

DATASHEET #1 SUMMARY: WEEKLY MONARCH DENSITY TOTAL

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

Start Time: _____ Stop Time: _____ Temp in Shade: _____

Eggs	1 st Instars	2 nd Instars	3 rd Instars	4 th Instars	5 th Instars	# of Adults (F = female M = male U = unknown)	# Dead (egg or larval stage)	# of Milkweed Plants Observed (use tick marks to represent 1, 5, 10, or 20 plants and record total at end of session)

Plants in bloom at site (species, not numbers of plants!):

Note any disturbances that occurred at the site over the past week (mowing, herbicide spraying, haying, etc.):

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

Other Notes:

ACTIVITY #1 DETAIL: WEEKLY MONARCH DENSITY PER MILKWEED PLANT

Objective: *Activity #1 Detail*, like the simpler *Activity #1 Summary*, 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. Since you also will 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 #1 Summary*, 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 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 #1 DETAIL: WEEKLY MONARCH DENSITY PER MILKWEED PLANT

PLEASE SEE INSTRUCTIONS

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 instar | p = pupae

EXAMPLE

Milkweed Species (only one): Common Date: 07/01/2023 Start Time: 1:45 pm End Time: 2:30pm Temp in Shade: 78 F

0 monarchs/plant	1 monarch/plant				2 monarchs/plant		3 monarchs/plant	4 monarchs/plant	>4 monarchs/plant
	e	2 nd	2 nd	e	e	1 st , 4 th	e, e, 3 rd		

Total plants: 13	Total eggs: 5
Total 1 st s: 1	Total 2 nd s: 2
Total 3 rd s: 1	Total 4 th s: 1
Total 5 th s:	Total pupae:
Dead (list stages)	
Adults (unknown):	
Adults (males):	
Adults (females):	

How many plants did you see that had the exact same stage(s) and number of larvae on them? For the data above, it would be:

SUMMARY TABLE	
0 monarchs	6
1 egg	3
1 2 nd instar	2
1 1 st & 1 4 th instar	1
2 eggs & 1 3 rd instar	1

The data portal will ask: “Did you see any monarch eggs, larvae, or pupae on this plant?” For the bold example to the left, you’ll enter **yes**. You’ll then have to enter what stage of larva(e) and how many, which you’ll enter under “Live 2nd instars” as **1**. Next: “How many total plants *exactly like this one* did you see on this date?” and you’ll enter **2**, before clicking “save and add another plant” and continuing with the rest of your data.

1st Milkweed Species: _____ Date: _____ Start Time: _____ End 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 1 st s:	Total 2 nd s:
Total 3 rd s:	Total 4 th s:
Total 5 th s:	Total pupae:
Dead (list stages):	
Adults (unknown):	
Adults (males):	
Adults (females):	

SUMMARY TABLE	
0 monarchs	

Plant Species Blooming: _____

(Disturbance and Aphid data collected on next page)

2nd Milkweed Species (if observed): _____ Start Time: _____ End 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 1 st s:	Total 2 nd s:
Total 3 rd s:	Total 4 th s:
Total 5 th s:	Total pupae:
Dead (list stages)	
Adults (unknown):	
Adults (males):	
Adults (females):	

SUMMARY TABLE			
0 monarchs			

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:
