

Open Ocean Survival Activity Sheet

Name: _____

Date: _____

Instructions:

- Gather your materials to survive in the open ocean!
 - Creature ID cards, hole punch, string or yarn for wearing creature cards, Colorful paper (yellow, blue, and red), long pieces of tape, rope, or string to mark off ocean zones in the classroom, glue or tape to stick the two sides of the creature cards together, *Optional*: coloring materials (markers, pencils or crayons).
- Each person will pretend to be a specific open ocean creature. Create your creature card to learn more about your new identity!
 - Cut out your creature card on the **cut line**.
 - Fold on the **fold line**. You should have a creature image on one side and the description on the other.
 - Glue (or tape) the two halves together.
 - Hole punch the top corners.
 - Cut out a piece of string or yarn about a foot long. Tie each end to the hole punched corners on the ID cards.
 - Optional*: Color in your creature picture to bring it to life!
 - Drape it around your neck as your new ID.
- Read the back of your card to learn about your creature.
 - Record the words in **bold** on your worksheet. These clues will help you know what action to take during the game!
- Create your own animal dance that represents your creature! For example, if you are a shark, you could put your hand on top of head to represent a dorsal fin.
 - Practice your dance!
 - Describe your dance below:



Establish the ocean zones!

5. Now that you have created your creature card, you will establish your ocean zones in the classroom. Make sure you have plenty of space!

6. Create the ocean zone labels. Use a black marker and write in big letters (decorate if you want!):

- a. "Sunlight Zone" on yellow paper.
- b. "Twilight Zone" on blue paper.
- c. "Midnight Zone" on red paper.

7. Use tape, rope, or string to create zones by marking lines across the classroom.

- a. Label the zones with your paper labels.
- b. There should be enough room so that all students can stand in each zone.
- c. Tape the sunlight zone on one side, the twilight zone in the middle, and the midnight zone on the other side.
- d. *Optional:* You can use the tape, rope, or string to create a border around each zone.



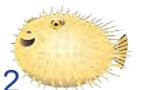
Descend through the ocean zones!

8. Your teacher is the narrator. Listen as they read the introduction:



"Close your eyes and imagine that you are standing at the edge of the beach looking out to sea—beyond the horizon. You can see past the shoreline, past the coastal waters to the open ocean. The open ocean covers more than half our planet Earth and is home to a variety of plants and animals that have adapted to survive from the surface to the very deep sea.

You have been given a new identity on your creature ID card and I have a new identity also! I am Dr. Open Ocean. I study life in the open sea and I am about to head out on my underwater submersible, the Pisces IV. I am going to journey through the open ocean zones in my submersible to explore some of the adaptations that help different organisms survive in their part of the ocean. Are you ready to come with me on this journey? Let's go investigate how well your organism might do if you were forced to live somewhere else!"





9. As Dr. Open Ocean begins their descent into the first zone, they will share their observations with you. You will listen for clues about how life exists in this region and use the information on your card to figure out how well you survive:
- If the description sounds like your ideal environment, do your creature dance and stand up!
 - If the description sounds like you might do okay (but not great), do your creature dance kneel down!
 - If the description sounds like you will not do well at all (and might even die), do your creature dance and sit down!
8. Gather in the area labeled the "Sunlight Zone" and listen to the next part of the adventure in the open ocean - **The Sunlight Zone:**



"Prepping for a trip like this takes a lot of effort! My team and I have been hard at work organizing the journey, gathering supplies, and planning for our research goals. After a long journey on a transport boat, The Pisces IV is ready to be lowered into the sea. I get into the 20 foot long submersible, settle on the cushions, and peer out the small bubble-like windows in anticipation.



The Pisces IV will take you on your journey through the deep sea!

As the sub begins to sink below the surface, the water line divides my window and I glance at the sky above. The sun warms the water and can even shine through to about 600ft in tropical waters! With so much sunlight, organisms like phytoplankton and algae that use the sun's energy to photosynthesize thrive in this zone. In fact, I see an algae drifting by, kept afloat with it's own packets of air!

With so many photosynthesizers around, there is also an abundance of herbivores, like zooplankton, who thrive by feeding on plant matter. Animals that feed on zooplankton and other surface swimmers also do well in this sunlight zone. With my sub still just at the surface, I look across the sea and I see a jelly! Like the algae, it has a bubble of air to help it float at the surface while the rest of it, the long dangling tentacles, drift below and catch food.



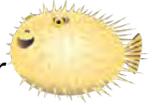
This jelly floats on the surface!

Because there is so much light in this region, it is much easier to see what is around. Creatures have adapted to have colors or patterns, like counter shading, that help them blend in survive well here. They can hide from predators more easily or go unnoticed when catching prey!"



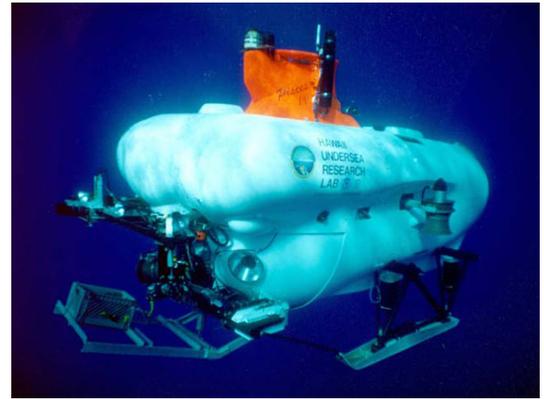
11. Look at your card and determine if you will do well in the sunlight zone.

Remember, if you will do well here, stand up. If you will do okay, but you might do better deeper in the water, kneel down. If the sunlight zone is just not for you, sit down. Don't forget to do your creature dance!



12. Move to the area labeled "Twilight Zone" and continue listening to the next part of the adventure in the open ocean - **The Twilight Zone:**

"Now that we've explored a little bit of the surface waters, it's time to dive deeper into the twilight zone! Brace yourselves as we descend from about 600 feet up to 2,000 feet deep. Here, there is very little light and the water is cold without the sun to warm it. There is also less oxygen. In order to see the creatures around me, I have to turn on all of my lights!



The picces IV descends!

Many animals here are adapted to living in low light conditions. There are a lot of animals who make their own light, a feature called bioluminescence. They can use this either as camouflage from predators below or as lures to attract prey. Some have even adapted to have specialized eyes. One such squid has two different sized eyes. The larger one is thought to be used to look upward, taking in the limited light that may come through the surface waters. The other smaller eye then, peers downward, catching glimpses of any bioluminescent animals.



The cockeye squid!

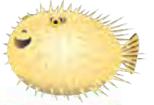
The ocean twilight zone is also an important source of food for many marine animals. Some zooplankton and fishes use the twilight zone to hide during the day and then they swim shallower at night to feed. Some animals, like the sperm whale, have to come to the surface to breathe but feed on giant squid that live in the twilight region. This pattern of movement is called vertical migration."

13. Look at your card and determine if you will do well in the twilight zone.

Remember, if you will do well here, stand up. If you will do okay, but you might do better deeper or shallower in the water, kneel down. If the twilight zone is just not for you, sit down. Don't forget to do your creature dance!



14. Move to the area labeled "Midnight Zone" and continue listening to the next part of the adventure in the open ocean - **The Midnight Zone:**



"Our next and last stop is the midnight zone, where we are engulfed in complete darkness! The depth in this zone can range from about 2,000 feet to over 10,000 feet in some parts of the ocean! The Pisces IV can carry us to 6,500 feet - just what we need for this trip to reach the bottom at our given location. As we near the final stage of our study, we have to pay close attention to our timing since the submersible can only support us for about 7-9 hours. So let's get to it!



It's too dark to see without lights in the twilight zone!

The water here is near freezing (usually about 39 degrees F) and dark. There is no light for photosynthesis so no phytoplankton or algae can grow here. Without the ability to see in the darkness, some organisms have even evolved without eyes! Water pressure is also very great here because of all the thousands of feet of water pushing down from above. A lot of the animals tend to be blobby, watery, and pale in order to survive the high pressure.

There is very little food in the deep ocean, so many predators also have large heads, mouths, and teeth to be able to eat whatever comes their way (otherwise, they might not get a chance to eat for a long time!). Others rely on matter that falls from the zones above, known as marine snow. This debris seemingly sprinkles down (like snow!), eventually reaching the seafloor. Some animals can filter the food scraps from the water with specialised feeding appendages. Others live in the mud on the seafloor and constantly sift through the sand for food."



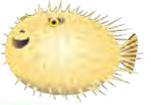
Deep sea fish with large teeth!

15. Look at your card and determine if you will do well in the midnight zone.

Remember, if you will do well here, stand up. If you will do okay, but you might do better deeper in the water, kneel down. If the midnight zone is just not for you, sit down. Don't forget to do your creature dance!



16. Now that you've made it to the deepest part of the ocean, it's time to go back up! Listen as your teacher tells the final story of your journey back up to the surface. Your teacher will indicate what zone you are in. When you get to the zone that you do best in, stay in that habitat.



"We are approaching the limit of our dive time and need to head back up to the surface. Before our submarine leaves the midnight zone, let's say goodbye to the creatures who are adapted to living in the deepest part of the ocean. Creatures that are standing, do your creature dance and then tell us about the adaptations that help you thrive in the midnight zone.

All other creatures – come with me as our Pices IV rises up to twilight zone. If this is your ideal habitat, do your creature dance and then tell us about the adaptations that help you thrive in the twilight zone.

All remaining creatures – come with me as our Pices IV continues rising to the surface zone. If this is your ideal habitat, do your creature dance and then tell us about the adaptations that help you thrive in the surface zone."

17. *Optional concluding activity:*

- a. Group Habitat Discussions: Talk with the other organisms adapted to your zone and discuss what sorts of adaptations help the creatures survive well in your zone. (Each group can also write their key ideas on the board for the whole class to discuss and compare.)
- b. Record Your Creature Zone: Create a model of the ocean zones on the board. Write the name of your creature in the zone where it was best adapted.



