

# Education and Outreach



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Education and Outreach Coordinator

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**Published 3 web stories** for Office of National Marine Sanctuaries (on-line articles):

1. *Lost But Not Forgotten: New Profiles added to Monterey Bay National Marine Sanctuary Shipwreck Database* by Michele Roest
2. *Understanding Underwater Noise in Monterey Bay National Marine Sanctuary* by Lisa Uttal
3. *Shedding Light: Saving Deep-Sea Coral Communities* by Marisa Ferreira

# New Exploration Center exhibits:

### The Problem with Plastic El problema con el plástico

**Plastic is forever**  
Scientists estimate that eight million metric tons of plastic enter the ocean each year, equivalent to emptying a garbage truck full of plastic into the ocean per minute. Most of it enters through coastal watersheds. Once in the ocean, plastic never goes away. Evergreen plastic items like bottles, caps, bags, and even synthetic clothing fibers break down into smaller pieces and fibers, called microplastics. These tiny particles can be found throughout the world's ocean, at all depths.

**El plástico es para siempre**  
Científicos estiman que ocho millones de toneladas métricas de plástico entran al océano cada año. Esto es igual a un camión de basura lleno de plástico entrando al océano cada minuto. Algunos artículos son botellas, tapas, bolsas y bolsas. Incluso la ropa sintética se rompe en pedacitos más pequeños que se llaman microplásticos. Estas microplásticas pueden ser encontradas en todas las profundidades del océano.

### The Problem with Plastic El problema con el plástico

**Microplastics in the food web**  
Scientists have found concentrations of microplastics in water samples taken from habitats in Monterey Bay National Marine Sanctuary. Japanese quillfish like parrotfish, red crabs, an important food source for many commercial fish, have been found to consume plastic particles. Chert fish-eating, blue head sea anemone that create balloons like mobile structures to capture food particles from the water, concentrate and transport microplastics in deep-sea ecosystems.

**Microplásticos en la red alimentaria**  
Científicos han encontrado concentraciones de microplásticos en muestras de agua tomadas en hábitats de Monterey Bay National Marine Sanctuary. Algunos quillfishes como peces loro, carpas, un importante alimento para muchos peces comerciales, han sido encontrados comiendo partículas de plástico. Los peces que comen algas que crean globos móviles para capturar partículas de alimentos del agua, concentran y transportan microplásticos en ecosistemas de aguas profundas.

### The Problem with Plastic El problema con el plástico

**What can you do?**  
Most plastic enters the ocean from coastal watersheds. Removing plastic from the ocean is costly and difficult. One solution is stopping the most sources. Fixing car tires and their wheels, using car tires with less plastic, and other actions on the land, can help reduce the amount of plastic that enters the ocean. More importantly, reducing the amount of plastic you use at an area and effective way to lessen the amount of plastic in our vital sanctuary ecosystems.

**¿Qué puedes hacer?**  
La mayoría del plástico que entra al océano es por costas cercanas. Quitar el plástico del océano es difícil y costoso. Una solución es parando las fuentes más importantes de plástico que entran al océano. Más importante, reducir la cantidad de plástico que usas en un área y una manera efectiva de disminuir la cantidad de plástico en nuestro ecosistema santuario vital.

### Discovery in the Deep Descubrimiento en lo profundo

**A deep-sea buffet**  
In the dark environment of the deep sea, food can be hard to come by. When a dead whale carcass floats to the ocean floor, it is like a buffet in a deep-sea desert. One whale can be an energy source for sharks, bony fish, crustaceans, octopuses, worms, and bacteria for over a decade. Each time a whale falls to the ocean floor, it provides a feast for the important life activities in the marine ecosystem even after their death.

**El buffet de mar profundo**  
En las profundidades del mar oscuro puede ser muy difícil para un organismo encontrar comida. Cuando una ballena muere, su cuerpo cae y termina en el piso del mar profundo, convirtiéndose y proporcionando una habitación por un tiempo prolongado en un desierto de mar profundo. Una ballena puede ser comida por tiburones, crustáceos, moluscos y bacterias por más de una década. Científicos aprenden un poco más de la importancia de estas ballenas y de que contribuyen a este ambiente marino.

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**Un jardín de peces**  
En el Océano Azul del Sur, significa a bordo del buque de exploración Nautilus descubrir especies nuevas y antiguas de más de 1,000 peces que viven en el fondo del mar profundo cerca del monte submarino llamado Davidson Seamount. Científicos aprenden un poco más de la importancia de estas ballenas y de que contribuyen a este ambiente marino.

### Discovery in the Deep Descubrimiento en lo profundo

**Hydrothermal system**  
In 2016, scientists discovered warm water venting from the seafloor near Davidson Seamount under the deep-sea canyon Murray sea fans. This phenomenon is likely due to fresh seawater passing through the porous rocks of Davidson Seamount and then traveling laterally beneath the seafloor, where the cold water is gradually warmed by the Earth's heat and released to remote seafloor vents. This was a new scientific discovery in the seafloor vents.

**Sistema hidrotermal**  
En el 2016, científicos descubrieron agua caliente escapando del piso cercano del monte submarino Davidson, donde se encuentran los ventiladores de Murray sea fans. Este fenómeno es probablemente provocado por movimiento de agua fría que pasa por los poros de las rocas de Davidson Seamount and then traveling lateral beneath the seafloor, where the cold water is gradually warmed by the Earth's heat and released to remote seafloor vents. Este fue una nueva descubrimiento para este entorno extremo.

## Microplastics in the Ocean

## Discovery in the Deep

## Short Film added:

OFFICIAL SELECTION  
International Ocean Film Festival  
2021

SHORT AWARD  
OCEAN  
2021

# DISCOVER WONDER THE OCTOPUS GARDEN

INTERNATIONAL OCEAN FILM FESTIVAL  
VIRTUAL FILM FESTIVAL  
APRIL 15 - MAY 2, 2021  
www.intoceanfilmfest.org

Writer | Director | Editor John Dutton  
Producers Andrew DeVogler & Chad King  
National Marine Sanctuary Foundation  
Narrator: Chad King  
Music by Valentin Milan Grbic

# Updating sanctuary signs:

*Completed:*

- 1) Inventory analysis of 60 wayside signs from San Simeon to Año Nuevo
- 2) 5-year recapitalization plan, PAC request

*In development:*

- 1) New MOAs with partners
- 2) FY21 replacement priorities



# Partners: Monterey Bay National Marine Sanctuary Foundation



## Monterey Bay National Marine Sanctuary

The Monterey Bay National Marine Sanctuary was created in 1992 to help protect the diversity of marine life and ocean ecosystems along the central California coast. This is one of thirteen marine sanctuaries nationwide—coastal and underwater counterparts to our national parks.

Sanctuary regulations are designed to protect marine resources while keeping the waters open to human use. Fishing, boating, and diving are encouraged, while harmful activities such as ocean dumping and oil drilling are prohibited.

Protecting the Sanctuary also means reducing land-based pollution that flows into the sea through rivers and storm drains. Together, we can protect our national treasures.

**Push Button**  
←  
Oprima el botón

El Monterey Bay National Marine Sanctuary (Parque Marino Nacional de la Bahía de Monterey) fue establecido en 1992 para ayudar a proteger la diversidad de la vida marina y los ecosistemas costeros a lo largo de la costa central de California. Este es uno de trece santuarios marinos en todo el país—son los homólogos costeros y submarinos de nuestros parques nacionales.

Las regulaciones de la santuario se diseñaron para proteger los recursos marinos mientras mantenemos los aguas marinas para su disfrute. Se fomenta la pesca, el uso de embarcaciones, y el buceo, pero se prohíben las actividades perjudiciales como el vertido y perforación petrolera.

La protección del santuario también significa la reducción de contaminación terrestre en la zona que corre hacia el mar a través de los ríos y alcantarillado pluviales. Juntos, podemos proteger nuestros tesoros nacionales.

MONTEREY BAY NATIONAL MARINE SANCTUARY



WELCOME TO MARRIOTT BAY NATIONAL LIBRARY STATION  
A MEMORIAL TO THE MARINE MAMMALS OF MARRIOTT BAY



Map of the Marriott Bay National Library Station area showing the coastline and a red star marking a specific location.

SAVE OUR SHORES

EXIT

### California is a Salmonscape

Salmon connect the land and sea

#### Salmon Life Cycle



### The Connection Between Salmon and People

Salmon are important for many Californians

Studying Salmon	Catching Salmon
<p>Scientists study salmon to learn more about their life cycle and how they interact with their environment. This helps us understand how to best manage salmon populations.</p>	<p>Salmon are an important part of California's economy and culture. Many people enjoy catching and eating salmon.</p>
<p>Salmon spend most of their lives in the ocean, but they return to fresh water to spawn. This makes them anadromous fish.</p>	<p>Salmon are a popular food source for many people. They are often sold as fresh fish, frozen fillets, or canned.</p>
<p>Salmon hatcheries raise young salmon in controlled environments. This helps ensure that there are enough salmon to support the industry.</p>	<p>Salmon are sold at markets and grocery stores. They are often sold as fresh fish, frozen fillets, or canned.</p>

### California Salmon and You

We can all help salmon in our daily lives

#### Use Water Wisely

On average, every Californian uses 181 gallons of water each day. Conserving water is the most important way we can help salmon. Here's what you can do.

- The average American family wastes about 100 loads of laundry a year. An old machine takes up to 40 gallons of water per load, new water-efficient machines use only 14-20 gallons. Remember to only do full loads of laundry.
- 10% of hot water goes down the drain. Show heads can use 2 gallons per flush. Use a bucket and foot valve, which averages 1.6 gallons per flush.
- Turn off the water while brushing your teeth. This change can save 5 gallons of water per brushing.
- We recycle about 2.5 gallons per minute. Use a 5-gallon bucket and other devices to collect and reuse only one 5.5 gallons. No leaks, no water!

Pollution from roads and roadsides gets into streams and the ocean where it can harm salmon. At home, dispose of used motor oil, antifreeze, paint, and other hazardous materials.

Today's climate change is altering the rivers and streams that salmon live in. You can be part of the solution by reducing your carbon footprint.

When choosing which salmon to eat in a restaurant or when buying salmon at a supermarket, choose local, sustainably caught salmon.

#### It's Their Water Too

Logos for NOAA, NPS, and other organizations.

Partners: NMFS, NMSF, Artist Ray Troll

# Conserving California Salmonscape

Salmon forests, people depend on healthy waters



Salmon forests, people depend on healthy waters

Salmon forests, people depend on healthy waters



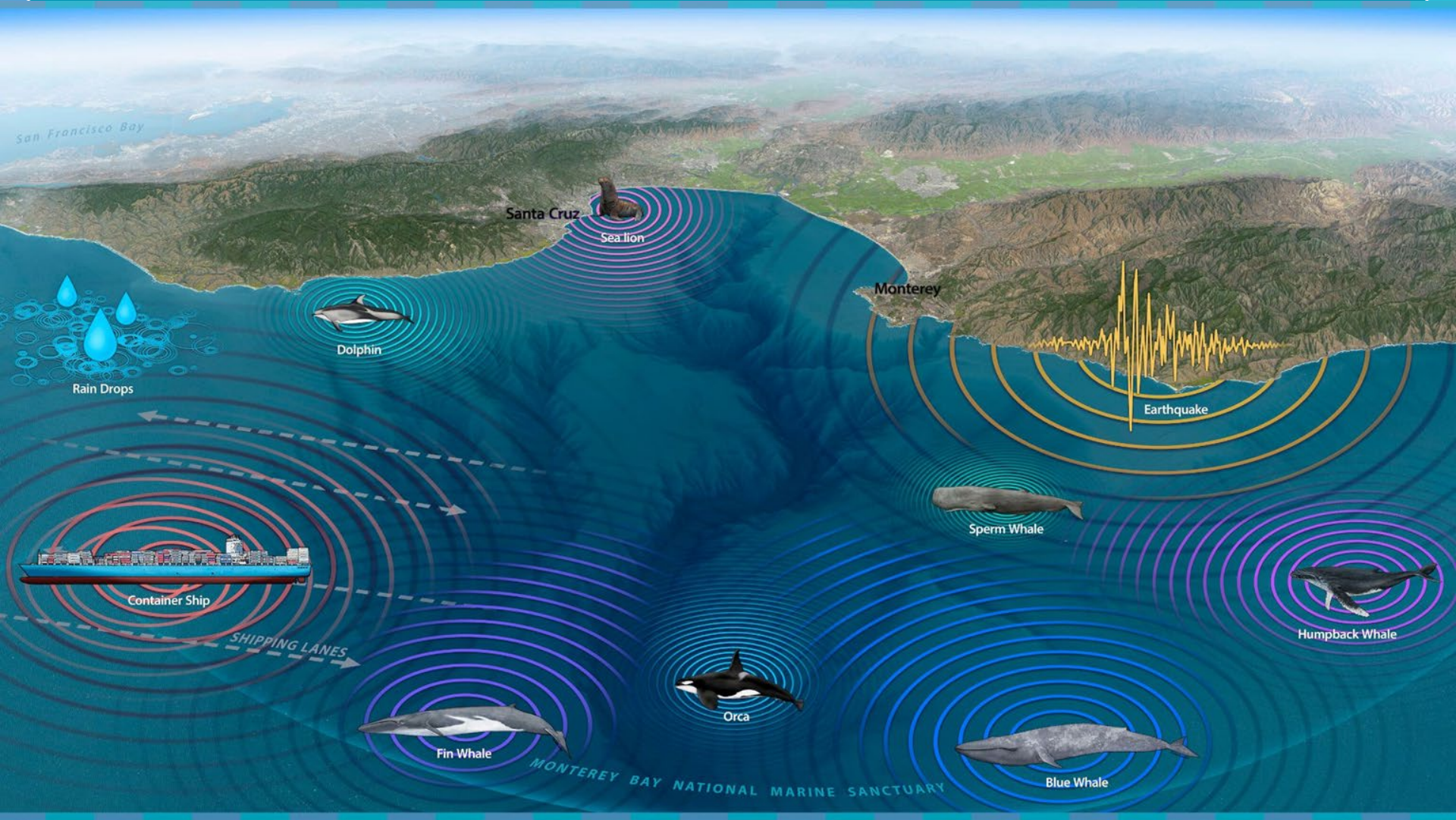
## California Salmonscape Stories

- Yellow Dot**  
Yellow Dot
- Red Dot**  
Red Dot
- Blue Dot**  
Blue Dot
- Green Dot**  
Green Dot









The 'Blue Economy' encourages better and sustainable stewardship of our ocean or 'blue' resources.

- 1.Economic – Businesses
- 2.Socio-cultural – Communities
- 3.Environment –Resource Protection

As of 2020, the Department of Commerce-led Tourism Policy Council aims to promote community-based recreation and advance job and volunteer opportunities related to outdoor activities.

## ONMS Strategic Plan:

(Goal 1, Obj 1.3). Expanding responsible-use recognition (“eco-certification”) programs across the National Marine Sanctuary System is an ONMS priority, as reflected in the 2017-2022 strategic plan.

(Goal 3, Obj 3.2) Increase Support for Sanctuaries

Objective 3.2: Increase Sanctuary Engagement

Prioritize increases in public participation in Get Into Your Sanctuary (GIYS) initiatives.

**Note:** Further engage with recreational fishermen, in conjunction with NOAA Fisheries, to expand sustainable recreational activities in sanctuaries.

## FY20 ONMS Business Recognition Program Activities

1. Mission
2. Program Name
3. Logo and use of logo with businesses
4. Business Recognition Program frameworks
5. Evaluations/Assessment
6. Marketing
7. Business Model

### Draft Mission:

Promote stewardship, awareness, and responsible enjoyment of our national marine sanctuaries and marine national monuments in partnership with recreation, tourism, hospitality, and cultural groups.

**BUSINESS RECOGNITION PROGRAM**

**EDUCATION/ENGAGEMENT**

**RESOURCE  
PROTECTION**



Whale Watching



SCUBA



Surfing



Kayaking



Rec Fishing

# Distance Learning Programs



Chelsea, Nick, & Acy!



# Five Program Options:

Protect Your Watershed  



Chelsea Prindle & Lisa Emanuelson  
Monterey Bay National Marine Sanctuary



3rd-5th


Dive Into Kelp Forests!  



Acy Wood  
Monterey Bay National Marine Sanctuary



2nd-4th


Plankton Exploration!  



Chelsea Prindle  
Monterey Bay National Marine Sanctuary



5th-6th


Deep Sea Discovery!  



Chelsea Prindle & Chad King  
Monterey Bay National Marine Sanctuary

3rd-5th

Sounds in the Sanctuary  



Chelsea Prindle  
Monterey Bay National Marine Sanctuary

3rd-5th

## For each of the 5 program topics teachers can select:

- **Pre-Recorded Program**  
15-20 minute topic overview video presentation FREE
- **Live Virtual Interaction**  
45 minute LIVE presentation with student engagement and interaction. Cost - \$65 per Live Broadcast
- Both programs include supplemental activities for teachers to complete with their class

Participants in the meeting include: You, Xenia Sherwood, Elizabeth Espinoza Mendez, Melissa Shaw, Adriana Moreno, Nicholas Ingram - NOAA Affi..., Giovanni Perez-Carlos, Cirely Ornelas-Placencia, Noah Figueroa, Jonah Figueroa, Maximiliano Martinez Molina, Jada Allshouse, Marbin Bautista, Gianna Bosso, Jesse Rocha, Yaretzi Chavez Zamora, Emma Rocha Fernandez, Meztlil Medrano, Ibrahim Sabla, Melody Siqueiros, Aaron Rosales, Lianni Fernandez, Sophia Cerna-Fernandez, Kaiden Gowen, Hunter Clary, and Ari Martin.

Meeting details

(26)

Adriana Moreno 11:05 AM  
It was a seal!

Ibrahim Sabla 11:05 AM  
i think is was a turtle

Adriana Moreno 11:05 AM  
Seal!

Xenia Sherwood 11:05 AM  
ya

Adriana Moreno 11:06 AM  
SEAL!

Xenia Sherwood 11:06 AM  
guys we should watch one episode of octonouts in lunch one timwe

Adriana Moreno 11:06 AM  
yes!

i used yto watch it when i was little

also magic school bus

Xenia Sherwood 11:06 AM  
have you seen it

came

Send a message to everyone

Meeting details ^



## **2020-2021 School Year:**

- 107 programs, 2800 students reached
- 8 classes completed entire 5 part series
- Partnered with multiple non-profits to deliver programs (Coastal Watershed Council, One Cool Earth)

## **Future:**

- Would like to continue to offer distance learning programs (potentially from the field).
- Integrate virtual engagements into our field trip program.

## Watershed

One Cool Earth Partnership



Anastasyia Ruttschow

# QUESTIONS?

