Biomass of the Deep Sea Activity Guide
Biodiversity Camp

What you need

- Activity Guide Worksheet, included in the final pages of this Activity Guide
- Scissors
- A metal fastener
- Blue glitter gel pen or another blue writing utensil

Preparation

The ocean contains five zones categorized by the ocean's depth in that zone: epipelagic, mesopelagic, bathypelagic, abyssopelagic, and hadopelagic. The epipelagic zone is the top zone and represents the ocean's depth from the surface to approximately one-eighth of a mile (200 meters) below the surface. The hadopelagic zone is the bottom zone and represents the depth of ocean trenches. Some trenches reach a depth of over 6 miles (over 10,000 meters) below the ocean's surface!

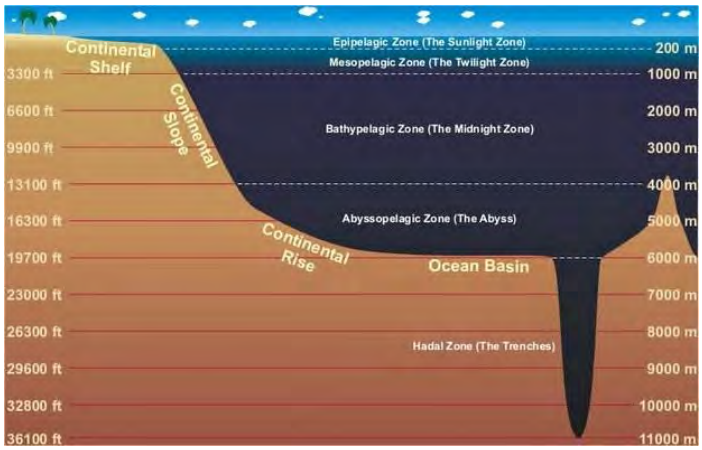

Image from NOAA

The ocean zone below the epipelagic zone is the mesopelagic zone, and includes ocean water at depths between approximately one-eighth of a mile (200 meters) and over one-half of a mile (1,000 meters) below the surface of the ocean. Organisms that live in this zone have adapted to the low light and low oxygen in this zone. Many organisms in this zone, such as deep-sea lanternfishes and dragonfishes, are bioluminescent and produce light energy within their body!

What to do

Follow the instructions on and use the Activity Guide Worksheet to explore deep-sea life!

What is happening?

Every day, deep-sea organisms, including deep-sea sharks, from the mesopelagic zone move from the deep water of this zone to the surface of the ocean. These organisms move to the surface of the ocean at sunset, so they can feed there, in the epipelagic zone, at night. Then, at sunrise, they return to the mesopelagic zone and stay there during the day. This daily migration is known as the deep-scattering layer, and it is the greatest movement of biomass in the ocean.

Deep-sea sharks. Illustrations by Laura Mohr.

Biomass of the Deep Sea Activity Guide Worksheet
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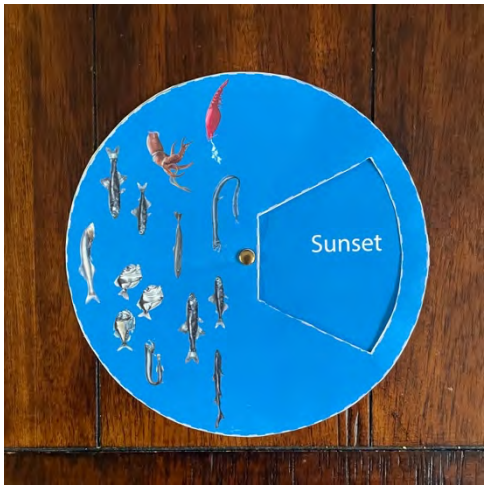
Part 1.
Construct a wheel to model the movement of deep-sea organisms in the deep-scattering layer. Cut out the two circles on pages 2 and 3 of this Activity Guide Worksheet. The grey dashed lines show you where to cut. Don't forget to cut out the white polygon within the circle on page 2 to create a window. Then, place the circle from page 2 on top of the circle from page 3 and attach them using a metal fastener. Hint: align the small white circles in the center of the circles from pages 2 and 3 and poke the fastener through both circles to secure them together. Illustrations of deep-sea organisms, the sun, and the moon by Laura Mohr.

The completed wheel will demonstrate movement of deep-sea organisms in the deep-scattering layer.

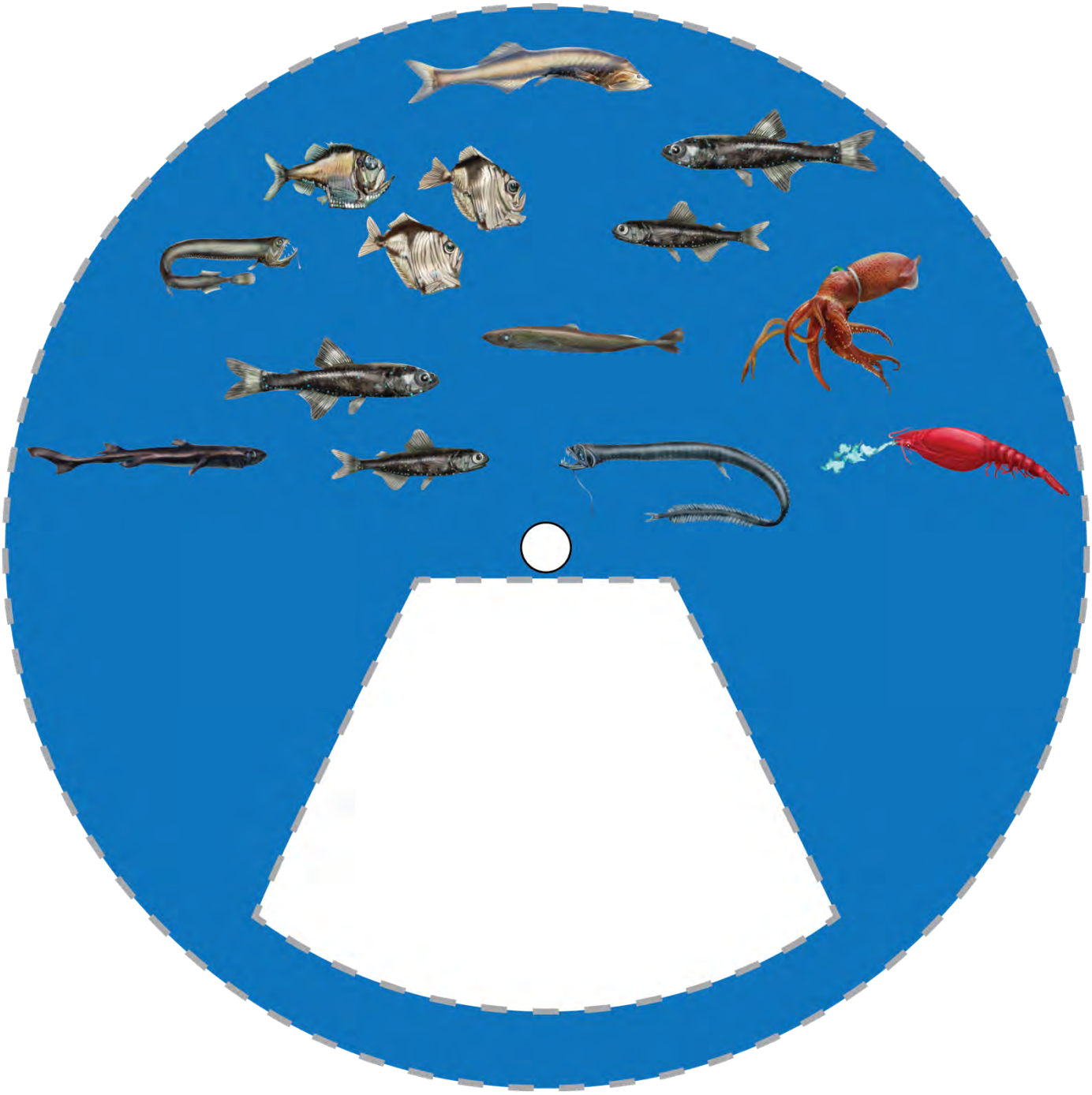
At night, the deep-sea organisms can be found feeding at the ocean's surface.

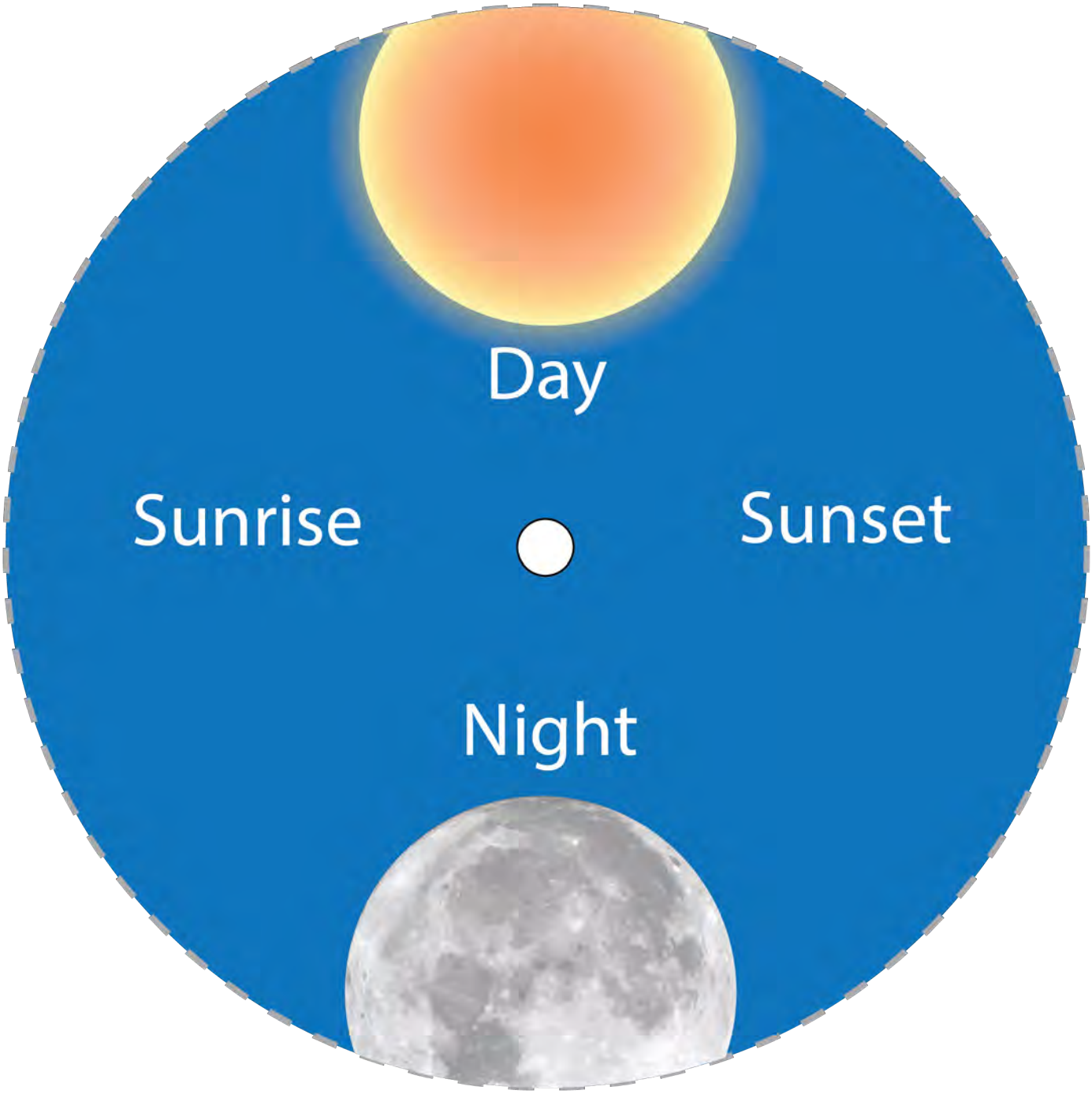
At sunrise, the deep-sea organisms begin their descent back to the deep waters of the mesopelagic zone of the ocean, about one-half of a mile (800 meters) below the surface of the ocean.

During the day, the deep-sea organisms stay in the deep ocean waters of the mesopelagic zone.



At sunset, the deep-sea organisms begin moving up, towards the ocean's surface, to feed.




Day
Sunrise
Sunset
Night

Part 2.
Use a blue glitter gel pen or another blue writing utensil and color the white circles on the lanternfish to represent its bioluminescent photophores. Illustration of lanternfish by Laura Mohr.