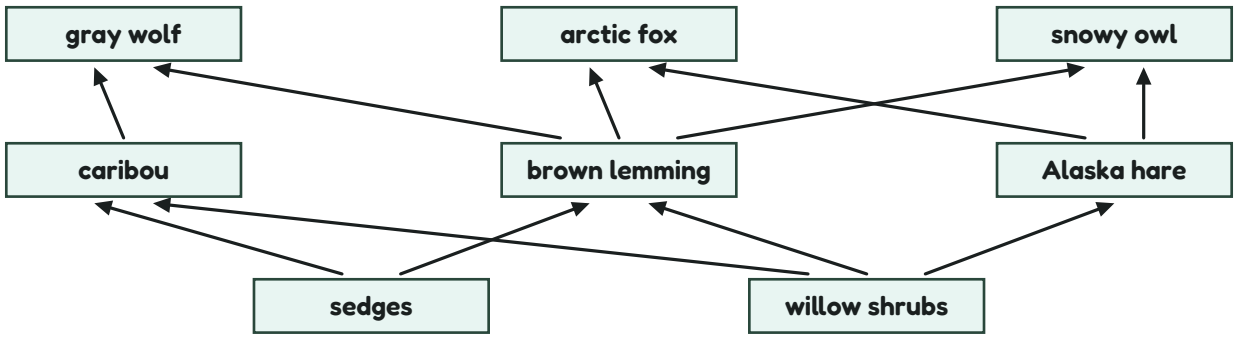
Food Webs: Who Eats Whom on the Tundra

Grades 6-8

Name _____ Date _____

Directions: A **producer** makes its own food with light. A **primary consumer** eats producers. A **secondary consumer** eats primary consumers. Use the food web for every item.



Food web: eight living things of the Arctic tundra in Alaska. Many other feeding links are left out.

1. (a) An arrow joins the caribou and the gray wolf. The one that gets eaten is the _____.
   (b) What does the direction of an arrow tell you in this web?

2. Name the two producers in the web. _____ _____

3. Name one primary consumer _____ and one secondary consumer _____

4. Trace two different food chains that end at the arctic fox. Begin each chain with a producer and join the names with arrows.

5. In some years nearly all the brown lemmings die. Predict (a) a direct effect on a living thing that shares an arrow with the lemming, and (b) an indirect effect on one that shares no arrow with it.

6. Rule of thumb: about 10 percent of the energy stored in one feeding level passes to the level that eats it. The producers on one hillside store 60,000 kilojoules (kJ). About how much reaches (a) the primary consumers? _____ kJ (b) the secondary consumers? _____ kJ (c) Where does the rest go?

7. No decomposer is drawn. (a) Name one kind of decomposer. _____ (b) How many of the 8 boxes should send an arrow to a decomposer box? _____ Explain.

8. The pomarine jaeger is a seabird that nests on this tundra and hunts brown lemmings. Add a box for it. (a) Its arrow starts at the box _____ and its head touches the box _____.
   (b) What kind of consumer is the jaeger? _____

Food Webs: Who Eats Whom on the Tundra

Grades 6-8

Answer key

Points for items 1 to 8: 2, 2, 2, 2, 2, 3, 3, 3. Total 19. Accept short names such as "lemming", "hare", "fox", "owl" and "wolf".

1. **(a) the caribou; (b) The arrow starts at the living thing that gets eaten and its head touches the one that eats it.**
   Also accept for (b): the arrow shows which way matter and energy pass. Not accepted: the arrow shows who hunts whom, which would turn every arrow around.

2. **sedges and willow shrubs**
   No arrow ends at these two boxes: nothing in the web is their food. Accept "sedge" and "willow".

3. **Primary: caribou, brown lemming or Alaska hare. Secondary: gray wolf, arctic fox or snowy owl.**
   One point for each. Any one name from each list earns the point.

4. **Any two of: sedges -> brown lemming -> arctic fox; willow shrubs -> brown lemming -> arctic fox; willow shrubs -> Alaska hare -> arctic fox**
   One point for each chain. A chain earns its point only when all 3 names are in order and the arrows point toward the arctic fox.

5. **(a) The gray wolf, arctic fox and snowy owl lose a food, so fewer of them survive or raise young. (b) The Alaska hare is hunted more, because the arctic fox turns to its other prey, so hare numbers fall.**
   Also accept for (a): sedges and willow shrubs are eaten less and grow back. Also accept for (b): the snowy owl hunts the hare more; the caribou is hunted more by the gray wolf; the caribou finds more sedges and willow, or the hare more willow, now that lemmings eat less of them; or, some time later, the hare and the caribou are hunted less because fewer predators are left. Each prediction needs its reason. On the real tundra the fox switches prey, while many snowy owls leave or do not nest in a year with few lemmings.

6. **(a) about 6,000 kJ; (b) about 600 kJ; (c) Living things use most of it to stay alive, and it leaves them as heat. Some stays in parts that are never eaten.**
   60,000 × 0.1 = 6,000 and 6,000 × 0.1 = 600. The real share changes from one web to another, so the rule gives a rough size, not an exact amount.

7. **(a) bacteria or fungi; (b) all 8: every plant and animal dies and leaves dead parts or wastes, and decomposers feed on all of them.**
   One point for each part and one for the reason. A student may add that decomposers put nutrients back into the soil for the producers. Accept "mold" or "mushrooms" for (a). Earthworms are detritivores; follow your textbook.

8. **(a) starts at brown lemming, head touches pomarine jaeger; (b) secondary consumer**
   The jaeger eats a primary consumer, so it is a secondary consumer. The lemming box then has 4 arrows leaving it. In (b), "carnivore" or "predator" is true, but ask for the kind named in the directions.