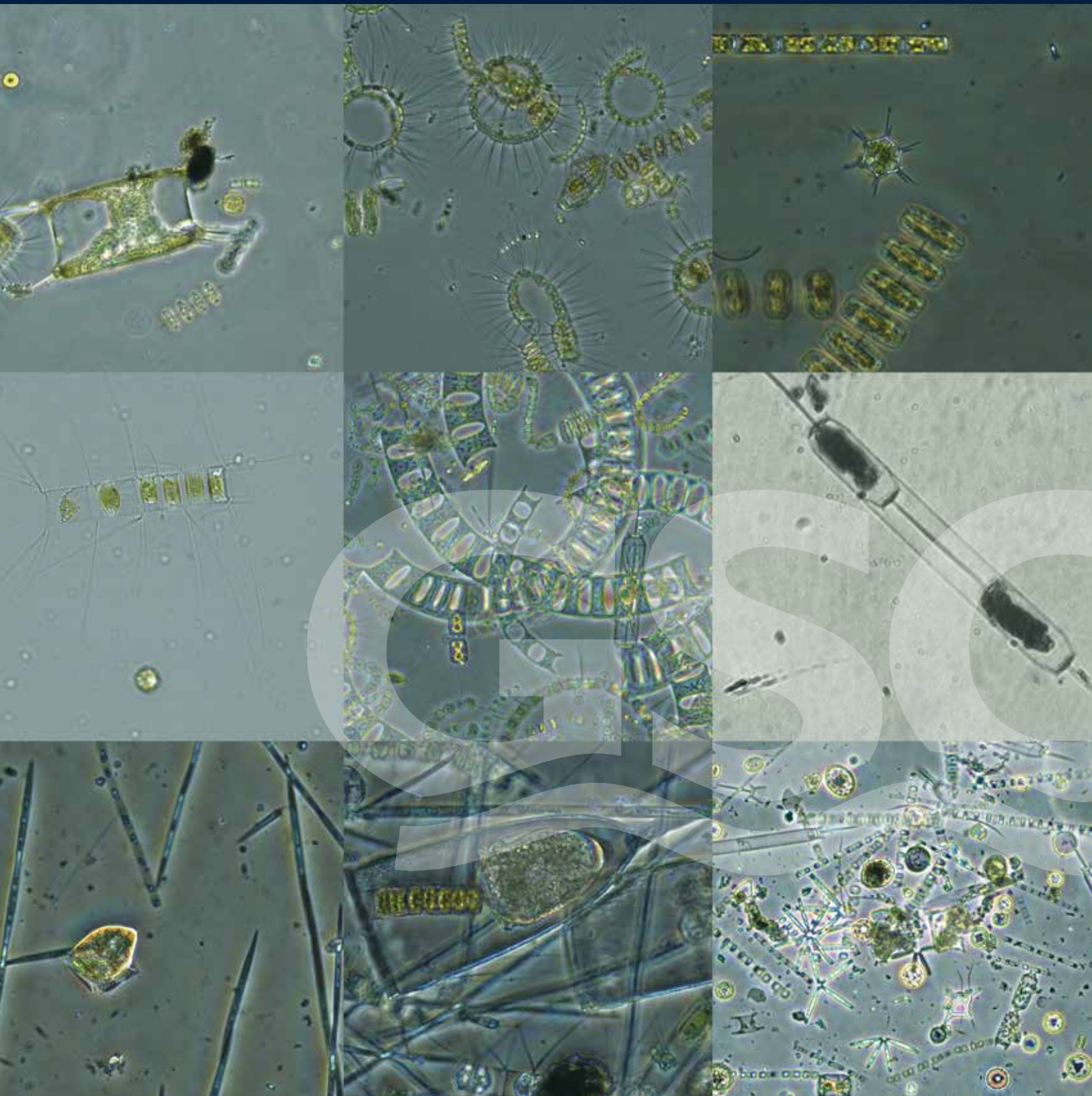


THE  
UNIVERSITY  
OF RHODE ISLAND  
GRADUATE SCHOOL  
OF OCEANOGRAPHY

# ANNUAL REPORT 2015









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Covers: Pictures of diatoms, silicoflagellates, and dinoflagellates from Narragansett Bay as viewed at 100x through a Nikon E800 microscope. Photos: Menden-Deuer Lab

Inside covers: "Schooling," a sculpture by Cliff Garten. Photos: Alex DeCiccio

Right: View of the Ocean Science and Exploration Center from the URI Narragansett Bay Campus quadrangle. Photo: Alex DeCiccio






## Fiscal Year 2015: A Year in Review

As a nationally and internationally recognized oceanographic institution, GSO carries out cutting edge oceanographic research, with a prime focus on graduate education complemented by innovative outreach activities. The 2015 GSO Annual Report offers an overview of some of the activities carried out over the last year. A few highlights include:

- The R/V *Endeavor* dock is undergoing repairs and a significant upgrade following damage by Superstorm Sandy. Ground has been broken for the new \$1.5 M aquaculture facility designed to house tuna culturing, and plans were finalized for construction of the Knauss Terrace situated at the east entrance to the Ocean Science and Exploration Center building.
- A revised Master Plan for the Narragansett Bay Campus has been funded and the RFP posted, with the goal of finalizing the plan by mid-spring 2016. Renovation of existing buildings, construction of new buildings, a residence for visitors, and landscaping will all be considered.
- Three international faculty searches were carried out this year. Professors Jaime Palter and Melissa Omand are physical oceanographers who study biogeochemical processes in the oceans and Professor Anton Post is a microbiologist who joined GSO as Director of the Coastal Resources Center. A search is currently underway for a coastal biologist or chemical oceanographer. Two new faculty positions for GSO were approved as part of a university-wide initiative to hire 55 faculty to enhance undergraduate teaching. One position will be for an ocean engineer working on Autonomous Underwater Vehicles and a second will be for a seafloor vent biogeochemist. These positions will enhance our efforts to increase our undergraduate teaching, as well as complement our current research strengths.
- Telepresence equipment for the R/V *Endeavor*, funded by the Provost and the GSO corporate donors, was installed. The ability to transmit live video from an ROV or for deck operations has been recognized by federal agencies as a significant advance for future ship operations and will play an important role in our bid for a new NSF vessel to replace the R/V *Endeavor*.
- The Masters of Oceanography degree program has been revised and will focus on tracks in marine fisheries management, coastal ocean management, ocean technology and data, and general oceanography. This non-thesis program will be aimed at students who wish to gain professional expertise in these specific areas, and we hope to have the first students enrolled in the fall 2016.





The GSO community has made significant progress over the last three years in revitalizing the Narragansett Bay Campus, recruiting outstanding new faculty members, and reviewing our educational programs and mission. We continue our tradition of pursuing basic oceanographic research with a growing interest in regional and global environmental issues. With a Master Plan planning process and a GSO Strategic Plan review underway, and the likelihood of additional new faculty joining our ranks, we are poised to position GSO for the future. This is an exciting time for GSO as we consider how best to address the changing scientific and financial landscape facing the oceanographic community.

One of the critical aspects of our past success has been the support of the GSO staff, faculty, and Friends of Oceanography to advance GSO, and I thank all for their past support. Working together, we can make a significant impact in understanding and protecting the oceans and guiding the future of the Graduate School of Oceanography in the years to come.

Best wishes,



Bruce H. Corliss  
Dean



## Graduate School of Oceanography Leadership, 2014–2015

### Dean's Office

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Bruce Corliss	Dean, Graduate School of Oceanography
Thomas Miller	Director, Graduate School of Oceanography / Administration
David Smith	Associate Dean, Graduate School of Oceanography
Barbara Braatz	Director of Development, Graduate School of Oceanography, URI Foundation

### Senior Administrators and Directors

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Dwight Coleman	Director, Narragansett Bay Campus / Inner Space Center
Alan Desbonnet	Assistant Director, Sea Grant College Program
Thomas Glennon	Director, Graduate School of Oceanography / Marine Operations
Sara Hickox	Director, Narragansett Bay Campus / Office of Marine Programs
Sunshine Menezes	Manager, Narragansett Bay Campus / Science Communication & Metcalf Institute
Dennis Nixon	Director, Rhode Island Sea Grant Program
David Palazzetti	Director, Narragansett Bay Campus / Facilities & Operations
Anton Post	Director, Graduate School of Oceanography / Coastal Resources Center
Gail Scowcroft	Associate Director, Narragansett Bay Campus / Inner Space Center
Jon Alberts	Executive Secretary, University National Oceanographic Laboratory System (UNOLS)
Annette DeSilva	Deputy Executive Secretary, UNOLS
Judith Swift	Director, Coastal Institute

### Dean's Advisory Committee

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Brian Heikes	Professor, representing Chemical Oceanography faculty
Katherine Kelley	Associate Professor, representing Marine Geology and Geophysics faculty
John King	Professor, representing Marine Geology and Geophysics faculty
Lewis Rothstein	Professor, representing Physical Oceanography faculty
Karen Wishner	Professor, representing Biological Oceanography faculty
David Ullman	Associate Marine Research Scientist, representing Marine Research Scientists



Header photo: Alex DiCiccio

Left photo: Frank Baker



## Dean's Advisory Council, 2014–2015

Christopher Pell (Chair)	Board Member, The John A. Hartford Foundation, New York, NY; former Partner, Barclay Investments and Executive Director, The Preservation Society of Newport County, RI
Lincoln Chafee	Former Governor of Rhode Island, United States Senator from Rhode Island, and Mayor of Warwick, RI
Leonard Chaikind	Chairman and CEO, Institutional Investors Consulting Company, Houston, TX
Dennis Costello	Managing Partner, Braemar Energy Ventures, Boston, MA
James Gilbert	President, ViewPoint Consulting, Key Largo, FL; founding Editor-in-Chief and former president of ShowBoats International; and founder of the International SeaKeepers Society
David Gove	Rear Admiral, USN Ret.; former Director, Undersea Warfare Systems, Raytheon Company - Integrated Defense Systems, Portsmouth, RI; former Oceanographer and Navigator of the Navy
Nancy Jamison	Retired Senior Vice President for Visa International; Trustee, Aquidneck Island Land Trust, Newport, RI
Robert Morton	Managing Partner, Newport Biodiesel, LLC, Newport, RI; former Manager, Marine Science and Technology of Science Applications International Corporation (SAIC), Newport, RI
Frank Ray	Attorney, Hinckley Allen & Snyder, LLP, Providence, RI
Andrew Reilly	Managing Director, Accretive Exit Capital Partners, New York, NY
Janet Robinson	Board Member and former Chair, Carnegie Corporation of New York; Chairman of the Presidential Board of Trustees of Salve Regina University, Newport, RI; former President and Chief Executive Officer, The New York Times Company, New York, NY
Christopher Roosevelt	Attorney, Mount Kisco, NY
Sandra Whitehouse	Senior Advisor, Ocean Conservancy, Washington, DC
Win Warren	Senior Advisor, Business Development, Noble Energy Corporation, Houston, TX
Richard West	Rear Admiral, USN Ret.; former Oceanographer and Navigator of the Navy; former President and CEO of the Consortium for Ocean Leadership, Washington, DC; former Chairman of the National Sea Grant College Program Federal Advisory Committee



*Members of the Dean's Advisory Council  
meet with GSO leadership in October 2014.  
Photo: Alex DiCiccio*

## Faculty and Marine Research Scientists, 2014–2015

Robert Ballard	Professor	Ocean exploration; Underwater archeology
Steven Carey	Professor	Geological oceanography; Explosive volcanism and its deposits; Hydrothermal vents
Jeremy Collie	Professor	Biological oceanography; Invertebrate and fish population dynamics; Ecosystem approach to fisheries management
Bruce Corliss	Professor	Geological oceanography; Paleoceanography
Peter Cornillon	Professor	Physical oceanography; Large scale dynamics of the upper ocean using satellite and in situ sensors; Oceanic fronts
Steven D'Hondt	Professor	Geological oceanography; Geobiology; Microbial activities in subseafloor environments
Edward Durbin	Professor	Biological oceanography; In situ feeding dynamics of zooplankton
Isaac Ginis	Professor	Physical oceanography; Dynamics of ocean-atmosphere coupled systems; Mathematical modeling of tropical cyclone interactions
Tetsu Hara	Professor	Physical oceanography; Ocean turbulence; Air-sea interface processes
Brian Heikes	Professor	Chemical oceanography; Measurement and interpretation of atmospheric photochemically reactive compounds
Christopher Kincaid	Professor	Geological oceanography; Geophysical fluid dynamics in laboratory and numerical modeling; Coastal water circulation and transport
John King	Professor	Geological oceanography; Paleogeomagnetism; Sedimentology; Marine habitat and ecosystem studies; Trace metal geochemistry
Rainer Lohmann	Professor	Chemical oceanography; Transport and fate of man-made compounds in marine and fresh water
Bradley Moran	Professor	Chemical oceanography; Radionuclides as tracers of geochemical processes; Ocean policy and education
Candace Oviatt	Professor	Biological oceanography; Coastal hypoxia and nutrient concentration relationships; Monitoring networks
Anton Post	Professor	Biological oceanography; Algal blooms; Marine nitrogen cycle; Marine biogeochemistry; Microbial ecology; Phytoplankton ecology
Lewis Rothstein	Professor	Physical oceanography; Impacts of climate change on ocean circulation
Yang Shen	Professor	Geological oceanography; Geophysics and seismology; Earth's crust and mantle tomography
David Smith	Professor	Biological oceanography; Distribution, diversity, and biogeochemical consequences of bacteria; Microbial activities in subseafloor environments
Jennifer Specker	Professor	Biological oceanography; Flatfish development and reproduction; Science communication
Arthur Spivack	Professor	Geological and chemical oceanography; Microbial biogeochemistry; Turbulence and dispersion
Karen Wishner	Professor	Biological oceanography; Zooplankton distribution associated with oxygen minimum zones; Benthic-pelagic coupling
Kathleen Donohue	Associate Professor	Physical oceanography; At-sea observational physical oceanography; Ocean circulation and strong-jet regimes





Katherine Kelley	Associate Professor	Geological oceanography; Geochemical exchange between upper portions of Earth and its interior at tectonic plate boundaries
Susanne Menden-Deuer	Associate Professor	Biological oceanography; Plankton behavior and predation; 3-D image and movement analysis of protists
Rebecca Robinson	Associate Professor	Geological and chemical oceanography; Marine nitrogen cycle; Biogeochemical cycling in low latitudes
Christopher Roman	Associate Professor	Physical and geological oceanography; Remotely operated sensing systems; Seafloor mapping; Observational oceanography
Tatiana Rynearson	Associate Professor	Biological oceanography; Genetic diversity in plankton; Plankton community structure, function, and productivity
Brice Loose	Assistant Professor	Chemical oceanography; Air-sea-ice gas exchange; Carbon cycle; Polar processes
Melissa Omand	Assistant Professor	Physical oceanography; Physical-biological interactions; Submeso-scale processes; Observational oceanography
Robert Campbell	Associate Marine Research Scientist	Biological oceanography; Energy transfer and carbon export by zooplankton in Arctic food webs
Daniel Codiga	Associate Marine Research Scientist	Physical oceanography; Observational physical oceanography; Current measurements; ROV sensing
Yiyong Luo	Associate Marine Research Scientist	Physical oceanography; Ocean circulation; Numerical modeling
Lucie Maranda	Associate Marine Research Scientist	Biological oceanography; Dynamics of biofilm formation and biofouling; Harmful algae
Jae-Hun Park	Associate Marine Research Scientist	Physical oceanography; Internal ocean waves
Robert Pockalny	Associate Marine Research Scientist	Geological oceanography; Geophysics; Tectonic plate motions; Paleomagnetism
Jan Rines	Associate Marine Research Scientist	Biological oceanography; Systematics and natural history of the diatom <i>Chaetoceros</i> ; Phytoplankton ecology and biological/physical/optical interactions
Vitalii Sheremet	Associate Marine Research Scientist	Physical oceanography; Boundary currents; Inertial gyres; Rotating convection; Inertial waves and internal tides; Current measurement instrumentation
David Ullman	Associate Marine Research Scientist	Physical oceanography; Coastal and estuarine physical oceanography; Observational and numerical modeling of mixing and circulation
James Sullivan	Assistant Marine Research Scientist	Biological oceanography; Spatio-temporal responses of phytoplankton to physical forcing; Optics in the ocean
Weng Wei	Assistant Marine Research Scientist	Geological oceanography; Tectonic geodesy; Fault mechanics; Earthquakes on oceanic transform faults; Physics of earthquake faulting
Richard Yablonsky	Assistant Marine Research Scientist	Physical oceanography; Numerical modeling of tropical cyclones; Air-sea exchange and heat transport
Charles Roman	Professor in Residence	Biological oceanography
David Hebert	Research Professor	Physical oceanography; turbulence and other small-scale mixing processes
Theodore Smayda	Research Professor	Biological oceanography; Dynamics of phytoplankton blooms; Phytoplankton community structure and succession
Randolph Watts	Research Professor	Physical oceanography; Strong large-scale ocean current characteristics and their influence on climate

## Emeritus Faculty and Marine Research Scientists, 2014–2015

Paul Hargraves	Professor Emeritus	Biological oceanography; Phytoplankton systematics, ultrastructure, biodiversity, and natural history
Perry Jeffries	Professor Emeritus	Biological oceanography
John Merrill	Professor Emeritus	Atmospheric long-range transport; Observational atmospheric parameter logging
Michael Pilson	Professor Emeritus	Chemical oceanography; Nutrients and sediment-water interactions
James Quinn	Professor Emeritus	Chemical oceanography; Marine organic chemistry; Organic geochemistry of seawater and sediments; Metal-organic and mineral-organic interactions; Biogeochemistry of organic pollutants in the marine environment
Kenneth Rahn	Professor Emeritus	Atmospheric chemistry; Long-range aerosol transport; Arctic air pollution and elemental tracers
Thomas Rossby	Professor Emeritus	Physical oceanography; Observational physical oceanography; Large-scale ocean current measurements; Measurements from ships of opportunity
Saul Salla	Professor Emeritus	Biological oceanography; Fisheries population dynamics
Jean Guy Schilling	Professor Emeritus	Geological oceanography; Isotope and trace element geochemistry of the oceanic crust and Earth's mantle
Haraldur Sigurdsson	Professor Emeritus	Geological oceanography; Volcanology
Mark Wimbush	Professor Emeritus	Physical oceanography; Ocean dynamics
James Yoder	Professor Emeritus	Biological oceanography; Remote sensing
David Farmer	Professor and Dean Emeritus	Physical oceanography; Upper ocean physics; Interaction of stratified flow with topography; Exchange through sea straits; Nonlinear internal wave generation and propagation; Seismic behavior of sea ice; Fjord dynamics; Acoustical oceanography; Impact of sound on marine mammals
John Knauss	Professor and Dean Emeritus	Physical oceanography; Ocean circulation; Marine affairs; US marine policy; History of marine policy
Percy Donaghay	Marine Research Scientist Emeritus	Biological oceanography; Biological, physical and bio-physical control of plankton ecology and plankton patch dynamics
Dian Gifford	Marine Research Scientist Emeritus	Biological oceanography; Zooplankton; Ecology and physiology of heterotrophic planktonic protists; Laboratory culture of planktonic ciliates and heterotrophic dinoflagellates
Alfred Hanson	Marine Research Scientist Emeritus	Chemical oceanography
Robert Kenney	Marine Research Scientist Emeritus	Biological oceanography; Marine mammal surveys, primarily the North Atlantic right whale
William Macy	Marine Research Scientist Emeritus	Biological oceanography
Barbara Sullivan-Watts	Marine Research Scientist Emeritus	Biological oceanography
Georgi Sutyrin	Marine Research Scientist Emeritus	Physical oceanography; Predictability of coherent structures; Baroclinic jets and vortices; Topographic and planetary waves; Turbulent boundary layers using analytical and numerical methods

*Opposite: GSO graduate student Victoria Treadaway meets with her advisor, Professor Brian Heikes, in a GSO atmospheric chemistry laboratory.  
Photo: Alex DeCiccio*







# Academic Affairs

The Academic Affairs Office at the Graduate School of Oceanography has much to be proud of during last year. The tables included in this annual report give the numbers regarding our students but, of course, these do not tell the whole story. Twenty-one students earned graduate degrees in oceanography last year. The research topics covered a wide spectrum of oceanographic subjects ranging from underwater volcanoes to fisheries. Some of the research was carried out right here in Narragansett Bay while others were in settings as distant as the Arctic and the Antarctic. While most theses were written about observations in the ocean, others concerned the atmosphere above the ocean as well as processes

occurring below the ocean whether it was life in deeply buried sediments or subducting slabs of oceanic crust.

Our students were recognized for their research on several occasions both locally and nationally. Dr. Maryjo Brounce was awarded the 2015 Excellence in Doctoral Research Award from URI and is currently a post-doctoral fellow at Caltech. Justine Sauvage won an "Outstanding Student Paper Award" at the 2014 fall meeting of the American Geophysical Union in San Francisco. She presented her research results funded by the Schlanger Ocean Drilling Fellowship that she was awarded the previous year. Zoe Gentes was selected for a 2016 NOAA Sea Grant John A. Knauss Marine Policy Fellowship. This prestigious fellowship, named for GSO's founding dean, is extremely competitive.

GSO alumni continue to make their mark on the world. We were very pleased to honor Dr. Amy Bower (PhD 1988)

at the URI Distinguished Achievement Award ceremony in November 2014. Dr. Bower, a Senior Scientist at Woods Hole Oceanographic Institution, was recognized for both her contributions to our understanding of ocean circulation and its relationship to Earth's climate as well as serving as role model for scientists with disabilities. GSO was very happy to host a visit by Dr. Kuo-Yen Wei (PhD 1987). Dr. Wei is the Minister of the Environmental Protection Administration of Taiwan.

The faculty at GSO continues to support student research at the cutting edge of oceanography. Eleven students were welcomed to GSO last September at the 50th Annual Boat Burning. While it is still too early to tell exactly what they will achieve during their time here, history suggests that many of their accomplishments will be significant.

David Smith  
Associate Dean, Graduate School of Oceanography

*Header photo: Alex DeCiccio*



*GSO students (front to back) Kira Homola, Casey Hearn, Mary Dzaugis, Zak Kerrigan, and Justine Sauvage on board the R/V Knorr during its final expedition in fall 2014. The students spent 40 days in the North Atlantic recovering cores. Photo: David C. Smith*





## Academic Affairs Staff

Meredith Clark

Admission Advisor



*Top: Student researchers prepare a CTD for launch during a training cruise to George's Bank in March 2015 led by Dr. Susanne Menden-Deuer. Photo: Susanne Menden-Deuer*

*Bottom: GSO students (l-r) Aaron Hirsch, Ben Chebot, Jake Balcanoff, Olivia Ahern, and Sean Anderson discussing a topic in class. Photo: Alex DeCiccio*

## Oceanography Course Offerings, 2014–2015 Academic Year

	COURSE	TITLE	INSTRUCTOR(S)
Fall 2014	OCG (Geo) 110	The Ocean Planet	Kelley/ Kincaid
	OCG 131	Volcanoes	Carey
	OCG 301	General Oceanography	Durbin/ Loose
	OCG 420	Deep-Sea Biology	Wishner
	OCG 493/494	Special Problems and Independent Study	Kelley, Durbin, Ryneerson, Robinson, Shen, Carey, Collie, Pockalny, Wei, Moran, Ginis
	OCG 501	Physical Oceanography	Cornillon
	OCG 523	Organic Geochemistry of Natural Water	Lohmann
	OCG 561	Biological Oceanography	Menden-Deuer
	OCG 591/592	Individual Study	Faculty
	OCG 593	Special Studies	Ginis, Shen, Menden-Deuer
	OCG 623	Physical Chemistry of Seawater	Heikes/ Spivack
	OCG 651	Marine Stratigraphy	D'Hondt
	OCG 673	Fisheries	Collie
	OCG 695	Seminar in Oceanography	Smith
	OCE 605	Ocean Engineering Seminar	Roman
	BIO 130	Topics in Marine Biology	Ryneerson
	BIO 130	Topics in Marine Biology	Smith
	CHM 353	Independent Study	Lohmann
Spring 2015	OCG 110	The Ocean Planet (Exploration)	D'Hondt, Roman
	OCG 123	Climate Change and the Oceans	Robinson
	OCG 200	Extreme Weather	Heikes, Donohue
	OCG 440/540	Geological Oceanography	Robinson, Kelley (Carey)
	OCG 451	Oceanographic Science	Smith, Rothstein
	OCG 480/580	Introduction to Marine Pollution	Lohmann
	OCG 493/494	Special Problems and Independent Study	Menden-Deuer, Durbin, Ryneerson, Robinson, Carey Collie, Pockalny, Post, Menden-Deuer, Moran, Ginis
	OCG/OCE 506	Numerical Models and Data Analysis	Collie, Heikes, Kincaid
	OCG 512	Ocean Waves and Storm Surge	Hara
	OCG 517	Earth System Dynamics	Kincaid
	OCG 521	Chemical Oceanography	Loose
	OCG 530	Principles of Ocean Circulation	Donohue
	OCG 545	Volcaniclastic Sedimentation	Carey
	OCG 555	Ocean Imaging and Mapping Techniques	Roman
	OCG 592	Individual Studies	Various faculty
	OCG 593/594	Special Studies	Ryneerson, Wishner
	OCG 610	Geophysical Fluid Dynamics I	Hara
	OCG 643	Subduction Zones	Kelley, Kincaid
	OCG 695	Seminar in Oceanography	Smith
	CHM 353	Independent Study	Lohmann
	OCE 606	Ocean Engineering Seminar	Roman
	HPR 109	Honors Seminar in Natural Sciences	Spivack



## Graduate Students, June 2014–May 2015

STUDENT	DEGREE	MAJOR PROFESSOR	STUDENT	DEGREE	MAJOR PROFESSOR
Olivia Ahern	MS	Tatiana Rynearson	Jiahang Li	PhD	Yang Shen
Sean R. Anderson	MS	Susanne Menden-Deuer	Qianqian Liu	PhD	Lewis Rothstein
Jacob R. Balcanoff	MS	Steven Carey	Ann Lovely	MS	Brice Loose
Patrick L. Bedsole	MS	Rebecca Robinson	Brendan Mackinson	MS	S. Bradley Moran
Arash Bigdeli	PhD	Brice Loose	Erin E. Markham	MS	Rainer Lohmann
Sarah A. Blackstock	MS	Jeremy Collie	Yackar Mauzole	PhD	Peter Cornillon
Austen Blair	PhD	Tetsu Hara	Jason E. McNamee	PhD	Jeremy Collie
Michael R. Bueti	PhD	Isaac Ginis, Lew Rothstein	Carrie A. McDonough	PhD	Rainer Lohmann
Brian J. Caccioppoli	MS	John King	Malcolm McFarland	PhD	Jan Rines
Kelly L. Canesi	MS	Tatiana Rynearson	M. Conor McManus	PhD	Jeremy Collie
Benjamin Chebot	MS	Rainer Lohmann	Anna Joy Mercer	PhD	Jeremy Collie
Alison Cleary	PhD	Edward Durbin	Jeffrey M. Mercer	PhD	Candace Oviatt
Catherine M. Coupland	MS	Candace Oviatt	Françoise Morison	PhD	Susanne Menden-Deuer
Brian Covellone	PhD	Brian Savage	Cameron Morissette	MS	John King
Jennifer A. Cragan	PhD	Rainer Lohmann	Amit Nehra	MS	Daniel Codiga
Erik R. Dixon-Anderson	MS	Rainer Lohmann	Christopher Orphanides	PhD	Jeremy Collie
Mary Dzaugis	PhD	Steven D'Hondt	Brennan T. Phillips	PhD	Christopher Roman
Sarah A. Flickinger	MS	Tatiana Rynearson	Christopher G. Piecuch	PhD	Kathleen Donohue
Ashton Flinders	PhD	Yang Shen	Kari Pohl St. Laurent	PhD	Rainer Lohmann
Michael W. Fong	MS	Susanne Menden-Deuer	Neal Redmond	MS	Rebecca Robinson
Annie Foppert	PhD	Kathleen Donohue, Randolph Watts	Brandon Reichl	PhD	Tetsu Hara
Sarah A. Fuller	MS	Steven Carey	Kevin L. Rosa	MS	Christopher Kincaid
Kun Gao	PhD	Isaac Ginis	Kellen C. Rosburg	PhD	Kathleen Donohue
Zoe E. Gentes	MS	Katherine Kelley	John P. Salter	PhD	Peter Cornillon
Charles T. Harry II	MS	Robert Kenney	Justine F. Sauvage	PhD	Steven D'Hondt
Casey K. Hearn	PhD	Yang Shen	Tara S. Stevens	PhD	Robert Kenney
Aaron C. Hirsch	PhD	Brian Savage	Caoxin Sun	PhD	Rainer Lohmann
Kira L. Homola	PhD	Arthur Spivack	R. Tucker Sylvia	MS	Christopher Kincaid
Daniel J. Iwanski	PhD	Peter Cornillon	Sara Szwaja	PhD	Christopher Kincaid
Brita Jessen	PhD	Candace Oviatt	Victoria A. Treadaway	MS	Brian Heikes
Colin Jones	PhD	Rebecca Robinson	Cathleen Turner	MS	Arthur Spivack
Mary K. Kane	PhD	Susanne Menden-Deuer	Emily A. Walsh	PhD	Steven D'Hondt
Minho Kang	MS	Jeremy Collie	Christina A. Wertman	PhD	Yang Shen
Zachary A. Kerrigan	PhD	Steven D'Hondt	Shuwen Zhang	PhD	Lewis Rothstein



GSO's Narragansett Bay Blades won their annual home-and-home series against the Woods Hole Oceanographic Institution High Stickers to earn the 2015 Niskin Cup. Photo: Shelley Brown

# R/V *Endeavor* Operations

Fiscal year 2015 was a very robust research season for *Endeavor*, which spent 248 days at sea conducting science operations. Her operations started in July 2014 extensively off the Mid-Atlantic coast with scientists from the University of Rochester investigating methane oxidation. This research was followed by a team from Oregon State University and NASA studying Bio-Optics. The vessel also completed multiple Rhode Island Endeavor Program (RIEP) cruises with Dr. Brad Siebel, Dr. Rainer Lohmann, and later with Dr. Chris Roman.

September saw *Endeavor* off the coast of North Carolina for 33 days on the ENAM CSE cruise. This was a seismic research project in conjunction with R/V *Marcus Langseth* with *Endeavor* twice laying down then recovering 49 Ocean Bottom Seismometers (OBS). Phase two of this cruise was carried out in April 2015. *Endeavor* spent most of November on pier-side maintenance and on the installation of two new Raytheon Radars obtained for the vessel with much-appreciated assistance from the Dean's Office.

*Endeavor* then got underway to Guadeloupe for buoy sets and maintenance with the NOAA NTAS/MOVE Project. This work focused on surface and subsurface mooring turns (recovery and re-deployment) and included CTD casts, acoustic data transfer, and other activities. We tied up for seven days over Christmas in Bridgetown, Barbados, getting underway again on December 29 for the NOAA PNE Project which included buoy servicing, CTD casts to 1500m, Argo float and surface drifter deployments, and recovery of two PMEL hydrophones, and then a quick port stop in Praia, Cape Verde. These two cruises were especially arduous, as *Endeavor* had to contend with strong trade winds, currents, and consistent 10' seas along with the Saharan sand riding on the trades, all while assembling buoys on the main deck. It is of special note that these buoys were set by the NOAA Ship *Ronald Brown* and due to be recovered by the R/V *Knorr*, both global ships.

*Endeavor* arrived home in March for her fourth RIEP cruise with Dr. Susanne Menden-Deuer. *Endeavor* then had three short local trips – starting with the Mid Atlantic Hydrate Project with Dr. Carolyn Ruppel, USGS, then the Activity Gradients Project, with Dr. Carol Arnosti, University of North Carolina, Chapel Hill, and then the Acoustic Network Project, with Dr. Steven Means of the Naval Research Laboratory.

The close of the FY 2015 sailing season found *Endeavor* in the Gulf of Mexico with scientists from the University of Southern Mississippi and the University of Georgia participating in ECOGIG2. The intent of ECOGIG2 is to study natural seepage of gas and oil from the ocean floor in the Gulf and also to monitor the impact on the ecosystem from the Macondo/BP blowout.

There was no time for *Endeavor* to rest upon her return to Rhode Island on July 1, as she departed for Reykjavik, Iceland, on July 6. All in all a very busy season, with *Endeavor* and crew returning from Iceland in August.



Thomas Glennon  
Director, Graduate School of Oceanography / Marine Operations



FY2015 Cruise Tracks for R/V *Endeavor*





Professor Chris Roman's "wire flyer," an ocean sensing system designed to take measurements at varying depths in the water column, was deployed for testing.  
Photo: Lynne Butler

## Marine Operations Staff

### Marine Office

Daniel Alexander  
Jane Eaton

Port Engineer  
Scientific Research Grant Assistant

### Marine Technicians

Lynne Butler  
William Fanning  
Erich Gruebel  
Thomas Orvosh

Ships Technician IV  
Ships Technician V  
Ships Technician III  
Ships Technician IV

### R/V Endeavor Crew (Full Time)

Christopher Armanetti  
Michael O. Brennan  
Michael J. Duffy  
Ethan Irons  
Everett McMunn  
Shanna Post-Maher  
Patrick Quigley  
Kurt Rethorn  
Steven Sisson  
Timothy Varney  
Kevin Walsh  
Christopher Wroblewski

Second Mate  
Messman  
Steward  
Able Bodied Seaman  
Master  
Chief Mate  
Wiper  
Wiper  
Bosun  
Chief Engineer  
Able Bodied Seaman  
Able Bodied Seaman



Demobbing in  
Barbados.  
Photo: Dan Alexander

Header photo:  
Nick Terry

## R/V Endeavor Cruises, July 2014–June 2015

CRUISE	DATES	LOCATION	PI/INSTITUTION	PORTS	DAYS/FUNDER
EN-541	8 - 13 July	Canyons	Kessler/UofR	Narragansett	6/NSF
EN-542	18 July - 6 August	Western Central North Atlantic	Behrenfeld/OSU	Narragansett	20/NASA
EN-543	13 - 18 August	Mid Atlantic	Siebel/GSO	Narragansett	6/RIEP
EN-544	20 - 21 August	Rhode Island Sound	NSF Inspection	Narragansett	0
EN-545	23 - 28 August	Mid Atlantic	Lohmann/GSO	Narragansett Senesco	6/RIEP
EN-546	12 Sept - 13 Oct 17 - 26 Oct	Mid Atlantic Mid Atlantic	Van Avendonk/UTIG Orr/NRL	Senesco Senesco	33/NSF 0/Navy - ONR
EN-547	31 Oct - 5 Nov	Mid Atlantic	Roman/GSO	Senesco	6/RIEP
EN-548	15 Nov - 23 Nov cancelled	South Eastern North Atlantic	Plueddemann/WHOI	Senesco Narragansett	0/NSF
EN-549	5 Dec - 21 Dec	South Western North Atlantic	Plueddemann/WHOI	Narragansett Barbados	18/NOAA
EN-550	28 Dec - 31 Dec	South Western North Atlantic	Smith/NSF	Barbados	4/NSF
EN-550	29 Dec - 11 Feb	South Atlantic	Smith/NSF Lumpkin/NOAA	Barbados San Juan, PR	43/NSF - NOAA
EN-551	14 - 27 Feb	South Western North Atlantic	Barringer/NOAA	San Juan, PR Port Everglades, FL	16/NOAA
EN-552	1 - 5 March		Transit to	Senesco	5/NSF
EN-553	19 - 23 March	Georges Bank	Menden-Deuer/GSO	Senesco	5/RIEP
EN-554	27 Mar - 7 Apr	Mid Atlantic	Van Avendonk/UTIG	Senesco	14/NSF
EN-555	14 - 21 April	Western Central North Atlantic	Ruppel/USGS	Senesco	8/DOE
EN-556	27 April - 2 May	Western Central North Atlantic	Arnosti/UNC-CH	Senesco	6/NSF
EN-557	11 - 20 May	Western Central North Atlantic	Orr/NRL	Senesco Morehead City, NC	11/Navy - NRL
EN-558	22 - 27 May		Transit to	Gulfport, MS	6/GOMRI
EN-559	29 May - 21 June	Gulf of Mexico	Joye/UGA	Gulfport, MS	27/GOMRI
EN-560	24 June - 1 July		Transit to	Senesco	8/GOMRI
				TOTAL	248 Days

Opposite: R/V Endeavor was outfitted with an array of telepresence equipment.  
Photo: Bruce Corliss





# Bay Campus Facilities

Continuously striving to efficiently maintain and modernize the Narragansett Bay Campus, the Facilities and Operations Department completed another productive year.

Mother Nature challenged us this winter with numerous day-long snow storms including historic Winter Storm Juno, which forced a State of Emergency declaration in Rhode Island.

Despite the record snowfalls our maintenance, custodial, and security teams ensured the campus remained continuously accessible to emergency vehicles and animal care providers. And, while the cost of extra labor, materials, and equipment needed to battle the snow exceeded \$30K, the hard work and dedication of our in-house work force eliminated the need for far more costly contracted snow removal services.

An increasing number of interior climate-control problems, water main breaks, non-functioning lab systems, and even a natural gas line leak highlighted the need for additional investment in infrastructure repairs at GSO. Fortunately, the URI Asset Protection Board responded with over \$275K in supplemental funding specifically for the Bay Campus. These monies were not only utilized to repair numerous building systems, but also funded renovations to the water and sewer pumping stations that provide the most basic of campus services.

The Asset Protection funds enabled us to make some improvements, as well. Specifically, freezers and incubators in three buildings were provided with emergency back-up power, the Marine Geological Samples storage capacity was expanded, and fume hoods in Horn Laboratory were outfitted with modern controls and recertified for operation.

Each of our support and service branches also performed well. The Equipment Development Lab completed numerous projects for GSO and Ocean Engineering faculty along with significant work for the U.S. Navy. The small boat fleet received some much needed overhauls this winter in a new heated maintenance garage space dedicated to that program. Moreover, the Information Technology Team led us through a seamless transition to Google Mail and provided endless technical support to the entire campus while Shipping/Receiving quietly went about moving over 70 tons of supplies and equipment.

The long awaited \$2M pier reconstruction project is nearing completion and will soon provide R/V *Endeavor* a full service home berth. Features of the pier include a new concrete deck and reinforced piles designed to resist wave forces in excess of those encountered during Hurricane Sandy. Additionally, all utility conduits are being raised above the deck elevation to further protect them against storm waves, and a double walled fueling line is being installed to help prevent the possibility of diesel spills into the water.

Lastly, we are in the early stages of updating the Narragansett Bay Campus' Master Plan. The previous master plan was completed back in 2000. With so much changing over the past 15 years, it is time to take a fresh look at the facilities we have now and determine the direction we want to go for the future. A Master Plan Review Committee will soon be established to solicit and consolidate input from the entire campus community.



David Palazzetti  
Director, Facilities and Operations



*The R/V Endeavor Pier underwent major upgrades to repair damage caused by Hurricane Sandy. Photo: Alex DiCiccio*





Top and bottom: The winter of 2014 brought numerous snow storms that blanketed the Narragansett Bay Campus.  
Photos: Frank Baker



## Facilities and Operations Staff

### *Facility Support Staff*

Kevin Golde  
Donna Perreault  
Robert Sand

Program Analyst  
Fiscal Clerk  
Manager, Systems Development  
and NBC Computer Center

### *Custodial*

Patrick Cleary  
Patricia Giarrusso  
Leonard Knapp  
Cornelia Lineham  
Albert Martin  
Maria Martin  
Cathy Morrison  
Victoria Pierson  
Melvin Whitaker  
Brenda Whitford

Housekeeper  
Housekeeper  
Senior Janitor  
Housekeeper  
Building Superintendent  
Housekeeper  
Housekeeper  
Housekeeper  
Housekeeper  
Housekeeper

### *Shipping*

Michael Ball  
Erma Celani  
Helen Silvestri

Central Mail Room Clerk  
Property Control and Supply Officer  
Property Control and Supply Officer

### *Maintenance*

Thomas Briand  
Paul Cahill  
Gregory Ferrante  
Dallas Hazard  
Doug Kissick  
Eric Klos

Michael Sharkey

Electrician  
Groundskeeper  
Arborist  
Building Systems Technician  
Senior Maintenance Technician  
Coordinator,  
NBC Facility Operations  
Building Maintenance Supervisor

### *Security*

Linda Palazzo  
James Balnaves  
Dennis Bernier  
Mark Brasil  
Dennis Chace  
Harry Tutko

Supervising Campus Patrol Person  
Campus Patrol Person  
Campus Patrol Person  
Campus Patrol Person  
Campus Patrol Person  
Campus Patrol Person



# Coastal Institute

The Coastal Institute (CI) works to advance knowledge and develop solutions to environmental problems in coastal ecosystems by providing guidance to local, regional, and national initiatives. It does so by promoting the educational and research efforts of URI faculty, staff, and students, awarding funds to CI Senior Fellows, and by initiating innovative interdisciplinary research and outreach projects. A few highlights follow.

The CI serves as host to the North Atlantic Coast Cooperative Ecosystem Studies Units (CESU), one of 17 national units. The CI oversees the 8 federal and 24 non-federal members and engages in strategic planning for national initiatives. In FY2015 alone, URI received in excess of \$2M in CESU research funds.

The CI maintains the Scientific Support for Environmental Emergency Response (SSEER) Memorandum of Understanding with the RI Department of Environmental Management (RIDEM) and is responsible for deploying university resources in an environmental emergency. The CI also works with RIDEM emergency response personnel to provide annual trainings for SSEER faculty, staff, and students. Efforts are underway to solidify GIS trainings for emergency response personnel with emphasis on Emergency Support Functions at the Rhode Island Emergency Management Agency (RIEMA). To date RIEMA's in-house emergency support functions have received CI sponsored training on GIS applications to improve efficiency in emergency planning and response.

CI chairs the Rhode Island Environmental Monitoring Collaborative, which is responsible for coordinating monitoring efforts across the state. The CI is also co-lead of Watershed Counts, which reports annually on the health of the land and waters of the Narragansett Bay region.

The CI chairs both the management and executive committees of the Narragansett Bay Estuary Program (NBEP), a bi-state program charged to protect and preserve Narragansett Bay and its watershed through partnerships that conserve and restore natural resources, enhance water quality, and promote community involvement. The CI was a key player in the development of the NBEP Corrective Action Plan resulting in resoundingly positive reviews from EPA. The newly formed NBEP Science Advisory Committee is chaired and staffed by a number of URI faculty and meets the long awaited goal of a bi-state science advisory group focused on the bay and its watershed.

The CI coordinates and supports the CI Senior Fellows program, a collection of more than 125 interdisciplinary researchers and practitioners. The CI hosts an annual field trip and meeting focused on interdisciplinary accomplishments on the bay and in the watershed, and provides grants to CI Senior Fellows.

The CI engages undergraduate and graduate students on CI projects, sponsors conferences and workshops, e.g., New England Estuarine Research Society, Land and Water Conservation Summit, and supports public events, e.g., the Annual Scott W. Nixon Lecture.

The CI works with partners on numerous initiatives including development of Rhode Island Shellfish Ecohistory with the Coastal Resources Center/RI Sea Grant, co-produces RI's Ocean and Coastal Magazine 41°N with Rhode Island Sea Grant, maintains RI Waves of Change website ([www.riclimatchange.org](http://www.riclimatchange.org)) developed by RI Climate Change Collaborative, and produces videos highlighting environmental monitoring and citizen science with the Rhode Island Natural History Survey BioBlitz.

The CI is also developing demonstration sites to illustrate a wide range of climate change adaptation strategies for coastal resilience in different environments.

The CI is launching a three-year economic valuation of Narragansett Bay, South Shore coastal ponds, the Wood-Pawcatuck River, and associated bi-state watersheds to support the goals of the Office of the Governor and Senator Reed's initiative of the Southeast New England Coastal Watershed Restoration Program.



Judith Swift  
Director, Coastal Institute





## Coastal Institute Staff

Nicole Rohr  
Ridley Boocock

Assistant Professor Research  
Office Manager



*The Napatree Point Conservation Area (top) and the Port of Providence (bottom) are the sites of Coastal Resiliency Demonstration Sites sponsored by the URI Coastal Institute in partnership with RINHS and CRMC. Photos: Ayla Fox*

*Header photo: Coastal Institute*



# Coastal Resources Center

The past year has been a vibrant one for the Coastal Resources Center (CRC), with fresh endeavors in new places and a broadening portfolio in familiar locales. I arrived as CRC's new Director in January 2015 and immersed myself in the intricacies of CRC's projects near and far, discovering the unique qualities that set the Center apart from its competitors.



Andrew Karas (USAID Deputy Mission Director in Ghana (left) Anton Post (CRC Director, center) and Brian Crawford (Chief of Party, right) participate in the official activities of the Sustainable Fisheries Management Project launch event in Ghana in April 2015. Photo: CRC-Accra, Ghana

In Fall 2014 alone, CRC secured the \$24 million USAID/Ghana Sustainable Fisheries Management Project—the largest grant ever awarded to URI—and Rhode Island approved its first statewide Shellfish Management Plan (SMP), a milestone regulatory guidance document that the state had asked CRC to lead in creating. The Ghana project continues a recently concluded CRC-led fisheries initiative that established critical precedents in that country. The SMP is Rhode Island's first comprehensive set of policies and practices for enhancing both wild and cultivated shellfish stocks and maximizing Rhode Island's expanding aquaculture industries.

In 2014, CRC also began its first fisheries projects in Bangladesh and Malawi, the latter a new foray into freshwater fisheries. Other international fisheries work includes:

- Making fisheries management and value chain improvements that benefit households;
- Studying illegal fishing in Somalia;
- Continuing a fisheries and climate change project in Senegal; and
- Championing efforts to provide women a greater voice in their important fisheries roles.

Marine Spatial Planning (MSP), coastal resilience, and capacity development come together throughout much of our work. Through the Rhode Island Shoreline Area Management Plan, CRC helps coastal communities apply science-based tools and techniques that reduce exposure to storm damage and fortify coastal resilience. CRC continues to respond to global calls from coastal practitioners seeking assistance implementing their own MSP initiatives, with a focus on furthering a strong worldwide network of MSP practitioners. Preparations also continue for the 14th Annual Ronald C. Baird Sea Grant Science Symposium in October 2015, International Marine Spatial Planning Symposium: Sharing Practical Solutions.



URI students helped staff the CRC climate change adaptation booth at the Volvo Ocean Race Exploration Zone tent in Newport in May 2015. Photo: CRC/RI Sea Grant

Sustainable fisheries management, climate change adaptation, capacity development, and MSP create unifying threads across CRC's initiatives. As we plan for Fiscal Year 2015-16, we see ever-widening opportunities for expanding our role and influence in these areas in the coming year.



Anton F. Post  
Director, Coastal Resources Center

Header photo: CRC/RI Sea Grant



-137.3 ft  
-41.84 m  
  
-2.1 ft  
-0.64 m

-40.99 m  
  
-2.1 ft  
-0.63 m

-43.40 m  
-2.2 ft  
-0.67 m

-2.8 ft  
-0.86 m

-2.7 ft  
-0.86 m

-2.7 ft  
-0.83 m

## Coastal Resources Center Staff

Bob Bowen  
Michelle Carnevale  
Brian Crawford  
Teresa Crean  
Azure Cygler  
Cathy Dwyer  
Kim Kaine  
Susan Kennedy  
  
Karen Kent  
Najih Lazar  
Kathryn Manning Butler  
Jen McCann  
Carol McCarthy  
  
Cathy McNally  
Cindy Moreau  
Amber Neville  
Glenn Ricci  
Don Robadue  
Pam Rubinoff  
Lesley Squillante  
Tiffany Smythe  
Jim Tobey  
Elin Torell  
Sara Woodring

Marine Research Specialist IV  
Marine Research Associate III  
Senior Coastal Resources Manager  
Marine Research Associate IV  
Marine Research Associate II  
Marine Research Specialist II  
Marine Research Specialist II  
Specialist, CRC  
Public Information and Communications  
Associate Coastal Resources Manager  
Marine Research Associate III  
Marine Research Specialist II  
Associate Coastal Resources Manager  
Specialist, CRC  
Public Information and Communications  
Post-Doctoral Fellow  
Coordinator, GSO / Coastal Resources Center  
Marine Research Specialist III  
Marine Research Associate III  
Associate Coastal Resources Manager  
Associate Coastal Resources Manager  
Assistant Director, Coastal Resources Center  
Marine Research Associate IV  
Associate Coastal Resources Manager  
Associate Coastal Resources Manager  
Scientific Research Grant Assistant



*Ghana fishermen tend to their nets or rest on their artisanal canoes at Axim, a fisheries landing site in Ghana's Western Region, in April 2015. Photo: Anton Post*



*CRC Coastal Manager Michelle Carnevale helps lead a public tour in October in South Kingstown about how storms and sea level rise are changing coastal shorelines. Photo: CRC/RI Sea Grant*

# Inner Space Center

The Inner Space Center (ISC) supports ocean exploration, research, and education. As a national hub for telepresence operations, the ISC partners with the NOAA Office of Ocean Exploration and Research (including the NOAA Ship *Okeanos Explorer*) and the Ocean Exploration Trust (including the E/V *Nautilus*), in addition to supporting other research vessels and ocean science programs. The ISC leads several large education programs, including the Consortium for Ocean Science Exploration and Engagement (COSEE), a global network of research and education institutions; the U.S. Climate Change Education Partnership Alliance (CCEP), a network of National Science Foundation (NSF) sponsored projects; and the Marine Technology for Teachers and Students program, funded by NSF, for RI and CT high school educators and students.

During the past year, the ISC supported telepresence-enabled research and outreach onboard the R/V *Thomas G. Thompson* for an exploration program in the Tonga Trench. It also supported telepresence-enabled educational broadcasts from the historic whaling ship *Charles W. Morgan* as it sailed in Stellwagen Bank National Marine Sanctuary as part of the OceansLive project. In 2015, the ISC outfitted URI's R/V *Endeavor* with telepresence technology and is currently planning a new project to dive on several RI shipwrecks and test the system to deliver educational programming in RI schools.

The ISC team conducted a large number of other education programs. The initiatives included: working with the international regulatory community to address needs related to underwater acoustics; hurricane science educational programming; participation in the 2015 NOAA Hurricane Awareness Tour; development of a new ocean science education program for the Boys & Girls Club of Newport County; ISC public tours and interpretive programs, serving more than 1500 visitors in FY 2015; and summer programs for New England middle and high school students.

Additionally, the ISC provided key leadership on numerous national and international committees that included leading integration of telepresence technologies on UNOLS ships; and serving as the Executive Director for COSEE, Director for the CCEP Alliance, and as a member of the Ocean Research Advisory Panel. ISC staff played key roles in ocean science education associations and conferences, including serving as the President of the Southeastern New England Marine Educators Association and Co-Chair of the 2015 National Marine Educators Association Annual Conference; orchestrating global webinars; participating in the national tour onboard a NOAA Hurricane Hunter aircraft to promote hurricane awareness; leading dozens of ISC tours for internal and external visiting groups; organizing all the education programs for the ISC; managing multiple web sites, databases, and archives; and supporting dozens of video editing and production projects throughout the year. ISC also employed several URI undergraduate students from the Harrington School of Communications, helping to expand the awareness and usage of telepresence. Lastly, the ISC team supported several events that included ISC kiosks running ocean exploration and telepresence related videos. These events included the 2014 NEOSEC Ocean Literacy Summit in Woods Hole, MA; the COSEE exhibit at the 2014 SACNAS conference in Los Angeles; the CCEP Alliance exhibit at the 2014 Fall AGU Meeting; the Volvo Ocean Race Exploration Zone; and the 2015 National Marine Educators Association Conference in Newport.



Dwight Coleman  
Director, Inner Space Center





ISC organized plankton sampling experiences as a component of a year-long educational program for the Boys & Girls Club of Newport County. Photo: Romy Pizziconi

## Inner Space Center Staff

Gail Scowcroft	Associate Director, NBC / Inner Space Center
Andrea Gingras	Coordinator, GSO / Inner Space Center (COSEE)
Chris Knowlton	Assistant Director, NBC / Inner Space Center
Holly Morin	Marine Research Associate II
Romy Pizziconi	Coordinator, NBC / OSC, ISC, COSEE Network
Derek Sutcliffe	Assistant Marine Development Engineer
Alex DeCiccio	Marine Research Specialist I



Right: Professor Steve Carey on the E/V Nautilus in the Caribbean working with the ROV Hercules. Photo: Dan Larsh

Below: As part of the NSF-funded Marine Technology for Teachers and Students (MaTTS) Project, ISC carried out a week-long ocean science program for Rhode Island and Connecticut high school science teachers and their students. Photo: MaTTS Project Team



Header photo:  
Alex DeCiccio



# Metcalf Institute for Marine and Environmental Reporting

It's been a busy, productive year for Metcalf Institute. As the number and types of Metcalf training programs continue to grow, our reach has expanded to include more journalists and researchers than ever before. This footprint is significant: our journalist alumni have the potential to reach many millions of news consumers around the world on a daily basis.

Our 2015 Annual Science Immersion Workshop for Journalists attracted an unprecedentedly high number of applicants from around the world. Thanks to their interactions with faculty and staff from the Graduate School of Oceanography, the 2015 Metcalf Fellows left the workshop with a greater understanding of the research process and the science underlying environmental stories.

Sarah McCammon, bureau chief for Georgia Public Broadcasting and a 2015 Annual Workshop Fellow, captured the essence of this experience: "The Metcalf Fellowship has been a tremendous opportunity to interact directly with researchers and gain hands-on experience related to coastal science," she wrote. Other Fellows described the week-long program as "life-changing," and an "extremely valuable experience" that equipped them to craft stronger environmental stories that benefit their audiences.

Metcalf Institute continues to leverage local and national partnerships to develop science resources for journalists and bring customized programs to journalists around the country. Over the past fiscal year, this included a session at the 2014 Society of Environmental Journalists' annual conference in New Orleans, where GSO professor and Metcalf Institute Advisory Board member Tatiana Rynearson was a featured speaker in a program focusing on climate change in polar regions. We then held back-to-back seminars in Chicago last fall: one for journalists focused on climate change impacts in the Great Lakes region, and a second summarizing nationally significant climate change research, impacts, and adaptation efforts for news executives as part of the American Society of News Editors' annual convention.

In May 2015, we traveled to St. Louis, where we partnered with the National Adaptation Forum and EcoAdapt to help journalists better understand how communities are planning and responding to climate change.

Metcalf Institute's training does not stop with journalists, however. As part of a 5-year, statewide grant, we have organized fifteen programs to help Rhode Island researchers become more effective communicators, seven of which were held over the past fiscal year. Many GSO faculty and graduate students participated in these programs, learning new ways to share their research with broader audiences.

Ultimately, Metcalf Institute works to deepen public engagement with science. In addition to our training programs, we achieve this goal through our Annual Public Lecture Series at the Bay Campus and occasional public seminars such as one in Providence this year that explored the regional economic significance of strategic environmental policy.

Thanks to the strength of GSO and the support of our partners, funders, and donors, the next fiscal year promises to be equally productive as we prepare to bring our unique and effective training model to many more journalists, scientists, and other science communicators.



Sunshine Menezes  
Metcalf Institute Executive Director





## Metcalf Institute Staff

Katharine McDuffie  
Karen Southern  
Margaret Hayden

Marine Research Specialist III  
Marine Research Specialist II  
Marine Research Assistant II



*Annual Workshop Fellows learn how to collect coastal water quality data with guidance from GSO graduate students. Photo: Gretchen Ertl*



*Journalists from around the world learn how sea-level rise affects coastal ecosystems at Metcalf's annual workshop. Photo: Gretchen Ertl*



*Metcalf's public lecture series brought international experts on environmental concerns of the day to GSO in June. Here, Metcalf Fellow Jacqueline Ronson poses a question to one of this year's speakers. Photo: Gretchen Ertl*

*Header photo:  
Gretchen Ertl*



# Office of Marine Programs

Over the last year, the Office of Marine Programs (OMP) organized and produced a wide array of education and engagement activities. Home to the Narragansett Bay Classroom (NBC), Studio Blue, the Engagement Team for the international, Sloan Foundation-funded Deep Carbon Observatory (DCO), and Metcalf Institute, our staff are also involved in wide range of initiatives supporting GSO's engagement strategy.

NBC organized more than 70 programs for Rhode Island classrooms, home schools, scout troops, and the public. Led by 19 Outreach Scientists, many of whom are current GSO graduate students, these programs included in-classroom interpretive classes, beach and rocky shore field trips, family beachcombing days, and historic South Ferry walking tours. As part of NBC's Teacher-at-Sea program, we also successfully recruited a full complement of Rhode Island educators for an August 2015 cruise aboard R/V *Endeavor*. And at the June National Marine Educators Annual Conference in Newport a number of GSO scientists were featured speakers, thanks to the role our NBC coordinator played as conference co-chair.

The 2014 Fish Lecture and Roundtable Discussion, held in October and featuring *American Catch* author Paul Greenberg, was just one part of a suite of events designed to promote GSO in the local Rhode Island community, in this case the commercial fishing industry. December saw the launch of the new GSO website with a complete design and content overhaul. We shaped the content and design for two key GSO publications, *On Course*, highlighting GSO's research and outreach, and the *Annual Report 2014*. We also created a comprehensive plan for GSO for the Providence Boat Show in January, and served as volunteers for the boat show and the Volvo Ocean Race.

OMP continues to oversee management of GSO's web presence, social media, and the weekly *On the Waterfront* eNewsletter. Through our simple online recruiting system more undergraduates than ever are employed at the Bay Campus. And in an effort to secure external support for upgrades to teaching labs and outdoor spaces, OMP prepared proposals for GSO to the Champlin Foundations and South County Garden Club.

Because of our efforts GSO was, for the first time, featured in URI's "Viewbook," a vital admissions publication. Our team also revamped the *Aboard GSO* newsletter for friends and alumni into both a print and online version. In addition, we provided content and graphic design expertise for numerous GSO initiatives including a Friends of Oceanography promotional card and fall public lecture announcement, a holiday card, a new GSO exhibit backdrop, and the invitation for GSO's Education at Sea fundraiser aboard Rhode Island's Tall Ship, the *Oliver Hazard Perry*.

All of us here at OMP look forward to another productive year of sharing GSO's scientific accomplishments both within Rhode Island and around the world.



Sara Hickox  
Director, Office of Marine Programs





Top: Last year's Annual Charles and Marie Fish Lecture featured Paul Greenberg, author of *American Catch, The Fight for Our Local Seafood*. Photo: Gretchen Ertl

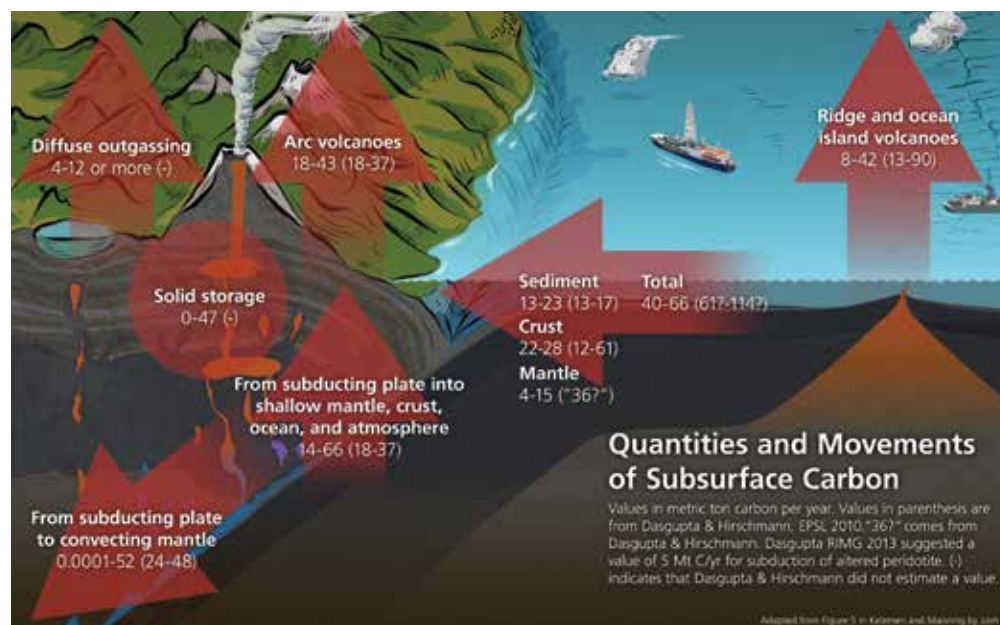
## Office of Marine Programs Staff

Frank Baker	Marine Research Associate III
Darrell McIntire	Graphic Designer
Sunshine Menezes	Manager, NBC / Science Communication & Metcalf Institute
Catherine Pratt	Marine Research Specialist III
Maryann Scholl	Marine Research Associate III
Josh Wood	Marine Research Specialist III

Right: GSO Outreach Scientists introduce families to ways to explore Rhode Island's coastal beaches and teach their children about the plants, animals, and minerals found in these unique environments. Photo: OMP



Bottom: A subset of OMP staff lead the Engagement Team for the international Deep Carbon Observatory project, a ten-year Sloan Foundation-supported research program, carrying out a wide range of science communications functions including producing visualizations. Infographic: Josh Wood





# Rhode Island Sea Grant

The cornerstone of Sea Grant's approach is that the research it funds must be meaningful in the public realm. It is not enough that it be of high quality; it must also answer the needs of stakeholders. This approach was never more evident than in 2014, when Rhode Island Sea Grant's research portfolio and extension efforts, in partnership with the Coastal Resources Center, combined to help produce the first Rhode Island Shellfish Management Plan, undertaken at the behest of the RI Department of Environmental Management and the RI Coastal Resources Management Council. Working with the Coastal Institute and other partners, staff engaged with a full range of stakeholders. The plan was crafted out of a targeted request for research proposals whose primary focus was improving understanding about shellfish ecology, and with assistance from Rhode Island Sea Grant's Legal Program, which provided legal and policy input.

The resulting plan and the process associated with it were hailed by many as ushering in a new era of cooperation between the state agencies and the stakeholders affected by their management decisions.

Sea Grant projects are supported in three areas:

- Extension Program: RI Sea Grant provides annual funding to the Graduate School of Oceanography's Coastal Resources Center staff to provide support for its extension program.
- Food Safety Outreach and Research: RI Sea Grant provides annual funding to the University of Rhode Island's College of the Environment and Life Sciences faculty to provide support for its food safety outreach and research program.
- Legal Program: RI Sea Grant provides annual funding to Roger Williams University's School of Law staff to provide support for its legal program.

In 2014, Rhode Island Sea Grant underwent a comprehensive evaluation by the national Sea Grant program, a process that takes place every four years. Rhode Island Sea Grant was deemed to have met the "standards of excellence" expected of programs, and was cited for its targeted approach to funding research, as well as for including stakeholders in the proposal review process. This approach is now considered a potential model for other state Sea Grant programs. The review team also noted that Sea Grant "fills an important niche in collaborative planning efforts with federal and state agencies."

Outreach staff also worked with coastal, municipal, and business communities to help them prepare for sea level rise, flooding, and other impacts of climate change. These efforts culminated in the 2014 Ronald C. Baird Sea Grant Science Symposium, "Staying Afloat: Adapting Waterfront Businesses to Rising Seas and Extreme Storms," held in December.

More information about all of these programs is available at [seagrant.gso.uri.edu](http://seagrant.gso.uri.edu).



Dennis Nixon  
Director, Rhode Island Sea Grant





## Rhode Island Sea Grant Staff

Alan Desbonnet  
Tracy Kennedy  
Monica Allard Cox  
Meredith Haas

Assistant Director  
Scientific Research Grant Assistant  
Marine Research Specialist V  
Marine Research Specialist III



*RI Department of Environmental Management Director Janet Coit and RI Coastal Resources Management Council Aquaculture Coordinator David Beutel participate in a "Clamming 101" class that was held as an outreach effort for the RI Shellfish Management Plan.  
Photo: Rhode Island Sea Grant*



*Rhode Island's south shore, particularly Misquamicut, was battered by Superstorm Sandy. Rhode Island Sea Grant worked with partners to help waterfront communities and businesses adapt to climate change impacts such as increased storminess.  
Photo: Rhode Island Sea Grant*



*Shellfishermen were key stakeholders in the development of the RI Shellfish Management Plan. Photo: Rhode Island Sea Grant*

*Header photo: John Supancic*

# Finance, Administration, and Research Support

GSO is feeling the pressure of decreasing federal grant funding, rising personnel and infrastructure costs, and flat state funding. The information that follows provides some general insight into GSO's financial status and the challenges it faces. Figure A depicts GSO's annual revenue sources. Research Awards represent 67% of its total revenues and provide the ultimate basis for GSO's year-to-year overhead return.

The Overhead Return funds are used to cover annual expenses that are not covered by general revenue (state funds), research awards, or foundation funding received each year. The annual overhead expenses for FY15 totaled approximately \$1.66M. Figure B depicts the specific breakdown of these expenses.

The inherent challenge year-to-year is working to ensure that GSO's overhead return covers the annual expenses depicted in Figure B. This reinforces the critical importance of the research and grant awards as the economic engine for GSO, and also highlights the need to identify non-traditional funding sources to not only sustain, but to increase GSO's revenues each year.

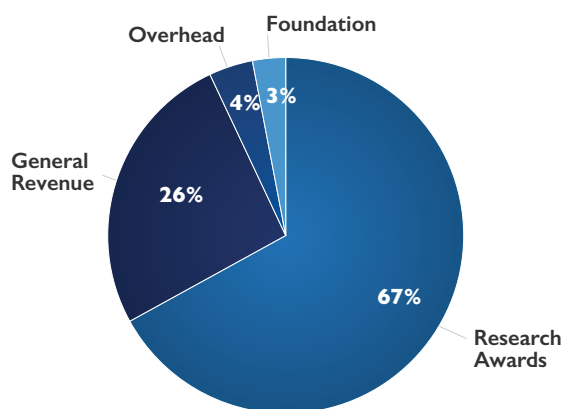


Figure A, GSO Annual Revenue Sources

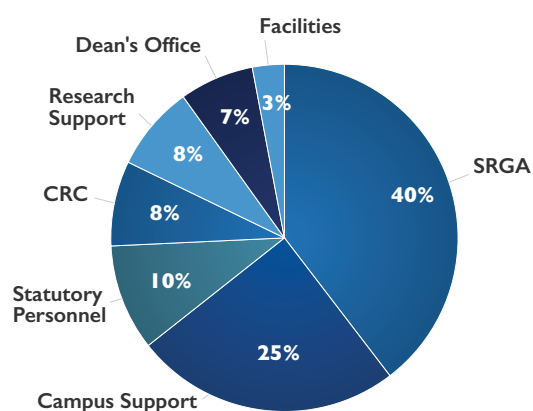


Figure B, Overhead Return Expense Breakdown

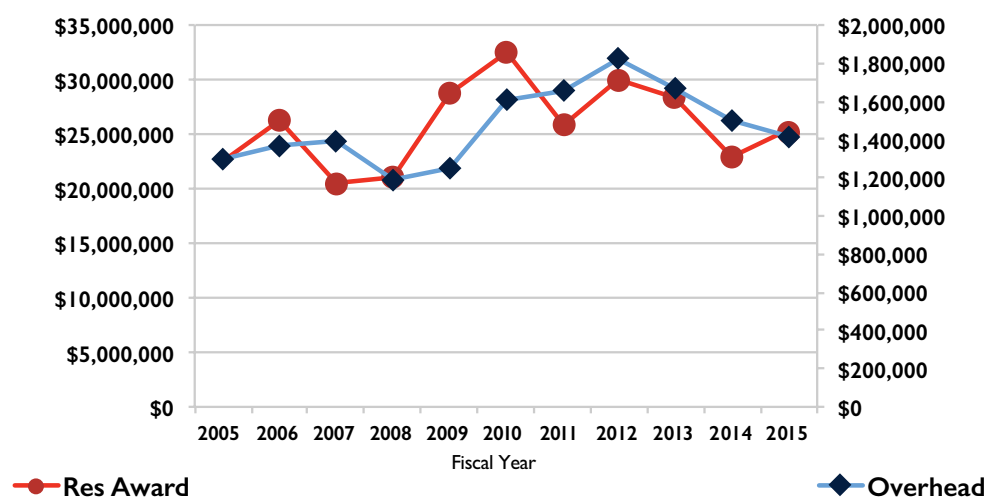
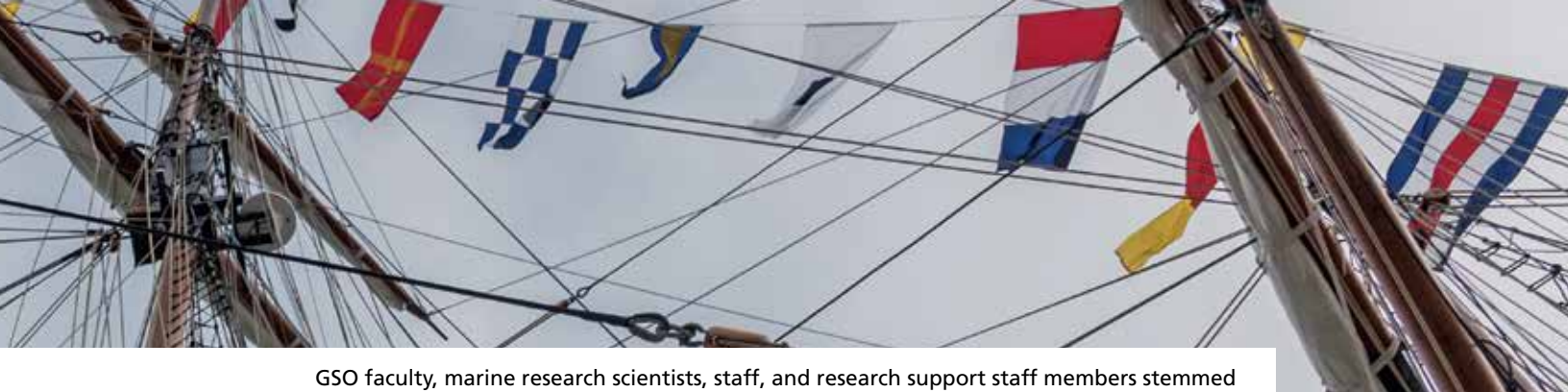


Figure C, Research Awards versus Overhead Return





GSO faculty, marine research scientists, staff, and research support staff members stemmed the trend of decreasing research and grant awards and attained a ~10% increase in the total FY15 awards compared to FY14. This is a significant accomplishment given the current funding climate. Figure C depicts Research Awards each year along with the corresponding Overhead Return totals. Review of these graphs demonstrates there is not an immediate correlation between the two in a given year. In reality there are delays (multi-year in some cases) in recognizing the overhead return until the research or projects are initiated and billed. Therefore, it is essential for consistent growth in the future that GSO continues to achieve an upward trend in Research Awards. This will generate additional annual revenues to keep pace with the expanding resource requirements associated with the addition of new faculty and broader research and grant portfolios.

In addition, GSO initiated several efforts to generate more revenue and to recapture resources. These initiatives included diversifying the school's research portfolio; leveraging collaborative efforts; building a Professional Masters Program; and streamlining our processes to optimize support. A description of these initiatives follows.

#### **Diversifying GSO's research portfolio.**

GSO spearheaded URI's proposal to become the lead institution for the Department of Homeland Security's Coastal Resilience Center of Excellence (DHS-CRC); a non-traditional funding source. This effort incorporated scientists, researchers and educators from GSO, the College of Environment and Life Sciences, College of Engineering, and the Cancer Research Prevention Center. While URI was not selected as the lead institution, the school was notified in April that three of the initial proposal's projects were selected. The initial award is worth approximately \$2.5 million dollars over five years. However, as one of two primary partners in the DHS-CRC, this partnership offers significant expansion potential within the center and DHS for increased and diversified revenue sources in the years to come.

#### **Leveraging GSO's collaborative efforts.**

Capitalizing on the ongoing resilience work at GSO and URI, GSO has partnered with the University of Connecticut, University of Massachusetts Dartmouth, Stony Brook University, and Rhode Island's Coastal Resource Management Council to develop a regionally based NOAA Cooperative Institute (NOAA-CI) on Coastal Resilience and Adaptation. The establishment of this NOAA-CI would provide NOAA a northeast perspective to serve the broader objectives of their strategic focus on national resilience. Once in place it would offer NOAA and other federal agencies an expedited mechanism to fund resilience and adaptation work. If successful the NOAA-CI would also provide a long-term source of additional GSO revenues. This approach has gained NOAA's attention, and GSO continues to press forward to develop this opportunity.

#### **Building GSO's Professional Master's degree program.**

GSO initiated development of a new master's degree program focused on professional training. The goal is to provide graduate education that prepares students to find employment or enhances their careers with private companies, and governmental and non-governmental organizations in the United States and around the globe. Specifically the Master's of Oceanography (MO) tracks include: Marine Fisheries Management; Coastal Ocean Management; Ocean Technology and Data; and General Oceanography. GSO anticipates that this program will increase GSO student enrollment starting in the Fall 2016, and ultimately serve as a source of additional revenue in years to come.

#### **Streamlining GSO's processes to optimize research support.**

Over the past year the Dean's Office has reviewed the research support function provided by GSO's staff of scientific research grant assistants and coordinators. GSO has taken steps to ensure broader consistency and compliance with URI policies and added resources to expedite proposal review and approval, thus improving efficiency. GSO has also revised support assignments to balance workloads. These steps recaptured some critical time resources and are starting to enable stronger attention to proposal development detail and output, as well as grant compliance, management, and reporting that will further support success of GSO scientific proposals – ultimately leading to additional research revenues.

*Header photo:  
Michael Slaerno*

# Finance, Administration, and Research Support continued

GSO has enjoyed considerable incremental successes because of the hard work of the GSO team. The GSO is extremely fortunate to have such a highly qualified and talented group of Finance, Administration, and Research Support professionals. These individuals are the foundation for the broader operation and success of GSO. Many of these men and women are GSO or URI alumni, while others made their way to GSO because of the school's reputation and prominence in the ocean sciences and their desire to serve the oceanographic community. While downturns in funding across the federal granting agencies has made competition fierce, I am confident our team's vigilance and dedication will continue to support GSO's success at the highest levels.



Thomas Miller  
Director of Administration



*In June 2015 the GSO Dean's Office hosted a campus visit for group of retail executives from companies such as Oracle, Hallmark, Subway, Walgreens, and Planet Fitness who were in Newport for their semi-annual meeting. Photo: Alex DiCiccio*





## Finance, Administration, and Research Support Staff

### *Finance and Administration Staff*

Kathleen Beck	Executive Assistant II
Deborah Lafen	Assistant Business Management Officer
Jane Miner	Manager, NBC / GSO Business
Amy Smith	Fiscal Clerk

### *Research Support Staff*

David Adelman	Marine Research Specialist III
Ed Baker	Marine Research Associate III
Xueyang Bao	Post-Doctoral Fellow
David Borkman	Marine Research Associate IV
Danielle Cares	Marine Research Specialist III
Kim Carey	Scientific Research Grant Assistant
Maria Casas	Marine Research Associate II
Gang Chen	Post-Doctoral Fellow
Catherine Cipolla	Marine Research Specialist III
Sharon Clements	Scientific Research Grant Assistant
Sandra Fontana	Marine Research Specialist V
Cecilia Gelfman	Marine Research Specialist III
Carol Gibson	Marine Research Specialist IV
Dennis Graham	Marine Research Specialist III
Stephen Granger	Marine Research Associate IV
Clifford Heil Jr.	Marine Research Specialist V
Kim Hindle	Scientific Research Grant Assistant
Daniel Holloway	Assistant Director, Remote Sensing Ocean Lab
Kristen Hunter-Cevera	Post-Doctoral Fellow
Mary Jane James-Pirri	Marine Research Associate IV
Roger Kelly	Marine Research Associate II
Maureen Kennelly	Marine Research Specialist III
Rhonda Kenny	Scientific Research Grant Assistant
John Kirkpatrick	Post-Doctoral Fellow
Monique LaFrance Bartley	Marine Research Assistant IV
Malcolm McFarland	Marine Research Specialist III
Amanda Montalbano	Marine Research Assistant IV
Cynthia Murray	Coordinator, Sea Grant Depository
April Pariseault	Coordinator, NBC / Astrobiology and Geochemistry Programs
Roberta Pascale	Scientific Research Grant Assistant
Sheldon Pratt	Marine Research Associate II
Laura Reed	Marine Research Specialist I
Edwin Requentina Sr.	Marine Research Specialist II
David Robinson	Marine Research Specialist V
Gary Savoie	Technician III
Fabian Schloesser	Post-Doctoral Fellow
Mohammed Serag Eldin	Post-Doctoral Fellow
Erran Sousa	Associate Marine Development Engineer I
Heather Stoffel	Marine Research Associate II
Biju Thomas	Marine Research Associate IV
Karen Tracey	Marine Research Specialist V
Nian Wang	Post-Doctoral Fellow
Marsha Warren	Scientific Research Grant Assistant
Joyce Winn	Marine Research Assistant II
Alexandra Witten	Manager, Programs / GSO, Archeological Ocean



*Aerial photo of R/V Endeavor at the GSO dock.*

## Research and Outreach Grants and Awards, FY 2015

AWARDEE	PROJECT TITLE	FUNDER*	AMOUNT**
Alberts, Jonathan C	University-National Oceanographic Laboratory System	NSF	\$359,316
Alberts, Jonathan C	USGS Participation in UNOLS	USGS	\$13,262
Alberts, Jonathan C	University-National Oceanographic Laboratory System	NSF	\$66,306
Alberts, Jonathan C	University-National Oceanographic Laboratory System	ONR	\$120,610
Alberts, Jonathan C	University-National Oceanographic Laboratory System	ONR	\$135,305
Ballard, Robert D	The Development of Advanced Telepresence and Mapping Technology and Its Use Field Aboard E/V Nautilus	OET	\$37,668
Campbell, Robert	Zooplankton Sample Processing for the Under Ice Bloom Study	PRIVCORP	\$20,498
Campbell, Robert	CI-Collaborative Research: Annual Observations of the Biological and Physical Marine Environment in the Chuckchi and Nearshore Beaufort Seas Near Barrow AK	NSF	\$57,860
Campbell, Robert	CI - Marine Arctic Ecosystem Study (MARES) - Ecosystem Dynamics and Dynamics and Monitoring of the Beaufort Sea: An Integrated-Science Approach	PRIVCORP	\$2,657
Campbell, Robert G	CI Chuckchi Sea Offshore Monitoring in Drilling Area (COMIDA) Hanna Shoal Ecosystem Sudy C	UNIV	\$19,555
Campbell, Robert G	Collaborative Research: Copepod Life-History and Lipid Strategy in a Changing Arctic-A New Trait Based Approach to Data Synthesis, Modeling and End-to-End Integration	NSF	\$25,997
Carey, Steven N	Marine Geological Samples Laboratory; Graduate School of Oceanography, URI	NSF	\$69,181
Carnevale, Michelle	CI - Rhode Island Shoreline Special Area Management Plan (Shoreline SAMP)	CRMC	\$75,000
Coleman, Dwight	OET Partnership with the URI Inner Space Center to Support Systematic Ocean Exploration 2015-2016 Season	OET	\$185,000
Coleman, Dwight F	CI - NUWC Collaboration; with the URI Inner Space Center for Educational Outreach	NUWC	\$20,000
Collie, Jeremy	GSO/Nature Conservancy/Global Marine Initiative Student Research Grant	NONPRO	\$20,220
Collie, Jeremy	CI Southern New England Ventless Trap Survey	DOI	\$22,500
Collie, Jeremy S	University of Rhode Island Weekly Fish Trawl	DEM	\$234,000
Corliss, Bruce H	Collaborative Research: Calibration of a New Approach to Reconstruct Ancient Bottom Water Oxygen	NSF	\$30,404
Cornillon, Peter C	Physical Processes Associated with Sea Surface Temperature Gradients and Coupled Atmospheric Boundary Layer	UNIV	\$22,788
Cornillon, Peter C	Physical Processes Associated with Sea Surface Temperature Gradients and Coupled Atmospheric Boundary Layer	UNIV	\$22,788
Cornillon, Peter C	Multi - Sensor Improved Sea - Surface Temperature (MISST) For IOOS	PRIVCORP	\$48,905
Crawford, Brian	CI - Study of Illegal Fishing in the Territorial Waters of Somalia	PRIVCORP	\$4,253
Crawford, Brian	CI - Ghana Sustainable Fisheries Management Project	AID	\$716,963
Crawford, Brian	CI - Ghana Sustainable Fisheries Management Project	AID	\$1,873,738
Crawford, Brian	Collaborative Management For a Sustainable Fisheries Future in Senegal - COMFISH	AID	\$776,700
Crawford, Brian	CI - GSO: ECOFISH Bangladesh	NONPRO	\$31,790
D'Hondt, Steven L	Global Estimate of Radiolytic Hydrogen Production in Subseafloor Sediment: Importance of Nuclear-Fueled Life in the Deep Seafloor	NONPRO	\$30,000
D'Hondt, Steven L	The Microbial Biogeography of the Sulfate-Methane Transition Zone	NONPRO	\$19,805
D'Hondt, Steven L	US Science Support Program 353 Cruise Participant John Kirkpatrick	NONPRO	\$2,056
D'Hondt, Steven L	US Science Support Program 353 Cruise Participant John Kirkpatrick	NONPRO	\$300
D'Hondt, Steven L	Microbial Taxa in Subseafloor Environments and Seeps	PRIVCORP	\$120,000
D'Hondt, Steven L	Center for Dark Energy Biosphere Investigations (C-DEBI)	UNIV	\$104,872



Desilva, Annette M	University-National Oceanographic Laboratory System	NSF	\$359,316
Desilva, Annette M	USGS Participation in UNOLS	USGS	\$13,262
Desilva, Annette M	University-National Oceanographic Laboratory System	NSF	\$66,306
Desilva, Annette M	University-National Oceanographic Laboratory System	ONR	\$120,610
Desilva, Annette M	University-National Oceanographic Laboratory System	ONR	\$135,305
Donohue, Kathleen	REU Site: SURFO-Summer Undergraduate Research Fellowships in Oceanography	NSF	\$53,562
Donohue, Kathleen	Graduate Student Support for Scientific Research Cruise	UNIV	\$3,217
Fanning III, William	Ship and Marine Tech Support for RV Endeavor EN 555	USGS	\$84,972
Fanning III, William	Phase One - Ship and Marine Tech Support RV Endeavor EN 558, 559, 560	UNIV	\$410,496
Fanning III, William L	Shiptime and Marine Technician Support for the R/V Endeavor CY 2012	ONR	\$131,750
Ginis, Isaac	Geophysical Fluid Dynamics Lab (GFDL) Navy Maintenance Support	ONR	\$70,001
Ginis, Isaac	GFDN (Navy) Maintenance and Support: 3 year 2014-2017	ONR	\$43,138
Ginis, Isaac	GFDN (Navy) Maintenance and Support: 3 year 2014-2017	ONR	\$44,706
Glennon, Thomas	Ship and Marine Tech Support for RV Endeavor EN 555	USGS	\$84,972
Glennon, Thomas	Phase One - Ship and Marine Tech Support RV Endeavor EN 558, 559, 560	UNIV	\$410,496
Glennon, Thomas J	Shiptime and Marine Technician Support for the R/V Endeavor CY 2012	ONR	\$131,750
Glennon, Thomas J	MOSA for OCE 1217446 2012-2017	NSF	\$11,845
Glennon, Thomas J	MOSA for OCE 1217446 2012-2017	NSF	\$39,484
Glennon, Thomas J	MOSA for OCE 1217446 2012-2017	NSF	\$11,845
Glennon, Thomas J	MOSA for OCE 1217446 2012-2017	NSF	\$11,845
Glennon, Thomas J	Ship and Marine Technician Support for RV Endeavor Cruise EN 549	UNIV	\$429,084
Glennon, Thomas J	Ship and Marine Technician Support for RV Endeavor Cruise EN 548	UNIV	\$184,842
Glennon, Thomas J	Ship and Marine Technician Support for RV Endeavor Cruise EN 548	UNIV	\$29,700
Glennon, Thomas J	MOSA for OCE 1217446 2012-2017	NSF	\$11,845
Glennon, Thomas J	MOSA for OCE 1217446 2012-2017	NSF	\$65,148
Graham, Rebecca	Diatom Community Composition as an Indicator of Coastal Ecosystem Change	STAC	\$79,361
Hanson Jr, Alfred K	URI Component of the Continued Development of the Northeastern Coastal Ocean Observing System (NERACOOS)	NERACOOS	\$60,000
Hanson Jr, Alfred K	Hardening the URI to NERACOOS Observation Datastream	NERACOOS	\$12,300
Hara, Tetsu	Airflow Separations Over Wind Waves and Their Impact on Air-Sea Momentum Flux	NSF	\$355,198
Heil Jr, Clifford W	Development of a Biogeochemical Proxy for the Characterization of Paleoenvironmental Changes Buenos, Argentina	UNIV	\$23,659
Hickox, Sara C	Deep Carbon Observatory Engagement	NONPRO	\$749,969
Kelley, Katherine A	Collab. Research: Upper Mantle Oxygen Fugacity From Source to Surface	NSF	\$55,453
Kenney, Robert D	North Atlantic Right Whale Sightings Database (NARSWD) Maintenance Services: 2014-2015	NMFS	\$59,999
Kent, Karen L	CI- West Africa Analytical Support Services and Evaluations	USDA	\$334,389
Kent, Karen L	CI- West Africa Analytical Support Services and Evaluations	USDA	\$301,094
Kincaid, Christopher	Pushing to New Limits for Models of Rhode Island Bays and Sounds	UNIV	\$22,569
King, John	CI - An Integrated Program of Environmental Characterization/Monitoring, and Engineering to Develop Management Policies and Practices that will Enhance Coastal Resiliency in Rhode Island	NONPRO	\$353,010
King, John	CI Southern New England Ventless Trap Survey	DOI	\$22,500
King, John W	Collab. Research: Sediment Pathways, Sedimentation Processes, and Structural Growth Along the Tohoku Segment of the Japan Subduction Margin: Role of Megathrust Earthquakes	NSF	\$80,994
King, John W	CI Identification of Sand/Gravel Resources in Rhode Island Waters	DOI	\$134,000
King, John W	CI - Submerged Habitat Mapping at Northeast Region Coastal Parks: Coordination and Synthesis	DOI	\$44,000
King, John W	CI - Electromagnetic Field Impacts on Elasmobranch (sharks, rays, and skates) and American Lobster Movement and Migration from Direct Current Cables	DOI	\$670,872

## Research and Outreach Grants and Awards, FY 2015 [continued]

King, John W	CI Post Hurricane Sandy Submerged Marine Habitat Mapping, Fire Island National Seashore	DOI	\$480,000
King, John W	Development of a Biogeochemical Proxy for the Characteriation of Paleoenvironmental Changes Buenos, Argentina	UNIV	\$1,245
Kirkpatrick, John	US Science Support Program 353 Cruise Participant John Kirkpatrick	NONPRO	\$2,700
Kirkpatrick, John	US Science Support Program 353 Cruise Participant John Kirkpatrick	NONPRO	\$18,500
LaFrance, Monique	CI - Submerged Habitat Mapping at Northeast Region Coastal Parks: Coordination and Synthesis	DOI	\$176,000
Lohmann, Rainer	Development of a Passive Multisampling Method to Measure Dioxins/Furans and Other Contaminant Bioavailability in Aquatic Sediments	STAC	\$150,000
Lohmann, Rainer	Community Based Seawater Monitoring for Organic Contaminants and Mercury in the Canadian Arctic	GOVT	\$11,500
Lohmann, Rainer	PCB Monitoring after Sediment Capping	PRIVCORP	\$41,924
Lohmann, Rainer	CI - Impact of Hurricane Sandy: Threats to Communities and Ecosystems from Storm-induced Mobilization of Toxic Compounds	UNIV	\$65,000
Loose, Brice	Rates and Controls on Methane Oxidation Beneath Sea Ice	NONPRO	\$110,000
Loose, Brice	Collaborative Research: Z Inventories of Primary Productivity (ZIPP) by In-Situ Mass Spectrometry in the Upper Ocean	NSF	\$256,756
Maranda, Lucie	Support Services for Sampling Biofouling on Iodine Infused Aeration Panels	NUWC	\$1,566
Maranda, Lucie	Support Services for Sampling Biofouling on DCOIT-Impregnated Sonar Domes	NUWC	\$2,144
Maranda, Lucie	REU Site: SURFO-Summer Undergraduate Research Fellowships in Oceanography	NSF	\$53,562
McCann, Jennifer	CI - Rhode Island Shoreline Change Special Area Management Plan (Beach SAMP)	CRMC	\$115,794
McCann, Jennifer	CI - An Integrated Program of Environmental Characterization/Monitoring, and Engineering to Develop Management Policies and Practices that will Enhance Coastal Resiliency in Rhode Island	NONPRO	\$34,440
Moran, S Bradley	IPA Position at NSF Chemical Oceanography Program	NSF	\$66,424
Murray, Cynthia J	A Proposal for the Support of Continuing and New Activities of the National Sea Grant Library	DOC	\$235,000
Nixon, Dennis W	Rhode Island Sea Grant 2014-2018 Omnibus	DOC	\$176,375
Nixon, Dennis W	Rhode Island Sea Grant 2014-2018 Omnibus	DOC	\$474,418
Nixon, Dennis W	Rhode Island Sea Grant 2014-2018 Omnibus	DOC	\$1,604,589
Nixon, Dennis W	Rhode Island Sea Grant 2014-2018 Omnibus	DOC	\$120,687
Nixon, Dennis W	Rhode Island Sea Grant 2014-2018 Omnibus	DOC	\$182,202
Pockalny, Robert	CI - An Integrated Program of Environmental Characterization/Monitoring, and Engineering to Develop Management Policies and Practices that will Enhance Coastal Resiliency in Rhode Island	NONPRO	\$25,830
Pockalny, Robert A	C-DEBI Data Management Portal	UNIV	\$121,459
Pockalny, Robert A	Synthesis of Line Islands Geologic Framework, Sedimentary Processes and Margin Evolution in Support of US Extended Continental Shelf Assessments	DOI	\$17,500
Pockalny, Robert A	Synthesis of Line Islands Geologic Framework, Sedimentary Processes and Margin Evolution in Support of US Extended Continental Shelf Assessments	DOI	\$39,462
Ricci, Glenn M	CI - Study Tour on Innovative Adapt. Strategies for Vietnam Officials Through the USAID Vietnam Forests Project	NONPRO	\$209,564
Ricci, Glenn M	IUCN Capacity Development Tools	NONPRO	\$25,088
Robadue Jr, Donald	CI - Ghana Sustainable Fisheries Management Project	AID	\$1,873,738
Robadue Jr, Donald	CI - Ghana Sustainable Fisheries Management Project	AID	\$716,963
Robadue Jr, Donald D	ci - Guidance for the National Park Service in Conducting Vulnerability Assessments in the Northeast Region	DOI	\$30,495



Rohr, Nicole Elisabeth	CI- RI Environmental Monitoring Collab: 2014 Report and Development	DEM	\$5,000
Roman, Christopher	CI - Collab. Research: A metabolic Index to Predict the Consequences of Climate Change for Midwater Ecosystems	NSF	\$366,309
Roman, Christopher N	Evaluation of a Dual Actuator Bottom Following Lagrangian Imaging System for Fisheries Stock Assessment	DOC	\$80,480
Roman, Christopher N	URI Component: Web-Scale Assisted Robot Teleoperation	UNIV	\$60,633
Roman, Christopher N	URI Component: Web-Scale Assisted Robot Teleoperation	UNIV	\$61,763
Roman, Christopher N	Construction of a Temperature Controlled Bath for CTD Sensor Testing	PRIVCORP	\$60,000
Roman, Christopher N	The Development of Advanced Telepresence and Mapping Technology and Its Use Field Aboard E/V Nautilus	OET	\$150,673
Rossby, Hans T	Collaborative Resesarch: The NERRONA Project: An International Collaboration	NSF	\$116,724
Rossby, Hans T	Collab. Res: The Next Generation RAFOS Float	NSF	\$26,937
Rothstein, Lewis	Dynamics of Near-Surface Eastward Flows in the South Indian Ocean	UNIV	\$23,732
Rothstein, Lewis	Marine Disturbance Disease and Climate Change in Rhode Island's Coastal Waters: Merging Higher Trophic Level Population Dynamics Models/Datasets with Lower Trophic Level Climate Forecast Models	STAC	\$55,981
Rothstein, Lewis	Pushing to New Limits for Models of Rhode Island Bays and Sounds	UNIV	\$22,569
Rubinoff, Pamela	Rhode Island Coastal Community Resiliency Planning with Green Infrastructure Guidance	NONPRO	\$400,000
Rynearson, Tatiana	Canaries in Narragansett Bay? Untangling the Ecological Response of a Key Diatom Genus to Environmental Change	STAC	\$118,895
Rynearson, Tatiana	Diatom Community Composition as an Indicator of Coastal Ecosystem Change	STAC	\$79,361
Rynearson, Tatiana A	CI-Ecology at the Microbial Scale: The Importance of Microscale Interactions Between Heterotrophic Bacteria and Phytoplankton in Marine Environments	UNIV	\$155,687
Schloesser, Fabian	Dynamics of Near-Surface Eastward Flows in the South Indian Ocean	UNIV	\$71,197
Scowcroft, Gail A	Discovery of Sound in the Sea	ONR	\$50,000
Scowcroft, Gail A	Discovery of Sound in the Sea	ONR	\$220,000
Scowcroft, Gail A	Climate Change Education Partnership Alliance: National Office	NSF	\$58,400
Shen, Yang	Earthquake Triggering and Synchronization on Ocean Transform Faults	NSF	\$8,396
Shen, Yang	Robust Coaxial Cable Reflectometry for Distributed Shape Sensing in Harsh Environments	NSF	\$12,099
Smith, David	REU Site: SURFO-Summer Undergraduate Research Fellowships in Oceanography	NSF	\$26,781
Spivack, Arthur J	International Drilling to Recover Aquifer Sands (IDRAs) and Arsenic Contaminated Groundwater	UNIV	\$63,132
Sullivan, James M	Biological Response to the Dynamic Spectral-Polarized Underwater Light field	UNIV	\$55,250
Swift, Judith M	CI - The History of Shellfish in Rhode Island	NONPRO	\$2,000
Tobey, James	CI - GSO: ECOFISH Bangladesh II	NONPRO	\$63,201
Tobey, James A	Collaborative Management For a Sustainable Fisheries Future in Senegal - COMFISH	AID	\$776,700
Torell, Elin	CI - GSO: ECOFISH Bangladesh II	NONPRO	\$63,201
Torell, Elin C	CI - Fisheries Integratin of Society and Habitats (FISH)	AID	\$49,999
Torell, Elin C	CI- Fisheries Integration of Society and Habits Fish	NONPRO	\$49,999
Torell, Elin C	CI- Fisheries Integration of Society and Habits Fish	NONPRO	\$572,796
Ullman, David	Pushing to New Limits for Models of Rhode Island Bays and Sounds	UNIV	\$23,253
Ullman, David S	MARACOOS: Mid ATLantic Regional Association Coastal Ocean Observing System	UNIV	\$30,000
Ullman, David S	MARACOOS: Mid ATLantic Regional Association Coastal Ocean Observing System	UNIV	\$30,000
Ullman, David S	COEUT: PARS Buoy	PRIVCORP	\$19,500
Ullman, David S	COEUT: PARS Buoy	PRIVCORP	\$18,924

## Research and Outreach Grants and Awards, FY 2015 [continued]

Watts, D Randolph	3 PIES with Microcat-Ready Option for the University of Miami	UNIV	\$111,801
Watts, D Randolph	3 PIES with Microcat-ready Option for NOAA/AOML, Miami	DOC	\$111,801
Watts, D Randolph	Upgrade Two H-Pies for AUX Output to Ocean Observatory	UNIV	\$3,600
Watts, D Randolph	Temperature-Popup Data Data Capsules for Greenfield Fjord	UNIV	\$46,400
Watts, D Randolph	Redeployment PIES Accessories for Welsch-Hamburg	UNIV	\$5,138
Watts, D Randolph	Western Pacific Studies using a PIES and CPIES for Institute of Oceanography Chinese Academy (IOCAS)	PRIVCORP	\$98,382
Watts, D Randolph	PIES parts for University of California, San Diego	UNIV	\$2,907
Watts, D Randolph	Kuroshio Studies Using 4 CPIES for Institute of Oceanography Chinese Academy of Sciences (IOCAS)	PRIVCORP	\$200,220
Watts, D Randolph	Western Pacific Studies Using 20 CPIES for Institute of Oceanography Chinese Academy of Sciences (IOCAS)	PRIVCORP	\$1,001,100
Watts, D Randolph	Supplement: Upgrade Two H-PIES for Aux Output to Ocean Observatory	UNIV	\$16,994
Watts, D Randolph	Transport Monitoring in Western Atlantic: 1 PIES (CPIES-ready) for U. Miami	UNIV	\$40,427
Watts, D Randolph	Agulhas Studies Upgrading 5 CPIES for L. Beal, UMiami (RSMAS)	UNIV	\$43,970
Wei, Meng	Earthquake Triggering and Synchronization on Ocean Transform Faults	NSF	\$159,530
Wei, Meng	Robust Coaxial Cable Reflectometry for Distributed Shape Sensing in Harsh Environments	NSF	\$48,396
Wishner, Karen	CI - Collab. Research: A Metabolic Index to Predict the Consequences of Climate Change for Midwater Ecosystems	NSF	\$366,309
Various GSO Investigators	Marine-Related EPSCoR Projects	NSF	\$295,000
FY 15 TOTAL			\$25,651,628

*Opposite: Research Vessel Ice Breaker (RVIB) Nathaniel B. Palmer at the completion of a successful cruise studying krill distributions, behavior, and feeding in the West Antarctic Peninsula.  
Photo: Alison Cleary*

*Below: A research team from GSO continued to map the submerged habitats along Fire Island to help wildlife officials understand the changes wrought by Hurricane Sandy.  
Photo: Monique LaFrance Bartley*









# Development Efforts

Private support from individuals, families, foundations, and corporations is critical to the continued success of the Graduate School of Oceanography. Many of our achievements would not have been possible without the generous gifts of all of our donors. These donations provide vital support to our graduate students, enable GSO to recruit the best faculty and research scientists, and fund informative and exciting outreach programs that reach not only our Narragansett neighbors but audiences around the globe. Gifts also enable GSO to make important discoveries about the oceans, atmosphere, and coastal environments, and to develop the tools and information required by policy makers and the public for wise stewardship of the world's marine resources. GSO is grateful to all who support our work.

GSO was without a development director for most of the fiscal year. However, thanks to the superb development efforts of my predecessor, Myrna Bizer, the ongoing development activities of GSO and the URI Foundation, and the tireless work by GSO faculty, research scientists, staff, and students to engage, enlighten, and excite our Friends and visitors both on and off campus, GSO closed the fiscal year with another fundraising record.

Development highlights of FY15 include:

- \$3.03 million cash in-hand for the year, the largest fundraising year on record;
- Two bequests, one from a GSO Friend and one from a GSO faculty member, with a combined value of \$1.01 million;
- Notably high donor rates for both GSO alumni and GSO faculty/faculty emeritus, at 25% for both categories of donor; and
- Launch of the new publication *On Course*, a magazine highlighting GSO's research and outreach endeavors, and publication of the spring issue of *Aboard GSO* and the *Annual Report 2014*.

A variety of cultivation and stewardship events were held, including a fall Friends lecture, exhibitions at the Providence Boat Show and at the two-week Newport stopover of the Volvo Ocean Race, GSO alumni gatherings at several professional meetings, and an Education-At-Sea reception aboard Rhode Island's Tall Ship, the *Oliver Hazard Perry*.

Thank you to all our donors — your support makes an enormous difference.



Barbara V. Braatz  
GSO Director of Development





## Development Support Staff

Deborah Coty

System Support Technician



*Left: Vice Admiral Thomas Weschler, USN, Ret., Chairman Emeritus at Oliver Hazard Perry Rhode Island and others teamed with GSO to host an Education-at-Sea reception aboard Rhode Island's new 200-foot tall ship, the SSV Oliver Hazard Perry.*  
*Photo: Michael Salerno*

*Below: GSO Professor Robert Ballard addresses a crowd at the Inner Space Center via telepresence. Photo: Alex DiCiccio*



*Header photo:  
 Michael Salerno*

## Friends of Oceanography

### Graduate School of Oceanography Donors (July 2014– June 2015)

We proudly recognize each donor to GSO as a Friend of Oceanography.

Many thanks to our individual, corporate, foundation, and organizational donors. Your generous contributions support student scholarships and awards, the Pell Marine Science Library, faculty development, and other projects undertaken to enhance GSO's research, outreach, and academic programs.

#### TRIDENT SOCIETY

All donors to GSO with annual gifts of \$1,000 or more are members of our Trident Society.

Dr. Craig A. Amerigian<sup>A</sup>  
Anonymous  
Mr. Ronald C. Baird  
Mr. A. L. Ballard  
Dr. Robert D. Ballard<sup>A</sup>  
Dr. David A. Bengston  
Dr. Linda E. Bireley<sup>A</sup>  
Dr. Joceline M. Boucher<sup>A</sup>  
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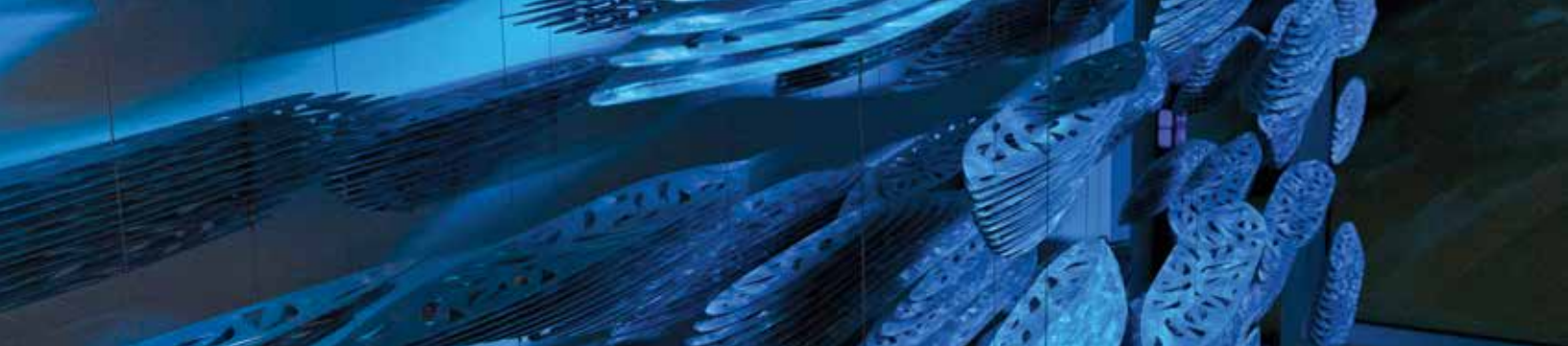


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 RI Flood Mitigation Association  
 Thread Rolling, Inc.

*Opposite: A GSO banner is affixed to the rigging on the SSV Oliver Hazard Perry to announce GSO's Exploration Zone exhibits at the Volvo Ocean Race. Photo: Michael Salerno*





UNIVERSITY  
RHODE ISLAND  
GRADUATE SCHOOL  
OCEANOGRAPHY

OCEAN EXPLORATION  
WITH THE  
INNER SPACE CENTER





## The University of Rhode Island Narragansett Bay Campus

### Legend

#### Key Offices and Facilities

- 26 Coastal Institute
- 25 Coastal Resources Center
- 1 Dean's Office
- 1 Inner Space Center
- 26 Metcalf Institute
- 10 Ocean Engineering Department
- 26 Office of Marine Programs
- 1 Pell Marine Science Library
- 26 Rhode Island Sea Grant
- 8 Shipping & Receiving

#### Parking

- A Coastal Institute Parking Lot
- B Lower Parking Lot
- C Upper Parking Lot
- D Horn Lab Parking Lot
- E Ocean Engineering Parking Lot

#### Buildings

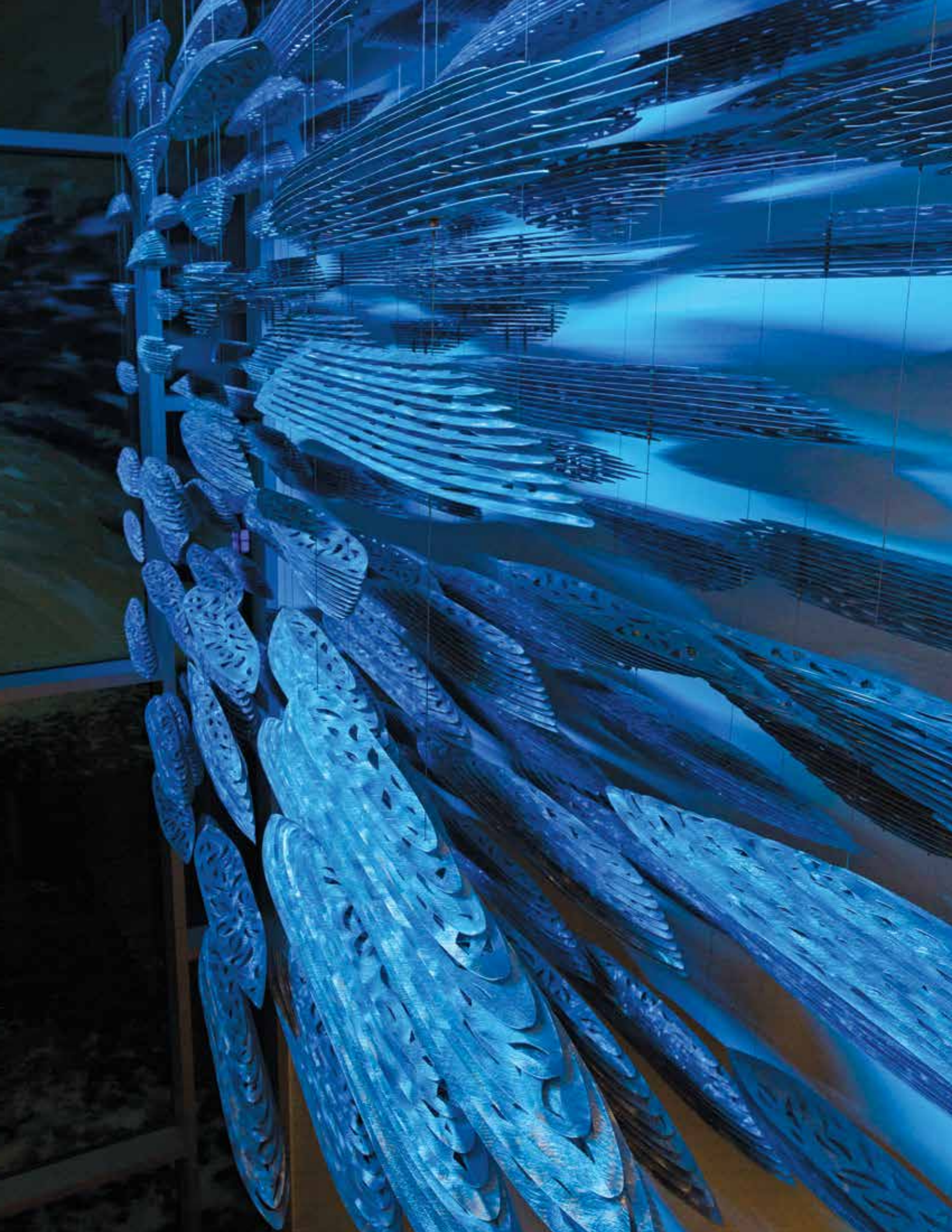
- 19 Aquarium Annex
- 20 Ann Gall Durbin Aquarium / Aquarium Ark
- 21 Blount Aquaculture Laboratory
- 18 Bunker Cram
- 5 Center for Atmospheric Chemistry Studies
- 26 Coastal Institute
- 27 EPA Atlantic Ecology Division
- 3 Fish Laboratory
- 8 Furtado Building
- 4 Horn Laboratory
- 13 Maintenance Building
- 22 Marine Ecosystem Research Laboratory
- 7 Marine Geological Laboratory
- 17 Marine Laboratory
- 15 Marine Logistics Building
- 14 Marine Operations Building
- 25 Marine Resources Building
- 11 Middleton Building / South Laboratory
- 24 Mosby Center
- 28 NOAA/NMFS/Northeast Fisheries Center
- 1 Ocean Science & Exploration Center

- 12 Ocean Technology Center / Equipment Development Laboratory
- 16 Perkins Small Boat Facility
- 23 R/V Endeavor Pier
- 6 Rhode Island Nuclear Science Center
- 10 Sheets Building
- 9 Small Boat Maintenance Building
- 29 South Ferry Church
- 2 Watkins Laboratory

#### Meeting Spaces

- 26 Coastal Institute (CI)
  - Coastal Institute Auditorium
  - Hazard Room
  - Large Conference Room
  - Small Conference Room
- 24 Mosby Center
  - 1 Ocean Science & Exploration Center (OSEC)
    - Challenger Room
    - Nautilus Galley Café
  - 2 Watkins Laboratory
    - Corless Auditorium
    - Trident Room









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