

Methods for Conducting Monarch Surveys (Nov. 15, 2004)

When and how often to survey

Surveys should be conducted at least once per season, although twice or more is preferred. If you can conduct only one survey this winter, it should be done during the week of Thanksgiving. If you can complete additional surveys, the next priority date is the week of January first (a New Years count). If you want to conduct more than these two surveys, feel free to establish weekly, bi-weekly or monthly schedules throughout the Monarch overwintering season (November through the first week of March). Even if you conduct surveys throughout the season, it is important to include counts at Thanksgiving and around New Years so we can compare population sizes among the sites.

Surveys should be conducted by at least two observers in the mornings while temperatures are low (usually below 13°C or 55F) and monarch butterflies are still clustered. *Note: Do not survey during heavy precipitation and/or strong winds because of poor visibility and increased chances of the butterflies being scattered and on the ground.*

Recorded Data

Record the following survey data at each site using the standardized data form: date, site, observers, time spent searching for clusters, count time start and end, presence of nectar and water sources, and observations of tagged or mating monarch butterflies. Weather data includes: sky, percent cloud cover, wind speed and direction, temperature, precipitation, and percent fog. Sky is indexed from 0-8 by the following criteria: (0) clear or few clouds, (1) scattered clouds, (2) mostly cloudy, (3) overcast, (4) fog or smoke, (5) drizzle, (8) showers. Wind is estimated using the Beaufort's wind scale (see below). For each tree that has roosting monarch butterflies, record the number of monarch butterflies, tree species, tree identification number, and the aspect and height of clusters. Also count and record separately the number of monarch butterflies on the wing and on the ground.

Cluster estimations .

At each overwintering sites, record estimates of butterflies roosting in specific trees and exhibiting other behaviors, e.g., basking, flying, etc. in the study area. Estimate the number of butterflies in each cluster in order to reach a total for the whole site. To estimate the number of butterflies in a cluster, first estimate the number of butterflies in a small area of a cluster and then extrapolated this count to arrive at a total count for the entire cluster. Record the average of the total counts of all observers. Only counts that were within a 20% margin should be considered. If counts are not within 20% discuss why and then start count again.

Beaufort Wind Speed Scale

None (Beaufort scale 0)	Calm Smoke rises vertically.
Low (Beaufort scale 1-3)	Light air to gentle breeze Smoke drifts slowly downwind to leaves rustling or in motion.
Moderate (Beaufort scale 4-5)	Moderate to fresh breeze . Small branches to small trees are swaying.
High (Beaufort scale 6+)	Strong breeze and more. Large branches to whole trees are swaying...or stronger.
If the wind is 'High' or stronger, it is unlikely that butterflies will be flying.	

Please return survey forms to Mía Monroe at 813A Menges St., Sausalito, CA 94965. If you have questions, please contact Mía at 415-388-2596 or muirmia@aol.com.