RESTORATION PLAN

for

Monarch Butterfly Aggregation Site
Sycamore Canyon Campground
Point Mugu State Park

Big Sycamore Canyon Aggregation Site (Xerces #3194)

Ventura County, California

Prepared for

California Department of Parks and Recreation

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Cover photo: Sycamore Canyon Campground, October 27, 2020. Kyle Nessen, A&M

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SECTION 1

Project Overview

1.1 PURPOSE OF THIS PLAN

This Restoration Plan has been prepared for Point Mugu State Park to provide guidance for the Restoration of a monarch butterfly (*Danaus plexippus*) aggregation site and monarch butterfly habitat located at Sycamore Canyon Campgound. This document provides the following:

1. A description of Existing Conditions at the Aggregation Site and other potential restoration and enhancement sites (see Section 2 and Figures 1 to 3).
2. Restoration Plan General Provisions that identify areas where the Restoration Plan will be implemented, a brief overview of equipment to be used, disposal and storage of any demolition and construction materials and debris, soil stabilization and erosion control methods.
3. Cultural Materials Plan, to assure all activities are conducted in a way that respects the history and cultural significance of the Chumash (see Section 4 below).
4. Erosion Control Plan, to govern the activities in a manner that does not result in erosion during and following restoration activities (see Section 5 below).
5. Restoration Plan, to restore habitat in the monarch butterfly aggregation site and other areas where habitat can be enhanced to protect the aggregation site and create additional monarch butterfly habitat.
6. Monitoring Plan, to ensure successful implementation of the restoration efforts (see Section 7 below).
7. Protected Species Avoidance and Minimization Measures to prevent impacts to rare, sensitive, or listed species.

1.2 RESTORATION PLAN SUMMARY

This Plan provides guidance for restoration of the Point Mugu State Park monarch butterfly aggregation site, and five additional areas that can provide overwintering habitat for roosting and clustering monarch butterflies within Sycamore Canyon Campground (Figure 4). The historical aggregation site has degraded due to tree falls in recent years and is in need of restoration. California sycamore trees (*Platanus racemosa*) anchor the aggregation site, and their high canopy creates habitat attractive to overwintering monarch butterflies. The breakdown of several large sycamore trees has reduced protection at the site. Filling gaps in the canopy cover along Sycamore Canyon Creek will add protection and habitat for monarch butterflies. Because sycamore trees are the anchor species for the aggregation site, this plan anticipates a long-term recovery of habitat dependent on the survival and growth of native sycamores.

The aggregation site is known by The Xerces Society as Site #3194, Big Sycamore Canyon, Point Mugu State Park in Ventura County. A high count of 7,000 monarchs was reported in 1997, 5,000 in 1998, and much lower numbers since then. In 2017 through 2020, no monarchs were reported at

the site. Improvements to the site for monarch butteflies include planting trees to reduce wind velocity and increase dappled shaded areas with vertical structure that monarchs use for clustering during the overwintering period.

Restoration of aggregation habitat can be achieved by planting native trees, shrubs, and pollinator nectar plants. Activities recommended in this plan include:

- Installation of native trees in select locations.
- Seeding and installation of native nectar plants.
- Clean-up of one fallen tree.
- Targeted hand removal with potential herbicide application to control invasive weeds.
- Maintenance and monitoring.

1.3 RESTORATION JUSTIFICATION

Areas designated for restoration include the historical monarch butterfly aggregation site and gaps in canopy cover that allow winds to penetrate the grove and sunlight to strike the ground in areas that were likely at one time dense closed canopy riparian habitat. In addition to the known aggregation site, restoration locations were selected where tree falls created gaps or where existing trees are in decline. Natural recruitment of native riparian plants, California sycamore being dominant in Sycamore Canyon (Figure 3), has most likely been reduced due to disturbance that limited seedling success. Therefore, the age structure of sycamore trees in the campground are skewed toward very mature trees.

Sustaining a viable monarch butterfly aggregation site for the long-term includes expanding age classes of trees to include saplings and young trees. A few sycamore saplings are present along the top of bank at the aggregation site, however the number of saplings is not great enough to restore the site. Five additional restoration areas were chosen to fill gaps, or to begin growing replacement trees to sustain high canopy cover for butterflies. Mid-story cover will also be improved by planting native California black walnut (*Juglans californica*) and blue elderberry (*Sambucus nigra* subsp. *caerulea*). Mid-story vegetation reduces wind speed in the grove during the overwintering period and enhances protection for monarch butterfly clusters. A height range of vegetaton allows monarch aggregation clusters to move up and down in the site, adjusting as temperatures, wind, and rain vary during the season.

Although monarchs often return to specific locatons and even specific branches, they are known to move within a grove as conditions vary through the overwintering season. Therefore, having multiple protected areas within an aggregation grove provides a greater chance that monarch aggregations will form and persist through the season.Restoration work in selected areas will increase protection at the site, and provide additional opportunities for aggregation formation.

SECTION 2

Existing Conditions

2.1 PROJECT LOCATION

The project is located at Sycamore Canyon Campground in Point Mugu State Park, 9000 W. Pacific Coast Highway, Malibu, California (Figure 1). The project is within the campground and along Sycamore Canyon Creek west of the campground (Figure 2). The campground site is centered on approximately N 34.0738°, W 119.0148° in the Point Mugu USGS 7.5 minute series map. Restoration efforts would be conducted in one to six locations in the campground area (Figure 4) and are prioritized as resources are available.

2.1.1 Site History

Point Mugu State Park was established in 1966 with the purchase of approximately 13,300 acres at the far west end of the Santa Monica Mountains. Park property includes Big Sycamore Canyon that runs from the ocean north to the base of Boney Mountain. The canyon contains a portion of the ancient Chumash trail route between the large Chumash village at Point Mugu and the significant village of Satwiwa at the pass over the Santa Monica Mountains. Chumash occupied the area for at least 10,000 years and many camps and villages were located throughout the area. The village at Point Mugu was one of the largest along the California Coast and was a primary departure point for travel by Tomol to the Channel Islands and coastal trade routes.

A monarch butterfly aggregation site occurs at Sycamore Canyon campground (Exhibit A). In 1986, Chris Nagano an entomologist with the Natural History Museum of Los Angeles County stated, “One of the best places in Southern California to observe the arriving monarchs is near the campground in Big Sycamore Canyon at Point Mugu State Park” (LA Times, Oct. 11, 1986).

EXHIBIT A. AGGREGATION LOCATION

Orange outline highlights the aggregation approximate location at Sycamore Canyon Campground described by the Monarch Program. It is west of campsite spaces 28, 29, and 30. See website: http://www.themonarchprogram.org/pt-mugu-state-park-ventura-county/

The Xerces Society lists the monarch butterfly aggregation as Big Sycamore Canyon, Pt. Mugu State Park, Xerces site #3149. The Xerces Society Western Monarch Thanksgiving Count documented 7,000 monarch butterflies at the Big Sycamore Canyon campground in 1997. The aggregation site was identified by David Marriot, The Monarch Project, as occurring along Sycamore Creek west of campsites. Monarch aggregations have been observed at the campground during the Thanksgiving Count over the years since 1997.

Early observations noted thousands of monarchs in the early 1970s, late 1980s and in the 1990s. More rigorous, annual monitoring of monarch numbers at California sites began in 1997 with the inception of the Western Monarch Thanksgiving Count. The Thanksgiving Count is a community science-based monitoring effort coordinated by the Xerces Society. Counts are conducted using a standard protocol during a three-week period centered on the Thanksgiving holiday each year. In

the winter of 2016-2017, a second count period was added to the monitoring effort, which covers a two-week period in early January, beginning the weekend before the New Year's holiday. Data obtained from these counts are incorporated into the Xerces Society Western Monarch Overwintering Sites Database and shared annually with the California Natural Diversity Database (within the California Department of Fish and Wildlife).

Over the next 30 years, following the 1997 census, counts diminished to 5,000 in 1998 and then dropped precipitously (Table 1). Only 13 monarchs were counted in 2016 and none since then.

TABLE 1. THANKSGIVING AND NEW YEAR'S COUNTS FOR SYCAMORE CANYON

The Xerces Society Thanksgiving Counts began in 1997 using standardized counting protocol. The New Year's Count began in 2016-2017. Xerces Society Western Monarch Thanksgiving Count, 2021. Western Monarch Thanksgiving Count Data, 1997-2020. Available at www.westernmonarchcount.org.

Year	Thanksgiving Count	New Year's Count
1997	7,000	n/a
1998	5,000	n/a
1999	600	n/a
2000	90	n/a
2001	15	n/a
2002	10	n/a
2003	110	n/a
2004	-	n/a
2005	-	n/a
2006	-	n/a
2007	10	n/a
2008	85	n/a
2009	-	n/a
2010	200	n/a
2011	10	n/a
2012	0	n/a
2013	3	n/a
2014	15	n/a
2015	8	n/a
2016	13	-
2017	0	0
2018	-	0
2019	0	0
2020	0	-

2.2 MONARCH AGGREGATION SITE CONDITION

The most recent report of monarch butterflies at Sycamore Canyon Campground is from 2016 when 13 butterflies were observed (Table 1). Habitat at the campground includes a significant canopy of sycamore trees (Figure 3) intermingled with California black walnut, and some mature blue elderberry. Native and non-native vegetation form the grove understory (See Table 2), and campsites include bare ground. Adjacent camp roadways and parking spaces are paved. Recent fires in the Malibu area spared Sycamore Canyon Campground and ancient sycamore trees, California walnut trees, and very large blue elderberry shrubs. Although fire came to the edge of the campground in 2013 during the Spring Fire, and again close in 2018 during the Woolsey Fire, the campground itself and its large mature trees were not consumed. Well developed vegetation along the creek corridor includes younger sycamores, arroyo willow (*Salix lasiolepis*), native walnut, and laurel sumac (*Malosma laurina*) shrubs. Loss of shrub vegetation on adjacent hillsides have increased wind velocity in the campground area along Sycamore Canyon Creek.

Over time, recovery of shrub vegetation that burned on the canyon slopes above the sycamore grove will increase wind turbulence at the site and reduce peak wind speeds in the canyon bottom during extreme wind events. Lack of developed vegetation along hills slopes may have reduced protection in the canyon bottom. Recovery of hill slope vegetation and supplemental plantings in the canyon bottom are likely to improve conditions at butterfly clustering spots in the grove.

Aggregations of monarch butterflies have been documented at a specific group of trees adjacent to Sycamore Canyon Creek (Figures 3 and 4), west of campsite spaces 28, 29, and 30, although the entire grove at the Campground contributes to the presence of suitable conditions for the aggregation. Very large sycamore trees and large shrubs throughout the campground reduce wind speed and weather extremes. Trees and shrubs provide roosting, basking, and patrolling habitat for monarch butterflies. A canopy map identifies sycamore trees in the campground area (Figure 3) and shows the extensive cover by sycamores, including at the historical aggregation site. These large sycamores anchor the aggregation location by providing high canopy cover and dappled light during the fall and early winter before loosing their leaves. Some sycamore trees are in decline or have fallen in the aggregation site (see section 6.1 and Photos 3a and 3 b for more detail). Photo 1a and 1b) creating gaps in the protective wind break and allowing more light and heat to enter the grove. Loss of specific trees in the aggregation site clearly has diminished the attractiveness of the site for both autumnal and overwintering butterfly aggregations.

Native trees and shrubs are recovering along the boundaries of the campground, particularly along Sycamore Canyon Creek where arroyo willow and mule fat (*Baccharis sailicifolia*) are established. There are young sycamore trees present in the creek corridor, although many have signs of disease that may be a result of drought conditions and water stress (Photos 2a and 2b taken October 2020). The leaf condition suggest anthracnose infection, a common malady of native California sycamore trees. This disease usually is expressed at first leaf out of sycamores in the spring, resulting in a die back and then a second event with healthier leaf growth. However, it can occur during other times of the year when conditions are humid and promote fungal growth. It is usually not fatal to the tree but does reduce vigor and growth. Mature trees in the grove did not express the same condition during fall and March 2021 visits.

Photo 1. Photos 1a and 1b. Several sycamore large branches and trees have fallen in the grove. Long-term sustainability of the grove depends on replacing trees.

Photo 2. Photo 2a and 2b. Many young sycamore trees along portions of Sycamore Canyon Creek show signs of anthracnose disease. Photos taken October 23, 2020.

TABLE 2. VASCULAR PLANT LIST OBSERVED AT SYCAMORE CANYON CAMPGROUND

Common Name	Scientific Name	Special Status	Origin
Trees – 5 Species			
California black walnut	*Juglans californica*	None	Native
Myoporum	*Myoporum laetum*	None	Introduced
California sycamore	*Platanus racemosa*	None	Native
Coast live oak	*Quercus agrifolia*	None	Native
Arroyo willow	*Salix lasiolepis*	None	Native
Shrubs - 19 Species			
Coastal sagebrush	*Artemisia californica*	None	Native
Coyote brush	*Baccharis pilularis*	None	Native
Mule fat	*Baccharis salicifolia* subsp. *salicifolia*	None	Native
California brittlebush	*Encelia californica*	None	Native
Coastal buckwheat	*Eriogonum cinereum*	None	Native
Saw-toothed goldenbush	*Hazardia squarrosa*	None	Native
Our lord's candle	*Hesperoyucca whipplei*	None	Native
Toyon	*Heteromeles arbutifolia*	None	Native
Giant coreopsis	*Leptosyne gigantea*	None	Native
Chaparral bush mallow	*Malacothamnus fasciculatus*	None	Native
Laurel sumac	*Malosma laurina*	None	Native
Tree tobacco	*Nicotiana glauca*	None	Introduced
Prickly pear	*Opuntia littoralis*	None	Native
Redberry	*Rhamnus crocea*	None	Native
Lemonade berry	*Rhus integrifolia*	None	Native
Castor bean	*Ricinus communis*	None	Introduced
California blackberry	*Rubus ursinus*	None	Native
Blue elderberry	*Sambucus nigra* subsp. *caerulea*	None	Native
Poison oak	*Toxicodendron diversilobum*	None	Native
Forbs - 15 Species			
Deerweed	*Acmispon glaber*	None	Native
Western ragweed	*Ambrosia psilostachya*	None	Native

Common Name	Scientific Name	Special Status	Origin
Mugwort	*Artemisia douglasiana*	None	Native
Brickelbush	*Brickellia californica*	None	Native
Poison hemlock	*Conium maculatum*	None	Introduced
Missouri gourd	*Cucurbita foetidissima*	None	Native
Umbrella sedge	*Cyperus eragrostis*	None	Native
Jimsonweed	*Datura wrightii*	None	Native
California fuschia	*Epilobium canum*	None	Native
Fennel	*Foeniculum vulgare*	None	Introduced
Telegraph weed	*Heterotheca grandiflora*	None	Native
Wild mustard	*Hirschfeldia incana*	None	Introduced
Horehound	*Marrubium vulgare*	None	Introduced
Broad-leaved cattail	*Typha latifolia*	None	Native
Stinging nettle	*Urtica dioica*	None	Native
Grasses - 4 Species			
Giant rye	*Elymus condensatus*	None	Native
Foxtail brome	*Bromus madritensis* subsp. *rubens*	None	Introduced
Annual beard grass	*Polypogon monspeliensis*	None	Introduced
Smilo grass	*Stipa miliacea* var. *miliacea*	None	Introduced

SECTION 3

General Provisions

Restoration efforts will be conducted in the historical monarch butterfly aggregation location and at up to five additional locations (Figure 4) that will improve wind protection and create additional potential clustering sites in the campground area. Restoring the known aggregation site is the top priority, and restoration of othe gaps in tree cover within the campground grove will improve monarch habitat. The entire grove of trees in the campground contribute to the monarch butterfly habitat, and will be protected.

Heavy equipment will not be used for the project. No grading is required, and only hand tools will be necessary. Soil disturbance will be limited to the minimum necessary for planting container material (See Section 6.4.5 Container Planting Installation for details). Since no grading is involved in this restoration plan, and all soil disturbed for plantings will be covered in mulch generated onsite, no temporary run-off will occur as a result of the restoration. This project is not expected to result in any erosion issues.

Work will not adversely impact resources protected under the Coastal Act and the County Local Coastal Plan (LCP), including but not limited to: geological stability, integrity of landforms, water quality, cultural/archeological resources and existing native vegetation. Work will not alter natural flow of drainages and will not adversely affect fish or wildlife resources protected under California Department of Fish and Wildlife (CDFW). Trucks and support vehicles will be parked within the campground on existing roadways and will not need to enter restoration areas.

Live tree removal is not planned. Trimming may be recommended for some trees that have toppled but remain alive. All cuttings including branches and tree trunks shall be removed and either chipped and distributed within the State Park or removed to an appropriate staging or disposal location. Chipped material will not be placed in locations where it could wash into drainages. Castor bean, fennel, and other introduced invasive weeds shall not be used as mulch – waste generated from weed removal will be hauled to a legal landfill or to an appropriate compost facility.

No demolition or construction will be conducted for the project. No hazardous materials will be generated by the restoration work.

Areas where ground disturbance occurs shall be smoothed with hand tools and mulched using material generated onsite.

Prior to the initiation of restoration activities, the boundaries of the Restoration Areas shall be physically delineated in the field, using temporary measures such as fencing, stakes, colored flags, or colored tape. All delineation materials shall be removed when no longer needed and verification of such removal shall be provided in the annual monitoring report that corresponds to the reporting period during which time the removal occurred. Temporary irrigation proposed for the project will be removed following three (3) years of use or when plants are established. Since restoration areas are adjacent to camp sites, signage and fencing may be necessary to protect restoration areas from disturbance until plants are well established.

SECTION 4

Cultural Materials Plan

Restoration work will include minimal soil disturbance to install plantings, broadcast seeding, hand weeding, and limited herbicide application. California State Parks will conduct cultural resource studies and Native American consultation prior to project implementation.

SECTION 5

Erosion Control Plan

No erosion is anticipated to occur as a result of the implementation of this project. Soil disturbance within the Restoration Area shall be limited to holes for tree planting in areas within the existing grove. Native tree and shrub plantings shall be conducted with minimal disturbance of soils and shall include mulching around each planting to cover the ground (3 inches of mulch). This project is anticipated to help with the long-term erosion control within the Restoration Areas as native outplantings and seeding will help provide soil stabilization over time.

Since no grading is involved in this restoration plan, and all soil disturbed for plantings will be covered in mulch, no temporary run-off will occur as a result of the restoration.

In the event that erosion control is necessitated, requirements below shall be followed:

- Identify and delineate on Plan map(s) locations of all temporary erosion control measures.
- If erosion control materials are required, biodegradable fiber rolls will be installed around the perimeter of the exposed soil surface.
- All erosion control materials shall be comprised entirely of biodegradable materials, including the material designed to encase fiber rolls.
- Erosion control materials shall be designed not to trap or ensnare wildlife and shall not contain plastic netting, including "photodegradable" plastic (CASQA 2012).
- Erosion control shall remain in place and be maintained until permanent erosion control measures (i.e. seeding) are established.
- All temporary erosion control measures shall be removed from the Restoration sites once permanent vegetation is established.

SECTION 6

Restoration Plan

Monarch butterflies utilize groves that provide wind protection, dappled light at the clustering and patrolling flight locations, over-hanging branches for clustering, and opportunities for clustering at different heights depending on temperature. Monarch butterfly flight patterns during aggregation season include directed flight to aggregation areas and then patrolling flight at potential aggregation sites. Patrolling behavior is cruising flight back and forth in open areas along a windrow grove, such as within and around well-devleoped tree canopies at the Sycamore Canyon Campground where trees create protected roosting places. Patrolling behavior provides monarchs the opportunity to assess clustering site quality. Some monarch aggregation sites are completely surrounded with trees while others, like Sycamore Canyon provide shelter along stream corridors or on the lee ward site of multi-level vegetation. The upper canopy composed of sycamore trees and with California black walnut, willows, large elderberries, and other shrubs create sheltering habitat that historically promoted aggregations. Improving wind protection and increasing native vegetation will improve the site and could provide multiple locations where monarchs can form aggregations.

Native tree plantings that supplement existing habitat and enhance the site (Figure 4) will consist of California sycamore trees, and California black walnut grown from local stock. Shrub plantings will be limited to native species already present within the local watershed. Coast live oak is a minor component of native vegetation in the grove and they are not included in the planting plan. Tree density is recommended to provide long-term structure and not over plant (See Section 6.4.3 and 6.4.4), however some attrition is expected. The number of plants listed in Table 6 may be adjusted at the time of planting depending on recruitment of native plants already occurring within the area.

Plant propagules and seeds must come from local, native stock from the property, or, if this is determined by the project botanist to not be possible, plant propagules and seeds shall come from the region as close as possible to the project. It is especially important to not introduce sycamore trees from other regions as they can erode heritable adaptative traits of local native trees. (Johnson et al. 2016).

6.1 RESTORATION AREAS

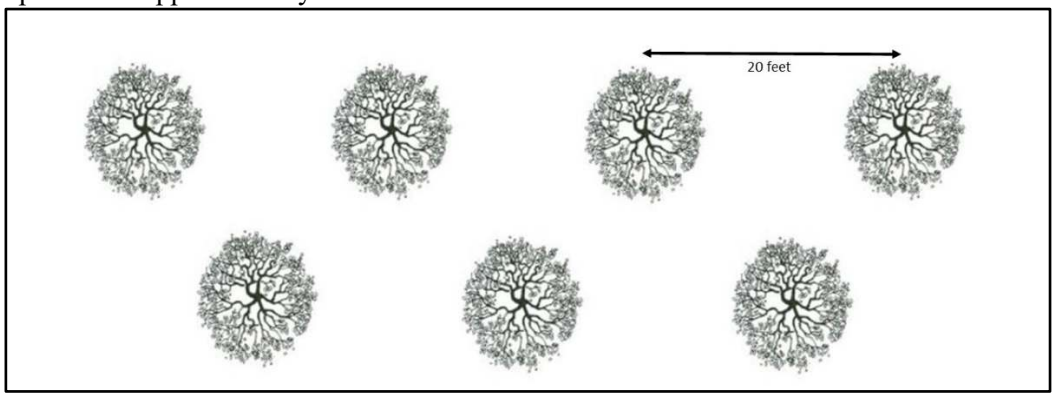
Restoration areas are selected to improve shelter for monarch butterfly aggregations by increasing wind protection, and improving micro climate at the aggregation site. The aggregation site and five other locations are delineated where planting trees and/or shrubs will increase protection from wind, expand patrolling and clustering opportunities, and provide nectar during the overwintering period (Figure 4). If all five recommended locations for restoration cannot be utilized initially, the priority for restoration activities follows the order listed below:

1. The historical aggregation site
2. Area B, and nectar plants
3. Area A
4. Area C
5. Area D
6. Area E

Each restoration site is described below with recommended planting numbers and general planting areas (and shown on Figure 4). Specific tree locations for planting are to be flagged in the field by a monarch butterfly expert in consulation with State Parks staff. Planting in a staggered row (Exhibit B) is recommend to provide adequate spacing for large mature trees while creating good wind protection when trees are relatively young (within ten years). It also anticipates some mortality of planted trees.

EXHIBIT B. STAGGERED TREE PLANTING CONFIGURATION

Space trees approximately 20 feet on center.



Sycamores planted in campground locations that can be protected would improve habitat for monarch butterflies and benefit the grove by increasing tree age diversity. Most of the sycamores in the campground are very old. To improve sustainability of sycamore dominated habitat, and the conditions that created a monarch buttefly aggregation habitat, we recommend planting sycamores throughout the campground as feasible. We recommend a total of 52 California sycamores, 32 California black walnuts, and 21 blue elderberries to be distributed around the aggregation site, five additional restoration sites, and optional planting areas as they become available around the campground as determined by State Parks staff (Table 3).

TABLE 3. TREES AND SHRUBS TO PLANT IN SYCAMORE CANYON CAMPGROUND

Location	California Sycamore	California Black Walnut	Blue Elderberry
Big Sycamore Aggregation Site	14	2	0
Area A	4	3	1
Area B	8	4	5
Area C	10	4	2
Area D	5	2	3
Area E	5	0	0
Sub-total	**46**	**15**	**11**
Optional Planting	6	17	10
Grand Total	**52**	**32**	**21**

6.1.1 Aggregation Site

Goal: Replace canopy and mid-story protection lost to tree falls, long-term addition of replacement trees, restore aggregation site function along creek corridor.

Description: Big Sycamore Canyon monarch butterfly aggregation site (Xerces site #3194) is located along Sycamore Canyon Creek west of camp spaces 28, 29, and 30 (Figure 4). The aggregation site was created by a natural stand of sycamore trees along both creek banks just north of a bend in the creek (Exhibit A and Figure 3). Sycamores formed a high canopy that reached over the creek providing branches for cluster formation, dappled light, and protection from wind and weather. Other native plants including California black walnut, arroyo willow, and mule fat fill in the mid-story and under story spaces and created an attractive aggregation site.

Protected roosting habitat for monarchs has been reduced in recent years due to the loss of a significant sycamore trunk, and the gradual reduction in the vertical structure of another important sycamore tree. The first large sycamore had dual trunks near the center of the site. The trunk on the creek side broke at the base and fell into and across the creek (Photo 3a). Portions of the downed trunk still have some life and therefore some root connection, but it entirely collapsed to the ground and into the creek channel. It also fell on a younger tree that is still alive although damaged. The fallen trunk now provides little to no benefit to the aggregation site and could be removed without degrading monarch butterfly habitat.

Photo 3. Fallen sycamore tree at the aggregation site (a), and remaining trunk (b)..

A second large sycamore in the aggregatioin site along the top of bank leans to the ground and is nearly prostrate (Photo 4). Reduction of vertical structure at the aggregation site results in reduced protected monarch clustering branches over the creek. This second tree is alive on the top of bank and still contributes to the monarch site. It should be left in place, and new trees planted around it to restore a high canopy.

Photo 4. A twisted and hollow trunk of this sycamore now leans on the ground. Upright trunks in the background are unconnected trees on the east creek bank.

A triangular shaped open area approximately 40 feet long and 36 feet wide is within the aggregation site (Photo 5). Dominant plants in this opening are weedy species: tobacco plant (*Nicotiana glauca*) and mustard (*Hirschfeldia incana*). Weeding this area and planting six sycamore trees and two California black walnut trees will improve the aggregation site. Several native walnut trees are growing on the south side of this opening that provide good mid-story wind protection.

Photo 5. A large sycamore that lost a main trunk is at the right of the photo. A triangular open space to the left is dominated by weeds .The top of bank is without high canopy cover.

Four more sycamore trees should be planted along the top of the creek bank near the sycamore that lost a trunk. Four additional sycamores are recommended to be planted at the outside edge of Campsite 29 within the aggregation site. Two walnut trees can be placed along the top of bank in the southern portion of the aggregation site.

6.1.2 Other Restoration Areas

Five additional areas are identified where restoration work would add valuable habitat for monarchs and contribute to the attractiveness of the habitat both for monarch butterflies and other visitors.

Restoration Area A

Goal: Improve site protection from onshore winds, reduce wind speed at aggregation site, create monarch patrolling and roosting habitat.

Description: Adjacent to Sycamore Canyon Creek at campground Space 58 (Photo 3) vegetation includes two myoporum shrubs (*Myopoum laetum*), coyote bush, and poison oak. Myoporum is rated by the California Invasive Plant Council (Cal-IPC) as moderate invasive. Its foliage and fruits contain toxic chemicals that can cause fatal liver damage. Replacing the two myopourm plants with two native sycamores will expand native riparian tree canopy toward the ocean, and improve microclimate conditions for monarchs. With removal of the myoporum approximately 45 linear feet of planting area would be available. Three mature sycamore trees could occupy this space, so planting 4 sycamores is recommended. Up to 3 walnuts can be planted along the bank top and one elderberry at the ocean side for wind protection are recommended.

Photo 6. Restoration Area A. Replacing two non-native myoporum plants with native sycamores will improve habitat for monarch butterflies and reduce potental for spread of this invasive and poisonous species. View north. Photo on 10-23-2020.

Restoration Area B

Goal: Close wind gap, increase protection of historical aggregation site, create new aggregation habitat, increase grove density, improve tree age structure, increase nectar sources.

Description: This location is approximately 100 linear feet of planting area located west of camping spaces 14, 15, and 18. Existing vegetation includes fennel (*Foeniculum vulgare*), hemlock (*Conium maculatum*), castor bean, (*Ricinus communis*), coyotebush, mule fat, and willow along the creek. Very old sycamore trees are on either side of the gap with large branches that were trimmed remaining on the ground (Photo 7). Weed the site prior to planting trees along creek top of bank, and east of mule fat and coyote bush. Recommend staggered row of eight sycamores and four California black walnut trees with 5 blue elderberry intersperced.

Recommend removal of hemlock and mustard patch, and seeding with pollinator plant palette (see Figure 4, and Table 6 in Section 6.4.3).

Photo 7. Restoration Area B. Closing this gap will improve protection within site. Patch of weeds in the photo center can be replaced with nectar plants. View north. Photo on 3-12-2021

Restoration Area C

Goal: Close wind gap, create new monarch roosting and patrolling habitat, increase grove density, improve tree age structure

Description: This location is approximately 75 linear feet of planting area north west of camping space 13 where there is a wide gap in tree cover (Photo 8). Recommend planting a staggered row of ten California sycamores across the top of bank and four walnuts at the northwest edge of the campsite. Places for two elderberry plants can be found along the northern portion of the bank.

Photo 8. Restoration Area C is behind Campsite 13. Photo taken 10-23-2020.

Restoration Area D

Goal: Close wind gap to north, create new aggregation habitat, increase grove density, improve tree age structure, expand sycamore grove habitat.

Description: This location is approximately 50 linear feet along the fence at Campsite 11. Recommend planting 4 to 5 California sycamores inside the fence line while avoiding coyote bush plants. Additional planting, if feasible could occur in the field beyond the fence to the north in a weedy field. Recommend planting spot planting of sycamore trees as feasible.

Photo 9. Restoration Area D. Planting area is in front of the fence. Space for additional planting is in the field beyond, if possible.

Restoration Area E

Goal: Reduce downslope wind speed, increase roosting, basking, and patrolling habitat, provide long-term replacement trees.

Description: This location is at Campsite 10 at the northern edge of the campground. Planting additional sycamore trees would help to reduce downslope wind speeds in campground and aggregation site as well as provide roosting habitat. Monarch butterflies could roost here in the autumn if more trees are present. Existing trees are old and have been damaged. Other vegetation includes lemonade berry (*Rhus integrifolia*), laurel sumac and coastal buckwheat (*Eriogonum cinereum*). Native vegetation should be left undisturbed. Recommend planting four to six sycamores low on the slope and adjacent to existing sycamores around this campsite as long-term replacements and monarch habitat improvement.

Photo 10. Photo 7a and 7b. Restoration Area E is at Space 10 in the campground. This site provides down canyon wind speed reduction and presents an opportunity to create roosting and clustering habitat for monarchs.

6.2 IMPROVE CLOSED CANOPY AND WIND BARRIER

Wind protection and solar radiation are important factors when considering how to create suitable microclimatic conditions for overwintering monarchs (Leong 1990, Xerces 2017, Weiss). Suitable canopy cover minimizes heat loss during the night, provides adequate levels of sun and shade, and protects from excessive wind and storms. Mid-story vegetation is important for creation of an adequate wind barrier and aggregation sites. Monarchs do not persist at sites with high wind speeds (Leong 1990, 1991). Heterogeneous habitat that provides access to areas of full sun, dappled sunlight, and shade is important in monarch aggregation sites (Xerces 2017). At Sycamore Canyon Campground native trees provide these features, a condition rare among aggregation sites in southern and Central California. Managing sycamores and other native trees through replacement of lost trees and enhancement of native vegetation within Sycamore Canyon Campground is essential to long-term sustainability of the monarch butterfly aggregation.

6.3 WEED MANAGEMENT

The California Invasive Plant Council (Cal-IPC) maintains the California Invasive Plant Inventory. This is a comprehensive, categorized list of invasive plant species that threaten California's natural areas. Categorization is based on an assessment of ecological impact conducted with science-based criteria and expert review. The following is an explanation of Cal-IPC ratings (Cal-IPC 2020):

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Alert – An alert is listed on species with High or Moderate impacts that have limited distribution in California but may have the potential to spread much further.

Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.

Thirteen weed species (Table 4) were identified during a site assessment conducted in the fall of 2020.

TABLE 4. NON-NATIVE WEED SPECIES ENCOUNTERED WITHIN THE RESTORATION AREA

Common name	Scientific name	Cal-IPC Rating
Black mustard	*Brassica nigra*	Moderate
Foxtail brome	*Bromus madritensis* subsp. *rubens*	High
Lamb's quarters	*Chenopodium album*	None
Fennel	*Foeniculum vulgare*	Moderate
Mustard	*Hirschfeldia incana*	Moderate
Scarlet pimpernel	*Lysimachia arvensis*	None
White horehound	*Marrubium vulgare*	Limited
Ngaio tree	*Myoporum laetum*	Moderate
Tree tobacco	*Nicotiana glauca*	Moderate
Annual beard grass	*Polypogon monspeliensis*	Limited
Castor bean	*Ricinus communis*	Limited
London rocket	*Sisymbrium irio*	Limited
Smilo grass	*Stipa miliacea* var. *miliacea*	Limited

6.3.1 Site Preparation / Initial Weeding Efforts

Removing competing vegetation has several benefits, which can provide newly outplanted container plants a competitive advantage over exotic, invasive plants. Several of the site restoration areas are dominated by weeds, including fennel, wild mustard (*Brassica nigra*), and hemlock. Removal of weeds will improve recover of these sites. Studies have shown that early control of vegetative competition can assist with the growth and survival of newly planted trees by as much as 50 percent and 90 percent, respectively (Lowery 1993).

The fall 2020 site assessment was conducted outside of the growing season and weeds and annual vegetation was senescent and dry. Annual monitoring of the Restoration Area will provide accurate assessment of weed management tasks that typically are ongoing management requisites (See Section 7). Any observed weed infestations within or adjacent to the Restoration Area should be addressed by State Parks staff on an ongoing basis. In the likely event that non-native species begin to appear more prolifically in the Restoration Area, the following management recommendations for individual species of High/Moderate Cal-IPC rating should be considered (Table 5).

TABLE 5. WEED MANAGEMENT TECHNIQUES

Common Name	Scientific Name	Control
Black mustard	*Brassica nigra*	Plants can be hand pulled or removed by other tools before the produce seed. Yearly manual removal of plants before seeds mature can eventually deplete the seedbank. Shallow tillage during seedling stage is also recommended.
Foxtail brome	*Bromus madritensis* subsp. *rubens*	Individual plants or small patches can be pulled by hand or hoed in early spring before seeds are ripe.
Fennel	*Foeniculum vulgare*	Hand chop smaller infestations. Repeat slashing just before flowering may kill plants. Use mattock to remove plants.
Mustard	*Hirschfeldia incana*	Manual removal before seeds develop, particularly during seedling stage, can control populations and eventually exhaust seedbank.
Ngaio tree	*Myoporum laetum*	Hand removal shows limited success when roots are left in soil. Chemical control with Glyphosate found to be successful.
Tree tobacco	*Nicotiana glauca*	Hand pull seedlings and saplings. Use weed wrench on larger individuals. Care must be taken to extract the entire root and best results are achieved when the soil is moist.

The utilization of non-chemical control methods is recommended to the greatest extent possible when working in overwintering aggregation sites because residual herbicides can negatively impact butterflies or nectar plants. If herbicides are determined to be necessary, they should be approved for aquatic use due to the proximity of Sycamore Canyon Creek and should only be used when monarchs are not present in the habitat (from April to August). Herbicides are a form of pesticides and are regulated by the U.S. Environmental Protection Agency (EPA) as described in 40 CFR 150-189. Any pesticide application on the Restoration Area must comply with EPA and State regulations, be recommended by a licensed Pest Control Advisor (PCA). Herbicides should not be applied where they can contact water in streams or standing water. Only herbicides registered for use in wetlands and waters in California and approved by the Environmental Protection Agency (EPA) for use near wetlands and waters can be used where they could contact the stream. For additional herbicide specific recommendations refer to the Xerces Society publication, Managing Monarchs in the West (The Xerces Society 2018).

6.4 HABITAT RESTORATION

Habitat Restoration efforts consider multiple factors that collectively serve to provide habitat for overwintering monarchs. Vegetation structure, including the ability to achieve appropriate overstory and mid-story canopy cover, is an important consideration when choosing supplemental outplantings. In combination with planting trees, planting nectar sources attractive to monarchs with an appropriate bloom period have been incorporated into the restoration plan (Xerces 2019).

6.4.1 Irrigation

Soil moisture plays a vital role in the uptake and translocation of nutrients and can have a significant influence on plant survival and growth (Engelbrecht and Kursar 2003, Jung et al. 2020). Following initial planting activities, root systems need access to enough water from the surrounding soil to meet transpiration requirements. Newly planted individuals can become stressed if soil moisture is inadequate, resulting in lower photosynthetic rates, reduced growth, and mortality.

Following initial weeding activities and prior to planting, installation of an irrigation system is advisable to reduce labor and costs associated with hand watering (Alexander 2003). Water sources exist within Sycamore Canyon Campground for scheduled irrigation.

Depending on the length of run from a water source, delivery hose such as 2-inch Blue Stripe® Oval Hose mainline tubing can be used to feed small distribution lines. According to manufacturer's recommendations, this mainline needs to be run at 21 PSI and consequently a pressure regulator should be utilized to ensure proper water pressure is applied. The site is relatively flat, so other pressure compensation at emitters is likely not necessary. It is recommended to install connector tubing following outplanting to ensure water reaches target locations as well as help curb incidental growth of non-native weed species. Emitters should be staked within a 10 square foot area cleared around the outplantings. Specifically, they should be directed into a shallow water basin at least 2 feet from individual plantings to avoid crown rot (See Section 6.4.5- Container Plant Installation).

6.4.2 Watering Frequency

Plant species differ in their water requirements and water exits various soil types at different rates. The rate at which water is lost and used in the landscape is called the evapotranspiration rate. In areas of high evaporation (hot, dry, windy), drought tolerant plantings still will require more water to establish. Sycamores transpire large amounts of water per day, and in some cases daily watering may be required to meet demand. Especially during the first three (3) years following planting supplemental water must be provided until roots reach ground water in the canyon.

Soil at the restoration site is Cumulic Haploxerolls, 0 to 2 to 9 percent slopes, stratified sandy loam from 0 to 16 inches, stratified clay loam from 16 to 69 inches and extremely gravelly coars sand from 69 to 83 inches (NRCS 2021). The extremely gravelly layer carries water when surface water is not present and holds the significant water source for sycamore and other riparian vegetation. Sycamores prefer gravely substrates, and reaching this layer is likely critical for tree establishment and long-term survival.

In restoration areas, it is recommended that a temporary irrigation system be utilized for a period of three (3) years or until plants are established following planting. Depending on future natural rainfall plantings should have supplemental water frequently during the summer and before fall rains, especially if any sign of water stress is observed. Longer and deeper watering is preferred rather than short duration watering so that roots drive down into soils rather than shallow spreading. Watering events should occur in evenings or early morning, and timers are recommended.

6.4.3 Nectar Plant Palette

In combination with planting trees, supplemental nectar plantings are recommended. Nectar producing genera attractive to monarch butterflies and other pollinators can be planted within the Campground area as possible. One location at Restoration Area B is recommended where mustard and poison hemlock current are dominant (Figure 4). Nectar producing plants benefit monarch butterflies and pollinators in general. Timing of bloom period and drought tolerance are important factors to consider. Also, it is important to note that while milkweed (*Asclepias* spp.) serves as the monarch caterpillar host plant, no members of this genus should be planted within the vicinity of the restoration area being that they may interfere with monarch migration and overwintering behavior.

Table 6 below provides the recommended plant species composition and quantity to supplement existing pollinator plants.

TABLE 6. NECTAR PLANT SPECIES PALETTE

Common Name	Scientific Name	Method	Annual/Perennial	Bloom Period	Life Form
California buckwheat	*Eriogonum fasciculatum*	Broadcast seed	Perennial	Spring to Fall	Shrub
California brittlebush	*Encelia californica*	Broadcast seed	Perennial	Winter to Summer	Shrub
Western vervain	*Verbena lasiostachys*	Broadcast seed	Perennial	Spring to Fall	Herb
Lemonade berry	*Rhus integrifolia*	1 gal container	Perennial	Winter to Spring	Shrub
Purple sage	*Salvia leucophylla*	Seed or 1-gal container	Perennial	Spring, summer	Shrub
Black sage	*Salvia mellifera*	Seed or 1-gal container	Perennial	Winter to Summer	Shrub
River bank lupine	*Lupinus latifolius*	Seed	Perrenial	Spring	Perennial herb

6.4.4 Nursery Stock Sourcing and Inspection

To the greatest extent possible, container plants will be sourced from seed within the same watershed as the Restoration Area. Trees are to be grown to five-gallon container size for planting. Propagation will be conducted by transferring collected seed or cuttings to a contract-grow nursery for germination, propagation, care, conditioning, and establishment in preparation for planting at restoration sites. The contract-grow nursery will be experienced in the germination, propagation, care, maintenance, conditioning, and establishment of native plants for installation into native habitats. Nursery staff will be proficient in the prevention, identification, and treatment of fungal diseases and other pest or weed infestations that may occur while the plants are under nursery care. Prior to installment, a thorough inspection of the health of nursery stock (e.g., pests or apparent disease) will be conducted immediately upon arrival at the Restoration Area.

6.4.5 Container Plant Installation

Placement and spacing of planting will be distributed to mimic natural groupings and patterns of vegetation growing in similar habitats. Installation of container plantings should be accomplished under the direct supervision of a Restoration Specialist.

Prior to outplanting, individual planting locations should have approximately at minimum a 2-foot clearance of any non-native weed species and grasses to reduce competition and increase soil moisture availability.

Within the designated planting areas (Figure 4), loosen soil a minimum diameter of two times the width and slightly less than the height of the container. Within the loosened soil, planting holes will be slightly wider and slightly less than the depth of the plant container. Each planting hole will be filled with water and allowed to drain until no free moisture remains in the hole. After the hole has drained, the plant will be removed carefully from its container and the root volume loosened somewhat with gentle pressure on the sides of the root mass. The plant will immediately be placed in the planting hole so that the top of the container surface is slightly higher than the original soil grade after planting. Soil removed during excavation will be firmed around the root mass to fill air voids and secure the plant in position in the hole. The soil surface may be pressed to firm the plant into position. Tree stakes should be used to stabilize trees until roots are well established in the native soil.

After plants are installed, a watering basin can be constructed around the root ball of each plant. Once this watering basin has been developed, connector tubing with emitters can be connected to a main line, directed to feed into this basin, and staked into place. Following the installation of emitters, a minimum 3-foot diameter area surrounding each tree can be mulched with a 3-inch layer generated by chipping on site, or alternatively using weed free straw (e.g., rice straw) to help retain moisture and suppress weeds. Nectar plants from container stock can also be mulched. Mulch shall be placed a minimum of three inches from the stem of the plant to avoid damage by insects living in the mulch and to avoid crown rot.

6.4.6 Broadcast Seeding

The seed mixture in Section 6.4.4 Nectar Plant Palette, Table 6, is composed of plant species known to occur in the Sycamore Canyon area and have been observed in habitats with similar conditions to those present within the Restoration Area.

Seeding should occur within the nectar planting area (Figure 4) following weeding and seed bed preparation. To promote successful plant establishment, broadcast seeding will occur between October and January prior to a forecasted precipitation event.

Adequate site preparation is recommended to allow for the germination of the seed mixture, including a small amount of debris removal and pre-watering seed areas to aid in seed adhesion. Following broadcast seeding in a pre-soaked area, the area can be gently raked and soil pressed to contact seeds.

6.5 RESTORATION SCHEDULE

California sycamore trees can be planted any time during the year, provided sufficient water is applied during summer months. Spring time is perhaps the best time to plant when water demand is not as high and transplant shock can be minimized, and the tree is in a growth phase and can developed its root system. Weeding activities should continue throughout the duration of the project on an as needed basis.

6.6 SYCAMORE CANYON CAMPGROUND VISITATION AND INFORMATIVE SIGNAGE

The restoration area is located within the Sycamore Canyon Campground, a popular destination with overnight camping near the mouth of Big Sycamore Canyon. Campsites are located within the sycamore grove. Publicly accessible sites that host overwintering monarchs can provide important educational and scientific research opportunities but may also be vulnerable to visitor impacts. The following recommendations will help minimize impacts to the Restoration Areas.

Provide Informative Signage and Limit Access to Restoration Site. Limiting public access to the restoration sites can help new planting protect monarchs, reduce site erosion, and improve the chances of successful restoration. Providing site boundaries with appropriate interpretative signage asking visitors to remain out of sensitive areas is recommended. The presence of Point Mugu State Park Staff can facilitate this message as well as help educate visitors about monarchs and their conservation.

Signage to identify monarch habitat restoration plantings would help inform the public and reduce disturbance of new plantings. Signs would be placed on low posts near new plantings. Suggested language is Monarch Butterfly Habitat Restoration Project. Contact State Parks with questions (contact information TBD).

6.7 SUCCESS TARGETS

The overall goal of this plan is to restore and enhance monarch butterfly habitat and an overwintering aggregation site for monarch butterflies. Primary success targets will be the percentage of increase in canopy cover and the survival of native tree plantingss. Because tree locations were selected with consideration of mature growth size, successful establishment of trees at each recommended location is the standard for successful restoration. This is a focused planting effort in specific locations anticipating that each tree planted within the five restoration areas will become established. Trees planted opportunistically in the camp site are not as critical to the monarch aggregation as those planted in defined restoration areas. Some mortality of trees outside of Restoration Areas due to an incompatible location or other causes is acceptable.

Annual monitoring, conducted once a year for 5 years, will be utilized to evaluate whether the Restoration Areas are meeting success targets. Success target for trees is a positive canopy increase in the range of 10 to 20 percent per year. See Table 7 for success targets and Section 7 for Monitoring Plan.

TABLE 7. SUCCESS TARGETS

Criterion	Monitoring Method	Target Year 1	Target Year 2	Target Year 3	Target Year 4	Target Year 5
Quantitative Assessment						
Tree Canopy Cover within Restoration Areas – annual increase	Aerial interpretation and Annual Monitoring Visit	+10%	+10%	+20%	+20%	+20%
Weed Control (Non-native species average % cover across Restoration Area)	Annual Monitoring visit	<20%	<20%	<20%	<20%	<20%
Qualitative Assessment						
Install Educational Signage (Campground Visitor Management)	Annual Monitoring visit	Install Educational Signage/Protect trees				
Pollinator plants	Visual assessment	Increase in number and locations				
Quantitative Assessment						
Tree number	Count	75% survival at five years				
Maintain or increase overwintering monarch numbers's at the site	Xerces Society Thanksgiving/January Count long term monitoring	Host annual butterfly count coordinated with Xerces Society Los Angeles County				

Sycamore Canopy Cover Extent (Figure 3) can be utilized as the existing baseline. Canopy Sampling Points, Photo Stations, and an assessment of weed cover should be established prior to the initiation of all restoration work (See Section 7 - Monitoring Plan). Photo Station locations should be established prior to work that provide a good view of the tree planting area. Canopy assessment can be done with aerial drone photography and canopy identification of sycamores.

SECTION 7

Monitoring Plan

To track the success of habitat recovery an annual assessment of site condition and annual monitoring of tree condition is recommended. The site assessment should count trees planted and document survival rates. Replacement of dead trees is recommended. Reporting should include recommendations to address observed issues that may affect tree health within the Campground.

Monarch butterfly counts should be conducted according to the Xerces Society protocol for the annual Thanksgiving count and the New Years Count. Coordination with the Xerces Society Los Angeles County monarch count volunteers is recommended (See Section 6.7 and Table 7 Success Criteria).

7.1 MONITORING SCHEDULE

State Parks follows best practices and typically monitors restoration sites for 5 years. Following restoration implementation, an annual site visit by a qualified biologist should be conducted to assess Success Criteria outlined in Section 6.7, overall site condition, as well as provide helpful management recommendations as needed. Monitoring site visits should occur in the fall annually.

Additionally, coordination with the Xerces Society to conduct annual overwintering monarch surveys during the Thanksgiving Count and New Year's Count periods will provide necessary data to review if restoration efforts are leading to successful site utilization and population reestablishment. The Xerces Society lists the site as Big Sycamore Canyon, Point Mugu State Park, Xerces site #3149.

Evaluation of data collected during the first 5 years of monitoring can be utilized to determine the effectiveness of management actions and lead to improvements in the long-term management plan.

7.2 TREE CANOPY AND HEALTH

Canopy Sampling can be done from the ground in Restoration Areas or by aerial drone photography to document changes in canopy cover through time. Sampling will be conducted within the same 2-week time period each year. Tree health assessments should include tree height, canopy width, signs of disease, and other additional items as prescribed by a Certified Arborist.

Permanent Photo Stations will be established at a minimum of 1 location in each Restoration Area to document changes in site conditions through time. Photos will be taken from the same cardinal direction at Photo Stations during the same 2-week time period each year.

7.3 MONITORING TASKS

Annual monitoring visits should be conducted by a qualified biologist, Arborist, or technician and occur in the fall. Utilization of a provided Restoration Site Monitoring Form (Appendix B) can help facilitate data collection.

Monitoring tasks include the following:

1. Assessment of canopy cover in each Restoration Area or aerial photography (drone). The same canopy sampling locations will be utilized for 5 years. Compare to aerial baseline documented in Figure 3.
2. Conduct a tree condition assessment of each planted tree as per recommended protocol recommended by a Certified Arborist.
3. Quantify average height and canopy spread of planted trees.
4. Establish and utilize at least one photo station at each Restoration Area to qualitatively track progress across the restoration site. At each photo site, within the photo, a visual estimation of percent cover of non-natives will occur, and management recommendations will be provided. The same photo stations will be utilized for 5 years.

In addition to annual monitoring site visits, if is recommended that Point Mugu State Park Staff address any observed weed infestations on an ongoing basis (See Section 6.3 Weed Management).

It is also recommended to coordinate an annual overwintering monarch survey with the Xerces society to provide valuable data on site utilization and population. A long-term citizen monitoring effort, the Xerces Society Western Monarch Thanksgiving Count has provided annual estimates of the number of monarchs overwintering at 300 different sites since 1997. The Xerces Society lists the site as Big Sycamore Canyon, Point Mugu State Park, Xerces site # 3149.

7.4 ANNUAL REPORTING

Following the year end of each annual monitoring visit, a summary report will be provided to Point Mugu State Park. The annual summary report will include dates when work was performed, a discussion of findings, representative photos and figures as needed. The report will include any adaptive management actions taken during the reporting period and any recommendations for future periods.

An annual summary report will be provided for the first four years following the restoration implementation. A final comprehensive summary report addressing data collected from the previous 4 years with long-term management recommendations will be provided during Year 5.

Conditions at the site and the condition of the western monarch butterfly population are likely to change over the coming years. The annual report should include recommendations regarding adaptative management of the site as new information or conditions arise.

SECTION 8

Protected Species Avoidance and Minimization Measures

A query of CNDDB was conducted for special-status species reports within the following USGS 7.5-minute quadrangles that are within five miles of Sycamore Canyon Campground: Triunfo Pass, Newbury Park, Camarillo, and Point Mugu. Attachment A includes a list of Special Status Plant and Animal Species Reported within the vicinity of the Restoration Area.

Standard avoidance measures should be followed to protect any sensitive status species encountered.

8.1 SPECIAL STATUS SPECIES

No Federal or State-listed species were encountered during site visits conducted in the fall of 2020 or Winter 2021. One special status plant species was detected within the Restoration Area, California black walnut. This species has a California Rare Plant Rank of 4.2 indicating their limited distribution and status as moderately threatened in California (20-80 percent occurrences threatened/ moderate degree and immediacy of threat) (CNPS 2020). The proposed Project is anticipated to benefit this species. No species status wildlife species were observed within the Restoration Area.

SECTION 9

References

Alexander, B. 2003. Irrigation Systems for Restoration and Mitigation Sites: A Cost Comparison. Sound Native Plants. SER/SWS Northwest Chapter Annual Meeting March 2003. Accessed online Feb 6, 2020: https://soundnativeplants.com/wp-content/uploads/irrigationpaper.pdf.

California Invasive Plant Council (Cal-IPC). 2020. The Cal-IPC Inventory. California Invasive Plant Council, Berkeley, CA. Accessed online Feb 6, 2020: https://www.cal-ipc.org/plants/inventory/.

California Native Plant Society (CNPS). 2020. Inventory of Rare and Endangered Plants (online edition, v8-03 0.39). California Native Plant Society. Sacramento, CA. Accessed online. Feb 11, 2020: http://www.rareplants.cnps.org/.

California Stormwater Quality Association (CASQA). California Stormwater BMP Handbook Portal. California Stormwater Quality Association. 595 pp. July 2012.

CDFW [California Department of Fish and Wildlife] 2019. California Natural Diversity Data Base, Occurrence #176 for *Danaus plexippus* citing Sakai, W.H., Field survey forms for monarch overwintering site observations during the 1988-1989 season and during the 1990-1991 season.

DiTomaso, J. M., G.B. Kyser et al. 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California. 544 pp.

Engelbrecht BM, Kursar TA. Comparative drought-resistance of seedlings of 28 species of co-occurring tropical woody plants. Oecologia. 2003 Aug;136(3):383-93. doi: 10.1007/s00442-003-1290-8. Epub 2003 Jun 17. PMID: 12811534.

Evans, M. 2019. Watering Native Plants. Tree of Life Nursey, San Juan Capistrano. Accessed online Feb 6, 2020: https://www.californianativeplants.com/PDFs/Watering-Native-Plants.pdf.

Johnson, M.G., Lang, K., Manos, P. *et al.* Evidence for genetic erosion of a California native tree, *Platanus racemosa*, via recent, ongoing introgressive hybridization with an introduced ornamental species. *Conserv Genet* **17,** 593–602 (2016). https://doi.org/10.1007/s10592-015-0808-z

Jung EY, Gaviria J, Sun S, Engelbrecht BMJ. Comparative drought resistance of temperate grassland species: testing performance trade-offs and the relation to distribution. Oecologia. 2020 Apr;192(4):1023-1036. doi: 10.1007/s00442-020-04625-9. Epub 2020 Feb 29. PMID: 32114638; PMCID: PMC7165153.

Los Angeles Times. 1997b. Butterfly Migration Is Early, Large; Weather System Credited. Nick Green and Scott Steepleton. Oct. 18, 1997. https://www.latimes.com/archives/la-xpm-1997-oct-18-me-44129-story.html.

Marriott, David. 1997. Where To See Monarch Butterflies in California. Published by the Monarch Program. California Monarch Studies, Inc., October 1997. (1st Edition), 12 pp.

Leong, K. L. H. 1990. Microenvironmental factors associated with the winter habitat of the monarch butterfly (Lepidoptera: Danaidae) in central California. Annals of the Entomological Society of America 83:907-910.

Leong, K. L. H. 1991. Use of multivariate analyses to characterize the monarch butterfly (Lepidoptera: Danaidae) winter habitat. Annals of the Entomological Society of America 84: 263-267.

Nagano, Christopher D. and John Lane. 1985. A survey of the location of Monarch Butterfly (*Danaus plexippus* [L.]) overwintering roosts in the state of California, U.S.A.: First year 1984/1985, report to the World Wildlife Fund-U.S., WWF-US grant #US-374, 30 August 1985.

Natural Resource Conservation Service (NRCS). 2021. Web Soil Survey. United States Department of Agriculture.

The Xerces Society. 2017. Protecting California's Butterfly Groves: Management Guidelines for Monarch Butterfly Overwintering Habitat. The Xerces Society for Invertebrate Conservation, Portland, OR. 32 pp.

The Xerces Society. 2018. Managing for Monarchs in the West: Best Management Practices for Conserving the Monarch Butterfly and its Habitat. 106+vi pp. Portland, OR: The Xerces Society for Invertebrate Conservation. (Available online at www.xerces.org).

The Xerces Society. 2019. Monarch Nectar Plants. The Xerces Society for Invertebrate Conservation. Portland, OR. Accessed online Feb 6, 2020: https://xerces.org/sites/default/files/publications/19-046_01_MonarchNectarPlants_California_web-3pg.pdf.

SECTION 10

Figures

Figure 1. Project Location

Legend

★ Project Location

N

0 0.5 1 Mile

Point Mugu State Park
Sycamore Canyon Campground
Map Center: 119.01713°W 34.09°N
Malibu, California

USGS Quadrangle: Point Mugu

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
January 13, 2021 09:52 AM by JBB

Figure 2. Aerial Photograph

Point Mugu State Park
Sycamore Canyon Campground
Map Center: 119.01453°W 34.07355°N
Malibu, California

N

0 100 200 Feet

Imagery Source: Althouse and Meade, Inc.
10/27/2020

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
January 18, 2021 07:49 AM by JBB

Figure 3. Sycamore Canopy Cover

Legend

Sycamore Canopy Cover

Historical Monarch Aggregation

N

0 150 300 Feet

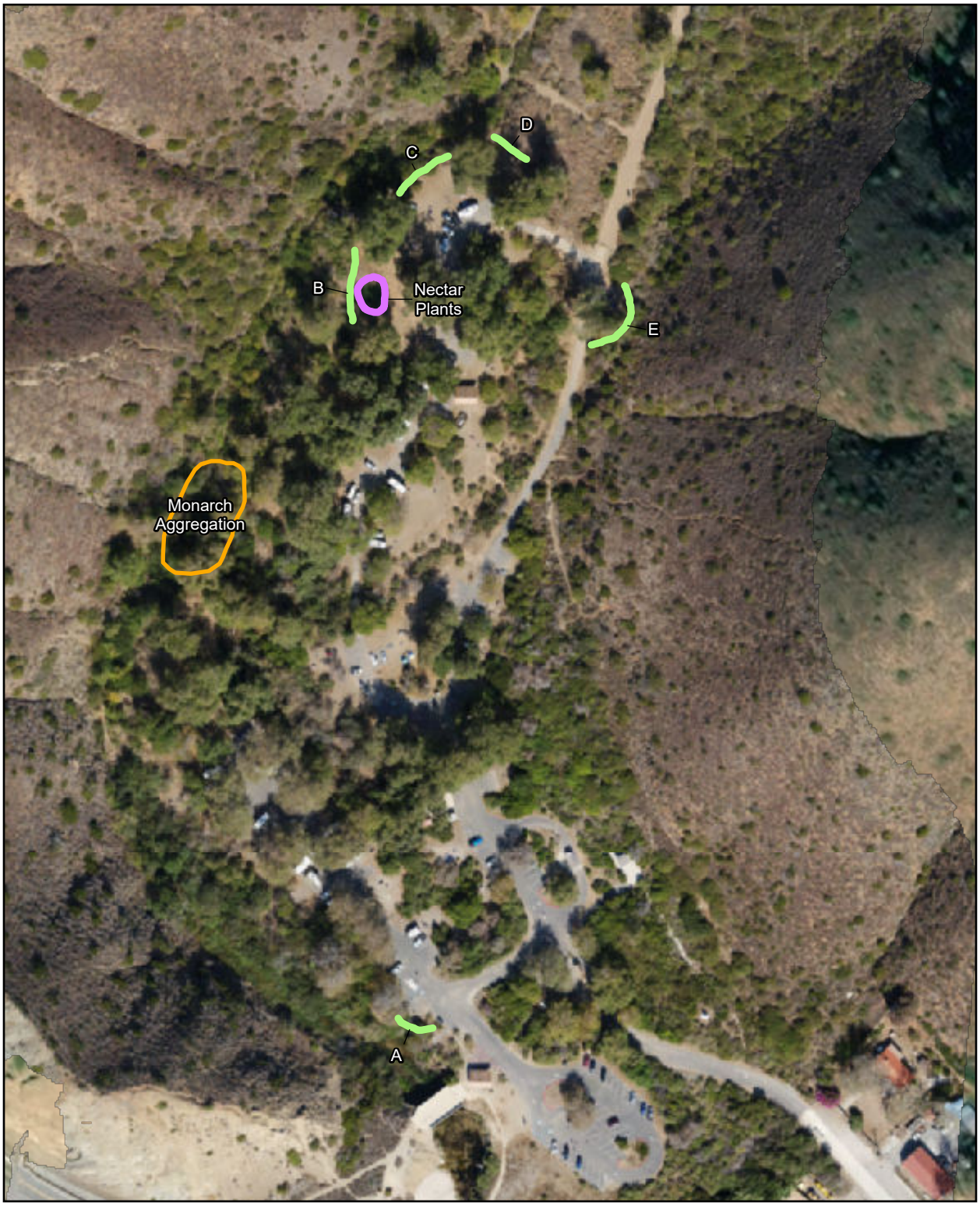
Point Mugu State Park
Sycamore Canyon Campground
Map Center: 119.01494°W 34.0739°N
Malibu, California

Imagery Source: Althouse and Meade, Inc.
10/27/2020

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
February 26, 2021 07:46 PM by JBB

Figure 4. Restoration Areas



N

0 100 200 Feet

Point Mugu State Park
Sycamore Canyon Campground
Map Center: 119.01457°W 34.07351°N
Malibu, California

Imagery Source: Althouse and Meade, Inc.

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
March 16, 2021 11:13 AM by JBB

ATTACHMENT A

Special Status Species

SPECIAL STATUS PLANTS REPORTED WITHIN THE VICINITY OF THE RESTORATION AREAS. SEARCH AREA INCLUDED 7.5 TOPO QUADS POINT MUGU, CAMARILLO, NEWBURY PARK, AND TRIUNFO PASS

	Scientific Name	Common Name	Federal/State Status Global/State Rank CA Rare Plant Rank	Blooming Period	Habitat Preference
1.	*Astragalus brauntonii*	Braunton's Milk-Vetch	FE/- G2/S2 1B.1	Jan-Aug	Disturbed areas in chaparral
2.	*Calochortus clavatus* var. *gracilis*	Slender Mariposa Lily	-/- G4T2T3/S2S3 1B.2	Mar-Jun	Shaded foothill canyons
3.	*Calochortus plummerae*	Plummer's Mariposa Lily	-/- G4/S4 4.2	May-Jul	Dry, rocky chaparral, yellow-pine forest
4.	*Centromadia parryi* ssp. *australis*	Southern Tarplant	-/- G3T2/S2 1B.1	May-Nov	Salt marshes, grassland, vernal pools, coastal scrub
5.	*Chaenactis glabriuscula* var. *orcuttiana*	Orcutt's Pincushion	-/- G5T1T2/S1 1B.1	Jan-Aug	Coastal dunes, bluffs
6.	*Chloropyron maritimum* ssp. *maritimum*	Salt Marsh Bird's-Beak	FE/CE G4?T1/S1 1B.2	May-Nov	Coastal salt marsh
7.	*Deinandra minthornii*	Santa Susana Tarplant	-/CR G2/S2 1B.2	Jul-Nov	Chaparral, coastal scrub, often on sandstone
8.	*Dudleya blochmaniae* ssp. *blochmaniae*	Blochman's Dudleya	-/- G3T2/S2 1B.1	Apr-Jun	Open, rocky slopes, often serpentine or clay-dominated

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9.	*Dudleya cymosa* ssp. *marcescens*	Marcescent Dudleya	FT/CR G5T2/S2 1B.2	Apr-Jul	Shaded, rocky volcanic outcrops and slopes
10.	*Dudleya cymosa* ssp. *ovatifolia*	Santa Monica Dudleya	FT/- G5T1/S1 1B.1	Mar-Jun	Shaded, rocky outcrops and slopes
11.	*Dudleya parva*	Conejo Dudleya	FT/- G1/S1 1B.2	May-Jun	N-facing volcanic cliffs, adjacent grassland
12.	*Dudleya verityi*	Verity's Dudleya	FT/- G1/S1 1B.1	May-Jun	N-facing volcanic outcrops
13.	*Eriogonum crocatum*	Conejo Buckwheat	-/CR G1/S1 1B.2	Apr-Jul	Volcanics
14.	*Horkelia cuneata* var. *puberula*	Mesa Horkelia	-/- G4T1/S1 1B.1	Feb-Sep	Dry, sandy, coastal chaparral and oak woodland
15.	*Lasthenia glabrata* ssp. *coulteri*	Coulter's Goldfields	-/- G4T2/S2 1B.1	Feb-Jun	Saline places, vernal pools
16.	*Monardella hypoleuca* ssp. *hypoleuca*	White-Veined Monardella	-/- G4T3/S3 1B.3	Apr-Sep	Oak woodland, chaparral
17.	*Monardella sinuata* ssp. *gerryi*	Gerry?S Curly-Leaved Monardella	-/- G3T1/S1 1B.1	Apr-Jun	Sandy openings

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18.	*Navarretia ojaiensis*	Ojai Navarretia	-/- G2/S2 1B.1	May-Jul	Clay soils
19.	*Pentachaeta lyonii*	Lyon's Pentachaeta	FE/CE G1/S1 1B.1	Feb-Aug	Coastal scrub, grassland, chaparral openings
20.	*Pseudognaphalium leucocephalum*	White Rabbit-Tobacco	-/- G4/S2 2B.2	Jul-Dec	Sandy or gravelly benches, dry stream bottoms, canyon bottoms
21.	*Quercus dumosa*	Nuttall's Scrub Oak	-/- G3/S3 1B.1	Feb-Aug	Generally sandy soils near coast, sandstone, chaparral, coastal-sage scrub
22.	*Senecio aphanactis*	Chaparral Ragwort	-/- G3/S2 2B.2	Jan-May	Alkaline flats, dry open rocky areas
23.	*Suaeda esteroa*	Estuary Seablite	-/- G3/S2 1B.2	May-Jan	Coastal salt marshes
24.	*Texosporium sancti-jacobi*	woven-spored lichen	-/- G3/S2 3	--	Open sites; in California with Adenostoma fasciculatum, Eriogonum, Selaginella. Found on soil, small mammal pellets, dead twigs, and on Selaginella. 60-870 m.
25.	*Thelypteris puberula* var. *sonorensis*	Sonoran Maiden Fern	-/- G5T3/S2 2B.2	Jan-Sep	Along streams, seepage areas
26.	*Tortula californica*	California Screw-Moss	-/- G2G3/S2S3 1B.2	n/a	sandy, soil

STATE/RANK ABBREVIATIONS:

FE: Federally Endangered
FT: Federally Threatened
PE: Proposed Federally Endangered
PT: Proposed Federally Threatened
CE: California Endangered
CR: California Rare
CT: California Threatened
Cand. CE: Candidate for California Endangered
Cand. CT: Candidate for California Threatened

California Rare Plant Ranks:

CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR 2A: Plants presumed extirpated in California, but common elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
CRPR 4: Plants of limited distribution - a watch list

CRPR Threat Ranks:

0.1 - Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2 - Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3 - Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Global/State Ranks

G1/S1 – Critically Imperiled
G2/S2 – Imperiled
G3/S3 – Vulnerable
G4/S4 – Apparently Secure
G5/S5 – Secure

Q – Element is very rare but there are taxonomic questions associated with it.
Range rank – (e.g., S2S3 means rank is somewhere between S2 and S3)
? – (e.g., S2? Means rank is more certain than S2S3 but less certain that S2)

SPECIAL STATUS ANIMALS REPORTED WITHIN THE VICINITY OF THE RESTORATION AREAS. SEARCH AREA INCLUDED 7.5 TOPO QUADS POINT MUGU, CAMARILLO, NEWBURY PARK, AND TRIUNFO PASS

	Scientific Name	Common Name	Federal/State Status Global/State Rank CDFW Status	Habitat Preference
1.	*Agelaius tricolor*	Tricolored Blackbird	-/CT G2G3/S1S2 SSC	Requires open water, protected nesting substrate, & foraging area with insect prey near nesting colony.
2.	*Anniella* spp.	California Legless Lizard	-/- G3G4/S3S4 SSC	Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.
3.	*Anniella stebbinsi*	Southern California Legless Lizard	-/- G3/S3 SSC	Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.
4.	*Aquila chrysaetos*	Golden Eagle	-/- G5/S3 FP	Nests in large, prominent trees in valley and foothill woodland. Requires adjacent food source.
5.	*Aspidoscelis tigris stejnegeri*	Coastal Whiptail	-/- G5T5/S3 SSC	Deserts and semi-arid areas with sparse vegetation and open areas, also woodlands and riparian areas. Ventura to San Diego.
6.	*Athene cunicularia*	Burrowing Owl	-/- G4/S3 SSC	Burrows in squirrel holes in open habitats with low vegetation.
7.	*Bombus crotchii*	Crotch Bumble Bee	-/CCE G3G4/S1S2 SA	Open grassland and scrub habitats. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.
8.	*Buteo regalis*	Ferruginous Hawk	-/- G4/S3S4 WL	Winters locally in open grassland or savannah habitats. More common in interior SLO County than coast.
9.	*Charadrius alexandrinus nivosus*	Western Snowy Plover	FT/- G3T3/S2S3 SSC	Sandy beaches, salt pond levees, & shorelines of large alkali lakes. Needs friable soils for nesting.

	Scientific Name	Common Name	Federal/State Status Global/State Rank CDFW Status	Habitat Preference
10.	*Cicindela hirticollis gravida*	Sandy Beach Tiger Beetle	-/- G5T2/S2 SA	Adjacent to non-brackish water near the coast from San Francisco to N. Mexico. Clean, dry, light-colored sand in the upper zone.
11.	*Cicindela senilis frosti*	Senile Tiger Beetle	-/- G2G3T1T3/S1 SA	Inhabits dark-colored mud in the lower zone and dried salt pans in the upper zone.
12.	*Coelus globosus*	Globose Dune Beetle	-/- G1G2/S1S2 SA	Coastal sand dune habitat. Inhabits foredunes and sand hummocks.
13.	*Danaus plexippus pop. 1*	Monarch - California Overwintering Population	-/- G4T2T3/S2S3 SA	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.
14.	*Diadophis punctatus modestus*	San Bernardino Ringneck Snake	-/- G5T2T3/S2? SA	Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous veg.
15.	*Elanus leucurus*	White-Tailed Kite	-/- G5/S3S4 FP	Nests in dense tree canopy near open foraging areas
16.	*Emys marmorata*	Western Pond Turtle	-/- G3G4/S3 SSC	Permanent or semi-permanent streams, ponds, lakes.
17.	*Eremophila alpestris actia*	California Horned Lark	-/- G5T4Q/S4 WL	Nests on the ground in open habitats. More common in the interior.
18.	*Eucyclogobius newberryi*	Tidewater Goby	FE/- G3/S3 SSC	Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.
19.	*Gila orcuttii*	Arroyo Chub	-/- G2/S2 SSC	Slow water stream sections with mud or sand bottoms. Feeds heavily on aquatic vegetation and associated invertebrates.

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20.	*Helminthoglypta traskii traskii*	Trask Shoulderband	-/- G1G2T1/S1 SA	Known from Ventura, Los Angeles, Orange, and San Diego counties. Also reported from northwestern Baja California.
21.	*Microtus californicus stephensi*	South Coast Marsh Vole	-/- G5T1T2/S1S2 SSC	Tidal marshes in Los Angeles, Orange and southern Ventura counties.
22.	*Neotoma lepida intermedia*	San Diego Desert Woodrat	-/- G5T3T4/S3S4 SSC	Moderate to dense canopies preferred. Abundant in rocky areas, outcrops. Ranges from San Diego to SLO Counties.
23.	*Oncorhynchus mykiss irideus pop. 10*	Steelhead - Southern California Dps	FE/- G5T1Q/S1 SA	Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.
24.	*Panoquina errans*	Wandering (=Saltmarsh) Skipper	-/- G4G5/S2 SA	Requires moist saltgrass for larval development.
25.	*Passerculus sandwichensis beldingi*	Belding's Savannah Sparrow	-/CE G5T3/S3 SA	Coastal salt marshes. Nests in Salicornia on or about margins of tidal flats. Santa Barbara to San Diego Counties
26.	*Pelecanus occidentalis californicus*	California Brown Pelican	FD/CD G4T3T4/S3 FP	Colonial nester on coastal islands just outside the surf line
27.	*Phrynosoma blainvillii*	Coast Horned Lizard	-/- G3G4/S3S4 SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.
28.	*Polioptila californica californica*	Coastal California Gnatcatcher	FT/- G4G5T2Q/S2 SSC	Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.
29.	*Rallus obsoletus levipes*	Light-Footed Ridgway's Rail	FE/CE G5T1T2/S1 FP	X

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30.	*Riparia riparia*	Bank Swallow	-/CT G5/S2 SA	Nests colonially in riparian and other lowland habitats west of the desert. Requires vertical banks or cliffs with sandy soils (to dig cavities) near streams, lakes, or the ocean.
31.	*Sorex ornatus salicornicus*	Southern California Saltmarsh Shrew	-/- G5T1?/S1 SSC	Requires dense vegetation and woody debris for cover.
32.	*Sternula antillarum browni*	California Least Tern	FE/CE G4T2T3Q/S2 FP	Nests on sand beaches, alkali flats, bare flat ground from San Francisco Bay to N. Baja California. Colonial breeder.
33.	*Taxidea taxus*	American Badger	-/- G5/S3 SSC	Needs friable soils in open ground with abundant food source such as California ground squirrels.
34.	*Thamnophis hammondii*	Two-Striped Gartersnake	-/- G4/S3S4 SSC	Coastal California from Salinas to Baja, sea level to 7000â€™, aquatic, in or near permanent water, streams with rocky beds and riparian growth
35.	*Trimerotropis occidentiloides*	Santa Monica Grasshopper	-/- G1G2/S1S2 SA	Found on bare hillsides and along dirt trails in chaparral.
36.	*Tryonia imitator*	Mimic Tryonia (=California Brackishwater Snail)	-/- G2/S2 SA	Inhabits coastal lagoons, estuaries, salt marshes from Sonoma to San Diego Counties.
37.	*Vireo bellii pusillus*	Least Bell's Vireo	FE/CE G5T2/S2 SA	Riparian habitat, near water or dry streambed, <2000 ft. Nests in willows, mesquite, Baccharis.

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California Department of Fish and Wildlife Rank:

WL:	Watch Lis	FP:	Fully Protected
SSC:	Species of Special Concern	SA:	Special Animal

Example Restoration Monitoring Form

Sycamore Canyon – Restoration Monitoring Form (Monarch Overwintering Habitat)

Date_____ Observer(s) _____Xerces Site ID **#2855**

Location: **Sycamore Canyon Campground, Point Mugu State Park (34.0734°, -119.0155° WGS84 datum)**

Weather _____

Average Wind Speed_____Max Wind Speed_____Temp(F)_____Humidity_____

Monarchs observed during site visit (Include approximate Count/Behavior)?

Tree Data

Area	Tree #	Canopy Dia. Ft.	Tree Conditon

Notes/Weed Management Recommendations:

_____

_____

Other:

Trash or other signs of public within restoration area? _____

Signage visible within campground? _____

Representative Photos Taken? _____

Additional Notes: