



Name: _____ Date: _____ Group: _____

Food Webs

- 1 In 1958, the Chinese government instituted a policy known as the Kill a Sparrow Campaign, which encouraged residents to kill all sparrows. The intention of this campaign was to increase production of grain crops by removing an animal that was thought to be eating grain seeds. The campaign was successful: the number of sparrows was drastically reduced. It initially appeared that the aim of the campaign was achieved, because that year's grain harvest was more plentiful than usual. However, the next year's harvest was almost completely destroyed by a locust swarm. Thirty million Chinese people died during the Great Chinese Famine, which was partially caused by the Kill a Sparrow Campaign. How could one policy cause such widespread devastation?
- 2 The plan to reduce sparrows did not consider the place sparrows held in the human food web. While food chains are the path of energy from one organism to another in an ecosystem, a food web is formed from several interrelated food chains in an ecosystem. Humans don't eat sparrows, and sparrows don't eat humans, so sparrows are not a part of the human food chain. However, sparrows are a part of our food web, because they eat the pests that consume our food.
- 3 All food webs start with light energy produced by the Sun, which plants convert into carbohydrates through the process of photosynthesis. There are two categories within a food web, the grazing web and the decomposing web. In the grazing web, energy is moved from the Sun to plants in the form of photosynthesis, then into herbivores that eat the plants, and then into omnivores or carnivores that prey on the herbivores. In the decomposing web, energy is moved from decomposing plants and animals into decomposers like earthworms and fungi. When carnivores such as birds eat the decomposers, the energy is moved back into the grazing web.
- 4 The human and sparrow food chains are interrelated in two major ways. The first way to consider is that sparrows eat grain seed. When the birds eat seeds that humans plant, they interact with the human food chain by removing a portion of the grain available for human consumption. In that way, they have a detrimental effect on the amount of food available for humans to eat.





- 5 Although sparrows reduce the amount of grain seeds available to grow to fruition, they increase the amount of grain available for humans to eat by killing locusts. Locusts are insects that travel in large swarms, which can contain billions of locusts. Locusts feed on any green plant, and when they travel in such huge swarms, they can strip a crop within just a few hours. Sparrows eat locusts and other insects that feed on crops as if they were a natural pesticide that protects human food sources. Sparrows eat far more insects than seeds, so the sparrow's presence increases the amount of grain available for humans to eat. Although they are not directly in the human food chain, they are an important part of the human food web.
- 6 Clearly, the plan to reduce sparrows did not consider the place sparrows held in the human food web. The organisms in food webs are interrelated and interdependent. We rely on the sparrow to help manage pests that threaten our crops, although we know they sometimes eat the seeds. They depend on us for seeds, and we depend on them for pest control. Changes in the path of one food chain can affect another food chain in ways that are unexpected and life altering.



1 Complete the following analogy:

carnivores:meat as herbivores:_____

- A carnivores
 - B locusts
 - C plants
 - D hunters
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2 Ultimately, how should the Kill a Sparrow Campaign be evaluated?

- A It was successful because that year's harvest was plentiful.
 - B It was successful because the sparrows did not eat the grain seeds.
 - C It was unsuccessful because all the sparrows did not die.
 - D It was unsuccessful because when the locusts came the next year, there were no sparrows around to eat them.
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3 Which conclusion is true, based on the information in this passage?

- A Changing one organism in a food web would not have any effect on any other food web.
- B It is easy to see all the ways that food webs are connected.
- C Food chains are always separate from each other.
- D Food webs are connected to each other and sensitive to any changes.



- 4 Why is the decomposing web important?
- A Decomposers help remove waste and use that energy to provide food for other animals.
 - B It is a pathway for energy to move between organisms that is independent of the grazing web.
 - C Decomposers take energy away from the grazing web, decreasing the food available to other animals.
 - D Decomposers are animals like worms and fungi.
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- 5 Why are sparrows important to the human food web?
- A Humans eat sparrows and find them to be quite a delicacy.
 - B Sparrows are biologically much like humans and eat the same foods as humans.
 - C Sparrows eat insects and worms that destroy food crops that humans eat.
 - D Sparrows eat other sparrows' young.