

MIT SG

MIT SEA GRANT PROGRAM 2010 NSGO REVIEW

Mike Liffmann

MIT Sea Grant program area

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MIT Program Management

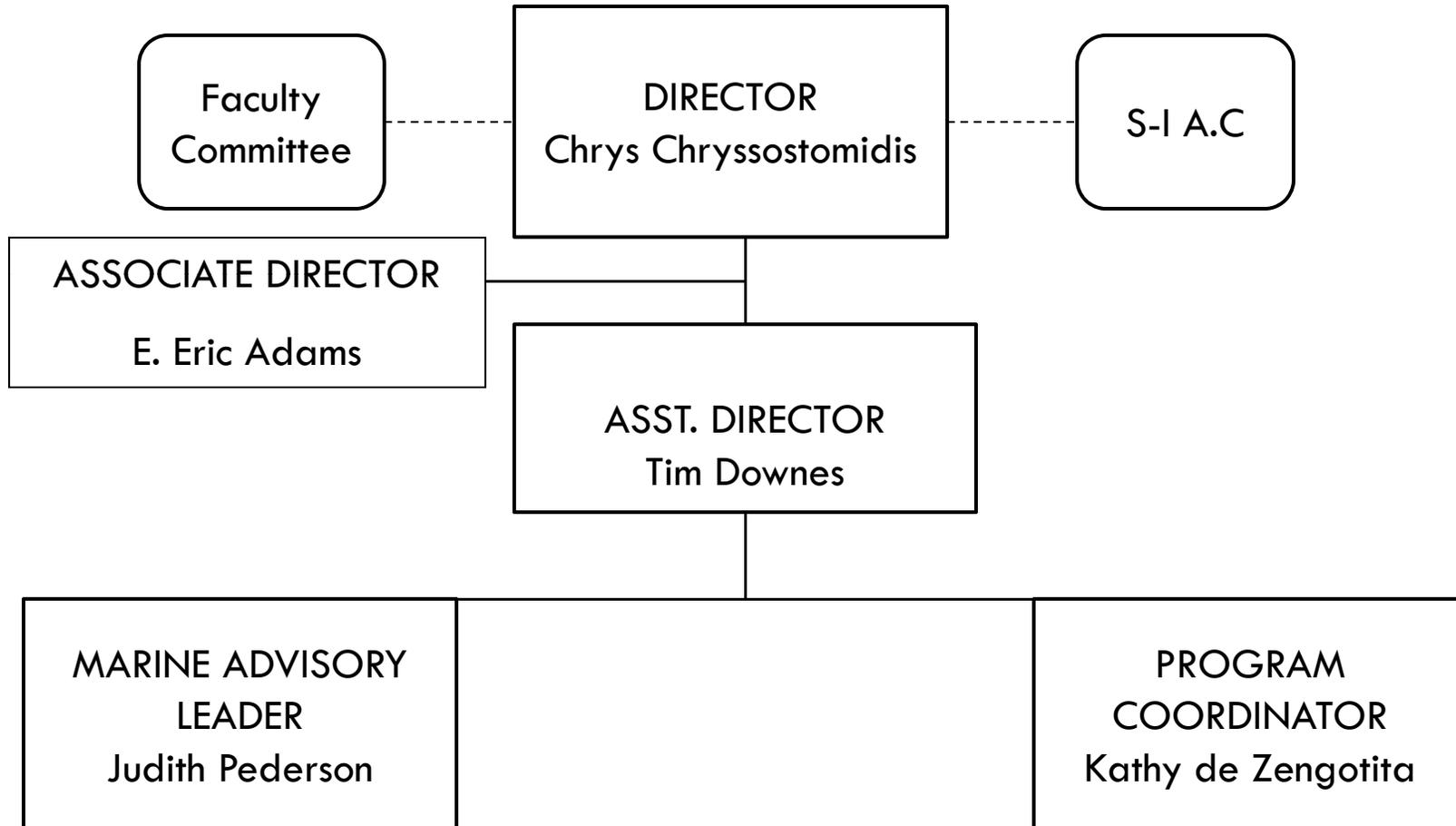
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□ Management Team

- Director, Chryssostomos Chryssostomidis (0.8 FTE)
- Associate Director, E. Eric Adams (0.2 FTE)
- Assistant Director, Timothy Downes (1.0 FTE)
- Marine Advisory Leader, Judy Pederson (1.0 FTE)
- Program Coordinator, Kathy de Zengotita (1.0 FTE)

MIT Organizational Chart



Extension Program

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- Coastal resources (Pederson) , communications (Cohen), marine social sciences (Hall-Arber), education (Olivo-Hammond), aquaculture and education (Moran), fisheries and climate (TBN)
- Web services and databases for information and project management are cross-cutting areas under extension
- Work with communities to develop marine invasion prevention programs, climate change impacts, alternative energy, sustainable fisheries and balanced ocean use

MIT Advisory Boards

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- **State-Industry Advisory Council**—marine-related agencies in (MA), public interest groups, private and corporate citizens. Also, Northeast Fisheries Science Center (NEFSC) and WHOI SG.

Role:

- identify and define marine-related issues;
- advice on programmatic priorities;
- identify others for more coordinated project efforts;
- evaluate MIT SG objectives and themes.

MIT Advisory Boards (cont.)

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□ Faculty Committee

- Evaluation of program management
- Relations between SG and rest of MIT
- Along with S-I A.C. helps identify and develop research themes and strategies
- Along with S-I A.C. ensures proper balance among funding recipients
- Up to 2009, along with S-I A.C. helped identify funding recipients at the pre-proposal stage

Joint Advisory Committee Membership^{MIT SG}

MIT Faculty Committee:

- James M. Utterback, Chair - Sloan School of Management
- John J. Leonard - Dept of Mechanical Engineering
- Scott R. Manalis - Department of Biological Engineering
- Heidi M. Nepf - Dept of Civil and Environmental Engineering
- James L. Kirtley - Dept of Electrical Engineering & Computer Science
- Alexander M. Klibanov - Dept of Chemistry
- Wesley L. Harris - Dept of Aeron. and Astronautics
- Martin F. Polz - Dept of Civil and Environmental Engineering
- Chiang C. Mei - Dept of Civil and Environmental Engineering
- Alexander H. Slocum - Department of Mechanical Engineering
- Robert Armstrong - Dept of Chemical Engineering
- Dara Entekhabi - Dept of Civil and Environmental Engineering
- E. Eric Adams - Dept of Civil and Environmental Engineering , *ex officio*

State Industry Advisory Council:

- John Agapakis - RVSI Acuity CiMatrix
- Martin Klein - retired engineer, invented Klein sonar
- Bernadette Kolb - CDM International State/Industry Advisory Council
- Joseph Lassiter - Harvard Business School
- Justin E. Manley - Liquid Robotics
- John Blair - retired engineer/scientist, Raytheon
- Ambrose Jearld - Northeast Fisheries Science Center
- Edwin Tiffany - CambridgeSoft Corporation
- Judith McDowell - Woods Hole Oceanographic Inst.
- Carlton D. Hunt - Battelle Laboratory
- Charles Richards - CEO, Chairman's View
- Jella Atema - BU Marine Program, MBL
- Michael B. Manning - Worcester Polytechnic Institute Technology Transfer Office
- Andrea Rex – MWRA, Massachusetts Water Resources Authority
- Bill Hubbard - U.S. Army Corps of Engineers, New England Division
- Kathryn Ford - Massachusetts Division of Marine Fisheries
- Paul Howard - New England Fishery Management Council

Institutional Setting

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- The MIT Sea Grant Program reports to the Vice-President for Research, Claude Canizares;
- Faculty Advisory Committee—provides valuable professional and outside advice, although limited role in strategic planning process;
- Housed within campus and full access to vast infrastructure.

MIT Sea Grant Plan – Estimated 4-yr MIT SG

Budget Allocation by focus area

National Focus Area	Focus Area from Program Strategic Plan	Estimated Level of Effort of Federal, Match and Leveraged (%)	Estimated Level of Effort of Federal and Match (\$)	Estimated Level of Effort of Leveraged (\$)
Safe & Sustainable Seafood Supply	same	15	\$1.8M	\$800K
Sustainable Coastal Development	same	25	2.5M	1.3M
Healthy Coastal Ecosystems	same	50	6.1M	2.6M
Hazard Resiliency in Coastal Communities	same	10	1.9M	500K
Total		100	\$12.3M	\$5.2M

Performance Measure/Outcome ^{MIT SG}

Highlights

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- Number of communities using invasive species database (MITIS) in active campaigns to minimize introductions;
- Number of working models of *Didemnum* responses to environmental and anthropogenic variables;
- Capacity to detect schools of fish using new lateral-line sensor;
- Creation of a deep-sea platform and tools capable of extracting samples of coral for chemical analysis.

Major Partners

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- Annually, MIT receives extensive funding support from industry and other partners as well as federal sources other than SG;
- Faculty, staff and students at area colleges and universities, NE Aquarium, and Quincy and Cohasset public schools;
- MassPort; NMFS/NEMFC

Network Activities - 2009

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- Limited national participation (exception-invasive species and fisheries social science)
- Regional leadership in RRP development and close working relationship with WHOI
- NOAA--Director Chryssostomidis assisted in initial formation of the NOAA AUV Committee
- Engineering support to NOAA education project in Hawaii

2010 RFP Process

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- Yearly funding competition
- Priorities—marine processes modeling and measurement; technologies for ocean research, education and commerce; fisheries, aquaculture and water quality
- 27 pre-proposals reviewed by in-state stakeholders; 11 recommended for full proposals consideration; 3-5 external reviewers per evaluation
- Five-person Technical Review Panel recommended funding of six projects

2008/2009 Program Metrics – Awards and Honors

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- 1. Chrys Chryssostomidis received an appointment renewal to the Doherty Professorship of Ocean Science and Engineering in 2008.
- 2. Judy Pederson's student Clifton Dassuncao received the Judge Paul Garrity Award
- 3. Franz Hover awarded faculty appointment as Assistant Professor and also received a two-year Doherty Junior Professorship Award
- 4. George Karniadakis received the U.S. Association of Computational Mechanics award in Computational Fluid Dynamics
- 5. Andrea Cohen received the Charles River Conservancy Distinguished Service Award
- 6. Student Corrine Hui received the MITSG Dean Horn Award

2008/2009 Highlights of Metrics^{MIT SG}

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- Total 40 individuals; 19.65 FTEs SG and 20.35 FTEs match and non-SG
- # and amount of PD projects—1 and \$10K
- Leveraged funds—13 projects and ~\$1.6M
- 153 partnerships

2008/2009 Program Impacts

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- Developed a small, low-power, digital holographic camera that images plankton and particles in the size range from microns to centimeters. Also developed image analysis methods for accurate automated identification of plankton from images. **Impact:** Advances pave the way for incorporation of small compact imaging systems, with on-board plankton identification, into ocean gliders and drifters. This new capability will allow remote sampling of plankton throughout the world ocean.

2008/2009 Program Impacts

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- New underwater electromagnetic-based acoustic modem that allows the transmission of underwater data at constant output signal per input.
- Developed underwater acoustic sensing techniques to safely and inexpensively estimate the destructive power of a hurricane.

2008/2009 Program Impacts

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Research funded by the oil industry yields results applicable to a number of SG research areas:

- Ability to characterize noise in underwater operating environment
- Underwater wireless communications for supervisory control in the presence of excessive noise
- Long term application: AUVs with the ability to transmit live, real-time, wireless video through an acoustic channel

2008/2009 Program Impacts

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- Established a link between pollutants and spermatotoxicity in a natural population of skates (*Raja erinacea*) in a marine environment. Addressed the risk to reproductive health of fisheries stock in New England coastal waters and provided information of relevance to regulators. **Impact:** Supports the conclusion that evaluation of anthropomorphic impact on reproductive parameters in commercially valuable fish populations is a factor to be included in fisheries management deliberations.

Best Management Practices

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- Centers as an effective outreach mechanism (1998 PAT)
- Process that carried AUV program from concept, through research and testing, to commercialization by Bluefin Robotics Corporation.