

Annual Report

July 1, 2008 – June 30, 2009

Center/Institute/Program: Oregon Sea Grant College Program (Oregon Sea Grant)

Director: Dr. Stephen Brandt

Number of Professorial Faculty who are members/associate members/affiliates: 28*

Number of Professional Faculty and Classified Staff on Payroll: 18*

Academic units (departments and colleges) from which your members/associate members/affiliates come:

College of Agricultural Sciences: Agricultural and Resource Economics; Biological and Ecological Engineering; Coastal Oregon Marine Experiment Station; Fisheries and Wildlife; Food Science and Technology

College of Forestry

College of Oceanic and Atmospheric Sciences: Marine Resource Management

College of Science: Geosciences; Science and Mathematics Education

College of Liberal Arts: Sociology

College of Veterinary Medicine: Biomedical Sciences; Veterinary Diagnostic Lab

Lab Animal Resources Center

Introduction

The Sea Grant model of a program in which research, education, and outreach are *integrated* for social and environmental benefit is powerful. Not only is the concept powerful, it's powerfully aligned with the identity and purposes of a public university like Oregon State University. But integration and societal benefit are no more than rhetoric without results. For more than 40 years, Oregon Sea Grant (OSG) has leveraged its comparatively modest size into significant results and has brought innovation and new programs to OSU. During the administration of former director Robert Malouf (1991–2008), OSG was repeatedly commended by external reviewers as the best Sea Grant program in the 30-state network. The program enjoys a reputation for not only planning well and comprehensively but also executing plans in conscientious and innovative ways. Innovations at OSU such as our early support of wave energy research, of new models of informal learning (“free-choice learning” – now a focus of the OSU Science and Math Education Department), and of the scholarship of an engaged institution (through the Outreach and Engagement Council) are current, leading examples. The program enjoys a close relationship with OSU Extension as one of five Extension program areas, supporting more than 20 faculty positions. OSG's award-winning communications team is recognized as not only the Oregon publisher dedicated to our coast and ocean but also, increasingly, as a leading exponent of research-based communications. As strong as the program is today, however, under new director Stephen Brandt, we aspire to being both well recognized and even more productive as a preeminent marine research enterprise funding research, enhancing partnerships, catalyzing new programs and providing leadership across academic institutions throughout Oregon. Our new strategic alignment with the OSU signature areas will also greatly enhance our value to OSU.

Goals and Accomplishments for Academic Year

Our primary **operational goal** for 2008–09 was to search for, recruit, and hire a new director while advancing programmatically, increasing visibility, maintaining operations, and preparing for change and transition in the interim. After an intensive national search, we are pleased that in mid-2008 Dr. Stephen Brandt was officially **hired as Oregon Sea Grant Director** with a mid-January 2009 start date. In the interim, Oregon Sea Grant (OSG) flourished under the leadership of Interim Director Jay Rasmussen who, with a very efficient and productive staff, successfully carried out programs and operations.

Determining, communicating, and negotiating Sea Grant’s needs with the managers of the **University Administrative Business Center** resulted in a satisfactory outcome with agreements now in place and tentative reorganizational plans within the support operations of Sea Grant.

Sea Grant worked to redefine the **OSG Leadership Team** and its purpose and role within OSG and completed a staff reorganization. The team of six is Stephen Brandt; Jay Rasmussen (associate director and Extension program leader); Joe Cone (assistant director); Nancee Hunter (director, education) Peggy Harris (administrative officer); and Evelyn Paret (fiscal officer). The team meets regularly and is actively engaged in program planning, setting policy and procedures, and now enhancing implementation. A new associate director for research has been proposed.

OSG is an integrated program of research, education, extension, and communications that addresses critical issues, engages partners, and seeks a broad funding base that helps the program become a leading national and regional creator of knowledge and a trusted provider of information. Oregon Sea Grant carefully plans *and* operates strategically to achieve **programmatic goals**. OSG’s 2003–2008 strategic plan (<http://seagrant.oregonstate.edu/sgpubs/onlinepubs/q05001.pdf>) aligns with the goals and priorities of National Sea Grant, societal needs, and the strategic plan of OSU. OSG is currently developing its 2009–2013 strategic plan under new guidance from the National Sea Grant Office. We have adopted three major new programmatic goals that more fully align with the OSU Signature Areas of Distinction. The OSG new goals are:

- Improving human health and safety related to ocean and coastal use
- Enhancing the sustainability of coastal ecosystems
- Promoting social progress and economic vitality

Our plan will be unique because we will work across all three goals on important issues.

Pre- and full-proposal process changes were implemented into this round of SG RFPs to provide a more robust external review process – a suggested improvement from the last national review of the program. This year, implemented into the pre-proposal review process were additional steps including (1) an external review of scientific quality; (2) an outreach review regarding projects’ societal relevance; and (3) comments by communications and education experts on how the pre-proposal might integrate better with these program elements. At the full proposal stage, new processes will include a key Extension point-of-contact being assigned to each project. All full proposals are expected to include an outreach component to ensure societal relevance.

OSG conducts appropriate **marketing** so that the products, activities, and accomplishments of the program are recognized. The “Breaking Waves” news blog helps subscribers stay current with OSG news and developments such as publications, videos, awards, grant and fellowship opportunities, and

workshops. “Breaking Waves” is hosted on our Web site, but subscribers may choose to receive either automatic e-mail notifications or RSS feeds from <http://feeds2.feedburner.com/BreakingWaves>. OSG manages and staffs the Visitor Center of the Hatfield Marine Science Center; OSG leadership worked with OSU University Advancement to update the appearance of the front entrance to this Center and obtained major university BUC funds to improve infrastructure. These professionally designed enhancements entice and welcome more than 150,000 visitors annually.

A new **Oregon Sea Grant Scholars** program was initiated to (1) create a community of OSG Scholars including students, principal investigators, and OSG extension, education, and communications faculty; (2) improve student identification with OSU and our mission; and (3) foster professional development relating to coastal and ocean sciences at Oregon universities.

Regional research planning was an important undertaking during this period. With a \$500,000 grant from NOAA, OSG led efforts with the Washington, California, and Southern California Sea Grant programs to assess the region’s marine research and information needs. Endorsed by the governors of all three states, the planning was a response to national recommendations calling for regional approaches. Dozens of stakeholder meetings (more than 1,000 participants) were held up and down the coast, along with public surveys and comments. The culmination, the *West Coast Regional Marine Research and Information Needs* report, was released in June and identifies new and continuing needs that, if met, could aid the region in adopting an ecosystem-based approach to resource management: <http://seagrant.oregonstate.edu/sgpubs/onlinepubs/q09001.html>

OSG’s **marine education programs** and oversight of the Visitor Center at HMSC expose general public audiences as well as K–12 students to marine science through lectures, exhibits, in-depth lab classes, summer camps, career days, and outreach events. More than 12,000 youth and 150,000 visitors each year take part in learning that may inspire their interest in marine studies and promote their lifelong stewardship of our coastal resources.

Other Significant Activities and Accomplishments

For the period 2008–2010, 11 **peer-reviewed research projects** were funded in five topical areas:

1. [Biotechnology](#) – Mapping the genes of toxic algal blooms
2. [Fisheries](#) – Salmon and parasite resistance; albacore catch trends; catch-and-release as a conservation tool?
3. [Ecosystems and Habitats](#) – Invasive grasses and dune formation; effects of hypoxia on fish communities; fishermen in ocean observing research
4. [Coastal Hazards](#) – Climate change and coastal flood risk; localized tsunami run-up
5. [Marine Science Literacy](#) – Sea Grant professorship in free-choice learning; deepening people's engagement with marine science exhibits

Although current **Oregon Sea Grant-funded research projects** are in midstream, some already have promising developments.

The **tsunami inundation research project**, with PI Dan Cox of the OSU Hinsdale Wave Lab, is looking at effective ways of *reducing the loss of life* from a predicted devastating earthquake occurring off Oregon’s shores. The research is evaluating the potential to evacuate into existing or new buildings in the inundation zone. Such a strategy requires a detailed understanding of the tsunami wave height and speed as it flows through a town. To accomplish this, researchers constructed a 1:50-scale physical

model of Seaside, Oregon. Researchers work with Sea Grant Extension specialist Pat Corcoran to disseminate the information to local residents, and with SG Communications' video team to highlight both the research and outreach in video products such as the DVD *Reaching Higher Ground*.

The **ocean observing research project** of Kipp Shearman (COAS) includes a unique partnership with Oregon crabbers to use their crab pots as underwater monitoring stations. Electronic data collectors attached to the pots gather vital oceanographic information that could help scientists better understand and predict hypoxia, a lack of oxygen in the water that can cause massive die-offs of organisms, including crab.

Toxic algal blooms heighten concerns regarding the health of river life, including Oregon's at-risk salmon runs. Dr. Theo Dreher, PI in Microbiology, is surveying cyanobacterial blooms from the Klamath River basin and several water bodies in Oregon to genetically characterize the cyanobacterial populations. Dreher's genotype studies will allow development of methods for monitoring the blooms and will begin to assess the feasibility of biological control with specific viruses to keep the Klamath toxic bloom cyanobacteria in check.

Sea Grant Program Development funds can be awarded on relatively short notice for rapid response to emerging issues and opportunities. These smaller (<\$10K) grants often launch innovative research that proves catalytic (see the following paragraph on wave energy). This year, such Sea Grant funding was deployed when the \$110 million West Coast shellfish industry was threatened by the bacteria *Vibrio tubiashii*. OSG program development funds helped Claudia Hase of OSU's Department of Biomedical Sciences begin working quickly on this threat. Her report on the results is published in *Microbiology*: <http://mic.sgmjournals.org/cgi/reprint/155/7/2296>

The **integrated efforts of OSG are highlighted by our early sponsorship of wave energy research and outreach**, which continues to benefit OSU. Although pioneering support for the research at OSU began in 2003 with OSG seed funding (of what was considered a "risky" bet), the results of our initial investment have galvanized additional support and many partners. With the US Department of Energy and other partners, a total of \$13.5 million has been raised for a new Northwest National Marine Renewable Energy Center, to be based at OSU's Hatfield Marine Science Center. Meanwhile, Sea Grant's Extension faculty have been active in working in communities and with wave energy interests to identify and address potential environmental and multi-use concerns; we recently facilitated a town hall meeting for Senator Merkley in Newport. In addition, OSG Communications' award-winning *Wave Power* video has been used extensively to inform decision makers, funders, the media, and the public. And the Visitor Center includes an exhibit where the public can see a prototype wave-energy device.

In another **integrated example** of Sea Grant research, education, and outreach through Extension and Communications, OSG's efforts in **aquatic invasive species (AIS)** continue to spread among projects, partners, and outcomes regionally, nationally, and internationally. In 2008, a year-long statewide invasive species educational effort between Oregon Sea Grant, Oregon Public Broadcasting, the *Statesman Journal*, the Oregon Invasive Species Council, and other organizations showed how invasive species are changing the environment in Oregon. Public education efforts were guided by focus groups and by a statewide knowledge and opinion survey, both led by Oregon Sea Grant and involving communications researcher Joe Cone, learning researcher Lynn Dierking, and AIS faculty lead Sam Chan. Not only did OPB receive the duPont-Columbia Award for Broadcast Journalism for *The Silent Invasion: An Oregon Field Guide Special*, public education likely had some legislative effect, as 11 of the 12 AIS-related Oregon legislative bills proposed this session passed. OSG's Chan continues to work with

biological supply houses, schools, teachers, and curriculum developers to understand and describe how potentially invasive species are obtained and distributed, and to develop innovative solutions to AIS-related concerns. This coordinated effort and improved curriculum development are beginning to help prevent the spread of invasive species. Stopping the spread was also the purpose of a regional field guide, *On the Lookout for Aquatic Invaders*, which won Sea Grant Communications a first prize in the 2009 ECO Awards, a national competition that recognizes excellence in environmental communications: <http://seagrant.oregonstate.edu/themes/invasives/index.html#onthelookout>

OSG played a critical role in resolving the contentious issue of **marine reserves**. Governor Kulongoski's directive to the state Ocean Policy Advisory Council (OPAC) in 2006 for recommendations on marine reserves set in motion a concerted effort that, by late 2007, had reached an impasse. OSG was invited by OPAC to design, develop, and implement extensive "listening and learning" in coastal communities. After a series of coastal meetings with stakeholders, all the comments were shared publicly in late spring 2008 at <http://seagrant.oregonstate.edu/outreach/reserves.html#report>. OSG's report to the Governor caused a major change in the process for developing marine reserves. That new process sought to combine scientific and experiential knowledge with a community-driven approach. The result of this process was the OPAC identification of two pilot marine reserves and four other areas for further consideration. The 2009 Oregon Legislature approved this plan (HB 3013) and dedicated to it funding of \$1 million. The Department of Fish and Wildlife's chief of fisheries and the Governor's representative on OPAC both commended Oregon Sea Grant's pivotal role in the successful development of the state's first marine reserves within Oregon's Territorial Sea.

On yet another vital coastal issue, Oregon Sea Grant faculty are leading in the state's response to **coastal climate change**. Through a separate \$300,000 grant from the NOAA Climate Program Office, PI Joe Cone and OSG colleagues Pat Corcoran, Michael Harte, and Shawn Rowe have developed a pioneering research project to understand the information needs and behavioral constraints of coastal public and private decision makers. The largest survey to date (n=300) of coastal decision-maker views on climate change has informed both the team's engagement with coastal communities and assistance to partners such as the state's coastal management program.

We take particular pride in **engaging and supporting students** and tomorrow's leaders. This year Oregon Sea Grant provided \$345,838 in support of 36 students across five OSU colleges. Oregon Sea Grant's fellowship program provided \$265,700 for 10 graduates and undergraduates; in addition, OSG provided learning experiences for three PROMISE students and several other internship opportunities at the HMSC Visitor Center. And four Oregon students were chosen for the prestigious National Sea Grant Knauss fellowships.

It is not only students who benefit from our fellowship support. Anna Pakenham, an OSU Marine Resource Management student, coordinated the activities of a bipartisan **caucus of coastal legislators** during the 2009 Oregon legislative session. In a recent letter, the caucus members referred to Anna as having been a "tremendous asset" to them all. Anna is one of Oregon's Knauss fellows who will serve in Washington, D.C., in 2010. Abby Brown, an OSU master's student in Water Resources Policy and Management, served the **Oregon Water Resources Department** in the Natural Resources Office. Abby's pilot project – developing a groundwater network for the Eola Hills neighborhood – is a leading example of "citizen science" for groundwater quantity protection. The training materials and program design developed through this fellowship are already being adopted in both Benton County and Yamhill County. A University of Oregon student, Juna Hickner, served as the OSG Natural Resource Policy Fellow. At the

Oregon Department of Fish and Wildlife, Juna provided policy and technical support to the team, navigating a number of very complex nearshore issues facing Oregon, including marine reserves, wave energy, and fishery management.

Significant Challenges

Program funding continues to be the major challenge, with NOAA's ongoing flat funding for Sea Grant, self-funded OSU salary increases, increasing assessments, inflation, and Extension budget reductions. Sea Grant is left with staffing challenges that include freezing a full-time agent position for the north coast in the area of marine and lower Columbia River fisheries and eliminating plans to refill the retiring bi-state California/Oregon marine partnership agent position, while on hold are the Portland/Metro watershed program assistant and a campus-based associate director for research.

However, on the bright side, Oregon Sea Grant is growing and expanding programs through grant writing and partnering. Last fiscal year, Oregon Sea Grant competed for and was awarded a total of \$1,225,977 in *outside* funds from a variety of sources [\$498,149 in state and local sources, and \$727,828 from other federal sources]. The challenge becomes balancing faculty and staff time as growing sources of funds adds more expectations for delivery, taking a toll on existing faculty and staff time and flexibility.

Another challenge is multiple and more strenuous reporting requirements from federal, state, university, and other funding sources; while such reporting is increasing, staffing is not.

Goals for the Next Academic Year

Operational Goals:

- Have Sea Grant's communication, education, research, and extension tools integrated in combinations that are most effective and serve as a model for the university and the national Sea Grant network.
- Complete internal reorganization, merging campus support into one office.
- Seek additional opportunities to increase outside funding.
- Find funds for and create an associate director for research position.
- Complete five-year national strategic and implementation plans.
- Increase communications, partnerships, and interactions within Oregon State University); and with other institutions of higher education in Oregon, other Sea Grant and NOAA offices, and state and federal agencies.
- Establish an OSU advisory council.
- Prepare for the national program review that will tentatively occur in 2011.

Programmatic Goals:

- Our primary programmatic goal is to complete the development of our five-year strategic and implementation plans and to get their approved alignment with the national office. These plans will fully encompass the three program goals listed above and be focused on improved understanding, more knowledgeable citizens, and improved management and decision making in the following topical areas:

—Multiple Uses and Spatial Planning

- Fisheries and Seafood
 - Ocean and Human Health
 - Ocean Stressors (AIS, HABs, Hypoxia, WQ, coastal development)
 - Predictive Science for Coastal Ecosystems
 - Watersheds and Water Resources
 - Coastal Hazards
 - Climate Change Adaptation
 - Ocean Literacy, Communication Sciences, and Learning Research
- Each Sea Grant Extension staff member will develop a Plan of Work within the three main programmatic goals, while the professional Communications and Education staffs will contribute to these goals and the larger program mission of helping people understand, rationally use, and conserve marine and coastal resources.
 - Enhance regional partnerships and collaborations in the areas of (1) climate change and (2) oceans and human health.