MAPPING THE MOVEMENTS OF OVERWINTERING WESTERN MONARCH BUTTERFLIES (*Danaus Plexippus*) AT THE PISMO BEACH MONARCH BUTTERFLY GROVE USING ARCGIS SOFTWARE

A RESEARCH ARTICLE

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Purpose

Dr. Villablanca of the Cal Poly Biology Department commissioned this project with the goal of tracking Monarch Butterfly spatial redistribution in anticipation of or response to severe weather events. We believe that Monarchs cluster non-preferentially on introduced Eucalyptus trees until midwinter when they begin to cluster preferentially on native conifers. Based on the efforts of a previous group of students, it has been determined that, over a two-week time period in mid-winter, Monarchs spend the majority of their time on native conifers. We set out to clearly demonstrate Monarch Butterfly spatial redistribution in either anticipation of or response to severe weather.

Overview

Severe weather events occurred on October 31, 2014 when 1.04” of rainfall fell on Pismo Beach in a 24-hour period. A cold front and light showers moved over San Luis Obispo County on Nov. 13, and on Nov. 19, about 1/10” fell on the Pismo Coastal area. Relative to the span of our study, low barometric pressure was observed around Nov. 1 and Nov. 10 to 11 (Fig. 1).
Figure 1. Meteorological data for the Pismo area November 2014 (weatherunderground.com).
Methods

Equipment:
• Binoculars
• Rangefinder
• Data sheets
• Anemometer
• Spotting telescope
• Pismo Grove map
  º Major Grid (Fig. 3)
  º Minor Grid (Fig. 4)

Data was collected by teams of 1 to 4 researchers at sunrise for 23 consecutive days, beginning Nov. 1, 2014 and ending Nov. 23, 2014. Using standardized counting techniques taught to us by State Parks Interpreter Danielle Patterson, we estimated the size, location, and height of each cluster of butterflies observed in the Pismo Monarch Butterfly Grove (PMBG) (Fig. 2).

Each cluster of butterflies was assigned a height estimate at the top and bottom of the cluster to the nearest meter. Hand-held rangefinders were used to determine this height value from directly underneath the cluster. A count estimate was then performed by two individuals so an average value could be assigned. We limited our estimations to a 20% margin of error between counter or a recount was performed. Using previously generated grid maps (created by a previous group of students), we determined the individual trees on which each cluster of butterflies was located. We first examined the Major Grid (Fig. 3) and decided which Major Cell the cluster resided in. Each Major Cell contained a Minor Grid (Fig. 4). We estimated the location of each cluster to the nearest 10’ x 10’ cell of the Minor Grid. We then recorded every cluster’s Major and Minor Grid location, butterfly count estimate, tree identifier, and height on our data sheets.
Figure 3. Major Grid
Collected data was entered into one Excel spreadsheet, saved as a .csv file type, and imported into ArcMap. The Major and Minor Grids, roads, and fences created in ArcMap by the previous student research groups were reused and added in as base layers. We then used several tools available in ArcMap to display butterfly density redistribution. The “Table to Table” tool was used to convert the .csv file into a .dbf file (Fig 5). This file type can be added into ArcMap as an attribute table (Fig. 6).

Figure 5. “Table to Table” tool
| OID | Date   | MonarchCou | TreeNum | TreeSpecie | Height | ZoneCell |
|-----|--------|------------|---------|------------|--------|----------|
| 0   | 11/1/2014 | 12         | T63     | E          | 3      | D-i-1    |
| 1   | 11/1/2014 | 45         | T63     | E          | 3      | D-i-1    |
| 2   | 11/1/2014 | 15         | T63     | E          | 3      | D-i-1    |
| 3   | 11/1/2014 | 22         | T63     | E          | 4      | D-h-1    |
| 4   | 11/1/2014 | 45         | T63     | E          | 4      | D-h-1    |
| 5   | 11/1/2014 | 15         | T63     | E          | 4      | D-h-1    |
| 6   | 11/1/2014 | 55         | T63     | E          | 4      | D-h-1    |
| 7   | 11/1/2014 | 36         | T63     | E          | 4      | D-h-1    |
| 8   | 11/1/2014 | 28         | T69     | E          | 10     | D-e-3    |
| 9   | 11/1/2014 | 1200       | T70     | E          | 10.5   | D-d-4    |
| 10  | 11/1/2014 | 48         | T70     | E          | 10     | D-d-4    |
| 11  | 11/1/2014 | 32         | T70     | E          | 11     | D-d-4    |
| 12  | 11/1/2014 | 18         | T70     | E          | 10     | D-d-4    |
| 13  | 11/1/2014 | 11         | T70     | E          | 10     | D-d-4    |
| 14  | 11/1/2014 | 41         | T70     | E          | 11     | D-d-4    |
| 15  | 11/1/2014 | 140        | T70     | E          | 11     | D-d-4    |
| 16  | 11/1/2014 | 260        | T70     | E          | 10     | D-c-4    |
| 17  | 11/1/2014 | 55         | T70     | E          | 10     | D-c-4    |
| 18  | 11/1/2014 | 28         | T70     | E          | 10     | D-c-4    |
| 19  | 11/1/2014 | 30         | T70     | E          | 10     | D-c-4    |
| 20  | 11/1/2014 | 65         | T81     | E          | 7      | C-i-8    |
| 21  | 11/1/2014 | 14         | T81     | E          | 7      | C-i-8    |
| 22  | 11/1/2014 | 40         | T81     | E          | 7      | C-i-8    |
| 23  | 11/1/2014 | 15         | T81     | E          | 7      | C-i-8    |
| 24  | 11/1/2014 | 18         | T81     | E          | 7      | C-i-8    |
| 25  | 11/1/2014 | 30         | T81     | E          | 7      | C-i-8    |
| 26  | 11/1/2014 | 30         | T81     | E          | 7      | C-i-8    |
| 27  | 11/1/2014 | 110        | T94     | E          | 8      | C-h-8    |
| 28  | 11/1/2014 | 80         | T94     | E          | 8      | C-h-8    |
| 29  | 11/1/2014 | 12         | T94     | E          | 8      | C-h-8    |
| 30  | 11/1/2014 | 110        | T100    | C          | 8      | D-b-10   |
| 31  | 11/1/2014 | 35         | T100    | C          | 8      | D-b-10   |
| 32  | 11/1/2014 | 12         | T100    | C          | 8      | D-b-10   |
| 33  | 11/1/2014 | 18         | T100    | C          | 8      | D-b-10   |
| 34  | 11/1/2014 | 330        | T100    | C          | 12     | D-c-9    |
| 35  | 11/1/2014 | 210        | T100    | C          | 12     | D-c-9    |
| 36  | 11/1/2014 | 45         | T100    | C          | 12     | D-c-9    |
| 37  | 11/1/2014 | 95         | T100    | C          | 14     | D-d-9    |
| 38  | 11/1/2014 | 22         | T142    | E          | 12     | I-a-5    |

Figure 6. Attribute Table
The “Create Address Locator” tool was used to assign each unique 10’ x 10’ cell in the Minor Grid to a field labeled “ZoneCell” (Fig. 7). Our Minor Grid layer was used as the primary table and the attribute field “MinorGridLabel” was used as the Key Field.
We then geocoded the addresses assigned to each individual cluster to the newly created addresses using the “Geocode Addresses” tool (Fig 8). This process linked the recorded “ZoneCell” data to the addresses on the Minor Grid. We set geocoding options for spelling sensitivity to be 100% (Fig. 9). This resulted in 100% matched addresses (Fig. 10).

Figure 8: “Geocode Addresses” tool
Figure 9: Geocoding Options
Figure 10: Geocoding Matches
Figure 11: Model Builder
We began creation of the model by adding the “Geocode_Address” layer to our blank model. We then used the “Select Layer by Attribute” tool to select the first date, Nov. 1. Then we took the output of this tool and used the “Point Density” tool to display butterfly density in the PMBG on Nov. 1. From there, we replicated this model for each of the other twenty-two dates. Then, we went to each line of the model and changed the “Select by Attribute” tool query to select each individual date. We then renamed each of the final outputs to correlate with the date of interest. This model supplied us with twenty-three point density maps—one for each day of our study (Appendix A).
We then created a point density map for the entirety of the study period using the “Point Density” tool (Fig. 12). This yielded the PMBG Point Density Map (Fig. 13).

Figure 12: “Point Density” tool
Figure 13: Pismo Beach Monarch Butterfly Grove point density map
We used the “Feature to 3D By Attribute” tool to convert our “Height” attribute field into a Z-value useable in ArcScene (Fig. 14).

![Feature to 3D By Attribute tool](image)

*Figure 14: “Feature to 3D By Attribute” tool*

We then opened ArcScene 10.2.2 and added in our base layers: the road, fence, and Major/Minor grids (Fig. 15).

![ArcScene Base Layers](image)

*Figure 15: ArcScene Base Layers*
We took the output of the “Feature to 3D by Attribute” tool, a layer named “Geocode_Address_Z,” and opened that layer in ArcScene (Fig. 16). We duplicated this layer and used Definition Query (found under properties) to nullify Cypress trees in the first layer and Eucalyptus trees in the second. This allowed us to show Cypress and Eucalyptus trees in the grove at the same time as different colors. We enabled time and elevation from features for both of these layers.

Figure 16: ArcScene Layers
To create a video animation with time enabled, we opened the Animation Manager and shot several keyframes (Fig. 17). Our animation is available in supplemental materials.

![Animation Manager](image)

**Figure 17: Animation Manager**

**Results**

Over the course of our study, the number of Monarchs in the grove grew dramatically. On November 1, we saw about 3,400 individuals, and on November 23, we saw just over 13,000 individuals. We noticed that clustering on the central Cypress tree became the densest by the end of our study, housing the most Monarchs. We also noticed that many of the clusters moved to greater heights as time went on, which we attribute to decreasing temperatures. Additionally, the butterflies tended to cluster in the center of the grove, leading us to believe that their affinity for the Cypress tree may be a result of its location rather than its physical characteristics. Perhaps the protection of the surrounding Eucalyptus trees is more important to Monarch survival than any benefits of clustering on a Cypress tree. The central location of the Cypress led us to believe that it is the most sheltered from outside winds.

We were able to produce many useable products in both ArcMap and ArcScene. We created a Point Density map for each day of our study and the study period as a whole. We show cluster redistribution from day-to-day in ArcScene, taking into account the height of each cluster. We also provided twenty-three days of useful count estimates at the PMBG.
Acknowledgements

We would first like to thank Dr. Francis Villablanca of the Cal Poly Biology department for providing inspiration and guidance to both our group and our predecessors. We would also like to thank David Yun for organizing the project and introducing us to the topic, as well as providing valuable guidance in using ArcGIS. We would like to thank Danielle Patterson of California State Parks for training our group in data collection techniques and providing us with specific information on the Pismo Monarch Butterfly Grove. We would like to thank the Cal Poly Wildlife Club for allowing us to present our project to their members. Finally, we would like to thank the following people for committing valuable time and effort into helping us collect the vital field data that made this project possible:

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Jessica Copeland
Hannah Brown
Taylor Steele
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Brandi Berggreen
Emily Dektar

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Appendix A

November 2014 - Pismo Monarch Grove Population Density

November 1st, 2014

Legend
- Minor Grid
- Major Grid
- Road
- Fence

Legend:
- Light Green: Lowest Density
- Dark Green: Intermediate Density
- Yellow: Moderate Density
- Orange: High Density
- Red: Highest Density

Scale:
0 50 100 150 200 Feet

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12/4/2014
Appendix B

# Over-wintering Monarch Butterfly Project

## Monarch Count Data Sheet

| DATE | Site Name | Observers | Observer Name(s) | Count Time Span (min) | Total Count Time (min) | Cloud/Fog Cover | Precipitation (circle one): | Temp (°C) | Wind (m/s) | Wind (Beaufort) | Wind Direction |
|------|-----------|-----------|-----------------|-----------------------|------------------------|----------------|-----------------------------|-----------|------------|----------------|----------------|
|      |           |           |                 |                       |                        |                |                             |           |            |                |                |

| # Monarchs Clusters | Zone (en A) | Cell (en A2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|---------------------|-------------|------------|--------|--------------|--------------------------|-----------------------------|
| 12                  | D           | 0         | T69    | Ex           | 5.0m                      | 3.5m                        |
| 14                  | D           | 0         | T68    | Ex           | 3.5m                      | 3.0m                        |
| 16                  | D           | 0         | T65    | Ex           | 3.5m                      | 3.0m                        |
| 14                  | D           | 0         | T63    | Ex           | 4.0m                      | 3.8m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| 15                  | D           | 0         | T63    | Ex           | 4.1m                      | 4.2m                        |
| Total in Clusters:  | (include count from next pg) | Total # Trees: | | | |

# Loners: 

# Sumners: 

# Flippers: 

# Grounders (live): 

Grand Total: (sum of all clustered butterflies plus loners, sumners, fliers, etc.)

# Mating Monarch: 

# Dead Monarch: 

Other Notes: 

\[ \text{(1.04°) Primo beach from study) } \]

\[ \text{Rain last night.Began to descend 8:05 am.} \]

\[ \text{Diving pelican hunt. Interesting.} \]
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: A2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|-------------------------|-----------------------------|
| 2.6                  | D           | C1           | T70    | Euc         | 10.3                    | 9.8                         |
| 5.5                  | D           | C4           | T70    | Euc         | 10.2                    | 10.0                       |
| 2.8                  | D           | C1           | T70    | Euc         | 10.0                    | 9.2                         |
| 3.0                  | D           | C1           | T70    | Euc         | 10.0                    | 9.2                         |
| 6.5                  | C           | C1           | T81    | Euc         | 6.6                     | 6.8                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |
| 1.5                  | C           | C1           | T81    | Euc         | 6.5                     | 6.7                         |

Please add any counts on this page to the total tally on the previous page.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE: 11/2/16  SITE: Name: Prime Grove

# Observers: 1  Observer Name(s): Beth Johnson

Count Time: 6:32 AM to 7:00 AM  Total Count Time (Min): 28

Cloud/Fog Cover: 0%  Precipitation (circle one):  None  dry rain

Temp (°C): 5°F  Wind (mph): 2.5  Wind (Beaufort): 2

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|--------------------------|----------------------------|
| 120                  | D           | 12           | T63    | Euc         | 6.5                      | 6.3                        |
| 65                   | D           | 2            | T63    | Euc         | 6.6                      | 6.5                        |
| 30                   | D           | 1            | T63    | Euc         | 7.0                      | 6.9                        |
| 22                   | D           | 13           | T63    | Euc         | 7.0                      | 6.9                        |
| 16                   | D           | 11           | T63    | Euc         | 6.8                      | 6.9                        |
| 12                   | D           | 12           | T61    | Euc         | 6.5                      | 6.5                        |
| 8                    | D           | 11           | T63    | Euc         | 6.8                      | 6.9                        |
| 45                   | D           | 11           | T63    | Euc         | 7.0                      | 6.8                        |
| 32                   | D           | 13           | T69    | Euc         | 10.2                     | 10.1                       |
| 22                   | D           | 11           | T70    | Euc         | 10.3                     | 10.3                       |
| 16                   | D           | 11           | T70    | Euc         | 10.3                     | 10.3                       |
| 7                    | D           | 11           | T70    | Euc         | 10.3                     | 10.3                       |

Total # Monarchs Clustered: (include count from next pg)  Total # Trees: 

# Loner(s): THU THU THU THU

# Mating Monarchs:
# Dead Monarchs:

Other Notes: 11/2/16  Count by: Beth Johnson
| # Monarch Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|---------------------|-------------|---------------|--------|--------------|-------------------------|---------------------------|
| 150                 | B           | e4            | T10    | Euc         | 11.0                    | 10.8                      |
| 30                  | D           | e4            | T10    | Euc         | 11.5                    | 11.0                      |
| 55                  | D           | e4            | T10    | Euc         | 11.8                    | 11.0                      |
| 450                 | D           | e4            | T10    | Euc         | 12.0                    | 11.0                      |
| 180                 | D           | e4            | T10    | Euc         | 11.5                    | 11.2                      |
| 28                  | D           | d4            | T10    | Euc         | 11.6                    | 11.6                      |
| 34                  | D           | d4            | T10    | Euc         | 10.9                    | 10.8                      |
| 20                  | B           | a4H           | T10    | Euc         | 11.2                    | 11.0                      |
| 60                  | B           | c4H           | T10    | Euc         | 11.1                    | 11.2                      |
| 125                 | B           | c4H           | T10    | Euc         | 10.8                    | 10.0                      |
| 50                  | B           | c4H           | T10    | Euc         | 10.9                    | 10.0                      |
| 28                  | C           | c4H           | T10    | Euc         | 10.6                    | 10.5                      |
| 35                  | B           | c4H           | T10    | Euc         | 10.4                    | 10.0                      |
| 325                 | D           | a9            | T10    | Cyp         | 16.0                    | 15.0                      |
| 250                 | B           | c10           | T100   | Cyp         | 12.0                    | 11.0                      |
| 40                  | B           | c10           | T100   | Cyp         | 13.0                    | 12.0                      |
| 300                 | D           | c10           | T100   | Cyp         | 13.5                    | 13.5                      |
| 65                  | D           | c10           | T100   | Cyp         | 13.2                    | 13.2                      |
| 65                  | C           | c10           | T100   | Cyp         | 13.9                    | 13.6                      |
| 35                  | C           | c10           | T100   | Cyp         | 15.2                    | 15.0                      |
| 20                  | C           | c8            | T81    | Euc         | 8.1                     | 9.0                       |
| 25                  | C           | c8            | T81    | Euc         | 8.0                     | 9.0                       |
| 20                  | C           | c8            | T81    | Euc         | 7.9                     | 9.0                       |
| 20                  | C           | c8            | T81    | Euc         | 6.0                     | 7.0                       |
| 35                  | C           | c8            | T81    | Euc         | 8.0                     | 9.0                       |
| 20                  | C           | c8            | T81    | Euc         | 8.0                     | 7.0                       |
| 35                  | C           | c8            | T81    | Euc         | 8.0                     | 9.0                       |
| 20                  | C           | c8            | T81    | Euc         | 4.0                     | 5.0                       |

Please add any counts on this page to the total tally on the previous page.
### Over-wintering Monarch Butterfly Project
#### Monarch Count Data Sheet

**DATE:**

**Observer Name:**

**# Observers:** 4

**Count Time Span:** 5:42 to 6:42, Total Count Time (Min): 40

**Cloud/Tog Cover:** 16%

**Precipitation (circle one):** none, drizzle, rain

**Temp (°C):** 11.2

**Wind (knots):** 10

**Wind direction:** NNE

| # Monarchs | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (up) (m) | Cluster Height (bottom) (m) |
|------------|--------------|---------------|--------|--------------|------------------------|-----------------------------|
| 50         | E3           | TH            | euc    | 12.5         | 11.5                   | 11.0                        |
| 24         | E8           | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 14         | E10          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 13         | E8           | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 51         | E8           | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 48         | D12          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 47         | D15          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 50         | D15          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 70         | D15          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 13         | D12          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 22         | D12          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 15         | D12          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 20         | D12          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 10         | D12          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |
| 14         | D12          | TH            | euc    | 11.5         | 11.0                   | 10.5                        |

**Total in Clusters:**

**Total # Trees:**

**# Loners:**

**# Stingers:**

**# Fliers:**

**# Grounders (live):**

**Grand Total:**

**# Mating Monarchs:**

**# Dead Monarchs:**

**Other Notes:**
| # Monarche Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|--------------------------|-----------------------------|
| 20                   | D            | d15           | T10    | Euc         | 15.5                     | 12.5                        |
| 42                   | D            | d14           | T10    | Euc         | 16.5                     | 15.5                        |
| 22                   | D            | d14           | T10    | Euc         | 16.5                     | 15.5                        |
| 76                   | D            | d14           | T10    | Euc         | 16.5                     | 15.5                        |
| 28                   | D            | d14           | T10    | Euc         | 8.5                      | 7.0                         |
| 217                  | D            | d14           | T10    | Euc         | 8.5                      | 7.0                         |
| 193                  | D            | d14           | T10    | Euc         | 7.5                      | 6.5                         |
| 166                  | D            | d13           | T10    | Euc         | 6.5                      | 6.0                         |
| 29                   | D            | d13           | T10    | Euc         | 6.5                      | 6.0                         |
| 27                   | D            | d13           | T10    | Euc         | 7.0                      | 6.5                         |
| 132                  | D            | d13           | T10    | Euc         | 8.5                      | 7.0                         |
| 115                  | D            | d13           | T10    | Euc         | 7.0                      | 7.0                         |
| 224                  | D            | d12           | T10    | Euc         | 8.5                      | 8.0                         |
| 124                  | D            | d12           | T10    | Euc         | 8.5                      | 8.0                         |

*Please add any counts on this page to the total tally on the previous page.*
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE: 11/15/14  SITE NAME: Pomona

Observer(s): Taylor & Daniel

Count Time: 6:50 to 7:00 Total Count Time (Min): 11

Cloud/Fog Cover: 25% Precipitation (circle one): drizzle rain

Temp (°C): 56 Wind (m/s): Wind (Beaufort): Wind direction:

| # Monarchs Clustered | Zone (ex: A1) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|----------------------|---------------|---------------|--------|--------------|-------------------------|----------------------------|
| 30                   | 7             | 06            | 4      |             | 1.0                      | 4.1                        |
| 19                   | 7             | 06            | 4      |             | 1.0                      |                            |
| 16                   | 7             | 06            | 4      |             | 1.0                      |                            |
| 12                   | 7             | 06            | 4      |             | 1.0                      |                            |
| 7                     |                | 06            | 4      |             | 1.0                      |                            |
| 4                     |                | 06            | 4      |             | 1.0                      |                            |
| 3                     |                | 06            | 4      |             | 1.0                      |                            |
| 2                     |                | 06            | 4      |             | 1.0                      |                            |
| 1                     |                | 06            | 4      |             | 1.0                      |                            |
| 1                     |                | 06            | 4      |             | 1.0                      |                            |
| 1                     |                | 06            | 4      |             | 1.0                      |                            |
| 1                     |                | 06            | 4      |             | 1.0                      |                            |

Total in Clusters: (include count from next pg) Total # Trees:

# Lone Monarchs:

# Summer Monarchs:

# Fliers: TTH, MTT

# Grounders (live):

Grand Total: (sum of all clustered butterflies plus lone, summer, fliers, etc.)

# Mating Monarchs:

# Dead Monarchs:

Other Notes:
| # Monarchs Clustered (ex: A) | Zone | Cell (ex: A2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|-----------------------------|------|---------------|--------|--------------|--------------------------|-----------------------------|
| 12                          | H    | 91            | 3.23   | E            | 5.2                      | 5.0                         |
| 13                          | I    | 52            | 5.34   | E            | 3.5                      | 2.2                         |
| 14                          | C    | 260           | 8.64   | E            | 5.7                      | 5.7                         |
| 15                          | B    | 180           | 19.4   | E            | 6.3                      | 5.5                         |
| 16                          | A    | 140           | 4.84   | E            | 5.4                      | 5.5                         |
| 17                          | C    | 160           | 19.4   | E            | 4.3                      | 4.9                         |
| 18                          | C    | 140           | 5.93   | E            | 4.5                      | 4.5                         |
| 20                          | B    | 140           | 18.6   | E            | 5.3                      | 5.5                         |
| 21                          | C    | 160           | 18.6   | E            | 5.3                      | 4.3                         |
| 22                          | C    | 140           | 18.6   | E            | 5.3                      | 4.3                         |
| 23                          | B    | 140           | 18.6   | E            | 5.3                      | 4.3                         |
| 24                          | C    | 160           | 18.6   | E            | 5.3                      | 4.3                         |
| 25                          | C    | 160           | 18.6   | E            | 5.3                      | 4.3                         |
| 26                          | C    | 160           | 18.6   | E            | 5.3                      | 4.3                         |
| 27                          | C    | 160           | 18.6   | E            | 5.3                      | 4.3                         |
| 28                          | C    | 160           | 18.6   | E            | 5.3                      | 4.3                         |

Please add any counts on this page to the total tally on the previous page.
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a1) | Tree # | Tree Species | Cluster Height (top) (m) | Chair Height (bottom) (m) |
|---------------------|-------------|---------------|--------|--------------|-------------------------|--------------------------|
| 200                 | D           | 110           | F10b   | C            | 7.4                     | 7.0                      |
| 200                 | D           | 100           | F10b   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |
| 100                 | D           | 100           | F100   | C            | 7.4                     | 7.0                      |

Please add any counts on this page to the total tally on the previous page.
# Over-wintering Monarch Butterfly Project

## Monarch Count Data Sheet

**DATE:** 11/4/14  
**SITE NAME:** [Student Name]

### Observers
- [Student Name(s)]

### Count Time Span
- 6:00 AM to 8:30 AM
- Total Count Time (Min): 2.5

### Weather Conditions
- **Cloud/Fog Cover:** [Cloud Cover]
- **Precipitation:** [Precipitation]
- **Wind:** [Wind Speed] [Wind Direction]

### Monarch Count Sheet

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|----------------------------|
| 100                  | E           | B6            | T34    | Eucalyptus   | 13                       | 13                         |
| 65                   | E           | B6            | T31    | Eucalyptus   | 13                       | 13                         |
| 35                   | E           | B6            | T34    | Eucalyptus   | 13                       | 13                         |
| 25                   | E           | B6            | T34    | Eucalyptus   | 13                       | 13                         |
| 23                   | E           | B6            | T39    | Eucalyptus   | 13                       | 13                         |
| 95                   | E           | A6            | T31    | Eucalyptus   | 13                       | 13                         |
| 62                   | E           | A6            | T39    | Eucalyptus   | 13                       | 13                         |
| 75                   | E           | A6            | T31    | Eucalyptus   | 13                       | 13                         |
| 20                   | D           | A5            | T38    | Eucalyptus   | 13                       | 13                         |
| 23                   | D           | B6            | T34    | Eucalyptus   | 13                       | 13                         |
| 60                   | D           | B6            | T36    | Eucalyptus   | 13                       | 13                         |
| 30                   | D           | B6            | T36    | Eucalyptus   | 13                       | 13                         |
| 40                   | D           | B6            | T36    | Eucalyptus   | 13                       | 13                         |
| 40                   | D           | B6            | T36    | Eucalyptus   | 13                       | 13                         |
| 20                   | D           | B6            | T36    | Eucalyptus   | 13                       | 13                         |

### Total in Clusters
- [Include count from next page]
- Total # Trees:

### Observations
- **Number of Monarchs:** [Count]
- **Number of Dead Monarchs:** 1
- **Other Notes:** [Student Notes]

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**Total Monarch Count:**

- [Include count from next page]
- Total # Trees:

**Observations:**
- [Include relevant observations or notes]

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**Grand Total:**

- [Sum of all clustered butterflies plus liners, sunners, fliers, etc.]

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**# Mating Monarchs:**

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**# Dead Monarchs:**

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**Other Notes:**

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| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Chir Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|--------------------------|
| 300                  | D           | 1.1           | T63    | Euc.         | 17                       | 9                        |
| 425                  | 1.1         | 1.1           | T63    | Euc.         | 7                        | 8                        |
| 750                  | 1.1         | 1.1           | T63    | Euc.         | 11                       | 10                       |
| 1000                 | 1.1         | 1.1           | T63    | Euc.         | 8                        | 8                        |
| 300                  | 1.1         | 1.1           | T63    | Euc.         | 9                        | 8                        |
| 500                  | C9          | T100          | Cypress| 14           | 16                       |                          |
| 150                  | C9          | T100          | Cypress| 17           | 16                       |                          |
| 175                  | C9          | T100          | Cypress| 13           | 13                       |                          |
| 100                  | D           | T100          | Cypress| 12           | 12                       |                          |
| 150                  | J           | T100          | Cypress| 12           | 12                       |                          |
| 4825                 | D           | T70           | Cypress| 4            | 4                        |                          |
| 900                  | D           | T70           | Euc.   | 12           | 11                       |                          |
| 300                  | D           | T70           | Euc.   | 11           | 11                       |                          |
| 500                  | D           | T69           | Euc.   | 21           | 21                       |                          |
| 900                  | D           | T69           | Euc.   | 21           | 21                       |                          |
| 900                  | D           | T70           | Euc.   | 11           | 11                       |                          |
| 100                  | D           | T70           | Euc.   | 10           | 10                       |                          |
| 25                   | D           | T70           | Euc.   | 10           | 10                       |                          |
| 70                   | D           | T70           | Euc.   | 10           | 10                       |                          |
| 500                  | D           | T70           | Euc.   | 11           | 11                       |                          |
| 150                  | C           | T81           | Euc.   | 8            | 8                        |                          |
| 300                  | C           | T81           | Euc.   | 8            | 8                        |                          |
| 100                  | C           | T81           | Euc.   | 9            | 9                        |                          |
| 80                   | C           | T81           | Euc.   | 9            | 9                        |                          |
| 80                   | C           | T94           | Euc.   | 12           | 12                       |                          |
| 70                   | C           | T94           | Euc.   | 13           | 13                       |                          |
| 100                  | H           | T222          | Euc.   | 7            | 7                        |                          |
| 20                   | H           | T222          | Euc.   | 7            | 7                        |                          |
| 10                   | H           | T222          | Euc.   | 10           | 10                       |                          |
| 250                  | H           | T134          | Euc.   | 12           | 12                       |                          |

Please add any counts on this page to the total tally on the previous page.

50 H C9 T196 Euc. 8 8
27 H C10 T184 Euc. 7 7
### Over-wintering Monarch Butterfly Project
#### Monarch Count Data Sheet

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|--------------------------|--------------------------|
| 307                  | A            | a1            | T9     | E            | 12                       | 12                       |
| 40                   | E            | a2            | T37    | E            | 12                       | 12                       |
| 95                   | D            | h1            | T34    | E            | 10                       | 10                       |
| 140                  | D            | h4            | T34    | E            | 12                       | 12                       |
| 170                  | D            | i2            | T63    | E            | 12                       | 12                       |
| 700                  | D            | i1            | T63    | E            | 8                        | 8                        |
| 25                   | D            | h1            | T63    | E            | 8                        | 8                        |
| 150                  | D            | h2            | T63    | E            | 15                       | 15                       |
| 96                   | D            | h1            | T63    | E            | 13                       | 13                       |
| 200                  | D            | h1            | T63    | E            | 11                       | 11                       |
| 270                  | D            | d3            | T70    | E            | 10                       | 10                       |
| 65                   | D            | d3            | T70    | E            | 14                       | 14                       |
| 75                   | D            | d4            | T70    | E            | 11                       | 11                       |
| 375                  | D            | c5            | T70    | E            | 11                       | 10                       |
| 380                  | D            | b5            | T70    | E            | 10                       | 10                       |
| 215                  | D            | b5            | T70    | E            | 10                       | 10                       |

**Total in Clusters:** (include count from next pg) **Total # Trees:**

- **# Loners:**
- **# Sammers:**
- **# Fliers:**
- **# Grounders (live):**

**Grand Total:** (sum of all clustered butterflies plus loners, sammers, fliers, etc.)

- **# Mating Monarchs:**
- **# Dead Monarchs:**

**Other Notes:**
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|-------------|-------------------------|--------------------------|
| 100                  | D           | a5            | T70    | E           | 9                       | 11m                      |
| 280                  | C           | i8            | T81    | E           | 8                       | 8m                       |
| 60                   | C           | i8            | T91    | E           | 10m                     |                          |
| 155                  | C           | i8            | T81    | E           | 10m                     |                          |
| 710                  | C           | i8            | T81    | E           | 12m                     |                          |
| 320                  | C           | k8            | T91    | F           | 13m                     | 17m                      |
| 75                   | C           | H8            | T91    | P           | 10m                     |                          |
| 125                  | C           | g8            | T91    | E           | 10m                     |                          |
| 105                  | K           | l1            | T89    | E           | 14m                     |                          |
| 90                   | K           | f1            | T89    | E           | 10m                     |                          |
| 390                  | T           | h15 b9        | T2uT60 | C           | 9                       | 8m                       |
| 49                   | T           | d6            | T26    | C           | 9                       | 9m                       |
| 77                   | T           | c5            | T26    | C           | 10                      | 10m                      |
| 135                  | T           | b2            | T26    | C           | 11                      | 10m                      |
| 260                  | T           | a2            | T26    | C           | 12                      | 12m                      |
| 42                   | T           | a1            | T26    | C           | 12                      | 11m                      |
| 160                  | T           | a1            | T26    | C           | 11                      | 11m                      |
| 250                  | T           | a1 c10        | T26    | C           | 12                      | 12m                      |
| 25                   | T           | b6            | T26    | C           | 12                      | 12m                      |
| 70                   | T           | c6            | T26    | C           | 12                      | 12m                      |
| 30                   | T           | a6            | T26    | C           | 12                      | 12m                      |
| 400                  | T           | a6            | T26    | C           | 14                      | 13m                      |
| 30                   | T           | c6            | T26    | C           | 9                       | 9m                       |
| 30                   | T           | d6            | T26    | C           | 8                       | 8m                       |

Please add any counts on this page to the total tally on the previous page.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11/6/19  SITE NAME Pismo
# Observers 3  Observer name(s) Beth, Emily, Nicole
Count Time Span 6:30 to 8:00  Total Count Time (Min) 160
Cloud/Fog Cover 10%  Precipitation (circle one): ☔️ drizzle  ☃️ rain
Temp (°C) 13  Wind (m/s) 1.5  Wind (Beaufort) 1  Wind direction NE

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: A2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|--------------------------|--------------------------|
| 55, 45 (55) E b6    | T40         | EvA          | 9      |             |                          |                          |
| 25, 30 (29) E b6    | T40         | EvA          | 10     | 10          |                          |                          |
| 10, 14 (12) E a6    | T40         | EvA          | 6      | 6           |                          |                          |
| 20, 24 (21) E a6    | T40         | EvA          | 6      | 6           |                          |                          |
| 40, 50 (45) E a6    | T40         | EvA          | 11     | 11          |                          |                          |
| 60, 70 (65) E a5    | T38         | EvA          | 8      | 8           |                          |                          |
| 75, 80 (77) D b6    | T34         | EvA          | 9      | 9           |                          |                          |
| 120, 130 (125) D b6 | T34         | EvA          | 10     | 10          |                          |                          |
| 50, 60 (55) E b6    | T34         | EvA          | 10     | 10          |                          |                          |
| 80, 80 (80) D b6    | T34         | EvA          | 11     | 11          |                          |                          |
| 18 (18) D b6        | T34         | EvA          | 12     | 12          |                          |                          |

Total in Clusters: (include count from next pg) 715  Total # Trees:

# Mating Monarchs: 1  (male has poor wing growth)
# Dead Monarchs:
Other Notes:
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|-------------------------|--------------------------|
| 50,685 (680,05)      | D           | h6           | T34    | Euc          | 11                      | 11                       |
| 45,116 (45)          | D           | h6           | T34    | Euc          | 11                      | 11                       |
| 100,100 (600)        | D           | h6           | T34    | Euc          | 12                      | 12                       |
| 675,600 (635)        | D           | l1           | T63    | Euc          | 6                       | 6                        |
| 50,600 (55)          | D           | l1           | T63    | Euc          | 6                       | 6                        |
| 80,410 (95)          | D           | l1           | T63    | Euc          | 6                       | 6                        |
| 70,600 (75)          | D           | l1           | T63    | Euc          | 7                       | 7                        |
| 65,650 (65)          | D           | l1           | T63    | Euc          | 6                       | 6                        |
| 76,000 (75)          | D           | l1           | T63    | Euc          | 11                      | 10                       |
| 50,600 (100)         | D           | l1           | T63    | Euc          | 13                      | 10                       |
| 450,450 (425)        | D           | l1           | T63    | Euc          | 11                      | 9                        |
| 92,800 (850)         | D           | d4           | T70    | Euc          | 6                       | 5                        |
| (5)                  | H           | h2           | Ghe    | Euc          | 6                       | 6                        |
| 90,400 (160)         | D           | d4           | T70    | Euc          | 67                      | 65                       |
| (250)                | C           | h8           | T32    | Euc          | 11                      | 10                       |
| (165)                | C           | l8           | T32    | Euc          | 12                      | 10                       |
| (276)                | C           | l8           | T32    | Euc          | 13                      | 11                       |
| 400,450 (425)        | D           | d4           | T70    | Euc          | 10                      | 9                        |
| (35)                 | C           | i9           | T81    | Euc          | 7                       | 7                        |
| (500)                | C           | i9           | T81    | Euc          | 12                      | 11                       |
| 470,650 (485)        | D           | d4           | T70    | Euc          | 12                      | 10                       |
| (15)                 | C           | i8           | T81    | Euc          | 8                       | 8                        |
| 92,3600 (575)        | D           | d4           | T70    | Euc          | 11                      | 10                       |
| 270,250 (240)        | D           | d4           | T69    | Euc          | 19                      | 19                       |
| 29,900 (80)          | D           | d4           | T69    | Euc          | 19                      | 19                       |
| 600,170 (655)        | D           | c9           | T80    | Cup          | 10                      | 9                        |
| 400,050 (1925)       | D           | c9           | T80    | Cup          | 11                      | 10                       |
| 270,250 (300)        | D           | c9           | T80    | Cup          | 11                      | 11                       |
| 200,250 (135)        | D           | c9           | T80    | Cup          | 13                      | 13                       |
| 300,300 (335)        | D           | c9           | T80    | Cup          | 19                      | 19                       |
| 200,300 (250)        | D           | c3           | T70    | Euc          | 12                      | 11                       |

Please add any counts on this page to the total tally on the previous page.
# Over-wintering Monarch Butterfly Project

## Monarch Count Data Sheet

| DATE       | SITE NAME | 11/1/14 | Pismo  |
|------------|-----------|---------|--------|
| # Observers | Observer name(s) | 2 | Tyler, Jordan, Sandra |
| Count Time Span | 6:20 to 7:25 | Total Count Time (Min) | 75 |
| Cloud/Fog Cover | 50% % | Precipitation (circle one): | None, drizzle, rain |
| Temp (°C) | 14.2 | Wind (m/s) | 0-1 |
| Wind (Beaufort) | | Wind direction | |

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: az) | Tree # | Tree Species | Cluster Height (top) (m) | Clatr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|-------------------------|--------------------------|
| 145                  | D           | a3           | T69    | E            | 15                      | 15                       |
| 45                   | D           | a3           | T69    | E            | 11                      | 11                       |
| 31                   | D           | a3           | T69    | E            | 11                      | 11                       |
| 285                  | D           | a4           | T69    | E            | 55                      | 10                       |
| 100                  | D           | a4           | T69    | E            | 11                      | 11                       |
| 12                    | D           | a5           | T70    | E            | 15                      | 15                       |
| 160                  | D           | a5           | T70    | E            | 45                      | 45                       |
| 162                  | D           | a5           | T70    | E            | 55                      | 10                       |
| 55                   | D           | a5           | T69    | E            | 11                      | 11                       |
| 230                  | D           | a4           | T70    | E            | 45.8                    | 45.8                     |
| 265                  | D           | a4           | T70    | E            | 45.8                    | 45.8                     |
| 790                  | C           | a1           | 1      | E            | 45                      | 45                       |

Total in Clusters: (include count from next pg) | Total # Trees:

# Loners: |
# Sunners: 11 |
# Fliers: 11 |
# Grounders (live): |
Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs: |
# Dead Monarchs: |
Other Notes: |
| # Monarch Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|---------------------|-------------|--------------|--------|--------------|--------------------------|---------------------------|
| 115                 | C           | i9           | T83    | E            | 9                        | 9                         |
| 700                 | C           | i9           | T83    | E            | 9                        | 9                         |
| 150                 | H           | h8           | T94    | E            | 15                       | 14                        |
| 75                  | H           | h8           | T94    | E            | 14                       | 14                        |
| 170                 | H           | g8           | T94    | E            | 13                       | 13                        |
| 75                  | H           | g8           | T94    | E            | 13                       | 13                        |

Please add any counts on this page to the total tally on the previous page.
### Over-wintering Monarch Butterfly Project

**Monarch Count Data Sheet**

**DATE** [11/7/2021]

**SITE NAME**

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**Observations**

- **Observer name(s):**
- **Count Time Span:** 6:20 to 7:35
- **Total Count Time (Min):**
- **Cloud/Fog Cover:**
- **Precipitation (circle one):** none
- **Rain**
- **Temp (°C):**
- **Wind (m/s):**
- **Wind (Beaufort):**
- **Wind direction:**

---

| # Monarchs Clustered (ex: A) | Zone (ex: Z) | Cell (ex: x2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|-----------------------------|--------------|----------------|--------|--------------|--------------------------|--------------------------|
| 450                         | D            | d9             | T100   | C            | 14                       | 14                       |
| 200                         | D            | d7             | T100   | C            | 14                       | 14                       |
| 250                         | D            | d9             | T100   | C            | 13                       | 13                       |
| 300                         | D            | d9             | T100   | C            | 10                       | 9                        |
| 750                         | D            | d9             | T100   | C            | 10                       | 9                        |
| 30                          | I            | b3             | T99    | E            | 10                       | 10                       |
| 20                          | E            | b3             | T99    | E            | 12                       | 12                       |
| 120                         | H            | j1             | T89    | E            | 12                       | 11                       |
| 50                          | H            | j1             | T89    | E            | 7                        | 7                        |

---

**Total in Clusters:** (include count from next pg) **Total # Trees:**

- **# Loners:**
- **# Sunners:**
- **# Fliers:**
- **# Grounders (live):**
- **Grand Total:** (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

---

**# Mating Monarchs:**

**# Dead Monarchs:**

**Other Notes:**

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**Notes:**

- Yellow: 312
- Red: 541
- Green: 7710
- White: 1877
- Black: 7740
# Over-wintering Monarch Butterfly Project
## Monarch Count Data Sheet

**DATE:** 11-3-14  
**SITE NAME:** Primo

**# Observers:**  
Observer name(s): [redacted]

**Count Time Span:** 0:15 to 5:00  
Total Count Time (Min): [redacted]

**Cloud/Fog Cover:** 10-50%  
Precipitation (circle one): (none) drizzle rain

**Temp (°C):** 12.2  
Wind (m/s): 0  
Wind (Beaufort): 0  
Wind direction: 0

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: A2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|--------------------------|---------------------------|
| 160 / 300            | I           | A2           | F-47   | E            | 12                       | 12                        |
| 130 / 100            | I           | C2           | F-47   | E            | 22                       | 22                        |
| 70 / 70              | C           | C2           | T-93   | E            | 22                       | 22                        |
| 90 / 90              | D           | C40          | T-190  | C            | 10                       | 10                        |
| 100 / 105            | D           | C-10         | T-105  | C            | 10                       | 10                        |
| 500 / 300            | D           | B-10         | T-110  | C            | 12                       | 11                        |
| 1,500 / 1300         | D           | B-9          | T-120  | C            | 11                       | 10                        |
| 1,000 / 950          | D           | A-10         | T-110  | C            | 21                       | 20                        |
| 100 / 110            | D           | G-5          | T-105  | E            | 13                       | 13                        |
| 350 / 270            | C           | 1-8          | T-85   | E            | 9                        | 9                         |
| 1,400 / 1600         | C           | 1-8          | T-31   | E            | 14                       | 12                        |
| 3,500 / 100          | C           | 3-2          | T-91   | E            | 8                        | 8                         |
| 3,000 / 270          | C           | h-2          | T-94   | E            | 12                       | 12                        |
| 4,70 / 350           | C           | h-2          | T-94   | E            | 11                       | 11                        |
| 1,000 / 160          | C           | h-2          | T-94   | E            | 10                       | 10                        |

**Total in Clusters:** (include count from next pg)  
**Total # Trees:**

## Notes

**# Loners:** 20  
Tally every butterfly of each type that you see throughout the site.

**# Sunners:** 8  
**# Fliers:**   
**# Grounders (live):**

**Grand Total:** (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

**# Mating Monarchs:**

**# Dead Monarchs:**

**Other Notes:**
**Over-wintering Monarch Butterfly Project**
**Monarch Count Data Sheet**

**DATE:** 1/8/21  
**SITE NAME:** Pismo

**# Observers:** 4  
**Observer name(s):** Brett, Hannah, Jesse, Daniel

**Count Time Span:** 6:26a to 8:30a  
**Total Count Time (Min):** 74 min

**Cloud/Fog Cover:** 100%  
**Precipitation (circle one):** drizzle  
**Temp (°C):** 13.2

**Wind (m/s):** 0  
**Wind (Beaufort):**  
**Wind direction:** n/a

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|--------------------------|--------------------------|
| H5                   | E            | 180.7        | T45    | e            | 9                         | 9                        |
| 700                  | E            | 19           | T43    | e            | 16                       | 16                       |
| 22,20 (5)            | E            | a6           | T40    | Evec         | 7                        | 7                        |
| 24,30 (54)           | E            | a6           | T40    | Evec         | 7                        | 7                        |
| 29,50 (50)           | E            | a6           | T40    | Evec         | 7                        | 7                        |
| 11,13 (12)           | E            | a6           | T40    | Evec         | 7                        | 7                        |
| 25,50 (17)           | E            | a6           | T40    | Evec         | 11                       | 11                       |
| 35,37 (26)           | E            | a6           | T40    | Evec         | 11                       | 11                       |
| 24,38 (32)           | E            | a6           | T40    | Evec         | 14                       | 14                       |
| 34,50 (42)           | D            | Hb           | T54    | Evec         | 10                       | 10                       |
| 15,16 (16)           | B            | Hb           | T34    | Evec         | 10                       | 10                       |
| 49,10 (55)           | D            | j5           | T38    | Evec         | 8                        | 8                        |
| 60,70 (60)           | D            | j5           | T38    | Evec         | 8                        | 8                        |
| 730,800 (525)        | D            | j1           | T63    | Evec         | 10                       | 10                       |
| 55,40 (47)           | D            | j1           | T63    | Evec         | 7                        | 7                        |
| 125,120 (285)        | D            | j1           | T63    | Evec         | 7                        | 7                        |

**Total in Clusters:** (include count from next pg)  
**Total # Trees:**

**# Loners:**  
**# Sunners:**  
**# Fliers:**  
**# Grounders (live):**

**Grand Total:** (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

**# Mating Monarchs:**

**# Dead Monarchs:**

**Other Notes:** Impro. Feeding not working. Egg?
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|------------------------|-------------------------|
| (29, 20, 70)         | D           | h1            | T63    | Euc         | 8                      | 8                       |
| (300, 390, 350)      | D           | c2            | T69    | Euc         | 24                     | 23                      |
| (100, 130, 115)      | D           | c1            | T69    | Euc         | 23                     | 23                      |
| (14, 55, 35)         | D           | c1            | T69    | Euc         | 11                     | 11                      |
| (10, 50, 105)        | D           | d3            | T70    | Euc         | 11                     | 11                      |
| (85, 66, 72)         | D           | d2            | T70    | Euc         | 10                     | 10                      |
| (115, 110, 117)      | D           | d2            | T70    | Euc         | 10                     | 10                      |
| (200, 150, 170)      | D           | d4            | T70    | Euc         | 11                     | 11                      |
| (40, 35, 38)         | D           | c4            | T70    | Euc         | 9                      | 9                       |
| (50, 50, 53)         | C           | m10           | Euc    | 7           | 7                       | 7                       |

*Please add any counts on this page to the total tally on the previous page.*
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11-9-14  SITE NAME Pismo

# Observers 4 Observer name(s) Renée, Hannah, Nicole, Family

Count Time Span 6:15 to 8:00 Total Count Time (Min) 80

Cloud/Fog Cover 100% Precipitation (circle one): ☐ drizzle ☐ rain

Temp (°C) 12.2 Wind (m/s) 0.7 Wind (Beaufort) 0 Wind direction E

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|------------------------|--------------------------|
| 30°/270              | I           | A2           | T99    | E            | 12                     | 12                       |
| 110°/140             | I           | A2           | T99    | E            | 13                     | 13                       |
| 180°/170             | I           | C2           | T99    | E            | 22                     | 22                       |
| 90°/170              | I           | C2           | T99    | E            | 22                     | 22                       |
| 60°/160              | I           | C2           | T99    | E            | 22                     | 22                       |
| 100°/180             | O           | C18          | T100   | C            | 10                     | 10                       |
| 140°/150             | O           | C10          | T100   | C            | 11                     | 10                       |
| 550°/50°             | O           | D9           | T100   | C            | 11                     | 10                       |
| 625°/1650            | O           | B9           | T100   | C            | 11                     | 10                       |
| 1600°/1500           | O           | D10          | T100   | C            | 21                     | 20                       |
| 110°/210             | O           | D11          | T100   | C            | 21                     | 20                       |
| 700°/160             | C           | h-3          | T94    | E            | 10                     | 10                       |
| 60°/1500             | C           | h-3          | T94    | E            | 11                     | 11                       |
| 350°/1500            | C           | h-3          | T94    | E            | 12                     | 12                       |
| 400°/1250            | C           | 1-7          | T94    | E            | 8                      | 8                        |
| 250°/1200            | C           | 1-7          | T94    | E            | 9                      | 9                        |

Total in Clusters: (include count from next pg) Total # Trees:

# Loners:  
# Sunners:  
# Fliers: 1 
# Grounders (live):  
Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs:  
# Dead Monarchs:  
Other Notes:  
| # Monarchs Clustered (ex: A) | Zone (ex: B) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|-----------------------------|-------------|---------------|--------|--------------|--------------------------|--------------------------|
| 400/120                      | C           | 1-7           | T-91   | E            | 12                       | 12                       |
| 80/70                        | C           | 2-7           | T-92   | E            | 9                        | 9                        |
| 450/500                      | D           | 1-4           | T-69   | E            | 20                       | 20                       |

Please add any counts on this page to the total tally on the previous page.
### Over-wintering Monarch Butterfly Project

**Monarch Count Data Sheet**

**DATE:** 11/9/14  
**SITE NAME:**

**# Observers:** Emily, Nicole

**Count Time Span:** 6:20 to 7:57  
**Total Count Time (Min):**

**Cloud/Fog Cover:** 100%  
**Precipitation (circle one):** drizzle

**Temp (°C):** 12.7  
**Wind (m/s):** 2  
**Wind (Beaufort):** 2  
**Wind direction:** S

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Chstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|-------------------------|--------------------------|
| 85.95 (55)           | E            | a6            | T40    | Euc          | 9                       | 5                        |
| 99.50 (35)           | E            | a6            | T40    | Euc          | 4                       | 4                        |
| 28.35 (22)           | E            | a6            | T40    | Euc          | 4                       | 4                        |
| 95.20 (18)           | E            | a6            | T40    | Euc          | 4                       | 4                        |
| 11.15 (13)           | E            | a6            | T40    | Euc          | 4                       | 4                        |
| 52.50 (50)           | E            | -50           | T39    | Euc          | 5                       | 5                        |
| 55.58 (50)           | E            | -50           | T39    | Euc          | 10                      | 10                       |
| 15.16 (8)            | D            | h6            | T34    | Euc          | 7                       | 7                        |
| 50.00 (40)           | D            | h6            | T24    | Euc          | 8                       | 8                        |
| 100.40 (412)         | D            | h4            | T63    | Euc          | 12                      | 12                       |
| 35.10 (102)          | D            | h4            | T63    | Euc          | 6                       | 6                        |
| 28.40 (347)          | D            | h4            | T63    | Euc          | 6                       | 6                        |
| 14.00 (115)          | D            | h4            | T63    | Euc          | 8                       | 7                        |
| 92.20 (118)          | D            | h4            | T63    | Euc          | 8                       | 7                        |

**Total in Clusters:** (include count from next pg)  
**Total # Trees:**

**# Loners:**  
**# Sunners:**  
**# Fliers:**  
**# Grainers:**

**Grand Total:** (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

**# Mating Monarchs:**

**# Dead Monarchs:**

**Other Notes:**

|  | dragonfly |
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Chstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|-------------|-------------------------|--------------------------|
| 80, 80 (56)          | D           | 12           | T63    | Euc         | 6                       | 6                        |
| 150, 100 (175)       | D           | 12           | T63    | Euc         | 11                      | 10                       |
| 10, 14 (16)          | D           | 12           | T63    | Euc         | 8                       | 8                        |
| 60, 75 (72)          | D           | 14           | T70    | Euc         | 11                      | 10                       |
| 140, 115 (127)       | D           | 14           | T70    | Euc         | 11                      | 11                       |
| 20, 120 (90)         | D           | 14           | T69    | Euc         | 11                      | 11                       |
| 120, 120 (120)       | D           | 14           | T70    | Euc         | 10                      | 10                       |
| 100, 100 (100)       | D           | 14           | T70    | Euc         | 13                      | 12                       |
| 150, 180 (170)       | D           | 14           | T70    | Euc         | 13                      | 13                       |
| 100, 110 (105)       | D           | 14           | T70    | Euc         | 13                      | 13                       |
| 150, 170 (165)       | D           | 14           | T70    | Euc         | 14                      | 14                       |
| 45, 50 (47)          | D           | 14           | T70    | Euc         | 14                      | 14                       |
| 18, 16 (17)          | D           | 14           | T70    | Euc         | 14                      | 14                       |
| 125, 145 (135)       | D           | 14           | T70    | Euc         | 14                      | 14                       |
| 10, 150 (42)         | D           | 14           | T70    | Euc         | 14                      | 14                       |
| 110, 150 (60)        | D           | 14           | T70    | Euc         | 10                      | 10                       |
| 25, 22 (28)          | D           | 14           | T70    | Euc         | 9                       | 9                        |
| 35, 50 (57)          | D           | 14           | T70    | Euc         | 9                       | 9                        |
| 90, 120 (105)        | D           | 14           | T70    | Euc         | 11                      | 11                       |
| 80, 75 (72)          | D           | 14           | T70    | Euc         | 11                      | 11                       |
| 60, 50 (55)          | D           | 14           | T70    | Euc         | 12                      | 12                       |
| 180, 170 (175)       | D           | 14           | T70    | Euc         | 10                      | 9                        |
| 250, 280 (235)       | D           | 14           | T70    | Euc         | 10                      | 9                        |
| 35, 50 (43)          | D           | 14           | T70    | Euc         | 10                      | 9                        |

Please add any counts on this page to the tallies on the previous page.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11-10-14  SITE NAME: Olmos

# Observers: 3  Observer name(s): Daniel, Tyler, Brandon

Count Time Span: 6:35 to 6:45  Total Count Time (Min):

Cloud/Fog Cover: 100%  Precipitation (circle one): drizzle  rain

Temp (°C): 14.4  Wind (m/s): 0.5  Wind (Beaufort):

| Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|--------------|---------------|--------|--------------|--------------------------|---------------------------|
| I            | A2            | T-99   | F            | 12                       | 12                        |
| I            | A2            | T-99   | E            | 12                       | 12                        |
| C            | G3            | T-99   | E            | 22                       | 22                        |
| C            | G3            | T-99   | E            | 22                       | 22                        |
| D            | C10           | T-100  | C            | 12                       | 12                        |
| D            | C10           | T-100  | C            | 12                       | 12                        |
| D            | B9            | T-100  | C            | 12                       | 12                        |
| D            | B9            | T-100  | C            | 12                       | 12                        |
| D            | D10           | T-100  | C            | 12                       | 12                        |
| T            | T-81          | E      | 8            | 8                        |
| T            | T-81          | E      | 8            | 8                        |
| C            | i-7           | T-11   | E            | 6                        | 6                         |
| C            | i-7           | T-11   | E            | 6                        | 6                         |
| C            | h-8           | T-94   | E            | 12                       | 12                        |
| C            | h-8           | T-94   | E            | 12                       | 12                        |
| C            | h-8           | T-94   | E            | 12                       | 12                        |
| C            | h-8           | T-94   | E            | 12                       | 12                        |
| C            | h-8           | T-94   | E            | 12                       | 12                        |

Total in Clusters: (include count from next pg)  Total # Trees:

# Loners: 3

# Sumners:

# Fliers: 12

# Grounders (live):

Grand Total: (sum of all clustered butterflies plus loners, sumners, fliers, etc.)

# Mating Monarchs:

# Dead Monarchs:

Other Notes:
| # Monarchs Clumped (ex: A) | Zone (ex: a2) | Cell | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|---------------------------|---------------|------|--------|--------------|--------------------------|--------------------------|
| 400 / 650                 | 0             | 6-5  | T-70   | E            | 10                       | 10                       |
| 350 / 320                 | 0             | E-4  | T-90   | E            | 11                       | 11                       |
| 250 / 750                 | 0             | d-4  | T-64   | E            | 22                       | 22                       |
| 300 / 1650                | 0             | c-5  | T-69   | E            | 22                       | 22                       |
| 350 / 400                 | 0             | i-1  | T-63   | E            | 12                       | 12                       |
| 350 / 350                 | 0             | i-2  | T-63   | E            | 11                       | 11                       |
| 350 / 320                 | 0             | i-2  | T-63   | E            | 8                        | 7                        |
| 450 / 500                 | E             | a-4  | T-42   | E            | 9                        | 4                        |
| 150 / 170                 | E             | b-4  | T-42   | E            | 16                       | 16                       |
| 50 / 420                  | E             | a-4  | T-42   | E            | 16                       | 16                       |
| 250 / 260                 | E             | a-4  | T-42   | E            | 21                       | 21                       |
| 40 / 60                   | E             | b-4  | T-40   | E            | 8                        | 8                        |
| 40 / 50                   | E             | b-4  | T-40   | E            | 12                       | 12                       |

*Please add any counts on this page to the total tally on the previous page.*
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE: 11/11/11
SITE NAME ___________________________

# Observers: 1
Observer name(s): [Name]

Count Time Span: 6:21 to 7:16
Total Count Time (Min): 55

Cloud/Fog Cover: 80 %
Precipitation (circle one): ☁️ drizzle
Rain

Temp (°C): 12
Wind (m/s): 0
Wind (Beaufort): 0
Wind direction: [Direction]

| # Monarchs Clusters | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|---------------------|-------------|--------------|--------|--------------|--------------------------|-----------------------------|
| 15,416 (41)         | C           | 17           | T81    | Eve          | 7                        | 7                           |
| 16,110 (16)         | C           | 17           | T81    | Eve          | 7                        | 7                           |
| 10,120 (11)         | C           | 17           | T81    | Eve          | 9                        | 9                           |
| 5,555 (9)           | C           | 17           | T81    | Eve          | 8                        | 8                           |
| 10,110 (16)         | C           | 17           | T81    | Eve          | 10                       | 10                          |
| 10,100 (19)         | C           | 17           | T81    | Eve          | 10                       | 10                          |
| 5,106 (14)          | C           | 17           | T81    | Eve          | 10                       | 10                          |
| 10,100 (10)         | C           | 17           | T81    | Eve          | 10                       | 10                          |
| 10,100 (10)         | C           | 17           | T81    | Eve          | 10                       | 10                          |
| 2,100 (25)          | C           | 17           | T81    | Eve          | 11                       | 10                          |
| 10,100 (10)         | C           | 17           | T81    | Eve          | 11                       | 10                          |
| 10,100 (10)         | C           | 17           | T81    | Eve          | 11                       | 10                          |
| 10,100 (10)         | C           | 17           | T81    | Eve          | 11                       | 10                          |
| 10,100 (10)         | C           | 17           | T81    | Eve          | 11                       | 10                          |
| 10,100 (10)         | C           | 17           | T81    | Eve          | 11                       | 10                          |
| 10,100 (10)         | C           | 17           | T81    | Eve          | 11                       | 10                          |

Total in Clusters: (include count from next pg) Total # Trees:

# Loners: [N]

# Sunners: [N]

# Fliers: [N]

# Grounders (live): 20 Tally every butterfly of each type that you see throughout the site.

Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs:

# Dead Monarchs:

Other Notes:
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|---------------------------|
| 155,160 (152)        | C           | 18            | T81    | Euc          | 9                        | 8                         |
| 90,146 (42)          | C           | 18            | T81    | Euc          | 8                        | 8                         |
| 95,160 (159)         | C           | 18            | T81    | Euc          | 8                        | 8                         |
| 120,170 (128)        | C           | 18            | T81    | Euc          | 8                        | 7                         |
| 120,170 (128)        | C           | 18            | T81    | Euc          | 8                        | 7                         |
| 95,170 (49)          | C           | 18            | T81    | Euc          | 6                        | 6                         |
| 95,170 (49)          | C           | 18            | T81    | Euc          | 6                        | 6                         |
| 66,175 (70)          | C           | 18            | T81    | Euc          | 6                        | 6                         |
| 90,175 (168)         | C           | 18            | T94    | Euc          | 7                        | 7                         |
| 10,120 (195)         | C           | 18            | T94    | Euc          | 7                        | 7                         |
| 10,120 (195)         | C           | 18            | T94    | Euc          | 11                       | 11                        |
| 10,120 (195)         | C           | 18            | T94    | Euc          | 11                       | 11                        |
| 169,175 (168)        | C           | 18            | T94    | Euc          | 11                       | 10                        |
| 89,360 (57)          | C           | 18            | T94    | Euc          | 9                        | 9                         |
| 75,120 (122)         | C           | 18            | T94    | Euc          | 9                        | 9                         |
| 10,160 (40)          | C           | 18            | T94    | Euc          | 10                       | 10                        |
| 90,160 (35)          | C           | 18            | T94    | Euc          | 9                        | 8                         |
| 90,160 (35)          | C           | 18            | T94    | Euc          | 8                        | 8                         |
| 45,50 (47)           | C           | 18            | T94    | Euc          | 8                        | 8                         |
| 55,70 (62)           | C           | 18            | T94    | Euc          | 9                        | 9                         |

Please add any counts on this page to the total tally on the previous page.
# Monarchs Clustered | Zone (ex: A) | Cell (ex: A2) | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m)
--- | --- | --- | --- | --- | --- | ---
2000, 1500 (179) | 0 | b10 | T100 | C | 20 | 10
180, 210 (190) | 0 | b10 | T200 | C | 15 | 8
150, 160 (155) | 0 | b10 | T200 | C | 11 | 8
50, 600 (550) | 0 | c10 | T200 | C | 13 | 13
200, 210 (210) | 0 | b10 | T100 | C | 12 | 12
40, 000 (50) | 0 | b10 | T100 | C | 22 | 22
230, 340 (275) | 0 | b10 | T100 | C | 22 | 22
200, 200 (215) | 0 | c10 | T100 | C | 22 | 22
1500, 1600 (215) | 0 | c10 | T100 | C | 21 | 21
200, 100 (180) | 0 | b10 | T100 | C | 20 | 20
150, 175 (120) | 0 | b10 | T100 | C | 9 | 9
50, 70 (60) | 0 | e6 | T100 | E | 9 | 9
100, 150 (130) | 0 | e6 | T100 | E | 7 | 7
40, 145 (41) | 0 | e5 | T100 | E | 8 | 5
Total in Clusters: (include count from next pg) Total # Trees:
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Chstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|-------------|--------------------------|---------------------------|
| 120,100 (110)        | E           | c1           | TS9    | E           | 7                        | 7                         |
| (100)                | E           | C1           | TS9    | E           | 11                       | 10                        |
| (100)                | E           | C1           | TS9    | E           | 11                       | 10                        |
| (20)                 | E           | C1           | TS9    | E           | 11                       | 10                        |
| (2.50)               | # D         | 12           | T63    | E           | 8                        | 7                         |
| (1.50)               | D           | 12           | T63    | E           | 7                        | 7                         |
| (20)                 | D           | 12           | T63    | E           | 7                        | 7                         |
| 300,350 (350)        | D           | C1           | T69    | E           | 23                       | 23                        |
| 150,170 (110)        | D           | C1           | T67    | E           | 23                       | 23                        |
| 50,30 (50)           | D           | C1           | T64    | E           | 23                       | 23                        |
| 200,200 (200)        | D           | C1           | T70    | E           | 12                       | 12                        |
| 100,300 (300)        | D           | C1           | T70    | E           | 10                       | 10                        |
| 200,100 (110)        | D           | C1           | T70    | E           | 10                       | 10                        |
| 30,30 (30)           | D           | C1           | T70    | E           | 10                       | 10                        |
| 2.00                  | I           | b3           | T99    | E           | 10                       | 10                        |
| 100                   | I           | b3           | T99    | E           | 12                       | 12                        |

Please add any counts on this page to the total tally on the previous page.

80534 - orange tag
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE: 11/12/14  SITE NAME: Pismo Beach

# Observers: 3  Observer name(s): Tyler, Brandi, Jose

Count Time Span: 6:30 to 7:45  Total Count Time (Min): 75

Cloud/Fog Cover: 30%  Precipitation (circle one): drizzle / rain

Temp (°C): 15  Wind (m/s): 0.0  Wind (Beaufort): 0  Wind direction:

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|-------------------------|--------------------------|
| 260 / 2300          | D           | 6            | T99    | E            | 10 m                    | 10 m                     |
| 130 / 1300          | D           | 7            | T99    | E            | 10 m                    | 10 m                     |
| 140 / 1300          | D           | 8            | T100   | C            | 10 m                    | 10 m                     |
| 2500 / 3500         | D           | 9            | T100   | C            | 10 m                    | 10 m                     |
| 1700 / 1800         | D           | 10           | T100   | C            | 17 m                    | 16 m                     |
| 520 / 1700          | E           | 11           | T69    | E            | 9 m                     | 9 m                      |
| 520 / 1700          | E           | 12           | T56    | E            | 9 m                     | 9 m                      |
| 700 / 3700          | E           | 13           | T56    | E            | 11 m                    | 11 m                     |
| 240 / 3800          | E           | 14           | T56    | E            | 22 m                    | 22 m                     |
| 550 / 4200          | D           | 15           | T69    | E            | 16 m                    | 16 m                     |
| 700 / 3700          | D           | 16           | T69    | E            | 16 m                    | 16 m                     |
| 450 / 3000          | D           | 17           | T69    | E            | 10 m                    | 10 m                     |
| 450 / 3000          | D           | 18           | T69    | E            | 10 m                    | 10 m                     |

Total in Clusters: (Include count from next pg)  Total # Trees:

# Loners: 1111  # Mating Monarchs: 1111  # Dead Monarchs: 1

# Sunners:

# Fliers: 11

# Grounders (live):

Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

Other Notes:

Orange Tag 1268  Phone: 1877-297-7430

Yellow Tags 51215
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|---------------------|-------------|---------------|--------|--------------|------------------------|---------------------------|
| 150/145             | D           | 64            | T69    | E            | 70                     | 20                        |
| 679/600             | D           | 64            | T70    | E            | 11                     | 10                        |
| 376/350             | D           | 65            | T70    | E            | 9                      | 9                         |
| 350/326             | D           | 65            | T70    | E            | 9                      | 9                         |
| 450/480             | D           | 64            | T70    | E            | 9                      | 9                         |
| 100/76              | D           | 64            | T70    | E            | 9                      | 9                         |
| 700/150             | C           | 19            | T81    | E            | 17                     | 10                        |
| 400/130             | C           | 19            | T81    | E            | 17                     | 10                        |
| 370/340             | C           | 19            | T81    | E            | 17                     | 10                        |
| 410/380             | C           | 18            | T91    | E            | 9                      | 9                         |
| 170/190             | C           | 18            | T91    | E            | 9                      | 9                         |
| 250/240             | C           | 18            | T91    | E            | 12                     | 12                        |
| 120/100             | C           | 18            | T91    | E            | 10                     | 10                        |

Please add any counts on this page to the total tally on the previous page.
**Over-wintering Monarch Butterfly Project**

**Monarch Count Data Sheet**

- **DATE**: 11/12/14
- **SITE NAME**:

- **# Observers**: 3
- **Observer name(s)**: Brett, Nicole, Emily

- **Count Time Span**: 6:36 to 8:05
- **Total Count Time (Min)**: 5:29

- **Cloud/Fog Cover**: 100 %
- **Precipitation (circle one)**: drizzle, rain

- **Temp (°C)**: 13.6
- **Wind (m/s)**: 0
- **Wind (Beaufort)**: 0
- **Wind direction**: W

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|-------------------------|--------------------------|
| 40,75 (92)           | E            | a5            | T90    | Evc          | 9                       | 9                        |
| 26,37 (76)           | E            | a5            | T99    | Evc          | 6                       | 6                        |
| 45,75 (95)           | D            | a5            | T99    | Evc          | 7                       | 7                        |
| 50,60 (55)           | D            | h6            | T99    | Evc          | 6                       | 6                        |
| 210 (118)            | D            | h6            | T99    | Evc          | 6                       | 6                        |
| 122,750 (165)        | E            | c2            | T50    | E            | 9                       | 9                        |
| 90,140 (105)         | E            | c2            | T50    | E            | 9                       | 9                        |
| 35,55 (42)           | E            | c2            | T50    | E            | 8                       | 8                        |
| 140,170 (168)        | E            | c2            | T50    | E            | 9                       | 9                        |
| 2,40,150 (145)       | E            | c2            | T50    | E            | 9                       | 9                        |
| 1,30,140 (150)       | D            | 12            | T53    | E            | 9                       | 10                       |
| 600,500 (575)        | D            | 12            | T53    | Evc          | 8                       | 8                        |
| 600,100 (150)        | D            | 12            | T53    | Evc          | 9                       | 10                       |
| 100,120 (160)        | D            | d1            | T70    | Evc          | 11                      | 13                       |
| 120,150 (188)        | D            | d4            | T70    | Evc          | 11                      | 11                       |
| 500,300 (125)        | D            | c4            | T70    | Evc          | 10                      | 10                       |

**Total in Clusters:**

- **Total # Trees:**

**Grand Total:**

- **# Mating Monarchs:**
- **# Dead Monarchs:**

**Other Notes:**

*Very light drizzle ~ 7am.*
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: x2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|--------------------------|
| 1950,300 (525)       | D           | c4            | T69    | Euc          | 21                       | 21                       |
| 175,300 (105)        | D           | e9            | T69    | Euc          | 21                       | 21                       |
| 25,30 (42)           | D           | e9            | T69    | Euc          | 12                       | 12                       |
| 10,30 (75)           | D           | e9            | T69    | Euc          | 21                       | 21                       |
| 200,250 (150)        | D           | d10           | T100   | C            | 12                       | 11                       |
| 75,150 (150)         | D           | d10           | T100   | C            | 12                       | 12                       |
| 100,100 (100)        | D           | d10           | T100   | C            | 14                       | 14                       |
| 75,100 (100)         | D           | d10           | T100   | C            | 20                       | 20                       |
| 60,80 (70)           | I           | c2            | T100   | C            | 10                       | 10                       |
| 80,75 (75)           | C           | i8            | T81    | Euc          | 8                        | 8                        |
| 90,75 (75)           | C           | i8            | T81    | Euc          | 9                        | 9                        |
| 70,50 (75)           | C           | i8            | T81    | Euc          | 12                       | 10                       |
| 75,250 (100)         | C           | i9            | T81    | Euc          | 8                        | 8                        |
| 20,100 (100)         | C           | i9            | T81    | Euc          | 9                        | 8                        |
| 50,90 (90)           | C           | i9            | T81    | Euc          | 11                       | 10                       |
| 25,100 (120)         | C           | h8            | T94    | Euc          | 9                        | 9                        |
| 25,30 (42)           | C           | h8            | T94    | Euc          | 9                        | 8                        |
| 195,100 (100)        | C           | h8            | T94    | Euc          | 13                       | 13                       |
| 20,80 (30)           | I           | c2            | T99    | Euc          | 8                        | 8                        |
| 20,80 (30)           | I           | c2            | T99    | Euc          | 8                        | 8                        |

Please add any counts on this page to the total tally on the previous page.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE: 11/14/14 | SITE NAME: Pismo

# Observers: 4 | Observer name(s): Tyler, Brandi, Jasmin, Jessica

Count Time Span: 6:30 to | Total Count Time (Min):

Cloud/Fog Cover: 60% | Precipitation (circle one): drizzle, rain

Temp (°C): | Wind (m/s): 0 | Wind (Beaufort): |

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|-------------------------|-------------------------|
| 275/240              | I            | 1             | T109   | B, E         | 20                      | 20                      |
| 100/125              | I            | 2             | T109   | E            | 20                      | 20                      |
| 150/190              | D            | 20            | T100   | C            | 10                      | 10                      |
| 1400/1750            | D            | 5             | T100   | C            | 11                      | 10                      |
| 850/700              | D            | 9             | T100   | C            | 13                      | 12                      |
| 350/550              | D            | 7             | T100   | C            | 11                      | 11                      |
| 1700/1100            | D            | 9             | T100   | C            | 19                      | 17                      |
| 160/120              | I            | 5             | T99    | E            | 10                      | 10                      |
| 120/90               | I            | 2             | T99    | E            | 19                      | 18                      |
| 120/135              | I            | 2             | T99    | E            | 16                      | 16                      |
| 16/200               | C            | 1             | T91    | E            | 11                      | 11                      |
| 520/550              | C            | 8             | T91    | E            | 9                       | 9                       |
| 220/235              | C            | 8             | T91    | E            | 12                      | 12                      |
| 80/75                | C            | 9             | T91    | E            | 8                       | 8                       |
| 550/400              | C            | 1             | T81    | E            | 3                       | 3                       |
| 125/100              | C            | 9             | T81    | E            | 3                       | 3                       |

Total in Clusters: (include count from next pg) | Total # Trees:

# Loners:
# Sunners:
# Fliers:
# Grounders (live):

Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs:
# Dead Monarchs:

Other Notes:
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|-------------|------------------------|--------------------------|
| 120/140              | C           | 67            | T91    | E           | 9                      | 9                        |
| 275/325              | C           | 13            | T76    | C           | 17                     | 17                       |
| 350/400              | C           | 24            | T176   | C           | 17                     | 17                       |
| 250/275              | C           | 34            | T176   | C           | 14                     | 14                       |
| 225/250              | D           | 24            | T170   | E           | 8                      | 8                        |
| 350/275              | D           | 64            | T170   | E           | 18                     | 18                       |
| 400/350              | D           | 64            | T170   | E           | 19                     | 19                       |
| 150/150              | D           | 24            | T69    | E           | 15                     | 15                       |
| 350/475              | D           | 24            | T70    | E           | 11                     | 11                       |

Please add any counts on this page to the total tally on the previous page.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11/14/14 SITE NAME Pismo

# Observers 4 Observer name(s) __________________________

Count Time Span ___________ to ___________ Total Count Time (Min) ___________

Cloud/Fog Cover ______% Precipitation (circle one): none drizzle rain

Temp (°C) ___________ Wind (m/s) 15 Wind (Beaufort) _______ Wind direction _______

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|--------------------------|--------------------------|
| 200                  | E8           | 82            | T49°   | E            | 7                        | 7                        |
| 100                  | E            | 82            | T49°   | E            | 20                       | 20                       |
| 350                  | D1           | 11            | T63°   | E            | 8                        | 8                        |
| 150                  | E            | 03            | T38°   | E            | 27                       | 27                       |
| 150                  | D            | 13            | T69°   | E            | 27                       | 27                       |

Total in Clusters: (include count from next pg) | Total # Trees: |

# Loners: |
# Sunners: |
# Fliers: |
# Grounders (live): |

Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs: |
# Dead Monarchs: |
Other Notes: |

* A0354 - orange. A0259 - orange.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11/15/14
SITE NAME: Asma

# Observers: 4
Observer name(s): Beth, Henley, David, Dward

Count Time Span: 6:40a to 8:30m
Total Count Time (Min): 80

Cloud/Fog Cover: 60%
Precipitation (circle one): rain, drizzle
Temp (°C): 65.5
Wind (mph): 0.2
Wind (Beaufort): 0
Wind direction: NE

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|-------------------------|---------------------------|
| 34                  | D           | h1            | T31    | E            | 9                        | 9                         |
| 40                  | D           | h1            | T34    | E            | 10                       | 10                        |
| 120, 110            | E           | b2            | T31    | E            | 10                       | 10                        |
| 600, 300 (300)      | E           | c2            | T50    | E            | 8                        | 7                         |
| 30, 50 (50)         | E           | c2            | T50    | E            | 10                       | 10                        |
| 350, 380 (350)      | D           | h1            | T83    | E            | 8                        | 7                         |
| 600, 600 (600)      | D           | h1            | T67    | E            | 9                        | 10                        |
| 580, 400 (80)       | D           | h1            | T68    | E            | 8                        | 8                         |
| 110, 120 (115)      | D           | h1            | T63    | E            | 7                        | 7                         |
| 200, 120 (120)      | D           | c3            | T70    | E            | 13                       | 11                        |
| 10, 20 (25)         | D           | 84            | T70    | E            | 9                        | 9                         |
| 850, 700 (850)      | D           | c2            | T69    | E            | 20                       | 19                        |
| 340, 400 (300)      | D           | 84            | T69    | E            | 21                       | 20                        |
| 10, 20 (25)         | D           | 84            | T69    | E            | 20                       | 20                        |
| 200, 200 (200)      | C           | 14            | T68    | C            | 17                       | 16                        |
| 100, 120 (110)      | C           | 14            | T68    | C            | 18                       | 18                        |

Total in Clusters: (include count from next pg) Total # Trees:

# Loners: 
# Sumners: 
# Fliers: 
# Grounders (live): 

Grand Total: (sum of all clustered butterflies plus loners, sumners, fliers, etc.)

# Mating Monarchs: 
# Dead Monarchs: 

Other Notes:
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: n2) | Tree # | Tree Species | Cluster Height (top) (m) | Chstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|---------------------------|
| 80, 100 (70)         | C           | 14            | T76    | C            | 19                       | 19                        |
| 60, 50 (50)          | C           | 14            | T76    | C            | 19                       | 19                        |
| 30, 20 (30)          | C           | 14            | T76    | C            | 19                       | 19                        |
| 30, 20 (30)          | D           | 8             | T109   | C            | 13                       | 13                        |
| 340, 400 (330)       | D           | 2             | T109   | C            | 11                       | 11                        |
| 1900, 1000 (850)     | B           | 110           | T100   | C            | 11                       | 9                         |
| 300, 200 (225)       | B           | 90            | T100   | C            | 11                       | 10                        |
| 1500, 800 (800)      | D           | 10            | T100   | C            | 13                       | 12                        |
| 600, 200 (700)       | D           | 10            | T100   | C            | 18                       | 16                        |
| 60, 200 (60)         | C           | 8             | T81    | E            | 13                       | 10                        |
| 100, 700 (100)       | C           | 19            | T81    | E            | 7                        | 6                         |
| 50, 50 (50)          | C           | 18            | T81    | E            | 6                        | 6                         |
| 50, 20 (60)          | D           | 10            | T81    | E            | 6                        | 6                         |
| 100, 400 (100)       | C           | 8             | T93    | E            | 9                        | 8                         |
| 100, 700 (100)       | C           | 18            | T93    | E            | 10                       | 9                         |
| 100, 800 (100)       | C           | 18            | T93    | E            | 9                        | 9                         |

Please add any counts on this page to the total tally on the previous page.
# Over-wintering Monarch Butterfly Project
## Monarch Count Data Sheet

**DATE:** 11/14/19  
**SITE NAME:**

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|--------------------------|--------------------------|
| 750 920 (870)        | I            | 13            | T218   | Euc          | 7                        | 7                        |
| 750 920 (870)        | I            | 13            | T218   | Euc          | 8                        | 7                        |
| 700 720 (120)        | I            | g4            | T218   | Euc          | 7                        | 7                        |
| 660 600 (750)        | I            | g4            | T218   | Euc          | 9                        | 9                        |
| 600 150 (120)        | I            | g4            | T218   | Euc          | 10                       | 8                        |
| 580 600 (650)        | D            | g2            | T63    | Euc          | 11                       | 10                       |
| 800 710 (660)        | D            | g2            | T63    | Euc          | 17                       | 17                       |
| 800 950 (850)        | D            | g2            | T63    | Euc          | 8                        | 8                        |
| 750 850 (955)        | D            | g2            | T63    | Euc          | 8                        | 7                        |
| 750 250 (120)        | D            | h6            | T34    | Euc          | 6                        | 6                        |
| 600 250 (150)        | D            | h6            | T34    | Euc          | 10                       | 10                       |
| 600 100 (10)         | E            | g2            | T41    | Euc          | 6                        | 6                        |

**Total in Clusters:** (include count from next pg)  
**Total # Trees:**

| # Loners: 4 | # Sunners: | # Fliers: | # Grounders (live): |
|-------------|------------|-----------|---------------------|

**Grand Total:** (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

| # Mating Monarchs: |
|--------------------|
|                    |

| # Dead Monarchs: |
|------------------|
|                  |

**Other Notes:**
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11-16-14  SITE NAME Primo

# Observers 4  Observer name(s) Danielle Hyland

Count Time Span 10:30 to 11:30  Total Count Time (Min) 0

Cloud/Fog Cover 10%  Precipitation (circle one): none drizzle rain

Temp (°C) 15.4  Wind (m/s) 0.2  Wind (Beaufort) 0  Wind direction W

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|---------------------------|
| 1100 / 1200          | D           | C9            | Ti69   | C            | 10                       | 9                         |
| 400 / 4150           | D           | C9            | Ti69   | C            | 11                       | 10                        |
| 125 / 1300           | D           | BS            | Ti67   | C            | 10                       | 9                         |
| 750 / 750            | D           | C9            | Ti69   | C            | 10                       | 9                         |
| 525 / 550            | D           | C9            | Ti69   | C            | 17                       | 18                        |
| 700 / 650            | D           | C9            | Ti69   | C            | 17                       | 16                        |
| 1250 / 1500          | D           | C9            | Ti69   | C            | 17                       | 16                        |
| 250 / 250            | D           | 24            | Ti69   | E            | 11                       | 10                        |
| 750 / 750            | D           | 24            | Ti69   | E            | 11                       | 10                        |
| 200 / 650            | D           | 24            | Ti69   | E            | 21                       | 20                        |
| 400 / 350            | D           | 24            | Ti69   | E            | 21                       | 20                        |
| 200 / 1500           | D           | 24            | Ti69   | E            | 21                       | 20                        |
| 400 / 480            | C           | 13            | Ti67   | C            | 19                       | 19                        |
| 250 / 1500           | D           | E8            | Ti69   | C            | 11                       | 10                        |
| 150 / 150            | I           | F3            | Ti69   | E            | 10                       | 9                         |

Total in Clusters: (include count from next pg) Total # Trees:

# Loner: 18

# Sunner: 0

# Flier: 0

# Grounder (live): 13

Grand Total: (sum of all clustered butterflies plus loners, sunniers, fliers, etc.)

# Mating Monarchs: 0

# Dead Monarchs: 0

Other Notes:
Over-wintering Monarch Butterfly Project  
Monarch Count Data Sheet

DATE 17 NOV  SITE NAME - Pismo  

# Observers 3  Observer name(s) - Daniel, Taylor, Tyler

Count Time Span 06:30 to 7:40  Total Count Time (Min) ______

Cloud/Fog Cover 0 %  Precipitation (circle one): none drizzle rain

Temp (°C) 14°F  Wind (m/s) 0.2  Wind (Beaufort) _____  Wind direction N

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|--------------|-------|-------------|--------------------------|----------------------------|
| 125/425              | D           | h6           | T34   | E           | 11                       | 11                         |
| 250/150              | E           | c2           | T56   | E           | 9                        | 9                          |
| 950/640              | D           | d4           | T70   | E           | 20                       | 19                         |
| 175/425              | D           | c4           | T70   | E           | 19                       | 19                         |
| 360/760              | D           | c4           | T70   | E           | 70                       | 20                         |
| 125/25               | D           | c6           | T70   | E           | 70                       | 20                         |
| 450/600              | D           | b6           | T70   | E           | 70                       | 20                         |
| 370/350              | D           | d5           | T69   | E           | 11                       | 11                         |
| 650/400              | D           | d4           | T69   | E           | 12                       | 11                         |
| 700/600              | D           | d5           | T69   | E           | 17                       | 12                         |
| 200/600              | D           | c5           | T69   | E           | 11                       | 11                         |
| 150/175              | D           | c1           | T100  | C           | 9                        | 9                          |
| 1000/900             | D           | d8           | T100  | C           | 11                       | 9                          |

Total in Clusters: (include count from next pg)  Total # Trees:

# Loners: 

# Sunners:  

# Fliers:  

# Grounders (live):  

Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs:  

# Dead Monarchs:  

Other Notes:  
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|--------------------------|
| 850/1400             | D           | d8            | T100   | C            | 18                       | 11                       |
| 750/1450             | D           | e5            | T100   | C            | 12                       | 10                       |
| 400/420              | D           | d9            | T100   | C            | 17                       | 16                       |
| 12/10/70             | D           | d9            | T120   | C            | 19                       | 17                       |
| 12/10/70             | D           | d9            | T120   | C            | 13                       | 17                       |
| 350/400              | C           | i4            | T76    | C            | 16                       | 16                       |
| 300/130              | C           | i4            | T76    | C            | 17                       | 17                       |
| 320/120              | C           | i8            | T81    | E            | 12                       | 12                       |
| 250/150              | C           | i8            | T94    | E            | 12                       | 12                       |
| 320/150              | D           | i4            | T63    | E            | 5                        | 5                        |
| 150/150              | D           | h6            | T63    | E            | 10                       | 10                       |
| 200/175              | D           | i2            | T83    | E            | 11                       | 11                       |
| 250/250              | D           | j9            | T88    | E            | 24                       | 24                       |

Please add any counts on this page to the total tally on the previous page.
# Over-wintering Monarch Butterfly Project

## Monarch Count Data Sheet

**DATE** 11/18/14  **SITE NAME** Pismo

# Observers: [Name(s)]

Count Time Span: [Start Time] to [End Time]  **Total Count Time (Min)**: [Duration]

Cloud/Fog Cover: [Coverage]  **Precipitation (circle one):**

Temp (°C): [Temperature]  **Wind (m/s):** [Speed]  **Wind (Beaufort):** [Beaufort Scale]  **Wind direction:** [Direction]

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|--------------------------|---------------------------|
| 80 19,12 (110)       | C           | h8           | T94    | E            | 11                       | 11                        |
| 70 17,75 (73)        | C           | h8           | T94    | E            | 12                       | 12                        |
| 70 17,72 (70)        | C           | h8           | T94    | E            | 12                       | 12                        |
| 50 1,60 (55)         | C           | i9           | T81    | E            | 10                       | 10                        |
| 40 40 (40)           | C           | i9           | T81    | E            | 11                       | 11                        |
| 60 2,60 (670)        | C           | j5           | T76    | C            | 16                       | 16                        |
| 15 2,550 (30)        | C           | j5           | T76    | C            | 17                       | 17                        |
| 15 2,60 (35)         | C           | j5           | T76    | C            | 18                       | 18                        |
| 10 2,60 (150)        | C           | j7           | T76    | C            | 19                       | 19                        |
| 75 95 (85)           | C           | j7           | T76    | C            | 19                       | 19                        |
| 12 1,35 (130)        | C           | j5           | T76    | C            | 16                       | 16                        |
| 200 2,200 (2200)     | D           | h10          | T100   | E            | 12                       | 12                        |
| 100 1,110 (1100)     | D           | h10          | T100   | E            | 13                       | 13                        |
| 100 2,300 (1100)     | D           | h10          | T100   | E            | 13                       | 13                        |
| 120 4,950 (4950) B   | c10         | T100         | C      | 19           | 19                        |

**Total in Clusters:**  **Total # Trees:**

# Loners: [Number]

# Sunners: [Number]

# Fliers: [Number]

# Grounders (live): [Number]

**Grand Total:** (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

| # Mating Monarchs: |
|--------------------|

| # Dead Monarchs: |
|------------------|

**Other Notes:**
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|--------------------------|
| 70.75 (7.3)          | 0           | F9            | T104   | C            | 3                        | 3                        |

Please add any counts on this page to the total tally on the previous page.
# Over-wintering Monarch Butterfly Project
## Monarch Count Data Sheet

**DATE:** 11/18/14  
**SITE NAME:** [Redacted]  
**# Observers:** 2  
**Observer name(s):** Nicole, Emily  
**Count Time Span:** 6:42 to 7:33  
**Total Count Time (Min):** 51  
**Cloud/Fog Cover:** 30%  
**Precipitation (circle one):** none  
**Temp (°C):** 50°F  
**Wind (m/s):** 0  
**Wind (Beaufort):** 0  
**Wind direction:**  

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|--------------------------|--------------------------|
| 90                  | I            | e9            | T218   | Euc          | 12                       | 9                        |
| 25,90               | E            | a6            | T39    | Euc          | 9                        | 9                        |
| 40,120              | D            | e9            | T39    | Euc          | 9                        | 9                        |
| 62,80               | D            | e9            | T34    | Euc          | 10                       | 8                        |
| 50,55               | D            | e9            | T34    | Euc          | 10                       | 8                        |
| 72,180              | D            | e9            | T34    | Euc          | 11                       | 10                       |
| 42,70               | D            | e9            | T34    | Euc          | 12                       | 12                       |
| 300,970             | D            | 12            | T63    | Euc          | 7                        | 7                        |
| 90,150              | D            | 12            | T63    | Euc          | 9                        | 9                        |
| 120,760             | D            | 12            | T63    | Euc          | 11                       | 10                       |
| 10,260              | E            | c2            | 149    | Euc          | 7                        | 7                        |
| 94,50               | D            | d9            | T70    | Euc          | 8                        | 8                        |
| 60,120              | D            | d9            | T70    | Euc          | 10                       | 9                        |
| 20,300              | D            | d9            | T70    | Euc          | 8                        | 8                        |
| 52,180              | D            | d9            | T69    | Euc          | 12                       | 12                       |
| 65,500              | D            | d3            | T69    | Euc          | 20                       | 19                       |

**Total in Clusters:** (include count from next pg)  
**Total # Trees:**

**# Loners:** NL 1  
**# Sunners:** Tally every butterfly of each type that you see throughout the site.  
**# Fliers:**  
**# Grounders (live):**  
**Grand Total:** (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

**# Mating Monarchs:**  
**# Dead Monarchs:** 1  
**Other Notes:**
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|--------------------------|
| 400,400 (405)        | D           | d3            | T69    | Euc          | 19                       | 18                       |
| 375,360 (334)        | D           | d3            | T69    | Euc          | 20                       | 20                       |
| 160,760 (180)        | D           | d3            | T69    | Euc          | 20                       | 20                       |
| 250,500 (265)        | D           | d3            | T69    | Euc          | 19                       | 19                       |

Please add any counts on this page to the total tally on the previous page.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11/19/14  SITE NAME Pismo

# Observers 2  Observer name(s) Tyler, Brandon

Count Time Span 6:45 to 7:32  Total Count Time (Min)

Cloud/Fog Cover 95%  Precipitation (circle one):<1mm drizzle  rain

Temp (°C) 12.7  Wind (m/s) 0.20  Wind (Beaufort) 1  Wind direction

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|--------------|--------|--------------|--------------------------|---------------------------|
| 250/230 C C 9 | T94 | E | 11 | 11 |
| 220/190 C C 8 | T81 | E | 11 | 11 |
| 475/400 D C 10 | T100 | C | 10 | 10 |
| 2000/1750 D B 7 | T100 | C | 11 | 10 |
| 1550/1300 D C 0 | T100 | C | 11 | 10 |
| 4800/3900 D E 4 | T100 | C | 12 | 16 |
| 6800/4625 C B 6 | T76 | C | 16 | 16 |
| 475/450 D I 5 | T69 | E | 18 | 18 |
| 3700/350 D H 4 | T69 | E | 17 | 17 |
| 125/160 D H 4 | T69 | E | 15 | 15 |
| 250/225 D C 4 | T70 | E | 9 | 9 |
| 1600/1060 D D 4 | T70 | E | 11 | 10 |
| 4000/400 D H 4 | T90 | E | 9 | 9 |
| 500/300 D I 2 | T69 | E | 12 | 11 |
| 150/900 D H 4 | T68 | E | 10 | 10 |
| 3000/2750 D I 2 | T68 | E | 8 | 8 |

Total in Clusters: (include count from next pg) Total # Trees:

# Loners:  
# Sunners:  
# Fliers:  
# Grounders (live):  
Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs:  
# Dead Monarchs:  
Other Notes:
| # Monarchs Clustered (ex: A) | Zone (ex: a2) | Cell | Tree # | Tree Species | Cluster Height (top) (m) | Cluster Height (bottom) (m) |
|-----------------------------|---------------|------|--------|--------------|--------------------------|-----------------------------|
| 275/225                     | E             | C2   | T40    | E            | 8                        | 8                           |
| 425/375                     | D             | H6   | T84    | E            | 9                        | 9                           |
| 200/150                     | D             | H3   | T34    | E            | 23                       | 23                          |
| 125/190                     | D             | 93   | T69    | E            | 23                       | 23                          |
| 400/500                     | E             | F1   | T100   | C            | 11                       | 11                          |

Please add any counts on this page to the total tally on the previous page.
Over-wintering Monarch Butterfly Project  
Monarch Count Data Sheet

DATE 11/10/14  SITE: P1000

# Observers 3  Observer(s): Brad, Emily, Nicole

Count Time Span 6:45 to 7:50  Total Count Time (Min): 65

Cloud/Fog Cover 100%  Precipitation (circle one):  none, drizzle, rain

Temp (°C)  Wind (m/s)  Wind (Beaufort)  Wind direction

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Chlstr Height (bottom) (m) |
|----------------------|--------------|--------------|--------|--------------|--------------------------|---------------------------|
| 17,120 (120)         | D            | h6           | T34    | Eve          | 8                        | 8                         |
| 120,150 (155)        | D            | h6           | T34    | Eve          | 10                       | 9                         |
| 180,200 (199)        | D            | h6           | T34    | Eve          | 10                       | 9                         |
| 0,550 (15)           | D            | h6           | T34    | Eve          | 9                        | 9                         |
| 45,550 (45)          | F            | e3           | T41    | Eve          | 11                       | 11                        |
| 220,170 (216)        | E            | e3           | T41    | Eve          | 3                       | 3                         |
| 1,120,500 (4,330)    | D            | i1           | T63    | Eve          | 7                        | 7                         |
| 380,180 (60)         | D            | i2           | T63    | Eve          | 11                       | 11                        |
| 160,150 (155)        | D            | i1           | T63    | Eve          | 10                       | 10                        |
| 7,300,200,000 (2,368) | D          | d4           | T70    | Eve          | 12                       | 11                        |
| 180,100 (100)        | D            | d4           | T70    | Eve          | 11                       | 11                        |
| 150,210 (215)        | D            | d3           | T69    | Eve          | 20                       | 20                        |
| 37,150 (32)          | D            | d3           | T69    | Eve          | 20                       | 20                        |
| 2,100,440 (216)      | D            | b3           | T64    | Eve          | 20                       | 20                        |
| 1,100,160 (4,330)    | D            | b3           | T64    | Eve          | 19                       | 19                        |
| 2,100,220 (2,368)    | C            | t4           | T76    | Eve          | 17                       | 17                        |

Total in Clusters:  (include count from next pg)  Total # Trees:  

# Loners:  
# Sunners:  
# Fliers:  
# Grounders (live):  

Grand Total:  (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs:  
# Dead Monarchs:  
Other Notes: Orange fog
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: n2) | Tree # | Tree Species | Cluster Height (top) (m) | Chstr Height (bottom) (m) |
|---------------------|-------------|--------------|--------|--------------|-------------------------|--------------------------|
| 160                  | C           | J1           | T76    | Cyp          | 17                      | 17                       |
| 60                   | C           | J1           | T76    | Cyp          | 18                      | 18                       |
| 100,120              | D           | E8           | T108   | Cyp          | 12                      | 12                       |
| 240,320              | C           | 9            | T108   | Cyp          | 10                      | 10                       |
| 100                   | D           | 100          | Cyp    | 10          | 10                       |
| 1500,1600            | D           | 100          | Cyp    | 10          | 10                       |
| 670,800              | D           | 100          | Cyp    | 11          | 10                       |
| 1200,1400            | D           | 100          | Cyp    | 12          | 11                       |
| 5000,5900            | E           | 100          | Cyp    | 20          | 19                       |
| 4100                 | D           | 100          | Cyp    | 20          | 20                       |
| 500                  | C           | 9            | T81    | Euc         | 8                       | 8                        |
| 110                   | C           | 9            | T81    | Euc         | 10                      | 10                       |
| 100,120              | C           | 8            | T81    | Euc         | 12                      | 12                       |
| 240,320              | C           | 9            | T42    | Arborv       | 10                      | 11                       |

Please add any counts on this page to the total tally on the previous page.
| Time | Species | Count |
|------|---------|-------|
| 10:00 | 1 | 1 |
| 10:05 | 2 | 2 |
| 10:10 | 3 | 3 |
| 10:20 | 4 | 4 |
| 10:25 | 5 | 5 |
| 10:30 | 6 | 6 |
| 10:35 | 7 | 7 |
| 10:40 | 8 | 8 |
| 10:45 | 9 | 9 |
| 10:50 | 10 | 10 |
| 10:55 | 11 | 11 |
| 11:00 | 12 | 12 |
| 11:05 | 13 | 13 |
| 11:10 | 14 | 14 |
| 11:15 | 15 | 15 |
| 11:20 | 16 | 16 |
| 11:25 | 17 | 17 |
| 11:30 | 18 | 18 |
| 11:35 | 19 | 19 |
| 11:40 | 20 | 20 |
| 11:45 | 21 | 21 |
| 12:00 | 22 | 22 |
| 12:05 | 23 | 23 |
| 12:10 | 24 | 24 |
| 12:15 | 25 | 25 |
| 12:20 | 26 | 26 |
| 12:25 | 27 | 27 |
| 12:30 | 28 | 28 |
| 12:35 | 29 | 29 |
| 12:40 | 30 | 30 |
| 12:45 | 31 | 31 |
| 13:00 | 32 | 32 |
| 13:05 | 33 | 33 |
| 13:10 | 34 | 34 |
| 13:15 | 35 | 35 |
| 13:20 | 36 | 36 |
| 13:25 | 37 | 37 |
| 13:30 | 38 | 38 |
| 13:35 | 39 | 39 |
| 13:40 | 40 | 40 |
| 13:45 | 41 | 41 |
| 14:00 | 42 | 42 |
| 14:05 | 43 | 43 |
| 14:10 | 44 | 44 |
| 14:15 | 45 | 45 |
| 14:20 | 46 | 46 |
| 14:25 | 47 | 47 |
| 14:30 | 48 | 48 |
| 14:35 | 49 | 49 |
| 14:40 | 50 | 50 |
| 14:45 | 51 | 51 |
| 15:00 | 52 | 52 |
| 15:05 | 53 | 53 |
| 15:10 | 54 | 54 |
| 15:15 | 55 | 55 |
| 15:20 | 56 | 56 |
| 15:25 | 57 | 57 |
| 15:30 | 58 | 58 |
| 15:35 | 59 | 59 |
| 15:40 | 60 | 60 |
| 15:45 | 61 | 61 |
| 16:00 | 62 | 62 |
| 16:05 | 63 | 63 |
| 16:10 | 64 | 64 |
| 16:15 | 65 | 65 |
| 16:20 | 66 | 66 |
| 16:25 | 67 | 67 |
| 16:30 | 68 | 68 |
| 16:35 | 69 | 69 |
| 16:40 | 70 | 70 |
| 16:45 | 71 | 71 |
| 17:00 | 72 | 72 |
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: n2) | Tree # | Tree Species | Cluster Height (top) (m) | Chstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|---------------------------|
| 100/100              | D           | C10           | T100   | C            | 10                       | 10                        |
| 200/200              | D           | b2           | T100   | C            | 12                       | 12                        |
| 100/100              | D           | C8            | T100   | C            | 12                       | 12                        |
| 200/200              | D           | C4            | T100   | C            | 14                       | 14                        |
| 500/500              | D           | d9            | T100   | C            | 16                       | 15                        |
| 75/75                | D           | e4/9         | T100   | C            | 11                       | 11                        |
| 150/150              | D           | f2           | T100   | C            | 9                        | 9                         |
| 850/800              | D           | c9           | T14+    | E            | 12                       | 12                        |
| 350/350              | D           | c8           | T14+    | E            | 9                        | 9                         |
| 250/250              | D           | d4           | T47+    | E            | 9                        | 9                         |
| 250/250              | D           | d9           | T47+    | E            | 18                       | 18                        |
| 250/250              | D           | d4           | T47+    | E            | 12                       | 12                        |
| 250/250              | D           | c4           | T70     | E            | 19                       | 19                        |
| 250/250              | D           | b4           | T69     | E            | 15                       | 15                        |
| 300/300              | D           | j5           | T76     | C            | 16                       | 16                        |
| 350/350              | D           | j5           | T76     | C            | 15                       | 15                        |
| 300/300              | D           | j2           | T63     | E            | 11                       | 11                        |
| 150/150              | D           | m2           | T63     | E            | 10                       | 10                        |
| 450/450              | D           | j2           | T63     | E            | 9                        | 9                         |
| 200/200              | D           | h3           | T39     | E            | 23                       | 23                        |
| 90/100               | D           | g3           | T69     | E            | 23                       | 23                        |
| 250/250              | E           | c2           | T58     | E            | 8                        | 8                         |
| 80/80                | E           | h4           | T34     | E            | 10                       | 10                        |
| 50/50                | C           | i2           | T51     | E            | 12                       | 12                        |
| 20/20                | C           | i2           | T51     | E            | 8                        | 8                         |
| 100/100              | C           | i9           | T54     | E            | 11                       | 11                        |
| 60/60                | C           | i9           | T54     | E            | 10                       | 10                        |
| 50/50                | C           | g4           | T54     | E            | 10                       | 10                        |
| 250/250              | D           | h1           | T109    | E            | 20                       | 20                        |
| 150/150              | D           | g9           | T109    | E            | 15                       | 15                        |

Please add any counts on this page to the total tally on the previous page.
# Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m)
---|---|---|---|---|---|---
50.60 (15) | D | d.6 | T19 | E | 10 | 10
50.60 (15) | D | d.6 | T19 | E | 10 | 10
60.30 (15) | D | d.6 | T19 | E | 10 | 10
70.90 (18) | B | b.6 | T19 | E | 10 | 10
40.10 (19) | D | d.6 | T19 | E | 10 | 10
50.60 (15) | D | d.6 | T19 | E | 10 | 10
60.70 (15) | D | d.6 | T19 | E | 10 | 10
70.70 (15) | D | d.6 | T19 | E | 10 | 10
80.50 (16) | B | b.8 | T19 | E | 10 | 10
170.150 (150) | D | d.15 | T19 | E | 10 | 10
50.300 (200) | D | d.15 | T19 | E | 10 | 10
80.250 (150) | D | d.15 | T19 | E | 10 | 10
150.350 (150) | D | d.15 | T19 | E | 10 | 10
700.300 (150) | D | d.15 | T19 | E | 10 | 10
70.15 (15) | D | d.15 | T19 | E | 10 | 10

Total in Clusters: (include count from next pg) | Total # Trees:
---|---

# Loners:
# Sunners:
# Fliers: /
# Grounders (live): /
Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs:
# Dead Monarchs:
Other Notes:
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|---------------------------|
| 700,250 (225)        | D           | c2            | T69    | E            | 19                       | 19                        |
| 140,120 (155)        | D           | k3            | T69    |              | 19                       | 19                        |
| 700,40 (150)         | D           | k3            | T69    |              | 11                       | 20                        |
| 500,600 (350)        | D           | c2            | T69    |              | 7                        | 21                        |
| 280,320 (260)        | D           | i2            | T40    |              | 7                        | 6                         |
| 90,400 (385)         | D           | i2            | T40    |              | 7                        | 9                         |
| 150,50 (539)         | D           | h2            | T63    |              | 7                        | 8                         |
| 90,120 (120)         | E           | c2            | T49    |              | 7                        | 7                         |
| 120,120 (112)        | D           | h2            | T30    |              | 25                       | 25                        |

Please add any counts on this page to the total tally on the previous page.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11-22-14  SITE NAME Pismo

# Observers ___________________________ Observer name(s) Daniel Hannah, Jeff Strus

Count Time Span 6:45 to 8:00 Total Count Time (Min) ______

Cloud/Fog Cover % Precipitation (circle one): none drizzle rain

Temp (°C) 10.7 Wind (m/s) 0.6 Wind (Beaufort) ______ Wind direction N/E

| # Monarchs | Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Chstr Height (bottom) (m) |
|------------|-----------|--------------|---------------|--------|--------------|--------------------------|---------------------------|
| 490 / 490  | 0         | C-9          | T100          | C      | 10           | 8                        |                           |
| 295 / 295  | 0         | C-9          | T100          | C      | 15           | 15                       |                           |
| 1100 / 1500| 0         | H-10         | T100          | C      | 11           | 9.5                      |                           |
| 390 / 390  | 0         | H-9          | T100          | C      | 10           | 10                       |                           |
| 250 / 250  | 0         | G-9          | T100          | C      | 10           | 10                       |                           |
| 1000 / 1000| 0         | L-9          | T100          | C      | 14           | 14                       |                           |
| 160 / 160  | 0         | C-8          | T100          | C      | 13           | 12                       |                           |
| 450 / 450  | 0         | D-9          | T100          | C      | 14           | 15                       |                           |
| 700 / 700  | 0         | D-9          | T100          | C      | 13           | 16                       |                           |
| 450 / 450  | 0         | D-9          | T100          | C      | 17           | 17                       |                           |
| 1500 / 1500| 0         | J-9          | T100          | C      | 19           | 19                       |                           |
| 650 / 650  | 0         | J-9          | T100          | C      | 19           | 19                       |                           |
| 250 / 250  | 0         | K-9          | T100          | C      | 19           | 19                       |                           |
| 150 / 150  | 0         | L-9          | T100          | C      | 19           | 19                       |                           |
| 500 / 500  | 0         | L-9          | T100          | C      | 19           | 19                       |                           |

Total in Clusters: (include count from next pg)  Total # Trees: 

# Loners: 15  # Summers: Tally every butterfly of each type that you see throughout the site.

# Fliers: 4  # Grounders (live): 1

Grand Total: (sum of all clustered butterflies plus loners, summers, fliers, etc.)

# Mating Monarchs:  # Dead Monarchs:

Other Notes:
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|-------------------------|--------------------------|
| 170/105              | D           | A-7           | T-109  | E            | 20                      | 20                       |
| 175/150              | C           | 1-9           | T-81   | E            | 12                      | 12                       |
| 850/1380             | C           | 1-3           | T-96   | C            | 16/16                   | 16                       |
| 70/60                | C           | 1-3           | T-96   | C            | 16/16                   | 16                       |
| 220/250              | C           | 1-3           | T-96   | C            | 17                      | 17                       |
| 650/25               | C           | 1-3           | T-76   | C            | 19                      | 19                       |

Please add any counts on this page to the total tally on the previous page.
Over-wintering Monarch Butterfly Project
Monarch Count Data Sheet

DATE 11/23/19    SITE NAME Pismo

# Observers 4    Observer name(s) Emily, Mike, David, Hannah

Count Time Span 6:45 to 7:35    Total Count Time (Min) 50

Cloud/Fog Cover 20 %    Precipitation (circle one): ☐ none ☑ drizzle ☐ rain

Temp (°C) 18    Wind (m/s) ☐ Wind (Beaufort) ☑    Wind direction N

| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Chstr Height (bottom) (m) |
|----------------------|--------------|---------------|--------|--------------|--------------------------|---------------------------|
| 80, 70 (50)          | D1           | H4            | T18    | Euc          | 6                        | 6                         |
| 100, 90 (170)        | J1           | G4            | T14    | Euc          | 8                        | 7                         |
| 140, 160 (150)       | D1           | H6            | T34    | Euc          | 10                       | 10                        |
| 160, 100 (90)        | D1           | H6            | T34    | Euc          | 11                       | 11                        |
| 300, 500 (900)       | D1           | H6            | T34    | Euc          | 12                       | 11                        |
| 500, 750 (925)       | D1           | I2            | T63    | Euc          | 7                        | 6.5                       |
| 200, 200 (135)       | D1           | I2            | T63    | Euc          | 9                        | 9                         |
| 350, 400 (875)       | D1           | I2            | T63    | Euc          | 10                       | 9                         |
| 200, 220 (105)       | E1           | C3            | T49    | Euc          | 8                        | 8                         |
| 220, 200 (140)       | D1           | I4            | T69    | Euc          | 70                       | 20                        |
| 240, 210 (280)       | D1           | I4            | T69    | Euc          | 19                       | 19                        |
| 160, 200 (190)       | D1           | I4            | T69    | Euc          | 20                       | 20                        |
| 200, 230 (260)       | D1           | I4            | T69    | Euc          | 20                       | 20                        |
| 80, 120 (110)        | D1           | I4            | T69    | Euc          | 19                       | 19                        |
| 100, 180 (150)       | D1           | C1            | T70    | Euc          | 10                       | 10                        |
| 100, 180 (105)       | D1           | C1            | T70    | Euc          | 9                        | 9                         |

Total in Clusters: (include count from next pg)  Total # Trees:

# Loners: Tally every butterfly of each type that you see throughout the site.
# Sunners: Tally every butterfly of each type that you see throughout the site.
# Fliers:
# Grounders (live):

Grand Total: (sum of all clustered butterflies plus loners, sunners, fliers, etc.)

# Mating Monarchs:
# Dead Monarchs:
Other Notes:
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|--------------------------|---------------------------|
| 60,90 (75)           | D           | c9            | T70    | Euc          | 15                       | 15                        |
| 500,600 (550)        | D           | d9            | T70    | Euc          | 12                       | 11                        |
| 450,480 (495)        | D           | d9            | T70    | Euc          | 11                       | 10                        |
| 280,240 (46)         | B           | d1            | T70    | Euc          | 9                        | 9                         |
| 320,350 (555)        | C           | j4            | T76    | Cyp          | 18                       | 17                        |

Please add any counts on this page to the total tally on the previous page.
| # Monarchs Clustered | Zone (ex: A) | Cell (ex: a2) | Tree # | Tree Species | Cluster Height (top) (m) | Clstr Height (bottom) (m) |
|----------------------|-------------|---------------|--------|--------------|------------------------|------------------------|
| 175                  | 550/600     | D             | C-10   | T-100        | 10                     | 8                      |
| 460                  | 450/410     | 0             | C-9    | T-100        | 15                     | 13                     |
| 650                  | 1900/1600   | 0             | b-10   | T-100        | 11                     | 9.5                    |
| 720                  | 700/740     | 0             | b-3    | T-100        | 16                     | 10                     |
| 765                  | 810/740     | 0             | a-9    | T-100        | 16                     | 10                     |
| 300                  | 320/280     | 0             | c-9    | T-100        | 16                     | 15                     |
| 475                  | 450/410     | 0             | d-9    | T-100        | 16                     | 16                     |
| 575                  | 550/510     | 0             | d-9    | T-100        | 16                     | 16                     |
| 1200                 | 1200/1200   | 0             | d-9    | T-100        | 19                     | 12                     |
| 475                  | 1450/510    | 0             | d-9    | T-100        | 19                     | 16                     |
| 125                  | 150/170     | 0             | g-9    | T-100        | 12                     | 11                     |
| 210                  | 240/170     | 0             | a-9    | T-100        | 11                     | 10                     |
| 415                  | 410/440     | 0             | B-S    | T-100        | 11                     | 10                     |
| 70                   | 80/140      | 0             | d-7    | T-100        | 21                     | 20                     |
| 210                  | 220/220     | 0             | d-7    | T-100        | 21                     | 20                     |
| 230                  | 240/210     | C             | h-8    | T-95         | 10                     | 9                      |
| 120                  | 120/110     | C             | i-8    | T-91         | 12                     | 12                     |

Please add any counts on this page to the total tally on the previous page.
|   | Date     | MonarchCount | TreeNum | TreeSpecies | Height | ZoneCell |
|---|----------|--------------|---------|-------------|--------|----------|
| 2 | 11/1/2014| 12           | T63     | E           | 3      | D-i-1    |
| 3 | 11/1/2014| 45           | T63     | E           | 3      | D-i-1    |
| 4 | 11/1/2014| 15           | T63     | E           | 3      | D-i-1    |
| 5 | 11/1/2014| 22           | T63     | E           | 4      | D-h-1    |
| 6 | 11/1/2014| 45           | T63     | E           | 4      | D-h-1    |
| 7 | 11/1/2014| 15           | T63     | E           | 4      | D-h-1    |
| 8 | 11/1/2014| 55           | T63     | E           | 4      | D-h-1    |
| 9 | 11/1/2014| 36           | T63     | E           | 4      | D-h-1    |
|10 | 11/1/2014| 28           | T69     | E           | 10     | D-e-3    |