



Khaled bin Sultan
Living Oceans
Foundation

KEYWORDS

- Abiotic Factor
- Algal Ridge
- Atoll
- Back Reef
- Barrier Reef
- Calcium Carbonate (CaCO₃)
- Drop-off
- Fore Reef
- Fringing Reef
- Lagoon
- Patch Reef
- Reef Crest
- Reef Flat
- Reef Front
- Spur and Groove Reef

REEF ZONATION

This unit explains the characteristics and location of the reef zones.

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

MULTIMEDIA RESOURCE

- *Coral Reef Zones* YouTube video (https://youtu.be/1wMrB37_GvI)

LEARNING OBJECTIVES

- Identify the three main types of coral reefs.
- List the abiotic factors that influence the distribution of organisms in each zone.
- Define reef flat and explain the conditions that corals have adapted to in this zone.
- Define lagoon and explain the conditions that corals have adapted to in this area.
- Define reef crest and explain the conditions that corals have adapted to in this zone.
- Define algal ridge
- Define spur and groove reef.
- Define reef front/fore reef and explain the conditions that corals have adapted to in this zone.
- Define drop-off.
- Define back reef and explain the conditions that corals have adapted to in this zone.
- Label the vertical zones for each of the main types of coral reefs.

UNIT PROCEDURE

1. Show *Coral Reef Zones* YouTube video.
 - a. Complete **Watch It! Coral Reef Zones** student worksheet.
2. Teach *Unit 11: Reef Zonation - Background Information*.
 - a. Complete **Lesson 1: Modeling the Reef** student worksheet.
 - b. Complete **Lesson 2: GIS Mapping** student worksheet
3. Teach students how to read and critique blogs.
 - a. Complete **Read It! Let's Name the Zones** student worksheet.
4. Evaluate students using **Unit 11: Reef Zonation Quiz** (found online at www.lof.org/education/portal/quiz/reef-zonation-assessment-1/).
NOTE: User must be logged in.





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.

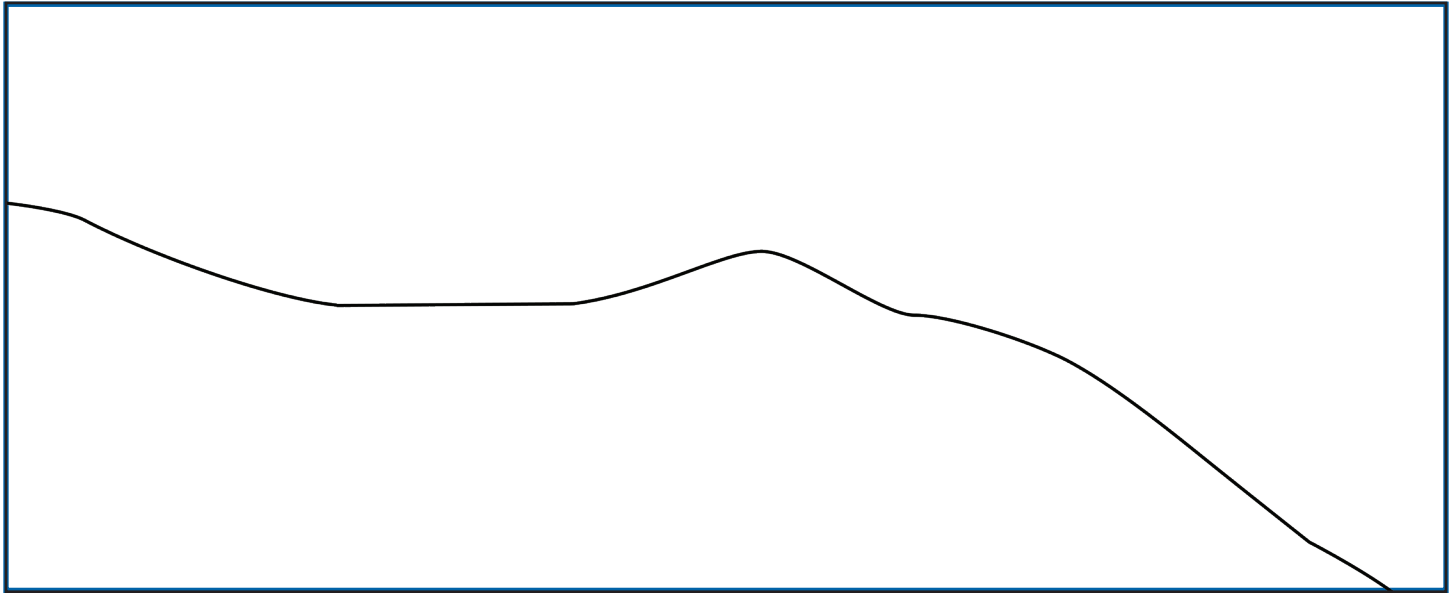




WATCH IT!

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?

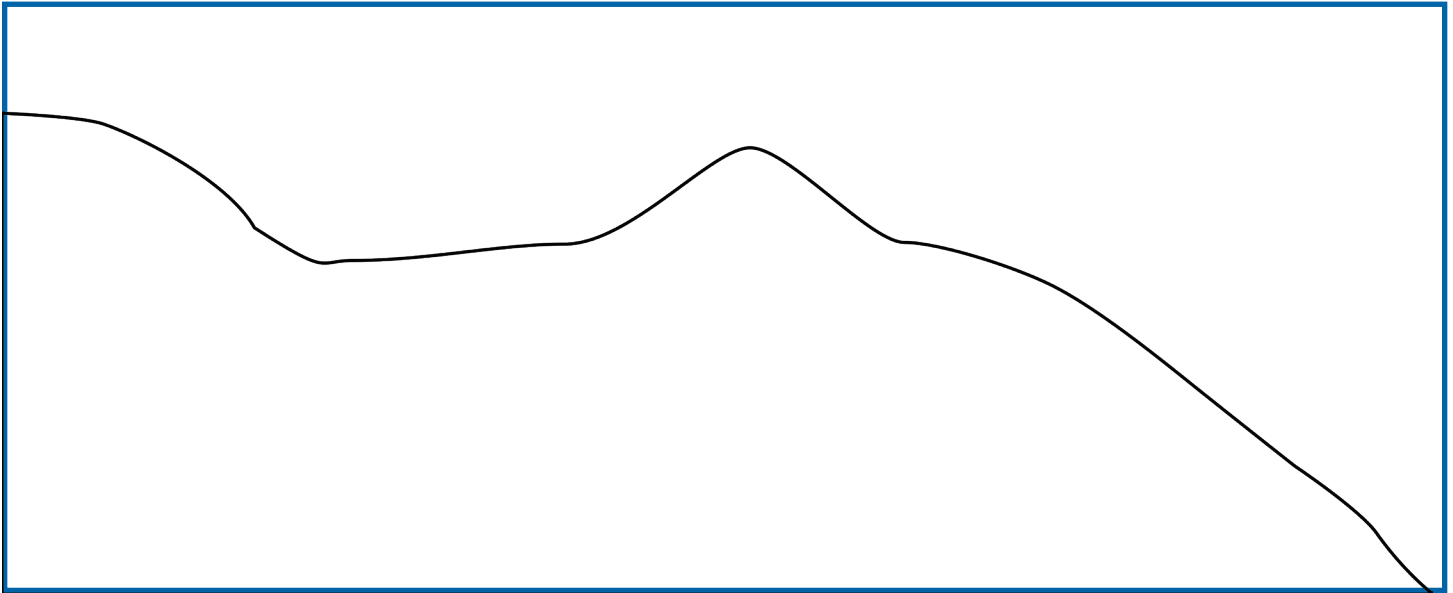
14. What is a barrier reef?



WATCH IT!

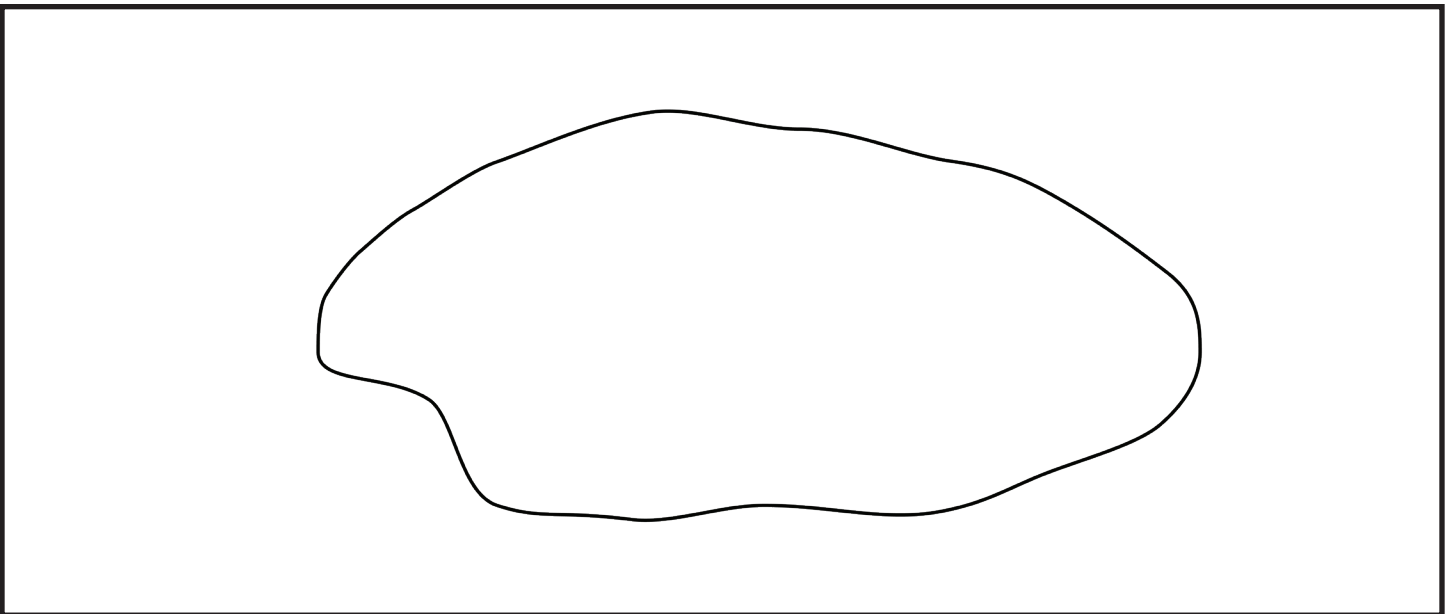
CORAL REEF ZONES

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.