

# Human Impact Lab: Species Spotlight: Leatherbacks

## Loggerhead Marineline Center

Loggerhead Marineline Center is an ocean conservation organization and sea turtle hospital located adjacent to one of the most important sea turtle nesting beaches in the world. The Center features an on-site campus hospital, research laboratory, educational exhibits and aquariums, and also operates the Juno Beach Pier, which hosts world-class angling and sightseeing. The Center's conservation team works with 76 local and international organizations across six continents to form partnerships and share conservation initiatives and best practices that are core to its mission of ocean conservation. The Center is expanding and has launched its Waves of Progress capital expansion campaign, designed to accelerate and amplify LMC's conservation and education impact.

Our mission is to promote conservation of ocean ecosystems with a special focus on threatened and endangered sea turtles. Our vision is to be recognized locally and internationally as the leading authority in sea turtle education, research and rehabilitation.



## Lesson Objectives

- I can describe the major adaptations of a Leatherback sea turtle
- I can compare their adaptations to those of other sea turtle species
- I can observe the principle of buoyancy through the Cartesian Diver activity

## Vocabulary

**Buoyancy:** the ability or tendency to float in water or air or some other fluid.

**Density:** a measure of mass per volume

**Mass:** The amount of matter or substance that makes up an object

**Pressure:** continuous physical force exerted on or against an object by something in contact with it.

**Volume:** The amount of space occupied by an object.

## Resources

[Marinelife.org/homelearn](http://Marinelife.org/homelearn)



Visit [Marinelife.org](http://Marinelife.org) to learn more about Loggerhead Marineline Center!

## Cartesian Diver Activity

Leatherback sea turtles are able to dive to depths of more than 1,000 meters (3,000 feet) in search of their prey, jellyfish. They are able to withstand the pressure underwater while diving these depths due to their rigid breastbones and “leather-y” shell that can collapse during deep dives. When diving, Leatherbacks are able to regulate their buoyancy by controlling how much air they inhale.

Through this activity, you will be able to demonstrate the principle of buoyancy (Archimedes’ principle) and how it changes as pressure changes.

### Materials:

- 2 liter bottle (cleaned)
  - Water
- Pen cap (with no holes on top end)
  - Modeling clay

### Directions:

1. Grab your clean 2 liter bottle and removed any labels on the outside.
2. Fill the bottle completely to the top of the rim
3. Place a pea-sized amount of clay around the bottom stick on the pen cap to make your “diver”. Make sure that the larger opening at the bottom is not covered.
4. Place your “diver” in the bottle and seal the top tightly with the bottle cap.
5. Gently squeeze the bottle to make the diver move.
6. Slow release the bottle and watch the diver move again.
7. Repeat this to observe the diver moving up and down in the water column.

### How does it work?

This activity shows us how density works. When you squeeze the bottle, the air bubble in top of the pen cap compresses and water flows in. This makes the pen cap more dense than the water around it and the cap sinks. As you release the bottle, the air bubble expands, the water is forced out of the cap, and the pen cap rises.

To extend this activity, you can try out different bottle sizes, make different “divers”, add salt into the water, or reduce the amount of water you put in the bottle and see how it impacts the “divers” ability to be buoyant.

