Tufts Institute of the Environment
Biennial Report
2010 – 2012
Contents

Executive Summary ............................................................................................................................................ 4

TIE Strategic Overview .................................................................................................................................. 4
  Vision and Mission ........................................................................................................................................ 4
  TIE Staff and Directors ................................................................................................................................. 5
    Professional Staff ........................................................................................................................................ 5
    TIE Co-Directors and Advisors ................................................................................................................... 6

History of TIE .................................................................................................................................................. 7

Physical Space ................................................................................................................................................ 8
  Renovation Process ...................................................................................................................................... 8

Communication and Outreach .......................................................................................................................... 9
  Environmental Community Brunch ................................................................................................................ 9
  Social Media ............................................................................................................................................... 9
  Websites .................................................................................................................................................... 9

Signature Programs ....................................................................................................................................... 11
  Water: Systems, Science and Society (WSSS) ............................................................................................ 11
    Practicum Track ...................................................................................................................................... 11
    Research Track ....................................................................................................................................... 13
    WSSS Symposium .................................................................................................................................. 13
    WSSS Newsletter ................................................................................................................................... 14

Tufts Environmental Literacy Program (TELI) ............................................................................................... 14
  TELI 2011 (May 23–27) ............................................................................................................................. 14
  TELI 2012 (May 21–25) ............................................................................................................................. 14

TIE Fellowship Program .................................................................................................................................. 15
  TIE Fellows 2010–2011 ............................................................................................................................... 16
  TIE Fellows 2011–2012 ............................................................................................................................... 17

Travel Grants ................................................................................................................................................... 17
  Travel Grant Recipients’ Research Locations, 2010 - 2012 ...................................................................... 18

Student Internships at TIE ............................................................................................................................. 19
  TIE Interns and Projects, 2010–2012: ......................................................................................................... 19

Initiatives .......................................................................................................................................................... 20

Dow Sustainability Innovation Student Challenge Award (SISCA) ............................................................... 20
Climate Change Climate Justice (CCCJ) ................................................................. 20
TIE Talks ................................................................................................................. 20
Arctic Initiative ...................................................................................................... 20
Faculty Roundtable ............................................................................................... 21
Energy and Climate Forum .................................................................................... 21
Collaborations and Affiliations .............................................................................. 22
Tufts Energy Conference (TEC) ............................................................................. 22
Environmental Studies Program (ENVS) .............................................................. 22
Tufts Environmental Alumni (TEA) ........................................................................ 22
 TEA Newsletter ...................................................................................................... 23
Integrated Graduate Education and Research Traineeship (IGERT) in Water Diplomacy ....................... 23
University Seminar – One Health ......................................................................... 23
Center for International Environmental and Resource Policy (CIERP) ...................... 23
ExCollege Course Development & Environmental Education .............................. 23
Sustainability Tracking Assessment & Rating System (STARS) ............................ 24
Masters in Conservation Medicine (MCM) .......................................................... 24
Research Day on Sustainability ........................................................................... 24
Stockholm Environment Institute (SEI) .................................................................. 25
Mystic Watershed Collaborative (MWC) ............................................................... 25
350.org Campaign ................................................................................................. 25
Executive Summary
The Tufts Institute of the Environment (TIE) is dedicated to promoting and catalyzing environmental, interdisciplinary research and education at Tufts University. From 2010 to 2012, TIE advanced its mission in scope and depth, each year increasing the total amount and methods for supporting faculty and students. TIE is not only a leader but a facilitator, as the Institute’s physical location and its staff create space for innovation to happen. As this biennial report outlines, TIE offers its own programs, sponsors and co-sponsors diverse initiatives, and engages with a broad array of collaborators and affiliates.

Looking ahead, 2013-2014 marks TIE’s 15-year anniversary. As we begin to prepare for this milestone, we are reminded how far we’ve come. TIE’s development is the result of visionary thinking and everyday implementation. Amidst climate change and other major environmental challenges that are bringing together diverse interests, we find ourselves positioned to take on an increasingly important role as at the University. We’re looking forward to the next 15!

TIE Strategic Overview
Vision and Mission

Vision
(1) The Tufts Institute of the Environment will be the preferred place of association for Tufts’ academic leaders in interdisciplinary environmental research, technology and policy development, and education.
(2) This association will elevate Tufts into an international leadership position in strategic research areas.
(3) This will attract stellar students and
(4) increase the visibility and thus literacy of environmental issues on campus.

Mission Statement
The Tufts Institute of the Environment (TIE) is an interdisciplinary, university-wide institute that initiates, facilitates, and supports environmental education, research, outreach, and service toward a sustainable future.

2010 to 2012 Draft Strategic Directions
1. Strengthen interdisciplinary research initiatives
2. Develop stronger sense of affiliation among environmental community members
3. Attract programmatic funding
4. Ensure a high level of environmental literacy for all Tufts students
5. Increase visibility of faculty and student research both within and outside the University
TIE Staff and Directors

Professional Staff

**Antje Danielson** is the Administrative Director of TIE and the Water: Systems, Science and Society (WSSS) Program. She came to Tufts from Durham University (UK), where she served as the Deputy Director for Sustainability, in May 2008. Previously, she worked with the Harvard Green Campus Initiative. A long-time resident of Cambridge, Antje also co-founded the innovative car-sharing company Zipcar. She holds a Ph.D. in Geology from Free University, Berlin.

**Heather Angstrom** was the Program Coordinator for TIE as well as the WSSS program. She managed the TIE office in Miller Hall at the Medford campus and coordinated events such as the Energy and Climate Forum and the WSSS Symposium. She holds a joint B.A. in Studio Art and Women's Studies, and recently received an M.S. in Health Communications at the Tufts School of Medicine. Heather left TIE in 2011 to pursue a career at the Tufts school of Public Health.

**Emily Geosling** is the Program Coordinator for TIE. She manages the TIE office in Miller Hall, manages events, and works on outreach and communication. Before coming to Tufts, Emily worked as a Recycling Coordinator for the City of Monterey, California and as a Graduate Assistant at the Monterey Institute of International Studies. She holds a B.S. in Environmental Science, Policy and Management from the University of California, Berkeley. Prior to her promotion to Program Coordinator, Emily served as the TIE Office Assistant.

**Libby Mahaffy** is currently the Communications Specialist at TIE and alumna of the Tufts Urban and Environmental Policy and Planning MA program. In 2009, Libby completed a program evaluation of the Tufts Environmental Literacy Institute. Since then, she has been involved in planning various events—such as the Global Work Party at Tufts with 350.org in October 2010—and creating content and designing newsletters. Her interviews of Tufts environmental alumni for various publications is ongoing. Libby began as an intern with TIE; her role was expanded to her current position through 2011 and 2012.
**TIE Co-Directors and Advisors**

Assistant Professor, Wildlife Medicine, Director of the Tufts Center for Conservation Medicine, Department of Environmental and Population Health

Associate Professor, Director of the Tufts Initiative for Forecasting and Modeling of Infectious Disease (InForMID), Tufts University School of Medicine

Professor, Director of the graduate program in Water: Systems, Science, and Society, Tufts University School of Engineering

**Undergraduate Education Directorate: Colin Orians since 2011**
Professor, Director Environmental Studies Program, Department of Biology

**Senior Advisor: William Moomaw**
Professor of International Environmental Policy, Director of the Center for International Environment and Resource Policy, The Fletcher School. Professor Moomaw was TIE’s Senior Director from 1998 until 2007, when he became one of TIE’s Faculty Co-directors after TIE’s re-organization. In 2010, Bill retired from TIE’s leadership team and served as Senior Advisor until the fall of 2011.
History of TIE

TIE was created in 1998 to formalize and expand on the missions of the Center for Environmental Management (CEM) and the Tufts Environmental Program Council (TEPC). The following is a timeline of important events leading to TIE’s current structure:

1973  Tufts’ first M.A. in Urban, Social and Environmental Policy is created.

1984  The Environmental Studies program as an optional second major develops out of Bio7 under the leadership of Professor Norton Nickerson.

CEM begins interdisciplinary training and outreach under Dr. Anthony Cortese.

1986  CEM receives grant from US Environmental Protection Agency to support more than 65 faculty members in conducting research projects, training, and outreach.

1990  Signing of the Talloires Declaration on environmental sustainability under the leadership of Tufts President Jean Mayer. There were 22 original signatories. It has now been signed by 350 university presidents and chancellors in over 40 countries.

Two new programs are started: the Agriculture, Food, and the Environment program (M.S./Ph.D.) at the Nutrition School, and the International Environment & Resource Policy program (M.A.L.D./Ph.D.) at Fletcher.

The Tufts Environmental Literacy Institute (TELI) is founded to help faculty integrate environmental concepts into curricula, paving the way for new degree options. TELI runs for five years.

1994  TEPC is charged with identifying opportunities for creating interdisciplinary programs.

1998  TIE is established under the direction of Professor William Moomaw to coordinate and catalyze environmental research, learning, outreach and service across all Schools of Tufts.

1999  The Tufts Climate Initiative (TCI) is a TIE project under William Moomaw. Over a period of five years TCI receives grants from various foundations to help the university reduce its greenhouse gas emissions. Under the management of Sarah Hammond Creighton, TCI becomes a model for campus greening initiatives for many other universities.

2002  The interdisciplinary cross-school Water: Systems, Science, and Society program (WSSS) is created from a call from the University Council on Graduate Education for cross-disciplinary PhD programs, and receives a major 3-year NIEHS training grant in 2004.

2005  Faculty and staff committee reviews TIE’s administrative structure and programmatic efforts.

2006  TCI evolves into the Office of Sustainability (OOS). Sarah Hammond Creighton becomes OOS director and reports directly to the Executive Vice President Patricia Campbell.

2007  Report on TIE recognizes its importance as a critical cross-school academic center. TIE is designated to report directly to the Office of the Provost and Senior Vice President. Professor Gretchen Kaufman (Cummings), Professor Elena Naumova (then TUSM—now SOE), and Professor William Moomaw (Fletcher) become TIE’s faculty co-directors.
2008  Dr. Antje Danielson is hired to strengthen TIE’s academic programs and execute TIE’s mission. TELI is revived.
TIE’s new website becomes the portal to environmental initiatives at Tufts.

2009  Tufts, in partnership with the Boston Architectural College and under the auspices of TIE, participates in the national Solar Decathlon competition of the US Department of Energy.
TIE becomes the administrative home of the WSSS program.

2010  Professor Colin Orians becomes the Director of the Environmental Studies program (ENVS) for undergraduates. The program is housed at TIE.
The WSSS program runs its first annual symposium.
TIE becomes the administrative home of the Tufts Energy Conference.

2011  TIE’s physical space is extended to accommodate the IGERT Water Diplomacy program, a 5-year NSF PhD training program directed by Shafik Islam (SOE).
Masters of Conservation Medicine program's first year. The TIE offices are used as the program’s home base on the Medford campus.

2012  TIE undergoes rebranding process with guidance from Tufts Publications and design team to showcase its evolution into an increasingly innovative, modern, and dynamic institute.

Physical Space
TIE is housed in the garden level floor of the Miller Hall dormitory on the Medford campus. The Institute’s location on the hill positions it well to be a hub for students and faculty, as it is close to dorms, dining halls, and classrooms.

Renovation Process
As interest in the environment grows here at Tufts, the number of students, staff, and faculty affiliated with TIE has also grown. Accordingly, TIE has undergone a major effort to increase the amount of space available in our office to accommodate our affiliates. These physical changes reflect the growth of interdisciplinary, environmental, cross-school initiatives at Tufts. TIE now hosts five such programs in our Miller Hall space: Environmental Studies (ENVS), Water: Systems, Science, and Society (WSSS), Water Diplomacy (IGERT), Masters of Conservation Medicine (MCM), and the Office of Sustainability (OOS). Even with the expansion, our space has never been so busy and full! The space renovation is projected to continue through 2013.
Communication and Outreach

Interdisciplinarity requires communication; indeed, connecting across disciplines is the backbone of the work TIE does. There is no “silver bullet” communication medium, so TIE engages others using a variety of platforms, from traditional face-to-face meetings to social media.

Environmental Community Brunch

As part of its commitment to facilitating collaboration and exchange among the programs that comprise the environmental community at Tufts, TIE hosts an Environmental Community Brunch and Open House every semester. Faculty, staff, and students from the environmental community across all Tufts campuses are invited to join TIE staff and interns at its offices in Miller Hall. The brunch serves as a community-strengthening event, bringing together staff from the Office of Sustainability (OOS) and Tufts Recycles! as well as students and faculty from our sponsored programs and partners, including the Water: Systems, Science, and Society program, the Environmental Studies program, Center for International Environment and Resource Policy (CIERP), and the Global Development and Environment Institute (GDAE).

Social Media

TIE has been working to dramatically expand our social media presence. In fall 2011, we created a Twitter account, @TIE_Tufts. In only a few months we gained over a hundred followers, a number that is steadily increasing. We also operate a Facebook page, support a TIE group on LinkedIn, and have YouTube and Vimeo accounts for uploading videos.

We recognize the importance of social media in today’s world, and are committed to maintaining a relevant and evolving online identity. Through our social media outlets, we hope to communicate our mission, inform users about important events, collect interesting information from other sources, share our work with a broad audience via videos and articles, and foster environmental discourse both inside and beyond the Tufts community.

Websites

TIE has maintained its website for over five years and is actively developing its online presence. Every summer TIE staff and interns assess the website for design and accessibility. This includes copyediting and strengthening the online connections between Tufts environmental programs.

http://environment.tufts.edu

We are proud to report that our efforts have resulted in a dynamic website that reflects the latest news, student and faculty research, resources, and events happening at TIE. Integrating our many initiatives into a single domain and updated weekly, the website serves students, faculty, and staff by providing pertinent information about:
• TIE-sponsored events  
• TIE Graduate Research Fellowships and Research Travel Grants  
• news of our alumni, fellows, and other members of the environmental community  
• Tufts Environmental Alumni (TEA) programming and newsletters  
• TIE initiatives and partnerships

The website also serves as a portal to the environmental community at Tufts, as it links to various Tufts environmental programs.

TIE created the Water: Systems, Science & Society website in the summer of 2008. As the WSSS program has grown, so has the website, which includes up-to-date information about:

• the Symposium, WSSS’s signature event  
• recent WSSS research and publications  
• news of current fellows and alumni  
• the annual WSSS practicum  
• important water-related news

The WSSS Symposium has also generated a series of independent informational pages, which provide access to the symposium’s program as well as a community discussion board.

Furthermore, in the last year, a multi-stage project was undertaken to create an extensive archive of WSSS’s activities, including assessing the website’s content and strategically planning for the storage of past web content. As a result of these efforts, our website now contains archives for news and program events dating back to 2006.

As a result of our efforts to present engaging news and information, the website has gained a significant online presence. In February 2012 alone, the website drew over 850 unique visitors. In this month, data shows over a 50% increase of new visitors.
Signature Programs

Water: Systems, Science and Society (WSSS)
Tufts University established the Water: Systems, Science and Society (WSSS) graduate research and education certificate program in 2004 to provide students with interdisciplinary perspectives and tools for managing water-related problems around the world.

To ensure a strong knowledge base in their chosen field, WSSS students must pursue a graduate degree from one of the participating schools (listed on the sidebar). The WSSS requirements add to the student's degree requirements, but because of electives and co-listed courses, are usually not a significant burden. The WSSS program has two tracks, a practicum-based track and a research-based track, which are described below.

Practicum Track
This WSSS track provides the opportunity, via a practicum, for students to conduct fieldwork that helps solve a real-world problem. As you’ll read in the articles below, practicums can be located anywhere in the world—from a watershed in Tufts’ backyard to a Palestinian refugee camp in the West Bank. In addition to participating in a WSSS practicum, students in this track also complete an Interdisciplinary Professional Experience/Internship and present a poster at the annual WSSS Symposium. Due to demand, WSSS offered two practicum locations in 2012.

Practicum: Alewife Brook (2011)
The 2011 WSSS Practicum team has just completed a set of projects designed to address water quality and related health concerns in the Alewife Brook and surrounding communities. The Alewife is part of Tufts University’s home watershed, the Mystic River. The inter-disciplinary practicum team has undertaken this research in collaboration with the Mystic River Watershed Association (MyRWA), a regional advocacy organization.

The focus of their efforts includes the water quality challenges posed by the continuing combined sewer overflows (CSOs) that afflict the Alewife, and efforts by adjacent communities—Somerville, Arlington, Cambridge and Belmont—to implement a complex set of stormwater remediation measures that are mandated by the federal Clean Water Act. Eight combined sewer overflow outfalls remain along Alewife Brook, and during moderate to heavy rainfalls these CSOs release raw sewage into the brook and then into the Mystic.

MyRWA has asked the four-student WSSS practicum team to analyze the impact of the water body classification variance under which the CSO reduction projects have been completed and to examine how future reduction projects would be affected if current water quality standards were downgraded.

The Alewife Brook practicum team was Maggie Holmes (Nutrition), Julia Ledewitz and Samantha Weaver (UEP), and Sara Blankenship (Fletcher). The team was advised by two WSSS faculty, Rich Vogel (CEE) and Rusty Russell (UEP).

Note: The above excerpt is part of a longer article written by Julia Ledewitz for the WSSS Newsletter in April, 2012.
Practicum: Aberjona Watershed (2012)
The WSSS Aberjona Practicum team also worked closely with the Mystic River Watershed Association (MyRWA) and the municipalities of Winchester, Woburn, Reading, and Burlington to address stormwater pollution in the Aberjona River watershed. Using a grant from the Massachusetts Department of Environmental Protection, MyRWA contracted Tufts to identify optimal locations in each of the four municipalities for best management practices (BMPs) to reduce stormwater pollution to the Aberjona River. Under the direction of Ph.D. candidate Jeff Walker, the group developed a novel methodology for estimating phosphorus loads from individual sub-catchments. This approach, which uses a Geographic Information System (GIS) to incorporate stormwater pipe networks, topography, soil types, and land use, has promising implications for stormwater modeling.

Ultimately, the team plans to submit this work for peer-reviewed publication. As part of the practicum, the group also developed a decision support tool to aid and inform town engineers, conservation commissioners, and planners in stormwater BMP implementation. In order to provide insight into the public understanding of stormwater pollution and management, the group tailored and administered a public perception survey. These tools will help MyRWA and the municipalities direct public education and engagement of stormwater issues in the future.

The practicum’s unique blend of scholarly research, faculty and Ph.D. student engagement, and community collaboration provides an exciting new model for community-based research in the WSSS program. The Aberjona project, which engaged four local communities as well as many WSSS students and faculty, both generated practical results for the communities in the Mystic River Watershed and tested new methods that have broad applicability in the field of stormwater management.

The Aberjona Practicum team was Jeff Walker, Ruiruo Wu, Yudan Jiang, and Shuo Zhao (CEE); Anne Sexton, Gabrielle Gareau, and Kate Olson (UEP); Glennon Beresin (Nutrition and Public Health). The team was advised by two WSSS faculty, Rich Vogel (CEE) and Rusty Russell (UEP).

Note: The above excerpt is part of a longer article written by Jeff Walker for the WSSS Newsletter in April, 2012.

Practicum: Middle East (2012)
The 2012 WSSS Middle East Practicum team partnered with the Lajee Center (lajee.org), a social justice organization based in Aida Refugee Camp in the West Bank to establish a water quality testing program because of concerns raised over the quality of water, which is a scarce resource within the camp. Coordinating with the Lajee Center, the practicum team conducted baseline public health surveys and developed a citizen-driven water quality testing program to be maintained by the Lajee Center. Additionally, the interdisciplinary practicum team will increase awareness of water quality issues by educating women and children on the importance of clean water as a human right and giving them a forum to voice their concerns and questions about water quality.

The team was in the West Bank from May 11–19, 2012, where they conducted training and information sessions for women and youth volunteers from the Camp. Volunteers were educated on the importance of water quality testing, sampling and analysis procedures, and methods to reduce risks from poor water
quality. The practicum team and volunteers collected water samples from drinking water sources throughout the Camp for analysis of total coliform and *E. coli* bacteria. The initial sampling results provided baseline data so that the team could identify key sampling locations to be incorporated into the water testing program. Another legacy of the partnership between WSSS and the Lajee Center is a part-time paid position to run the water quality testing program in Aida Camp. The Lajee Center is sponsoring the position while the WSSS team provided the water quality and data management training.

The practicum team is Jessica Morrison and Stephanie Galaitsis (CEE), Adam Weinberg and Franklin Crump (UEP), Elliot Hohn (AFE), Maggie Holmesheoran (AFE, Public Health), and Kate McMahon (AFE, Fletcher). The team is led by faculty advisors John Durant, Ph.D. (CEE), Rusty Russell, J.D. (UEP), and a visiting scholar, Annette Huber-Lee, Ph.D.

**Research Track**
The WSSS research track requires students to undertake a significant interdisciplinary water resources research project, culminating in a thesis, directed study, or dissertation. Student research is organized around six areas where Tufts has well-established programs and strong faculty support, which are:

1. Water, Climate, and Environmental Change
2. Water and Public Health
3. Water pollution and Remediation Science
4. Watershed Management
5. Water, Food, and Livelihood Security
6. Water and National and International Security

They must also submit a refereed journal article and present at the annual WSSS symposium or a major national or international conference. Students have conducted a wide range of fascinating research, such as an impact assessment of Ghanaian reservoirs, case studies of Cape Cod coastal protection, and a multivariate non-stationary stochastic streamflow modeling project. These examples represent the variety of disciplines and locations of student research.

**WSSS Symposium**
WSSS has hosted an annual symposium on the Medford campus dedicated solely to water since 2009. The 2011 symposium, *Water in 2050: The infrastructure to get us there*, held on April 1, featured conversations between students, researchers, and practitioners from various disciplines on current water-related challenges. The program included two keynote speakers, panels called “Scaling and Infrastructure,” “Aging infrastructure in the United States,” and “Meeting the growing needs of developing countries,” and student research presentations.

The 2012 symposium, *The Glass Half Full: valuing water in the 21st century*, was held on April 27. It was organized in collaboration with the Water Resources Research Center (WRRC) at the University of Massachusetts, Amherst. This symposium featured two keynote speakers, student research presentations, and panels on “The value of clean water: Challenges of clean water in the developed and developing world,” “Scarcity and Floods: Managing the extremes,” and “The value of environmental flows.”
**WSSS Newsletter**
The WSSS newsletter has been published annually since 2010. A compendium of recent and upcoming events in the WSSS program, alumni profiles, and student research, the newsletters feature student writers and serve as annual reports as well as showcases for the varied and important WSSS student research. Read the newsletters online at: [http://www.tufts.edu/water/newsletter.html](http://www.tufts.edu/water/newsletter.html)

**Tufts Environmental Literacy Program (TELI)**
The Tufts Environmental Literacy Institute (TELI) is a multi-day faculty development workshop for enhancing faculty environmental literacy, with a goal of assisting participants to incorporate these themes into existing or new courses. The broader goal of TELI is to increase knowledge of environmental themes among all Tufts students, and to enable them to effectively engage with the issues that will affect their generation. In order to foster a climate of interdisciplinary scholarship, the program specifically recruits faculty participants from a wide range of disciplines.

The program itself includes facilitated discussion, content presentations, field trips, and course development workshopping. Student interns at TIE work with faculty directors to develop the theme and content for the program. TIE also organizes two follow-up meetings for TELI participants to share their progress and evaluates TELI to make improvements for future years.

**TELI 2011 (May 23–27)**
TELI 2011, *Environmental Literacy in the 21st Century: Reality, Perceptions & Education*, was led by Colin Orians, Director of Environmental Studies and Professor of Biology, and Julie Dobrow, Director of Communications and Media Studies and Lecturer in Child Development. Participants explored some of the science behind critical environmental issues facing society (“Reality”), examined the role of media and politics in environmental discourse (“Perceptions”), and evaluated approaches and different platforms for maximizing engagement with students, colleagues and community or organizational partners (“Education”). These concepts were explored through the lens of sustainable agriculture, diseases in the 21st century, and environmental communication strategies.

**TELI 2012 (May 21–25)**
TELI 2012, *Communicating Environmental Issues Through Education*, was led by Colin Orians and TIE Administrative Director Antje Danielson. This year, participants explored some of the most important environmental problems that society faces, using case studies about environmental pollution, sustainable agriculture and climate change to illustrate the social and scientific components of effective education and why some changes are more difficult to communicate and enact than others. Additionally, the workshop examined pedagogical strategies for conveying these ideas to students in different disciplines.
**TELI 2011 Workshop Participants**
Albert Robbat Jr., Chemistry
Anne Lombardi Cantu, Spanish
Blake Ratcliff, Fletcher School
Christin Walth, Education Management Consultant
Diego Milan, Wright Center for Science Education
Gogi Grewal, Friedman School
James Mulder, English
Lai Ying Yu, English
Malini Goel, Fletcher School
Matt Panzer, Chemical & Biological Engineering
Michael Reed, Biology
Michael Boyd, Child Development
Regina Raboin, Tisch Library
Sara Hasselbach, English

**TELI 2012 Workshop Participants**
Aaron Dell, Master’s Candidate, English
Caroline Gelmi, PhD Candidate, English
Gulfer Goze, PhD Candidate, English
Magaly Koch, Lecturer, Urban and Environmental Policy & Planning
Kenneth Kwan, Assistant Professor, Public Health & Community Medicine, School of Medicine
Libby Mahaffy, Communications Specialist, Tufts Institute of the Environment
Elena Naumova, Professor, Civil & Environmental Engineering
Christine Payson, Master’s Candidate, English
Cornelia Photopoulos, Master’s Candidate, English
Beth Rohloff, Coordinator of First Year Library Instruction, Tisch Library
Emma Schneider, Master’s Candidate, English
Nicole Soltis, Master’s Candidate, Biology
Mareike Stanitzke, PhD Candidate, English

**TIE Fellowship Program**
TIE fellowships are grants of up to $6000 that enable students to conduct original, interdisciplinary research related to the environment. Students in any of Tufts University’s graduate programs and professional schools are eligible to apply. These fellowships allow TIE to further support and provide greater visibility for stellar students and their environment-related work. Fellows, who are listed on the TIE website, are invited to present final reports to the Tufts community and receive funding toward a research stipend and materials.

Over the past two years, two new components have been added to the TIE Fellowship program: a retreat, held on the Grafton campus, and an Awards Dinner in late fall on the Medford campus. In past evaluations of the program administered by TIE, fellows had expressed an interest in more opportunities to interact with one another and hear about each other’s research. In order to be responsive to fellows’ requests, TIE initiated the new events. The retreat serves as a fun and informal gathering for students to discuss their research experiences and hear from others in their cohort. The Awards Dinner was introduced as a way to formally acknowledge the completion of the fellowship year and provide an opportunity for Fellows to present their research and for past fellows to reunite.

TIE also sponsored a spring grant-writing workshop to promote the fellowship program and provide support and information to potential applicants.
We are pleased to report that the fellowship has so far proved a success. Here are comments from a few of the fellows:

“I can’t recommend the TIE fellowship enough for people who are either just getting started on research and looking for a kick-start, or even for somebody who, later in their graduate career, has some research they’ve wanted to do but it’s been so pushed to the side by things their advisor wants to do, things that other collaborators want to do, things their department needs them to do. This is a good way to accomplish that.”

—Patrick Antle, Chemistry PhD candidate

“The TIE fellowship was really essential to my research. The fellowship made it possible for me to travel to Honduras and to live with a host family. Just having a family to talk to on a regular basis that didn’t speak any English forced me to constantly work on my language skills. It also gave me a chance to talk through some of the things that had come up in interviews throughout the day. I was able to ask the family members for their perspective and for some cultural background to help me interpret my findings.”

—Laura Kuhl, Fletcher IGERT PhD candidate

TIE Fellows 2010–2011
Patrick Antle (School of Arts and Sciences): Immediate Detection of Mold and other Airborne Pollutants in Sick Buildings

Stefan Collinet-Adler (School of Medicine): Environmental Indicators of Enteric Infections in a Rural Area and Urban Slum of Vellore, India

Liz Carver (School of Arts and Sciences): Developing Climate Policy in the Face of Scientific Uncertainty: The Case of Black Carbon

Chiyo Crawford (School of Arts and Sciences): Toward an Eco-Antiracist Literary Criticism: Environmental Justice, Urban Space, and 20th Century American Literature

Andreas Eleftheriou (Cummings School of Veterinary Medicine): Effects of Nest Density and Gender on Prevalence of Antibiotic Resistant Gram-Negative Bacteria in the GI Tract of Herring Gulls (Larus argentatus)

Gogi Grewal (Friedman School of Nutrition Science and Policy): Assessing the Short-Term Impact of School-Based Safe Water Points on Childhood Diarrheal Disease & School Attendance in Somali Region, Ethiopia

Laura Kuhl (Fletcher School of Law & Diplomacy): A Comparative Study of Adaptation to Coastal Flooding and Sea Level Rise in La Ceiba, Honduras and Boston, Massachusetts

Aaron Strong (Fletcher School of Law & Diplomacy): Tackling Maritime Bunker Fuel Emissions: The Role of the IMO in International Climate Change Policy
Tilmann Liebert (Fletcher School of Law & Diplomacy): *Competitiveness of Renewable Energies in Climate Change Policy: Explaining Post-Kyoto Emission Reduction Targets of the EU, US and China*

Branko Zugic (School of Engineering): *An Alternative Biofuel: LPG From Biomass Derived Organic Acids*

**TIE Fellows 2011–2012**

Negin Ashoori (School of Engineering): *Water Consumption Patterns and Enteric Infection Transmission: A Case Study in Vellore, India*

Andrea Brown (School of Engineering): *Transmission of Diarrheal Diseases Through the Land Surface: A Comparison of Urban Slums and Rural Villages in Southern India*

Erin Kempster (Fletcher School of Law and Diplomacy): *Biofuels, Gender Equity, and Land Rights: The Impact of and Potential for Biofuel Development in Tanzania*

Jennifer Mortensen (School of Arts and Sciences): *The Role of Social Behavior in Buffering Populations from Extinction: Persistence of an Endangered, Cooperatively-Breeding Passerine*

Jessica Perkins (School of Engineering): *Investigation of Air Quality in a Boston Interstate Tunnel*

Ana Rosner (School of Engineering): *Detecting the Power of Climate Trends: A New Decision Tree Methodology to Assess Risks and Costs of Adapting to an Uncertain Future*

Mary Schmid (Cummings School of Veterinary Medicine): *Evaluation of Antibiotic Resistance of Bacteria Cultured from Wounds in Sea Turtles Undergoing Rehabilitation*

Jennifer (Yaning) Shen (School of Arts and Sciences): *An Economic Assessment of Water and Energy Tradeoffs in Rice Production of Developing Nations in Asia, Using a Generalized Optimization Model*

Brian Thomas (School of Engineering): *The Relationship Between Groundwater Recharge, Streamflow and Human Water User*

**Travel Grants**

TIE provides awards to offset transportation costs and conference registration fees for Tufts students who present at environmental conferences, meetings, and workshops. Please note that travel awards are solely for conference travel and registration fees and are not for supporting individual field research or internships. The following students were awarded travel grants:

William Farmer
"A Comparison of Two Methods for Monthly Streamflow Prediction in Ungauged Basins”
*American Geophysical Union Fall Meeting 2011*
December 5–9, 2011, San Francisco, CA

Yongxuan Gao
"Managing and Planning of Small Reservoirs in Upper East Region, Ghana"
*2011 World Environmental & Water Resource Congress*
May 22–26, 2011, Palm Springs, CA
Nancy W. Gleason
Overcoming Natural Resource-Induced Civil Conflict: The Case of Suriname's Forests
*International Studies Association Annual Convention 2011*
March 16–19, 2011, Montreal, Canada

Sitara Grewal
"Barriers to Use and Sustainability of Water and Sanitation Facilities in Ethiopian Primary Schools"
*2011 Global Health Conference*
November 11–15, 2011, Montreal, Canada

Ana Rosner
"Climate Change Adaptation Decisions Using Risk-Informed Trend Analysis"
*NOAA's 36th Climate Diagnostics and Prediction Workshop*
October 3–6, 2011, Fort Worth, Texas

Aaron Strong
“The Political-Ecological Geography of the Sea: The Promises and Pitfalls of Bounding Marine Spaces for Environment Management”
*Association of American Geographers Annual Meeting*
April 12–16, 2011, Seattle, WA

Brian Thomas
"Streamflow Recession Analysis Incorporating Human Water Use"
*American Geophysical Union Fall Meeting 2011*
December 5–9, 2011, San Francisco, CA

Travel Grant Recipients’ Research Locations, 2010 - 2012
Student Internships at TIE

TIE has a wide array of internships for both undergraduate and graduate students. In addition to providing general office support, interns have taken leadership roles at TIE, planning and executing the Solar Decathlon, organizing TELI, writing and distributing newsletters, updating the website, creating the Tufts Environmental Alumni (TEA) network, researching environmental initiatives, and planning events.

TIE Interns and Projects, 2010–2012:

**Lenz Bayas**, Department of Urban and Environmental Policy and Planning, Master of Arts candidate 2013.

Projects for TIE included
- Research on urban sustainability measures
- Grant writing workshops
- Serving as liaison to the Climate Change Climate Justice Initiative

**Brienne Cignarella**, Department of Classics, Master of Arts candidate 2012.

Projects for TIE included
- Website content management
- Graphic design
- Photo editing

**Sara Matasci**, International Relations and Environmental Studies Bachelor of Arts candidate 2012.

Projects for TIE included
- Programs and events coordination
- Website content management

**Devyn Powell**, International Relations and Environmental Studies Bachelor of Arts candidate 2014.

Projects for TIE included
- Programs and events coordination
- Social media outreach
- Graphic design

**Katie Walsh**, Fletcher School of Law and Diplomacy and Department of Urban and Environmental Policy and Planning, Master of Arts candidate 2013.

Projects for TIE included
- Research
- Communication and coordination for TIE Talks
- Coordination of the Tufts Environmental Literacy Institute
Initiatives

**Dow Sustainability Innovation Student Challenge Award (SISCA)**
The Dow Sustainability Innovation Student Challenge Award (SISCA) is an annual student award for innovative sustainability projects. Tufts graduate students or graduate student teams who create an innovative concept, device, product, process, or system that targets broad global sustainability challenges are eligible to win up to $10,000. TIE works closely with the Provost’s office to administer the awards for Tufts; additionally, TIE’s Administrative Director sits on the interdisciplinary selection committee. Past winners have included students from the Graduate School of Engineering, Graduate School of Arts and Sciences, and the Friedman School of Nutrition and Science Policy.

**Climate Change Climate Justice (CCCJ)**
The Tufts Initiative on Climate Change and Climate Justice (CCCJ), a committee comprising faculty, staff, and students, has promoted climate justice education, awareness, and active citizenship among Tufts students for over four years. Taking a proactive approach, the CCCJ has focused on curriculum development toward the goal of increasing total course offerings on climate change. The challenges of climate change and climate justice are vast, requiring a broad interdisciplinary approach to solving the most challenging problems of current and future generations. The protection of disadvantaged populations is a concern central to the CCCJ Initiative; the initiative has received wide-ranging support from affiliated offices and faculty.

So far in the committee’s history, committee member Jonathan Kenney proposed, developed, and was awarded a Tufts Innovates grant to instruct a course for spring 2013 that would introduce the theme of justice as central to a host of environmental and climate change issues being studied. Additionally, the annual Peace & Justice Studies Association conference will be held on the Tufts campus in October 2012 in collaboration with CCCJ and TIE. Entitled “Anticipating Climate Disruption: Sustaining Justice, Greening Peace,” the conference features presentations from a wide range of disciplines, professions, and perspectives on the many complex issues now unfolding amidst disruptive climate change.

**TIE Talks**
TIE Talks, inaugurated in spring 2012, are monthly gatherings in which environmental faculty, staff, students, and alumni speak about their work in a casual social setting. After a successful first semester, the talks continue through the 2012–2013 academic year and beyond. A theme for the talks is established each semester, with speakers addressing that theme in their talk from their own angles. In spring 2012, the theme was Environmental Justice, and featured talks by Penn Loh and Mary Davis from the Urban and Environmental Planning Program, Bea Rogers from the Friedman School, and Sivan Kartha, Senior Scientist at the Stockholm Environment Institute. The fall 2012 theme is *Water and Agriculture*.

**Arctic Initiative**
The Arctic Initiative consists of workshops and research collaborations exploring issues of climate change and health in the Arctic.
Faculty Roundtable
A themed faculty roundtable initiated to identify university-wide research, teaching, and practice related to the environment. Convened by TIE, this faculty roundtable was initiated to establish a framework for discussions around sustainability at Tufts University. Participants of the first meeting on October 1, 2010 decided that a directional rather than targeted approach towards sustainability research, education, and service would be appropriate due to large uncertainties related to this topic. The roundtable will continue with an organizing theme. 2010 – 2011 theme: Sustainability; 2012 – 2013 theme: Civic Engagement.

Energy and Climate Forum
The Energy and Climate Forum was a seminars and occasional lectures addressing critical issues related to energy and climate and co-sponsored by the Department of Economics and the Fletcher School’s Center for International Environment and Resource Policy (CIERP) along with TIE. The Forum ran through 2010 and 2011.)
Collaborations and Affiliations

**Tufts Energy Conference (TEC)**

TEC is an annual student-run conference featuring panels of business leaders and policy experts as well as networking events. The conference examines various environmental, security, and economic facets of the global energy crisis.

The 2011 TEC was a milestone year in this 10-years-strong tradition. For the first time, TEC partnered with TIE in order to become financially administered through TIE accounts. While TEC raises all their own funds through sponsorship and admission, this partnership with TIE allows the group greater flexibility and credibility as a Tufts institution. As the budgetary officer for the account, TIE Program Coordinator Emily Geosling continues to work with the TEC team on purchasing, reimbursement, travel, and more.

The 2012 conference committee elected TIE intern Katie Walsh as president of TEC 2012, thus fostering a deeper relationship between these two groups. **TEC 2012, “Transforming the Global Energy Debate: From Challenges to Solutions,”** showcased keynote speakers Dr. Mohamed T. El-Ashry, Senior Fellow with the United Nations Foundation; Kevin Book, Managing Director of ClearView Energy Partners, LLC; and Barbara Kates-Garnick, MA Undersecretary for Energy, Executive Office of Energy and Environmental Affairs; as well as six professional and academic panels, a student innovation contest and poster session.

**Environmental Studies Program (ENVS)**

TIE’s relationship with the Environmental Studies Program has been strengthened in the past few years, thanks to a partnership with the ENVS program coordinator and director. By offering its facilities to students and teachers for classes and meetings, and regularly organizing events, TIE aims to be a vital resource for ENVS students to discover opportunities in learning, cooperation, and career development. Additionally, TIE sponsors the Environmental Studies Lunch & Learn program, a weekly lecture series that brings leaders from the environmental community to speak about their experiences at Tufts, as well as the ENVS undergraduate environmental photography contest. Even greater collaboration between these two programs is expected in years to come.

**Tufts Environmental Alumni (TEA)**

TIE helped found the Tufts Environmental Alumni (TEA) group in 2009 through the vision of TIE’s Administrative Director and the organizing work of TIE intern (and first president of the TEA steering committee) Kiersten von Trapp. In summer 2011, the group earned official Special Interest Group status through the Tufts University Alumni Association, giving it increased financial and institutional support and a wider distribution network. The steering committee of TEA organized a number of successful events in the past two years. Highlights include the Ipswich Crane Beach educational walk, a tour of the LEED-certified Genzyme building, and multiple networking happy hours. The spring speaker and the Environmental Career Panel were both so well received that they have been established as annual events. As the group matures, they are looking to expand to other locations outside of Boston while continuing to provide high-quality events to New England environmental alums.
TEA Newsletter
The Tufts Environmental Alumni Newsletter is a quarterly e-newsletter, produced by TIE, which keeps alumni informed of the current research in interdisciplinary environmental topics on campus and highlights the work of environmental alumni. The newsletter features student and faculty research, interviews, accounts of on-campus events and individual alumni activities, job postings, reviews of alumni publications, and occasionally alumni opinion pieces. As of July 2012, eleven issues had been published, all of which are archived on the TIE website.

Integrated Graduate Education and Research Traineeship (IGERT) in Water Diplomacy
The Water Diplomacy IGERT program started in the 2011–2012 academic year, with the goal of training interdisciplinary water professionals who think across boundaries, integrate explicit and tacit knowledge, and link knowledge and action from multiple disciplines to help resolve water issues through mutual gains negotiations. TIE helps with the strategic planning process for the Water Diplomacy program and provides physical space for IGERT students, staff, and faculty. As the IGERT welcomes a new cohort every year, TIE will begin renovations in 2013 to accommodate the growing program.

University Seminar – One Health
The 2011–2012 academic calendar marked the fourth year of the University Seminar, a program initiated by former Provost Jamshed Bharucha to further Tufts’ goal to prepare leaders with a rich and textured understanding of the world in all its complexity and diversity. To do this, the University Seminar seeks to enhance the interface between research and teaching, to develop new research questions through trans-disciplinary approaches to a global issue, and to develop innovative teaching and learning methods that can be applied to the larger Tufts community, and its existing and emerging programs. In Fall 2011 and again in Spring 2012, four TIE-affiliated professors (Gretchen Kaufman and Elena Naumova, two TIE faculty co-directors, as well as Joann Lindenmayer and J. Michael Reed) came together to teach the Seminar “One Health: Interdisciplinary Approaches to People, Animals and the Environment,” a course designed to explore the “emerging challenges to human, animal and ecosystem health” globally.

Center for International Environmental and Resource Policy (CIERP)
Established in 1990, the Tufts Center for International Environment and Resource Policy (CIERP), based at the Fletcher School, integrates environmental science and engineering with economics, law, and policy. The center works to educate students in the complex nature of formulating effective environmental strategies and solutions, preparing them for work in intergovernmental organizations, multinational corporations, and NGOs. CIERP offers several opportunities for students to engage in a number of initiatives, including a number of student-run environmental organizations, internships, jobs, and fellowships.

ExCollege Course Development & Environmental Education
With the Office of Sustainability, TIE supported the course development and a graduate teaching assistant for an Experimental College course in 2009 and 2010, *Environmental Action: Shifting from*
Sustainability Tracking Assessment & Rating System (STARS)

STARS is a program of the Association for the Advancement of Sustainability in Higher Education (AASHE). It is a transparent self-reporting framework for colleges and universities to gauge relative progress toward sustainability. It enables universities to make meaningful comparisons over time and across institutions using a common set of measurements in the categories: Education & Research; Operations; and Planning, Administration & Engagement. There is also an Innovation category to recognize pioneering practices that aren’t covered by other STARS credits. This project was initiated by TIE and the Office of Sustainability during spring 2010. In August 2011, Tufts earned a STARS rank of Silver.

Masters in Conservation Medicine (MCM)

Embracing a commitment to protect biodiversity, conservation medicine pursues a One Health approach – studying the intersection and interrelationships of human, animal and ecosystem health – to address urgent health issues facing our stressed planet, such as emerging diseases, wildlife-livestock conflicts, environmental contamination, and climate change. Conservation medicine professionals use their expertise and collaborative skills to work with other scientists, professionals, policy-makers, and local communities to develop and implement solutions for these health-related challenges within an ecological context. With the inaugural cohort starting in AY 2011 – 2012, this new 12-month program builds upon an individual student’s disciplinary strengths, provides foundational knowledge in emerging conservation medicine issues, fosters interdisciplinary collaborations, and creates opportunities to master and practice skills necessary for them to be successful leaders in the field of conservation health. The TIE offices serve as the “home” for MCM students on the Medford campus and weekly MCM seminars are held in the large TIE conference room.

Research Day on Sustainability

The Research Day on Sustainability is a venue for faculty and students to showcase their unique, innovative research in the environmental realm, sponsored by the Office of the Provost. The 8th Research Day on Sustainability occurred on May 8th, 2011, and featured four panel discussions on sustainable technology, development, cities, and policy, as well as poster presentations by students.
from different Tufts schools. TIE was a co-sponsor of this event and many TIE-affiliated students were able to present their work at the poster session.

**Stockholm Environment Institute (SEI)**
The Stockholm Environment Institute is a sustainable development research organization that conducts applied scientific research to bring the best available science to policymakers. SEI's US branch is a research affiliate of Tufts. In addition to providing policy-relevant analyses, SEI builds capacity in the developing world for integrated sustainability planning through training and collaboration on projects. Their decision support tools for energy and climate mitigation and water resources are widely used. SEI's work is interdisciplinary in nature: drawing upon engineering, economics, ecology, ethics, operations research, international relations and software design.

**Mystic Watershed Collaborative (MWC)**
The Mystic Watershed Collaborative (MWC) envisions strategies and catalyzes the resources of Tufts University and MyRWA to address challenges and opportunities in the Mystic Watershed. The MWC was formalized in 2000 under the leadership of President DiBiaggio. In 2005, on the 5th anniversary of the MWC, President Bacow reaffirmed Tufts University's commitment to the restoration of the Mystic River Watershed. For more on TIE's collaboration with the MWC and MyWRA, please see the Water: Systems, Science, and Society section of Signature Programs in this report.

**350.org Campaign**
On October 10th, 2010, TIE organized an event in collaboration with 350.org, a climate change education and awareness activist group. Based on the success of a previous collaboration with 350.org in planning the International Day of Climate Action on the Tufts Medford campus on October 24, 2009, TIE worked again with the group to hold a local volunteer event in conjunction with the Global Work Party on 10/10/10. As part of the campaign, TIE worked with Cambridge Group HEET (the Home Energy Efficiency Team) to make a large building on campus more energy efficient. Tufts students and staff helped to weatherize the swimming and sailing fraternity, ATO, during an all-day event. In tandem with the weatherization event, Fletcher Green, an environmental student group based in the Fletcher School of Law and Diplomacy, spearheaded a light bulb exchange in the neighborhoods surrounding Tufts. Over 40 people participated in the combined events, successfully shrinking the carbon footprint of the three-story fraternity house, making it a less drafty and more comfortable place to live, and providing energy-efficient light bulbs to area residents.