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Living Oceans
Foundation

STANDARDS

- **CCSS:** RST.9-10.1, 2, 3, 4, 5, 7, 8, 10; RST.11-12.1, 2, 3, 4, 8, 10; SL.9-10.1, 2, 3, 6; SL.11-12.1, 2, 3, 6
- **NGSS:** HS-ESS2-1, HS-LS2-6
- **OLP:** 5.B.7, 5.B.8, 5.C.33, 7.A.5, 7.C.2, 7.C.3

ONLINE CONTENTS

- [Reef Zonation Quiz](#)
- [Coral Reef Zones Video](#)
Scientists divide coral reefs into zones. They base these divisions on location within the reef and characteristics such as depth, wave action, light intensity, temperature, and water chemistry. Zones of the reef include: lagoon, back reef, reef flat, reef crest, and fore reef.

REEF ZONATION

This lesson is a part of the *Reef Zonation* unit, which explains the characteristics and location of the reef zones. Below is a summary of what is included in the entire unit.

UNIT CONTENTS

A. [Background Information](#)

- Reef Zones
- Zonation Patterns

B. Lessons

[Watch it! Coral Reef Zones](#)

- A worksheet to accompany the [Coral Reef Zones](#) video

[Modeling the Reef](#)

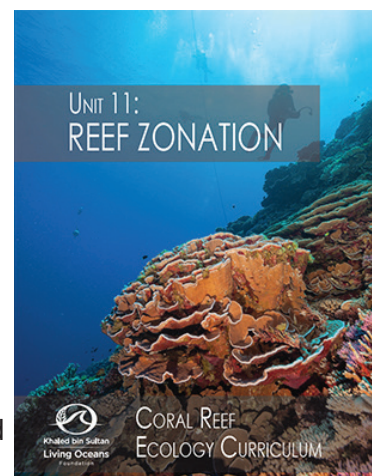
- An art project to research and model a coral reef

[GIS Mapping](#)

- An activity exploring interactive GIS mapping tools

[Read it! Let's Name the Zones](#)

- A worksheet to accompany the [Let's Name the Zones, the Zones, the Zones of the Reefs... of Raivavae and Tubuai](#) field blog





WATCH IT!

CORAL REEF ZONES

INSTRUCTIONS: Watch *Coral Reef Zones* YouTube video (https://youtu.be/1wMrB37_GvI) and answer the following questions.

1. What do scientists divide coral reefs into? _____

2. List five characteristics that define coral reef zones.

3. What are the main two factors influencing differing zonation?

4. What is the most common type of reef? _____

5. What is a fringing reef?

6. Describe the characteristics of a fringing reef.

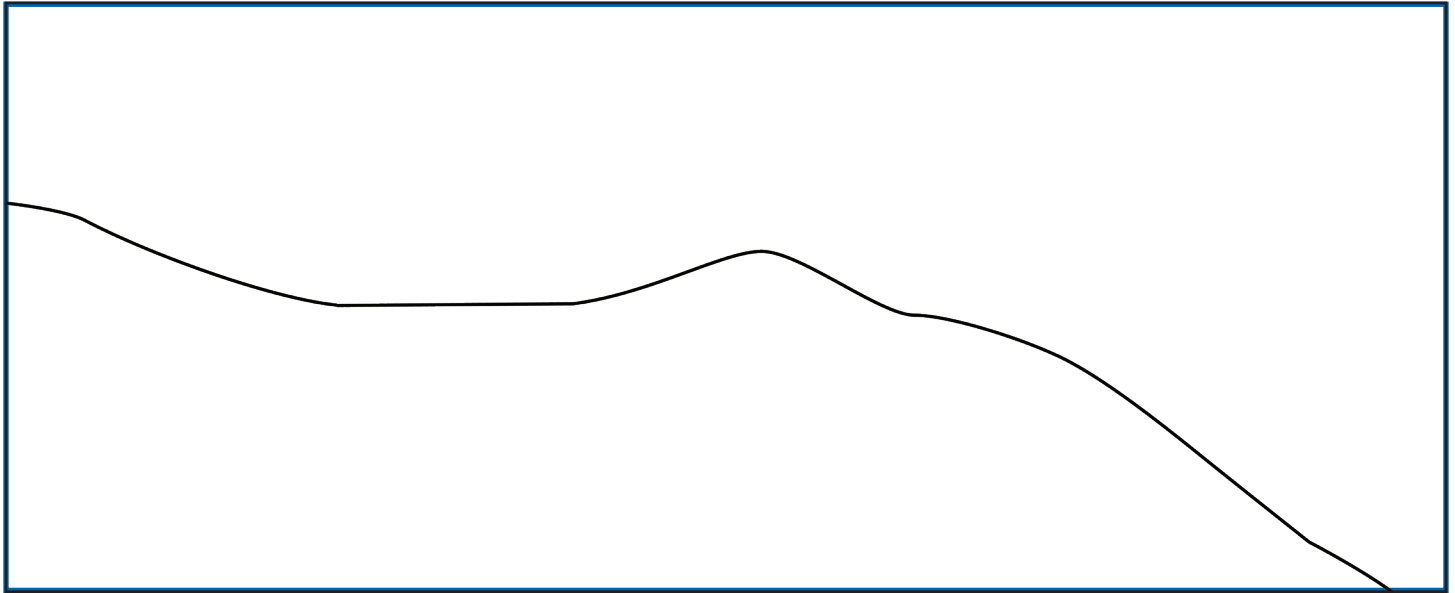




WATCH IT!

CORAL REEF ZONES

7. Draw the zones of a fringing reef.



8. Why do corals look different in varying zones? _____

9. What zone receives the greatest amount of sunlight? _____

10. What is the surface of the reef crest composed of? _____

11. Which zone receives the greatest amount of wave action? _____

12. Which zone has the greatest diversity of corals? _____

13. Why do corals grow wide and flat at greater depths?

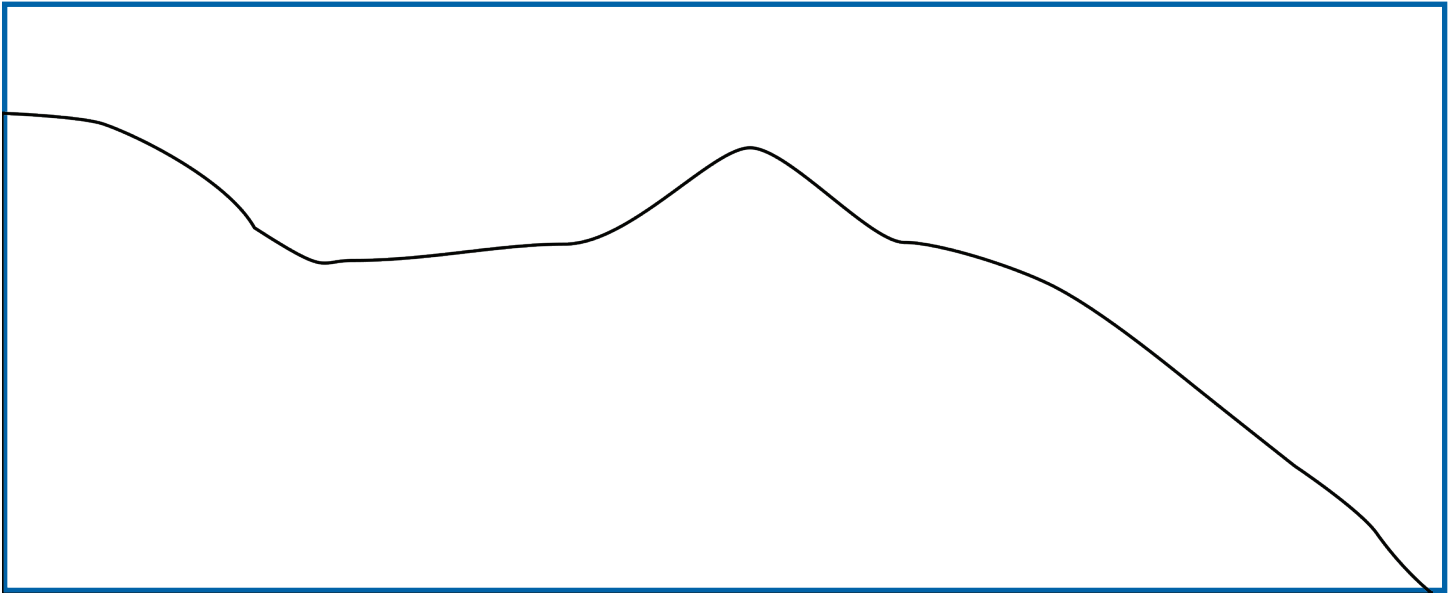
14. What is a barrier reef?



WATCH IT!

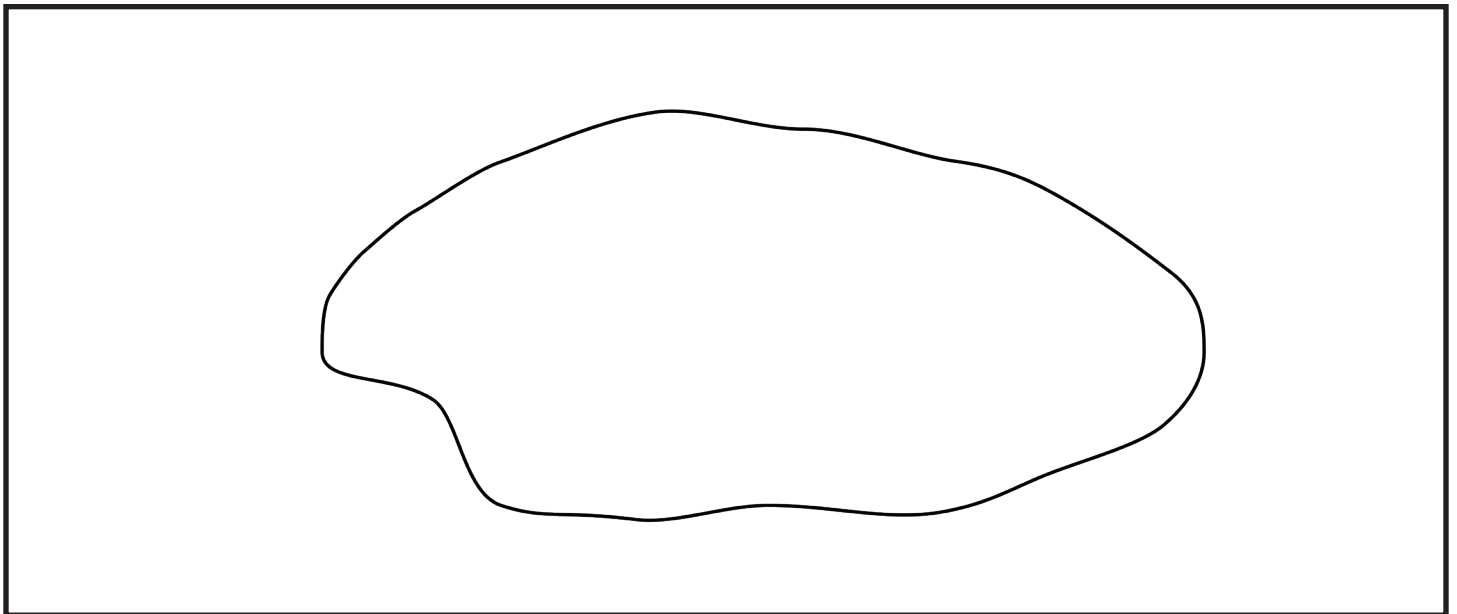
CORAL REEF ZONES

15. Draw the zones of a barrier reef.



16. What is an atoll?

17. Draw the zones of an atoll.



VIDEO SCRIPT:

To most of us, coral reefs are simply wonderlands, thriving ecosystems that support thousands of different species.

But to scientists, this habitat is more complex and varied, and different organisms, including different types of corals, live in specific parts of the reef.

Scientists divide coral reefs into zones.

They base these divisions on location within the reef, and characteristics such as depth, wave action, light intensity, temperature, and water chemistry.

The zones can vary depending on the kind of reef and its location in the world.

The most common type of reef is the fringing reef, which grows outward from coastlines of islands and continents.

In a fringing reef, the zone found along the shoreline is called the reef flat.

For corals, it's a tough place to live.

Wide variations in temperature and salinity challenge the corals, and low tides expose them to air.

Species that survive here have adapted and often look different than they do in deeper water.

The reef flat extends out to the highest part of the reef called the reef crest. This zone receives the greatest amount of sunlight.

Its crusty surface, made of calcium carbonate, can survive the brute force of the waves, which hit hardest here.

The last zone of the fringing reef is the one farthest from shore, the reef front or fore reef.

In the shallower part of this zone, the diversity of corals is greater than in other parts of the reef.

They thrive between 5 and 20 meters deep, where sunlight filters down and wave action is gentle.

Farther out to sea, the reef front slopes downward and can reach great depths. Corals here often grow wide and flat, to take maximum advantage of the faint sunlight, a good example of organisms adjusting to a zone's characteristics.

A fringing reef may be the most common type of reef, but there are two other types whose zone pattern, or "zonation," as scientists say, is somewhat different.

One is called a barrier reef.

Here the shoreline is separated from the reef by an expanse of water called a lagoon.

Next to it, a zone named the back reef leads to the reef crest.

WATCH IT!

CORAL REEF ZONES

The size and depth of lagoons vary widely. The corals that live here do too.

The third type of reef is called an atoll. It's usually circular or oval in shape, with a lagoon in the center.

The same zones can be found in the atoll too.

But the back reef is located in the center along with the lagoon, while the other zones extend outwards from the shoreline.

Understanding the different zones in coral reefs contributes to our appreciation of the whole ecosystem, one of the most diverse and productive on earth.

WATCH IT!

CORAL REEF ZONES

INSTRUCTIONS: Watch *Coral Reef Zones* YouTube video (https://youtu.be/1wMrB37_GvI) and answer the following questions.

1. What do scientists divide coral reefs into? Zones

2. List five characteristics that define coral reef zones. **Answers may vary.**

<u>Location</u>	<u>Depth</u>
<u>Wave action</u>	<u>Light intensity</u>
<u>Temperature</u>	<u>Water chemistry</u>

3. What are the main two factors influencing differing zonation?

Reef Type

Location in the world

4. What is the most common type of reef? Fringing reef

5. What is a fringing reef?

A fringing reef grows outward from islands and continents.

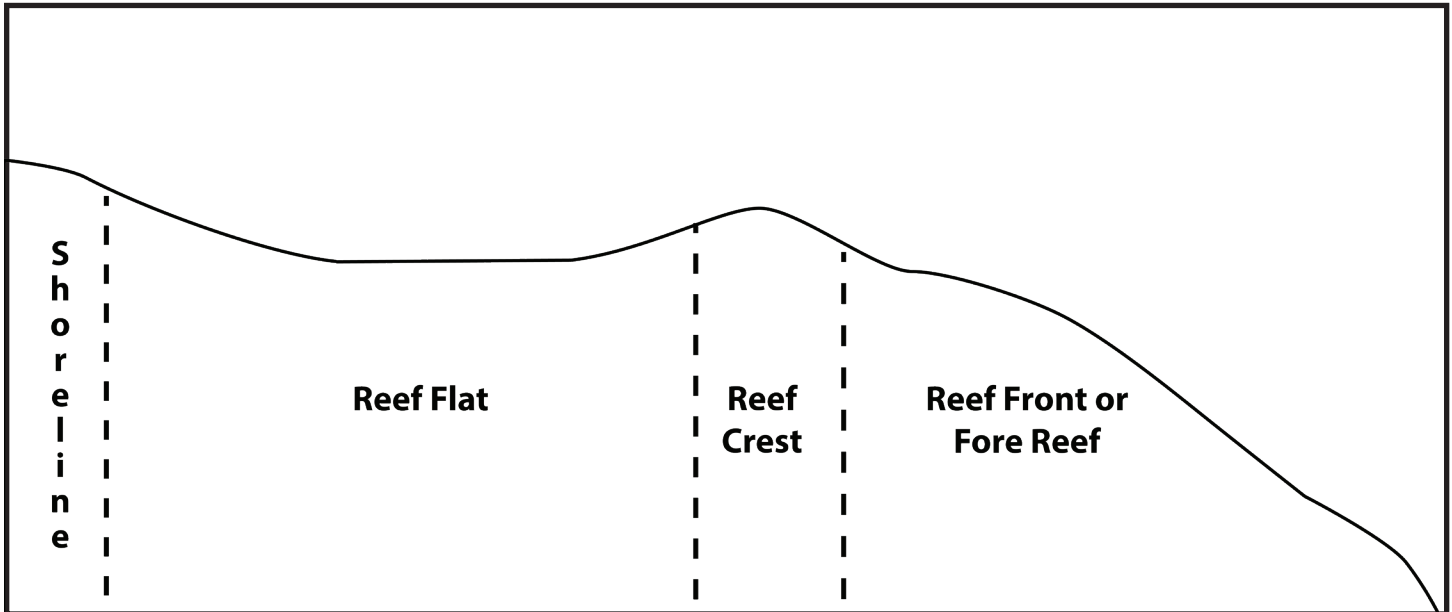
6. Describe the characteristics of a fringing reef.

Fringing reefs have a wide variation of temperature and salinity and they can be exposed at low tide.

WATCH IT!

CORAL REEF ZONES

7. Draw the zones of a fringing reef.



8. Why do corals look different in varying zones? Corals have adapted to living in different environmental conditions

9. What zone receives the greatest amount of sunlight? Reef crest

10. What is the surface of the reef crest composed of? Calcium carbonate

11. Which zone receives the greatest amount of wave action? Reef crest

12. Which zone has the greatest diversity of corals? Reef front or fore reef

13. Why do corals grow wide and flat at greater depths?

Corals grow in this formation in order to maximize the amount of sunlight they receive.

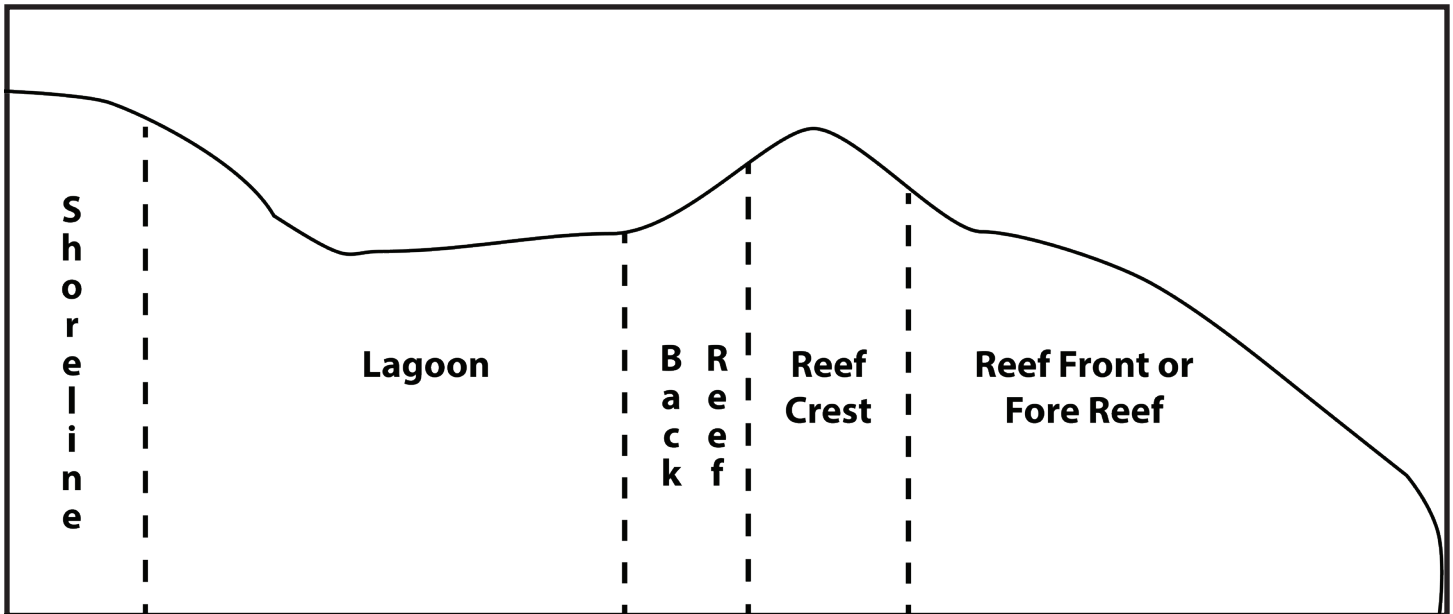
14. What is a barrier reef?

A barrier reef has a lagoon that separates the shoreline from the reef.

WATCH IT!

CORAL REEF ZONES

15. Draw the zones of a barrier reef.



16. What is an atoll?

An atoll is a circular or oval shaped reef with a lagoon at the center.

17. Draw the zones of an atoll.

