

Western Monarch Overwintering Habitat Assessment (Long Form)

Instructions and Definitions

Thank you for your interest in collecting monarch overwintering habitat data. The information that you collect is important as it will enable us to assess threats to sites and, if used regularly, to document changes over time. In addition, the data may inform overwintering site restoration and management.

1. Fill out the data sheet to the best of your ability. Feel free to skip sections, but please note why the section was skipped (not enough time, did not have the necessary equipment, were not sure). If you are unsure, no information is better than inaccurate information. The majority of the items listed on the data form are self explanatory. Below is additional information for items that require further explanation.
2. **Site ID** is the number assigned to the site from the Xerces Society's Monarch Overwintering Database. If you do not know the site identification number, leave this line blank.
3. **Property Owner** can include public agencies such as the U.S. National Forest Service or California Department of Parks and Recreation, private landowners such as home owners or business owners, or non-profit organizations. If the property owner is a private landowner but you do not know the company or the person's name, please write private landowner.
4. **Current land use** is the primary human use of a specific land area. Some examples include state, county, or national parks; state or national forests; golf courses; residential areas; commercial areas; industrial areas; agricultural fields; or other land uses.
5. **Site Location/Directions**: Please be as specific as possible. Be sure to include relevant information such as town names, highway or street names, river or stream names, and distances.
6. **GPS data**: If you have access to a GPS unit or a smart phone with GPS capabilities, please provide GPS coordinates of the site as well as the accuracy of the GPS unit and the datum (i.e. NAD27, NAD83, WGS84) that the data is collected in. If you do not have access to a GPS unit, skip this section.
7. **Microclimate Data**: If you have access to a Kestrel pocket weather meter, please use this device to collect the data. Be sure to collect the data in metric units (i.e. Celsius, meters per second). If you do not have access to this device, please skip the relative humidity and dewpoint data fields and use an outdoor weather thermometer to record the temperature data.
8. **Topography Data**: To measure aspect (which is the direction in which a slope is oriented), record the cardinal direction (N, NE, E, SE, S, SW, W, NW) that the slope is facing at the site. If you have access to a clinometer, a compass with a clinometer, or a rangefinder, use this to record slope. If you do not, record an ocular slope estimate by estimating the incline at the site relative to the terrain around you. For example, if the horizon of the ground appears flat, then you would record that the site has a 0% slope.
9. **Community Structure**: Record an ocular estimate of the percentage each forest structure layer (i.e. tree, shrub, herbaceous layer) occupies. For example, tree cover is measured by projecting an imaginary shape encompassing the crown of the tree onto the ground (think shading). Densely growing trees would be 80-100% cover, whereas very

sparsely growing trees generally would be 20% or less cover. Shrub cover includes woody species that do not reach tree height. Herbaceous cover comprises flowers, grasses, or other plants that are not woody. Leaf litter cover is the percentage of dead material such as leaves, branches, and tree bark that covers the ground. Bare soil cover includes all exposed soil not covered by plants or dead material. Consider each layer on its own. The total for all layers combined can be greater than 100%.

10. Photopoints: If you are able, take a photograph or multiple photographs of the site. Record a description, to the best of your ability, on the camerapoint (where you are standing to take the photograph) and the photopoint (the direction in which you are taking the photograph). GPS points and cardinal directions (N, NE, etc) are helpful if you have access to a GPS unit and/or a compass. If you have sufficient time, it is best to position the camerapoint location a few feet from the main monarch cluster tree and take photopoints in every cardinal direction (N, NE, E, SE, S, SW, W, NW). Email or send the photos to The Xerces Society along with this form.

11. Overall Site Sketch: Draw as much information as you can including monarch cluster trees, trees within the grove in which monarchs are not roosting, buildings, trails, streams/rivers, adjacent roads or highways, signs, areas with nectar plants, and open areas.

12. Please return completed habitat assessment forms to wmtc@xerces.org or The Xerces Society, 628 NE Broadway St, Suite 200, Portland, OR.

Monarch Overwintering Habitat Assessment Equipment List

- Data sheets
- Clipboard (helpful but not required)
- Pen or pencil
- Binoculars (to monitor monarchs)
- Kestrel pocket weather meter or outdoor weather thermometer
- GPS unit or smart phone w/ GPS capability (optional)
- Clinometer or rangefinder or compass with a clinometer (optional)
- Plant Identification/Field Guide Book (optional)
- Camera (optional)
- Compass (optional)

Monarchs Observed ___ Yes ___ No

Western Monarch Overwintering Habitat Assessment (Long Form)

Please fill out as much information on this form as you can, but feel free to skip any sections for which you do not have the right equipment or you are uncertain about the question. Any information you are able to provide is valuable! Refer to the *Instructions and Definitions* on page 5 for additional information about how to fill out this data sheet.

Date _____ Site Name _____ Site ID # _____
County _____ Property Owner _____
Observers _____ Start Time _____ End Time _____
Current Land Use (i.e. State, County or National Park; State or National Forest; Golf Course; or Residential Area)

Location Information

Site Location/Directions _____

Please provide GPS coordinates of the grove's boundaries. If the grove is an odd-shaped polygon, please provide additional GPS points as needed or as a shapefile/kmz utilizing ArcGIS or Google Earth.

GPS Point of Grove's Northern corner: _____ N _____ W Accuracy (ft): _____
GPS Point of Grove's Eastern corner: _____ N _____ W Accuracy (ft): _____
GPS Point of Grove's Western corner: _____ N _____ W Accuracy (ft): _____
GPS Point of Grove's Southern corner: _____ N _____ W Accuracy (ft): _____

GPS Point of Cluster tree #1: _____ N _____ W Accuracy (ft): _____
GPS Point of Cluster tree #2: _____ N _____ W Accuracy (ft): _____

Datum of GPS Unit: ___ NAD27 ___ NAD83 ___ WGS84 ___ Unknown ___
Other, please specify (e.g., recreational GPS): _____

Weather

Cloud/Fog Cover: _____ %
Precipitation: ___ None ___ Drizzle ___ Rain ___ Downpour

Topography

Aspect: ___ N ___ NE ___ E ___ SE ___ S ___ SW ___ W ___ NW
Slope: _____ % (The data was collected: ___ with a clinometer /rangefinder or ___ by ocular estimate)

Microclimate INSIDE Overwintering Grove

Temperature (°F or C): _____
Relative Humidity: _____

Dewpoint: _____

Wind: _____ (mph or m/s or bft)

Wind Direction: ___ N ___ NE ___ E ___ SE ___ S ___ SW ___ W ___ NW

Wind OUTSIDE Overwintering Grove

Wind: _____ (please circle: mph or m/s or Bft)

Wind Direction (direction wind is coming FROM): ___ N ___ NE ___ E ___ SE ___ S ___ SW ___ W ___ NW

Wind Protection

Is there a buffer between predominant and storm winds and the cluster trees? Yes / No

Please describe the tree arrangement (including tree species) _____

Light

Do the cluster trees get morning sunlight Yes / No

Fresh Water Source

Fresh Water Source Present at the Site: ___ stream/river ___ lake/pond ___ abundant dew ___ other ___ none

About how many meters is the fresh water source from the monarch cluster trees? _____

Community Structure (total can be >100% for all layers combined)

Tree cover ____% Shrub cover ____% Herbaceous cover ____% Leaf litter layer ____%

Bare soil cover ____%

Nectar Species In Bloom

(Rate the amount per species: A= abundant; M= moderate; S= scarce)

___ no nectar species in bloom

| | | |
|---|---|--|
| <p><u>Native Species:</u></p> <p>___ Narrow leaf milkweed (<i>Asclepias fascicularis</i>)</p> <p>___ Mule fat/seep willow (<i>Baccharis glutinosa</i>)</p> <p>___ Coyote brush (<i>Baccharis pilularis</i>)</p> <p>___ Arroyo willow (<i>Salix lasiolepis</i>)</p> <p>___ Other willow (<i>Salix</i> sp.)</p> <p>___ Monkeyflower (<i>Mimulus</i> sp.)</p> <p>___ Morning glory (<i>Calystegia</i> sp.)</p> <p>___ Miner's lettuce (<i>Montia perfoliata</i>)</p> <p>___ Dune groundsel/ragwort (<i>Senecio blochmaniae</i>)</p> <p>___ Mock heather (<i>Ericameria ericoides</i>)</p> <p>___ Crisp dune mint (<i>Monardella crispera</i>)</p> <p>___ California blackberry (<i>Rubus ursinus</i>)</p> | <p><u>Native Species (cont.):</u></p> <p>___ Red alder (<i>Alnus rubra</i>)</p> <p>___ Aster (<i>Aster</i> sp.)</p> <p>___ Redclaw (<i>Escallonia</i> sp.)</p> <p>Other: _____</p> <p>_____</p> <p>_____</p> <p><u>Non-native Species:</u></p> <p>___ Blue gum (<i>Eucalyptus globulus</i>)</p> <p>___ Red gum (<i>Eucalyptus camaldulensis</i>)</p> <p>___ Black mustard (<i>Brassica nigra</i>)</p> <p>___ Unknown or other mustard (<i>Brassica</i> sp.)</p> <p>___ Common dandelion (<i>Taraxacum officinale</i>)</p> <p>___ Ox-eye daisy (<i>Chrysanthemum</i></p> | <p><u>Non-native Species (cont.):</u></p> <p>___ German ivy (<i>Senecio mikanioides</i>)</p> <p>___ Passionflower vine (<i>Passiflora</i> sp.)</p> <p>___ Bull thistle (<i>Cirsium vulgare</i>)</p> <p>___ Wild radish (<i>Raphanus sativus</i>)</p> <p>___ English daisy (<i>Bellis perennis</i>)</p> <p>___ White nightshade (<i>Solanum nodiflorum</i>)</p> <p>___ Ice plant (<i>Mesembryanthemum</i> sp.)</p> <p>___ Field bindweed (<i>Convolvulus arvensis</i>)</p> <p>___ Chrysanthemum (<i>Chrysanthemum</i> sp.)</p> <p>___ Klamath weed/tansy mustard (<i>Senecio</i> sp.)</p> <p>___ Lily-of-the-Nile (<i>Agapanthus africanus</i>)</p> <p>___ Sweet fennel (<i>Foeniculum vulgare</i>)</p> <p>___ Bottlebrush (<i>Callistemon</i> sp.)</p> <p>___ Lantana (<i>Lantana</i> sp.)</p> <p>___ Lemon (<i>Citrus limon</i>)</p> |
|---|---|--|

| | | |
|---|---|--|
| <input type="checkbox"/> Morro manzanita (<i>Arctostaphylos morroensis</i>) <input type="checkbox"/> Bottle brush (<i>Ceanothus thyrsiflorus</i>) <input type="checkbox"/> Western goldenrod (<i>Euthamia occidentalis</i>) | <i>leucanthemum</i> <input type="checkbox"/> Periwinkle (<i>Vinca major</i>) <input type="checkbox"/> Butterfly bush (<i>Buddleia</i> sp.) <input type="checkbox"/> English ivy (<i>Hedera helix</i>) | <input type="checkbox"/> Pride of madeira (<i>Echium fastuosum</i>) Other: _____ _____ _____ _____ |
|---|---|--|

How many meters is the closest nectar source from the monarch cluster trees? _____

Did you observe monarchs feeding on nectar? Yes No

If yes, which species? _____

Monarch Cluster Trees

Record the species that monarchs are actively clustering on. A cluster is considered 3 or more adjacent monarch butterflies with closed wings:

| | |
|---|--|
| <input type="checkbox"/> Blue gum (<i>Eucalyptus globulus</i>) <input type="checkbox"/> Red river gum (<i>Eucalyptus camaldulensis</i>) <input type="checkbox"/> Unknown or other Eucalyptus species (<i>Eucalyptus</i> spp.) <input type="checkbox"/> Monterey pine (<i>Pinus radiata</i>) <input type="checkbox"/> Unknown or other pine (Pinus spp.) <input type="checkbox"/> Monterey cypress (<i>Cupressus macrocarpa</i>) | <input type="checkbox"/> Coastal redwood (<i>Sequoia sempervirens</i>) <input type="checkbox"/> Coast live oak (<i>Quercus agrifolia</i>) <input type="checkbox"/> Western sycamore (<i>Platanus racemosa</i>) <input type="checkbox"/> Willow (<i>Salix</i> spp.) <input type="checkbox"/> Acacias (<i>Acacia</i> spp.) Other: _____ |
|---|--|

Tree Species Composition

Other tree species present at the site that monarchs are not clustering on:

| | |
|---|--|
| <input type="checkbox"/> Blue gum (<i>Eucalyptus globulus</i>) <input type="checkbox"/> Red river gum (<i>Eucalyptus camaldulensis</i>) <input type="checkbox"/> Unknown or other Eucalyptus species (<i>Eucalyptus</i> spp.) <input type="checkbox"/> Monterey pine (<i>Pinus radiata</i>) <input type="checkbox"/> Unknown or other pine (Pinus spp.) <input type="checkbox"/> Monterey cypress (<i>Cupressus macrocarpa</i>) | <input type="checkbox"/> Coastal redwood (<i>Sequoia sempervirens</i>) <input type="checkbox"/> Coast live oak (<i>Quercus agrifolia</i>) <input type="checkbox"/> Western sycamore (<i>Platanus racemosa</i>) <input type="checkbox"/> Willow (<i>Salix</i> spp.) <input type="checkbox"/> Acacias (<i>Acacia</i> spp.) Other: _____ |
|---|--|

Visible Disturbances within the Overwintering Site

| | |
|--|--|
| <input type="checkbox"/> Cut trees <input type="checkbox"/> Trimmed trees <input type="checkbox"/> Possibly too dense of trees (i.e. too much shade) <input type="checkbox"/> Trees diseased from pitch canker <input type="checkbox"/> Trees diseased from Eucalyptus leaf beetle <input type="checkbox"/> Trees diseased from Eucalyptus lerp psyllid <input type="checkbox"/> Trees diseased from Eucalyptus longhorn borer <input type="checkbox"/> Trees diseased from unknown source <input type="checkbox"/> Dead/dying trees from non- disease source <input type="checkbox"/> Old/aging trees <input type="checkbox"/> High visitation load <input type="checkbox"/> Erosion | <input type="checkbox"/> Cattle grazing <input type="checkbox"/> Pesticide/herbicide use at site (observed) <input type="checkbox"/> Pesticide/herbicide use at site (likely) <input type="checkbox"/> Fire destroyed a portion of site <input type="checkbox"/> Construction <input type="checkbox"/> Buildings <input type="checkbox"/> Pavement <input type="checkbox"/> Parking lot <input type="checkbox"/> Mowing/plowing of nectar plants <input type="checkbox"/> Railroad tracks <input type="checkbox"/> Extensive trails <input type="checkbox"/> Road (within the site) Other: _____ |
|--|--|

| | |
|---|-------|
| <input type="checkbox"/> Campsite <input type="checkbox"/> Picnic area | _____ |
|---|-------|

Visible Disturbances in the Landscape (Outside of the Overwintering Site)

| | |
|--|---|
| <input type="checkbox"/> Roads/Highways <input type="checkbox"/> High vehicle traffic area <input type="checkbox"/> Housing Developments <input type="checkbox"/> Shopping Malls/Restaurants <input type="checkbox"/> Pavement | <input type="checkbox"/> Parking lot <input type="checkbox"/> Pesticide/herbicide use in landscape (observed) <input type="checkbox"/> Pesticide/herbicide use in landscape (likely) <input type="checkbox"/> Construction Other: _____ |
|--|---|

Possible Future Threats

| | |
|---|---|
| <input type="checkbox"/> High possibility that overwintering trees will be cut <input type="checkbox"/> Site might become too dense/shady in the future <input type="checkbox"/> Site might not offer enough wind protection in the future <input type="checkbox"/> Proposed housing development | <input type="checkbox"/> Proposed expansion of facilities or buildings within the site Other: _____ _____ |
|---|---|

Is the site protected by staff/docent presence? Yes No

Describe the disturbances/threats in greater detail, if possible. (For example, if you observed dead/dying trees or cut trees at the site, how many did you observe and how important are these trees to the site? If the site is affected by erosion, what is the cause of the erosion?) _____

Photopoints

Cameraspoint Description: _____

Photopoint #1 Description: _____

Photopoint #2 Description: _____

Notes

Overall Site Sketch (here or on the back of the datasheet)

A shortened version of this data sheet is available at www.westernmonarchcount.org