

Marsh Energy Paths

Trace how energy and nutrients move through a salt marsh food web.

SC.7.L.17.1 "Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each producer, consumer, and decomposer named in the passage. Then number the energy transfers in one pathway from sunlight to an animal.

Energy in a Salt Marsh

- ① At the edge of a South Carolina salt marsh, cordgrass captures energy from sunlight. Using water and carbon dioxide, this plant makes sugars that store energy. Cordgrass is a producer because it makes its own food. A marsh rabbit eats cordgrass, so it is a consumer. A red fox may eat the rabbit. Energy moves from the grass to the rabbit and then to the fox. At each transfer, organisms use much of the energy for life processes, and less is available to the next eater.
- ② Food webs show that one organism can have more than one energy connection. In this marsh, a grasshopper can eat cordgrass, and a heron can eat the grasshopper. The fox might also eat a grasshopper. These linked feeding paths form a web rather than a single chain. Arrows in a food web point in the direction energy moves, from the organism being eaten to the organism that eats it. Thus, arrows show who receives energy, not who chases whom.
- ③ Decomposers complete an important part of the marsh system. Fungi and bacteria break down dead cordgrass, rabbit waste, and dead animals. As they break down this material, decomposers obtain energy for themselves and release nutrients into the soil or water. Cordgrass can take in those nutrients and use them to grow. Nutrients cycle through the web, but energy does not cycle back to the Sun. Energy enters as sunlight, moves through producers, consumers, and decomposers, and eventually leaves as heat.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Why is cordgrass a producer, and why is a marsh rabbit a consumer?

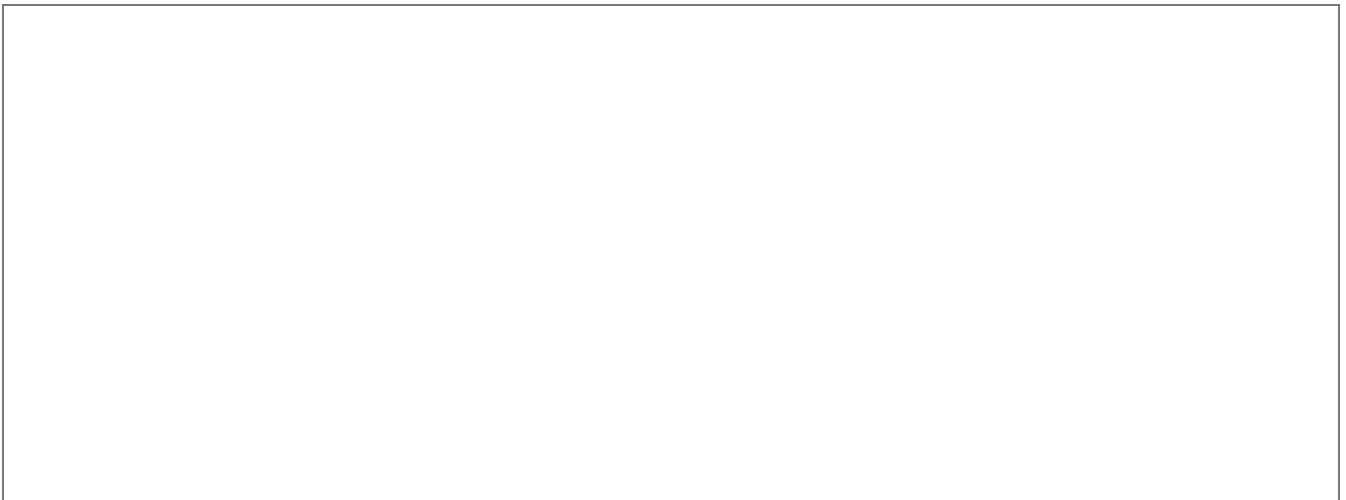
2 Write one energy pathway from sunlight to the red fox.

3 What evidence shows that the marsh connections form a food web instead of one food chain?

4 How do decomposers help cordgrass grow after they break down dead material or waste?

3 YOUR TURN _____ Your own words

Draw a food web from a habitat you choose. Include sunlight, one producer, two consumers, and one decomposer, with arrows showing energy movement and an arrow from dead matter to the decomposer. Write two sentences that identify one energy path and explain how the decomposer helps the producer using nutrients.



PART 1 • READ AND MARK

Underline each producer, consumer, and decomposer named in the passage. Then number the energy transfers in one pathway from sunlight to an animal. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Why is cordgrass a producer, and why is a marsh rabbit a consumer?	Cordgrass makes its own food using sunlight, water, and carbon dioxide. A marsh rabbit is a consumer because it eats cordgrass.
2	Write one energy pathway from sunlight to the red fox.	sunlight → cordgrass → marsh rabbit → red fox
3	What evidence shows that the marsh connections form a food web instead of one food chain?	A grasshopper can eat cordgrass, and both a heron and a fox can eat the grasshopper. One organism has more than one energy connection.
4	How do decomposers help cordgrass grow after they break down dead material or waste?	Decomposers release nutrients into the soil or water. Cordgrass takes in those nutrients and uses them to grow.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Sample sketch labels and arrows: sunlight → oak tree → caterpillar → robin; dead oak leaves and dead caterpillar → fungi; fungi → nutrients in soil → oak tree. Energy moves from sunlight to the oak tree, then to the caterpillar and robin. Fungi get energy from dead matter and return nutrients to soil that the oak uses.

Accept equivalent roles and pathways that match the passage. For the drawing, accept any accurate habitat web with arrows moving from food to eater, a decomposer linked to dead matter, and a nutrient connection back to the producer.