

**1999 ANNUAL REPORT AND
STATEMENT OF PROGRAM DIRECTION**

**URI/NOAA CMER PROGRAM
UNIVERSITY OF RHODE ISLAND
GRADUATE SCHOOL OF OCEANOGRAPHY
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**URI/NOAA Cooperative
Marine Education and Research Program**

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EXECUTIVE SUMMARY

Now in its eleventh 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 October 1999, cooperative projects supported by the URI/NOAA CMER Program have totaled almost 6.1 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 80 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 1999 alone, the URI/NOAA CMER Program supported 11 research projects totaling \$686,736.

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 eleventh 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 80 graduate students since 1989 (Table 3). More than half 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. Six NMFS employees, two with adjunct faculty appointments, are stationed on the campus of URI in the Graduate School of Oceanography and the Department of Fisheries, Animal and Veterinary Science (Table 5). Several additional 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 1999, cooperative projects supported through the URI/NOAA CMER Program have totaled almost 6.1 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 14% of the projects funded. Studies of the effects of contaminants on marine organisms, and fishery statistics and engineering have accounted for 7% and 13% of funded projects respectively. Resource economics and fisheries product development together made up 11% of funded projects. 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 WITH 1999 BASE FUNDS

Base funding for the CMER program is provided by NOAA through the Northeast Fisheries Science Center. A substantial portion of 1999 base funds were used to continue support for multiyear projects begun in 1998. 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.

Priorities for allocation of base funds are set by the URI/NOAA CMER Coordinating Committee, composed of the URI Vice Provost for Marine Programs, the Director of the URI Agricultural Experiment Station, the Director of the Office of Science and Technology (NMFS), and the Science and Research Director of the Northeast Fisheries Science Center (NMFS). A listing of projects supported with 1999 base funds follows.

BASE FUNDS

“Economic Aspects Of Atlantic Herring Management” (CMER 99-05)

John Gates, Resource Economics, URI

The herring stocks of the northeast Atlantic have received relatively little attention from fisheries economists in the U.S. University investigators will use multi-objective programming and multi-level planning to investigate the consequences of alternative mechanisms for resolving allocation issues in the Atlantic herring fishery. This work is particularly relevant since recent increases in herring stocks in the Northeast are stimulating effort expansion and transfer from other regions and nations. The lack of a management plan may lead to an overly rapid expansion and subsequent collapse of herring stocks.

“The Use Of Microsatellite DNA To Manage Naturally Spawning Cod And Haddock Captive Broodstock” (CMER 99-06)

Terence Bradley, Fish, Animal and Veterinary Science, URI

In year two of this study, University investigators will continue the collection and analysis of cod and haddock samples for microsatellite DNA fingerprinting to determine the familial relationship of larvae produced by captive broodstock spawning in a community tank. The investigators will also determine if the reagents developed for fingerprinting of cod will identify the microsatellites of haddock and if this can be used to identify parents and siblings. This research would assess the use of a genetic tool that could be of significant economic benefit to aquaculture and assist in management of wild gadid stocks.

“Metabolic Studies Of Juvenile Cod And Haddock” (CMER 99-07)

David Bengtson, Fish, Animal and Veterinary Science, URI

Now in its third year, University investigators propose to define the energy budget components of cod and haddock early life stages as they grow from 10-80 mm length. The ontogenetic changes occurring during this growth period include: a) the transition from larval to juvenile stages; and b) the transition from a pelagic to a benthic existence. During year three, University investigators will determine food and oxygen consumption, fecal output, ammonia excretion and growth at several discrete sizes of fish. The data obtained in this study will provide new basic knowledge on the biology of these two species.

PROJECTS SUPPORTED WITH 1999 CONTRIBUTED FUNDS

In addition to the base funds provided by the Northeast Fisheries Science Center, funds were 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 in 1999 were continuations or extensions of projects funded in previous years. All projects in this category were approved by the URI/NOAA CMER Program coordinating committee for inclusion in the Program.

CONTRIBUTED FUNDS

“US GLOBEC: Abundance And Distribution Of Zooplankton On Georges Bank” (CMER 99-01C)

Edward Durbin, Graduate School of Oceanography, URI

Now in its fifth year, this year's objectives focus on understanding of the processes controlling the population dynamics of the target zooplankton species and a description of the zooplankton prey field for larval cod and haddock. The investigators will participate in six survey cruises in 1999 to quantify the abundance of zooplankton in space and time on Georges Bank over the winter/spring period as part of the US GLOBEC Georges Bank Program. They will continue to process samples from 1999 and earlier broad-scale cruises. The objective of the project is to describe the population dynamics of the copepods *Calanus finmarchicus* and *Pseudocalanus sp.* Both are important prey of cod and haddock larvae and juveniles.

“US GLOBEC: Spatial And Temporal Variability In The Occurrence, Distribution And Structure Of Sea Surface Temperature Fronts In The Georges Bank Region” (CMER 99-02C)

Peter Cornillon, Graduate School of Oceanography, URI; James Bisagni, University of Massachusetts

This a continuation of a project which focuses on the variability of sea surface temperature (SST) fronts in the Georges Bank Region. Nearly fifteen years of satellite-derived SST data are currently being reprocessed by the principal investigators for this study. A comprehensive analysis of this data will help to understand the oceanographic processes controlling the sources, sinks and retention of waters and organisms on Georges Bank. The investigators will use the positions and magnitudes of SST fronts to: (1) determine the mean and seasonal/interannual variation for the location and frequency of potential surface water loss/gain regions on Georges Bank; and (2) quantify the magnitude of losses (gains) to near surface waters due to wind and warm-core Gulf Stream rings.

“A Cooperative Proposal For Surveying And Monitoring The Economic Status Of Northeast Fishing Vessels” (CMER 99-03C)

John Gates, Resource Economics, URI

This is an ongoing project to enhance monitoring of fishing fleets via computerized simulators. Such a simulator exists for New England Otter trawl vessels through an earlier cooperative effort between the University of Rhode Island and the National Marine Fisheries Service (NMFS). The investigators will extend to other Northeast fisheries, a personal computer based simulator for otter trawlers; specifically, to explore its extension to hook and party/charter boat vessels. The purpose for this cooperative project is to develop a data collection system that will become part of the core statistics collected through NMFS and the cooperating universities for the assessment of fishery management issues and other fishery economics research needs.

**“Recovery Of Essential Fish Habitat And Estimation Of Scallop Abundance On Georges Bank”
(CMER 99-04C)**

Jeremy Collie, Graduate School of Oceanography, URI

This project builds on earlier CMER funded research on the effects of bottom fishing on benthic communities on Georges Bank. The objectives of this study are: (1) monitor the recovery of areas closed to fishing, in comparison with areas that remain open; (2) estimate the density and size distribution of scallops from still photographs of the sea bottom; and (3) investigate possible reasons for inconsistencies between population assessment model and survey-based estimates of scallop abundance.

**“Habitat Enhancement For Lobsters In Narragansett Bay”
(CMER 99-08C)**

J. Stanley Cobb, Biological Sciences, URI

The proposal details a five year project to study the development of populations on six small rocky reefs created to enhance the habitat for lobsters in areas of Narragansett Bay. A critical component of the project is to culture, tag, and release larval lobsters into Narragansett Bay. In cooperation with NOAA scientists, the University investigators will study the development of populations on the newly created habitat. The investigators will continue to monitor density and other population parameters of lobsters on the reefs and to increase the number of hatchery-reared released juveniles.

**“Development Of A Testing Program For Active Acoustic Alarms”
(CMER 99-09C)**

James Miller, Ocean Engineering, Graduate School of Oceanography, URI

This project is an ongoing study on the development of a passive acoustic tracking system for harbor porpoise (*Phocoena phocoena*) in the vicinity of gillnets. The study for 1999 consists of two under-graduate engineering projects related to management and protection of marine mammals. In the first project, the University investigators will model and measure the acoustic field strength near a gillnet equipped with Dukane pingers. The pingers are used to prevent entanglement of harbor porpoise in the nets. In the second project, the investigators will design an automated system for acquiring bearing and range information from “Big Eye” binoculars used for marine mammal surveys.

**“Support For The Oceanographic Remote Sensing Laboratory”
(CMER 99-10C)**

Peter Cornillon, Graduate School of Oceanography, URI; Grayson Wood and John O’Reilly, NEFSC

This project is part of an ongoing activity between URI/GSO and NMFS/NEFSC employing satellite remote sensing data in marine research. Investigators will continue development of data processing and image analysis algorithms and contribute to three multifaceted marine ecosystem research projects: (1) SST Frontal Analyses for the Northeast U.S. Shelf; (2) Monitoring Long-term Variability in Primary Productivity, Using Ocean Color Satellites; and (3) The NOAA Coast Watch Northeast Node Projects.

**“Maintenance, Archival, and Analysis of Western North Atlantic Right Whale Data”
(CMER 99-11C)**

Robert Kenney, Graduate School of Oceanography, URI

A cooperative research program conducted since 1986 by several institutions has developed a database on the western North Atlantic right whale (*Eubalaena glacialis*) which is one of the most complete long-term records of right whale occurrence in the world. Northern right whales are the most endangered large whale species in the world. The work to be completed by the university investigators under this award includes continued maintenance of the archived database, incorporation and quality control of newly-generated data, provision of data and data products to cooperating investigators and other interested researchers and agencies, and analyses based on the database for publication in the peer-reviewed scientific literature.

PROJECTS SUPPORTED IN 1999 ON NO-COST EXTENSIONS

Projects continued through 1999 on a no-cost extension.

“Length-Based Models of Narragansett Bay Winter Flounder” (CMER 97-NB1)

Jeremy Collie, Graduate School of Oceanography, URI

Carol Meise, National Fisheries Science Center, NOAA

“A Proposal to Study Patterns in Circulation within Narragansett Bay” (CMER 97-NB2)

Chris Kincaid, Graduate School of Oceanography, URI

“A Cooperative Proposal for Surveying and Monitoring the Economic Status of Northeast Fishing Vessels” (CMER 99-03C)

John Gates, Resource Economics, URI

PROJECTS COMPLETED IN 1999

Nine projects supported with CMER funds were completed in 1999. Requests for reprints or information should be directed to the principal investigators.

“Sachuest Point Salt Marsh (Sachuest Point NWR, Middletown, RI): Post Restoration Ecological Monitoring” (CMER 98-04C)

Charles T. Roman, Geological Survey, Graduate School of Oceanography, URI

The purpose of this post-restoration study was to monitor the results from the restoration of the Sachuest Point Salt Marsh and to determine the responses of marsh vegetation and nekton (fish and crustaceans) to enhance tidal exchange. For vegetation monitoring, data on species composition, relative abundance (percent cover) and structure (plant height) was collected. For nekton, a variety of methods (e.g., throw trap, bottom lift net) were employed to sample nekton in marsh creeks and marsh pools, and on the marsh surface. Data was then compared to pre-restoration values.

“Development Of An Acoustic Tracking System For Harbor Porpoise (*Phocoena phocoena*) In The Vicinity Of Gillnets” (CMER 97-05)

James Miller, Graduate School of Oceanography, URI

This study tested the possibility of acoustically tracking individual harbor porpoises using the animals' own echolocation sonar signals. The University investigators improved upon the existing system through deployment from a motionless bottom-mounted platform for extended periods of time, increasing the baseline for better bearing estimation and improving shielding from radiofrequency interference. Analysis software with graphical user interface was developed and demodulation schemes tested for use with future real-time tracking systems.

“Recovery Of Essential Fish Habitat On Georges Bank” (CMER 95-09)

Jeremy Collie, Graduate School of Oceanography, URI

In this 5 year study, University investigators examined the cumulative effects of dredging and trawling on Georges Bank benthic community. The overall objective of the project was to: (1) monitor the recovery of areas closed to fishing, in comparison with areas that remained open; (2) measure the rate of recolonization of clean gravel with settling trays; (3) estimate scallop densities from ROV transects; and (4) construct a mathematical model for the recolonization of abiotic gravel substrate. Analysis of samples have shown that undisturbed sites have significantly higher numbers of organisms, biomass and species diversity. The meta analysis showed that

gravel habitats are more sensitive to fishing disturbance than other sediment types, dredges cause more disturbance than trawls, and the impacts of chronic fishing disturbance exceed those of experimental fishing studies. The results of this study will be of wide interest to agencies and organizations concerned with the ecosystem effects of bottom fishing.

“Maturity In Female Summer Flounder And Monkfish” (CMER 97-07)

Jennifer Specker, Oceanography and Biological Sciences, URI

The goal of the project was to help improve management of summer flounder and monkfish fisheries by providing basic information on their reproductive biology. University investigators collected blood and gonads from summer flounder captured during fall and winter bottom trawl surveys to analyze their reproductive status, age and size at maturity. At the same time, investigators collected samples from monkfish to determine the applicability of techniques for assessing their reproductive biology. The objectives were: (1) to improve the accuracy of assigning maturity status to female summer flounder of age-classes 0 and 1; and (2) to assess the reproductive biology of monkfish. Based on their findings, the investigators have recommended criteria for assessing maturity in both summer flounder and monkfish.

“Maintenance Of The Computer Database For The Right Whale, *Eubalaena glacialis*, In Waters Of The Western North Atlantic” (CMER 96-19C)

Robert D. Kenney, Graduate School of Oceanography, URI

A cooperative research program conducted since 1986 by several institutions has developed a database on the western North Atlantic right whale (*Eubalaena glacialis*) which is one of the most complete long-term records of right whale occurrence in the world. Northern right whales are the most endangered large whale species in the world. Under this award, University investigators developed a centralized computer database which very likely represents the best long-term record of cetacean sighting information. The project included maintenance of the archived database, incorporation and quality control of newly-generated data, provision of data and data products to cooperating investigators and other interested researchers and agencies, and analyses based on the database for publication in the peer-reviewed scientific literature.

“Engineering Design Of A Programmable, Temperature Monitoring Tag For Smolt Atlantic Salmon” (CMER 97-02C)

Conrad Recksiek, Fisheries, Animal and Veterinary Science, URI

Godi Fischer, and James Daly, Electrical Engineering, URI

A four-year research project devoted to designing a programmable, temperature monitoring tag for Smolt Atlantic Salmon. The objective was to develop a battery powered monolithic archival temperature sensor capable of storing up to 1,000 temperature readings over a period of three years. The sensors would be used to collect habitat information (i.e., the water temperature) of Atlantic salmon during their sojourn at sea. Tagging would occur while the fish were still in their natal streams. The work included design engineering, performance simulation, and component testing. Despite the limitations imposed by the need to conserve power and size, the device is expected to be an efficient new tool in the study of the thermal ecology of juvenile fish. The project addressed the need for Atlantic salmon postsmolt in-situ oceanic habitat observations.

“Monitoring The Economic Status Of Northeast Fishing Vessels” (CMER 96-21C)

John M. Gates, Resource Economics, URI

The project was initiated as a survey of small trawlers in the Northeast; it was extended for a second year to encompass large trawlers as well. An economic simulator developed for New England Otter trawl vessels through a cooperative effort between the University of Rhode Island and the National Marine Fisheries

Service (NMFS) was used in the study. Field testing of survey instrument with focus groups was implemented as part of the project. The use of questionnaires, telephone surveys, and various meetings were part of the study. Survey instrument and results were provided to the Northeast Fisheries Science Center.

“Analysis Of Recirculating Systems For Shellfish” (CMER 97-03C)

James Anderson, Resource Economics, URI

This project focused on economic issues associated with land-based recirculating systems for shellfish and finfish aquaculture. University investigators worked closely with Northeast Fisheries Science Center staff, Social Sciences Branch staff, as well as Milford Laboratory staff on identifying and communicating practical operational parameters of closed, recirculating, land-based culture systems for marine finfish and shellfish. Economic costs and returns associated with the operational parameters and key economic factors affecting the financial viability of these land-based recirculating systems were evaluated.

“Assessment Of Atlantic Bluefin Tuna Market” (CMER 97-04C)

James Anderson, Resource Economics, URI

This study examined factors influencing the Japanese wholesale market for Atlantic bluefin tuna and implications for management. The goal of the study was to evaluate how supply, time of harvest, and quality characteristics influence the price of U.S. Atlantic bluefin tuna sold on the Japanese wholesale market. The study also focused on the relationship between prices in Japan and ex-vessel prices received by U.S. fishermen. How different fishery management options influence gross revenues received by U.S. fishermen was also examined.

PROGRAM DIRECTOR’S RESEARCH ACTIVITIES

The program director’s research was supported in 1999 through several grants with University and NMFS co-investigators:

"Development of a Commercially Viable Aquaculture Industry in New England Based on Cod and Haddock" Sea Grant Program
Hunt Howell, Department of Zoology and Center for Marine Biology, UNH
Linda Kling, Department of Animal, Veterinary and Aquatic Sciences, UMaine
Larry Buckley, URI/NOAA CMER Program
Terry Bradley, Department of Fisheries, Animal and Veterinary Sciences, URI

"Dispersive and Adjective Influences on the Survival of Cod and Haddock Larvae on Georges Bank," NOAA/NSF GLOBEC Northwest Atlantic Georges Bank Program
R.G. Lough, J.P. Manning and E.M. Caldarone, NOAA/NMFS/NEFSC
L.J. Buckley, URI/NOAA CMER Program
L.S. Incze, Bigelow Laboratory of Ocean Sciences

"U.S. GLOBEC: Environmental Consequences of Tidal-Front Entrainment in Larval Fish Along the Southern Flank of Georges Bank," Coastal Ocean Program
R.G. Lough, J.P. Manning and E.M. Caldarone, NOAA/NMFS/NEFSC
L.J. Buckley, URI/NOAA CMER Program
L.S. Incze, Bigelow Laboratory of Ocean Sciences
D.W. Townsend, School of Marine Sciences, University of Maine

"Digestive Enzyme Activity and Regulation in Juvenile Cod (*Gadus morhua*) and Haddock (*Melanogrammus aeglefinus*) from Georges Bank Fed Natural or Commercial Diets"
Todd Smith, NRC Post-Doctoral Fellow
L.J. Buckley, URI/NOAA CMER Program

"Establishing Mortality Risks Associated with Starvation for Atlantic Cod Larvae using Molecular Markers and Cox Regression Models," National Science Foundation (NSF)
Tun Liang Ong, Graduate School of Oceanography, URI
L.J. Buckley, URI/NOAA CMER Program

These projects provided support to a marine scientist, a post-doctoral fellow, three marine research specialists and four undergraduate students.

Figure 1. CMER Program Topics

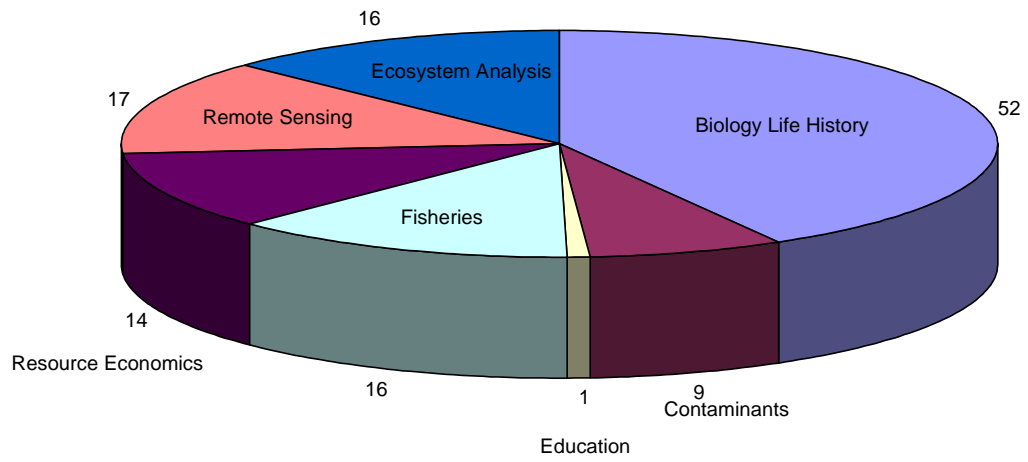


Table 1. Funding for URI CMER Program (Thousands of Dollars)

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
Total	1025.3	5042.1	6067.4

Departments represented:

- Department of Resource Economics
- Department of Experimental Statistics
- Department of Fisheries, Animal and Veterinary Science
- Graduate School of Oceanography
- Department of Natural Resource Science
- Department of Zoology
- Department of Pharmacognosy and Environmental Health
- Department of Electrical Engineering
- Department of Food Science & Nutrition
- Department of Ocean Engineering

Table 2. Summary Of URI/CMER Funded Projects

<u>FY</u>	<u>CMER</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
1989	89-01	Economic Analysis of US Market for Blue Mussels	Anderson ^a Brooks	20,000 ^B
	89-04	Genetics of Gulf of Maine <u>Calanus</u> Populations	Wishner ^b Kann	20,000 ^B
	89-05	Flow-through Sampler for Automated Plankton Analyzer	Jeffries ^b Berman ^c	30,000 ^B
	89-08	Spring Bloom and <u>Calanus</u> Production in the Gulf of Maine	Durbin ^b Durbin Green ^c	23,000 ^B
	89-09	Trawl Selectivity and Survival of Cod-End Escapees	DeAlteris ^d	22,500 ^B
	89-11	CD-ROM <i>Aquatic Sciences and Fisheries Abstract</i>	Sieburth	5,000 ^B
	89-13	Applications of Satellite Remote Sensing Data	Cornillon ^b Armstrong ^c	39,000 ^B
1990	90-01	Genetics of Gulf of Maine <u>Calanus</u> Populations	Wishner ^b Kann	20,000 ^B
	90-05	Integrated Program for Research on the Northern Right Whale	Winn ^b Kenney ^b	204,400 ^B
	90-06	Remote Sensing, Hydrographic Structure, and Zooplankton Production in the Gulf of Maine	Gifford ^b Durbin Bisagni ^c Meise-Munns	20,200 ^B
	90-08	Immune Response in Atlantic Salmon and Winter Flounder	Bodammer ^d Bradley	18,600 ^B
	90-09	Economic Analysis of US Market for Blue Mussels	Anderson ^a Brooks	16,300 ^B
	90-12	Fisheries Law Enforcement	Sutinen ^a	6,500 ^B
	90-15	On-Line Access to In Situ Oceanographic Data Sets	Cornillon ^b Holloway	17,400 ^B
	90-17	National Eutrophication Experiment	Hinga, ^b et al.	121,000
1991	91-01	Flow-Through Sampler for Automated Plankton Analyzer	Jeffries ^b Berman ^c	13,000 ^B
	91-02	Immune Response in Atlantic Salmon and Winter Flounder	Bodammer ^d Bradley	9,900 ^B
	91-03	Spring Bloom and <u>Calanus</u> Production in the Gulf of Maine	Durbin ^b Durbin Green ^c	17,500 ^B
	91-04	Fish Stomach Evacuation Rates	Durbin ^b Durbin Fogarty ^f	17,600 ^B +5,000 [*]
	91-05	Trawl Selectivity: Fish Behavior in the Vicinity of a Trawl	DeAlteris ^d Castro	23,700 ^C
	91-06	Remote Sensing, Hydrographic Structure, and Zooplankton Production in the Gulf of Maine	Gifford ^b Durbin Bisagni ^c Meise-Munns	4,100 ^B

Table 2. Cont.

<u>FY CMER</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
Proj. No.			
91-07	Geostatistical Estimates of Shellfish Abundance	Heltshe ^g	17,900 ^B
91-09	Monitoring Economic Status of Otter Trawl and Scallop Vessels	Gates ^a Wang ^h	36,900 ^C
91-10	Demersal Gillnet Fishery of the Gulf of Maine	DeAlteris ^d	20,000 ^C
91-11	Integrated Program for Research on the Northern Right Whale	Winn ^b Kenney	188,000 ^C
91-12	Applications of Satellite Remote Sensing Data	Cornillon ^b Armstrong ^c	45,000 ^C
91-13	Coastal Wetland Mapping and Change Detection in the NE	August ⁱ LaBash Golet Civco ^j	32,500 ^C
91-14	Student Research Training Program	Winn ^b Smith ^f	43,500 ^C
1992 92-01	Immune Response in Atlantic Salmon and Winter Flounder	Bodammer ^d Bradley	10,800 ^B
92-02	National Eutrophication Experiment	Hinga ^g	68,000 ^C
92-03	Integrated Program for Research on the Northern Right Whale	Winn ^b Kenney	188,600 ^C
92-04	Student Research Training Program	Winn ^b Smith ^f	46,300 ^C
92-05	Applications of Satellite Remote Sensing Data	Cornillon ^b Armstrong ^c	41,000 ^C
92-06	Fish Stomach Evacuation Rates	Durbin ^b Durbin Fogarty ^f	26,400 ^B
92-07	Genetics of Gulf of Maine <u>Calanus</u> Populations	Wishner ^b Kann	3,600 ^B
92-08	Recruitment Strategies of Decapods	Cobb ^k	6,900 ^B
92-09	Remote Sensing, Hydrographic Structure, and Zooplankton Production in the Gulf of Maine	Gifford ^b Durbin Bisagni ^c Miese-Munns	2,500 ^B
92-10	Analysis of the NEFSC Shark Data Base	Heltshe ^g Casey ^c	37,000 ^C
1993 93-06	Reproductive Success of Summer Flounder	Bengtson ^k Pereira ^l	12,967 ^B
93-07	Diarrhetic Shellfish	Maranda ^m	8,961 ^B
93-08	Fish Stomach Evacuation Rates	Durbin ^b Durbin Fogarty ^f	26,951 ^B
93-09	Effects of Scallop Dredging	Collie ^b	22,889 ^C
93-10	Immune Response II	Bodammer ^d	12,184 ^B
93-11	Decapods Recruitment	Cobb ^k	15,538 ^B

Table 2. Cont.

<u>FY</u>	<u>CMER</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
		<u>Proj. No.</u>		
		93-12	Student Research Training Program	Winn ^b Smith ^f 59,119 ^C
		93-13	Right Whale Database	Winn ^b Kenney ^b 29,945 ^C
		93-14	Applications of Satellite Remote Sensing Data	Cornillon ^b Armstrong ^c 49,000 ^C
1994		94-01	Harbor Porpoise Abundance	Heltshe ^g 20,614 ^{BC}
		94-04	Scallop Quality Evaluation	Pivarnik ^o 29,990 ^C
		94-08	Fish Stomach Evacuation Rates	Durbin ^b Durbin Fogarty ^f 15,804 ^C
		94-09	Bluefin Tuna Regulations	Swallow ^a 14,415 ^B
		94-11	Recruitment Strategies in Marine Decapods	Cobb ^k
		94-12	Student Research Training Program	Winn ^b Smith ^f 71,235 ^C
		94-13	Database Right Whale	Winn ^b Kenney ^b 36,445 ^C
		94-14	Oceanographic Remote Sensing	Cornillon ^b Armstrong ^c 40,250 ^C
		94-15	Temperature Monitoring Tag for Salmon	Recksiek ^d Daly ⁿ Fischer ⁿ 53,946 ^C
		94-19	Effect of Harvesting Gear Type	DeAlteris ^d Grogan 22,123 ^B
		94-21	Zooplankton Analysis Group Rates	Durbin ^b Durbin Busch ^c 200,000 ^B
1995		95-02	Characterization of Mid-Atlantic Coastal Gillnet	DeAlteris ^d Lazar 41,050 ^C
		95-03	Age Structure of Squid	Macy ^b 21,078 ^B
		95-04	Quality Evaluation of Scallops	Pivarnik ^o 29,399 ^B
		95-09	Effects of Dredging on Benthic Megafauna of N. Georges Bank	Collie ^b 22,918 ^B
		95-11	Recruitment Strategies of Decapods: Comparative Approach	Cobb ^k 15,000 ^B
		95-13	Survey Methods for Harbor	Heltshe ^g 22,522 ^C
		95-14	Applications of Satellite Remote Sensing	Cornillon ^b Armstrong ^c 26,150 ^C
		95-15	Engineering for Programmable Temperature Tag	Recksiek ^d 59,776 ^C
		95-16	Development of Client and Server Libraries	Cornillon ^b 30,000 ^C
		95-17	Student Research Training Program	Winn ^b Smith ^f 75,288 ^C
		95-18	Broad Scale Zooplankton on Georges Bank	Durbin ^b 300,000 ^C
		95-19	Right Whale Database	Winn ^b Kenney ^b 55,828 ^C
1996		96-01	Maturity in Atlantic Cod and Summer Flounder	Specker ^{bk} 25,110 ^B

Table 2. Cont.

<u>FY CMER</u>	<u>Proj. No.</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
	96-02	Distribution and Abundance of Hydroids	Sullivan ^b Klein-MacPhee ^b	20,701 ^B
	96-09	Effects of Dredging on Benthos	Collie ^b	46,917 ^B
	96-10	Ecological Investigation of Sachuest Point Salt Marsh	Rowman ^b	38,100 ^C
	96-11	Buoy System for Remote Tracking	Recksiek ^d	35,000 ^C
	96-12	Population Structure in Longfinned Squid	Macy ^b	24,356 ^B
	96-14	OPDB/DODS Server at NODC	Cornillon ^b Milkowski ^b	30,000 ^C
	96-14	Satellite Remote Sensing	Cornillon ^b Bisagni ^b	89,300 ^C
	96-18	US GLOBEC: Zooplankton Technical Group	Durbin ^b	230,000 ^C
	96-19	Right Whale Database	Kenny ^b	39,166 ^C
	96-20	Acoustic Tracking of Harbor Porpoises	Miller ^p	54,480 ^C
	96-21	Economic Analysis of North East Fishing Vessels	Gates ^a	75,000 ^C
	96-22	Marine Ecosystems: Visualization of Patterns and Trends	August ⁱ	60,000 ^C
1997	97-03	Recovery of Essential Fish Habitat on Georges Bank	Collie ^b	24,403 ^B
	97-05	Development of an Acoustic Tracking System for Harbor Porpoises	Miller ^p	20,766 ^B
	97-06	Feeding and Metabolic Studies of Juvenile Cod and Haddock	Bengtson ^d Peck ^b Oviatt ^b	30,702 ^B
	97-07	Maturity in Female Summer Flounder and Monkfish	Specker ^{bk}	30,762 ^B
	97-01C	Right Whale Database	Kenny ^b	122,564 ^C
	97-02C	Salmon Temperature Monitoring Tag	Recksiek ^d Fischer ⁿ Daly ⁿ	34,895 ^C
	97-03C	Analysis of Recirculating Systems for Shellfish	Anderson ^a	24,507 ^C
	97-04C	Assessment of Atlantic Bluefin Tuna Market	Anderson ^a	47,997 ^C
	97-05C	Monitoring the Economic Status of NE Fishing Vessels	Gates ^a	74,806 ^C
	97-06C	Oceanographic Remote Sensing	Cornillon ^b Wood ^c	23,301 ^C
	97-07C	Habitat Enhancement for Lobsters in Narragansett Bay	Cobb ^k	98,002 ^C
	97-08C	US GLOBEC: Abundance of Zooplankton on Georges Bank	Durbin ^b	150,000 ^C
	97-NB1	Winter Flounder Length Model	Collie ^b Meise ^f	40,853 ^C
	97-NB2	Narragansett Bay Tidal Model	Kincade ^b	10,000 ^C
	97-NB3	Benthic Chemistry	King ^b Quinn ^b	84,750 ^C

Table 2. Cont.

<u>FY</u>	<u>CMER</u>	<u>Short Title</u>	<u>Investigator</u>	<u>Amount</u>
	<u>Proj. No.</u>			
	97-NB4	Time-Series Monitoring	Kester ^b	104,777 ^C
	97-NB5	Bay Survey-Towed Body	Durbin ^b	87,725 ^C
			Oviatt ^b	
1998	98-01C	Abundance of Zooplankton on GB	Durbin ^b	300,000 ^C
	98-02C	Variability in Temperature Fronts	Cornillon ^b	98,000 ^C
			Bisagni	
	98-03C	Harbor Porpoise Tracking System	Miller ^b	30,500 ^C
	98-04C	Sachuest Point Restoration	Roman ^b	4,793 ^C
	98-05C	Remote Sensing Laboratory	Cornillon ^b	23,301 ^C
			Wood ^c	
	98-06C	Active Acoustic Alarms Development	Miller ^b	45,000 ^C
	98-01	Atlantic Herring Management	Gates ^a	26,487 ^B
	98-05	Estimation of Scallop Abundance	Collie ^b	24,178 ^B
	98-07	DNA Fingerprinting of Cod Broodstock	Bradley ^d	30,164 ^B
	98-08	Metabolic Studies of Cod & Haddock	Bengtson ^d	36,585 ^B
			Peck ^b , Oviatt ^b	
1999	99-01C	Abundance of zooplankton	Durbin ^b	300,000 ^C
	99-02C	Variability and SST fronts	Cornillon ^b	
			Bisagni ^q	32,000 ^C
	99-03C	Monitoring Northeast Fishing Vessels	Gates ^a	60,183 ^C
	99-04C	Estimation of Scallop Abundance	Collie ^b	24,972 ^C
	99-05	Atlantic Herring Management	Gates ^a	29,729 ^B
	99-06	DNA Fingerprinting of Cod Broodstock	Bradley ^d	34,839 ^B
	99-07	Metabolic Studies of Cod and Haddock	Bengtson ^d	37,947 ^B
			Peck ^b , Oviatt ^b	
	99-08C	Habitat Enhancement for Lobsters	Cobb ^k	94,042 ^C
	99-09C	Marine Mammals	Miller ^p	10,000 ^C
	99-10C	Maintenance of Right Whale Data Base	Kenney ^b	39,965 ^C
	99-11C	Remote Sensing Laboratory	Cornillon ^b	23,059 ^C
			Wood ^c	

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- B Base CMER Program funds
 - C Funds contributed to the CMER Program
 - * Support for R/V Gloria Michelle
 - a URI, Department of Resource Economics
 - b URI, Graduate School of Oceanography
 - c NEFSC, Narragansett Laboratory
 - d URI, Department of Fish, Animal and Veterinary Science
 - e URI, Pell Marine Science Library
 - f NEFSC, Woods Hole Laboratory
 - g URI, Department of Computer Science Experimental Statistics
 - h NER, Gloucester
 - i URI, Department of Natural Resource Science
 - j University of Connecticut
 - k URI, Department of Zoology
 - l NEFSC, Milford Laboratory
 - m URI, Department of Pharmacognosy and Environmental Health Sciences
 - n URI, Department of Electrical Engineering
 - o URI, Department of Food Science and Nutrition
 - p Department of Ocean Engineering
 - q UMass, Department of Physics

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. Hermsen (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)
95-13	Survey for Harbor Porpoise	B. Koloziej (MS, T, C) C. Wentworth (MS, T, C)

Table 3. Cont.

<u>CMER#</u>	<u>SHORT TITLE</u>	<u>STUDENTS SUPPORTED</u>
95-15	Programmable Temperature Tag	Yang Chun (MS,T,C) ^{96-11C} D. Hyun (MS,T,Ph.D.) S. Lee (Ph.D.)
97-02C		B. Watkins (BS,C)
95-04	Quality Evaluation of Scallops	Y. Janelle (MS,T,C) Jaiming Ye (MS)
95-03	Squid Age Structure	R. Hein (Ph.D.,C)
96-12		
96-22C	Ecosystems Visualization	C. Damon (MS,T,C)
96-02	Abundance of Hydroids	J. Williams (MS,T,Ph.D.)
96-18C	US GLOBEC: Zooplankton	A. Lapolla (MS,T,C)
97-08C		K. Collins (Ph.D.)
98-01C		
99-01C		
97-07C	Habitat Enhancement for Lobsters	K. Castro (Ph.D.) B. Murphy (MS) S. Robbins (MS)
99-08C		
96-20C	Harbor Porpoise Tracking	R. Gampert (MS,T,C) M. Langlais (BS,C)
97-05		M. Zarnetske (MS,C)
98-03C		J. LaPorte (BS)
99-09C		P. Lallemand (Ph.D.)
96-21C	Fishing Vessel Economics	E. Gudmundsson (Ph.D.)
97-05C		
99-03C		
97-06	Metabolic Studies of Cod/Haddock	M. Peck (MS,T,Ph.D.)
98-08		
99-07		
97-03C	Recirculating Systems for Shellfish	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	Remote Sensing Laboratory	Tim Mavor (Post-Doc)
98-05C		
99-11C		
97-07	Female Summer Flounder	C. Casey (MS,C) B. Soffientino (Ph.D.) C. Martinez (MS,C) R. Merson (Ph.D.,C)
97-NB2	N. Bay Tidal Model	W. Deleo (MS,T,C)
97-NB3	Benthic Chemistry	E. Lacey (Ph.D.,C) C. Reddy (Ph.D.,C) P. Hartman (Ph.D.)
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)
97-NB5	Bay Survey - Towed Body	C. Suchman (Ph.D.,C) C. Melrose (MS)
98-07	Microsatellite DNA Fingerprinting	A. Choudury (MS)
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.,C)

¹T - Thesis on topic supported by CMER²C - Degree requirements completed³D - 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. PhD 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 osellata*). 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 Oceanography, University of Rhode Island, Kingston, RI; 167 p.

Kolodziej, Bruce, 1996. (In manuscript form under review). Comparing two adaptive sampling schemes to estimate abundance of clumped individuals. MS Thesis Department of Computer Science and Statistics, University 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 Oceanography, 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 Oceanography, University 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, University 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 Oceanography, University 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, University 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 Oceanography, University 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 Oceanography, University 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.

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

Stationed at URI

Dr. Lawrence J. Buckley

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

Dr. Joel E. Bodammer

Adjunct Professor
Pathobiologist
Department of Fisheries, Animal and Veterinary Science
College of Resource Development
East Farm

Alan Blott, Vernon Nulk, John Kenney

Fisheries Engineering
Department of Fisheries, Animal and Veterinary Science
College of Resource Development
East Farm

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

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

OCG 693V:	Fishery Oceanography Fall 1993, 1995, 1997	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	Allan 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. (Dr. R.E. Wolke, major prof. 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.
Paul Spencer	GSO, Ph.D. (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.
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.
Cathy Duffy	GSO, Ph.D. (C)
Catalina Martinez	GSO, MS (C)
Markis Koelbl	FAVS, MS
Tarquin Dorrington	GSO, Ph.D.
Rebecca Jones	FAVS, MS
Arpita Choudury	FAVS, MS

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
Carolyn Belcher	Statistics, MS (C)
Allison Ferreira	Marine Affairs, MS

C - degree requirements completed
D - dropped out of program

Appendix I. CMER Supported Publications

- 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.
- Brooks, Priscilla M. 1991. "Consumer perception of seafood safety: A case study of the northeast market for blue mussels." In: Virginia Halderman (ed.), Proceedings of the 37th Annual Conference of the American Council on Consumer Interests. ACCI: Reference Document, Univ. of Missouri, Columbia, MO.
- Carlson, R.E., D.P. Anderson, and J.E. Bodammer. 1993. "*In vitro* cortisol administration suppresses the *in vitro* primary immune response of winter flounder lymphocytes." Fish and Shellfish Immunology 3:299-312.
- Carroll, M.T., J.L. Anderson and J. Martinez-Garmendia. 1998. (Submitted) "Market understanding and opportunities for market-based public management of natural resources: US-Japan bluefin tuna trade." J.Public Manag. & Mktg.
- Carroll, M.T., J.L. Anderson and J. Martinez-Garmendia. 1999. (Submitted) "Pricing U.S. North Atlantic bluefin tuna and implications for management." Land Economics.
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Appendix II. Recent CMER Supported Presentations.

- Campbell, R., J.A. Runge, and E. Durbin. "Growth, molting, and egg production rates of *Calanus finmarchicus* on Georges Bank: evidence for food limitation." AGU/ASLO Ocean Sciences Mtg. San Diego, Feb. 1998.
- Casey, C.S., B. Soffientino, C. Martinez, M. Terceiro, F. Almeida, and J. Specker. "Maturity status in female summer flounder: 1996-1997." Won best student paper presentation. American Fisheries Society, Southern New England Chapter. Woods Hole, MA, June 1997.
- Casey, C.S., R.R. Merson, B. Soffientino, C. Martinez, M. Terceiro, F. Almeida, and J.L. Specker. "Length-at-maturity of summer flounder (*Paralichthys dentatus*)." Estuarine Research Federation. Providence, Rhode Island, October 1997.
- Castro, K.M., J.S. Cobb, R.A. Wahle, and J. Catena. "Home for the homeless or just passing through?" American Fisheries Society Annual Mtg., Charlotte, N.C., Aug. 1999.
- 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.
- Cobb, J.S. "Recruitment strategies in lobsters." Biology at Noon, Graduate School of Oceanography, University of Rhode Island, Narragansett, RI, Nov. 1997.
- Cobb, J.S. and K.M. Castro. "An artificial reef for lobsters in Rhode Island, USA." Magdalen Islands, Canada, October 1997.
- Cobb, J.S. "Oceanic processes in recruitment dynamics." Fifth International Workshop on Lobster Biology, Queenstown New Zealand, February 1997.
- Cobb, J.S. "Decapod recruitment strategies: A comparison." Universidad Nacional Autonoma de Mexico, Estacion Puerto Morelos, Mexico, June 1997.
- Cobb, J.S. and K.M. Castro. "The role of artificial reefs for lobster - enhancement or redistribution?" American Fisheries Society, Southern New England Chapter Mtg., Jan. 1998.
- Cobb, J.S. "Early life history and recruitment strategies in lobsters." CEFAS Fisheries Laboratory, Lowestoft, England, June 1998.
- Collie, J. "Scraping the bottom: Impacts of bottom fishing on benthic megafauna on Georges Bank." Danish Institute for Fisheries Research, Charlottenlund, Denmark, Oct. 1999.
- Collie, J. "Studies in New England." Conference of Fishing Gear Effects on the Sea Floor of New England, Ashland, MA, May 1997.
- Collie, J. "Impacts of bottom fishing on the benthic megafauna of a gravel habitat." Annual Mtg. of the Society for Conservation Biology, Victoria, B.C., June 1997.
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