STATE OF CONNECTICUT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

Robert Klee
Commissioner

Bureau of Natural Resources
Marine Fisheries Division
www.ct.gov/deep/fishing

A STUDY OF MARINE RECREATIONAL FISHERIES IN CONNECTICUT

Federal Aid in Sport Fish Restoration
F14AF00296 (F-54-R-34)
Annual Performance Report
March 1, 2014 – February 28, 2015

Jobs 1-4 (Angler Surveys)

Cover photo: ***Fisheries Biologist (retired) Roderick MacLeod with a trophy striped bass he caught in Long Island Sound.***

Roderick (Rod) MacLeod retired on April 30, 2015, after more than 34 years of service with the Marine Fisheries Division. During that time Rod helped initiate the marine angler survey program including the Volunteer Angler Program – one of the first of its kind on the east coast. Rod headed up the marine angler survey for nearly 30 years including managing the transition from Connecticut's independent creel surveys to participation in the Marine Recreational Fishery Statistics Survey in 1987. Rod also contributed significantly to the design and implementation of our return to independent creel surveys in 2013 intended to complement the federal MRIP survey.

In addition to oversight of state marine angler surveys, Rod served as Connecticut's representative on ASMFC Interstate Tagging and Artificial Reef Committees and on the ACCSP Operations and Recreational Technical Committees.

Rod's day-to-day duties also included heading up fish kill investigations and looking out for anglers' interests in the agency's review of structures and dredging permits, including providing critical advice on the development of fishing access sites whenever such opportunities arose. Rod also played a central role in our outreach efforts targeting the angling community, including producing the weekly fishing reports and helping hundreds of callers over the years looking for a good place to get out fishing or crabbing. His detailed knowledge of fishing and fishing access along the entire coast, gleaned from years of creel survey work and his owned extensive fishing experience, has been invaluable to this office and the fishing public.

Rod will be missed not only for the contributions he has made to this agency over more than a third of a century, but also as a longtime friend and colleague. We wish Rod and his family the best as he enters this new and exciting phase in his life in retirement. Try to leave a few fish on the shoal for us weekend warriors, Rod!

State of Connecticut
Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127
www.ct.gov/deep

Federal Aid in Sport Fish Restoration
F14AF00296 (F-54-R-34)
Annual Performance Report

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

Period Covered: March 1, 2014 - February 28, 2015

Job Title	***Prepared by*:**
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Job 7: Alosine Survey	Jacqueline M. Benway
Job 8: Estuarine Seine Survey	David R. Molnar Penelope T. Howell
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Date: May 1, 2015

MARINE ANGLER SURVEY

Job 1: Marine Recreational Fishery Statistics Survey

MARINE RECREATIONAL FISHERY STATISTICS SURVEY

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JOB 1: MARINE ANGLER SURVEY

GOAL

To collect marine recreational angler fishing information in the boat mode through a voluntary catch card survey program.

OBJECTIVES

Provide estimates of:

1) Length-frequency distribution of harvested black sea bass, bluefish, scup, winter flounder, summer flounder, tautog, striped bass, and weakfish.
2) Length-frequency distribution of discarded black sea bass, bluefish, scup, winter flounder, summer flounder, tautog, striped bass, and weakfish.
3) Targeted catch/effort of black sea bass, bluefish, scup, winter flounder, summer flounder, tautog and striped bass.
4) Percent of targeted trips by species.

INTRODUCTION

The Connecticut Department of Energy and Environmental Protection (DEEP), Bureau of Natural Resources, Marine Fisheries Division, has been collecting marine recreational fisheries information along the Connecticut coastline since 1979. However, in order to improve state-wide marine fisheries statistics and become more consistent with other states, Connecticut joined with the National Marine Fisheries Service (NMFS) Marine Recreational Fishery Statistics Survey (MRFSS) in July, 1987. Before Connecticut's involvement in the MRFSS, data collection was conducted by NMFS's contractor just as in other states where state agencies do not participate in the program. The MRFSS has undergone a series of procedural changes over recent years as an outcome of the National Research Council (NRC) independent review and findings in regards to the MRFSS and potential bias. As a result, a new survey was developed and initiated under the Marine Recreational Information Program or MRIP. A critical procedural change in the sampling design of MRIP was the implementation of twenty-four hour per day sampling in the Access Point Angler Intercept Survey (APAIS). Prior to 2013, APAIS sampling took place during daytime peak angling activity times under MRFSS procedures. In addition, MRIP night sampling requires two persons per assignment as a safety precaution. Under these new MRIP guidelines, this meant DEEP would have to possibly double or triple its current resources in order to participate. As a subcontractor to NMFS primary contractor, DEEP could not absorb those additional costs. Consequently, the primary contractor assumed full angler survey responsibility beginning in 2013. DEEP continues to manage the site registry for the MRIP survey. The Marine Angler Survey focus then shifted to collection of length frequency of both harvested and released fish to supplement the MRIP survey. Collection of length frequency data that included released fish was viewed as particularly important to support stock assessments as well as to better understand the recreational fishing experience in our state, both from shore and private boat.

METHODS

The CT Marine Angler Survey consists of collecting marine recreational fishing (finfish) information through a new voluntary catch card program. Anglers were recruited at selected private boat mode fishing sites by DEEP staff to voluntarily report their fishing trip information and collect length measurements on fish caught, including both caught and released fish (discards). Collecting length measurement information on discarded fish is difficult to obtain through traditional access point intercept surveys such as NOAA/NMFS Marine Recreational Information Program (MRIP). In addition, this program is designed to better characterize the private boat mode which lands a substantial proportion of fish caught in Connecticut (Table 1.1). The voluntary catch card was implemented in order to better understand the size composition on discarded fish as well as collecting other valuable recreational angler boat fishing trip data.

Table 1.1

NOAA Fisheries - Marine Recreational Information Program
Marine Angler Catch (Numbers of Fish) Estimates by Mode for Connecticut 2012

Mode	Total Catch	% Dist.	Kept/Harvest	% Dist.
Shore	768,237	12.1%	336,358	17.4%
Party Boat	84,526	1.3%	51,790	2.7%
Charter Boat	76,270	1.2%	55,563	2.9%
Private Boat	5,396,375	85.3%	1,490,616	77.1%
Total	6,325,408		1,934,327	

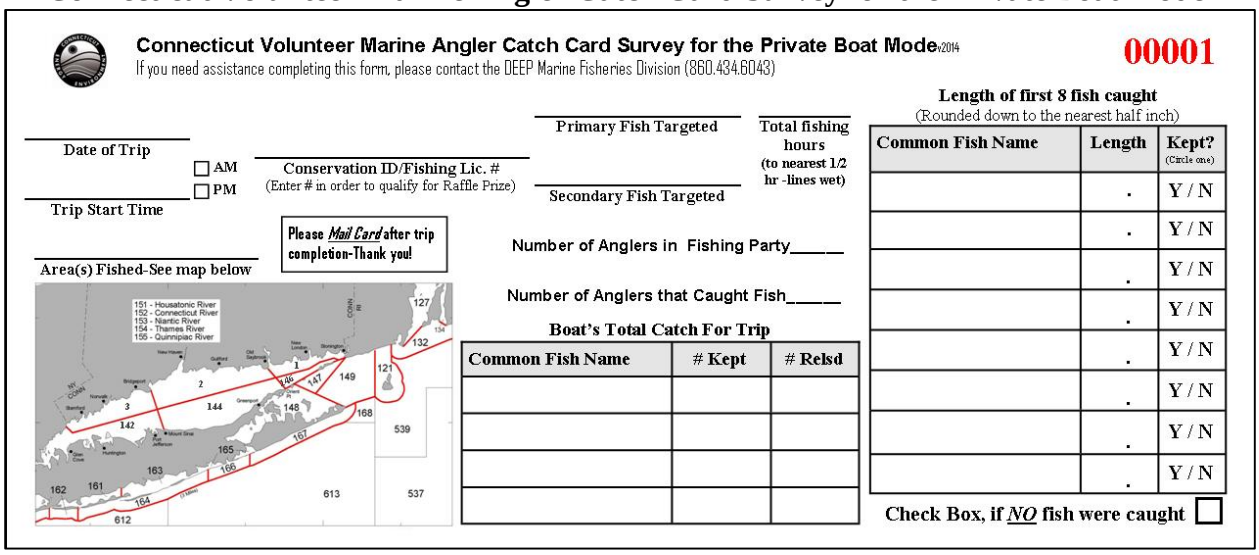
The catch card was designed to collect fishing trip effort and catch, including fish length information from boat anglers. Boat anglers were approached by DEEP staff and queried for eligibility and voluntary participation purposes. Post marked daily catch cards were distributed to anglers departing from selected private boat sites with high activity in order to maximize catch card distribution. Each participating boat angler or anglers fishing together in a group were provided a waterproof daily catch card, pencil, and measuring tape in addition to verbal instructions. Anglers were encouraged to drop off post marked catch cards in the mail upon trip completion or at designated drop-off-boxes installed at key fishing sites. This information will provide important angler trip and species catch data needed to effectively monitor and assess this component of the recreational fishery.

Boat anglers were asked to fill out the following (Figure 1.1):

- Date of Trip (mm/dd)/Trip Start Time (check box AM/PM)
- Conservation ID/Fishing License Number
- Primary Fish Targeted
- Secondary Fish Targeted
- Total Hours Fishing (lines wet)
- Areas Fished (see map)

- Number of Anglers that Caught Fish
- Number of Anglers in Fishing Party
- Boat's Total Catch for Trip
    - Total Number of Fish Caught and Disposition (Kept/Released)
- If No Fish Caught -Check Box
- Length of First 8 Fish Caught
    - Common Fish Name, Length, Disposition (Kept/Released)

Figure 1.1:
Connecticut Volunteer Marine Angler Catch Card Survey for the Private Boat Mode



Connecticut Volunteer Marine Angler Catch Card Survey for the Private Boat Mode v2014

If you need assistance completing this form, please contact the DEEP Marine Fisheries Division (860.434.6043)

00001

Date of Trip

☐ AM
☐ PM

Trip Start Time

Conservation ID/Fishing Lic. #
(Enter # in order to qualify for Raffle Prize)

Primary Fish Targeted

Secondary Fish Targeted

Total fishing hours
(to nearest 1/2 hr -lines wet)

Please *Mail Card* after trip completion-Thank you!

Area(s) Fished-See map below

151 - Housatonic River
152 - Connecticut River
153 - Niantic River
154 - Thames River
155 - Quinnipac River

Number of Anglers in Fishing Party_____

Number of Anglers that Caught Fish_____

Boat's Total Catch For Trip

Common Fish Name	# Kept	# Relsd

Length of first 8 fish caught
(Rounded down to the nearest half inch)

Common Fish Name	Length	Kept? (Circle one)
	.	Y / N
	.	Y / N
	.	Y / N
	.	Y / N
	.	Y / N
	.	Y / N
	.	Y / N
	.	Y / N

Check Box, if *NO* fish were caught ☐

Boat anglers were asked to enter catch information including common name(s) and number of fish kept and released in the spaces provided on the catch card. A check off box was provided if no fish were caught. Additionally, anglers entered common name(s) of the first eight fish captured regardless of species and size. Each fish was measured to the nearest ½ inch (rounded down) and recorded disposition by circling either Y (yes) or N (no) in the Kept column. The number of cards issued was categorized by a unique card identification number, date, site, and vessel registration of fishing boat was also recorded. All catch cards given out to anglers was accounted for through the card ID number. As an incentive to maximize participation, anglers entering their Conservation ID/Fishing License Number would be eligible for wining a raffle prize at year's end. All data were electronically entered and stored in ACCESS.

RESULTS AND DISCUSSION

DEEP staff completed 228 daily assignments and distributed 1,118 catch cards to boat based anglers at four state boat launch facilities. The launch areas were selected because of their

high usage ratings based on information compiled by NMFS' MRIP master site register database. These launch areas were located primarily in the eastern part of the state (Appendix 1.1).

A total of 309 cards were returned (27.6%) with 645 anglers reporting their fishing trip activities. Of the 645 anglers, 539 or about 84% of the anglers caught at least one fish. A total of 1,330 (27.7%) fish were kept and 3,471 (72.3%) fish were released (Table 1.2).

Anglers measured a total of 1,624 fish during the survey. Black sea bass, scup, striped bass, and summer flounder accounted for about 75% of the measured catch (Table 1.3).

MODIFICATIONS

None.

Table 1.2:

Angler Catch Percent Distribution by Species and Disposition

Species	Kept	%	Released	%	Total
Alewife	0	0.0%	1	100.0%	1
Black Sea Bass	280	26.8%	765	73.2%	1,045
Bluefish	81	24.5%	249	75.5%	330
Catfish	1	50.0%	1	50.0%	2
Cunnner	0	0.0%	1	100.0%	1
Dogfishes	0	0.0%	63	100.0%	63
Eels	0	0.0%	1	100.0%	1
False Albacore	4	16.0%	21	84.0%	25
Hickory Shad	2	1.2%	164	98.8%	166
Ladyfish	0	0.0%	6	100.0%	6
Menhaden	24	72.7%	9	27.3%	33
Northern Kingfish	0	0.0%	8	100.0%	8
Scup	528	47.6%	581	52.4%	1,109
Searobins	13	9.5%	124	90.5%	137
Skates	1	1.0%	102	99.0%	103
Smooth Dogfish	0	0.0%	4	100.0%	4
Squid	4	100.0%	0	0.0%	4
Striped Bass	44	15.9%	232	84.1%	276
Striped Searobin	0	0.0%	5	100.0%	5
Summer Flounder	234	28.0%	603	72.0%	837
Tautog	100	16.3%	512	83.7%	612
Triggerfishes	0	0.0%	1	100.0%	1
Jacks	0	0.0%	1	100.0%	1
Winter Flounder	14	45.2%	17	54.8%	31
Total	**1,330**	**27.7%**	**3,471**	**72.3%**	**4,801**

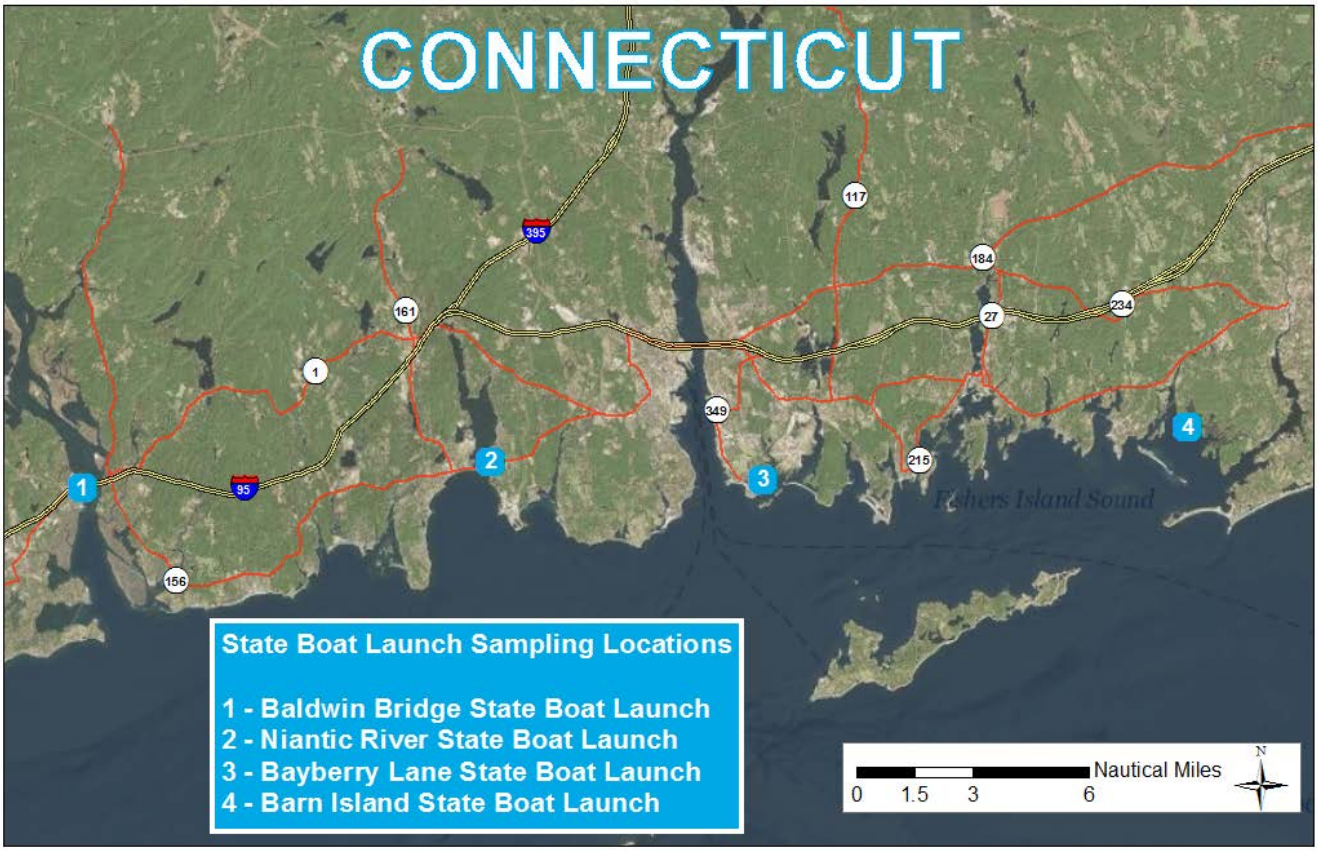
Table 1.3:

Total Number of Fish Measured by Volunteer Anglers

Species	Total Number of Fish Measured	% Distr.
Alewife	1	0.1%
Black Sea Bass	303	18.7%
Bluefish	123	7.6%
Catfish	2	0.1%
Cunner	1	0.1%
Dogfishes	21	1.3%
Eels	1	0.1%
False Albacore	19	1.2%
Hickory Shad	1	0.1%
Ladyfish	5	0.3%
Menhaden	8	0.5%
Northern Kingfish	1	0.1%
Scup	291	17.9%
Searobins	52	3.2%
Skates	19	1.2%
Striped Bass	175	10.8%
Summer Flounder	443	27.3%
Tautog	135	8.3%
Winter Flounder	23	1.4%
TOTAL	**1,624**	

Appendix 1.1:

Recreational Boat Angler Sampling Locations



MARINE ANGLER SURVEY

Job 2: Volunteer Angler Survey

VOLUNTEER ANGLER SURVEY

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JOB 2: VOLUNTEER ANGLER SURVEY

OBJECTIVES

Provide estimates of:
1) Size composition data on both kept and released bluefish, striped bass and other common species.
2) Catch frequency (trips catching 0,1, 2,.. fish) data on both kept and discarded fish.

INTRODUCTION

The purpose of the Volunteer Angler Survey (VAS) is to supplement the National Marine Fisheries Service, Marine Recreational Fishery Statistics Survey/Marine Recreational Information Program by providing additional length measurement data particularly concerning fish that are released. In 1994, the VAS program was incorporated into the Marine Angler Survey (Job 1) in order to improve and expand the survey.

The survey's initial objective was to collect marine recreational fishing information concerning finfish species with special emphasis on striped bass. In 1994, the collection of bluefish length measurements was added to the survey to fully understand that fishery. In 1997, length measurement information on other marine finfish was added to the survey. This report primarily consists of data collected in 2014.

METHODS

The VAS is designed to collect trip and catch information from marine recreational (hook and line) anglers who volunteer to record their fishing activities by logbook. The logbook format consists of recording fishing effort, target species, fishing mode (boat and shore), area fished (subdivisions of Long Island Sound and adjacent waters), catch information concerning finfish kept (harvested) and released, and striped bass and bluefish length measurements. In 1997, the logbook was modified in order to collect length measurement data on other species. Instructions for volunteers were provided on the inside cover of the postage paid logbook. Each participating angler was assigned a personal numeric code for confidentiality purposes. After the logbook data were computer entered, logbooks were returned to each volunteer for their own personal record. Furthermore, to improve communications with recreational anglers and to encourage more public input, volunteers were notified of upcoming public hearings including proposed and final changes in recreational fishing regulations.

New in 2013, the VAS program was incorporated into the Atlantic Coastal Cooperative Statistics Program (ACCSP) Standard Atlantic Fisheries Information System (SAFIS) eLogbook application. Under the ACCSP eLogbook application, the VAS database was upgraded from the previous outdated database system it was using. The VAS logbook format was slightly modified

so that the information collected would be compatible with ACCSP minimum data element standards (Appendix 2.1).

RESULTS AND DISCUSSION

Over the years the number of participants in the survey ranged from as low as 18 anglers participating in 1979 to a high of 115 anglers in 1997. Advertising the VAS program through the DEEP's annually published Connecticut Angler's Guide including the state web site www.ct.gov/deep/fishing has helped increase volunteer participation. The guide is distributed to anglers purchasing Connecticut fishing licenses in addition to being circulated by bait and tackle shops and other entities.

Initially in 2012 with the VAS database being housed and updated under ACCSP SAFIS, one of the primary purposes was that anglers would be able to enter their own fishing information and compile their own statistics using eLogbook. However, a data entry problem occurred concerning the 'fishing area' field. Because of the unique geographic location of Connecticut's shoreline including Long Island Sound, marine anglers can fish over multiple areas crossing interstate and federal boundaries during a single trip. Unfortunately, eLogbook software disabled data entering of certain 'fishing area' fields outside of Connecticut's marine waters. Nevertheless, the problem was resolved, but the concept of electronic reporting by volunteer anglers was postponed until 2014. As in previous years, paper logbooks were distributed to survey volunteers and Marine Fisheries staff performed VAS data entry.

VAS 2014

The Connecticut Volunteer Angler Survey (VAS) program has been in existence since 1979. In 2014, a total of 32 anglers participated in the program and made 661 trips averaging about 20 trips per year. The number of angler trips including all members in the fishing party was 1,435 (Table 2.1). The private boat mode comprised the most trips with 62% of all angler trips. Of that total, 1,176 angler trips or about 82% of the trips caught a total of 8,709 fish. VAS anglers caught a variety of species from near shore species to open ocean pelagic species (e.g. tuna). The top seven species important to Connecticut and currently under a fisheries management plan comprised about 80% of the total catch (Table 2.2). With the exception of winter flounder, the release rate for most species was over 70%.

VAS participants measured over 90% (7,860 fish) of the total catch (Table 2.3). In some cases, anglers measured every fish they caught (striped bass, summer flounder, tautog, and winter flounder). As previously mentioned, collecting length measurements especially on released/discarded fish is very difficult to obtain through conventional access point angler intercept surveys.

New for 2014 was SAFIS, where angler's computer entered their own data through eLogbook on the ACCSP website www.accsp.org. A total of 12 anglers participated in the

eLogbook application. Most of the anglers that entered their own data expressed favorable comments toward the program.

CONCLUSIONS

VAS anglers provide valuable recreational fisheries data at a relatively low cost. In addition, collecting length data on released fish is often difficult or unattainable through conventional access point angler intercept surveys. The VAS program provides this information which is essential in assessing the recreational fishery in Connecticut as required by the Atlantic States Marine Fisheries Commission. Any anglers interested in participating in the program can contact David Molnar at 860-434-6043, or e-mail address: david.molnar@ct.gov or writing to State of Connecticut, DEEP, Marine Fisheries Office, P.O. Box 719, Old Lyme CT 06371.

MODIFICATIONS

None.

ACKNOWLEDGEMENTS

I am very grateful to all anglers who have participated in the survey. Without their cooperation and assistance, the VAS program would be not possible.

Table 2.1 Distribution of Angler Trips by Mode

Mode	Trips[1]	%
Charter	6	0.4%
Headboat	42	2.9%
Private Boat	889	62.0%
Shore	420	29.3%
Enhanced Shore	78	5.4%
Total	**1,435**	

Trips[1]-Total number of trips in fishing party

Table 2.2 Angler Total Catch Distribution (in numbers) by Species and Disposition

	#Harvested	% Harvested	#Released	% Released	Total
Black sea bass	326	22.5%	1,125	77.5%	**1,451**
Bluefish	171	23.6%	553	76.4%	**724**
Scup	621	30.0%	1,447	70.0%	**2,068**
Striped bass	92	8.3%	1,012	91.7%	**1,104**
Summer flounder	208	20.8%	791	79.2%	**999**
Tautog	116	21.7%	419	78.3%	**535**
Winter flounder	29	74.4%	10	25.6%	**39**
Total	**1,563**	**22.6%**	**5,357**	**77.4%**	**6,920**

Table 2.3 Measured Catch Distribution (in numbers) by Species and Disposition

	#Harvested	% Harvested	#Released	% Released	Total
Black sea bass	316	22.6%	1,082	77.4%	**1,398**
Bluefish	158	22.7%	537	77.3%	**695**
Scup	536	27.5%	1,410	72.5%	**1,946**
Striped bass	92	8.3%	1,012	91.7%	**1,104**
Summer flounder	208	21.0%	781	79.0%	**989**
Tautog	116	21.7%	419	78.3%	**535**
Winter flounder	29	74.4%	10	25.6%	**39**
Total	**1,455**	**21.7%**	**5,251**	**78.3%**	**6,706**

APPENDIX 2.1: Connecticut Volunteer Angler Logbook

TAPE

CONNECTICUT VOLUNTEER ANGLER SURVEY

Rev. 2/2013 – 12 Trip

Angler Code

This space for office use only.

Logged _____

Entered _____

Checked _____

TAPE

Send Me ☐ *More Logbooks*

Connecticut Department of Energy & Environmental Protection
Bureau of Natural Resources
Marine Fisheries Division

TAPE

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 75 OLD LYME CT

POSTAGE WILL BE PAID BY ADDRESSEE

CT DEEP MARINE FISHERIES DIVISION
PO BOX 719
OLD LYME CT 06371-9973

VOLUNTEER ANGLER SURVEY INSTRUCTIONS

Listed below are instructions for filling out the logbook. Upon logbook completion, tape the prepaid postage logbook shut and drop it off in the mail. All information is kept confidential. Once the information is entered into the database, and error checked, the logbooks will be returned for your own records. If you are interested in online reporting please contact us.

The information provided by this report will help us in making fishery management decisions. Please help us by completing this report as accurately as possible.

If you have any questions or comments regarding the survey, please contact Rod MacLeod (rod.macleod@ct.gov) or Greg Wojcik (gregory.wojcik @ct.gov) at 860.434.6043.

Trip Header Record

The top of each page is for recording **each trip's header information**. In this section, make a new entry for each trip made. If you fill a logbook page before the trip is over, continue onto the next page. Use as many pages and books as necessary to record your fishing activity. If you have a multi-day trip, make only one entry for that trip.

Date Enter the date that your fishing trip occurred on.

Start Time Enter the time on a 24 hour clock (military time) that you started your fishing trip.

Mode Indicate the fishing mode by putting a check mark in the appropriate box. The Shore (Enhanced Site) option refers to the designated shore fishing sites along the Connecticut coast that allow for the harvest of smaller select species. See the anglers guide for more information.

Trip Effort Record

Enter the approprate fishing effort information for the fishing area.

Fishing Area Enter the code for the area in which you made your catch. Refer to the Fishing Area Chart on page iii for the appropriate area code. If you fish in the race along the border between area 6 and 147, please use area code 6.

Total Anglers Enter the total number of anglers that are in the fishing party.

Lucky Anglers Enter the number of anglers that caught fish in the fishing party.

Hours Fished Enter the actual fishing time or 'lines wet' to the nearest half hour. Do not include travel time.

Targeted Species Enter the 1st (Primary) targeted species and 2nd (secondary) targeted species.

VOLUNTEER ANGLER SUVEY INSTRUCTIONS (CONTINUED)

Trip Catch Record

Under each trip effort record are the associated catch records. Enter a catch row for each species, disposition (Kept/Released) and length. If you caught more fish then rows provide, continue onto the next effort or page as necessary. If you do not catch or harvest any fish, complete the trip header and effort information (Date to Targeted Species 2).

Species Enter the species code from the Species Code List below. If the species is not listed, write in the species name.

K / R Indicate if the fish were kept or released by writhing K (Kept) or R (Released). If you kept and released the same species indicate this by adding an additional row. If you kept and released the same species, complete two rows.

Length (in) Enter the length in inches of the fish. **ROUND DOWN TO THE NEAREST HALF INCH**. In previous years, the Volunteer Angler Survey requested rounding to the nearest half inch but rounding down helps produce more accurate data.

Quantity Enter the number of fish of that specific species, disposition (K/R), and length. If any of these fields change, create a new row. If additional rows are needed, continue onto the next page.

Species Code List

Groundfish

COD - Cod
HADD - Haddock
POLL - Pollock

Flounders

FLUK - Summer flounder / fluke
FLBB - Winter flounder / blackback

Other Finfish

BLU - Bluefish
BSB - Black sea bass
CUN - Cunner
EEL - Eel, American
MEN - Menhaden / bunker
WPRC - Perch, white
SCUP - Scup / porgy
SROB - Sea robins
HSHD - Hickory shad
STB - Striped bass

Other Finfish continued

TAUG - Tautog / blackfish
TRIG - Triggerfish
WEAK - Weakfish / squeteague / gray sea trout

Tuna / Large Pelagics

ALB - Albacore tuna
BET - Big eye tuna
BFT - Bluefin tuna
BON - Bonito
LTNY - Little tunny
SKJ - Skipjack
YFT - Yellowfin tuna
DOL - Dolphin fish / mahi-mahi
WAH - Wahoo

Sharks and Skates

DGSP - Dogfish, spiny
DGSM - Dogfish, smooth
SKAT - Skate
SHBL - Shark, blue

If you caught a species that does not appear in this list, write in the species name or contact the Marine Fisheries Division for the proper species code.

Date: ___ / ___ / ___ Start Time: ___ : ___

Mode: Private Boat ☐ Charter Boat ☐ Party Boat ☐ Shore ☐ Shore (Enhanced Site) ☐

Area	Total Anglers	Lucky Anglers	Hours Fished	Targeted Species 1	Targeted Species 2

Species	K/R	Length (in)	Quantity

Comments/Observations: _____

Long Island Sound and Vicinity Fishing Area Chart

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JOB 3: ENHANCED OPPORTUNITY SHORE FISHING PROGRAM

GOAL

To maintain and improve the fishing experience, opportunity and quality of access to public trust marine fisheries resources in Connecticut especially in urban areas, while maintaining marine fish conservation objectives.

OBJECTIVES

1. *Preserve the quality of shore fishing opportunity for species whose management is heavily minimum size dependent, while also meeting fishery management plan conservation objectives.*
2. *Collect data from the designated enhanced shore fishing sites necessary to gauge the biological and social impact of enhanced opportunity and whether fishery management plan harvest targets are still being met.*
3. *Create an "adopt-a-shore-site" relationship with tackle shops that are located near specific sites to help maintain and manage locations.*
4. *Establish contacts with local officials of town owned sites especially within urban areas to increase awareness and appreciation of quality shore based recreational fishing opportunity in their community.*
5. *Increase public awareness of the sites to encourage activity by increasing communication with tackle shops and anglers.*

INTRODUCTION

The Connecticut Department of Energy and Environmental Protection (DEEP), Bureau of Natural Resources, Marine Fisheries Division, has collected marine recreational fisheries information since 1979. Starting in 1987, Connecticut joined with the National Marine Fisheries Service (NMFS) Marine Recreational Fishery Statistic Survey (MRFSS) which in 2007 evolved into the Marine Recreational Information Program (MRIP). In 2013 a critical procedural change in the sampling design was implemented requiring 24 hour per day sampling for the Access Point Angler Intercept Survey (APAIS). Prior to 2013, APAIS sampling took place during daytime peak angling activity times only. In addition, MRIP night sampling required two persons per assignment as a safety precaution. Under these new MRIP guidelines, DEEP would have to double or triple its current seasonal staff to participate which would have been prohibitively costly in our capacity as a subcontractor to NMFS primary private contractor. Due to these concerns DEEP ended MRIP participation in 2013 and a NMFS contractor took over responsibility for conducting the MRIP APAIS in Connecticut. At the same time, DEEP identified a need to enhance fishing opportunity for shore based anglers. Starting in 2011 DEEP designated shore based fishing sites that allowed for less restrictive fishing regulations (see Appendix 8.1). Additionally, the Atlantic States Marine Fisheries Commission (ASMFC) Summer Flounder, Scup and Black Sea Bass Board requested that DEEP increase monitoring of the enhanced shore fishing sites to provide additional catch information since the number of shore mode intercepts completed by MRIP was significantly

lower at shore sites compared to other modes. This project was designed to meet that monitoring need.

METHODS

The DEEP developed a voluntary daily angler catch card program designed to collect fishing trip and catch information, including length measurements of harvested and released (discarded) fish, from recreational anglers at enhanced shore fishing sites. Collecting length measurement data, especially on discarded fish, is extremely difficult to obtain through traditional access point angler intercept surveys (i.e. MRIP). In past years, such length data has been successfully collected utilizing volunteer anglers to report their fishing trip information through a logbook survey (i.e. Connecticut Volunteer Angler Survey program (VAS, Job 2). The VAS program was used as a template for the more extensive catch card program (see Appendix 3.2).

There were five assignment zones containing a total of 39 sites from Stonington to Norwalk that were sampled (Figure 3.1). For each assignment, the zone, time of day (am or pm), starting site and direction of travel was randomly selected using the SAS 'ranuni' function. Upon arriving at a site, the creel agent would record:

- Date and time of creel agent arrival
- Weekend or weekday
- Site name
- Initial count of angler(s)
- Arrival and departure time of additional anglers
- Date and time of creel agent departure

Each angler was asked to participate in an angler survey to provide fishing effort and catch information. If they agreed, the creel agent would perform a partial trip interview. The following questions were asked:

- What time did you start fishing?
- Have you been interviewed by this program already this year?
- What species are you fishing for?
- How Many times do you go saltwater fishing per year?
- Of those, what percent are from shore?
- Are there any comments you would like to make about shore fishing in CT (Pro's or Con's).
- Have you caught any fish yet on this trip? If yes, how many fish of each species did you catch?

All fish caught while the creel agent is on site, are measured and recorded. To capture the remaining catch and effort information, each participating angler was provided a waterproof daily catch card, pencil, measuring tape, and verbal instructions were given by DEEP staff. Anglers were asked to fill out the following (data fields):

- Conservation identification number (fishing license number)
- Primary target species
- Secondary target species

- Total hours spent fishing
- Date (mm/dd/yy)/start time (check box AM/PM)
- Total number of fish kept and released by species
- Length measurements for the first seven fish caught.

Anglers were encouraged to mail in the post marked catch card, or deposit it into designated drop-off-boxes installed at fishing sites, upon trip completion. Questions concerning the survey could be answered by contacting the DEEP Marine Headquarters office.

RESULTS AND DISCUSSION

Survey volunteers provided important data characterizing individual angler trips, species specific catch rates and length measurements for both kept and discarded fish Catch cards distributed to shore anglers were categorized by identification number, date, and enhanced shore fishing site code. From May-November 2014 there were a total of 292 assignments totaling 2,092 cards distributed to anglers at enhanced shore fishing sites and 800 (34.5%) were returned. A total of 1,542 fish were reported caught (Table 3.1). Half of the fish (50%) were released due to regulatory discard or undesirable catch. The total harvest reported was 330 fish comprised of 11 species.

Length Information

Each individual angler reported common name(s) of the first seven fish captured regardless of species and size. Each fish was measured to the nearest ½ inch (rounded down) and disposition recorded. A total of 661 fish measurements were received, comprised of 11 species (Table 3.2). Bluefish, scup, striped bass and summer flounder were the most frequently harvested by anglers, comprising 90% of the total measured catch (Figure 3.1).

Enhanced shore fishing

Anglers fishing from designated enhanced opportunity shore fishing sites in 2014 were allowed to harvest scup at 9 inches minimum length (vs. 10.5 inches in other private fishing modes and 11 inches for party/charter modes) and summer flounder at 16 inches (vs 18 inches for other modes). The smaller minimum sizes were adopted out of concern that shore anglers were taking a disproportional share of conservation burden associated with the increased minimum sizes adopted in response to the harvest limits established under the joint ASMFC/MAFMC fishery management plans for these species. Shore fishing is a popular component of marine waters fishing in Connecticut with an MRIP estimated 437,339 such trips being made in 2014. Despite making up more than 30% of all 1.39 million marine fishing trips in Connecticut last year, scup and summer flounder harvest by shore fishermen (8,854 scup, 5,380 summer flounder) represented just 1.5% and 4.5%, of the state's harvest of these species, respectively.

Although sample sizes remain small, enhanced opportunity shore fishing site sampling in 2014 suggests the reduced minimum length requirements at these sites improved success rates for shore scup anglers by 21% and shore summer flounder fishermen by 29%

MODIFICATIONS

No modifications are expected, however objectives 4 and 5 will be further emphasized in 2015.

Table 3.1: Assignments by month and zone

MONTH	ZONE1	ZONE2	ZONE3	ZONE4	ZONE5	TOTAL
MAY	6	7	5	6	5	**29**
JUNE	9	9	10	7	8	**43**
JULY	11	10	8	9	9	**47**
AUGUST	11	10	10	9	9	**49**
SEPTEMBER	10	9	10	8	9	**46**
OCTOBER	13	8	9	9	9	**48**
NOVEMBER	6	7	6	6	5	**30**
TOTAL	**66**	**60**	**58**	**54**	**54**	**292**

Table 3.2: Sites visited by month and zone in 2014

MONTH	ZONE1	ZONE2	ZONE3	ZONE4	ZONE5	TOTAL
MAY	34	46	29	53	29	**191**
JUNE	63	79	56	61	48	**317**
JULY	76	89	46	82	54	**347**
AUG	76	90	54	81	54	**355**
SEPT	70	81	60	72	54	**337**
OCT	90	68	53	77	54	**342**
NOV	42	59	36	48	28	**213**
TOTAL	**451**	**512**	**334**	**474**	**321**	**2,092**

Table 3.3: Number of fishing parties intercepted (Intercepts) and total number of anglers interviewed in 2014

MONTH	INTERCEPTS	ANGLERS INTERVIEWED
MAY	144	206
JUN	322	553
JUL	420	686
AUG	481	758
SEPT	312	512
OCT	219	340
NOV	32	51
TOTAL	**1930**	**3106**

Table 3.4: Catch disposition from Enhanced Shore Fishing Sites in 2014

SPECIES	RELEASED	KEPT	TOTAL
ATLANTIC MACKEREL		1	1
ATLANTIC MENHADEN	13	65	78
BLACK SEA BASS	2	1	3
BLUEFISH	245	466	711
CUNNER	1		1
DOGFISH UNC	3		3
HICKORY SHAD	27	15	42
SCUP	109	268	377
SEA ROBINS UNC	136	7	143
SKATES UNC	3		3
STRIPED BASS	55	14	69
SUMMER FLOUNDER	70	13	83
TAUTOG	17	8	25
WHITE PERCH	1	2	3
COMBINED TOTAL	**682**	**680**	**1,542**

Table 3.5: Length measurement distribution from Enhanced Shore Fishing Sites

SPECIES	MEASURED BY ANGLER	MEASURED BY AGENT	TOTAL LENGTHS
ATLANTIC MENHADEN	6	6	12
BLACK SEA BASS	2		2
BLUEFISH	127	130	257
CUNNER	1		1
HICKORY SHAD	5	8	13
SCUP	94	139	233
SEA ROBINS UNC	9	4	13
STRIPED BASS	40	15	55
SUMMER FLOUNDER	37	12	49
TAUTOG	13	8	21
WHITE PERCH	2	1	3
COMBINED TOTAL	**338**	**323**	**661**

Table 3.6: MRIP 2014 effort and harvest statistics for Connecticut by mode.

Estimate Status	Year	Fishing Mode	Angler Trips	PSE
FINAL	2014	SHORE	437,339	20.8
FINAL	2014	PARTY BOAT	19,155	3.4
FINAL	2014	CHARTER BOAT	71,390	6.1
FINAL	2014	PRIVATE/RENTAL BOAT	865,347	13.6
TOTAL			1,393,231	

Estimate Status	Year	Common Name	Fishing Mode	Total Harvest (A+B1)	PSE
FINAL	2014	SCUP	SHORE	8,854	83.1
FINAL	2014	SCUP	PARTY BOAT	49,960	23.3
FINAL	2014	SCUP	CHARTER BOAT	8,794	73.9
FINAL	2014	SCUP	PRIVATE/RENTAL BOAT	497,218	20.2
TOTAL				564,826	

Estimate Status	Year	Common Name	Fishing Mode	Total Harvest (A+B1)	PSE
FINAL	2014	SUMMER FLOUNDER	SHORE	5,380	79.4
FINAL	2014	SUMMER FLOUNDER	PARTY BOAT	421	70.6
FINAL	2014	SUMMER FLOUNDER	CHARTER BOAT	0	.
FINAL	2014	SUMMER FLOUNDER	PRIVATE/RENTAL BOAT	113,701	21.8
TOTAL				119,502	

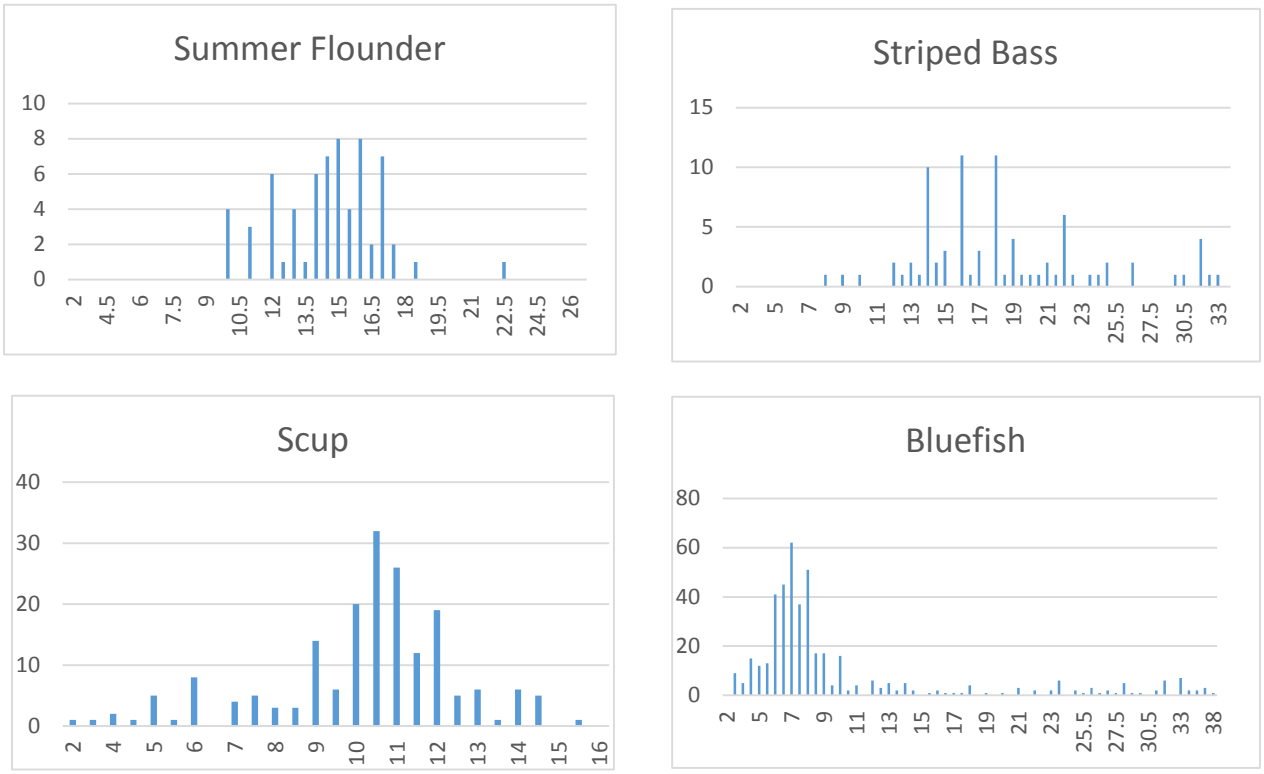

Figure 3.1: Length frequencies of popular marine fish measured at Enhanced Opportunity Shore Fishing Sites. Total length is rounded down to the nearest half inch.

Appendix 3.1

Appendix 3.2

00001

Site Number

Date Distributed

Time Distributed

Fishing Mode

Vessel Registration Number

CT Fishing Quality Evaluation (Individual Fisherman Card)

If you need assistance completing this form, please contact the DEEP Marine Fisheries Division (860.434.6043)

00001

(One card per angler/trip) Please place this card in the mail after completing the trip.

Trip Date:

Conservation ID (Found on your Fishing License)

Primary Targeted Species

Secondary Targeted Species

☐ I did not catch any fish today

Angler's Total Catch For The Trip
(Use Tally Marks in # Kept and # Rlsd Column's)

Species	# Kept	# Rlsd
Porgy (example)	++++ ||	++++

Length of first seven fish caught
(Rounded down to the nearest half inch)

Species	Length	Kept?
Fluke (example)	16.5	Y/N
	.	Y/N
	.	Y/N
	.	Y/N
	.	Y/N
	.	Y/N
	.	Y/N
	.	Y/N

JOB 4: TACKLE SHOP COOP SURVEY

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GOAL

Create working relationships with coastal tackle shops and supplement recreational fishery catch statistics to be used in the analysis of recreational management measures.

OBJECTIVES

1) Provide length composition estimates for marine recreational finfish catches, both kept and released, from participating tackle shop customers.
2) Provide creel data (number of fish harvested per angler trip) from participating tackle shop customers.
3) Create a shore site sponsorship with tackle shops that are located near specific sites to help maintain and manage locations.
4) Increase public awareness of these sites to encourage activity by increasing communication with tackle shops and anglers.
5) Establish contacts with local officials of town owned sites especially within urban areas to increase awareness and appreciation of quality shore based recreational fishing opportunity in their community.

INTRODUCTION

The focus of the Tackle Shop Coop Survey is to build cooperation with tackle shop personnel along the Connecticut coastline to help increase awareness of shore fishing sites. This job was also intended to provide supplemental catch, effort and size composition for several marine species by distributing angler catch report forms to anglers through tackle shops.

METHODS

Tackle shops that are in close proximity to shore sites were asked to participate by sponsoring a shore fishing site. The Department provided these tackle shops with publicity materials such as sponsored shop signs at their chosen fishing site and on the Department's website. The tackle shop personnel were then asked to increase awareness of the sites with customers and keep the Department informed of maintenance needs and fishing activity at the sites.

In addition, Reporting Cards (see Job 3) were distributed to all tackle shops along the Connecticut coastline to be handed out to anglers patronizing these shops. Recreational fishery dependent catch, harvest and length composition data will be collected from fishermen using the procedures outlined in Job 3.

RESULTS

Tackle shops contacted were interested in fishing access issues and generally supported efforts to improve fishery data to support management. However, active involvement in these efforts was not sustainable because of their need to focus on servicing customers and running their businesses. Display space is also at a premium making shops reluctant to display shore access site materials or catch cards. Time required to explain the purpose of the catch cards and how they should be completed was also lacking as employees understandably needed to focus on helping customers who are generally trying to get what they need and be on their way to begin a day of fishing.

Efforts to increase communication with shops has paid off however, in terms of the input we have received on our enhanced shore fishing access program. One tackle shop in New London now advocates for shore anglers at a major local state owned fishing access site when marine fishing regulations are being discussed at annual public hearings held to guide our state's response to Atlantic States Marine Fisheries Commission mandates on harvest limits.

Two other shops have come forward with suggestions for adding enhanced shore fishing access sites in their areas. In response, the agency has designated a site in Old Saybrook and another in the center of New Haven. The same New Haven tackle shop owner has also successfully advocated for maintaining the enhanced shore fishing site designation at another New Haven location damaged by storms. His customers let him know this site was still accessible and productive. He, in turn, let us know how valued this site remained for his customers which lead the agency to restore the enhanced shore fishing site designation to this access point. Good working relationships maintained through greater communication efforts with our local tackle shops have improved our ability to serve our shore based angling community.

Since there is a high percentage of Enhanced Shore Fishing Sites that are town and city owned along the shoreline, keeping in contact with town officials has helped in the success of promoting the use angling at the sites. In many cases, town officials have taken the responsibility of posting and maintaining signs identifying sites as well as signs that provide fishing regulations to the anglers using the sites.

MODIFICATIONS

Given lessons learned during the first year of this project, objectives 1, 2 and 3 under job 4 are being eliminated.

Fishery catch and harvest information is being more effectively collected under jobs 1 ,2 and 3 and it is clear that tackle shops are unable to invest the time required to sponsor shore fishing sites in their areas, although they have proven to be strong advocates for such sites which is equally valuable.

Consistent with this narrower focus on strong communications and relationships with local tackle shops, particularly as partners in promoting shore fishing access, objectives 4 and 5 will be added to Job 3 in 2015, and Job 4 as a separate program will be discontinued.