MCj04060840000[1]

***Food Web***

***Of the***

***Greater Yellowstone Ecosystem***

**Objectives:**

1. To show the energy flow through a food chain by constructing model food webs with the given drawings of organisms.
2. To be able to determine the trophic level of an organism.
3. To be able to predict what might happen if one organism is removed from the food web.

**Materials:**

2 sheets of organism diagrams

Question sheet (one per lab group)

Scissors, glue

Markers/Colored Pencils

Large Sheet of Paper

**Directions:**

1. Use scissors to cut the pictures apart.
2. Sort the pictures into groups according to energy sources; producers, herbivores, omnivores, carnivores, scavengers and decomposers.
3. Using the colored pencils, color each group a different color. For example mark the energy source yellow, the producers green, the herbivores blue, the omnivores purple, the carnivores red, and the decomposers brown.
4. Construct a food web of the Yellowstone area by arranging the pictures on the blank sheet of paper. Remember that all organisms must have a source of energy. Think about how you will draw your arrows. You may need to rearrange some of the organisms.
5. Use the marker to make arrows that show the flow of energy in your food web. (Remember arrows go from the prey to the predator.)
6. Use your food web to answer the following questions. When you are finished please make sure **everyone’s** name is on both the question sheet **and** the food web. Staple the completed question sheet to the food web and turn it in.

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| **Yellowstone Organisms Sheet #1** | | |
| **Idaho Fescue (grass)**  idahoe fescue  **Producer** | **Lodge Pole Pine**  lodgepole_pine  **Producer** | **Big sagebrush**  sagebrushdrawing  **Producer** |
| **White Bark Pine**  whitebark2  **Producer** | **Whortleberry**  whortleberry  **Producer** | **Quaking Aspen**  quaking aspen  **Producer** |
| **Bacteria-Fungi-Molds**  MCNA01329_0000[1]  **Decomposers** | **Beetles (various species)**  MCj03469150000[1]  **Consumer**  Plant matter, carrion, | **Grasshopper** (several species)  MCj03469290000[1]  **Consumer**  Leaves, grass, sagebrush |
| **Ants** (various species)  MCj04380200000[1]  **Consumer**  Plant matter, carrion | **Columbia Spotted Frog**  MCj03561630000[1]  **Consumer**  Insects, algae, aquatic  plants | **Clark’s Nutcracker**  Nutcracker  **Consumer**  Pine nuts, other seeds,  Berries, eggs. |
| **Raven**  raven1  **Consumer**  Carrion, especially wolf kills, fruit, eggs, rodents… | **Bald Eagle**  MCAN00210_0000[1]  **Consumer**  Fish, otters, carrion in  winter | **Red Tailed Hawk**  MCAN00496_0000[1]  **Consumer**  Rodents, fish, carrion... |

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| **Yellowstone Organisms Sheet # 2** | | |
| **Pocket gopher**  MCBD07329_0000[1]  **Consumer**  Grasses, underground  stems | **Uinta Ground squirrel**  ground squirrel  **Consumer**  Pine seeds, grasses, insects,  mushrooms | **Marmot**  marmot-t9765  **Consumer**  Grasses, seeds |
| **Moose**  moose2  **Consumer**  Aspen, aquatic plants | **Bobcat**  MCj01119200000[1]  **Consumer**  Rodents, pronghorn | **Bison**  MCj04060840000[1]  **Consumer**  Grasses |
| **Grizzly Bear**  **Grizzly-Bear**  **Consumer**  Pine seeds, rodents, fish, elk, berries, grass, bison…. | **Elk**  **elk**  **Consumer**  Aspen, grasses | **River Otter**  **RiverOttersimg0sm**  **Consumer**  Fish, crayfish, frogs, turtles. |
| **Pronghorn**  prong  **Consumer**  Sagebrush, grasses | **Beaver**  **MCAN01338_0000[1]**    **Consumer**  Aspen, aquatic plants | **Wolf**  **wolf_art**  **Consumer**  Elk, bison, pronghorn, deer, beaver… |
| **Yellowstone Cutthroat Trout**  **MCAN02612_0000[1]**  **Consumer**  Insects, frogs, algae | **Sun**  **MCj02321720000[1]**  **Solar Energy**  Ultimate source of energy  for most life on Earth. |  |

**Please answer in complete sentences.**

1. How many trophic levels does your food web contain?
2. The Red tailed hawk is feeding at what trophic level?
3. If an insecticide killed off the insects, which organisms would be affected the most? Why?
4. If an insecticide killed off all the insects, which organisms would have less competition?
5. Which organism is in the most direct competition with the Moose? Explain your answer.

1. Name an animal that appears to be a generalist. Why?
2. Name an animal that appears to be a specialist. Why?
3. Which living organisms would first be affected if the decomposers died off? Why?
4. In an ecosystem, why are there fewer carnivores than herbivores?
5. Why can’t food chains go on for more than 6-7 trophic levels?
6. Write out two different food chains contained in your food web.
7. ( 3 organisms)
8. (5 organisms)