



**STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

Daniel C. Esty  
Commissioner

Bureau of Natural Resources  
Marine Fisheries Division  
[www.ct.gov/dep/fishing](http://www.ct.gov/dep/fishing)

**A STUDY OF MARINE RECREATIONAL  
FISHERIES IN CONNECTICUT**



Federal Aid in Sport Fish Restoration  
F-54-R-30 Annual Performance Report  
March 1, 2010 – February 28, 2011



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Federal Aid in Sport Fish Restoration  
F-54-R-30  
Annual Performance Report

**Project Title: *A Study of Marine Recreational Fisheries in Connecticut***

Period Covered: March 1, 2010 - February 28, 2011

**Job Title**

***Prepared by:***

Job 1: Marine Angler Survey Part 1: Marine Recreational Fishery Statistics survey Part 2: Volunteer Angler Survey	Roderick E. MacLeod
Job 2: Marine Finfish Survey Part 1: Long Island Sound Trawl Survey  Part 2: Estuarine Seine Survey	Kurt F. Gottschall Deborah J. Pacileo  David R. Molnar
Job 3: Inshore Survey	Jacqueline M. Benway
Job 4: Studies in Conservation Engineering	Inactive
Job 5: Cooperative Interagency Resource Monitoring	Matthew J. Lyman Katie O'Brien-Clayton
Job 6: Public Outreach	David R. Molnar



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***Approved by:***

David G. Simpson, Director  
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Cover photo taken at a Connecticut River American shad (*Alosa sapidissima*) juvenile seine survey site in East Haddam.



## **EXECUTIVE SUMMARY**

Project: A Study of Marine Recreational Fisheries in Connecticut

**Federal Aid Project:** F54R-30 (Federal Aid in Sport Fish Restoration)

**Annual Progress Report:** March 1, 2010 – February 28, 2011

### **Purpose of the Project**

The purpose of this project is to collect information needed for management of the marine recreational fishery. This information includes angler participation, effort, catch, and harvest; the relative abundance of finfish and specific population parameters for important selected species, water quality and habitat parameters, and assessment of fishery related issues such as hook and release mortality. The project also includes an outreach component to inform the public, and increase understanding and support for management programs and regulations.

The project is comprised of six jobs: 1) Marine Angler Survey, 2) Marine Finfish Survey, 3) Inshore Survey, 4) Fishing Gear Studies (Inactive), 5) Cooperative Interagency Resource Monitoring, 6) Public Outreach. Job 3 had been inactive since March 1997 (see below). Job 4 has been inactive since 2000.

Information on marine angler activity is collected from intercept interviews conducted by DEP staff and through a telephone survey conducted by a National Marine Fisheries Service contractor as part of the coastwide Marine Recreational Fisheries Statistics Survey. The relative abundance of 40 species and more detailed population information on selected finfish are obtained from an annual Long Island Sound Trawl Survey. The relative abundance of young-of-year winter flounder and nearshore finfish species is obtained from fall seine sampling conducted at eight sites. Fishing gear and fishing practices are evaluated by conducting studies of hook and release mortality rates and through sampling catches of commercial fishing vessels taking species of recreational interest. Marine habitat is monitored and evaluated through cooperative interagency monthly sampling of water quality parameters (temperature, salinity, dissolved oxygen) at 20 to 25 fixed sites throughout the Sound. Public outreach is performed through speaking engagements at schools, with civic organizations and fishing clubs as well as through displays in the Marine Headquarters lobby and fishing shows. Project staff also keep the Fisheries Advisory Council informed on project activities and frequent media contacts provide broad newspaper coverage of project activities and findings.

**JOB 1: MARINE ANGLER SURVEY**  
**PART 1: MARINE RECREATIONAL FISHERY STATISTICS SURVEY**

**OBJECTIVES (Summary)**

- To estimate the number of marine anglers, fishing trips, fish caught, and the number and weight of fish creeled.

**KEY FINDINGS:**

- Marine recreational fishery statistics estimates are continuously updated over time. Estimates of participants, trip effort, and catch can be queried by region, sub-region, and state by visiting the National Oceanic and Atmospheric Administration (NOAA Fisheries/National Marine Fisheries Service/Marine Recreational Fishery Statistics Survey (MRFSS)) web site at <http://www.st.nmfs.gov/st1/recreational/queries/index.html>. For this reason, this report will not include MRFSS statistics. However, intercept survey work completed by Connecticut is available in the Results and Discussion section of this report.

**CONCLUSIONS:**

- Coastwide fishery management plans are resulting in increases in several fish populations and good catches of many primary recreational species.

**RECOMMENDATIONS:**

- Continue obtain catch and harvest information and angler participation rates through the Marine Recreational Fishery Statistics Survey in order the status of the recreational fishery.

**JOB 1: MARINE ANGLER SURVEY**  
**PART 2: VOLUNTEER ANGLER SURVEY**

**OBJECTIVES (Summary)**

- To characterize the size composition of both kept and released fish observed by volunteer anglers.

**KEY FINDINGS:**

- A total of 43 anglers participated in the survey and made 873 trips in 2010. Volunteers including anglers involved in a fishing party made a total of 1,791 trips. With multiple species taken per trip anglers reported 752 trips targeting bluefish, 1,150 trips for striped bass, 502 trips for summer flounder, 44 trips for winter flounder, 164 trips for scup, and 156 trips for tautog.
- Volunteer anglers measured 1,003 bluefish measuring > 12 inches in length, 800 striped bass, 1,204 summer flounder, 31 winter flounder, 1,629 scup and 409 tautog. Collecting length measurements on released fish provides valuable data not available through the Marine Recreational Fishery Statistics Survey, except for the headboat sea sampling survey.

**CONCLUSIONS:**

- Volunteer anglers provide a tremendous amount of data on the size and catch composition of popular recreational species in Connecticut, supplying several stock assessments with scarce length information on released fish.

**RECOMMENDATIONS:**

- Maintain the Volunteer Angler Survey as an effective means of characterizing angler behavior and particularly in collecting length data on released fish that are not available from the Marine Recreational Fishery Statistics Survey.

## **JOB 2 PART 1: LONG ISLAND SOUND TRAWL SURVEY (LISTS)**

### **OBJECTIVES (Summary)**

- Provide an annual index of numbers and biomass per standard tow for 40 common species and age specific indices of abundance for scup, tautog, winter flounder, and summer flounder, and recruitment indices for bluefish (age 0) and weakfish (age 0).
- Provide annual totals counts for all finfish species taken, total biomass for all finfish and invertebrate species taken, as well as, a species list for all species caught in LIS Trawl Survey sampling.

### **KEY FINDINGS:**

- A total of 39,228 finfish, lobster and squid weighing 5,452 kg were collected in 2010.
- Forty-three (43) finfish species and thirty-eight (38) invertebrate species (or taxa) were collected from 78 tows conducted in 2010. The total fish species count (43) is below the 27-year average of 57 species per year (1984-2009), but this is not surprising since there was no fall sampling in 2010. The Long Island Sound Trawl Survey has collected ninety-nine (99) finfish species since the survey began in 1984. No new finfish species were observed in 2010.
- Scup index of abundance for Spring 2010 (6.88 scup per tow) was the third highest in the time-series for April-May combined. If June catches are included in the spring indices, the 2010 index falls to ninth highest. Although the fall index is usually the preferred index of abundance from the trawl survey, even the springtime scup indices have been above the time-series average for six of the past eleven years.
- Four other finfish species had relatively high abundance in the Spring 2010 Trawl Survey; rough scad, spotted hake, blueback herring and northern kingfish.
- Although the spring 2010 striped bass index fell below the mean for the first time in the past 16 years (since 1993), the current index of 0.40 fish per tow remains well above the average from the first eight years of the Survey (0.08 fish per tow, 1984-1992).
- Seven finfish species had relatively low abundance in the Spring 2010 Trawl Survey; little skate, smooth dogfish, tautog, fourbeard rockling, fourspot flounder, bluefish and weakfish.
- American lobster abundance in spring 2010 remained low at 1.3 lobsters per tow; a new time-series low. Current springtime abundance is less than one-tenth the peak abundance of 18.52 lobsters per tow seen in 1998.

### **CONCLUSIONS:**

- The abundance of some recreationally important species in Long Island Sound remains moderate to high including scup, striped bass, summer flounder and black sea bass. However, some recreational species like winter flounder and tautog have gone through a protracted period of declining abundance and this is cause for concern. Additionally, several species not typically targeted by recreational fishermen have undergone changes in abundance in trawl

survey catches that may indicate shifts in species assemblages within Long Island Sound associated with broad scale increasing temperature trends in the northwest Atlantic.

**RECOMMENDATIONS:**

- Continue monitoring through LIS Trawl Survey to provide information for stock assessment purposes, to evaluate management measures and to maintain the continuity of this long-standing time-series.

## **JOB 2 PART 2: ESTUARINE SEINE SURVEY**

### **OBJECTIVES (summary)**

- To provide an annual index of recruitment for young-of-year winter flounder and all finfish and crab species taken.

### **KEY FINDINGS:**

- The 2010 annual index of recruitment for young-of-year winter flounder (1.0) fish/haul) ranked second lowest (22<sup>nd</sup>) following the 2009 record low.
- Mean catch of all finfish (172 fish/haul) ranked eighth out of 22 annual indices and was just above the series average of 142 fish/haul (Figure 2.2).
- The forage fish index for 2010 (137 forage fish/haul) was the fourth highest of the time series.

### **CONCLUSIONS:**

- Another decrease in abundance of the winter flounder young of year index for 2010, followed by fairly low indices since 2000 and the absence of a strong year class since 1996 (relatively high in 2004) is not expected to change the disappointing short term outlook for the stock.
- The inshore forage fish abundance index primarily reflects the abundance of Atlantic silversides, followed by striped killifish and mummichog, the dominant forage species taken in the survey.

### **RECOMMENDATIONS:**

- Continue to monitor young-of-year winter flounder and inshore forage species abundance through the September seine survey.

### **JOB 3: INSHORE SURVEY**

#### **OBJECTIVES (Summary)**

- Provide information on the adult American shad spawning population: length, age structure and sex ratio.
- Provide annual indices of relative abundance for juvenile shad, blueback herring and common nearshore marine species.

#### **KEY FINDINGS:**

- The 2010 adult American shad age structure for males ranged from ages 3-6 and for females ages 4-6. The percentage of repeat spawners remains low for the population (7.2%).
- The 2010 CT River seine survey completed 103 seine hauls and collected over 51,000 fish, including 9,404 juvenile shad and 32,722 blueback herring.
- The 2010 juvenile American shad catches reflects a strong year class with annual index that ranks as the fourth highest CPUE in the 33 year time series.
- The 2010 juvenile blueback herring abundance resulted in an annual juvenile index that ranks as the third highest CPUE in the 33 year time series.
- The Thames River seine survey completed 64 seine hauls and collected over 12,000 fish. Atlantic silversides were the most abundant species, followed by anchovies, snapper bluefish and juvenile menhaden.

#### **CONCLUSIONS:**

- The 2010 adult shad spawning population continues to have a low percentage of repeat spawners. Despite the truncated age structure and low rate of repeat spawners, the 2010 run produced a strong year class.
- The blueback herring run produced a strong year class in 2010.
- Juvenile menhaden catches in the Thames continue to widely fluctuate on an annual basis and were some of the lowest seen since 1998.

#### **RECOMMENDATIONS:**

Continue to monitor the Connecticut and Thames Rivers to maintain the long term time series on juvenile American shad and blueback herring. Adult age structure and juvenile indices contribute to alosine stock assessments as well as a state plan demonstrating sustainability of the American shad fishery.

### **JOB 4 FISHING GEAR SELECTIVITY – INACTIVE THIS SEGMENT**

## **JOB 5: COOPERATIVE INTERAGENCY RESOURCE MONITORING**

### **OBJECTIVES**

- Provide monthly monitoring of water quality parameters important in the development of summer hypoxia in Long Island Sound including temperature, salinity, and dissolved oxygen.
- Provide indicators of hypoxia impacts on living resources.

### **KEY FINDINGS:**

- Hypoxia first developed on or about July 5, 2010, and persisted for 40 days ending on or about August 13, 2010.
- Forty-seven square miles (121.7 km<sup>2</sup>) were affected by severe hypoxia (<2.0 mg/l dissolved oxygen) in 2010.
- Hypoxia (<=3.5 mg/l dissolved oxygen) extended over a maximum area of 154.7 km<sup>2</sup> during 2010, the second smallest areal extent since 1991.
- The Biomass Area-Day Depletion Index (BADD) index for 2010 was the third lowest at about 4,000 area-days (average=6,961.7). The BADD index is a gross measure of seasonal habitat loss associated with hypoxia.

### **CONCLUSIONS:**

- Hypoxia was comparatively mild in 2010, persisting for just 40 days (mean= 55 d) and affecting less area than any year since 1997.

### **RECOMMENDATIONS:**

- Continue conducting the water quality monitoring program to provide information needed to evaluate the effectiveness of measures to reduce nutrient loading to LIS and the impact of water quality improvements on marine life.

## **JOB 6: PUBLIC OUTREACH**

### **OBJECTIVES**

- Increase public awareness among anglers and the general public that information provided through this project contributes to state and federal efforts to enhance recreational fisheries conservation and that the majority of marine fisheries research and monitoring activities in Connecticut are funded through the Federal Aid in Sportfish Restoration Program.

### **KEY FINDINGS:**

- A total of 19,139 outdoor and environmental writers, marine anglers and boaters, marina operators, fishing tackle retailers, Fisheries Advisory Council (FAC) members, and members of the general public attended outreach events. The two largest event were the “CMTA Boat Show” attended by 7,803 fishermen and hunters, followed by “Northeast Hunting and Fishing Expo” at the Hartford Convention Center which had an attendance of 11,491.

### **CONCLUSIONS:**

- Large numbers of anglers and members of the general public are provided information about Marine Fisheries programs through participation in outdoor fishing & hunting shows, Science and Career Days, public speaking engagements and displays at the Marine Fisheries Office.

### **RECOMMENDATIONS:**

- Continue outreach efforts.