

Reef Roundup

Audience: Grade Level or specific group participating

Duration: 30 to 60 minutes

STEM Process Skills: graphing coordinate pairs

Learning Objectives/Goals: Participants will improve their understanding of reef zonation

TEKS: list of TEKS addressed

Ocean Literacy Principles: 1, 2, & 5
<http://www.coexploration.org/oceanliteracy>

Vocabulary: coral, lagoon, mangrove, zonation

Set Up/Break Down: Students can do this activity individually or in pairs.

Updated 2018

Description: Students will graph coordinate pairs to draw a generalized Gulf of Mexico or Caribbean coral reef.

Materials: Graph paper and copies of the Reef Roundup Coral Zonation page – one per individual or student pair

Procedures: Students can work individually or in pairs to graph coordinate pairs to draw a generalized Gulf or Mexico or Caribbean coral reef.

Extensions: At the Aquarium, visit the Flower Garden Banks and Caribbean Journey coral reef habitats. Take photos or sketch the two habitats. How do they differ? What are the dominant species? Why are they different? Use your observations, photos, sketches, and the resources listed below to answer these questions.

Background Information: Tropical coral reefs require warm, clear, light-filled waters above about 90 meters. No two reefs, however, are exactly alike. For example, reefs just off the coasts of Mexico and Central America form a 1000 kilometer system of barriers parallel to and protecting the shore. Mangrove forests and seagrass

beds in the low-energy waters between the shore and the reef shield the corals from water-clouding silt and sediment-laden runoff. Known as the Mesoamerican Reef, the system is second in size only to Australia's famous Great Barrier Reef.

By contrast, the Flower Garden Banks grow atop two domes of salt pushed up from the seafloor over 160 kilometers from the Texas Coast. These reefs have no association with mangroves, seagrasses, or lagoons. What they do have is a reef zonation similar to Gulf of Mexico reefs and other reefs around the world. Each coral zone can be identified by its depth and dominant species.

Additional Resources:

Sian Ka'an Biosphere Reserve <http://whc.unesco.org/en/list/410>

Caribbean Journey Animal Species <http://eol.org/collections/130654>

Flower Gardens National Marine Sanctuary <http://flowergarden.noaa.gov/>

SECORE Coral Conservation <http://www.secure.org/site/home.html>

NOAA Coral Reef Video Collection <https://oceantoday.noaa.gov/every-full-moon/full-moon-coralcomeback.html>

Read this before you begin!

Tropical coral reefs require warm, clear, light-filled waters above about 90 meters. No two reefs, however, are exactly alike. For example, reefs just off the coasts of Mexico and Central America form a 1000 kilometer system of barriers parallel to and protecting the shore. Mangrove forests and seagrass beds in the low-energy waters between the shore and the reef shield the corals from water-clouding silt and sediment-laden runoff. Known as the Mesoamerican Reef, the system is second in size only to Australia's famous Great Barrier Reef.

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Coral reef zonation differs in various parts of the world.

Use this table and follow the instructions below to graph the zones of a generalized Gulf of Mexico or Caribbean reef.

Zone	Coordinates	Dominant Species
mangrove forest	(-10, +1)	black mangrove trees
lagoon	(-6, -1)	turtle grass
back reef	(-2, -1)	brain, boulder, star, and fire coral
reef crest	(-1, 0)	broken coral, encrusting algae, fire
reef front	(+1, 0)	elkhorn coral
Fore reef slope (upper)	(+3, -1)	boulder and brain coral
Fore reef slope (lower)	(+5, -4)	sheets of great star coral
Deeper fore reef	(+8, -5) to (+10, -7)	tube & basket sponges, sea lilies, stars, and black corals

- Divide a piece of graph paper into four quadrants. Decide on units that will allow you to use the entire piece of graph paper. Each unit on the graph represents about 4.57 meters.
- The x-axis represents elevation above and below sea level, and the y-axis represents distance toward the sea (+) and shore (-) from the reef crest.
- Each zone begins at the coordinate listed, so place your labels between the points you plotted. For example, the mangrove forest is found between (-10, +1) and (-6, -1).
- Use Texas State Aquarium's Caribbean Journey Collection at Encyclopedia of Life (<http://eol.org/collections/130654>) to identify and learn more about the dominant species. Draw them on the graph. How do they differ? Why do you think elkhorn corals grow near the top of the reef, but star corals grow at the bottom?

