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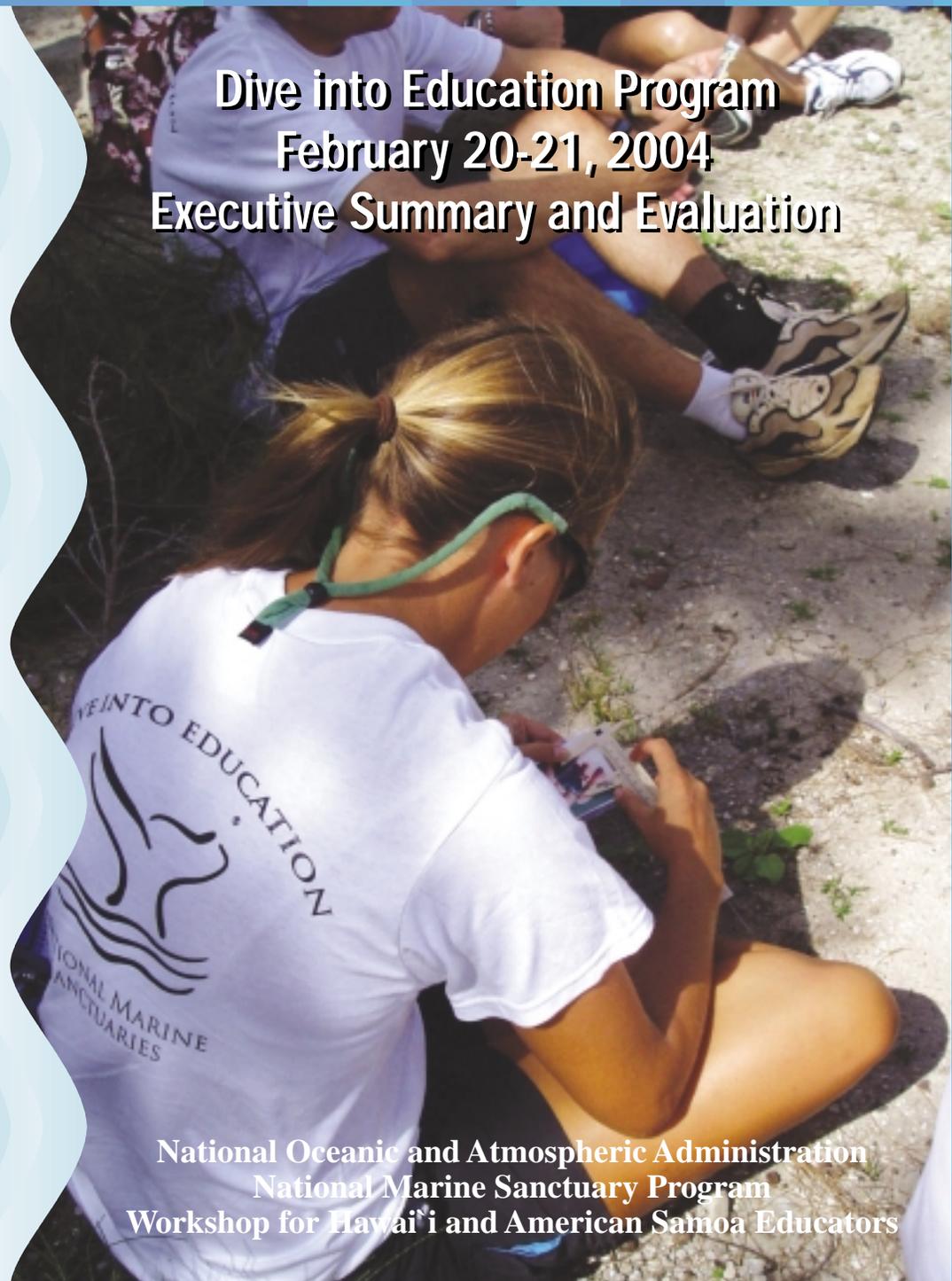
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NATIONAL MARINE  
SANCTUARIES



# Dive into Education Program February 20-21, 2004 Executive Summary and Evaluation



National Oceanic and Atmospheric Administration  
National Marine Sanctuary Program  
Workshop for Hawai'i and American Samoa Educators

## Achieving Ocean Literacy in America's Classrooms

This summary details the work of eighty educators and more than twenty NOAA staff in moving ocean literacy forward for the students of Hawai`i and American Samoa. Over a two-day period, this group worked to build the knowledge and understanding of ocean education.

Our national marine sanctuaries are known as our nation's ocean classrooms and recognized nationally as a leader in local, focused educational programs and grassroots creativity on how to better connect the public with the ocean and build within this country real literacy on ocean issues.

The National Marine Sanctuary Program education effort contains the talent of trainers, facilitators and messengers to the nation about the marine environment and national marine sanctuaries. During this workshop we used this talent bank to convey ocean-related content and techniques to these educators.

In its role of being a living classroom for ocean education, the sanctuary program works to build pilot programs like this that can be exported to each sanctuary, other NOAA offices and be utilized by other partners around the country. Dive into Education is a new programmatic thrust for the National Marine Sanctuary Program and part of a larger ocean literacy initiative to infuse marine science into America's classrooms. This executive summary provides insight into the expectations of teachers and key outcomes of this well-received and extremely successful workshop.

Ocean education and the vision of ocean literacy is more than investing in pilot programs. The National Marine Sanctuary Program is also working, through its strategic plan, to invest in the internal expertise of the program to better equip its trainers, volunteers and staff to further ocean education and excite the public about the ocean and marine ecosystems.



Hands-on ocean science activities.  
Photo: Claire Johnson/NOAA



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Front Cover: A workshop  
participant learns hands-on  
monitoring techniques.  
Photo: Claire Johnson/NOAA

Back Cover: Coconut Island.  
Photo: Andy Collins/NOAA

## National Marine Sanctuary Program Education Mission

*To promote public understanding of our national marine sanctuaries to empower citizens with the necessary knowledge to make informed decisions that lead to the responsible stewardship of marine, natural and cultural resources.*

### Program Goals

Dive into Education is a marine science education program aimed at providing teachers resources and training to support ocean literacy in America's classrooms. The major goals of the Dive into Education program are to:

- Provide K-12 teachers with professional development using hands-on, standards-based, ocean science activities that will excite their students about science and technology.
- Provide K-12 teachers a marine science education network for future partnerships, collaborations and support.
- Promote understanding of National Oceanic and Atmospheric Administration's National Marine Sanctuary Program and its system of national marine sanctuaries.
- Encourage responsible stewardship of marine, natural, and cultural resources, especially national marine sanctuaries.

### Demographics of Participants

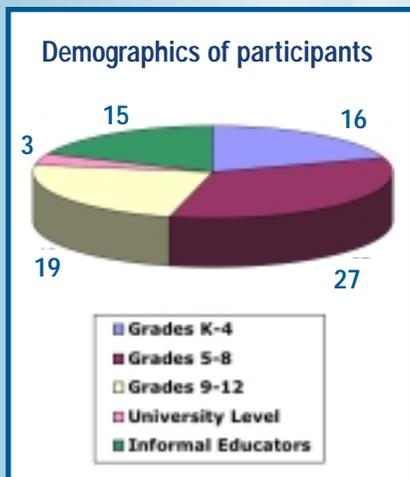
Seventy-seven educators from Hawai`i and two teachers from American Samoa participated in the first ever Dive into Education marine science workshop hosted by NOAA's National Marine Sanctuary Program.

- 62 were K-12 teachers in the formal education system
- 15 were educators from free-choice, or informal, education organizations
- 3 represented university level educators

A total of 37 teachers were based on the island of O`ahu and 43 participants traveled from neighboring islands through scholarship support provided by Coastal Zone Management Hawai`i and American Samoa Coastal Zone Program.

Participants were recruited by advertising in the Honolulu Advertiser newspaper, formal and informal newsletters, email listservs, direct mailings to school districts, and word of mouth.

Participants represented a broad diversity of ethnic groups including Asian American, Hawaiian, African American, and European American.



## 2004 Program

The National Marine Sanctuary Program's Education Team sponsored a two-day Dive into Education marine science workshop, a professional development opportunity for approximately eighty K-12 teachers and informal educators from Hawai'i and American Samoa, on February 20-21, 2004. Educators representing thirteen different marine protected areas of the National Marine Sanctuary Program offered hands-on sessions aimed at providing teachers with the knowledge and resources necessary to bring marine science into the classroom. Thirty-six concurrent sessions were held at Bishop Museum and on Coconut Island, ranging from satellite oceanography to coral reef surveying and monitoring.

Four workshop sessions were offered concurrently. The concurrent sessions were primarily aligned by grade bands: K-4, 5-8, 9-12. Based on the breakdown of workshop applicants, it was deemed essential to offer grade-specific activities that complimented the national and state standards for three grade bands. Attendance was distributed quite evenly among sessions.

Sessions were adapted to meet unique interest and needs of the Hawai'i and American Samoa teachers, including having two thematic strands in Friday's schedule for humpback whales and coral reef ecosystems.

The schedule of events for one of two days of activities and provides a snapshot of workshop session offerings (see page 6).

## Workshop Evaluation Summary

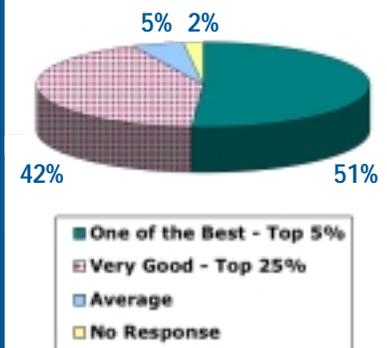
The National Marine Sanctuary Program 2003 Dive into Education program was a huge success, drawing rave reviews from participants and presenters alike. **Ninety-three percent of participants rated the workshop as among the best professional development opportunities available.** More than half of the respondents noted that the workshop was one of the best they had ever attended, and 93% said that they would recommend this workshop to other educators. Key outcomes of this well-received and extremely successful workshop follow:

- 90% of participants are very likely to integrate marine science into their classroom as a direct result of this workshop.
- 96% of participants want to learn more about national marine sanctuaries via the Internet through live camera coverage, marine science lesson plans and tutorials.

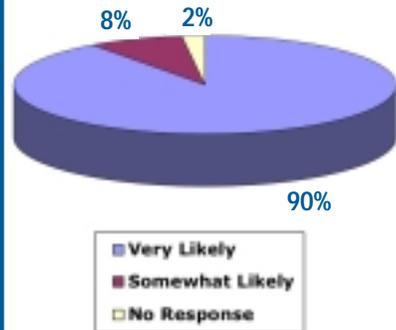
*"The variety of activities offered to educators was exceptional! It was hard to make a choice."*

— Dive into Education participant

Participants rate the quality of the Dive into Education workshop



Percentage of participants that will integrate marine science into their classrooms



*“The highlights of the Dive into Education workshop included the resources made available to us from people to hand outs. Everything from the Coconut Island tour to awareness of other marine sanctuaries.”*

*– Dive into Education participant*

- 95% of participants were inspired to get involved with NOAA and the National Marine Sanctuary Program.
- 44% increase in participants' knowledge about the system of national marine sanctuaries and their interest to visit one of America's underwater treasures.
- 93% of participants were concerned about stewardship of the marine environment after attending the Dive into Education workshop.

## Partnerships

The Dive into Education workshop was conceived and organized by NOAA's National Marine Sanctuary Program and co-sponsored by Coastal Zone Management Hawai'i and American Samoa Coastal Zone Program.

Key collaborators included:

- Coastal Zone Management Hawai'i
- American Samoa Coastal Zone Program
- Monterey Bay Aquarium Research Institute
- Waikiki Aquarium
- University of Hawai'i
- Hawai'i Sea Grant
- State of Hawai'i
- Hawai'i Intertidal Project
- Hawai'i Institute of Marine Biology
- NOAA's Offices of Education and Sustainable Development, National Marine Sanctuary Program, Marine Protected Areas Center, Ocean Exploration, and National Oceanographic Data Center

	Grades K-4		Grades 5-8		Grades 9-12		Open
9:00 - 9:45 am	In Water: Coral Reef	Finding Nemo	Sanctuary Sandbox		Ocean Tides		Dive into Hawai`i Fishwatching
9:50 - 10:45 am			Coconut Island Tour		Each One Teach One		Loggerhead Sea Turtle Migrations
10:45 - 11:45 am	Coconut Island Tour		LiMPETS	Water Quality			Coral Reef Surveying and Monitoring
11:50 am - 12:30 pm	Design a Fish				Intergrated Humpback Whales		
12:30 -1:15 pm	Lunch						
1:15 - 2:05 pm	Adaptations from the Depths		Think Like a Humpback		Coconut Island Tour		Mock Shipwreck
2:10 - 2:55 pm	Life in a Coral Reef		From Whaling to Watching		Safety and Shoreline Ecology	LiMPETS	Satellite Oceanography
3:00 - 3:45 pm	Seagrass...It's Alive!		Maps for a Marine Sanctuary Tour				Black Death: Oil Spills

### **Coral Reef Surveying and Monitoring**

This session will show teachers the techniques coral reef researchers use to sample and monitor coral reefs. Simple materials will be used so that teachers can reproduce the techniques in their classrooms.

### **LiMPETS: Long-term Monitoring Program and Experiential Training for Students**

The LiMPETS network and Hawai`i Intertidal Project will introduce teachers to rocky intertidal and sandy beach monitoring protocols to be used with their students, as well as discuss upcoming opportunities for Hawai`i educators.

### **From Whaling to Watching**

Learn about tracking whales and how satellite data are allowing scientists to understand their migration patterns. Also, learn a hands-on activity that compares toothed and baleen whale feeding styles. Take-home materials will be provided.

### **Water Quality Monitoring**

This hands-on session will expose participants to several common water quality measurements (i.e. transparency, temperature, pH, alkalinity, salinity, conductivity, and dissolved oxygen).

### **Sanctuary Sandbox and Marine Scene Investigation**

National marine sanctuaries serve as repositories of sands that illustrate a wide range of coastal and marine geological processes. Come explore the fascinating world of earth science using sanctuary sands and activities; then help solve a "Marine Scene Investigation" that uses sand "evidence" from a mystery sanctuary.

### **Satellite Oceanography: Measuring Sea Level from Space**

Measuring differences in ocean surface elevation is a challenging task, but sensing instruments aboard satellites have made it easier and more accurate. This activity uses TOPEX/Poseidon satellite altimetry data to investigate the relationship between sea surface and sea floor topography.

***“The greatest thing about the workshop was that it sent me back to the classroom with renewed energy. The energy needed to excite my students and get them exploring the marine environment in a way that will ensure its preservation.”***

*– Dive into Education participant*

## 2005 Program Planning

The National Marine Sanctuary Program will host another Dive into Education marine science workshop that will take place in Georgia in 2005 and is expected to attract educators from all over the southeastern region. The workshop will offer enough programs and sessions for up to 250 teachers. Some of the proposed sessions will include informational presentations on regional megafauna such as Loggerhead Sea Turtles, Northern Right Whales, Bottlenose Dolphins, Florida Manatees, and various sharks. Other sessions will feature programs and activities developed by individual sites in the National Marine Sanctuary Program such as multicultural ocean science education, student monitoring of the oceans, watershed education, and coral reef classrooms. Education Coordinators from the thirteen national marine sanctuaries and one coral reef ecosystem reserve will again form the core team of workshop presenters. The collective talent and leadership of the National Marine Sanctuary education team will bring this special, marine science education program to the southeastern United States.

## Conclusion

With unparalleled success, the Dive into Education marine science workshop equips educators with tools aligned to national education standards using national marine sanctuaries and the ocean. The professional development and hands-on ocean science materials provided to teachers will enable educators to excite school children about science and technology, as well as inspire future generations to be stewards of the Earth. The Dive into Education Program is uniquely positioned to meet the demands of achieving a higher level of ocean literacy in America's classrooms. The future of ocean health depends on this.



Teachers learn classroom activities using a mock shipwreck.  
Photo: Andy Collins/NOAA



Workshop participants gather classroom materials.  
Photo: Claire Johnson/NOAA



Teachers eagerly await the boat to Coconut Island.  
Photo: Paul Wong/NOAA

## National Marine Sanctuary System

Our national marine sanctuaries embrace part of our collective riches as a nation. Within their protected waters, giant humpback whales breed and calve their young, coral colonies flourish and shipwrecks tell stories of our maritime history. Sanctuary habitats include beautiful rocky reefs, lush kelp forests, whale migration corridors, spectacular deep-sea canyons and underwater archaeological sites. Our nation's sanctuaries can provide a safe habitat for species close to extinction or protect historically significant shipwrecks. Ranging in size from less than one square mile to more than 5,300 square miles, each sanctuary is a unique place needing special protections. Natural classrooms, cherished recreational spots and valuable commercial industries marine sanctuaries represent many things to many people.



The National Marine Sanctuary Program serves as the trustee for a system of thirteen sanctuaries, encompassing more than 18,000 square miles of marine and Great Lakes waters from Washington State to the Florida Keys, and from Lake Huron to American Samoa. In addition, the sanctuary program is conducting a process to designate the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve as the nation's 14th marine sanctuary. The National Oceanic and Atmospheric Administration's (NOAA) manages national marine sanctuaries under the authority of the National Marine Sanctuaries Act. Since 1972, the National Marine Sanctuary program has worked cooperatively with its partners and the public to promote conservation while allowing compatible commercial and recreational activities. Increasing public awareness of our maritime heritage, scientific research, monitoring, exploration, educational programs and outreach are just a few of the ways the National Marine Sanctuary Program fulfills its mission to the people.

## America's Underwater Treasures



NATIONAL MARINE  
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