

Ecosystems Under Pressure

Trace how major environmental changes reshape living communities.

LS.8.c "large-scale changes such as eutrophication, climate changes, and catastrophic disturbances affect ecosystems."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each large-scale change, circle its direct effects, and number the later effects in each cause-and-effect chain so you can track how an ecosystem changes.

Three Ways Ecosystems Change

- ① Large changes can reshape an ecosystem by changing resources, habitats, and relationships among organisms. In a lake near farms, rain can wash fertilizer containing nitrogen and phosphorus into the water. These nutrients can cause an algal bloom, a rapid growth of algae. When many algae die, decomposers use oxygen as they break the algae down. Fish and insects may then lack enough dissolved oxygen. This nutrient-driven process, called eutrophication, can turn clear water cloudy and reduce biodiversity.
- ② Climate change can also alter ecosystems over many years. As ocean water warms, corals can lose the tiny algae that live inside their tissues and provide much of their food. The pale coral is described as bleached. If stressful heat continues, many corals die, leaving fewer shelters and feeding places for reef fish. Warmer water can also shift the ranges of species. A species that cannot move, adapt, or find suitable conditions may decline, changing the food web.
- ③ A catastrophic disturbance happens quickly and affects a large area. For example, a severe wildfire can burn plants, kill some animals, and remove shade from the ground. After the fire, ash may add nutrients to soil, while exposed soil can erode during rain. Some seeds survive underground, and certain plants sprout after fire. As plants return, they provide food and cover for animals. Recovery depends on the disturbance's intensity, the organisms present, and conditions after the event.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How can fertilizer runoff eventually cause fish and insects to lack enough oxygen?

2 Why can coral bleaching affect reef fish?

3 Name two changes a severe wildfire can cause. Then explain one change that can affect what happens after the fire.

4 Which change in the passage usually alters ecosystems over many years, and which type happens quickly?

3 YOUR TURN _____ Your own words

Create a four-sentence explanation about a different ecosystem affected by a large-scale change. Name the change, trace at least three linked effects on organisms or resources, and identify one factor that could affect recovery.

PART 1 • READ AND MARK

Underline each large-scale change, circle its direct effects, and number the later effects in each cause-and-effect chain so you can track how an ecosystem changes. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How can fertilizer runoff eventually cause fish and insects to lack enough oxygen?	Fertilizer nutrients cause an algal bloom. When algae die, decomposers use oxygen while breaking them down, leaving too little dissolved oxygen for fish and insects.
2	Why can coral bleaching affect reef fish?	Continued heat can kill bleached corals. Dead corals leave reef fish with fewer shelters and feeding places.
3	Name two changes a severe wildfire can cause. Then explain one change that can affect what happens after the fire.	A wildfire can burn plants, kill animals, remove shade, add ash nutrients to soil, or expose soil to erosion. For example, exposed soil can erode during rain after the fire.
4	Which change in the passage usually alters ecosystems over many years, and which type happens quickly?	Climate change can alter ecosystems over many years. A catastrophic disturbance, such as a severe wildfire, happens quickly.

PART 3 • YOUR TURN (SAMPLE ANSWER)

After a hurricane flooded a coastal marsh with salty water, many freshwater plants died. Fewer plants meant less shelter for insects and young fish. Birds that ate the fish had less food and may have left the marsh. Recovery would depend on how long saltwater remained and whether seeds or nearby plants could recolonize.

Accept equivalent cause-and-effect language that matches the passage. For Part 3, accept any accurate large-scale change with a logical chain of at least three effects and a reasonable recovery factor.