

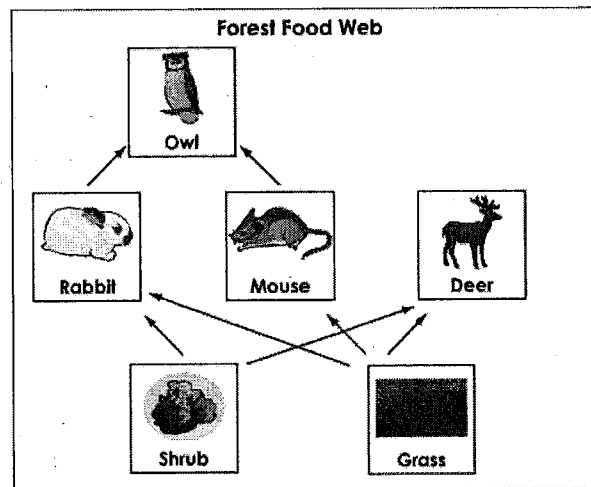


Symbiosis & Organism Relationships Review Sheet

Test is on _____

Match the term to its meaning.

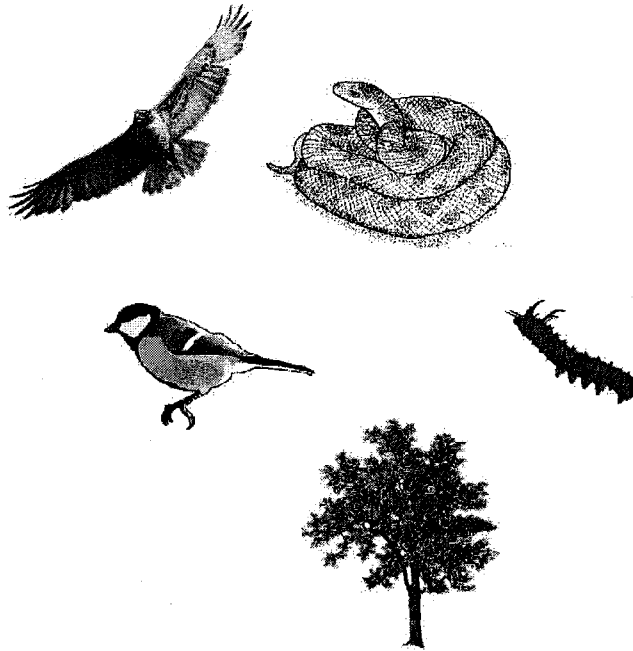
1. ____ Mutualism
 2. ____ Commensalism
 3. ____ Parasitism
 4. ____ Native species
 5. ____ Invasive species
 6. ____ Parasite
 7. ____ Host
 8. A forest food web is shown. Disease causes the rabbit population in the food web to decrease. Circle the organism in the food web that would be the first to increase because of this change. Use arrows to indicate what would happen to the other organisms shortly after the rabbit disease is introduced.
- A. one organism benefits and the other is neither benefitted or harmed
- B. one organism is helped and the other is harmed
- C. Both organisms benefit
- D. Organism that parasite lives in
- E. Organism that lives in and takes energy from another organism
- F. Organism that is introduced into a new ecosystem
- G. Organisms that have been living naturally in an area for a long time



9. Identify the type(s) of symbiotic relationship. Use P for parasitism, M for mutualism, and C for commensalism. Circle the organisms that benefit. Draw an X through the organisms that are harmed.
- ___ A flea lives on the skin of a dog and feeds on the dog's blood.
 - ___ Acacia trees are a home and a food source for ants. Ants in turn defend the trees from other insect pests.
 - ___ African tickbirds can often be found sitting on the backs of large grazing animals such as the Cape buffalo. The tickbirds eat bloodsucking ticks found on the skin of the large animals.
 - ___ A male golden weaver bird builds a hanging nest made of grass and straw high on the branches of an acacia tree. The tree is not affected by the nest.
 - ___ Small, hard-shelled animals called barnacles attach themselves to the bodies of some whales. This increases the barnacles' chances of finding food. The whale is unharmed by the barnacles.
 - ___ The honeybee gets nectar and pollen to eat from a flower and also brings pollen from one flower to another.
 - ___ Some wasps lay their eggs on or inside living caterpillars. When the eggs hatch, the wasp larvae feed on the bodies of the caterpillars.
 - ___ Oxpeckers are birds that land on zebras and eat ticks that live on the zebras' skin. Ticks are insects that feed on the blood of animals. They can cause infection and spread disease.
 - ___ Leafcutter ants collect small leaf pieces and carry them back to their nest. The ants do not eat the leaf pieces. The leaf pieces are used as a food source for a fungus that grows in the ants' nest. The fungus grows by breaking down the leaf pieces for energy and the ants eat the fungus for food.

10. Construct a food web with the following organisms:

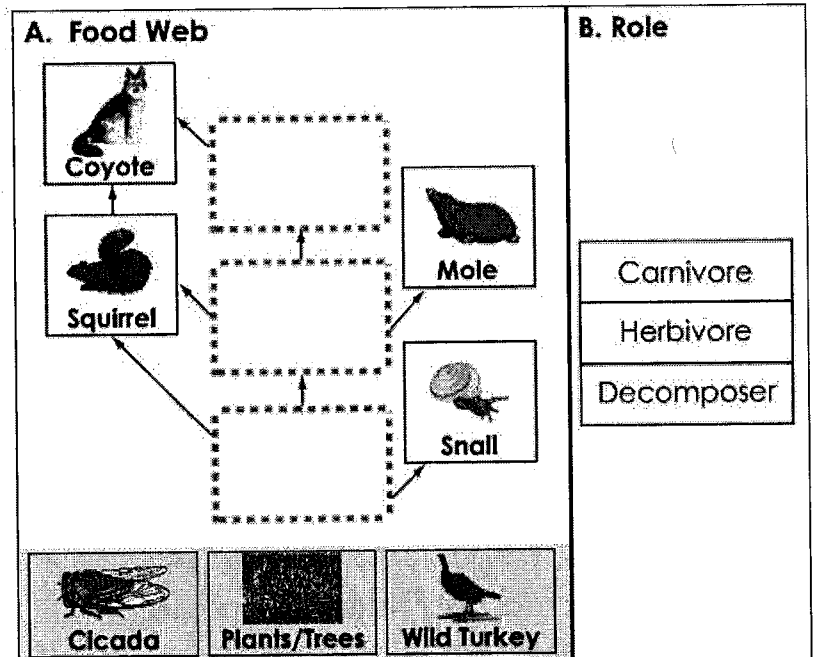
Organism	What it eats
Finch	Ash tree seeds, caterpillar
Caterpillar	Ash tree leaves
Black rat snake	Finch
Red-tailed hawk	Finch , young snakes



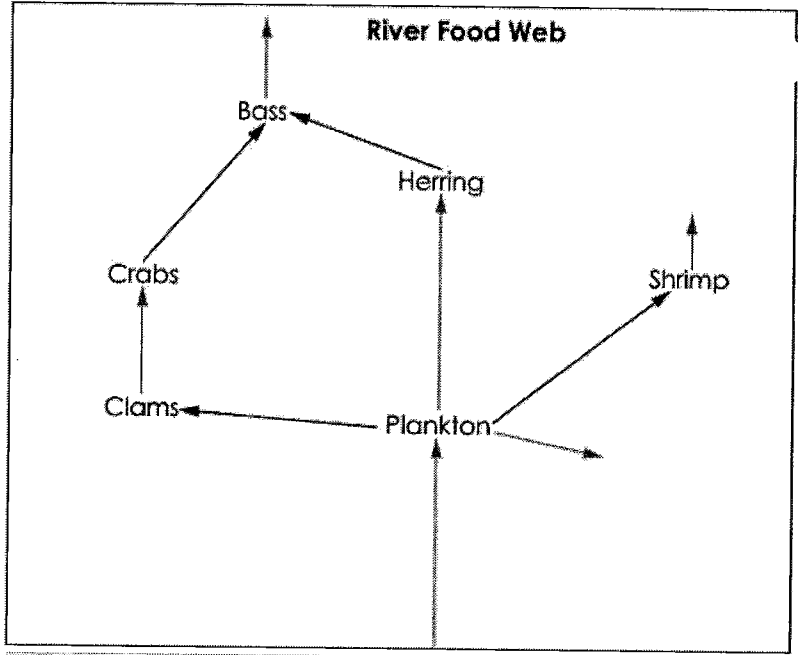
- Emerald ash borer is a beetle that was found in Ohio in 2003. The larvae feed on the tree, often killing it. Add the ash borer to the above food web diagram.
- Circle the name of the invasive species. Underline all of the native species.

13. In Ohio, swarms of cicadas hatch from the ground every 17 years. When the cicada population appears, the populations of moles and wild turkeys increase.

- Write the organism name into the correct blank boxes in the food web to show the flow of energy.
- Circle the role that cicadas play in this food web.



14. A food web of a Hudson River ecosystem is shown. It includes plankton (tiny photosynthetic organisms), shrimp, herring, and bass (types of fish), clams, and crabs. Zebra mussels (a type of clam) are introduced into this ecosystem. Zebra mussels get their energy from plankton. Zebra mussels do not provide energy to any animals in the ecosystem. Update the food web by writing zebra mussel into the correct arrow to show where the zebra mussel will be found.



15. Scientists observe how the introduction of an insect species affects an existing forest ecosystem. The insects feed on hemlock trees within the forest. Write in each blank box to identify the source of energy to complete the Energy Flow in the Forest Ecosystem table.

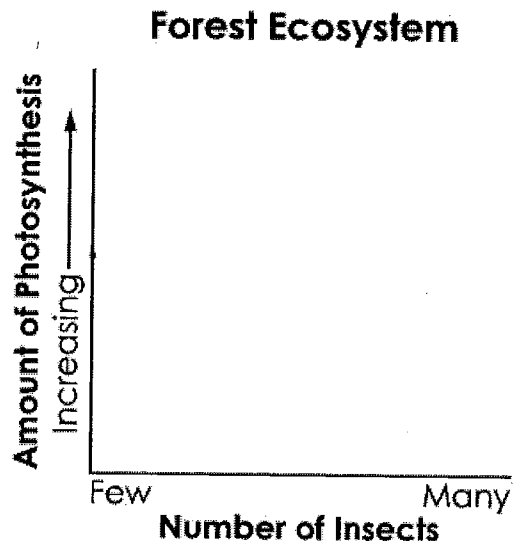
Energy Flow in the Forest Ecosystem

Source of Energy	Direction of Energy Flow	Source of Energy	Direction of Energy Flow	Source of Energy
<input type="text"/>	→	<input type="text"/>	→	<input type="text"/>

16. Create a graph to show the relationship between the amount of photosynthesis in the forest ecosystem and the number of insects.

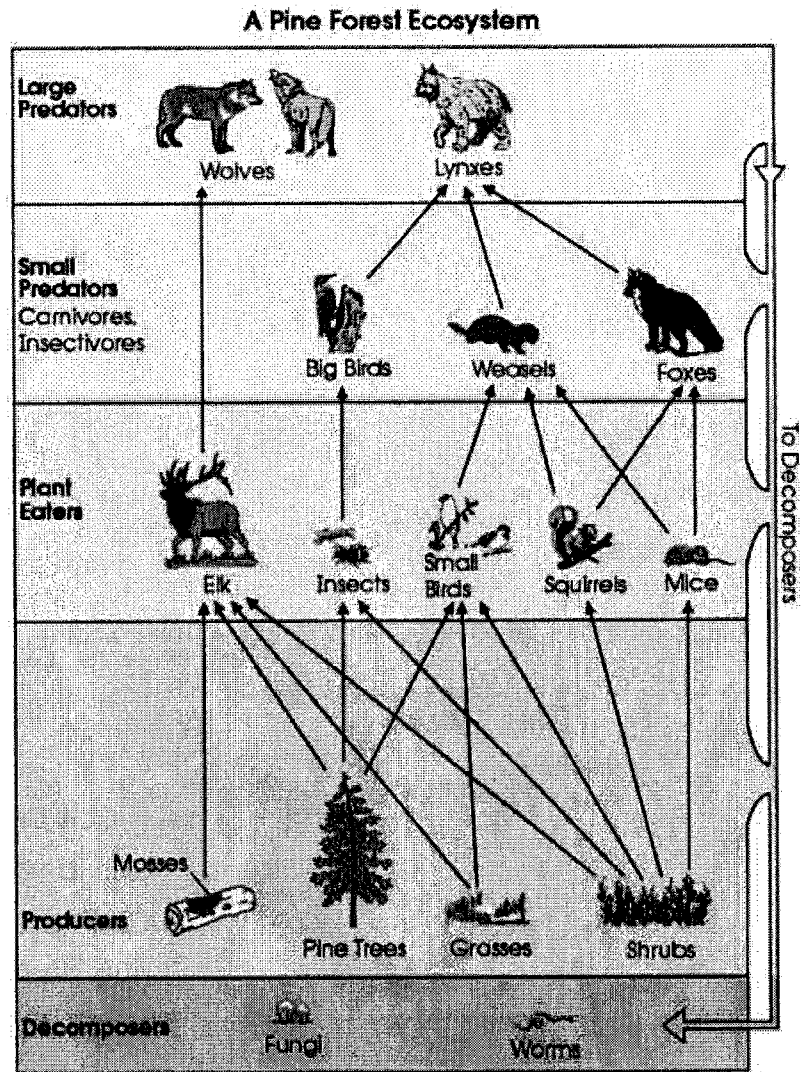
17. Circle the word that describes how the energy available to the hemlock trees in the forest ecosystem is affected over time after the introduction of the insects.

Increasing Decreasing Remaining constant



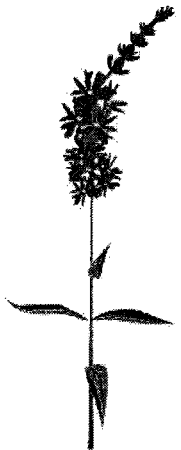
18. The diagram shows some of the food web interactions in a pine forest ecosystem. The forest experiences a severe drought that kills the grasses and shrubs living under the trees. Draw arrows to show how the loss of grasses and shrubs would affect the other organisms in the ecosystem.

- a. Mouse population _____
- b. Elk population _____
- c. Small bird population _____
- d. Weasel population _____
- e. Fox population _____
- f. Wolf population _____



19. An invasive species called purple loosestrife is shown. It grows and reproduces quickly. It takes up space and changes the food chain. The table shows several organisms found in the Ohio River ecosystem that are affected by this invasive species. Complete the chart to show which organisms compete with each other.

Purple Loosestrife

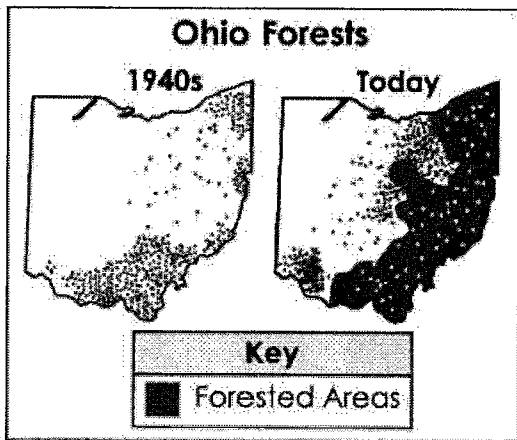
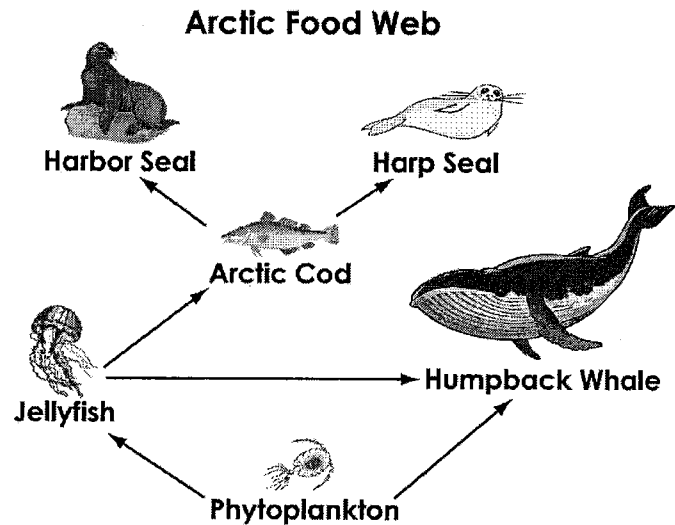


Organism	Energy Source	Competes with . . .
Bullfrog	Crayfish, insects, mice, other frogs	
Cattail	Photosynthesis	
Goose	Plants, water insects	
Muskrat	Water plants, clams, frogs, crayfish	
Purple loosestrife		

20. A disease that only harms the health of arctic cod fish in an ecosystem causes a decline in the arctic cod population. A partial food web is shown.

Select the boxes to identify how the amount of energy transferred to each organism changes immediately after this severe decline in the arctic cod population.

	Increases	Decreases	No Change
Jellyfish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Harp Seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Harbor Seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phytoplankton	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humpback Whale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



21. Black bears eat nuts from oak, hickory, and beech trees. As Ohio's landscape changed from forests to farmlands, the number of black bears also changed. The maps show how scientists have been working to restore Ohio forests over the years.

A. Relationship

Forested areas results in **Black bears**

B. Table 1 → Table 2

Beech tree
Black bear
Forest soil
Sunlight

Beech tree
Black bear
Forest soil
Sunlight

- a. Draw arrows in the blank boxes to predict the relationship between the forested areas and the number of black bears from the 1940s to today.
- b. Draw arrows to show the way that factors in Table 2 receive energy from factors in Table 1.