

The National Association of Marine Laboratories' (NAML) Vision for the Centers for Ocean Science Education Excellence (COSEE) and the COSEE Network

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NAML member institutions support high quality ocean, coastal, and Great Lakes research and education in the natural and social sciences and seek to translate this new knowledge for decision-making on important issues facing our country and disseminate it to foster ocean science literacy. As both a resource for, and beneficiary of, COSEE's goal of engaging scientists and educators in transforming ocean sciences education, we would like to offer the following vision and recommendations to the national COSEE Network.

We believe that one of the most evident emerging opportunities in ocean sciences education is to engage the demographically large sector of individuals from groups that have been historically underrepresented in ocean science and education (e.g., African Americans, Hispanic Americans, Pacific Islanders, and Native Americans). A community effort led by the COSEE Network to help recruit more minority students from a wider variety of colleges and universities into programs at marine laboratories and oceanographic institutions is the vision that we offer. COSEE leadership of such an effort would provide a good conduit for linking more ocean science institutions, more marine laboratories, more minority serving institutions, and more community colleges into the rather extensive network that both NSF and NOAA supports for minority programs.

Recruiting and visibility-raising efforts could include hosting ocean community booths and displays at meetings like those of the Society for Advancement of Chicanos and Native Americans in Science (SACNAS), the NSF's Louis Stokes Alliances for Minority Participation (LSAMP), and the NOAA Educational Partnership Program's (EPP) Cooperative Science Centers (CSC) student meetings. Their purpose would be to promote and inform students about careers, training, education, and research opportunities in ocean science, especially those at marine laboratories and oceanographic institutions. Especially important in this regard would be organizing and linking existing, marine science research experience for undergraduates (REU) and research internship programs (e.g., NSF REU, Hollings, EPA STAR, EPP CSC). Replicating and packaging booth displays and materials into traveling displays that can be loaned to MSIs, community colleges and others is also a way to expand the visibility of marine and ocean sciences beyond existing partnerships and networks. Partnering and contracting with

informal science education organizations (public aquaria, zoos and museums) to develop displays and traveling exhibits would be a logical approach to reach a larger segment of the population. Increasing the visibility of the contributions of minority scientists who work or have worked on ocean related sciences, such as Dr. Ernest Everett Just, in these exhibits or through special awards has significant merit as well.

Besides the benefits of recruiting students directly into existing programs, such visibility may generate interest in creating new opportunities among new partners. Establishing new linkages could result in new curriculum development, and foster new, creative experiential learning in the form of courses, research experiences and hybrid education opportunities. Expanding networks regionally, especially to inland areas, may be a useful approach to promote collaboration and address larger scale issues. Finally, expanding networks may provide opportunities to bridge perceived and real gaps between science, policy and resource management that could be helpful in engaging those who are not exclusively ocean science-oriented.

Existing COSEE partnerships involve relatively few institutions from these underrepresented categories. It is evident that the network needs to be expanded to be more inclusive of these institutions and should be a high priority in the COSEE vision. While the COSEE programs include a number of host and partner marine labs, the COSEE network is not all that well linked to the network of marine laboratories. Expanding linkages between them should be a high priority. Having systematic mechanisms through the COSEE network designed to engage students and faculty at more minority serving institutions, community colleges, and inland colleges with more marine laboratories and oceanographic institutions would be a meritorious contribution.

Displays and recruiting tools developed by COSEE network could be significant tools to catalyze more linkages and partnerships. We also recognize that interest in marine sciences at the undergraduate and graduate level begins early. With assistance from the COSEE network, NOAA and other sources, NAML laboratories, even those that don't have an extensive education programs, could begin providing a week or two of programs for teachers and K-12 students. Ensuring that future workforce needs will be met by individuals from diverse backgrounds advances the broader impact needs of the ocean sciences research community. The mature COSEE network appears poised to play a major role in meeting the community's needs.

NAML is a nonprofit organization of about 100 members employing thousands of scientists, engineers, and professionals and representing ocean, coastal and Great Lakes laboratories nationwide. NAML's education mission is two-fold: 1) to provide enhanced ocean-related education so that all citizens recognize the role of the oceans, coasts, and Great Lakes in their own lives and the impacts they themselves have on these environments; and 2) to provide formal and informal research and training opportunities at K-12, college, and postgraduate levels to ensure a technically-qualified, and ethnically diverse workforce capable of solving problems and answering questions related to the protection, restoration, and management of coastal and ocean resources, climate variability, and society's needs.