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 field for which you do not have the right equipment or you are uncertain about the answer. Refer to the document ***Western Monarch Overwintering Habitat Assessment Instructions*** for more information about how to fill out this data sheet.

General Site Information

Date 12/2/2020 Site Name Natural Bridges State Park Site ID # _____
County Santa Cruz Property Owner CADPR
Observers Bill Henry, Allison Wickland Start Time 10:30 am End Time 12 noon
Current Land Use(s) (e.g., park, residential, agricultural, industrial, golf course)
_____

Location Information

Site Location/Directions 300 feet east of NB Visitor Center
_____

Please provide GPS coordinates of the grove's boundaries. If the grove is an odd-shaped polygon or many cluster trees, please provide additional GPS points as needed, draw a map on the back of this sheet, or make a shapefile/kmz using Google Earth or GIS products.

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 __ Smartphone __ Unknown __

Weather and Microclimate

Cloud/fog cover: 0 %
Precipitation: ☑ none ☐ drizzle ☐ rain ☐ downpour

Microclimate INSIDE the grove, near the cluster trees
Temperature (°F or C): _____
Relative Humidity: _____
Average wind speed (mph, m/s or bft) _____ Maximum wind speed (mph, m/s or bft) _____
Wind Direction (direction wind is coming FROM), circle what applies: N, NE, NW, S, SE, SW, W, E

Wind OUTSIDE the grove, away from the cluster trees
Temperature (°F or C): 68 F
Relative Humidity: _____
Average wind speed (mph, m/s or bft) _____ Maximum wind speed (mph, m/s or bft) _____
Wind Direction (direction wind is coming FROM), circle what applies: N, NE, NW, S, SE, SW, W, E

Monarchs Observed? Yes / No yes
If so, is there an associated count data sheet? Yes / No no

If not, roughly how many monarchs were observed? 500 off main boardwalk on dirt path

Habitat Information

1. Is there a wind buffer between the cluster trees and the edge of the grove? ☑ Yes ☐ No ☐ No current cluster trees. If so, in what directions (circle all that apply)? N, NE, NW, S, SE, SW, W, E All sides

2. Describe the grove's tree arrangement (e.g., u-shape, linear along a drainage, dense grove with scattered openings, etc.) Dense core grove of Eucalyptus globulus along a minor drainage with gap/openings to the North and large opening with a pond/wetland area to the South.

3. What tree species are present? Eucalyptus globulus in inner grove and Monterey pine, coast live oak, and Monterey cypress in outer edges of grove.

4. Do the cluster trees get direct sunlight? ☑ Yes ☐ No ☐ No current cluster trees. If so, during what times of day (circle those that apply)? Morning / Midday / Afternoon / Other Filtered mid-day sun

5. Are there dead/diseased/hazard trees in the grove? ☑ Yes ☐ No
If so, please describe their location, # of affected trees, and species Large Eucalptus with sparse foliage (due to leaf beetle?) to S/E of cluster
Also a lot of downed debris/slash on forest floor

6. Is there fresh water (including dew) available nearby? ☑ Yes ☐ No
If so, what is the source? (check all that apply) Dew ☑ Stream ☐ Pond ☑ Lake ☐ Other pond/wetland
How far away is it from the cluster trees? (meters) The pond is <20 meters away from where monarch are clustering and when heavy rains area floods

7. Are nectar plants currently blooming nearby? ☑ Yes ☐ No.
Record what species are present (check all that apply). If possible, rate the relative amount of blooms available to monarchs per species: A= abundant; M= moderate; S= scarce)

Native Species:	Native Species (cont.):	Non-native Species (cont.):
__Narrow leaf milkweed (*Asclepias fascicularis*)	__ Red alder (*Alnus rubra*)	M English ivy (*Hedera helix*)
__ Mule fat/seep willow (*Baccharis glutinosa*)	__ Aster (*Aster* sp.)	S German ivy (*Senecio mikanioides*)
M Coyote brush (*Baccharis pilularis*)	__ Seaside fleabane (*Erigeron glaucus*)	__ Passionflower vine (*Passiflora* sp.)
__ Arroyo willow (*Salix lasiolepis*)	Other: Marsh baccharis	__ Bull thistle (*Cirsium vulgare*)
S Other willow (*Salix* sp.)		S Wild radish (*Raphanus sativus*)
S Monkeyflower (*Mimulus* sp.)		__ English daisy (*Bellis perennis*)
__ Morning glory (*Calystegia* sp.)	Non-native Species:	__ White nightshade (*Solanum nodiflorum*)
__ Miner's lettuce (*Montia perfoliata*)	__ Tropical milkweed (*Asclepias curassavica*)	S Ice plant (*Mesembryanthemum* sp.)
__ Dune groundsel/ragwort (*Senecio blochmaniae*)	M Blue gum (*Eucalyptus globulus*)	__ Field bindweed (*Convolvulus arvensis*)
__ Mock heather (*Ericameria ericoides*)	M Red gum (*Eucalyptus camaldulensis*)	__ Chrysanthemum (*Chrysanthemum* sp.)
__ Crisp dune mint (*Monardella crispa*)	S Black mustard (*Brassica nigra*)	__ Klamath weed/tansy mustard (*Senecio* sp.)
S California blackberry (*Rubus ursinus*)	__ Unknown or other mustard (*Brassica* sp.)	__ Lily-of-the-Nile (*Agapanthus africanus*)
__ Manzanita (*Arctostaphylos* sp.)	S Common dandelion (*Taraxacum officinale*)	__ Sweet fennel (*Foeniculum vulgare*)
S Blue blossom (*Ceanothus thyrsiflorus*)	__ Ox-eye daisy (*Chrysanthemum leucanthemum*)	__ Bottlebrush (*Callistemon* sp.)
S Western goldenrod (*Euthamia occidentalis*)	__ Periwinkle (*Vinca major*)	__ Lantana (*Lantana* sp.)
__ Bluedicks (*Dichelostemma capitatum*)	S Butterfly bush (*Buddleia* sp.)	__ Lemon (*Citrus limon*)
		__ Pride of madeira (*Echium fastuosum*)
		Other: Lonicera

8. Roughly, how close is the closest nectar source from the monarch cluster trees? (meters) 0

9. Did you observe monarchs feeding on nectar? Yes / No yes
If yes, which species? Eucalyptus globulus

10. Record the tree species that monarchs are clustering on (check all that apply).

✔ Blue gum (*Eucalyptus globulus*)	☐ Coastal redwood (*Sequoia sempervirens*)
X Red river gum (*Eucalyptus camaldulensis*)	☐ Coast live oak *(Quercus agrifolia*)
☐ Unknown or other Eucalyptus species (*Eucalyptus spp.*)	☐ Western sycamore (*Platanus racemosa*)
☐ Monterey pine (*Pinus radiata*)	☐ Willow (*Salix spp*.)
☐ Unknown or other pine (Pinus spp.)	☐ Acacias (*Acacia spp*.)
☐ Monterey cypress *(Cupressus macrocarpa*)	Other: _____

11. Record other tree species present at the site that monarchs are <u>not</u> clustering on (check all that apply).

☐ Blue gum (*Eucalyptus globulus*)	☐ Coastal redwood (*Sequoia sempervirens*)
☐ Red river gum (*Eucalyptus camaldulensis*)	✔ Coast live oak *(Quercus agrifolia*)
☐ Unknown or other Eucalyptus species (*Eucalyptus spp.*)	☐ Western sycamore (*Platanus racemosa*)
✔ Monterey pine (*Pinus radiata*)	☐ Willow (*Salix spp*.)
☐ Unknown or other pine (Pinus spp.)	☐ Acacias (*Acacia spp*.)
✔ Monterey cypress *(Cupressus macrocarpa*)	Other: _____

12. Estimate the community structure composition (total can be >100% for all layers combined).
Tree cover 50 % Shrub cover 95 % Herbaceous cover 10 % Leaf litter layer 80 %
Bare soil cover 10 %

13. Record any threats or disturbances you observe at the site (check all that apply).

X Storm damage	☐ Cattle/burro/other livestock grazing
☐ Cut trees	☐ Pesticide use at site (observed)
☐ Trimmed trees	☐ Pesticide use at site (likely)
✔ Possibly too dense of trees (i.e. too much shade)	X Fire damage
X Trees diseased from pitch canker	☐ Construction
✔ Trees diseased from Eucalyptus leaf beetle	X Buildings
X Trees diseased from Eucalyptus lerp psyllid	x Pavement
☐ Trees diseased from Eucalyptus longhorn borer	☐ Parking lot
☐ Trees diseased from unknown source	☐ Mowing/plowing of nectar plants
x Dead/dying trees from non- disease source	☐ Railroad tracks
✔ Old/aging trees	✔ Extensive trails
☐ Utility maintenance	X Road (within the site)
✔ High human visitation load	Other: Flooding beneath monarchs; new fencing so people do not make trails; remove fire hazards/slash.
✔ Erosion	
X Campsite	

14. Describe the disturbances/threats in greater detail, if possible. For example, if you observed dead/dying trees, how many did you observe and are they cluster trees? If the site is affected by erosion, what is the cause of the erosion? During heavy rains, the pond floods and water rises on the dirt path below monarchs -this could discourage them from clustering there. Regulating the outflow of this water could help. The understy of the grove is dense and a fire hazard. Clearing needs to be done in a way that does not then enourage off trail use by visitors.

15. Record any threats or disturbances you observe OUTSIDE but nearby the site (check all that apply).

[X] Roads/Highways	[ ] Parking lot
[ ] High vehicle traffic area	[ ] Pesticide/herbicide use in landscape (observed)
[X] Housing Developments	[✔] Pesticide/herbicide use in landscape (likely)
[ ] Shopping Malls/Restaurants	[ ] Construction
[x] Pavement	Other: _____

16. Record possible future threats that seem likely to affect this site (check all that apply).

[ ] High possibility that overwintering trees will be cut	[ ] Proposed expansion of facilities or buildings within the site
[✔] Site might become too dense/shady in the future	Other: _____
[ ] Site might not offer enough wind protection in the future	_____
[ ] Proposed housing development	

17. Is there a staff and/or docent presence at the site? Yes / No yes
If so, from what agencies/groups (list all that apply)? CADPR

Photopoints

Camerapoint Description: Butterfly Tree
Ivy in Core Grove

Photopoint #1 Description: Pond edge and trail
Oak competing with 25 Year old Monterey Cypress

Photopoint #2 Description: _____

Notes

Brush clearing needs to be done for the entire area. Area of dirt trail over roots safety hazard. Regulate flow of water in pond area. Priority area of site has changed now that monarchs are clustering out of boardwalk zone. Planting of early spring nectar species like ribes and ceonoth

Overall Site Sketch

Provide a sketch here or on the back of the datasheet; utilize aerial maps, ArcGIS, Google Earth, Google Maps, or other programs to provide a more detailed map of the site and its major features , including cluster locations, if possible).

See Plan