



ENVIRONMENTAL LITERACY AND EDUCATION: EDUCATING THE PUBLIC AND TOMORROW'S WORKFORCE

Effective stewardship and informed decision making regarding coastal and marine resource management and sustainability depend on a well-informed public. The public and private education system from pre-school through graduate school, community-based education, and the availability of experiential learning provide mechanisms to achieve an environmentally literate public.

The University of Hawai'i (UH) Sea Grant College Program contributes to marine and coastal education efforts at all levels through the university system and through partnerships with the State of Hawai'i Department of Education and other organizations and institutions. With its partners in the Pacific, UH Sea Grant develops and strengthens technical skills through community and regional workshops, professional development opportunities, and student internships that focus on environmental careers and provide valuable work experience on insular issues. UH Sea Grant's marine and coastal education efforts directly support NOAA's strategic goals and cross-cutting priorities in environmental literacy, outreach and education.

Evaluating the Opportunities — Currently, several UH marine and coastal education programs exist, or are under development, such as efforts to develop system-wide integrated experiential/degree programs linking topics and better utilizing limited resources. Collaborative partnerships linking conservation groups, natural resource agencies, and the community, are important to develop educational programs focused on marine science and coastal resources extending throughout the *ahupua'a*, a Hawaiian concept of integrated resource management.

Understanding the Challenges — There is a strong need in Hawai'i and the Pacific to build a workforce skilled in natural resource stewardship. A workforce trained in watershed and coastal marine habitat management and ocean-related technical skills will enhance community-based education, insure more informed stewardship, and enhance student training leading to marine- and coastal-related careers. Appropriate experiential learning will serve students at all levels. Increased "hands-on" learning using Hawai'i's natural environment as a living laboratory will impart a basic understanding of marine science to students



in the K-12 grades. Additional experience-based programs, including internships, fellowships, research, and mentoring opportunities at the undergraduate level, will continue to encourage student entry into marine and coastal careers.

Building on a Record of Achievement

Working with institutional and community partners, UH Sea Grant supports and facilitates the following efforts:

Formal and Community-based Education — UH Sea Grant partners with Global Environmental Science, the university's highly successful baccalaureate degree program; and, partners with the Ocean Learning Academy, a charter school that uses hands-on learning experiences to cultivate stewardship of Hawai'i's natural resources. UH Sea Grant coordinates and administers the Hanauma Bay Education Program, which provides public education on corals and the coral reef ecosystem to residents and visitors at one of Hawai'i's premiere coastal attractions. The Pacific Aquaculture and Coastal Resources Center develops coastal resources and aquaculture training programs; the Pearl Research and Training Program emphasizes pearl grafting research and training; the Waipā Ahupua'a Learning Center on Kaua'i promotes traditional Hawaiian stewardship practices. On the Big Island of Hawai'i, UH Sea Grant supports community-based educational programs designed to help students, teachers and residents become better stewards of marine and coastal ecosystems. These programs include the West Hawai'i Explorations Academy's Aloha Kai Cross-Peer Training Program; ReefWatchers habitat monitoring; ReefTalk public lecture series; ReefTeach student informational presentations; Friends of NELHA (Natural Energy Laboratory of Hawai'i Authority); NELHA Ambassador Presenter Program volunteer informational presentations; the West Hawai'i Marine

Science Mentoring Project; and, the West Hawai'i Regional Fishery Management Council.

Cooperative Education — Windward Community College Aquaculture Complex provides technical assistance to schoolteachers using aquaculture as an instructional tool.



Educator Training — COAST/Operation Pathfinder is a program for elementary and middle school teachers of predominantly minority students; the Global Learning and Observation for the Benefit of the Environment (GLOBE) Workshop is an international hands-on, inquiry-based, environmental science and education program.

Curriculum Development — the UH Marine Science Program draws on knowledge from biology, geology, chemistry and physics to fully understand the marine realm; UH Sea Grant extension agents and specialists contribute expertise to marine and coastal science education in the community colleges system-wide.

Fellowships and Internships — UH Sea Grant administers the NSF-funded Kumu-Ola program, which attracts undergraduates from under-represented groups to careers in ocean sciences. The Micronesia and American Samoa Student Internship Program (MASSIP) and the UH Hawaiian Internship Program (UH-HIP) provide environmental research, education and management summer internship opportunities for Native Pacific Island students; the Jack R. Davidson Marine Policy Fellowship provides policy experience for students interested in ocean and coastal resources; the Sea Grant Summer Undergraduate Research Fellowship supports student research in the marine sciences; the UH Sea Grant Science Writers Project mentors students in science journalism; the national Graduate

Fellowship Program in Population Dynamics & Marine Resource Economics offers two- and three-year programs for doctoral students; the national Dean John A. Knauss Marine Policy Fellowship Program provides ocean, coastal and Great Lakes resource policy experience in the Washington, D.C. area.

Graduate and Postdoctoral Education — A hallmark of UH Sea Grant since its inception has been its support of graduate and postdoctoral education. The many Sea Grant-trained faculty and professionals that staff universities and resource management agencies around the U.S. and the Pacific are testimony to the Program's success and contribution to the public good.

UH Sea Grant has identified the following areas for education enhancement:

Experiential Learning — Teaching and research activities will be integrated to provide students rigorous experiential (including field and laboratory) activities.

University Marine Education — The number of qualified college graduates in marine and related careers will increase by providing educational and training opportunities that address coastal and marine sustainability and resource management needs.

Statewide K-12 Education — This program promotes educational opportunities in the areas of marine and coastal habitats and related issues for K-12 students and teachers through curriculum development, teacher training and technology transfer.

Graduate and Postdoctoral Education — This program supports the development of the next generation of leaders in research and education in the ocean and coastal sciences.

All of these efforts are aimed at developing tomorrow's leaders and workforce; providing for continued stewardship of our coastal and marine resources. Many of these individuals may very well find their way into positions with NOAA, other federal or state agencies, or private sector businesses and organizations.



MISSION

The Education Focus Group propose that greater environmental stewardship of Hawai'i's coastal resources, with an emphasis on sustainable use, will result from innovative formal and community-based education.

Section Leaders:
Fred Mackenzie, Professor
Elizabeth Maynard,
Extension Agent
Richard Brock, Extension
Leader
Christine Woolaway,
Extension Agent

For further information:

E. Gordon Grau, Director
Sea Grant College Program
School of Ocean and Earth
Science and Technology
University of Hawai'i
2525 Correa Road, HIG 238
Honolulu, HI 96822

Phone: (808) 956-7031
Fax: (808) 956-3014

www.soest.hawaii.edu/SEAGRANT

