**Class Outline: Animal Defenses on the Sandy Beach**

**Grade: 1st**

**Developed By: Zoe Allen**

**Question: How do animals in the sandy beach protect themselves?**

(As class starts, have students take a sheet of paper and fold it in half. Half for questions/observations. Half for drawing.)

7: Welcome and introduce sandy beach

* What is the sandy beach?
	+ Video: waves on the beach
	+ Take a moment to observe: What do you observe about the sandy beach?
		- Habitat, waves, sand
* What is sand made of?
	+ Take a minute to discuss with your class
		- Rocks, shells, glass, coral eroded away by the waves
* Review of tides
	+ What do you notice in these two pictures? Is this the same beach?
		- The same beach, 6 hours apart
		- The tides are caused by the gravitational pull of the Earth and Moon
* What challenges do animals face on the sandy beach?
	+ Waves, predators, people, and much more

5: Students meet with teacher and compile questions

* What kinds of animals live in the sand? How do they survive?
* What are some adaptations that help them survive in their habitat?

7: Adaptations animals use to protect themselves

* What is an adaptation?
	+ A characteristic or behavior that helps an animal survive in its habitat
	+ Examples: Humans have thumbs to hold things, cats and dogs have fur to keep them warm, birds have wings to help them fly.
* Example: Sand crab (AKA mole crab)
* How do sand crabs survive on the beach?
* Video: Sand crab burying itself <https://www.pbs.org/wnet/nature/blog/pacific-mole-crabs-deep-look/>
	+ Bury themselves in the sand
* Video: Sand crab feeding <https://youtu.be/XdL78W22Ywo>
* Do it do it: Become a sand crab
	+ Twist in your seat to dig into the sand
	+ Make your arms into antennae and wave them around to catch food
	+ Lick the food off your antennae and repeat

5: Students meet with teacher and compile questions

* Have you ever been knocked down by a wave at the beach? How can you stop yourself from being knocked down?
* What are some ways animals can stop themselves from being knocked over by waves?

7: Adaptations animals use to protect themselves

* How might an animal in the sand protect itself from the waves?
* Example: Sand dollar
* Draw with me: Sand dollar



* + Students draw along with teacher while teacher uses whiteboard
* Video: sand dollar bed <https://www.youtube.com/watch?v=mvdFPvoBvmo&feature=youtu.be>
	+ What do you observe the sand dollars doing?
* How do sand dollars stay in the sand?
	+ Take a minute to talk to your class: How do you think the sand dollars stay in the sand?
		- Eat a little bit of sand to weigh them down

5: Students meet with teacher and compile questions

* Do the animals that live in the sandy beach live on top or below the sand? What tools could you use to find these animals?
* How do humans affect the sandy beach habitat?

7: Finding these animals in their natural habitat

* How do humans affect the sandy beach habitat?
	+ Pollution
	+ Talk a minute to talk to your class: What are some ways we can all help the sandy beach?
		- Throw away trash
		- Recycle
		- Reduce amount of trash we produce
		- Use less plastic
* One of the ways we can help is by studying it- lets see how!
* What are some tools we could use to find these animals in the sand?
	+ Shovel or hands for digging
	+ Colander for shifting through sand
* Video: Sand crabbing and exploring the beach

5: Students meet with teacher and compile questions