Fish in the Channel

Compare fish adaptations and the pressures on an estuary

ZOO.7 "Students will understand the structure and function of phylum Chordata, classes Chondrichthyes and Osteichthyes, and how they demonstrate the characteristics of living things..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two shark features and circle two bass features that help each fish survive in the channel, then number two human-caused changes that could threaten fish there.

Where River Meets Sea

1 At the mouth of a river, a young sandbar shark and a striped bass may cross the same cloudy channel. Both are chordates with backbones, gills, and fins, but their skeletons differ. The shark belongs to Chondrichthyes: cartilage supports its body, and it lacks the gas-filled swim bladder typical of many bony fish. An oil-rich liver and lift from its fins help keep it from sinking. The bass belongs to Osteichthyes: bone supports its body, and its swim bladder changes gas volume to adjust buoyancy. These different structures let both fish move through water without using the same design.

2 In the cloudy channel, the shark's streamlined body reduces drag as its tail drives it forward. Its jaws can project outward during a strike, bringing sharp teeth toward prey before the shark closes its mouth. The bass uses an operculum, a bony gill cover, to move water over its gills even while it holds still. Its lateral line senses nearby water movement when sight is limited. Pectoral fins help it steer around submerged roots, while its tail supplies thrust. Neither fish must see every obstacle or prey animal clearly to survive in this murky habitat.

3 This river mouth is also a nursery and feeding ground, so changes upstream can reach fish here. Paved streets speed runoff into streams, carrying sediment that can cloud water and smother habitat. A dam may block striped bass from reaching river spawning grounds, reducing successful reproduction. Overfishing can remove adult sharks before they produce many young; sharks generally mature slowly and have relatively few offspring. Introduced fish may compete with native fish for food or prey on their young. Such pressures change which species survive and reproduce, even when the fish have adaptations suited to natural conditions.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does each fish's skeleton differ, and what helps each fish control its position in the water?

2. How do the sandbar shark's body shape and jaws work together when it hunts?

3. If the striped bass holds still in cloudy water, how do two of its structures help it survive?

4. Compare one human-caused threat to striped bass reproduction with one threat to sandbar shark reproduction.

3 YOUR TURN

Your own words

Invent a fish adapted to cold, rocky coastal water. In 4 to 5 sentences, choose a cartilaginous or bony skeleton, explain how two other anatomical features help it there, compare one trait with the other fish class, and predict how one human activity could reduce its population.

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PART 1 · READ AND MARK

Underline two shark features and circle two bass features that help each fish survive in the channel, then number two human-caused changes that could threaten fish there. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does each fish's skeleton differ, and what helps each fish control its position in the water?	**The shark has a cartilage skeleton; its oil-rich liver and fin lift help keep it from sinking. The bass has a bony skeleton; its swim bladder adjusts buoyancy.**
2	How do the sandbar shark's body shape and jaws work together when it hunts?	**Its streamlined body reduces drag as it swims toward prey. Its jaws project outward, bringing sharp teeth toward prey during a strike.**
3	If the striped bass holds still in cloudy water, how do two of its structures help it survive?	**Its operculum moves water over its gills while it holds still. Its lateral line senses nearby movement when sight is limited.**
4	Compare one human-caused threat to striped bass reproduction with one threat to sandbar shark reproduction.	**A dam may keep striped bass from reaching river spawning grounds. Overfishing may remove sharks before they produce many young.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My invented rock crevice fish has a bony skeleton and a narrow body that slips between stones. Its large pectoral fins let it brake and turn quickly when waves push it toward rocks. A sensitive lateral line detects prey moving in dark gaps, so it can hunt without depending on clear water. Unlike a cartilaginous shark, it has a swim bladder that lets it hover beside a crevice. Heavy fishing could remove breeding adults faster than they reproduce, shrinking its population.

Accept other accurate feature-and-function connections supported by the passage. For the invented fish, check that both features suit the stated habitat and that the comparison and human impact are biologically plausible.