



Monarch Larva Monitoring Project

ACTIVITY #4: COMPARING PLANTS OCCUPIED BY MONARCHS TO RANDOM PLANTS

Objective: To assess whether female monarchs choose milkweed plants randomly within a site, or if there are characteristics of milkweed plants that make some plants more likely to be chosen as sites for oviposition. This will help us to understand what characteristics make milkweed “good” host plants for monarchs.

Methods: Measure the same characteristics (height, reproductive status, age, herbivore damage, and the presence or absence of invertebrates) of plants with monarchs and random plants. You will measure all (or a subset if you find over 30 plants with monarchs) of the plants you observe with monarchs and a random set of 30 plants at your site.

You will fill out two datasheets every week (**Datasheets 4A and 4B**) if you do this activity, recording the same characteristics in plants with monarchs on them and random plants.

DATASHEET #4A: CHARACTERISTICS OF MILKWEED PLANTS WITH MONARCHS

It works well to copy this datasheet on the back of **Datasheet 1A: Weekly Monarch Density**. When you find a monarch egg or larva as you are monitoring for the monarch density, stop and record the data asked for on the datasheet.

1. Look at the plant to determine what, if any, other invertebrates are on it, and record what you see on the datasheet. It is important to do this first, since your presence and plant manipulation will disturb some of the invertebrates.
2. Record the species of milkweed.
3. Measure the plant height in cm. Measure height to the top of the top set of leaves, even if another set is higher. If the plant is not standing straight, or if it is a recumbent species, measure its length. If it has several branches, measure the height of the tallest branch.
4. Note the presence/absence of buds, flowers, and seed pods.
5. Evaluate the percentage of leaf material yellowed and senescing. This is a subjective measurement, but our goal is to determine how this plant compares to other plants in your site in terms of aging leaves. Use the categories provided on the datasheet for percentages.
6. Evaluate the percentage of leaf material that is eaten by herbivores or infected by a disease or air pollution. Use the categories provided on the datasheets for percentages.
7. Count the number of other milkweed plants in a one meter square that has the focal plant at its center.

If monarch densities are very high at your site (i.e. you find more than 30 plants occupied by monarchs), stop recording their characteristics after the first 30 occupied plants. You can still keep looking for monarchs, but just record the number and stage of the monarchs, and the number of plants you look at. Otherwise, you’ll be in the field all day!

DATASHEET #4B: CHARACTERISTICS OF RANDOM MILKWEED PLANTS

IF YOU HAVE A BIG FIELD WITH LOTS OF PLANTS YOU WILL NEED TO SAMPLE PLANTS RANDOMLY:

1. Randomly choose a direction to walk through your monitoring site. This can be done by standing at some point in the site or on the edge and tossing your ruler, butterfly net, or pencil up into the air and walking in the direction it points. It is important to do this randomly so that you don't subconsciously start walking in a direction with good-looking or otherwise nonrandom plants.
2. Walk 10 paces (or 5 if your site is small), and measure the closest milkweed plant to your feet. Be sure to look for very small plants, and not to measure a more noticeable plant if an inconspicuous one is closer to your feet. If you don't see a plant, walk 5 or 10 more paces.
3. Follow the directions above to record plant characteristics. Record any monarchs that you see on these random plants as well as other invertebrates.
4. Walk 10 (or 5) more paces and repeat this process. Continue until you have measured 30 plants. If you reach the edge of the field before you have measured 30 plants, then randomly choose another direction and begin again.
5. If you randomly choose a plant on which you have already found a monarch, that's okay. Just note the presence of the monarch as an invertebrate. This plant will end up being measured twice, but that is okay, as long as it was chosen randomly each time.

IF YOU HAVE A SMALL AREA FIELD WITH FEWER THAN 30 PLANTS:

Measure the characteristics of all of the plants. In this case, your plants that are occupied with monarchs will be part of the "random plant" survey, since you will measure all plants. You should record the data on these plants on both datasheets – you don't have to actually write the data down twice, but enter them onto the web site in both datasheets. We will then be able to determine if your "occupied" plants are a non-random subset of all of the plants.

DATASHEET #4B: CHARACTERISTICS OF RANDOM MILKWEED PLANTS

Date: _____ Observers: _____ Site Name: _____

City: _____ State: _____

Plant #	Invertebrates on Plant	Plant Height (cm)	Buds (Y/N)	Flowers (Y/N)	Seed Pods (Y/N)	Condition (1 = <5% 2 = 5-40% 3 = 41-80% 4 = 81-100% yellowed or dying)	Herbivory/ Disease (1 = 0% 2 = <5% 3 = 5-25% 4 = >25% damaged)	# of other milkweeds within one m ²	Plant Species
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
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