

ACTIVITY #1C: MONARCH DENSITY (WEEKLY DENSITY PER MILKWEED PLANT)

Objective: Activity #1C, like the simpler Activity #1A, results in an estimate of monarch density at your site. The difference is that you will keep track of the number of monarchs you observe on individual plants, instead of just reporting the total numbers of plants and monarchs that you observe. Whereas in the simpler activity you would report seeing, for example, 4 eggs on a total of 100 plants observed, this protocol will allow you to report if these eggs were on 4 separate plants, or if they were all on the same plant. This information will be useful in understanding potential impacts of crowding on monarch survival. Because you will also be recording the milkweed species, we'll be able to assess how female monarchs make egg-laying decisions when they have more than one milkweed species in a single site. Your data will be added to overall monarch densities, but will also be analyzed separately.

Method: Follow the directions for Activity #1A, with these modifications. When you look at a plant with no monarchs, place a tick mark in the box labeled "0 monarchs/plant." When you see one monarch on a plant, write "e," "1st," "2nd," "3rd," "4th," or "5th" (depending on whether you see an egg or a first, second, etc. instar) in one of the boxes under the words "1 monarch/plant." When you see 2 monarchs on a plant, write "e,e" or "e,1st," or "1st,1st," etc., depending on the stage of the two monarchs you see. Do the same in the boxes under the words "3 monarchs/plant," "4 monarchs/plant," and ">4 monarchs/plant" as needed. Note if an individual is dead; for example, if you see a dead first instar and a live first instar on a plant, you would note "dead 1st, 1st". At the end of the session, add up the total number of plants (including those with and without monarchs), eggs, and larvae you observed, and tally this in the appropriate section in the summary below below the table.

If you have only one species of milkweed on your site, you'll use one table per monitoring session. If you have more than one milkweed species, you should keep a separate table for each species you observe. There are two tables per sheet.

DATASHEET #1C: MONARCH DENSITY (WEEKLY DENSITY PER MILKWEED PLANT) PLEASE SEE INSTRUCTIONS ABOVE

Year: _____ Observers: _____ Site Name: _____ City, State: _____

Key: e = egg | 1 or 1st = 1st instar | 2 or 2nd = 2nd instar | 3 or 3rd = 3rd instar | 4 or 4th = 4th instar | 5 or 5th = 5th instar | p = pupae

Milkweed Species: _____ Date: _____ Start Time: _____ Stop Time: _____ Temp in Shade: _____

0 monarchs/plant	1 monarch/plant				2 monarchs/plant				3 monarchs/plant				4 monarchs/plant				> 4 monarchs/plant			

Total plants: _____ Total Eggs: _____ Total 1sts: _____ Total 2nds: _____ Total 3rds: _____ Total 4ths: _____ Total 5ths: _____

Total Pupae: _____ Dead (list stages): _____ Adults: _____ males, _____ females, _____ unknown

Milkweed Species: _____ Date: _____ Start Time: _____ Stop Time: _____ Temp in Shade: _____

0 monarchs/plant	1 monarch/plant				2 monarchs/plant				3 monarchs/plant				4 monarchs/plant				> 4 monarchs/plant			

Total plants: _____ Total Eggs: _____ Total 1sts: _____ Total 2nds: _____ Total 3rds: _____ Total 4ths: _____ Total 5ths: _____

Total Pupae: _____ Dead (list stages): _____ Adults: _____ males, _____ females, _____ unknown

Plant species blooming: _____

(Disturbance and Aphis nerii data collected on next page.)

Note any disturbances at your site this week:

Did you see any *Aphis nerii* at your site this week? Circle one: Yes No Didn't look

Other notes or observations:
