Between Mud and Reef

Compare coastal habitats, food webs, and environmental threats

MAQ.4 "Students will examine characteristics of specific aquatic ecosystems and the effects of human and natural phenomena on those ecosystems..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline one physical condition in each of the first two paragraphs and circle an organism adapted to it. In paragraph three, number two threats and their effects to compare how these habitats respond to change.

A Marsh and a Reef

1. At the mouth of a river, a salt marsh floods and drains with the tide. Fresh river water mixes with seawater, so salinity shifts after rain or drought. Cordgrass tolerates salty soil and carries oxygen to its roots in waterlogged mud. Its stems slow moving water, trapping sediment and sheltering young fish. Fiddler crabs feed on algae and decaying material; small fish eat tiny invertebrates, and wading birds catch fish. The marsh offers both habitat and feeding links, but its muddy, changing water would challenge animals that require steady, clear seawater.

2. Patches of coral reef may grow offshore where warm, shallow, salty water lets sunlight reach microscopic algae living inside coral animals. The algae make sugars by photosynthesis and share some with the coral; the coral provides shelter and nutrients. Reef structure gives small fish hiding places. Parrotfish scrape algae from hard surfaces, while larger predatory fish eat smaller fish. Unlike cordgrass, reef-building corals depend on their algal partners and cannot tolerate heavy sediment that blocks light or settles on their surfaces. Both habitats support food webs, but their organisms meet very different physical demands.

3. When rain washes exposed soil from new construction into the river, sediment can settle in the marsh and drift toward a nearby reef. A marsh may trap some particles, yet excess sediment can bury its plants or fill shallow nursery areas. On the reef, cloudy water reduces photosynthesis, and sediment may smother coral. A hurricane can tear marsh plants from the mud and break coral colonies; recovery depends partly on living plants and corals that remain. Keeping soil covered at building sites reduces runoff, but it does not prevent hurricane damage. These different impacts matter when communities decide where and how to build.

2 ANSWER WITH EVIDENCE

Use the passage

1. Compare the water conditions in the marsh and on the reef. How is one organism in each habitat suited to those conditions?

2. Give one feeding link from the marsh and one from the reef. How do the links differ?

3. How do coral and its algae help each other, and why could sediment threaten this relationship?

4. Why could keeping soil covered at construction sites help both habitats but not protect either from a hurricane?

3 YOUR TURN

Your own words

A town plans a kayak launch beside a salt marsh. In 5 to 7 sentences, choose a site and propose two design features or rules that reduce harm. Explain one expected effect on the food web and how you would check whether your plan works.

Between Mud and Reef

PART 1 · READ AND MARK

Underline one physical condition in each of the first two paragraphs and circle an organism adapted to it. In paragraph three, number two threats and their effects to compare how these habitats respond to change. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Compare the water conditions in the marsh and on the reef. How is one organism in each habitat suited to those conditions?	**The marsh has shifting salinity and waterlogged mud, which cordgrass tolerates while carrying oxygen to its roots. The reef has warm, shallow, clear saltwater, where light reaches the algae living inside coral.**
2	Give one feeding link from the marsh and one from the reef. How do the links differ?	**In the marsh, wading birds eat fish. On the reef, parrotfish eat algae. The first link involves a predator eating another animal; the second involves an animal eating a producer.**
3	How do coral and its algae help each other, and why could sediment threaten this relationship?	**The algae provide sugars to the coral, while the coral provides shelter and nutrients. Sediment can block the light the algae need for photosynthesis or settle on the coral.**
4	Why could keeping soil covered at construction sites help both habitats but not protect either from a hurricane?	**Soil cover reduces sediment runoff, which can bury marsh plants or nursery areas and harm coral. It cannot stop hurricane forces from tearing out marsh plants or breaking coral colonies.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would put the kayak launch on an already cleared shore rather than remove cordgrass. A raised walkway would keep visitors from trampling marsh plants. A planted rain garden would trap sediment from the parking lot before runoff reaches the water. Protecting cordgrass should leave more shelter for young fish that wading birds eat. I would compare water clarity and young fish counts before and after the launch opens.

Accept other passage-supported comparisons and feeding links. For the open task, look for a feasible site choice, two distinct protective measures, a plausible food-web effect, and a way to measure results.