Fish Under Pressure

Trace how a growing city can change native fish diversity.

ZOO.7.6 "Research, analyze, and communicate the effects of urbanization and continued expansion by humans on the biodiversity of fish species (e.g., overfishing, and invasive species)."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Number three different human activities that could change fish diversity. For each one, underline the words that show how it could affect native fish.

From City Streets to Fish Habitat

1 At the edge of a growing coastal city, a small stream runs from neighborhoods to a tidal inlet. New streets and parking lots keep rain from soaking into soil, so stormwater rushes through drains into the stream. Fast flows can scour gravel beds where some fish lay eggs, while runoff can carry sediment that clouds the water. Warm water from sun-heated pavement may also raise stream temperatures, especially during summer storms. If cool-water fish lose suitable habitat, fewer native species may be able to breed there. Counting species alone would miss another change: a few tolerant species might become common as sensitive ones decline.

2 Expansion also changes how people use the inlet. More boats and buyers can increase demand for locally caught fish. Without effective limits, fishing may remove adults faster than they reproduce. A depleted population can lose genetic variation, making it less able to withstand disease or warming. As recreation grows, some people may release unused bait or aquarium fish into nearby water. An introduced fish becomes invasive when it spreads and causes harm. It may eat native juveniles or compete for their food. Its presence could raise the total species count even as native fish disappear from the inlet.

3 To investigate these effects, researchers could sample the stream and inlet before and after development, using the same gear, sites, and season each time. They would record native species and their abundance, water temperature, egg-bed condition, fishing catch, and any introduced fish. A drop in native juveniles alongside scoured gravel would support a habitat concern, but it would not prove runoff was the only cause. Comparing sites with different amounts of pavement and checking fishing pressure could help separate possible causes. Protecting streamside plants, limiting harvest, and preventing fish releases address different links in the problem.

2 ANSWER WITH EVIDENCE

Use the passage

1. Trace how new pavement could lead to fewer native fish species breeding in the stream.

2. How could the total number of species in the inlet rise while native fish diversity declines?

3. Why would researchers use the same gear, sites, and season before and after development, then also check fishing pressure?

4. Choose two actions in the final paragraph that address different threats. Explain the threat each action targets.

3 YOUR TURN

Your own words

An inland town plans to widen a road beside a creek and open a fishing pier, while some residents propose releasing unfamiliar fish. Write five sentences recommending two different protective actions, explaining how each could protect native fish diversity, and naming one measurement that could test your predictions.

ANSWER KEY

Fish Under Pressure

PART 1 · READ AND MARK

Number three different human activities that could change fish diversity. For each one, underline the words that show how it could affect native fish. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Trace how new pavement could lead to fewer native fish species breeding in the stream.	**Pavement sends more stormwater into the stream. Fast flows can scour egg-laying gravel, and runoff or warmer water can make habitat unsuitable, so fewer native species may breed.**
2	How could the total number of species in the inlet rise while native fish diversity declines?	**An introduced fish could add to the total species count while harming native fish through predation or competition, causing native species to disappear.**
3	Why would researchers use the same gear, sites, and season before and after development, then also check fishing pressure?	**Consistent sampling makes changes in fish records easier to compare. Checking fishing pressure helps researchers consider whether harvest, rather than development alone, contributed to a decline.**
4	Choose two actions in the final paragraph that address different threats. Explain the threat each action targets.	**Limiting harvest addresses the removal of breeding adults by fishing. Preventing fish releases addresses the risk that introduced fish will harm native species.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Keep a planted strip between the widened road and the creek to slow runoff. This could help protect gravel beds where native fish lay eggs. Do not allow unfamiliar fish to be released into the creek. That rule could prevent new predators from eating native juveniles. Count native juveniles at the same sites before and after construction, during the same season, to test whether their numbers change.

Accept other scientifically sound pairs of actions if each is linked to a distinct threat and a plausible effect on native fish. The measurement should be relevant to at least one predicted effect.