

Fixing Priya's Report on Nature's Services

Learning target: I can find and explain errors in a report about ecosystem services, including mix-ups about pollination, energy, causes and value, and rewrite each statement so it is scientifically accurate.

Error analysis

About 40 min

Individual

MS-LS2-5 · practice

MS-LS2-4 · practice

MS-LS2-3 · supports

writing

independent practice

Name _____

Date _____

Period _____

Directions

Priya, a seventh grader, wrote a report about why healthy ecosystems matter. Her teacher marked eight statements to check. Read each one carefully; some are wrong, some are partly right, and you must decide which. Use the reference table for statement 2. For each statement, explain the science and then rewrite it so it is accurate. Keep any part that is already correct.

You will need: This worksheet, Pencil

Priya's report: eight statements to check

1. An ecosystem service is something people do to help an ecosystem, like picking up trash on the beach.
2. Every crop needs bees. Without pollinators we would lose wheat, rice, corn and almonds.
3. Honey bees are the best thing for biodiversity, because more honey bees means more pollination everywhere.
4. Decomposers recycle the energy in dead leaves back into the soil so plants can use that energy again.
5. When India's vultures disappeared, the number of feral dogs went up. That graph proves the dogs caused every extra human death.
6. Stone, copper and iron are ecosystem services because they come from nature.
7. The vultures' cleanup was free, so it was not worth anything. Only things people pay for have value.
8. Planting one kind of banana everywhere is the safest choice, because farmers know exactly how it will grow.

Reference: how some crops are pollinated

Crop	What moves its pollen	How much the harvest depends on animal pollinators
Almonds	Insects, mostly honey bees	Heavily; most varieties need pollen from a different variety
Apples	Insects such as honey bees and mason bees	Heavily; need pollen from a different variety
Blueberries	Bumble bees and other bees	Heavily
Squash and pumpkins	Bees, including native squash bees	Almost completely; male and female flowers are separate
Wheat	Mostly its own flowers (self-pollinating)	Little or not at all
Rice	Mostly its own flowers (self-pollinating)	Little or not at all
Corn (maize)	Wind	Not at all

Summarized from the U.S. National Research Council report Status of Pollinators in North America (2007) and university extension guides.

Part A: Diagnose

- Complete the table for all eight statements. If a statement is partly correct, say which part is right.

Correct, partly correct, or incorrect?	What is the error, in a few words?
Statement 1	
Statement 2	
Statement 3	
Statement 4	
Statement 5	
Statement 6	
Statement 7	
Statement 8	

Part B: Explain and rewrite

- Statement 1: Explain what Priya has turned backwards, and rewrite the statement correctly. Then say what picking up beach trash actually is.

3. Statement 2: Use the reference table to explain which part is right and which part is wrong. Rewrite the statement.

4. Statement 3: Use the meaning of *biodiversity* to explain the problem. (Hint: honey bees are one species, and they were brought to North America from Europe.) Rewrite the statement.

5. Statement 4: What do decomposers recycle, and what happens to the energy stored in dead leaves? Rewrite the statement.

6. Statement 5: Name two problems with Priya's conclusion. What kind of evidence would support a claim that losing vultures caused more human deaths? Rewrite the statement.

7. Statement 6: Explain why stone and metals are natural resources but not ecosystem services. Give one example of a provisioning service that a living ecosystem really does provide.

8. Statement 7: Use the idea of replacement cost, and what happened in India when the vultures disappeared, to explain why a free service can be very valuable. Rewrite the statement.

9. Statement 8: Keep the part that is true and fix the part that is risky. Explain what can happen to a crop when every plant is genetically the same.

Part C: The thinking behind the mistakes

10. Choose two of Priya's mistakes that come from the same kind of thinking (for example, jumping from one case to 'every', or treating price as the only measure of value). Name that kind of thinking and write two sentences of advice that would help Priya avoid it next time.

Three checks for every statement

Check 1: Who benefits? An ecosystem service benefits people; it is done by the ecosystem. Check 2: Is the word 'every', 'all', 'proves' or 'only' too strong? Look for a case that breaks the rule. Check 3: Is it about matter or energy, about a living process or a rock, about price or value? Many errors mix up a pair like these.

Write statement 9

Write a ninth statement Priya might have written about New York City's water or about coastal dunes that sounds reasonable but contains a subtle error. Then write the teacher's comment explaining the error, and the corrected statement. Trade with a partner and see whether they can find your error without the comment.