| | |
|---|---|
| **From:** | Jason Sanders |
| **To:** | Brianda Negrete |
| **Cc:** | Jones, Morgan; sbcob; Wageneck, Lael |
| **Subject:** | Fwd: Community Association for Modoc Preserve's Public Comment Letter Re: Proposed Modoc Road Multi-Use Path for the County Board of Supervisors' November 1, 2022 Hearing |
| **Date:** | Thursday, October 13, 2022 4:05:22 PM |
| **Attachments:** | 20221007 Comment Letter Modoc_Final.pdf |



Good afternoon Brianda,

I am forwarding you a copy of the previous email that attached the comment letter and provided a link to the Dropbox folder containing both the letter and the exhibits. I just tried that link and was able to access the exhibits and the comment letter.

The exhibit .pdf exceeds google's file size limit and will appear as a google drive link. Regardless, you should now be able access the comment letter and exhibits through one or more of the following: 1) this email, the 2) Dropbox link or 3) the google drive link. Please let me know if you cannot access either document.

**20221007_Exhibits to CAMP Comment Letter on Mul...**

*Jason R. Sanders | Attorney At Law*
VENSKUS & ASSOCIATES, A.P.C.
**LOS ANGELES** | 1055 Wilshire Blvd. Ste 1996, Los Angeles, CA 90017
**OJAI** | 603 West Ojai Ave., Suite F, Ojai, CA 93023
**Phone**: (213) 482-4200 **Email: jsanders@lawsv.com**
Visit us online at: www.lawsv.com and housingrightslaw.com



---

**From:** Jason Sanders <jsanders@lawsv.com>
**Sent:** Friday, October 7, 2022 11:39 AM
**To:** mmjones@countyofsb.org <mmjones@countyofsb.org>; sbcob@co.santa-barbara.ca.us <sbcob@co.santa-barbara.ca.us>
**Cc:** Modoc Preserve <modocpreserve@gmail.com>; Sabrina Venskus <venskus@lawsv.com>; lwageneck@countyofsb.org <lwageneck@countyofsb.org>
**Subject:** Community Association for Modoc Preserve's Public Comment Letter Re: Proposed Modoc Road Multi-Use Path for the County Board of Supervisors' November 1,

2022 Hearing

Good morning,

Please find attached a copy of Community Association for Modoc Preserve's Pubic Comment Letter on the Proposed Modoc Road Multi-Use Path for the County Board of Supervisors' November 1, 2022 Meeting.

A copy of the comment letter, as well as the exhibits referenced therein are available at the following Dropbox
link: https://www.dropbox.com/sh/gd51xkbb5m7uguj/AAD8S6uCynjm9SVah3cCkFOBa?dl=0

Please acknowledge receipt of the letter and exhibits. Thank you,

*Jason R. Sanders* | *Attorney At Law*
VENSKUS & ASSOCIATES, A.P.C.
**LOS ANGELES** | 1055 Wilshire Blvd. Ste 1996, Los Angeles, CA 90017
**OJAI** | 603 West Ojai Ave., Suite F, Ojai, CA 93023
**Phone**: (213) 482-4200 **Email: jsanders@lawsv.com**
Visit us online at: www.lawsv.com and housingrightslaw.com

Venskus & Associates
A PROFESSIONAL CORPORATION

603 WEST OJAI AVE., SUITE F
OJAI, CALIFORNIA 93023
TEL: 805-272-8621

1055 WILSHIRE BLVD., SUITE 1996
LOS ANGELES, CALIFORNIA 90017
TEL: 213-482-4200

October 7, 2022

**SENT VIA ELECTRONIC MAIL**

Board of Supervisors
County of Santa Barbara
105 E Anapamu Street, Suite 407
Santa Barbara, CA 93101
c/o: Morgan Jones (mmjones@countyofsb.org); and
Clerk of The Board (sbcob@co.santa-barbara.ca.us)

**RE: Comment Letter on the Proposed Modoc Road Multi-Use Path for the County Board of Supervisors' November 1, 2022 Hearing**

## INTRODUCTION

The Community Association for the Modoc Preserve ("CAMP") is a grassroots organization dedicated to protecting the Modoc Preserve – a biodiverse oasis with at least 133 plant species and 71 bird species. CAMP represents over 4,060 (and growing) individuals who have signed on to CAMP's Save The Modoc Road Trees petition (https://www.change.org/SaveModocRoadTrees). CAMP hereby submits this comment letter on the proposed Multi-Use Path for the County of Santa Barbara, for which a Mitigated Negative Declaration has been prepared pursuant to the California Environmental Quality Act. ("proposed Project").

The County staff has recommended that Alignment B be approved. CAMP opposes both Alignment A and Alignment B as set forth in the Revised MND dated September 8, 2022, and requests that the Board of Supervisors place the entire Multi-Use Path up onto Modoc Road or let the ATP grant expire so that these funds can be used where they are most needed to increase bike safety in Santa Barbara County. The County has already moved the western half of the Multi-Use Path onto Modoc Road using existing asphalt infrastructure in County Right of Way (ROW), north of the valuable tree belt that lines Modoc Road. CAMP calls their proposed alignment placing the entire path onto Modoc Road the "Greenbelt Alignment".

Any decision by the Board of Supervisors to approve the proposed Project as currently formulated will result in multiple violations of the California Environmental Quality Act. First, the Initial Study/Mitigated Negative Declaration ("MND") prepared

for the proposed Project contains numerous inaccuracies and fails as informational document. Second, Alignment B is not viable since it cannot be constructed in a manner consistent with the Conservation Easement in the Modoc Preserve that the Land Trust for Santa Barbara County currently holds. Third, Alignment A, as currently designed, is not tenable for multiple reasons, not the least of which being that it would destroy 29 majestic Canary Island Palm Trees and a number of native Oak trees not included in the MND's tree survey.

Therefore, CAMP respectfully requests that the Board of Supervisors reject the MND for the proposed Project at this time, and instead, consider the Greenbelt Alignment.

## LEGAL BACKGROUND

Once an agency decides that a project is not exempt from CEQA, it prepares an Initial Study. The purpose of the initial study is to inform the choice between a Negative Declaration or an Environmental Impact Report ("EIR"). (14 California Code of Regulations ("CCR" or "CEQA Guidelines") §§ 15063(c)(1); *Inyo Citizens for Better Planning v. Inyo County Bd. of Supervisors* (2009) 180 Cal.App.4th 1, 7.)

"In preparing an Initial Study, the Lead Agency bears the burden to investigate the potential environmental impacts. The failure to conduct an adequate Initial Study may limit the substantial evidence upon which the agency determines whether an EIR is necessary. Courts have held that deficiencies in the administrative record, such as an inadequate Initial Study, may actually enlarge the scope of the fair argument by lending a logical plausibility to a wider range of inferences of possible environmental impact.[.]" (1 California Environmental Law & Land Use Practice § 21.08 (2022).)

When an Initial Study is used to decide whether or not an EIR is necessary, the Lead Agency must determine whether *there is substantial evidence that any aspect of the project, either individually or cumulatively, may cause a significant effect on the environment*. (CEQA Guidelines § 15063(b)(1).)(emphasis added.)

If there is no substantial evidence that the project or any of its aspects may cause a significant effect on the environment, the Lead Agency must prepare a Negative Declaration. (CEQA Gudielines § 15063(b)(2); Public Resources Code ("PRC") § 21080(c)(1).)

On the other hand, if there is substantial evidence that the project may have a potential environmental effect that is significant, then the lead agency must do one of the following: 1) prepare an EIR, 2) use a previously prepared EIR that adequately analyzed issue, or 3) revise or mitigate the project so it no longer causes a significant effect and then issue a mitigated negative declaration. (PRC § 21080(c)(2) and (d); CEQA Guidelines 15063(b)(1).)

These determinations must be based on substantial evidence in the record. (CEQA Guideline § 15064(f).)

Specifically for Mitigated Negative Declarations, "A public agency shall prepare or have prepared a proposed [] mitigated negative declaration for a project subject to CEQA when: (a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or (b) The initial study identifies potentially significant effects, but: (1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and (2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment." (CEQA Guideline § 15070.)

Any necessary mitigation measures must be specifically set forth in the Mitigated Negative Declaration in advance of Lead Agency adoption of the Mitigated Negative Declaration (*Quail Botanical Gardens Foundation, Inc. v. City of Encinitas* (1994) 29 Cal. App. 4th 1597, 1606 fn 4). When a public agency adopts a Mitigated Negative Declaration, the adopted mitigation measures must expressly be made conditions of project approval. Also, the Lead Agency must adopt a monitoring or reporting program for the mitigation measures that it included in the Mitigated Negative Declaration or made a condition of approval to avoid significant effects on the environment. (PRC § 21081.6(b); CEQA Guidelines § 15074(d); see *Ocean View Estates Homeowners Assn. v. Montecito Water Dist*. (2004) 116 Cal. App. 4th 396, 400–401.)

## ANALYSIS

1. **THE MITIGATED NEGATIVE DECLARATION FAILS AS AN INFORMATIONAL DOCUMENT BECAUSE IT OMITS AND OBFUSCATES SUBSTANTIAL EVIDENCE OF POTENTIAL ENVIRONMENTAL IMPACTS**

   A. The Initial Study/Mitigated Negative Declaration ("MND") Obfuscates Substantial Evidence Of Potentially Significant Impacts On Biological Resources

In describing the thresholds of significance for biological resources, the MND admits that the following impacts could be potentially significant: a) A loss or disturbance to a unique, rare or threatened plant community; b) A reduction in the numbers or restriction in the range of any unique, rare or threatened species of plants; c) A reduction in the extent, diversity, or quality of native vegetation (including brush removal for fire prevention and flood control improvements); d) An impact on non-native vegetation whether naturalized or horticultural if of habitat value; e) The loss of healthy native specimen trees; g) A reduction in the numbers, a restriction in the range, or an impact to the critical habitat of any unique, rare, threatened or endangered species of animals; h) A

reduction in the diversity or numbers of animals onsite (including mammals, birds, reptiles, amphibians, fish or invertebrates); i) A deterioration of existing fish or wildlife habitat (for foraging, breeding, roosting, nesting, etc.); and k) Introduction of any factors (light, fencing, noise, human presence and/or domestic animals) which could hinder the normal activities of wildlife. (Revised MND p. 28.)

More specifically, the Santa Barbara County Environmental Thresholds and Guidelines Manual ("County Guidelines") states that "Assessment of impacts must account for both short-term and long-term impacts. Thus, the assessment must account for items such as immediate tree removal and longer-term, more subtle impacts such as interruption of the natural fire regime or interference with plant or animal propagation." (County Guidelines, p. 27.) The County Guidelines further state that "Disturbance to habitats or species may be significant, based on substantial evidence in the record (not public controversy or speculation), if they substantially impact significant resources in the following ways:

(1) Substantially reduce or eliminate species diversity or abundance
(2) Substantially reduce or eliminate quantity or quality of nesting areas
(3) Substantially limit reproductive capacity through losses of individuals or habitat
(4) Substantially fragment, eliminate, or otherwise disrupt foraging areas and/or access to food sources
(5) Substantially limit or fragment range and movement (geographic distribution or animals and/or seed dispersal routes)
(6) Substantially interfere with natural processes, such as fire or flooding, upon which the habitat depends."

(County Guidelines p. 27.)

The revised MND obfuscates the existence of substantial evidence that would establish one or more of the above-enumerated factors. Even worse, the lion's share of evidence the MND has ignored came from studies commissioned by the County of Santa Barbara as part of other County projects.

i. *Obfuscation of the Presence of, and Impacts on, Native/Special-Status Oak Trees*

The MND represents to the public and the decision makers that zero (0) Coast Live Oak trees will be removed under the Alignment A scenario. (See MND p. 41, Table 8 [Tree Removal Summary]; see project webpage as of September 27, 2022 https://www.countyofsb.org/modocmup].) The evidence demonstrates that this statement in the MND is false.

The County's own tree base map for the instant proposed Project identified a stand of 7 oak trees situated over what is now Alignments A and B along Modoc Road just before Via Zorro. (Exhibit A [Original Tree Base Map, Sheet 3 of 4, Trees Nos. 103-104, 106-108, and 110-111.].) Photographs confirm the presence of the oak trees in this location.

(Exhibit B [Photographs of Oak Trees Along Modoc Road].) The MND's error is compounded by the fact that the full complement of Coast Live Oaks that are present along this specific stretch of Modoc Road were identified on the original tree base map (See Exhibit A [Original Tree Base Map, Sheet 3 of 4]) but were omitted from the subsequent Alignment Maps (see Exhibit C [August 27, 2022 Alignment Map].) The subsequent maps even misidentified one oak tree as a eucalyptus tree. (*Ibid*.) The stand of Oak Trees is clearly in both Alignments A and B and subject to removal by the proposed Project. (Exhibit D [Photographs of Oak Trees in boundary markers set placed by the county].)

When the existence of the stand of oak trees and these other errors were brought to the attention of the senior environmental planner with the County of Santa Barbara, he admitted that the County was aware of this error and subsequently provided a revised tree impact summary noting that 6 Native Coastal Live Oaks may be removed under the proposed Project. (Exhibit E [Morgan Jones E-mail].) This updated information was not included in, or analyzed in, the MND provided to the decision-makers. The MND still indicates that 0 Coast Live Oaks will be removed under Alignment A.

An additional inaccuracy in tree species identification in the MND occurs near Modoc Road and Clara Vista Road. There, the County once again misidentified an Oak Tree as a 33" Eucalyptus Tree. (Exhibit A [Tree Base Map, Sheet 2 of 4, identifying Tree # 77 as "Q" ]; see Exhibit C [August 27, 2022 Alignment Map still reflecting a Eucalyptus Tree, not an Oak Tree]; Exhibit F [Photographs of misidentified Oak Tree].)

Since the full complement of oaks trees subject to removal were not identified or addressed in the MND, the MND fails as an informational document. Moreover, the MND fails to provide mitigation measures for the oak trees that would be removed under Alignment A. For these reasons alone the MND should be rejected.

*ii. Obfuscation of Habitat Loss Data*

The County calculated tree canopy habitat loss resulting from loss of trees along a stretch of Modoc Road for a different portion of the Multi-Use Path not directly at issue in the instant project as shown by the following table that CAMP obtained via a California Public Records Act Request:

| Habitat Loss | | | | | |
|---|---|---|---|---|---|
| Species | Average Canopy Radius | Area (ft2) | Number | Total Area (ft2) | Acres |
| Phoenix | 10 | 314 | 13 | 4084 | |
| Eucalyptus globulus | 15 | 707 | 27 | 19085 | |
| Quercus agrifolia | 10 | 314 | 13 | 4084 | |
| Schinus | 10 | 314 | 3 | 942 | |
| Salix | 10 | 314 | 1 | 314 | |
| Podocarpus | 10 | 314 | 2 | 628 | |
| Eucalyptus citriodora | 15 | 707 | 1 | 707 | |
| **TOTAL** | | | | **29845** | **0.69** |
| **Non-Native** | | | | **25447** | **0.58** |
| | | | | | |

But this calculation was not performed in the Revised MND. Per CAMP's own calculation, the following habitat loss would result in the instant project for Alignment A:

> Phoenix canariensis/Canary Island Date palm: 29 trees x 314ft2 ave. canopy area = 9106ft2
>
> Blue gum Eucalyptus: 8 trees x 707ft2 canopy area = 5656ft2
>
> Lemon gum Eucalyptus: 5 trees x 707ft2 = 3535ft

Total tree canopy habitat loss Alignment A: 9106ft2 + 5656ft2 + 3535ft = 18,297ft2. Additionally, if we calculate the loss of shade canopy for the 6 Coast Live oaks (Quercus agrifolia), there is an additional 6 x 314f2 canopy area = 1884ft2 of canopy loss.

No reasonable person could conclude that losing ~20,000 square feet of habitat and shade canopy is not a significant loss, especially given the state of our climate emergency. Mitigated plantings are only for native trees, which the County states that 0 native oaks would be removed in Alignment A from the County's Table 8 **Tree Removal Summary** ...when if fact, there are 6 Coast live oaks (*Quercus agrifolia*).

### *iii. Obfuscation of the Presence of Special-Status Plant Species*

The MND indicates that the only special status plants observed on-site were Coast Live Oaks. (MND p. 32.) Substantial evidence indicates that the observer (with only one visit to the site) failed, as there are clearly other special status plants on site, as the photographic evidence and studies commissioned by the County over a 5 year period demonstrate.

The MND admits that plants listed as a "rare plant of Santa Barbara County" by the Santa Barbara Botanic Garden or plants considered by the California Native Plant Society to be "rare, threatened, or endangered in California," are special-status plants. (MND p. 33.)

According to this definition, then, Southern Tarplant, Yerba Mansa and Spiny Rush are all special status plants. In its 2020 annual grassland restoration report submitted August 25, 2020 to Mr. Alex Tuttle of SB County Public Works by Kisner Restoration and Ecological Consulting, Inc. (KR&EC) along with Dr. Adam Lambert, the County admitted that the Southern Tarplant, Yerba Mansa and Spiny Rush were all classified as rare plants by the Santa Barbara Botanic Garden. (Exhibit G [Grasslands Restoration Project Annual Report, Attachment C, pg C-4.) For ease of reference, CAMP has extracted the table from the County-commissioned Grasslands Restoration Project Annual Report Attachment C, and display only the relevant plants at issue for purposes of this argument section of this comment letter.

**PLANT SPECIES OBSERVED ON SITE**

| Scientific Name | Common Name | Origin | Before Grassland Restoration 2014 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|---|---|
| *Anemopsis californica** | Yerba mansa | N | Preserve | WM | | |
| *Centromadia parryii ssp. australis** | Southern tarplant | N (rare) | | G/WM | | |
| *Juglans californica** | Southern California black walnut | N | G | G | | |
| *Juncus acutus* ssp. *leopoldii** | Southwestern spiny rush | N | | WM | | |
| *Stachys ajugoides* var. *ajugoides** | Hedge nettle | N | | G/WM | | |

*listed on Santa Barbara Botanical Garden's Rare Plants of Santa Barbara County List

Preserve: Found on the Modoc Preserve but no within the restoration area; WM: Found in the wet meadow portions of the restoration area.

G: Found in the grassland portions of the restoration area; v: volunteer native species; if "p" also listed it was also planted in other areas

Additionally, the Southern Tarplant is also classified as rare, threatened or endangered by the California Native Plant Society. (https://rareplants.cnps.org/Plants/Details/144.) In fact, the Southern Tarplant is ranked 1B.1 on California Native Plant Society (CNPS) Rare Plant Inventory List. (https://rareplants.cnps.org/Search/result?global=southern%20tarplant [stating 1B.1: Plants rare, threatened, or endangered in California and elsewhere.
Plants with a California Rare Plant Rank of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century.].)

The evidence demonstrates that Southern Tarplant, Yerba Mansa and Spiny Rush are all present in the Modoc Preserve and are in close proximity to the proposed alignments. The County listed Yerba Mansa and Spiny Rush on a list of flora observed **along** the Alignment (MND pg. 28 ["A list of all plant species observed **along the multi-use path alignment** is provided as Appendix A"; Appendix A pg. 1 [listing Yerba Mansa], pg. 2

[Listing Spiny Rush])(Emphasis added.) This establishes that these two special status plants are not only in the Modoc Preserve, but along the proposed alignments.

The County's 2020 annual report on the Grassland Restoration project confirms that Southern Tarplant was present in the preserve, in close proximity to the alignment areas. (Exhibit G, Attachment C, pg. C-1 [Listing Southern Tarplant].) That same reporting also confirms the presence of all three special status plant species in the preserve as of 2020. (Exhibit G, Attachment C.) This evidence – which is the County's own evidence -- directly contradicts the MND's claims that no Southern Tarplants were observed on site and that Spiny Rush was not observed near the alignment. (MND pg. 33.)[1] Hedge Nettle, another special status plant, was also found to exist on-site by biologists funded by the County (Exhibit G, Attachment C, pg. C-4), but this special status plant is completely excluded from mention and analysis in the MND.

It is axiomatic that flora occurring along the proposed Project alignments are in danger of destruction. For example, the California Native Plant Society identifies development, recreational activities, human foot traffic and road widening as threats to the Southern Tarplant. (https://rareplants.cnps.org/Home/Glossary#_Toc72398855.) It is difficult to imagine how these threats would not also apply to Yerba Mansa and Spiny Rush. Yet, the MND has not identified these as potential significant impacts on biological resources and does not provide any analysis on these impacts, nor provide any mitigation for these impacts. Despite the fact that Dr. Adam Lambert wrote comments outlining this lack of analysis on 6/17/2022 (last day for comment in first MND) in an email to Morgan Jones...as well as pointing out other discrepancies and omissions, (Exhibit H [Lambert E-Mail]), the Revised MND fails to correct these deficiencies.

These omissions are troubling, given that some, if not all, of these plants were the result of seeding and planting performed under the County's own Grassland Restoration Project, which was implemented as a mitigation measure for significant impacts resulting from another construction project in the area. (See Exhibit G p.1 [discussed in more detail below]). The Revised MND should be rejected on this basis alone.

Furthermore, the County has overlooked, and in some cases contradicted, the presence of multiple special status plants that the County itself spotted on site just two years prior.[2] This only underscores how the MND fails to accurately describe the presence of special status plants on-site and makes the statement that the only special status plants observed on-site were Coast Live Oaks, erroneous. The MND fails as an informational document for this reason alone.

---

[1] Perhaps the observer did not do a thorough job observing what is actually on-site.

[2] CAMP has issued a California Public Records Act request that included all annual reports from the Grassland Restoration Project, but to date, the most recent 2021 and 2022 annual survey reports have yet to be provided despite multiple requests for those reports.

The MND has also incorrectly framed the vegetation community types in the Modoc Preserve. (Exhibit H [Lambert E-mail].) This issue as well as the general concepts embodied by the issues identified above were brought to the attention of the County staff. (*Ibid*.) Yet, strangely, staff did not include any of this information in the MND.

Finally, the County was tasked with preparing a tree survey and tree protection and replacement plan. (See Exhibit I [Description of work for initial study].) The tree base map and the alignment maps, when considered together, do not meet the requirement for a survey of the specific number of individual trees, species and size in diameter breast height (Dbh), approximate height and location as set forth in the description of work. (Exhibit I.) There is no tree replacement and protection plan.

*iv. Failure to Assess Impacts on Restored Native Grasslands*

The County implemented a Native Grassland Restoration Project in the Modoc Preserve as a mitigation measure for another development in the area. (Exhibit G [Year 3 Annual Report for Modoc Preserve Native Grassland Restoration for the Boulders Park Hills Estates Project, Santa Barbara, California].) As part of that mitigation measure, a total of 15,749 native plants over 3.64 acres and approximately 45 pounds of seed over 2.23 acres were installed. (Exhibit G, pg. 2-3.) The Native Grasslands Restoration As Built Map shows that several areas that have received planting and seeding under the restoration program are near both alignments of the proposed Modoc Multi-Use Path. (Exhibit G, Attachment A, p. A-1 [As Built Map].) In fact, one planted area abuts Modoc Road near Clara Vista. (*Ibid*.) Photographs taken by CAMP also clearly show that native grass plantings and seedings have been made directly in the path of the proposed alignments. (Exhibit J [Photographs taken and marked by CAMP of Native Grassland located in the proposed Alignments].)

This puts a portion of the very  plantings and seedings made as a mitigation measure for another County project at risk of destruction, thereby undermining the mitigation measure and the goals of the County's own Native Grassland Restoration Project. In fact, the County has also smoothly shifted focus away from the included 8' wide adjacent equestrian trail and 4' high fence separation...that could bring the width to 20'-24' in sections...it is impossible to do that and not invade the mitigated plantings in some sections. The destruction of pre-existing mitigation measures is not permissible under CEQA. It also signifies the inadequacy of the MND as an informational document due to its complete failure to identify that native grasslands would be removed under Alignments A and B.

The issues with special status plants and native grassland restoration were brought to the attention of County staff by the biologist (Dr. Adam Lambert) who worked on the County's Native Grassland Restoration Project, but, as we understand it, County staff never responded. (Exhibit H [Lambert E-mail].) Nor were these concerns addressed in the MND.

*v. Obfuscation of Presence of Monarch Butterflies*

The MND admits that animals that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act, as well as animal species of special concern to the California Department of Fish and Wildlife (CDFW), are special status species. (MND p. 34.) The Monarch Butterfly meets both of these thresholds. (https://wildlife.ca.gov/Conservation/Invertebrates/Monarch-Butterfly.)

The MND ultimately provides no impact analysis or mitigation measures for Monarch Butterflies because "monarch roosting has never been reported here [in the preserve]" (MND p. 36) and "none were observed at the project site during the biological survey" (MND p. 34). But substantial evidence demonstrates otherwise.

CAMP has recent photographs of Monarch Butterflies in the preserve (Exhibit K [Monarch Photographs]) and recent video of Monarchs in the preserve (Exhibit L [Video Link https://youtu.be/GUur19TqnG0 of Monarchs in the Modoc Preserve].) But the County need not resort to evidence from other sources, when its own 2020 Annual Report from the Grassland Restoration Project admits that "Efforts have continued to increase the number of narrow-leaved milkweed, the host plant for Monarch butterflies. In 2017, 150 milkweed plants were installed and in 2018 an additional 200 milkweed were installed. Monarch caterpillars were observed on many of the planted milkweed in spring of 2019 and 2020." (Exhibit G [Grassland Restoration Report p. 7 and Attachment B, p. B-19 showing a photograph of a Monarch Butterfly on a Milkweed Plant].) The MND's claim that Monarch butterflies were not observed on site during the field survey is especially problematic in light of this reporting. It is also suspect that no Monarch butterflies were observed at the project site during the biological survey for the project, when members of the community regularly observe Monarch butterflies at the site, as evidenced by the authenticated photographs and videos. It calls into question the comprehensiveness and propriety of the biological survey that was conducted for this proposed Project. Thus, the MND fails as informational document for this reason alone.

Yet, the MND uses the fiction that Monarch butterflies were not observed in the preserve to avoid identifying or analyzing the potentially significant impacts the proposed Project would have on Monarch butterflies and their habitat. And There is substantial evidence that Monarch habitat loss may occur under the project.

First, even the County itself has admitted that milkweed plants are host plants for Monarch butterflies and that many Monarch caterpillars were observed on said plants in 2019 and 2020. (Exhibit G [Grassland Restoration Report p. 7 and Attachment B, p. B-19 showing a photograph of a Monarch Butterfly on a Milkweed Plant]) The County also admits said plants were observed "along" the proposed alignments. (Revised MND, Appendix A pg. 1.) Again, any plant along the alignment is in danger of removal. Second, "Eucalyptus Trees are the dominate tree used by Monarchs in California." (Exhibit M [Frontiers in Ecology and Evolution Article].) The MND even admits as much by indicating that "Suitable roosting habitat (eucalyptus stands) occurs within the adjacent Modoc Preserve…" (Revised MND p. 34.) Yet, the MND also admits that

Modoc Preserve contains eucalyptus groves and that 8 eucalyptus trees are subject to removal under either Alignment. (MND p. 41.)

The MND fails to address the impacts of the removal of milkweed and eucalyptus trees on the presence of Monarchs in the preserve (whether or not roosting is occurring on site) and fails to provide mitigation measures for this impact. Thus, the MND is inadequate and fails an informational document for this reason alone.

That Monarch butterflies are present in the Modoc Preserve, despite a general decline in overwintering numbers, only underscores the need for a detailed analysis of the impacts the proposed Project may have on the butterflies. (Exhibit M [Frontiers in Ecology and Evolution Article].) The decline should also be placed in context. There is evidence that despite the decline in Monarch butterfly overwintering populations in California as whole, Santa Barbara County [Where Modoc Preserve is located] remains the number 1 county with the largest number of overwintering sites in the state of California. (Exhibit N [State of Overwintering Sites in California]. ) Furthermore, the herbicide ROUNDUP ® was used in the Modoc Preserve Restoration Project approved by the County. With the recent ruling on "ROUNDUP" and its drastic impact on the "Monarch" butterfly's habitat demise, this should have been addressed in the MND, as well by the CDFW, which still has not signed off or issued it's report.

### *vi. Obfuscation of the Presence of Other Animals*

The MND also fails as an informational document because it misrepresents the number of birds observed near the proposed alignment, as data from ebird.org lists at least 5 more birds as being present in the Modoc Preserve than does the MND. (https://ebird.org/hotspot/L9995680.) Another birding group listed another two additional birds not noted in the MND. (https://sbcobirding.groups.io/g/main [Hugh Ranson sited 4/19/2020 "hundreds of Vaux's Swifts feeding over Modoc Open Space"... Hugh Ranson sited 1/6/2021: "Baltimore Oriole"].) Substantial evidence of migrating red shouldered hawks using eucalyptus and palm trees in the Modoc Preserve also exists. (Exhibit O [Video Link of Red Shouldered Hawks - https://youtu.be/NOg7b-IicJc ].) The MND admits that a reduction in the diversity or numbers of animals onsite (including mammals, birds, reptiles, amphibians, fish or invertebrates) or a deterioration of existing fish or wildlife habitat (for foraging, breeding, roosting, nesting) are questions that must be answered in the CEQA analysis. But there is no analysis in the MND of the impact on red shouldered hawks from removal of Eucalyptus or Palm Trees.

### *vii. Inadequate Wildlife Corridor Analysis:*

The MND indicates that "Habitats to be preserved and enhanced include, but are not limited to creeks, streams, waterways, fish passage, wetlands, vernal pools, riparian vegetation, wildlife corridors, roosting, nesting and foraging habitat for birds and subterranean species." (Revised MND p. 88.) However, the MND neglects to comment on impacts to wildlife corridors with 2000' of 2'-4' high concrete retaining walls.

Retaining walls not only impact the visibility of the beauty of the nature preserve, it also impedes the natural movement of the wildlife. The proposed Project is not consistent with avoiding impediments to the movement of wildlife. Whether it is snakes, foxes, coyotes, possums, skunks, rats, mice, etc...the retaining wall is like a "Berlin Wall" to wildlife, and also the public, that is supposed to be able to enjoy this area as undeveloped open space.

The MND goes on to state that, "Highly mobile species such as larger mammals and birds are expected to move between coastal areas and the Santa Ynez Mountains. Cieneguitas Creek and adjacent bike paths and trails provides a means to traverse developed areas, dense vegetation and steep slopes. Therefore, Cieneguitas Creek may be an important wildlife movement corridor in the area. Wildlife are also likely to utilize the cover and habitat provided by the Modoc Preserve during local movements." (Revised MND p. 33; Exhibit R [Photographs of Oriole Nest, Cooper's Hawk and Owl in the preserve].)

The Canary Island Date palms provide habitat for migrating Hooded Orioles...Alexandra Loos image of Oriole nest in Modoc Preserve. Here is a video of a fox trotting down East Encore Dr. to cross Modoc Road into the Modoc Preserve...a 2'-4' high concrete retaining wall and 14' wide asphalt road would impact this cross-sectional travel of wildlife into the Modoc Preserve. (https://youtu.be/HgA6Jsk5JsI.)

B. The MND Has Not Adequately Analyzed Visual/Aesthetic Impacts

The County Guidelines indicate that the existence of the following visual/aesthetic impacts could be potentially significant: "1) Does the project site have significant visual resources by virtue of surface waters, vegetation, elevation, slope, or other natural or man-made features which are publicly visible? If so, does the proposed project have the potential to degrade or significantly interfere with the public's enjoyment of the site's existing visual resources?" (County Guidelines p. 184-185.)

According to the County Guidelines, the first step in assessing a visual impact is to evaluate the "***visual resources of the project site***. Important factors in this evaluation include the physical attributes of the site, its relative visibility, and its relative uniqueness." (County Guidelines p. 184-185. )(Emphasis added.)

The MND has not adequately assessed the visual resources of the Modoc Preserve, nor has it asked or answered the fundamental question posed by the County's own thresholds as to whether the project will degrade or significantly interfere with the public's enjoyment of the Modoc Preserve's visual resources. (Revised MND p. 14-16.) The MND merely alludes to the fact that the trees lining Modoc Road provide a park-like setting. (Revised MND p. 15.) Above and beyond just the trees lining Modoc Road, the very nature of the Modoc Preserve would seem to end all disputes of its inherent visual value. Nevertheless, there is substantial evidence that Modoc Preserve has great visibility and uniqueness. (Exhibit G [Grassland Report showing diversity in plants and animals, including special status plants and animals].) If that were not enough, CAMP has

photographed views of the Modoc Preserve that can only be described as majestic. (See Exhibit P [Photographs of views into the preserve]; see also https://modocpreserve.com/modoc-preserve-gallery-1; https://modocpreserve.com/modoc-preserve-videos.)

The MND states that the scenic resource that is closest to the project site is the intersection of State Street and Route 154 (Revised MND p. 14), an intersection which contains an adult content store and a gas station. (Exhibit P [Photographs].) The superior visual value of Modoc Preserve as compared to this intersection cannot be understated. This bucolic section of Modoc Road, along Modoc Preserve, should be designated a Scenic Roadway.

Indeed, the conservation easement for Modoc Preserve recognizes the scenic value of the preserve. (Exhibit Q [Conservation Easement – "the Easement Area…is substantially undisturbed natural condition and the easement area possesses unique and significant natural, open space, scenic, wetlands, ecological and wildlife habitat values (collectively "Conservation Values") of great importance to LANDOWNER, the people of Santa Barbara County and the people of the State of California…"].)

Yet, when it comes to discussion the proposed Project's impacts on the visual value of Modoc Preserve itself, the County simply says that despite the removal of some trees along Modoc Road, other trees would remain and continue to provide a park-like setting. (Revised MND p. 15.) The MND then states that the removal of 29 mature palm trees will be minor and considered less than significant, when CAMPs photographs show that these are perhaps some of the most visually appealing trees in the Modoc Preserve. (Exhibit P.)

The County states on Page 15 in the revised MND, "These palm trees provide a distinctive visual character and park-like visual setting." (Revised MND p. 15.) The Canary Island Date palms are heritage trees over 100 years old. Henry Chase, the brother of the revered Pearl Chase, is responsible for planting the majestic Canary Island Palm Trees in the Modoc Road corridor...(https://www.pearlchasesociety.org/pearl-chase.)

Pearl Chase was a civic leader in Santa Barbara, California. She is best known for her significant impact on the historic preservation and conservation of that city. (https://en.wikipedia.org/wiki/Pearl_Chase ["*A pioneer in the fields of conservation, preservation, social services, and civic planning, Pearl Chase was devoted to improving the surroundings of others. For 70 years, from the time of her graduation from UC Berkeley in 1909, until her death, she was a dominant force in molding the character of Santa Barbara. Often referred to as the First Lady of Santa Barbara, she founded many civic and cultural organizations that have profoundly affected the city of Santa Barbara and the state of California, including the local chapter of the American Red Cross, the Community Arts Association, and the Santa Barbara Trust for Historic Preservation.'*].)

The MND admits at least some of the Palm Trees are at least 100 years old. (Revised MND p. 52 [**"**The cultural resources record search included the State Historic

Property Data Files, National Register of Historic Places, California Historical Landmarks and California Points of Historic Interest, and did not identify any historic resources in the immediate project area. However, residents in the project area have indicated the Canary Island palms along Modoc Road may have some historical significance, and possibly planted by a person of historical interest (Pearl Chase). In the Hope Ranch area, about 360 Canary Island palms were first planted in 1904, mostly along driveways on Las Palmas Drive and Marina Drive (Chase, 1963). Canary Island palms were first planted along Modoc Road in 1915 (Morning Press, 1915). Inspection of a January 1928 aerial photograph indicates a linear row of trees (possibly palms) was present on the south side of Modoc Road in the Via Zorro area. Inspection of an August 12, 1958 aerial photograph indicates a linear row of palm trees were present along the south side of Modoc Road. Therefore, at least some of the Canary Island palms along the subject segment of Modoc Road are at least 100 years old."].)

But the MND errs by declining to find the Palm Trees a historical resource. (Revised MND, p. 53 ["Archival research (including the County Planning and Development records) by the Santa Barbara County Public Works Department did not identify any historical significance of these palm trees or any connection to a historical property, building or person. Therefore, these trees are not considered a historical resource."].) This ignores the over a century old plantings of the Palm Trees by a significant historical figure.

The MND also downplays the impact of the retaining wall that will be as high as four feet on views into the preserve. At four feet high, the retaining wall would completely block certain views into the preserve from those passing the preserve by car and block other views.

Finally, the MND does not identify, analyze or provide mitigation for the impact of converting areas of the Modoc Preserve with special status and otherwise important plants with habitat value into a paved road. This would be the direct antithesis of preserving the conservation values (open space, scenic and wildlife habitat condition) of Modoc Preserve. Put another way, the MND has not acknowledged that loss of certain plants in the Modoc Preserve as a result of the proposed alignments may result in the loss of habitat and therefore the loss of wildlife in the Modoc Preserve. A loss of, for example, the Monarch Butterflies as a result of milkweed plant or eucalyptus tree removal would impair the visual value of the preserve by and through the loss of flora and fauna. In turn, the public's view into the Modoc Preserve would be impaired because the public would no longer see any, or as many, milkweed plants, eucalyptus trees or the Monarch butterflies that use those plants and trees as habitat. The MND's failure to address these impacts justifies denial of the proposed Project on this basis alone.

C. <u>The MND Has Not Analyzed The Impacts Of Degradation Of Topsoil Quality</u>

The proposed Project intends to "slightly re-align" the bioswale. The new drainage swale would have a top width of about six feet and depth of about two feet. (Revised MND p. 5 [ "An existing man-made 750 foot-long earthen drainage swale located parallel to Modoc Road would be slightly re-aligned and incorporated into the multi-use path

design. The drainage swale would have a top width of about six feet and depth of about two feet."].) This is in direct conflict with the provisions of the Deed of Conservation Easement (Exhibit Q, p. 5) a portion of which has been embedded into this comment letter:

(f) **Erosion**. Any use or activity in the Easement Area which causes significant degradation of topsoil quality, significant pollution or a significant increase in the risk of erosion.

(g) **Alteration of Topography**. Any alteration of the general topography or natural drainage of the Easement Area, including, without limitation, the excavation or removal of soil, sand, gravel or rock, except as may be required for permitted uses within the Easement Area.

(h) **Watercourses**. The alteration or manipulation of watercourses located in the Easement Area or the creation of new water impoundments or watercourses for any purpose other than permitted uses of the Easement Area or enhancement of natural habitat or wetland values.

This Modoc Road bioswale filters the runoff feeding into the Modoc Preserve wetland recharges the groundwater and nourishes the trees' roots. Bioswales provide a way to conserve water, improve water quality, minimize the pollution in waterways and improve biodiversity in our burgeoning concrete jungles.

The MND states that "Storm run-off from the subject segment of Modoc Road and collector streets (Encore Drive, Via Zorro) drains to the Modoc Preserve via sheet flow and storm drain inlets where much of it infiltrates in this depressional area. Excess storm flow discharges via a small earthen channel to Cieneguitas Creek approximately 600 feet downstream (south) of Modoc Road." (Revised MND p. 73.)

The MND also states that "No changes in creek or storm drain locations, dimensions or hydraulic characteristics would occur. Therefore, no changes in drainage patterns would occur. The project includes minor realignment of a man-made drainage swale located south of Modoc Road; however, local drainage patterns would be maintained. The project would not involve an increase in impervious surfaces. Approximately 0 acres of impervious surfaces would be added when including reductions associated with the use of pervious materials and the removal of impervious surface portions of the existing bike lane associated with the multi-use path construction. This area would be dispersed over the 3,955-foot-long multi-use path alignment and would not substantially alter percolation rates or surface run-off in the project area." (Revised MND p. 75.)

Just having heavy equipment anywhere near the soil along this important drainage would degrade the soil. The MND further states "soil disturbance associated with recent restoration activities may have adversely affected this species" and "Northern California legless lizard is unlikely to occur along the multi-use path alignment due to soil compaction associated with roadway construction and maintenance, and existing trail use by pedestrians, bicyclists and equestrians." (Revised MND p. 37.) Yet, no mitigation is provided for this species' impact. (Revised MND p. 37 ["Northern California Legless Lizard. Suitable habitat for this species occurs at the Modoc Preserve. However, soil disturbance associated with recent restoration activities may have adversely affected this species if present. Northern California legless lizard is unlikely to occur along the multi-

use path alignment due to soil compaction associated with roadway construction and maintenance, and existing trail use by pedestrians, bicyclists and equestrians."].)

D. The County Has Failed To Consult With CDFW

An agency preparing an initial study must consult with all responsible agencies and trustee agencies responsible for resources affected by the project, under PRC §21080.3(a), and CEQA Guidelines § 15063(g). Consultation means the "meaningful and timely process of seeking, discussing, and considering carefully the views of others[.]" (See e.g., Gov't. Code, § 65352.4.) Thus, consultation is more than just sending a piece of paper to the State Clearinghouse. Here, there is no evidence that the County has consulted with the CDFW on this proposed Project, especially with respect to biological impacts relating to wildlife that are of concern to the CDFW as noted above.

E. The MND Fails To Conduct An Adequate Cumulative Impacts Analysis

The MND purports to address cumulative impacts by looking at other projects in the Goleta Area. (Revised MND p. 82, referencing MND Section 3.2.) However, MND Section 3.2 uses a list of project approach. (Revised MND p. 13.) A list of projects approach to cumulative impacts analysis requires the agency to create a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency. (CEQA Guideline Section 15130(b)(1).) However, here, the Revised MND only identifies projects that are pending, have recently been approved, and projects that are currently being constructed. This limited list excludes all probable future projects and prior projects with similar impacts as those of the instant proposed Project, such has oak tree removal, native grassland removal, special status plant removal and other biological impacts. Without a comprehensive list of projects causing related impacts, the MND's cumulative impact analysis is inadequate as a matter of law.

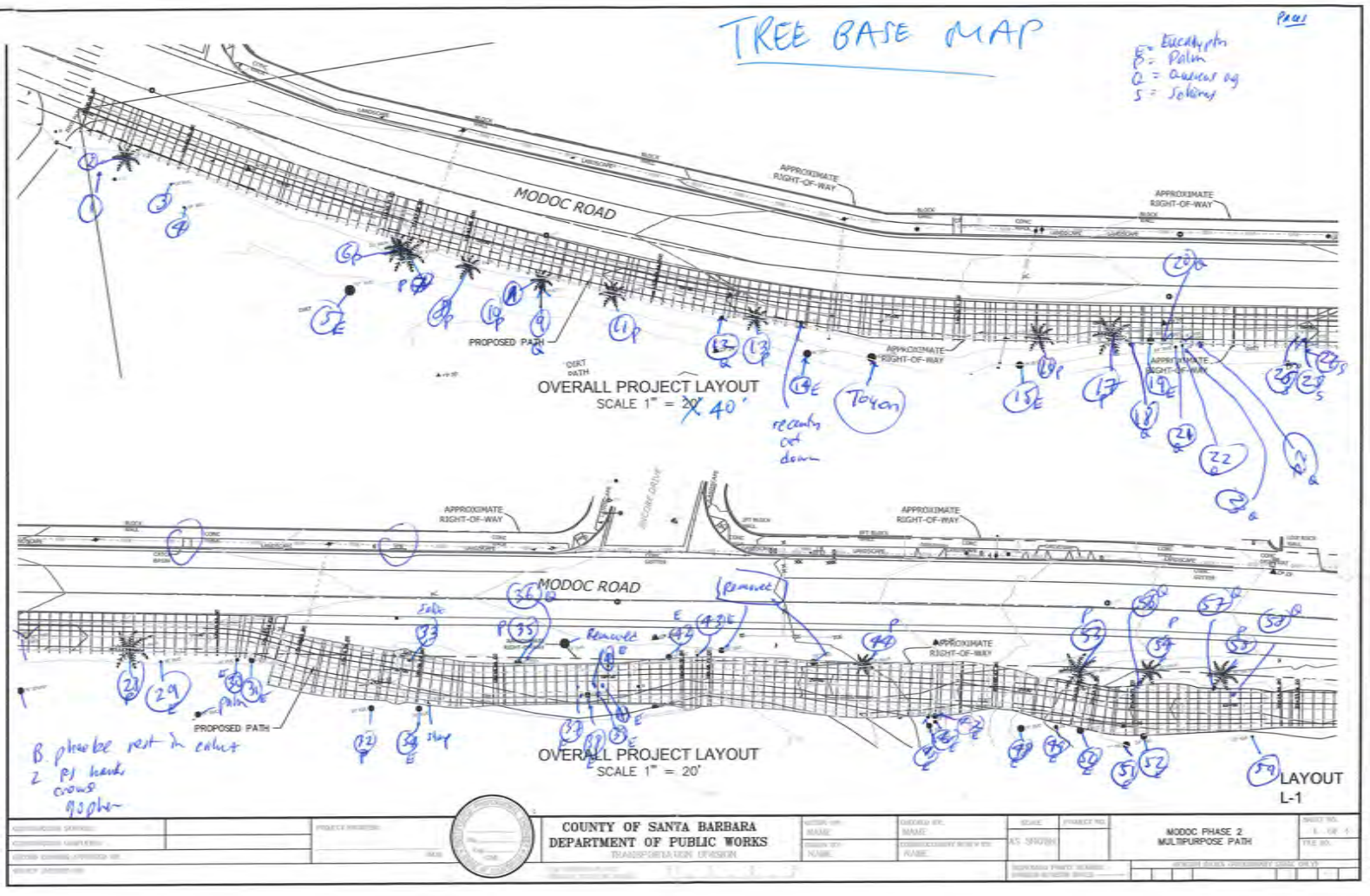
As just one example, while the list includes the Boulders Park Hills Estates residential development as a project under current development, it fails to address how the construction under the instant proposed Project would impact the mitigatory plantings in the Modoc Preserve that were required by the Park Hills Estate Project approval.

Respectfully submitted,

VENSKUS & ASSOCIATES, A.P.C.

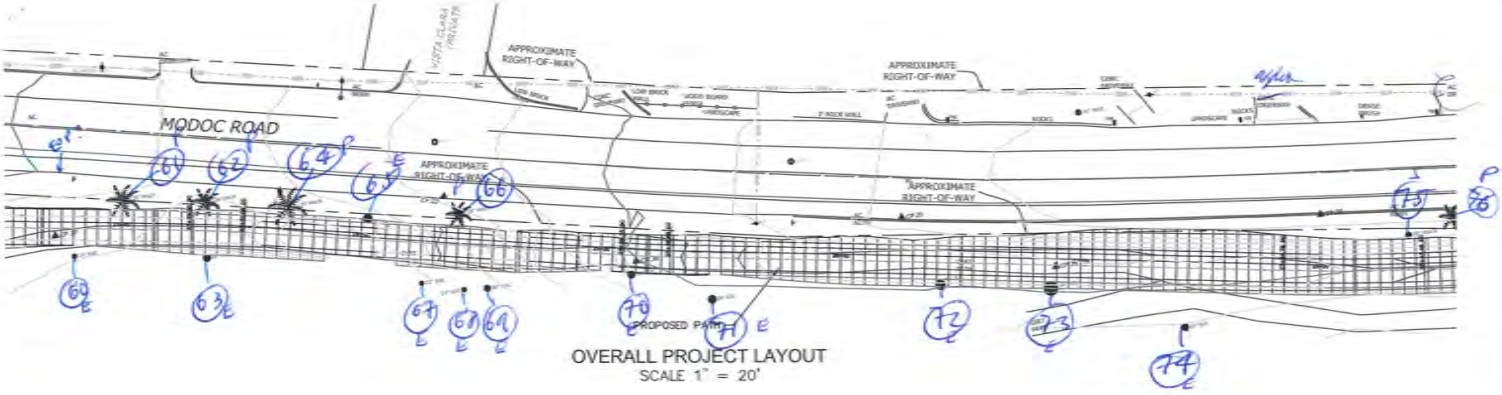
Sabrina Venskus, Esq.
Attorney for CAMP

# EXHIBIT A

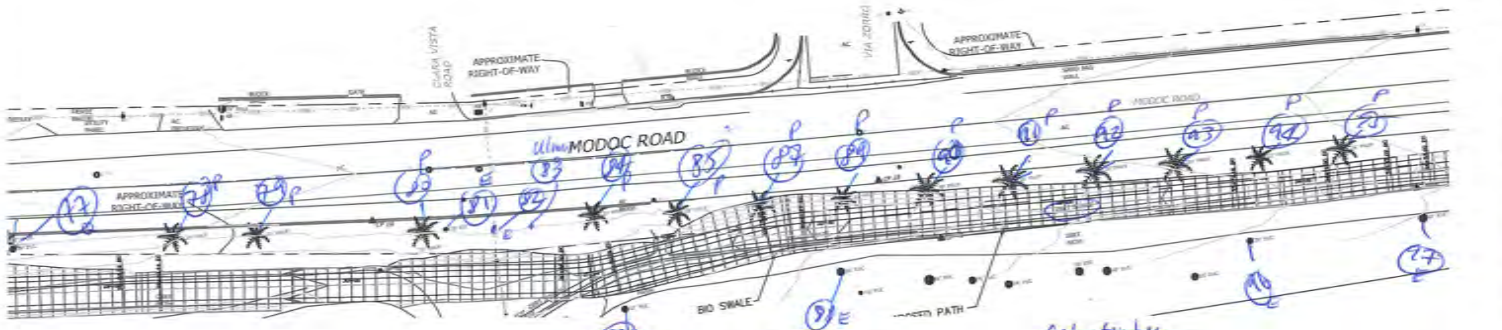



COUNTY OF SANTA BARBARA
DEPARTMENT OF PUBLIC WORKS
TRANSPORTATION DIVISION

MODOC PHASE 2
MULTIPURPOSE PATH




OVERALL PROJECT LAYOUT
SCALE 1" = 20'



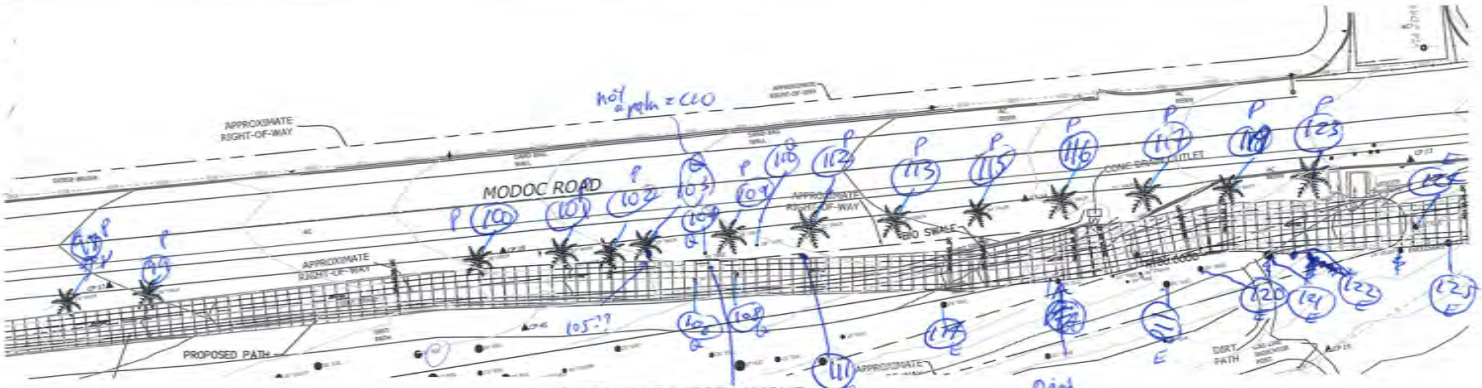

OVERALL PROJECT LAYOUT
SCALE 1" = 20'

Cal towhee
Bush rabbit
acorn woodpecker

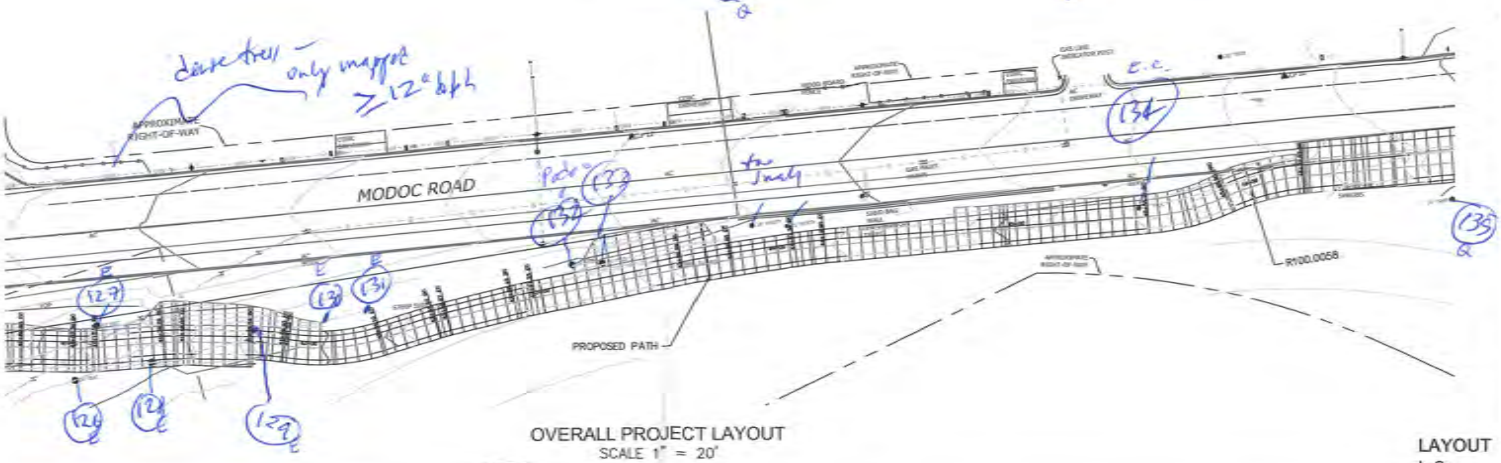
LAYOUT
L-2

COUNTY OF SANTA BARBARA
DEPARTMENT OF PUBLIC WORKS
TRANSPORTATION DIVISION

MODOC PHASE 2
MULTIPURPOSE PATH




OVERALL PROJECT LAYOUT
SCALE 1" = 20'

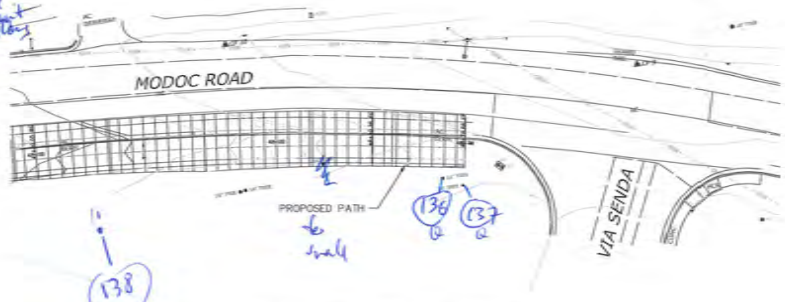



OVERALL PROJECT LAYOUT
SCALE 1" = 20'

LAYOUT
L-3

COUNTY OF SANTA BARBARA
DEPARTMENT OF PUBLIC WORKS
TRANSPORTATION DIVISION

MODOC PHASE 2
MULTIPURPOSE PATH




OVERALL PROJECT LAYOUT
SCALE 1" = 20'

LAYOUT
L-4

COUNTY OF SANTA BARBARA
DEPARTMENT OF PUBLIC WORKS
TRANSPORTATION DIVISION

MODOC PHASE 2
MULTIPURPOSE PATH
CONCEPTUAL PLAN

# EXHIBIT B

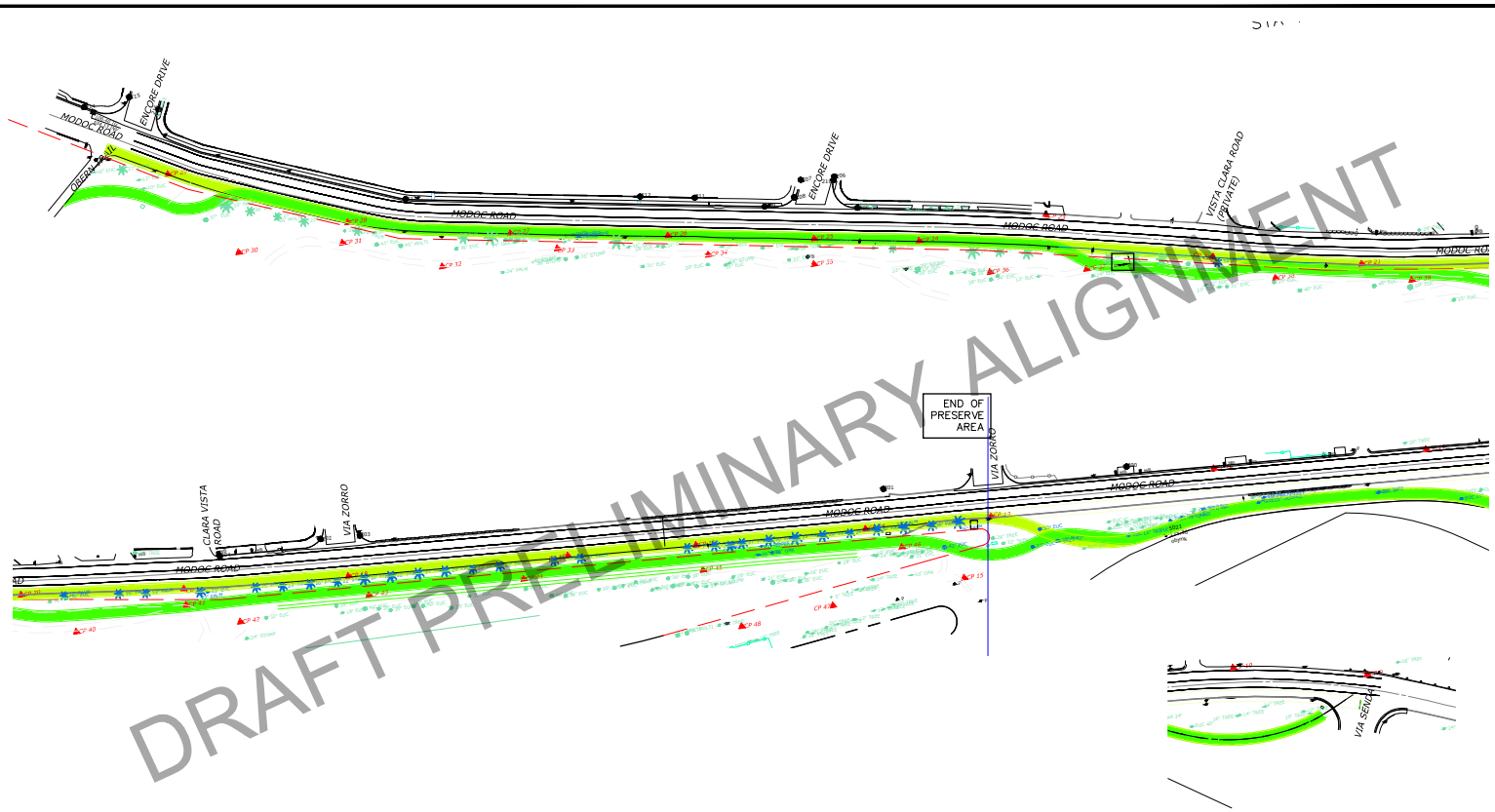

4051 Modoc Rd
Exit Street View
1 2 3 4 5 6 7 8 9
VIA ZORRO
OAKS
OAKS
OAK
© 2022 Google
Google Earth
Report a problem
34°26'10.94" N 119°45'24.96" W elev 157 ft eye alt 156 ft


4051 Modoc Rd
Exit Street View
N
© 2022 Google
Google Earth
Report a problem
Imagery Date: 3/2019 34°26'12.89" N 119°45'27.51" W elev 149 ft eye alt 157 ft


OAKS
DRAINAGE


7 8 9 10 11 6F 1
67 68 69 70 71 72 73

# EXHIBIT C






OVERALL PROJECT LAYOUT
SCALE 1" = 60'

LAYOUT
L-3

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CONSTRUCTION STARTED: | | PROJECT ENGINEER: | COUNTY OF SANTA BARBARA<br>DEPARTMENT OF PUBLIC WORKS<br>TRANSPORTATION DIVISION | DESIGN BY: NAME<br>DRAWN BY: NAME | CHECKED BY: NAME<br>CONSTRUCTABILITY REVIEW BY: NAME | SCALE: AS SHOWN | PROJECT NO. | MODOC PHASE 2<br>MULTIPURPOSE PATH | SHEET NO. 3 OF 4<br>FILE NO. |
| CONSTRUCTION COMPLETED: | | | | | | | | | |
| RECORD DRAWING APPROVED BY: | | DATE | | | | | | | |
| SURVEY CHECKED BY: | | | FOR REDUCED PLANS ORIGINAL SCALE IN INCHES 0 1 2 3 | | | DISREGARD PRINTS BEARING EARLIER REVISION DATES | | REVISION DATES (PRELIMINARY STAGE ONLY) | |

# EXHIBIT D

# EXHIBIT E

**From:** Jones, Morgan <mmjones@countyofsb.org>
**Sent:** Monday, August 29, 2022 9:26 AM
**To:** Andreas Forsland <andreas@cognixion.com>
**Cc:** Wageneck, Lael <lwageneck@countyofsb.org>
**Subject:** RE: Update on the Modoc Road Bike Path Project

Hi Andreas,

I am aware of the plan discrepancies, here's a more accurate table for the tree impacts which noted the Coast live oaks (below). Part of the issue with the tree count is that some trees were already removed by the Preserve or the County along the roadway since the planning process started and the other is the volume of changes to the alignments and having several plans being developed at the same time results in small errors. The oak trees noted could be avoided if the proposed trail the moved slightly south but there's a conflict with equestrian trail users there. The equestrian users are working on an alternative trail path which may avoid the area in general but that

process is under development at this point and won't be finalized for a while.

There are a few extremely upset people and it could be said the lack of frequent early engagement with neighbors was predictable, but this is something that has been in process for many years with the community and cycling groups after securing grants and developing a county wide multi-use bike path system. It's really some people are late to the process only becoming aware at last stage of the planning process for the entire system due to the proximity to their homes which is understandable. The option C plan CAMP is promoting would necessitate the removal of a lot of trees, 50 perhaps and requires massive grading to meet ADA requirements and is not buildable, the road down Nogel drive from Vieja to the school is something like 23% and the bridge at the creek would have to be widened impacting a sensitive riparian habitat area. One of your neighbors told me they (CAMP) have hired Sabrina Venskos and are seeking legal action stop the project, sort of left to wonder is this a " save the trees or Preserve" issue as claimed or really an attempt to stop alternative transportation projects County wide?

We will be releasing a new draft environmental document (MND) in the near future for a 30-day public review which will fully disclosure Options A& B as the potential routes.

If you are willing, interested and motivated to have the path adjacent to your home and would like to help please do so. I'm CC-ing Lael our Public information Officer (PIO) who is the point of contract for media and public relations.

e. Project implementation would require the removal of approximately 21 trees, including six native and 15 non-native trees (see Table 8). The impact to native trees is considered significant because more than 10 percent of the native trees of biological value found at the project site would be removed.

**Table 8. Tree Impact Summary***

| Species | Range of Tree Diameters at Breast Height (inches) | Number to be Removed | Origin |
|---|---|---|---|
| Canary Island palm (*Phoenix canariensis*) | 26 | 1 | Non-native, planted along Modoc Drive |
| Blue gum (*Eucalyptus globulus*) | 20-38 | 8 | Non-native, planted and invasive |
| Coast live oak (*Quercus agrifolia*) | 5-16 | 6 | Native |
| Peruvian pepper tree (Schinus mole) | 6-8 | 3 | Non-native, planted and invasive |
| Fern pine (*Podocarpus gracilior*) | 17 | 1 | Non-native, planted |
| Incense cedar (*Calocedrus decurrens*) | 9 | 1 | Non-native, planted |
| Lemon gum (*Eucalyptus citriodora*) | 18 | 1 | Non-native, planted |
| **Total** | | **21** | |

*Does not include non-native tree saplings

Best regards,

Morgan M. Jones

Morgan M. Jones

Engineering Environmental Project Team Leader

Santa Barbara County Public Works, Transportation Division-Engineering Section

123 Anapamu Street, Santa Barbara, CA 93101-2026

Phone 805-568-3059

Fax 805-884-8081

mmjones@countyofsb.org

# EXHIBIT F


4118 Modoc Rd
Goleta, California
Google
Street View - Mar 2019
OAK
Encore Dr
Google
Image capture: Mar 2019 © 2022 Google United States Terms Privacy Report a problem


4112 Modoc Rd
Goleta, California
Google
Street View - Mar 2019
OAK
Modoc Rd
Encore Dr
Modo
Google
Image capture: Mar 2019 © 2022 Google United States Terms Privacy Report a problem


OAK


OAK
35


OAK
ROW SURVEY STAKE

# EXHIBIT G

KR&EC

August 25, 2020

Mr. Alex Tuttle
Supervising Planner, Development Review
County of Santa Barbara Planning and Development
123 East Anapamu Street
Santa Barbara, CA 93101

**RE: Year 3 Annual Report for Modoc Preserve Native Grassland Restoration for the Boulders Park Hills Estates Project, Santa Barbara, California**

Dear Mr. Tuttle:

This report serves as the Year 3 Annual Report for the Modoc Preserve Native Grassland Restoration Project implemented as mitigation for the Boulders Park Hills Estates residential development and required by the County of Santa Barbara Planning and Development Department (County) Permit #10TRM-00000-00001, Condition 14-Bio-Sp2. The purpose of the Annual Report is to provide a summary of restoration monitoring and maintenance activities over the last year following the approved restoration plan [*Modoc Preserve Native Grassland Compensatory Mitigation Plan for the Park Hills Estates Project* prepared by Kisner Restoration and Ecological Consulting, Inc. (KR&EC, 2014)]. Additional details are included under the monitoring section below including a discussion of the progress of the restoration site in achieving performance standards and goals, and a description of contingency measures to be implemented if achievement of performance standards is not anticipated.

## PROJECT BACKGROUND

The County approved restoration plan was implemented as part of mitigation for the native bunchgrass, purple needlegrass (*Stipa pulchra*), associated with the development of Park Hills Estates residential housing development project, Santa Barbara County, California. The approximately 6.5-acre restoration site is located at the Modoc Preserve (preserve) south of Modoc Road near Hope Ranch in Santa Barbara. The 22-acre preserve is owned by the La Cumbre Mutual Water Company (Water Company) and managed in collaboration with the Santa Barbara Land Trust and the Modoc Preserve Committee. The preserve consists primarily of non-native dominated annual grasslands with eucalyptus (*Eucalyptus globulus*) and coast live oak (*Quercus agrifolia*) woodlands on the southern border, a central drainage dominated by arroyo willow (*Salix lasiolepis*) and ornamental trees, and eucalyptus/ornamental trees along the northern border adjacent to Modoc Road. The central drainage receives overflow from Laguna Blanca and water flows from east to west through the wetlands on site and then in to Cieneguitas Creek at the west boundary of Modoc Preserve. The wetlands also receive runoff from several storm drains along Modoc

Kisner Restoration and Ecological Consulting, Inc.
1130 East Clark Suite 150-233
Santa Maria, CA 93455

Road and surface runoff from the adjacent residential areas and roads. The site has a gradual slope up to Modoc Road north of the wetlands and a steeper slope south of the wetlands up to Vieja Road and some residences. The property is used for passive recreation include hiking and horseback riding. There is a horse jumping arena just outside of the preserve at the northwest end.

Mrs. Johanna Kisner and Mr. David Kisner, owners and Principal Ecologists of KR&EC, are the Restoration Ecologists for the restoration efforts. Santa Barbara Natives, Inc. provided supplemental native plant materials and Agri-Environmental Landscapes performed maintenance during Year 3 maintenance and monitoring.

Restoration efforts began with mowing in spring 2015. Planting and seeding efforts began in November 2015 and were completed on March 11, 2017. The five-year maintenance and monitoring program was initiated immediately following completion of planting. This annual report covers Year 3 maintenance and monitoring for the period from June 2019 through May 2020.

## RESTORATION INSTALLATION

A detailed description of the restoration installation is provided in the *As Built Report for Modoc Preserve Native Grassland Restoration for the Boulders Park Hills Estates Project, Santa Barbara, California* (KR&EC, 2017). Attachment A shows the locations of Phase I and II planted and seeded areas. A total of 15,749 native plants over 3.64 acres and approximately 45 pounds of seed over 2.23 acres were installed. In wet meadow areas a total of 5,495 plants were installed and in grassland areas a total of 10,254 plants were installed. The total restoration area including mowed areas is 6.51 acres which is slightly higher than the 6.14 acre required mitigation. Plant species and quantities planted are shown in Table 1. Plant species seeded and pounds of seed installed are shown in Table 2.

**Table 1. Native Plant Species and Quantities Installed**

| Species | Quantities |
|---|---|
| **Wet Meadow** | |
| *Anemopsis californica* | 510 |
| *Carex praegracilis* | 172 |
| *Distichlis spicata* | 192 |
| *Eleocharis macrostachya* | 250 |
| *Elymus triticoides* | 1698 |
| *Euthamia occidentalis* | 0 |
| *Juncus acutus* | 62 |
| *Juncus mexicanus* | 25 |
| *Juncus patens* | 1086 |
| *Juncus phaeocephalus* | 291 |
| *Juncus textillis* | 606 |

| **Species** | **Quantities** |
|---|---|
| *Muhlenbergia rigens* | 257 |
| *Scirpus americanus* | 120 |
| *Scirpus cernus* | 76 |
| *Scirpus pungens* | 90 |
| *Sparganium eurycarpum* | 60 |
| **Total wet meadow** | **5495** |
| **Native Grassland** | |
| *Asclepias fascicularis* | 95 |
| *Bromus carinatus* | 430 |
| *Distichlis spicata* | 2250 |
| *Eschscholzia californica* | 170 |
| *Fragaria vesca* | 100 |
| *Hordeum brachyantherum brachyantherum* | 64 |
| *Hordeum brachyantherum californicum* | 232 |
| *Elymus condensatus* | 270 |
| *Lupinus succulentus* | 36 |
| *Sisyrinchium bellum* | 876 |
| *Stachys ajugoides* | 149 |
| *Stipa pulchra* | 5550 |
| *Verbena lasiostachya var. lasiostachys* | 32 |
| **Total grassland** | **10254** |
| **Both habitats total** | **15749** |

**Table 2. Pounds of Native Seeds Installed**

| **Seeds** | **~ lbs** |
|---|---|
| *Bromus carinatus* | 4 |
| *Centromadia parryii ssp. australis* | 17.6 |
| *Eschscholzia californica* | 1.5 grams |
| *Lupinus bicolor* | 0.1 |
| *Lupinus succulentus* | 0.35 |
| *Stipa pulchra* | 23 |
| *Uropappus lindleyi* | 0.1 |
| *Zeltnera muehlenbergii* | 0.2 |
| **Total** | **45** |

Photo point locations established prior to restoration installation are shown in Attachment A. Photographs were taken at the photo points prior to, during, and after restoration activities. The As-Built Report provides photographs of the restoration site before and immediately following installation.

**MAINTENANCE**

Maintenance was conducted by Agri-Environmental Landscapes during Year 3. Maintenance included weed removal by hand weeding, weed whacking, and mowing, supplemental watering, repair of the irrigation system, supplemental planting, and gopher control. Limited herbicide was applied by Dr. Adam Lambert for weed removal as necessary.

**Weeding**

The Restoration Biologist conducted regular site visits to make sure weeds were removed in a timely manner prior to fruiting and setting seed. Maintenance was typically conducted by a two-man crew at least twice a week with oversite and mowing conducted by Mr. Marc Russo. Several weed whacking events and mowing in selective areas was conducted during the spring seasons to minimize non-native annual grasses going to seed. In addition, the crew hand removed target weeds including cheeseweed (*Malva parviflora*), smilo grass (*Stipa miliacea* var. *miliacea*), bristly ox-tongue (*Helminthotheca echioides)*, prickly wild lettuce (*Lactuca serriola*), castor bean (*Ricinus communis*), curly doc (*Rumex crispus*), periwinkle (*Vinca major*), bindweed (*Convolvulus arvensis*), common salsify (*Tragopogon porrifolius*), Russian knapweed (*Acroptilon repens*), Russian thistle (*Salsola tragus*), wild radish (*Raphanus sativus*), and black mustard (*Brassica nigra*). Herbicide was applied to control difficult to remove species such as Russian knapweed, kikuyu grass (*Pennisetum clandestinum*), bindweed, geranium (*Geranium dissectum*), knotted hedge parsley (*Torilis nodosa*), and Bermuda grass (*Cynodon dactylon*). Herbicide was also applied carefully around newly installed purple needlegrass plants to reduce competition and allow the plants to become established. Weeds were moved to piles and were either disposed of off-site in a waste bin or moved to a pile outside the restoration site to minizine spreading of weed seeds.

**Irrigation**

The maintenance crew conducted hand watering over the summer and fall months to keep plants growing, and also during the supplemental planting installation to assist with plant establishment. Supplemental watering was not necessary during months with rainfall (December through April). Water use as a result of project demands was balanced with water availability since La Cumbre Mutual Water Company has authority over water use at the site. The hand watering system has allowed for maximum efficiency and plants have been watered only as needed.

**Supplemental Planting**

In Year 2, 2,775 native grassland plants were installed in areas of lower vegetative cover including 1,200 purple needlegrass and a mix of 10 other species. In Year 3, from December 2019 through April 2020, 4,000 purple needlegrass plants were installed in areas of lower native cover throughout the site.

**Animal Disturbance**
Gophers, squirrels, and rabbits are abundant on the Preserve and have had some impacts to planting efforts. Ongoing gopher control using wire traps has been implemented throughout the site since completion of Phase II plant installation. The Restoration Biologist has been noting areas of higher gopher activity for the crew to focus their trapping efforts. During Year 3 maintenance, gopher control efforts have successfully kept the disturbance to native plants to a minimum. Two barn owl boxes were installed in March 2020 to assist with reducing the gopher population over the long term.

Squirrels have mostly been a problem on the west end near the horse corral and approximately 10 installed grasses were lost due to damage from squirrel burrowing. This problem has not been enough to affect meeting performance standards, but this should be monitored and if it becomes more of a problem, squirrels may also need to be trapped to reduce the damage to plants from burrowing activity.

Limited herbivory from rabbits was noted along the edges of bushes and trees, so container plants were stored in open areas to avoid herbivory by rabbits, and this was successful.

There had been a large invasion of snails on February 15, 2020 immediately following planting efforts, and a small portion of the newly installed grasses were eaten by snails. Snail bait was immediately applied around the newly installed plants, which protected the majority of the new plants until the threat passed.

## MONITORING

KR&EC Principal Ecologist, Johanna Kisner conducted restoration monitoring of the project site throughout Year 3. Monitoring included providing regular guidance to the maintenance crew on weeding priorities, planting, and watering, and qualitative and quantitative vegetation monitoring methods to document the success of the restoration maintenance activities for the third year according to the restoration plan. Monitoring methods and results are described below.

**Monitoring Methods**
Qualitative monitoring visits were conducted approximately one or more times a month during Year 3 to document native plant establishment and weeding priorities and provide direction to the maintenance crew for planting, watering, and weeding. A list of all plants and wildlife observed on site during site visits was recorded. Photographs were taken on April 30 and May 5, 2020 from the established photo points three years after installation was complete (see Attachment B). In addition, photographs were taken during monitoring visits to document progress of weeding and establishment of native plants throughout the third year of maintenance activities.

In April/May 2020, vegetation transect monitoring was implemented for the first time to determine percent cover of non-native species, native species, and purple needlegrass, and

plant diversity. Fifteen linear vegetation monitoring transects were established within the restoration site to systematically assess the progress of native plant establishment and weed control. Four transects were placed in wet meadow areas and eleven transects were placed in grassland areas. The location of each of these transects is shown on Attachment E. Each fixed linear transect is thirty meters in length. The point intercept method is used to identify the cover type along each transect at 10-centimeter intervals from 500 to 1000 cm and 2000 to 2500 cm for a total of 1000 cm. At each point, the intersecting plant species are recorded (with a maximum of the two dominant species recorded per point). If plants are absent from the point, the substrate is recorded as bare ground. Plants that are dead are recorded as dead plants.

**Monitoring Results**

Overall, good progress was made in Year 3 to control weeds and increase native cover. Year 3 received above average rainfall, which promoted increased vegetative growth. Based on vegetation transect results in the spring of 2020, site-wide, native species cover is approximately 53 percent in wet meadow areas and 30 percent in grassland areas as shown in Table 3. There has been noticeable vegetative growth of the native species as is evident in the photos comparing Year 2 and Year 3 (See Attachment B).

**Table 3. Average Percent Cover by Habitat Type in Spring 2020**

| Cover Type | Wet Meadows | Grasslands |
|---|---|---|
| Native Species | 53.3% | 30.4% |
| Non-Native Species | 41.3% | 45.4% |
| Bare Ground | 5.4% | 24.2% |

Purple needlegrass is variable in cover throughout the site but showed an average of 13.5 percent cover. Purple needlegrass is flowering throughout the site where it is present, and there is new recruitment of several seedlings around mature plants in areas that are more open such as the north side and west end east of the trail. The purple needlegrass installed in Year 3 are growing and the first plants installed this growing season on the west end flowered and seeded.

Flowering native forbs seeded or planted that were observed in Year 3 include Monterey centaury (*Zeltnera muhlenbergii*), fleshy lupine (*Lupinus succulentus*), blue-eyed grass (*Sisyrinchium bellum*), southern tarplant (*Centramadia parryi* ssp. *australis*; CNPS 1B), white yarrow (*Achillea milefolium*), narrow-leaved milkweed (*Asclepias fascicularis*), verbena (*Verbena lasiostachya*), wood mint (*Stachys bullata*), hummingbird sage (*Salvia spathacea*), *Solidago californica*, wild strawberry (*Fragaria vesca*), and California poppy (*Eschscholzia californica*). Other native volunteer forbs observed include alkali mallow (*Mavella leprosa*), miner's lettuce (*Claytonia perfoliata*), and caterpillar phacelia (*Phacelia cicutaria*).

Non-native cover comprises about 41 percent cover in wet meadows and 45 percent cover in grasslands. This is reduced from Year 2, which had approximately 60 percent cover of non-native species. Weeds with the highest percent cover include ripgut brome (*Bromus diandrus*), wild oats, and Italian ryegrass with patches of bindweed, geranium, and cheeseweed and several other scattered weeds as listed in Attachment C. The majority of weeds on site are cut or removed prior to producing seed. Several weeds that were abundant prior to restoration are only found in small numbers or not at all including kikuyu grass, harding grass (*Phalaris aquatica*), and Russian knapweed. A newly observed weed on site is swamp pickle grass (*Crypsis schoenoides*).

Native species diversity was high in Year 3 and was the same as Year 2 in grassland and wet meadow habitats; however, the cover of these species has continued to increase. Fifty-two native plant species were observed within the restoration area in Year 3, with four species listed as rare on the Santa Barbara Botanical Garden's *Rare Plants of Santa Barbara County List*. Attachment C provides a list of all plant species observed on site and compares observations prior to restoration and after restoration including new species observed in Year 3.

The site has a good diversity of wildlife species as shown in Attachment D. Efforts have continued to increase the number of narrow-leaved milkweed, the host plant for Monarch butterflies. In 2017, 150 milkweed plants were installed and in 2018 an additional 200 milkweed were installed. Monarch caterpillars were observed on many of the planted milkweed in spring of 2019 and 2020.

**PERFORMANCE EVALUATION**

The performance criteria specified in the restoration plan to measure the success of the restoration project are as follows:

1) Characteristic native grassland species shall meet a minimum of 25 percent relative cover and in addition to *Stipa pulchra* include species such as *Sisyrinchium bellum, Plagiobothrys* sp., *Elymus triticoides, Juncus occidentalis, Eschscholzia californica*.
2) Purple needlegrass shall meet a minimum absolute cover of 20 percent across the site.

Based on the vegetation transect monitoring in April/May 2020, wet meadow areas have on average exceeded native cover of 25 percent, and native grassland areas have exceeded 25 percent native cover. Purple needlegrass is on average 13.5 percent cover in grassland areas, which has not yet achieved the percent cover requirement but with 4,000 purple needlegrass installed in Year 3, the project is on track for achieving this performance standard by the end of the five-year maintenance and monitoring program. Purple needlegrass cover is expected to continue to increase across the site over the late spring/summer months as there is no competition with annual non-native grasses and

recently installed purple needlegrass are being provided supplemental water for successful establishment.

## CONCLUSION AND RECOMMENDATIONS

Overall, the restoration project is progressing well with increasing native cover across the site and a high diversity of native grassland and wet meadow species. The wet meadow areas have exceeded the native cover requirement of 25 percent and are at about 53 percent. Therefore, no additional planting is anticipated for the wet meadow areas; however, continued weed control is necessary to maintain the native cover and minimize spreading of weed seeds into the grassland areas. The grassland areas doubled in native cover from about 15 percent cover overall last year to 30 percent in Year 3, which is exceeding the native cover performance standard. Purple needlegrass cover has not yet reached the 20 percent cover requirement at 13.5 percent cover. Therefore, maintenance in Year 4 will focus on maximizing growth and recruitment of well-established and newly installed purple needlegrass and maintaining areas that have achieved the performance standards. The restoration biologist will continue to work closely with the landscaper. The following are some maintenance activities that should be implemented throughout Year 4 in order to efficiently continue to work towards achievement of the purple needlegrass performance standard. These tasks are based on adaptive management and using restoration methods that have proved most successful at the restoration site:

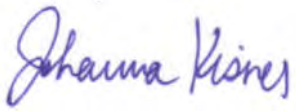
1. Upon approval from La Cumbre Mutual Water Company, continue conducting supplemental hand watering over the summer/fall of the newly installed grasses for successful establishment until rainfall is sufficient. Currently the small purple needlegrass should be watered once a week. Purple needlegrass installed this year that is more establish and has already flowered should be watered every two weeks.
2. Areas seeded with poppies over wood chips should be watered regularly if rainfall is not sufficient to trigger germination or keep seedlings growing.
3. During early germination of weeds continue implementation of large-scale herbicide application by Adam Lambert in areas dominated by weeds, carefully avoiding the natives by having the restoration biologist flag native species in the treatment areas. Continue to use herbicide in areas dominated by weeds or difficult to remove species that are not removed by other methods throughout the year as needed. In Year 3 this allowed for more efficient weed control and reduced competition, which has resulted in a significant increase in native plant growth.
4. Continue with the weekly maintenance schedule of one-man crew four days per week to keep weeds controlled and allow for maximum recruitment of native species focusing particularly around purple needlegrass. It has been observed that purple needlegrass has been showing the most recruitment around the mature plants that have bare soil around them. This requires aggressive weed removal around the seeding plants for about a 2-foot radius. This has proven more successful than broadcast seeding. Carefully hand weed the areas containing poppy, lupine, southern tarplant, and other native species to create more open space for successful germination next season. Continue to implement weed whacking as soon as non-

native grasses begin to flower and maintain cut so that flowers do not produce seed. Mowing is no longer a good method for maintaining the weeds in the restoration areas due to the increase of natives and the expectation that the remaining areas of low cover will be planted or seeded by early winter. In order to maximize growth and recruitment of purple needlegrass the grassland areas need to be kept weeded.

5. Restoration biologist to opportunistically drop purple needlegrass seeds into moist soil after a good rain in areas with lower cover.
6. It is important that the Modoc Committee implements early mowing/weed whacking of non-native grasses and weeds in early spring (around early March when grasses begin to flower in coordination with the Restoration Biologist) throughout the preserve outside of the restoration areas. This will benefit the preserve as a whole by increasing the ecological value and beauty of the preserve by allowing native species already present in these areas to spread and will decrease weed seeds over time that would otherwise blow in to the restoration areas, thus contributing to the long-term success of the two active restoration projects at the Preserve.
7. Since narrow-leaved milkweed is a native grassland species and beneficial for the Monarch butterflies, efforts should be made to continue expanding the milkweed plants by keeping the areas weeded and allowing them to spread by natural recruitment from seeds.

Please feel free to contact me at 805-863-7266 or kisnerecology@gmail.com if you have any questions.

Sincerely,



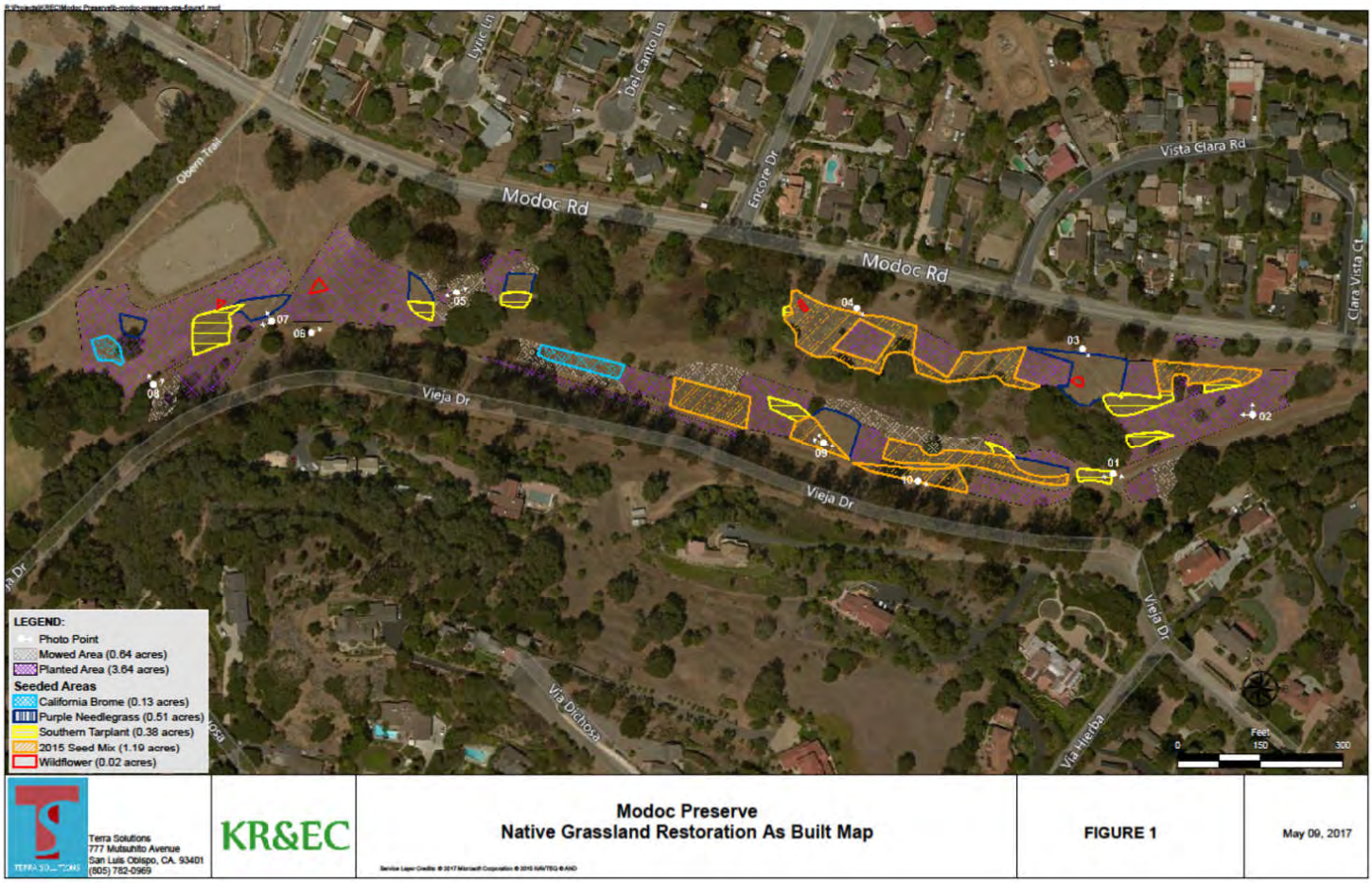
Johanna Kisner
Owner/Principal Ecologist
Kisner Restoration and Ecological Consulting, Inc.

Cc: Jeff and Dottie Nelson, Oak Creek Company; David Magney, California Native Plant Society; Jane Lodas, Modoc Preserve Committee; Bruce Reitherman, Santa Barbara Land Trust, and Mike Alvarado, La Cumbre Mutual Water Company

**Attachments**
Attachment A. As Built Map and Photo Point Locations
Attachment B. Spring 2019 and 2020 Photo Point Photographs
Attachment C. List of Plants Observed on Site
Attachment D. Wildlife Observations on Site
Attachment E. Vegetation Transect Locations

**ATTACHMENT A.**

**AS BUILT MAP AND PHOTO POINT LOCATIONS**




Terra Solutions
777 Mutsuhito Avenue
San Luis Obispo, CA. 93401
(805) 782-0969

KR&EC

**Modoc Preserve**
**Native Grassland Restoration As Built Map**

**FIGURE 1**

May 09, 2017

# ATTACHMENT B.

# SPRING 2019 AND 2020 PHOTO POINT PHOTOGRAPHS

Photograph 1. Photo Point 1 – south east end facing west. Area behind mulefat planted with *Juncus acutus* and thriving after the planting of *Solidago* was all eaten by rabbits. Area near trail is recommended to be mulched and seeded with poppies. 5/31/19.

Photograph 2. Photo Point 1 – south east end facing west. 5/5/20

Photograph 3. Photo Point 1 – south eastern slope grassland facing southeast showing increased growth of installed natives. 5/31/19.

Photograph 4. Photo Point 1 – south eastern slope grassland facing southeast. 5/5/20.

Photograph 5. Photo Point 2 – wet meadow east end facing west showing increased growth of installed wet meadow plants. 5/31/19.

Photograph 6. Photo Point 2 – wet meadow east end facing west. 5/5/20.

Photograph 7. Photo Point 2 – wet meadow east end facing north showing increased growth of wet meadow species. 5/31/19.

Photograph 8. Photo Point 2 – wet meadow east end facing north. 5/5/20.

Photograph 9. Photo Point 3 – grassland north side facing southeast showing a few patches of mature purple needlegrass. 5/31/19.

Photograph 10. Photo Point 3 – grassland north side facing southeast. 5/5/20.

Photograph 11. Photo Point 4 – grassland north side facing southeast with mature purple needlegrass on the right that went to seed and newly installed purple needlegrass on the left. 5/31/19.

Photograph 12. Photo Point 4 – grassland north side facing southeast. 5/5/20.

Photograph 13. Photo Point 5 – grassland west end facing northeast showing newly installed purple needlegrass and alkali mallow in the foreground and patch of mature purple needlegrass in the background. 5/31/19.

Photograph 14. Photo Point 5 – grassland west end facing northeast. 5/5/20.

Photograph 15. Photo Point 5 – grassland west end facing southwest showing newly installed purple needlegrass after herbicide treatment. 5/31/19.

Photograph 16. Photo Point 5 – grassland west end facing southwest. 5/5/20.

Photograph 17. Photo Point 6 – wet meadow, west end facing east showing increased growth and native cover. 5/31/19.

Photograph 18. Photo Point 6 – wet meadow, west end facing east. 5/5/20.

Photograph 19. Photo Point 7 –west end grassland facing southwest showing increased growth of native wet meadow species on the left and reduced cover of native grassland species on the right. 5/31/19.

Photograph 20. Photo Point 7 –west end grassland facing southwest. 5/5/20.

Photograph 21. Photo Point 7 – west end grassland facing northwest. 5/31/19.

Photograph 22. Photo Point 7 – west end grassland facing northwest. 5/5/20.

Photograph 23. Photo Point 8 – wet meadow/grassland, west end facing northwest showing increased growth of native wet meadow species. 5/31/19.

Photograph 24. Photo Point 8 – wet meadow/grassland, west end facing northwest 4/30/20.

Photograph 25. Photo Point 8 – grassland on south east slope facing east. 5/31/19.

Photograph 26. Photo Point 8 – grassland on south east slope facing east. 4/30/20.

Photograph 27. Photo Point 9 – grassland south side facing east. 5/31/19.

Photograph 28. Photo Point 9 – grassland south side facing east. 5/5/20.

Photograph 29. Photo Point 9 – grassland, south side facing west. 5/31/19.

Photograph 30. Photo Point 9 – grassland, south side facing west. 5/5/20.

Photograph 31. Photo Point 9 – grassland from south side facing northwest. 5/31/19.

Photograph 32. Photo Point 9 – grassland from south side facing northwest. 5/5/20.

Photograph 33. Photo Point 10 – southern "island" grassland facing east. 5/31/19.

Photograph 34. Photo Point 10 – southern "island" grassland facing east. 5/5/20.

Photograph 35. Example of vegetation transect in wet meadow, Transect WX, facing southeast. 5/9/20.

Photograph 36. Example of vegetation transect in grassland, Transect GX facing northeast. 5/8/20.

Photograph 37. Narrow-leaf milkweed, the host plant for Monarch butterflies, is growing well and becoming established in restoration areas. 5/23/20.

Photograph 38. Recently installed grasses on the west end becoming established and flowering. 4/30/20.

**ATTACHMENT C.**

**LIST OF PLANTS OBSERVED ON SITE**

# PLANT SPECIES OBSERVED ON SITE

| Scientific Name | Common Name | Origin | Before Grassland Restoration 2014 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|---|---|
| *Achillea milefolium* | white yarrow | N | | | G | |
| ***Acroptilon repens*** | **Russian knapweed** | **I (Cal-IPC)** | | **WM** | | |
| ***Agrostis stolonifera*** | **Creeping bentgrass** | **I (Cal-IPC)** | **Preserve** | | | |
| *Ambrosia psilostachya* | Western ragweed | N | WM | WM | | |
| *Anemopsis californica** | Yerba mansa | N | Preserve | WM | | |
| *Artemisia californica* | California sagebrush | N | Preserve | | | |
| *Artemisia douglasiana* | Mugwort | N | Preserve | | | |
| *Asclepias fascicularis* | Narrow-leaved milkweed | N | | G | | |
| *Atriplex triangularis* | Spearscale | N | Preserve | | | |
| ***Avena fatua*** | **Wild oats** | **I (Cal-IPC)** | **G** | **G** | | |
| *Baccharis pilularis* | Coyote brush | N | G | G | | |
| *Baccharis salicifolia* | Mulefat | N | Preserve | | | |
| *Bolboschoenus maritimus* | Prarie bulrush | N | Preserve | | | |
| ***Brassica nigra*** | **Black mustard** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| *Bromus carinatus* | California brome | N | | G | | |
| ***Bromus diandrus*** | **ripgut brome** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| ***Bromus hordeaceus*** | **Soft chess** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| *Calystegia macrostegia* | Coastal morning glory | N | Preserve | | | |
| ***Carduus pycnocephalus*** | **Italian thistle** | **I (Cal-IPC)** | **G** | **G** | | |
| *Carex harfordii* | | N | | | G | |
| *Carex praegracilis* | Black creeper | N | Preserve | WM | | |
| ***Carpobrodus edulis*** | **Fig-marigold** | **I (Cal-IPC)** | **Preserve** | | | |
| *Carya illinoinensis* | Pecan (ornamental) | I | G | G | | |
| *Centromadia parryii ssp. australis** | Southern tarplant | N (rare) | | G/WM | | |
| *Chenopodium berlandieri* | Pig-seed goosefoot | I | Preserve | | | |
| ***Circium vulgare*** | **Bull thistle** | **I (Cal-IPC)** | **G** | **G** | | |
| *Claytonia perfoliata* | Miner's lettuce | N | G | G | | |
| ***Conium maculatum*** | **Poison hemlock** | **I (Cal-IPC)** | **G** | **G** | | |
| *Convolvulus arvensis* | Bindweed | I | G | G | | |
| ***Cortaderia selloana*** | **Pampas grass** | **I (Cal-IPC)** | **Preserve** | | | |
| *Cressa truxillensis* | Alkali weed | N | Preserve | G/WM | | |
| *Crypsis schoenoides* | Swamp pickle grass | I | | | | G/WM |
| ***Cynodon dactylon*** | **Bermuda grass** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| *Cyperus eragrostis* | Tall flatsedge | N | Preserve | | | |
| *Cyperus sp.* | Nutsedge | I | Preserve | | | |
| *Distichlis spicata* | Saltgrass | N | G/WM | G/WM | | |
| *Eleocharis macrostachya* | Common spikerush | N | | WM | | |
| *Elymus condensatus* | Giant rye | N | | G | | |

| Scientific Name | Common Name | Origin | Before Grassland Restoration 2014 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|---|---|
| *Elymus triticoides* | Creeping ryegrass | N | Preserve | WM | | |
| *Epilobium canum* | California fuchsia | N | Preserve | G | | |
| *Erigeron bonariensis* | flax-leaved horseweed | I | | | | G |
| *Erigeron canadensis* | Horseweed, mare's tale | N | G/WM | G/WM | | |
| *Erigeron coulteri* | Coulter's horseweed | N | | G | | |
| *Eriobotrya japonica* | Loquat (ornamental) | I | Preserve | | | |
| ***Erodium cicutarium*** | **red-stem filaree** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| *Eschscholzia californica* | California poppy | N | G | G | | |
| ***Eucalyptus globulus*** | **Blue gum** | **I (Cal-IPC)** | **Preserve** | | | |
| *Euphorbia maculata* | spoted spurge | I | | | | G |
| *Euthamia occidentalis* | Western goldenrod | N | Preserve | | | |
| ***Festuca perennis*** | **Italian ryegrass** | **I** | **G/WM** | **G/WM** | | |
| ***Foeniculum vulgare*** | **Sweet fennel** | **I (Cal-IPC)** | **G** | **G** | | |
| *Fragaria vesca* | Wild strawberry | N | | G | | |
| ***Fraxinus uhdei*** | **Shamal ash** | **I** | **G** | **G** | | |
| *Geranium molle* | Geranium | I | G | G | | |
| ***Helminthotheca echioides*** | **Bristly ox-tongue** | **I** | **WM** | **WM** | | |
| *Heteromeles arbutifolia* | Toyon | N | Preserve | | | |
| ***Hirschfeldia incana*** | **Mediterranean mustard** | **I (Cal-IPC)** | **G** | **G** | | |
| *Hordeum brachyantherum brachyantherum* | Meadow barley | N | | WM | | |
| *Hordeum brachyantherum californicum* | Meadow barley | N | | G | | |
| ***Hordeum murinum*** | **Barley** | **I (Cal-IPC)** | **G** | **G** | | |
| ***Hypochaeris glabra*** | **Smooth cats-ear** | **I (Cal-IPC)** | | | | **G** |
| *Isolepis cernua* | Low bulrush | N | | WM | | |
| *Juglans californica** | Southern California black walnut | N | G | G | | |
| *Juglans regia* | English walnut | I | Preserve | | | |
| *Juncus acutus* ssp. *leopoldii** | Southwestern spiny rush | N | | WM | | |
| *Juncus bufonius* | Toad rush | N | | WM | | |
| *Juncus mexicanus* | Mexican rush | N | | WM | | |
| *Juncus patens* | Common rush | N | | WM | | |
| *Juncus phaeocephalus* | Brown headed rush | N | | WM | | |
| *Juncus textilis* | Basket rush | N | | WM | | |
| *Lactuca serriola* | Prickly wild lettuce | I | G | G | | |
| *Lonicera japonica* | Japanese honeysuckle | I | Preserve | | | |
| *Lupinus bicolor* | Miniature lupine | N | | G | | |
| *Lupinus succulentus* | Fleshy lupine | N | | G | | |
| ***Lythrum hyssopifolium*** | **Hyssop loosestrife** | **I (Cal-IPC)** | | **WM** | | |
| *Malacothamnus fasciculatus* | Chaparral mallow | N | Preserve | | | |
| *Malva parviflora* | Cheeseweed | I | G | G | | |

| Scientific Name | Common Name | Origin | Before Grassland Restoration 2014 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|---|---|
| *Malvella leprosa* | Alkali mallow | N | G/WM | G/WM | | |
| *Melilotus officinalis* | Yellow sweetclover | I | G/WM | G/WM | | |
| *Muhlenbergia rigens* | Deer grass | N | | G/WM | | |
| ***Nicotiana glauca*** | **Tree tobacco** | **I (Cal-IPC)** | **G** | **G** | | |
| *Oenothera suffrutescens* | Wild honeysuckle | N | G/WM | G/WM | | |
| *Oleander sp.* | Oleander | I | Preserve | | | |
| *Paspalum dilatatum* | Dallisgrass | I | Preserve | | | |
| ***Pennisetum clandestinum*** | **Kikuyu grass** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| *Phacelia cicutaria* | Caterpillar phacelia | N | | G | | |
| ***Phalaris aquatica*** | **Harding grass** | **I (Cal-IPC)** | **WM** | **WM** | | |
| ***Phoenix canariensis*** | **Canary Island date-palm** | **I (Cal-IPC)** | **Preserve** | | | |
| *Pholistoma auritum* | Fiesta Flower | N | G | G | | |
| ***Pittasporum sp.*** | **Pittasporum** | **I (Cal-IPC)** | **Preserve** | | | |
| *Plantago major* | Common plantain | I | WM | WM | | |
| *Persicaria amphibia* | Water smartweed | N | Preserve | | | |
| *Polygonum arenastrum* | Common knotweed | I | G/WM | G/WM | | |
| ***Polypogon monspeliensis*** | **rabbitsfoot grass** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| ***Pyrocanthus sp.*** | **Pyrocanthus** | **I (Cal-IPC)** | **Preserve** | | | |
| *Quercus agrifolia* | Coast live oak | N | G | G | | |
| *Quercus suber* | Cork oak (Ornamental) | I | Preserve | | | |
| ***Raphanus sativus*** | **Wild radish** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| ***Ricinus communis*** | **Castor bean** | **I (Cal-IPC)** | **G/WM** | **G/WM** | | |
| ***Rubus armeniacus*** | **Himalayan blackberry** | **I** | **Preserve** | | | |
| *Rubus ursinus* | Blackberry | N | G/WM | G/WM | | |
| ***Rumex crispus*** | **Curly dock** | **I (Cal-IPC)** | **WM** | **WM** | | |
| *Rumex maritimus* | Golden dock | I | WM | WM | | |
| *Rumex pulcher* | Fiddle dock | I | WM | WM | | |
| *Rumex salicifolius* | Willow dock | N | WM | WM | | |
| *Salix lasiolepis* | Arroyo willow | N | Preserve | | | |
| ***Salsola tragus*** | **Russian thistle** | **I (Cal-IPC)** | | **G** | | |
| *Salvia spathacea* | Hummingbird sage | N | | | G | |
| *Sambucus nigra* | Mexican elderberry | N | Preserve | | | |
| ***Schinus molle*** | **Peruvian pepper tree** | **I (Cal-IPC)** | **Preserve** | | | |
| ***Schinus terebinthifolius*** | **Brazilian pepper tree** | **I (Cal-IPC)** | **Preserve** | | | |
| *Schoenoplectus acutus* | Common tule | N | Preserve | | | |
| *Schoenoplectus americanus* | Olney's three-square bulrsh | N | | WM | | |
| *Schoenoplectus californicus* | Southern bulrush | N | Preserve | | | |
| *Schoenoplectus pungens* | Common three-square bulrush | N | | WM | | |
| *Sequoia sempevirens* | Redwood | N (ornamental) | Preserve | | | |

| Scientific Name | Common Name | Origin | Before Grassland Restoration 2014 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|---|---|
| ***Silybum marianum*** | **Milk thistle** | **I (Cal-IPC)** | **G** | **G** | | |
| *Sisyrinchium bellum* | Blue-eyed grass | N | | G/WM | | |
| *Solanum douglasii* | Douglas' nightshade | N | Preserve | | | |
| *Solidago californica* | | N | | | G | |
| *Sonchus oleraceus* | Common sow thistle | I | G/WM | G/WM | | |
| *Sparganium eurycarpum* | | N | | WM | | |
| *Stachys ajugoides* var. *ajugoides** | Hedge nettle | N | | G/WM | | |
| *Stachys bullata* | Wood mint | N | | | G | |
| *Stipa lepida* | Foothill needlegrass | N | | | G | |
| ***Stipa miliacea var. miliacea*** | **Smilo grass** | **I (Cal-IPC)** | **G** | **G** | | |
| *Stipa pulchra* | Purple needlegrass | N | | G | | |
| ***Torilis nodosa*** | **Knotted hedge parsley** | **I (Cal-IPC)** | | **G** | | |
| *Tragopogon porrifolius* | Common salsify | I | G/WM | G/WM | | |
| ***Tribulus terrestris*** | **Puncuture vine** | **I** | Preserve | | | |
| *Typha latifolia* | Broad-leaved cattail | N | Preserve | | | |
| *Uropappus lindleyi* | Silver puffs | N | | G | | |
| *Verbena lasiostachya var. lasiostachys* | Verbena | N | | G | | |
| *Vicia sativa* | spring vetch | I | G/WM | G/WM | | |
| ***Vinca major*** | **Periwinkle** | **I (Cal-IPC)** | **G** | **G** | | |
| ***Washingtonia robusta*** | **Mexican fan-palm** | **I (Cal-IPC)** | **Preserve** | | | |
| *Xanthium strumarium* | Cocklebur | N | WM | WM | | |
| ***Zantedeschia aethiopica*** | **Calla-lily** | **I (Cal-IPC)** | **WM** | **WM** | | |
| *Zeltnera muhlenbergii* | Monterey centaury | N | | G | | WM |

***Note:*** *species bolded are considered highly invasive by Cal-IPC or are priorities for removal at Modoc Preserve*

**listed on Santa Barbara Botanical Garden's Rare Plants of Santa Barbara County List*

*Preserve: Found on the Modoc Preserve but no within the restoration area; WM: Found in the wet meadow portions of the restoration area.*

*G: Found in the grassland portions of the restoration area; v: volunteer native species; if "p" also listed it was also planted in other areas*

# ATTACHMENT D.

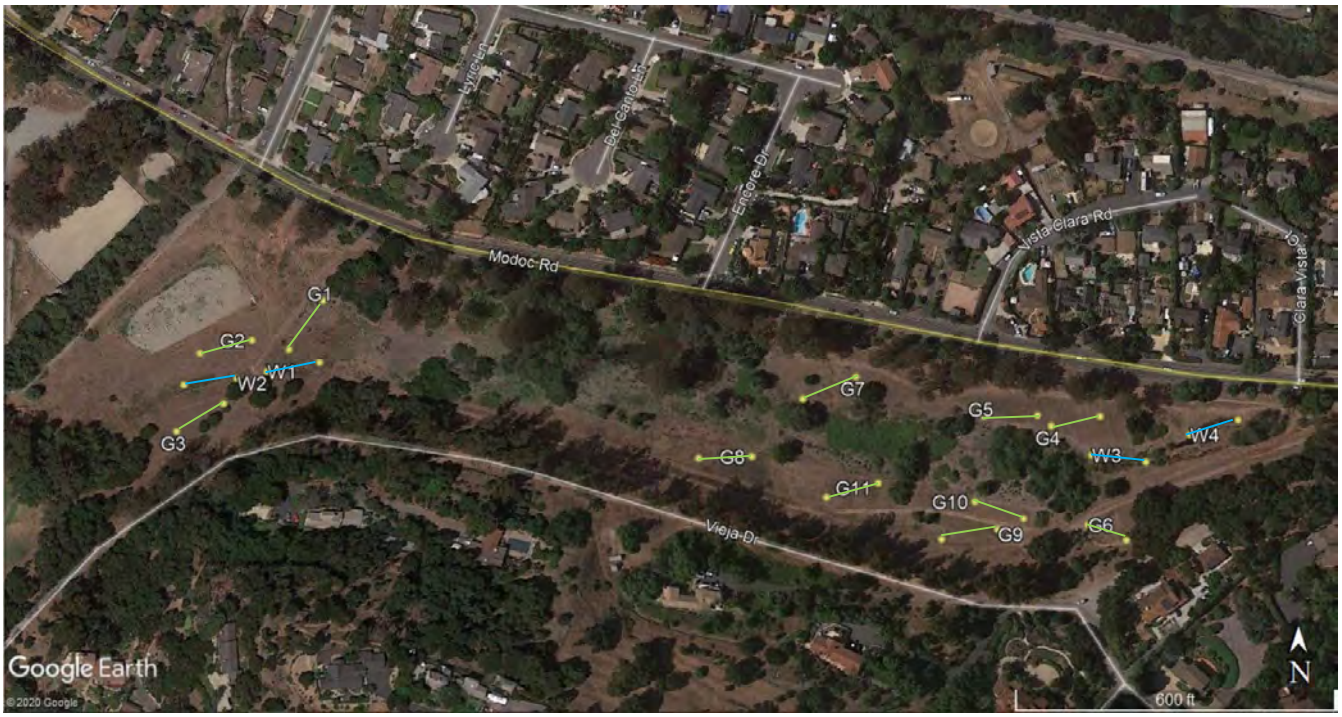
# WILDLIFE OBSERVATIONS ON SITE

# WILDLIFE OBSERVATIONS ON SITE

| **Common Name** | **Scientific Name** |
|---|---|
| Monarch butterfly | *Danaus plexippus* |
| Pacific tree frog | *Pseudacris regilla* |
| Western fence lizard | *Sceloporus occidentalis* |
| San Diego gophersnake | *Pituophis catenifer annectens* |
| Botta's pocket gopher | *Thomomys bottae* |
| California ground squirrel | *Spermophilus beecheyi* |
| Desert cottontail | *Sylvilagus audubonii* |
| Coyote | *Canis latrans* |
| Bobcat | *Lynx rufus* |
| **Birds** | |
| Acorn woodpecker | *Melanerpes formicivorus* |
| American crow | *Corvus brachyrhynchos* |
| Anna's hummingbird | *Calypte anna* |
| Bewick's wren | *Thryomanes bewickii* |
| Black phoebe | *Sayornis nigricans* |
| Bullock's oriole | *Icterus bullockii* |
| Bushtit | *Psaltriparus minimus* |
| California towhee | *Pipilo crissalis* |
| Dark-eyed junco | *Junco hyemalis* |
| Great blue heron | *Ardea herodias* |
| Great horned owl | *Bubo virginianus* |
| Hermit thrush | *Catharus guttatus* |
| Hooded oriole | *Icterus cucullatus* |
| House finch | *Haemorhous mexicanus* |
| Lesser goldfinch | *Carduelis psaltria* |
| Mourning dove | *Zenaida macroura* |
| Northern flicker | *Colaptes auratus* |
| Oak titmouse | *Baeolophus inornatus* |
| Red-tailed hawk | *Buteo jamaicensis* |
| Ruby-crowned kinglet | *Regulus calendula* |
| Say's phoebe | *Sayornis saya* |
| Scaly-breasted munia | *Lonchura punctulata* |
| Song sparrow | *Melospiza melodia* |
| Western bluebird | *Sialia mexicana* |
| Western scrub-jay | *Aphelocoma californica* |
| Western tanager | *Piranga ludoviciana* |
| White-breasted nuthatch | *Sitta carolinensis* |
| White-crowned sparrow | *Zonotrichia leucophrys* |

# ATTACHMENT E.

# VEGETATION TRANSECT LOCATIONS




Attachment E. Vegetation Transect Locations – wet meadow transect shown in light blue and grassland transects shown in light green.

# EXHIBIT H

## CA Rare Plant Rank: 4.2

## Notes:

Threatened by urbanization and flood control.

https://rareplants.cnps.org/Plants/Details/939

**From:** Adam Lambert <alambert@ucsb.edu>
**Sent:** Friday, June 17, 2022 5:03 PM
**To:** Jones, Morgan <mmjones@countyofsb.org>
**Subject:** Re: Modoc Path MND please review and let's discuss



Hi Morgan,

Here are comments specifically on the MND document:

General comment: I may have missed this, but not clearly stated how the general habitat might be disturbed by the actual work of tree removal and paving/grading. Specifically, how will impacts to the wetland restoration areas be avoided, reduced, or mitigated?

Page 25. The vegetation community types for grassland and meadow are not accurately described. They should be broken out into wet meadow/depressional wetland, restored native grassland, and weed dominated grassland. Significant effort went into restoring several of these areas, and this needs to be accounted for.

Page 28. Juncus acutus subsp. leopoldii is designated as a CNPS 4.2 (limited distribution, fairly threatened). This species occurs in the Preserve.

Appendix A -

Add Eriogonum parvifloium
Add Isocoma menzesii
Add Juncus balticus/mexicanus and J. textilis
Likely not Oregon Ash

Shamal ash is present (Fraxinus undei)
Add Rumex californicus
Likely not Rumex salicifolius (see above)
Add Persicaria aquatica

Happy to discuss,

Adam Lambert

# EXHIBIT I

## DESCRIPTION OF WORK:

For an Initial Study of the proposed Modoc Road Bike Path.

Professional Environmental Services are required to perform all necessary studies, to assist the County in securing environmental clearances through the preparation of ED's. These documents will serve as informational documents for the public, County of Santa Barbara decision-makers and potentially the Department of Transportation (Caltrans) and the Federal government. The process will culminate with the County of Santa Barbara decision-makers, to consider approval or certification of the final ED's, related permits and a decision on the proposed project.

To comply with the California Environmental Quality Act (CEQA) it is anticipated that an Initial Study resulting in a Mitigated Negative Declaration (MND) will be required. The MND will include, but is not limited to analysis of the following issue areas:

Aesthetics/Visual Resources; Agricultural Resources; Air Quality; Biological Resources; Cultural Resources; Energy; Fire Protection; Geological Resources; Hazardous Materials; Historic Resources; Land Use; Noise; Public Facilities; Recreation; Transportation; Circulation; and Water Resources including Surface, Storm Water Quality and Post construction storm water control and treatment plan.

The below items included will also be required:

- A Habitat Mitigation and Monitoring Plan (HMMP) to meet the requirements of the County and any permitting agencies. The HMMP shall be consistent with the MND and all related permits. The plan shall be prepared for implantation through a separate RFP process.
- Water Quality. A technical memorandum or Post Construction Stormwater Control and Treatment Plan may be required that addresses water quality and storm water issues associated with any proposed discharges into Arroyo Burro Creek on the eastern side of the project area.
- Archeological Survey Report (ASR). The ASR must be prepared in accordance with the latest County regulations, policies, procedures, guidelines, and standards and cultural resource documents prepared also need to meet the Secretary of Interior Standards. Should Federal funding be acquired, federally funded projects require the archaeologist needs to meet the Secretary of Interior Standards. The Secretary of Interior Standards can be found in Attachment 1 of the Caltrans Programmatic Agreement below:

Link here: https://dot.ca.gov/-/media/dot-media/programs/environmental analysis/documents/ser/f0002091-106pa-14-a11y.pdf

Post construction storm water control and treatment plan to satisfy the requirements of the RWQCB. The storm water control plans should include at a minimum: treatment of runoff from the total area of impervious surface generated by an 85$^{th}$ percentile storm event or 0.2 inch hourly rainfall intensity. The proposed BMPs should be identified and be effective for addressing

all pollutant types generated by the project. Use storm water infiltration as first preference such as dry wells and bio-filtration as second preference, and natural system-based – swales, etc. as third preference; projects that create or replace more than 15,000 square feet of impervious surface should control volume or retain runoff (pre-project runoff volume for the 85th percentile storm event should match to post-project runoff volume for the 85th percentile storm event, or retain runoff generated by the 85th percentile storm event); and a maintenance mechanism.

Additional support may be required for aspects of regulatory permitting such as the California Department of Fish and Wildlife (CDFW) and the California Regional Water Quality Control Board (RWQCB).

Focused study area: 1) Archeological Resources

Background research indicates that a portion of the project API is located within a general area that has a very high sensitivity for Native American resources. The significance of CA-SBA-039 has not been determined but CA-SBA-39 is considered eligible for the NRHP, background research, Native American consultation, XPI and Phase II testing completed for CA-SBA-39 confirmed the presence of a historic property within the APE for the near-by Hollister Road project. The boundaries of CA-SBA-39 fall within the ADI for the proposed Modoc Road bike path project.

The proposed bike path project could potentially impact significant archaeological resources, an Archeological Survey Report will be required. The ground surface throughout the project API has been disturbed by past agricultural and current equestrian activity, some grading, and periodic flooding of Cieneguitas Creek at the western end of the proposed project area.

It is believed that an Extended Phase 1 Subsurface Testing Program may be required, and executed using a series of systematically spaced shovel test pits (STPs), to determine the presence or absence of buried archaeological resources within the project API. The following guidelines are suggested for the Subsurface Testing Program.

1. Prior to field work, a subsurface testing plan should be provided by the lead archaeologist, which includes the goals of the study, the methods to be used and curation plans.

2. A Native American monitor should be retained to monitor the subsurface field testing.

3. The STPs shall be placed within the API and spaced at no greater than 15 meter (50 ft. intervals).

4. The STP shall be excavated in 20 cm increments and the excavated material screened through 1/8-inch mesh. STPs should be excavated to a 100 cm depth when feasible.

5. The lead archaeologist shall have the flexibility to modify the spacing and depth of the STPs as dictated by field findings and discretionary judgment.

6. Laboratory work shall include washing, basic identification of materials and artifact types,

cataloging the materials, and the tabulation of their quantities.

7. The Extended Phase 1 Report should provide documentation on the presence or absence of subsurface archaeological resources within the project API. In addition, the report shall note the nature of the deposits, if any, that were encountered and the integrity of the deposit. The report shall provide recommendations on the need or lack thereof for any additional archaeological investigation.

8. Revise the CA-SBA-39 archaeological site records, if needed as appropriate. The findings of the Extended Phase 1 Subsurface Testing Program will determine whether or not additional archaeological investigation is warranted.

Focused study area: 2) Biological Resources

The proposed Modoc Road Bike path project requires a tree survey and a tree replacement and protection plan be prepared to address potential native Coast Live oak and specimen trees impacted from the construction of the project. This tree protection plan needs to be prepared in accordance with the policies of the Eastern Goleta Community Plan and the Protection of Native and Specimen Trees in the County of Santa Barbara's Visual Aesthetics Impact Guidelines. Visual simulations of the project area may be required.

Tree survey work, quantifying, recording, reporting and provide a tree replacement plan. Tree survey work within the project study area to catalog the exact number of individual trees, species and size in Diameter breast height (Dbh), approximate height and location.

The tree report needs to summarize the number of individual tree removals and encroachments related to the project activities utilizing the existing mapped tree information in relation to the Project plans; summarizes the number of replacement trees required as a result of potential impacts to existing trees; illustrates the potentially available locations for replacement trees; provides a tree replacement plan and makes recommendations for maintenance and monitoring of the replacement trees.

# EXHIBIT J


4112 Modoc Rd
Goleta, California
Google
Street View - Mar 2019
Encore Dr
Modo
Google
Image capture: Mar 2019 © 2022 Google United States Terms Privacy Report a problem


4104 Modoc Rd
Goleta, California
Google
Street View - Mar 2019
Entrance Dr
Modo
Google
Image capture: Mar 2019 © 2022 Google


4124 Modoc Rd
Goleta, California
Google
Street View - Mar 2019
Modoc Rd
Encore Dr
Google
Image capture: Mar 2019 © 2022 Google United States Terms Privacy Report a problem


4104 Modoc Rd
Goleta, California
Google
Street View - Mar 2019
Modoc Rd
Google
Image capture: Mar 2019 © 2022 Google United States Terms Privacy Report a problem

# EXHIBIT K

# EXHIBIT L

PLACEHOLDER FOR VIDEO LINK EXHIBIT

# EXHIBIT M

frontiers in Ecology and Evolution

PERSPECTIVE
published: 03 July 2019
doi: 10.3389/fevo.2019.00258

# Western Monarch Population Plummets: Status, Probable Causes, and Recommended Conservation Actions

*Emma M. Pelton[1], Cheryl B. Schultz[2], Sarina J. Jepsen[1], Scott Hoffman Black[1] and Elizabeth E. Crone[3]**

*[1] The Xerces Society for Invertebrate Conservation, Portland, OR, United States, [2] Department of Biological Sciences, Washington State University, Vancouver, WA, United States, [3] Department of Biology, Tufts University, Medford, MA, United States*

Western monarch butterflies dropped by ∼97% of their average historic abundance between the 1980s and mid-2010s. In winter 2018–2019, the population plummeted even farther, to fewer than 30,000 monarchs, which represents a single year drop of 86% and a drop of >99% since the 1980s. The population may now be hovering at its quasi-extinction threshold. In this Perspectives piece, we: (1) Place the current status in context, (2) Highlight the most likely window during the annual life cycle when the population declined, (3) Review probable causes of long-term declines, and (4) Recommend steps that the public, policy makers, and land managers can take to recover western monarchs. The available studies reinforce the hypotheses that overwintering habitat loss and loss of central California breeding habitat, as well as pesticide use, are likely important contributors to the western monarch's long-term decline. The most limiting part of the migratory cycle appears to be concentrated during the overwintering stage and/or in early spring. If western monarchs are in fact entering an extinction vortex, they need extraordinary efforts—focused on the most vulnerable periods of the annual cycle— to save the migration. Critical short-term conservation priorities are to (1) Protect, manage and restore overwintering habitat, (2) Protect monarchs and their habitat from pesticides, (3) Restore breeding and migratory habitat in California, (4) Protect, manage, and restore summer breeding and fall migration monarch habitat throughout the western monarch's range, and (5) Fill research gaps to inform western monarch recovery strategies.

**Keywords:** ***Danaus plexippus plexippus*, western monarchs, quasi-extinction, conservation, population trends**

OPEN ACCESS

***Edited by:***
*Jay E. Diffendorfer, United States Geological Survey, United States*

***Reviewed by:***
*Tyler Flockhart, University of Maryland Center for Environmental Science (UMCES), United States*
*Ralph Grundel, U.S. Geological Survey, Great Lakes Science Center, Chesterton, IN, United States*

***Correspondence:**
*Elizabeth E. Crone*
*elizabeth.crone@tufts.edu*

***Specialty section:***
*This article was submitted to Conservation, a section of the journal Frontiers in Ecology and Evolution*

***Received:*** *05 March 2019*
***Accepted:*** *18 June 2019*
***Published:*** *03 July 2019*

***Citation:***
*Pelton EM, Schultz CB, Jepsen SJ, Black SH and Crone EE (2019) Western Monarch Population Plummets: Status, Probable Causes, and Recommended Conservation Actions. Front. Ecol. Evol. 7:258. doi: 10.3389/fevo.2019.00258*

## INTRODUCTION

Monarch butterflies (*Danaus plexippus plexippus*) across North America have been undergoing a multi-decade decline (Semmens et al., 2016; Schultz et al., 2017). Nonetheless, the crash of the western population (**Figure 1**) in winter 2018–2019 was particularly stunning. In 2017, we estimated that the overwintering population had dropped by 97% of its average historic abundance, from ∼3 to 10 million to ∼200–300 thousand butterflies (Schultz et al., 2017). In winter 2018-2019, the population plummeted to fewer than 30,000 monarchs,

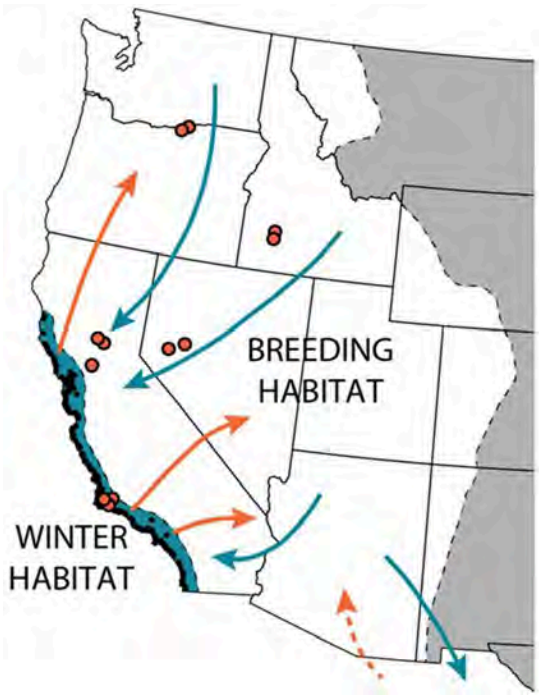



**FIGURE 1 |** Western monarchs breed west of the Rocky mountains and primarily overwinter at over 200 sites (black points) along the Pacific coast in California. During the spring, monarchs leave the overwintering habitat (colored blue) to disperse (orange arrows) across the West. The butterflies breed continuously across the West during the summer (colored white); in the fall, they return (blue arrows) to the overwintering grounds. [Tag recoveries in Mexico show that at least some western monarchs migrate to central Mexico, mixing with the eastern monarch overwintering population; whether or not monarchs from Mexico return to the West in the spring has not been documented, but is suspected (dashed orange arrow)]. The authors have monitored monarch breeding phenology and milkweed at 12 sites throughout the West (orange points) as part of a multi-year study.

which represents a single year drop of 86%, and a >99% drop since the 1980s (**Figure 2A**).

In this Perspective, we: (1) Place the current status in context, both how trends compare to the eastern population and potential implications of dropping to unprecedentedly low abundance in the West, (2) Highlight the most likely window during the annual life cycle when the population declined, (3) Review probable causes of long-term declines, and (4) Use our understanding of drivers of declines to recommend steps that the public, policy makers, and land managers can take including identifying knowledge gaps for which focused mechanistic studies could contribute to developing more effective and efficient conservation actions.

## STATUS OF WESTERN MONARCHS IN WINTER 2018–2019

Since 1997, volunteers have estimated the overwintering population in California each fall at coastal groves (Xerces Society Western Monarch Thanksgiving Count, 2019). The 2018 Xerces Thanksgiving Count revealed a new low—only 28,429 monarchs were tallied—<1% of the historic population (**Figure 2A**). The current trend in western monarchs is in contrast to eastern monarchs, which hit the highest estimated population size in the last decade in winter 2018–2019 with 6.05 hectares occupied (Rendón-Salinas et al., 2019).

We know from our past analyses that a western population of <30,000 butterflies is unprecedented. The 2018 Thanksgiving count mirrors a textbook extinction vortex (Gilpin and Soule, 1986), in the sense that fluctuations in abundance—which have been happening throughout the past 30 years—become riskier as the population becomes smaller. As populations become smaller, "ordinary" environmental variation can cause a population to drop below a point from which extinction is inevitable, unless extraordinary measures are taken. We call this point the quasi-extinction threshold. In 2016, a group of experts proposed 30,000 butterflies as the quasi-extinction threshold for western monarchs (Schultz et al., 2017). Now, it is suddenly imperative to know if the experts were correct, and, if so, what extraordinary measures need to be taken to preserve the population.

In general, we know very little about what happens when formerly large populations become small. Individuals in small populations may have reduced mating success, suffer increased predation, and lose other benefits of schooling or flocking (Courchamp et al., 1999). These effects due to small population size are known as "Allee effects" and are difficult to estimate in wild populations because they are only expressed after a population has begun to decline to extinction (Liermann and Hilborn, 1997). Therefore, setting quasi-extinction thresholds is one of the most subjective steps of population viability analysis (e.g., Frick et al., 2010; McGowan et al., 2017). If the published quasi-extinction threshold is correct, then positive density-dependent processes associated with Allee effects could lead to further rapid decline. If the quasi-extinction threshold is incorrect, we will see the western monarch recover to a larger population size. Regardless, this serves as a call to intensify efforts to boost abundance to healthy enough numbers in the wild for the population to be able to sustain itself through normal ups and downs in the population size.

## ENVIRONMENTAL DRIVERS

### Causes of Rapid Decline From 2017 to 2018

Given the large drop in western monarchs from 2017 to 2018, some are tempted to blame the weather for the low numbers. Late rainy season storms swept across California in March. There was a severe and extended wildfire season in the West and smoke was widespread at times. California is still recovering from a historic drought. Large amplitude inter-annual fluctuations are an intrinsic aspect of butterfly population dynamics, and causes of year-to-year variation are not necessarily the same as the causes of long-term declines. Nonetheless, it is important to try to understand western monarch abundance throughout the year from winter 2017–2018 through winter 2018–2019, when the decline occurred.

Starting in winter 2016–2017, the Xerces Society and volunteers began a second count at overwintering sites, the New

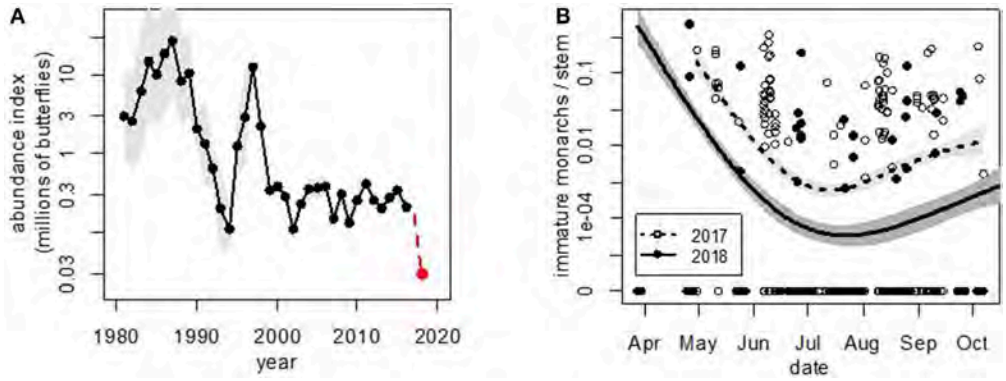



**FIGURE 2 |** Western monarch abundance at **(A)** overwintering and **(B)** breeding sites. In both panels, shaded areas show 95% confidence limits. **(A)** Western monarch butterfly 1981–2018 estimates for overwintering abundance during the Thanksgiving Count time period in coastal California. Estimates for 1981–2017 were calculated with state space models (Schultz et al., 2017), scaled to be comparable to the raw count from 2018 (shown). **(B)** Monarch egg and larva counts per stem at all 12 monitoring sites (shown in **Figure 1**) throughout the season in 2017 and 2018. Curves were fitted with generalized additive models (Wood, 2011) to show general trends in abundance. The fact that the two curves are parallel suggests that densities were lower by the time monarchs arrived in 2018; the decline does not appear to be due to different dynamics during breeding. Note the log scale and 10-fold difference among years.

Year's count (centered around New Year's Day, to complement the Thanksgiving Count 6 weeks earlier). Monarch abundance at the New Year's Count had declined by 43% on average in 2017 ($n = 44$ sites), 49% on average in 2018, ($n = 115$ sites) and 36% in 2019 ($n = 130$ sites), when compared to monarch abundance at those same sites during the Thanksgiving Count. These data suggest that monarch butterflies did not have exceptionally low survival between November 2017 and January 2018, compared to the previous year.

In addition to counts at overwintering sites, we started monitoring summer breeding of western monarchs in 2017 at 12 sites throughout the West (**Figure 1**). Across these 2 years, the density of monarch eggs and larvae was consistently lower in 2018 than 2017 (**Figure 2B**), with about a 10-fold decline between the 2 years (average immature monarchs/stem = 0.0273 [95% CI = 0.0025, 0.2953] in 2017 and 0.0022 [95% CI = 0.0001, 0.0429] in 2018; paired $t$-test of site averages between years: $t = -2.53$, df = 10, $P = 0.030$). We therefore suggest that the drop measured at Thanksgiving 2018 originated before the beginning of the 2018 breeding season, either late during the overwintering season or very early in the breeding season.

This inference is consistent with Espeset et al. (2016) who concluded that western monarch declines were concentrated in early spring. Of the environmental events that seemed "unusual" in 2017–2018, this pattern points to the possible negative effects of unusually heavy rains in March 2018 with the caveat that many other factors may have caused the population drop, including the interaction of weather with habitat quality at overwintering sites, and habitat inland from the coast in California, where the first generation breeds.

## Causes of Long-Term Declines

In the larger eastern population, declines have largely been attributed to overwintering habitat loss (Brower et al., 2012; Vidal et al., 2013) and breeding habitat loss, especially through the use of herbicides (e.g., Pleasants and Oberhauser, 2012; Flockhart et al., 2014). We (Crone et al., in press) recently evaluated climate and land use factors simultaneously as potential drivers of western monarch abundance. Trends in abundance were more strongly associated with land use variables including coastal development in overwintering areas and pesticide use (glyphosate and neonicotinoid insecticides) in breeding areas than climate variables in both overwintering and breeding areas (Crone et al., in press). These results are consistent with the hypotheses that overwintering habitat loss and loss of central California breeding habitat are important for western monarchs (see Espeset et al., 2016) and that trends in pesticide use likely contribute to declining monarch populations as well as declines in other butterfly taxa (see also Forister et al., 2016).

In addition to this broad scale analysis, we estimated daily survival using data from Tuskes and Brower (1978), for comparison with population declines estimated from Thanksgiving and New Year's counts. Daily survival at Natural Bridges near Santa Cruz was 0.995 (95% CI 0.988, 0.997) and at Santa Barbara was 0.991 (0.989, 0.993). Over 6 weeks (the approximate time between Thanksgiving to New Year's counts), this historical estimate translates into a 29% drop (95% CI 12–40%) using estimates from Santa Cruz and a 32% drop (95% CI 26–37%) using estimates from Santa Barbara. Hence, based on the best available evidence, apparent survival during winter in recent years (36–49% drop) has been lower than it was in the past. This change reinforces the importance of overwintering habitat quality on the long-term decline of the western monarch population. At the present time, we have not found comparable data to evaluate whether breeding season survival or reproduction have changed in western monarchs.

# URGENT STEPS FOR CONSERVATION

To date, western monarchs have received far less conservation attention and financial resources than the larger eastern

population. Nonetheless, the western monarch breeds across most of the US west of the Rocky Mountains, a significant portion of the monarch's overall North American range. It makes an important contribution to the resilience, redundancy, and representation of the species as a whole (see definition in Shaffer and Stein, 2000).

While the precise causes of the recent dramatic drop in the western population, as well as the longer term decline, remain unknown, this knowledge gap should not prevent conservation action. We suggest that a precautionary approach be taken to remediate potential causes of decline. Specifically we recommend efforts (1) to protect, enhance, and actively manage overwintering sites; (2) to protect monarch habitat from pesticides, particularly systemic insecticides (including neonicotinoids); (3) to supplement larval and adult resources-especially in the early spring-in California; (4) to identify, protect, and enhance monarch habitats throughout the West, and (5) to prioritize research efforts to answer questions critical to developing an effective and efficient recovery strategy. Here, we briefly explain our recommendations, and their relationship to the causes of western monarch declines, described above. These recommendations and relevant resources are expanded in in our "Western Monarch Call to Action."[1]

## Protect, Manage, and Restore Overwintering Habitat

Our analyses ("Environmental drivers" above) point to the importance of monarch habitat in winter and early spring, prior to the breeding season. Conservation biologists have long known that efforts focused only on one stage of a species' life cycle (e.g., breeding) may not be sufficient if populations are limited by another life stage [e.g., overwintering (Brown et al., 2017)]. Despite the importance of monarchs to Californians and the state's tourism economy, few overwintering sites are meaningfully protected (International Environmental Law Project and the Xerces Society, 2012) and sites continue to be destroyed—indeed, from 2017 to present, over one dozen sites have either been newly destroyed or are reported to be threatened by inappropriate tree trimming, removal, and/or development (Xerces Society Western Monarch Overwintering Sites Database 2019, unpublished). To protect remaining habitat, overwintering sites could be designated as Environmentally Sensitive Habitat Areas (ESHAs) by the California Coastal Commission, protected as Critical Habitat *if* monarchs were listed under the federal Endangered Species Act, protected by California Department of Fish and Wildlife *if* monarchs were listed as endangered under the California Endangered Species Act, or a new law could be created by the California state legislature to protect overwintering sites from destruction.

To address the need for active management of overwintering sites, the majority of which occur on publicly owned land, a greater financial investment is needed. The Monarch Butterfly and Pollinator Rescue Program (California Assembly Bill 2421), was signed into law in 2018, and $3 million was allocated to this program. An additional $3.9 million was recently allocated for restoration of overwintering sites owned by the City of Goleta. While these represent important steps forward, more resources are needed to restore and manage the over 200 actively used overwintering sites. While there are no published estimates, restoring a significant number of overwintering sites would easily require tens of millions of dollars and, more importantly, would benefit from sustained funding to continue to manage the groves for monarchs in the long-term. Of the Top 50 priority sites identified by Pelton et al. (2016) many of the most important sites are owned by the California Department of Parks and Recreation, followed by cities, U. S. Department of Defense, East Bay Regional Parks District, and county, university, and other state and federal agencies as well as private entities. Some of these owners do not encourage or permit the planting of eucalyptus (the dominant tree used by monarchs in California during overwintering), nor are these land managers necessarily focused on managing for monarch overwintering habitat—and, in some cases, may be unaware of the full extent of overwintering habitat within their jurisdiction.

## Protect Monarchs and Their Habitat From Pesticides

In our analyses of long-term trends, insecticide and herbicide use were almost as tightly associated with monarch declines as overwinter habitat loss. Restricting insecticide and herbicide use increases adult Lepidoptera abundance (Frampton and Dorne, 2007). Broadcast herbicide use can kill host and nectar plants and have non-target effects on butterflies (Stark et al., 2012). We advise protecting the most important monarch breeding and overwintering habitats from insecticide and herbicide use. Specifically, we recommend avoiding herbicide applications that damage monarch breeding and migratory habitat such as milkweed and wildflowers. These recommendations apply to home gardens and lawns, as well as lands used for agriculture and other purposes. If herbicides are used, we advise using targeted application methods, avoiding large-scale broadcast applications of herbicides, and taking precautions to limit off-site movement of herbicides. Neonicotinoid insecticides, in particular, should be avoided at all times in monarch habitat due to their persistence, systemic nature, and toxicity. When purchasing milkweeds or wildflowers from nurseries, we recommend ensuring that they have not been treated with neonicotinoids or other systemic insecticides.

## Restore Breeding and Migratory Habitat in California

Enhancing monarch breeding habitat may be able to partly mitigate reductions in overwintering habitat quality because larger populations at the end of the summer can potentially withstand higher mortality. Numerous studies have quantified the importance of host and nectar plants for butterfly populations (Dennis et al., 2006; Dennis, 2010), and restoration efforts which enhance host and nectar have been effective approaches for the conservation of rare butterflies (Carleton and Schultz, 2013). We recommend planting native milkweeds in areas where they historically grew in California, and, in particular,

[1] www.savewesternmonarchs.org

in the Coast Range, Central Valley, and the foothills of the Sierra Nevada, areas where the first generation of monarchs are produced each spring. Early emerging native species that may be particularly important in spring include woollypod (*Asclepias eriocarpa*), California (*A. californica*), and heartleaf milkweed (*A. cordifolia*). However, commercial availability of these species is limited. Later-emerging native California milkweed species that are more readily available, and may also help, include narrowleaf (*A. fascicularis*) and showy milkweed (*A. speciosa*). In the desert southwest of California, we recommend rush (*A. subulata*) and desert milkweed (*A. erosa*). We recommend only planting milkweed >5 miles inland from overwintering sites, as milkweed does not naturally grow close to the coast north of Santa Barbara and milkweed at overwintering sites can interrupt natural overwintering behavior. Tropical milkweed (*A. curassavica*) is exotic to California, disrupts the monarch's migratory cycle, and serves as a reservoir for monarch pathogens (Satterfield et al., 2016). As such we recommend against planting tropical milkweed. In places where tropical milkweed already exists, we recommend cutting it back to the ground in the fall (October/November) and repeatedly throughout the winter to mimic native milkweed phenology and break the disease cycle; ideally, it should be replaced by native milkweed.

In addition, we recommend planting nectar-rich wildflowers, especially those that bloom early in the spring (February–April) and fall (September-October). If located close to the coast, plants which bloom in the winter (November-January) may also be useful.

## Protect, Manage, and Restore Summer Breeding and Fall Migration Monarch Habitat Throughout the Western Monarch's Range

Identifying key areas of breeding and migrating habitat for monarchs in the West remains a knowledge gap. Some geographic regions contribute disproportionately to the eastern monarch overwintering population in Mexico (e.g., Flockhart et al., 2017), and it is important to know whether the same is true for western monarchs. No data exist from which we could meaningfully evaluate their importance for short- or long-term population declines. Thus, while some of the most important monarch habitat within its western breeding (Yang et al., 2016; Dilts et al., 2019) and overwintering (Pelton et al., 2016) range has already been identified, additional work is needed to identify and rank these areas. We recommend identifying existing monarch habitat, ensuring that it is managed to protect monarchs (Xerces Society, 2018) and in some regions and landscape types, we recommend habitat enhancement or restoration. Habitat restoration in regions where monarch habitat historically occurred, but have likely been lost (such as the Columbia Plateau and Snake River Plain), as well as riparian areas, are high priority areas outside of California. Such restoration would likely benefit from habitat elements beyond milkweed and nectar, such as shrubs or trees for roosting and shade.

## Fill Research Gaps to Inform Western Monarch Recovery Strategies

Breeding and migrating habitat are only a few of the gaps in our knowledge of western monarchs. We especially need observations of monarch biology in places where human populations are low (e.g., the Great Basin desert) and at times of year when monarch butterflies are sparse (e.g., early spring in western California, just as they leave the overwintering grounds). We urge volunteers across the West to collect observations of monarchs and milkweeds, especially in the early spring (February–April), the period in which monarchs typically leave the overwintering sites. Together these observations will help answer questions about monarch breeding phenology. In this year, when numbers are low in the West and high in the East, targeted observations of monarch adults and larvae may also tell us whether the West sees an influx of monarchs arriving from Mexico (see Pyle, 2015). Monarch adult, larva, egg, nectaring, and milkweed sightings can be reported to the Western Monarch Milkweed Mapper[2] and first adults observed can be reported to Journey North[3] as well. More robust monitoring may be achieved through increased western participation in the Integrated Monarch Monitoring Program[4].

We urge academic ecologists to conduct targeted experimental and observational studies to complement large-scale observations like the ones described above. In both the eastern and western monarch populations, filling knowledge gaps about demography throughout the life cycle would allow us to design quantitative thresholds for conservation and restoration. For example, it may be possible for targeted actions at one point in the life cycle to make up for stresses at other points. If climate change is making the landscape less favorable, can we make up for this with improved breeding or overwintering habitat quality and/or area? Can more breeding habitat in the outer parts of the breeding distribution make up for habitat loss at breeding or overwintering sites in California? Intuitively, the answer is probably "yes, but only partly." To answer this in a more quantitative way, we need a better understanding of how the life cycle pieces fit together.

# CONCLUSION

In closing, western monarchs are currently in peril. Their status reflects a long-term decline due to some combination of habitat loss and degradation in their overwintering and breeding range, increased pesticide use, and possibly climate change. The recent dramatic drop reflects conditions when the least is known about western monarchs—where they are, what habitat they are using, and what they need to survive, migrate and reproduce. In spite of their current status, monarchs are resilient; we believe that rapid conservation actions can recover the population. This recovery will require the protection of monarchs and their habitat, as well as targeted research to understand the unique life cycle of western

[2]www.monarchmilkweedmapper.org
[3]https://journeynorth.org/monarchs
[4]https://monarchjointventure.org/immp

monarch butterflies. If we are going to take these actions, the time is now.

## DATA AVAILABILITY

The datasets for this study will not be made publicly available because restrictions apply to some of the datasets. Some of the datasets are in a publicly accessible repository:

The Xerces Society Western Monarch Thanksgiving and New Year's Counts analyzed in this study can be found at www.westernmonarchcount.org/data.

Restrictions apply to some of the datasets:

The Xerces Society Western Monarch Overwintering Sites Database 2019 is not publicly available because of privacy concerns with a subset of the information. Requests to access the database should be directed to Emma Pelton, monarchs@xerces.org.

The western monarch and milkweed phenology dataset summarized in this manuscript are not publicly available because it is part of a study currently in-progress. Requests to access the datasets should be directed to Cheryl Schultz, schultzc@wsu.edu.

## AUTHOR CONTRIBUTIONS

EP, SJ, and SB (along with others—see Acknowledgments) oversee Thanksgiving and New Year's Counts and maintain the overwintering sites database. All authors contributed to funding and implementing the 2017–2018 surveys in the breeding range. EC conceived and ran all analyses with input from CS and EP. All authors wrote and revised the manuscript.

## FUNDING

Funds for the 2017–2018 breeding and phenology surveys and analysis were provided by Department of Defense Legacy Natural Resources Program (NR 16 Western Monarch) and the U.S. Fish & Wildlife Service Coastal Program. Authors were supported by their institutions (WSU, Tufts and Xerces Society) and EC, SJ, EP, and CS were partly supported by the National Science Foundation (NSF DEB 1920834).

## ACKNOWLEDGMENTS

Thank you to the Western Monarch Thanksgiving Count volunteers, particularly our regional coordinators, Mia Monroe, and Katie Hietala-Henschell of the Xerces Society; Stephanie McKnight of the Xerces Society and Cameron Thomas of Washington State University for conducting the fieldwork for the breeding and milkweed phenology project; fellow western monarch researchers and conservation practitioners for conversations that led to the development to the Western Monarch Call to Action; US Fish and Wildlife Service Coastal Program, Department of Defense, National Science Foundation, and Xerces Society members and other funders for supporting the work presented in this Perspective.

## REFERENCES

Brower, L. P., Taylor, O. R., Williams, E. H., Slayback, D. A., Zubieta, R. R., and Ramirez, M. I. (2012). Decline of monarch butterflies overwintering in Mexico: is the migratory phenomenon at risk? *Insect Conserv. Div.* 5, 95–100. doi: 10.1111/j.1752-4598.2011.00142.x

Brown, L. M., Breed, G. A., Severns, P. M., and Crone, E. E. (2017). Losing a battle but winning the war: moving past preference-performance to understand native herbivore-novel host plant interactions. *Oecologia* 183, 441–453. doi: 10.1007/s00442-016-3787-y

Carleton, A., and Schultz, C. B. (2013). Restoration action and species response: oviposition habits of *Plebejus icarioides fenderi* (Lepidoptera: Lycaenidae) across a restoration chronosequence in the Willamette Valley, Oregon, USA. *J. Insect Conserv.* 17, 511–520. doi: 10.1007/s10841-012-9535-7

Courchamp, F., Clutton-Brock, T., and Grenfell, B. (1999). Inverse density dependence and the Allee effect. *Trends Ecol. Evol.* 14, 405–410. doi: 10.1016/S0169-5347(99)01683-3

Crone, E. E., Pelton, E. M., Brown, L. M., Thomas, C. C., and Schultz. C. B. (in press). Why are monarch butterfly populations declining in western North America? *Ecol. Appl.*

Dennis, R., Shreeve, T., and Van Dyck, H. (2006). Habitats and resources: the need for a resource-based definition to conserve butterflies. *Biodivers. Conserv.* 15, 1943–1966. doi: 10.1007/s10531-005-4314-3

Dennis, R. L. H. (2010). *A Resource-Based Habitat View for Conservation: Butterflies in the British Landscape*. Oxford: John Wiley & Sons.

Dilts, T. E., Steele, M. O., Engler, J. D., Pelton, E. M., Jepsen, S. J., McKnight, S., et al. (2019). Host plants and climate structure habitat associations of the western monarch butterfly. *Front. Ecol. Evol.* 7:188. doi: 10.3389/fevo.2019.00188

Espeset, A. E., Harrison, J. G., Shapiro, A. M., Nice, C. C., Thorne, J. H., Waetjen, D. P., et al. (2016). Understanding a migratory species in a changing world: climatic effects and demographic declines in the western monarch revealed by four decades of intensive monitoring. *Oecologia* 181, 819–830. doi: 10.1007/s00442-016-3600-y

Flockhart, D. T., Brower, L. P., Ramirez, M. I., Hobson, K. A., Wassenaar, L. I., Altizer, S., et al. (2017). Regional climate on the breeding grounds predicts variation in the natal origin of monarch butterflies overwintering in Mexico over 38 years. *Glob. Change Biol.* 23, 2565–2576. doi: 10.1111/gcb.13589

Flockhart, D. T., Pichancourt, J. B., Norris, D. R., and Martin, T. G. (2014). Unraveling the annual cycle in a migratory animal: breeding-season habitat loss drives population declines of monarch butterflies. *J. Ani. Ecol.* 84, 155–165. doi: 10.1111/1365-2656.12253

Forister, M. L., Cousens, B., Harrison, J. G., Anderson, K., Thorne, J. H., Waetjen, D., et al. (2016). Increasing neonicotinoid use and the declining butterfly fauna of lowland California. *Biol. Lett.* 12:20160475. doi: 10.1098/rsbl.2016.0475

Frampton, G. K., and Dorne, J. L. C. (2007). The effects on terrestrial invertebrates of reducing pesticide inputs in arable crop edges: a meta-analysis. *J. Appl. Ecol.* 44, 362–373. doi: 10.1111/j.1365-2664.2007.01277.x

Frick, W. F., Pollock, J. F., Hicks, A. C., Langwig, K. E., Reynolds, D. S., Turner, G. G., et al. (2010). An emerging disease causes regional population collapse of a common North American bat species. *Science* 329, 679–682. doi: 10.1126/science.1188594

Gilpin, M. E., and Soule, M. E. (1986). "Minimum viable populations: processes of species extinction," in *Conservation Biology: The Science of Scarcity and Diversity*, ed M. E. Soule (Sunderland, MA: Sinauer Associates), 19–34.

International Environmental Law Project and the Xerces Society (2012). *The Legal Status of Monarch Butterflies in California*. Portland, OR: International Environmental Law Project; The Xerces Society. Available online at: www.xerces.org

Liermann, M., and Hilborn, R. (1997). Depensation in fish stocks: a hierarchic Bayesian meta-analysis. *Can. J. Fish. Aqua. Sci.* 5, 1976–1984. doi: 10.1139/f97-105

McGowan, C. P., Allan, N., Servoss, J., Hedwall, S., and Wooldridge, B. (2017). Incorporating population viability models into species status assessment and listing decisions under the US Endangered Species Act. *Glob. Ecol. Conserv.* 12, 119–130. doi: 10.1016/j.gecco.2017.09.004

Pelton, E., Jepsen, S., and Schultz, C., Fallon, C., and Black, S. H., (2016). *State of the Monarch Butterfly Overwintering Sites in California*. Portland, OR: The Xerces Society for Invertebrate Conservation. Available online at: www.xerces.org

Pleasants, J. M., and Oberhauser, K. S. (2012). Milkweed loss in agricultural fields because of herbicide use: effect on the monarch butterfly population. *Insect Conserv. Div.* 6,135–144. doi: 10.1111/j.1752-4598.2012.00196.x

Pyle, R. M. (2015). "Monarchs in the mist: new perspectives on monarch distribution in the Pacific Northwest," in *Monarchs in a Changing World: Biology and Conservation of an Iconic Butterfly*, eds K. S. Oberhauser, S. Altizer, and K. Nail (Ithaca, NY: Cornell University Press), 236–246.

Rendón-Salinas, E., Martínez-Meza, F., Mendoza-Pérez, M., Cruz-Piña, M., Mondragon-Contreras, G., and Martínez-Pacheco, A. (2019). *Superficie Forestall Ocupada por las Colonias de Mariposas Monarca en México Durante la Hibernación de 2018-2019.* Available online at http://d2ouvy59p0dg6k.cloudfront.net/downloads/2018_reporte_monitoreo_mariposa_monarca_mexico_2018_2019.pdf

Satterfield, D. A., Villablanca, F. X., Maerz, J. C., and Altizer, S. (2016). Migratory monarchs wintering in California experience low infection risk compared to monarchs breeding year-round on non-native milkweed. *Integr. Comp. Biol.* 56, 343–352. doi: 10.1093/icb/icw030

Schultz, C. B., Brown, L. M., Pelton, E., and Crone, E. E. (2017). Citizen science monitoring demonstrates dramatic declines of monarch butterflies in western North America. *Biol. Conserv.* 214, 343–346. doi: 10.1016/j.biocon.2017.08.019

Semmens, B. X., Semmens, D. J., Thogmartin, W. E., Wiederholt, R., López-Hoffman, L., Diffendorfer, J. E., et al. (2016). Quasi-extinction risk and population targets for the Eastern, migratory population of monarch butterflies (Danaus plexippus). *Sci. Rep.* 6:23265. doi: 10.1038/srep23265

Shaffer, M. L., and Stein, B. A. (2000). "Safeguarding our precious heritage," in *Precious Heritage: The Status of Biodiversity in the United States*, ed M. Schaffer (New York, NY: Oxford University Press), 301–321.

Stark, J. D., Chen, X. D., and Johnson, C. S. (2012). Effects of herbicides on Behr's metalmark butterfly, a surrogate species for the endangered butterfly, Lange's metalmark. *Environ. Pollut.* 164, 24–27. doi: 10.1016/j.envpol.2012.01.011

Tuskes, P. M., and Brower, L. P. (1978). Overwintering ecology of the monarch butterfly, *Danaus plexippus* L., in California. *Ecol. Entomol.* 3, 141–153. doi: 10.1111/j.1365-2311.1978.tb00912.x

Vidal, O., Lopez-Garcia, J., and Rendón-Salinas, E. (2013). Trends in deforestation and forest degradation after a decade of monitoring in the Monarch Butterfly Biosphere Reserve in Mexico. *Conserv. Biol.* 28, 177–186. doi: 10.1111/cobi.12138

Wood, S. N. (2011). Fast stable restricted maximum likelihood and marginal likelihood estimation of semiparametric generalized linear models. *J. R. Stat. Soc.* 73, 3–36. doi: 10.1111/j.1467-9868.2010.00749.x

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

Xerces Society Western Monarch Thanksgiving Count (2019). *Western Monarch Thanksgiving Count Data from 1997–2018*. Available online at: www.westernmonarchcount.org

Yang, L. H., Ostrovsky, D., Rogers, M. C., and Welker, J. M. (2016). Intra-population variation in the natal origins and wing morphology of overwintering western monarch butterflies *Danaus plexippus*. *Ecography* 39, 998–1007. doi: 10.1111/ecog.01994

**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

# EXHIBIT N

# State of the Monarch Butterfly Overwintering Sites in California

Report to the U.S. Fish and Wildlife Service
by the Xerces Society for Invertebrate Conservation

XERCES SOCIETY
for Invertebrate Conservation

# State of the Monarch Butterfly Overwintering Sites in California

Emma Pelton
Sarina Jepsen
Cheryl Schultz
Candace Fallon
Scott Hoffman Black

Prepared for the U.S. Fish and Wildlife Service by:

The Xerces Society for Invertebrate Conservation
Portland, Oregon

June 2016

## Acknowledgments

Funding for this report was provided by the U.S. Fish and Wildlife Service and Xerces Society members.

Additional funding to support the Xerces Society's western monarch conservation efforts comes from Xerces Society members, as well as Alice C. Tyler Perpetual Trust, The Bay and Paul Foundations, CS Fund, Disney Conservation Fund, The Edward Gorey Charitable Trust, Endangered Species Chocolate, Hind Foundation, Idaho Department of Fish and Game, Monarch Joint Venture, and Turner Foundation, Inc.

Thanks go to Samantha Marcum and John Klochak of USFWS for their input into this report; Mia Monroe for her long term commitment to western monarch count efforts; volunteers with the Xerces Society's Western Monarch Thanksgiving Count for collecting the data upon which this report is based; and contributors to the Xerces Society's Western Monarch Overwintering Sites Database (particularly the California Natural Diversity Database for contributing significantly to its content) and to Cecily Douglas for updating it.



Editing and layout: Matthew Shepherd, The Xerces Society

**Cover photographs**
Front: Overwintering cluster of monarchs in Monterey cypress at Pismo Beach State Park. (Photograph: The Xerces Society/Carly Voight.)
Back: Overwintering cluster of monarchs in eucalyptus. (Photograph: The Xerces Society/Candace Fallon.)

## Recommended Citation

Pelton, E., S. Jepsen, C. Schultz, C. Fallon, and S. H. Black. 2016. *State of the Monarch Butterfly Overwintering Sites in California*. 40+vi pp. Portland, OR: The Xerces Society for Invertebrate Conservation. (Available online at www.xerces.org)

# Contents

Monarch butterflies cluster on a Monterey pine in the Point Lobos State Natural Reserve, Monterey County. The site is ranked number 31 in the Top 50 list of overwintering sites in California in greatest need of management attention. (Photo: The Xerces Society/Carly Voight.)

# Executive Summary

Monarchs spread across North America in the spring and summer, relying on milkweed for larval development and nectar plants for fuel. Each fall, the last generation of adults migrates to overwintering sites. While the migration pathways of monarchs in the interior West are still poorly understood, a portion of western monarchs migrate to coastal California, which hosts hundreds of overwintering sites along a 1,000-kilometer (620-mile) stretch from Mendocino County to Baja California, Mexico. Monarchs have been found clustering at more than four hundred sites that provide suitable microhabitat conditions, including protection from wind and freezing temperatures. However, overwintering habitat continues to be lost to development and the senescence of groves. While monarchs face multiple stressors, such as breeding habitat loss and pesticide use, loss of overwintering habitat may also be an important driver of population decline. This report summarizes existing information about western overwintering monarch population trends and identifies the highest priority overwintering sites for active management and protection.

A concerted effort to obtain population estimates at western overwintering sites began in 1997 through the Western Monarch Thanksgiving Count (WMTC), a citizen-science based effort now coordinated by the Xerces Society and Mia Monroe. These data show that western overwintering monarchs have undergone a significant population decline from over 1.2 million monarchs counted in 1997 to 292,674 monarchs in 2015. Through analyses that account for differences between sites and in effort over time, we estimate that the population has declined 74% since the late 1990s, which is similar to the decline in the eastern monarch population overwintering in central Mexico.

Of the more than four hundred current and historic overwintering sites in California, a Top 50 list prioritizes sites for protection and active management. Twenty-five of the Top 50 sites are profiled with a basic site description and information about site-specific conservation issues. Sites have been ranked based on quantitative measures. The highest ranking is given to sites which have undergone the greatest declines, yet still host the largest proportion of the remaining wesern overwintering population. These sites demand the most urgent attention from land managers and policy makers. The top ten highest priority sites are 1) Pismo Beach (San Luis Obispo County); 2) Private Site 2732 (Santa Barbara County); 3) Private Site 2920 (Monterey County); 4) Ellwood Main (Santa Barbara County); 5) Morro Bay Golf Course (San Luis Obispo County); 6) Pacific Grove Sanctuary (Monterey County); 7) Lighthouse Field State Beach (Santa Cruz County); 8) San Leandro Golf Course (Alameda County); 9) Moran Lake (Santa Cruz County); and 10) Pecho Road, Los Oso (San Luis Obispo County).

Management action and protection of overwintering sites is a necessary component of recovering the western monarch population. In addition to prioritizing the Top 50 sites, this report identifies knowledge gaps and provides management recommendations to inform conservation efforts. We intend for this report to be used by land managers, restoration practitioners, researchers, and policy makers to understand the current state of overwintering sites in California, and to begin to identify actions that can contribute to sustaining monarchs for future generations.

To complete their annual cycle, monarchs require different plants, sometimes hundreds of miles apart. In the spring and summer breeding range, milkweeds are the essential host plant for caterpillars (above left). During the fall migration, adults are fueled by late-blooming flowers (above right). During the winter, they cluster in groves along the Pacific Coast (below). (Photographs: [above left] The Xerces Society/Scott Hoffman Black; [above right] Carly & Art/WikiMedia Commons; and [below] The Xerces Society/Candace Fallon.

# Life History of the Western Monarch

## Life cycle

Female monarchs (*Danaus plexippus plexippus*) lay eggs singly on milkweed (*Asclepias* spp.), which the larvae rely upon for energy and protective cardenolides. The larvae develop through five instars before forming a chrysalis and pupating into an adult butterfly. During the spring and summer, an adult monarch spends its 2–5 week lifespan mating and nectaring on flowers, with females searching for milkweed upon which to lay their eggs. Multiple generations are produced over the spring and summer, with the fall generation migrating to overwintering sites and living for 6–9 months.

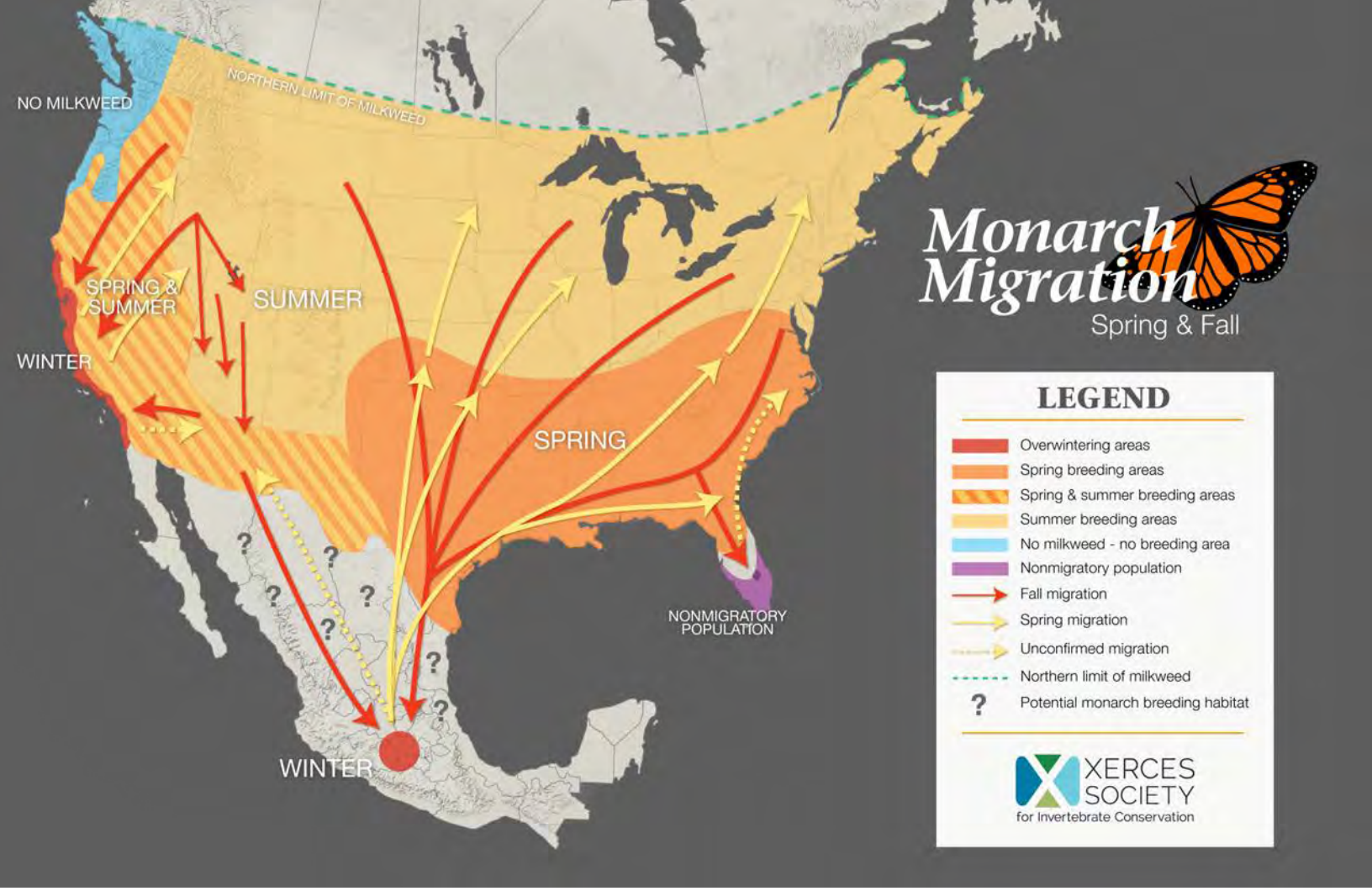
## Migration and overwintering behavior

Monarchs begin to arrive at overwintering sites along the Pacific coast in September and the first half of October (Hill et al. 1976; Leong 1990), forming fall aggregations. By mid-November, they have formed more stable aggregations that persist through January or into February. The butterflies cluster in dense groups on the branches, leaves, and occasionally, the trunks of trees. The adults usually remain in reproductive diapause throughout the winter (Herman 1981) and activity is limited to occasional sunning, rehydrating, and nectaring. In February and March, the surviving monarchs breed at the overwintering site before dispersing.

Monarchs aggregate in clusters at sites scattered along 1,000 km (620 miles) of the Pacific coast from California's Mendocino County to Baja California, Mexico (Lane 1993; Leong et al. 2004; Jepsen and Black 2015). Small aggregations inland from the coast have been reported in Inyo County and Kern County in California (Xerces Society Western Monarch Overwintering Sites Database 2016) and in Arizona, where a maximum of 45 butterflies per site have been reported (Morris et al. 2015). The distribution of monarchs among overwintering sites changes over the season and annually, based on regional and individual site conditions (Leong 1990).

Older migration models assumed that monarchs west of the Rocky Mountains overwinter on the Pacific coast while monarchs east of the Rockies migrate to central Mexico. Tagging efforts have shown that wild monarchs tagged in Oregon (Pyle 2015) and Nevada (Southwest Monarch Study 2016) migrate to the California coast, and as well as some monarchs in Washington (Pyle 1999; Pyle 2015), Idaho (Pyle 1999), and Arizona (Morris et al. 2015). Additionally, a recent isotopic study at four overwintering sites suggests that the natal origin of a large proportion of the overwintering monarchs is from coastal Southern California and Oregon, Washington, and Idaho (Yang et al. 2015).

However, the Continental Divide has proven to be more permeable than originally thought. An early eastern vs. western population migration model was built upon very limited evidence (Pyle 1999;




Brower and Pyle 2004), and we now know that there is significant interchange between monarchs in the eastern and western United States (Pyle 2015). Monarchs tagged in Idaho (Pyle 1999) and Washington (David James, Dplex listserv) have been recovered in Utah as well as California, suggesting a second, south-easterly migration route and recently, monarchs tagged in Arizona have been recovered in central and western Mexico, as well as coastal California (Morris et al. 2015). Furthermore, genetic studies have concluded that the western and eastern populations are not genetically distinct (Lyons et al. 2012; Zahn et al. 2014). These findings support hypotheses that some portion of western monarchs travel to Mexico for the winter (Pyle 1999; Brower & Pyle 2004; Dingle et al. 2005), some portion of eastern monarchs travel to the western United States after overwintering in central Mexico (Brower & Pyle 2004; Vandenbosch 2007), and/or there is interbreeding of eastern and western monarchs during the breeding season, likely in the Intermountain West. The relative rate of exchange between the eastern and western populations is currently unknown and isotopic studies have generally omitted isoscapes on either side of the Continental Divide (Wassenaar and Hobson 1998; Yang et al. 2015). Hence, while population trends at California overwintering sites provide an index of the western population, they do not represent the entire western population.

## Overwintering habitat requirements

Coastal California provides the mild climatic conditions that monarchs need to survive the winter in western North America. The majority of overwintering sites are located within 2.4 km (1.5 miles) of the Pacific Ocean or San Francisco Bay (Leong et al. 2004) which moderates temperatures (Chaplin and Wells 1982). Sites are typically found at low elevations (60–90 m [200–300 feet]) and situated on slopes oriented to the south, southwest, or west which provide the most solar radiation (Leong et al. 2004) or in shallow canyons or gullies (Lane 1993).

Monarchs require very specific microclimatic conditions at overwintering sites including dappled sunlight, high humidity, fresh water, and an absence of freezing temperatures or high winds (Chaplin and Wells 1982; Calvert and Cohen 1983; Masters et al. 1988; Anderson and Brower 1996; Leong 1999). Fall- or winter-blooming flowers provide nectar which may be needed to maintain lipid levels necessary for spring migration (Tuskes and Brower 1978).

Suitable microclimate conditions are often found at sites consisting of roost trees, in which monarchs cluster, surrounded by a larger grove or windrow of trees. The trees most commonly used for roosting are the nonnative blue gum eucalyptus (*Eucalyptus globulus*) and the native Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*) (Xerces Society Western Monarch Overwintering Sites Database 2016). Clusters are also found on nonnative red gum eucalyptus (*Eucalyptus camadulensis*), and the native western sycamore (*Platanus racemosa*), coast redwood (*Sequoia sempervirens*), coast live oak (*Quercus agrifolia*), and others (Xerces Society Western Monarch Overwintering Sites Database 2016). Although it was historically assumed that monarchs preferred to overwinter in nonnative eucalyptus rather than native tree species, recent research has demonstrated that monarchs do not prefer eucalyptus trees, and actually use native tree species more than would be expected, given the low density of native trees relative to eucalyptus in many groves (Griffiths and Villablanca 2015).

# Overwintering Population Trends

## Description of data

The Xerces Society's Western Monarch Overwintering Sites Database is the most comprehensive database of California overwintering site locations and population trends. The database was created by combining long-term monitoring data from the Western Monarch Thanksgiving Count, monarch overwintering site occurrences in the California Department of Fish and Wildlife's California Natural Diversity Database (CNDDB), and information from a variety of unpublished reports, personal communications, and published literature. Ongoing data sharing between Xerces and CNDDB occurs, and the database is frequently updated. The database includes sites identified by historical records, original site surveys (e.g., Nagano and Lane 1985; Sakai and Calvert 1991; Meade 1999), ongoing data collection as part of the annual Western Monarch Thanksgiving Count, and focused survey efforts by Xerces staff after identifying information gaps. It also includes information such as site location, habitat quality, conservation issues, and land ownership information.

As of June 2016, the database contains 400+ overwintering sites which are known to have hosted monarchs in California with over 4,400 count records stretching back to 1970. An additional 70+ sites have been anecdotally reported as cluster sites by landowners or historical records, but have not been verified by counts. More than thirty sites have been added to the database in the last five years due to Xerces Society staff survey effort and growing volunteer participation in the Western Monarch Thanksgiving Count (WMTC).

The WMTC was started in 1997 by three individuals, Dennis Frey, Mia Monroe, and David Marriott, to provide a standardized method of collecting monarch abundance estimates. The WMTC greatly increased the quality and quantity of data available to track the trends of the Western overwintering monarch population. Each year, during a three-week period centered on Thanksgiving, monarch experts and citizen scientists fan out across coastal California to count clustered monarchs using a standard protocol (available at westernmonarchcount.org). The number of sites visited each year has varied between 76 and 188 sites based on volunteer effort. An additional five sites in Baja California, Mexico, were monitored during the early years of the WMTC and five sites in Arizona have been added in recent years due to the participation of the Southwest Monarch Study program. While survey efforts are not exhaustive, the majority of known, large overwintering sites are included in the count. The standardized counts of the WMTC allow comparisons between years and sites and provide an estimate of the size of the monarch population that overwinters in western North America.

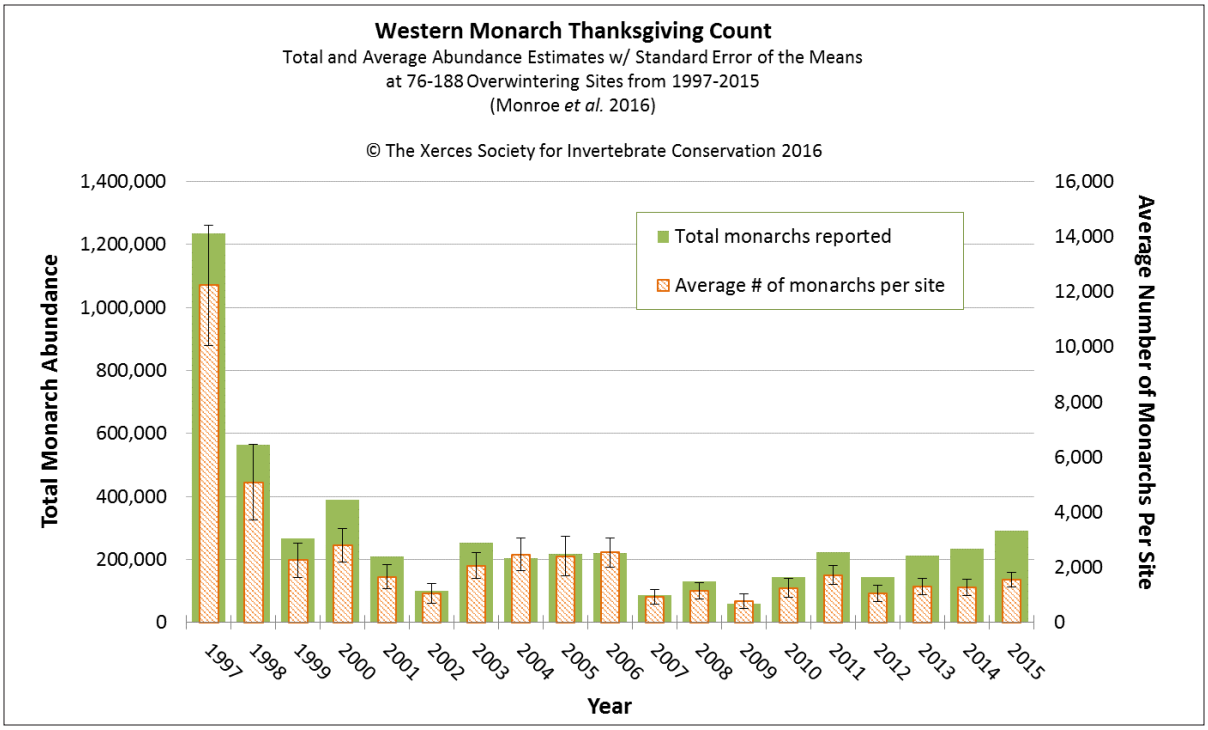



**Figure 1.** Total abundance and average number of butterflies per site (with standard error of means) calculated from data gathered during the Western Monarch Thanksgiving Count, 1997–2015.

## Population estimates before 1997

Western overwintering monarch populations have been declining since regular monitoring began in 1997, but older data indicates the downward trend may have started even earlier. In 1991, 200,000 butterflies were observed at Pismo Beach (San Luis Obispo County) and clusters of more than 100,000 butterflies were observed at five other sites in the 1980s and 1990s. Since 1997, no site has hosted over 100,000 monarchs. Clusters of more than 10,000 butterflies were documented at 90 sites between 1970 and 1997, but in 2015, only seven sites had clusters this large (Xerces Society Western Monarch Overwintering Sites Database 2016).

A major survey effort in 1990 by Sakai and Calvert (1991) provided count estimates at a large number of overwintering sites, including 24 which were later included in the Western Monarch Thanksgiving Count. Monarch abundance in 1990 was comparable to that in the late 1990s at these sites, suggesting the late 1990s were not unusually high monarch years. Due to the limited data availability of standardized estimates of the western monarch population in other years, analyses of long-term population trends prior to 1997 are limited.

## Recent population trends

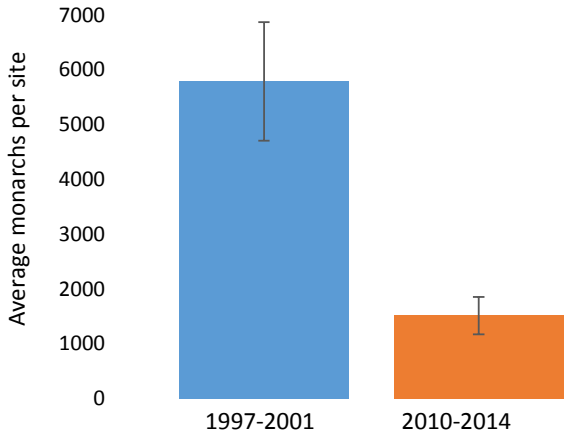
Several methods have been used to quantify changes in the western monarch overwintering population size. In 1997, a total of 1.2 million monarchs were observed overwintering along the Pacific coast. In 2015, the number of monarchs was 292,674. A comparison of the average number of monarchs per site shows that the 2015 count total is 35% below the 19-year annual average. Using the long-term average as the yardstick, in the past five years western monarch counts have fluctuated between 35% and 59% below average. Hence, a 40–50% decline has been generally cited (e.g., Center for Biological Diversity et al. 2014; Jepsen et al. 2015).

Using the long-term average as the yardstick has been widely used to describe declines in the eastern overwintering population as well, and while useful and straightforward, insect populations are characterized by a high degree of variability from year to year and site to site. Spatial or temporal averages do not reflect the inherent variability in population dynamics that influence long-term trends (Fagan et al. 2001; Schultz and Hammond 2003). For example, the central Mexico overwintering population in 2013 was 90% below the 20-year average, whereas high numbers of monarchs in 2015 puts the population just 32% below the 22-year average. Still, the long-term trend of Mexican overwintering monarchs is demonstrably downward.

To overcome the limitations of this method, the Xerces Society has undertaken more robust analyses to model overall trends while accounting for differences in survey effort over time and variability between sites. These new analyses of the WMTC data (below) estimate the western overwintering population has undergone a 74% decline since 1997–2001 (Analysis 1) and an average decline of 12% per year (Analysis 2). All statistical analyses were performed using R (R Development Core Team 2015).

### Analysis 1: Before-and-after site comparison

One hundred fifteen overwintering sites have at least two years of count data in the period 1997–2001 and at least two years of count data in the period 2010–2014. Using the average monarch count for each site over each 5-year time period minimizes the influence that any one year has on the analysis. A paired t-test shows a significant decline between the two time periods ($t = 5.098$, $df = 114$, p-value $<0.0001$). This before-and-after site comparison analysis shows a 74% decline since 1997–2001.

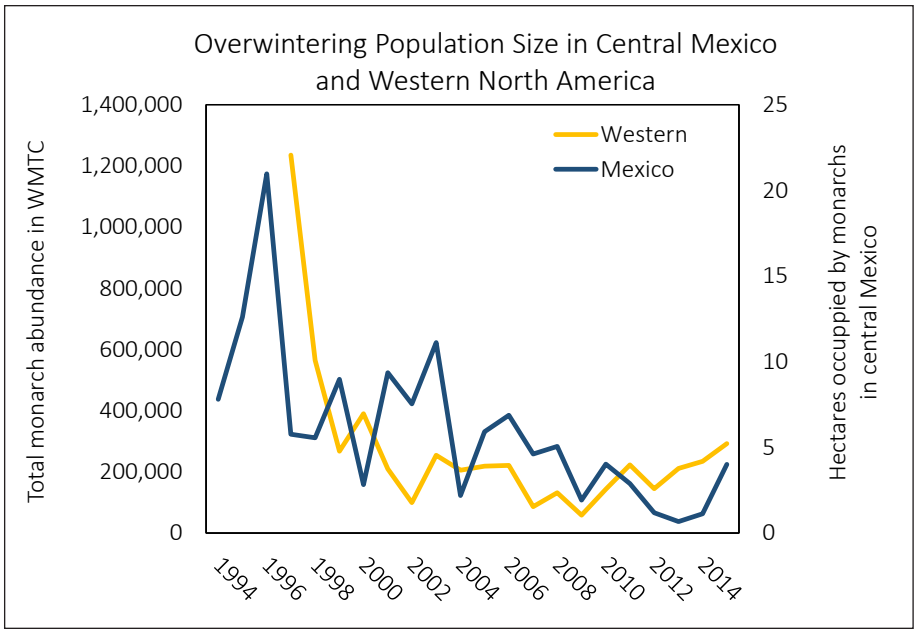


## Analysis 2: Mixed model analysis

Population trends across the 1997–2015 WMTC data were analyzed using a general linear mixed model (lme4 package in R; Bates et al. 2015). The number of monarchs counted was natural log transformed and the model included site as a random effect and fixed effects of Year and Year x Site interaction, with the latter included to account for autocorrelation in the data. The analysis shows that the data fit a logarithmic trend of a 12% average decline in the population per year.

## Comparing California and central Mexico overwintering populations

The eastern monarch population migrates in astonishing numbers to the oyamel fir forests of central Mexico. However, eastern overwintering numbers have also undergone a significant decline in abundance since the 1990s (Brower et al. 2012; Center for Biological Diversity et al. 2014) and recent analyses have determined that the Eastern overwintering population of monarch butterflies in central Mexico is highly vulnerable to extinction (Jepsen et al. 2015; Semmens et al. 2016). Due to the massive numbers of monarchs which cluster in the forests of central Mexico, yearly monarch abundance is determined by measuring the total area occupied by the butterflies. The area occupied in central Mexico is modeled at 84% below the 1996 population maximum (Semmens et al. 2016). While calculated differently, the 74% decline from the 1997–2001 population average at California overwintering sites (documented in this report) is similarly severe.



# Priority Overwintering Sites

## California overwintering sites by county

The table below presents an overview of the 400+ known monarch overwintering sites, organized by county and occupancy status. "Active sites" are those where monarchs have been observed clustering at least once during surveys done between 2010 and the present. "Failed to find" are sites where monarchs have not been observed clustering during surveys done since 2010. "Unknown status" denotes sites which have not been visited during a monitoring survey since 2010, but were verified as cluster sites in a pre-2010 monarch count.

| County | Total Number of Sites | Occupancy Status | | |
|---|---|---|---|---|
| | | Active sites | Failed to find | Unknown status |
| Mendocino | 3 | 2 | 1 | 0 |
| Sonoma | 15 | 3 | 2 | 10 |
| Marin | 21 | 10 | 4 | 7 |
| Solano | 3 | 0 | 1 | 2 |
| Contra Costa | 2 | 1 | 1 | 0 |
| Alameda | 11 | 10 | 0 | 1 |
| San Francisco | 13 | 10 | 0 | 3 |
| San Mateo | 14 | 3 | 3 | 8 |
| Santa Cruz | 19 | 13 | 1 | 5 |
| Monterey | 25 | 15 | 3 | 7 |
| San Luis Obispo | 54 | 39 | 6 | 9 |
| Santa Barbara | 130 | 61 | 20 | 49 |
| Inyo | 3 | 0 | 0 | 3 |
| Ventura | 12 | 11 | 0 | 1 |
| Los Angeles | 39 | 13 | 4 | 22 |
| Orange | 20 | 11 | 1 | 8 |
| San Diego | 28 | 19 | 6 | 3 |
| ***Total Sites*** | ***412*** | ***221*** | ***53*** | ***138*** |

## Top 50 priority sites list

A list of the fifty overwintering sites in greatest need of attention was developed to help land managers, policy makers, communities, and others make decisions about which sites are most critical for protection and active management when resources are limited. The Top 50 sites are listed on the next page, with short profiles of the twenty-five sites in greatest need of attention on the pages that follow.

The ranking of the Top 50 priority overwintering sites was generated by multiplying two factors: 1) the percent decline in a site's population from its 1997–2001 count average to 2010–2014 count average and 2) the proportion of the remaining total population in 2010–2014 at the site. Sites in which the monarch populations have undergone the greatest declines, yet host the largest proportion of the remaining population have the highest ranking. Sites that lacked sufficient count information (not monitored in 1997–2001 or 2010–2014) or that have been recently discovered were excluded, as a ranking could not be calculated. Management and protection decisions should also be based on criteria such as severity of development pressures, grove structural diversity, level of tree senescence or other site threats, but comprehensive information on these threats at many sites is currently lacking, so this information was not used in the ranking process.

The Top 50 priority sites are spread across twelve California counties stretching the length of the Pacific coast from Sonoma to San Diego counties. Twenty of the sites are located in two counties, Santa Barbara and San Luis Obispo, which represent the core of the monarchs overwintering range along the Pacific coast. More than half of the Top 50 sites are publicly owned: twelve are located within California state parks, five are located on city property, two on Department of Defense property, two within the East Bay Regional Parks District, and at least six others are owned by county, state, university, or federal entities. Of the sites located on private property, most are in residential areas, although three are located on golf courses, and three on oil or natural gas facilities.


**Figure 2.** Locations of the Top 50 priority monarch overwintering sites in California. (Priority sites are orange, other sites white.)

# Top 50 Priority Sites

| Rank | Xerces Database ID# | County | Site Name | Current Population (2010–2014 average) | Decline (from 1997–2001 average) |
|---|---|---|---|---|---|
| 1 | 3060 | San Luis Obispo | Pismo Beach State Park | 25,494 | 64.8% |
| 2 | 2732 | Santa Barbara | Private Site 2732 | 12,686 | 67.6 % |
| 3 | 2920 | Monterey | Private Site 2920 | 16,362 | 48.7 % |
| 4 | 2751 | Santa Barbara | Ellwood Main | 12,142 | 58.0 % |
| 5 | 3056 | San Luis Obispo | Morro Bay Golf Course | 11,306 | 61.2 % |
| 6 | 2935 | Monterey | Pacific Grove Sanctuary | 11,914 | 51.8 % |
| 7 | 3000 | Santa Cruz | Lighthouse Field State Beach | 7,360 | 83.6 % |
| 8 | 2833 | Alameda | San Leandro Golf Course | 5,350 | 63.0 % |
| 9 | 2983 | Santa Cruz | Moran Lake | 3,915 | 74.7 % |
| 10 | 3043 | San Luis Obispo | Pecho Road, Los Oso | 4,321 | 64.3 % |
| 11 | 2998 | Santa Cruz | Natural Bridges State Park | 2,760 | 95.1 % |
| 12 | 3142 | Ventura | Arrundel Barranca, Ventura | 2,716 | 82.5 % |
| 13 | 2765 | Santa Barbara | Atascadero Creek | 5,138 | 42.6 % |
| 14 | 2799 | Santa Barbara | Carpinteria Creek | 2,445 | 75.1 % |
| 15 | 2712 | Santa Barbara | Vandenberg AFB, Spring Canyon | 1,760 | 82.0 % |
| 16 | 2699 | Santa Barbara | Vandenberg AFB, Tangair Rd. | 2,067 | 67.8 % |
| 17 | 2831 | Alameda | Ardenwood Historic Farm | 1,837 | 72.4 % |
| 18 | 3140 | Ventura | Vista Del Mar, North Ventura | 1,250 | 94.6 % |
| 19 | 3151 | Ventura | Harbor Boulevard, Ventura | 967 | 87.2 % |
| 20 | 2800 | Santa Barbara | Chevron Park | 1,100 | 74.5 % |
| 21 | 3051 | San Luis Obispo | Toro Creek, South of Cayucos | 926 | 79.4 % |
| 22 | 3055 | San Luis Obispo | Morro Bay State Park | 1,095 | 64.0 % |
| 23 | 3070 | San Luis Obispo | Villa Creek, North of Cayucos | 787 | 85.3 % |
| 24 | 3058 | San Luis Obispo | Montana De Oro State Park | 683 | 97.5 % |
| 25 | 2755 | Santa Barbara | Devereaux School | 748 | 71.4 % |

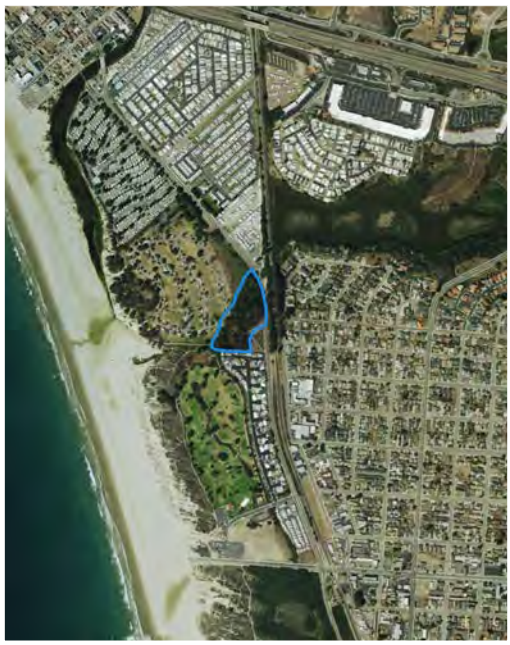
Note: A site is named as numbers only if it is sensitive to public disturbance and/or at the explicit request of the private landowner.

| Rank | Xerces Database ID# | County | Site Name | Current Population (2010–2014 average) | Decline (from 1997–2001 average) |
|---|---|---|---|---|---|
| 26 | 2832 | Alameda | Chuck Corica Golf Course | 1,459 | 31.3 % |
| 27 | 3057 | San Luis Obispo | Eagle Rock, Morro Bay | 788 | 52.7 % |
| 28 | 2941 | Monterey | Plaskett Creek Campground, Los Padres National Forest | 430 | 96.3 % |
| 29 | 2883 | Los Angeles | Busch Dr. & Pacific Coast Hwy., Malibu | 417 | 91.2 % |
| 30 | 3093 | San Luis Obispo | San Luis Obispo Cemetery | 337 | 81.6 % |
| 31 | 3186 | Monterey | Point Lobos State Natural Reserve | 287 | 91.8 % |
| 32 | 2903 | Marin | Stinson Beach | 261 | 98.7 % |
| 33 | 2986 | Santa Cruz | New Brighton/Potbelly, Aptos | 394 | 61.7 % |
| 34 | 3150 | Ventura | Taylor Ranch, North Ventura | 250 | 94.0 % |
| 35 | 2899 | Marin | Purple Gate, Bolinas | 233 | 98.8 % |
| 36 | 3053 | San Luis Obispo | Monarch Lane, Los Osos | 202 | 91.1 % |
| 37 | 2841 | Contra Costa | Point Pinole | 197 | 86.1 % |
| 38 | 2830 | Alameda | Albany Hill | 389 | 33.1 % |
| 39 | 3121 | Sonoma | Bodega Dunes Campground | 124 | 86.8 % |
| 40 | 2924 | Monterey | Andrew Molera State Park | 2,176 | 4.8 % |
| 41 | 2857 | Los Angeles | Encinal Canyon, Malibu | 97 | 96.1 % |
| 42 | 2909 | Marin | Fort Baker, GGNRA | 102 | 89.0 % |
| 43 | 2980 | Orange | Sundance Drive, Costa Mesa | 87 | 91.3 % |
| 44 | 2949 | Orange | San Clemente State Park | 61 | 96.4 % |
| 45 | 2749 | Santa Barbara | Ellwood North | 58 | 98.3 % |
| 46 | 3054 | San Luis Obispo | Sweet Springs, Los Osos | 386 | 13.4 % |
| 47 | 3149 | Ventura | Pt. Mugu State Park | 46 | 97.9 % |
| 48 | 3031 | San Diego | UCSD Coast Site, Azul Street | 41 | 92.6 % |
| 49 | 3181 | Los Angeles | Woodlawn Cemetery | 44 | 83.5 % |
| 50 | 2855 | Los Angeles | Leo Carrillo State Beach, Malibu | 35 | 97.0 % |

# Profiles of 25 Highest Priority Overwintering Sites

Below are brief profiles of the 25 highest priority sites. Each profile includes the ownership, population trends, and conservation issues that have been identified. Site profiles are based on information contained in the Xerces Society Western Monarch Overwintering Sites Database, reports from previous studies (e.g., Sakai and Calvert 1991), and habitat assessments completed by Xerces biologists and WMTC volunteer monitors. Site profiles are based on the most recent available information. However, not all sites have been assessed comprehensively and conservation issues may be incomplete or unknown. Conservation issues are presented for the purpose of identifying common conservation challenges for overwintering sites and recognized site-specific concerns, but are not comprehensive. In addition, many overwintering site managers are actively addressing site-specific threats, and these activities are not captured in these summaries. If you have additional information about conservation issues at these sites, please email it to wmtc@xerces.org.

## 1. Pismo Beach State Park



**County**: San Luis Obispo

**Ownership**: Public (California Department of Parks and Recreation)

**Population**: Decline from 1997–2001 average: 65%
Peak (1990): 200,000
Most recent (2015): 28,073

This site contains ~11% of the overwintering population in California.

**Site Description**: Grove along creek includes eucalyptus and Monterey cypress cluster trees. Non-cluster tree species include blue gum, Monterey pine, Monterey cypress, and willow (*Salix* spp.). Nectar species include dune groundsel/ragwort (*Senecio blochmaniae*), mock heather (*Ericameria ericoides*), crisp dune mint (*Monardella crispa*), nightshade (*Solanum* spp.) and common deerweed (*Lotus scoparius*).

**Conservation Issues**: Unknown

## 2. Private Site 2732

(No aerial image is provided to maintain privacy of landowner.)

**County**: Santa Barbara

**Ownership**: Private

**Population**: Decline from 1997–2001 average: 68%
Peak (1998): 150,000
Most recent (2013): 10,777

**Site Description**: Large grove of mixed-age blue gum eucalyptus along a dry creek drainage. Nectar species include Aster (*Aster* spp.), willow (*Salix* spp.) and coyote brush (*Baccharis* spp.).

**Conservation Issues**: Site is largely unprotected from vandalism. Trees are senescing and stressed from Eucalyptus leaf beetle infestation and there is evidence of fire-killed trees. Erosion may be limiting plant regeneration and threatening cluster trees.

## 3. Private Site 2920

(No aerial image is provided to maintain privacy of landowner.)

**County**: Monterey

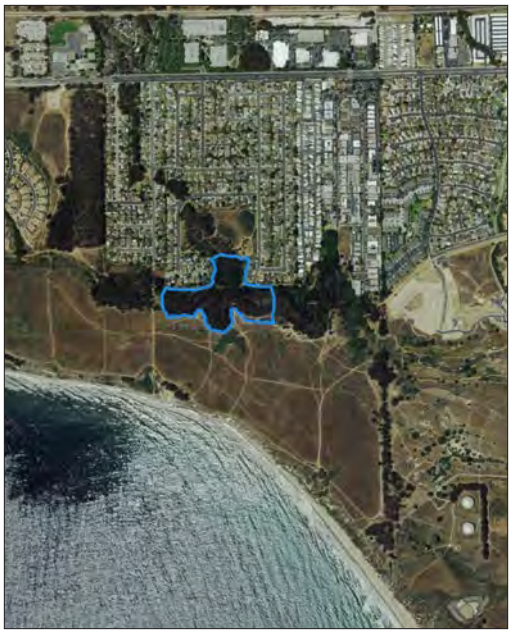
**Ownership**: Private

**Population**: Decline from 1997–2001 average: 49%
Peak (1996): 75,000
Most recent (2015): 5,202

**Site Description**: A large, planted coast redwood tree surrounded by blue gum eucalyptus, Monterey pine, Monterey cypress, and palms. Site is a facility consisting of buildings within a natural area landscape. Nectar species include nonnative English ivy (*Hedera helix*).

**Conservation Issues**: Tree trimming and removal may threaten the site.

## 4. Ellwood Main



**County**: Santa Barbara

**Ownership**: Public (City of Goleta)

**Population**: Decline from 1997–2001 average: 58%
Peak (1990): 129,000
Most recent (2015): 6,610

**Site Description**: Site is part of a complex of overwintering sites located along a drainage extending northward from the coastal bluff, which forms a gully through a dense grove of eucalyptus. The gully is primarily dry and connects to Devereaux Creek which runs east/west across the Ellwood Mesa. The eucalyptus grove is part of a thick band of eucalyptus trees running parallel to Devereaux Creek. Monarchs roost on either side of the gully or directly above on overhanging branches in a cathedral-like opening. Devereaux Creek provides a fresh water source in wet winters. Nectar sources include coyote brush (*Baccharis* spp.) on the coastal bluff, herbaceous species along Devereaux Creek, and numerous ornamental plants at the nearby residences.

**Conservation Issues**: Nearby development may negatively affect this site. High levels of human visitation may have caused erosion and damage to understory. The eucalyptus trees in the grove are significantly drought-stressed and the canopy is becoming increasingly open as trees and branches fall.

## 5. Morro Bay Golf Course

**County**: San Luis Obispo

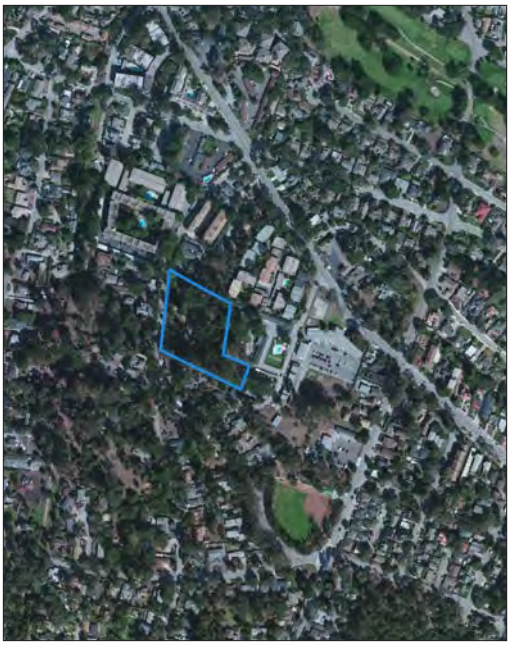
**Ownership**: Public (California Department of Parks and Recreation)

**Population**: Decline from 1997–2001 average: 61%
Peak population in 1998: 110,500
Most recent (2015): 13,492

**Site Description**: Groves of Monterey pine, eucalyptus, Monterey cypress, and other tree species on a golf course. Nectar species include coyote brush (*Baccharis* spp.).

**Conservation Issues**: The Monterey pines on the site have pitch canker and some trees have been removed or trimmed because of the disease. Monterey cypress and redwood were planted in their place. However, additional tree planting may be needed.

## 6. Pacific Grove Sanctuary



**County**: Monterey
**Ownership**: Public (City of Pacific Grove)
**Population**: Decline from 1997–2001 average: 52%
Peak (1997): 45,000
Most recent (2015): 11,472

**Site Description**: Grove in a residential area dominated by Monterey pine; cypress and eucalyptus tree species are also present. Nectar species include native coyote bush (*Baccharis* spp.) and many nonnative species.

**Conservation Issues**: This site has been the focus of active restoration for many years including native tree plantings, which have since been occupied by overwintering monarchs, and nectar plants.

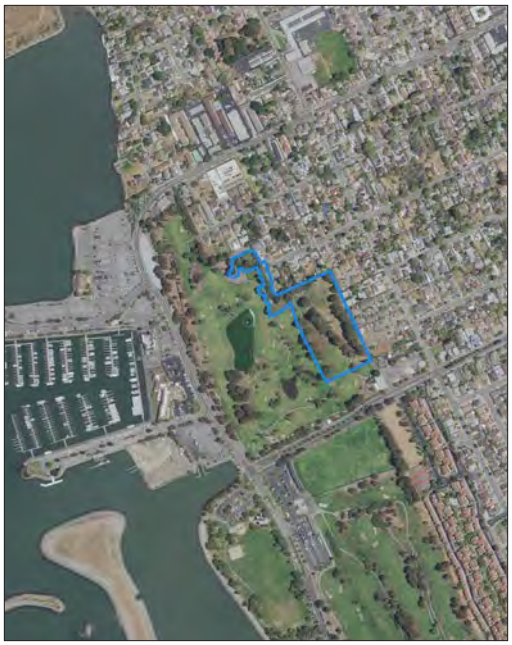
## 7. Lighthouse Field State Beach

**County**: Santa Cruz
**Ownership**: Public (California Department of Parks and Recreation)
**Population**: Decline from 1997–2001 average: 84%
Peak (1997): 70,000
Most recent (2015): 12,000

**Site Description**: Eucalyptus and Monterey cypress remain from old plantings on an originally treeless coastal terrace between a residential area and the ocean. Other trees nearby include Monterey pine and willows. Nectar species include nonnative ice plant (family Aizoaceae), *Oxalis* spp., mustard and radish (family Brassicaceae), and *Prunus* spp.

**Conservation Issues**: The grove is small, and some of the eucalyptus trees are senescing or have been trimmed for safety reasons or due to storm damage. Much of the downed wood remains on site and may be harboring tree pests. Eucalyptus beetle infestation and drought are also negatively affecting the eucalyptus. There is limited regeneration of trees outside the cluster area to provide wind protection, especially from storms. Pitch canker is present in the Monterey pines on site. Human use of the area is high and symbolic fencing offers only minimal protection to the cluster trees.

## 8. San Leandro Golf Course



**County**: Alameda

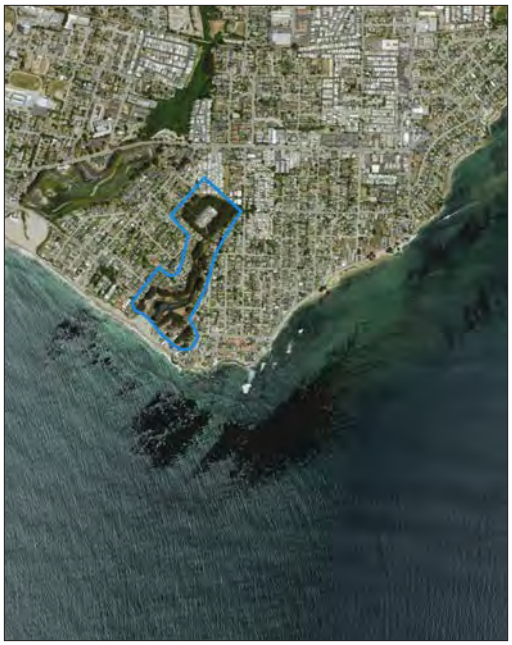
**Ownership**: Private (American Golf Corporation)

**Population**: Decline from 1997–2001 average: 63%
Peak (1998): 31,000
Most recent (2015): 12,864

**Site Description**: Windrow of eucalyptus on a golf course surrounded by residential housing and parkland. Monarchs cluster on blue gum eucalyptus; non-cluster tree species include coast redwood.

**Conservation Issues**: Development has been planned for the adjacent San Leandro Marina and this development may negatively impact the site.

## 9. Moran Lake



**County**: Santa Cruz

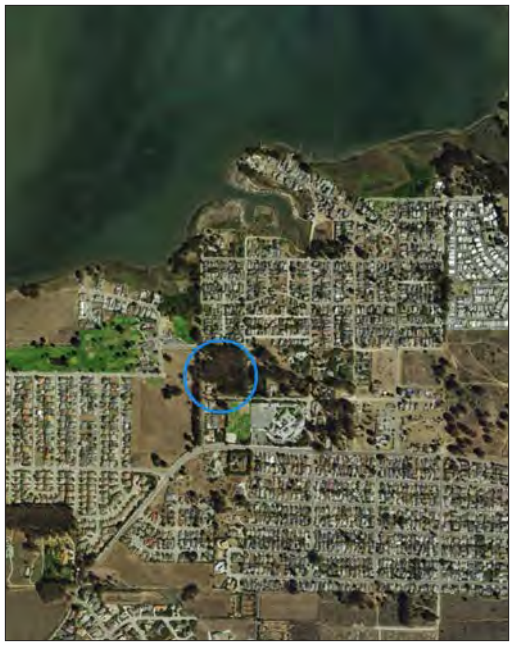
**Ownership**: Public (County of Santa Cruz).
A portion of site is privately owned.

**Population**: Decline from 1997–2001 average: 75%
Peak (1997): 70,000
Most recent (2015): 5,800

**Site Description**: A dense stand of eucalyptus and pine with native species in the wind break near a creek and surrounding a water treatment plant. Non-cluster tree species include blue gum, coast redwood, Monterey cypress, Monterey pine. Nectar species include nonnative ivy.

**Conservation Issues**: This site has undergone tree trimming and removal in some areas, but vegetation in other areas may be growing too densely to provide ideal microclimate conditions for clustering monarchs. Unrestricted human use of the site has resulted in at least one fire in recent years. Runoff and erosion may also limit tree and nectar plant regeneration.

## 10. Pecho Road, Los Oso



**County**: San Luis Obispo

**Ownership**: Private

**Population**: Decline from 1997–2001 average: 64%
Peak (1998): 50,000
Most recent (2015): 9,232

**Site Description**: Eucalyptus grove bordered by roads on three sides. Eucalyptus trees planted in tightly packed rows with little to no understory. Grove is located on five residential lots, three of which have residences. Nectar sources are located in home gardens.

**Conservation Issues**: Drought stress on eucalyptus trees has resulted in several dead and dying trees. There is potential development risk on the two residential lots that are currently undeveloped.

## 11. Natural Bridges State Park

**County**: Santa Cruz

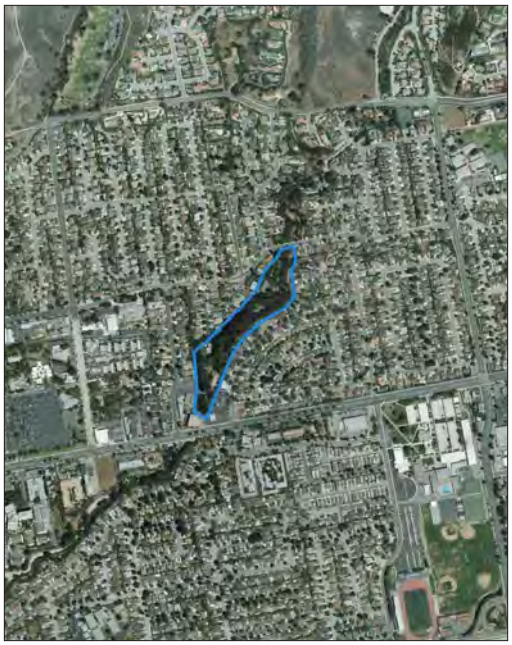
**Ownership**: Public (California Department of Parks and Recreation)

**Population**: Decline from 1997–2001 average: 95%
Peak (1997): 120,000
Most recent (2015): 8,000

**Site description**: Eucalyptus grove in a ravine surrounded by coastal prairie. A nearby freshwater pond provides a water source for monarchs. Other tree species present include Monterey cypress and Monterey pine. Nectar species include nonnative English ivy (*Hedera helix*). Wooden boardwalks and interpretative signage have been added in recent years to direct park visitors.

**Conservation Issues**: The eucalyptus grove is senescing, and the Monterey pines, which provide wind protection, may be affected by pitch canker.

## 12. Arrundel Barranca



**County**: Ventura

**Ownership**: Mixed public–private ownership. Site boundaries are undefined, but likely intersect private residential land and county land, including flood control basins and channels owned by Ventura County Flood Control District.

**Population**: Decline from 1997–2001 average: 83%
Peak (1997–98): 40,000
Most recent (2015): 835

**Site Description**: Concrete-lined channel bordered on either side by eucalyptus windrows.

**Conservation Issues**: Unknown

## 13. Atascadero Creek

**County**: Santa Barbara

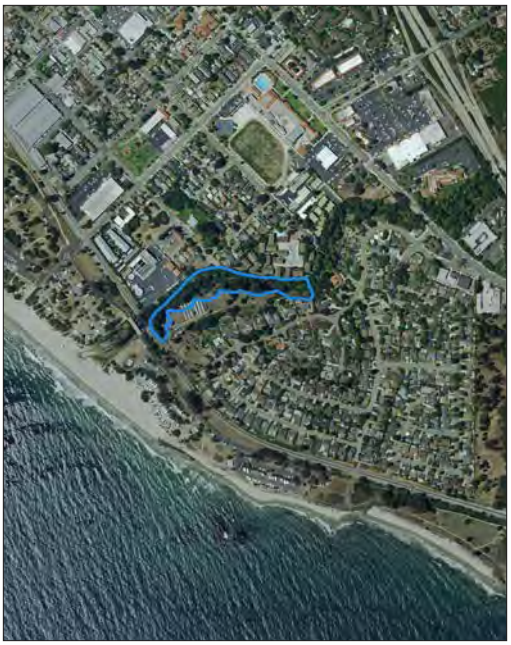
**Ownership**: Private

**Population**: Decline from 1997–2001 average: 43%
Peak (1996): 70,000
Most recent (2015): 3,795

**Site Description**: Eucalyptus grove lines both sides of a perimeter road on the northern edge of a natural gas industrial facility. A road runs through a thick grove of eucalyptus. Monarchs cluster on branches extending towards the road on both sides. Atascadero Creek parallels the road to the north, providing a fresh water source, and to the south are agricultural fields and the natural gas facility. Nectar species include nonnative German ivy (*Senecio mikanioides*) and weedy herbaceous species along the roadsides.

**Conservation Issues**: Unknown

## 14. Carpinteria Creek



**County**: Santa Barbara

**Ownership**: Private

**Population**: Decline from 1997–2001 average: 71%
Peak (1997): 50,000
Most recent (2015): 4,110

**Site Description**: Grove including arroyo willows (*Salix lasiolepis*), western sycamore, blue gum eucalyptus, cottonwoods (*Populus* spp.), alders, and coast live oak on both banks of Carpinteria Creek, immediately south of an apartment complex. Monarchs have been documented clustering on almost every tree species at the site, sometimes only a few feet off the ground. Mature sycamore trees overhang the creek from north and south banks. Scattered mature blue gum eucalyptus are located on the south bank. Understory on both sides of the creek consists of arroyo willow trees and shrubs, nonnative shrubs, and annual grasses and forbs. A footpath runs parallel to the creek, on top of the north bank. Nectar sources include assorted native and nonnative weedy herbaceous species along the creek banks.

**Conservation Issues**: There is unrestricted public access, but human visitation to the site is probably low. The development risk is unknown.

## 15. Vandenberg AFB, Spring Canyon

**County**: Santa Barbara

**Ownership**: Public (Department of Defense)
No public access

**Population**: Decline from 1997–2001 average: 82%
Peak (1997): 50,000
Most recent (2015): 8,625

**Site Description**: Blue gum eucalyptus and Monterey cypress grove along a dry creek bed. Nectar species include California blackberry (*Rubus ursinus*), mustard (family Brassicaceae) and coyote brush (*Baccharis* spp.).

**Conservation Issues**: The grove is drought stressed.

## 16. Vandenberg AFB, Tangair Road

**County**: Santa Barbara

**Ownership**: Public (Department of Defense). No public access

**Population**: Decline from 1997–2001 average: 68%
Peak (1997): 25,500
Most recent (2015): 2,860

**Site Description**: Large, medium-density mixed-age grove of blue gum eucalyptus growing on flat terrain. Nectar species include coyote brush (*Baccharis* spp.) and nonnative ice plant (family Aizoaceae).

**Conservation Issues**: The eucalyptus trees are drought stressed and the grove is located in a high fire risk area.

## 17. Ardenwood Historic Farm

**County**: Alameda

**Ownership**: Public (Eastbay Regional Parks District)

**Population**: Decline from 1997–2001 average: 72%
Peak (1997): 25,000
Most recent (2015): 2,409

**Site Description**: Blue gum eucalyptus plantation within a working farm and park landscape with a residential neighborhood bordering the grove on the northwest and a park-run railroad to the southeast. Additional eucalyptus species and other tree species are present at the far west and east ends of the grove. Nectar plants include *Oxalis* spp. and other plants in the ornamental gardens on the site.

**Conservation Issues**: Eucalyptus trees are suffering from drought and pest pressure from the eucalyptus leaf beetle, lerp psyllid, and longhorned borer. Sections of the grove are senescing and some trees have been lost or cut for safety reasons. Human visitation is high, but managed by staff.

## 18. Vista Del Mar, North Ventura

**County**: Ventura

**Ownership**: Mixed ownership

**Population**: Decline from 1997–2001 average: 95%
Peak (1997): 47,500
Most recent (2014): 2,500

**Site Description**: Grove surrounded by residential development and sports facilities. Tree species include pines, eucalyptus, cypress, and cheesewood (*Pittosporum* spp.).

**Conservation Issues**: Unknown

## 19. Harbor Boulevard

**County**: Ventura

**Ownership**: Mixed public–private ownership

**Population**: Decline from 1997–2001 average: 87%
Peak (1998): 30,000
Most recent (2014): 975

**Site Description**: Eucalyptus grove near agricultural fields, undeveloped land, and residential neighborhoods.

**Conservation Issues**: Trees have been pruned and a subset of trees have been removed in recent years. Regeneration was noted in a 2014 assessment of the site.

## 20. Chevron Park

**County**: Santa Barbara

**Ownership**: Private

**Population**: Decline from 1997–2001 average: 75%
Peak (1996): 45,000
Most recent (2013): 0

**Site Description**: Grove of eucalyptus and Monterey pine between a subdivision and former industrial facilities. Non-cluster tree species include western sycamore and coast live oak.

**Conservation Issues**: Monterey pines show signs of pitch canker.

## 21. Toro Creek, South of Cayucos

**County**: San Luis Obispo

**Ownership**: Private

**Population**: Decline from 1997–2001 average: 79%
Peak (1990): 26,000
Most recent (2015): 1,699

**Site Description**: Grove along a creek consisting of eucalyptus and western sycamore cluster trees and non-cluster trees including coast live oak and western sycamore. Nectar species include nonnative German ivy (*Senecio mikanioides*).

**Conservation Issues**: Unknown

## 22. Morro Bay State Park

**County**: San Luis Obispo

**Ownership**: Public (California Department of Parks and Recreation)

**Population**: Decline from 1997–2001 average: 64%
Peak (1988): 30,000
Most recent (2015): 4,441

**Site Description**: Eucalyptus grove near a campground within the park. Nectar species include coyote brush (*Baccharis* spp.).

**Conservation Issues**: Unknown

## 23. Villa Creek, North of Cayucos

**County**: San Luis Obispo

**Ownership**: Private

**Population**: Decline from 1997–2001 average: 85%
Peak (1996): 16,000
Most recent (2015): 171

**Site Description**: Blue gum eucalyptus grove in the flood plain of Villa Creek.

**Conservation Issues**: Eucalyptus trees show signs of pest pressure from the eucalyptus leaf beetle. Wind protection of cluster trees from the north may be inadequate.

## 24. Montana De Oro State Park

**County**: San Luis Obispo

**Ownership**: Public (California Department of Parks and Recreation)

**Population**: Decline from 1997–2001 average: 98%
Peak (1998): 80,000
Most recent (2015): 2,105

**Site Description**: Grove of eucalyptus along a drainage.

**Conservation Issues**: Unknown

## 25. Devereaux School

**County**: Santa Barbara

**Ownership**: Public (University of California)

**Population**: Decline from 1997–2001 average: 71%
Peak (2000): 7,320
Most recent (2015): 1,307

**Site Description**: Grove of eucalyptus and willows surrounding a drainage connected to Devereaux Slough. Cluster tree species include blue gum eucalyptus, Monterey cypress, and willows. These are surrounded by a row of eucalyptus that extends around the east, west, and south sides. Grove is open to the north where small drainage connects to larger branch of the slough. Nectar species include plants in the genus *Baccharis*. Poison oak (*Toxicodendron diversilobum*) is present on the western slope of the drainage.

**Conservation Issues**: The drainage is surrounded by parking lots, school buildings, and an access road. The site may be impacted by vehicular traffic and landscape activities.

# Conservation Issues

Monarch butterfly populations in North America face multiple stressors and may be limited by the availability of breeding habitat, fall and winter nectar resources, and overwintering habitat as well as pesticides, natural enemies, and climate change.

The loss of breeding habitat in the Midwest has been identified as an important driver of the eastern population's decline since the late 1990s (Pleasants and Oberhauser 2012; Flockhart et al. 2015). Breeding habitat loss refers to the decline in milkweed abundance in Midwestern agricultural fields linked to the increased adoption of genetically modified corn and soy and related increased use of the herbicide glyphosate (Hartzler 2010; Pleasants and Oberhauser 2012). However, the relative importance of milkweed, compared with other drivers such as fall nectar or overwintering habitat availability is an area of active research and debate (e.g., Davis and Dyer 2015; Dyer and Forister 2016; Inamine et al. 2016; Pleasants et al. 2016). This question is particularly poorly understood in the western states, where glyphosate use has also increased over the past two decades but the severity of milkweed loss is unclear.

Besides loss of breeding habitat, monarchs are directly impacted by insecticides such as neonicotinoids (Krischik et al. 2015; Pecenka and Lundgren 2015) which have increased in use in agriculture, plant nurseries, and in urban and suburban landscapes since the late 1990s (USGS NAWQA 2016). Herbicides such as glyphospate may also be limiting nectar plant availability for breeding and migrating adult monarchs across their range. Monarch fitness and mortality are naturally regulated by predators, pathogens, and parasites. The best studied of these is the protozoan parasite *Ophryocystis elektroscirrha* (OE), which may negatively impact migratory success (Altizer et al. 2015). Climate change may also be affecting monarchs by increasing the severity and intensity of drought, which has been suggested as a major driver of monarch populations in the West (Stevens and Frey 2010). Another important factor that may influence monarch population size, and the focus of this report, is the availability and quality of overwintering habitat (Jepsen & Black 2015; Jepsen et al. 2015).

## The importance of overwintering survival to the population

The monarch's life history trait to congregate in restricted geographic areas may make the species more vulnerable to stochastic events than other broadly distributed species. The short-term effects of mortality events at overwintering sites can be severe, such as the single winter storm in Mexico in January 2002 that caused an estimated 500 million monarchs to perish (Brower et al. 2004). In 2015, the entire overwintering population consisted of only 150 million monarchs and a winter storm in March 2016 may have killed millions of monarchs overwintering in Mexico, but the impact of that event on the population may never be fully known.

Monarchs in coastal California overwinter at more sites than their counterparts in central Mexico, and thus it is less likely for a stochastic event, destruction, or degradation of a single site to have a large impact on the overall population. However, overwintering has been posited as the most vulnerable element of the western monarch's annual cycle (Pyle and Monroe 2004) and loss of overwintering habitat may be an important driver of population decline (Jepsen & Black 2015; Espeset et al. 2016). Overwintering habitat is also crucial for the continuity of the migratory phenomenon. Clustering of monarchs in large numbers (up to 11% of the overwintering population in a single site) in the western U.S. means that an event such as a winter storm or fire in an overwintering site can have an outsized effect on the next spring's population because a notable percentage of the population can be impacted. Additionally, without sufficient high-quality overwintering habitat, monarchs may be forced to utilize sites with poor microclimatic conditions and inadequate wind protection. At these poor-quality sites, monarchs may incur higher mortality or reduced fitness because of storms and severe weather.

The overwintering groves in California are under pressure from several threats, including encroaching development (left) and aging and diseased trees (right). The overwintering sites need thoughtful management to ensure that they can continue to play an essential role in the monarch's annual cycle. (Photographs: The Xerces Society/Carly Voight.)

## Threats to California overwintering habitat

### Development

Development is a major cause of overwintering habitat loss and degradation; California has undergone and continues to face development pressure of varying severity along its coast. In highly urban areas such as the San Francisco Bay and Los Angeles, land conversion is extreme and can lead to complete destruction of suitable overwintering habitat. The destruction of 38 overwintering sites prior to 1990 was documented in a California statewide report (Sakai and Calvert 1991), and the destruction of 11 additional sites in the 1990s was documented in a 1999 Santa Barbara county report (Meade 1999). Six additional sites are known to have become unsuitable for monarchs since the late 1990s (Xerces Society Western Monarch Overwintering Sites Database 2016). The majority of sites were made unsuitable for monarch overwintering when urban development replaced the cluster trees. Encroaching development can also degrade overwintering sites by limiting grove size and tree regeneration and altering microclimatic conditions, but the severity of these effects on individual sites is unknown.

### Grove senescence, pests, and disease

The impact of and interaction between grove senescence, pests, and disease reduce habitat quality for monarchs and is the most commonly noted conservation issue at California overwintering sites (Xerces Society Western Monarch Overwintering Sites Database 2016). Many groves are dominated by one or a few tree species, especially blue gum eucalyptus, and all of the trees on a site may be of a similar age class. Without tree planting or management to encourage regeneration, low diversity groves may senesce and eventually become uninhabitable for monarchs as microclimate conditions deteriorate. Senescing groves are also especially vulnerable to the negative impacts of diseases (e.g., pitch canker) and pests (e.g., eucalyptus leaf beetle [family Chrysomelidae]). The continuing drought in California has exacerbated these stressors at many overwintering locations, which can result in limb or tree failure, sometimes throughout an entire grove. Stressed blue gum eucalyptus may also cease flowering, eliminating the main source of nectar available to monarchs during the overwintering season at some sites. Additionally, downed trunks and limbs often attract and harbor pests (e.g., eucalyptus longhorned beetle [family Cerambycidae]), creating a feedback cycle which further stresses the grove.

### Inappropriate site management

*Silviculture management*

Inappropriate tree removal and tree trimming can adversely affect the quality of overwintering sites by reducing wind protection and altering microclimate conditions. Severe alteration of a grove can make monarch clusters more vulnerable during storm events. These practices are especially problematic at small groves, where removal of a key individual tree or windrow may render the site unsuitable for monarchs.

The nonnative blue gum eucalyptus has become an important tree for clustering monarchs. Careful management of aging trees is needed to maintain suitability of a site for monarchs. (Photograph: The Xerces Society/Candace Fallon.)

*Blue gum eucalyptus*

Blue gum eucalyptus was introduced from Australia to California in the 1850s (Butterfield 1935), a time of expanded European settlement, and actively planted on farms and in parks. The species is now abundant along the California coast and may form dense groves, in large part because its leaves contain allelopathic compounds which inhibit regeneration of other plants. Despite the fact that monarchs do not prefer nonnative eucalyptus to native conifers (Griffiths and Villablanca 2015), blue gum is now the dominant tree in most of the California overwintering sites. The trees are not long lived and are prone to disease and herbivory. In addition, many sites have management goals to remove eucalyptus and trim trees considered to be fire or public safety hazards. Together, these pressures can put overwintering sites at risk. The Xerces Society recommends incorporating native tree species such as Monterey cypress into monarch overwintering sites to diversify ecualyptus groves.

*Milkweed and overwintering sites*

The majority of monarchs spend the winter in reproductive diapause (Herman 1981) until breeding resumes in February or March. Monarchs require milkweed for egg laying and larval development, but historic records suggest that milkweed was largely absent from most coastal areas of California (Xerces Society Western Milkweed and Monarch Occurrence Database 2016). Planting milkweed outside of its historic range and close to overwintering sites may encourage monarchs to continue breeding and laying eggs during the winter. Of particular concern is tropical milkweed (*Asclepias curassavica*); monarchs that reproduce in winter on tropical milkweed in coastal areas of California and along the Gulf Coast have higher loads of the parasite OE, which may inhibit successful monarch migration in the eastern United States. (Altizer et al. 2015; Satterfield et al. 2015, 2016). The Xerces Society recommends a precautionary approach: Do not plant milkweed close to overwintering sites (generally within 5–10 miles) in those parts of coastal California where it did not historically occur. In addition, the Xerces Society recommends against planting of tropical milkweed anywhere because of its potential to increase parasite infection in monarchs.

*Public access to overwintering sites*

Allowing public access to overwintering sites is valuable from an education and scientific perspective, but must be balanced with protection of overwintering monarchs and their habitat. Recreational use of overwintering sites can indirectly harm monarchs by having a negative impact on habitat quality and

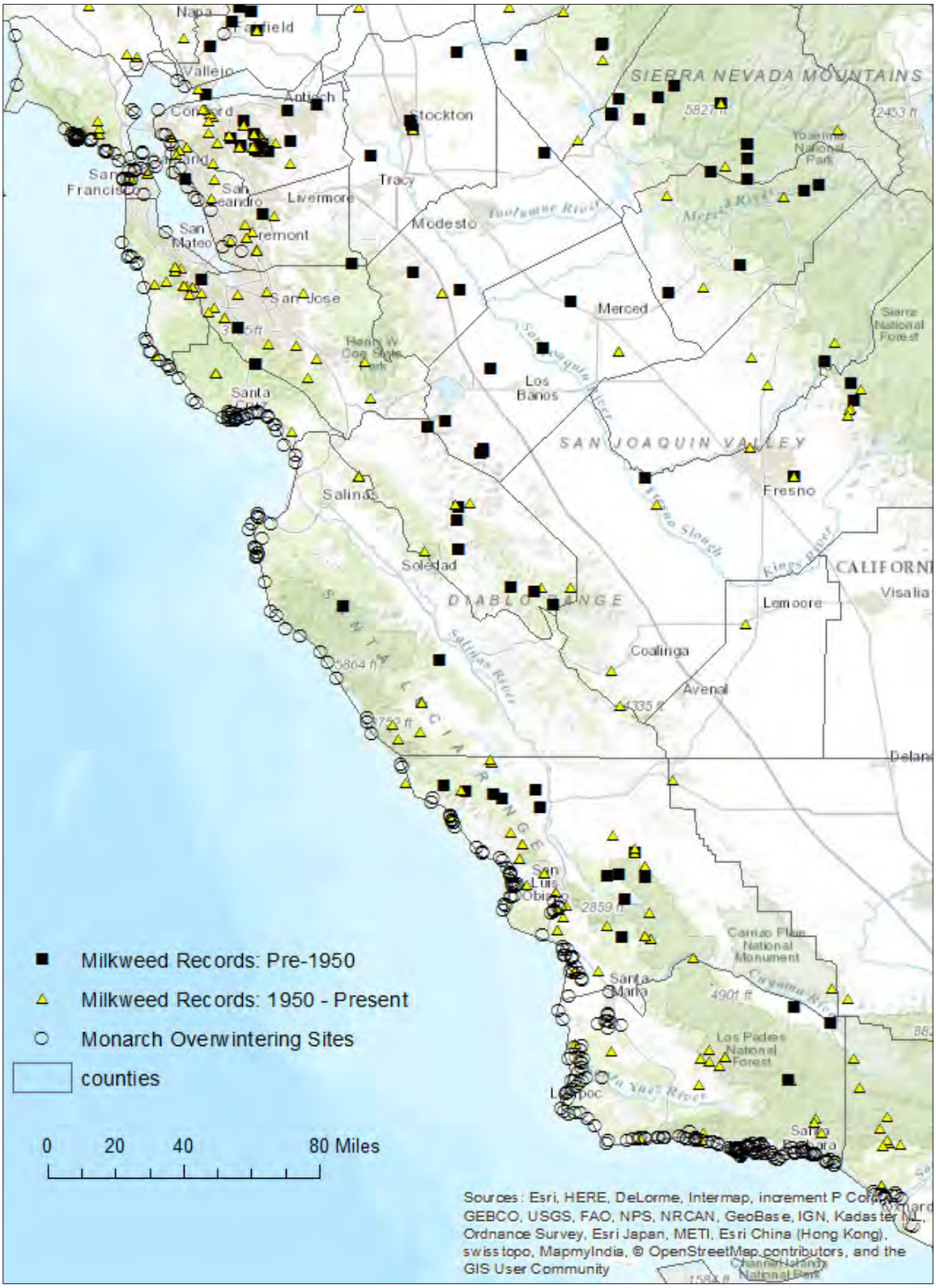



**Figure 3.** Locations of historical and recent records of milkweed occurrance in relation to monarch overwintering sites in California. The presence of milkweed close to overwintering sites may be altering monarch breeding patterns.

directly affect monarchs through disturbance. High pedestrian traffic can cause erosion and limit natural regeneration of nectar plants and trees. At overwintering sites in urban areas, human habitation and the associated risk of uncontrolled fire can threaten groves. Collection of large numbers of monarchs for commercial rearing or other purposes may also be detrimental to monarch populations. The Xerces Society recommends a balanced approach to providing access to monarchs for education, tagging, and other research studies. Fencing, designated trails, interpretative signage and the presence of docents or other staff can limit the negative effects of high human visitation.

Overwintering monarchs are a remarkable phenomenon that can attract sigifnicant public interest. Providing facilities such as boardwalks and trails within overwintering groves can reduce potential disturbance to the habitat. (Photograph: The Xerces Society/Carly Voight.)

## Legal status and protection

A petition was submitted to the U.S. Fish and Wildlife Service in 2014 by the Center for Biological Diversity, the Center for Food Safety, the Xerces Society, and Dr. Lincoln Brower, requesting that the monarch butterfly be listed as a threatened species under the federal Endangered Species Act. The petition is currently under review by USFWS after a positive 90-day finding. In California, Oregon, Washington, and Idaho, the butterfly is designated as a Species of Greatest Conservation Need which allows state agencies greater ability to work on the butterfly's conservation. A full summary of the species status in California can be found in "The Legal Status of Monarch Butterflies in California" (International Environmental Law Project and the Xerces Society 2012).

Overwintering sites have mixed levels of protection depending upon site ownership. On non-military federal and state lands, monarch overwintering sites are protected from almost all development and non-scientific collection, but there are not restrictions on habitat modification by land managers. Federal military lands have restrictions in place for monarch overwintering sites but are largely non-binding. City and county ordinances create a patchwork of protection and most ordinances are inadequate to protect sites from development or monarchs from collection. Many overwintering sites fall within the "coastal zone" as defined by the federal Coastal Zone Management Act of 1972 and a subset of these sites are designated as environmentally sensitive habitat areas (ESHAs) which "shall be protected against any significant disruption of habitat values." Collectively, these laws do not offer comprehensive or consistent protection for monarchs or their overwintering habitat in California.

# Taking Action

## Knowledge gaps

Documenting changes in the western monarch population and determining the effectiveness of recovery efforts requires long-term monitoring at overwintering sites. The Western Monarch Thanksgiving Count (WMTC) is the most comprehensive survey of overwintering populations in California and currently provides the most robust index of the western monarch population. The data from the WMTC has been used in at least seven scientific publications or book chapters (Frey and Schaffner 2004; Koenig 2006; Vandenbosch 2007; Stevens and Frey 2010; Griffiths and Villablanca 2015; Jepsen and Black 2015; Espeset et al. 2016). The WMTC is volunteer based, and while many dedicated volunteers and regional coordinators contribute hundreds of hours to the count each year, crucial data gaps remain. About one third of the 400+ known overwintering sites have not been monitored in the past five years and other sites are inconsistently monitored (only 111 sites have been monitored 10 of the 19 years of monitoring). Increased outreach activities such as workshops to recruit and train new volunteers are needed to help fill critical gaps in the WMTC. Additionally, a comprehensive statewide survey of overwintering sites could supplement the WMTC and resolve site status questions.

In addition to annual population estimates, many questions remain about western monarch overwintering biology, habitat needs, and population dynamics. The prevalence of winter breeding and the interactions between tropical milkweed, OE, and winter breeding are areas of active investigation in California (by Monarch Health and Monarch Alert). A better understanding of the parameters such as wind protection and forest structure that make overwintering habitat suitable for monarchs, could improve restoration and management recommendations and aid in prioritizing where actions would be most effective on the landscape. Other questions in need of additional research include determining the impact of tree disease and pests on grove health, the prevalence of bird and rodent predation on overwintering monarchs, and population dynamics over the season as monarchs move between sites.

The relative importance of the western monarch population to the entire North American monarch population remains poorly understood and has been the focus of few studies. However, successful conservation of the North American monarch population relies on understanding migratory monarchs' natal origins and basic biology across its range, including in the western United States. Further research could focus on improving our understanding of migratory monarchs' natal origins through the use of isotopic analyses which include all of North America in its isoscapes. Increased monitoring and tagging of monarchs in the central U.S. and interior West (e.g., Montana, Colorado, etc.), perhaps through improved outreach to citizen scientists, would improve our knowledge of migration paths of western monarchs.

## Management recommendations

The majority of overwintering sites would benefit from active management to address issues of grove senescence, disease and pest infestations, and ensure tree regeneration or replacement. Other management considerations include minimizing negative impacts of public access by adding trails and fencing (or symbolic fencing) to reduce erosion and disturbance to the butterflies, signage for education, and, if feasible, a docent or staff presence during peak winter months for both outreach and protection of the site.

Best management practices for monarch overwintering habitat management include developing a site-specific adaptive management plan which consists of:

- identifying where monarchs cluster and important wind break features in the surrounding landscape;
- measuring wind, temperature, humidity, and sun exposure throughout the grove area to determine where additional tree planting or tree trimming would benefit or harm the site's suitability for monarchs;
- monitoring monarchs' use of the site during the overwintering season (October to February), including cluster trees and areas used for sunning, nectaring, and imbibing water;
- scheduling management action outside of the overwintering season to minimize impacts on clustering monarchs;
- ensuring management action that does occur does not negatively impact trees used by monarchs or buffer trees; and
- monitoring of site conditions and monarchs' use of the site and subsequent adaptation of the site management plan.

Management actions at an overwintering site should take place only after monitoring for an entire overwintering season (and ideally after multiple years of monitoring) to determine where monarchs move within the grove and surrounding habitat over the season. Before any modifications are made to monarch cluster trees, consultation with a monarch expert and an arborist or forestry professional is recommended. Management of overwintering groves and surrounding wind break features should continue to be monitored and adjusted in accordance with an adaptive management framework as the microhabitat conditions of a grove will change as trees grow and senesce.

(Opposite—Photograph: The Xerces Society/Candace Fallon.)

# Literature Cited


Altizer, S., K. A. Hobson, A. K. Davis, J. C. De Roode, and L. I. Wassenaar. 2015. Do healthy monarchs migrate farther? Tracking natal origins of parasitized vs. uninfected monarch butterflies overwintering in Mexico. *PloS One* 10(11):e0141371.

Anderson, J. B., and L. P. Brower. 1996. Freeze-protection of overwintering monarch butterflies in Mexico: critical role of the forest as a blanket and an umbrella. *Ecological Entomology* 21:107–116.

Bates, D., M. Machler, B. Bolker, and S. Walker. 2015. Fitting linear mixed-effects models using lme4. *Journal of Statistical Software* 67:1–48.

Brower, L. P., D. R. Kust, E. R. Salinas, E. García-Serrano, K. R. Kust, J. Miller, C. Fernandez del Rey, and K. Pape. 2004. Catastrophic winter storm mortality of monarch butterflies in Mexico during January 2002. In *The Monarch Butterfly: Biology and Conservation*, edited by K. S. Oberhauser and M. J. Solensky, 151–166. Ithaca: Cornell University Press.

Brower, L. P., and R. M. Pyle. 2004. The interchange of migratory monarchs between Mexico and the Western United States, and the importance of floral corridors in the fall and spring migrations. In *Conserving Migratory Pollinators and Nectar Corridors in Western North America*, edited by G. Nabhan, 144–166. Tucson: University of Arizona Press.

Brower, L. P., O. R. Taylor, E. H. Williams, D. A. Slayback, R. R. Zubieta, and M. I. Ramírez. 2012. Decline of monarch butterflies overwintering in Mexico: Is the migratory phenomenon at risk? *Insect Conservation and Diversity* 5:95–100.

Butterfield, H. M. 1935. The introduction of Eucalyptus into California. *Madrono* 3:149–154.

Calvert, W. H., and J. A. Cohen. 1983. The adaptive significance of crawling up onto foliage for the survival of grounded overwintering monarch butterflies (*Danaus plexippus*) in Mexico. *Ecological Entomology* 8:471–474.

Center for Biological Diversity, Center for Food Safety, Xerces Society for Invertebrate Conservation, and Dr. L. Brower. 2014. "Petition to protect the monarch butterfly (Danaus plexippus plexippus) under the Endangered Species Act." Report submitted to the United States Secretary of the Interior, Washington, D.C., 26 August 2014. 159 pp. Available at http://www.xerces.org/wp-content/uploads/2014/08/monarch-esa-petition.pdf (accessed December 8, 2015).

Chaplin, S. B., and P. H. Wells. 1982. Energy reserves and metabolic expenditures of monarch butterflies overwintering in southern California. *Ecological Entomology* 7:249–256.

Davis, A. K., and L. A. Dyer. 2015. Long-term trends in Eastern North American monarch butterflies: a collection of studies focusing on spring, summer, and fall dynamics. *Annals of the Entomological Society of America* 108(3):661–663.

Dingle, H., M. P. Zalucki, W. A. Rochester, and T. Armijo-Prewitt. 2005. Distribution of the monarch butterfly, *Danaus plexippus* (L.) (Lepidoptera: Nymphalidae), in western North America. *Biological Journal of the Linnaean Society* 85:491–500.

Dyer, L. A., and M. L. Forister. 2016. Wherefore and whither the modeler: understanding the population dynamics of monarchs will require integrative and quantitative techniques. *Annals of the Entomological Society of America* 109(2):172–175.

Espeset, A. E., J. G. Harrison, A. M. Shapiro, C. C. Nice, J. H. Thorne, D. P. Waetjen, J. A. Fordyce, and M. L. Forister. 2016. Understanding a migratory species in a changing world: climatic effects and demographic declines in the western monarch revealed by four decades of intensive monitoring. *Oecologia* DOI 10.1007/s00442-016-3600-y.

Fagan, W. F., E. Meir, J. Prendergast, A. Folarin, and P. Karieva. 2001. Characterizing population vulnerability for 758 species. *Ecology Letters* 4:132–138.

Flockhart, D. T. T., J. B. Pichancourt, D. R. Norris, and T. G. Martin. 2015. Unraveling the annual cycle in a migratory animal: breeding-season habitat loss drives population declines of monarch butterflies. *Journal of Animal Ecology* 84:155–165.

Frey, D., and A. Schaffner. 2004. Spatial and temporal patterns of monarch overwintering abundance in Western North America. In *The Monarch Butterfly: Biology and Conservation*, edited by K. S. Oberhauser and M.J. Solensky, 167–176. Ithaca: Cornell University Press.

Gowler, C., K. E. Leong, M. D. Hunter, and J. C. de Roode. 2015. Secondary defense chemicals in milkweed reduce parasite infection in monarch butterflies, *Danaus plexippus*. *Journal of Chemical Ecology* 41:520–523.

Griffiths, J., and F. Villablanca. 2015. Managing monarch butterfly overwintering groves: making room among the eucalyptus. *California Fish and Game* 101:40–50.

Hartzler, R. G. 2010. Reduction in common milkweed (*Asclepias syriaca*) occurrence in Iowa cropland from 1999 to 2009. *Crop Protection* 29(12):1542–1544.

Herman, W. S. 1981. Studies on the adult reproductive diapause of the monarch butterfly, *Danaus plexippus*. *Biological Bulletin* 160:89–106.

Hill, H. F., Jr., A. M. Wenner, and P. H. Wells. 1976. Reproductive behavior in an overwintering aggregation of monarch butterflies. *American Midland Naturalist* 95(1):10–19.

Hladik, M. L., D. W. Kolpin, and K. M. Kuivila. 2014. Widespread occurrence of neonicotinoid insecticides in streams in a high corn and soybean producing region, USA. *Environmental Pollution* 193:189–196.

Inamine, H., S. P. Ellner, J. P. Springer, and A. A. Agrawal. 2016. Linking the continental migratory cycle of the monarch butterfly to understand its population decline. *Oikos* DOI 10.1111/oik.03196.

International Environmental Law Project and the Xerces Society. 2012. "The Legal Status of Monarch

Butterflies in California." 104 pp. IELP Report on Monarch Legal Status. Portland, OR: International Environmental Law Project and the Xerces Society. Available at http://www.xerces.org/wp-content/uploads/2008/09/legal-status-of-california-monarchs.pdf (accessed May 10, 2016).

Jepsen, S., and S. H. Black. 2015. Understanding and conserving the Western North American monarch population. In *Monarchs in a Changing World: Biology and Conservation of an Iconic Butterfly*, edited by K. Oberhauser, S. Altizer, and K. Nail, 147–156. Ithaca: Cornell University Press.

Jepsen, S., D. F. Schweitzer, B. Young, N. Sears, M. Ormes, and S. H. Black. 2015. *Conservation Status and Ecology of Monarchs in the United States*. 36 pp. NatureServe, Arlington, Virginia, and the Xerces Society for Invertebrate Conservation, Portland, OR.

Koenig, W. 2006. Spatial synchrony of monarch butterflies. *The American Midland Naturalist* 155(1):39–49.

Krischik, V., M. Rogers, G. Gupta, and A. Varshney. 2015. Soil-applied imidacloprid translocates to ornamental flowers and reduces survival of adult *Coleomegilla maculata*, *Harmonia axyridis*, and *Hippodamia convergens* lady beetles, and larval *Danaus plexippus* and *Vanessa cardui* butterflies. *PloS One* 10(3):e0119133.

Lane, J. 1993. Overwintering monarch butterflies in California: past and present. In *Biology and Conservation of the Monarch Butterfly*, edited by S. B. Malcolm and M. P. Zalucki, 335–344. Los Angeles: Natural History Museum of Los Angeles County.

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. 1999. Restoration of an overwintering grove in Los Osos, San Luis Obispo County, California. In *1997 North American Conference on the Monarch Butterfly*, edited by J. Hoth, L. Merino, K. Oberhauser, I. Pisanty, S. Price, and T. Wilkinson, 221–218.

Leong, K. L. H., W. H. Sakai, W. Bremer, D. Feuerstein, and G. Yoshimura. 2004. Analysis of the pattern of distribution and abundance of monarch overwintering sites along the California coastline. In *The Monarch Butterfly: Biology and Conservation*, edited by K. S. Oberhauser and M. J. Solensky, 177–185. Ithaca: Cornell University Press.

Lyons, J. I., A. A. Pierce, S. M. Barribeau, E. D. Sternberg, A. J. Mongue, and J. C. de Roode. 2012. Lack of genetic differentiation between monarch butterflies with divergent migration destinations. *Molecular Ecology* 21:3433–3444.

Masters, A. R., S. B. Malcolm, and L. P. Brower. 1988. Monarch butterfly (*Danaus plexippus*) thermoregulatory behavior and adaptations for overwintering in Mexico. *Ecology* 69(2):458–467.

Meade, D. E. 1999. "Monarch Butterfly Overwintering Sites in Santa Barbara County California." 114 pp. Paso Robles, CA: Althouse and Meade, Inc.

Monroe, M., C. Fallon, D. Frey, and S. Stevens. 2016 "Western Monarch Thanksgiving Count Data

from 1997–2016." Available from http://www.xerces.org/western-monarch-thanksgiving-count/ (accessed March 9, 2016).

Morris, G., C. Kline, and S. M. Morris. 2015. Status of *Danaus plexippus* population in Arizona. *Journal of the Lepidopterists' Society* 69(2):91–97.

Nagano, C. D., and J. 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." 71 pp. Report to the World Wildlife Fund–US.

Pecenka, J. R., and J. G. Lundgren. 2015. Non-target effects of clothianidin on monarch butterflies. *The Science of Nature* 102:19.

Pleasants, J. M., and K. S. Oberhauser. 2012. Milkweed loss in agricultural fields because of herbicide use: effect on the monarch butterfly population. *Insect Conservation and Diversity* 6:135–144.

Pleasants, J. M., E. H. Williams, L. P. Brower, K. S. Oberhauser, and O. R. Taylor. 2016. Conclusion of no decline in summer monarch population not supported. *Annals of the Entomological Society of America* DOI 10.1093/aesa/sav115.

Pyle, R. M. 1999. *Chasing Monarchs: Migrating with the Butterflies of Passage*. 307 pp. Boston: Houghton Mifflin Harcourt.

Pyle, R.M. 2015. Monarchs in the mist: new perspectives on monarch distribution in the Pacific Northwest. In *Monarchs in a Changing World: Biology and Conservation of an Iconic Butterfly*, edited by K. Oberhauser, S. Altizer, and K. Nail, 236–247. Ithaca: Cornell University Press.

Pyle, R. M., and M. Monroe. 2004. Conservation of western monarchs. *Wings: Essays on Invertebrate Conservation* 27:13–17.

R Development Core Team. 2015. "R: A language and environment for statistical computing." R Foundation for Statistical Computing, Vienna, Austria. URL http://www.R-project.org/.

Sakai, W. H., and W. C. Calvert. 1991. "Statewide Monarch Butterfly Management Plan for the State of California Department of Parks and Recreation. Final Report, June 1991." Interagency Agreement No. 88-11-050 between California Department of Parks and Recreation and Santa Monica College. 160 pp. Sacramento: California Department of Parks and Recreation.

Satterfield, D. A., J. C. Maerz, and S. Altizer. 2015. Loss of migratory behavior increases infection risk for a butterfly host. *Proceedings of the Royal Society of London B: Biology* 282:20141734. DOI 10.1098/rspb.2014.1734.

Satterfield, D. A., F. X. Villablanca, J. C. Maerz, and S. Altizer. 2016. Migratory monarchs wintering in California experience low infection risk compared to monarchs breeding year-round on non-native milkweed. *Integrative and Comparative Biology* 282:20141734. DOI 10.1093/icb/icw030.

Schultz, C. B., and P. C. Hammond. 2003. Using population viability analysis to develop recovery criteria for endangered insects: case study of the Fender's Blue Butterfly. *Conservation Biology* 17:1372–

1385.

Semmens, B. X., D. J. Semmens, W. E. Thogmartin, R. Wiederholt, L. López-Hoffman, J. E. Diffendorfer, J. M. Pleasants, K. O. Oberhauser, and O. R. Taylor. 2016. Quasi-extinction risk and population targets for the Eastern, migratory population of monarch butterflies (*Danaus plexippus*). *Scientific Reports* 6, 23265; DOI 10.1038/srep23265.

Stevens, S. R., and D. F. Frey. 2010. Host plant pattern and variation in climate predict the location of natal grounds for migratory monarch butterflies in western North America. *Journal of Insect Conservation* 14:731–744.

Tuskes, P. M., and L. P. Brower. 1978. Overwintering ecology of the monarch butterfly, *Danaus plexippus* L., in California. *Ecological Entomology* 3(2):141–153.

USGS NAWQA (USGS National Water-Quality Assessment Program). 2016. Annual Pesticide Use Maps 1992-2013. Available at https://water.usgs.gov/nawqa/pnsp/usage/maps/index.php (accessed April 21, 2016).

Vandenbosch, R. 2007. What do monarch population time series data tell us about eastern and western population mixing? *Journal of the Lepidopterists' Society* 61(1):28–31.

Wassenaar L. I., K. A. Hobson. 1998. Natal origins of migratory monarch butterflies at wintering colonies in Mexico: New isotopic evidence. *Proceedings of the National Academy of Sciences* 95: 15436–15439.

Xerces Society Western Milkweed and Monarchs Occurrence Database. The Xerces Society for Invertebrate Conservation. 2016.

Xerces Society Western Monarch Overwintering Sites Database. The Xerces Society for Invertebrate Conservation. 2016.

Yang, L. H., D. M. Ostrovsky, M. C. Rogers, and J. M. Welker. 2015. Intra-population variation in the natal origins and wing morphology of overwintering western monarch butterflies (*Danaus plexippus*). *Ecography* DOI: 10.1111/ecog.01994.

York, H. A., and K. S. Oberhauser. 2002. Effects of duration and timing of heat stress on monarch butterfly (*Danaus plexippus*) (Lepidoptera: Nymphalidae) development. *Journal of the Kansas Entomological Society* 75:290–298.

Zhan, S., W. Zhang, K. Niitepold, J. Hsu, J. F. Haeger, M. P. Zalucki, S. Altizer, J. C. de Roode, S. M. Reppert, M. R. Kronforst. 2014. The genetics of monarch butterfly migration and warning colouration. *Nature* 514:317–321.

XERCES SOCIETY
for Invertebrate Conservation

628 NE Broadway, Suite 200, Portland, Oregon 97232 USA
(855) 232-6639 | monarchs@xerces.org
www.xerces.org

# EXHIBIT O

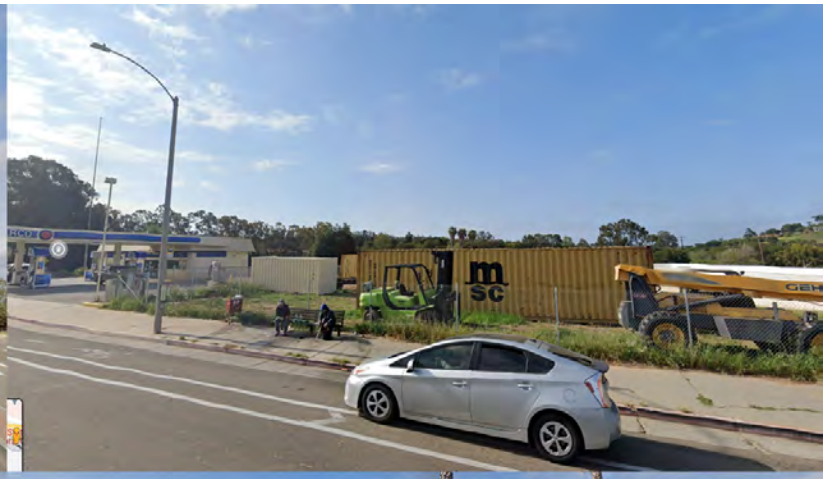
PLACEHOLDER FOR VIDEO LINK EXHIBIT

# EXHIBIT P





ARCO


msc


EL MERCADO
Google

# EXHIBIT Q

1999-0069145

Recorded
Official Records
County Of
SANTA BARBARA
KENNETH A. PETTIT
Recorder
LARRY G. HERRERA
Assistant
09:46AM 01-Sep-1999

REC FEE 61.00

AES
Page 1 of 19

Recording Requested by and When Recorded Mail To:

LAND TRUST FOR SANTA BARBARA COUNTY
P.O. Box 91830
Santa Barbara, California 93190
Telephone: *(805)* 966-4520

19

## DEED OF CONSERVATION EASEMENT

This DEED OF CONSERVATION EASEMENT is made this18th day of May 1999, by LA CUMBRE MUTUAL WATER COMPANY, a California nonprofit mutual water corporation ("LANDOWNER"), in favor of THE LAND TRUST FOR SANTA BARBARA COUNTY, a California nonprofit public benefit corporation ("LAND TRUST"), for the purpose of granting in perpetuity the Conservation Easement and associated rights described below.

WHEREAS, LANDOWNER is the owner in fee simple of certain real property located in the unincorporated portion of the County of Santa Barbara, State of California, identified as Assessor's Parcels No.61-220-09, 61-220-10 and 61-261-01, and more particularly described in "Exhibit A" attached hereto and incorporated herein by this reference and delineated on the map attached as "Exhibit C" ("Property"); and

WHEREAS, a portion of the Property, identified as the "Easement Area" and described in "Exhibit B" and delineated on the map attached as "Exhibit C", remains in a substantially undisturbed natural condition and the Easement Area possesses unique and significant natural, open space, scenic, wetlands, ecological and wildlife habitat values (collectively "Conservation Values") of great importance to LANDOWNER, the people of Santa Barbara County and the people of the State of California; and

WHEREAS, the Easement Area possesses outstanding Conservation Values and consists in part of vernal marsh, southern willow scrub, annual grassland and oak woodland habitat with significant natural, open space, scenic, wetlands, ecological and wildlife habitat values, the preservation and management of which is consistent with the present and continued use of the Property for urban open space, injection and extraction water wells (including access roads, pipelines, utility lines and associated equipment), equestrian facilities and educational purposes; and

WHEREAS, LANDOWNER intends that the Conservation Values of the Easement Area be preserved and maintained by permitting only those land uses in the Easement Area that do not significantly impair or interfere with those Conservation Values; and

WHEREAS, the County of Santa Barbara has established an Open Space Element and other policies and zoning ordinances to help preserve Santa Barbara County's wetlands, wildlife habitat and open space lands; and

WHEREAS, LANDOWNER intends, as the owner of the Property, to convey to LAND TRUST the right to preserve and protect the Conservation Values of the Easement Area in perpetuity; and

WHEREAS, LAND TRUST is a publicly supported, tax-exempt nonprofit organization, qualified under Sections 501(c)(3) and 170(h) of the Internal Revenue Code and Section 23701d of the California Revenue & Taxation Code, whose primary purpose is the preservation and protection of land in its natural, open space, scenic and wildlife habitat condition; and

WHEREAS, the LAND TRUST agrees, by acceptance of this Easement, to honor the intentions of LANDOWNER stated herein to preserve and protect in perpetuity the Conservation Values of the Easement Area for the benefit of this generation and future generations to come; and

WHEREAS, the specific Conservation Values of the Easement Area are further documented in an inventory of relevant features of the Property, dated SEPT 16, ___ 1999, on file in the office of LAND TRUST ("Baseline Inventory") and incorporated herein by reference, which consists of reports, maps, photographs and other documentation that the parties agree provides an accurate representation of the Easement Area as of the date of this Easement and which is intended to serve as an objective information baseline for monitoring compliance with the terms of this Easement;

NOW, THEREFORE, in consideration of the mutual covenants, terms, conditions, and restrictions contained herein, and pursuant to the laws of the State of California, including Sections 815-816 of the California Civil Code, LANDOWNER does hereby voluntarily grant to LAND TRUST a Conservation Easement ("Easement") in perpetuity over those portions of the Property described in "Exhibit B" attached hereto and incorporated herein by reference ("Easement Area") of the nature and character and to the extent hereinafter set forth, and LAND TRUST hereby accepts said Easement.

1. **PURPOSE**. It is the purpose of this Easement to assure that the Easement Area within the Property will be retained in perpetuity in its natural, open space, scenic, wetlands, ecological and wildlife habitat condition, use and utility, and to prevent any use of the Easement Area that would significantly impair or interfere with the Conservation Values. LANDOWNER intends that this Easement, except as noted herein, will confine the use of the Easement Area to such activities, including, without limitation, those relating to ecological research, open space, wetlands and wildlife preservation which are consistent with the purpose of this Easement.

2. **AFFIRMATIVE RIGHTS CONVEYED TO LAND TRUST**. To accomplish the purpose of this Easement, the following rights and interests are conveyed to LAND TRUST by this Easement:

(a) **Identify Resources and Values**. To identify, preserve and protect in perpetuity the Conservation Values of the Easement Area.

(b) **Monitor Uses and Practices.** To enter upon, inspect, observe, and study the Easement Area for the purposes of identifying the current uses and practices thereon and the baseline condition thereof, to conduct research on and make scientific observations of the ecological systems, to manage, maintain and/or restore the Conservation Values, and to monitor the uses and practices regarding the Easement Area to determine whether they are consistent with this Easement. Such entry shall be permitted upon prior notice to LANDOWNER, and shall be made in a manner that will not unreasonably interfere with LANDOWNER's use and quiet enjoyment of the Property.

(c) **Prevent Inconsistent Uses.** To prevent any activity on or use of the Easement Area that is inconsistent with the purpose of this Easement and to require the restoration of such areas or features of the Easement Area that may be damaged by any inconsistent activity or use.

(d) **Provide Signage.** To erect and maintain a sign or signs or other appropriate markers in prominent locations on the Basement Area, visible from a public road, bearing information indicating that the Easement Area is protected by LANDOWNER and LAND TRUST. The wording of the information shall be determined by LANDOWNER and LAND TRUST, but shall clearly indicate that the Property is privately owned and open to the public only along designated trails. LAND TRUST shall be responsible for the costs of erecting and maintaining such signs or markers.

3. **PERMITTED USES AND PRACTICES.** LANDOWNER and LAND TRUST intend that this Easement shall confine the uses of the Easement Area to open space, equestrian, pedestrian, educational and water company uses, and such other related uses as are described herein. Such uses shall not result in soil degradation or erosion, or pollution or degradation of any surface waters which significantly impact the existing wetlands, uplands or wildlife habitat, or result in impairment of open space vistas, and shall be consistent with the purpose of this Easement. The following uses and practices, if in accordance with federal, state and local laws and ordinances, and to the extent not inconsistent with the purpose of this Easement, are permitted:

(a) **Water Company Uses.** Except as specifically prohibited in Paragraph 4, to utilize the Easement Area for water recharge and extraction of underground water resources, with utility access including but not limited to water extraction and injection wells, access roads, pipelines and electric lines for operation and maintenance of water wells ("Water Company Uses").

(b) **Equestrian Use.** To allow LANDOWNER to utilize the Easement Area for equestrian purposes, including but not limited to trails.

(c) **Educational Uses.** To allow LANDOWNER to install and maintain facilities for educational purposes, including gardens and field study areas, and the public utilities necessary for their use. Such uses shall not include the construction of occupied buildings, roads or parking areas, either temporary or permanent.

(d) **Natural Resources Management, Restoration and Enhancement.** To make improvements which are intended to manage, restore or enhance the natural resource values within the Easement Area, including but not limited to alterations of topography or water courses, removal of non-native plants including trees, planting of additional appropriate plants, construction of trails,

bridges, and installation of related improvements for resource management, educational or scientific purposes.

(e) **Construction, Maintenance and Repair**. To maintain, repair and replace existing structures, fences, roads, ditches, water wells, water lines and other improvements in the Easement Area; and to construct additional improvements accessory to the permitted uses of the Easement Area. The LANDOWNER shall obtain the prior written approval of LAND TRUST for the construction of any such additional improvements, which consent shall not be unreasonably withheld. Prior notice and approval of the LAND TRUST are not required to maintain, repair or replace existing improvements.

(f) **Control of Animals and Plants**. To control problem animals and plants by the use of selective control techniques.

(g) **Utility Easements**. To provide for easements to private, public and quasi-public utilities in furtherance of the purpose of this Easement.

(h) **Public Access**. To allow public access to the Easement Area via a system of designated trails. The LANDOWNER and LAND TRUST shall establish appropriate restrictions on, and measures to manage, public access to the Easement Area, including but not limited to fences, gates, vehicle barriers, signs and time-of-use rules to ensure public safety and protection of the Conservation Values of this Easement.

4. **PROHIBITED USES**. Any activity on or use of the Easement Area that is inconsistent with the purpose of this Easement is prohibited. Without limiting the generality of the foregoing, the following activities and uses are inconsistent with the Conservation Values of this Easement and are expressly prohibited:

(a) **Subdivision**. The division, subdivision, or de facto subdivision of the Easement Area.

(b) **Commercial or Industrial Uses**. The establishment of any commercial or industrial uses within the Easement Area, including the construction, placement or erection of any commercial signs or billboards; provided, however, that neither equestrian, water well nor educational uses as contemplated by the provisions of this Easement shall be considered commercial or industrial uses.

(c) **Roads or Structures**. The construction of any road or structure within the Easement Area, except as provided in this Easement.

(d) **Motorized Vehicles**. The use of motorized and/or off-road vehicles, except by LANDOWNER or others under LANDOWNER's control for equestrian, water well, utility, educational, maintenance, restoration or emergency uses of the Easement Area.

(e) **Dumping or Disposal**. The dumping or other disposal of wastes, refuse or debris on the Easement Area.

(f) **Erosion**. Any use or activity in the Easement Area which causes significant degradation of topsoil quality, significant pollution or a significant increase in the risk of erosion.

(g) **Alteration of Topography**. Any alteration of the general topography or natural drainage of the Easement Area, including, without limitation, the excavation or removal of soil, sand, gravel or rock, except as may be required for permitted uses within the Easement Area.

(h) **Watercourses**. The alteration or manipulation of watercourses located in the Easement Area or the creation of new water impoundments or watercourses for any purpose other than permitted uses of the Easement Area or enhancement of natural habitat or wetland values.

(i) **Other Incompatible Uses**. Any use of the Easement Area which may generate significant noise, traffic, dust, artificial lighting or crowds; or which may significantly impair or interfere with the natural, open space, scenic, wetlands, ecological and wildlife habitat values of the Easement Area.

5. **RESERVED RIGHTS**. LANDOWNER reserves to itself, and to its personal representatives, heirs, successors and assigns, all rights accruing from the ownership of the Property, including the right to engage in or permit or invite others to engage in all uses of the Easement Area that are not expressly prohibited herein and are not inconsistent with the purpose of this Easement. Without limiting the generality of the foregoing, the following rights are expressly reserved:

(a) **Water Rights**. All right, title, and interest in and to all tributary and non-tributary water, water rights, and related interest in, on, under or appurtenant to the Property; provided, however, that such water rights are used in a manner consistent with the purpose of this Easement.

(b) **Mineral Rights**. All right, title, and interest in subsurface oil, gas, and minerals; provided, however, that the manner of exploration for, and extraction of any oil, gas or minerals shall be only by a subsurface method, shall not damage, impair or endanger the protected Conservation Values of the Easement Area, and shall be limited to such activities as are permitted under Internal Revenue Code Section 170(h)(5) and applicable Treasury Regulations.

(c) **Property Management**. LANDOWNER may elect to assign certain responsibilities for planning, oversight and management of activities within the Easement Area~to a management committee or site manager of LANDOWNER'S choice. LANDOWNER agrees to inform LAND TRUST of the scope of responsibilities so assigned, and further agrees to ensure that all activities undertaken by any assigned management entity are fully consistent with the terms of this Easement. LAND TRUST agrees to work cooperatively with any assigned management entity to further the purposes of this Easement.

6. **NOTICE AND APPROVAL**. The purpose of requiring LANDOWNER to notify LAND TRUST prior to undertaking certain permitted activities is to afford LAND TRUST an adequate opportunity to monitor the activities in question to ensure that the permitted uses as defined in Paragraph 3 are designed and carried out in a manner that is consistent with the purpose of this Easement. Whenever notice is required, LANDOWNER shall notify LAND TRUST in writing not less than thirty (30) days prior to the date LANDOWNER intends to undertake the activity in

question. The notice shall describe the nature, scope, design, location and any other material aspect of the proposed activity in sufficient detail to permit LAND TRUST to make an informed judgment as to its consistency with the purpose of this Easement. LAND TRUST shall respond in writing within twenty (20) days of receipt of LANDOWNER's written request. LAND TRUST's approval may be withheld only upon a reasonable determination by LAND TRUST that the action as proposed would be inconsistent with the purpose of this Easement.

7. **ARBITRATION**. If a dispute arises between the parties concerning the consistency of any existing or proposed use or activity with the purpose of this Easement, either party is encouraged to refer the dispute to mediation first, or if that fails, to arbitration as an alternative to judicial proceedings, by request made in writing upon the other. If the other party agrees to such arbitration, any and all disputes, controversies and claims arising out of or relating to this Easement or concerning the respective rights or obligations hereunder of the parties hereto shall be settled and determined by arbitration in Santa Barbara, California, pursuant to the then existing provisions of the California Code of Civil Procedure relating to Arbitration (Code of Civil Procedure Section 1280 et. seq.) The arbitrators shall have the power to award specific performance or injunctive relief and reasonable attorney's fees and expenses to any party in any such arbitration. The parties shall have the right to obtain discovery relating to the subject matter of any arbitration as provided in Code of Civil Procedure section 1283.05, including the right to take depositions as provided therein. The arbitration award shall be final and binding upon the parties, and judgment thereon maybe entered in any court having jurisdiction thereof. The service of any notice, process, motion or other document in connection with an arbitration under this Easement, or for the enforcement of any arbitration award hereunder, may be effectuated either by personal service upon a party or by certified or registered mail to the party at its address herein provided.

8. **LAND TRUST'S REMEDIES**.

(a) **Notice of Violation**. If LAND TRUST determines that a violation of any of the terms, conditions, covenants or restrictions contained in this Easement by LANDOWNER has occurred or is threatened, LAND TRUST shall give written notice to LANDOWNER of such violation and demand corrective action sufficient to cure the violation and, where the violation involves injury to the Easement Area resulting from any use or activity inconsistent with the purpose of this Easement, to restore that portion of the Easement Area so injured.

(b) **Injunctive Relief**. If LANDOWNER fails to cure a violation which is the result of LANDOWNER's action within a thirty (30) day period after receipt of notice thereof from LAND TRUST, or fails to continue diligently to cure such violation until finally cured, LAND TRUST may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Easement, to enjoin the violation by temporary or permanent injunction, to recover any damages to which it may be entitled for violation of the terms of this Easement or injury to any Conservation Values, including damages for any loss thereof, and to require the restoration of the Property to the condition that existed prior to any such injury.

(c) **Damages**. LAND TRUST shall be entitled to recover damages for violation of the terms of this Easement or injury to any of the Conservation Values protected by this Easement, including, without limitation, damages for the loss of Conservation Values. Without limiting

LANDOWNER's liability therefor, LAND TRUST, in its sole discretion, may apply any damages recovered to the cost of undertaking any corrective action on the Easement Area.

(d) **Emergency Enforcement.** If LAND TRUST, in its sole discretion, determines that circumstances require immediate action to prevent or mitigate significant damage to the protected values of the Easement Area, LAND TRUST may pursue its remedies under this Paragraph without waiting for the period provided for correction to expire. LAND TRUST shall notify LANDOWNER in a timely fashion of any action either proposed or taken pursuant to this Paragraph.

(e) **Scope of Relief.** LAND TRUST's rights under this Paragraph shall apply equally to threatened as well as actual violations of the terms of this Easement. LAND TRUST's remedies described in this Paragraph shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity.

(f) **Costs of Enforcement.** Any reasonable costs incurred by LAND TRUST in enforcing the terms of this Easement against LANDOWNER, including, without limitation, costs and expenses of suit and reasonable attorneys' fees, and any costs of restoration necessitated by LANDOWNER's violation of the terms of this Easement shall be borne by LANDOWNER; provided however that LANDOWNER shall not be responsible for any such costs of restoration necessary to remedy damage to the Easement Area caused by the conduct of third parties acting without permission of LANDOWNER. The prevailing party in any action brought pursuant to the provisions of this Easement shall be entitled to recovery of its reasonable costs of suit, including, without limitation, attorneys' fees, from the other party.

(g) **Enforcement Discretion.** Enforcement of the terms of this Easement shall be at the discretion of LAND TRUST, and any forbearance by LAND TRUST to exercise its rights under this Easement shall not be deemed or construed to be a waiver by LAND TRUST of such rights or of any subsequent breach of the same or any other terms of this Easement, or of its rights under the Easement. No delay or omission by LAND TRUST in the exercise of any right or remedy upon any breach by LANDOWNER shall impair such right or remedy or be construed as a waiver, and LANDOWNER hereby waives any defense of laches, estoppel or prescription.

9. **LANDOWNER'S REMEDIES.** LANDOWNER may pursue all remedies available at law or in equity.

10. **ACTS BEYOND LANDOWNER'S CONTROL.** Nothing contained in this Easement shall be construed to entitle LAND TRUST to bring any action against LANDOWNER for any injury to or change in the Easement Area resulting from causes beyond LANDOWNER's control, including, without limitation, fire, flood, storm and earth movement, or actions by persons outside the control of LANDOWNER, or from any prudent action by LANDOWNER under emergency conditions, to prevent, abate or mitigate significant injury to the Property or lives or other property resulting from such causes. LANDOWNER shall cooperate with LAND TRUST to remedy any such injuries or damage to the Easement Area to the extent feasible.

11. **COSTS AND LIABILITIES**. LANDOWNER retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep and maintenance of the Property for health and safety, including payment of property taxes and assessments of any kind, costs associated with fire management and zoning regulations, and maintenance of adequate comprehensive general liability insurance coverage. LANDOWNER remains solely responsible for obtaining any applicable governmental permits and approvals for any construction or other activity or use permitted by this Easement, and all such construction or other activity or use shall be undertaken in accordance with all applicable federal, state and local laws, regulations and requirements. LANDOWNER shall not be responsible for any costs associated with maintenance or repair of any additional improvements within the Easement area which may be made for open space, habitat restoration, educational, equestrian, pedestrian or public access purposes.

12. **INDEMNIFICATION**. LANDOWNER shall release and hold harmless, indemnify and defend LAND TRUST and its trustees, officers, members, employees, agents and contractors and the heirs, personal representatives, successors, and assigns of each of them (collectively "Indemnified Parties") from and against any and all liabilities, penalties, fines, charges, costs, losses, damages, expenses, causes of action, claims, demands, orders, judgments or administrative actions ("Claims"), including, without limitation, reasonable attorneys' fees, arising from or in any way connected with (a) injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Property, regardless of cause, except to the extent of the adjudicated proportionate fault of any of the Indemnified Parties; (b) the violation or alleged violation of, or other failure to comply with, any state, federal or local law, regulation or requirement, including, without limitation, environmental or hazardous waste provisions; and (c) the obligations and costs associated with the LANDOWNER responsibilities specified in Paragraph 11. LANDOWNER's indemnification obligation shall not apply to any Claims caused by or arising out of the active or passive negligence or willful misconduct of Indemnified Parties. Nothing herein shall impose any obligation on LANDOWNER to be responsible for or liable for consequential damages suffered by LAND TRUST.

13. **SUBSEQUENT TRANSFERS**. LANDOWNER agrees to incorporate the terms of this Easement by reference in any deed or other legal instrument by which it divests itself of any interest in all or a portion of the Property, including, without limitation, any leasehold interest. The failure of LANDOWNER to perform any act required by this Paragraph shall not affect the validity of such transfer nor shall it impair the validity of this Easement or limit its enforceability in any way.

14. **EXTINGUISHMENT**. If circumstances arise in the future which render the purpose of this Easement impossible to accomplish, this Easement can only be terminated or extinguished, whether in whole or in part, by judicial proceedings in a court of competent jurisdiction. The proceeds, if any, from such extinguishment to which LAND TRUST shall be entitled, as determined by the court, shall be the stipulated fair market value of the Easement, or proportionate part thereof as determined by a qualified appraiser mutually agreed upon by LAND TRUST and LANDOWNER, or a court appointed appraiser if the parties cannot reach mutual agreement.

15. **CONDEMNATION**. If all or any part of the Property is taken by exercise of the power of eminent domain, or acquired by purchase in lieu of condemnation, whether by public,

corporate or other authority, so as to terminate this Easement, in whole or in part, LANDOWNER and LAND TRUST shall act jointly to recover the full value of the interests in the Property subject to the taking or in lieu purchase and all direct or incidental damages resulting therefrom. All expenses reasonably incurred by LANDOWNER and LAND TRUST in connection with the taking or in lieu purchase shall be paid out of the amount recovered. The LAND TRUST share of the balance shall be determined by the pro rata percentage of the value of the Easement compared to the total value of the Property unencumbered by the Easement as determined by a qualified appraiser mutually agreed upon by LAND TRUST and LANDOWNER, or a court appointed appraiser if the parties cannot reach mutual agreement.

16. **SUBORDINATION**. If at the time of conveyance of this Easement, the Property is subject to any mortgage or deed or trust encumbering the Property, LANDOWNER shall obtain from the holder of any such mortgage or deed of trust an agreement to subordinate its rights in the Property to this Easement to the extent necessary for the LAND TRUST to enforce the purpose of this Easement in perpetuity and to prevent any modification or extinguishment of this Easement by the exercise of any rights of the mortgage or deed of trust holder.

17. **GENERAL PROVISIONS**.

(a) **Controlling Law**. The interpretation and performance of this Easement shall be governed by the laws of the State of California.

(b) **Liberal Construction**. Any general rule of construction to the contrary notwithstanding, this Easement shall be liberally construed in favor of the grant to effect the purpose of this Easement.

(c) **Severability**. If any provision of this Easement, or the application thereof to any person or circumstance, is found to be invalid, the remainder of the provisions of this Easement, or the application of such provision to persons or circumstances other than those as to which it is found to be invalid, as the case may be, shall not be affected thereby.

(d) **Entire Agreement**. This instrument sets forth the entire agreement of the parties with respect to the Easement and supersedes all prior discussions, negotiations, understandings, or agreements relating to the Easement, all of which are merged herein.

(e) **No Forfeiture**. Nothing contained herein will result in a forfeiture or reversion of LANDOWNER's title in any respect.

(f) **Successors in Interest**. The covenants, terms, conditions, and restrictions of this Easement shall be binding upon, and inure to the benefit of the parties hereto and their respective beneficiaries, personal representatives, heirs, successors, and assigns and shall continue as a servitude running in perpetuity with the Property.

(g) **Notices**. Any notice, demand, request, consent, approval, or other

communication that either party desires or is required to give to the other party shall be in writing and either delivered personally or sent by first class mail, postage prepaid, addressed to the appropriate party at the address provided in this Easement or at such address as either party or successor in interest shall from time to time designate by written notice to the other.

IN WITNESS WHEREOF, LANDOWNER has executed this Easement and LAND TRUST has accepted this Easement as of the date first written above. This Easement shall become effective as of the date of recordation.

LANDOWNER:

LA CUMBRE MUTUAL WATER COMPANY
695 Via Tranquila
Santa Barbara CA 93110
Telephone: 967-2376 Fax: 967-8102

By B. R. Bertrando
B. R. Bertrando, President

By George E. Goodall
George E. Goodall, Secretary

LAND TRUST:

THE LAND TRUST FOR SANTA BARBARA COUNTY
Post Office Box 91830
Santa Barbara, California 93190
Telephone: *805/9664520* Fax: 805 963-5988

By: Robert Isaacson
Robert Isaacson, Vice President

By:
Andrew Mills, Secretary

STATE OF CALIFORNIA )
COUNTY OF SANTA BARBARA ) ss.

On MAY 13, 1999 before me, Regina Gonzalez, a Notary Public in and for said State, personally appeared ROBERT ISAACSON _____, ~~personally known to me~~ (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

REGINA GONZALEZ
Comm. #1137343
Notary Public
California
SANTA BARBARA COUNTY
My Comm. Expires May 11, 2001

WITNESS my hand and official seal.

Signature Regina Gonzalez

(SEAL)

STATE OF CALIFORNIA )
COUNTY OF Santa Barbara ) ss.

On May 18, 1999 before me, Margaret L. Braniff, a Notary Public in and for said State, personally appeared BR. Bertrando, George E. Goodall & Andrew Mills _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that ~~he/she~~/they executed the same in ~~his/her~~/their authorized capacity(ies), and that by ~~his/her~~/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature Margaret L. Braniff

(SEAL)

MARGARET L. BRANIFF
Commission # 1068143
Notary Public — California
Santa Barbara County
My Comm. Expires Jan 18, 2000

"Exhibit A"
Legal Description of Propert

# Exhibit A

PARCEL ONE: AP# 61-220-09

Lot No. 62 as shown-and designated on Sheet No. 7 of "Map of Tract No. 1 of La Cumbre Estates, being a Subdivision of a Portion of Hope Ranch" as surveyed by George A. Miller, licensed surveyor, which map was recorded on August 10, 1926 in Map Book 15, at Pages 117 to 126 inclusive, in the Office of the County Recorder of Santa Barbara County.

Together with a strip of land of a uniform width of 30 feet lying Southerly of and adjacent to said Lot 62, lying between the most Easterly line and the most Southwesterly line thereof produced to the centerline of Vieja Drive.

EXCEPTING therefrom:

That portion of Lot 62 of La Cumbre Estates, Tract No. 1, a Subdivision of a portion of Hope Ranch, in the County of Santa Barbara, State of California, according to the map thereof recorded in Map Book 15, Pages 117 to 126 inclusive, in the Office of the County Recorder of said County, described as follows:

Beginning at the most Easterly corner of Lot 54B of La Cumbre Estates, Tract No. 1, on the center line of Vieja Drive, as shown on said map; thence 1st, leaving the center line of Vieja Drive, North 43° 54' West, along the Northeasterly line of said Lot 54B, a distance of 364.72 feet to the most Northeasterly corner of said Lot 54B; thence 2nd along the Easterly prolongation of the Northerly line of said Lot 54B, North 77° 32' East, a distance of 36.00 feet; thence 3rd, South 43° 54' East, a distance of 146.00 feet; thence 4th, South 67° 08' East, a distance of 225.71 feet to a point on the center line of said Vieja Drive on the arc of a curve to the left having a tangent at said point which bears South 51° 51' 57" West, said Vieja Drive having a right of way sixty feet in width, being, thirty feet along each side of the following described center line; thence 5th, Southwesterly along said center line and along the arc of said curve, the radius of which is 1562.88 feet and through a central angle of 4° 23' 57", a distance of 120.00 feet to the point of beginning.

PARCEL TWO: AP# 61-220-10

Commencing at Stake No. 20 at angle point in the South line of Modoc Road as called for in deed from Delia Hope (a widow) to the Pacific Improvement Company, dated April 4, 1887, and recorded in Book 13 of Deeds, Page 157, et seq., Santa Barbara County Records; thence South 82° 15' East on line with a 4" x 4" redwood stake no. 19 as per deed, 435.6 feet to a 4 x 4 inch redwood stake; thence at right angles South 7° 45' West 100 feet to a 4 x 4 inch redwood stake; thence North 82° 15' West, parallel with the first above mentioned course, 435.6 feet to a 4 x 4 inch redwood stake; thence North 7° 45' East 100 feet to place of beginning; containing one acre.

PARCEL THREE: AP# 61-261-01

Lots 64, 65, 66, 67 and 68 as shown on Sheets Nos. 7 and 8 of 10 sheets of that certain Map of Tract No. 1, La Cumbre Estates, being a subdivision of a portion of Hope Ranch, recorded with the County Recorder of Santa Barbara County, California, in Map Book 15 at Pages 117 to 126, inclusive.

"Exhibit B"
[Legal Description of Easement Area]

## Exhibit B

**DESCRIPTION:** Conservation Easement (APN 61-220-09 & 10 and 61-261-01)

An Easement over those portions of Lots 62, 63, 64, 65, 66, 67 and 68 of La Cumbre Estates, Tract No. 1, a Subdivision of a portion of Hope Ranch, recorded in Book 15, Pages 117 to 126, inclusive, of Maps, in the Office of the County Recorder, County of Santa Barbara, State of California, being described as follows:

BEGINNING at a point at the northwesterly corner of said Lot 64, said point being at the northeasterly corner of said Lot 63, at the southerly line of Modoc Road as shown on said map;

Thence along said southerly line of Modoc Road the following courses:

South 81°32'30" East, 314.54 feet to a point;

South 79°27'30" East, 439.11 feet to a point;

South 83°29'30" East, 478.99 feet to a point;

South 88°12'30" East, 974.76 feet to a point of curvature of a tangent curve;

Along a curve to the right having a radius of 15.53 feet, a delta of 169°44'30", a radial line of which bears South 01°47'30" West, an arc length of 46.01 feet to a point in the northerly line of Vieja Drive as shown on said map;

Thence along said northerly line of Vieja Drive the following courses:

South 81°32'00" West, 426.81 feet to a point of curvature of a tangent curve;

Along a curve to the right having a radius of 925.37 feet, a delta of 11°38'00", a radial line of which bears North 08°28'00" West, an arc length of 187.89 feet to a point;

North 86°50'00" West, 227.60 feet to a point of curvature of a tangent curve;

Along a curve to the left having a radius of 551.67 feet, a delta of 32°04'00", a radial line of which bears South 03°10'00" West, an arc length of 308.75 feet to a point;

South 61°06'00" West, 229.74 feet to a point of curvature of a tangent curve;

Along a curve to the right having a radius of 418.56 feet, a delta of 19°36'00", a radial line of which bears North 28°54'00" West, an arc length of 143.18 feet to a point;

South 80°42'00" West, 55.44 feet to a point of curvature of a tangent curve;

Along a curve to the right having a radius of 257.94 feet, a delta of 21°21'00", a radial line of which bears North 09°18'00" West, an arc length of 96.12 feet to a point;

North 77°57'00" West, 133.64 feet to a point of curvature of a tangent curve;

Along a curve to the right having a radius of 2425.70 feet, a delta of 7°46'00", a radial line of which bears North 12°03'00" East, an arc length of 328.81 feet to a point;

North 70°11'00" West, 74.52 feet to a point of curvature of a tangent curve;

Along a curve to the left (at a delta of 5°50'00" and an arc length of 111.12 feet the southwesterly corner of said Lot 64) having a radius of 1091.43 feet, a delta of 7°04'00", a radial line of which bears South 19°49'00" West, an arc length of 134.61 feet to a point;

North 77°15'00" West, 208.55 feet to a point of curvature of a tangent curve;

Along a curve to the left having a radius of 1176.28 feet, a delta of 6°49'00", a radial line of which bears South 12°45'00" West, an arc length of 139.95 feet to a point;

North 84°04'00" West, 216.11 feet to a point of curvature of a tangent curve;

Along a curve to the left having a radius of 363.09 feet, a delta of 43°08'00", a radial line of which bears South 05°56'00" West, an arc length of 273.34 feet to a point;

South 52°48'00" West, 90.85 feet to a point of curvature of a tangent curve;

Along a curve to the left having a radius of 1592.88 feet, a delta of 1°32'23", a radial line of which bears South 37°12'00" East, an arc length of 42.81 feet to a point on the northeasterly line of that certain tract of land described in a deed from the La Cumbre Mutual Water District to the Hope School District of the County of Santa Barbara recorded in Book 1801, Page 365, of Official Records, records of said County;

Thence North 67°08'00" West, leaving said northerly line of Vieja Drive and along the northeasterly line of said Hope School District land, 191.20 feet to a point;

Thence North 43°54'00" West, continuing along said northeasterly line, 146.00 feet to a point;

Thence South 77°32'00" West, continuing along said northeasterly line, 36.00 feet to a point in the westerly line of said Lot 62;

Thence North 01°47'00" East, along said westerly line, 44.54 feet to a point;

Thence North 45°25'00" East, leaving said westerly line, 295.39 feet to a point;

Thence South 40°34'40" East, 65.86 feet to a point;

Thence South 42°18'13" West, 157.41 feet to a point;

Thence South 45°18'22" East, 100.03 feet to a point;

Thence North 68°35'33" East, 325.84 feet to a point;

Thence North 46°08'40" East, 182.90 feet to a point;

Thence North 26°40'21" East, 120.78 feet to a point in the southerly line of Modoc Road;

Thence South 69°38'30" East, along said southerly line (at 174.69 feet an angle point in the northerly line of said Lots 62, being the northwesterly corner of said Lot 63), 179.01 feet to a point;

Thence South 81°32'30" East, continuing along said southerly line of Modoc Road, 431.45 feet to the point of beginning.

Calculated area of easement: Approximately 20.4 acres

Prepared by: Joseph E. Waters, PLS Date: May 10, 1999

Joseph E. Waters, PLS 3804

LICENSED LAND SURVEYOR
Joseph E. Waters
No. 3804
Exp 4/30/2000
STATE OF CALIFORNIA

"Exhibit C"
Map of "Property" and "Easement Area"

EXHIBIT "C"
MAP OF EXHIBITS "A" & "B"

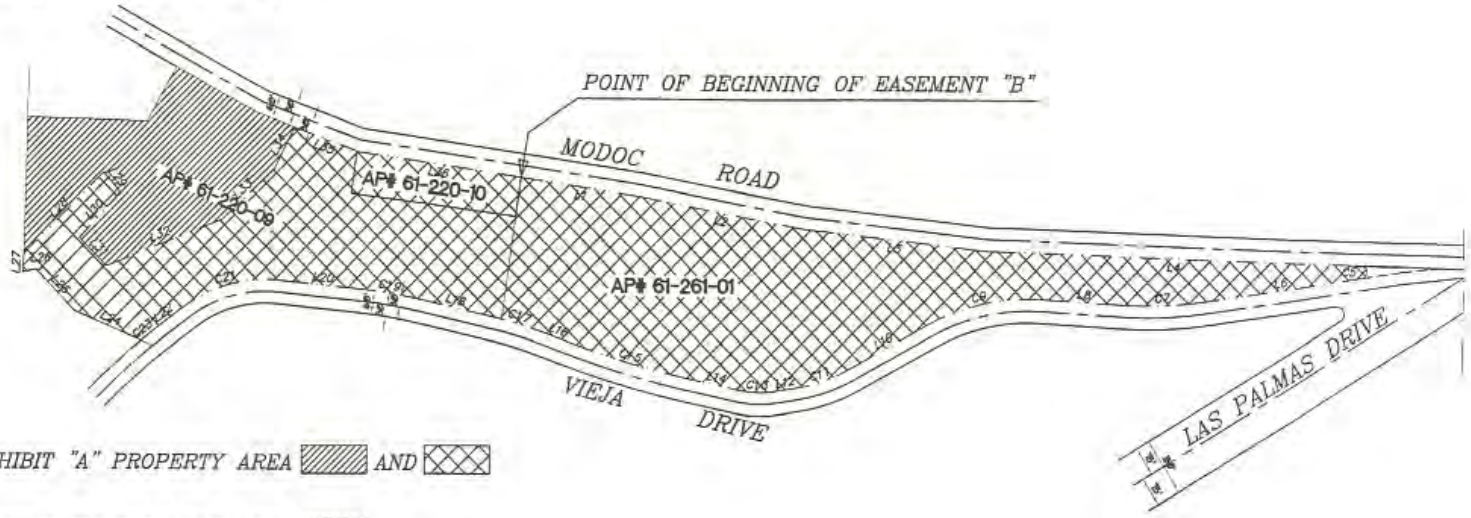



EXHIBIT "A" PROPERTY AREA AND

EXHIBIT "B" EASEMENT AREA

GRAPHIC SCALE


( IN FEET )

EXHIBIT "B" BOUNDARY

| LINE TABLE | | |
|---|---|---|
| LINE | BEARING | DISTANCE |
| L1 | S81°32'30"E | 314.54 |
| L2 | S79°27'30"E | 439.11 |
| L3 | S83°29'30"E | 478.99 |
| L4 | S88°12'30"E | 974.76 |
| L6 | S81°32'00"W | 426.81 |
| L8 | N86°50'00"W | 227.60 |
| L10 | S61°06'00"W | 229.74 |
| L12 | S80°42'00"W | 55.44 |
| L14 | N77°57'00"W | 133.64 |
| L16 | N70°11'00"W | 74.52 |
| L18 | N77°15'00"W | 208.55 |
| L20 | N84°04'00"W | 216.11 |
| L22 | S52°48'00"W | 90.85 |
| L24 | N87°08'00"W | 191.20 |
| L25 | N43°54'00"W | 146.00 |
| L26 | S77°32'00"W | 36.00 |
| L27 | N01°47'00"E | 44.54 |
| L28 | N45°25'00"E | 295.39 |
| L29 | S40°34'40"E | 65.86 |
| L30 | S42°18'13"W | 157.41 |
| L31 | S45°18'22"E | 100.03 |
| L32 | N68°35'33"E | 325.84 |
| L33 | N46°08'40"E | 182.90 |
| L34 | N26°40'21"E | 120.78 |
| L35 | S69°38'30"E | 179.01 |
| L36 | S81°32'30"E | 431.45 |

| CURVE TABLE | | | |
|---|---|---|---|
| CURVE | DELTA | RADIUS | LENGTH |
| C5 | 169°44'30" | 15.53 | 46.01 |
| C7 | 11°38'00" | 925.37 | 187.89 |
| C9 | 32°04'00" | 551.67 | 308.75 |
| C11 | 19°36'00" | 418.56 | 143.18 |
| C13 | 21°21'00" | 257.94 | 96.12 |
| C15 | 7°46'00" | 2425.70 | 328.81 |
| C17 | 7°04'00" | 1091.43 | 134.61 |
| C19 | 6°49'00" | 1176.28 | 139.95 |
| C21 | 43°08'00" | 363.09 | 273.34 |
| C23 | 1°32'23" | 1592.88 | 42.81 |

# EXHIBIT "C"

## CONSERVATION EASEMENT

LA CUMBRE MUTUAL WATER COMPANY

MAY 18, 1999

The Land Trust
For Santa Barbara County

August 17, 2022

VIA Certified US Mail, Return Receipt Requested, and
email to malvarado@lacumbrewater.com

La Cumbre Mutual Water Company
Mike Alvarado, General Manager
695 Via Tranquila
Santa Barbara, CA 93110

Santa Barbara County Public Works Transportation Division
Chris Sneddon, Deputy Director for Transportation
123 E. Anapamu St.
Santa Barbara, CA 93101

Re: Proposed Class I Bike Path at Modoc Preserve (Project); Deed of Conservation Easement dated May 18, 1999 from La Cumbre Mutual Water Company ("**Landowner**") to The Land Trust for Santa Barbara County (the "**Land Trust**"), recorded on September 1, 1999 as Document No 1999-0069145 (the "**Conservation Easement**") over a portion of Assessor's Parcel Numbers 61-220-09, 61-220-10, and 61-261-01 (the "**Property**")

Dear Mr. Alvarado and Mr. Sneddon:

I am reaching out to you regarding the County of Santa Barbara's proposal to build a Class I Bike Path through the Modoc Preserve (the "**Project**"). As you know, the Modoc Preserve, which is a portion of the above-referenced Property, is subject to the terms, conditions, and restrictions of the Conservation Easement, which is held by the Land Trust.

La Cumbre Mutual Water Company as Landowner under the Conservation has the duty to comply with its terms and it may not allow others, including the County, to engage in any use or activity that violates the terms, restrictions, or conditions of the Conservation Easement. We are specifically including the County as an addressee of this letter to ensure the County is apprised of the Landowner's obligation to comply with the Conservation Easement and the Land Trust's legal obligation to enforce the Conservation Easement.

Plans and other documents related to this Project appear to have been developed without due consideration for the provisions of the Conservation Easement or the terms in it that empower and obligate the Land Trust to ensure perpetual conservation. To date, the Land Trust has not been provided with notice or information adequate to determine whether the Project is consistent with the terms of the Conservation Easement. Only if the Land Trust determines that the Project is designed, constructed, and managed in a way that complies with the Conservation Easement can the Land Trust provide approval and support for the Project. The Land Trust, therefore, requests information sufficient to determine if this Project can be constructed in compliance with the Conservation Easement. Please provide the information requested below at your earliest

opportunity. Requests for project approval should come from La Cumbre Mutual Water Company, as the landowner. However, as this is a County project, please work with the County to procure this information.

The Land Trust desires to work with the Landowner and the County to see if the Project can be accommodated under the Conservation Easement, and what it will take for the Project be successful. Although the Land Trust must and will enforce the Conservation Easement, in court if necessary, we believe a collaborative solution would be in the best interest of the Landowner, the Land Trust, and the community.

The Land Trust Is Required to Enforce the Conservation Easement in Accordance with its Terms

As the grantee of this Conservation Easement, the Land Trust is charged with enforcing its terms, conditions, and restrictions. This enforcement obligation is codified at Civil Code sections 815–816, which created conservation easements. In addition, the Corporations Code applicable to California nonprofit public benefit corporations requires the Land Trust to prevent loss of or injury to its charitable assets. The Land Trust's interests in real property, including conservation easements, are assets of the Land Trust. The Land Trust's obligation to appropriately steward its charitable assets is enforced by the California Attorney General through its Charitable Trusts Section. Failure of the Land Trust to competently manage its charitable assets could result in penalties or even loss of its state status as a nonprofit charitable corporation. This obligation is also a requirement of being a land trust accredited by the Land Trust Accreditation Commission, and the Land Trust is required to enforce each of its conservation easements in accordance with each of their terms. The Land Trust has adopted a written policy and developed written procedures for documenting and responding to potential conservation easement violations, is obligated to investigate potential violations in a timely manner and promptly document all actions taken, and must involve legal counsel as appropriate to the severity of the violation and the nature of the proposed resolution (Land Trust Alliance Standards and Practices, Standard 11.C)

Section 8 of the Conservation Easement states that if there is a threatened violation, the Land Trust may resort to a lawsuit, including an injunction to stop the violation. The Land Trust will be entitled to damages and recovery of its attorneys' fees and costs both under the Conservation Easement Section 8 and under California Civil Code section 815.7. Section 815.7 also permits the Land Trust to not only recover the costs to restore any harm to the Easement Area and other damages, but also the loss of scenic, aesthetic, and environmental values.

Overview of Conservation Easement Provisions

The Recitals section of the Conservation Easement states that the Easement Area shall be preserved and maintained by permitting only those land uses in the Easement Area that do not significantly impair or interfere with identified Conservation Values. Conservation Values are defined as the natural, open space, scenic, wetlands, ecological and wildlife habitat values, which include, but are not limited to, "vernal marsh, southern willow scrub, annual grassland and oak woodland habitat" (**"Conservation Values"**).

Section 1 of the Conservation Easement states that its Purpose is to "assure that the Easement Area within the Property will be retained in perpetuity in its natural, open space, scenic, wetlands, ecological and wildlife habitat condition, use and utility, and to prevent any use of the Easement Area that would significantly impair or interfere with the Conservation Values" ("**Conservation Purpose**").

Section 2 of the Conservation Easement affirmatively conveys to the Land Trust the right to determine if uses and practices in the Easement Area are consistent with the Conservation Easement, and to prevent any activity on or use of the Easement Area that is inconsistent with the Conservation Purpose.

Section 3 of the Conservation Easement sets out the permitted uses of the Easement Area with the stated intent "that this Easement shall confine the uses of the Easement Area to open space, equestrian, pedestrian, educational, and water company uses and other related uses." Section 3(e) requires the Landowner to obtain Land Trust's prior written approval, which "the Land Trust will not unreasonably withhold."

Section 4 of the Conservation Easement prohibits activities and uses of the Easement Area that are inconsistent with the purpose of the Easement and also lists specific prohibited activities and uses. In particular Section 4(i) states "Any use of the Easement Area which may generate signification noise, traffic, dust, artificial lighting, or crowds or which may impair the natural open space, scenic, wetlands, ecological and wildlife habitat values [is prohibited]."

The Conservation Easement contemplates public access to the Easement Area via a system of designated trails, with restrictions to ensure that public safety and the protection of the Conservation Values. Paved trails are not categorically prohibited so long as the paved trail is compatible with the Conservation Easement, its Conservation Purposes, and Conservation Values. The Conservation Easement is silent on whether bicycles are permitted or prohibited within the Easement Area, but any such use would need to be implemented in ways (including trail design) that ensure the Conservation Purpose to preserve the Conservation Values.

<u>Land Trust Requests the Following Design, Construction, and Management Plan Information</u>

Please provide trail design, construction, and management plans of adequate detail to allow the Land Trust to evaluate consistency with the relevant terms of the Conservation Easement. Please also include specific information on how, and by whom, the Project will manage the kinds of bicycles allowed to use the path, speeds, traffic intensity, and lighting, all of which may be incompatible with the protection of the Conservation Values.

In addition, please provide information to show that the construction of and use of the bike path:

- Will not result in soil degradation of erosion (Section 3, preamble);
- Will not result in pollution or degradation of surface waters that significantly impact the existing wetlands, uplands, or wildlife habitat in the Easement Area (Section 3, preamble);
- Will not result in the impairment of open space vistas (Section 3, preamble);
- Will be consistent with the purpose of the Conservation Easement to "assure that the Easement Area within the Property will be retained in perpetuity in its natural, open space, scenic, wetlands,

ecological and wildlife habitat condition, use and utility, and to prevent any use of the Easement Area that would significantly impair or interfere with the Conservation Values" (Section 3, preamble; Section 1);

- Will prevent use of the path by motorized vehicles, such as electric bikes, which are a concern of the Land Trust (Section 4(d));
- Will prevent dumping and garbage (Section 4(e));
- Does not cause significant degradation of topsoil quality, significant pollution, or a significant increase in the risk of erosion (Section 4(f));
- Will not alter the general topography or natural drainage of the Easement Area, including the excavation or removal of soil, sand, gravel, or rock (Section 4(g));
- Will not result in the alteration or manipulation of watercourses located in the Easement Area or the creation of new water impoundments or watercourses (Section 4(h));
- Does not generate signification noise, traffic, dust, artificial lighting, or crowds or which may impair the natural open space, scenic, wetlands, ecological, and wildlife habitat values (Section 4(i)); and
- How public access to the Easement Area will be managed and restricted to protect public safety and the Conservation Values (Section 3(h)).

We look forward to hearing from you soon so that all parties can determine if there is a path forward for this project.

Sincerely Yours,

Meredith Hendricks

Meredith Hendricks,
Executive Director
Land Trust for Santa Barbara County

cc: Doug Campbell, Chair, Modoc Preserve Committee (via email)
Alison Petro, Land Trust for Santa Barbara County (via email)
Chris Sneddon, Santa Barbara County Public Works (via email and certified mail)
Rachel Van Mullem, County Counsel (via email and certified mail)
Eileen Chauvet, Conservation Partners LLP (via email)

# EXHIBIT R

## Hooded Oriole *Icterus cucullatus*

Alex Loos

8 May 2022

Modoc Preserve, Santa Barbara, California, United States

Gum Eucalyptus tree? Credit: @AlexLoos — with **Alexandra Loos** at **Modoc Nature Preserve**.


MODOC PRESERVE
COOPER'S HAWK