# Marsh Energy Paths

Trace how energy moves through a food web and an energy pyramid.

**LS.5.b** "energy flow is represented by food webs and energy pyramids; and"

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Underline each feeding relationship in the passage. Then number the organisms in one complete path from cordgrass to a top consumer to trace the direction of energy flow.

### Energy in a Coastal Marsh

1. At a coastal marsh, cordgrass captures sunlight and stores some of that energy in its tissues. Marsh rabbits eat cordgrass. Grasshoppers also eat it, and killdeer eat many grasshoppers. Foxes may eat rabbits, while hawks can eat rabbits or killdeer. These connected feeding paths form a food web. Arrows in a food web point from the organism being eaten to the organism that receives energy. Thus, an arrow from grasshopper to killdeer shows energy moving into the bird.

2. Energy does not travel through a web without change. Organisms use most of the energy they take in for life processes, and much leaves as heat. Only a small portion becomes new biomass that another organism can eat. An energy pyramid represents this pattern. Its wide bottom is made of producers, such as cordgrass. Above it are primary consumers, including rabbits and grasshoppers. Higher levels, such as killdeer, foxes, and hawks, contain less available energy.

3. Decomposers, including fungi and bacteria, break down dead marsh organisms and wastes. They return matter, such as nutrients, to the environment, where cordgrass can use it again. Energy is different. It enters the marsh mainly as sunlight, moves from food to eater, and eventually leaves as heat. A food web can include organisms with several food sources, like a hawk eating rabbits or killdeer. A pyramid cannot show every connection, but it clearly compares energy among feeding levels.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. What does an arrow from a grasshopper to a killdeer show?

2. Write two different energy paths that begin with cordgrass and end with a hawk.

3. Why are higher levels of an energy pyramid narrower than the bottom level?

4. How is the movement of matter different from the movement of energy in the marsh?

## 3 YOUR TURN

Your own words

Create a two-panel representation of energy flow in a pond ecosystem. In Panel 1, draw a food web with algae, zooplankton, snails, minnows, sunfish, and a heron, including two paths to the heron. In Panel 2, draw an energy pyramid for the same organisms, with the producer level at the bottom and less energy at each higher level.

ANSWER KEY

# Marsh Energy Paths

GRADES 7-8 · LS.5.b

## PART 1 · READ AND MARK

Underline each feeding relationship in the passage. Then number the organisms in one complete path from cordgrass to a top consumer to trace the direction of energy flow. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | What does an arrow from a grasshopper to a killdeer show? | **It shows energy moving from the grasshopper to the killdeer when the killdeer eats it.** |
| 2 | Write two different energy paths that begin with cordgrass and end with a hawk. | **cordgrass → rabbit → hawk; cordgrass → grasshopper → killdeer → hawk** |
| 3 | Why are higher levels of an energy pyramid narrower than the bottom level? | **Organisms use most of the energy they take in for life processes, and much leaves as heat. Only a small portion becomes biomass for the next level.** |
| 4 | How is the movement of matter different from the movement of energy in the marsh? | **Matter, including nutrients, can return to the environment and be used again by cordgrass. Energy enters mainly as sunlight, moves from food to eater, and eventually leaves as heat.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

Panel 1: algae → zooplankton → minnow → heron; algae → snail → sunfish → heron. Panel 2, bottom to top: algae; zooplankton and snails; minnows and sunfish; heron. Arrows point from food to eater, and each higher level is narrower.

Accept scientifically accurate arrows from food to eater and two pond pathways that begin with algae and reach the heron. The pyramid should place algae at the base and show decreasing available energy at higher feeding levels.