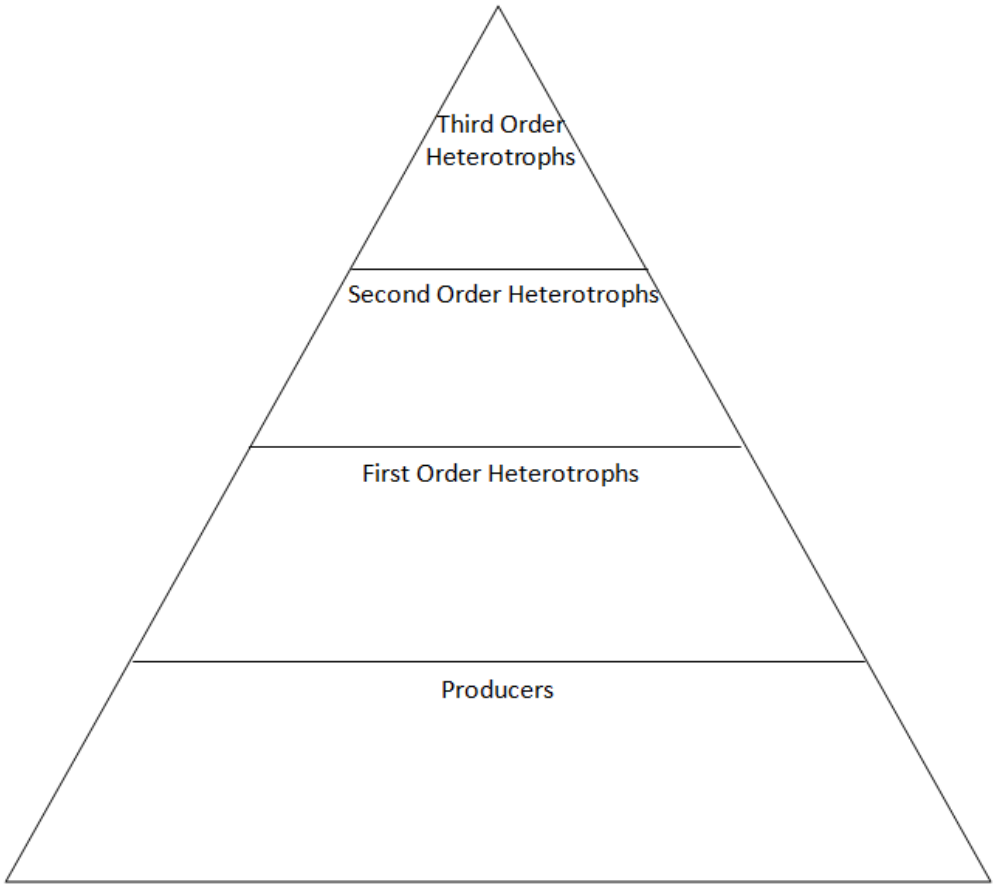
Ecological Pyramid Interactive

Purpose: to understand the relative amounts of energy and matter moving through ecosystems

Background: An ecosystem is a community of living things interacting with each other and their nonliving environment. An ecological (or trophic) pyramid, is a depiction of how energy or matter moves through an ecosystem. Each level of the pyramid is for a different level of the food web: producers, consumers, secondary consumers, etc. This particular interactive uses the word “heterotrophs” to stand for each level of organism that cannot make its own food, whether they are herbivores, carnivores, omnivores, etc.

Directions:

1. Go to the Model Ecosystems Virtual Lab
2. Pick one of the ecosystems from the dropdown menu
3. Complete the pyramid and click “Check”. If you place some things incorrectly, it will knock those back and let you try again.
4. When you are done, click “Pyramid of numbers” and it will show you the number of organisms in each level. Record the totals for each level below. This is intended to show a rough idea of the amount of matter in each level. DO NOT exit the pyramid yet.



Answers to this section will vary a little based on the ecosystem. Overall, the numbers will decrease going up the pyramid.

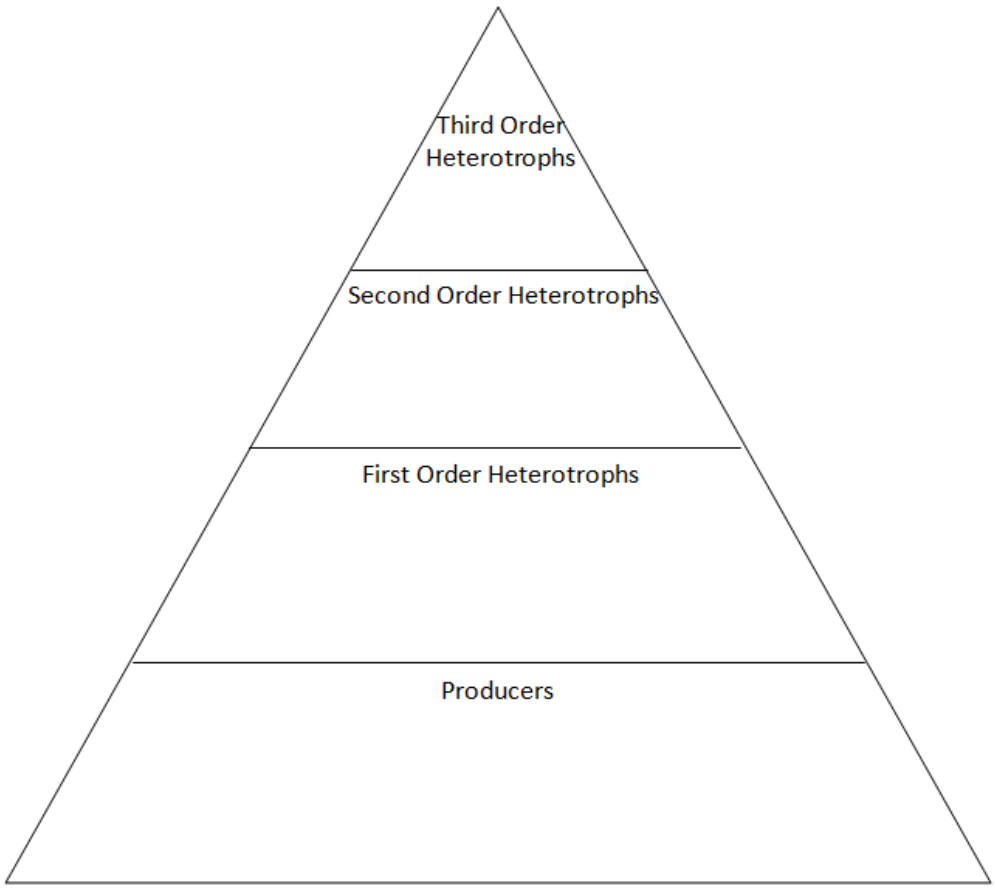
5. What do you notice about the number of organisms as you move from producer through the consumers (heterotrophs)?

   There are a lot more at the bottom (producer), then you get fewer as you go up the pyramid.

6. Why do you think there are so few organisms at the top of the pyramid?

   Each level uses a lot of their food energy to live, so there is less energy available at the next level.

7. Click “Pyramid of Energy” and it will show you the amount of energy available in each level. Record that below.



   Answers to this section will vary a little based on the ecosystem. Overall, the numbers will decrease going up the pyramid.

8. What do you notice about the amount of energy as you move from producer through the consumers (heterotrophs)?
   It is the highest in the producer level and decreases as you move up the pyramid.

9. Why do you think there is so much less energy at the top of the pyramid?

   Each level uses a lot of their food energy to live, so there is less energy available at the next level.

10. What do you think would happen to the ecosystem if the producers all died off?
    There would be no food for the First Order Heterotrophs, so they would die off. The Second Order and Third Order would also starve.