Bring Wild Oysters to Your Classroom!

The Watershed Project is seeking teacher partners for our Wild Oysters Institute in Spring 2020!

What is Wild Oysters?

Wild Oysters is a popular high school science program that uses native Olympia oysters as a teaching tool to explore local aquatic ecosystems. Students engage in citizen science at The Watershed Project’s community-built oyster reef at Point Pinole and taste oysters in Tomales Bay. Through the field trips and in-class lessons, students learn about climate change, ecosystem resilience and stewardship.

Why add a Wild Oysters Institute?

The Wild Oysters Institute gives teachers the resources and one-on-one support necessary to teach the program’s in-class lessons. The Watershed Project still coordinates, pays for, and leads the program field trips. In this way, more students can participate in the program!

What are the benefits of participating?

Wild Oysters Institute teachers will receive:

- Lesson plans and associated student materials
- A half-day training with individual follow-up
- Up to 2 FREE field trips for their classes, coordinated by The Watershed Project
- A $500 stipend

More information about the Wild Oysters Program on the next page!

Click here to apply!

Wild Oysters is provided through the support of the National Oceanic and Atmospheric Administration and the National Marine Sanctuaries.

The Watershed Project’s mission is to inspire Bay Area communities to understand, appreciate, and protect our local watersheds.

If you’re interested in bringing this program to your school, please contact us at: education@thewatershedproject.org

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**Wild Oysters Program Overview**

*Wild Oysters* is a high school program that uses native Olympia Oysters as a teaching tool. Targeting environmental science and biology students from underserved communities, we provide four classroom visits and two field trips to participating high school classes, all of which are free to most schools. Students will become citizen scientists as they put on rubber boots and collect data at our community-built oyster reef at Point Pinole Regional Shoreline. They will also get to learn about oyster farming and taste oysters in Tomales Bay, engaging all of their senses.

**Program Goals**

1. Underserved San Francisco Bay Area students will engage in a practice-based, STEM learning opportunity.
2. Students and teachers will have greater awareness of native oysters and how they are affected by climate change and ocean acidification.
3. Students will participate in outdoor learning opportunities that connect them to local ecosystems and inspire stewardship.
4. Students and teachers will be engaged towards action to reduce climate change impacts on the Bay and ocean environments.

**Program Outline**

- Pre-lesson about climate change (*if necessary*)
- Lesson 1: Introduction to Oysters*
- History of Oysters in the San Francisco Bay (*optional take-home lesson or assignment*)
- Lesson 2: Oysters and Climate Change Impacts*
- Field Trip 1: Point Pinole Regional Shoreline (*TWP-led*)
- Ocean acidification lab
- Lesson 3: Data Analysis, Ecosystem Resilience, and Aquaculture*
- Field Trip 2: Hog Island Oyster Co. Lease (oyster farm) and Millerton Point State Park in Tomales Bay (*TWP-led*)
- Lesson 4: Argumentation Discussion about Oyster Restoration and Climate Change Impacts
- Action Project

*Recommended lessons for Wild Oysters Institute (teachers can choose to teach more, but we recommend teaching these three *at a minimum*).

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**Field Trip Expectations**

While we are generally able to offer this program and the buses for field trips free-of-charge, buses are very expensive and it is not feasible for us to host a field trip for just a few students. Our program lessons build off of what students experience on the field trips. We ask that teachers have at least 20 students confirmed for each field trip 1 week before the field trip is to take place. Otherwise, we will have to cancel the field trip. We also ask that only classes who are participating in the program attend the field trips.

**Program Evaluation**

The *Wild Oysters* program is evaluated through a student pre- and post-survey as well as a written teacher evaluation.

**Standards Connections for Wild Oysters Lessons**

We will address many of the Essential Principles for Climate Science, with particular emphasis on:

- **2D.** The abundance of greenhouse gases in the atmosphere is controlled by biogeochemical cycles that continually move these components between their ocean, land, life, and atmosphere reserves. The abundance of carbon in the atmosphere is reduced through seafloor accumulation of marine sediments and the accumulation of plant biomass and is increased through deforestation and the burning of fossil fuels as well as through other processes.
- **3A.** Individual organisms survive within specific ranges of temperature, precipitation, humidity and sunlight. Organisms exposed to climate conditions outside their normal range must adapt or migrate, or they will perish.
- **6D.** Growing evidence shows that changes in many physical and biological systems are linked to human-caused global warming. Some changes resulting from human activities have decreased the capacity of the environment to support various species and have substantially reduced ecosystem biodiversity and ecological resilience.
- **7D.** The chemistry of ocean water is changed by absorption of carbon dioxide from the atmosphere. Increasing carbon dioxide levels in the atmosphere is causing ocean water to become more acidic, threatening the survival of shell-building marine species and the entire food web of which they are a part.

*Wild Oysters* supports learning and engagement in the following Next Generation Science Standards:

- **Practices:** Asking questions (for science); Planning and carrying out investigations; Analyzing and interpreting data; Using mathematics and computational thinking; Engaging in argument from evidence; Obtaining, evaluating, and communicating information

Furthermore, we will address aspects of the following NGSS Disciplinary Core Ideas:

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<tr>
<td>LS4.D: Biodiversity and Humans</td>
<td>ESS3.D: Global Climate Change</td>
</tr>
<tr>
<td>PS1.B: Chemical Reactions</td>
<td>ET S1.B: Developing Possible Solutions</td>
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