

**Testimony**

**by**

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**To**

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**Ocean Education and Outreach: Old Ways and New Ideas**

Mr. Chairman, distinguished members of the Commission and staff, thank you for allowing me this opportunity. Healthy, prosperous, and secure nations are built on a foundation of adequate and effective education. The oceans require and deserve no less, for we as a nation and a people rely on its health, rich resources, adequate access, and preservation. Though we are considered leaders on a planet dominated by seas, we have done poorly when it comes to educating the Earth's citizens about the ocean. I will spend a portion of my testimony addressing some of the problems we face in ocean education and outreach, and wrap up with several recommendations.

Today the oceans play a minor role in our national science education standards, included as a small component within the Earth and Space Science sections, and K-12 teachers throughout the nation are inadequately trained to teach marine science or incorporate ocean learning into the classroom. Yet, the oceans cover nearly three-quarters of our planet and provide an excellent approach for teaching integrated science. While federal programs have supported the development of marine science teacher training programs and curricula, there are few means to provide funding to sustain, disseminate or coordinate these programs. Experience has shown that no matter how good educational activities are, teachers will typically not incorporate new materials into the classroom without sufficient training and guidance. Today, many successful,

highly regarded teacher training and K-12 education programs are struggling or have disappeared altogether; in Florida this has happened at the University of Miami, the University of South Florida, Mote Marine Laboratory, Harbor Branch Oceanographic Institution, Nova Southeast University, and the list goes on. The inability to sustain teacher training and K-12 educational programs has led many to seek funds through NSF's new Center of Ocean Science Education Excellence (COSEE) initiative for programmatic support rather than the much-needed coordination effort it was intended as. The COSEE effort aims to provide national coordination, however with just a few regional centers that will be run by different groups with minimal funding it runs a high risk of failure.

As we learn more about the oceans it is critical that exciting new discoveries and insights be incorporated into what we teach our students, managers, policy-makers and our citizens. Over the last several years, a number of federal agencies have required that outreach be part of individual research proposals; this is a start, but not necessarily an effective means to combine research results with education. Outreach becomes the stepchild to research, only a small percentage of a grant, if any, is actually allocated to education, it is often a last minute add-on to a well-thought out and lengthy proposal, and the researchers are often unfamiliar with effective outreach or education methods. But most importantly, the problem with this process is that we end up with a large number of disparate projects with little coordination and little impact. As scientists worldwide work to plan and create an integrated ocean observing system, education has not been a significant part of the planning process; will it again be a last minute add-on?

Since the 1960's when Jacque Cousteau first brought the wonders of the ocean into the lives of the everyday people through television, we have failed to engage the public with similar intensity. At the time, many were inspired to pursue a career in marine science or formed a lasting fascination and love of the sea. As our ocean resources dwindle from the increasing pressures of human population growth and development, creating a national ethic and passion for the ocean is more important than ever. Unfortunately, few scientists are encouraged or trained to work with the general public, and time spent teaching or doing outreach is rarely valued in the academic community or compensated for. But the truth is that the majority of successful marine scientists are just that because they are excellent at what they do, scientific research, not education and not outreach.

There is another barrier to public outreach outside of the world of science. Within the print and broadcast media, the publishers, the editors, and the producers largely control what topics are chosen for public consumption. While the popularity of the Discovery Channel illustrates the public's fascination with science that is made understandable and entertaining, few of the media gatekeepers are willing to give science a chance or promote the work of scientists. An even more concerning consequence of the mass media's selective public promotion is the lack of role models that can inspire kids to stay in school and promote academic achievement in science or otherwise. Actors, athletes, and pop stars have become cultural icons and are paid exorbitantly large salaries – it is easy to see why they have become society's most visible role models. Educators, explorers, and scientists that could be wonderful inspirations to our students scrounge to make a living, spend countless hours writing proposals to fund their professional endeavors, are typically poor communicators, and rarely receive any visibility through the media.

What can be done?

In terms of education, the oceans must be better represented within the national science standards. We must provide the means to disseminate excellent marine science curricula and activities, with adequate teacher training provided. Since education is often the purview of the States, I propose investigating the possibility of a program of matching support in which ocean science education is developed by federal programs and implemented through matching State funds. As new discoveries are made and technologies develop we must simultaneously adapt our educational programs. The value of teaching and communication must be recognized and compensated for within the scientific community. These efforts must be done in a coordinated and committed manner so that they are successful over the long term. We must also find means to engage students and the larger public in the oceans, create a sea ethic and use the oceans as a vehicle to promote math and science achievement. Success will only be obtained if we also train people in both science and communications and provide opportunities for these skills to be used effectively.

NASA has been extremely successful in engaging the public in space exploration, building widespread support for its efforts, and bringing space into the educational arena. We need the same for the oceans!

How do we do all of this in a coordinated and effective manner?

I suggest to you that there should be an Office of Education and Outreach within the National Oceanic and Atmospheric Administration (NOAA). The proposed office would obtain its funding as an appropriated line item to be used to coordinate educational programs nationwide and facilitate a national ocean outreach campaign. The Office would coordinate education efforts across NOAA's own departments and foster partnerships with schools, academia, industry, non-governmental organizations, associations, and the media. We are at a time in history where limited resources have left many organizations willing to collaborate, some for the first time, for a common goal of ocean understanding and stewardship. Innovative partnerships with the media and private industry can help to better disseminate ocean information and engage the public. A starting budget of \$10 to 20 million could support activities such as the National Ocean Science Bowl, teacher training, The Jason Project, and a competitive granting program for ship time use for education. Funds could also support a national ocean publicity campaign and an annual traveling, interactive lecture program for kids. I have seen first hand the impact that a well designed and interactive presentation can have on students of all ages; we should create a best of the best ocean's speaker tour for kids and families nationwide.

These are not impossible goals, but will require strong leadership, resources, commitment, and new ways of thinking.

Thank you.

