

Film Series Spawns Teen Ocean Stewards

BY KIMBERLY WILLIAMS

Our oceans are at a critical turning point as they face intense pressures from increasing industrial uses, pollution, ocean acidification, and sea level rise. In some regions of the United States, collaborative planning for the future of our oceans is bringing together state and federal agencies, Native American tribes, and stakeholders from a variety of sectors. Teaching students about important marine policy decisions being made right now is vital for them to become informed ocean stewards. In my high school classroom in Smithtown, New York, I've been using the Ocean Frontiers film series to encourage students to think about the ocean in a new way and inspire them to take action. The ocean connects all subjects and age levels, and we, as teachers and educators, need to help students learn to stay alert and engaged.

I have a student-centered, inquiry-based approach to teaching and try to incorporate relevance to my student's lives whenever possible. Our best days as a class are when I've brought them to the brink of a new world, concept, creature adaptation, or way of looking at things—and let them stumble upon ideas, solutions, etc., as if they were the first ones on Earth to experience it! When I see them so inspired that they run out of the room when the bell rings, still busy arguing a point or imagining a new idea, that's a successful day to me. Without a doubt, successful ocean steward building involves having a wide variety of "tools" to help students get to that point. The Ocean Frontiers film series provides a website and curriculum guides to help educators develop new ways to incorporate teaching tools, including lesson plans, films, video clips, blog posts, and ocean action items, into classroom activities.

The four films in the award-winning series show how collaborative, science-based ocean planning can benefit coastal communities, the economy, and the ocean (Sidebar 1 on page 22). Produced by Green Fire Productions, the films delve into the question: How do we meet our ever-expanding demands on the ocean without destroying it? With the Northeast and Mid-Atlantic regions in the U.S. now implementing their new regional ocean plans—and the West Coast beginning their planning process—I find it incredibly timely to teach about our busy oceans.



Oceanography students learning taxonomy, safe crustacean handling, and career options they saw in the Ocean Frontiers films. Courtesy of Kimberly Williams

I started using these films in 2013, shortly after the first installment, *Ocean Frontiers: The Dawn of a New Era in Ocean Stewardship* was released. The film has four chapters, with each segment focusing on unlikely allies working together to address an ocean-related challenge in their part of the country, from changing the shipping lanes in Boston Harbor and protecting endangered whales, to Iowa farmers creating wetlands to reduce deadly fertilizer runoff into the Gulf of Mexico. An educator's resource guide for middle and high school teachers and a discussion guide for university professors are available for this film.

My marine ecology and oceanography courses (for high school and college credit) are where I showed the original *Ocean Frontiers* film. Students' comments ranged from, "Wow, I can't believe all the different jobs a person who loves the ocean can actually do," "Thanks for not showing us such doom and gloom stuff," to "If it were me, I'd do this....". Their reactions to the film lead to engaging classroom discussions geared exactly in the direction we want them to go, which is to use appropriate vocabulary to make educated decisions about our shared resources. These types of discussions then prepare them for when they have opportunities to write to or speak with elected officials in our community.

Ocean Frontiers II: A New England Story for Sustaining the Sea tells the story of New England's efforts to create an ocean plan for the entire region. The film focuses in on an offshore wind energy development and their collaboration with fishermen, Native Americans, and conservationists that became possible through the Rhode Island state ocean plan.

My colleagues and I planned an activity using this film that involves us organizing the students into groups and asking them to be the planners who create a pilot for an offshore wind farm. Then we ask them to come up with plans and discuss their plans among their peers, including accountability to all user groups. After the exercise, we show them the film and have a productive discussion about who thought to involve each of the user groups mentioned in the film. The students are always amazed about the possibility of an underwater burial ground that includes Native American tribes as one of the user groups.

The latest installment in the series, *Ocean Frontiers III: Leaders in Ocean Stewardship & the New Blue Economy* is a powerful film that chronicles U.S. efforts to plan for a healthy, safe, and sustainable future for our oceans. It explores the intersection of national security, maritime commerce, fishing, and recreation, plus expanding industries such as offshore wind energy and aquaculture, coupled with scientific

SIDEBAR 1. FILM DESCRIPTIONS AND LINKS

Teachers can order the films free of charge at <http://ocean-frontiers.org/host-a-screening>.

Ocean Frontiers III: Leaders in Ocean Stewardship & the New Blue Economy

Chronicles recent efforts along the Eastern seaboard to plan for a healthy, safe, and sustainable future for our oceans. (55-minute film, plus excerpts and short clips)

Trailer: <http://ocean-frontiers.org/the-films/ocean-frontiers-3>

Short clips: <http://bit.ly/OF3playlist>

Ocean Frontiers II: A New England Story for Sustaining the Sea

In a pioneering trial of ocean planning, people are coming together to keep their ocean and livelihoods alive. (45- and 28-minute versions available)

Trailer: <http://ocean-frontiers.org/trailer>

Short clips: <http://bit.ly/OF2playlist>

Ocean Frontiers: The Dawn of a New Era in Ocean Stewardship

Journey to coral reefs, seaports, and watersheds across the US, where unlikely allies are working together to sustain the sea and our ocean economies. (22-, 60-, and 80-minutes, aquarium and Spanish versions available)

Chapter clips: <http://ocean-frontiers.org/the-films/ocean-frontiers>

Educator Guides: <http://ocean-frontiers.org/discussion-guides>

The Great Bear Sea: Reflecting on the Past—Planning for the Future

Learn about the marine plans for British Columbia's North Pacific coast where whales, wolves, bears, and humans thrive in rich coastal ecosystems. (60- and 75-minute versions available)

Trailer: <http://ocean-frontiers.org/great-bear-sea-trailer-2-min>

Curricula: <http://greatbearsea.net>

Short clips for classroom use: <http://bit.ly/GBSplaylist>



Marine ecology student using tools of the trade, the refractometer, to help appreciate salinity changes in our local tidal river. Courtesy of Kimberly Williams

discovery. *Ocean Frontiers III* debuted in 2017, and I use the film as an introduction to an activity modeled after the television show “Shark Tank.” Students devise an ad campaign to “sell” some component of how humans are sustainably using the ocean such as with offshore wind, aquaculture, ferry boat transportation, etc. Volunteer judges (or “Sharks”) then award students with pretend advertising dollars based upon the student’s understanding of how humans are sustainably using the oceans as well as the creativity of their ad campaign.

The new ocean plans rely heavily on the regional ocean data portals that are also demonstrated in the film. These online mapping tools are an excellent resource for teachers and students (see Sidebar 2). Using actual data not only makes what we do more meaningful to students, it is also an important component of the Next Generation Science Standards (NGSS), which emphasizes that students become proficient in predicting, engineering, modelling, and then analyzing results. This school year I plan to work with colleagues to use the data portals to create fun, engaging activities. For example, students can be presented with a real-life situation to examine and then work in small groups to create their own maps with data layers specific to that particular example.

What a great professional development opportunity it would be to have the *Ocean Frontiers* curriculum developers and regional ocean portal team members give an NMEA annual conference workshop about all the amazing things students can do using the data portals! For teachers interested in using *Ocean Frontiers III* in the classroom, a discussion guide for this latest film—for middle, high school, and college level courses—is in development and should be available in Fall 2018.



Marine Ecology Ocean Stewards appreciating the natural history of Long Island, while conducting a river clean-up and testing the Nissequogue River for nitrates, phosphates, and dissolved oxygen. Courtesy of Kimberly Williams

SIDEBAR 2. DATA PORTAL LINKS

Northeast Ocean Data Portal:

<http://www.northeastoceandata.org>

Mid-Atlantic Ocean Data Portal:

<http://portal.midatlanticocean.org>

West Coast Ocean Data Portal:

<http://portal.westcoastoceans.org>

In addition to the three films about ocean planning in US waters, the filmmakers produced *The Great Bear Sea: Reflecting on the Past-Planning for the Future*, which is about recent marine planning efforts in Canada involving First Nations and the Province of British Columbia. There are so many fantastic, ready-to-use activities for elementary, secondary, and post-secondary educators on the website, but since my students and I have a soft spot for otters, I especially loved showing my students the Otter Kelp Research video clip in the Great Bear Sea Case Studies. When we covered vocabulary and concepts related to food webs and predator-prey interactions, I asked the students to view the short video at home and come back to class ready to discuss: a.) what the scientists are doing in the video; b.) how students would set up a similar research study in the area where we live; and c.) how the study teaches us the value of healthy ecosystems. After that discussion, I asked them to watch any of the other case studies and write answers to the same three discussion questions.

The videos are easily accessible to all students, visually beautiful, and short enough to keep the students engaged and asking questions. Once I knew they had watched and discussed all the clips, it was a perfect segue into Lesson 3 (page 49 of the free downloadable curriculum guide). We organized the students into groups and asked each group to research and be ready to report on the questions asked in the curriculum guide, as well as present any questions that arose in their group during their research. Since there are so many learning styles in the classroom, questions and comments from students provide a wide and diverse opportunity for an exchange of thoughts.

There is a reason that every type of student wants to participate in our school's marine science courses, and I owe a great debt to people like the producers of the Ocean Frontiers film series who create content that help teachers reach different learner types. For students, it's simple—they live on a planet of islands and they feel connected to it, even if they don't know it yet! I take it as my personal mission to help every student find and develop their inner ocean steward, so I have absolutely come to rely upon the types of materials offered by the Ocean Frontiers staff. If your school doesn't have a marine science program, this film series can support any existing environmental or ecological curricula.

There has never been a better time to ensure that students understand the role they play in caring for the ocean, whether it touches their own shores or other bodies of water around the planet. Now, more than ever, we owe it to our students to make sure they have seen what a difference working together and sharing solutions from around the globe have made for people from all walks of life like those introduced in the Ocean Frontiers film series. From farmers in Iowa to fishers in Oregon, scientists in Massachusetts to First Nations People in British Columbia, and yes, even to students in our classrooms, who are learning how to succeed in becoming our next generation of ocean stewards—our oceans connect us all.

KIMBERLY WILLIAMS has her master of science degree in marine environmental science and is also certified in earth science, biology, and general science, grades 5-12. In addition to fun-filled summers and weekends of fieldwork, she has enjoyed teaching marine science for over 20 years to students of all ages, but her primary audience is her high school oceanography and marine ecology "Squiddos." Her students at Smithtown High School in New York can take her courses for college credit through the School of Marine and Atmospheric Sciences at SUNY Stony Brook and participate in many field experiences throughout the year.



Long Island Sound Science and Use students conducting water quality tests to compare pristine areas to those more visibly impacted by humans. Courtesy of Kimberly Williams