

# Coastal Protections:

## Build Your Own Hybrid Reef

### Student Worksheet

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You will be working in small groups, making your own model of a hybrid reef, and finding the best structure, design and material to protect the coastline.

1. Start off by brainstorming which materials are best for creating your hybrid reef. If time allows, you may bring in your own recycled materials from outside the classroom to construct their reef.
2. Construct your reef using the shapes you think would best protect your coastline, making sure that it fits inside the container provided by your teacher.

- a. If doing, construct taller and shorter reefs.

The former represents a healthy reef, and the latter a degraded reef.

3. Before putting your structure in the container, fill one half of the container with sand, going about halfway up the side of the container. Bank the sand against one side of the container so that you can still see the bottom through the other half.
4. Fill the containers with water so it hits just under the sand. The sand will represent the coastline, and the water is the ocean.
5. Make waves in the container before putting the reef in. Do this by rocking the container back and forth gently, so the water starts to move to the coast. This will represent waves hitting a shoreline without any coastal protection.



6. Record your observations. Take note of how much the sand is moving.
7. Put your barrier in the container. This represents the hybrid reef.
8. Run the experiment again, this time with your reef in place, and record any differences.
9. If you made degraded and healthy reefs, test each and record your observations.

# Build Your Own Hybrid Reef

## Student Worksheet

1. Obtain materials from your teacher and fill out the chart below with observations from each coastline model.

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<b>Predict</b> what you think will happen			
	Do the waves reach the shoreline?	How do waves affect the beach?	Notes
Container with no coral reef			
Container with healthy reef			
Container with degraded reef			

\*Photos provided by the Coral Resilience Lab; for more information on photos, and photo credits, please consult this [link](#)

<b>Observe and Record</b> what happened			
	Do the waves reach the shoreline?	How do waves affect the beach?	Notes
Container with no coral reef			
Container with healthy reef			
Container with degraded reef			

Additional observations:

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Dive in deeper...

1. What happened when waves hit your beach and there was no coral present?
2. What would happen to **coastlines** if the coral reefs were to diminish? Why?
3. What would happen to **humans** if coral reefs were to diminish?
4. Why did you choose the **material** and **structure** that you did in designing your reef?

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5. How do you think that impacted your reef's ability to protect the coastline?  
Do you think ocean organisms had much habitat in the structure you created?

6. Using what you already know about global climate change, what are some factors that are causing the rise of global temperatures?

7. Based on what you've learned, what do you think will happen to the number and type of organisms present on the reef if it continues to degrade? How will this impact the ecosystem overall?

