After the Disturbance

Compare how soil and site conditions shape ecological succession.

BIO.5.7 "Investigate and evaluate factors involved in primary and secondary ecological succession using local, real-world examples."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline where each site starts, circle factors that affect what grows, and number one piece of evidence at each site that supports a prediction about succession.

Two Sites, Different Starts

1. At a quarry outside town, workers have exposed a wall of bare granite. Rain runs off its smooth surface, and no developed soil fills the cracks. Windblown dust and tiny bits of dead material collect where water slows. Lichens and mosses can grow in some cracks, then help trap more particles as they die and break down. Eventually, shallow soil may support grasses or other small plants. This is **primary succession** because a community is forming where soil was absent. The change may take decades or longer, and a steep, dry face may stay sparsely covered.

2. Across town, a former community garden was abandoned after floodwater flattened its plants. Soil remained, along with buried seeds, roots, and soil organisms. Annual weeds appeared first; later, perennial grasses and shrubs spread into places they could reach. This is **secondary succession**: plants returned after a disturbance without starting from bare rock. It may move faster than succession at the quarry because soil and some living parts were already present. Yet the garden might not turn into woodland. Repeated mowing, compacted ground, or a shortage of nearby tree seeds could keep shrubs and trees from taking hold.

3. A biology class visits both places each spring. Students record percent plant cover in equal-size plots and check whether soil is present. At the quarry, shaded cracks hold more moisture than the smooth, sunny face; in the garden, packed paths support fewer plants than loose soil nearby. These patterns suggest that water and soil conditions affect which species establish, not just how long a site has been undisturbed. A single visit cannot show the rate of change, and differences between the two sites cannot prove that soil alone caused their different plant cover. Repeated observations and records of disturbance would strengthen the comparison.

2 ANSWER WITH EVIDENCE

Use the passage

1. How do the sites' starting conditions help explain why plants may establish sooner in the garden than at the quarry?

2. Which parts of the quarry would you predict will gain plant cover first? Use a factor from the passage to explain.

3. A student predicts that the garden must eventually become woodland. Evaluate this prediction using two factors in the passage.

4. Why would different plant cover at the quarry and garden not prove that soil alone caused the difference? What evidence would strengthen the comparison?

3 YOUR TURN

Your own words

Choose a disturbed place near your school or home. In 4 to 5 sentences, explain whether succession there would start with or without soil, predict how two factors could affect what grows next, and describe one observation that could test a prediction.

After the Disturbance

PART 1 · READ AND MARK

Underline where each site starts, circle factors that affect what grows, and number one piece of evidence at each site that supports a prediction about succession. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How do the sites' starting conditions help explain why plants may establish sooner in the garden than at the quarry?	**The garden retains soil, seeds, roots, and soil organisms. The quarry starts on bare rock without developed soil, so plants need suitable cracks and accumulating material to establish.**
2	Which parts of the quarry would you predict will gain plant cover first? Use a factor from the passage to explain.	**Shaded cracks are likely to gain cover before the smooth, sunny face because they hold more moisture and collect particles.**
3	A student predicts that the garden must eventually become woodland. Evaluate this prediction using two factors in the passage.	**Woodland is not certain. Repeated mowing could remove young trees, and a shortage of nearby tree seeds could limit the trees that establish.**
4	Why would different plant cover at the quarry and garden not prove that soil alone caused the difference? What evidence would strengthen the comparison?	**Moisture, compaction, and disturbance also differ or vary at the sites. Repeated plant-cover measurements and records of disturbance would strengthen the comparison.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A mowed roadside near my school still has soil and grass roots, so regrowth would be secondary succession. Frequent mowing could prevent shrubs from surviving. Packed soil near the curb might also slow new plant growth. I would compare plant cover in equal-size plots near the curb and farther from it each spring.

Accept other supported factors named in the passage. For the open task, look for a plausible local site, a soil-based classification, two relevant factors, and an observation that tests at least one prediction.