



NATIONAL MARINE SANCTUARY SYSTEM





Photo: © Jim Knowlton

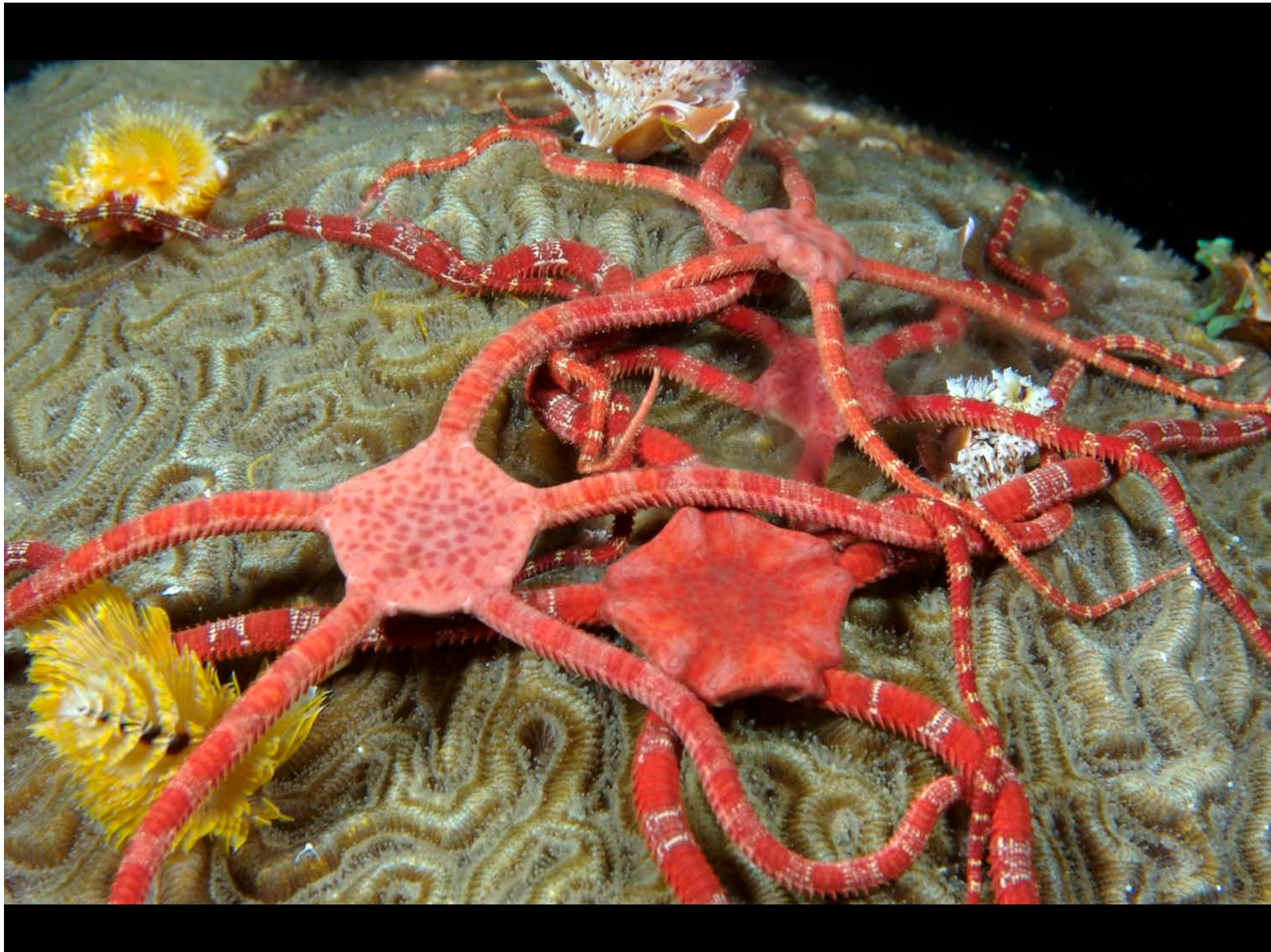










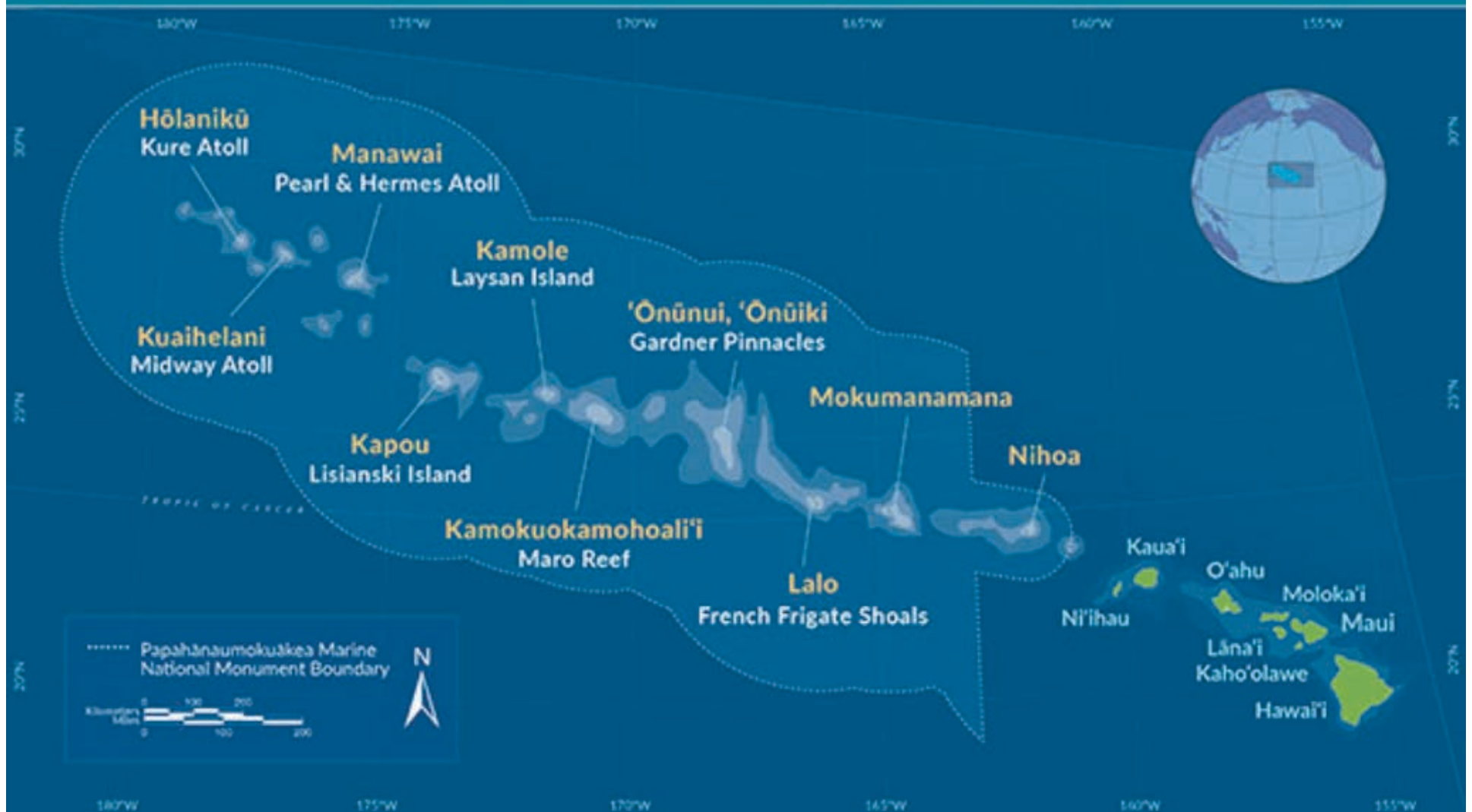




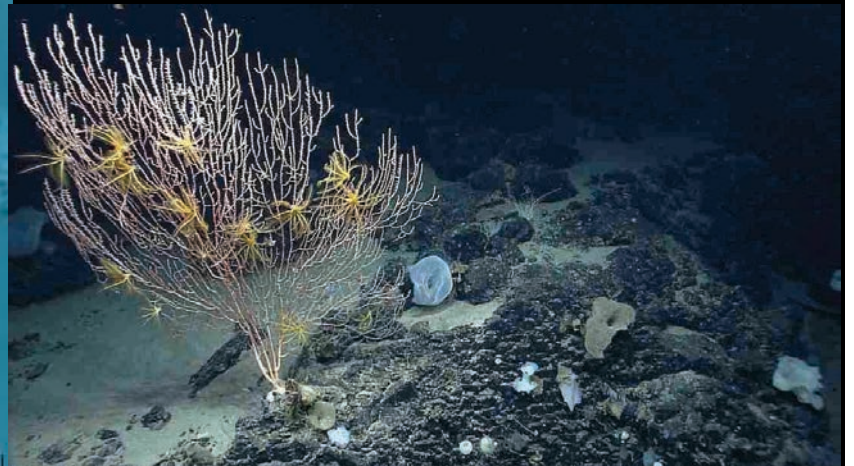
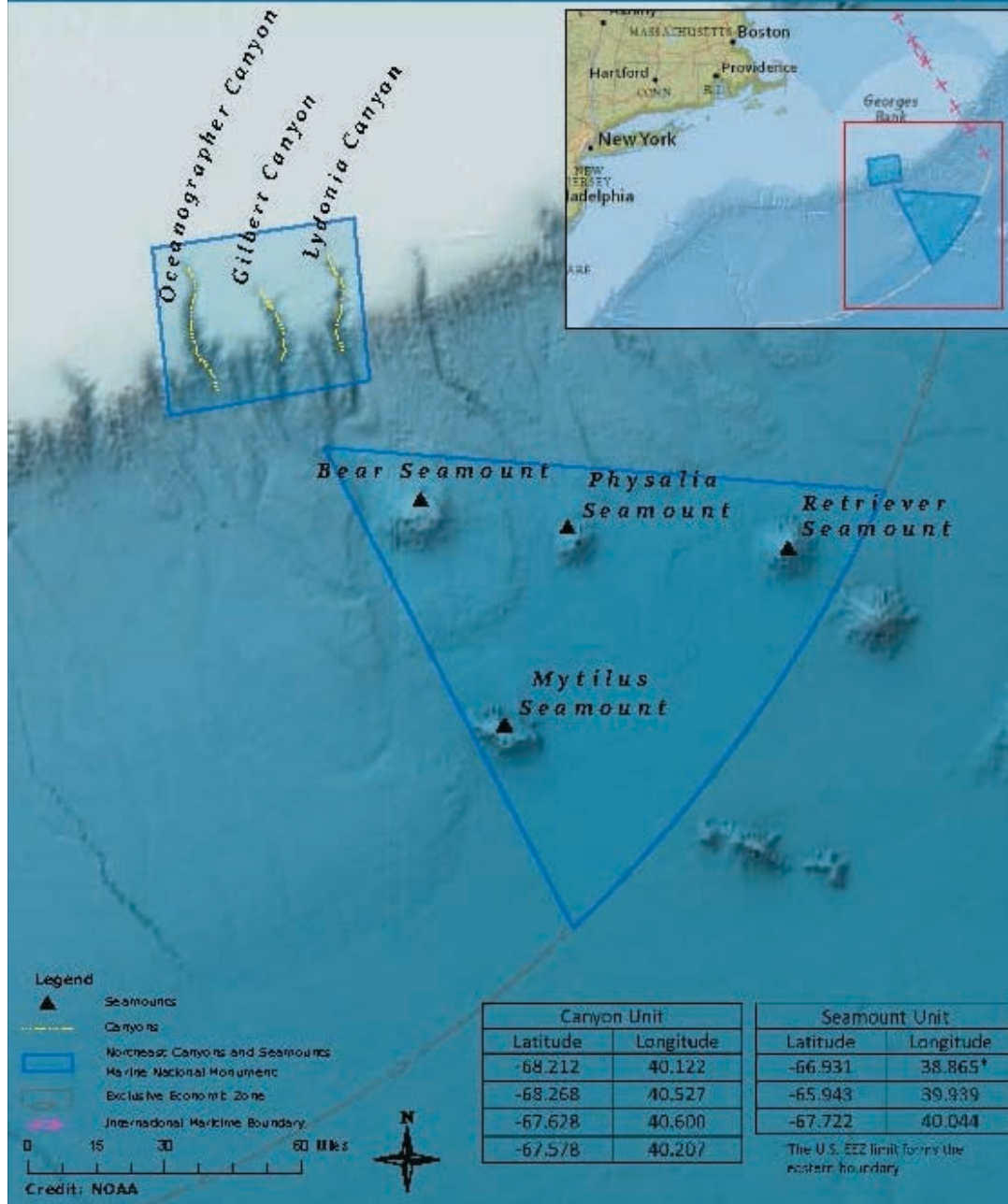





» Ko Hawai'i Pae 'Āina - Hawaiian Archipelago



Northeast Canyons and Seamounts Marine National Monument



A full-page background image showing a diver in a dark wetsuit swimming through a dense kelp forest. The water is a deep blue-green, and the kelp stalks and leaves are visible in the foreground and background.

“Areas of the marine environment with special conservation, recreational, ecological, historical, cultural, archeological, or esthetic qualities...”

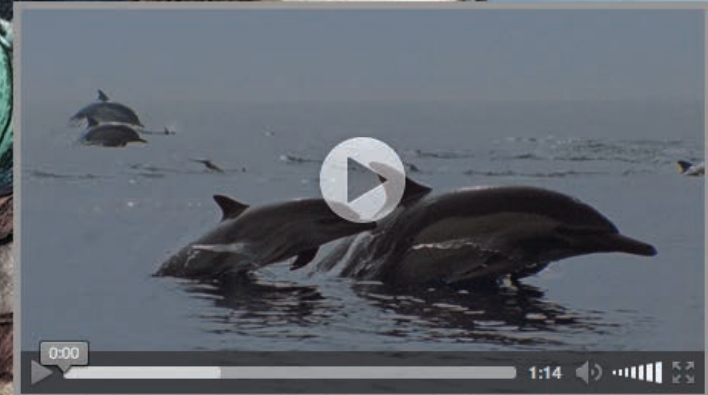
National Marine Sanctuary Act (sec. 301)



Sanctuary Nomination Process

For the first time in two decades, NOAA invites communities across the nation to nominate their most treasured places in our marine and Great Lakes waters for consideration as national marine sanctuaries.

In response to ongoing widespread interest from the public, NOAA has launched a new, locally driven sanctuary nomination process developed with input from more than 18,000 public comments. Throughout the nomination process, NOAA will be available to answer questions and provide guidance to nominating communities and other interested parties. NOAA will also update nominators on the progress of the agency's review of their nomination.



Actor and activist Edward James Olmos lends his voice to the new sanctuary nomination process and offers a challenge to the American people. [Watch in HD](#)

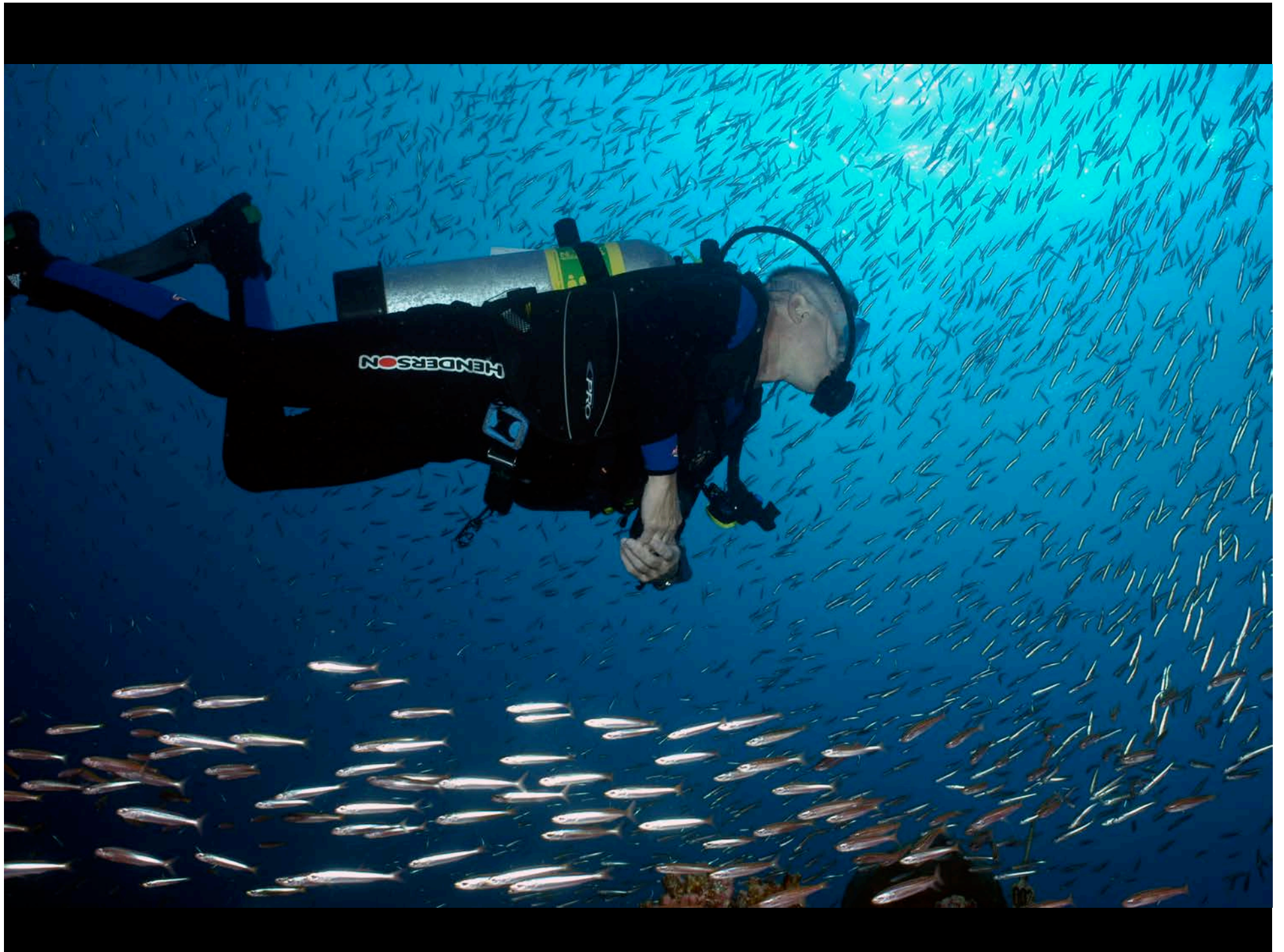
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<http://www.nominate.noaa.gov/>















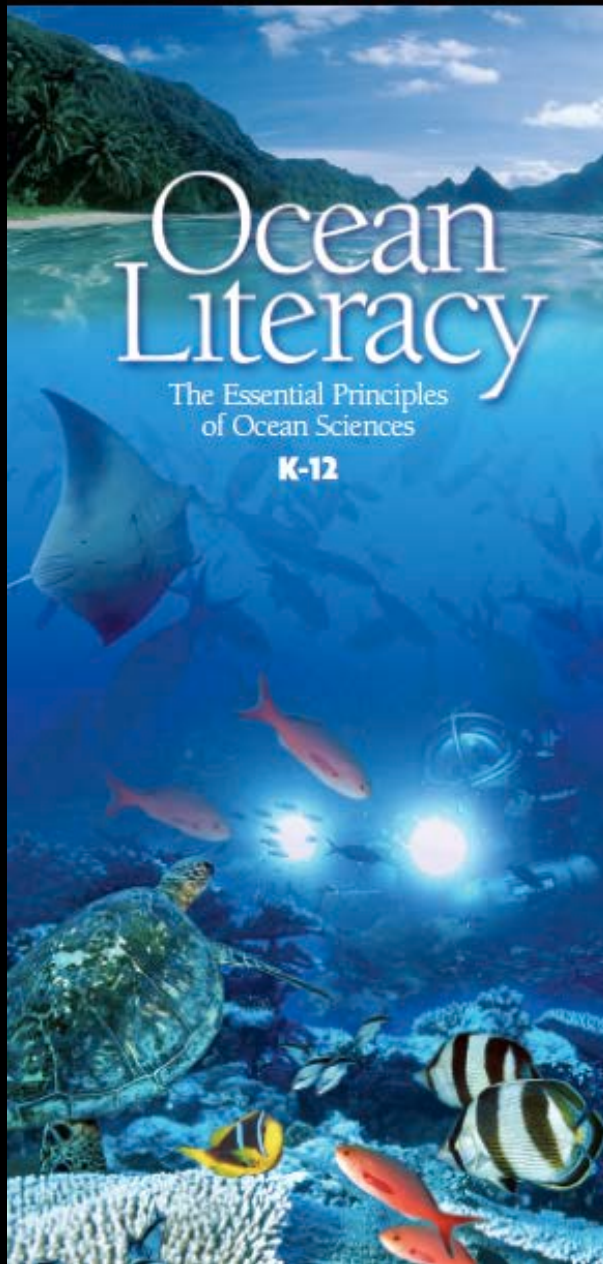
EDUCATION STRATEGIC PLAN 2010-2020



Vision:
**An ocean-literate public
making informed
environmental decisions**

Mission:
**To inspire ocean and
climate literacy and
conservation through
national marine
sanctuaries**

AN OCEAN-ORIENTED APPROACH TO
TEACHING SCIENCE STANDARDS



Climate Literacy

The Essential Principles
of Climate Sciences

A Guide for Individuals and Communities



<http://oceanservice.noaa.gov/education/literacy.html>

EDUCATION



*National Marine Sanctuaries are
Living Classrooms where People can
See, Touch, and Learn
about the Nation's Great Lakes
and Ocean Environments.*



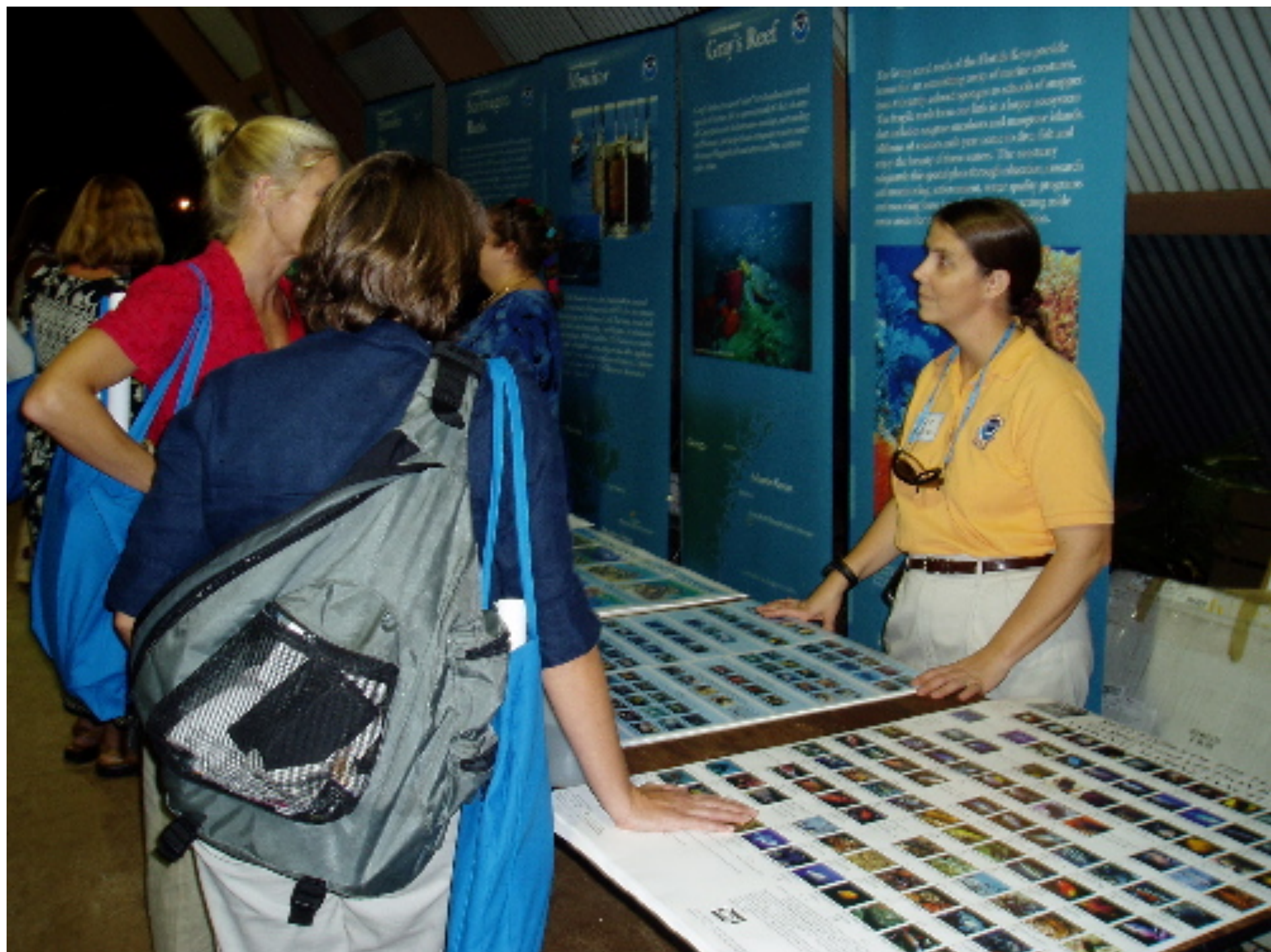
Photo: Kacie Jean
Photography





Photo courtesy of the Marine Science Institute at UCSB









EDUCATION

Enhancing public awareness, understanding, and appreciation of the marine environment

LEARN

[Education](#)

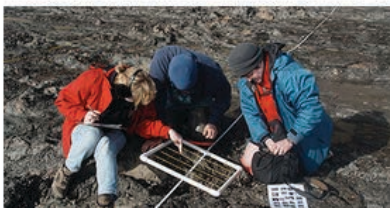
[Teachers](#)

[Students](#)

[Games and Activities](#)

[Sanctuary History](#)

[Frequently Asked Questions](#)



FOR TEACHERS

The NOAA Office of National Marine Sanctuaries aims to provide teachers with resources and training to support ocean literacy in America's classrooms.



FOR STUDENTS

National marine sanctuaries are living classrooms that can be explored in person or through interactive digital labs and activities.

[Marine Careers & Opportunities](#)

<http://sanctuaries.noaa.gov/education>



Lesson Plan

Exploring National Marine Sanctuaries



Grade Level

- 7-8
Life Science / Earth Science

Timeframe

- 20 minutes for teacher to introduce and two 45-minute class periods for presentations

Materials

- National Marine Sanctuaries Student Project and Further Understanding worksheets (Download at <http://sanctuaries.noaa.gov/education/teachers/features/pexpl ore.html>)
- Each student group will need poster board and materials
- Overhead of national marine sanctuaries map, available at <http://sanctuaries.noaa.gov/education/teachers/features/pexpl ore.html>
- Internet access

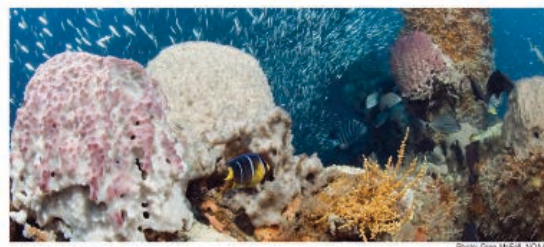


Photo: Greg McFall, NOAA

Activity Summary

In this lesson, students will learn about the national marine sanctuaries found in the Pacific and Atlantic oceans and off the coast of American Samoa. They include breeding and feeding grounds of whales, sea lions, sharks, and sea turtles; significant coral reefs and kelp forest habitats; and the remains of the U.S.S. *Monitor*, a Civil War ironclad that sank off the coast of North Carolina. By learning about the biodiversity, ecological integrity and cultural legacy of these marine sanctuaries, students can place into context what they are learning about the interdependence of living things on our planet.

Learning Objectives

Students will be able to:

- use the internet to research national marine sanctuaries—America's ocean and Great Lakes treasures;
- identify major groups of organisms living in and protected by national marine sanctuaries;
- describe various habitats found in national marine sanctuaries;
- list characteristics that define various national marine sanctuaries, including their similarities and differences;
- identify some of the resource issues threatening the ocean, and specifically our national marine sanctuaries;
- describe human interactions with the ocean and will be able to explain the importance of marine protected areas; and

<http://sanctuaries.noaa.gov/education>



Education



Photo: Michael Richlen

An orca or killer whale breaching in Monterey Bay National Marine Sanctuary off California.



Photo: Carrie Fackler, NOAA

An endangered Hawaiian green sea turtle in the Hawaiian Islands Humpback Whale National Marine Sanctuary.



Photo: G.P. Schmitt, NOAA

A cluster of male ruby brittle stars atop a brain coral in Flower Garden Banks National Marine Sanctuary.

Exploring National Marine Sanctuaries Student Project Worksheet

Name: _____

Your group will create a poster about one of the national marine sanctuaries being protected by the National Oceanic and Atmospheric Administration's (NOAA) Office of National Marine Sanctuaries. For each marine sanctuary, you will find a link with lots of information about that sanctuary. Your poster should address all of the questions contained in the chart below.

The resources you will need can be accessed from the following websites: <http://sanctuaries.noaa.gov/>, <http://marinelife.noaa.gov> and <https://instagram.com/noaasanctuaries/>.

Fill out the chart as you explore the websites to help you gather the information you will need.

What is the name of your national marine sanctuary and where is it located?
What kinds of habitats are found there?

<http://sanctuaries.noaa.gov/education>

<http://sanctuaries.noaa.gov/education/teachers>

Deep-Sea Coral Communities

DEEP Coral Communities Sentinels of a Changing Ocean

Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration

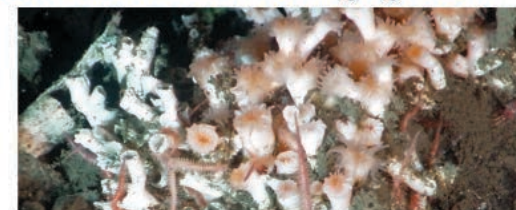


Education

Deep Coral Communities: Sentinels of a Changing Ocean



Black coral with squat lobsters. Photo: NOAA



Spider hard coral polyps. Photo: NOAA

Grade Level
9th-12th

Time Frame
2-5 hours

Materials

- Computer, projector and screen
- Visual materials (all available for download):
 - ◊ Deep-Sea Coral Video
 - ◊ Introduction Training Power-Point
 - ◊ Deep-Sea Coral Community Video
 - ◊ ROV Deployment and Transect Training Video
 - ◊ Sanctuary Transect Videos
 - ◊ Deep-Sea Species ID Guide
- Text documents (all available for download):
 - ◊ Introduction Presentation Talking Points
 - ◊ Outline of Transects
 - ◊ Question Sheet for Students
 - ◊ Teacher Answer Guide
 - ◊ Transect Data Sheet
 - ◊ Abundance Graph Template

Activity Summary

This lesson focuses on the species found in deep-sea coral communities, the threats that face them and what individuals and communities can do help protect them. Students will learn about the five national marine sanctuaries on the West Coast, protected ocean places in Washington and California. They will investigate the unique biology of deep-sea corals and learn to identify the soft corals, hard corals, invertebrates and fish found within these communities. Students will view real scientific transects taken with Remotely Operated Vehicles (ROVs), while recording data on the presence of specified species. They will then graph and analyze their data to evaluate the composition of deep-sea coral communities according to habitat type, depth and temperature.

Learning Objectives

Students will be able to:

- Describe the physical and biological components of the deep sea in the five national marine sanctuaries on the West Coast;
- Experience the challenges associated with identifying species and recording data taken with ROVs;
- Explain how scientists analyze data by using species diversity and abundance from recorded video;
- Explain the importance of characterizing habitat and be able to describe the various habitat types found in deep-sea coral communities;
- Understand the human-caused threats that face deep-sea coral communities;
- Explain actions that individuals and communities can take to protect these special places

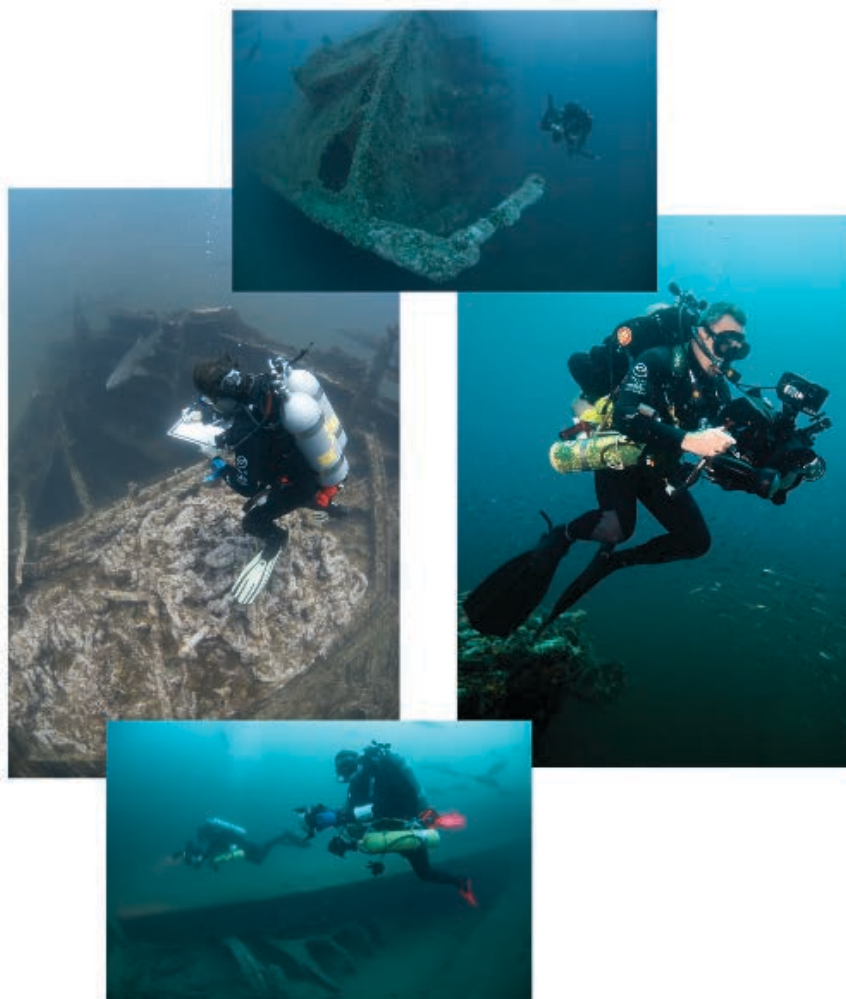
<http://sanctuaries.noaa.gov/education>



MARITIME ARCHAEOLOGY

Discovering and Exploring Shipwrecks

Educational Product	
Educators	Grades 6-12



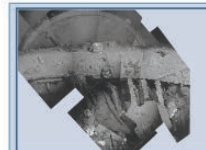
<http://monitor.noaa.gov>

Maritime Archaeology Curriculum and



Education

Putting the Pieces Together: Shipwreck Photomosaics



Photomosaic of the Monitor's turret,
Courtesy NOAA

Grade Level

- 4-6

Timeframe

- 1 hour or less

Materials

Photomosaic copy, scissors, tape

Key Words

Maritime Archaeologist,
Photomosaic, Site Plan, ROV

Activity Summary

This lesson focuses on how
archaeologists document and
survey a shipwreck.

Learning Objectives

To recognize the importance of
understanding the science of
archaeology

National Standards:

Science K-4: Science Inquiry, Science
and Technology, and Science as a
Human Endeavor

Background Information

How do maritime archaeologists study shipwreck sites? One way is for SCUBA divers to dive down to the wreck to observe and record what they see. When archaeologists study a site, they carefully document the shipwreck and its artifacts. That means they take many measurements, make drawings, and take pictures and video of the site.

When archaeologists make a carefully measured drawing, it is called a site plan. If archaeologists piece together the video or pictures from a shipwreck site, they create a photomosaic. Photomosaics are very useful in studying shipwreck sites, because archaeologists can see exactly what the wreck looks like on the bottom of the ocean or lake.

Sometimes when a shipwreck site, such as the *Monitor*, is very deep water and archaeologists cannot spend a long time underwater on the site, they use remotely operated vehicles (ROVs) to take pictures and video for them. ROVs are a useful way to document a shipwreck site because they do not need air like SCUBA divers, so they can stay on the bottom for a very long time.

In 1974, National Geographic and the *Monitor* National Marine Sanctuary created a complete photomosaic of the wreck of the USS *Monitor*. Photos of small sections of the sunken ironclad were joined together to form a detailed image of the entire wreck site. The task of fitting all the images together was a difficult and lengthy process, but the product has provided invaluable information for the scientists and managers that study the site.

From the early 1990s to 2002, archaeologists recovered numerous artifacts from the *Monitor*, including the steam engine, propeller, cannons and its famous rotating gun turret. With all the changes to the site, it was imperative that an updated photomosaic be created to document the changes and status of the wreck site. In the summer 2006, the MNMS worked with the University of Rhode Island and the Institute for Exploration to create a new partial photomosaic of the *Monitor*.

<http://sanctuaries.noaa.gov/education>

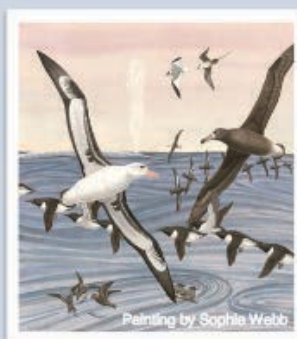
Winged Ambassadors



Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration
in collaboration with Oikonas Ecosystem Knowledge



Education



Grade Level

- 6-8, with options for 9-12

Timeframe

- Two 45-minute class periods

Materials

- Meter sticks, rulers or tape measures
- Student worksheets
- Lesson 1 Presentation

Key Words

- Seabird
- Albatross
- Adaptation
- Life Cycle
- Food Web
- Microbes

WINGED AMBASSADORS

OCEAN LITERACY THROUGH THE EYES OF ALBATROSS



Lesson 1: Introduction to Seabirds

Activity Summary

This lesson serves as an introduction to seabirds, particularly albatross. Spending their entire lives at sea, these amazing birds have many adaptations that allow them to live away from land. Their bodies are both similar to and different from those of humans, making them an interesting way for students to consider anatomy and other life functions. Through the art and photography of Sophie Webb and others and maps displaying real scientific data, students will learn about the unique life history and adaptations of albatross. This foundational understanding will prepare them to study the movements and habitats of these birds in the following lessons.

Learning Objectives

Students will be able to:

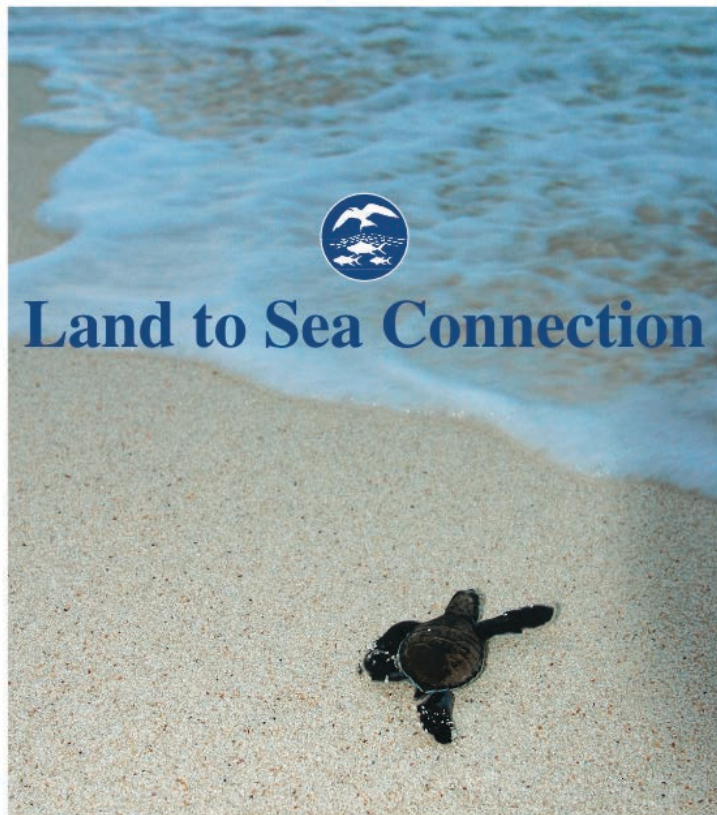
- Illustrate the life cycles of the albatross.
- Give examples of adaptations that allow seabirds to make a living at sea and fly thousands of miles.
- Compare the bodies of albatross and humans.
- Analyze a sample albatross food chain and explain how food chains depict the transfer of energy in ecosystems.

Outline

Engage – Introduction to Seabirds
Explore – Wingspan Activity
Explain – Life Cycle & Adaptations
Elaborate – Marine Food Webs
Evaluate – Albatross Adaptations



Navigating Change



Pōhai ka manu maluna, he i'a ko lalo.
When the birds circle above, there are fish below.
—Mary Kawena Pukui, 'Ōlelo No'eau 2667



Navigating Change Land to Sea Connection 67



Photo by Polynesian Voyaging Society

Nānā ka maka; hana ka lima.
Observe with the eyes; work with the hands.
Just watching isn't enough. Pitch in and help!
—Mary Kawena Pukui, 'Ōlelo No'eau 2267

Navigating Change Human Impact

Education

Marine Osteoporosis



Grade Level

- 5th - 8th

Timeframe

- 2- 45 minute lessons
- Observation time - 3 hours
- *Experiment 1:* Students will record observations every 30 minutes for 2-3 hours (but can complete other work in between recordings)

Materials

- Computer(s) and projector
- Internet connection
- Acid Test video and worksheet (video available online by clicking <http://www.nrdc.org/oceans/acidification/aboutthefilm.asp>)
- Sanctuary Encyclopedia DVD



Activity Summary

In this lesson students will explore the effects of acidic oceans on certain marine organisms, in the ocean food web, and to humans. Students will conduct a science experiment using the scientific method to see the effects of increased acidity on certain species. They will also investigate the causes for increased ocean acidity and discuss ways to minimize the impact as an individual and as a society.

Learning Objectives

Students will be able to:

- Use the scientific method to hypothesize, test, record, and make conclusion on the effects of acidity on certain marine organisms.



<http://sanctuaries.noaa.gov/education>

Osteoporosis of the Sea

Local species that will not be able to make their shells and grow



Abalone Shell in Vinegar



Fig A: At the start



Fig B: After 1 hour

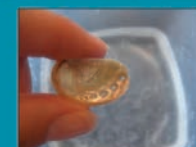


Fig C: After 2 hours



Fig D: After 3 hours



Fig E: After 4 hours



Fig F: After 5 hours



Photo: Daniel Dreifuss, Santa Maria Times

<http://limpets.org>



Photo: Jim Webb, National Geographic Media Camp



Photo: Nicholas Lemoine, France



<http://sanctuaries.noaa.gov/education/>



Photo: Alhassan Omar, Egypt

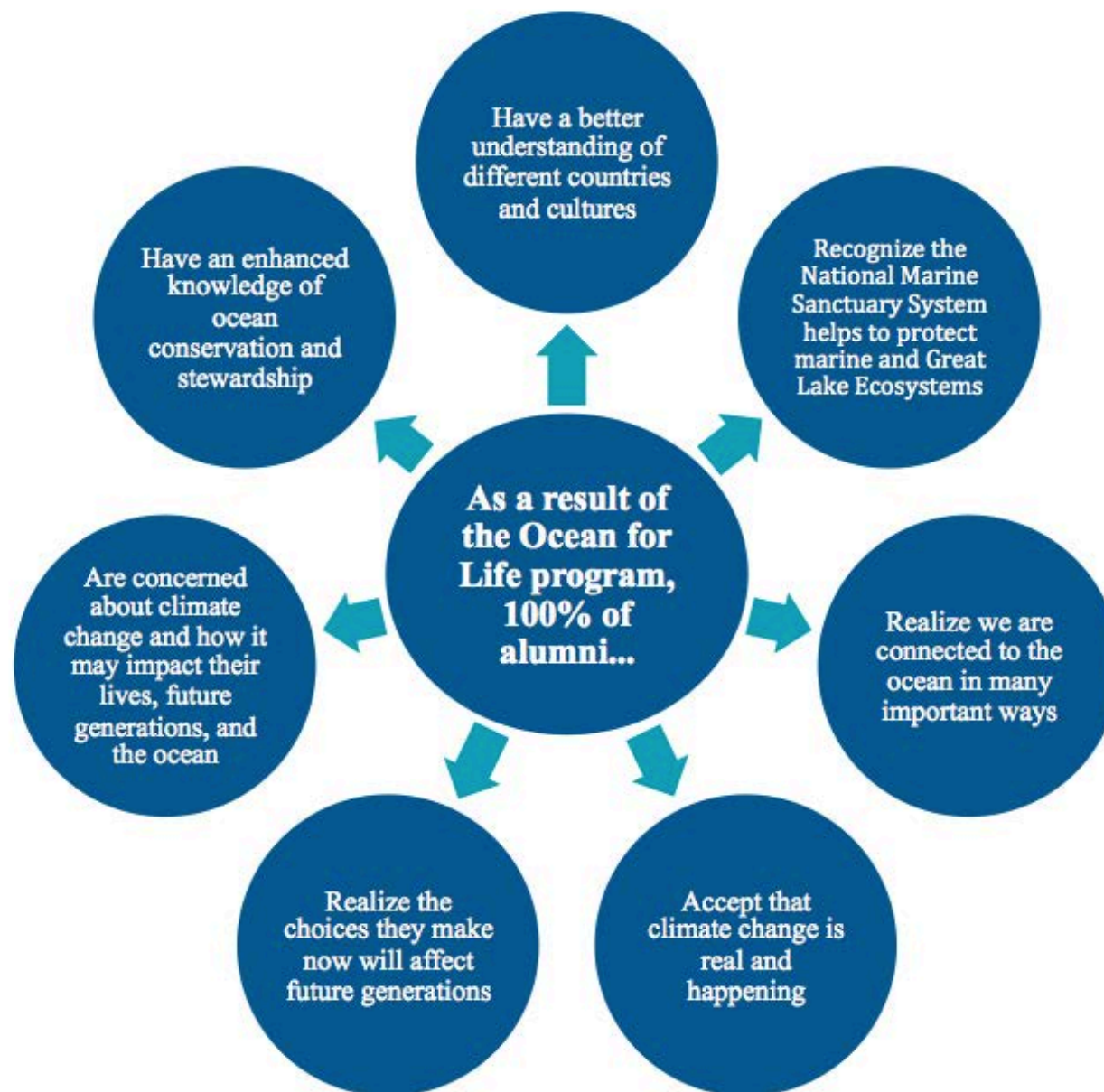


Figure: Surveys were conducted of Ocean for Life alumni approximately one and half years after each of the field studies. This figure represents statements that 100% of the respondents agreed they learned as a result of Ocean for Life.



ROVs at work in National Marine Sanctuaries

America's Underwater Treasures



sanctuaries.noaa.gov

Tools for research, monitoring, exploration and education



Jamie Hall

Excite students with marine technology!

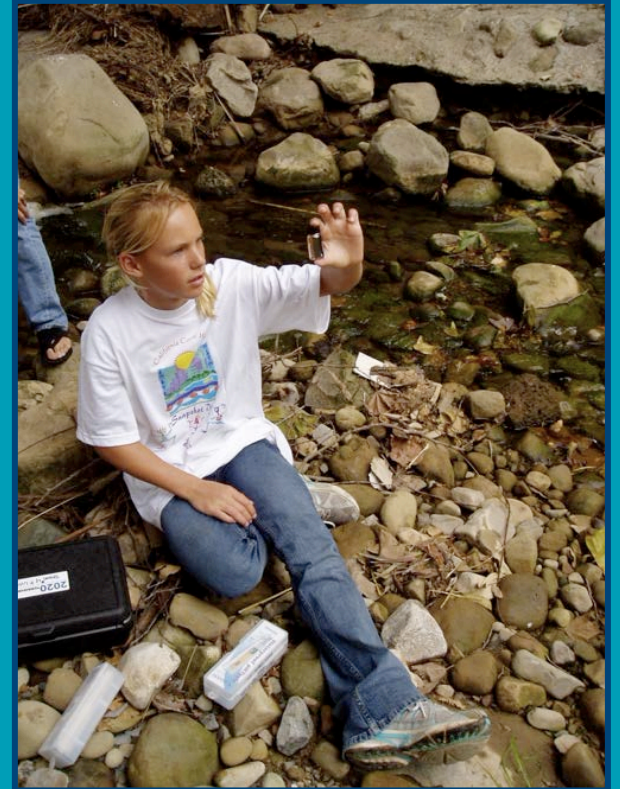


Bay Watershed Education and Training (B-WET) Grants



<http://www.noaa.gov/office-education/bwet>

Ocean Guardian School Grants



[http://sanctuaries.noaa.gov/education/
ocean_guardian](http://sanctuaries.noaa.gov/education/ocean_guardian)



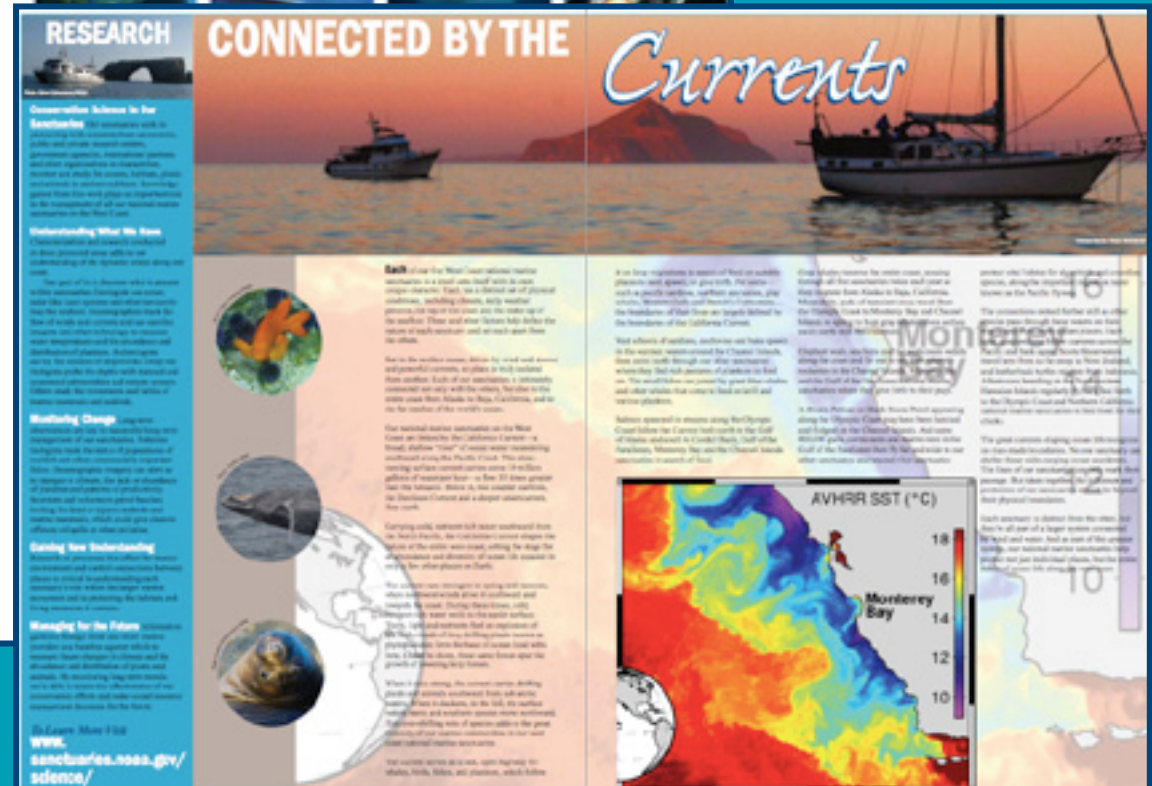
Ocean Guardian School Pathways

- Restoration
- Refuse/Reduce/Reuse/Recycle/Rot
- Marine Debris
- Water Quality Monitoring
- Schoolyard Habitat/Gardens
- Energy & Ocean Health

Ocean Guardian School MEASURABLE DATA	2014-2015	2010-2015
Grant amounts	\$102,727.00	\$544,315.00
# of participating schools	33	71
# of students directly participated in projects	7,865	30,043
Pounds of trash removed from school and/or community sites	3,653	119,032
# of recycling bins installed on school campus	138	648
# of compost bins installed on school campus	37	340
Pounds of compost created from school food waste	-	1,387
Pounds of reused clam and oyster shells	-	6,000
Pounds of e-waste recycled	-	5,131
# of reusable bags distributed or purchased to replace single use bags	1,796	7,695
# of reusable bottles distributed or purchased to replace single-use bottles	2,168	8,312
# of single use plastic bottles not used due to use of reusables at hydration station	24,250	58,053
Square feet of non-natives removed from school or community sites	13,685	157,542
Square feet of turf removed from school or community sites	4,099	8,296
Linear feet of bank stabilization on school or community sites	510	770
# of native or fruit trees planted at school or community sites	760	2,227
# of native perennials planted at school or community sites	7,215	24,491
# of rain barrels installed on school campus	5	34
Gallons of water reclaimed on school grounds from use of water catchment system	60	3,610
# of storm drains labeled in community locations	-	63
# of wildlife structures installed on school or community locations	35	79
# of nurdles removed from coastal areas	-	9,767
Energy Reduction kwh	125	186,368
Energy smart power strips installed in classrooms	30	30
# of official bike to school days	12	12

National Marine Sanctuaries of the West Coast

Field Guide



<http://sanctuaries.noaa.gov/education>

NATIONAL MARINE SANCTUARIES™ CHANNEL ISLANDS

MAMMALS FISHES BIRDS INVERTEBRATES PLANTS REPTILES

CHANNEL ISLANDS

ENCYCLOPEDIA OF THE SANCTUARY

Introduction

Channel Islands National Marine Sanctuary is home to a rich and diverse community of marine life. The shoreline topography and currents in this region facilitate mixing of cool, nutrient rich waters from the north with warmer waters from the south, creating a biologic transition zone that brims with life. The purpose of the "Encyclopedia of the Sanctuary" project is to provide you with the essential information about the marine species found in each of the 14 national marine sanctuaries. The species cards are characterized by quick facts, photographs, and video glimpses into the marine world. The 100 species selected for inclusion in the "Encyclopedia of the Sanctuary" represent species that are both economically and ecologically important. We hope you find this to be a valuable resource and visit often. Your feedback is welcomed.




Photo by Kathy deWet-Olsson

MAMMALS FISHES BIRDS INVERTEBRATES PLANTS REPTILES

NATIONAL MARINE SANCTUARIES™ GRAY'S REEF


MAMMALS FISHES BIRDS INVERTEBRATES PLANTS REPTILES

GRAY'S REEF

ENCYCLOPEDIA OF THE SANCTUARY

Welcome

Gray's Reef National Marine Sanctuary is one of the largest nearshore sandstone reefs in the southeastern United States. The series of rock ledges and sand expanses has produced a complex habitat of caves, burrows, troughs, and overhangs that provide a solid base for the abundant sessile invertebrates to attach and grow. This topography supports an unusual assemblage of temperate and tropical marine flora and fauna. The reef attracts numerous species of benthic and pelagic fish. Since Gray's Reef lies in a transition area between temperate and tropical waters, reef fish population composition changes seasonally. The 100 species selected for inclusion in the Encyclopedia project represent species that are both economically and ecologically important. We hope you find this to be a valuable resource and visit often.



Select from the following groups to learn more.

MAMMALS FISH BIRDS INVERTEBRATES PLANTS REPTILES

Marine Life of National Marine Sanctuaries

NATIONAL MARINE SANCTUARIES™ NORTHWESTERN HAWAIIAN ISLANDS

MAMMALS FISH BIRDS INVERTEBRATES PLANTS REPTILES

Northwestern Hawaiian Islands

Coral Reef Ecosystem Reserve

Welcome

Dozens of tiny islands, atolls and shoals, spanning more than 1,200 miles of the world's largest ocean, are slowly, quietly slipping into the sea, destined to become seamounts. Hundreds of miles north of Kauai, places like Nihoa, Laysan, Pearl and Hermes and Kure comprise the little known, rarely visited Northwestern Hawaiian Islands. The living coral reef colonies of the Northwestern Hawaiian Islands are a spectacular underwater landscape covering thousands of square miles and composing the majority of coral reefs in the United States. These reefs are some of the healthiest and most undisturbed coral reefs on the planet. They support an ecosystem that hosts a wide variety of marine life, including fish, birds, and invertebrates. Many of these species are found nowhere else on Earth. This area is meant to provide a place to find more information.



Photo by James Watt

NATIONAL MARINE SANCTUARIES™ MONTEREY BAY

MAMMALS FISHES BIRDS INVERTEBRATES PLANTS REPTILES

Sunflower Star

(*Pycnopodia helianthoides*)

DISTRIBUTION

Alaska to Baja California, more common north of Point Conception

HABITAT

Rock, sand or mud in the subtidal zone to 435 meters

DIET

Urchins, snails, mussels, chitons, crabs, sea urchins, fish, and other sea stars

STATUS

ENDANGERED

QUICK FACT

Though juvenile sunflower stars have only five arms, the adults will exhibit between 20 and 24 arms.

LEARN MORE

Enchanted Learning


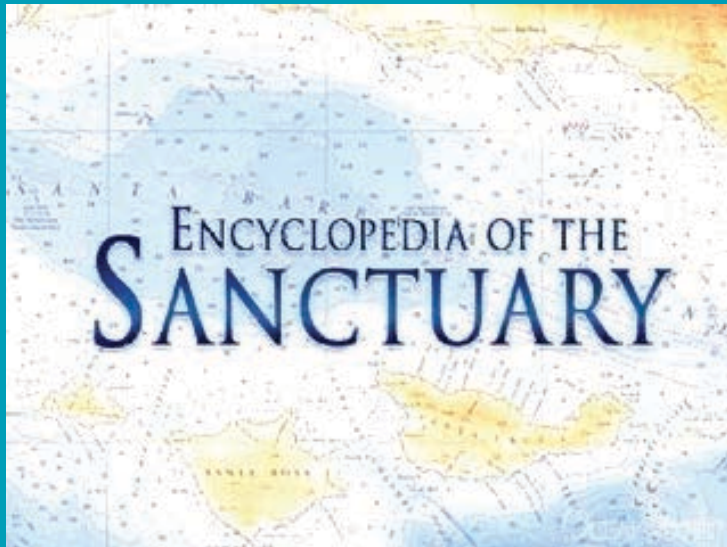




Photo by Kathy deWet-Olsson

The sunflower star is a colorful large flexible sea star. It is estimated that this species can have up to 15,000 tube feet, and it has the ability to put them into action moving much more quickly than other sea stars. Sunflower stars feed on a wide variety of other invertebrates and some fish. Having such a large selection of prey organisms probably helps account for the large size this star can attain. Sunflower stars can have an arm radius of 40 cm.

<http://marinelife.noaa.gov>

Marine Life of National Marine Sanctuaries





NATIONAL MARINE SANCTUARIES™

CHANNEL ISLANDS

MAMMALS FISH BIRDS INVERTEBRATES PLANTS REPTILES

BACK




Photo by CINMS

VIEW MOVIE

California spiny lobsters have been known to grow over 25lbs. They are an important sport and commercial catch in Southern California. However, collecting is limited to the season when the lobster are not reproducing. To mate, the male attaches a packet of sperm on the underside of the female. When the female is ripe with eggs, she will scratch open the packet to fertilize the eggs. Good eyesight, long sensitive antennae, and a spiny carapace help provide protection for this species.

California Spiny Lobster
(*Panulirus interruptus*)

DISTRIBUTION
Central California to Baja California

HABITAT
Intertidal, rocky crevices by day, reef and sand bottoms by night, down to 61m (200ft.)

DIET
Mollusks, small crustaceans, echinoderms, and other benthic invertebrates

STATUS
ENDANGERED STABLE
The status of this species is representative of the populations within the waters of this Sanctuary only, not global populations.

QUICK FACT
Instead of having front claws for protection, California spiny lobsters have spines covering their exoskeleton.

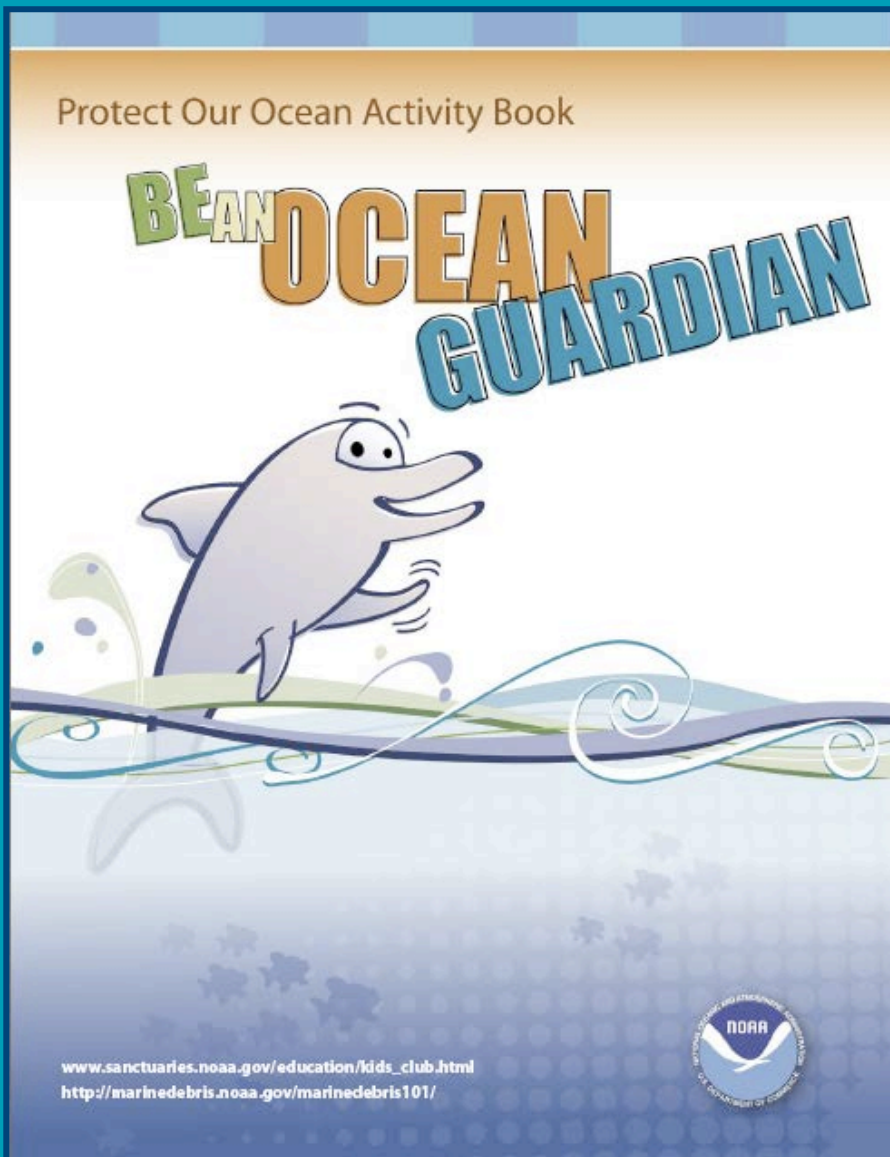
LEARN MORE
- Doheny State Beach Interpretive Association
- UCLA Ocean Discovery Center

<http://marinelife.noaa.gov>



<http://sanctuaries.noaa.gov/education>









Ocean Guardian Activity Book



How Long Will it Take?

It takes just a moment for an item to be carelessly discarded or blown by wind into the ocean, but it can take many, many years for that item to completely decompose. Test your knowledge about decomposition times. Draw a line between each item from left to its corresponding decomposition time (right).

How Many Years Will it Take for These Items to Decompose in the Ocean?

		Undetermined
		600 Years
		450 Years
		200 Years
		50 Years
		1-5 Years
		3 Months
		2-6 Weeks

The answers are on the back cover.

This activity page is an excerpt from "Understanding Marine Debris, Games and Activities for Kids of all Ages."

13 Million Pounds?!



It is estimated that 13 million pounds of litter are put into the ocean each year.* This litter is generated by many sources, from boats and offshore oil rigs on the water to picnickers, fishermen, and beachgoers along the shore. Inside below is a list of objects that have been discarded into our oceans. See if you can find them all!

N B A B I H O S E A T M R G
E G U T A C A N C E W E L L
K L R C R L A R N R N O U A
T O A P K C L G D I A K M S
R V D O A E N O A H W T B S
A E I D W I T T O A A M E B
S H O E H D N G R N L T R O
H S W S (B O T T L E C A P) T
B K I P C T S J B U R G Y T
A F U T D I A P E R D O L L
G C I G A R E T T E U T P E
W A N X O E U O H B A S N E
B F I S H I N G L I N E H M

*1997 U.S. Academy of Science Study

BAIT CONTAINER CIGARETTE CUP DISH FISHING NET FISHING LINE GLOVE HANG NAIL HOSE LUMBER PAINT BRUSH RADIO ROPE RUG SHOE SOCK CAN STRAW TIRE TRASH BAG

This activity page is an excerpt from "Understanding Marine Debris, Games and Activities for Kids of all Ages."

Grades K-3

<http://sanctuaries.noaa.gov/education/pdfs/ogab.pdf>



Ocean Guardian Kids Club

Open to all K-8 students around the United States

Ocean Guardian Pledge

Because I want to help the ocean and the creatures in it, I pledge today to do these things and accept membership into the Ocean Guardian Kids Club:

- Promote ocean awareness and pass on my knowledge to friends and family.
- Clean up the beach, park, or river and leave it better than I found it.
- Reduce my eco-footprint by cutting down on my use and waste.
- Reuse or repurpose products to extend their usable life.
- Recycle, and use products made of recycled materials.
- Conserve natural resources.

Signature:

sanctuaries.noaa.gov/education

http://sanctuaries.noaa.gov/education/kids_club

Ocean Guardian Dive Club

Ocean Guardian



NATIONAL
MARINE
SANCTUARY
FOUNDATION

DIVE CLUB

Level 1

Level 2

Level 3

Level 4

Level 5

Get Data

Teachers

Survey

El Niño

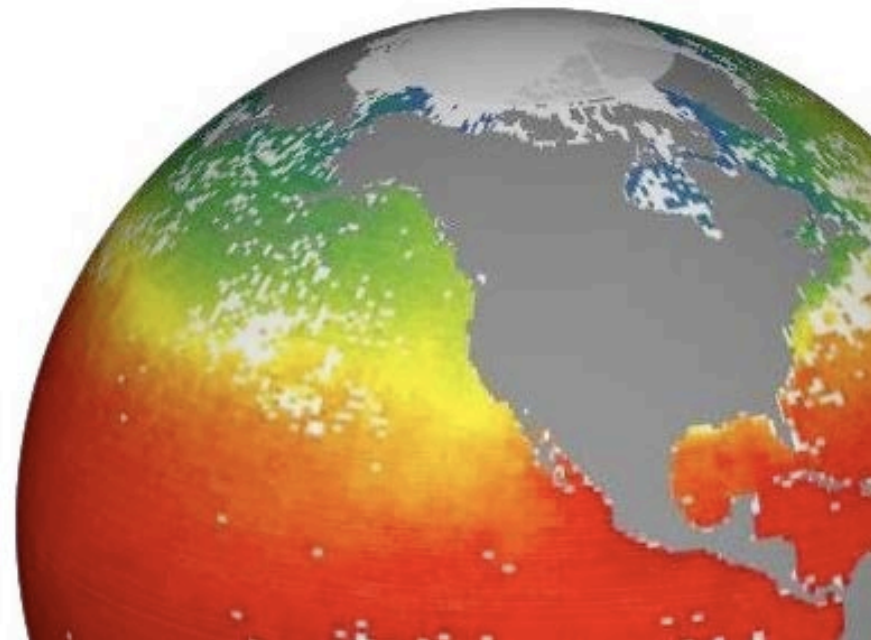
People blame El Niño for all kinds of abnormal weather. But how does El Niño really work?

This Web site features five activities at different levels to help you learn about El Niño using real data.

Teachers: [start here](#) to download the curriculum guide.

Links

- [NOAA El Nino page](#)
- [The Integrated Ocean Observing System \(IOOS\)](#)
- [Science and the Sea: El Niño](#)



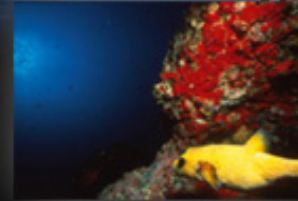


NATIONAL MARINE SANCTUARIES MEDIA LIBRARY



OVERVIEW

The National Marine Sanctuaries Media Library is an online vault where a comprehensive collection of select video clips and still images from all 13 of the National Marine Sanctuaries is securely stored and available for searchable access.



Photos by Dean DePhillipo

QUICKSEARCH

ENTER KEYWORD

SELECT OPTIONS

- ☒ Images for Web
- ☒ Images for Print
- ☒ Video

All Categories ▾

All Subcategories ▾

All Sanctuaries ▾

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PHOTO GALLERIES

SEA LION HIGHLIGHTS



SANCTUARY SUNSETS



HUMAN IMPACTS



FISH PORTRAITS



OCEAN FORESTS



SCENIC BEAUTY



Quicktime is required to view video on this site.

[User login](#) | [Administrative login](#)

<http://sanctuaries.noaa.gov/photos>

Social Media Earth is Blue Campaign



Photo by Bob Talbot



<http://sanctuaries.noaa.gov/earthisblue.html>



NOAA Office of National Marine Sanctuaries
 Page Liked · August 11 ·

Heads up! The whale tagging boat in NOAA's Stellwagen Bank National Marine Sanctuary got a treat when this humpback whale breached right by them. Want to see whale tagging in action? Check out our video at <https://youtu.be/PdARpduN44g>. (Photo: NOAA/taken under NOAA Fisheries Permit #14245) #EarthIsBlue

Like · Comment · Share

Matt McIntosh, Nicole Capps and 2,992 others like this.

3,787 shares

Stephen Young Fantastic shot, I would have been happier with less boat and more Whale, but it is all about right place, right time. Fantastic Shot.
 Like · Reply · 16 · August 11 at 8:05am

NOAA Office of National Marine Sanctuaries Thanks, Stephen! You can find more photos (including more whales!) at <http://sanctuaries.noaa.gov/earthisblue.html>.

Earth is Blue:
 daily photos...
 SANCTUARIES.N...

Like · Reply · 6 · August 11 at 8:19am

View more replies

Write a comment...

Facebook: 2,934 likes, 587,000 people reached with 3800+ shares

Instagram: 684 likes + 23 comments



FREE 24 x 7 LIFE ON THE BEACH

Freeing a GIANT

How do you disentangle a 45-foot-long, 40-ton animal like a humpback whale?

Very carefully...

...And the Hawaiian Islands Large Whale Disentanglement Network has it down to a science.

Each year, numerous whales and other marine animals become entangled in a variety of man-made debris, such as fishing gear, rope and plastic bags. Entanglement can physically harm animals while also impairing their movement. An entangled animal can find it difficult or impossible to feed, and at times the entanglement can be fatal.

That's where the Hawaiian Islands Large Whale Disentanglement Network comes in. These highly trained professionals from Hawaiian Islands Humpback Whale National Marine Sanctuary, working closely with and under authority of NOAA Fisheries' Marine Mammal Health and Stranding Response Program, know how to safely remove creatures like humpback whales from entanglement.

Humpback whales can hold their breath for much longer and swim faster than a human can, and an entangled whale is often stressed or panicked. Trying to free a 45-ton whale that likely doesn't realize rescuers are there to help can be dangerous for the animal and for humans. Rescuers never enter the water to free an entangled whale.

Instead, rescuers grab hold of the entangled item using a grapple hook, then attach a series of buoys to the line. This keeps the whale at the surface and allows it down enough for the disentanglement team, following the whale in a small inflatable boat, to gain access to the animal and the line. It's a long process, however, even with the buoy attached, the inflatable boat may still get towed behind the animal. Humpback whales are strong animals that can move rapidly through the water, so they can be quite dangerous. It is important that the disentanglement team be trained and prepared to respond to the whale's movements.

As the whale goes free, the rescuers work their way closer. Once they're close enough, they use a custom-designed web designed to a long pole to cut away the gear entangling the whale. These knives are specially designed to cut the rope but not the whale. Typically, after several passes, the whale is free!

Once the whale is entangled, the team uses the grapple hook once again to collect and remove the debris from the water so that other animals don't become trapped in the future.

Disentanglement is a problem around the globe, and sanctuary staff can only help a small percentage of entangled whales. Since 2002, Hawaiian Islands Humpback Whale National Marine Sanctuary has received more than 100 confirmed reports of entangled humpbacks, representing at least 70 different animals -- and more entanglements go unreported and unrecorded.

With that in mind, prevention is the ultimate objective by reducing the amount of debris floating gear and other debris in the ocean and making certain that gear more "whale safe." We can reduce the number of whales and other animals that get entangled and hurt or killed. For more information, check out [sanctuaries.noaa.gov/gettingdisentangled](#).

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FREE 24 x 7 LIFE ON THE BEACH

Hands-on Education

National marine sanctuaries are living classrooms where students and teachers can learn about the importance of our marine environments.

A student participant in the Hawaiian Islands Explorer Program. Through hands-on education, students learn about the importance of our marine environments. The student and why they are present in our national marine sanctuaries.

Ocean Guardian program helps a variety of ways to the preservation, restoration of their local watersheds, the world's oceans, and sanctuaries from the National Marine Sanctuaries. Here, a student participant is helped to release a juvenile species and join native species on California beaches.

Sanctuary educator programs work with teachers, student-led summertime camps, and other programs to help students learn about the importance of our marine environments. Here, a student participant is helped to release a juvenile species and join native species on California beaches.

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<http://sanctuaries.noaa.gov/earthisblue.html>

Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration

NATIONAL MARINE SANCTUARY SYSTEM



REACHING FAR & WIDE



EDUCATION PROGRAMS

The National Marine Sanctuary System creates, participates, and/or funds education programs to increase ocean literacy

57,900

LIFE LONG LEARNERS

have become more ocean-literate and are equipped to make informed environmental decision after working with the National Marine Sanctuary System



2,295

EDUCATORS

have learned how to bring the ocean into their classroom with America's underwater treasures.



24,555

STUDENTS

students have become ocean literate through National Marine Sanctuary education programs





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Email: claire.fackler@noaa.gov

<http://sanctuaries.noaa.gov/education>