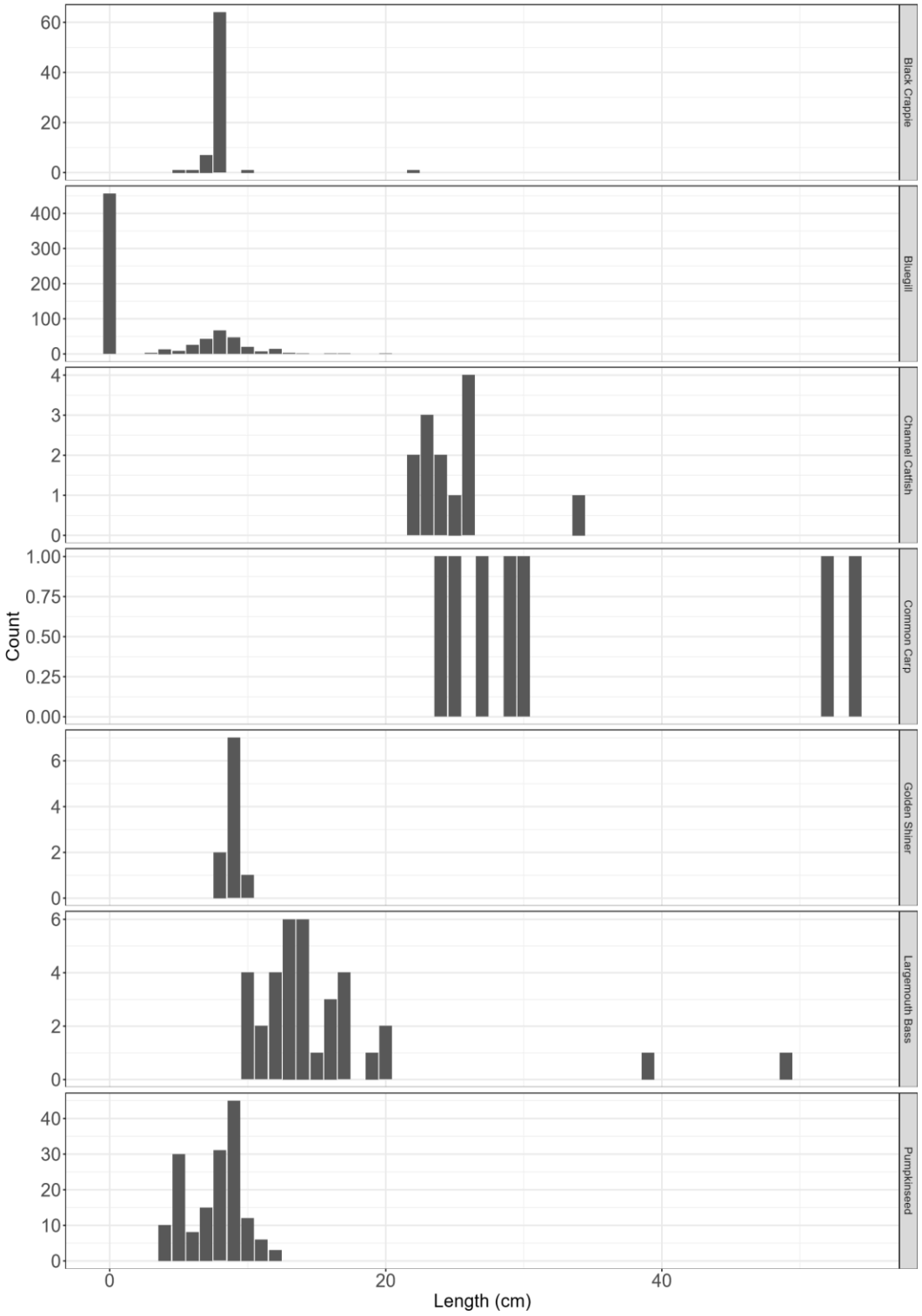


Figure 36. Length frequency histogram for Stanley Quarter Park Pond, 10-22-2024.

WEST HILL POND (BARKHAMSTED-NEW HARTFORD)

(Sampled using Kann electrofishing boat.)

Table 1. The number of each organism caught by species and size class in West Hill Pond on 05-29-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	5	5	5	4	0
Bluegill	57	40	19	10	0
Hybrid Bluegill & Pumpkinseed	3	3	3	3	0
Chain Pickerel	14	9	0	0	0
Golden Shiner	21	21	0	NA	NA
Banded Killifish	1	0	0	0	0
Largemouth Bass	43	20	11	3	2
Pumpkinseed	57	57	34	14	0
Rock Bass	81	81	57	33	3
Hybrid Bluegill & Redbreast	2	2	2	2	0
Redbreast Sunfish	102	98	41	2	0
Smallmouth Bass	1	1	0	0	0
Tessellated darter	1	0	0	0	0
Yellow Perch	10	9	2	0	0

Table 2. The catch per hour (CPH) of each organism caught by species and size class in West Hill Pond on 05-29-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	All	Stock	Quality	Preferred	Memorable	PSD
Banded Killifish	1.5	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Bluegill	85.4	59.9 (343.3)	28.5 (142.3)	15.0	0.0	47.5 (47.9)
Brown Bullhead	7.5	7.5 (11.7)	7.5 (10.6)	6.0	0.0	100 (91.1)
Chain Pickerel	21.0	13.5 (20.6)	0 (6.3)	0.0	0.0	0 (35.8)
Golden Shiner	31.4	31.4 (20.9)	0 (6.7)	NA	NA	0 (39.6)
Hybrid Bluegill & Pumpkinseed	4.5	4.5 (NA)	4.5 (NA)	4.5	0.0	100 (NA)
Hybrid Bluegill & Redbreast	3.0	3 (NA)	3 (NA)	3.0	0.0	100 (NA)
Largemouth Bass	64.4	30 (57.9)	16.5 (29.4)	4.5	3.0	55 (54.8)
Pumpkinseed	85.4	85.4 (59.3)	50.9 (23.5)	21.0	0.0	59.6 (42.3)
Redbreast Sunfish	152.7	146.8 (33.7)	61.4 (12.7)	3.0	0.0	41.8 (34.6)
Rock Bass	121.3	121.3 (38.9)	85.4 (24.4)	49.4	4.5	70.4 (67)
Smallmouth Bass	1.5	1.5 (26)	0 (10.4)	0.0	0.0	0 (39.6)
Tessellated darter	1.5	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Yellow Perch	15.0	13.5 (102.1)	3 (48.2)	0.0	0.0	22.2 (53.5)

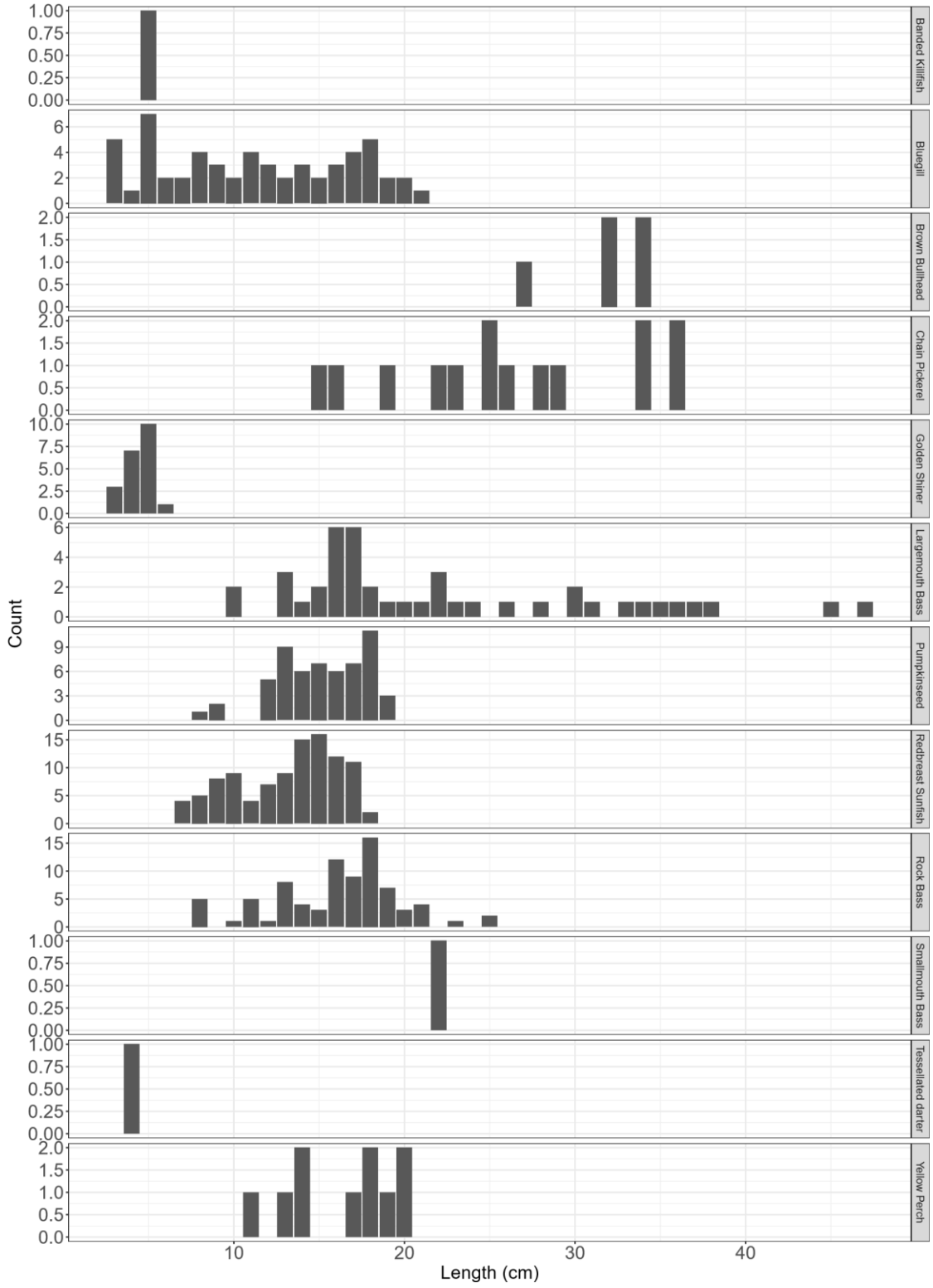


Figure 37. Length frequency histogram for West Hill Pond, 05-29-2024.

WEST TWIN LAKE [AKA WASHINEE LAKE] (SALISBURY)

Table 1: The number of each organism caught by species and size class in West Twin Lake (aka Washinee Lake) on 06-03-2024.

Species	All	Stock	Quality	Preferred	Memorable
Brown Bullhead	40	40	36	20	0
Bridled Shiner	1	0	0	0	0
Bluegill	127	114	78	44	1
Hybrid Bluegill & Pumpkinseed	4	4	3	0	0
Chain Pickerel	17	15	6	5	0
Golden Shiner	21	21	2	NA	NA
Largemouth Bass	33	21	15	10	3
Pumpkinseed	102	101	66	32	0
Rock Bass	24	24	21	13	6
Yellow Perch	270	183	47	9	1

Table 2: The catch per hour (CPH) of each organism caught by species and size class in West Twin Lake (aka Washinee Lake) on 06-03-2024. Statewide averages for CPH and PSD are shown in parentheses where available.

Species	**All**	**Stock**	**Quality**	**Preferred**	**Memorable**	**PSD**
Bluegill	125.9	113 (343.3)	77.3 (142.3)	43.6	1.0	68.4 (47.9)
Bridled Shiner	1.0	0 (NA)	0 (NA)	0.0	0.0	NaN (NA)
Brown Bullhead	39.6	39.6 (11.7)	35.7 (10.6)	19.8	0.0	90 (91.1)
Chain Pickerel	16.9	14.9 (20.6)	5.9 (6.3)	5.0	0.0	40 (35.8)
Golden Shiner	20.8	20.8 (20.9)	2 (6.7)	NA	NA	9.5 (39.6)
Hybrid Bluegill & Pumpkinseed	4.0	4 (NA)	3 (NA)	0.0	0.0	75 (NA)
Largemouth Bass	32.7	20.8 (57.9)	14.9 (29.4)	9.9	3.0	71.4 (54.8)
Pumpkinseed	101.1	100.1 (59.3)	65.4 (23.5)	31.7	0.0	65.3 (42.3)
Rock Bass	23.8	23.8 (38.9)	20.8 (24.4)	12.9	5.9	87.5 (67)
Yellow Perch	267.6	181.4 (102.1)	46.6 (48.2)	8.9	1.0	25.7 (53.5)

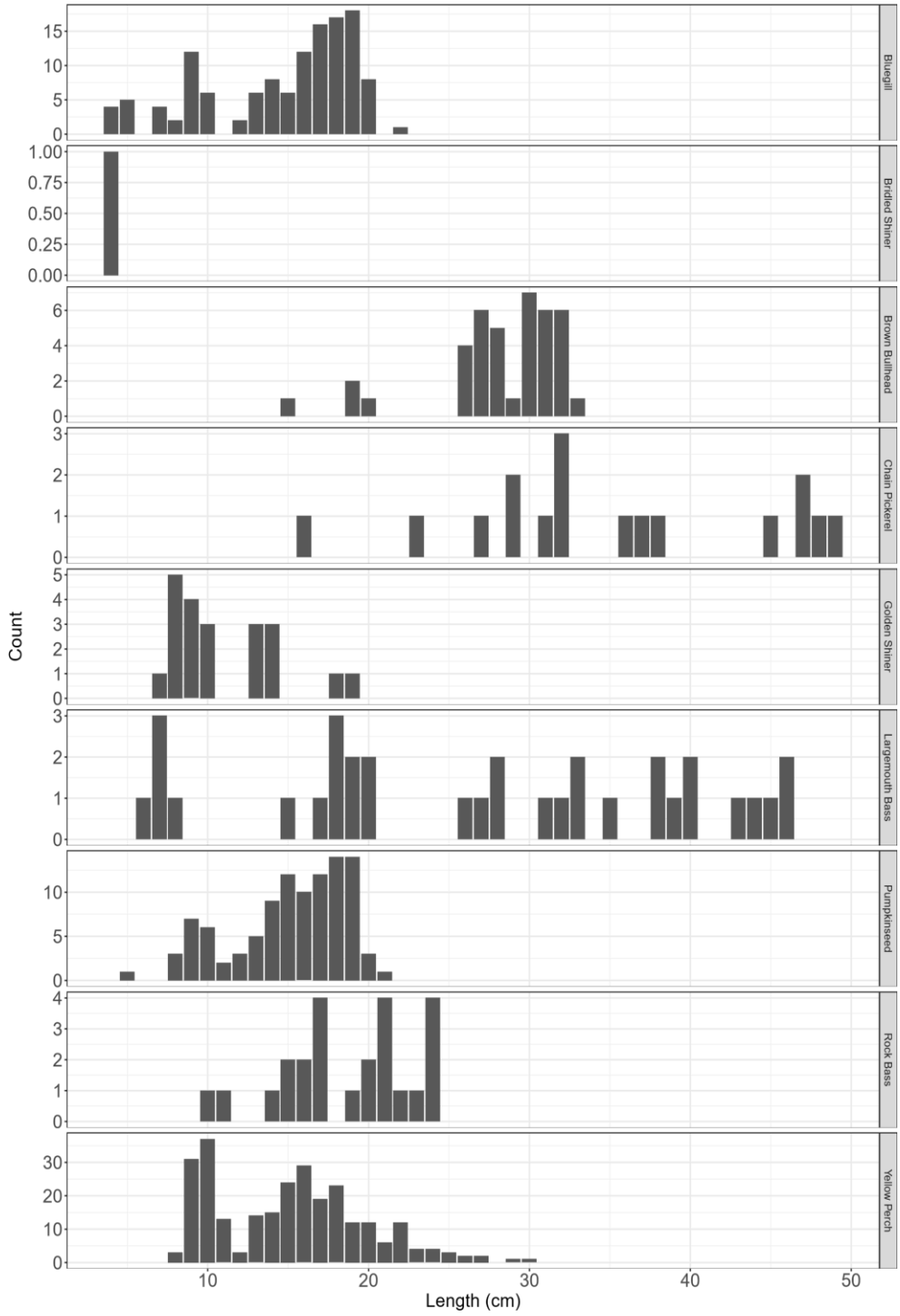


Figure 38. Length frequency histogram for Length Frequency Histogram for West Twin Lake (aka Washinee Lake), 06-03-2024.

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2023 to 3/31/2024

Grant Title:	Inland Fisheries Research and Management
Study 2:	Warmwater Fisheries Management
Job 2:	Lake and Large River Angler Surveys

Report Prepared by:	Spencer Mallette and Andrew Ransom
Job Personnel:	Spencer Mallette, Job Leader
	Andrew Ransom, Primary Staff
	Christopher McDowell, Primary Staff
	Andrew Bade, Program Coordinator

Overview: Angler surveys are an indispensable component of any sportfish management program. These surveys provide vital information on angler use (effort, catch and harvest) and angler feedback concerning current management practices. Standardized survey methods ensure comparability of data across locations and years. Angler survey staff work in consultation with staff from various management projects to prioritize potential surveys and ensure that data needs are met in a cost-effective manner. This project will continue to produce and maintain a centralized archive for all Connecticut lake and large river angler survey data.

The increasing access to social media and computerized angler statistics (e.g., Connecticut's angler license database) affords the opportunity to solicit large numbers of constituents for the purpose of acquiring statewide angler attitude and use patterns. The biases of these survey modalities must be accounted for when interpreting the results to guide management.

The objectives of the lake and large river angler survey job are:

1. Schedule, coordinate and conduct quantitative angler surveys on lake and large river fisheries on an as-needed and/or rotational basis as resources permit.
2. Develop and implement standardized survey methodologies.
3. Maintain and archive angler survey database(s) and provide support to management projects.
4. Evaluate the potential for collecting angler information using alternative computer-based survey methods.

Key Findings

Objective 1: Schedule, coordinate, and conduct quantitative angler surveys on lake and large river fisheries on an as needed and/or rotational basis as resources permit.

- On March 1, 2024, the Fisheries Division (FD) initiated a creel survey of the State's Community Fishing Waters (CFW) to assess angler effort, catch, fishing preferences, and opinions on FD management strategies for each of the 17 waterbodies (Table 1, Figure 1) and Wharton Brook Park Pond, North Haven. The angler survey ran until October 31, 2024, and was resumed for a second cycle on March 1, 2025.
    - Wharton Brook Park Pond, North Haven, was included in this survey as it will be designated a CFW in the coming regulations package. This waterbody received its first ever stocking of Channel Catfish on 10/03/2024, an event which will hopefully be repeated annually. Wharton Brook Park will continue to receive multiple stockings of trout annually.
- The 18 waterbodies were divided into six groups (henceforth referred to as "loops") based on average travel time to each other (Table 1). A stratified, random survey schedule was created for each loop based on two different strata (weekdays and weekend/holiday days) and three different sampling periods (morning, mid-day, dusk; survey start times range from 0600 – 0800, 1300 – 1500, and 1500 – 1600; respectively). The starting time for the morning and dusk sampling units differed depending on available daylight during the seasonal block.
    - The seasonal periods were as follows, with calendar dates and daily possible survey hours in parenthesis: early Spring (03/01 – 04/15; 0600 – 1800); late Spring (04/16 – 06/15; 0600 – 1900); early Summer (06/16 – 07/31; 0600 – 2000); late Summer (08/01 – 09/15; 0700 – 1900); early Fall (09/16 – 10/31; 0600 – 1800).
    - An average of one loop was scheduled per day during the first year of this survey. The selection of the daily loop was done with replacement across all strata and sampling units. During year two, multiple alternative, stratified, random survey schedules were created to allow for additional survey effort when extra survey staff were available.
- Loops were surveyed in a randomly selected waterbody order with a randomly selected start time within the selected sampling unit. There was a two-hour gap between the start of a survey for one waterbody and the start of the next waterbody. For example, if the randomly selected start time was 0800, then the first lake would be surveyed at 0800, the second lake at 1000, and the third at 1200. For each survey, one hour was allotted for the counting and interviewing of anglers actively fishing, while the second hour was for travel to the next waterbody.
    - For the count form portion of the survey, see Appendix A. For the questions asked during the survey, see Appendix B.

***Table 1**: Name, town, county, and alternative name of all Community Fishing Waters in Connecticut. Waterbodies are divided into corresponding survey groups, such that all waterbodies in Loop 1 will be surveyed on the same day by the same creel agent.*

Loop	Town; County	Community Fishing Water	Alternative Name
1	New Haven; New Haven	Beaver Park Pond	Beaver Park Lagoon
1	Bridgeport; Fairfield	Bunnell's Pond	Beardsley Park Pond
1	Hamden; New Haven	Lake Wintergreen	
2	Bristol; Hartford	Birge Pond	
2	Enfield; Enfield	Freshwater Pond	
2	New Britain; Hartford	Stanley Quarter Park Pond	
3	Southington; Hartford	Crescent Lake	
3	Waterbury; New Haven	Lakewood Lake	Great Brook Reservoir
3	Waterbury; New Haven	Upper Fulton Park Pond	
4	Manchester; Hartford	Center Springs Park Pond	
4	Hartford; Enfield	Keney Park Pond	
4	Norwich; New London	Mohegan Park Pond	Spaulding Pond
5	Meriden; New Haven	Mirror Lake	Hubbard Park Pond
5	Middletown; Middlesex	Rowan's Pond	Butternut Pond
5	North Haven; New Haven	Wharton Brook Park Pond	Allen Brook Pond
6	Ansonia; New Haven	Colony Pond	
6	Derby; New Haven	Pickett's Pond	
6	Danbury; Danbury	Rogers Park Pond	

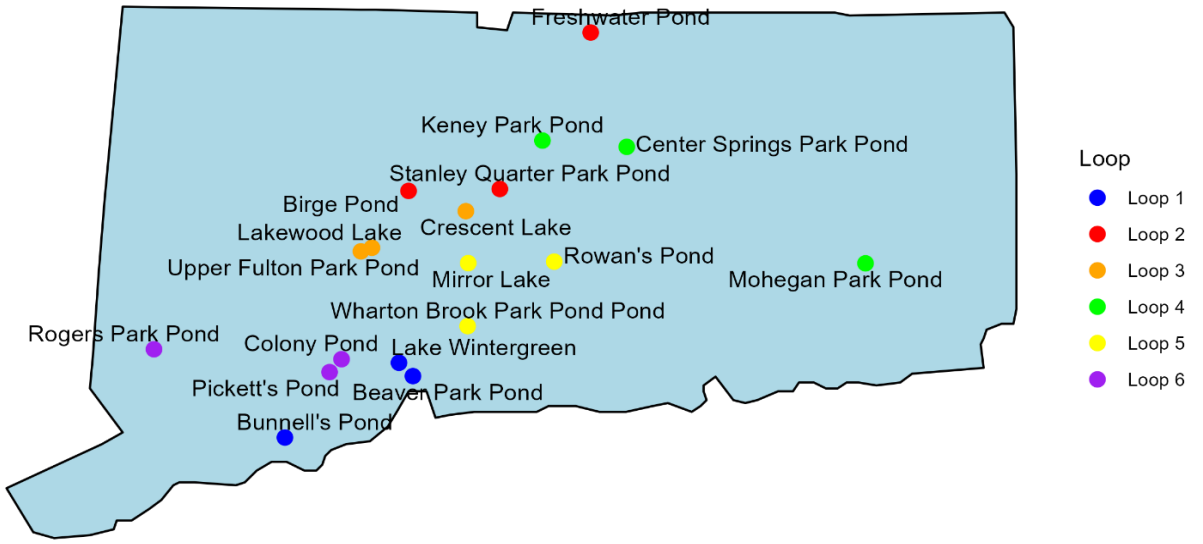


***Figure 1**: Waterbodies where angler surveys were conducted during the open water (03/01 - 10/31) fishing season. Colors indicate groupings for survey loops.*

- Beginning in 2025, a Spanish language version of the interview form was created (Appendix C). Staff were asked to offer a Spanish language informational sheet about the survey to inform Spanish-speaking individuals of the purpose. If they agreed to proceed, the Spanish-speaking individual was handed the Spanish

language form and wrote in their own answers. Surveys will be translated later by FD full-time staff.
    - Beginning in 2025, staff were asked to change their methodology regarding the spare time between counts. During the original scheduled time for each waterbody, staff were still counting and interviewing anglers. At the top of the second hour they were asked to do a secondary count of anglers. For example, if the randomly selected start time was 0800, then the first lake would be surveyed at 0800 as had been done in 2024, but the survey staff would wait until 0900 at the first waterbody and do a secondary count only (no interviews) of all anglers fishing at the waterbody. Once the count was complete, they would drive to the second waterbody and repeat the process of counting/interviewing at 1000 and then counting only at 1100. For the third location, they would always do a primary count/interview period (in this case 1200), but they might not do a secondary count dependent on available time and sunset. The purpose of the secondary count at waterbodies is to increase the capture of angler effort information for waterbodies.

- Fisheries Division staff conducted an ice creel from January 22, 2025, to March 7, 2025, on Tyler Lake in Goshen and Lake Wononscopomuc and East Twin Lake in Salisbury. Survey methods were standardized following historical CT Fisheries Division protocols and Malvestuto et al. (1978) where both weekend days and two weekdays were randomly selected for surveys (Mallette et al. 2024). Start times for each survey were randomly selected, and counts/interviews were conducted for an hour at each lake.
    - This creel was conducted to assess angler effort, opinion about current stocking practices and regulations, and monitor harvest rates of stocked trout and other fish in each lake. Lake Wononscopomuc and East Twin Lake both support a population of large holdover trout.
    - Statewide ice conditions were much improved from last year, and safe ice formed on each lake for much of the winter season. Safe ice was observed on Tyler Lake prior to the initiation of the creel, however staffing limitations delayed the start of the creel until the remaining lakes had stable ice.

Community Fishing Water Survey Results:

- The results presented here will be a summary of all surveys and will not cover individual waterbody results, unless specifically stated. Upon completion of the 2025 CFW creel, waterbody-specific statistics will be compared across years and across historical surveys for those waterbodies that the FD surveyed previously.
- Between 39 and 46 counts were performed on all waterbodies, with variability accounted for by random scheduling and cancellations. A total of 1,200 anglers was observed actively fishing during these surveys, with 642 (54% of total) anglers approached for an interview. There were 453 full interviews completed (anglers interviewed for the first

time), 42 repeat interviews (anglers interviewed for a second or more time), and 147 refused interviews (23% of anglers approached).

- Total angler effort ranged from an estimated 1,390 angler-hours (AH; Freshwater Pond) to 12,033 AH (Crescent Lake). Relative standard error (RSE) for these estimates ranged from 31% (Wharton Brook Park Pond) to 82% (Lakewood Lake), signifying the high uncertainty on a per-lake basis. This high waterbody-specific uncertainty can be attributed to the low amount of survey effort directed to each loop compared to historical FD angler survey methodology. For more detailed results on angler effort at each waterbody, see Appendix D.
    - Only one angler was observed at Beaver Park Pond/Lagoon during this survey period, therefore an estimate of total angler-hours was not possible. This could represent minimal use in this waterbody or that our survey efforts did not target the times anglers most used this waterbody.
- Anglers fishing for "anything" represented 39.2% of total anglers interviewed, with trout (including specific species) representing 39%. The remaining groups were anglers fishing for bass, catfish, sunfish/panfish, and carp (Figure 2); these groups represent combined answers, such as Largemouth Bass, Smallmouth Bass, and black bass representing the bass group.

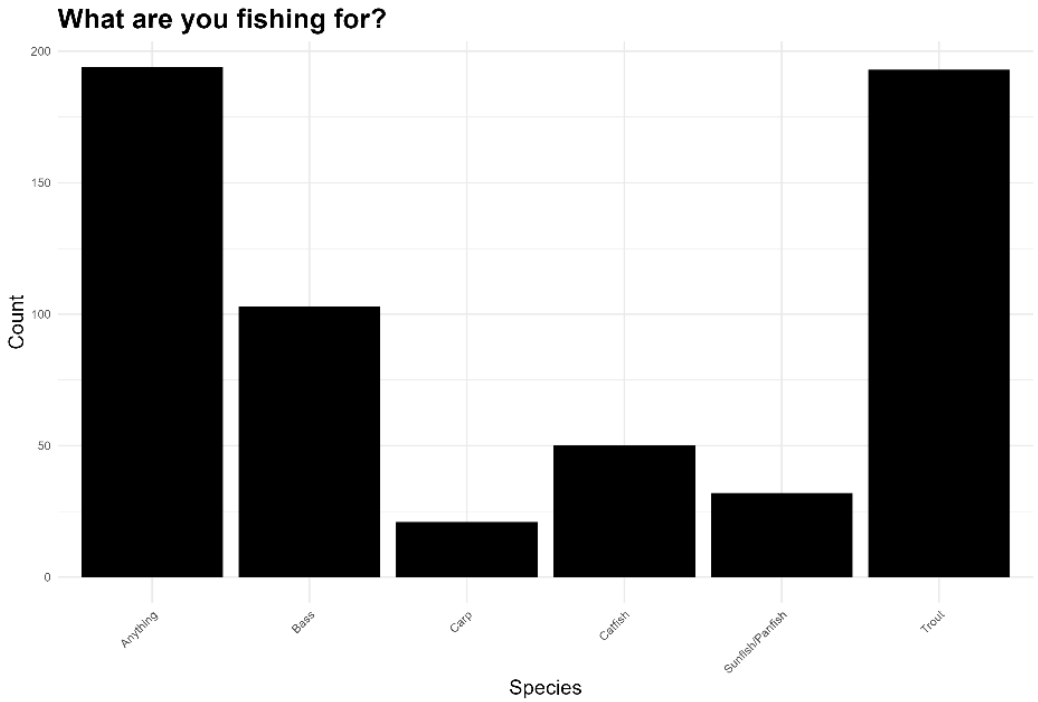


Figure 2: *Summarized responses to the question "What are you fishing for?" Anglers could give multiple answers if they were targeting different groups of fish. Similar species are grouped together (i.e., Largemouth Bass, Smallmouth Bass, and black bass are categorized under "Bass" in this figure).*

- Bait fishing was the most common fishing method for anglers, representing 65% of all anglers interviewed. This percentage includes anglers that are only using bait and those

using a combination of bait and another technique. Casting, or some combination including casting, was the second most common method (42%), while fly fishing was the only other method observed, representing less than 1% of total anglers. Percentages equal greater than 100% as anglers often used multiple fishing methods during their trip.

- Estimated catch ranged from only 107 fish caught (Lakewood Lake) to 6,009 fish caught (Wharton Brook Park Pond) (Figure 3). The most frequently caught fish were trout, which accounted for the highest estimated catch in 11 of the 16 trout-stocked waterbodies.
    - Estimated harvest has a high degree of uncertainty due to the low number of harvest events reported by survey agents. The most frequently harvested fish were trout, followed by sunfish and Channel Catfish.

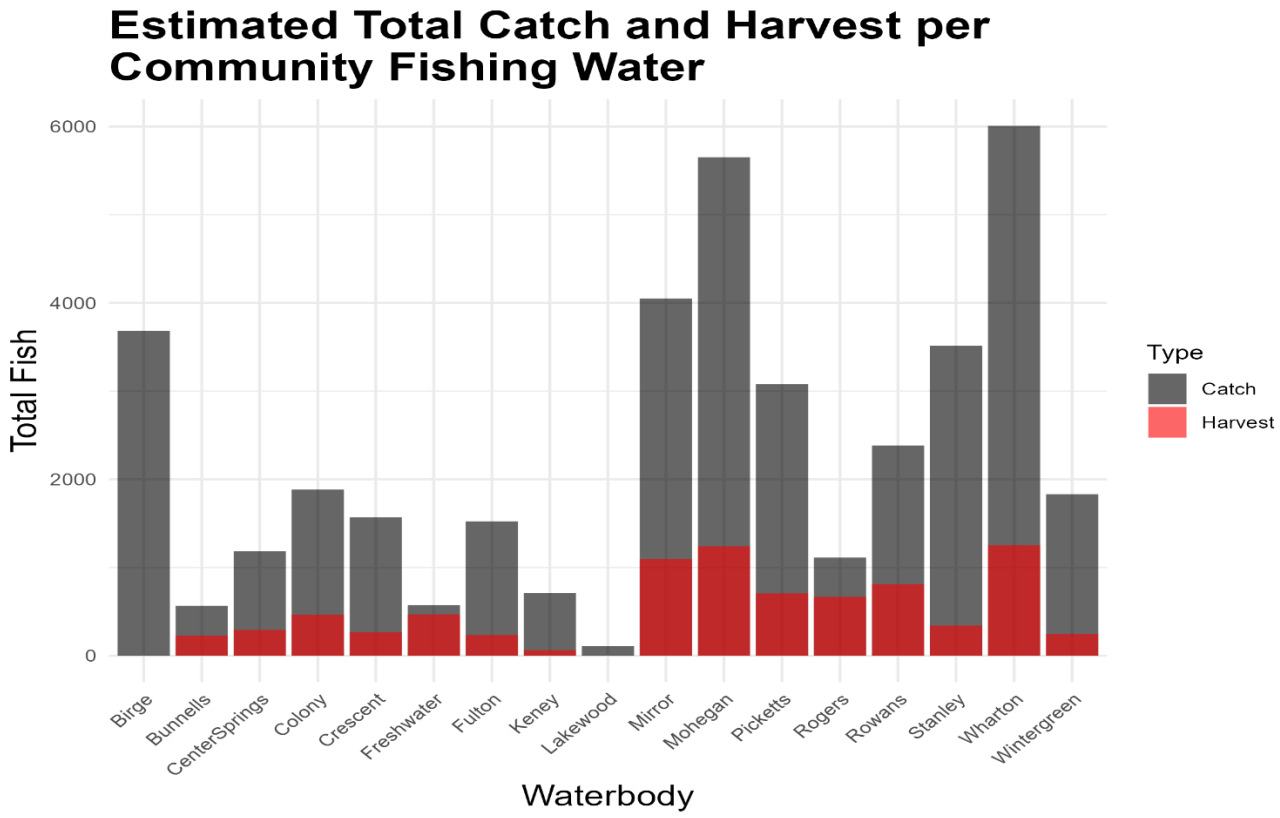


Figure 3: *Total estimated catch and harvest of all fish species combined for Community Fishing Waters with reported catch events.*

- Anglers were asked questions related to fisheries management practices at each of the CFW's (Appendix B). Crescent Lake and Lakewood Lake are not stocked with trout, so anglers were not asked the related trout management questions. Upper Fulton Park Pond and Wharton Brook Park Pond were not stocked with Channel Catfish, so anglers were not asked the related Channel Catfish management questions.

    - It is important to note that Wharton Brook Park Pond was stocked with Channel Catfish on 10/03/2024. Though Channel Catfish questions were asked to anglers after this date, the results will not be reported here as total surveys were minimal.
- In waterbodies stocked with Channel Catfish, only 52% of interviewed anglers were aware of stockings (Appendix E). Furthermore, only 35% of anglers had caught Channel Catfish at the waterbody where interviewed (Appendix E).
    - When anglers were asked their opinion of the program at that waterbody, most anglers were either "In Favor" or "Highly in Favor" (65%; Appendix E) of Channel Catfish being stocked. Anglers cited the increase in diversity of catch, how much fun they can be to catch, as well as how good they can be to eat. Anglers that were "Opposed" or "Highly Opposed" (2%) cited concerns about the Channel Catfish eating other fish or that other species should be stocked instead of Channel Catfish. All other anglers had "No Opinion" of the program.
    - When anglers were asked how likely they would be to keep a Channel Catfish at the waterbody they were being interviewed, over half (54%) of the anglers said they would "Never" harvest one (Appendix E), citing that they are catch and release fishing only, don't eat catfish, or don't trust the cleanliness of the water from which they come. Only 16% of anglers stated they would keep fish more than half the time they caught one. The lack of interest in harvesting Channel Catfish is counter-intuitive to the original purpose of the FD stocking Community Fishing Waters, where they were expected to be a put-and-take fishery. With current angler trends shifting toward more catch-and-release oriented practices, a reevaluation of CFW stocking strategies should be initiated by the FD.
- In waterbodies stocked with trout, 83% of anglers were aware that trout had been stocked (Appendix F). However, only 59% of anglers had caught trout at the respective waterbody where interviewed (Appendix F).
    - When anglers were asked their opinion of the program at that waterbody, an overwhelming majority (85%) were "In Favor" or "Highly in Favor" of trout stocking, citing things such as opportunities for everyone, increased diversity of catch, good food source, and other reasons (Appendix F). Only 3 anglers stated they were "Opposed" to trout stocking in the waterbody, citing such reasons as overharvest, the waterbody is too warm to support these fish, and that the Fisheries Division only seems to care about trout and no other species.
    - When anglers were asked how likely they would be to keep trout at the waterbody they were being interviewed, over half (58%) would "Never" or "Rarely" keep a fish (Appendix F). Anglers most frequently stated they were catch and release only for trout, unless they inadvertently killed the fish during catch. Approximately 25% of anglers stated they would keep a trout more than half the time they caught one. Like Channel Catfish, trout are stocked into Community Fishing Waters as a put-and-take fishery.

- Anglers were asked what other types of fish they would be interested in catching at the waterbody they were interviewed at. The target of this question was to inform the Fisheries Division about what anglers were interested in catching and if it would be possible for the Fisheries Division staff to improve or create a fishery around those desires. Of the 453 responses, the most common response was “None”, showing that anglers were either happy with the fishery or didn’t believe there was a need to manage other species (Figure 4). However, when combined, some grouping of Largemouth Bass, Smallmouth Bass, and black bass was the most desired species/group of fish.

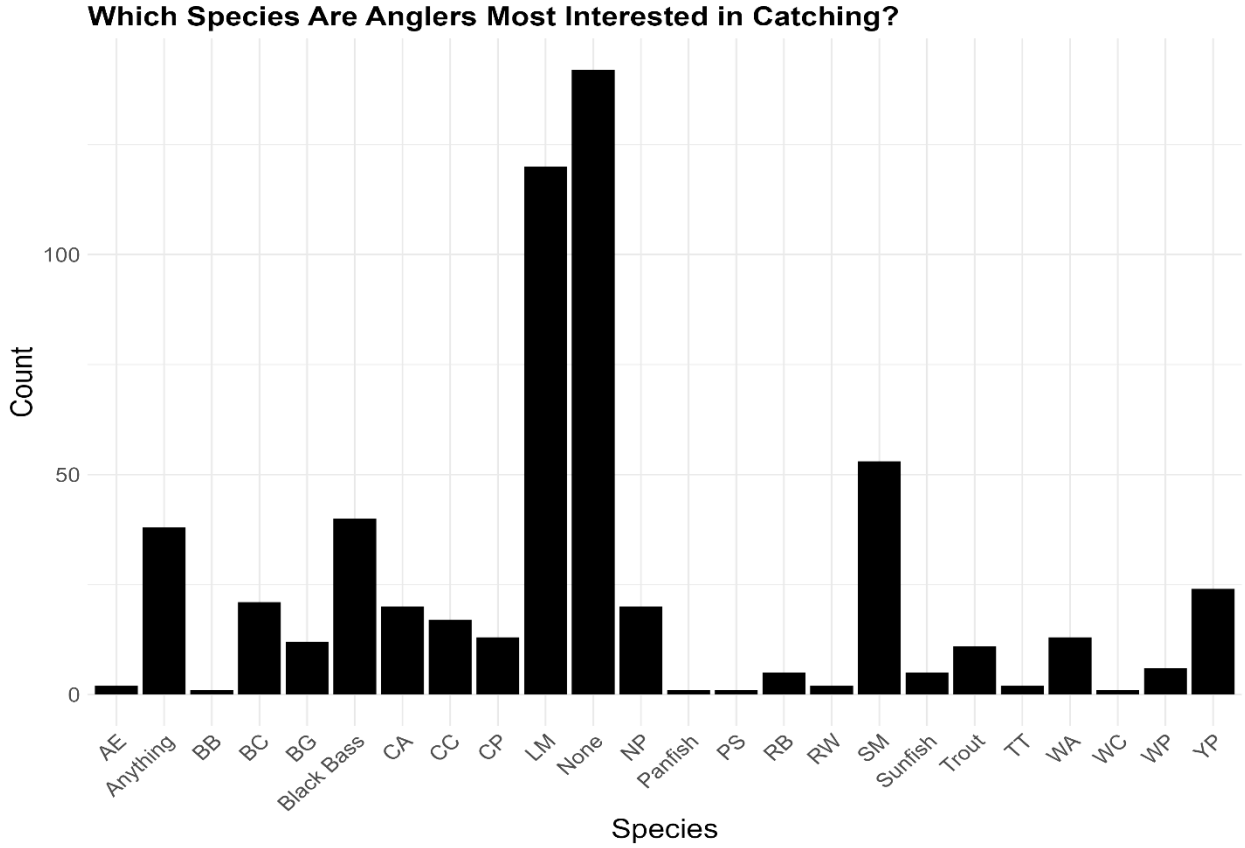


Figure 4*: Responses (n = 453) when anglers were asked "Are there other types of fish you would be interested in catching in this lake?” Anglers were allowed to answer with as many options as they wanted, so total responses were greater than total interviews performed.*

Ice Creel Results

- East Twin Lake had an estimated 999 hours of angler effort during the 2024/2025 ice fishing season. A total of 134 anglers were observed fishing, and of those, 75 were interviewed during 29 interviews. Ice anglers typically fish as a group, so interviews account for multiple people. Most anglers were targeting either any trout or Brown Trout specifically (81%), and Yellow Perch was the second most targeted species (10%). Fishing success was variable, with 51% of anglers reporting “Poor” results during the interview and 41% reporting “Good”. Opinion questions relating to the trophy Brown Trout regulations (1 fish for harvest over 22” and only two tip-ups allowed) were largely

positive for the length minimum and the reduced tip-up limit, with 81% and 67% being either "In Favor" or "Highly in Favor", respectively. Of the anglers targeting trout, 35% responded saying they only "Occasionally" keep fish they catch, and all others "Rarely" or "Never" harvest. Only anglers targeting Yellow Perch responded that they keep what they catch "Always" or "Most of the Time".

- Brown Trout catch was sporadic on East Twin Lake. However, when catch rates were expanded with daily effort, a total of 110 fish was estimated to be caught during the season (Figure 5; 95% CI range of 93.7 – 130.6). Of the 29 Brown Trout reported caught during interviews, seven were above the 22" minimum length (32%). All trout (including rainbows) were reported to be released.

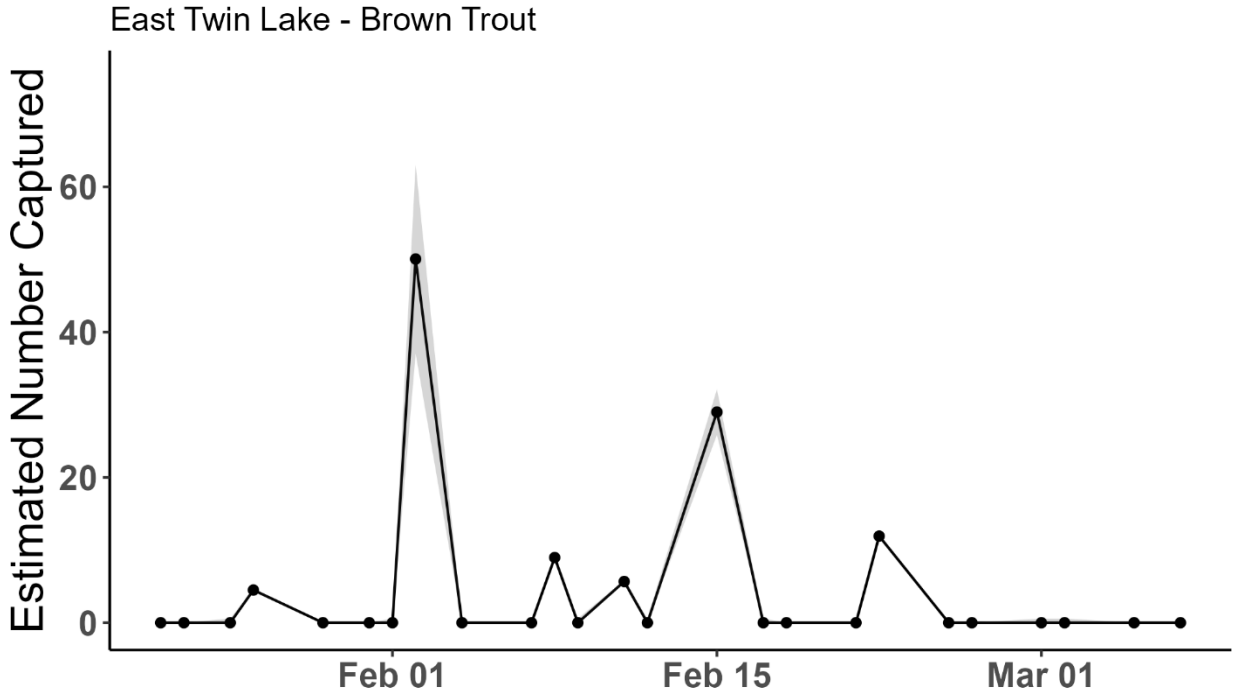


Figure 5. *Estimated daily catch of Brown Trout on East Twin Lake during the 2024/2025 ice creel. When multiple capture events were observed and daily variance was possible to calculate, the shaded areas above and below the estimated catch line represent daily variability.*

- Lake Wononscopomuc had an estimated 576 hours of angler effort during the 2024/2025 ice fishing season. A total of 77 anglers were observed fishing, and of those, 56 were interviewed during 24 interviews. Most anglers were targeting Any Trout (80%); however, a few were targeting Any Bass (2%), Yellow Perch (2%), or just Anything (16%). Fishing success was low throughout the season, with only 29% of anglers reporting "Good" or "Excellent" results during the interview. Opinion questions relating to the trophy Brown Trout regulations (1 fish for harvest over 22" and only two tip-ups allowed) were similar to East Twin for the length minimum (77%), however 48% of anglers were "Opposed" or "Highly Opposed" to the reduced tip-up limit. Of the anglers targeting trout, 50% responded saying they "Most of the time" or "Always" keep fish

they catch. Brown Trout catch was low on Lake Wononscopomuc, however the largest fish during the creel survey were reported here. Only four Brown Trout were reported, with total lengths of 25", 30", and 31" (two fish).

- A wintertime stocking of 500 Rainbow Trout occurred during the second week of the creel to increase trout catch rates for anglers. Interestingly, the singular Rainbow Trout reported captured during interviews was before the stocking event. This suggests wintertime stocking does not always result in immediate angler success and may be better suited to smaller waterbodies.

- Tyler Lake had an estimated 585 hours of angler effort during the 2024/2025 ice fishing season. A total of 69 anglers was observed fishing, and of those, 56 were interviewed during 26 interviews. Most anglers were targeting a combination of Anything and/or Panfish (89%), however a few were also targeting Any Bass (9%). A subset of the "Anything" anglers also mentioned stocked trout being a target (9%). Fishing success was generally low but variable throughout the season, with only 39% of anglers reporting "Good" or "Average" results during the interview. Almost all anglers interviewed were using tip-ups baited with minnows (89%), and Yellow Perch was the highest reported caught species (Figure 6; 171 fish captured, 95% CI 120.1 - 231.1). Bluegill, Chain Pickerel, Stocked Brook Trout, and Largemouth Bass were also estimated to have been captured in high numbers (135, 114, 71, and 53 fish, respectively)

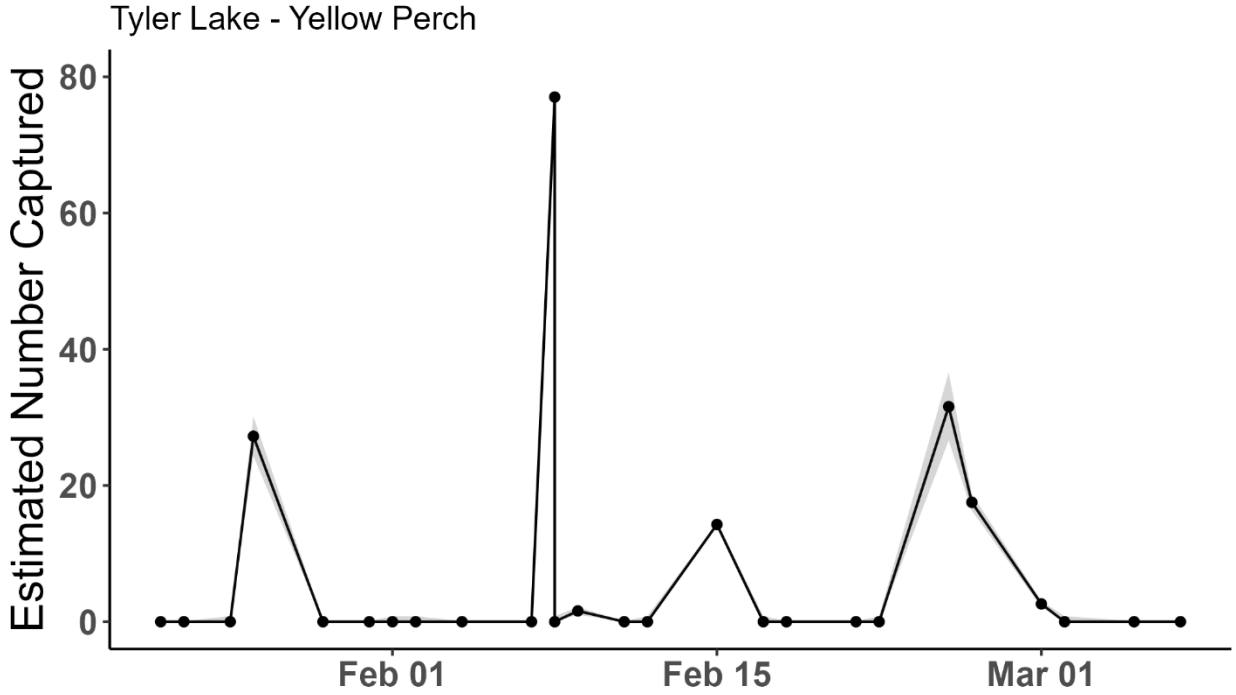


***Figure 6**. Estimated daily catch of Yellow Perch on Tyler Lake during the 2024/2025 ice creel. When multiple capture events were observed and daily variance was possible to calculate, the shaded areas above and below the estimated catch line represent daily variability.*

Objective 2: Develop and implement standardized survey methodologies.

- We continue to implement the standard lake and large survey methodologies used by the Fisheries Division for decades. This ensures comparability of data through time.
- Tablets with the ArcGIS application Survey123 have replaced paper data collection for most creel surveys. This change has allowed the FD to eliminate time spent on data entry, passively collect spatial information (i.e., locations of interviews), and improve data quality through thoughtful form design (e.g., certain fields are required to submit an electronic survey).

Objective 3: Maintain and archive angler survey database(s) and provide support to management projects.

- A post-doctoral scholar at the University of Connecticut started in August 2024 and is collating and modernizing data storage practices for our angler survey data, among other data streams, as part of their studies. Deliverables on this project should be available in 2026.

Objective 4: Evaluate the potential for collecting angler information using alternative computer-based survey methods.

- The Fisheries Division receives quarterly catch reports from the social media platform, FishBrain. The FD can also send notifications through FishBrain to anglers fishing specific waterbodies if the need arises. This could be used, for example, to give anglers who have fished a waterbody a link to complete a survey concerning management of the waterbody.
    - There are serious data quality issues with the catch reports. Catch coordinates are often missing or incorrect and species identification is unreliable.
- A remote angler survey using trail cameras was also initiated in February of 2025 on Long Pond (North Stonington), Amos Lake (Prestson), Winchester Lake (Winchester), Sages Ravine (Salisbury), and Gulf Brook (Somers). This survey is a follow up to and an expansion of an experimental camera survey conducted by the FD in 2019 (Eltz 2020, Dutterer et al. 2020). Cameras were placed at boat launches or popular angling areas where wade fishermen would be observed. In addition to the cameras used for monitoring effort, a sign with QR code link to an online survey prompting anglers to voluntarily report catch rates was stationed at each waterbody. Anglers can scan the code and follow the link to a series of questions where targeted species and catch data are reported using Survey123. This creel will be ongoing in 2025 and will be reported on in detail in the next performance report.

Moving Forward

- Continue the creel surveys at the Community Fishing Waters.
    - Examine reported information to begin creating models on angler usage and opinions of programs at each independent waterbody, if possible.
    - Begin internal discussions with other FD staff to determine stocking practices and highlight areas for improved management.
- Develop long-term creel survey schedule to focus on waterbodies that are important for different fisheries management goals in the near future.
- Continue analyzing the use of camera-based and voluntary survey methods and create a scheduled co-occurring in-person creel survey to compare fishing effort estimates between different methodologies.
- Research engagement strategies for electronic angler logs to increase participation (e.g., incentives, regular outreach, data sharing).
    - Tournament anglers could be a group to test-run this on, as they often pre-fish a waterbody to find locations. This pressure is not included in tournament reporting data and could be useful for managing populations.
    - Partner with the Connecticut Aquatic Resources Education (CARE) Program to engage in angler logs with individuals who attend classes to track retention of anglers as well as catch efficacy. This project could be supplemented with incentives for returning logs.

References

- Malvestuto, S.P., W.D. Davies, and W.L. Shelton. 1978. An evaluation of the roving creel survey with nonuniform probability sampling. Transactions of the American Fisheries Society 107(2):255-262.
- Dutterer, A.C., Dotson, J.R., Thompson, B.C., Paxton, C.J. and Pouder, W.F., 2020. Estimating recreational fishing effort using autonomous cameras at boat ramps versus creel surveys. North American Journal of Fisheries Management, 40(6): 1367-1378.
- Eltz, B. 2020. Fisheries Research and Management, Coldwater Fisheries Program, Stream Angler Surveys. Federal Aid in Sport Fish Restoration F-57-R-38 Annual Performance Report F19AF00329. Connecticut Department of Energy and Environmental Protection Bureau of Natural Resources, Fisheries Division, Hartford, CT.
- Mallette, S. and Ransom, A. 2024. Fisheries Research and Management, Warmwater Fisheries Program, Lake and Large River Angler Surveys. Federal Aid in Sport Fish Restoration F-57-R-41 Annual Performance Report F22AF01153. Connecticut Department of Energy and Environmental Protection Bureau of Natural Resources, Fisheries Division, Hartford, CT.

Appendix A

Community Fishing Water 2024
Creel Survey Hourly Count Form

Waterbody: _____ **CREEL START TIME: _____**
DATE: _____ **Time Count Actually Began: _____**
Agent's Name: _____ **Time Count Actually Ended: _____**

STRATA CODE (Circle one): (WD) Weekday **(WE)** Weekend **(H)** Holiday
WEATHER (Circle one in each category):
Precipitation: Clear P. Cloudy Overcast Light Rain Moderate Rain
Heavy Rain Lightning Storm Snow Fog
Wind: Calm Breezy Windy
Air Temp: _____ **Water Temp: _____**

Age	Shore	Boat
Under 16		
16 or Older		

IS THERE AN ONGOING EVENT ON THE WATERBODY? Yes No # of Participants____
(circle one if yes): Fishing Class Derby Other
COMMENTS:

Appendix B

Waterbody:_____ ID No. _____

Creel Survey Interview Form

Date: _____ **Agent:** _____ **Sample Time:** _____ **# of Anglers:** __(if >1, separate with A, B, etc.…)
Time Fishing Started: _____ **Time Now:** _____ **Fishing from:** Boat Shore
Technique used: Casting Fly Rod Bait Trolling Downrigger
Bait used: Lure Flies Worms Minnows Other bait._____
"What are you fishing for?": _____ "**Are you part of a fishing event/derby today?"** Yes No
"Did you catch any fish today?" Yes No
If yes **"Do you mind if I measure your fish"** Yes No
"Did you release ANY fish?" Yes No
"How would you rate your fishing success today?"
1 Terrible 2 Poor 3 Average
4 Good 5 Excellent 6 Can't tell yet
"How would you rate your overall experience today?"
1 Terrible 2 Poor 3 Average
4 Good 5 Excellent 6 Can't tell yet
"What brings you to fish this lake today?"

Species Code	**Lengths (truncate to lower cm)** *separate w/ commas. If too many to measure, put extra count in (parentheses)*	**# Released**	**Size Range (in)**

"How long did you travel today to get to this lake?": _____mins **"How did you get to this lake today?"** _____
"Have you been interviewed on this lake this year?" Yes No **# of times:**_____
---------- ONLY CONTINUE IF FIRST TIME INTERVIEWED----------
1. Town/State From _____
2. "How many times in an average year do you fish in this lake?" _____
3. "Are you aware that Channel Catfish have been stocked in this lake?" Yes No
4. "Have you ever caught a Channel Catfish in this lake?" Yes No
5. "What's your opinion of the Channel Catfish program in this lake?"
"2) In Favor 1) Highly in favor 4) Opposed 5) Highly opposed 3) No Opinion"
6. "Why are you <previous opinion> to the Channel Catfish program in this lake?"

7. "How often are you likely to keep Channel Catfish that you catch in this lake?"
"2) Most of the time (>50%) 1) Always 4) Rarely (<10%) 3) Occasionally (10-50%) 5) Never"
8. *(If rarely or never)* **"Why wouldn't you keep Channel Catfish that you catch in this lake?"**

9. "Are you aware that trout have been stocked in this lake?" Yes No
10. "Have you ever caught a trout in this lake?" Yes No
11. "What's your opinion of the trout stocking program in this lake?"
"2) In Favor 1) Highly in favor 4) Opposed 5) Highly opposed 3) No Opinion"
12. "Why are you <previous opinion> to the trout stocking program in this lake?"

13. "How often are you likely to keep trout that you catch in this lake?"
"2) Most of the time (>50%) 1) Always 4) Rarely (<10%) 3) Occasionally (10-50%) 5) Never"
14. *(If rarely or never)* **Why wouldn't you keep trout you catch in this lake?"**

15. "Are there other types of fish you would be interested in catching at this lake?"_____
16. "What other services could D.E.E.P. provide to anglers to improve fishing experiences?"
I.e. improved shoreline access, more stocking, more outreach, more locations

Reliability of interview: Good Uncertain Poor Refused (*if poor/uncertain)* **Why?**_____
ADDITIONAL COMMENTS:

Waterbody:_____ ID No. _____
(Either Crescent Lake or Lakewood Lake)

Creel Survey Interview Form

Date: _____ **Agent:** _____ **Sample Time:** _____ **# of Anglers:** __(if >1, separate with A,B, etc…)
Time Fishing Started:_____ **Time Now:** _____ **Fishing from:** Boat Shore
Technique used: Casting Fly Rod Bait Trolling Downrigger
Bait used: Lure Flies Worms Minnows Other bait_____
"What are you fishing for?": _____ "**Are you part of a fishing event/derby today?"** Yes No

"Have you caught any fish today?" Yes No
If yes **"Do you mind if I measure your fish"** Yes No
"Did you release ANY fish?" Yes No
"How would you rate your fishing success today?"
1 Terrible 2 Poor 3 Average
4 Good 5 Excellent 6 Can't tell yet
"How would you rate your overall experience today?"
1 Terrible 2 Poor 3 Average
4 Good 5 Excellent 6 Can't tell yet
"What brings you to fish this lake today?"

Species Code	**Lengths (truncate to lower cm)** *separate w/ commas. If too many to measure, put extra count in (parantheses)*	**# Released**	**Size Range (in)**

"How long did you travel today to get to this lake?": _____mins **"How did you get to this lake today?"** _____
"Have you been interviewed on this lake this year?" Yes No **# of times:**_____
---------- **ONLY CONTINUE IF FIRST TIME INTERVIEWED**----------

1. Town/State From _____
2. "How many times in an average year do you fish in this lake?" _____
3. "Are you aware that Channel Catfish have been stocked in this lake?" Yes No
4. "Have you ever caught a Channel Catfish in this lake?" Yes No
5. "What's your opinion of the Channel Catfish program in this lake?"
"2) In Favor 1) Highly in favor 4) Opposed 5) Highly opposed 3) No Opinion"
6. "Why are you <previous opinion> to the Channel Catfish program in this lake?"

7. "How often are you likely to keep Channel Catfish that you catch in this lake?"
"2) Most of the time (>50%) 1) Always 4) Rarely (<10%) 3) Occasionally (10-50%) 5) Never"
8. *(If rarely or never)* **"Why wouldn't you keep Channel Catfish that you catch in this lake?"**

9. "Are there other types of fish you would be interested in catching at this lake?"_____
10. "What other services could D.E.E.P. provide to anglers to improve fishing experiences?"
I.e. improved shoreline access, more stocking, more outreach, more locations

Reliability of interview: Good Uncertain Poor Refused (*if poor/uncertain)* **Why?**_____
ADDITIONAL COMMENTS:

Waterbody:_____ ID No. _____
(Either Upper Fulton Park Pond or Wharton Brook Park Pond)

Creel Survey Interview Form

Date: _____ **Agent:** _____ **Sample Time:** _____ **# of Anglers:** __(if >1, separate with A,B, etc…)
Time Fishing Started:_____ **Time Now:** _____ **Fishing from:** Boat Shore
Technique used: Casting Fly Rod Bait Trolling Downrigger
Bait used: Lure Flies Worms Minnows Other bait_____
"What are you fishing for?": _____ "**Are you part of a fishing event/derby today?"** Yes No
"Have you caught any fish today?" Yes No
If yes **"Do you mind if I measure your fish"** Yes No
"Did you release ANY fish?" Yes No
"How would you rate your fishing success today?"
1 Terrible 2 Poor 3 Average
4 Good 5 Excellent 6 Can't tell yet
"How would you rate your overall experience today?"
1 Terrible 2 Poor 3 Average
4 Good 5 Excellent 6 Can't tell yet
"What brings you to fish this lake today?"

Species Code	**Lengths (truncate to lower cm)** *separate w/ commas. If too many to measure, put extra count in (parantheses)*	**# Released**	**Size Range (in)**

"How long did you travel today to get to this lake?": _____mins **"How did you get to this lake today?"** _____
"Have you been interviewed on this lake this year?" Yes No **# of times:**_____
---------- ONLY CONTINUE IF FIRST TIME INTERVIEWED----------
1. Town/State From _____
2. "How many times in an average year do you fish in this lake?" _____
3. "Are you aware that trout have been stocked in this lake?" Yes No
4. "Have you ever caught a trout in this lake?" Yes No
5. "What's your opinion of the trout stocking program in this lake?"
"2) In Favor 1) Highly in favor 4) Opposed 5) Highly opposed 3) No Opinion"
6. "Why are you <previous opinion> to the trout stocking program in this lake?"

7. "How often are you likely to keep trout that you catch in this lake?"
"2) Most of the time (>50%) 1) Always 4) Rarely (<10%) 3) Occasionally (10-50%) 5) Never"
8. *(If rarely or never)* **Why wouldn't you keep trout you catch in this lake?"**

9. "Are there other types of fish you would be interested in catching at this lake?"_____
10. "What other services could D.E.E.P. provide to anglers to improve fishing experiences?"
I.e. improved shoreline access, more stocking, more outreach, more locations

Reliability of interview: Good Uncertain Poor Refused (*if poor/uncertain)* **Why?**_____
ADDITIONAL COMMENTS:

Appendix C

Cuerpo de agua:_____ Número de identificación de la entrevista _____

Formulario para Entrevista de Encuesta Anónima sobre Pesca

Fecha: **Entrevistador(a):** **Hora de muestra:** **Núm. de Pescador(a):** (si > 1, separe con A, B etc.)
Hora que comenzó la pesca: _____ **Hora ahora:** _____ **Pescando de:** Embarcación Costa
Técnica usada: Caña de pescar Caña de mosca Captura de cebos Curricán/Troleo Profundizador/Curricán de fondo
Cebo/carnada usada: Señuelos artificiales Moscas Gusanos Pececillos Otro cebo:_____
"¿Qué usted está pescando?": _____ **"¿Usted está a participar en un evento/torneo de pesca hoy?"** Sí No
"¿Ha pescado algo hoy?" Sí No
Si sí: **"¿Le importa si mido su pescado?"** Sí No
"¿Ha liberado ALGÚN pez hoy?" Sí No
"¿Cómo calificaría su éxito de pesca hoy?"
1 Horrible 2 Malo 3 Medio
4 Bueno 5 Excelente 6 Aún no lo sé
"¿Cómo calificaría su experiencia en general hoy?"
1 Horrible 2 Malo 3 Medio
4 Bueno 5 Excelente 6 Aún no lo sé
"¿Qué le trae a pescar en este estanque/lago hoy?"

Código de especie	**Longitudes (trunque para bajar; centímetros)** *Separe con comas. Si son demasiados para medir, ponga recuentos adicionales en (paréntesis)*	**# Liberado**	**Rango de tallas (plg./*in.*)**

"¿Cuanto tiempo viajó hoy para llegar a este estanque/lago?": _____min **"¿Cómo llegó a este estanque/lago hoy?"** _____
"¿Le han entrevistado en este estanque/lago este año?" Sí No **Núm. de veces:**_____

---------- **CONTINUAR SOLO SI ENTREVISTADO POR LA PRIMERA VEZ** ----------

1. **"¿En qué ciudad (y estado) usted vive?"**_____
2. **"¿En promedio, cuántas veces al año pesca en este estanque/lago?"** _____
3. **"¿Usted está informado de que se han equipado Bagres de Canal en este estanque/lago?"** Sí No
4. **"¿Alguna vez ha pescado un Bagre de Canal en este estanque/lago?"** Sí No
5. **"¿Cuál es su opinión sobre el programa de Bagres de Canal en este estanque/lago?"**
"2) A favor 1) Muy a favor 4) En contra 5) Muy en contra 3) Sin opinión"
6. **"¿Por qué está usted <opinión previa> (d)el programa de Bagre de Canal en este estanque/lago?"**

7. **"¿Con qué frecuencia es probable que conserve el Bagre de Canal que capturas en este estanque/lago?"**
"2) La mayoría de las veces (>50%) 1) Siempre 4) Raramente (<10%) 3) De vez en cuando (10-50%) 5) Nunca"
8. *(Si raramente o nunca)* **"¿Por qué usted no conservaría el Bagre de Canal que pesca en este estanque/lago?"**

9. **"¿Usted está informado de que se han equipado Trucha en este estanque/lago?"** Sí No
10. **"¿Alguna vez ha pescado una Trucha en este estanque/lago?"** Sí No
11. **"¿Cuál es su opinión sobre el programa de repoblación de Trucha en este estanque/lago?"**
"2) A favor 1) Muy a favor 4) En contra 5) Muy en contra 3) Sin opinión"
12. **"¿Por qué está usted <opinión previa> (d)el programa de repoblación de Trucha en este estanque/lago?"**

13. **"¿Con qué frecuencia es probable que conserve la Trucha que capturas en este estanque/lago?"**
"2) La mayoría de las veces (>50%) 1) Siempre 4) Raramente (<10%) 3) De vez en cuando (10-50%) 5) Nunca"
14. *(Si raramente o nunca)* **"¿Por qué usted no conservaría la Trucha que pesca en este estanque/lago?"**

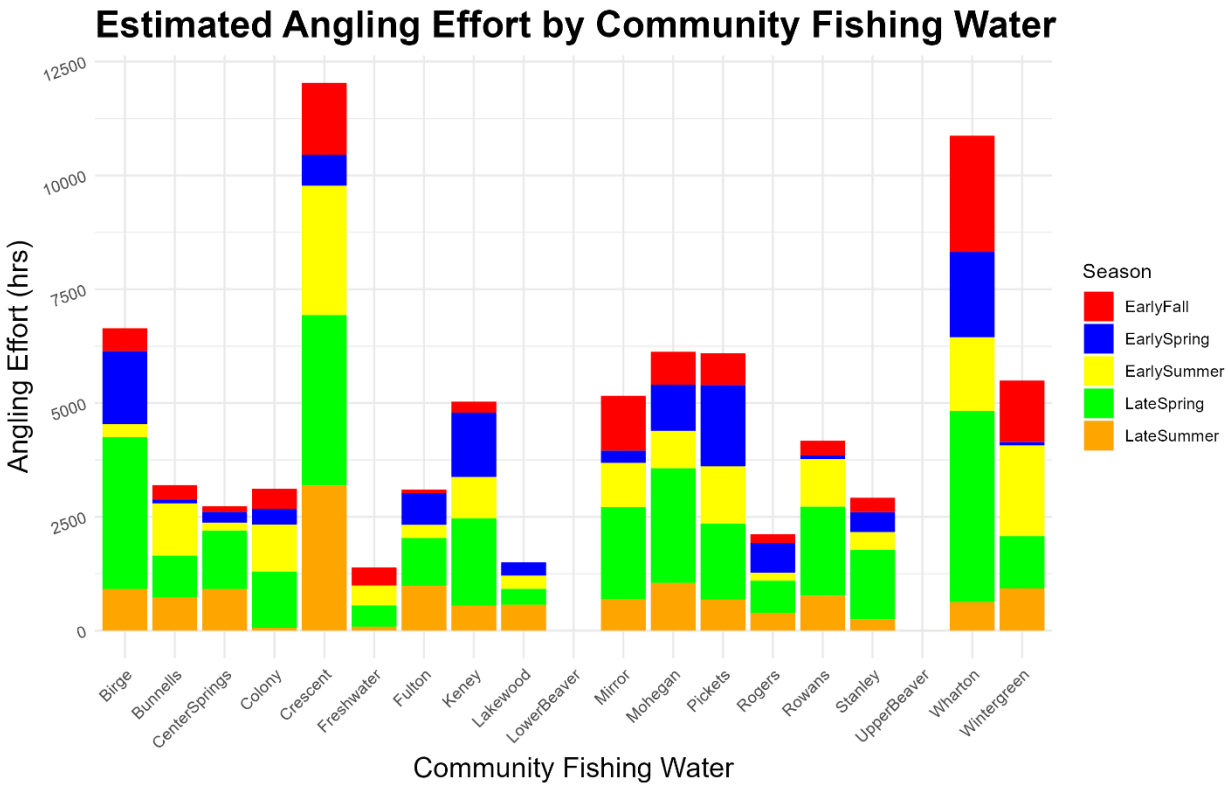
15. **"¿Hay otros tipos de peces que le interesaría pescar en este estanque/lago?"**_____

16. **"¿Qué otros servicios podría proveer el D.E.E.P. (Departamento de Energía y Protección Ambiental de Connecticut) a pescadores para mejorar las experiencias de pesca?"** _____
E.g., Mejor acceso a la costa, mayor repoblación de peces, mayor participación de la comunidad, más ubicaciones

Confiabilidad de la entrevista: Buena Incierta Poca Rechazada *(si poca/incierta)* **¿Por qué?**_____
COMENTARIOS ADICIONALES: _____

Appendix D

Estimated angling effort (angler-hours) for each seasonal strata at all Community Fishing Waters and Wharton Brook Park Pond during the open-water fishing season (March 1, 2024 – October 31, 2024). Unique colors represent individual seasons. Lower and upper Beaver Park Pond had only one angler observed during this period, so no estimate was able to be calculated.

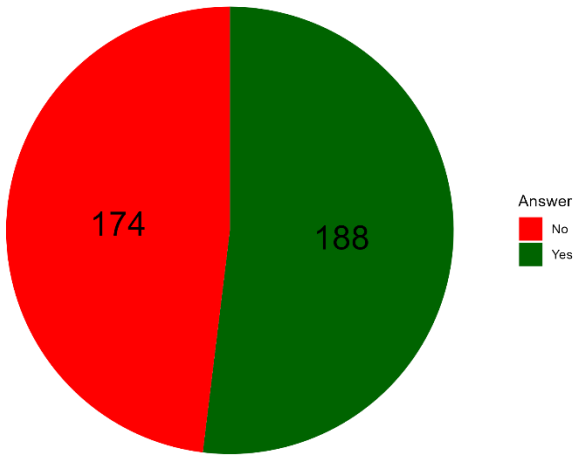


Appendix E

Angler responses to questions targeting Channel Catfish at Community Fishing Waters stocked with Channel Catfish.

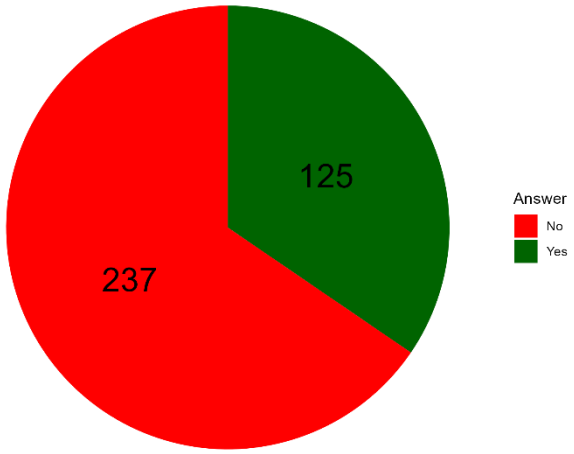
A

Are you aware that Channel Catfish have been stocked in this lake?



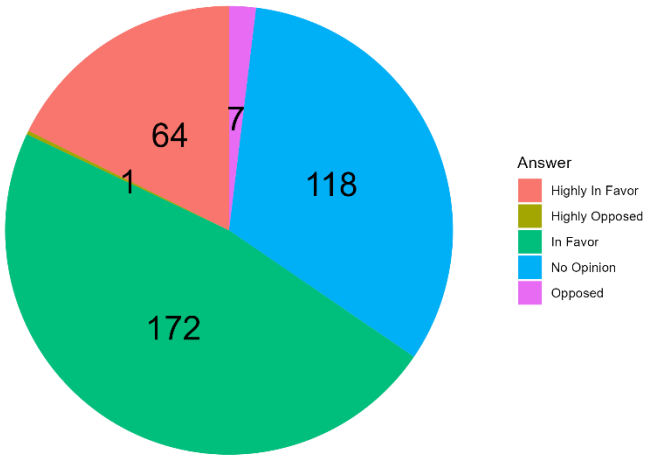
B

Have you ever caught a Channel Catfish in this lake?



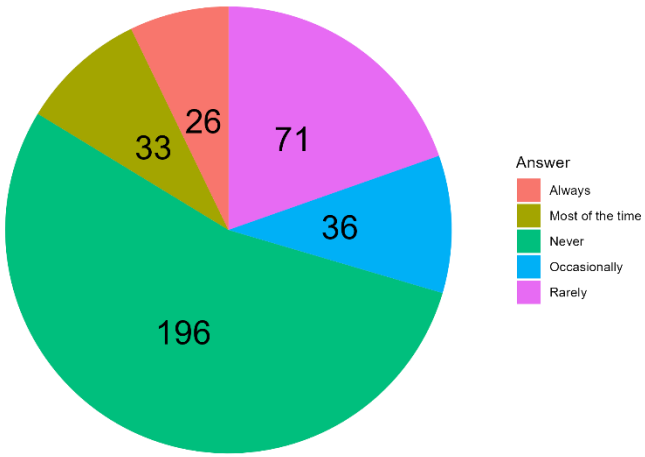
C

What's your opinion of the Channel Catfish program in this lake?



D

How often are you likely to keep Channel Catfish that you catch in this lake?

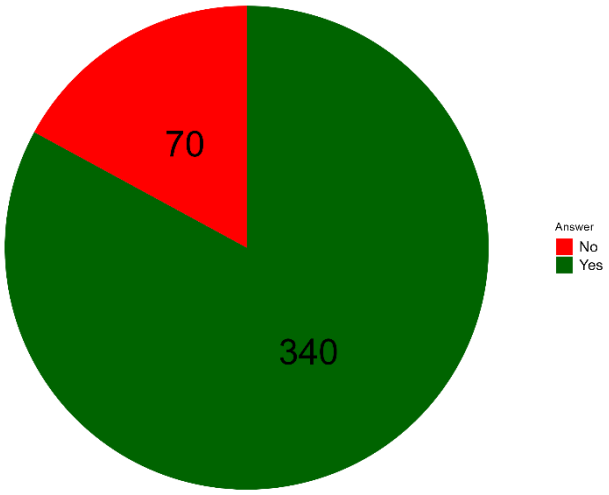


Appendix F

Angler responses to questions targeting trout at Community Fishing Waters stocked with trout.

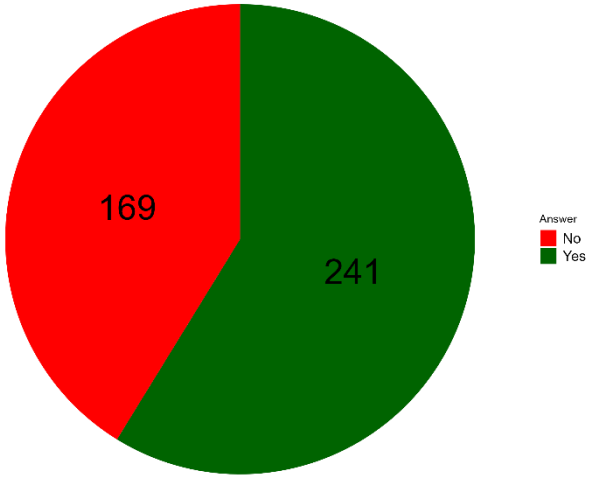
A

Are you aware that trout have been stocked in this lake?



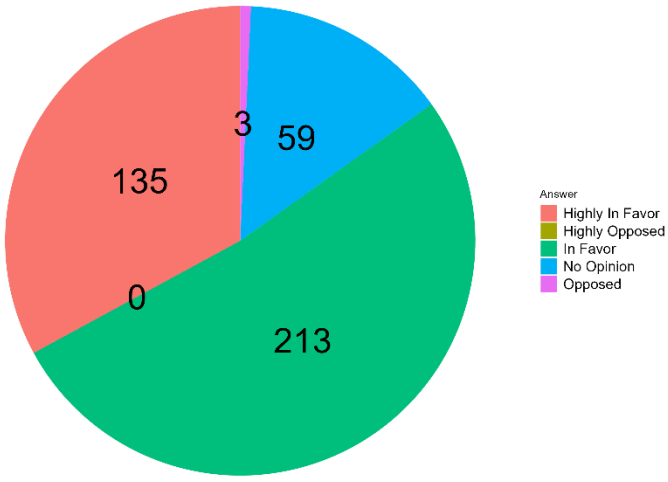
B

Have you ever caught a trout in this lake?



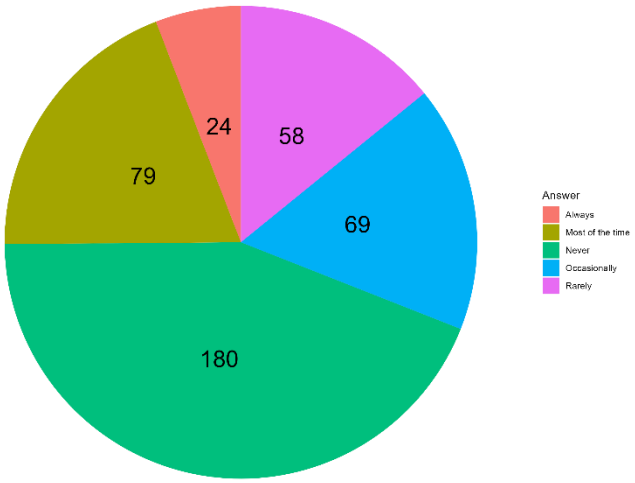
C

What's your opinion of the trout program in this lake?



D

How often are you likely to keep trout that you catch in this lake?



State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 2:	Warmwater Fisheries Management
Job 3:	Bass Research and Management

Report Prepared by:	Andrew Bade and Spencer Mallette
Job Personnel:	Andrew Bade, Co-Job Leader/Program Coordinator
	Spencer Mallette, Co-Job Leader
	Christopher McDowell, Primary Staff
	Lillian Glynos, Primary Staff

Overview: Largemouth Bass (*Micropterus nigricans,* formerly *M. salmoides*) and Smallmouth Bass (*M. dolomieu*), referred to collectively as "bass" herein, are Connecticut's most popular freshwater gamefish with 2.1 million fishing days spent per year targeting bass, which is a 31% increase in bass fishing over the previous decade (U.S. Fish and Wildlife Service 2013). In addition, competitive tournament fishing for bass has doubled in Connecticut from approximately 400 tournaments in 1990 to over 800 tournaments in 2021. Currently, the Fisheries Division has special bass fishing regulations on 29 lakes (Figure 1) and a section of the Housatonic River. However, Connecticut is currently at a crossroads with respect to bass management. Traditional management tools like minimum lengths, slot lengths, and creel limits are generally only effective when regular harvest occurs (Hessenauer et al. 2018). The bass regulations implemented in 2002 assumed that the harvest levels documented during the preceding 20 years would continue. However, a shift in angler behavior towards catch-and-release (current voluntary release rates approach 100%) has limited their effectiveness. Increased catch-and-release fishing for bass has also led to a reduction in catch rates due to repeated catch events creating learned avoidance behaviors (Hessenauer et al. 2016).

Accordingly, the Fisheries Division developed and published a Bass Action Plan in September 2022, with emphasis on the changes in angler behavior and desires, advances in scientific literature, and extensive public feedback. Significant progress has been made to implement various elements of this plan since its release.

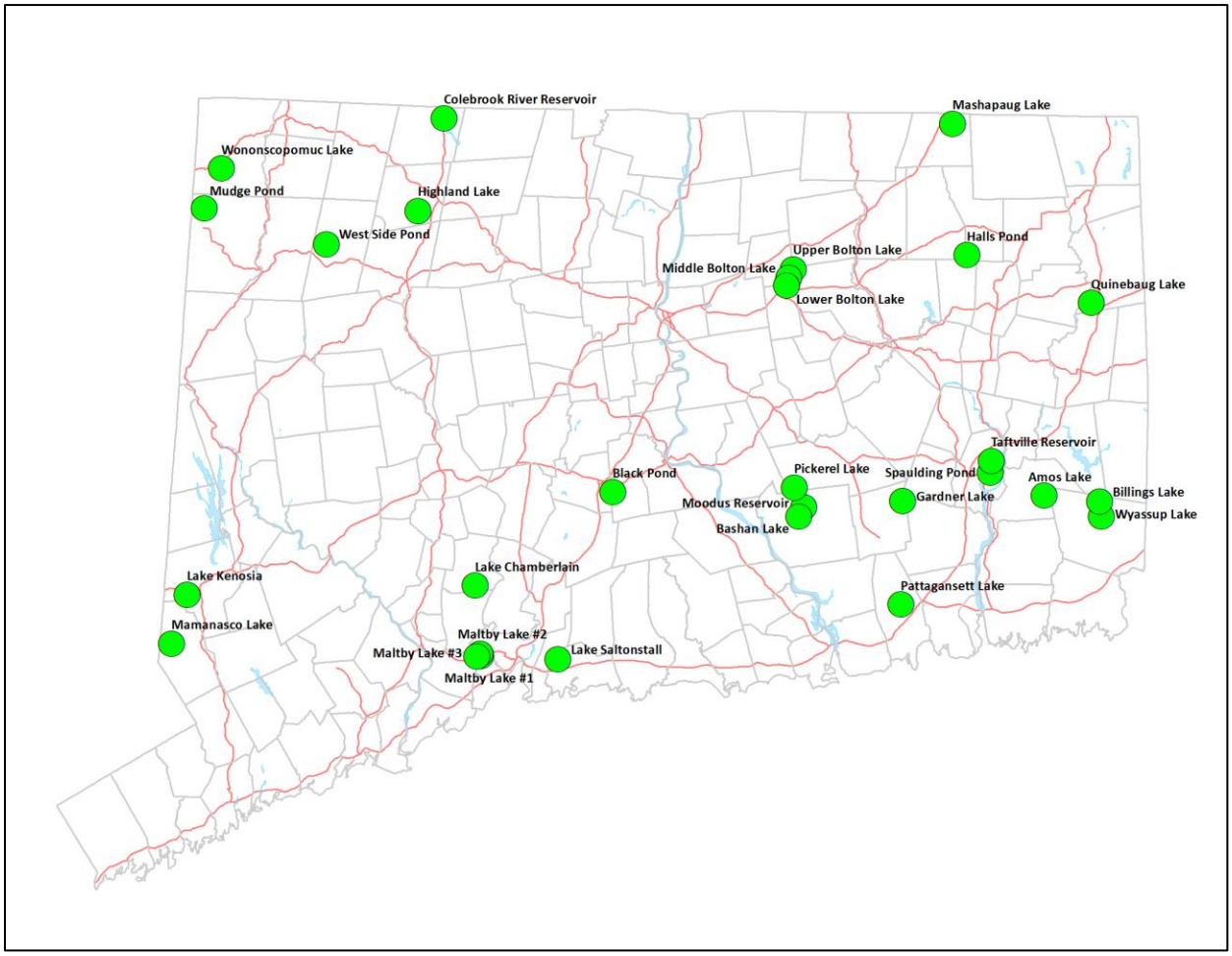


Figure 5. *Connecticut's 29 Bass Management Lakes (green circles).*

The objectives for the bass management job are:

1. Continue to monitor Bass Management Lakes (BMLs) and other important bass fisheries via electrofishing on a rotational basis.
2. Monitor tournaments for bass catch rates and size structures in selected lakes.
3. Monitor changes in bass angler habits, attitudes and impacts on fisheries.
4. Investigate effects of catch-and-release mortality on bass populations.
5. Determine the need for modifications of traditional statewide and BML regulations.
6. Explore the possibilities of improving angling quality and bass population genetic structure through continued experiments involving stocking reservoir bass into public lakes.

Key Findings

Objective 1: Continue to monitor Bass Management Lakes (BMLs) and other important bass fisheries via electrofishing on a rotational basis.

- The Fisheries Division (FD) sampled seven BMLs and Candlewood Lake, one of the most important bass fisheries in Connecticut (Table 1).
- Highland Lake and Mansfield Hollow Lake were each sampled multiple times to coincide with a quality-size or larger bass population estimate for these heavily fished tournament lakes.
- Wyassup Lake samples were performed to assess Smallmouth Bass stockings (which took place on April 8 and 22, 2024) and subsequent spawning success. Two samples were performed in October, 2024 to sample for the PIT-tagged, stocked adult Smallmouth Bass and any YOY spawned by the Spring stocked fish.

Table 1. *All BMLs and other important bass fisheries sampled during the 2024-2025 performance period, along with waterbody management type and sample date(s).*

Lake	Management Type	Sample Date(s)
Amos Lake	BML	06/05/2024
Bashan Lake	BML	05/20/2024
Candlewood Lake	Important Bass Fishery	06/10/2024
Halls Pond	BML	09/30/2024
Highland Lake	BML/ Trout Management Lake	04/26/2024, 05/10/2024, 5/24/2024
Mansfield Hollow Lake	BML/ Northern Pike Management Lake	05/03/2024, 05/17/2024, 05/31/2024
Spaulding Pond (Mohegan Park Pond)	BML/ Trout Park	10/07/2024
Wyassup Lake	BML	10/02/2024, 10/16/2024

Objective 2: Monitor tournaments for bass catch rates and size structures in selected lakes.

- For the first time, the FD put together an annual summary report of bass tournament fishing in Connecticut (2024 State of Connecticut Bass Tournament Fishing). This report is published for public reference on the status of important bass tournament fisheries across the state, where tournaments are most prevalent, waterbody specific pressures, and where some of the biggest bass have been caught. Some 2024 tournament season highlights include:
    - Forty-two unique waterbodies hosted a total of 699 bass fishing tournaments. This is 106 fewer tournaments and one fewer waterbody than in 2023.
    - Overall post-tournament reporting was 35.5% for 2024, a decrease of approximately 6% from 2023.

- Candlewood Lake hosted 150 tournaments, with the greatest number of tournaments during April and May when other regional states have closed bass seasons to accommodate the spawn. Compared to 2023, Candlewood Lake hosted 31 fewer tournaments.
- Candlewood Lake also dominated the top 20 biggest fish report, with eleven representatives. The remaining nine biggest fish came from five different waterbodies.
- Mansfield Hollow Lake, Amos Lake, and Glasgo Pond had the highest pressure per acre with 13.82, 13.45, and 13.23 tournament angling hours per acre, respectively. These three lakes also represented the top 3 pressured lakes per acre in 2023, but total pressure declined by nearly ten angling hours per acre for each waterbody. This apparent decline is largely driven by a change in assumptions during the analysis – in previous years, the number of anglers per tournament was estimated using the permitted number of anglers (which was available for each permit). This year, the "actual" number of anglers was used based on those events which completed post-event report forms, and this average was extrapolated to those tournaments where a post-event report was not completed. This methodology will be used moving forward
- This report will be published annually.

- In-person tournament monitoring was conducted at two popular bass fisheries, Highland Lake and Mansfield Hollow Lake. This project aimed to gain a better understanding of the bass population structure at these lakes and assess anglers' usage and perceptions of forward-facing sonar technology.
  - FD staff attended CT DEEP-permitted fishing tournaments that utilized traditional, in-person weigh-in formats. After the official weigh-in, staff collected the fish and placed them into bins assigned to individual anglers/teams. During this process, anglers were asked a series of questions about their experience that day, including the number of fish caught, whether they culled any fish, if any bycatch was caught, and whether they used forward-facing sonar in that day's event.
  - Once all fish were handed over, staff recorded fish total length, mass, and overall health. Scale samples were taken for aging analysis that will be performed later. If a fish had never been previously caught, a fin was clipped as a capture marker to track recapture in future events.
  - Paired night-time electrofishing samples (four at each waterbody; two of which took place before the current reporting period but are included herein) were performed to increase the number of bass sampled and diversify capture type to develop a more robust population estimate. Fish were measured using the same methodology as during tournament monitoring.

- This was the first bass population estimate done by the FD on Highland Lake. Population estimates will only be given for fish greater than 12", which is the minimum length allowable in most tournaments.
    - There are an estimated 662 Smallmouth Bass of quality size (≥12") in Highland Lake (95% CI: 378 – 1,281), for an average of 1.5 quality size Smallmouth Bass per acre (Table 2). An estimated 24.6% of Smallmouth Bass are equal to or greater than memorable size (≥17").
    - There are an estimated 686 Largemouth Bass of quality size (≥12") in Highland Lake (95% CI: 481 – 1,019), for an average of 1.5 quality size Largemouth Bass per acre (Table 3). An estimated 24.2% of the Largemouth Bass are equal to or greater than memorable size (≥18").
- Mansfield Hollow Lake bass populations have been monitored previously, and the current population estimate will be compared against those from 2002 and 2013. Estimates for earlier years will only be expressed in fish greater than or equal to quality size Largemouth Bass (≥12").
    - As of 2024, there are an estimated 2,427 Largemouth Bass of quality size (≥12") in Mansfield Hollow Lake (95% CI: 1,856 – 3,175), for an average of 5.3 quality size fish per acre (Table 4). An estimated 10.5% of the Largemouth Bass are equal to or greater than memorable size (≥18").
    - The 2024 population estimate shows a larger population of quality size (≥12") Largemouth Bass in Mansfield Hollow Lake than in 2013 or 2002. Quality size fish density has increased over time from 3.9 quality size fish per acre in 2002, to 5.3 quality size fish per acre in 2024.

Table 2. *Highland Lake Smallmouth Bass mark-recapture population estimate summary table for 2024. Captured Smallmouth Bass were given fin clips after the first catch event and recorded as recaptures for every catch event afterward.*

	2024
Quality Size ≥12 inches (30.4cm)	
Number of Smallmouth Bass captured in size class	138
Number of recaptured Smallmouth Bass in size class	12
Number of mortalities	9
Estimated population size (N)	662
95% CI	378 - 1,281
Number per acre (range)	1.5 (0.8 - 2.9)
Preferred Size ≥14 inches (35.0cm)	
Number of Smallmouth Bass captured in size class	117
Number of recaptured Smallmouth Bass in size class	11
Number of mortalities	8
Estimated population size (N)	514
95% CI	287 - 1,047
Number per acre (range)	1.1 (0.6 - 2.3)

Memorable Size ≥17 inches (43.0cm)	
Number of Smallmouth Bass captured in size class	54
Number of recaptured Smallmouth Bass in size class	7
Number of mortalities	5
Estimated population size (N)	163
95% CI	79 - 408
Number per acre (range)	0.4 (0.2 - 0.9)

Table 3. *Highland Lake Largemouth Bass mark-recapture population estimate summary table for 2024. Captured Smallmouth Bass were given fin clips after the first catch event and recorded as recaptures for every catch event afterward.*

	2024
Quality Size ≥12 inches (30.4cm)	
Number of Largemouth Bass captured in size class	226
Number of recaptured Largemouth Bass in size class	30
Number of mortalities	10
Estimated population size (N)	686
95% CI	481 - 1,019
Number per acre (range)	1.5 (1.1 - 2.3)
Preferred Size ≥15 inches (38.1cm)	
Number of Largemouth Bass captured in size class	151
Number of recaptured Largemouth Bass in size class	17
Number of mortalities	5
Estimated population size (N)	533
95% CI	333 - 915
Number per acre (range)	1.2 (0.7 - 2.0)
Memorable Size ≥18 inches (45.7cm)	
Number of Largemouth Bass captured in size class	35
Number of recaptured Largemouth Bass in size class	3
Number of mortalities	2
Estimated population size (N)	166
95% CI	56 - 830
Number per acre (range)	0.4 (0.1 - 1.9)

Table 4. *Mansfield Hollow Lake Largemouth Bass mark-recapture population estimate summary table for 2002, 2013, and 2024. Captured Largemouth Bass were given fin clips after the first catch event and recorded as recaptures for every catch event afterward. Estimates for 2002 and 2013 only represent quality size fish as the raw data could not be found to do estimates for preferred and memorable size classes.*

	Year		
	2002[1]	2013[2]	2024
Quality Size ≥12 inches (30.4cm)			
Number of Largemouth Bass captured in size class	NA	NA	545
Number of recaptured Largemouth Bass in size class	207	47	53
Number of mortalities	NA	NA	5
Estimated population size (N)	1,792	1,942	2,427
95% CI	1,564 - 2,054	1,460 - 2,582	1,856 - 3,175
Number per acre (range)	3.9 (3.6 - 4.5)	4.2 (3.2 - 5.6)	5.3 (4.0 - 6.9)
Preferred Size ≥15 inches (38.1cm)			
Number of Largemouth Bass captured in size class	NA	NA	269
Number of recaptured Largemouth Bass in size class	NA	NA	28
Number of mortalities	NA	NA	2
Estimated population size (N)	NA	NA	1,102
95% CI	NA	NA	763 - 1,658
Number per acre (range)	NA	NA	2.4 (1.7 - 3.6)
Memorable Size ≥18 inches (45.7cm)			
Number of Largemouth Bass captured in size class	NA	NA	65
Number of recaptured Largemouth Bass in size class	NA	NA	7
Number of mortalities	NA	NA	0
Estimated population size (N)	NA	NA	254
95% CI	NA	NA	123 - 636
Number per acre (range)	NA	NA	0.6 (0.3 - 1.4)

1. The full dataset was not available for the 2002 population estimate at Mansfield Hollow Lake. Provided numbers come from O'Donnell et al. (2003).
2. The full dataset was not available for the 2012 population estimate at Mansfield Hollow Lake. Provided numbers come from Davis et al. (2013).

Objective 3: Monitor changes in bass angler habits, attitudes and impacts on fisheries.

- During the monitoring of bass fishing tournaments at Highland Lake and Mansfield Hollow Lake, tournament anglers were asked a series of questions when they presented FD agents with their weighed-in fish. One of the questions posed to the anglers were if they used forward-facing sonar (FFS) during the tournament to target bass.
    - Of the 193 groups asked, 72% of the anglers did not use FFS technology, while the remaining 28% did. It should be noted that many of the individuals that did not use the technology possess it but are not yet skilled enough to use it effectively and therefore do not use it during tournaments.

- Fisheries Division staff wanted to see if anglers using FFS were more successful in filling their bag limit (five fish of 12" or greater), and if those fish caught were on average of greater size in terms of both length (mm) and mass (g) by species (Largemouth and Smallmouth Bass) at each waterbody. The null hypothesis was there would be no statistical difference in any of these comparisons, with the working hypothesis that anglers using FFS would catch more fish per angler and have larger fish.
    - When comparing bag size, normalized for how many anglers were fishing for the bag (either individuals or teams of 2), anglers not using FFS averaged 2.82 fish/person (s.d. = 1.56), while those using FFS average 2.67 fish/person (s.d = 1.35). There was no statistically significant difference in average fish bagged/person with FFS and without FFS ($t = 0.63$, $df = 114$, p-value = 0.53). While the average fish bagged/person was slightly higher for those not using FFS, the difference could be attributed to random variation.
    - Differences for length and mass were separated by waterbody, species, and forward-facing sonar use. There were no statistically significant differences in average fish length or mass across waterbodies and species (Table 1; Table 2). On average, anglers not using FFS caught longer fish, and except for Smallmouth Bass at Highland Lake, caught heavier fish. The differences in these pairings could be due to random variation.

Table 5. *Summary statistics of fish length (mm) for Largemouth Bass and Smallmouth Bass at Highland Lake and Mansfield Hollow Lake based on anglers' use of forward-facing sonar (FFS). Independent samples t-tests evaluated differences in length means between each species at each waterbody by whether fish were caught by anglers using FFS or not. Statistically significant results have a p-value ≤ 0.05.*

						T-test Values		
Waterbody	**Species**	**FFS Used?**	**Length (mm)**	**sd**	**n**	**t**	**df**	**p-value**
Highland Lake	LM	no	412	43	139	1.62	72	0.11
		yes	400	45	45			
	SM	no	416	66	75	0.82	58	0.42
		yes	405	54	28			
Mansfield Hollow Lake	LM	no	395	56	283	1.62	269	0.11
		yes	386	48	123			

Table 6. *Summary statistics of average fish mass (g) for Largemouth Bass and Smallmouth Bass at Highland Lake and Mansfield Hollow Lake based on anglers' usage of forward-facing sonar (FFS). Independent samples t-tests evaluated differences in mass means between each species at each waterbody by whether fish were caught by anglers using FFS or not ($\alpha \leq 0.05$).*

						T-test Values		
Waterbody	**Species**	**FFS Used?**	**Mass (g)**	**sd**	**n**	**t**	**df**	**p-value**
Highland Lake	LM	no	1,007	362	139	1.10	78	0.27
		yes	941	347	45			
	SM	no	862	289	75	-0.07	39	0.94
		yes	868	386	28			
Mansfield Hollow Lake	LM	no	940	446	283	1.51	279	0.13
		yes	876	369	123			

Objective 4: Investigate effects of catch-and-release mortality on bass populations.

- A total of nineteen and eight bass were reported dead at weigh-in during tournament monitoring at Highland Lake and Mansfield Hollow Lake, respectively. At Highland Lake, ten of the dead fish were Largemouth Bass and the remaining nine were Smallmouth Bass. All fish dead at Mansfield Hollow Lake were Largemouth Bass.
    - Edwards et al. (2004) estimated a 2.8% tournament mortality rate for bass caught in Mansfield Hollow Lake and Gardner Lake, two highly utilized tournament lakes in Connecticut. This rate is below what has been previously reported across other studies nationally (e.g., 4-10% immediate mortality rates in the following: Kwak and Henry 2004; Driscoll et al. 2007, Sylvia and Weber 2022).
    - A total of 408 Largemouth Bass were brought to weigh-in at Mansfield Hollow Lake, for an instantaneous mortality rate (dead at or before weigh-in) of 2.0%, which was lower than the rate estimated by Edwards et al. (2004).
    - A total of 185 Largemouth Bass were brought to weigh-in at Highland Lake, for an instantaneous mortality rate of 5.4%. A total of 108 Smallmouth Bass were brough to weigh-in at Highland Lake, for an instantaneous mortality rate of 8.3%.
        - The higher-than-expected fish mortality at Highland Lake could be attributed to lake characteristics. Highland Lake has a deep basin that stays cool and has a deep thermocline, as well as a good forage base of Alewife. Bass likely move deeper to cooler, more oxygenated waters when temperatures increase to stay cooler and chase schools of Alewife. Being caught from depth results in rapid changes in temperature and pressure that may lead to higher mortality rates.

Objective 5: Determine the need for modifications of traditional statewide and Bass Management Lake regulations.

- The Fisheries Division published the Bass Action Plan, which is the culmination of extensive, iterative public feedback, literature review, consultations with biologists from other states, and reviewing decades of fish community and angler data in Connecticut.
    - The plan includes several suggested regulatory changes including experimental reduced bag limits and/or allowable bass tournament durations during the summer months on BMLs, assessing the feasibility of closed areas and/or bait restrictions during the spawning season, and adding a minimum length limit and reduced bag for riverine bass. Public feedback and continued evidence of the ineffectiveness of current regulations point to the need for new strategies, but implementation of alternatives remains in the early stages.
    - Regulations were developed that include extending the Bull's Bridge Bass Management Area in the Housatonic River upstream to the Massachusetts border.
    - The FD has begun compiling a list of possible regulation changes that will directly impact the management of bass throughout the state of Connecticut. This list has not been completed to date. Possible changes may be made available for public comment during the next performance period.

Objective 6: Explore the possibilities of improving angling quality and bass population genetic structure through continued experiments involving stocking reservoir bass into public lakes.

- Smallmouth Bass were caught from Wangum Lake, Canaan via angling on 4/8/2024 (n=74) and 4/22/2024 (n=86) and transplanted to Wyassup Lake, North Stonington, where Smallmouth Bass have been extirpated since 2013.
    - Fisheries Division and Aquarion Water Company staff angled from two small aluminum boats fitted with large plastic tubs to transport Smallmouth Bass back to the launch where an oxygenated tank was positioned. Boats and equipment were decontaminated using a bleach solution and power washer prior to launching.
    - Staff (5 to 6 anglers at any given time) fished with artificial lures continuously from approximately 9:00 am to 2:00 pm on 4/8/2024 and from 8:30 am to 1:30 pm on 4/22/2024.
    - One Smallmouth Bass appeared to be in poor condition upon capture and was released without being brought back to the launch for processing. For all other Smallmouth Bass, FD staff sexed (Benz and Jacobs 1984), measured, weighed, took scales for ageing, and injected passive integrated transponder (PIT) tags into the dorsal musculature before stocking them at Wyassup Lake.
    - Smallmouth Bass were transported the same day in an oxygenated tank in the bed of a FD truck and released at the Wyassup Lake boat launch. No mortalities were observed among transplanted individuals, and all appeared to be in good condition at time of stocking. Anecdotal reports from anglers indicate that the Smallmouth Bass in Wyassup Lake remain highly vulnerable to angling.

- Snorkel and electrofishing surveys to evaluate this stocking are described in more detail in Study 2, Job 7. But in short, early indicators suggest acceptable adult survival and successful recruitment of YOY.

Table 7. *Number of Smallmouth Bass caught at Wangum Lake, Canaan, and transplanted to Wyassup Lake, North Stonington, sorted by sex. Mean and standard deviation for total length (mm) and weight (g) is also shown sorted by sex.*

Sex	Count (proportion)	Mean length in mm (sd)	Mean weight in g (sd)
Male	62 (0.3875)	392.6 (26.2)	732.6 (142.1)
Female	96 (0.6)	398.6 (26.2)	784.2 (161.5)
Unknown	2 (0.0125)	370 (33.9)	590.5 (116.7)
Total	160	395.9 (26.4)	761.8 (156.3)

Figure 2. *Fisheries Division biologist Andrew Miano holding a Smallmouth Bass caught via angling on Wangum Lake, Canaan.*

- The FD developed a plan to raise Smallmouth Bass at the Kensington State Fish Hatchery using broodstock taken from Wangum Lake starting in the spring of 2026. Progress on

hatchery improvements and other work to facilitate this project will be described in the next performance period.
- The FD is working to identify waters most likely to benefit from supplemental stockings of reservoir-origin Largemouth Bass through ongoing electrofishing and angler surveys at Community Fishing Waters, as well as by leveraging information from previous survey work in potential source locations and other waterbodies likely to benefit from supplemental stocking (e.g., popular bass tournament lakes). An extended analysis and a proposed program for collecting and stocking reservoir-origin bass is expected to be included in the next performance report.

Moving Forward

- Continue creating the annual State of Connecticut Bass Tournament Fishing report, updating it with new relevant data and highlighting lakes of interest to tournament anglers.
- Continue engaging with tournament directors through emails and in-person tournament visits to improve post-tournament reporting rates to improve data availability for the annual State of Connecticut Bass Tournament Fishing report.
- Continue with in-person tournament monitoring at important bass tournament lakes to fill data gaps related to tournament mortality and efficiently estimate population sizes and size structures.
- Continue to pursue additional fishing access at select drinking water reservoirs that are currently closed to fishing to create new bass fishing opportunities.
- Proactively monitor important bass fisheries for targeted pathogens in coordination with the USFWS Lamar Fish Health Lab.
- Move forward with possible regulatory changes to bass fishing, including experimental reduced bag limits and/or allowable bass tournament durations during the summer months and assessing the feasibility of closed areas during the spawning season.
- Continue to stock Wyassup Lake with Smallmouth Bass for a total of three years.
- Move forward with hatchery-rearing of Smallmouth Bass at the Kensington State Fish Hatchery starting in 2026.
- Develop a collection and stocking plan for reservoir-origin Largemouth Bass.

References

Davis, J., E. O'Donnell, M. Humphreys, E. Machowski, C. McDowell, R. Jacobs, T. Barry, J. Vokoun, J.M. Hessenauer. 2013. Inland Fisheries Research and Management: Warmwater Fisheries Management: Bass Research and Management; Bass Supplemental Stocking Study. Federal Aid in Sportfish Restoration F-57-R-31. Annual Performance Report. Connecticut Department of Energy and Environmental Protection, Bureau of Natural Resources. Hartford, CT. 65pg.

Driscoll, M.T., Smith, J.L., Myers, R.A. 2007. Impact of Tournaments on the Largemouth Bass Population at Sam Rayburn Reservoir, Texas. *North American Journal of Fisheries Management, 27,* 425 - 433.

Edwards, P.E., Neumann, R.M., Jacobs, R.P., O'Donnell, E.B. 2004. Factors Related to Mortality of Black Bass Caught during Small Club Tournaments in Connecticut. *North American Journal of Fisheries Management*, *200,* 801-810.

Hessenauer, J. M., Vokoun, J., Davis, J., Jacobs, R., & O'Donnell, E. 2016. Loss of Naivety to Angling at Different Rates in Fished and Unfished Populations of Largemouth Bass. *Transactions of the American Fisheries Society*, *145*(5), 1068–1076. https://doi.org/10.1080/00028487.2016.1194894

Hessenauer, J.M., J. Vokoun, J. Davis, R. Jacobs, and E.B. O'Donnell. 2018. Size structure suppression and obsolete length regulations in recreational fisheries dominated by catch and-release. Fisheries Research 200 (2018) 33-42.

Kwak, T.J., Henry, M.G. 1995. Largemouth Bass Mortality and Related Causal Factors during Live-Release Fishing Tournaments on a Large Minnesota Lake. *North American Journal of Fisheries Management*, *15,* 621-630.

O'Donnell, E.B., R. Jacobs, R. Orciari, T. Barry, G. Leonard. 2003. Inland Fisheries Research and Management: Warmwater Fisheries Management: Monitor Warmwater Fish Populations in Lakes, Pond, and Large Rivers; Assessment of New Bass Regulations. Federal Aid in Sportfish Restoration F-57-R-21. Annual Performance Report. Connecticut Department of Environmental Protection, Bureau of Natural Resources. Hartford, CT. 65pg.

Sylvia, A., Weber, M.J. 2022. Assessing Size-Dependent Population-Level Effects of Largemouth Bass Tournament Mortality. *North American Journal of Fisheries Management, 42,* 1324-1339.

U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2013. 2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation Connecticut. 84p.

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 2:	Warmwater Fisheries Management
Job 4:	Esocid Management

Report Prepared by:	Christopher McDowell
Job Personnel:	Christopher McDowell, Co-Job Leader
	Spencer Mallette, Co-Job Leader
	Andrew Bade, Program Coordinator

Overview: Connecticut currently has four fish species belonging to the family Esocidae. The Redfin Pickerel (Figure 1) and Chain Pickerel are native to Connecticut, whereas Northern Pike and tiger muskie have been introduced. Only Northern Pike and tiger muskie have been actively managed in Connecticut, with Northern Pike receiving the most management effort. The Chain Pickerel has statewide management regulations through daily length and bag limits.

Figure 1. *A Redfin Pickerel.*

Species Highlights:

The **Chain Pickerel** (Figure 2) is Connecticut's only native, freshwater, apex predatory sportfish. Often viewed in a negative light, Chain Pickerel populations have had a contentious history with anglers and fisheries managers alike. They are often seen as an unwanted and harmful predator of other, preferable gamefish, such as trout and black bass. However, in a 2020 online survey conducted by the Fisheries Division (FD) with over 300 respondents, approximately 39% stated they target Chain Pickerel. Angler survey data from Connecticut shows that most harvest of Chain Pickerel occurs during the ice-fishing season, as they are one

of a few lake-dwelling species that remain active during the winter months. Therefore, this species provides year-round fishing opportunities for anglers.

Figure 2. *A large Chain Pickerel caught angling in Connecticut.*

Although Chain Pickerel have the potential to grow to more than 24 inches and four pounds in unfished water supply reservoirs, these sizes are rarely attained in Connecticut waters where fishing occurs, likely due to several factors including winter water drawdowns (McDowell, 2012), low minimum size limit (15-inches) and high daily creel limit (6 fish). The FD is working to establish baseline population data (i.e. abundance, length-frequency, and age and growth) for lakes with established Chain Pickerel populations and determine if current regulations provide adequate protection.

Northern Pike (Figure 3) were introduced to Connecticut in the 1970s to create an exciting fishing opportunity and take advantage of abundant forage fish populations. Management of Northern Pike fisheries by the FD adds to the diversity and quality of Connecticut's freshwater fishing opportunities. However, none of the Northern Pike Management Lakes (PMLs) have enough natural reproduction to support a directed fishery. These fisheries are therefore supplemented or completely supported by annual stockings of three to six-inch "fingerlings" that are raised in a small, managed marsh located in Mansfield, Connecticut, or purchased from a commercial vendor in Minnesota. Maintaining existing fisheries through marsh management and fingerling stocking will ensure angler access to a unique and popular sport fishery.

Figure 3. *A female Northern Pike captured to be used for breeding in a CT DEEP Fisheries Division Northern Pike spawning marsh.*

Currently, the FD stocks fingerlings into four PMLs: Bantam Lake (Morris/Litchfield), Mansfield Hollow Lake (Mansfield), Pachaug Pond (Griswold) and Winchester Lake (Winchester) (Figure 4). Lake Lillinonah (Brookfield/Bridgewater/Newtown/New Milford/Roxbury/Southbury), which is not a PML and is typically not stocked by the Fisheries Division, receives annual stockings of yearling Northern Pike and/or tiger muskie purchased by

the Lake Lillinonah Authority (LLA) from commercial vendors through permits issued by the FD. The FD, when possible, also stocks Northern Pike fingerlings into the Haddam area of the Connecticut River to supplement its existing population.

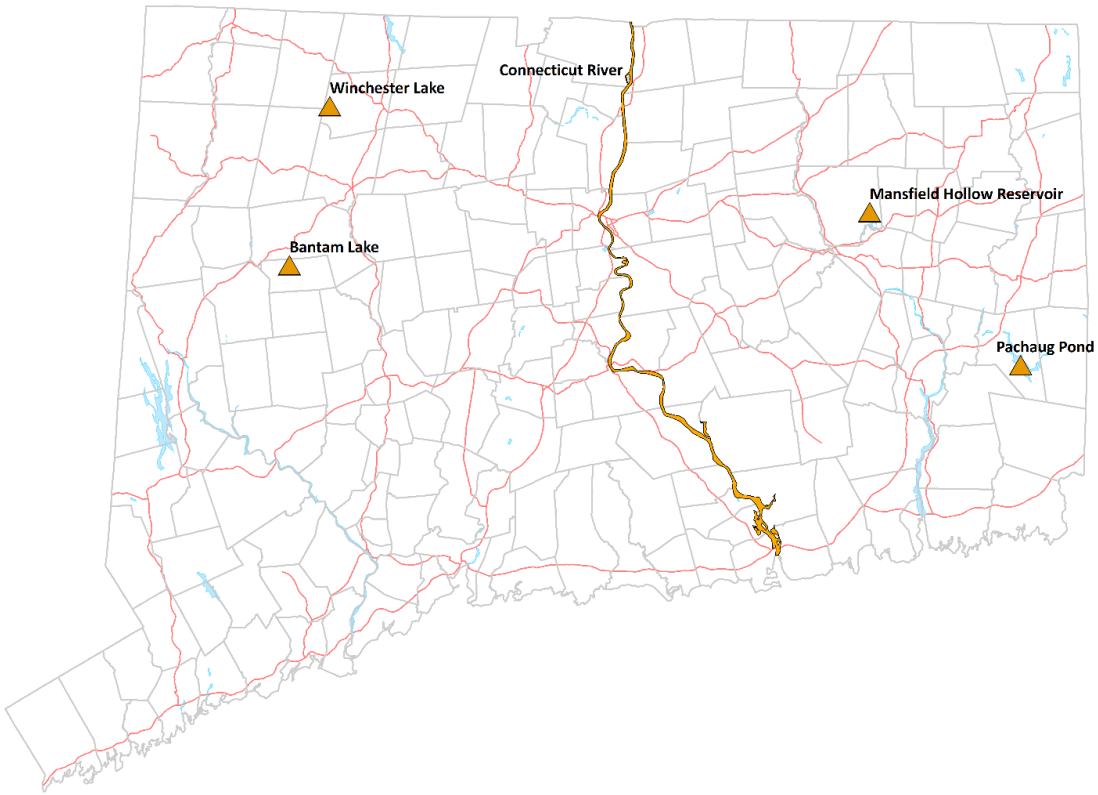


Figure 4. *Connecticut's four Northern Pike Management Lakes (orange triangles). Also highlighted in orange is the Connecticut River, which has a self-sustaining Northern Pike population that has been supplemented by CT DEEP Fisheries Division Northern Pike fingerlings raised in the Haddam marsh through 2020. (Stocking of the Connecticut River has been paused due to the Haddam marsh system being shut down for renovations since December of 2020.) All locations, sans the Connecticut River, were stocked with fingerling Northern Pike in 2024.*

Tiger muskie, a sterile hybrid cross of Northern Pike and Muskellunge, is currently not stocked by the Fisheries Division. However, two lake associations (the Lake Lillinonah Authority and the Woodridge Lake Association) have been issued permits to stock this fish, with approval from the Fisheries Division. Like Northern Pike and Walleye, tiger muskie are seen as a management tool for maintaining fish population balance because of their piscivorous nature and quick growth rates. The FD is currently exploring the option of stocking tiger muskie in other waters throughout Connecticut. Currently, the only active management regulation for tiger muskie in Connecticut is a 38-inch, one fish per day limit on Lake Lillinonah.

Figure 5. *A massive tiger muskie caught in Lake Lillinonah.*

The objectives for the Esocid management job are:

1. Monitor Northern Pike and Chain Pickerel populations as resources permit.
2. Assess the potential for creation of tiger muskie fisheries and determine which lakes have the most potential for supporting tiger muskie.
3. Evaluate Chain Pickerel Management Lake regulations on Lake Wononskopomuc, East Twin Lake, and West Twin Lake.
4. Continue to produce fingerling Northern Pike from managed spawning marshes and stock into selected lakes each year.
5. Evaluate the most cost-effective method or combination of methods of procuring or producing fingerling Northern Pike to maintain our PMLs.

Key Findings

Objective 1: Monitor Northern Pike and Chain Pickerel populations as resources permit.

- A short duration, single gear (trap nets) mark-recapture population estimate of catchable size Northern Pike was performed in Pachaug Pond during the spring of 2024 while collecting Northern Pike broodstock for the Mansfield Hollow spawning marsh. Captured Northern Pike were marked with a fin clip. The population at Pachaug Pond was last estimated in 2023.
    - Originally, a mark-recapture population estimate in conjunction with broodstock capture was slated for Mansfield Hollow Lake. However, extremely high-water levels at Mansfield Hollow Lake made the setting of trap nets impossible. The FD staff pivoted to Pachaug Pond for broodstock capture and simultaneously performed a short duration mark-recapture population estimate.
    - Four trap nets were deployed from March 4, 2024, to March 13, 2024. Nets were set in historically sampled locations where pre-spawn Northern Pike were assumed to be traveling to access spawning habitat. A total of 36 trap net days of sampling was performed. Trap net days were calculated by adding together the number of days each net was "working" (open, in the water, and actively fishing).
    - Table 1 shows the results of the 2024 Northern Pike population assessment alongside past estimates from 2002, 2007, and 2023. In 2004, a relative abundance estimate was performed. However, no marks were given to fish, which made determining population size for each catchable size class impossible.
        - The estimated population size in 2024 should be interpreted with caution due to the short duration of this sampling, the low number of recaptures, and that 25 Northern Pike were removed from the population and moved to the Mansfield Hollow spawning marsh during the estimate and not returned until June, which was after the estimate was completed.
    - Figure 6 shows the length-frequency graphs for Northern Pike captured during four separate sampling periods from 2002 through 2024 at Pachaug Pond. Capture methods involved trap netting in 2002,2004, 2023 and 2024. In 2007, trap netting, nighttime boat electrofishing, and gillnetting were the methods of capture.

Table 1. *Pachaug Pond (Griswold) Northern Pike mark-recapture population estimate summary table for sampled years. Captured Northern Pike were given fin clips during the first catch event and recorded as recaptures in any future catch events. See the footnotes for details regarding sampling gear and notes related to each sample.*

****PACHAUG POND WAS FIRST STOCKED WITH NORTHERN PIKE IN 1999***	**Year**				
	2002[1]	**2004[3]**	**2007[4]**	**2023[5]**	**2024[8]**
All Size					
Number of Northern Pike captured in size class	60	21	217	80	89
# of recaptured Northern Pike in size class	6	-	20	3	7
Number of mortalities	1[2]	0	0	26[6]	26[9]
Estimated population size (N)	191	-	846	400	236
95% CI	87-519	-	549-1,338	136-2,000	115-591
#/Acre (Range)	0.2 (0.1-0.62)	-	1.0 (0.65-1.65)	0.5 (0.16-2.38)	0.3 (0.1-0.7)
Stock Size (≥35 CM) [≥14 IN]					
Number of Northern Pike captured in size class	60	21	214	78	89
# of recaptured Northern Pike in size class	6	-	20	3	7
Number of mortalities	1[2]	0	0	26[6]	26[9]
Estimated population size (N)	191	-	824	368	236
95% CI	87-519	-	535-1,351	125-1,840	115-591
#/Acre (Range)	0.2 (0.10-0.62)	-	1.0 (0.64-1.61)	0.4 (0.15-2.19)	0.3 (0.14-0.70)
Quality Size (≥60 CM) [≥24 IN]					
Number of Northern Pike captured in size class	26	17	143	72	59
# of recaptured Northern Pike in size class	2	-	12	3	6
Number of mortalities	1[2]	0	0	26[6]	24[9]
Estimated population size (N)	108	-	617	302	103
95% CI	30-1,075	-	353-1,195	103-1,508	47-282
#/Acre (Range)	0.1 (0.04-1.28)	-	0.4 (0.42-1.42)	0.4 (0.12-1.79)	0.1 (0.06-0.34)
Preferred Size (≥71 CM) [≥28 IN]					
Number of Northern Pike captured in size class	7	8	74	45	36
# of recaptured Northern Pike in size class	1	-	7	1	5
Number of mortalities	1[2]	0	0	17[6]	17[9]
Estimated population size (N)	14	-	279	322	40
95% CI	2-140	-	136-698	57-3,220	17-125
#/Acre (Range)	0.02 (0.003-0.17)	-	0.3 (0.16-0.83)	0.4 (0.07-3.83)	0.05 (0.02-0.15)
Memorable Size (≥86 CM) [≥34 IN]					
Number of Northern Pike captured in size class	0[3]	0	16	3	11

# of recaptured Northern Pike in size class	0	-	1	0	2
Number of mortalities	0	0	0	1[6]	1[9]
Estimated population size (N)	0	0	82	NC[7]	13
95% CI	0	0	15-820	-	3-125
#/Acre (Range)	0	0	0.1 (0.02-0.98)	-	0.01 (0.004-0.15)

[1]Sampling in 2002 was carried out using two trap nets and was done from March 1, 2002, to March 25, 2002, totaling 58 trap net days. (Trap net days are calculated by adding together the number of days each net was "working", meaning open in the water and actively catching fish).

[2]One fish was removed from the lake to be used in a fish tank at the hunting and fishing Expo. It was returned after the Expo was completed but was considered a mortality in the population estimate because it was removed from the catchable population.

[3]Sampling in 2004 was carried out using three trap nets and was done from March 18, 2004, to April 6, 2004, totaling 66 trap net days. No clips were given to captured fish so a population estimate could not be calculated. (Trap net days are calculated by adding together the number of days each net was "working", meaning open in the water and actively catching fish).

[4]Sampling in 2007 was carried out using five trap nets and was done from March 19, 2007, to April 5, 2007, totaling 110 trap net days. Additionally, one night of boat electrofishing was carried out in various locations around the lake for a total of 1.01 hours. Also, 10 gill nets were set in two locations in Pachaug Pond totaling 45 gill netting hours.

[5]Sampling in 2023 was carried out using five trap nets and was done from February 21, 2023, to April 3, 2023. A total of 210 trap net days of sampling was performed. (Trap net days are calculated by adding together the number of days each net was "working", meaning open in the water and actively catching fish).

[6]A total of 25 Northern Pike of various sizes were retained for broodstock and were released into the Mansfield Hollow spawning marsh. These fish were counted as mortalities as they were removed from the sampleable population. Additionally, one Northern Pike was actually found dead in one of the trap nets. Making the total "mortalities" 25.

[7]NC - Not calculated because no recaptures.

[8]Sampling in 2024 was carried out using four trap nets and was done from March 4, 2024, to March 13, 2024. A total of 36 trap net days of sampling was performed. (Trap net days are calculated by adding together the number of days each net was "working", meaning open in the water and actively catching fish). The purpose of this sampling was to collect broodstock for the Mansfield Hollow spawning marsh which is why the length of netting was short.

[9]A total of 25 Northern Pike of various sizes were retained for broodstock and were released into the Mansfield Hollow spawning marsh. These fish were counted as mortalities as they were removed from the sampleable population.

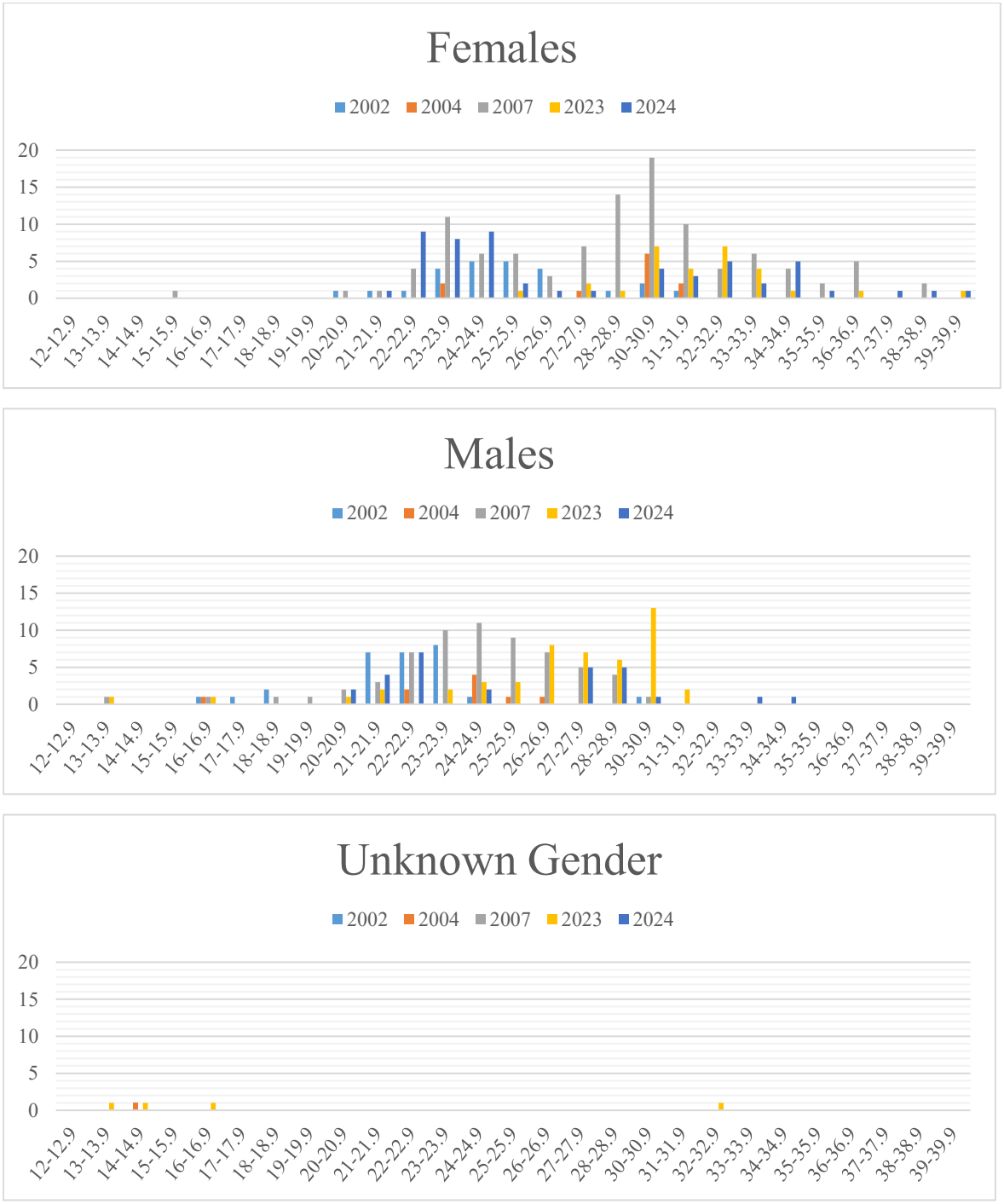


Figure 6. *Length-frequency graphs of Northern Pike captured during five separate sampling periods from 2002 through 2024 at Pachaug Pond. Capture methods involved trap netting in 2002,2004, 2007, 2023 and 2024. In 2007, nighttime boat electrofishing and gillnetting were also used as methods of capture. Graphs are displayed by gender.*

- A single gear (nighttime boat electrofishing) mark-recapture population estimate was attempted at Mansfield Hollow Lake during spring of 2024 over the course of four days: 3/27, 5/3, 5/17 and 5/31. During this sampling Chain Pickerel, Largemouth Bass, and Smallmouth Bass were targeted (the results of the Largemouth and Smallmouth Bass sampling can be found in Study 2, Job 3). All captured Chain Pickerel (N= 43, Figure 7) were given a fin clip and checked for this fin clip during subsequent samples during the sampling window. No population estimate could be carried out because no marked Chain Pickerel were re-captured.

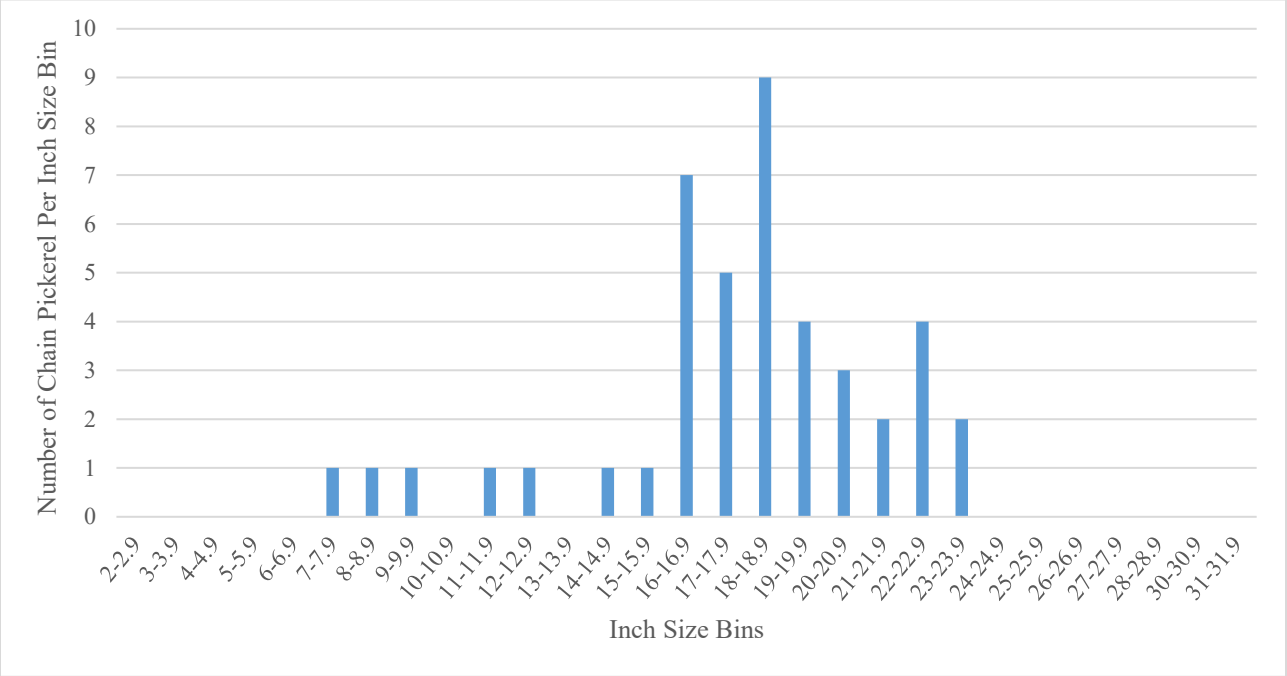


***Figure** 7. Length-frequency graphs of Chain Pickerel captured during four separate sampling days in 2024 (3/27, 5/3, 5/17 and 5/31) at Mansfield Hollow Lake. Capture method was nighttime boat electrofishing.*

- During fall 2024, a single gear (trap nets) mark-recapture population estimate was attempted between 10/21/24 through 11/22/24 at East Twin Lake (aka Washining Lake), Salisbury. During this sampling both Chain Pickerel and Brown Trout were targeted (the results of the Brown Trout sampling can be found in Study 1, Job 6). All captured Chain Pickerel (N= 59, Figure 8) were given a fin clip and checked for this fin clip during subsequent samples during the sampling window. Only one Chain Pickerel was recaptured during the sampling window. Unfortunately, this single recaptured Chain Pickerel was not measured so only a population estimate for 'All Size' Chain Pickerel within the lake could be performed. Additionally, with only one recapture, the population estimate results for this waterbody should be interpreted with caution. The population estimate for 'All Size' Chain Pickerel in the lake is 1,528 (95% CI 268 – 10,314). The wide range in confidence of the population estimate is caused by the singular recapture event. However, it also suggests the population level could be relatively large. The size range for captured Chain Pickerel ranged from 14.0 to 26.1 inches (Figure 8).

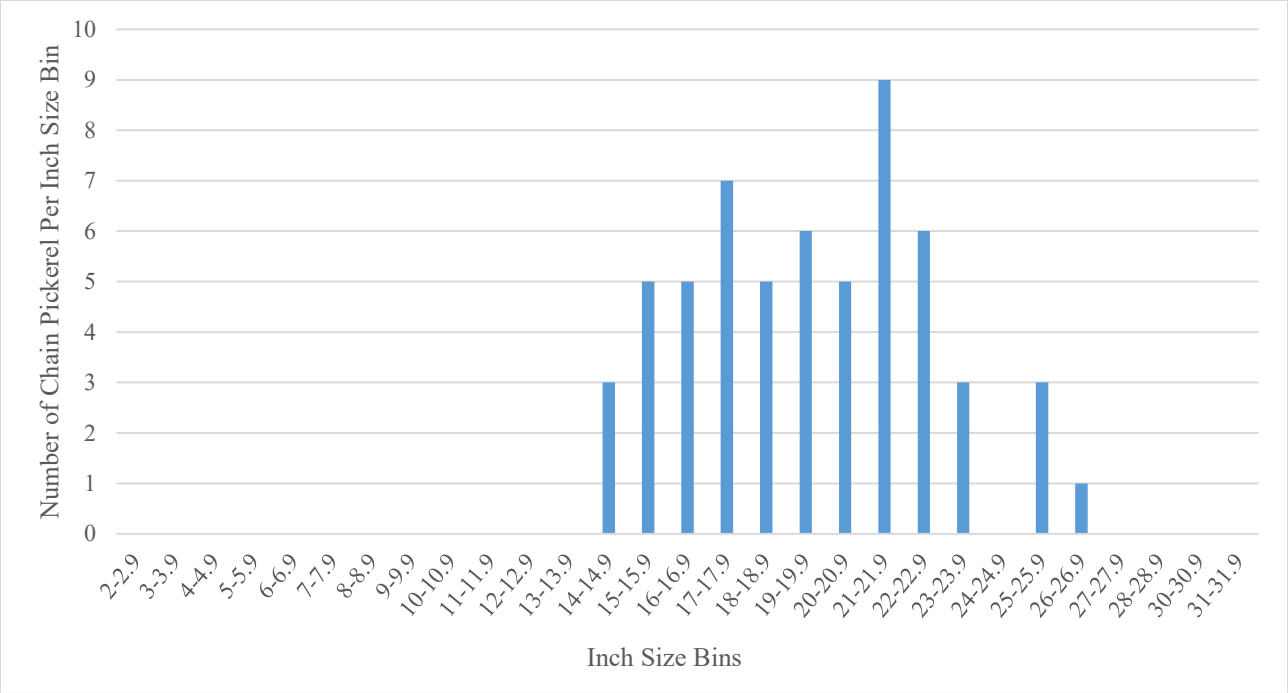


Figure 8. *Length-frequency graphs of Chain Pickerel caught in trap nets 10/21/24 through 11/22/24 at East Twin Lake (aka Washining Lake), Salisbury.*

Objective 2: Assess the potential for creation of tiger muskie fisheries and determine which lakes have the most potential for supporting tiger muskie.

- Discussions amongst staff began to identify potential lakes for the initiation of tiger muskie stocking. A consensus was made that the 301-acre Aspinook Pond located in the towns of Canterbury, Griswold and Lisbon, CT was a top choice to investigate further. Other strong candidates include Quaddick Lake and West Thompson Lake. During the upcoming project segment, Aspinook Pond will be vetted further and additional waterbodies located east of the Connecticut River will be investigated.

Objective 3: Evaluate Chain Pickerel Management Lake regulations on Lake Wononskopomuc, East Twin Lake, and West Twin Lake.

- The regulation package containing the new Chain Pickerel Management Lake regulations for Lake Wonoskopomuc, East Twin Lake and West Twin Lake has been approved and will go into effect on January 1, 2026. These regulations are as follows:
    - "*The minimum length for Chain Pickerel shall be twenty-two inches and the daily creel limit shall be one at: (1) East Twin Lake (Salisbury). (2) West Twin Lake (Salisbury). (3) Wononoskopomuc Lake (Salisbury).*"

- As these regulations have yet to go into effect, no action was taken towards evaluating the new regulations in 2024-2025. However, see Objective 1 for pre-data on Chain Pickerel abundance and size-structure at East Twin Lake.

Objective 4: Continue to produce fingerling pike from managed spawning marshes and stock into selected lakes each year.

- The FD stocked a total of 30,511 juvenile Northern Pike in 2024 (Table 2). The FD exceeded its annual stocking goal of 12,864 fingerlings by 137.2%.
    - The Mansfield Marsh produced 7,769 Northern Pike fingerlings (Figure 9) that averaged 4.9 inches (range 2.0-6.6-inches).
        - Northern Pike fingerling production from the Mansfield Hollow Marsh in 2024 (7,769) exceeded the 1999-2023 average (4,862) by 46.0%. See figure 9 for a graph showing number of finglering Northern Pike produced from the Mansfield Marsh from 1999 through present.
            - The marsh was stocked with 25 (16 males and 9 females) pre-spawn Northern Pike from Pachaug Pond.
        - The fingerlings from Mansfield Marsh were stocked into four waterbodies (Table 2): Bantam Lake, Mansfield Hollow Reservoir, Pachaug Pond, and Winchester Lake.

Figure 9. *Picture of a Connecticut raised Northern Pike fingerling from one of the FD managed spawning marshes.*

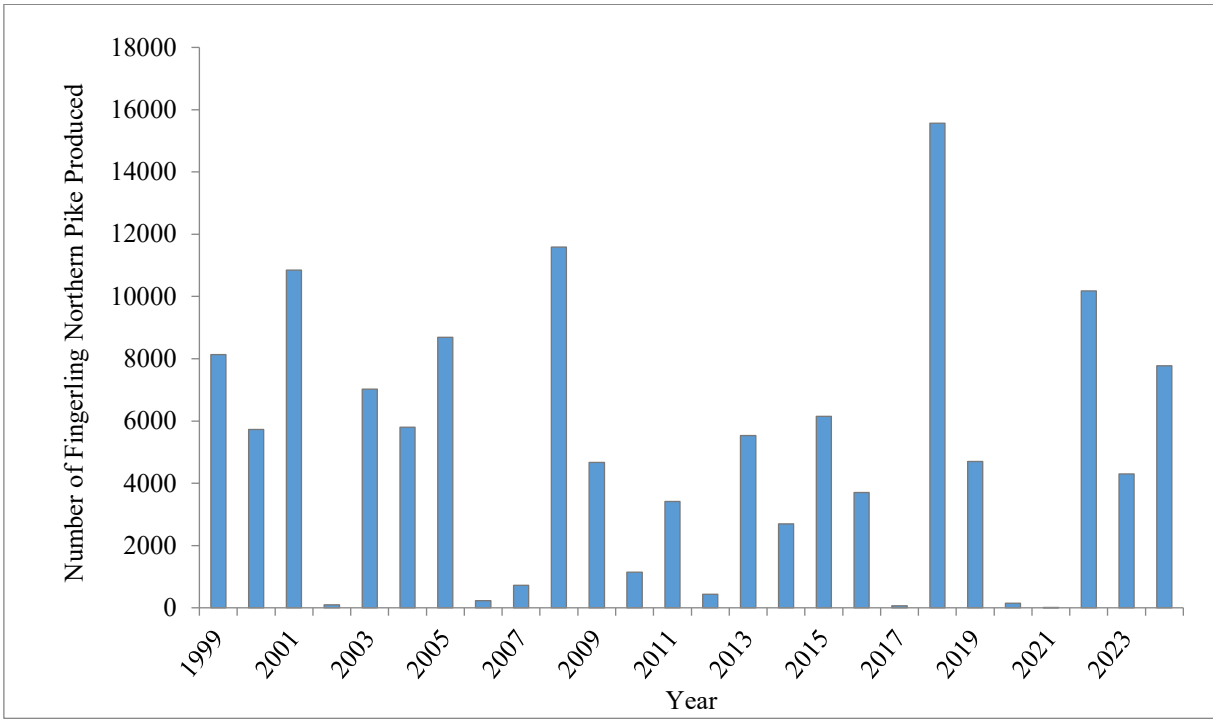


Figure 9. *Number of finglering Northern Pike produced from the Mansfield Marsh from 1999 through*

- On June 11, 2024, the Fisheries Division received 19,379 Northern Pike "frylings" (average length 2.5 inches, range 1.2-3.6 inches) after accounting for transportation related mortality from West Central Bait & Fisheries Co. Inc., MN. (Figure 10). The fish were split evenly and stocked into Bantam Lake and Winchester Lake (Table 2).

Figure 10. *Connecticut Fisheries Division staff receiving the Minnesota Northern Pike frylings at Bantam Lake on 6/11/2024. One of the Minnesota frylings can be seen in the upper left-hand corner.*

- The Upper and Lower marshes located at Haddam Meadows State Park have not been operated since 2020 due to water control infrastructure and access issues. These challenges are being addressed but will take several more years to be resolved.

Table 2. *Number of Northern Pike fingerlings stocked in Connecticut's Pike Management Lakes between 6/11/24-7/2/24. Please note that the upper and lower Connecticut River are not being stocked at this time due to the Haddam spawning marshes being closed for renovation.*

Lake	***Number Stocked***	***% of Target Number***
Bantam Lake[a]	11,937	630.2%
Mansfield Hollow Reservoir[b]	3,771	164%
Pachaug Pond[c]	4,155	98.8%
Winchester Lake[d]	10,648	865.7%

[a]*Stocked with 9,773 Minnesota "frylings" (2.5-inches, range 2.0-3.6-inches) and 2,164 fish that were produced from the Mansfield Hollow spawning marsh (4.9-inches, range 2.0-6.6-inches) in 2024. The fish produced from the Mansfield Hollow spawning marsh were derived from fry from the Charles O. Hayford State Fish Hatchery in Hackettstown, New Jersey and pre-spawn Northern Pike broodstock from Pachaug Pond. The lineage of the Pachaug Pond broodstock could be a mixture of New Jersey, Bantam Lake and/or Connecticut River fish.*

[b]*Mansfield Hollow Reservoir was stocked with fish produced from the Mansfield Hollow spawning marsh (4.9-inches, range 2.0-6.6-inches). These fingerlings were derived from fry from the Charles O. Hayford State Fish Hatchery in Hackettstown, New Jersey and pre-spawn Northern Pike broodstock from Pachaug Pond. The lineage of the Pachaug Pond broodstock could be a mixture of New Jersey, Bantam Lake and/or Connecticut River fish.*

[c]*Pachaug Pond was stocked with 802 4.9-inch (range 2.0-6.6-inch) fingerlings produced from the Mansfield Hollow spawning marsh. These fingerlings were derived from fry from the Charles O. Hayford State Fish Hatchery in Hackettstown, New Jersey and pre-spawn Northern Pike broodstock from Pachaug Pond. The lineage of the Pachaug Pond broodstock could be a mixture of New Jersey, Bantam Lake and/or Connecticut River fish. An additional 3,353 7.8-inch (range 6.5-8.9-inch) fingerlings were stocked directly from the Charles O. Hayford State Fish Hatchery in Hackettstown, New Jersey on 6/28/24.*

[d]*Winchester Lake was stocked with 9,616 Minnesota "frylings" (2.5-inches, range 2.0-3.6-inches) and with fish produced from the Mansfield Hollow spawning marsh (4.9-inches, range 2.0-6.6-inches). The fingerlings produced from the Mansfield Hollow spawning marsh were derived from both fry from the Charles O. Hayford State Fish Hatchery in Hackettstown, New Jersey and pre-spawn Northern Pike broodstock from Pachaug Pond. The lineage of the Pachaug Pond broodstock could be a mixture of New Jersey, Bantam Lake and/or Connecticut River fish.*

Objective 5: Evaluate the most cost-effective method or combination of methods of procuring or producing fingerling Northern Pike to maintain our PMLs.

- Precise cost-benefit analyses are challenging. However, given the uncorrelated probabilities of success across souces, it is recommended that a diverse portfolio of sources be maintained to maximize the probability of meeting stocking allocation goals in any given year.
    - Managed marsh cost-per-recruit was not estimated in 2024 but is historically extremely variable because it is driven by highly variable production.

- In our efforts to maintain a diverse portfolio of fingerling sources, three methods were utilized during 2024 to try to reach our PML stocking goals:
    - Between March 4-13, 2024, 25 pre-spawn broodstock (9 females and 16 males) from Pachaug Pond were stocked into the Mansfield Hollow Northern Pike spawning marsh.
        - Collection of the resulting fingerlings was carried out between June 29-July 2, 2024. A total of 7,769 fingerlings were retrieved from the marsh and stocked into all PML's at varying numbers.
    - On March 26, 2024, approximately 71,000 Charles O. Hayford State Fish Hatchery-reared Northern Pike fry were stocked in the Mansfield Hollow Northern Pike spawning marsh.
    - On June 11, 2024, the Fisheries Division received 19,389 Northern Pike fingerlings (average length 2.5-inches, range 2.0-3.6-inches) from West Central Bait & Fisheries Co. Inc., MN. (Figure 10). The fish were split evenly and stocked into Bantam Lake and Winchester Lake.
    - On June 28, 2024, a total of 3,355 Northern Pike fingerlings (average length 7.8-inches, range 6.5-8.9-inches) were stocked directly into Pachaug Pond from the Charles O. Hayford State Fish Hatchery.

Moving Forward

- Continue to pursue necessary infrastructure modifications to the Haddam Marsh water control structures once land access issues have been resolved.
- Purchase Northern Pike "frylings" from a private vendor to augment numbers of Northern Pike produced in the Connecticut marshes.
- Determine a waterbody in Eastern Connecticut to stock tiger muskie, find a viable vendor and begin the approval process to purchase and stock tiger muskie.

References

McDowell, Christopher P., "Winter Drawdown Effects on Swim-up Date and Growth Rate of Age-0 Fishes in Connecticut" (2012). *Master's Theses*. 324. https://digitalcommons.lib.uconn.edu/gs_theses/324

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title: Inland Fisheries Research and Management
Study 2: Warmwater Fisheries Management
Job 5: Walleye Management

Report Prepared by: Christopher McDowell
Job Personnel: Christopher McDowell, Job Leader
Spencer Mallette, Primary Staff
Lillian Glynos, Primary Staff
Andrew Bade, Program Coordinator

Overview: Walleye (Figure 1) are one of the most popular gamefish in North America (Scott and Crossman 1973, Eddy and Underhill 1974). They grow to large size, can be caught throughout the year using a variety of techniques, and provide excellent table fare. Walleye are also efficient predators that can utilize abundant forage fish populations. Overall, Walleye management adds to the diversity and quality of Connecticut's freshwater fishing opportunities. Natural reproduction of Walleye in Connecticut lakes appears to be nonexistent, so fisheries are sustained by stocking medium-sized (5-8 inch) fingerlings during late October or early November. Fingerlings are purchased with Federal Sport Fish Restoration funds from a commercial supplier in Minnesota for the nine State-managed Walleye Management Lakes (WML) (Figure 2). Two water companies and one municipality purchase their Walleye allotments using their own budgets. Stocking of all waters occurs on the same day from the same vendor as the fish are concurrently shipped.

Figure 1. *A nice angler-caught Walleye.*

The objectives for the Walleye Management job are:

1. Maintain quality fisheries in the Walleye Management Lakes through stocking and effective management.

2. Evaluate the effects of stocking rates on Walleye growth and abundance.
3. Evaluate the performance of larger 7-inch fingerlings relative to 5-inch fingerlings in selected lakes.
4. Continue to evaluate the effectiveness of current regulations in maintaining quality Walleye fisheries.
5. Identify additional lakes that are likely to support successful Walleye fisheries.

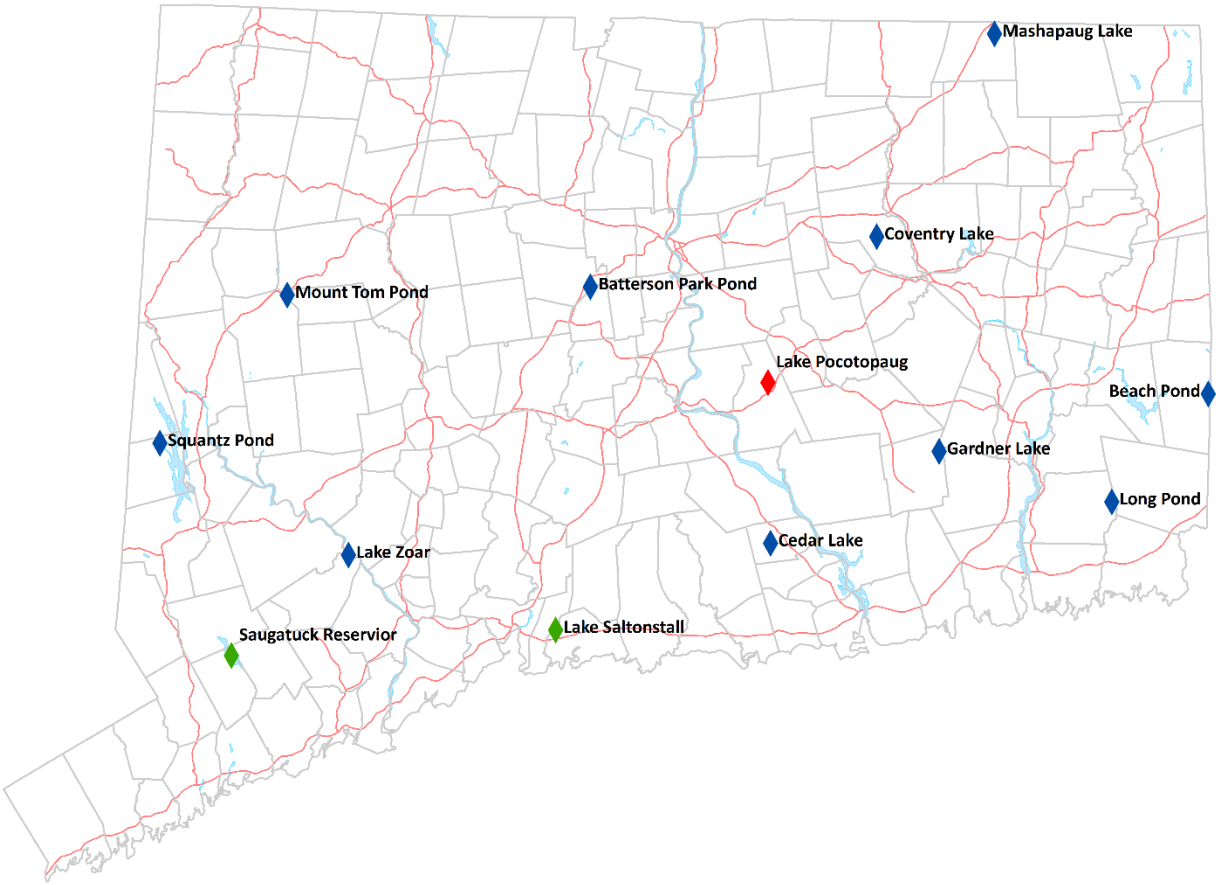


Figure 2. *Connecticut waterbodies stocked with Walleye. Blue diamonds denote State-managed Walleye Management Lakes (WMLs). Green diamonds denote the water company lakes (Lake Saltonstall and Saugatuck Reservoir), and the red diamond denotes a quasi-private waterbody (Lake Pocotopaug). The Walleye purchased by the water companies and quasi-private waterbody are paid for by the water company/municipality. Beginning in 2023, Cedar Lake was dropped from the list of stocked waterbodies.*

Key Findings

Objective 1: Maintain quality fisheries in the Walleye Management Lakes by stocking.

- A total of 13,146 (9,238 "medium" 5-8 inch, 3,908 "large" 6-8 inch) Walleye fingerlings from West Central Bait and Fisheries Company, Inc. (Minnesota) were stocked into the nine State-managed WMLs on October 28, 2024 (Table 1).
    - Transport and handling mortality was 5.5% for 2024, which is slightly higher than the 2020-2023 average of 4.1% for the State-purchased fish.
        - For 2024 the FD purchased "medium" sized fish which averaged 6.2 inches (range 4.0-9.4 inches) as opposed to the usual "small" sized fish which would have been in the 4–5-inch size range. The larger size is expected to minimize aquatic invasive species risk (staff can sort through fewer, larger Walleye while screening for possible non-target species) and improve survival of stocked fish.
        - Because of the carrying capacity of the vendor's truck fewer fish were purchased overall. Lakes were slated to receive 5 fish per acre prior to transport related mortality.
    - The "large" fingerlings have been stocked into Mashapaug and Gardner lakes for the last eight years as part of an ongoing experiment to see if stocking larger sized Walleye will create more adults. The remaining "medium" sized fingerlings were stocked into the remaining 7 WML's.
- Two water companies (the South-Central Connecticut Regional Water Authority that oversees Lake Saltonstall [Branford/East Haven] and Aquarion Water Company that oversees Saugatuck Reservoir [Easton/Redding/Weston]) and the Town of East Hampton (which oversees Lake Pocotopaug) purchased a combined total of 6,485 Walleye fingerlings (Table 1). These fish were delivered on the same truck and distributed by Fisheries Division staff.
    - The South-Central Regional Water Authority requested 1,866 "medium" sized Walleye fingerlings for Lake Saltonstall. However, only 1,603 fingerlings were stocked due to an issue with the vendor's transport tank that resulted in approximately 263 mortalities.
    - Aquarion requested 3,773 "medium" sized Walleye fingerlings for Saugatuck Reservoir, but only 3,398 were stocked due to an issue with the vendor's transport tank that resulted in approximately 375 mortalities.
    - The Town of East Hampton requested 1,500 "medium" Walleye fingerlings for Lake Pocotopaugr. After accounting for transport and handling mortality, 1,484 fingerlings were stocked.

Table 1. *2024 Walleye stocking locations, numbers stocked, size class, and stocking density.*

Waterbody	Town	Approximate Number Stocked	Size Class	Number Per Acre
Batterson Park Pond	Farmington/New Britain	670	Medium	4.8
Beach Pond	Voluntown/Exeter, RI	1,765	Medium	4.7
Coventry Lake[1]	Coventry	558	Medium	1.5[1]
Gardner Lake	Bozrah/Montville/Salem	2,485	Large	4.7
Lake Pocotopaug[2]	East Hampton	1,484	Medium	3.0
Lake Saltonstall[3]	Branford/East Haven	1,603	Medium	3.8
Lake Zoar	Monroe/Oxford/Newtown/Southbury	4,245	Medium	4.7
Long Pond	Ledyard/North Stonington	505	Medium	4.6
Mashapaug Lake	Union	1,423	Large	5.0
Mount Tom Pond	Morris/Litchfield/Washington	250	Medium	4.5
Saugatuck Reservoir[3]	Easton/Redding/Weston	3,398	Medium	4.1
Squantz Pond	New Fairfield/Sherman	1,245	Medium	4.6

[1]The number of fish stocked per acre at Coventry Lake is purposely stocked at a low density. After years of stocking experimentation, the FD has found that the lake can only support a low number of stocked Walleye.
[2]Lake Pocotopaug is a private waterbody open to town of East Hampton residents only. The Town of East Hampton purchases Walleye fingerlings using their own budget.
[b]Lake Saltonstall (owned by the South-Central Connecticut Regional Water Authority) and Saugatuck Reservoir (owned by the Aquarion Water Company) purchased Walleye fingerlings using their own budget, but to save shipping costs their order is shipped on the same truck as the CT DEEP Fisheries Division's order and is distributed to them by Fisheries Division staff.

Objective 2: Evaluate the effects of stocking rates on Walleye growth and abundance.

- Scales were taken on Walleye captured during 2024 and will be aged when time allows.
- Nighttime boat electrofishing Walleye population surveys were carried out on three Walleye lakes during the spring of 2024: Saugatuck Reservoir, Lake Saltonstall and Squantz Pond. Below are the results of these surveys.
    - Saugatuck Reservoir (Easton/Redding/Weston) was sampled on March 19, 2024, with the sole intent of capturing and marking (via a fin clip) Walleye, in hopes of returning multiple times throughout the spring to perform a single gear population estimate. Unfortunately, the other scheduled samples were canceled due to weather. The single sample resulted in 16 Walleye being captured and marked during 0.84 hours of sampling. Of the 16 Walleye captured, three were of unknown gender (size range 5.5-15.7 inches), four were female (size range 18.9-23.6 inches) and nine were males (size range 17.3-21.3 inches; Figure 3).

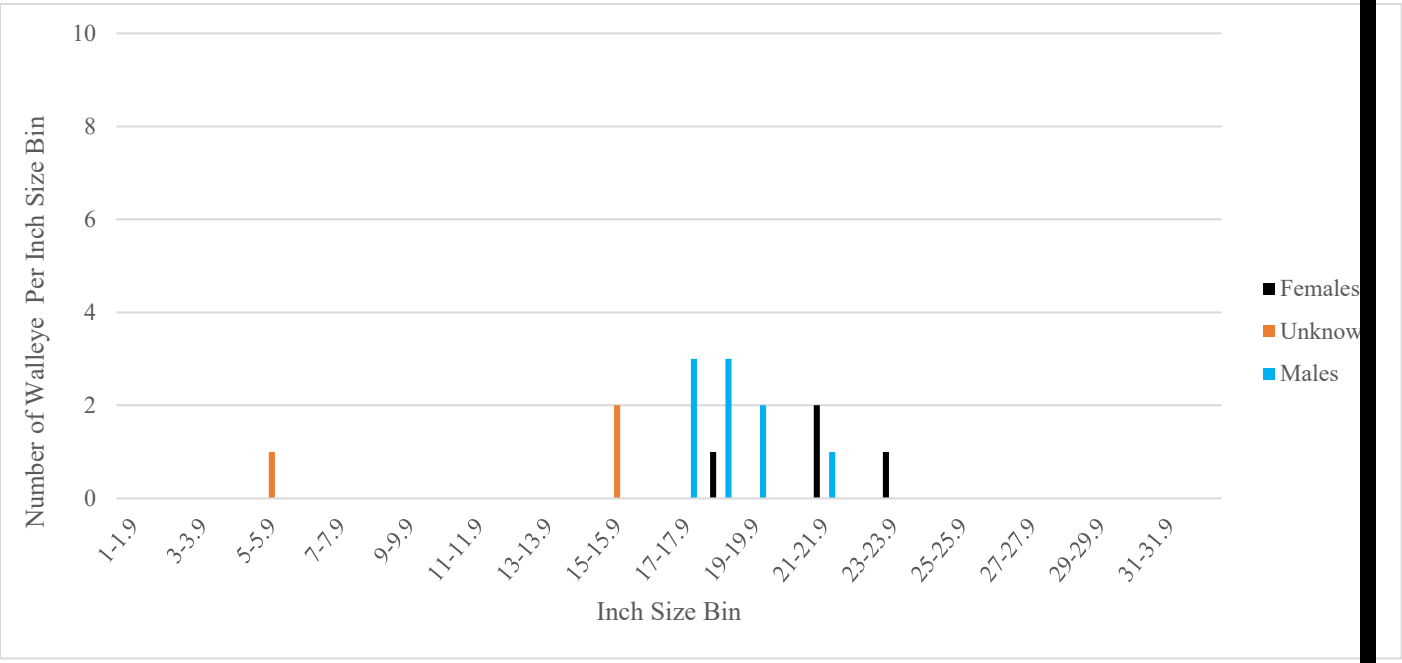


Figure 3. *Saugatuck Reservoir length-frequency graph showing lengths of Walleye captured during Walleye only nighttime boat electrofishing on March 19, 2024.*

- Since a population estimate could not be completed, relative abundance estimates for four common size classes (all sizes; ≥15 inches; ≥18 inches; and ≥ 20 inches) were calculated. These data were then compared to previous relative abundance nighttime boat electrofishing samples dating back to 2003 (Table 2).
    - The results show an extremely low number of each size class captured during the 2024 sample when compared to other years. This is troubling and will require follow-up sampling in 2025 to see if this was an anomaly due to the very early sampling (almost one month earlier than prior years' sampling) or challenging weather conditions.

Table 2. *Relative abundance estimates for Walleye only samples carried out via nighttime boat electrofishing from 2003 through 2024 at Saugatuck Reservoir, Easton/Redding/Weston.*

Year	Date of Sample	Water Temp °C	Catch Per Hour			
			All Size	≥15 inches	≥18 inches	≥20 inches
2003	**4/22**	**12.1**	80.8	76.8	36.9	8.0
2004	**4/20**	**9.8**	53.3	53.3	37.0	10.8
2006	**4/19**	**10.3**	73.5	71.5	45.7	30.8
2009	**4/20**	**8.7**	75.5	75.5	42.6	25.6
2011	**4/19**	**13.5**	26.5	24.5	24.5	23.4
2012	**4/11**	**9.1**	30.9	30.9	20.2	13.1
2014	**4/14**	**7.3**	103.3	101.3	79.8	55.2
2024	**3/19**	**6.4**	19.0	17.8	14.2	4.7

- Lake Saltonstall (Branford) was sampled on March 20, 2024 and May 28, 2024, with the intent of performing a single gear population estimate. There was to be another Walleye only sampling performed in April of 2024, however this sample was cancelled due to weather. The sample performed on May 28th was an all-species sample but also looked for any Walleye that were clipped during the March 20th sample. In total, 42 Walleye were caught over 1.83 hours of sampling. There were no recaptures, so no population estimate could be created. Of the 42 Walleye captured, seven were of unknown gender (size range 5.5-15.7 inches), 16 were female (size range 18.9-23.6 inches) and 19 were males (size range 17.3-21.3 inches; Figure 4).

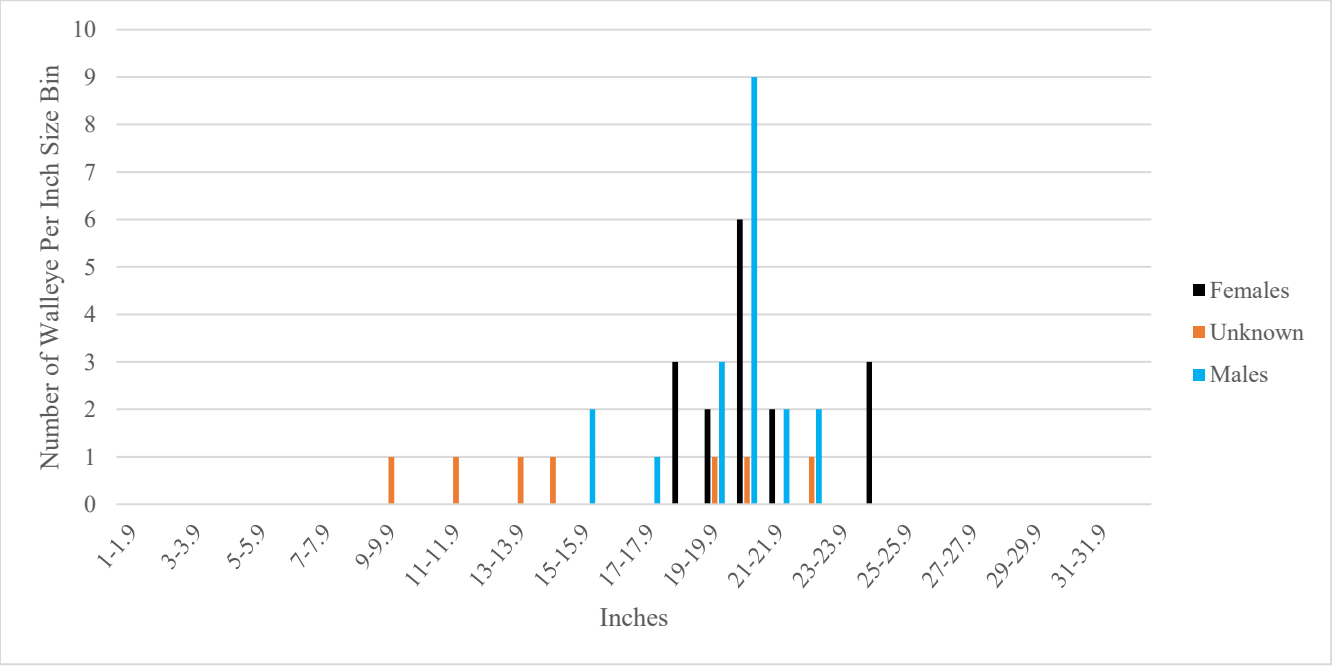


Figure 4. *Lake Saltonstall, Branford length-frequency graph showing lengths of Walleye captured during Walleye only nighttime boat electrofishing on March 20 and May 28, 2024.*

- Even though a population estimate could not be completed, relative abundance estimates for four common size classes (all sizes; ≥15 inches; ≥18 inches; and ≥ 20 inches) were performed. These data were then compared to the previous relative abundance nighttime boat electrofishing samples that had been carried out in prior years dating back to 1996 (Table 3).
    - The results showed a very low number of each size class in the 2024 samples. This is troubling and will require follow-up sampling in 2025 to see if this was an anomaly due to the first sample being in mid-March with no follow up sample in April. Historical sampling was limited to early- to mid-April. The 2024 May sample was likely too late to adequately sample the existing Walleye population.

Table 3. *Relative abundance estimates for Walleye only samples carried out via nighttime boat electrofishing from1996 through 2024 at Lake Saltonstall, Branford.*

			Catch Per Hour			
Year	**Date of Sample**	**Temp**	**All Size**	**≥15 inches**	**≥18 inches**	**≥20 inches**
1996	**4/17**	**7.5**	12.4	0.0	0.0	0.0
2000	**4/13**	**10.0**	33.7	29.8	27.8	10.9
2002	**4/15**	**13.8**	67.7	62.7	60.7	55.7
2003	**4/17**	**7.4**	96.4	90.4	75.5	63.6
2004	**4/27**	**13.0**	95.1	92.3	79.5	54.9
2006	**4/5**	**7.2**	85.4	84.4	71.8	65.0
2008	**4/8**	**7.9**	36.9	36.9	29.7	27.4
2010	**4/14**	**12.9**	65.6	61.8	58.9	40.5
2011	**4/19**	**8.4**	48.2	38.3	32.4	27.5
2013	**4/4**	**5.6**	61.0	61.0	59.8	47.8
2024	**3/20 & 5/28**	**7.8 & 23.7**	22.9	20.7	19.6	14.7

- Squantz Pond (New Fairfield/Sherman) was sampled on March 27, 2024, and April 4, 2024. Both samples were performed specifically to target and mark (via a fin clip) Walleye. Between these two samples, 74 Walleye were caught over 1.7 hours of sampling. There were only 4 recaptures. Though a population estimate can be performed, the low number of recaptures will result in very high confidence intervals and therefore is not very robust. The results (Table 4) should be interpreted with caution. Of the 74 Walleye captured, one was of unknown gender (size 13.8 inches), four were female (size range 20.1-26.0 inches) and 69 were males including the four recaptures, (size range 13.4-23.6 inches; Figure 5).

Table 4. *Walleye mark-recapture relative abundance estimate results from single gear sampling using nighttime boat electrofishing at Squantz Pond, New Fairfield/Sherman on March 27, 2024, and April 4, 2024. Total combined sampling time was 1.7 hours. *Note – sampling carried out in 1996, 1997, 1998, 1999 and 2006 was a combination of trap netting and nighttime boat electrofishing; whereas the sampling done in 2024 was only nighttime boat electrofishing.*

	Population Estimate Data by Standard Size Class					
	1996	**1997**	**1998**	**1999**	**2006**	**2024**
All Size						
Number sampled	NA	NA	NA	NA	NA	74
Number recaptured	NA	NA	NA	NA	NA	4
N	NA	NA	NA	NA	NA	338
95% CI	NA	NA	NA	NA	NA	133-1,353
#/Acre (Range)	NA	NA	NA	NA	NA	1.3 (0.5-5.0)
Stock Size (≥10 IN)						
Number sampled	322	546	695	496	834	74
Number recaptured	13	60	83	37	36	4
N	684	1,183	1,308	1,553	1,896	338
95% CI	399-1,289	919-1,522	1,055-1,621	1,127-2,211	1,371-2,720	133-1,353
#/Acre (Range)	2.5 (1.5-4.8)	4.4 (3.4-5.6)	4.8 (3.9-6.0)	5.7 (4.2-8.2)	7.0 (5.1-10.1)	1.3 (0.5-5.0)
Quality Size (≥15 IN)						
Number sampled	276	476	650	479	972	72
Number recaptured	13	53	80	36	34	4
N	541	1,005	1,158	1,487	1,851	318
95% CI	315-1,019	841-1,314	930-1,441	1,075-2,132	1,325-2,678	133-1,353
#/Acre (Range)	2.0 (1.2-3.8)	3.7 (3.1-4.9)	4.3 (3.4-5.3)	5.5 (4.0-7.9)	6.7 (4.9-9.9)	1.2 (0.5-4.7)
Preferred Size (≥18 IN)						
Number sampled	95	252	457	337	759	67
Number recaptured	3	21	49	21	29	4
N	282	695	883	1,252	1,477	276
95% CI	96-1,408	456-1,123	668-1,119	822-2,022	1,029-2,207	133-1,353
#/Acre (Range)	1.0 (0.3-1.5)	2.6 (1.7-4.2)	3.3 (2.5-4.1)	4.6 (3-7.5)	5.5 (3.8-8.2)	1.0 (0.4-4.1)

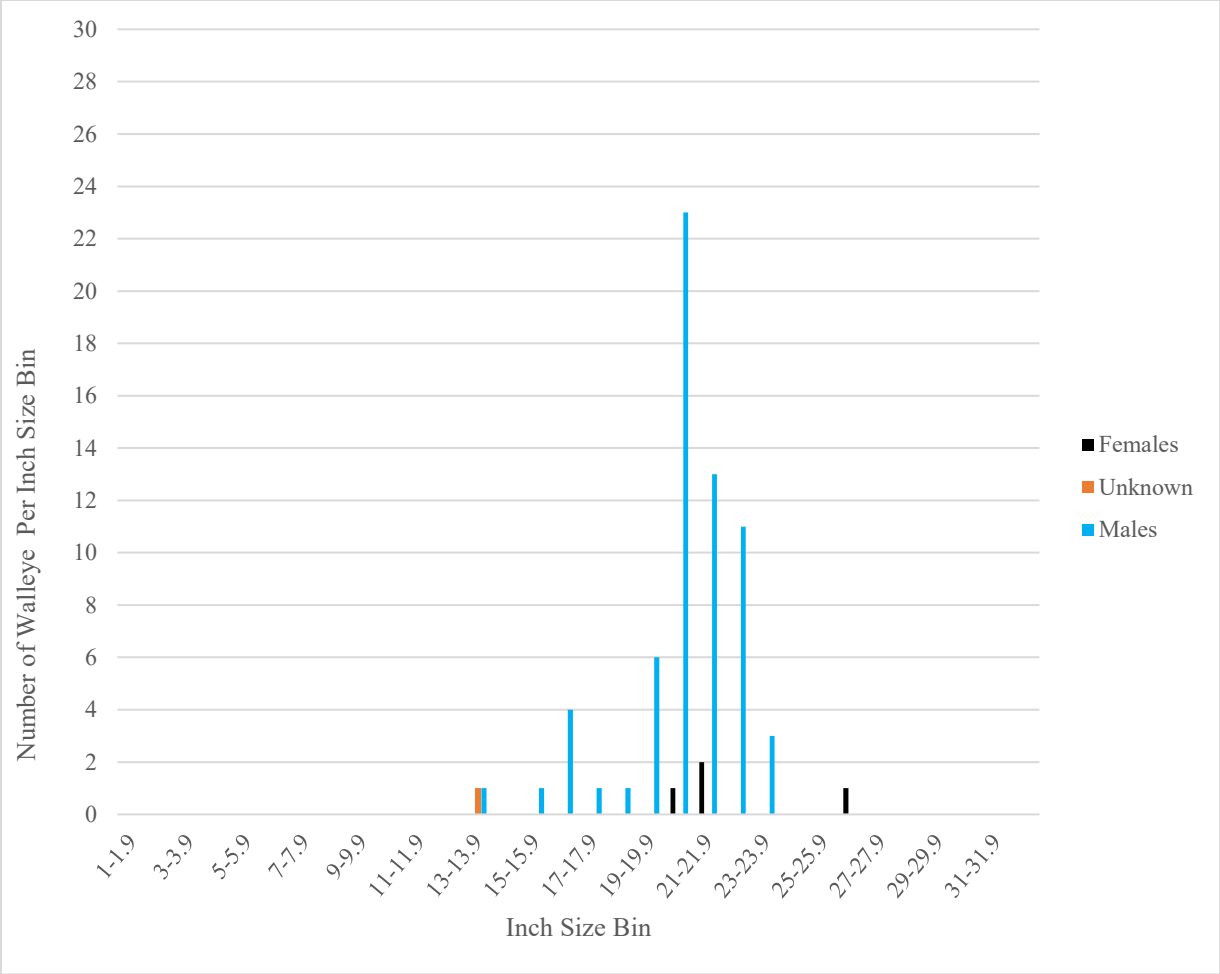


Figure 5. *Squantz Pond, New Fairfield/Sherman, length-frequency graph showing lengths of Walleye captured during Walleye only nighttime boat electrofishing on March 27, 2024, and April 4, 2024.*

- In addition to the population estimate, relative abundance estimates for four common size classes (all sizes; ≥15 inches; ≥18 inches; and ≥ 20 inches) were performed. These data were compared to the previous relative abundance nighttime electrofishing samples that had been carried out in prior years dating back to 1995 (Table 5).
    - The results showed considerably lower numbers of each size class when compared to other years. This is troubling and will require follow-up sampling in 2025 to see if this was just an anomaly.

Table 4. *Relative abundance estimates for Walleye only samples carried out via nighttime boat electrofishing from1995 through 2024 at Squantz Pond, New Fairfield/Sherman.*

			Catch Per Hour			
	Date	Temp	**All**	**≥38**	**≥45**	**≥50**
1995	**4/24**	**10.5**	12.4	0.9	0.0	0.0
1996	**4/15**	**6.5**	18.3	15.1	4.2	0.3
1997	**4/14&15**	**8.0**	106.7	87.1	44.3	12.9
1998	**4/15&16**	**10.3**	111.8	94.7	60.1	22.0
1999	**4/14**	**10.5**	90.0	85.3	60.8	20.3
2000	**4/18**	**10.0**	78.8	74.3	63.4	29.7
2003	**4/21**	**8.1**	83.1	82.1	58.4	37.6
2004	**4/12**	**NA**	106.1	104.3	87.8	49.4
2005	**4/18**	**10.4**	167.3	152.4	130.5	79.7
2006	**4/10**	**9.0**	87.6	84.7	74.3	46.7
2008	**4/10**	**8.7**	62.1	58.6	46.9	30.5
2010	**4/13**	**12.8**	123.4	99.4	90.3	59.4
2011	**4/18**	**9.2**	111.3	102.4	87.9	57.9
2012	**NA**		77.6	48.7	27.7	17.4
2014	**4/17**	**8.6**	174.7	173.5	159.3	86.8
2024	**3/27 & 4/4**		44.2	43.0	40.0	36.4

Objective 3: Evaluate the performance of larger 7-inch fingerlings relative to 5-inch fingerlings in selected lakes.

- See McDowell et al. 2022 for population estimate work carried out at Gardner Lake in 2021 and Mashapaug Lake in 2022.
- Warmwater staff propose removing this objective from future reports as there is no current or planned work to address this objective.

Objective 4: Continue to evaluate the effectiveness of current regulations in maintaining quality Walleye fisheries.

- No action was taken towards this objective during the 2024-2025 grant period.

Objective 5: Identify additional lakes that are likely to support successful Walleye fisheries.

- No action was taken towards this objective during the 2024-2025 grant period.
- Warmwater staff propose removing this objective from future reports as there is no current or planned work to address this objective.

Moving Forward

- Look into purchasing all 6-8-inch larger size Walleye for all state-managed Walleye Management Lakes in 2025 and suggest the two water companies and the Town of East Hampton consider switching over as well.
- Perform nighttime boat electrofishing on multiple Connecticut Walleye lakes to examine relative abundance of those Walleye populations.
- Perform a population estimate using nighttime boat electrofishing and trap netting in at least one of the western district lakes to get more refined populations estimates.
- Remove the objective to "evaluate the performance of larger 7-inch fingerlings relative to 5-inch fingerlings in selected lakes".
- Remove the objective to "identify additional lakes that are likely to support successful Walleye fisheries."

References

Eddy, S., and J.C. Underhill. 1974. Northern Fishes. University of Minnesota Press. Minneapolis.

McDowell, C., E. Machowski, A. Bade and M. Beauchene. 2022. Connecticut Fisheries Division Synopsis of Activities and Key Findings Regarding Management of Channel Catfish, Largemouth Bass, Smallmouth Bass, Northern Pike, Walleye, and the Monitoring of Lakes, Ponds and Large Rivers. Federal Aid in Sportfish Restoration F-57-R-40. Annual Performance Report – F21AF01091. Connecticut Department of Energy and Environmental Protection Bureau of Natural Resources, Fisheries Division, Hartford, CT.

Scott, W.B., and E.J. Crossman. 1973. Freshwater Fishes of Canada. Bulletin 184. Fisheries Research Board of Canada, Ottawa.

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 2:	Warmwater Fisheries Management
Job 6:	Channel Catfish Management

Report Prepared by:	Christopher McDowell
Job Personnel:	Christopher McDowell, Job Leader
	Spencer Mallette, Primary Staff
	Andrew Bade, Program Coordinator

Overview: Channel Catfish is a popular sportfish species across much of the United States.

Figure 1. *A stocked adult Channel Catfish caught by Shawn Sims from Mohegan Park Pond.*

Realizing the potential to create an attractive new fisheries program in Connecticut, the Connecticut Department of Energy and Environmental Protection Fisheries Division (FD) initiated a Channel Catfish stocking program in 2007 to increase Connecticut's diversity of recreational fishing opportunities with a specific interest in creating new fisheries in small urban ponds. Catfish Management Lakes were designated and stocked under two different strategies. The first was stocking of adult (14-18 inch) Channel Catfish into Community Fishing Waters (CFWs) located in urban environments to support "put-and-take" fisheries that would provide immediate opportunities for anglers to catch and harvest large Channel Catfish. The second strategy involved a "put-and-grow" model where smaller (9-11 inch) yearling Channel Catfish were stocked in several lakes across Connecticut. Because they were less expensive than adults, more locations could be stocked, and there was the expectation that they would survive and grow to catchable size within 1-2 years. From 2007 through 2018 a total of 31 waterbodies were stocked at some level with Channel Catfish. However, in 2019, the FD switched its strategy and focused solely on purchasing and stocking only adult Channel Catfish for an immediate and predictable return to anglers. Then come 2021 the FD again adjusted its strategy and began only stocking CFWs (Figure 1). The

switch to stocking only CFWs was due to population assessments that were carried out on numerous "put-and-grow" yearling stocked lakes that indicated robust populations with multiple size classes holding over.

In addition to the Channel Catfish fisheries created above, there are also some significant naturalized populations that occur within the Connecticut, Housatonic, and Thames rivers. These naturalized populations are not managed by the FD except via the statewide daily creel limit. These naturalized fisheries are worth noting as they all have some level of recreational directed effort and are likely underutilized.

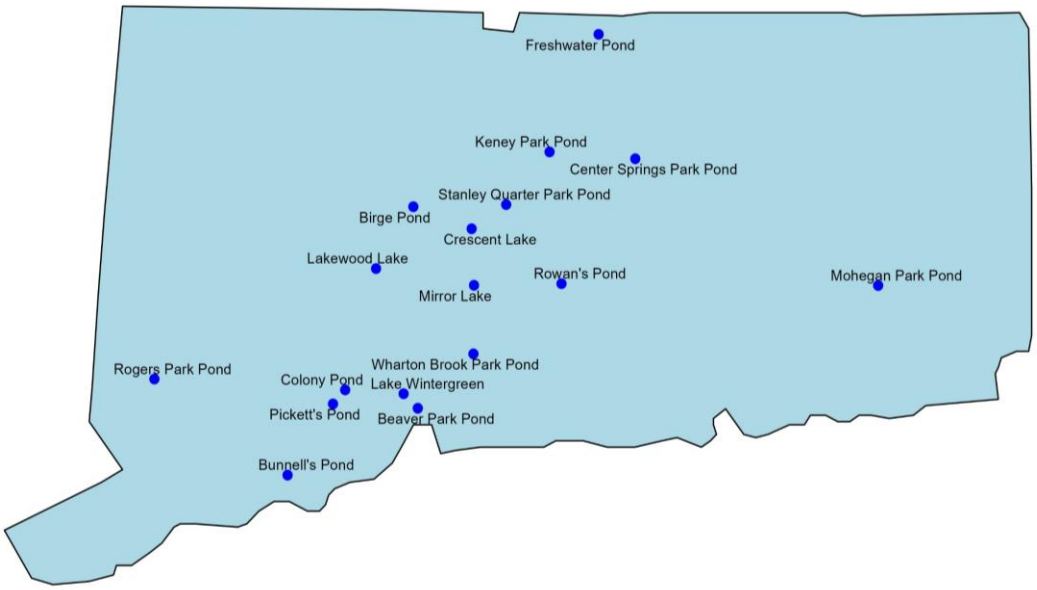


Figure 1. *The 17 Community Fishing Waters (CFWs) stocked by the Connecticut Fisheries Division with Channel Catfish in 2024.*

The objectives for the Channel Catfish Management job are:

1. Stock Channel Catfish into Channel Catfish Management Lakes (CMLs) to maintain quality fisheries.
2. Collect stock assessment data (abundance, size structure, age structure, growth rates) for Channel Catfish populations in stocked lakes/ponds and established riverine populations as resources permit.

Key Findings

Objective 1: Stock Channel Catfish into CMLs to maintain quality fisheries.

- The FD did not receive its annual order of Channel Catfish from Farm Cat, Inc. (Arkansas), during the requested May time due to issues with the vendor's delivery vehicle. After discussions amongst FD staff and vendor it was decided to move the shipment to October 3, 2024. The FD ordered 8,800 14–18-inch Channel Catfish. However, based on the vendor's loading manifest, an estimated 9,531 fish were shipped (an extra 731 fish free of charge, which would have cost $2,814.35). The vendor usually ships extra fish to make up for any transport-related mortality. As such, stocking locations had allocations increased by ~43 fish (Table 1). Transport-related mortality for the day was extremely low with only 9 fish recorded as deceased. With the extra fish provided and the low stocking-related mortality, the percent mortality was only 0.0971% for the day. The average length was 15 inches with a range of 11-22 inches (Figure 4, total number of Channel Catfish measured was 510). Wharton Pond (aka Allen Brook Pond) was stocked for the first time this year.

Figure 2. *Distribution of Channel Catfish to waiting Fisheries Division hatchery trucks for transport to CMLs.*

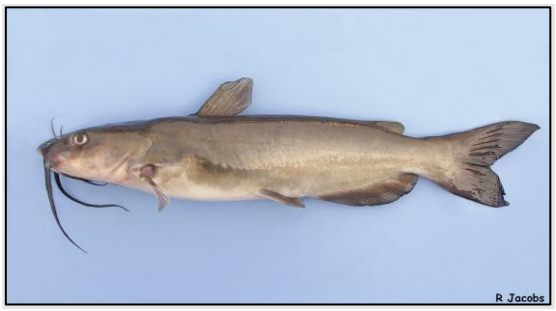


Figure 3. *Adult Channel Catfish (14-18 inches)*

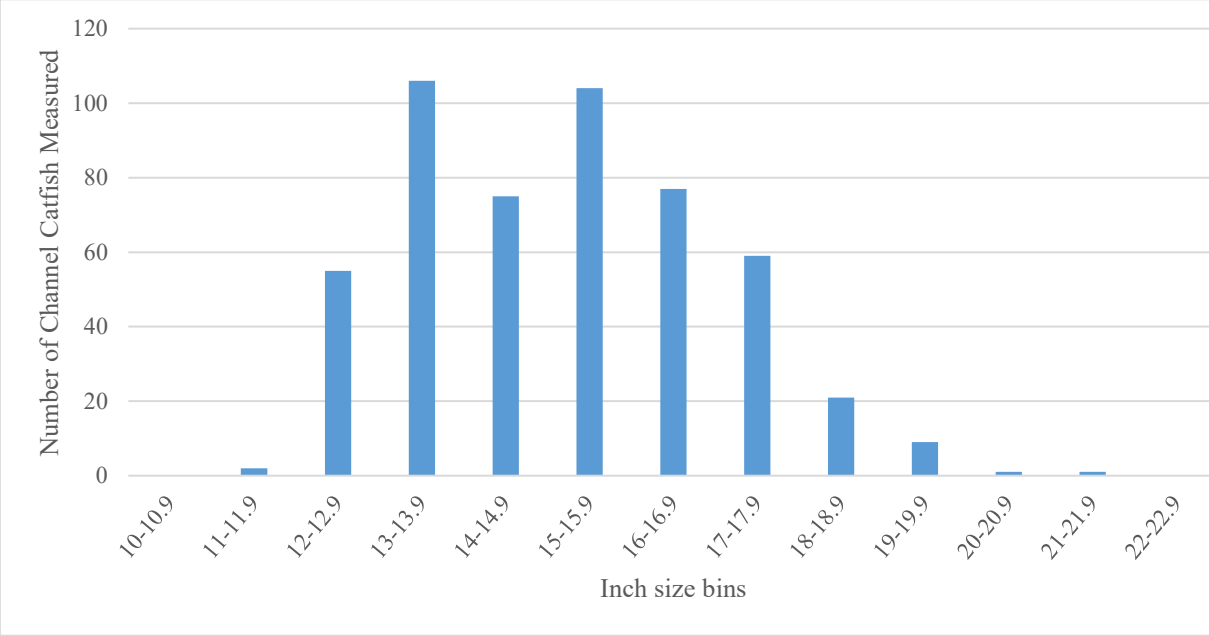


Figure 4. *Length frequency histogram for Channel Catfish measured from the 2024 delivery (N=510).*

Table 1. *Numbers of adult Channel Catfish stocked in the Community Fishing Waters on 10/3/2024. All waterbodies stocked have a 3 fish per day limit (no minimum size limit) regulation, except for Wharton Pond (aka Allen Brook Pond), which has a 6 fish per day limit.*

Waterbody Name	**Town**	**Approximate number of adults stocked**
Beaver Park Lagoon (North)	New Haven	443
Birge Pond	Bristol	441
Bunnells Pond (Beardsley Park Pond)	Bridgeport	843
Center Springs Park Pond	Manchester	443
Colony Park Pond (Abe Stone Park Pond)	Ansonia	442
Crescent Lake	Southington	843
Freshwater Pond	Enfield	443
Keney Park Pond	Hartford	443
Lake Wintergreen[1]	Hamden	575
Lakewood Lake	Waterbury	843
Mirror Lake (Hubbard Park Pond)	Meriden	443
Picketts Pond	Derby	442
Rogers Park Pond	Danbury	443
Rowans Pond (Butternut Park Pond)	Middletown	443
Spaulding Pond (Mohegan Park Pond)	Norwich	842
Stanley Quarter Pond	New Britain	443
Wharton Brook Pond (Allen Brook Pond)	Wallingford-North Haven	443

[1]*Due to a counting error Lake Wintergreen only received 575 fish as opposed to its allotted 843.*

Objective 2: Collect stock assessment data (abundance, size structure, age structure, growth rates) for Channel Catfish populations in stocked lakes/ponds and established riverine populations as resources permit.

- During the reporting period, eight CFWs were sampled via nighttime electrofishing (either by electrofishing boat or electrofishing raft). The CFWs sampled are Birge Pond (Bristol), Center Springs Park Pond (Manchester), Freshwater Pond (Enfield), Lakewood Lake (Waterbury), Lake Wintergreen (Hamden), Spaulding Pond (aka Mohegan Park Pond, Norwich), Rowans Pond (aka Butternut Park Pond, Middletown) and Stanley Quarter Park Pond (New Britain). Birge Pond and Lake Wintergreen were sampled twice on different dates; one sample used the Kann electrofishing boat and the second sample used the electrofishing raft. Of these locations, holdover Channel Catfish were sampled in Birge Pond (n = 1), Center Springs Park Pond (2), Lake Wintergreen (20), Lakewood Lake (9), and Spaulding Pond (4). The presence of Channel Catfish in these waters prior to stocking, especially considering that they were not stocked in 2023, is interesting. These fisheries were established as "put-and-take" resources, and the finding that the Channel Catfish persist for years in them suggests the need to reconsider stocking densities and further evaluate potential impacts on other species present in these waters.

Moving Forward

- Collaborate with the Connecticut Aquatic Resources Education Program (CARE) and the Urban Fishing Coordinator to develop, implement, and assess methods to encourage and promote fishing in Catfish Management Lakes.
- Periodically re-assess fish abundance and angler interest in Channel Catfish management lakes where yearling Channel Catfish were stocked to determine the future needs for additional stocking.

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 2:	Warm Water Fisheries Research and Management
Job 7:	Lake Habitat Assessment and Enhancement

Report Prepared by:	Joseph Cassone and Andrew Bade
Job Personnel:	Joseph Cassone and Andrew Bade, Co-job Leaders
	Spencer Mallette, Primary Staff
	Andrew Bade, Program Coordinator

Overview: High quality habitat is important to producing and maintaining robust populations of sport fish and the forage species they rely on. The Connecticut Department of Energy and Environmental Protection (DEEP) Fisheries Division has initiated a program of lake habitat assessment and habitat enhancement with an end goal of improving the quality of fisheries in lakes where there are management concerns such as declining populations, poor survival, poor growth, or other concerns identified by DEEP biologists. The general approach of this program consists of the assessment of existing habitat conditions and identification of habitat issues followed by the development, implementation, and evaluation of habitat enhancement measures. Examples of habitat enhancements include the installation of structures or measures to promote a healthy aquatic vegetation community.

Objectives:

1. Habitat Data Acquisition and Analysis: Side Scan Sonar Habitat Surveys
2. Restoring Submerged Aquatic Vegetation to Candlewood Lake
3. Freshwater Fish and Wildlife Habitat Structures: Wyassup Lake.

This report describes efforts related to these objectives during the study year. Under this Job, the Fisheries Division collected and processed side scan sonar data from 5 lakes, directly removed 238 triploid grass carp from Candlewood Lake to support the recovery of submerged aquatic vegetation, and installed 37 spawning habitat structures for Smallmouth bass in Wyassup Lake.

Key Findings

Objective 1: Habitat Data Acquisition and Analysis: Side Scan Sonar Habitat Surveys

Data Collection

Side Scan Sonar surveys were conducted at Beach Pond, Mashapaug Lake, Gardner Lake, Middle Bolton Lake, and Lower Bolton Lake during the project reporting period. In 2023 data were collected on Wyassup Lake, Quinebaug Reservoir, Seymour Reservoir No.4, and portions of Candlewood Lake.

A Humminbird Helix 12 CHIRP MEGA SI G4N fish finder and chart plotter was used to collect the sonar data. The sonar frequency was set to 1.2MHz to maximize the detail of the lake bottom captured in the survey. The transducer was mounted to a Beatdown Outdoors transducer pole toward the bow of the boat; locating the transducer away from the outboard motor can improve the resolution of the imagery (Figure 6). A Humminbird external GPS receiver was secured to the top of the transducer pole to enhance the accuracy of GPS positions. Side scan sonar data were collected along transects spaced 75-100ft apart. The transects were created in Arc GISPro and then uploaded to the ESRI Field Maps application which assisted navigation along the transect by displaying the boat's position relative to the transect lines. The survey boat followed the transects at 2-4 mph. Data collected during the survey were stored on an SD card and transferred to a computer for processing.

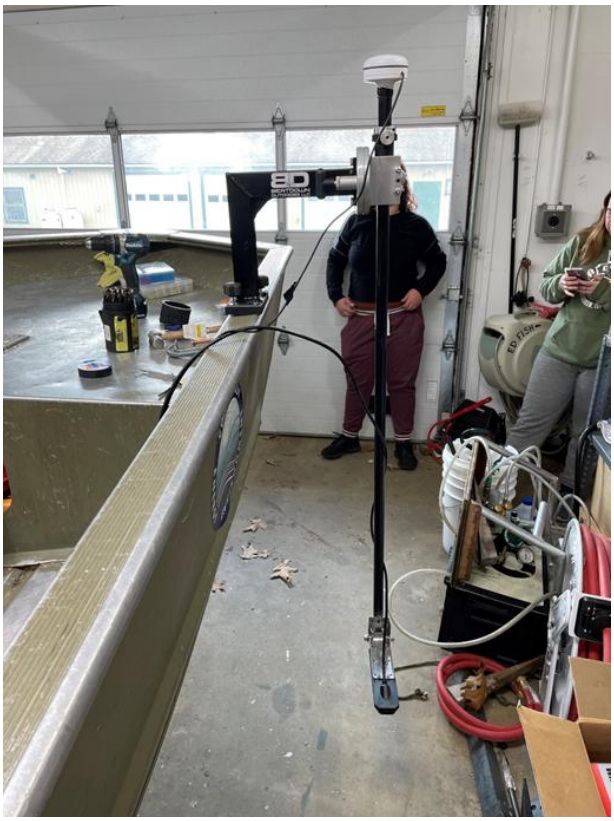


Figure 6. *Sidescan Transducer and GPS Pole Mount.*

Data Processing

Sonar data were processed using Sonar TRX or PING Mapper software. The process consists of normalizing sonar intensity across the coverage area to improve image quality, georeferencing images, and mosaicking of sonar images collected along a transect into a single file that can be displayed in GIS or Google Earth (Sonar TRX) for future analysis.

Data collected from Wyassup Lake were used to identify areas with depth (3-12ft), substrate (sand, gravel, cobble), or cover (boulders) suitable for Smallmouth Bass spawning. The portions of these areas that were appropriate (See Objective 3 below) for the installation of Smallmouth nesting habitat structures were delineated in ArcGIS Pro and used as a boundary area input for the create random points tool to evaluate how many structures could potentially be placed in each area while maintaining 50ft spacing between them. This exercise was useful for determining the number of structures to install relative to the number of adult Smallmouth bass present in the lake, and for determining the quantity of materials needed to build the structures.

Data Review and Development of Products

Visual review of the georeferenced imagery produced by the side scan surveys is valuable to Fisheries Division staff as it provides knowledge of lake habitat, ability to review the impact of regulated activities, ability to identify large bodied fish such as triploid grass carp (Figure 7, See Objective 2), aids in planning sampling activities with fixed gears (trap nets and gill nets), and aids in identifying high value habitat areas (spawning and foraging).

The detailed imagery clearly depicts the depressions formed by centrarchid spawning beds, visual review of the data can quickly identify areas of spawning activity that merit additional investigation or protection (Figure 8). The size and distribution of the beds can be used to determine if they are from sunfish (smaller, more numerous, and closely spaced) or bass (larger and more widely spaced; Figure 9).

However, simple visual review of the data does not provide standardized habitat metrics that allow lakes to be compared or habitat data to be related to fish community data. Fisheries division staff have begun developing the GIS workflows to identify habitat features of interest and standardize by unit area.

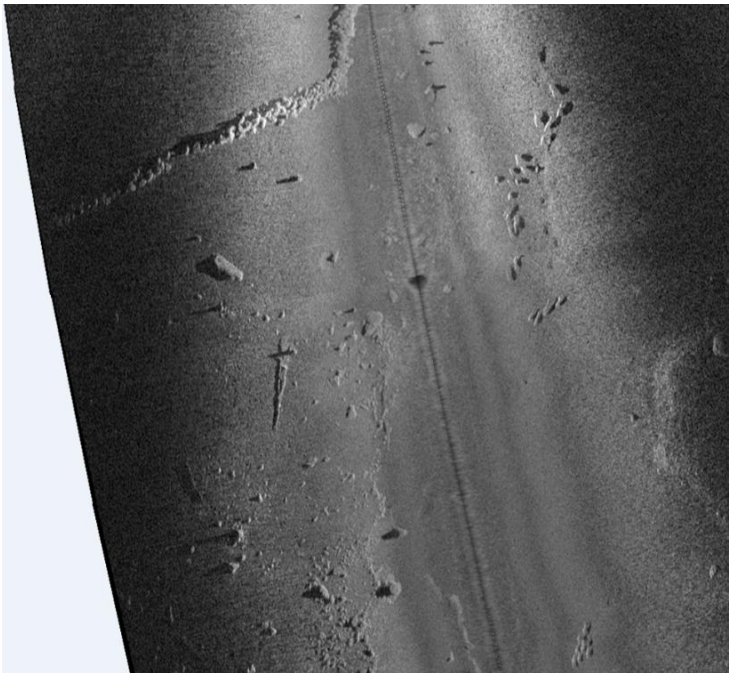


Figure 7. *Snapshot of imagery from Candlewood Lake displaying a stonewall, scattered boulders, and schools of carp.*

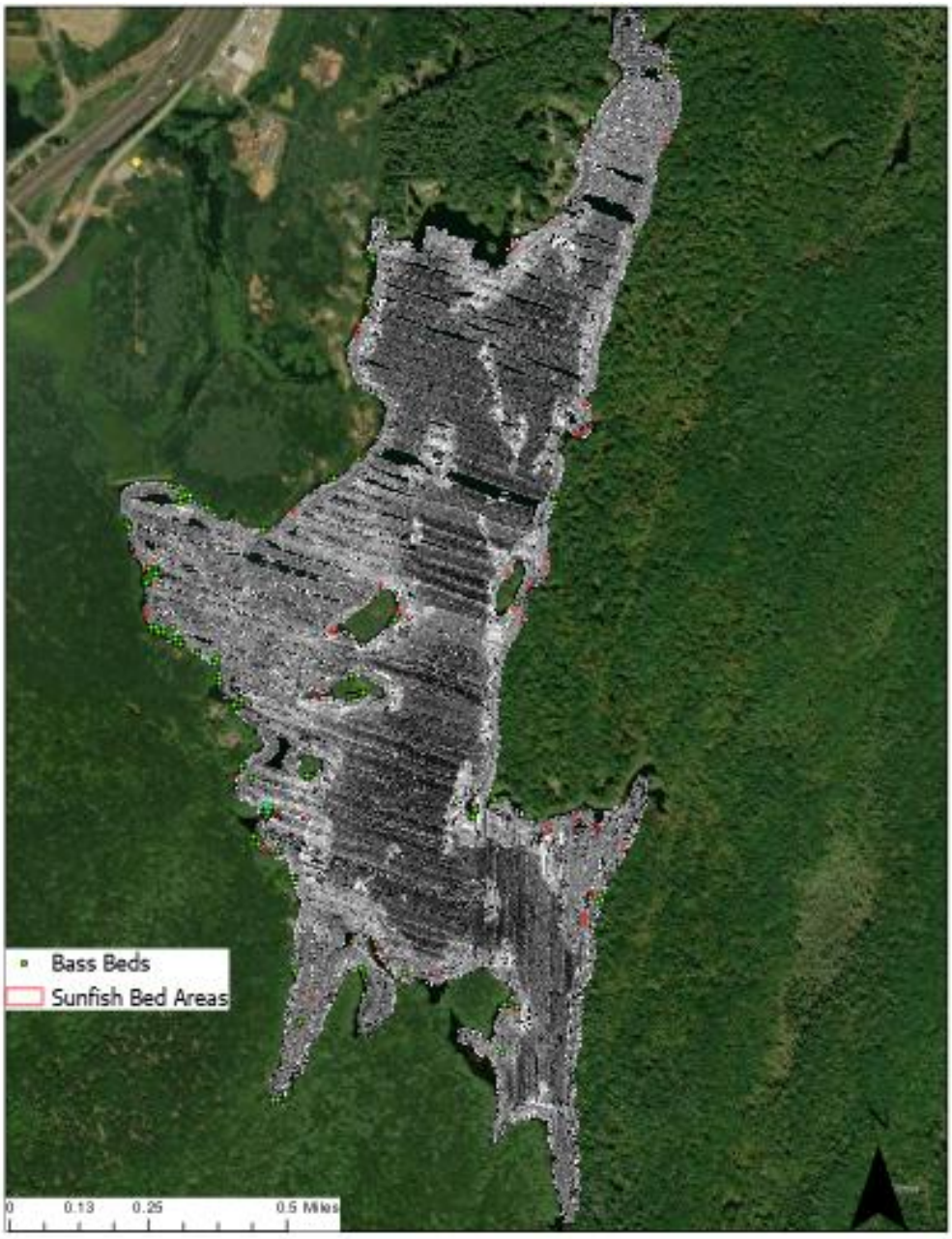


Figure 8. *Georeferenced Side Scan Sonar Imagery and Centrarchid Bed Locations for Mashapaug Lake.*

Complex habitat such as boulders, submerged trees, and manmade structures can also be readily identified. Maps depicting these and other features would be of interest to anglers. Efforts have been made to combine the imagery from individual transects into a continuous image that can be shared with the public. The overlapping images from the separate transects can produce an image that is cluttered and difficult to see in detail unless zoomed in (Figure 8). Processes to improve the appearance of whole lake imagery that minimize the amount of time intensive manual processing of images are still being explored.

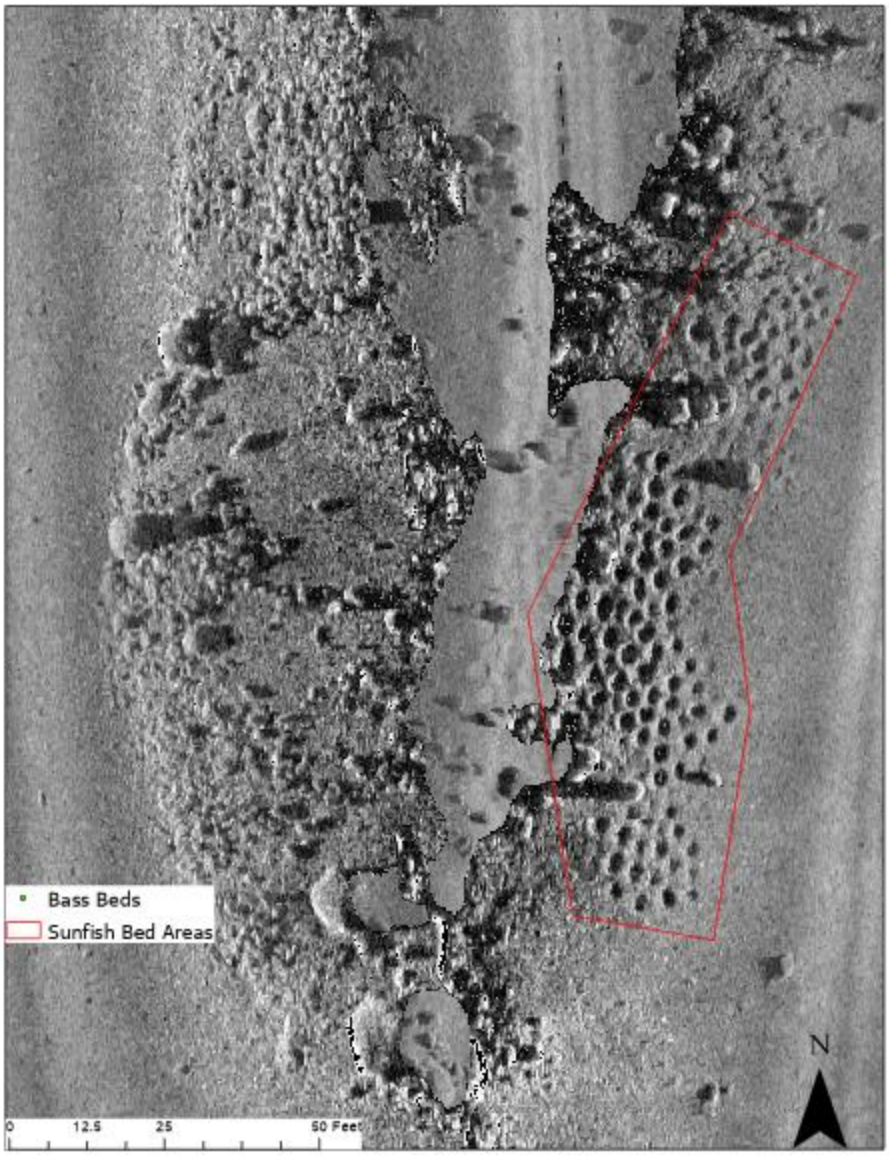


Figure 9. *Example of sunfish bed depressions and rocky habitat at Mashapaug Lake.*

Objective 2: Restoring Submerged Aquatic Vegetation to Candlewood Lake

Grass Carp Removal

The Fisheries Division removed 238 triploid grass carp (TGC) from Candlewood Lake during 5 modified-unified method removal events during this reporting period. In 2023, Fisheries Division staff removed 226 grass carp during seven removal events.

Each event consisted of one electrofishing boat pushing through a shallow cove that has been closed off and divided into compartments using strategically placed gill nets deployed from a separate work boat (Figure 11). The electrofishing boat then systematically works its way through the compartments searching for grass carp, which are either stunned by the electric field or captured by the gill nets. The combination of electrofishing and gill nets enhances the

effectiveness of both gears; the gill nets create barriers that prevent carp from escaping the boat's electric field and the electric field drives carp into the nets which they may otherwise avoid. Depending on the size and width of the cove, 2 to 4 gillnets were used, each net was 100yds long, with a 12 ft panel height, and composed of large 4.25" monofilament mesh. The large mesh size and potentially the selection of removal locations was very effective at minimizing bycatch in the gill net. The catch in the gill nets has been dominated by Grass Carp. The most common bycatch was Common Carp which were large enough to be gilled and seasonally occupy similar habitats to Grass Carp. Occasionally an individual Largemouth Bass or Black Crappie would catch the corner of their jaw in the netting but were too small to be gilled; these fish were all able to be removed and released without observed mortality.

Figure 10: *Triploid Grass Carp removed from Candlewood Lake.*

Grass carp seem to aggregate in select coves during the spring – the largest catches of grass carp have come during the months of April and May. Notably, 133 carp were removed in a single event from the 4-acre area at the back of Brookfield Bay. The same locations fished in the fall are not as productive. The extent to which this trend is due to changes in grass carp distribution or localized depletion from spring removals is unknown.

Most removed grass carp have come from two coves, Shelter Harbor and Brookfield Bay (Figure 11). Both locations were documented to hold grass carp and are well suited to the removal methods as they provide a relatively narrow enclosed area of suitable depth to concentrate grass carp. Carp removals have been attempted in several other coves (Figure 11), but generally only

produce a fraction of the carp for the same amount of effort. As such, removals have focused on Shelter Harbor and Brookfield Bay.

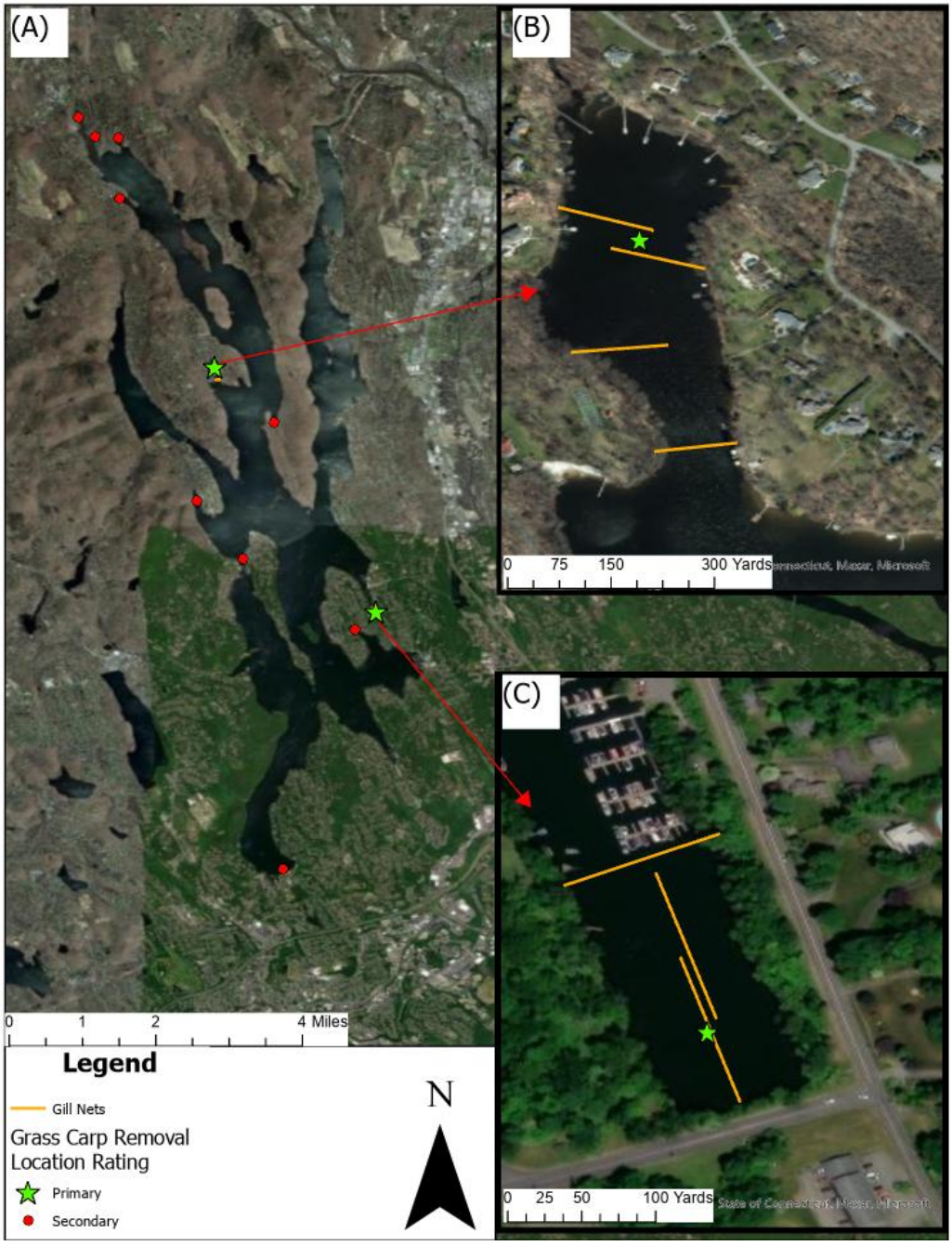


Figure 11. *Map of Candlewood Lake grass carp removal locations and representation of gill net configuration. (A) Represents the locations where grass carp removal has been attempted. Primary locations have produced the best grass carp catches and are focus of removal efforts. Secondary sites are those that have been or are occasionally sampled but produced fewer grass carp. (B) Depicts a typical gill net configuration at Shelter Harbor site. (C) Depicts a typical gill net configuration at Brookfield Bay site.*

Volunteer Angler Carp Removal Program

A volunteer angling program that authorized fishing for grass carp in Candlewood Lake and Squantz Pond was established in 2023. This program is intended to assist Fisheries Division staff in achieving their Grass carp removal goals while also creating a unique angling opportunity. To participate in the program volunteer anglers were required to sign on to a Scientific Collectors Permit and report any grass carp catches through online forms developed for these purposes. In 2023, there were 556 registrations to participate in the program. During the 2024 project reporting period there were 24 new registrations, however anglers who had registered previously were still able to participate. In 2023 16 grass carp were reported compared to 6 in 2024.

Figure 12. *Grass carp exclosure installed in Candlewood Lake.*

Vegetation Monitoring and Planning

Widespread and persistent recovery of aquatic vegetation was not observed by Fisheries Division staff during the reporting period. Small and isolated patches of vegetation were observed in very shallow areas during the annual Nuisance Plant Survey conducted by First Light Power in accordance with their FERC license. In late fall and winter there was some regrowth of vegetation observed by and reported to the Fisheries Division. Grass carp feeding activity is known to decline greatly in colder water which may allow some vegetation to grow. However, this winter regrowth disappears in the spring as carp feeding activity increases.

Fisheries Division staff assisted the Candlewood Lake Authority (CLA) with the installation of 5 grass carp exclosures. The structures are meant to exclude grass carp from an area to allow vegetation to regrow for monitoring and restoration purposes (Figure 12). Some regrowth of vegetation was observed in exclosures in monitoring performed by Western Connecticut State University and CLA. Fisheries Division staff have also participated in meetings with CLA about the potential to expand the network of exclosures to provide some vegetated habitat for juvenile fish.

After the project reporting period, the population of grass carp was estimated to range from approximately 620-2375 fish; this range reflects the use of 4 different annual mortality rates from the literature due to the lack of actual mortality estimates reflecting conditions in Candlewood Lake. An estimate for how many additional grass carp need to be removed was developed using grass carp stocking data and vegetation surveys from Lake Mahopac in New York. Vegetation was eliminated in Lake Mahopac within 4 years of grass carp stocking and did not begin to recover for another 15 years; during this time, the population of grass carp had declined through natural mortality. Based on an analysis of data from Lake Mahopac, approximately 100—600 additional grass carp will need to be removed from Candlewood Lake before reaching the estimated carp density in Lake Mahopac at the time vegetation began to recover. These coarse estimates are useful for high level planning, but decisions about the number of carp to be removed in the future will be based on conditions observed in the Lake.

Objective 3: Freshwater fish and wildlife habitat structures: Wyassup Lake Smallmouth Bass Spawning Habitat Structures

Structure Installation

A total of 37 Smallmouth Bass nesting structures were installed in Wyassup Lake during the project period. Specifically, 21 half logs and 16 nest boxes were installed. The half logs were placed in areas with suitable spawning substrates for Smallmouth Bass. The nest boxes were placed in areas that provided cover such as adjacent to large boulders but lacked spawning substrate. Structures were placed on:

- 4/29/2024: Half Logs
- 5/14/2024: Half Logs
- 5/21/2024: Half Logs and Nest Boxes
- 10/24/2024: Nest Boxes
- 11/7/2024: Nest Boxes

To minimize the potential for conflicts with boating, swimming, and water skiing, both types of structures were placed in proximity to the shoreline (including islands), existing navigation hazards such as boulders or overhanging trees, and along undeveloped sections of shoreline; all of these locations are within the no wake zone established by Boating regulations (Figure **13**8)**.**

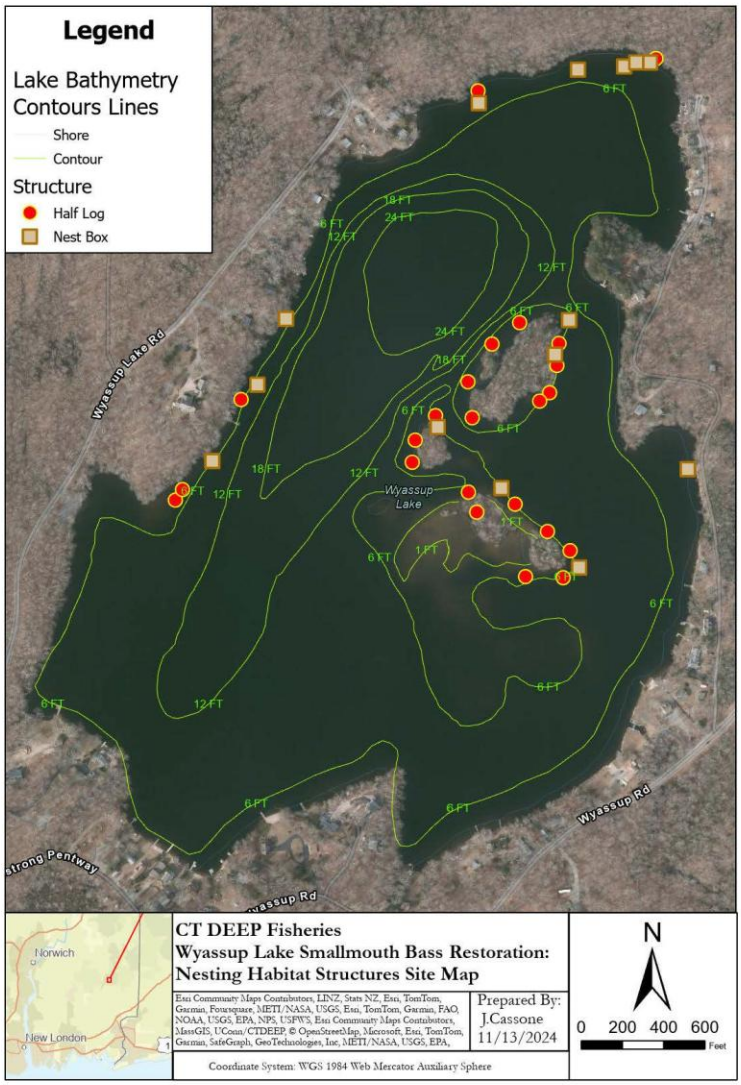


Figure 13. *Map of nesting habitat structures in Wyassup Lake, North Stonington.*

The half logs were lowered by hand from a workboat with two ropes that were strung through the cinder blocks on each end of the half log (Figure **14**9). This method allowed for the controlled placement of the structures on the lake bottom in the intended upright position. Once on the bottom, the ropes were pulled back through the cells of the cinder block to release the structure. Once the structure was placed, a GPS point was collected using the ESRI field maps application.

Figure 14. *Half log structures ready for placement in Wyassup Lake.*

The installation of the nest box structures was more complex than the half logs, primarily due to the weight of the gravel in each box. Each nest box received eight five-gallon buckets of gravel. They are estimated to weigh more than 400 lbs when full, which is not feasible to handle manually. To overcome this challenge, the nest boxes were filled with gravel after they were placed in the lake. First the nest boxes were partially filled with just enough gravel to overcome the buoyancy of the wooden frame and allow it to be lowered to the bottom using ropes. The remainder of the gravel was poured from a boat into the nest box using a custom "gravel funnel" that consisted of a concrete footing form attached to a 12" diameter HDPE culvert pipe (Figure 150). The end of the funnel was guided into the nest box with the assistance of a diver in a wetsuit. Once the gravel was placed the diver made sure the gravel was evenly spread in the nest box. A GPS point for each nest box was collected using the ESRI Field Maps application.

Figure 15. *Gravel funnel process used to fill nest boxes.*

Evaluation

Following the transfer of adult Smallmouth Bass on April 8th and April 22nd, 2024, and the installation of the spawning structures, snorkel surveys were conducted to assess spawning activity, utilization of spawning structures by Smallmouth Bass and other species, and the condition of the structures. These surveys were complemented by night boat electrofishing and seining in the fall to assess reproductive success, as measured by the catch per unit effort of YOY Smallmouth Bass.

Snorkel surveys:

- Snorkeled on 5/8/2024. 63 °F water temperature. Observed by the launch and the islands. Visibility was poor, but 10 of the half logs were observed, eight of which had clear nesting activity (one Smallmouth Bass, two Largemouth Bass, and five unknown). Five

Smallmouth Bass nests being actively guarded in naturally occurring habitat were also observed, including three with visible eggs. All were immediately adjacent to large rocks/boulders. One was just south of the launch (41.488838, -71.876687), another was just east of the launch (41.488968, -71.875720), and the remaining three were around the islands (41.489226, -71.872293; 41.489462, -71.872331; 41.488334, -71.870635). There were also several Largemouth Bass nests and recent centrarchid nests with no eggs or guarding male present.

- Snorkeled on 5/14/2024. 64 °F water temperature. Same areas repeated for observation. Poor-moderate visibility. Again found 10 logs, nine of which had nesting activity (one Smallmouth Bass, three largemouth bass, and five unknown). Four of the SM nests from the previous week (including one on a half log) were found again but no Smallmouth Bass were present. Two additional actively guarded Smallmouth Bass nests were observed in naturally occurring habitat around the island (41.490209, -71.871573; 41.490956, -71.870427). Many more Largemouth Bass and Bluegill were observed in shallow water this week and significant algae and plant growth occurred since the previous sample. Fewer Smallmouth Bass were observed overall.
- Snorkeled on 5/22/2024. 69 °F water temperature. Same areas repeated for observation. Poor visibility. No Smallmouth Bass nesting activity on or off the half logs. Of the 15 half logs observed, six had actively guarded Largemouth Bass nests and an additional six had nest depressions but no fish observed. Significant submerged aquatic vegetation growth occurred since the previous sample. Bluegill nesting colonies became established since the previous sample. Smallmouth Bass were still observed occupying shallow water habitats in groups of up to three, but they were no longer associated with any apparent nest depressions.

Electrofishing and seine surveys:

- Conducted night boat electrofishing on Wyassup Lake on October 2nd and October 16th, 2024, in the standard sampling zones within the lake.
- 23 Smallmouth Bass were caught, including 19 YOY and four recaptures (Table 1 and Figure 12).
- Overall catch per hour remains below the statewide average for lakes with well-established, self-sustaining Smallmouth Bass populations. However, finding multiple Smallmouth Bass YOY that survived through their first summer and remained in good condition, as well as recapturing four stocked adults, is a promising early indicator.
- A seine survey was attempted on October 31st, 2024. Two YOY Smallmouth Bass were observed. However, various in-lake obstacles and fallen leaves made seining in the areas where we expect to observe Smallmouth Bass YOY largely ineffective.

Table 1. *The night boat electrofishing catch per hour by size class of Smallmouth Bass in Wyassup Lake.*

Date	All	Stock	Quality	Preferred	Memorable	PSD
10/02/2024	10	2	2	1	0	100
10/16/2024	13	2	2	1	0	100

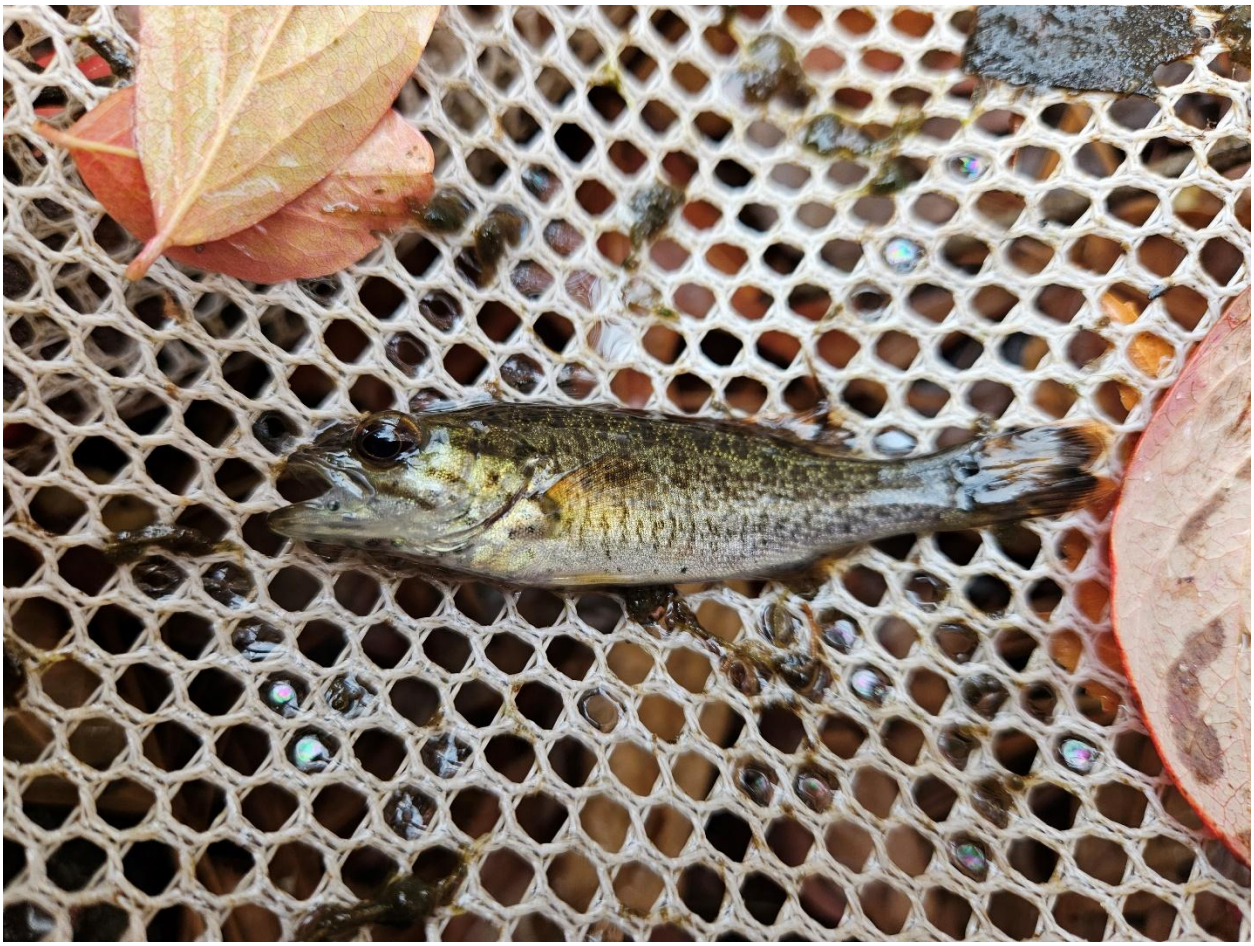


Figure 16. *YOY Smallmouth bass captured during Fall 2024 surveys indicating successful spawning.*

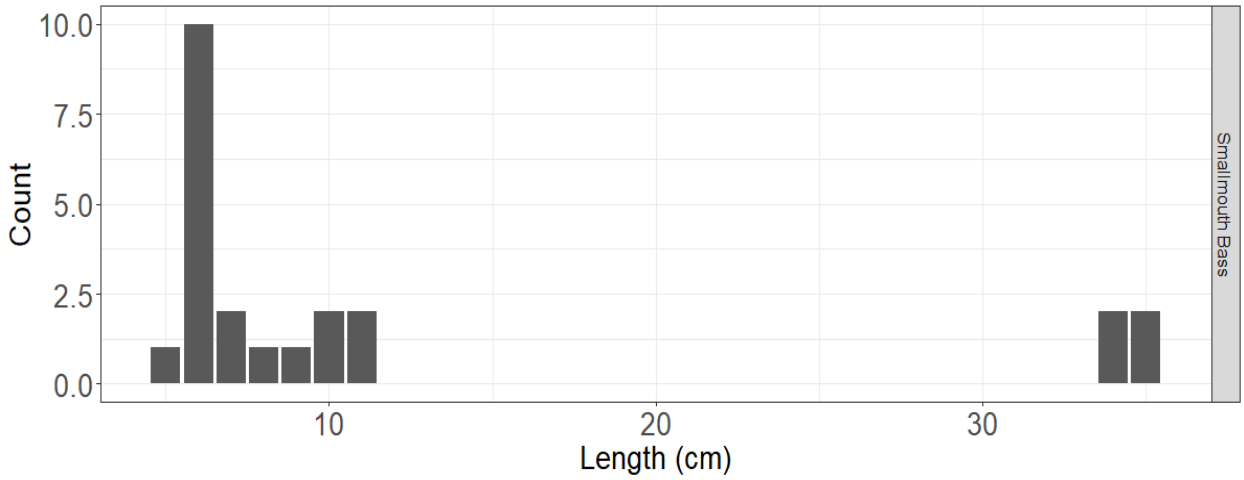


Figure 12. *Length frequency histogram for Smallmouth Bass caught via night boat electrofishing on Wyassup Lake, October 2nd and 16th, 2024.*

Coordination and Permitting

While habitat improvement activities can require approvals by the Army Corps of Engineers (USACE) and CT DEEP, there are circumstances where habitat improvement activities are exempt from permitting. Prior to installation of any structures, confirmation was sought from each agency that the installation of habitat structures did not require permits.

A Self Verification Notification Form for authorization under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act via General Permit 10: Aquatic Habitat Restoration, Establishment, and Enhancement Activities was submitted to USACE. The form was also provided to CT DEEP regulatory staff for their awareness. In response, on April 22, 2024 USACE provided a determination (NAE 2010-00858) that authorization was not necessary for the habitat improvement work in Wyassup Lake. In a separate email USACE staff explained that since the project entailed the placement of structures and not the discharge of dredged or fill material a permit would not be necessary.

The project received approvals through the DEEP Project Request and District Review Process; a process where staff from the various programs at DEEP provide input on DEEP projects. Coordination with the DEEP Boating Division to familiarize boating staff with habitat enhancement structures, address concerns related to navigation safety, and the siting of habitat structures continued through late April 2024.

Confirmation was received from CT DEEP that the proposed project was exempt from the Inland Wetlands and Watercourses Act since it was a qualifying activity conducted by a state agency on state property. The Town of North Stonington Inland Wetlands and Watercourses Agency was made aware of the habitat improvement work in the event they received questions from the public or had any concerns. There was also robust coordination with the Lake Wyassup Improvement Association (LWIA) to make lake residents and other stakeholders aware of the project and provide opportunities for feedback. LWIA membership was supportive of the habitat enhancement work.

Moving Forward

- Continue to assess lake habitat with side scan sonar and further develop data products for staff and the public.
- Analyze existing habitat data and develop habitat enhancement plans for additional lakes.
- Continue the removal of Triploid Grass Carp from Candlewood Lake until the persistent recovery of submerged aquatic vegetation is observed.
- Monitor the utilization of habitat structures and Smallmouth Bass spawning at Wyassup Lake.
    - Begin snorkel surveys earlier in the season.
    - Continue fall YOY assessments.
    - Apply lessons learned to enhance Smallmouth Bass fisheries in other CT waterbodies.

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F24AF01138
4/1/2024 to 3/31/2025

Grant Title: Inland Fisheries Research and Management
Study 3: Inland Fisheries Coordination and Administration
Job 1: Inland Fisheries Operations

Report Prepared by: Mike Beauchene
Job Personnel: Mike Beauchene, Job Leader/Program Coordinator
Brian Eltz, Primary Staff
Christopher McDowell, Primary Staff
Matt Devine, Primary Staff
Andrew Bade, Program Coordinator

Overview: Fisheries Division staff must provide services to the angling public to ensure the proper protection and management of Connecticut's fisheries resources. These activities are necessary so that current knowledge and the results of research and management projects can be broadly applied. Included in these activities are public outreach, access development, planning, and technical assistance with the review of permits to avoid any biological issues.

The Fisheries Division is frequently required to administer projects and collect information due to unforeseen circumstances (e.g., fish needed for contaminant analysis, investigation of fish kills). In addition, opportunities to collect valuable information often arise. It is important that the Fisheries Division be able to meet these demands and take advantage of such opportunities.

The objectives of the inland fisheries operations job are:

1. Provide general fisheries information to the public.
2. Ensure that data can be collected where needed to evaluate programs and to take advantage of opportunities.
3. Perform minor maintenance to provide adequate physical access to support all fisheries management activities within the grant (e.g., paths, roads, trails, fishing piers, ramps, docks) and allow for fishing access.

Key Findings

Objective 1: Provide general fisheries information to the public.

- Press releases, web page updates, and social media posts were issued to advise the public about important fisheries activities and news.
- Published digital versions of the Fishing Guide (freshwater and saltwater).
- Printed and distributed the 2025 Fishing Guide in both English and Spanish.
- Provided editorial review or authored six fisheries related articles in Connecticut Wildlife Magazine.
- Shared angler posts and questions on the CT Fish and Wildlife Facebook page (currently 66,000+ followers) and on Instagram (currently 6,647 followers).
- Eleven presentations were made to fishing organizations on the benefits of Sport Fish Restoration to Connecticut's fisheries (approximately 240 people).
- Responses to public inquiries for fisheries information were provided upon request.
- Published the Annual Fish Stocking Report.
- Published monthly e-newsletter, *CT Fishin' Tips* using Constant Contact (13,812 subscribers).
- Technical assistance, to avoid biological issues, was provided 1) to anglers participating in 750 fishing tournaments, 2) to individuals making 117 requests to import and 216 requests to liberate fish, 3) to approximately 17 individuals or organizations requesting authorization to collect scientific data on fish, and 4) to retail bait dealers making185 requests to import bait.
- Maintained a self-service angler recognition application to enable anglers to submit catch data for trophy fish, state record fish, youth fishing passport – fishing challenge, first fish, and lifetime personal best.
- Maintained a dashboard to display trophy fish catches submitted to and verified by DEEP staff.
- Mailed certificates to anglers who caught the largest fish of each species, set a new state record, and who achieved the title of "Angler of the Year".
- Maintained Connecticut's sportfish regulation data within the FishBrain app with CT's fishing regulations. This allows instant access to fishing regulations at the location where the person is fishing.

Objective 2: Ensure that data can be collected where needed to evaluate programs and to take advantage of opportunities.

- Routine efforts to ensure data can be collected where and when needed to evaluate programs continued and are reported under the respective study and job.

Objective 3: Perform minor maintenance so to provide adequate physical access to support all fisheries management activities within the grant (e.g., paths, roads, trails, fishing piers, ramps, docks) and allow for fishing access.

- There were no requirements for minor maintenance to provide adequate physical access to support all fisheries management activities during this reporting cycle.

Moving Forward

- Continue ongoing efforts to communicate the benefits of the Sport Fish Restoration Program as it relates to improving Connecticut's fisheries, especially through the development of interactive maps and smartphone applications.
- Continue to utilize electronic media as a tool to deliver interesting and educational material to engage constituents, especially through live streaming on Facebook Live.
- Continue to perform minor maintenance at existing access areas as necessary.

State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Fisheries Division

Federal Aid in Sport Fish Restoration F-57-R-42
Annual Performance Report – F22AF01138
4/1/2024 to 3/31/2025

Grant Title:	Inland Fisheries Research and Management
Study 3:	Inland Fisheries Coordination and Administration, Access Maintenance, and Public Outreach
Job 2:	Fisheries Historical Data Restoration
Report Prepared by:	Joshua Mouser, Postdoctoral Scholar and Jason Vokoun, Professor
Job Personnel:	Joshua Mouser, Job Leader Andrew Bade, Program Coordinator

Overview: Historical records of fish sampling events and associated data can be used to aid analyses of range shifts, population dynamics, climate change, run timing and even local extirpations across space and time. As environmental variability increases under climate change, detecting signal from noise requires, now more than ever, time series of data to support fisheries management decisions.

Historic data digitization and organization into a modern database with associated metadata allows fisheries agencies to query the data and undertake analyses that are otherwise not possible. Much of these data can exist on paper, but some of the most vulnerable to being lost can be found on hard drives in remote fisheries offices or on CD-ROMs and other outdated storage media. Consolidating and modernizing these types of data has been referred to as 'data rescue'.

This project has three main goals. First is to locate and retrieve as much of the freshwater fisheries data held by the CT DEEP fisheries division as is possible. This will involve site visits to the field offices and interviews with current employees and recent retirees to find existing data. We expect to find much data already digitized, but others may predate digital formats while others have been lost and now can only be found in paper reports. Second, we will digitize and organize these disparate data sources into a few, flexible relational databases. Third, we will undertake an example analysis with the newly organized data. This example analysis will be used to create a process document highlighting how fisheries biologists can interact with the databases to support fisheries decision making. The specific topic of the analysis will be selected

in consultation with the Fisheries Division once data are organized and cataloged, but questions about fish community shifts and population size structure changes over time are promising possibilities.

The project will be led by a post-doctoral scholar that has prior experience working with large datasets. The scholar will engage with a small group of representative fisheries biologists from the Fisheries Division during the database design phase of the project, especially to better envision the needed uses of the databases, which is a key step to informed database design.

University of Connecticut students will be hired to support the data digitization under the supervision of the post-doctoral scholar.

Objectives:

1. Facilitate site visits and interviews with Fisheries Division staff and the scholar.
2. Create a comprehensive file of all data obtained and associated metadata.
3. Develop relational databases to house, at minimum, all available electrofishing (including associated ageing results), angler survey, and fish distribution data.
4. Develop a process document and conduct trainings to ensure Fisheries Division staff can use and maintain database products.
5. Demonstrate the utility of the databases through quantitative modeling efforts targeting the effects of climate and urbanization on fisheries resources over time and space, leading to the development of one or more peer-reviewed publications.

Key Findings

Objective 1: Facilitate site visits and interviews with Fisheries Division staff and the scholar.

- Eleven interviews have occurred between current and former Fisheries Division staff and the scholar.
    - The interviews focused on learning the structure of current and historic databases and where data are currently stored.
    - A retired biologist provided a flash drive with the historic lake and pond databases, an inventory of those databases, and executable files for running RBase.
    - Another retired biologist revealed that there were historic angler surveys in the Farmington and Housatonic rivers that are not captured in any of the known databases.
    - Another provided several suggestions for possible locations of data including stocking records at Burlington, Kensington, and Quinebaug hatchery; potential angler survey data at Burlington; files from Bob Orciari and Tim Barry in Harwinton; files

in a storage closet in Hartford; and data about border waters at the Marine Headquarters.

- Site visits to Litchfield, Eastern District Headquarters (EDHQ), Western District Headquarters (WDHQ), and the DEEP headquarters in Hartford have been conducted.
    - One file cabinet of miscellaneous historic survey data was located in WDHQ and another in EDHQ. These data are currently being scanned by DEEP seasonal staff, then sorted according to waterbody and subject by the scholar (Figure 1). This organization scheme will continue to be used as new data are collected and scanned. Data specific to fish surveys, fish distributions (stocking), and angler surveys (creels) will be added to the relational database developed for objective three.
    - Two 8-in floppy disks with creel data from the Housatonic River were found in the historic data at WDHQ. SalvageData provided an estimated recovery cost of $900. Due to the uncertainty of the contents of the external drives and high costs, we have decided to not proceed with data recovery.
    - Two boxes of early angler survey data from the Housatonic River that may not exist in digital format were recovered during the site visit to Litchfield. The recovered data will be entered if an existing database containing the data is not found. Scanning the angler surveys has been added to a list of tasks at the end of the report that can be completed as seasonal staff have availability. Standard operating procedures will be written to aid those tasks.
    - During the site visits to Hartford, several sources of data were found. Datasheets from the 1930s through the 1950s were located and are being scanned by the scholar. Most of the data are visual assessments of small ponds but there is a limited amount of angling and netting data. The angling and netting data will be entered into the relational database and entering the remainder of the data has been added to the list of future tasks for seasonals. Several file cabinets of miscellaneous historic survey data were found and will be scanned by seasonal staff and sorted by the scholar. Lastly, a box of monthly reports from the 1960s and 1970s was located and will provide context for the survey data from that time period.

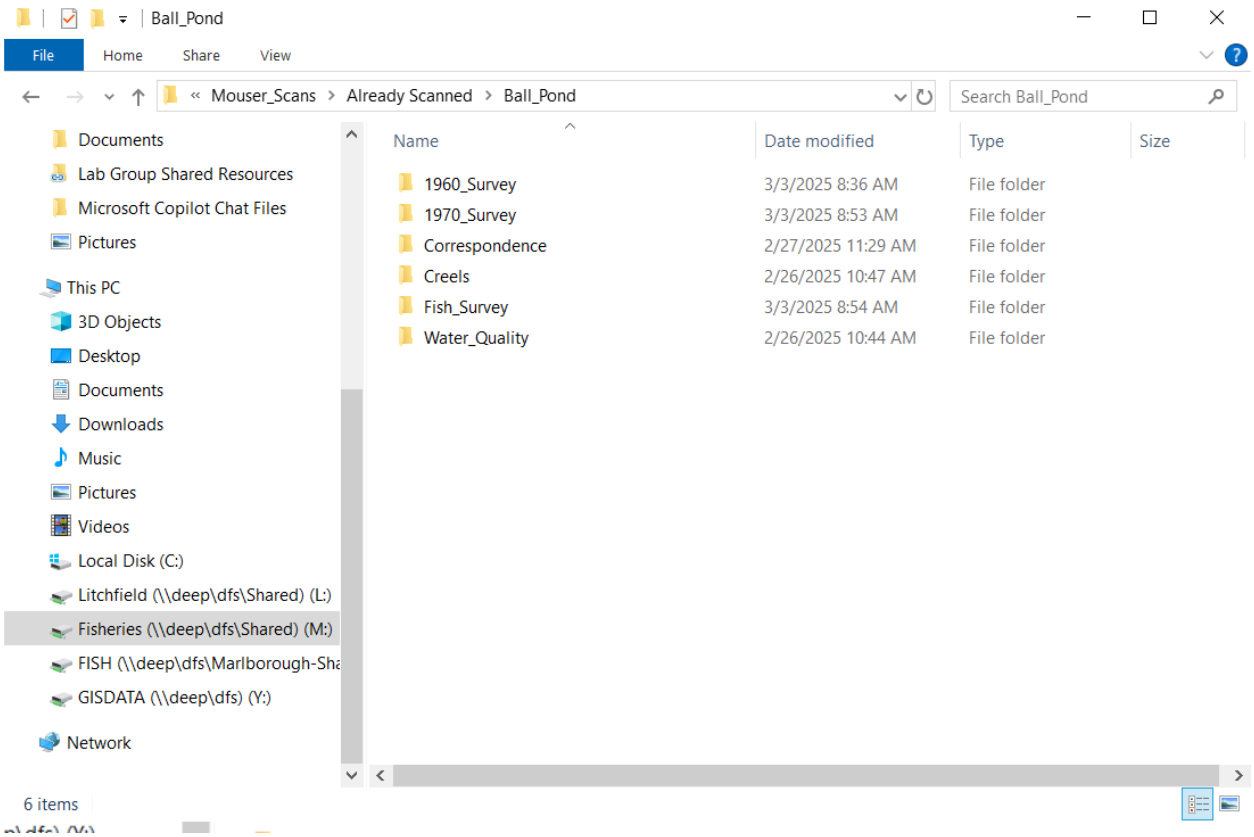


Figure 1. *Historic and current data will be stored in folders labeled with the waterbody name (Ball Pond in shown in figure 1). Within specific waterbody folders, data will be organized by subject. These subjects will include, but are not limited to, specific projects (e.g., 1960s surveys and current lake and pond sampling), angler surveys (creels), and miscellaneous correspondences.*

Objective 2: Create a comprehensive file of all data obtained and associated metadata.

- Data pertaining to lake and pond sampling, stream sampling, fish age estimates, stream angler surveys, lake and pond angler surveys, and fish distribution records are currently being collated; however, active work on the angler surveys and fish distribution records has not started (Table 1). Although the original aim was to focus on electrofishing data, other types of sampling methods are being compiled because they form the bulk of the historic data that have not been digitized. Metadata will be written as work continues.

Table 1. *Stream sampling, lake and pond sampling, fish age estimates, stream angler surveys, lake and pond angler surveys, and fish distribution data are currently being collated. Scanning of historic data is currently ongoing and the amount of data recovered will continue to increase. Active work on the angler surveys and fish distribution records will begin autumn 2025; therefore, a list of all the files pertaining to those data sources is not currently unavailable.*

Category	Files	Format	Amount	Notes
Stream Sampling	1920s	PDFs	1,670 pages	Rapid surveys of streams conducted in the 1920s.
	UCONN 1960s	Excel	1,041 surveys, 4,447 rows	Dr. Whitworth's stream surveys.
	TMA81_96	RBase	To be determined	Catch, effort, length data from trout management areas.
	genuse	Excel	8,642 surveys, 262,231 rows	The stream surveys conducted prior to 2018
Lake and Pond Sampling	1920s	PDFs	82 pages	Rapid surveys of lakes and ponds conducted in the 1920s.
	1930s	Table	47 rows	Surveys of 47 Lakes and Ponds in Connecticut that form the basis of the book, "A Fishery Survey of Important Connecticut Lakes."
	1940s/1950s	PDFs	2,053 pages	The Fisheries Division attempted to visit every lake and pond in Connecticut. 154 more intensive surveys were conducted and are the data used to create the database titled, "SURV1959." Only townships Canterbury–Guilford have been scanned.
	1960s	PDFs	26 pages	Mostly gillnet surveys from the 1960s.
	1970s	PDFs	15 pages	Mostly gillnet surveys from the 1970s.
	SURV1959	Excel	124 surveys, 1,303 rows	The data for, "A Fishery Survey of the Lakes and Ponds of Connecticut"
	Pike Data	PDFs	350 pages	Miscellaneous pike sampling data from 1994– 2016.
	Nets	RBase	To be determined	Statewide trapnet, gillnet, hoopnet, and seining data.
	Angling	RBase	To be determined	Controlled angling by staff.
	Alewife	RBase	To be determined	Alewife abundance in 15 lakes 1986–2003.

	Survey	Excel	2,183 surveys, 278,042 rows	The lake and pond surveys conducted prior to 2018.
	Other	PDFs	50 pages	Other sampling data includes angling, electrofishing, netting, and snorkel surveys that were never entered.
Fish Aging	Lakegrow	Excel	65,536 rows	Scales that have been aged and checked.
Stream Angler Surveys	To be determined	RBase/Excel/Reports/ Paper documents	To be determined	Two boxes of datasheets have been recovered and there is an inventory stored on the M Drive.
Lake and Pond Angler Surveys	To be determined	RBase/Excel/PDFs	To be determined	12 angler surveys prior to 2018 have been located in the scans by the seasonals. The current databases are stored on the M Drive.
Fish distribution	To be determined	To be determined	To be determined	Some work was begun to locate missing records, which are currently stored at Eastern District Headquarters

Objective 3: Develop relational databases to house, at minimum, all available electrofishing (including associated ageing results), angler survey, and fish distribution data.

- The data will likely be housed in the current Access database used by the Fisheries Division with some updates. Microsoft SQL Server was initially explored as an option for housing the data because it is supported by DEEP. However, because it is proprietary software with a steep learning curve and requires connection to the DEEP network to use, it was decided that SQL Server was not the best option for storing the fisheries data. MySQL was also explored and seems to be a good option; however, it may prove too difficult to execute a data entry and extraction workflow without employing someone with a computer science degree. Therefore, it may be simpler and more efficient to continue with the current Microsoft Access database with some updates to improve data integrity. For example, the current database does not have protections to keep entered data from being overwritten or automatic checks for suspicious data (e.g., unrealistic fish lengths).
- It is expected that each unique data source will have its own table within the database and each table will have matching columns that can be joined or queried to compare disparate data sources. This structure will allow each data source to retain its unique features but allow for integration of the data.
- As part of developing the relational database, lake and pond electrofishing and stream electrofishing prior to 2018 must be updated to match the format of the surveys conducted post 2017. Beyond correcting minor errors, the following major updates to the databases are being made.
    - Correcting the stream lengths for the stream electrofishing database to ensure that catch per unit effort (CPUE) can be calculated correctly.
    - Adjusting the fish counts in the lake and pond electrofishing database so that they reflect what was collected in the field in addition to the counts adjusted for subsampling.

Objective 4: Develop a process document and conduct trainings to ensure Fisheries Division staff can use and maintain database products.

- The process document will be developed and trainings will be conducted after completion of the database.

Objective 5: Demonstrate the utility of the databases through quantitative modeling efforts targeting the effects of climate and urbanization on fisheries resources over time and space, leading to the development of one or more peer-reviewed publications.

- The following broad research questions will be refined and explored upon completion of relevant portions of the database.
    - What factors influence the distribution and decline of Smallmouth Bass in Connecticut?
    - How have angler interests shifted through time?
    - How does land use, climate, and streamflow shape the fish assemblage in Connecticut, which species will be at risk of future changes, and how will this ultimately affect sportfishing in Connecticut?

Moving Forward

- Completion of community sampling database is expected by summer 2025.
- Additional current and former staff interviews will be conducted in summer 2025.
- Fish aging and potentially diadromous samples will be added to the database in summer 2025.
- Creel surveys will be added to the database in autumn 2025 and work will continue through spring 2026.
- Stocking records will be added to the database in spring 2026.
- Development of the process document and training will occur in summer 2026.
- After the project ends, seasonal staff will continue to complete the following tasks.
    - Scan the angler surveys.
    - Enter data from the 1920s–1950s samples.
    - Scan the stream surveys.