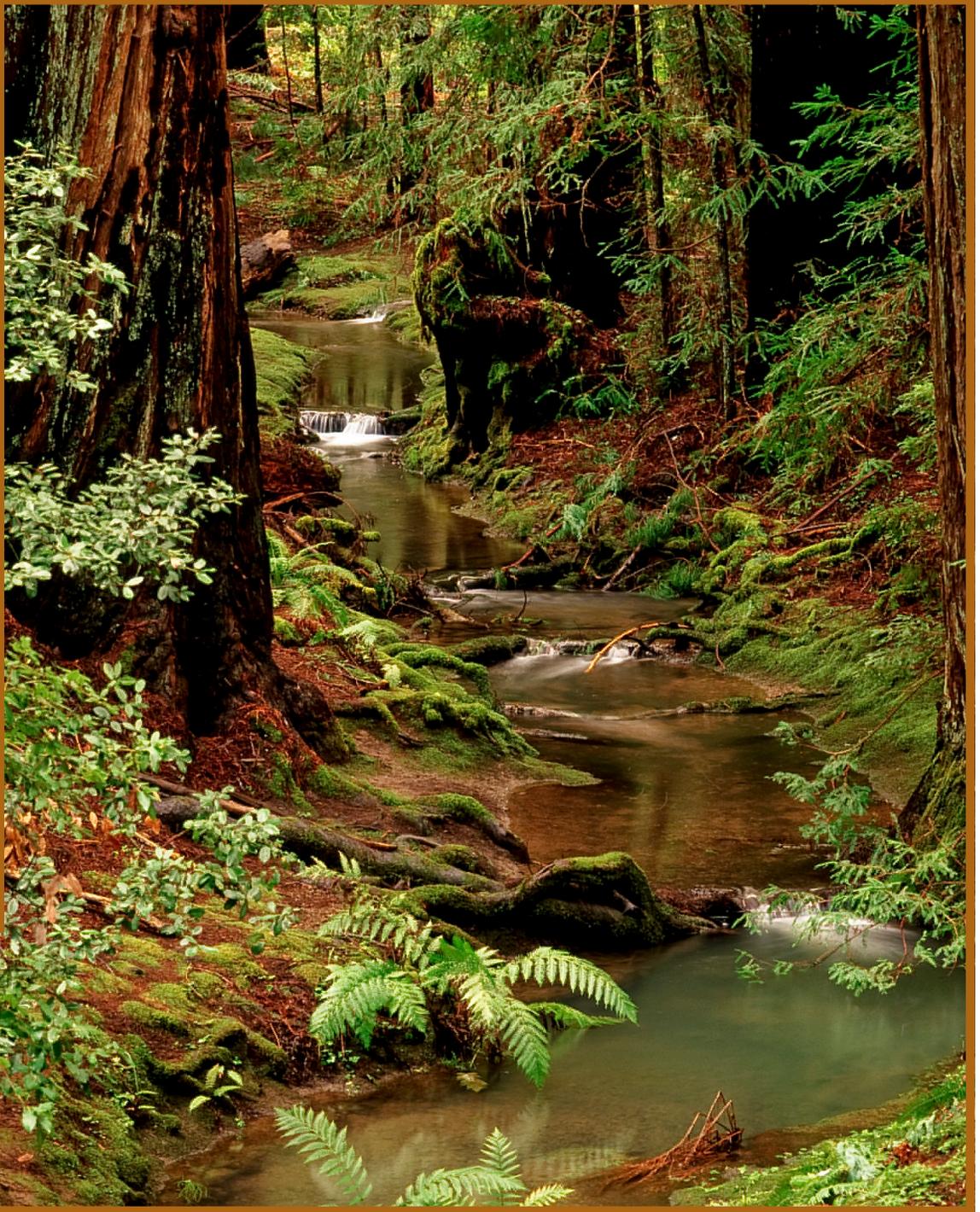


4

Science Standard
4.2.b.



The Flow of Energy Through Ecosystems

California Education and the Environment Initiative

Approved by the California State Board of Education, 2010

The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency
California Natural Resources Agency
Office of the Secretary of Education
California State Board of Education
California Department of Education
California Integrated Waste Management Board

Key Leadership for the Education and Environment Initiative:

Linda Adams, Secretary, California Environmental Protection Agency
Patty Zwarts, Deputy Secretary for Policy and Legislation, California Environmental Protection Agency
Andrea Lewis, Assistant Secretary for Education and Quality Programs, California Environmental Protection Agency
Mark Leary, Executive Director, California Integrated Waste Management Board
Mindy Fox, Director, Office of Education and the Environment, California Integrated Waste Management Board

Key Partners:

Special thanks to **Heal the Bay**, sponsor of the EEI law, for their partnership and participation in reviewing portions of the EEI curriculum.

Valuable assistance with maps, photos, videos and design was provided by the **National Geographic Society** under a contract with the State of California.

Office of Education and the Environment
1001 I Street • Sacramento, California 95812 • (916) 341-6769
<http://www.calepa.ca.gov/EEL/>

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Lesson 1 Life in a Marine Ecosystem

None required for this lesson.

Lesson 2 In Ecosystems Everywhere...

None required for this lesson.

Lesson 3 Eat or Be Eaten

None required for this lesson.

Lesson 4 Changing the Web

None required for this lesson.

Lesson 5 Changing the Web Means Changing the System

None required for this lesson.

Assessments

The Flow of Energy Through Ecosystems— Traditional Unit Assessment Master	2
In An Ecosystem Far, Far Away—Alternative Unit Assessment Master	7

Name: _____

Part 1

Instructions: Select the best answer and circle the correct letter. (1 point each)

1. What is a system of living and nonliving things that are found together?
 - a. environment
 - b. producer
 - c. ecosystem
 - d. consumer
2. Which of the following is a **producer**?
 - a. tree
 - b. insect
 - c. fish
 - d. shrimp
3. Which of the following is a **consumer**?
 - a. tree
 - b. plant
 - c. flower
 - d. mouse
4. A butterfly eats the nectar of flowers. Which of the following best describes the butterfly?
 - a. producer
 - b. herbivore
 - c. carnivore
 - d. omnivore
5. The sardine eats plant and animal plankton. Which of the following best describes the sardine?
 - a. producer
 - b. herbivore
 - c. carnivore
 - d. omnivore
6. The Pacific hake eats sardines and shrimp. Which of the following best describes the Pacific hake?
 - a. producer
 - b. herbivore
 - c. carnivore
 - d. omnivore
7. Which of the following food chains is correct?
 - a. Sun → cow → human → grass
 - b. Sun → grass → cow → human
 - c. grass → Sun → cow → human
 - d. cow → Sun → grass → human
8. What is missing from this food chain?
Sun → → sardine → squid
 - a. phytoplankton
 - b. Pacific hake
 - c. water insects
 - d. sea urchin
9. What are some factors that can disrupt a whole ecosystem?
 - a. fire
 - b. disease
 - c. drought
 - d. all of the above

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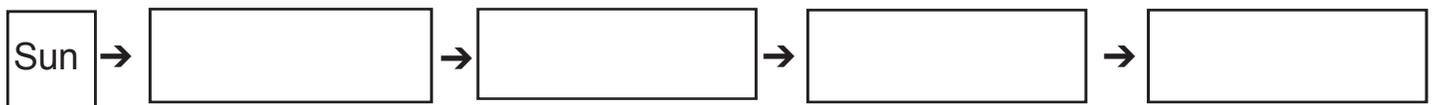
Part 2

Instructions: Use the Word Banks below to answer the following questions.

10. The organisms below are part of a marine ecosystem. Create a food chain by putting them in order. Put one organism in each box. (4 points)

Word Bank

plankton	Humboldt squid	sardine	marlin
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11. The organisms below are part of a grassland ecosystem. Create a food chain by putting them in order. Put one organism in each box. (3 points)

Word Bank

meadow mouse	Pacific rattlesnake	Blue Mountain lilac
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The Flow of Energy Through Ecosystems

Name: _____

Instructions: Write a short answer for each of the following questions.

12. Could an **herbivore** and an **omnivore** compete for the same energy sources?
Why or why not? (2 points)

13. Could an **herbivore** and a **carnivore** compete for the same energy sources?
Why or why not? (2 points)

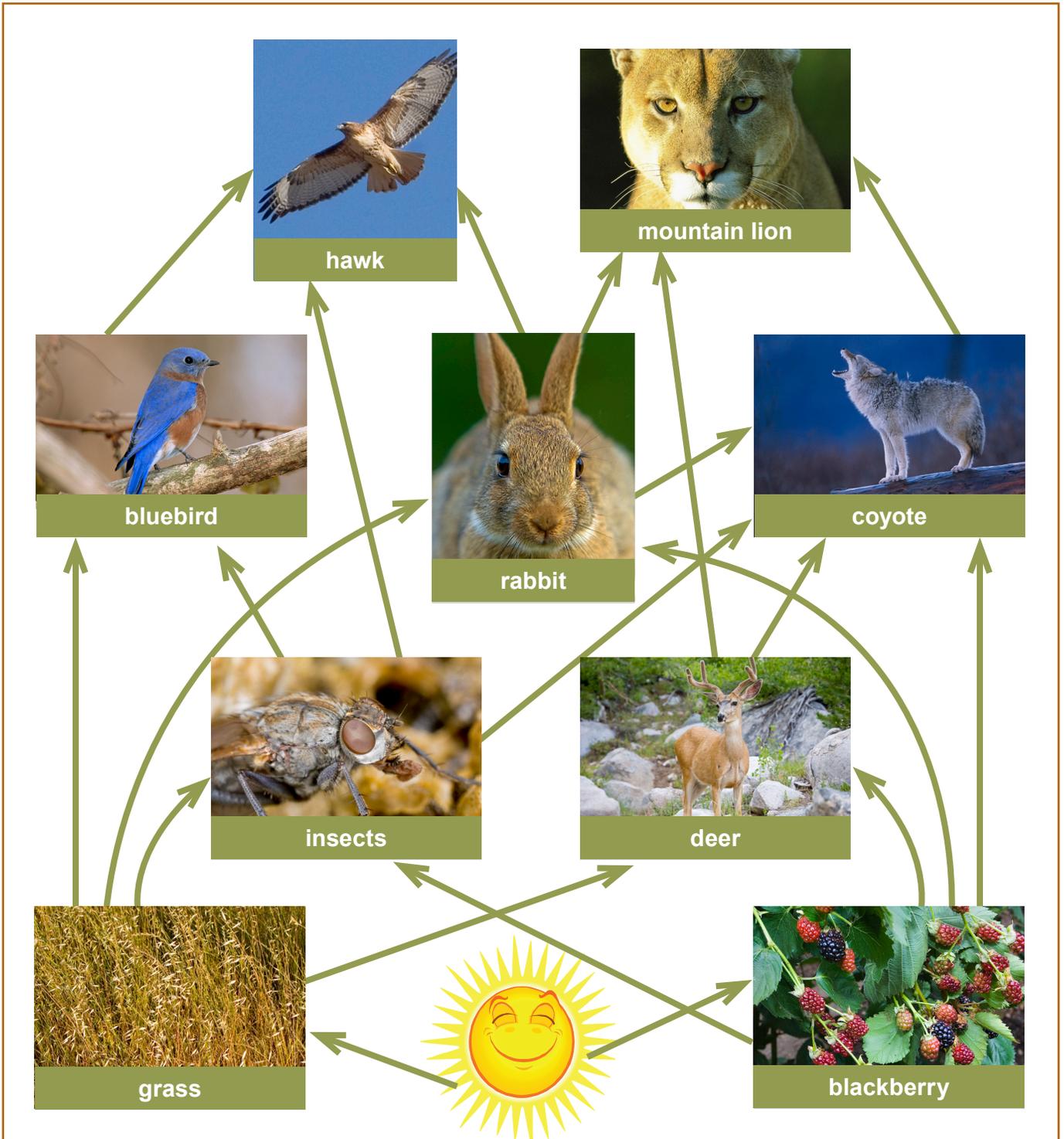
14. How is a food **web** different from a food **chain**? (2 points)

The Flow of Energy Through Ecosystems

Name: _____

Part 3

Instructions: Look at the food web below to help you answer the questions that follow.



The Flow of Energy Through Ecosystems

Name: _____

15. Name at least one **producer** in this ecosystem. (1 point)

16. Name at least one **herbivore** in this ecosystem. (1 point)

17. Name at least one **omnivore** in this ecosystem. (1 point)

18. Name at least one **carnivore** in this ecosystem. (1 point)

19. What would happen to this ecosystem above if there were more **carnivores**?
(2 points)

20. What would happen to this ecosystem if one organism disappeared? Give an
example. (2 points)

Name: _____

Part 1

Instructions: Use the information to complete the chart.

Imagine you are visiting planet Eekoo. A star, like our Sun, gives Eekoo energy. Organisms on Eekoo get energy just like organisms on Earth. You have been studying one ecosystem on Eekoo. You have looked at many different organisms.

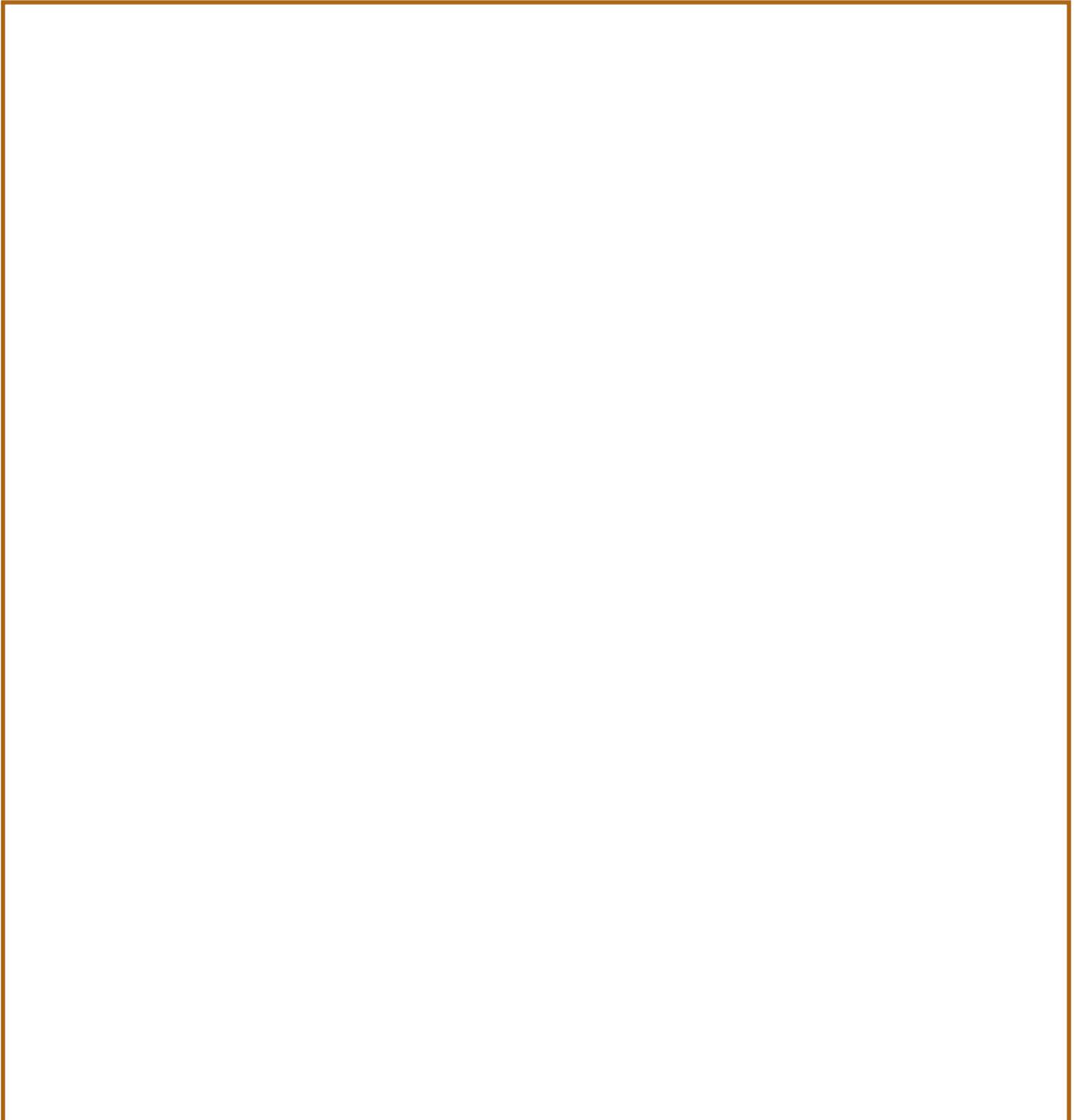
In the chart below, read the name and energy source for 10 organisms that live on Eekoo. In the “What Is It?” column, write if the organism is a **producer** or **consumer**. (1 point each) **If it is a consumer**, also write whether it is an **herbivore**, **omnivore**, or **carnivore**. (1 point each)

Organism	How It Gets Energy	What Is It?
Haki tree	from the nearby star (Sun)	
Blue-tongued owl	by eating singing blackbirds and three-eyed mice	
Three-eyed mouse	by eating pink grass and the flowers of the Haki tree	
Brown-nosed fox	by eating singing blackbirds, three-eyed mice, and baby scavenger boars	
Singing blackbird	by eating the Haki moth, seeds of the Haki tree, and dead three-eyed mice	
Haki moth	by eating nectar from the flowers of the Haki tree	
Orange-tailed deer	by eating pink grass and many parts of the Haki tree	
Scavenger boar	by eating three-eyed mice, dead orange-tailed deer, and pink grass roots	
Pink grass	from the nearby star (Sun)	
Spotted lion	by eating scavenger boars, brown-nosed foxes, orange-tailed deer, and blue-tongued owls	

Name: _____

Part 2

Instructions: In the space below, draw a food web that includes all of the organisms listed in Part 1. Next, draw arrows to show how the energy moves from one organism to another. (32 points possible, 1 for each organism placement, 1 for each energy arrow)



Name: _____

Part 3

Instructions: Write a short answer to each of the following questions about this ecosystem. (6 points possible, 2 points each)

1. What would happen to the Haki moth if all the Haki trees died?

2. What would happen to the singing blackbird if the Haki trees died off?

3. What would happen to orange-tailed deer if there were more spotted lions in the ecosystem?



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