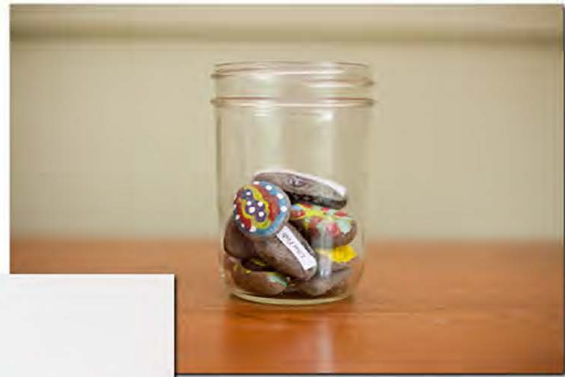




**Outreach Materials Based On**

# **The Marvelous Musical Report of the Marine National Monuments**



## The Marine National Monuments Song

In *The Marvelous Musical Report*, Louis surprises his boss by delivering his official report as a song with his teammates. The song highlights all four Marine National Monuments, and it is accompanied by a lively mixture of ukelele, upright bass, maracas and upbeat vocals. And it is catchy! Here is your chance to sing along, with all the lyrics.



### Marine National Monuments Song Lyrics

By Laura Sams and Robert Sams

Papahānaumokuākea,  
Where millions of birds do stay and  
Nest here with sea turtles too, with more than 7000 species underwater it's true  
In Hawai'i!  
Northwest Hawai'i!  
Sacred places galore,  
historical shipwrecks and planes and more,  
Where culture and nature mix,  
With Hawaiian monk seals and albatross chicks,  
Some of the most incredible reefs in the world!

Marine national monuments out in the blue,  
Special places that I never knew  
Were filled with extraordinary things  
Marine national monuments  
Were set aside,  
Protected places of Pacific pride  
Makes my heart sing.

The Rose Atoll  
So incredibly beautiful  
Supports a whole lot of life  
From underwater to high up in the sky  
And the sea birds!  
So many sea birds!  
Though the islands are small,  
As a place to nest and rest it's one of the best of all





Sea turtles nest here too,  
Pink reefs around blue lagoons,  
One of the most pristine ecosystems in the world!

Marine national monuments out in the blue,  
Special places that I never knew  
Were filled with extraordinary things  
Marine national monuments  
Were set aside,  
Protected places of Pacific pride  
Makes my heart sing.

The Marianas Trench  
Is surprising, with underwater mountains rising  
And erupting below, With deep volcanic trenches where hot magma flows  
And hydrothermal vents,  
Scalding hot hydrothermal vents,  
Where life can survive,  
Without sunlight these creatures thrive.  
Species never seen before,  
And still there's so much unexplored,  
Young volcanic reefs down to the deepest trench in the world!

Scientists are working hard to share what they have found,  
Tow boarding past the reefs to count the different fish around  
Sampling the coral shows the history of a hundred years.  
Taking water samples, recording sounds with underwater ears.

Pacific Remote Islands,  
are some of the most thriving ecosystems we've found,  
with fish and coral all around.  
And giant Clams! So many giant clams to see,  
and an abundance of sharks  
and coconut crabs that climb up trees.  
Unique and endangered species,  
incredible biodiversity,  
with some of the most incredible reefs in the world!

Marine national monuments out in the blue,  
Special places that I never knew  
Were filled with extraordinary things  
Marine national monuments  
Were set aside,  
Protected places of Pacific pride  
Makes my heart sing.



# Story Stones

## Summary

Students create story stones, featuring a word on one side and an image or design on the other. Then students choose stones from a jar to prompt story ideas for writing or telling stories. Use the stones to help students practice creating good stories, linking different ideas with a beginning, middle and end.

## Materials Needed

Stones, pebbles, or wooden disks (something with two sides -- even nuts, seed pods or pieces of paper);  
Glue; Scissors; Washable paint; Paint brushes  
A jar or bowl to hold the stones; Copies of word lists

## The Activity

Storytelling, from written stories to oral stories to songs, is an important part of cultures around the world, especially cultures of the Pacific Islands. What stories can students imagine about the Marine National Monuments? Have them create their own story stones to give them ideas for stories to share with friends and family. If they reach into a jar and pull out the words “Giant Clam,” “Coconut Crab,” “Hiding” and “Laughing,” what story can they imagine that ties those words together? What if they choose the words “Albatross,” “Scientist,” and “Dancing?”

## Student Directions

1. Choose words from the lists below that you would like to put on your story stones. All the words are inspired by something in the movie: *The Marvelous Musical Report of the Marine National Monuments*. Some words are in English. There are also Chamorro, Samoan and Hawaiian words.
2. Cut out the words carefully and glue each word to one side of a stone. Alternately, you can write the words with a marker or pen on the rock.
3. Turn each stone over to the other side, and decorate the stone with paint. If the word is “White Tern,” what does that inspire you to draw? You can draw the animal, or you can draw a colorful design. Be creative!
4. Let the paint dry.
5. Put your stones into a jar.
6. Close your eyes, reach into the jar, and pull out a few stones. Let those inspire a written or oral story. What happens at the beginning of your story? What happens in the middle of the story that is exciting or unexpected? How does your story end? Share that story with your friends and family!







## Story Stones Word Lists



Albatross



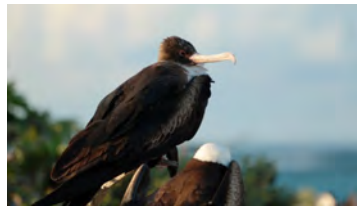
Butterflyfi



Coconut Crab



Coral Reef



Frigate Bird



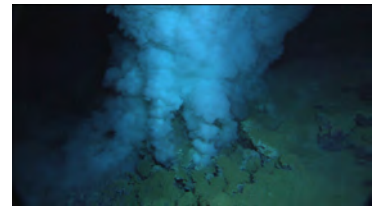
Giant Clam



Goatfis



Green Sea Turtle



Hydrothermal Vent



Masked Booby



Hawaiian Monk Seal



Spotted Eagle Ray



Jacks/Trevally Fish



Fairy Tern



Whitetip Reef Shark





|          |           |                |                          |               |
|----------|-----------|----------------|--------------------------|---------------|
| swimming | nesting   | sampling coral | collecting marine debris | tow boarding  |
| playing  | eating    | hiding         | discovering              | photographing |
| laughing | singing   | playing music  | sharing                  | report        |
| flyin    | scientist | diver          | baby                     | ship          |
| boss     | ukelele   | ship           | maracas                  | anchor        |
| mustache | sunset    | wave           | briefcase                | plane         |

**Chamorro Words with English Translations**

|  |   |
|--|---|
| volcano ..... bütån  | bubble (more like bubbling) ..... bo'bü |
| reef ..... mama'ti   | ocean ..... tåsi                        |
| (reef) crab ..... pånglau i mama'ti                                      | shrimp ..... ü'hang                     |
| sea bird .... palüma'n tåsi  | white (ferry) tern ..... chüngi'        |
| sooty tern ..... girigirak   | albatross- .... lu'au                   |
| white-tailed tropic bird ..... fakpi                                     | frigate bird..... payå'ya'              |
| coral ..... koråling   | shark ..... alü'ü                       |
| conservation, environment-use ethic ..... a'dahi (verb), ina'dahi (noun) |   |

**Samoan Words with English Translation**

|   |  |
|---|--|
| sea .... sami   | red tailed tropicbird .... tava'e'ula        |
| parrotfish .... fug   | giant clam .... faisua                       |
| black noddy .... gogo   | shark .... malie                             |
| coral .... 'amu   | algae (pink coralline algae) ..... 'amu limu |
| sea cucumber .... fugafuga  | island .... motu                             |
| conservation, environmental-use ethic (or word for caring) .... fa'asao ma puipui |  |
| reef .... a'au  |  |







### Hawaiian Words with English Translations

sea bird .... manu kai

island .... moku

albatross .... mōlī

seal .... 'Īlio'holoikaua'ua

ocean .... moana

environment .... kaiapuni

humpback whale .... koholā

crab .... pāpa'i

algae .... limu

sea .... kai

moray eel .... puhi

frigate .... 'iwa (thief)

spotted eagle ray .... hihimanu

caring/conservation ethic .... malama

jack/trevally .... ulua

sea turtle .... honu

shark .... manō

manta ray .... hāhālua

waves .... nalu

underwater mountain .... mauna lalo kai

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### Your Own Word List

Write your own words in whichever language you would like!

Nouns

Verbs

Adjectives



## Marine Debris Instruments

### Summary

Students think about what makes marine debris. They brainstorm ways to prevent trash from reaching the ocean. They also create musical instruments from recycled materials (that could be trash), which they can use to play along with the Marine National Monuments Song featured in the video.

### What is Marine Debris?

According to the U.S. Environmental Protection Agency, Marine debris is “any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes. It may enter directly due to human action, or indirectly when washed out to sea via rivers, streams and storm drains. Marine debris has become one of the most pervasive pollution problems facing the world’s oceans and waterways.”



*Trash found in the stomach of a dead Albatross chick; photo by Cynthia Vanderlip*

According to NOAA’s guide *Turning the Tide on Trash*, “Marine debris includes objects that typically do not naturally occur in the marine environment (i.e., oceans, salt marshes, estuaries, and beaches). The most common materials that make up marine debris are cloth, glass, metal, paper, plastic, rubber, and wood. Another way to classify marine debris is by the type of activity that created the waste item and the associated behaviors that caused the waste to become marine debris.”

### Resources

1. For an incredibly detailed, free educator packed about marine debris, download *Turning the Tide On Trash: A Learning Guide on Marine Debris*. The guide includes 100 pages of comprehensive resources and activities. You will find it at

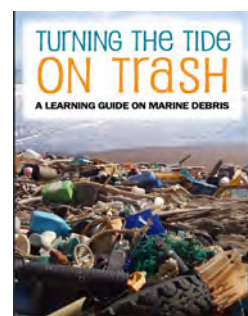
[http://marinedebris.noaa.gov/sites/default/files/urningTideonTrash\\_LoRes\\_Final.pdf](http://marinedebris.noaa.gov/sites/default/files/urningTideonTrash_LoRes_Final.pdf)

2. For information about NOAA’s Marine Debris Program website go to: [www.marinedebris.noaa.gov](http://www.marinedebris.noaa.gov)

3. For an inspirational story about children who created musical instruments from a gigantic landfill in Paragua , watch these two videos:

<https://www.youtube.com/watch?v=CsfOvJEdurk>

<http://newsfeed.time.com/2012/12/11/watch-the-recycled-orchestra-slum-children-create-music-out-of-garbage/>







**Activity**

1. Have students watch *The Marvelous Musical Report of the Marine National Monuments*, especially the middle section when Laura is tangled in marine debris. What items are wrapped around Laura? (Fishing net, plastic bottle, fishing float, foam block, flip flop, yellow plastic deb



2. Read students different official definitions of marine debris Ask students if they have seen trash or debris near bodies of water. How would they define marine debris?

According to *Turning the Tide on Trash*, the “Top Ten Most Frequently Collected Marine Debris Items” are:

Number of Items over 25 years:

|                              |             |
|------------------------------|-------------|
| Cigarettes/Cigarette Filters | 52,907,756  |
| Food Wrappers/Containers     | 14,766,533  |
| Caps, Lids                   | 13,585,425  |
| Cups/Plates/Utensils         | 10,112,038  |
| Beverage Bottles (Plastic)   | 9,549,156   |
| Bags (Plastic)               | 7,825,319   |
| Beverage Bottles (Glass)     | 7,062,199   |
| Beverage Cans                | 6,753,260   |
| Straws/Stirrers              | 6,263,453   |
| Rope                         | 3,251,948   |
| Total                        | 132,077,087 |



*A monk seal near marine debris on the beach of Kure Atoll; photo by Cynthia Vanderlip*

Data collected by volunteers worldwide during the International Coastal Cleanup (1986 – 2010)





3. Have students create three columns on a piece of paper, with these column titles:
  - A) What I think/feel/know about marine debris
  - B) Ways that marine debris affects me
  - C) Ways I can help the marine debris problem
4. Help students fill out the first column by giving them guiding questions. Each student's experiences are unique, so they may have very different answers. What do they know about marine debris? Where have they seen marine debris? What do they know about the ocean's currents carrying marine debris? What do their family or friends think about littering or the marine debris problem? See the chart in this activity for examples.
5. Help students fill out the second column by asking them guiding questions. How does marine debris affect them as individuals? What about their town, community or waterway?
6. Help students fill out the third column. The boys in the video, who picked up marine debris surrounding Laura, were actively doing something to clean up marine debris. Ask students to brainstorm ways they can prevent marine debris or educate others about marine debris. How can they stop trash from getting into the water? Where can they pick up litter? How can they tell family and friends about the problem? How can they reduce the amount of trash and debris in their community?
7. One way to reduce trash is to recycle it! Use materials that could be trash in art projects or in other creative ways. Follow the instructions in this activity to make musical instruments from items that could have been thrown away.
8. Listen to the *Marine National Monuments Song* in the video and play the instruments to add percussion, like the man who plays maracas in the video.







**What I think/know/feel about marine debris**

**Ways that marine debris affects me**

**Ways I can help the marine debris problem**

*Marine debris includes plastic, fishing nets, trash, both intentionally and accidentally put into waterways.*

*I have seen trash on the beach, or on school grounds, or near rivers.*

*I know that streams and rivers connect to the ocean.*

*I know that animals, like sea lions can get fishing nets wrapped around their bodies. I know albatross will sometimes feed their chicks plastic instead of food.*

*I liked watching the boys in the video help Laura get rid of the debris.*

*I saw a friend drop litter on the ground and I didn't like it.*

*I know that the world has one big ocean, so marine debris can travel far.*

*If I drop trash in the water, I know the currents could carry it to another continent.*

*My parents don't think I should litter and have encouraged me to throw trash away.*

*My school recycles to reduce trash.*

*Marine debris is ugly, and it clutters the beach where I walk.*

*I want albatross chicks to live long lives, so it is sad to see a chick eat lots of plastic.*

*I don't want to swim in water with lots of trash. I want to swim in clean water.*

*Sometimes fish get accidentally caught in leftover fishing nets floating in the ocean. When these fish get caught in marine debris and die, they aren't available for people to catch and eat. My family fishes for a living, so we need healthy fish populations*

*I could get hurt by stepping on sharp marine debris on the beach.*

*Fishing nets can get tangled around boat propellers, which can endanger the lives of people on the boats if they are stuck at sea and can't steer well.*

*Use reusable water bottles, instead of disposable plastic bottles.*

*Encourage my school and family to recycle.*

*Use reusable cloth bags instead of plastic bags.*

*Tell my family about marine debris and how it affects the ocean, animals and me.*

*Write a story about marine debris and read it to a friend.*

*Pick up litter when I see it.*

*Join friends to have a beach clean up day.*

*Reuse and recycle materials whenever I can, such as using an aluminum can to make a drum.*

*Write a letter to a local politician, telling them you support clean water and removing marine debris.*

*Encourage your family to produce less trash at home.*





## Recycled Instruments

### *Plastic Bottle Shaker*

1. Find an empty plastic bottle and wash it clean.
2. Decorate the outside of the bottle with paint, paper, markers, etc.
3. Fill the bottle about a third to a half full with items that make sound, such as rice, sand, cereal, buttons, small plastic pieces, etc. Screw the cap on the bottle.
4. Shake the bottle! Experiment with different amounts of material on the inside. Try different shaking techniques.
5. If the soda bottle has ridges, take a stick or a spoon and slide it up and down along the side of the bottle. That works like a guiro, a percussion instrument often used in Latin America.



*Note: Glass jars also make great shakers. Just follow the same basic instructions, but with the jar instead of the bottle.*

### *Tin Can Drum*

1. Clean a tin can, and make sure there are no sharp edges around the can. A tin can with a lid works well, because it can be turned over so the lid is on the ground, with the can's bottom as the playing surface.
2. Decorate the can with paint, markers, stickers, duct tape, etc. If painting, try using masking tape to make straight edges or stencil shapes around the can. Let the paint dry.
3. Grab a stick, a chopstick, spoon, or anything that can be a drumstick. Start playing!







### ***Bottle Cap Tambourine***

1. With a hole puncher or nail, punch holes around the edges of a plastic plate, or a piece of plastic debris.
2. Use a nail to punch holes in the center of bottle caps. Tie a knot at the end of a string, and feed the string through the center of the bottle caps. Tie the other end of the string onto a hole around the edge of the plate. You may also want to tape the end of the string onto the plate.
3. Repeat step two around the rest of the plastic plate.
4. Decorate the tambourine.





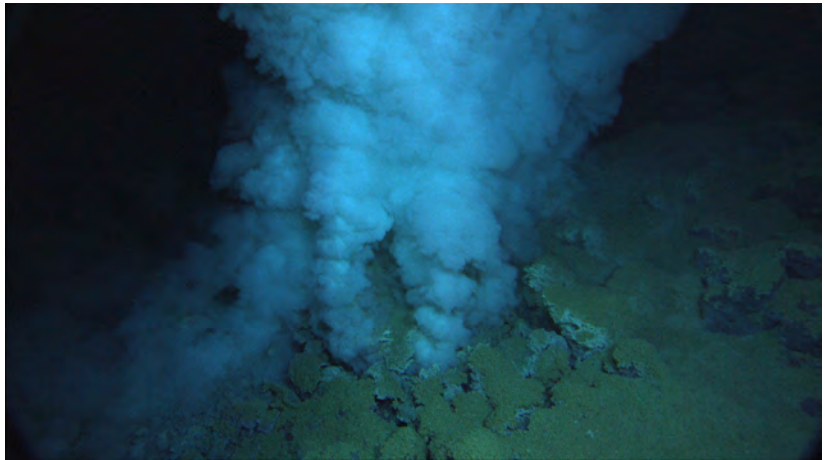
## New Species Field Guide

### Summary

Students imagine a new species they have discovered in the ocean. Then they create a field guide page to describe that species.

### Background

In the Mariana volcanic arc, scientists found a seamount, or underwater volcano, that was continuously erupting. It was the first time scientists could watch an active deep sea volcano. On this seamount, near seafloor hot springs, with no sunlight, scientists also discovered new species



*Hydrothermal Vent in the Marianas Trench  
Marine National Monument*

of animals. In fact, scientists found two different species of shrimp, each with its own lifestyle, that specialize in living near underwater volcanoes. One species grazes on bacterial mats that grow on the rocks. These shrimp act like herbivores, such as cows grazing grass. The other species of shrimp is bigger with giant claws. It is a predator, which eats the other species of shrimp. This larger shrimp does graze bacterial mats sometimes too, and it also eats dead fish that have fallen to the ocean floor after swimming through toxic plumes above the volcano.

These shrimp only live on active underwater volcanoes, which are often far apart in the ocean. Scientists think that the shrimp larvae drift on the ocean currents before finding a home on different volcanoes.



*Shrimp deep in the Marianas Trench Marine National Monument; The large shrimp is a predator, and the smaller shrimp are grazers.*







### **Activity**

1. Watch the video of *The Marvelous Musical Report of the Marine National Monuments*. Share with your students how the ocean is largely unexplored. There are so many more species yet to be discovered! This is their chance to imagine discovering new species in or near the ocean.
2. After watching the video, have students write down three kinds of animals they found interesting. Look at the Story Stones activity for an animal key with pictures, to help identify species.
3. Have students research at least one of those animals to fill out the field guide page. See the notes in this activity for ways to prompt students to answer the field guide questions
4. Have students then imagine a totally new species to discover! Have students fill out the field guide page for this NEW species.

### **Notes for the Field Guide page:**

#### **Physical Description:**

Is it furry? Covered with scales? Are there certain colors for this species? Does it have a big head and tiny arms? What does it basically look like?

**Size:** How big is the animal? Give measurements. How long are its body parts, such as a tail, or antenna?

#### **Diet:**

What does it eat? How much does it eat? How often?

#### **Preferred Habitat/Ecosystem:**

Where does it live? Deep in the ocean? On a coral reef? Does it drift on currents? Does it need salt water, or can it survive in fresh water? Does it live near shore? On the beach?

#### **Solitary or Social Animal:**

Does it live alone or in groups? Does it depend on another species to survive?

#### **Interesting Animal Behaviors:**

Here is your chance to share amazing facts about the species!! How does it find food? Where is it born? How does it find shelter? Does it stay with its mom or leave and find another family group when it grows up? Does it have an interesting animal sound? Can it create a weird slimy cocoon when it sleeps at night (like a parrotfish)? Can it sense electromagnetism? Does it have a heart? How does it defend itself from predators? How does it move around? Can it travel super long distances? Does it change shape from juvenile to adult?





## Field Guide Page

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Name of Species



Drawing of the Animal

Physical description:

Diet:

Preferred Habitat/Ecosystem:

Size:

Solitary or social animal?

Interesting Animal Behaviors:







## To The Future!

### *An Activity About Marine Careers*

#### Summary

Students learn about marine-related careers by reading interviews with scientists and researching careers. Then they create a future career path for themselves, imagining who they want to be. They create a business card, write a story about how they got their job, and they create an award that they win in the future.



#### Background

In *The Marvelous Musical Report* movie, the band sings about scientists doing some extraordinary research in incredibly remote places of the Marine National Monuments. Some scientists are pulled underwater on towboards, soaring over the reef while they count fish or estimate coral cover. Other scientists use underwater drills to take samples from deep inside the coral skeleton, so they can analyze over 100 years of coral growth! Other scientists record underwater sounds with devices that work like underwater ears.

The movie also showcases scientists who study amazing animals, such as the coconut crab that actually climbs trees. The Marianas Trench section shows species of crabs and shrimp that survive near hydrothermal vents deep at the bottom of the ocean, where no sunlight exists. Some of those species had never been seen before!

The movie also includes a person who is comically tangled in marine debris. People are studying how marine debris moves around the ocean, how it affects animals and how we can get rid of it. Other people work on projects to restore native plants, to protect sea birds, to educate people to protect their environment and to care for important cultural areas such as the Hawaiian fish ponds





### The Activity

If you could have a job near the ocean, what would you like to do? This is a chance for students to imagine their future. Where do they work? How did they get there? What does their amazing business card look like?

1. Have students read the interviews with 1) Mark Manuel, Marine Debris Specialist, 2) Jeanette Clark, Oceanographer, 3) Noah Pomeroy, Biologist and Towboarder, 4) Stephani Gordon, Underwater Filmmaker, 5) Keli'i Kotubetey, Fishpond Practitioner and 6) Anna Switzer, Outdoor Educator

2. Encourage students to research one more marine-related career.

The web sites [www.oceancareers.com](http://www.oceancareers.com) and <http://marinecareers.net> are great resources.

Some career ideas include: Fisheries Ecologist, Environmental Engineer, Outdoor Educator, Marine Mapper, Marine Mammal Biologist, Underwater Geologist, Microbiologist, Marine Plant Specialist [or Algae Specialist- also called a Phycologist], Dive Instructor, Commercial Fisherman, Marine Law Professor, Aquarium Curator, Underwater Archaeologist, Aquatic Veterinarian, Motorboat Mechanic, Fish and Game Warden, Ship Boat Captain, Remotely Operated Vehicle (ROV) Technician

3. After doing research, ask students which career they liked most. What sounded appealing about that job? What sounded challenging?

4. Ask students to choose one of those careers and imagine that as their future career. Then have students each write a short story about how they got to their job. What is their job title and where do they work? They can totally imagine their future path! When did they first decide to pursue that job? What challenges did they overcome on their way to getting the job? Where did they study? Did they have any teachers who helped them? Who do they work with? What is their office or place of work like? What is an imaginary hard day at work like?

5. Ask students to design a business card for their future career. What is their name and title? Where do they work? What other information would they like on a business card? Is there an inspirational quote or saying they want to include on the back of the business card? What colors or designs would be on their card? Show students examples of other business cards for inspiration. Use whatever art materials are available to create the business cards, such as blank index cards, markers, colored pencils, glue, colored paper, etc.

6. Give each student a copy of the award certificate template. Have them imagine what award they won in their job. What was the award for? Did they discover something? Work extra hard? Who presented them with that award? Students should fill in their award certificate. On the first blank line the student should write his/her name. On the second line, fill in the accomplishment. On the final three lines, student should write 1) the name of the person presenting the award, 2) that person's title and 3) the date. For example, "Signed by Lucy Marbello, President of the Office of Important Places and Things, July 30, 2014"

7. Have students pair up to share their award, business cards and brief career backstories with each other.







## Mark Manuel, Marine Debris Specialist

### What is your job?

I lead the Marine Debris Project and am also the Operations Manager for the Coral Reef Ecosystem Division at the Pacific Islands Fisheries Science Center, NOAA Fisheries. My main role is to ensure all scientists within our division are conducting their research in a safe manner.

### What is the best part of your job?

I really enjoy conducting marine debris survey and removal efforts throughout the Northwestern Hawaiian Islands because I feel a sense of accomplishment with every piece of debris I remove.



### Have you always wanted to do this? Have you always had a love for the ocean?

No, I originally wanted to be a professional baseball player, but when that door closed another door opened. I grew up on the Island of Hawai'i in mostly mountainous areas with the closest beach approximately 30 minutes away. I was more interested in playing sports, but would spend a lot of time camping, diving and fishing during the weekends and summer. It wasn't until high school that I fell in love with the ocean. I participated in this local summer camp that emphasized ocean research and resource conservation. After those two weeks I was hooked and knew I wanted to pursue a career in a marine related field.

### What did you study in school?

I went to the University of Hawai'i at Hilo and got my Bachelor of Arts in Marine Science. After graduating, I decided to pursue my graduate degree and later obtained a Master's of Science in Tropical Conservation Biology and Environmental Science.



### Any advice for someone who wants your job?

Ultimately, you need to have passion and perseverance in what you're doing in life and always push yourself to never give up. It is not how many times you fall, but a matter of how many times you get back up. Below is a 'Ōlelo No'ēau or Hawaiian Proverb that reflects perseverance.

“He pūko‘a kani ‘āina”

A coral reef that grows into an island.

This can be metaphorically interpreted as, “a person beginning in a small way gains steadily until he/she becomes firmly established.” Never give up on your dreams and keep pushing to reach every goal.



## Jeanette Clark, Oceanographer

### What is your job?

I'm a Marine Ecosystems Research Specialist at the Coral Reef Ecosystem Division of the Pacific Islands Fisheries Science Center at NOAA.

I work as part of the Oceanography team, so I study all of the physical properties of the ocean, like temperature, waves, and currents, and how they affect the coral reef ecosystems that we study. My job is hard because it requires many different skills, from scuba diving to data analysis, but that

is one of the things that I love about it. I get to balance spending time in the field, which is much more labor intensive, with time spent back at the office analyzing data, which is more cognitive. The best bonus part of the job is definitely getting to spend time in the ocean at amazing places

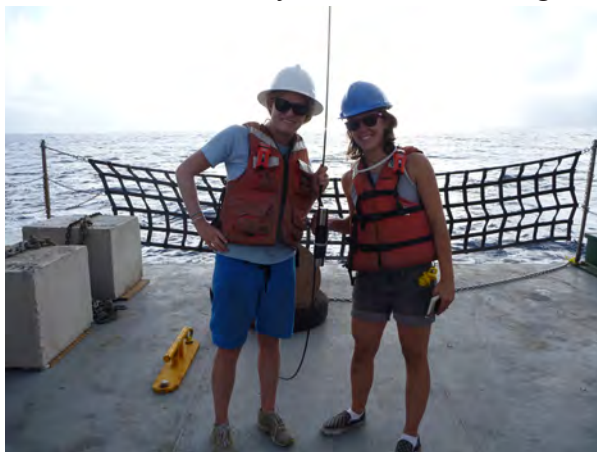


### Have you always wanted to do this? Have you always had a love for the ocean?

I have always had a love for the ocean, but I didn't grow up wanting to be an oceanographer. During school, I took various environmental science classes because I enjoyed them, and ended up liking the oceanography courses the best, so I just continued along that path, and happily have found myself where I am today.

### What did you study in school? What other skills do you have which help your job?

I majored in Environmental Science in college, but I took lots of additional classes in pure math, chemistry, and physics which definitely served as a good foundation for my scientific knowledge. I also got a masters in physical oceanography. There are lots of skills that are essential for my job, but the ones that I think are the hardest to get are skills associated with my academic background. When we get our data back that we work so hard for, I can analyze and report it in a way that hopefully tells us something new about the ocean. Without both a strong foundation in science and math, and my more specific knowledge of oceanography, I would never be able to do the science that I am able to.



*Jeanette (on the right) stands on the deck of a research ship*

### Any advice for someone who wants to do what you're doing someday?

Find a good mentor, even if it is just a teacher that you like. I have had three amazing mentors in my career, all teachers, and I would not be where I am without them.





## Noah Pomeroy, Marine Scientist/Tow Boarder

### What is your job?

I am a marine scientist. I investigate the health of coral reefs, and we go out on research ships to remote islands in the Pacific Ocean where we do coral reef research. One of the things I do out there is SCUBA tow boarding. As a SCUBA tow boarder, we go down underwater with SCUBA gear, and we get pulled around behind a boat to look at the different types of fish that we come across. We write down what kinds we find and how many there are. It feels as if you're a manta ray flying through the water.



### Is it hard to hold on to the tow board?

No. You just need to grab on to the board as the boat pulls you, and we communicate with the driver of the boat with a special code of beeps to let them know that we're okay underwater. After about an hour, you've used up most of the air in your tank, but you still have plenty to get to the surface.

### What is the best bonus part of your job as a tow boarder?

Sometimes fish and other marine life will come up and swim right along side us or we'll even have friendly little sharks following us sometimes. The best bonus part of the job is getting to go to these incredible places in the ocean. They're very special because they're a part of a network of places that are not very impacted by human presence. A lot of the oceans



are heavily affected by the people that live on the planet and often times that means there's less fish and the coral is less healthy, but we go to these incredibly natural places to observe how healthy oceans and coral reefs are supposed to look. That helps us figure out how to help the oceans in places where there are a lot of people.

### What did you study at school, and what other skills do you have which help your job?

I studied marine biology in college. I also developed my skills in the water swimming, surfing and diving. I've learned how to get along with people in challenging settings where it's really important to work as a team. So that's an important skill to develop in any field, but especially when you're on a ship in a remote part of the world.







## Stephani Gordon, Underwater Filmmaker

### What is your job?

The most exciting part of my job is when I am underwater, filming. Sometimes there are sharks all around me (I LOVE sharks!). Sometimes the reef has colorful fishes and coral all around. Other times it just feels good to be in the water and I always see something interesting. Filming underwater is just one part of my job though- I also spend a lot of time prepping my gear: dive gear, camera gear, and field gear in general like solar panels to charge camera batteries when I'm on a remote island. And after filming I spend a lot of time editing footage on a computer. I also sometimes help the scientists with their research when I am out there filming. I was a scientific diver before I learned how to make film



*Wearing a Sooty Tern hat, while filming in Papahānaumokuākea*

### You filmed footage of the Marine National Monuments for *The Marvelous Musical Report*. What was the hardest part?

Filming in the monuments took over two years! The hardest part was being patient. It took a long time to find a way to get to these far away protected places and to be allowed to film there without disturbing the wildlife. When I finally made it out to each of the places- usually on a ship- we were at each place only a week, so I filmed and filmed and barely slept. Sleeping was nearly impossible anyway, on the small islands, because there are SO many birds and they make a big ruckus all night. You were laying there in a sleeping bag thinking, "I wonder if any of these birds is going to poop on my head."

### What did you study in school?

I studied biology and then later learned how to film and edit in a science filmmaking program. Special skills needed for filming underwater?

Being a fish! You need to know how to stay safe in the ocean, and how to swim without kicking the coral or stepping on the reef. I am respectful of the ocean and want to learn as much about it as I can.

### Do you have advice for people who would like to have your job?

Be curious. Kids are great at that, and a filmmaker needs to be curious like a kid, about everything. Learn everything you can- the names of fishes, how to tie a good knot, how to swim, how to tell a story using words or pictures- it will all come in handy later.



*Stephani films Robert Sams in Hawaii for the video*







## Keli`i Kotubetey, Fishpond Practitioner

### What is your job?

I work at He`eia Fishpond and my official title is `Āina Momona Coordinator. My kuleana is to identify and develop fishpond products and services (ex. Growing fish, harvesting limu, cultivating oysters and clams) that can be produced in a way that benefits both our organization and the fishpond. I also do other tasks around the fishpond like rebuilding the walls, removing invasive species, working with school children, and sharing stories about the pond and surrounding area with community members.



### Does your job inspire you?

It makes me feel extremely proud of my ancestors who built this 88-acre fishpond and the legacy they left for us. I feel a sense of pride and humbleness as I am constantly reminded that despite my knowledge and experience at this place, there is still so much more we need to understand about this ancient aquaculture system and its secrets to feeding large communities. What initially inspired me to do this work was just the sheer size and magnitude of the fishpond. I was and still am blown away by the size of the pond walls and therefore the amount of human labor it took to build it at a time when no machines were available. Absolutely stunning and impressive. Once I comprehended the size, then the inspiration came in the form of how much food an ancient “refrigerator” like this could stock and therefore be fed to communities. And more recently my inspiration comes from my two sons who I now have a responsibility to make sure they take care of this place too.

### Have you always wanted to do this?

I have always wanted to work outside but not a fishpond specificall . Or even the ocean specificall . Just outside was good enough for me. I have always had a love for the ocean but I never thought I could work in a field where I could support myself and my family in such close proximity to the ocean. I have an Economics undergraduate degree with a minor in Environmental Studies. I also have my Masters of Business Administration. Those two degrees are not typically related to ocean, fis - pond, or environmental fields of work. But here I am, proof that it is possible

### Any advice for others?

Begin with a passion or love.

Volunteer. Ask to talk with people. It all starts with your heart and that will open doors you never thought could be opened. It will connect you with people who have similar passions, ideas and visions. Get involved. Simply lend a helping hand somewhere or with someone or simply start doing it yourself.





## Anna Switzer, Outdoor Educator

### What is your job?

I currently work as an Outward Bound instructor (mostly in the Florida Everglades) and as a consultant in schools. In the schools, I help teachers to understand and develop curricula that are experiential and community-based. This coming year I'll be working with two schools in Maine and one school in England. Recently, I was the Program Manager for Outdoor and Experiential Education at National Geographic Society in which I managed a grant focused on the on-line mapping of citizen science data collected all over the United States (called FieldScope).



### What is citizen science?

Citizen Science is the basic idea that anyone can observe what is happening around them (for example, the weather, birds, frogs, trees, water-quality indicators, etc.) and share those observations with others. Currently there are many organizations around the United States and around the world that are interested in utilizing the data collected by citizen scientists because the geographic scope that these volunteers can reach is larger than by any single researcher.

What is great about citizen science is that it gives people a connection to where they live and a great reason to go outside and be a part of it.

### What inspires you?

My work in education stems from two places I think. First is my own love of the outdoors and a desire to protect and improve the health of our environment. Water-based environments, in particular, give me great enjoyment and a sense of wonder, and so I want others to experience that as well. Second is my own sense of what I am good at doing. I love seeing the “lightbulb” go on for people and to see their own self-efficacy grow. It makes me feel great to have a positive impact in the world through inspiring other people.





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