Will Ocean, Coastal, and Great Lakes Literacy Efforts Help Build a Diverse and Innovative Ocean Workforce?

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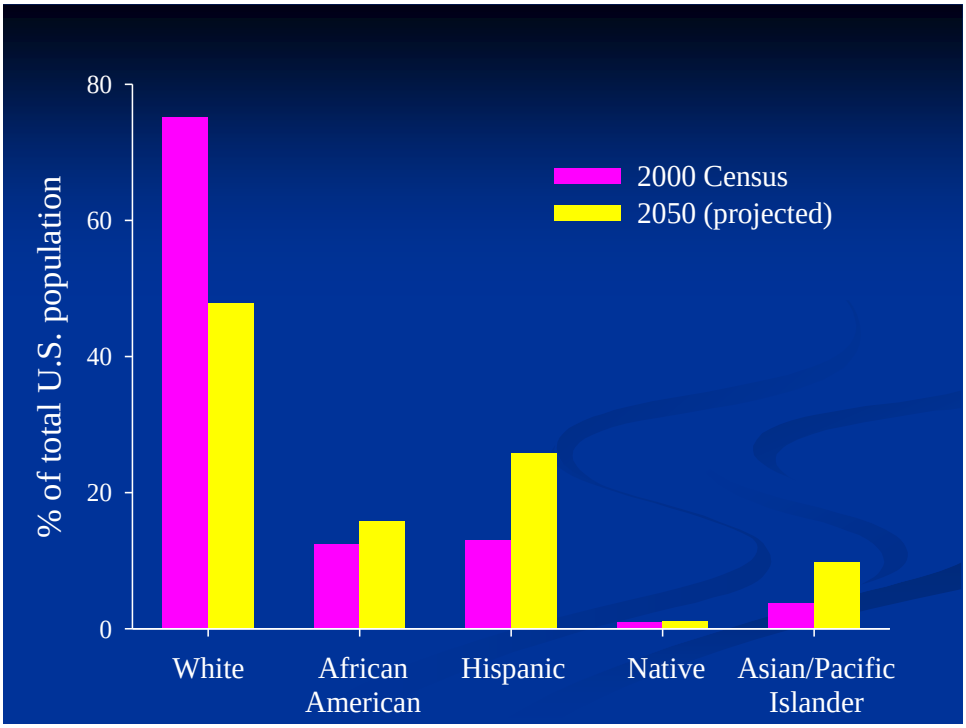
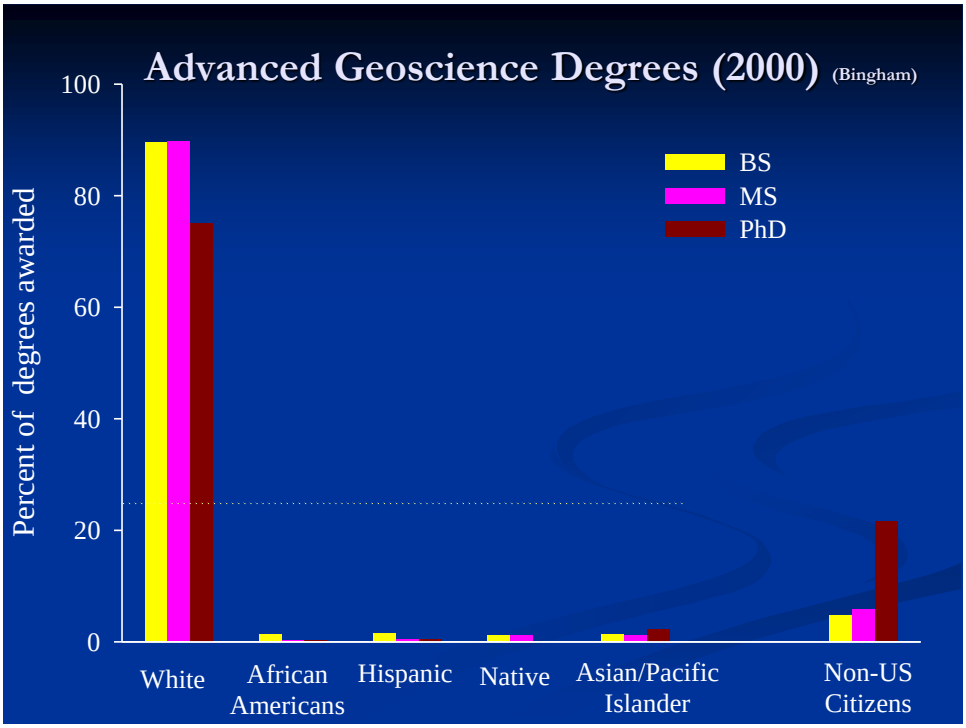
The increasing proportion of the U.S. population that is Black and Hispanic has profound implications for the aquatic science community as will continuing underrepresentation by American Indians and Pacific Island Americans.

They are now profoundly underrepresented and more than half of the existing aquatic science community will be eligible for retirement in the next 60 months.


80
60
40
20
0
% of total U.S. population
2000 Census
2050 (projected)
White
African American
Hispanic
Native
Asian/Pacific Islander


Advanced Geoscience Degrees (2000) (Bingham)
100
80
60
40
20
0
Percent of degrees awarded
BS
MS
PhD
White
African Americans
Hispanic
Native
Asian/Pacific Islander
Non-US Citizens

Ocean and Coastal Literacy in the United States

The State of the American Public's Knowledge on Ocean Policy Issues

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The 2004 Pew Oceans Commission report *America's Living Oceans: Charting a Course for Sea Change* has called for "a new era of ocean literacy that links people to the marine environment." Similarly, the 2004 U.S. Oceans Commission preliminary report also called for new efforts to inform the public because, "To successfully address complex ocean and coastal-related issues…an interested and engaged public will be needed." Implicit in both of these reports is the assumption that enhancing public awareness and knowledge of ocean and coastal issues will eventually lead to increased public support for restoration efforts. Most social scientists argue that knowledge is vital in developing an individual's perception of environmental problems and building support for sustainable policies and behaviors. Because citizens are either directly or indirectly involved in activities that can harm the oceans and coastal areas, learning the scope and depth of policy-relevant knowledge on these issues is an important first step to develop outreach and educational efforts to enhance public ocean literacy.

Recent findings by researchers at Oregon State University provide a general assessment of ocean literacy among the public and the opportunities and barriers to increasing levels of policy-relevant knowledge among the masses concerning the oceans. This article will describe a 2002/2003 pilot project to measure public ocean literacy that was first conducted in the states of Oregon and Washington, and then followed up in 2003 with a national study. The major objectives of this research were to investigate the level and correlates of policy-relevant knowledge concerning ocean and coastal management issues, and to determine which information sources are associated with higher levels of this policy-relevant knowledge.

Distribution of Public Knowledge

The scientific and technical complexity of many public policy issues—such as ocean and coastal management—pose serious challenges for the effective participation of public citizens. In order for people to effectively monitor policy-makers in democratic societies, they need to be informed consumers of relevant scientific research and the policy options suggested by those findings. However, the critical gap between the need for policy-relevant knowledge and the generally poor level of public understanding of many public policy issues has led some political scientists to proclaim the existence of a legitimacy crisis.

Many scholars suggest that knowledge is central to the policy-making process, and that improving the knowledge base of citizens should be the first step in establishing a nationwide effort to preserving the oceans. It has been argued that "communications directed to the general public are important not only because they may influence public opinion and, therefore, have an impact on public policy, but also because they are potentially effective in inducing individuals to engage in behavior that can lessen the destructive impact of humans on the environment."

Self-Assessed Level of Informedness with Ocean and Coastal Policy Issues

	Total Sample	Coastal States	Non-Coastal States
1. Not Informed	33.5%	29.3%	38.2%
2. Somewhat Informed	52.2%	56.3%	51.9%
3. Informed	10.0% <15%	11.0%	8.9%
4. Very Well Informed	4.3%	3.4%	1.0%
N =	1,223	639	589

Legitimacy crisis

(gap between citizen's knowledge seeking/holding and policy decision needs)

Policy-relevant knowledge

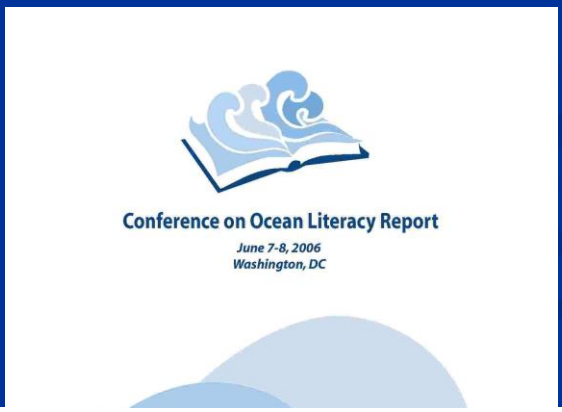
Policy outcome stake holding

Socio-economic status

It is important for the selfish interests of ocean related professions and institutions to be concerned about diversity in the workplace.

(not about CR, EO, reparations - its good strategic planning)

The Conference on Ocean Literacy (CoOL)



Background

- ICOSRMI-endorsed high level conference to promote ocean literacy
- Conference was held on June 7-8, 2006
- 200 Attendees in Washington, DC and 300 at 5 Regional Workshops

GOAL 1: Engage High Level Speakers

Results:

- CEQ Chairman James Connaughton
- DOI Deputy Secretary Lynn Scarlett and DOC Deputy Secretary David Sampson
- Assistant Secretary of Education Tom Luce
- NOAA Under Secretary Conrad Lautenbacher
- EPA AA for Water, Ben Grumbles
- Jean-Michel Cousteau and Sylvia Earle

Goal 2: Extend the conference beyond Washington

Results: 5 Regional Workshops at

- Aquarium of the Pacific, CA
- J.L Scott Aquarium, MS
- John C. Shedd Aquarium, IL
- National Mississippi River Museum & Aquarium, IA
- National Aquarium in Baltimore, MD

Goal 3: Generate recommendations to inform future ocean education efforts under the U.S. Ocean Action Plan

Results:

Panelists asked to identify challenges and opportunities and recommend next steps.

Formal Education Panel

Moderator: Dan Barstow, TERC

Panelists:

- Dr. Sylvia Earle
- Dr. Gerald Wheeler NSTA
- Richard Steinke, MD Dept of Education
- Dr. Gerald Lieberman, State Education and Environment Roundtable
- Mr. Larry Snowhite, Houghton-Mifflin

Formal Education Panel

Recommendations:

- Get involved at all levels, from national to state and local
- Focus on teachers
- Connect to earth system science and environmental education efforts
- Scale up to reach larger audiences
- Engage and coordinate Federal efforts

Informal Education Panel

Moderator: Ted Beattie, Shedd Aquarium

Panelists:

- Dr. Jerry Schubel, Aquarium of the Pacific
- Paula Coble, University of South Florida
- Dr. Jackie Ogden, Disney's Animal Kingdom
- Julie Scardina, Sea World-Busch Gardens

Informal Education Panel

Recommendation:

- Form an active, energized, informal science network to develop and deliver a comprehensive, well branded ocean literacy program for the public.

Regional Approaches Panel

Moderator: Dr. Sharon Walker, USM - Scott Aquarium

Panelists:

- Dr. Dana Sitzler AK SeaLife Center
- Dr. Paul Sandifer NOAA
- Jerry Enzler, MS River Museum and Aquarium
- Craig Strang, UC Berkeley
- Dr. Sharon Walker, Gulf of Mexico Alliance

Regional Approaches Panel

Recommendations:

- Strengthen regional networks
- Develop coordinated messages

Media Panel

Moderator: Ellen Prager, ORRAP

Panelists:

- Bill Blakemore, ABC News
- Cheryl Lyn Dybas, NSF/Freelance Journalist
- Mark Bauman, National Geographic Society

Media Panel

Recommendations:

- Make it relevant to people's lives
- Speak the language of media representatives
- Provide imagery
- Stick to the science
- Invest in messaging

Future Workforce Panel

Moderator: Dr. Matt Gilligan, Savannah State University

Panelists:

- RADM Fred Byus, Oceanographer of the Navy
- Dr. Judith Vergun, University of Hawaii
- Dr. Larry Robinson, Florida A&M Univ.
- Dr. Maria Alvarez, El Paso Community College

Admiral Byus stressed three themes:

- A diverse entry pool
- Continued career progression
- Work place empowerment and treatment

Increase of African American and women officers selected to significant leadership positions.

What are Model Programs? (Judith)

- Dr. Brian Bingham, Shannon Point Lab, WWU - MIMSUP
- Dr. Ben Cuker HU: ASLOMP, MAST, Hall-Bonner Program for Minority Doctoral Scholars in the Ocean Sciences
- Dr. Eda Davis-Butts at Oregon State University - SMILE
- Dr. Judith Vergun at the University of Hawai'i at Manoa - NAMSS, Diversity Internship Program, and the Hawai'i Kumu Ola STEM Program
- Dr. Ashanti Pyrtle at the University of South Florida - Minorities Striving and Pursuing Higher Degrees of Success in Earth System Science (MS PHD'S)
- Dr. Matt Gilligan SSU, Bridge/HBOI, CIRE/SkIO
- NAML Panel Report (2001)

Educational Partnership Program with Minority-Serving Institutions (Larry)

Jan. 19, 2007 - Conrad C. Lautenbacher on NOAA's

- $62.5 million to five universities and their 31 partners for Cooperative Science Centers over five years.
- African American PhDs in both the atmospheric and environmental sciences has doubled.
- Helping universities to further develop programs in marine, atmospheric, and environmental sciences as well as remote sensing and scientific instrumentation.
- Served to increase collaborative research between NOAA scientists and researchers at Minority-Serving Institutions. (student traffic)

NIH-NIGMS models and Community Colleges (Maria)

- Bridges Program - links community colleges with baccalaureate-granting institutions.
- MARC program that support students at the junior and senior level.
- Bridge Program that transitions students from Master-granting institutions to Ph.D.-granting institutions
- MBRS-RISE Program that provides support throughout the whole spectrum.

Building a Future Workforce

Recommendations:

- Ask the right questions (e.g. Why aren't good models replicated?)
- Include community colleges
- Develop an excellence in science award
- Include the disabled
- Link marine labs and MSI's (MUI?) (2006 ASLO, JGeosci. Ed)

Though HBCUs enroll only 13% of the African Americans who are in college, they award 40% of the science degrees earned by African Americans in the U.S. (45% of agriculture and natural resources degrees)

Marine Laboratories and Minority Serving Institutions (MSIs) Can Work Together to Build a Diverse and Innovative Ocean Workforce.

There are marine labs that are not properly staffed and equipped to offer quality and accessible research experiences for undergraduates and there are MUIs that are not properly staffed and equipped to prepare students for geo/aquatic science research and education careers.

Effective Collaboration/Partnerships/programs

- Critical mass goals and proven elements/methods
- Patience
- Mutual respect
- Reward system
- Multicultural competency of staff

Elements of a Collaborative Capacity-Building Proposal (**Growing your own**)

- MUI funded for new faculty position(s) (partnering marine lab alum. Recruiter for marine lab.) to build geoscience research/ed. capacity. New facilities (research labs.)
- Marine lab funded for new staff (educator, REU coordinator, partnering MSI alum.) to build multicultural education capacity (and pursue advanced degree). New facilities (housing)

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