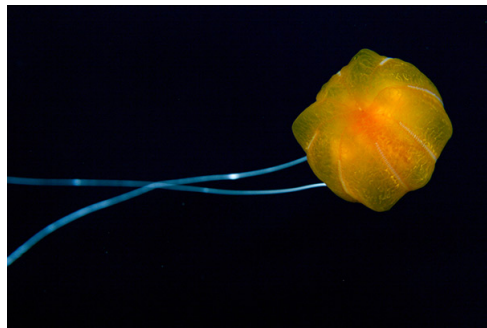




Ocean Exploration Education Highlights November 2016

Welcome to the NOAA Ocean Explorer Education Highlights email. These monthly emails provide 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!

What's the Latest from NOAA Ocean Exploration for Your Classroom?



This image of "Mr. Pumpkin", an unusual jellyfish, in the water column was taken by the *Global Explorer* remotely operated vehicle during the [Hidden Ocean 2016: Chukchi Borderlands Expedition](#). Image courtesy of *Oceaneering-DSSI*.

Wondering What Has Recently Been Explored in the Arctic?

In the summer of 2016, scientists aboard the U.S. Coast Guard Cutter *Healy* explored the Chukchi Borderlands - a region located to the north of Alaska with water depths ranging from the shallow shelf edge to 3000 meters.

The expedition team studied the tightly linked, yet poorly understood, sea ice, pelagic and benthic communities of the region to better understand the interdependence of these three realms in the wake of rapid environmental change.

Read about [two University of Washington graduate students' experience studying polar bears](#) during this expedition, explore [what tools are used to sample the deep mud on the Arctic ocean floor](#), or [find out about Mr. Pumpkin, a favorite deep-sea jelly from this expedition!](#)

Standards-based Lesson

[Just Jelly](#) (Grades 9-12)

NGSS:
PE - HS-LS2
DCI - LS2.B

In this lesson, students compare and contrast the feeding strategies of at least three different types of gelatinous zooplankton, explain why gelatinous zooplankton may function at several trophic levels within a marine food web, and, given information on the vertical distribution of temperature in a water column, make inferences about potential influences on the distribution of planktonic species in the water column.

Hidden Ocean Expedition 2016: Chukchi Borderlands
Just Jelly
(adapted from the 2005 Hidden Ocean Expedition)

Focus: Gelatinous zooplankton in the Chukchi Borderlands

Grade Level: 9-12 (Life Science)

Focus Question: What are the common gelatinous zooplankton in the Chukchi Borderlands environment, and what are their ecological roles?

Learning Objectives:

- Students compare and contrast the feeding strategies of at least three different types of gelatinous zooplankton.
- Students explain why gelatinous zooplankton may function at several trophic levels within a marine food web.
- Given information on the vertical distribution of temperature in a water column, students make inferences about potential influences on the distribution of planktonic species in the water column.

Materials:

- Copies of *Observations on Arctic Gelatinous Zooplankton and Analysis Guide for Observations on Arctic Gelatinous*

Note: All lessons are written to support the [NGSS](#) and the [Ocean Literacy Essential Principles and Fundamental Concepts](#).

Image of the Month



[A trawl catch of the rich benthic fauna on the Arctic shelf](#) at 50 meters depth showing lots of brittle stars, feather stars, and sea cucumbers. Image courtesy of *Katrin Iken, University of Alaska Fairbanks*.

Life on the Arctic Deep-sea Floor

Contrary to what one might expect in an ice-covered ocean, the seafloor of the Arctic Ocean is actually teeming with life. These seafloor animals are called "benthos." The most abundant types of benthos we find are brittle stars, sea cucumbers, sea stars, snails, clams, bristle worms, and, occasionally, crabs.

Read [Life on the Arctic Deep-sea Floor](#) to learn more about the reasons there is so much benthic life in the Arctic.



Alexis Walker observes as Sandra Thornton assists with filtering water collected from the water column. *Image courtesy of Caitlin Bailey, GFOE, The Hidden Ocean 2016: Chukchi Borderlands.*

[Meet Sandi Thorton, NOAA Teacher at Sea](#)

As a PolarTREC Fellow/NOAA Teacher at Sea, Sandi Thorton, a science teacher at Broadwater Academy in Virginia, was privileged to travel to a remote region north of Alaska and participate in the [Chukchi Borderlands 2016 Expedition](#).

There she dove into investigating the sea ice, pelagic and benthic communities beside an amazing group of scientists, students, and technicians, and experienced life aboard a USCG icebreaker/research vessel. Her experiences included seeing polar bears, walruses, and a ribbon seal, exploring life on the seafloor via a remotely operated vehicle, and viewing a ciliate-infected copepod under the microscope!

Read more about her experience [here](#).



Teachers participant in the [Invent a Robot lesson](#) at Dauphin Island Sea Lab in Alabama.

Image courtesy of NOAA.

Upcoming Education Professional Development

Our Fall 2016 [professional development opportunities](#), *Exploring the Deep Ocean with NOAA*, are listed on our website.

Sign up for a full-day onsite professional development at an aquarium or science center near you!

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!

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