

# Ocean Guardian School

A cartoon walrus is positioned between the words 'Ocean' and 'Guardian' in the title.

National  
Marine Sanctuary  
Foundation

*Protecting our ocean one school at a time*

Seaberry Nachbar, Director

Naomi Pollack, Program Coordinator

*The Ocean Guardian School Program is managed by NOAA's Office of National Marine Sanctuaries  
with funding coordinated by the National Marine Sanctuary Foundation*



## PRESENTATION OVERVIEW

- What is an Ocean Guardian School?
- More Ocean Guardian School stories
- How to Participate in the Ocean Guardian School program

What do the following have in common?





Photo: J. Moore/NOAA MMHSRP permit#18785-02



Photo: Jaime Jahncke, NOAA/GFA/Pt. Blue/ACCESS

National Marine Sanctuaries serves to preserve and protect biodiversity, beauty, historical connections and economic productivity of underwater parks

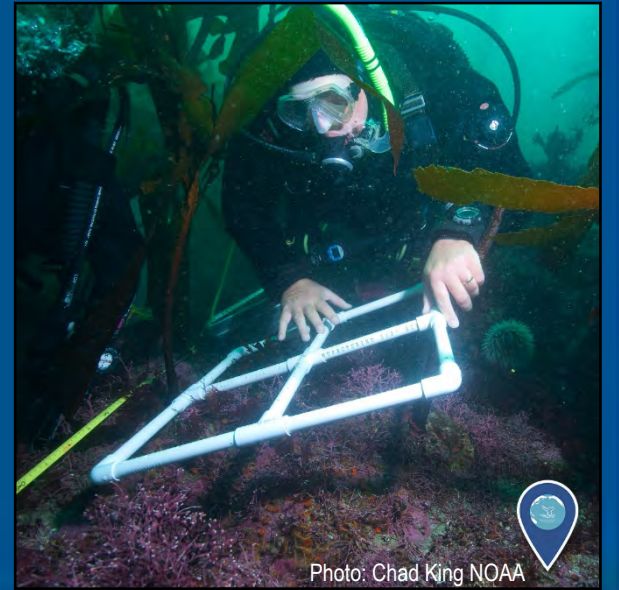


Photo: Chad King NOAA

# EDUCATION



*ocean-literate public making informed environmental decisions*

## AN OCEAN GUARDIAN SCHOOL PROJECT...

Engages K-12 students (public, private, charter) in the protection and conservation of local watersheds, the ocean and special ocean areas like national marine sanctuaries.



Students carry out **HANDS-ON stewardship projects** on school campus and/or in the local community that address an issue affecting the health of local watersheds and/or the ocean.

# *Hands-on* stewardship project connects to one of the 5 PROJECT PATHWAYS



**RESTORATION**  
watershed/wetland  
restoration, fish habitat  
creation, shoreline/bank  
stabilization



**6Rs: Rethink/Refuse/  
Reduce/  
Reuse/Rot/Recycle**  
school-wide recycling/  
composting programs, redesign  
and implementation of school-  
based wastewater system,  
school-wide green purchasing  
program, zero waste lunch  
programs



## **SCHOOLYARD HABITAT/ GARDEN**

creating or improving school  
gardens/schoolyard habitats  
with an emphasis on native  
plants, low water use, rain  
catchment systems, etc. while  
clearly connecting these  
activities to the health and  
preservation of the local  
watershed and/or the ocean.



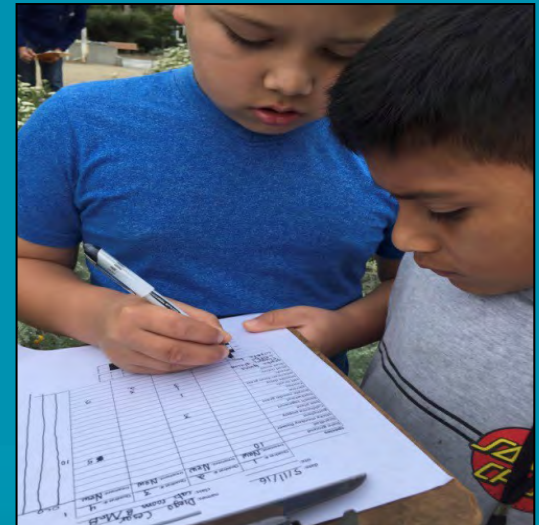
**ENERGY & OCEAN  
HEALTH** Reducing fossil  
fuel-based energy use/  
carbon footprint (i.e., "power  
down" campaign, "no idling"  
campaign, bike to school  
days, light bulb/computer  
energy saving plans, etc.),  
implementing renewable  
energy alternatives (i.e.,  
wind/solar projects), water  
savings projects, tree  
planting projects.



## **MARINE DEBRIS**

reducing single-use plastics in school/  
community, promoting reusable items in  
local community/stores

# HANDS-ON PROJECT





# SCHOOL PRESENTATIONS

## Project Introduction Presentation



## Project Wrap-up

### **“What a Wonderful Creek”**

Original Lyrics by 3rd Grade Class,  
Willow Creek Academy  
2013

I see bracken ferns, sword ferns too  
Wild strawberries for me and you  
And I think to myself, *what a wonderful creek*

Willows and horsetails blow in the wind  
I hear the song of the red breasted robin  
And I think to myself, *what a wonderful creek*

This is the landscape where the deer like to play  
And salmon and bears, before they were chased away  
The Miwoks used poison oak to make tattoos  
And bay leaves to hunt, even on their shoes

I see salamanders and raccoons  
Newts, mayflies and woodpeckers, too  
And I think to myself, *what a wonderful creek*

Let's clean up the trash, make sure we do our part  
There's so much history here, there's so much heart  
We want the fish to come back, the birds to sing  
The humans to love without hurting anything

I hear water run, I watch it flow  
I've learned much more than I thought I'd know  
And I think to myself, *what a wonderful creek*

INTERNAL OUTREACH

EXTERNAL OUTREACH

# Keep your butts out of the bay

Protect the San Francisco Bay Watershed!

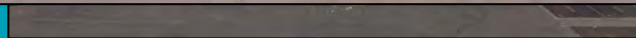
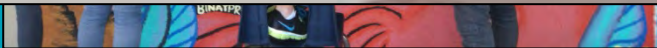
A message from  
Wood Middle School Environmental Science Students in Alameda, California



Sincerely  
Mintie White 5th  
graders



<http://youtu.be/02dZPWXX4po>



# MEASURABLE DATA

## Ocean Guardians, Citizen Scientists

Since 2009 students at Will C. Wood Middle School in Alameda have been combing this area of Crocker Beach in 1 square meter plots for harmful plastics. Their teacher Will C. Wood, C.A.N. (Citizenship, Action, Now) make a difference! In 2018 they were awarded a NOAA Ocean Guardian Grant to collaborate with East Bay Regional Parks for this panel.



plastic bag on the beach



Sea Lion choked by plastic debris



Turtle about to eat a bag

### What is a Nurdle?

Nurdles are plastic pellets used in manufacturing of plastics or they are pieces of plastics eroded in the ocean by wave action. Sometimes fish or other sea creatures mistake these nurdles for eggs of sea turtles, fish or plankton. This gets in our food web, since we are the top predators of many fish.



Students work in groups to sort and size their shells and look for 2mm size pieces of plastic known as "nurdles". The nurdles are used by Professor Takada at Tokyo Univ study of Aquaculture and Technology who is studying their bio toxicity. [www.pellaivetski.com](http://www.pellaivetski.com)

### Polystyrene

Polystyrene is a foam-like plastic that is used in coffee cups, ice chests, take-out containers and, technology packaging. If people throw polystyrene in the street, it can flow to water sources like the ocean and animals will eat it and die. The polystyrene will also pollute the water. It contains Estrogen-like molecules that disrupt hormones in animals. (Current Science, March 13, 2009). If we eat the fish that eats the polystyrene, won't humans be affected? Do your part, make a good start, pack it in, pack it out!



Looking for Nurdles in Marine Debris.

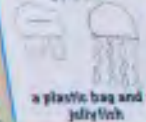


2018 SLWRF (Service-Learning, Waste Reduction Project) Class with Ms. Frechou. Ready, Set, Nurdle Search!



polystyrene on the beach

### See the resemblance between



a plastic bag and a jellyfish

### Don't Be Grastic



Throw Away Your Plastic!



**STOPWASTE.ORG**  
Stopping the Waste Crisis in Alameda County

Thanks to NOAA Ocean Guardian Grant, Alameda County Office of Education SLWRF, Alameda Unified School District, Sycamore St. Frechou, Science Teacher at Will C. Wood Middle School, and East Bay Regional Parks District

East Bay  
Regional Park District  
[www.ebparks.org](http://www.ebparks.org)





# Ocean Guardian School

Protecting the Ocean  
One School at a Time

## PROGRAM REACH • 2018 - 2019



**10,060**  
students

**53**  
schools



"Students were empowered to make positive changes in their everyday environment."



**361** teachers/staff

**176** COMMUNITY PARTNERS



Serving **26** schools with under-represented students

**\$162,777**  
GRANTS

Funding coordinated by:  
National Marine Sanctuary Foundation

## TOTAL IMPACT • 2010-2019



**149,651**  
KILOGRAMS OF TRASH COLLECTED



**36,730**  
REUSABLE BAGS & BOTTLES DISTRIBUTED



**1,600**  
RECYCLE & COMPOST BINS INSTALLED



**726,544**  
SINGLE-USE PLASTIC BOTTLES NOT USED



**55,819**  
SQ. METERS OF NATIVE PLANTS PLANTED



**51,656**  
SQ. METERS OF NON-NATIVE PLANTS REMOVED

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

## Ocean Guardian Schools 2010-2019

Awarded Grants	<b>\$1,074,367</b>
Number of Participating Schools *Schools that received more than one grant are only counted one time	134
Number of Participating Students *Number reported from participating schools, not school districts	<b>61,936</b>
Number of Participating School Districts	2
Number of recycle bins installed	1070
Number of compost bins installed	530
Kilograms of compost made from school food/garden waste	927.14
Kilograms of recycled e-waste	2,322.85
Kilograms of reused oyster and clam shells	2,721.55
Kilograms of trash/debris removed from campus and/or from out in the community	149,651.14
Number of reusable bags (grocery bags, snack bags, etc.) distributed	12,929
Number of reusable bottles distributed	23,801
Number of single use plastic bottles NOT used due to use of reusable bottles at filtration station	726,544
Number of rain barrels installed	107
Liters of water reclaimed from use of water catchment system	88,138.13
Number of native trees planted	5142
Number of native perennials/grasses/annuals planted	41,302
Square meters of native plants planted	55,818.89
Square meters of non-native invasive plants removed	51,655.81
Square meters of turf removed	3,876.42
Linear meters of bank stabilization	1,238.94
Number of wildlife habitat structures installed	198
Number of LED or energy saving bulbs installed	46
Number of bike-to-school days	173
Number of stenciled storm drains	63

# NOAA Ocean Guardian School Recognition



California



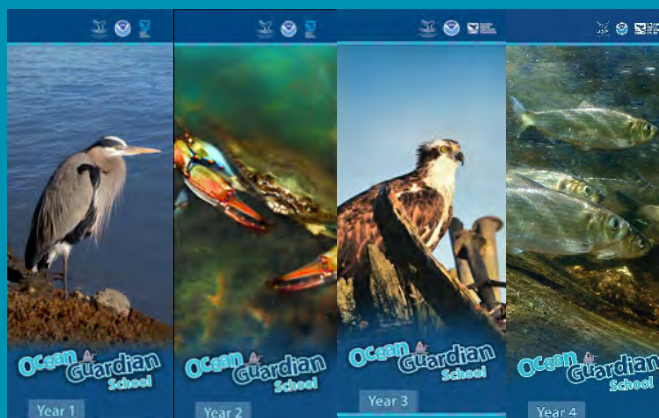
Florida Keys



Texas



Washington and Oregon



Maryland



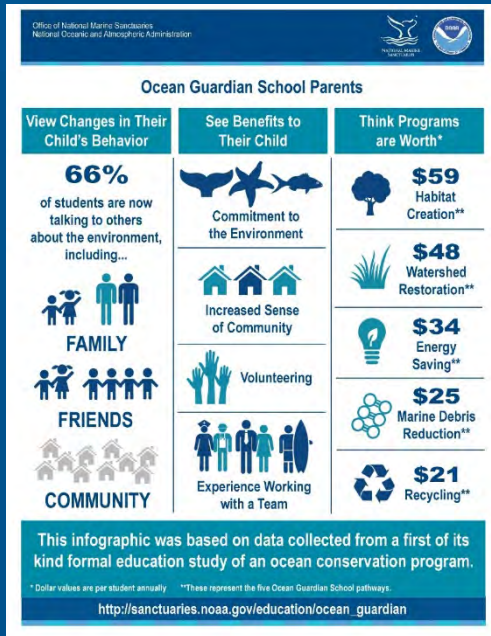
Alaska



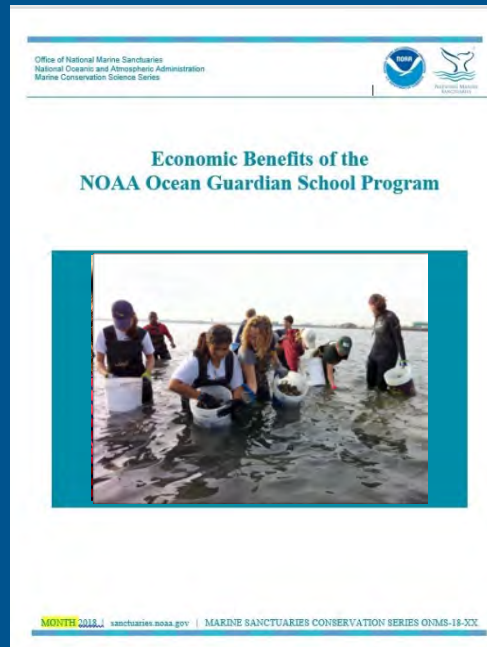
North Carolina

# Ocean Guardian School Evaluation Studies

2015-2016



2018



2018 -2019

## Evaluating the Program Sustainability of Ocean Guardian Schools

Contributions and support from:  
Ashley Ruiz  
Naomi Pollack  
Jenny Stock  
Julie Bursek  
Claire Fackler  
Seaberry Nachbar  
Allison Alexander  
Tracy Hajduk

This study is funded by the NOAA Office of National Marine Sanctuaries and the National Marine Sanctuary Foundation.

Evaluation Report  
Prepared by: John Y. Baek, PhD  
March 2019







Calabasas Elementary School  
Watsonville, CA

Project Pathway: 6Rs  
2016-present

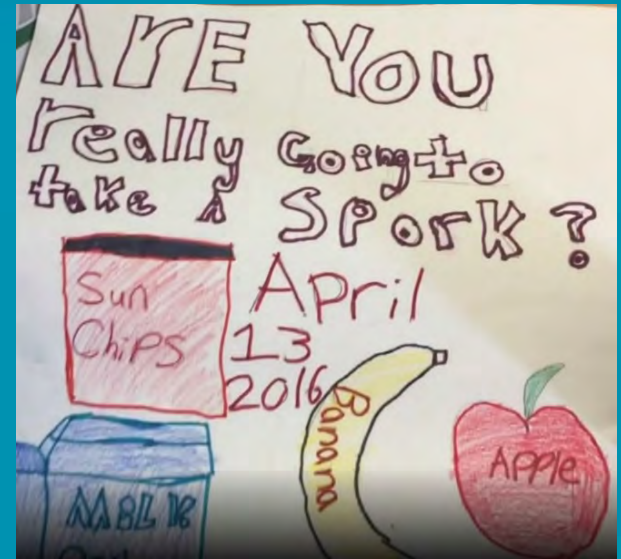


Boy or girl?  
Choose ▾

Are you taking a Spork packet today?  
Choose ▾

Why are you taking a Spork packet?

- Can't eat with hands.
- Messy with all the ketchup and sauce.
- Need a napkin
- Need a spork
- Need a straw
- I just like to
- Worried about germs
- Other:



“We live on this earth, and who would want to live in a place that’s full of garbage?”  
- Calabasas Green Team member

Why do you think kids sneak snacks outside? Choose the three most important reasons. \*

- They don't want to eat inside at the brown table if they didn't finish.
- They like to eat it in their classroom.
- They are hungry during the day.
- They want to make a club or a party.
- They want to do trades for stuff kids bring from home.
- They want to eat their food in peace.
- They want to take it home.

How could we stop the snack wrapper trash? Choose the three best ideas. \*

- Have kids volunteer to tell kids not to eat snacks outside.

### The Great Calabasas Clean Up!

The Green Team is asking for your help in reducing the amount of litter on our campus! Please go out with your class as often as you can between April 15 and April 30. Use a timer to record how long you do the Wrapper Dash. Mr. Westfall has promised us that if we reduce the litter, he will move his office to the roof for one day! The class that picks up the most trash will win a prize. Mr. Westfall will do their homework while he is up there! Use the space below to tally each piece you pick up. If your class would like to create categories, you are welcome to do so! (The Green Team would like to sort the trash by "bins" and "chests" trash, but you could do plastic/paper/other, or shiny wrappers/other trash, or just count all the pieces you find!)

Please count every piece of litter, no matter how small, but do not count natural objects such as sticks, wood chips, grass, dirt, rocks.

**Ocean Guardian School**

Date	Teacher's name	Number of students	Time spent dishing
4/15/19	Mrs. Jensen	22	10min

Tally Spots

Total Pieces Today: 497


11 97






Local News

## After-school team changing school's environmental culture

By: TODD GUILD  May 25, 2018

 0  142

*(Calabasas Elementary School students of the Green Team round up trash around their campus. Photo by Tarmo Hannula/Register-Pajaronian)*



# The Moral(s) of the Story...

**It doesn't have to cost a lot of money.**

**It might not work the way you thought or happen on time.**

**It doesn't have to be perfect.**

**Everyone wants to help you.**

**The kids have weirder but better ideas than you do.**



Scotts Valley High School,  
Scotts Valley, CA

Project Pathway: Schoolyard Habitat/Garden  
2018 - present



HOME / COLLECTIONS / TRASH TALK / TRASH COUNTS (PART 8)

## Trash Counts (Part 8)

If you wish to be part of the solution to marine debris and are ready to do more than talk trash, watch our new TRASH COUNTS video featuring a citizen science project that is making a difference, one data entry at a time.






“What starts on land ends up in the sea!”



**Roof Formula (for each inch of rain)**

Square feet of roof x (.62 gallons per sq. ft.)  
= # gallons per one inch of rain.


- Square footage for Wrestling room (both sides of roof) = length (50ft) x width (23ft) = 1150 sq. ft.
- 1,150 ft x (0.62) = 713 gallons
- Number of inches of rain necessary to fill both 1000 gallon tanks = 2000 gallons/713 = 2.80 inches of rain






# Scotts Valley Unified takes us to school on sustainability | Rachel Kippen, Our Ocean Backyard





**Updated Store Hours** 

Community, A Walgreens Pharmacy

9AM-9PM Weekdays In Most Stores. Check Your Local Store.

 Silver Spring

 WEBSITE  DIRECTIONS

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**Problem:** Our community of Scotts Valley needs a cost-efficient means of killing weeds that does not pollute our land or oceans.

**Observation:** **Creating an Organic Weed Killer that can be sprayed onto plants in a time-efficient manner and kill them within 5 days.**

Note: Killed is defined as no more green color on leaves.

**Hypothesis:** Predict which formulation will be the most cost-effective.

**Materials:** 1. Coyote Brush Native Plants around campus (or Stinkwort)

2. Masking Tape
3. Dove Soap
4. 100ml and 500ml beakers or graduated cylinders
5. Spray Bottles
6. Distilled Water
7. Distilled Vinegar
8. Salt
9. Lemon Juice
10. Wild Card – You choose if you dare!



**Study Objective:** Using two separate sample formulas of your team's choice, determine and list your six formulations in order from the least cost effective to the most cost effective.

**Procedure:** Describe your procedure and study design IN DETAIL here. You will develop and study two different formulations each week for three weeks. **Insert you first two formulations here.**

**Cost Information:** Change all cost information to the common unit of milliliter (ml). Simply use **5 ml of soap per spray bottle.**

Student approved!

Scotts Valley High School

# GREEN TEAM

ORGANIC WEED KILLER



Ingredients: 5 ml Dawn Dish Soap, 450 ml Distilled White Vinegar, 45



# OCEAN GUARDIAN SCHOOL!





Gault Elementary School  
Santa Cruz, CA

Project Pathway:  
Restoration  
2014-2019

Community Partner:  
Groundswell Coastal Ecology





by plastic debris

affected? Do you  
pack it in, pack

If we eat the fish that  
won't humans be

Looking for Nurdles in Marine Debris.

a plastic bag and a









Office of National Marine Sanctuaries  
National Oceanic and Atmospheric Administration

NOAA OCEAN GUARDIAN SCHOOLS



TO LEARN MORE, VISIT: [SANCTUARIES.NOAA.GOV/EDUCATION/OCEAN\\_GUARDIAN](https://sanctuaries.noaa.gov/education/ocean_guardian)



# Ocean Guardian Schools

Schools from anywhere in the U.S. may apply to participate in the Ocean Guardian School program without funding.



# APPLICATION TIMELINE

April 1, 2020

Application for 2020-2021 available on the Ocean Guardian School webpage,

[https://sanctuaries.noaa.gov/education/ocean\\_guardian/application.html](https://sanctuaries.noaa.gov/education/ocean_guardian/application.html)

June 1, 2020 – Deadline for grant applications and applications for participation without funding

**All applications must be postmarked by 5 pm.**

Early July 2020 – Funding and non-funding participation decisions announced





Litter on Land =  
Ocean Pollution

Californians  
use 550  
plastic bags  
each year!

Reduce  
Reuse  
Recycle

Plastic bags  
can kill animals

Reduzca  
Re-use  
Recycle

Balloons are  
bad for us!

TAKE YOUR  
STEP

# Ocean Guardian School



National  
Marine Sanctuary  
Foundation

[naomi.pollack@noaa.gov](mailto:naomi.pollack@noaa.gov)

Thank you!