Creek Protection Puzzle

Tracing agency roles and conservation choices in a Chesapeake Bay watershed

MAQ.4.7 "Research, analyze, and communicate which and in what capacity local, state, and federal regulatory agencies are involved in different aquatic ecosystems, including current environmental policies already in place (e.g...."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline one action by a local agency, one by a state agency, and one by a federal agency. Circle the two laws named, then number two actions that could help protect animal diversity.

Who Can Help This Creek?

1. After a hard rain, muddy water pours from streets into a Maryland creek connected to the Chesapeake Bay. Sediment can bury fish spawning habitat, while fertilizers can fuel algae that reduce oxygen. A county stormwater office can inspect drainage systems, enforce local runoff rules, and install rain gardens to slow polluted water. Maryland's Department of the Environment (MDE) sets water-quality standards for its waters, subject to approval by the U.S. Environmental Protection Agency (EPA). Under the Clean Water Act, MDE also issues permits for many regulated discharges into covered waters. EPA oversees the state permit program. Each level has a different job.

2. NOAA Fisheries leads federal protection of endangered Chesapeake Bay Atlantic sturgeon under the Endangered Species Act. If a federally permitted project may affect the fish, federal agencies must consult with NOAA Fisheries. Maryland's Department of Natural Resources (DNR) can track sturgeon and restore habitat, while a county can protect stream banks upstream. Clean Water Act permits address pollution; the Endangered Species Act addresses risks to listed species. Neither law alone restores every spawning site. Researchers can count returning adults and test water quality before and after restoration, then use the results to recommend changes to agency plans.

3. A restoration plan can plant native streamside vegetation and reconnect blocked channels, giving fish shelter and access to habitat. Scientists should compare fish surveys from several years, not treat one good season as proof of recovery. If a breeding program is considered, wildlife managers must check animal health and genetic diversity so released fish do not spread disease or come from too few parents. Breeding cannot replace clean, connected habitat. Agency reports let residents compare proposed work with measured results and ask who has authority to act. Sharing research across watersheds can help protect populations beyond one creek.

2 ANSWER WITH EVIDENCE

Use the passage

1. A facility proposes a regulated discharge into the creek. Which agency would typically issue its permit, and what separate role does EPA have?

2. Why might a federally permitted project that affects endangered sturgeon involve both NOAA Fisheries and Maryland DNR?

3. How could a county rain garden and MDE's water-quality work address the same pollution problem in different ways?

4. Why should managers consider animal health, genetic diversity, and habitat conditions before releasing bred fish?

3 YOUR TURN

Your own words

Research an aquatic ecosystem near your community using at least two government agency webpages or agency documents your teacher provides. In one paragraph, explain distinct local, state, and federal roles, name a relevant law or policy, propose a way to protect animal diversity, and cite each source by agency and page or document title.

ANSWER KEY

Creek Protection Puzzle

PART 1 · READ AND MARK

Underline one action by a local agency, one by a state agency, and one by a federal agency. Circle the two laws named, then number two actions that could help protect animal diversity. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	A facility proposes a regulated discharge into the creek. Which agency would typically issue its permit, and what separate role does EPA have?	**MDE would typically issue the discharge permit under its state Clean Water Act program. EPA oversees that program.**
2	Why might a federally permitted project that affects endangered sturgeon involve both NOAA Fisheries and Maryland DNR?	**Federal agencies must consult with NOAA Fisheries about effects on listed sturgeon. Maryland DNR can track the fish and restore habitat.**
3	How could a county rain garden and MDE's water-quality work address the same pollution problem in different ways?	**A county rain garden slows polluted runoff. MDE sets water-quality standards, subject to EPA approval, and issues permits for many regulated discharges.**
4	Why should managers consider animal health, genetic diversity, and habitat conditions before releasing bred fish?	**Health and genetic checks help prevent disease and reliance on too few parents. Released fish also need clean, connected habitat.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

For the Charles River near Boston, the Boston Water and Sewer Commission manages local storm drains. Massachusetts' Department of Environmental Protection sets state surface-water standards, subject to EPA approval under the Clean Water Act. I would propose adding rain gardens near storm drains and surveying native fish and oxygen levels before and after installation. The surveys could show whether reducing runoff improves habitat for different fish species. Sources: Boston Water and Sewer Commission, "Stormwater"; Massachusetts Department of Environmental Protection, "Surface Water Quality Standards"; EPA, "Water Quality Standards."

Accept other accurately documented aquatic ecosystems and policies. Check that the sources support each stated agency role and that the proposed action has a plausible connection to animal diversity.