

Wisconsin NatureMapping Milkweed Community Study

Developed by:

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ECOLOGY OF THE MILKWEED COMMUNITY

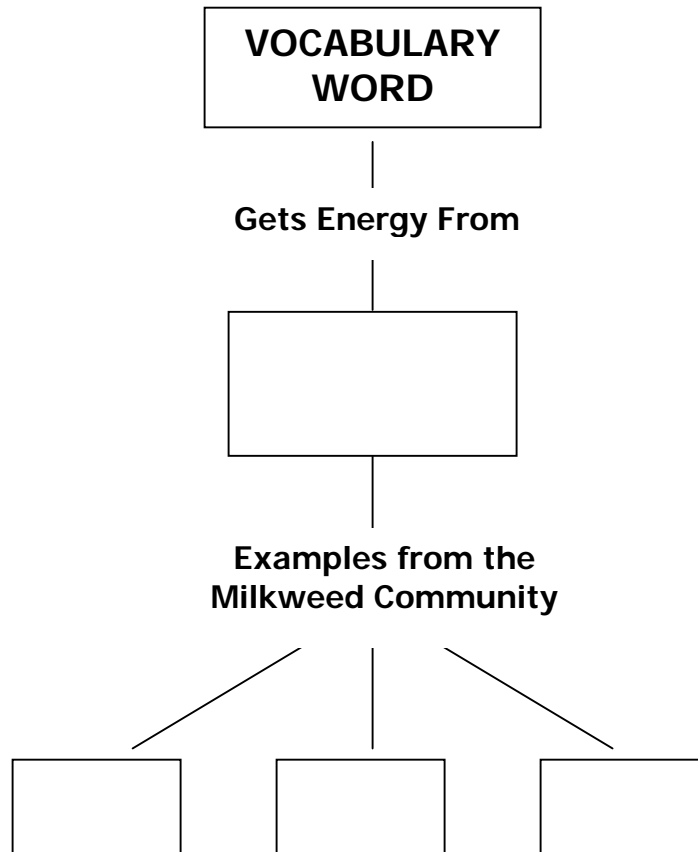
PART ONE: ECOLOGY TERMS

Use a sheet of notebook paper for the following section.

1. Make a concept chain for the following 7 vocabulary words:

Producers, consumers, decomposers, herbivores, carnivores, omnivores, & scavengers

Format:



PART TWO: FOOD CHAINS

1. Using your milkweed organism squares, create four food chains on your table. Use milkweed in at least 2 of them.
2. Record your food chains on your notebook paper using proper food chain format (p. 51).

PART THREE: FOOD WEBS

Use a large piece of butcher paper for this section.

1. Make a food web using all of your milkweed community members. Glue the squares on the paper once you've organized it. Draw in proper energy arrows using a color of your choice (COLOR #1).



2. Using another color (COLOR #2), draw a line connecting two organisms that have a relationship with one another (not food chain). Number this line with a #1 and on the back of the poster write #1 and describe the relationship. Be sure to clearly explain the relationship (see below). Repeat this with NINE more pairs of organisms. Use as many different types of relationships as possible.

For example:

These two spiders probably won't eat each other, but they will compete with each other for food.

Jumping Spider ————— #1 ————— Garden Spider

On back of the poster--#1: The jumping spider and the garden spider are both carnivores competing for the same food (grasshopper, blah)

Other examples of relationships:

- Milkweed provides food and habitat for monarch larvae.
- Spiders provide indirect protection for monarch larvae because they eat organisms that might prey on larvae.

3. List **5 ABIOTIC factors** (see your notes) somewhere on the edge of your food web.
4. Using another color (COLOR #3), draw a line connecting the abiotic factor to an organism that is influenced by this abiotic factor. Number this line with a #1 and on the back of the poster write #1 and describe the relationship. Be sure to clearly explain the relationship.

5. Select ONE of your abiotic factors from #3 and record it on your notebook paper with Part 1 & 2.
6. Use your food web and other relationships to explain how a drastic change (↑ or ↓) could influence the milkweed community members. Be sure to mention how ALL of the relationships (feeding, competition, habitat, protection, etc.) could be influenced!

PART FOUR: ENERGY PYRAMIDS & TROPHIC LEVELS

Use a your notebook paper for the following section.

1. Draw an energy pyramid with four trophic levels from the monarch community (refer to picture in your notes). Assume milkweed is the producer. Assume the milkweed plants involved have 10,000 calories to offer.
2. Be sure to label:
 - a. The name of the organism at each level (i.e. milkweed).
 - b. The name of each level of the pyramid (producer, primary consumer, etc.).
 - c. The type of organism (carnivore, herbivore, etc...).
 - d. The number of calories available at each level (see notes).
 - e. Under your energy pyramid, write a paragraph explaining why the number of calories decreases as you move up each level. Use specific examples from your energy pyramid to illustrate your point.

PART FIVE: NICHES VS. HABITAT

Use your notebook paper for the following section.

1. Describe the habitat of the monarch.
2. Describe the niche of the monarch.
3. Garden spiders and jumping spiders both share the same habitat—the milkweed community. Compare and contrast their niches.
4. Many species in the milkweed community could potentially compete for the same resources, but manage to co-exist on the same plants. This is probably due to the fact that their niches are slightly different and because competition has caused them to occupy a realized niche (smaller) instead of their full fundamental niche.
 - a. Name two species from the milkweed community that you think could be competing for the same resources and describe these resources.

- b. Describe one possible way that these two organisms could be “dividing up” resources in order to “peacefully” live together without obvious competition.

PART SIX: WHAT WOULD HAPPEN IF.....

Those nasty “lady bugs”

Many of you have noticed that suddenly your house is covered in what appear to be ladybugs. These are actually called Asian lady beetles and they are a nonnative species from Asia. In their native habitat, they hibernate in large groups in the cracks and crevices within cliff faces. Unfortunately, in the US where cliffs are not prevalent, they are overwintering in and around buildings. Because of this habit, they are now considered a nuisance pest.

Asian lady beetles are here because the U.S. Department of Agriculture released millions of them in an effort to control an insect that was injuring trees. Now Asian lady beetles can be found in many different habitats including forests, gardens, and open fields (milkweed community!). Asian lady beetles are predators that consume aphids, small insects, and other pests that injure plants.

Answer the following questions on your paper: (you may need your posters)

1. Explain how the Asian lady beetle could potentially impact the monarch population.
2. What impact could the Asian lady beetle have on other members of the milkweed community? Give several well-explained examples (at least three).
3. Can you come up with a member of the monarch community that would not be affected in some way by the introduction of Asian lady beetles? Explain.
4. If the overwintering sites in Mexico continue to diminish, the monarch butterfly could become endangered. If we wanted to ensure that monarch populations were thriving in Wisconsin, is there a species that we could introduce or eliminate that could help the monarch population? Describe your plan and why you think it could benefit monarch populations.
5. How does your plan impact other species in the milkweed community?
6. Do you think introducing or eliminating species is a wise idea? Why or why not?

7. What could be an alternative plan in Wisconsin for helping the monarch populations thrive?