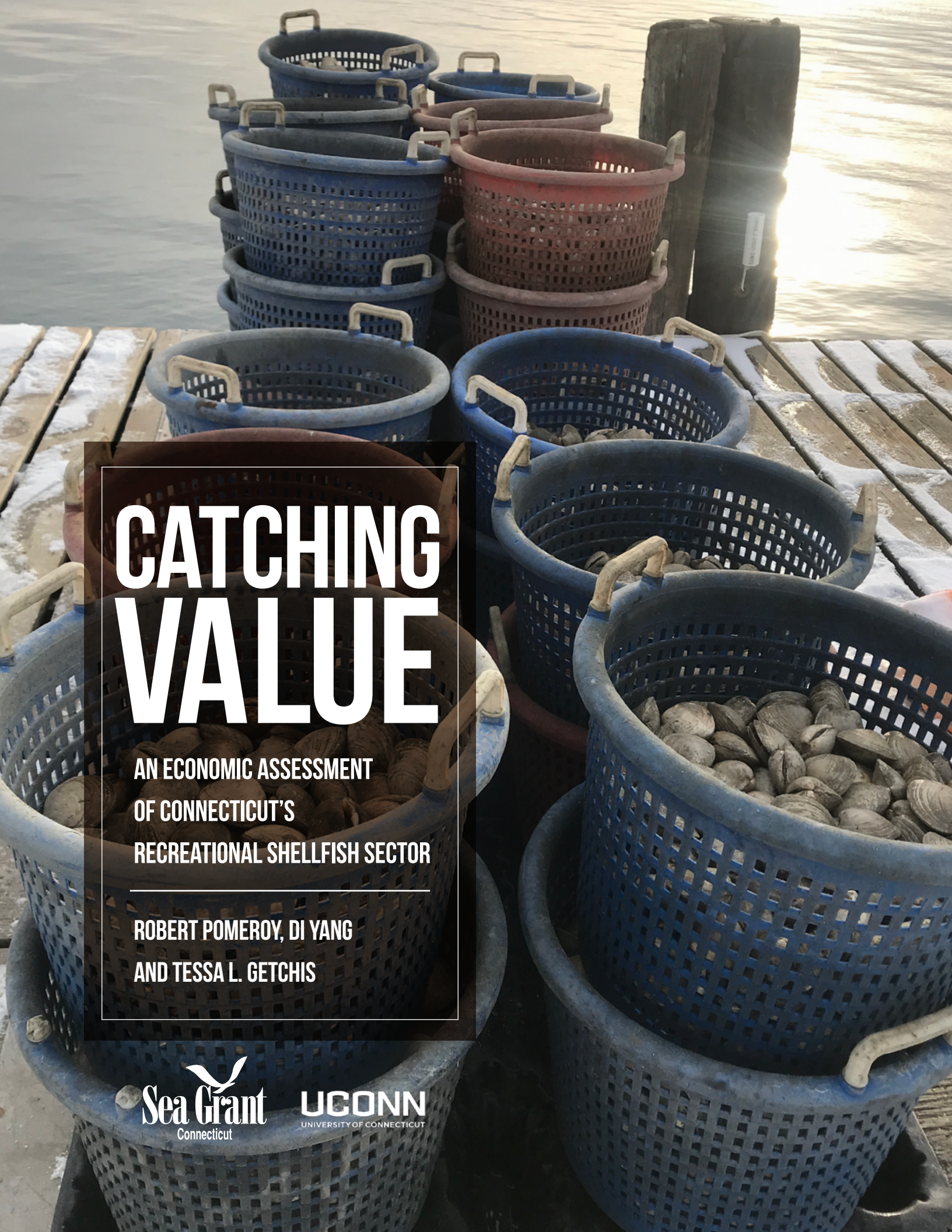

CATCHING VALUE

AN ECONOMIC ASSESSMENT OF CONNECTICUT'S RECREATIONAL SHELLFISH SECTOR

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EXECUTIVE SUMMARY

Each year in Connecticut, nearly 10,000 people obtain recreational shellfishing permits from municipal shellfish commissions.

A statewide economic assessment of recreational shellfishing was undertaken to place a dollar value on the economic importance of this maritime sector in Connecticut.

The study focused on 13 communities with active recreational shellfishing programs (Branford, Darien, East Lyme, Fairfield, Greenwich, Groton, Guilford, Madison, Norwalk, Stonington, Waterford, Westport and the joint Waterford-East Lyme Shellfish Commission).

COVER PHOTO:
CLAMS IN STONINGTON.

In 2015, 7,994 permits were sold in the 13 communities with a permit sales value of $173,895. The average annual permit sales for the study period of 2005-2015 was $115,607.

BELOW:
STONINGTON SHELLFISH COMMISSION MEMBERS PLANT CLAMS IN RECREATIONAL AREA.

An economic model was used to capture the scope of the recreational shellfishing sector. This includes its linkages to the rest of the state economy through direct and indirect sales into statewide economic output and jobs to account for recreational shellfishing sectors' purchase of goods and services from other segments of the state economy.

The recreational shellfishing sector had an overall annual economic impact of more than $1.6 million on the state's economy in 2015.

The total value-added impacts (money earned by state residents which induces further economic activity in the state) of the recreational shellfishing sector on the state's economy in 2015 was more than $1 million.

The total employment impact of the recreational shellfishing sector in 2015 was 16.7 jobs, primarily in the marina and retail store sectors.

SHELLFISHERMAN JOHN SHORT AND HIS SON GATHER OYSTERS AND CLAMS IN FAIRFIELD.

1 INTRODUCTION

Connecticut is a major producer of molluscan shellfish, including oysters, clams, mussels and scallops. The state has a long, rich history and tradition of recreational and commercial shellfishing dating back to the Colonial period. Shellfishing is an important component of Connecticut's economy and its recreation and tourism industries. It is estimated that there are nearly 70,000 acres of underwater property dedicated to farming or harvesting shellfish in the state. This number doesn't include natural populations of shellfish, commercially valuable or not, that occupy vast tracts of sea bottom. The shellfishing industry in Connecticut has several sub-sectors including recreational shellfishing, commercial harvest and commercial aquaculture. The purpose of this report is to present the results of an economic assessment of the recreational shellfish sector in Connecticut.

Recreational shellfish harvest opportunities exist in most coastal towns. Each year, nearly 10,000 people obtain recreational shellfishing permits from town shellfish commissions and head to Connecticut's tidal flats and coastal waters to harvest a variety of shellfish. Many of the recreational

harvesters are from inland towns far from the coast and out-of-state. For example, two-thirds of recreational permits sold in the Town of Stonington and about half of those from the Town of Guilford are issued to non-residents.

THE FEES FROM RECREATIONAL PERMIT SALES ARE USED TO PURCHASE SHELLFISH TO RESTOCK THE HARVEST AREAS, HIRE WARDENS TO PATROL THE SHELLFISH GROUNDS AND ADD SUPPORT FOR NUMEROUS OTHER ACTIVITIES TO SUPPORT RECREATIONAL HARVEST.

Recreational shellfishing provides a safe and wholesome source of food, while simultaneously encouraging public interest in the marine environment. Recreational shellfishing not only engages the public with Long Island Sound, it connects the public to the commercial sector of the shellfish industry. A robust recreational program bolsters consumer confidence in the safety of locally caught shellfish. Without recreational shellfish permits, these harvesters might have less of a vested interest in the health and water quality of Long Island Sound.

Municipal shellfish commissions are responsible for managing the shellfisheries and shellfish grounds within the boundaries of their town in cooperation with the State of Connecticut Department of Agriculture/ Bureau of Aquaculture. Shellfish commissions are comprised of volunteer members appointed by their town leadership. Their primary responsibilities include collecting water and shellfish meat samples, notifying the public of harvest area closures, managing permit sales, leasing or licensing commercial harvest areas and restocking areas as necessary. Additionally, many commissions are engaged in community outreach. The commission members are volunteers and provide in-kind services through their time and effort.

The fees from recreational permit sales are used to purchase shellfish to restock the harvest areas, hire wardens to patrol the shellfish grounds and add support for numerous other activities to support recreational harvest. Local seed shellfish are typically purchased from aquaculture farms, which benefits the commercial sector and fosters a positive relationship between the towns and the local industry. Several commissions cultivate shellfish for fisheries enhancement or restoration purposes. The revenue from permit sales and ancillary goods and services (such as rakes, baskets, gauges, gas, food and ice) purchased contributes to the local economy.

GROTON SHELLFISH WARDENS AL POTTER AND AL POTTER JR. ASSIST WITH A RESEARCH PROJECT TO BETTER UNDERSTAND HOW WATER QUALITY IMPACTS SHELLFISH POPULATIONS.

2 CATCHING VALUE

As part of the Connecticut Shellfish Initiative, University of Connecticut economists and Sea Grant Extension staff have undertaken the first statewide economic assessment of recreational shellfishing.

The recreational shellfishing study was conducted through a four-step process:

1. Obtain information on permit record-keeping practices in each town
2. Collect town permit sales data including permit types, number sold and revenue
3. Survey town permit vendors and wardens to estimate spending by permit holders
4. Assess economic impact using IMPLAN for the years 2012 and 2015

FAIRFIELD SHELLFISH COMMISSION MEMBERS GATHER AFTER THEIR COMMUNITY CLAM DIG.

3 VALUE OF RECREATIONAL SHELLFISHING PERMIT SALES

Of the 19 towns having shellfish commissions in 2014, the 13 active recreational shellfishing programs were selected as the focus of the study. This included the communities of Branford, Darien, East Lyme, Fairfield, Greenwich, Groton, Guilford, Madison, Norwalk, Stonington, Waterford, Westport and the joint Waterford-East Lyme Shellfish Commission (which has jurisdiction over shellfishing in the Niantic River).

In late 2014, a survey of town shellfish commissions was undertaken to better understand their respective permit record-keeping practices. The commissions were asked several questions on the type of information on recreational shellfishing permit holders collected, permit types sold and permit records on file. Of the 13 commissions that responded regarding the number of years that they have kept records, two shellfish commissions have been keeping records on permit sales for less than five years, two commissions have been keeping records for six to 10 years, and seven have been keeping records for more than 11 years. Of the 13 commissions that responded regarding the format of their permit records, six shellfish commissions keep paper permit records and six keep electronic records. All the shellfish commissions sell annual harvest permits, while some also sell monthly, weekly or daily permits.

In early 2015, a survey was sent to the shellfish commissions asking them to provide information on permit sales which included the number sold by permit type and associated fees from 2005 onward. Responses were obtained from all 13 communities. The data availability is shown in Table 1 with non-available years of data in gray. The average number of years of available permit records from the 13 communities is 8.2 years. The longest history of record is from the town of Stonington, which covers all 11 years from 2005 to 2015. The towns of Greenwich and Madison have the shortest history of permit records of five years. The permit records are available for all 13 towns over the period of 2011 to 2014. In 2017, a second survey was sent to the shellfish commissions asking for the same information to update all permit record information to 2015. This was obtained from all 13 towns.

TABLE 1: RECREATIONAL SHELLFISHING PERMIT DATA AVAILABILITY BY TOWN

STONINGTON	BRANFORD	FAIRFIELD	GUILFORD	DARIEN	WELSCO	EAST LYME	WESTPORT	WATERFORD	GROTON	NORWALK	GREENWICH	MADISON
2005	2005	2005	2005	2005	2005	2005	2005	2005	2005	2005	2005	2005
2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006
2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009
2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010
2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011
2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
2015	2015	2015	2015	2015	2015	2015	2015	2015	2015	2015	2015	2015

THE AVERAGE NUMBER OF YEARS OF AVAILABLE PERMIT RECORDS FROM THE 13 COMMUNITIES IS 8.2 YEARS. THE LONGEST HISTORY OF RECORD IS FROM THE TOWN OF STONINGTON, WHICH COVERS ALL 11 YEARS FROM 2005 TO 2015.

TABLE 2. AGGREGATE PERMIT SALES AND PERMIT SALES REVENUE FOR 13 COASTAL COMMUNITIES 2005-2015

From an aggregate perspective, shown in Figure 1 and Table 2, a clear upward trend is observed for both permit sales and permit sales revenue for the years 2005 to 2015. In 2007, permit sales and permit sales revenue increased by more than 30 percent. With such a significant increase on the demand side, several towns increased their permit prices, and that resulted in a 53 percent increase in the permit sales revenue in 2008. The increased price did not slow the demand for recreational shellfishing, and permit sales increased about 35 percent in the following year. The permit sales and permit sales revenue peaked in 2015, with 7,994 permits sold and the value of permit sales of $173,895. The increase in 2015 reverses a downward trend in permit sales and revenue. The average annual permit sales for the study period was $115,607.

The three towns with highest annual number of permits sold are the towns of Groton (1589), Guilford (1016), and Westport (845) (Figure 2 and Table 3).

FIGURE 1. AGGREGATE PERMIT SALES AND PERMIT SALES REVENUE FOR 13 COASTAL COMMUNITIES 2005-2015

YEAR	NUMBER OF PERMITS SOLD	PERMIT SALES REVENUE
2005	2193	$ 42,600
2006	2138	$ 44,540
2007	2815	$ 57,666
2008	3793	$ 88,083
2009	5260	$ 111,455
2010	6149	$ 140,761
2011	6341	$ 128,338
2012	6519	$ 133,477
2013	5535	$ 118,827
2014	5333	$ 116,436
2015	7994	$ 173,895

As for the average annual permit sales revenue, the towns of Guilford ($39,769), Groton ($29,468), and Westport ($15,617) rank as the top three.

FIGURE 2. AVERAGE NUMBER OF PERMITS SOLD (LEFT). AVERAGE PERMIT SALES REVENUE (RIGHT)

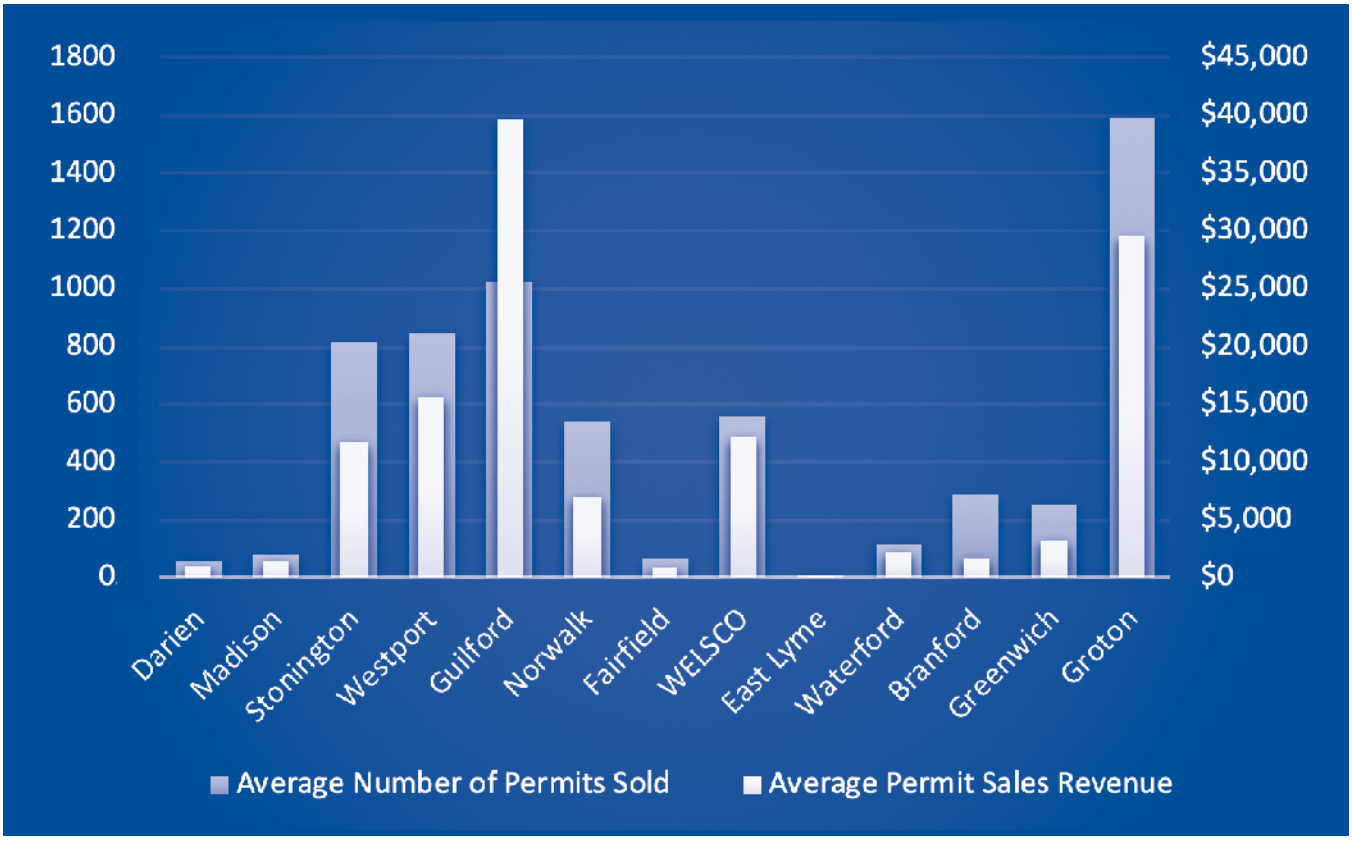

TABLE 3. ANNUAL AVERAGE NUMBER OF PERMITS SOLD AND PERMIT SALES REVENUE FOR 13 COASTAL COMMUNITIES

	TOTAL PERMITS SOLD	TOTAL SALES REVENUE	YEARS OF RECORD	AVERAGE ANNUAL NUMBER OF PERMITS SOLD	AVERAGE ANNUAL PERMIT SALES REVENUE
Darien	515	$8,480	9	57.2	$942
Madison	387	$6,995	5	77.4	$1399
Stonington	8959	$128,875	11	814.5	$11716
Westport	6760	$124,935	8	845.0	$15617
Guilford	10156	$397,685	10	1015.6	$39769
Norwalk	3223	$42,211	6	537.2	$7035
Fairfield	682	$8,386	10	68.2	$839
WELSCO	4998	$110,278	9	555.3	$12253
East Lyme	21	$633	8	2.6	$79
Waterford	820	$16,249	7	117.1	$2321
Branford	2841	$16,838	10	284.1	$1684
Greenwich	1521	$19,519	6	253.5	$3253
Groton	11126	$206,277	7	1589.4	$29468

4 VALUE OF GOODS AND SERVICES

Like any other sector of the Connecticut economy, recreational shellfishing includes the purchasing of goods and services from other sectors, as well as hiring of local labor. Its economic impact cascades throughout the state's economy. This analysis estimated the total economic impact of the recreational shellfish harvest through the use of an economic model of the Connecticut economy for the years 2012 and 2015.

4.1 METHODOLOGY

This analysis utilized an input-output model that captures the scope of the recreational shellfishing sector, its linkages to the rest of the state economy, and translated direct sales into statewide output and jobs to account for shellfishing sector purchase of goods and services from other sectors.

In economics, an input-output model is a quantitative economic technique that represents the interdependencies between different branches of the economy (Isard 1960; Lahr and Dietzenbacher 2001; Leontif 1986; Miller and Blair 2009; Ten Raa 2005; U.S. Department of Commerce 1997). Wassily Leontif developed this type of analysis. Leontif's contribution was to state the model in such a way as to make computation feasible. He used a matrix representation of a nation's (or a region's) economy and the model depicts inter-industry relations of an economy. It shows how the output of one industry is an input to each other industry. A given input is typically enumerated in the column of an industry and its outputs are enumerated in its corresponding row. This format, therefore, shows how dependent each industry is on all others in the economy both as customer of their outputs and as supplier of their inputs. Each column of the matrix reports the monetary value of an industry's inputs and each row represents the value of an industry's outputs. Because the input-output model is fundamentally linear in nature, it lends itself well to rapid computation as well as flexibility in computing the effects of changes in demand. The structure of the input-output model has been incorporated into national accounting in many developed countries, and as such forms an important part of measures such as GDP (Gross Domestic Product, an indicator of the health of the nation's economy). In addition to studying the structure of national economies, input-output economics have been used to study regional economies within a nation, and as a tool for national and regional economic planning. Indeed, a main use of input-output analysis is for measuring the economic impacts of events as well as public investments or programs. But it is also used to identify economically-related industry clusters and also so-called key or target industries—those that are most likely to enhance the internal coherence of a specified economy. By linking

industrial output to satellite accounts articulating energy use, effluent production, space needs, and other factors, input-output analysts have extended the application of this approach to a wide variety of uses.

This study used IMPLAN (IMpact analysis for PLANning: Minnesota IMPLAN Group, Inc.) software to evaluate the economic impacts of Connecticut's recreational shellfishing sector; aiming to capture the scope of the shellfishing sector, its linkages to the rest of the state economy, and to assess its contribution to statewide output and jobs. IMPLAN is a widely used model for input-output analysis. The IMPLAN model has recently been used to evaluate the economic impacts of Connecticut's agriculture industries including the aquaculture sector (Lopez et al. 2017).

IMPLAN looks at incremental impacts as a sector increases or decreases in activity via built-in multipliers based on input-output tables of the economy. The IMPLAN model uses as input the direct sales from a sector of the industry and calculates economy-wide impacts through multipliers. Generally, economic multipliers estimate the economy-wide impact on related economic sectors of changes in one sector in the identified economy, such as a state, across all other sectors of the economy. An important feature of the IMPLAN model is that it focuses on "supply" to an industry, treating the sector of interest as the point of final demand.

The IMPLAN analysis was conducted for two time periods—2012 and 2015—as those were the time periods when the IMPLAN software was available to conduct the analysis.

4.2 MEASURES OF IMPACT

The IMPLAN model provides a means to capture not only the direct impact of maritime industries but also the indirect and induced impacts that occur when maritime industries' dollars work their way through the economy. To be more specific, IMPLAN uses three effects to measure economic impact: direct effect, indirect effect and induced effect.

- Direct effect refers to production change associated with a change in demand for the good itself. It is the initial impact to the economy;
- Indirect effect refers to the secondary impact caused by changing input needs of directly affected industries (i.e., additional input purchases to produce additional output);
- Induced effect is caused by changes in household spending due to the additional employment generated by direct and indirect effects.

Using the IMPLAN model, the study assessed three indicators of the economic importance or impacts of maritime industries: (1) total impact on output, the value of which is measured by sales in Connecticut; (2) total impact on employment, which includes full-time and part-time jobs generated in Connecticut; and (3) total impact on value added, which measures the value added to raw materials.

In addition, input-output models incorporate several assumptions that impose some limitations on the interpretation of results:

- The input-output model assumes a constant production function for each firm within the industry. The economies of scale are not taken into account in the input-output model. For example, it assumes that the small and the large firm will use the same inputs in the same proportions;
- Output is assumed to be homogeneous assuming that the two firms would produce the same percentage of goods and services;
- Input-output model assumes that there are no additional constraints on the supply side of any commodity.

4.3 SECTOR SELECTION AND ASSUMPTIONS

This study used the U.S. Department of Commerce (DOC) classification of sectors of the economy. This classification divides the economy into 440 sectors. Six primary economic sectors that cover most economic activities that would be involved in recreational shellfishing were selected for the analysis. These activities include the consumption of food and beverages; ice; gasoline for boat and car; purchase, replacement and maintenance of harvest equipment; marina services and boat repair and maintenance.

- Sector 324: Retail Store-Food and beverages (food stores, package stores, food markets)
- Sector 326: Retail Store-Gasoline Station (gasoline stations, gasoline stations with convenience stores, marine service stations)
- Sector 328: Sporting goods, hobby, book, music (rakes, baskets, gauges, sporting equipment)
- Sector 330: Retail Stores-Miscellaneous (boating equipment, clothing)
- Sector 409: Amusement parks, arcades, and gambling industries (boating clubs with marinas, marinas, sailing clubs with marinas, yacht clubs with marinas)

- Sector 418: Personal and household goods repair and maintenance (boat, pleasure, repair and maintenance services without retailing new boats; outboard motor repair shops; sporting equipment repair and maintenance without retailing new sports equipment)

By specifying the sectors that interact economically throughout the recreational shellfishing activities, several assumptions were made:

- Permit is sold as individual specific, which means one permit can only be used by one specific person.
- The average number of trips to shellfishing is 10 per person in a year.
- The cost for a single trip to shellfishing is 23 dollars for each person, including gas ($10), food ($8), and ice ($5). Permit cost is not included.
- 70% of all permit holders use a boat to get to shellfish grounds after arriving at the coast/water with an average of four hours in boat ($25/hour).
- The ownership costs of all boat users include marina service (50%) and boat maintenance service (50%).
- There is 10% replacement of equipment with a cost of $100.
- The cost of cooking shellfish is $40 including a pot, thongs and electricity/gas.

4.4 STUDY CAVEATS AND LIMITATIONS

This was a preliminary analysis of the economic value of the recreational shellfishing in Connecticut. The study will be limited to the market value of recreational shellfishing, relying on secondary data provided by the U.S. Department of Commerce. It should be noted that the estimated impacts are limited to Connecticut's economy. This study did not analyze the non-market value of ecosystem services provided by natural resources of the Connecticut coast. Ecosystem services (ecological services) are economic benefits provided to society by nature such as water filtration, flood reduction and drinking water supply. Nor did the study estimate the market value of natural resources (the value of ecosystem services) of the Connecticut coast for habitat such as wetlands and marine waters. These non-market benefits that are not measured by market earnings are equally important when one measures economic benefits of the industry. However, this would have required more resources than are currently available and some primary data collection. The current study will serve as a foundation for these additional analyses.

4.5 RESULTS AND ANALYSIS

The total output impacts using state level data for recreational shellfishing in Connecticut in 2012 was $1,576,874. This increased to $1,661,386 in 2015. Detailed information on output impact for each of six selected sectors is shown in Table 4. In the output impact, marina services and boat maintenance services are the sectors contributing the most to the economy among all six sectors. They are followed by food and beverage, ice and gasoline consumption. Due to the small cost and low frequency of tool replacement and maintenance, this sector contributes a small amount to the total output impact of shellfishing industry.

4.5.1 TOTAL OUTPUT IMPACTS

TABLE 4. TOTAL OUTPUT IMPACTS 2012

OUTPUT	TOTAL EFFECT
Retail store – food and beverage (sector 324)	$ 271,253
Retail store – gasoline (sector 326)	$ 176,682
Tool replacement and maintenance (sector 328)	$ 4,766
Retail store – ice (sector 330)	$ 264,909
Marina services (sector 409)	$ 437,652
Boat maintenance services (sector 418)	$ 421,612
TOTAL	$1,576,874

TABLE 5. TOTAL OUTPUT IMPACTS 2015

OUTPUT	TOTAL EFFECT
Retail store – food and beverage (sector 324)	$ 282,463
Retail store – gasoline (sector 326)	$ 183,212
Tool replacement and maintenance (sector 328)	$ 5,110
Retail store – ice (sector 330)	$ 274,863
Marina services (sector 409)	$ 461,592
Boat maintenance services (sector 418)	$ 454,146
TOTAL	$1,661,386

4.5.2 TOTAL VALUE-ADDED IMPACT

The value-added impact is defined as the sum of salaries and wages earned by all workers in the state, income received by self-employed individuals, payments received by individuals and corporations in the form of interest, rents, royalties, dividends and profit, and indirect business taxes paid by individuals to businesses (IMPLAN, 2004). This is an important measure

of the impact of an economic sector. Hence, much of the value added by an economic activity in a state, such as the recreational shellfishing industry sector, is presented as money earned by the residents of the state. Those residents can then spend that to buy goods and services, inducing further economic activity in the state.

The total value-added impacts using state level data for recreational shellfishing in Connecticut in 2012 was $997,719. This increased to $1,033,440 in 2015. Detailed information on value-added impact for each of six selected sectors is shown in Table 2.

TABLE 6. TOTAL VALUE-ADDED IMPACT 2012

VALUE-ADDED	TOTAL EFFECT
Retail store – food and beverage(sector 324)	$ 194,397
Retail store – gasoline (sector 326)	$ 123,492
Tool replacement and maintenance (sector 328)	$ 3,232
Retail store – ice (sector 330)	$ 177,848
Marina services (sector 409)	$ 274,814
Boat maintenance services (sector 418)	$ 223,936
TOTAL	$ 997,719

TABLE 7. TOTAL VALUE-ADDED IMPACT 2015

VALUE-ADDED	TOTAL EFFECT
Retail store – food and beverage (sector 324)	$ 205,471
Retail store – gasoline (sector 326)	$ 129,877
Tool replacement and maintenance (sector 328)	$ 4,152
Retail store – ice (sector 330)	$ 182,561
Marina services (sector 409)	$ 281,609
Boat maintenance services (sector 418)	$ 229,770
TOTAL	$1,033,440

For the value-added impact, the same pattern as total output impacts was shown with marina services and boat maintenance services being the sectors contributing the most to the economy among all six sectors. This was followed by the consumption of food and beverages, gasoline and ice. Due to the small cost and low frequency of tool replacement and maintenance, this sector again contributed only a small amount to the total output impact of shellfishing industry.

4.5.3 TOTAL EMPLOYMENT IMPACT

The total employment impact was 16.3 jobs in 2012. This increased to 16.7 jobs in 2015 due to an increase in total permit sales revenue. Marina services is the sector contributing the most employment to the Connecticut economy from recreational shellfishing. This represents the assumption that 70% of recreational shellfish permit holders use a boat to access shellfishing grounds. The total employment impact may seem low at first review but makes sense since recreational shellfishing is only an occasional activity and the employment impact will be for only part of a person's time.

TABLE 8. TOTAL EMPLOYMENT IMPACT 2012

EMPLOYMENT	TOTAL EFFECT
Retail store – food and beverages (sector 324)	3.2
Retail store – gasoline (sector 326)	1.2
Tool replacement and maintenance (sector 328)	0.1
Retail store – ice (sector 330)	3.8
Marina services (sector 409)	5.5
Boat maintenance services (sector 418)	2.5
TOTAL	16.3

TABLE 9. TOTAL EMPLOYMENT IMPACT 2015

EMPLOYMENT	TOTAL EFFECT
Retail store – food and beverages (sector 324)	3.3
Retail store – gasoline (sector 326)	1.3
Tool replacement and maintenance (sector 328)	0.1
Retail store – ice (sector 330)	3.8
Marina services (sector 409)	5.6
Boat maintenance services (sector 418)	2.6
TOTAL	16.7

5 CONCLUDING REMARKS

This study represents the first estimate of the total economic impact of recreational shellfishing on Connecticut's economy. The study illustrates that recreational shellfishing has an over $1.6 million annual economic impact on the state's economy. While the cultural and recreational value of shellfishing is perhaps better known, this report shows that its contributions extend to the economy as well. While not as large as other maritime sectors, such as commercial fishing with a total impact of $65 million, the sector does add economic value throughout the state's economy.

An important consideration is that much of Connecticut's shoreline is privately owned; therefore, access to many recreational shellfish grounds is severely limited. In addition, growth in the number of private docks and the expansion of marinas and mooring areas encroaches on the area available for recreational shellfishing.

The aging of recreational shellfishers and shellfisheries managers is being observed in several towns. Because commissions typically provide senior citizens with a discounted permit fee, they in turn lose revenue as the harvesting population ages. Shellfish commission members have a valuable knowledge base that is lost when members leave the commission. Managing the water sampling requirements of the National Shellfish Sanitation Program-Model Ordinance is becoming increasingly difficult for the volunteers of the shellfish commissions so it is vital that processing of samples continues to be free of charge and resources for its transportation be made available. Commissions must also undertake education programs to engage youth. This is vital to the continuation of the programs and to develop a cadre of individuals interested in serving on the voluntary town shellfish commissions.

"THE STUDY ILLUSTRATES THAT RECREATIONAL SHELLFISHING HAS AN OVER $1.6 MILLION ANNUAL ECONOMIC IMPACT ON THE STATE'S ECONOMY. WHILE THE CULTURAL AND RECREATIONAL VALUE OF SHELLFISHING IS PERHAPS BETTER KNOWN, THIS REPORT SHOWS THAT ITS CONTRIBUTIONS EXTEND TO THE ECONOMY AS WELL."

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