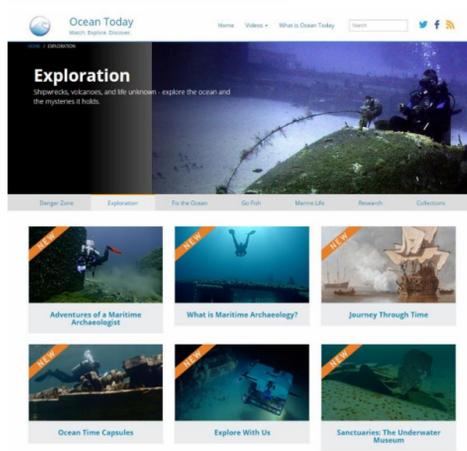




Ocean Exploration Education Highlights August 2017

Welcome to the NOAA Ocean Explorer Education Highlights newsletter. This monthly newsletter provides you with quick access to ocean exploration-focused, standards-based tips and tools to bring the excitement and science of ocean exploration into your classroom!

Ocean Today: Educational Videos on Ocean Topics



[Watch, Explore, Discover!](#)

NOAA's [Ocean Today website](#) is an exciting, multimedia repository that features videos on all aspects of the ocean realm -- exploration and discoveries, marine life and science. It offers a wealth of short educational videos perfect for using in formal and informal education settings. Topics covering the deep sea include shipwrecks, volcanoes, unknown life forms, and exploring the ocean and the mysteries it holds.

Summer Reading

The Incredible Shrinking Cup

Styrofoam cups are a great way to illustrate the impact of pressure at depth. One of the traditions on an oceanographic cruise is to shrink Styrofoam cups which have been drawn on with a permanent marker. This is done by having the cups hitch a ride on a scientific instrument which is sent down into the deep ocean.



Styrofoam cups after visiting 2,500 meters deep attached to the ROV *Seirios*. Image courtesy of the NOAA Office of Ocean Exploration.

Styrofoam cups are expanded polystyrene (plastic). The polystyrene is expanded by having a gas (air) injected into it, creating little bubbles. When the cups are sent down to extreme depths, the water pressure compresses the plastic, forcing all of the gas out. So how much pressure is placed on a cup when it goes down into the deep ocean? Find the answer [here](#).

Image of the Month

Sea Star at Lunch

During the [Laulima O Ka Moana: Exploring Deep Monument Waters Around Johnston Atoll](#) expedition we encountered a number of deep-sea sea star species alive and in their natural habitat. This permits us to observe how anatomical features function when the animal is interacting with its surroundings.



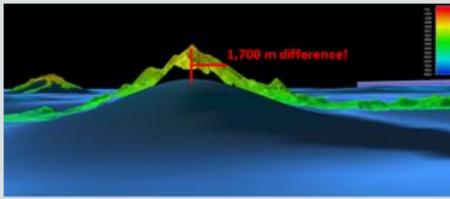
Sea star feeding on precious coral. Image courtesy of the NOAA Office of Ocean Exploration and Research, 2017 Laulima O Ka Moana.

One such structure within sea stars is called a pedicellaria. In some species, such as brisingids and their relatives (such as the shallow-water *Asterias*), pedicellariae are claw-shaped and occur on stalks in clusters or in dense aggregations. Sea stars, such as brisingids, are covered with pedicellariae and use them in order to capture food. This image shows a sea star using its pedicellariae to feed on precious coral.

Read more about the eating habits of sea stars [here](#).

Upcoming Expeditions

From September 3 through 30, 2017, the NOAA Ship *Okeanos Explorer* will conduct remotely operated vehicle (ROV) and mapping operations in the vicinity of Musician Seamounts north of the Hawaiian archipelago and in close proximity to the recently expanded Papahānaumokuākea Marine National Monument.



The mapping mission in January in the Jarvis Unit of the Pacific Remote Island Marine National Monument discovered that a seamount was 1,700 meters higher than satellite data previously indicated.

Watch the ROV *Deep Discover's* live video feeds on your computer [here](#), or download our free mobile app (for [iOS](#) or [Android](#) devices) that will allow you to bring the excitement of ocean discovery directly to your smart phone or tablet. Visit our [website](#) to see exciting discoveries we have made thus far this year. An overview of the entire 2017 field season can be found [here](#).



LT Aaron Colohan, Operations Officer, NOAA. Image courtesy of the NOAA Office of Ocean Exploration and Research.

Math on the High Seas

A common complaint from those not fond of math courses is: Since I don't want to work with math, why do I need to know this? But math is an important element for...well...pretty much everything! When you shop for food, you need to know how much things will cost. When you drive your car, you need to know how far you can drive until you need to fill up again. When you are looking over your pay stub, you need to be able to figure out if you have been paid correctly for your time. These are all math problems.

On NOAA Ship *Okeanos Explorer*, everyone uses math in some way - from the ship's crew, to the science team, to the remotely operated vehicle (ROV) team. [Read here](#) for some examples of how math is used by our various *Okeanos Explorer* team members.



Educators build methane hydrate models during a NOAA Office of Ocean Exploration and Research professional development workshop at the Dauphin Island Sea Lab in Alabama in March 2017. Image courtesy by Tina Miller-Way.

Education Professional Development

NOAA OER's free full-day professional development workshops provide opportunities for teachers and other educators to engage in learning more about ocean exploration. These workshops are designed to introduce participants to exemplary tools and resources for the classroom to enhance the teaching and learning of ocean science and NOAA endeavors in ocean exploration. Onsite professional development workshops are offered around the country in cooperation with our [Ocean Explorer Education Alliance Partners](#).

Upcoming fall workshops will be listed on our [website](#) soon.

Note: This workshop is a combination of the previously offered *Why Do We Explore?* and *How Do We Explore?* workshops.

We hope that these Exploration Education Highlights will help you focus more of your classroom teaching and learning on the amazing discoveries taking place right here, right now, on our own Planet Ocean! Onward and downward!

[VISIT OUR WEBSITE](#)



[Feedback](#)

[Subscribe to Educator Email/Newsletter](#)