

**2006 ANNUAL REPORT AND
STATEMENT OF PROGRAM DIRECTION
URI/NOAA CMER PROGRAM**

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*URI/NOAA Cooperative
Marine Education and Research Program*

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December 2006

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**URI/NOAA Cooperative
Marine Education and Research Program**

ANNUAL REPORT AND STATEMENT OF PROGRAM DIRECTION 2006

EXECUTIVE SUMMARY

Now in its eighteenth year, the URI/NOAA Cooperative Marine Education and Research (CMER) Program was established under the aegis of a cooperative agreement between the University of Rhode Island (URI) and the National Oceanic and Atmospheric Administration (NOAA). The CMER program was built upon a long history of cooperation between these institutions. The program offers enhanced opportunities to jointly accomplish NOAA mission-oriented research and University mandates in graduate education, research and outreach.

Through December 2006, cooperative projects supported by the URI/NOAA CMER Program have totaled 9.96 million dollars (Tables 1 and 2). The program receives base funding from the National Marine Fisheries Service (NMFS), Northeast Fisheries Science Center (NEFSC). Additional funds are contributed to the URI/NOAA CMER Program from a variety of sources within and outside NEFSC to support specific research projects.

Graduate education and research are at the core of the URI/NOAA CMER Program. Faculty and students in ten University departments have participated in CMER funded research projects, including more than 90 graduate students (Table 3). NOAA employees have taught numerous university courses, served as chairs and members of graduate student committees, and participated as co-principal investigators on numerous CMER funded projects. Other NOAA employees have taken a wide range of course offerings and have been awarded graduate degrees at the University.

URI/NOAA CMER Program funding has brought expertise in a broad range of disciplines, including marine biology, statistics, remote sensing, economics, natural resource science, molecular biology, engineering, political science, sociology and marketing, to bear on critical problems of marine science and resource management. In 2006 alone, the URI/NOAA CMER Program supported seven research projects totaling \$430,000.

INTRODUCTION

The Cooperative Marine Education and Research (CMER) Program was established in early 1989 under the aegis of a cooperative agreement between the University of Rhode Island (URI) and the National Oceanic and Atmospheric Administration (NOAA). The CMER program was built upon a long history of cooperation between these institutions. The CMER program is intended to foster enhanced interactions between all elements of NOAA and URI; however, special emphasis is placed upon projects of mutual interest to the University and the Northeast Region (NER) of NOAA's National Marine Fisheries Service (NMFS). The proximity of these institutions offers enhanced opportunities for: (a) joint research involving faculty, students and NOAA personnel; (b) training opportunities for both students and federal employees; and (c) shared use of specialized facilities and equipment. Now in its fourteenth year, the CMER program combines university and agency expertise to address marine issues affecting the state, region, and nation.

Graduate research and education are at the core of the URI/NOAA CMER Program. Faculty and students in ten University departments have participated in CMER funded research projects. The CMER program has provided partial support to more than 90 graduate students since 1989 (Table 3). Most of these students have completed their degree programs. A partial list of students supported by the CMER program is provided in Table 4. Numerous student volunteers have participated in NOAA research cruises and assisted in research underway at NOAA laboratories.

The CMER program is a truly cooperative program with all parties contributing towards the objectives of the program. This cooperation can take many forms ranging from both URI and NOAA scientists serving as co-principal investigators, to sharing computing, laboratory and aquarium facilities, to exchange of data and specimens, to joint cruises. A coordinating committee, consisting of two University representatives and two NOAA representatives, determines program direction and funding priorities. The Program Director, a NMFS employee and Affiliated Professor at URI is stationed on the campus of URI in the Graduate School of Oceanography (Table 5). Several additional Northeast Fisheries Science Center (NEFSC) scientists have adjunct faculty appointments at URI (Table 5). NOAA CMER staff have taught several university courses (Table 6), served as chairs and members of graduate student committees (Table 7), and participated as co-principal investigators on numerous CMER funded projects (Table 2).

As of October 2006 cooperative projects supported through the URI/NOAA CMER Program have totaled 9.96 million dollars (Table 1). A summary of URI/NOAA CMER projects funded since 1989 is provided in Table 2. These projects have involved a wide variety of disciplines and topic areas. About 42% of the projects have addressed aspects of the biology and life history of estuarine and marine organisms (Figure 1). Remote sensing research has accounted for 12% of the projects funded. Studies of the effects of contaminants on marine organisms, and fishery statistics and engineering have accounted for 7% and 15% of funded projects respectively. Resource economics and fisheries product development together made up 11% of funded projects. Ecosystem analysis accounted for 13% of the project. Partial listings of publications and presentations supported by the URI/NOAA CMER Program funding are provided in Appendices I and II to this annual report. Requests for reprints or information on individual research projects should be directed to the principal investigators.

Several URI/NOAA CMER Program projects have been jointly funded by other agencies, particularly the Sea Grant Program. Still other projects, initiated under the URI/NOAA CMER Program, have been continued and expanded with funding received directly from other agencies. In

either case, funds made available through the CMER program are leveraged to support a broad range of research into questions important to the effective management of marine resources.

PROJECTS SUPPORTED

NOAA through the Northeast Fisheries Science Center provides base funding for the CMER program. Priorities for allocation of base funds are set by the URI/NOAA CMER Coordinating Committee, composed of the URI Dean of the Graduate School of Oceanography (GSO) and the Dean of the College of the Environment and Life Sciences (CELS) or their designees, the Director of the Office of Science and Technology (NMFS), and the Science and Research Director (NMFS) or their designees. Continuing work under multiyear projects receives the highest priority for funding, given satisfactory performance in the preceding year. This policy helps to insure continuity of support to graduate students.

In addition to the base funds provided by the Northeast Fisheries Science Center, funds are contributed to the URI/NOAA CMER Program to support specific research projects. These funds come from a variety of sources within and outside the Northeast Fisheries Science Center. Many of the projects supported with contributed funds were continuations or extensions of projects funded in previous years. All projects were approved by the URI/NOAA CMER Program coordinating committee for inclusion in the Program.

Active research projects in any given calendar year consist of projects initiated the previous year, projects initiated in the current year and projects on no-cost extensions. No-cost extensions extend the award period only without change to the scope-of -work or the funding level.

FY-2005

‘Metabolism and growth of larval and early juvenile haddock’ (Year 2 of 2)

David Bengtson, Department of Fisheries and aquaculture, URI

This study will produce new information on the growth and metabolism of haddock by 1) measuring metabolic rates of larvae at three temperatures (4, 7, and 9°C), 2) determining the relationships between food consumption and growth of larvae at these temperatures and, 3) identifying any metabolic differences between fast- and slow-growing haddock in the early juvenile stage.

“Consequences of transferable days-at-sea on input substitution in the Northeast multispecies fishery: Experimental analysis of capital stuffing”

Christopher Anderson and Jon Sutinen, Department of Environmental and Natural Resource Economics, URI

This project will assess the extent to which input substitution (‘capital stuffing’) affects the efficiency of market transactions under a transferable days-at-sea (DAS) program, and how market volatility affects input limitations. The results will provide information on the risks to effective effort and efficiency that are introduced by trading DAS and help managers and stakeholders to craft

complementary input restrictions that advance fishery-specific socioeconomic and biological objectives.

“Maintenance, archival, and analysis of western north Atlantic right whale data: 2005-2008 continuation” (Year 1 of 3)

Robert Kenney, Graduate School of Oceanography, URI

The western North Atlantic stock of the right whale, *Balaena glacialis*, is one of the most endangered large whale populations in the world. Since 1986 researchers at several institutions have developed an extensive database on western North Atlantic right whales. This database is one of the most complete long-term records of right whale occurrence in the world. This invaluable scientific resource is important to understanding right whale ecology, and population dynamics, and to management of the right whale. This activity has been supported through the URI/CMER Program since its inception in 1989. The project supported the continued maintenance of the archived database, and the incorporation and quality control of newly generated data. Data and data products are provided to cooperating investigators and other interested researchers and agencies. New analyses result in several publications in the peer-reviewed scientific literature. This project contributes to the management of endangered species.

“Narragansett Bay Window”

Candice Oviatt, Graduate School of Oceanography, URI

Jeremy Collie, Graduate School of Oceanography, URI

Larry Buckley, URI/NOAA CMER Program, Graduate School of Oceanography, URI

Peter August, Natural Resource Science, URI

Christopher Deacutis, Narragansett Bay Estuary Program, URI

The project will gather broad, comprehensive data on the state of Narragansett Bay - its waters, tides, creatures, plants and sediments, and the complex interplay among them all. The data collected by the project will help researchers look for answers to a wide variety of questions such as:

- How healthy is Narragansett Bay?
- Is pollution increasing or decreasing?
- Are fisheries management strategies working?
- Is the Bay getting warmer?
- Are dissolved oxygen levels adequate for Bay creatures?

“Documenting and understanding the behavioral interactions between cetaceans and trawl fishing gear in the western Atlantic”

Joseph DeAlteris, Department of Fisheries, CELS, URI

The proposal encompasses several objectives: (1) develop an inexpensive, robust camera system that can be effectively utilized by the fishing industry to attain video data from their fishing gear; (2) collaborate with the fishing industry and the NEFSC Observer Program by teaching fishermen and observers how to outfit trawl gear with cameras when they are fishing in areas with a higher probability of encountering protected species, collect data on fish and cetacean behavior in the trawl month, and share that data with the fishermen; and (3) develop methodologies to quantitatively

analyze video data of animal behavior so as to predict the likelihood of particular behaviors that result in interaction between fishing gear and the protected species.

“Identifying and profiling fishing communities in the Northeastern Region of the United States”

Richard Pollnac, Department of Sociology and Anthropology, URI

This project involves the creation of brief community profiles for use in the Human Environment sections of EISs and as part of the data for determining “fishing community” status under the MSA, with respect to the provisions of National Standard 8. Multivariate data reduction techniques (e.g., cluster analysis, principal component analysis, etc.) will be used to categorize the universe of coastal fishery related communities into groupings that will be useful in objective selection of candidates for profiling and/or more detailed investigation. Further analysis of profiled communities will be used to select representative profiled communities for future research testing aspects of the fishery social impact assessment models.

FY-2006

“Maintenance, archival, and analysis of western north Atlantic right whale data: 2005-2008 continuation” (Year 2 of 3)

Robert Kenney, Graduate School of Oceanography, URI

This is the second year of the project described above.

“Reducing cetacean bycatch in northeast trawl fisheries: identifying and testing an effective bycatch reduction technology (BRT): Phase 3”

Joseph DeAlteris, Department of Fisheries, CELS, URI

The final phase of this project (described above) is the larger-scale industry evaluation of the final redesigned BRTs.

“Identifying and profiling fishing communities in the Northeastern Region of the United States”

Richard Pollnac, Department of Sociology and Anthropology, URI

This is the second year of the project described above.

“US GLOBEC – Factors determining early-life survival and recruitment variability in North Atlantic cod: a comparison between the NW Atlantic and Norwegian Sea Systems”

Edward Durbin, Graduate School of Oceanography, URI

This project is part of a larger multi-institution project to develop an understanding of the processes controlling recruitment of cod and haddock on Georges Bank and cod in the Norwegian Sea sufficient to parameterize useful models and to forecast likely recruitment levels.

“Application of RAFOS Tags to Yellowtail Flounder on Georges Bank”

Godi Fischer, Electrical Engineering, URI
Tom Rossby, GSO, URI

This project is a partnership of the cooperative tagging team of the Northeast Fisheries Science Center and School for Marine Science and Technology (UMass) with URI oceanographers and electrical engineers to develop a RAFOS tag that can be deployed on fish to track their movements.

PROJECTS SUPPORTED ON NO-COST EXTENSIONS

Several projects continued through the period on no-cost extensions.

PROGRAM DIRECTOR’S RESEARCH ACTIVITIES

The program director’s research was supported in 2006 through grants with University and NMFS co-investigators:

“Development of haddock for offshore aquaculture in the US: Broodstock development and juvenile production” NOAA Cooperative Institute for New England Mariculture and Fisheries (CINEMar), Open Ocean Aquaculture Demonstration Project.

Larry Buckley, URI/NOAA CMER Program

Terry Bradley, Department of Fisheries, Animal and Veterinary Sciences, URI

David Berlinsky, Dept. of Zoology, UNH

**“Stock structure and length-based models of Narragansett Bay winter flounder”
(part of the Narragansett Bay Window project)**

Jeremy Collie, URI, GSO

Larry Buckley, URI/NOAA CMER Program

“US GLOBEC - Factors determining early-life-stage survival and recruitment variability in North Atlantic cod: a comparison between the NW Atlantic and Norwegian Sea Systems”

Francisco Werner, UNC, Chapel Hill

Larry Buckley, URI/NOAA CMER

Durbin, Edward (URI)

Greg Lough, David Mountain, and Michael Fogary, NMFS, NEFC, Woods Hole

These projects provided support to two marine research specialists, a part time biologist and two undergraduate students.

Figure 1. Projects by Topic

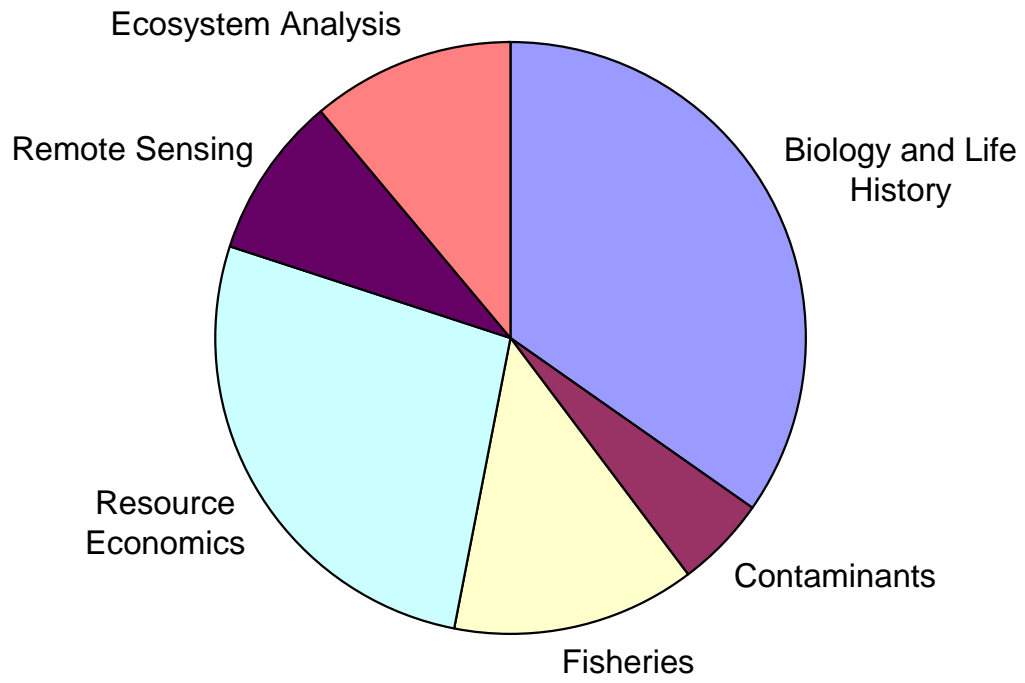


Table 1. Funding for URI CMER Program (Thousands of Dollars)

Fiscal Year	Base	Contributed	Total
89	100	22.5	122.5
90	100	363.4	463.4
91	85	442.3	527.3
92	50	380.9	430.9
93	76.6	151.4	228.0
94	105	430.0	535.0
95	89.4	610.6	700.0
96	92.8	651.0	743.8
97	106.6	904.2	1010.8
98	117.4	501.6	619.0
99	102.5	584.2	686.7
00	66.5	720.8	787.3
01	67.6	654.6	722.2
02	69.0	89.0	158.0
03	36.9	341.6	378.5
04	73.9	610.7	684.6
05	73.4	656.4	729.8
06	0	429.9	429.9
Total	1,412.6	8,545.1	9,957.7

Departments represented:

Department of Environmental and Natural Resource Economics
Department of Computer Science and Statistics
Department of Fisheries, Animal and Veterinary Science
Graduate School of Oceanography
Department of Natural Resource Science
Department of Biological Sciences
Department of Biomedical and Pharmaceutical Sciences
Department of Electrical and Computer Engineering
Department of Nutrition and Food Science
Department of Ocean Engineering

Table 2. Summary Of URI/CMER Funded Projects

<u>FY</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
1989	- Economic Analysis of US Market for Blue Mussels	Anderson ^a Brooks	20,000 ^B
	- Genetics of Gulf of Maine <u>Calanus</u> Populations	Wishner ^b Kann	20,000 ^B
	- Flow-through Sampler for Automated Plankton Analyzer	Jeffries ^b Berman ^c	30,000 ^B
	- Spring Bloom and <u>Calanus</u> Production in the Gulf of Maine	Durbin, Durbin ^b Green ^c	23,000 ^B
	- Trawl Selectivity and Survival of Cod-End Escapees	DeAlteris ^d	22,500 ^B
	- CD-ROM <i>Aquatic Sciences and Fisheries Abstract</i>	Sieburth	5,000 ^B
	- Applications of Satellite Remote Sensing Data	Cornillon ^b Armstrong ^c	39,000 ^B
	1990	- Genetics of Gulf of Maine <u>Calanus</u> Populations	Wishner ^b Kann ^b
- Integrated Program for Research on the Northern Right Whale		Winn ^b Kenney ^b	204,400 ^B
- Remote Sensing, Hydrographic Structure, and Zooplankton Production in the Gulf of Maine		Gifford, Durbin ^b Bisagni, Meise-Munns ^c	20,200 ^B
- Immune Response in Atlantic Salmon and Winter Flounder		Bodammer ^d Bradley ^d	18,600 ^B
- Economic Analysis of US Production for Blue Mussels		Anderson ^a Brooks	16,300 ^B
- Fisheries Law Enforcement		Sutinen ^a	6,500 ^B
- On-Line Access to In Situ Oceanographic Data Sets		Cornillon ^b Holloway	17,400 ^B
- National Eutrophication Experiment		Hinga, et al. ^b	121,000 ^C
1991	- Flow-Through Sampler for Automated Plankton Analyzer	Jeffries ^b Berman ^c	13,000 ^B
	- Immune Response in Atlantic Salmon and Winter Flounder	Bodammer ^d Bradley ^d	9,900 ^B
	- Spring Bloom and <u>Calanus</u> Production in the Gulf of Maine	Durbin, Durbin ^b Green ^c	17,500 ^B
	- Fish Stomach Evacuation Rates	Durbin, Durbin ^b Fogarty ^f	17,600 ^B +5,000 [*]
	- Trawl Selectivity: Fish Behavior in the Vicinity of a Trawl	DeAlteris ^d Castro ^d	23,700 ^C
	- Remote Sensing, Hydrographic Structure, and Zooplankton Production in the Gulf of Maine	Gifford et al.	4,100 ^B
	- Geostatistical Estimates of Shellfish Abundance	Heltshe ^g	17,900 ^B

Table 2. Cont.

<u>FY</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
1991	- Monitoring Economic Status of Otter Trawl and Scallop Vessels	Gates ^a Wang ^h	36,900 ^C
	- Demersal Gillnet Fishery of the Gulf of Maine	DeAlteris ^d	20,000 ^C
	- Integrated Program for Research on the Northern Right Whale	Winn ^b Kenney	188,000 ^C
	- Applications of Satellite Remote Sensing Data	Cornillon ^b Armstrong ^c	45,000 ^C
	- Coastal Wetland Mapping and Change Detection in the NE	August ⁱ LaBash, Golet ⁱ Civco ^j	32,500 ^C
	- Student Research Training Program	Winn ^b Smith ^f	43,500 ^C
	1992	- Immune Response in Atlantic Salmon and Winter Flounder	Bodammer ^d Bradley
- National Eutrophication Experiment		Hinga ^g	68,000 ^C
- Integrated Program for Research on the Northern Right Whale		Winn ^b Kenney	188,600 ^C
- Student Research Training Program		Winn ^b Smith ^f	46,300 ^C
- Applications of Satellite Remote Sensing Data		Cornillon ^b Armstrong ^c	41,000 ^C
- Fish Stomach Evacuation Rates		Durbin et al.	26,400 ^B
- Genetics of Gulf of Maine <u>Calanus</u> Populations		Wishner ^b Kann	3,600 ^B
- Recruitment Strategies of Decapods		Cobb ^k	6,900 ^B
- Remote Sensing, Hydrographic Structure, and Zooplankton Production		Gifford et al.	2,500 ^B
- Analysis of the NEFSC Shark Data Base		Heltshe ^g Casey ^c	37,000 ^C
1993		- Reproductive Success of Summer Flounder	Bengtson ^k Pereira ^l
	- Diarrhetic Shellfish Poisoning	Maranda ^m	8,961 ^B
	- Fish Stomach Evacuation Rates	Durbin et al.	26,951 ^B
	- Effects of Scallop Dredging	Collie ^b	22,889 ^C
	- Immune Response II	Bodammer ^d	12,184 ^B
	- Decapods Recruitment	Cobb ^k	15,538 ^B
	- Student Research Training Program	Winn ^b Smith ^f	59,119 ^C
	- Right Whale Database	Winn ^b Kenney ^b	29,945 ^C
- Applications of Satellite Remote Sensing Data	Cornillon ^b Armstrong ^c	49,000 ^C	

Table 2. Cont.

<u>FY</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>	
1994	- Harbor Porpoise Abundance	Heltshe ^g	20,614 ^{BC}	
	- Scallop Quality Evaluation	Pivarnik ^o	29,990 ^C	
	- Fish Stomach Evacuation Rates	Durbin et al.	30,342 ^B	
	- Bluefin Tuna Regulations	Swallow ^a	15,804 ^C	
	- Recruitment Strategies in Marine Decapods	Cobb ^k	14,415 ^B	
	- Student Research Training Program	Winn ^b Smith ^f	71,235 ^C	
	- Database Right Whale	Winn ^b Kenney ^b	36,445 ^C	
	- Oceanographic Remote Sensing	Cornillon ^b Armstrong ^c	40,250 ^C	
	- Temperature Monitoring Tag for Salmon	Recksiek ^d Daly ⁿ Fischer ⁿ	53,946 ^C	
	- Effect of Harvesting Gear Type	DeAlteris ^d Grogan	22,123 ^B	
	- Zooplankton Analysis Group Rates	Durbin ^b Durbin Busch ^c	200,000 ^B	
	1995	- Characterization of Mid-Atlantic Coastal Gillnet	DeAlteris ^d Lazar	41,050 ^C
		- Age Structure of Squid	Macy ^b	21,078 ^B
		- Quality Evaluation of Scallops	Pivarnik ^o	29,399 ^B
- Effects of Dredging on Benthic Megafauna of N. Georges Bank		Collie ^b	22,918 ^B	
- Recruitment Strategies of Decapods: Comparative Approach		Cobb ^k	15,000 ^B	
- Survey Methods for Harbor Porpoise		Heltshe ^g	22,522 ^C	
- Applications of Satellite Remote Sensing		Cornillon ^b Armstrong ^c	26,150 ^C	
- Engineering for Programmable Temperature Tag		Recksiek ^d	59,776 ^C	
- Development of Client and Server Libraries		Cornillon ^b	30,000 ^C	
- Student Research Training Program		Winn ^b Smith ^f	75,288 ^C	
- Broad-Scale Zooplankton on Georges Bank		Durbin ^b	300,000 ^C	
- Right Whale Database		Winn ^b Kenney ^b	55,828 ^C	
1996		- Maturity in Atlantic Cod and Summer Flounder	Specker ^{bk}	25,110 ^B
		- Distribution and Abundance of Hydroids	Sullivan ^b Klein-MacPhee ^b	20,701 ^B
	- Effects of Dredging on Benthos	Collie ^b	46,917 ^B	
	- Ecological Investigation of Sachuest Point Salt Marsh	Rowman ^b	38,100 ^C	
	- Buoy System for Remote Tracking	Recksiek ^d	35,000 ^C	

Table 2. Cont.

<u>FY</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
1996	- Population Structure in Longfinned Squid	Macy ^b	24,356 ^B
	- OPDB/DODS Server at NODC	Cornillon ^b Milkowski ^b	30,000 ^C
	- Satellite Remote Sensing	Cornillon ^b Bisagni ^b	89,300 ^C
	- US GLOBEC: Zooplankton Technical Group	Durbin ^b	230,000 ^C
	- Right Whale Database	Kenny ^b	39,166 ^C
	- Acoustic Tracking of Harbor Porpoises	Miller ^p	54,480 ^C
	- Economic Analysis of North East Fishing Vessels	Gates ^a	75,000 ^C
	- Marine Ecosystems: Visualization of Patterns and Trends	August ^t	60,000 ^C
1997	- Recovery of Essential Fish Habitat on Georges Bank	Collie ^b	24,403 ^B
	- Development of an Acoustic Tracking System for Harbor Porpoises	Miller ^p	20,766 ^B
	- Feeding and Metabolic Studies of Juvenile Cod and Haddock	Bengtson ^d Peck ^b Oviatt ^b	30,702 ^B
	- Maturity in Female Summer Flounder and Monkfish	Specker ^{bk}	30,762 ^B
	- Right Whale Database	Kenny ^b	122,564 ^C
	- Salmon Temperature Monitoring Tag	Recksiek ^d Fischer ⁿ Daly ⁿ	34,895 ^C
	- Analysis of Recirculating Systems for Shellfish	Anderson ^a	24,507 ^C
	- Assessment of Atlantic Bluefin Tuna Market	Anderson ^a	47,997 ^C
	- Monitoring the Economic Status of NE Fishing Vessels	Gates ^a	74,806 ^C
	- Oceanographic Remote Sensing	Cornillon ^b Wood ^c	23,301 ^C
	- Habitat Enhancement for Lobsters	Cobb ^k	98,002 ^C
	- US GLOBEC: Abundance of Zooplankton	Durbin ^b	150,000 ^C
	- Winter Flounder Length Model	Collie ^b Meise ^f	40,853 ^C
	- Narragansett Bay Tidal Model	Kincade ^b	10,000 ^C
	- Benthic Chemistry	King, Quinn ^b	84,750 ^C
- Time-Series Monitoring	Kester ^b	104,777 ^C	
- Bay Survey-Towed Body	Durbin, Oviatt ^b	87,725 ^C	
1998	- US GLOBEC: Abundance of Zooplankton	Durbin ^b	300,000 ^C
	- Variability in Temperature Fronts	Cornillon ^b Bisagni	98,000 ^C

Table 2. Cont.

<u>FY</u> _	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
1998	- Harbor Porpoise Tracking System	Miller ^b	30,500 ^C
	- Sachuest Point Restoration	Roman ^b	4,793 ^C
	- Remote Sensing Laboratory	Cornillon ^b	23,301 ^C
		Wood ^c	
	- Active Acoustic Alarms Development	Miller ^b	45,000 ^C
	- Atlantic Herring Management	Gates ^a	26,487 ^B
	- Estimation of Scallop Abundance	Collie ^b	24,178 ^B
	- DNA Fingerprinting of Cod Broodstock	Bradley ^d	30,164 ^B
	- Metabolic Studies of Cod & Haddock	Bengtson ^d Peck, Oviatt ^b	36,585 ^B
1999	- US GLOBEC: Abundance of zooplankton	Durbin ^b	300,000 ^C
	- Variability and SST fronts	Cornillon ^b	32,000 ^C
		Bisagni ^q	
	- Monitoring Northeast Fishing Vessels	Gates ^a	60,183 ^C
	- Estimation of Scallop Abundance	Collie ^b	24,972 ^C
	- Atlantic Herring Management	Gates ^a	29,729 ^B
	- DNA Fingerprinting of Cod Broodstock	Bradley ^d	34,839 ^B
	- Metabolic Studies of Cod and Haddock	Bengtson ^d Peck, Oviatt ^b	37,947 ^B
		Cobb ^k	
	- Habitat Enhancement for Lobsters	Cobb ^k	94,042 ^C
	- Marine Mammals	Miller ^p	10,000 ^C
	- Maintenance of Right Whale Data Base	Kenney ^b	39,965 ^C
- Remote Sensing Laboratory	Cornillon ^b Wood ^c	23,059 ^C	
2000	- Market Information and Fisheries Mgt.	Wessells ^a	30,000 ^B
	- DNA Fingerprinting of Tautog	Bradley ^d	36,560 ^B
	- US GLOBEC - Abundance of zooplankton	Durbin ^b	300,000 ^C
	- Maintenance of Right Whale Data-Base	Kenney ^b	79,664 ^C
	- Narragansett Bay Cooperative Study	Oviatt, Durbin ^b Kester ^b	341,150 ^C
		August, Damon ⁱ	
		Colt, Schwartz ^f Mustard ^s	
2001	- Market Information and Fisheries Mgt.	Wessells ^a	29,985 ^B
	- DNA Fingerprinting of Tautog	Bradley ^d	37,641 ^B
	- US GLOBEC - Abundance of zooplankton	Durbin ^b	300,000 ^C
	- Habitat Enhancement for Lobsters	Cobb ^k	40,450 ^C
	- Maintenance of Right Whale Data-Base	Kenney ^b	84,905 ^C
	- Northcape Restoration Monitoring	Castro ^d Collie, Delong ^b	229,298 ^C
2002	- Temperature and sand shrimp predation	Collie ^b	36,947 ^B
	- Ctenophore predation on fish eggs	Sullivan, MacPhee ^b	32,098 ^B
	- Maintenance of Right Whale Data-Base	Kenney ^b	89,393 ^C

Table 2. Cont.

<u>FY</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
2003	- Temperature and sand shrimp predation	Collie ^b	36,947 ^B
	- Shortfin mako population dynamics	Collie ^b	44,465 ^C
	- Northern Right Whale archive	Kenney ^b	117,851 ^C
	- Bioeconomic model of NE fisheries	Gates ^a	55,322 ^C
	- URI/Coast Watch	Cornillon ^b	36,900 ^C
		Wood ^c	
	- Performance of survey trawl	DeAlteris ^d	87,041 ^C
	Haddock Aquaculture	Buckley	152,620 ^C
2004	- Northern Right Whale archive	Kenney ^b	124,929 ^C
	- Shortfin mako population dynamics	Collie ^b	44,465 ^C
	- Narragansett Bay Cooperative Study	Oviatt ^b	206,000 ^C
		Collie, Buckley ^b	
		August ^f	
		Deacutis ^b	
	- Metabolism of fish larvae	Bengtson ^d	35,000 ^B
	Peck ^b		
- Economic analysis of transferable days at sea	Anderson, Sutinen ^a	121,970 ^{b,c}	
- Haddock Aquaculture	Buckley ^b	152,094 ^C	
	Bradley ^d		
2005	- Northern Right Whale archive	Kenney ^b	139,970 ^C
	- Narragansett Bay Cooperative Study	Oviatt ^b	413,232 ^C
		Collie, Buckley ^b	
		August ^f	
		Deacutis ^b	
	- Metabolism of fish larvae	Bengtson ^d	35,000 ^B
		Peck ^b	
- Transferable days at sea input substitution	Anderson, Sutinen ^a	38,395 ^b	
- Cetacean and turtle behavior	DeAlteris ^d	63,384 ^C	
- Fishing communities	Pollnac	86,000 ^C	
2006	- Northern Right Whale archive	Kenney ^b	140,000 ^C
	- Fishing communities	Pollnac	75,922 ^C
	- Cetacean and turtle behavior	DeAlteris ^d	63,384 ^C
	- US GLOBEC - zooplankton	Durbin ^b	45,416 ^C
	- RAFOS tags on fish	Fischer ⁿ	82,596 ^C
	Rossby ^b		

B Base CMER Program funds
 C Funds contributed to the CMER Program
 * Support for R/V Gloria Michelle

Table 3. CMER Grants Providing At Least Partial Student Support

<u>CMER#</u>	<u>SHORT TITLE</u>	<u>STUDENTS SUPPORTED</u>
89-01	Market for Blue Mussels	P. Brooks (Ph.D., T ¹ , C ²)
90-09		
89-04	<u>Calanus</u> Genetics	L. Kann (Ph.D., T, C)
90-01		
92-07		
89-05	Automated Plankton Analyzer	G. Lambert (Post-Doc)
91-01		
89-08	Spring and <u>Calanus</u>	S. Larimer (Ph.D., C)
91-03		A. Thompson (MS, C)
89-09	Cod-End Escapees	D. Reifsteck (MS, C)
90-05	Research on Right Whale	B. Dorf (Ph.D., C) N. Burke (MS, C)
90-06	Gulf of Maine Zooplankton	P. Garrahan (MS, C)
91-06		
90-08	Immune Response	R. Carlson (MS, T, C)
91-02		
92-01		
90-12	Fisheries Law Enforcement	P. Lalleman (Ph.D., C)
91-04	Fish Evacuation Rates	P. Garrahan (MS, T, C)
92-06		J. Wunder (MS, T, C)
93-08		
91-05	Fish Behavior	J. Harris (MS, T, C)
91-07	Shellfish Abundance	M. Ecker (MS, T, C)
91-09	Economic Status	C. Glick (MS, C), P. Lalleman (Ph.D., C)
91-10	Gillnet Fishery	N. Lazar (MS, T, C)
91-13	Coastal Wetland Mapping	J. Hurd (MS UConn, T, C)
91-15	Eutrophication Experiment	B. Koop (Ph.D.)
92-08	Decapod Recruitment	M. Clancy (Ph.D., T, C)
93-11		M. J. James (Ph.D., T, C)
94-11		B. Moravchik (MS, T, C) R. Rand (Ph.D., C)
95-11		D. Grote (Ph.D., T, D) C. Boyco (Ph.D.)
97-01C		B. Niedbalski (MS, T, C) T. Feehan (MS, C) N. Hobb (Ph.D.)
92-10	Shark Data Base	M. Pirri (MS, T, Ph.D., C) C. Belcher (MS, T, C)
91-14	Student Research Training	A. Verhulst (Ph.D., C)
92-04		R. Griffin (Ph.D., C)
93-12		N. Friday (Ph.D., C)
94-12		K. Vigness (MS, T, C)
95-17		
93-06	Success of Summer Flounder	T. Gleason (Ph.D.)
93-07	Diarrhetic Shellfish	Christine Chan (Ph.D., C)
93-09	Effects of Scallop Dredging	G. Escanero (MS, T, C)
95-09		Tien-Shui Tsou (Ph.D., C)
96-09		J. Hermesen (Ph.D.)
97-03		E. Hughes (MS, T, C)
98-05		
99-04C		
93-10	Immune Response II	L. Putnam (MS, D)
94-09	Tuna Angling Preference	K. Blake (MS, T, C)

Table 3. Cont.

<u>CMER#</u>	<u>SHORT TITLE</u>	<u>STUDENTS SUPPORTED</u>
95-13	Survey for Harbor Porpoise	B. Koloziej (MS,T,C) C. Wentworth (MS,T,C)
95-15 96-11C	Programmable Temperature Tag	Yang Chun (MS,T,C) D. Hyun (MS,T,Ph.D.) S. Lee (Ph.D.)
97-02C 95-04	Quality Evaluation of Scallops	B. Watkins (BS,C) Y. Janelle (MS,T,C) Jaiming Ye (MS)
95-03 96-12	Squid Age Structure	R. Hein (Ph.D.,C)
96-22C 96-02	Ecosystems Visualization Abundance of Hydroids	C. Damon (MS,T,C) J. Williams (MS,T,Ph.D.)
96-18C 97-08C 98-01C 99-01C 00-01C	US GLOBEC: Zooplankton	A. Lapolla (MS,T,C) K. Collins (Ph.D.) W.Saumweber (Ph.D.) Bronwynn Cahill (Ph.D.) Catalina Martinez (MS) Mark Brush (Ph.D.)
97-07C	Habitat Enhancement for Lobsters	K. Castro (Ph.D.) B. Murphy (MS) S. Robbins (MS)
99-08C 96-20C 97-05 98-03C 99-09C 96-21C	Harbor Porpoise Tracking Fishing Vessel Economics	R. Gampert (MS,T,C) M. Langlais (BS,C) M. Zarnetske (MS,C) J. LaPorte (BS) P. Lallemand (Ph.D.) E. Gudmundsson (Ph.D.)
97-05C 99-03C 97-06 98-08 99-07 97-03C	Metabolic Studies of Cod/Haddock Recirculating Systems for Shellfish	M. Peck (MS,T,Ph.D.) G. Magnusson (Ph.D.) J. Martinez-Garmendia (Ph.D.)
97-04C	Assessment of Bluefin Tuna Market	M. Carroll (MS,T,C) Heng-Hung Kuo (MS, C)
97-06C 98-05C 99-11C 97-07	Remote Sensing Laboratory Female Summer Flounder	Tim Mavor (Post-Doc) C. Casey (MS,C) B. Soffientino (Ph.D.) C. Martinez (MS,C) R. Merson (Ph.D.,C)
97-NB2 97-NB3	N. Bay Tidal Model Benthic Chemistry	W. Deleo (MS,T,C) E. Lacey (Ph.D.,C) C. Reddy (Ph.D.,C) P. Hartman (Ph.D.,C)
97-NB4	Time-series Monitoring	M. Swanson (MS,T,C) Lt. J. Andrews (MS,T,C) A. Magnuson (Ph.D.,C) Meg Scott (MS,C)

Table 3. Cont.

<u>CMER#</u>	<u>SHORT TITLE</u>	<u>STUDENTS SUPPORTED</u>
00-NB1		D.Bergondo (Ph.D.)
97-NB5	Bay Survey - Towed Body	C. Suchman (Ph.D.,C) C. Melrose (Ph.D. T, C)
00-NB1		
98-07	Microsatellite DNA Fingerprinting	A. Choudury (PhD. T, C)
99-06		
98-01	Atlantic Herring Management	Cho Jung-Hee (Ph.D.,C)
99-05		
98-04C	Salt Marsh Post-Restoration	S. Adamowicz (Ph.D.) K. Raposa (Ph.D.,T,C)
00-02	Discrimination of Tautog Populations	C.Blake (MS)
00-00	Market Information	Jung-Sam Lee (MS, T., PhD.)
00-NB1	NB Winter Spring Bloom Intensity	G. Ellis (MS)
00-NB1	NB Temperatures and Properties	Hongwei Chen (MS) J. Fisher (Ph.D.)
01-01	Habitat Enhancement for Lobsters	C. Castro (Ph.D., T, C) Norden, Wendy (MS,T, C) D.L.Taylor (Ph.D. C)
02-01	Winter flounder and sand shrimp	
03-01		
02-02	Ctenophore predation on fish	A. Allen (MS, C)
03-01	Shortfin mako population dynamics	A. Wood (Ph.D.)
04-01		
03-02	Bioeconomic model of NE fisheries	Jungsam Lee (Ph. D. T). Jongoh Nam (MS, C)
03-03	Performance of survey trawl	
04-01	Narragansett Bay Cooperative Study	C. Calabretta (Ph.D.)
05-01		R. Bell (Ph.D.)
04-02	Metabolism of fish larvae	K. Larkin (MS)
05-02		
04-03	Economic analysis of days at sea	Sudha Kannan (Ph.D)
05-03		
05-04	Cetacean and turtle behavior	
05-05	Fishing communities	Sarah Smith (Ph.D.)

¹T - Thesis on topic supported by CMER

²C - Degree requirements completed

³ D - Dropped Out

Table 4. CMER Supported Thesis and Dissertations

1992

Brooks, Priscilla M. 1992. The Northeast market for blue mussels: Consumer perceptions of seafood safety and the demand for mussels. Ph.D. Dissertation, Department of Research Economics, University of Rhode Island, Kingston, RI.

Carlson, Robert E. 1992. The effect of prolonged *in vivo* cortisol administration on the *in vitro* primary immune response of Atlantic salmon and winter flounder lymphocytes. MS Thesis, Department of Fisheries, Aquaculture and Pathology, University of Rhode Island, Kingston, RI.

Ecker, Mark 1992. Geostatistical estimates of scallop abundances. MS Thesis, Department of Statistics, University of Rhode Island, Kingston, RI.

Hurd, J. D. 1992. Coastal wetland mapping and change detection in the northeastern United States. MS Thesis, University of Connecticut, CT.

Lazar, Najih 1992. Analysis of the sink-gillnet fishery of the Gulf of Maine and adjacent waters. MS Thesis, Department of Fisheries, Aqua. and Veterinary Science, Univ. of Rhode Island, Kingston, RI.

1993

Kann, Lisa 1993. Zooplankton distribution in the Great South Channel and the genetic population structure of the copepod (*Calanus finmarchicus*) in the Gulf of Maine. Ph.D. Dissertation, Univ. of Rhode Island, Kingston, RI; 170 p.

1994

Belcher, Caroline 1994. Evaluation of longline surveys for producing population estimates of large coastal sharks. MS Thesis, Department of Statistics, University of Rhode Island, Kingston, RI.

Garrahan, Peter 1994. Gastric evacuation in Atlantic cod (*Gadus morhua*). MS Thesis, Graduate School of Oceanography, University of Rhode Island, Kingston, RI; 181 p.

1995

Clancy, M. 1995. Recruitment of the rock crab (*Cancer irroratus*): The influence of larval supply, settlement, and post-settlement processes to the benthic distribution pattern. Ph.D. Dissertation, Department of Biological Sciences, University of Rhode Island, Kingston, RI; 247 p.

Harris, Jessica 1995. Effects of selectivity of 14.0 and 15.2 CM square and diamond mesh codends on yellow tail flounder (*Pleuronectes ferrugineus*) and Atlantic cod (*Gadus morhua*). MS Thesis, Department of Fisheries, Aquaculture and Veterinary Science, University of Rhode Island, Kingston, RI; 88 p.

Wunder, Jennifer 1995. Gastric evacuation in winter skate (*Raja ocellata*). MS Thesis, Graduate School of Oceanography, University of Rhode Island, Kingston, RI; 148 p.

1996

Blake, Kevin S. 1996. Modeling preferences for regulatory options: A case study of the northeast recreational bluefin tuna fishermen. University of Rhode Island, Kingston, RI.

Griffin, Robert B. 1996. Community ecology of cetacean habitat. Graduate School of Oceanography, University of Rhode Island, Kingston, RI; 200 p.

James-Pirri, Mary Jane 1996. Growth and behavior during the settlement period of the American lobster (*Homarus americanus*). MS Thesis, Ph.D. Dissertation, Biological Sciences. Graduate School of Oceanogr., Univ. of Rhode Island, Kingston, RI; 167 p.

Kolodziej, Bruce 1996. Comparing two adaptive sampling schemes to estimate abundance of clumped individuals. MS Thesis, Department of Computer Science and Statistics, Univ. of Rhode Island, Kingston, RI.

Moravchik, Bruce 1996. The influence of space and density on postlarval settlement in the American lobster (*Homarus americanus*). MS Thesis, Zoology, Graduate School of Oceanogr., University of Rhode Island, Kingston, RI; 95 p.

Wentworth, Charles 1996. Estimating spatially clumped individuals using adaptive cluster sampling. MS Thesis, Department of Computer Science and Statistics, University of Rhode Island, Kingston, RI; 59 p.

Yang, Chun 1996. Design of a programmable temperature monitoring device for tagging small fish: A monolithic thermal sensor with digital data storage. MS Thesis, Electrical and Computer Engineering, University of Rhode Island, Kingston, RI.

1997

Escanero, Gallo A. 1997. Effects of bottom fishing on the gravel-substratum benthic megafauna of Georges Bank. MS Thesis, Graduate School of Oceanography, Univ. of Rhode Island, Kingston, RI; 111 p.

Friday, Nancy, 1997. Evaluating photographic capture-recapture estimates of abundance of North Atlantic humpback whales. Ph.D. Dissertation, Grad. School of Oceanogr., Univ. of Rhode Island, Kingston, RI; 173 p.

Janelle, Yungdong 1997. Quality evaluation of domestic sea scallop (*Placopecten magellanicus*). MS Thesis, Food Science and Nutrition, University of Rhode Island, Kingston, RI; 109 p.

Lacey, Elizabeth M. 1997. Evaluation of simultaneously extracted metals-acid volatile sulfide (SEM-AVS) in lacustrine sediment (Lake Champlain), estuarine sediment (Narragansett Bay) and under laboratory conditions. Ph.D. Dissertation, Graduate School of Oceanogr., Univ. of Rhode Island, Kingston, RI; 226 p.

Swanson, Melissa 1997. Estuarine measurements of chlorophyll fluorescence with high temporal resolution. MS Thesis, Graduate School of Oceanogr., Univ. of Rhode Island, Kingston, RI; 104 p.

1998

Carroll, Michael T. 1998. An assessment of the Atlantic bluefin tuna market: The economic implications for management. MS Thesis, Resource Economics, Univ. of Rhode Island, Kingston, RI.

Gampert, Robert 1998. Development of an acoustic tracking system for harbor porpoises (*Phocoena phocoena*) in the vicinity of gillnets. MS Thesis, Graduate School of Oceanogr., Univ. of Rhode Island, Kingston, RI; 154 p.

Niedbalski, Bonnie 1998. Size and timing of morphological metamorphosis in the American lobster (*Homarus americanus*). MS Thesis, Biological Sciences, Univ. of Rhode Island, Kingston, RI.

1999

Hein, Richard 1999. Age, growth, and factors controlling post-settlement habitat use of juvenile French grunts (*Haemulon flavolineatum*) near Tobacco Caye, Belize, Central America. Ph.D. dissertation, Graduate School of Oceanogr., Univ. of Rhode Island, Kingston, RI.

Hughes, Edmund 1999. Spatial characteristics of Atlantic sea scallops (*Placopecten magellanicus*) on Northern Georges Bank". MS Thesis, Graduate School of Oceanogr., Univ. of Rhode Island, Kingston, RI.

Ward, Jessica A. 1999. Right whale (*Balaena glacialis*) south Atlantic bight habitat characterization and prediction using remotely sensed oceanographic data. MS Thesis, Graduate School of Oceanogr., Univ. of Rhode Island, Kingston, RI.

2000

Raposa, Kenneth B. 2000. Nekton utilization of tidally restricted, restoring, and reference New England salt marshes. Ph.D. Dissertation, Graduate School of Oceanogr., Univ. of Rhode Island, Kingston, RI.

Cho, Jung-Hee 2000. Optimal exploitation of Atlantic herring stocks in the U.S.A.: Bioeconomic model for Atlantic herring. Ph.D. Dissertation, Dept. of Environmental and Natural Resource Economics, Univ. of Rhode Island, Kingston, RI.

Wagner, Melissa M. (2000) Nucleic acids as indicators of growth rates and nutritional condition of *Calanus finmarchicus* (Copepoda: Calanoida). Ph.D. Dissertation, Graduate School of Oceanography., Univ. of Rhode Island, Kingston , RI.

2001

Peck, Myron 2001. Metabolic studies of juvenile cod, *Gadus morhua*, and haddock, *Melanogrammus aeglefinus*. Ph.D. Dissertation, Graduate School of Oceanography, Univ. of Rhode Island, Kingston , RI.

Chen, Hongwei 2001. Optical properties and modeling of estuarine water with multispectral and hyperspectral data. MS Thesis, Brown University, Providence, RI.

2002

Hermesen, Jerome M. 2002. Effects of bottom fishing on the demersal megafauna and benthic productivity of Georges Bank. Ph.D. Dissertation, Graduate School of Oceanogr., Kingston, RI.

Ellis, Gregory 2002. An examination of the benthic macrofauna of Narragansett Bay and the possible implications of winter-spring bloom intensity on population size. MS Thesis, Graduate School of Oceanography, Univ. of Rhode Island, Kingston, RI.

2003

Castro, Kathleen (2003) Assessing the impact of habitat and stock enhancement for the American lobster (*Homarus americanus*), in Narragansett Bay, Rhode Island, Ph.D. Dissertation, University of Rhode Island, Biological Sciences.

Norden, Wendy (2003) Risk of predation during settlement for the postlarval lobster *Homarus americanus*. MS Thesis, University of Rhode Island, Biological Sciences.

Taylor, David L. (2003) Predation on the early life history stages of winter flounder (*Pseudopleuronectes americanus*) by the sand shrimp (*Crangon septemspinosa*). Ph.D. Dissertation, University of Rhode Island, Graduate School of Oceanography, 376 pp

2004

Allen, Angela R. (2004) An assessment of predation by the lobate ctenophore *Mnemiopsis leidyi* (Agassiz, 1865) on ichthyoplankton in Narragansett Bay, Rhode Island, MS Thesis, Graduate School of Oceanography, Univ. of Rhode Island, Kingston, RI.

2005

Choudhury, Arpita (2005) The use of microsatellite DNA fingerprinting for aquaculture and fisheries science. Ph.D. Dissertation, University of Rhode Island, Fisheries, Animal and Veterinary Science.

Poltis, Philip (2005) Effects of sea conditions on the physical performance of the National Marine Fisheries Service Northeast Fisheries Science Center bottom survey trawl.

Table 5. URI/NOAA CMER PROGRAM STAFF AND ADJUNCT FACULTY

Stationed at URI

Dr. Lawrence J. Buckley

Director URI/NOAA CMER Program
Affiliated Professor in Residence
Marine Biochemist
Graduate School of Oceanography
Coastal Institute Building

Adjunct Faculty Stationed at NEFSC Laboratories

Dr. Timothy Smith

Fisheries Biologist / Adjunct Professor Oceanography
NEFSC, Woods Hole Laboratory

Dr. Kenneth Sherman

Fisheries Biologist / Adjunct Professor Oceanography
NEFSC, Narragansett Laboratory

Dr. Steven Edwards

Economist / Adjunct Professor Resource Economics

Dr. Nancy Kohler

Fisheries Biologist / Adjunct Professor Oceanography
NEFSC, Narragansett Laboratory

Jay O'Reilly

Biologist / Adjunct Professor Oceanography
NEFSC, Narragansett Laboratory

Dr. Michael Fogarty

Fisheries Biologist / Adjunct professor of Biology
NEFSC, Woods Hole Laboratory

Dr. Jason Link

Biologist / Adjunct Professor Oceanography
NEFSC, Narragansett Laboratory

Dr. John Hoey

Fisheries Biologist / Adjunct professor of Fisheries

Table 6. Courses taught by URI/NOAA CMER PROGRAM Personnel

OCG 693V:	Fishery Oceanography Fall 1993, 1995, 1997, 2001, 2003, 2005	Larry Buckley (with Dr. Jeremy Collie)
ASP 487X:	Pathobiological Effects of Contaminants on Fish Spring 1996	Joel Bodammer (with Dr. Richard Wolke)
FST 392:	Anadromous Fish and Fish Passage Spring 1996	Alan Blott
OCG 693I:	Cetaceans: Population Dynamics and Assessments Fall 1993, 1994	Tim Smith
REN 426X:	Economics of Property Rights to Natural Resources Fall 1993	Steven Edwards
OCG 670:	Fish Population Dynamics Spring 1990, 1991, 1992	Michael Fogarty
OCG 694V:	Pollutants in the Marine Environment Spring 1991	Garry Mayer
ZOO 675:	Advanced Ecology Seminar Fall 1991	Michael Fogarty (with Dr. Saran Twombly)
ZOO 691:	Community Ecology Spring 1990	Michael Fogarty (with Dr. Saran Twombly)

Table 7. Participation on graduate committees by URI/NOAA CMER Program personnel since 1989.

Dr. Joel E. Bodammer

Robert Carlson	Fisheries, Animal and Veterinary Sci., M.S. (major prof., C)
Laurie Putnam	Fisheries, Animal and Veterinary Sci., M.S. (major prof., D)
Pamela Haynes	Fisheries, Animal and Veterinary Sci., M.S. (major prof., D)
Robert Fuller	Fisheries, Animal and Veterinary Sci., M.S. (C)

Dr. Michael J. Fogarty

Gustavo Bisbal	Zoology, Ph.D. (C)
Randy Camilio	Zoology, Ph.D. (D)
Margarida Castro	Oceanography, Ph.D. (C)
Michael Clancy	Zoology, Ph.D. (C)
Nancy Clancy	Zoology, Ph.D. (C)
Peter Garrahan	Oceanography, M.S. (C)
Tim Gleason	Zoology, Ph.D. (C)
Donna Johnson	Zoology, M.S. (major prof., C)
Abdellah Kinani	Fisheries, Animal and Veterinary Science, M.S. (C)
Nizha Saleh-Eddine	Fisheries, Animal and Veterinary Science, M.S. (C)
Najih Lazar	Fisheries, Animal and Veterinary Science, M.S. (C)
Edward Thier	Zoology, M.S. (C)
Kathleen Castro	Zoology, Ph.D. (C)
Paul Spencer	GSO, Ph.D. (C)
Tien-Shui Tsou	GSO, Ph.D. (C)
Katherine Bisack	Resource Economics, Ph.D. (C)
Barbara Somers	Biology, M.S.
Mark Ecker	Statistics and Computer science, M.S. (C)

Dr. Lawrence J. Buckley

Einar Hjorleifsson	Oceanography, Ph.D. (C)
Karla Johanning	Zoology, Ph.D. (C)
Gustavo Bisbal	Oceanography, Ph.D. (C)
Melissa Wagner	Oceanography, M.S. (major prof., C)
Lisa Kann	Oceanography, Ph.D. (C)
Barbara Dorf	Oceanography Ph.D. (C)
Alex Schreiber	Zoology, Ph.D. (C)
Tien-Shiu Tsou	GSO, Ph.D. (C)
Liuae Huang	Zoology, Ph.D. (C)
William Michaels	GSO, Ph.D. (D)
Diane Nacci	Zoology, Ph.D. (C)
David Alves	FAVS, MS (C)
Bonnie Niedbalski	Zoology, Ph.D. (C)
Carla Johanna	Zoology, Ph.D. (C)
Mike Peck	GSO, Ph.D. (C)
Cathy Duffy	GSO, Ph.D. (C)
Catalina Martinez	GSO, MS (C)
Markis Koelbl	FAVS, MS (C)
Erling Otterlei	U Bergen, Ph.D. (C)
Tarquin Dorrington	GSO, Ph.D. (C)
Rebecca Jones	FAVS, MS (C)
Arpita Choudury	FAVS, MS (C)
Steven Gavlik	GSO, Ph.D. (C)
Rachel Howell	FAVS, MS (C)

Mark Watson	FAVS, MS (C)
Julie Saint Andre	GSO, MS (major prof., D)
Joseph Cofone	GSO, MS (C)
Jessica Henderson	FAVS, MS (C)
Jerome Hermsen	GSO, Ph.D. (C)
Janalyn Sanders	FAVS, MS (C)
Steve Cadrin	FAVS, PH.D (C)
Jennie Mandeville	UNH, MS (C)
Jaques Zarate	FAVS, PH.D (C)
Phil Edwards	FAVS, MS (C)
Jennifer Andrew	FAVS, MS
Jennifer McCarthy	UMass, DNRC, MS
Kate Lankin	FAVS, MS
Richard Bell	GSO, Ph.D.
Kiersten Curti	GSO, Ph.D.

Dr. Kenneth Sherman

Jim McKenna	Oceanography, Ph.D. (C)
Jerry Prezioso	Oceanography, MS (C)
John Kurland	Oceanography, Ph.D. (C)
Kevin Thomas	Oceanography, Ph.D. (C)
David Avery	Oceanography, Ph.D.

Dr. Timothy Smith

Robert Griffin	Oceanography, Ph.D. (major prof., C)
Nancy Friday	Oceanography, Ph.D. (major prof., C)
Richard Petricig	Oceanography, Ph.D. (C)

Dr. Nancy Kohler

Michael Pirri	Statistics, MS (C)
Carolyn Belcher	Statistics, MS (C)
Allison Ferreira	Marine Affairs, MS
Brian DeAngeles	FAVS, MS

Jay O'Reilly

Kim Whitman Hyde	Oceanography, Ph. D. (C)
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Dr. Jon Hare

Abby Wood	Fisheries, Animal & Veterinary Science, M.S. (C)
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Dr. Jason Link

Kiersten Curti	GSO, Ph.D.
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C - degree requirements completed
D - dropped out of program

Appendix I. CMER Supported Publications

- August, P.V., R.D. Kenney, and T.P. Husband. 2001. "Mammals." In: P.V. August, L. Gould, R. Enser, and H. Ginsberg, eds. Vertebrates of Rhode Island: The Biota of Rhode Island, Volume 2. Kingston, RI: Rhode Island Natural History Survey.
- Bartlett, K. and R.D. Kenney. 2002. "Narrow River TMDL study nears completion." *Narrow River Notes* 2002 (winter): 1&3.
- Bengtson, D., M. Peck and C. Oviatt. (In Prep) "Effects of body size and temperature on the volitional swimming velocity of laboratory-reared juvenile Atlantic Cod, *Gadus morhua*." *J. of Fish Biol.*
- Bisagni, J. J. and M. Sano. (In press) "Satellite observations of short time scale sea surface temperature variability on southern Georges Bank." Submitted for *Cont. Shelf Res.*, Narragansett, RI.
- Bisagni, J.J., D.J. Gifford and C.M. Ruhsam. 1996. "The spatial and temporal distribution of the Maine coastal current during 1982." *Cont. Shelf Res.* 16:1-24.
- Bisagni, J.J. and P. Cornillon. 1996. "Satellite-derived sea surface temperature variability in the Gulf of Maine." In: Gulf of Maine News. Regional Association for Research in the Gulf of Maine, Spring 1996, p.1-12.
- Brodziak, J.K.T. and W.K. Macy. 1996. "Growth of long-finned squid (*Loligo pealei*) in the Northwest Atlantic." *Fish Bull.* 94:212-236.
- Brooks, Priscilla M. 1992. "The Northeastern market for blue mussels: Consumer perceptions of seafood safety and implications for aquaculture." In: U. Hatch and H. Kinnucan, eds. Aquaculture: Models and Economics. Boulder, CO: Westview Press Inc.
- Brooks, Priscilla M. and J. L. Anderson. 1992. "The northeast United States market for blue mussels: Consumer perceptions of seafood safety and the demand for mussels." In: Proceedings of the Sixth International Institute of Fisheries Economics and Trade Conference. IIFET: Oregon State University, Corvallis, OR.
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- Taylor, DL and JS Collie (2003) A temperature and size-dependent model of sand shrimp

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Appendix II. Selected Recent CMER Supported Presentations

Bradley, M., C. LaBash, B. Somers, K. Castro. "Lobster migration and movement in Narragansett Bay, RI, USA" Poster Presentation. ESRI Conference. August 2002.

Calabretta, C.J. "Will a Decrease in Anthropogenic Nutrients Affect the Macrobenthic Community of Narragansett Bay", Rhode Island? URI Graduate School of Oceanography, Student Seminar. November 19, 2004.

Calabretta, C.J. and C.A. Oviatt. "Benthic macrofauna in Narragansett Bay, RI: The relationship between winter/spring phytoplankton bloom dynamics and benthic infaunal abundance and diversity". Estuarine Research Federation (ERF) Conference. October 16-20, 2005. Norfolk, Virginia.

Castro, K.M., J.S. Cobb, R.A. Wahle, and J. Catena. "Progress on RI artificial reef project for lobsters." Narragansett Bay 2000 Summit. Jan. 2000.

Castro, K.M., Cobb, J.S., Wahle, R.A. and J. Catena. The effects of habitat addition and stock enhancement on distribution and abundance of American lobsters, *Homarus americanus*. Special session on Emerging Issues in Lobster Biology and Management. International Conference and Workshop on Lobster Biology and Management, Key West FL, Sept 1-15, 2000.

Castro, K.M., J. Stanley Cobb, R. Wahle and J. Catena. "The effects of habitat addition and stock enhancement for American lobsters, *Homarus americanus* on artificial reefs in Rhode Island" National Shellfish Association April, 2002.

Cho, Jung-Hee and J.M. Gates. "Environmental factors and natural resource stock: Atlantic herring case." Proceedings, International Institute of Fisheries Economics and Trade, Oregon State Univ., Corvallis, Oregon, 2000.

Cho, Jung-Hee, J.M. Gates, P. Logan, and A. Kitts. "The opportunity cost of ecosystem reserves for herring in the Northeast Large Marine Ecosystem." Proceedings, 1st Workshop on Social and Economic Dimensions of Large Marine Ecosystems, Alton Jones Campus, Univ. of RI, RIAES Contribution No. 3811, Feb. 2000.

Collie, J.S., S.J. Hall, M.J. Kaiser, and I.R. Poiner. "Are fishing effects on shelf-sea benthos clear-cut?" American Fisheries Society, Alaska Chapter Annual Meeting, Fairbanks, AK, November 2000.

Collie, J.S. and P. Valentine. "Effects of bottom fishing on gravel habitats of Georges Bank." American Fisheries Society, Alaska Chapter Annual Meeting, Fairbanks, AK, November 2000.

Collie, J.S., S.J. Hall, M.J. Kaiser, and I.R. Poiner. "Effects of mobile fishing gear on shelf-sea benthos". 2nd Symposium and Marine Conservation Biology, San Francisco, CA., June 2001.

Deacutis, C. "The Future for Narragansett Bay: Like Predicting NE Weather ?" NEERS Fall Meeting. Nutrient Symposium Invited Speaker, Block Island, RI. October 2004.

Deacutis, C. "Evidence of Impacts from Excess Nutrients in Narragansett Bay : Past , Present , & Future", Invited Plenary Speaker, RI SeaGrant Special Symposium on Nutrients in Narragansett Bay, Block Island, RI. Nov. 2004.

Deacutis, C. "Targeted Monitoring for Oxygen in Narragansett Bay", Invited Speaker, Oxygen Dynamics in Chesapeake Bay Revisited: New Perspectives on Trends, Impacts and Indicators. A Workshop Sponsored by Maryland Sea Grant College. University of Maryland, University College, Adelphi, MD August 2-3, 2004.

Deacutis, C. "Anatomy of a Fish Kill: Hypoxia and Anoxia in Narragansett Bay, RI", invited speaker, Brown University Center for Environmental Studies. Oct. 23, 2003. Brown Univ.

Durbin, E.G., M.C. Casas, R.G. Campbell, M.A. Wagner, J.A. Runge, B. Niehoff. "Calanus finmarchicus abundance, egg production and growth rates in the Gulf of Maine during winter." Ocean Sciences 2000, San

Antonio, TX. 2000.

Durbin, E.G., M. Casas, J. Pierson. "Interannual variability of *Calanus finmarchicus* on Georges Bank and in the Gulf of Maine: Results from the GLOBEC study." ASLO 2000, Copenhagen, 2000.

Durbin, E.G., M.Casas. "Interannual variability of zooplankton on Georges Bank and in the Gulf of Maine: Results from the GLOBEC study." 3rd International Zooplankton Production Symposium. Gijon, Spain. May, 2003

Gates, J.M. "Partial Populations: a New Arrow in the Quiver of Rights Based Fishing?" Seminar presented at FAO Fisheries, Rome, April 2003.

Gates, J.M. , Jung-Hee Cho and Jung-Sam Lee. "US Fisheries Policies :the New England Experience," presentation at the the Korean Maritime Institute, Seoul, Korea. October, 2003. Government of Thailand/FAO Conference in Cha-Am, Thailand, May 11-14, 2004:

Hermesen, J.M., J.S. Collie, and P.C. Valentine. "Effects of mobile fishing gear on epibenthic scavenging invertebrates on Georges Bank." American Fisheries Society, Southern New England Chapter meeting, June 2001.

Kenney, R. "North Atlantic right whale calving success: Linkages to the North Atlantic oscillation, oceanographic patterns, and prey availability." Fourteenth Biennial Conference on the Biology of Marine Mammals, Vancouver, BC, Canada. December 2001.

Kenney, R. "Dolphins of southern New England." Part of a fund-raising event with a special presentation of *Dolphins*, Audubon Society of Rhode Island, Feinstein IMAX Theater, Providence, RI, February 2003.

Kenney, R., "Linking climate (ENSO & NAO) to North Atlantic right whale reproduction." Bowhead/Right Whale Comparative Health and Physiology Workshop, New England Aquarium, Boston, MA, March 2003.

Landers, D.F., Castro, K.M., Angell, T.A., Estrella, B.T., Howell, P., and C. LoBue Shell disease in Southern New England lobsters. Presented at Sea Grant Long Island Lobster Health Symposium. Nov. 29, 2001.

Menendez, J., K. Castro, B. Somers, T. Racine, and J. Catena. "Effects of V-notching and tagging on the American lobster (*Homarus americanus*) at various molt stages." AFS SNEC Meeting, January 2002.

Ohman, M.D., K. Eiane, E.G. Durbin, J.A. Runge, H.-J. Hirche. "A comparative study of *Calanus finmarchicus* mortality patterns in five localities in the North Atlantic." 3rd International Zooplankton Production Symposium. Gijon, Spain. May 2003.

Oviatt, C. and G. Ellis. "Demise of the winter-spring bloom?" Estuarine Research Federation 16th Biennial Conference, St. Petersburg, FL., November 2001.

Oviatt, C. A. "Tertiary treatment will reduce nutrient concentrations and productivity at several trophic levels in Narragansett Bay". Estuarine Research Federation (ERF) Conference. October 16-20, 2005. Norfolk, Virginia.

Perry, R.I., H.P. Batchelder, S. Chiba, E.G. Durbin, W. Greve, D.L. Mackas, H.M. Verheye."Identifying global asynchronies in marine zooplankton populations: issues and opportunities." 3rd International Zooplankton Production Symposium. Gijon, Spain. May, 2003.

Robbins, S.H., Castro, K.M., Powell, C. and C. Recksiek. Movement and growth of Black sea bass on artificial reefs in Rhode Island. Southern New England AFS winter meeting, January 18, 2001.

Roman, C.T., K.B.Raposa, S. Adamowicz, M. James-Pirri, and J. Catena. "Salt marsh restoration in Narragansett Bay: An example from Sachuest Point." Narragansett Bay 2000 Symposium. Narragansett, RI, Jan. 2000.

Runge, J. A., Quinlan, E.G. Durbin, L. Incze, G. Lough, J. Manning, D. Mountai, B. Niehoff, S. Plourde, and F. Werner. "The effect of spatial and temporal variations zooplankton concentrations on larval cod growth and survival on Georges Bank: a sensitivity analysis based on modeling and observations." ICES CM 2000/M.

Runge, J.A., F.E. Werner, E.G. Durbin, J.A. Quinlan, K. Pehrson-Edwards, R.G. Lough, L.J. Buckley, S. Plourde, M.D. Ohman. "The effect of spatial and temporal variation in zooplankton concentrations on larval cod growth on Georges Bank: A comparison of two years based on modeling and observations." 3rd International Zooplankton Production Symposium. Gijon, Spain. May, 2003.

Somers, B. "Lobster studies in Rhode Island - Monitoring the North Cape Lobster Restoration Project 2002-2002" Poster Presentation. Fish Expo. October 2002.

Taylor, D.L. "Evidence of sand shrimp predation on juvenile winter flounder from three northwestern Atlantic estuaries" Southern New England Chapter American Fisheries Society Meeting, Bristol, RI. June 2002. Winner of Saul B. Salla Best Student Paper Award

Taylor, D.L. "Detecting juvenile flounder in the stomachs of invertebrate predators with the Ouchterlony immunoassay." New England Estuarine Research Society Meeting, Bar Harbor, ME. May 2002. Winner of Bostwick H. Ketchum Best Graduate Student Paper Award

Taylor, D.L. "Detecting juvenile winter flounder in the stomachs of invertebrate predators with the Öuchterlony double-diffusion immunoassay" American Fisheries Society, 132nd Annual Meeting, Baltimore, MD (Aug 2002) Winner of Outstanding Student Paper

Taylor, D.L. "Detecting juvenile winter flounder in the stomachs of invertebrate predators with the Öuchterlony immunoassay." Society of Environmental Toxicology and Chemistry Annual Meeting, Portland, ME (Apr 2002). Winner of Best Student Paper Award

Taylor, D.L. "Predation of winter flounder eggs by the sand shrimp *Crangon septemspinosa*" American Fisheries Society, 133rd Annual Meeting, Quebec City, Quebec, Canada (Aug 2003)

Taylor, D.L. "Predation of winter flounder eggs by the sand shrimp *Crangon septemspinosa* in Mt. Hope Bay" New England Estuarine Research Society/Southern New England Chapter of the American Fisheries Society Joint Meeting, Fairhaven, MA (May 2003)

Taylor, D.L. "Predation of winter flounder eggs by the sand shrimp *Crangon septemspinosa*" Marine Benthic Ecology Meeting, Groton, CT (Mar 2003)

Taylor, D.L. Sand shrimp "*Crangon septemspinosa* size-selective predation on post-settled winter flounder". Southern New England Chapter of the American Fisheries Society Meeting, Auburn, MA (Jan 2003)