COVERED PLANT SPECIES INVENTORY OF PRESERVE SYSTEM ACQUISITIONS, EAST CONTRA COSTA COUNTY HABITAT CONSERVANCY, CONTRA COSTA COUNTY, CALIFORNIA

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Prepared for

East Contra Costa County Habitat Conservancy
30 Muir Road
Martinez, CA 94553

Prepared By

NOMAD ECOLOGY
832 ESCOBAR STREET
MARTINEZ, CALIFORNIA 94553
(925) 228-1027

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Section 1. INTRODUCTION

The purpose of this report is to present the results of surveys conducted by Nomad Ecology (Nomad) in 2014 for select covered[1] and no-take[2] plant species on East Contra Costa County Habitat Conservancy (Conservancy) preserve system acquisition properties (Figure 1). This report includes a description of the methods used; an assessment of population health based on HCP/NCCP reporting requirements for all populations observed; photographs; and recommendations for management.

During the course of these surveys, populations of four covered plant species were observed within acquisition properties: big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Diablo helianthella (*Helianthella castanea*), Brewer's dwarf flax (*Hesperolinon breweri*), and shining navarretia (*Navarrettia nigelliformis* subsp. *radians*[3]). In addition, non-covered but special status plant species including Contra Costa manzanita (*Arctostaphylos manzanita* subsp. *laevigata;* CRPR 1B.2), serpentine bedstraw (*Galium andrewsii* subsp. *gatense*; CRPR 4.2), hogwallow starfish (*Hesperevax caulescens;* CRPR 4.2), sylvan microseris (*Microseris sylvatica;* 4.2); Lime Ridge navarretia (*Navarretia gowenii;* CRPR 1B.1), and Michael's rein orchid (*Piperia michaelii;* CRPR 4.2) were also observed within acquisition properties.

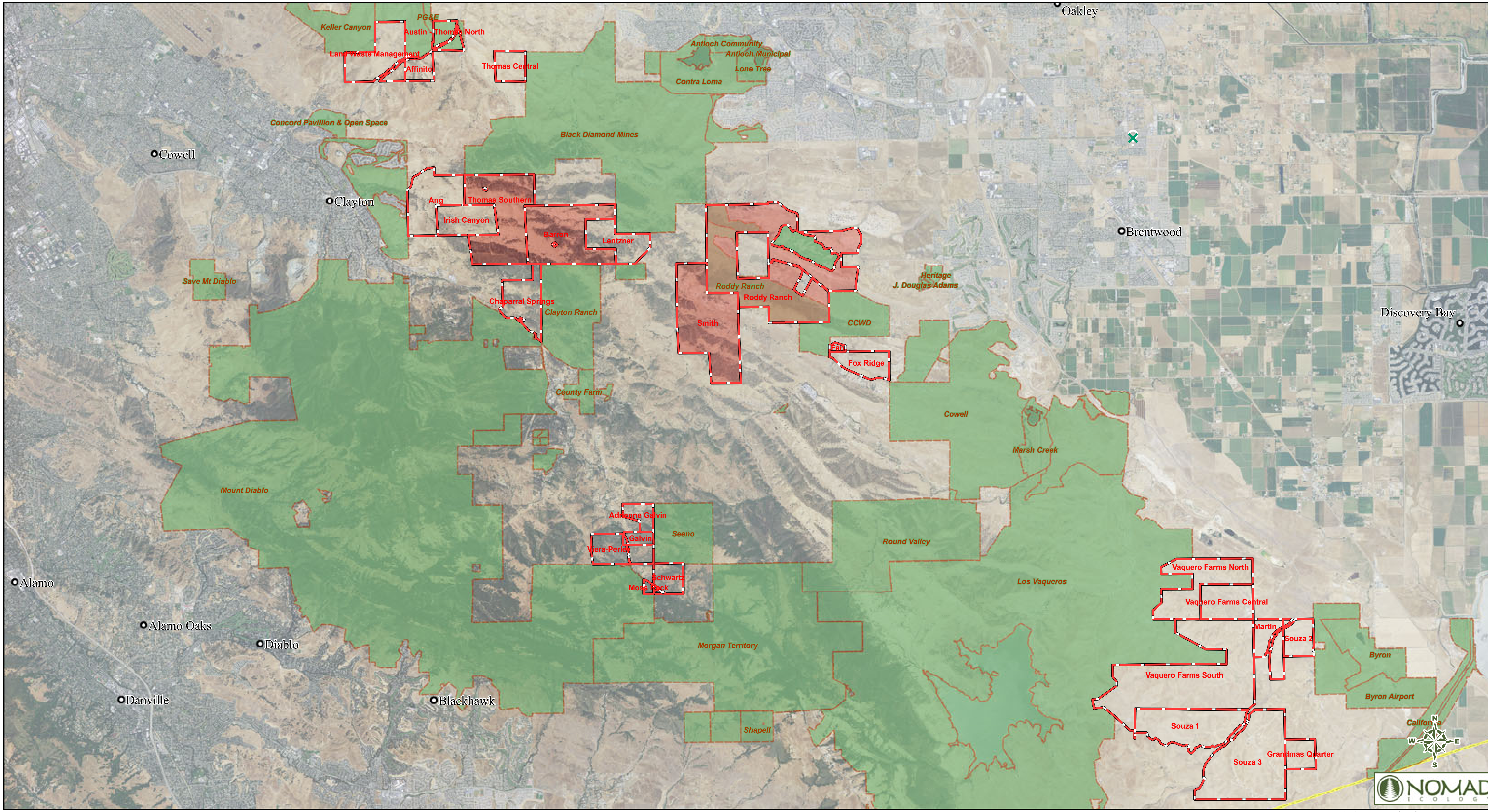
1.1. HCP/NCCP BACKGROUND

The Conservancy is the implementing entity of the East Contra Costa Habitat Conservation Plan/Natural Community Conservation Plan, referred to herein as the "HCP/NCCP" or "Plan" (Jones & Stokes 2006). The purpose of this Plan is to protect and enhance ecological diversity and function within the rapidly urbanizing region of eastern Contra Costa County (County). To that end, the Plan describes how to avoid, minimize, and mitigate, to the maximum extent practicable, impacts on covered species and their habitats, wetlands, and other sensitive communities while allowing for the growth of selected regions of the County. The Plan also describes the responsibilities associated with operating and maintaining the new preserves created to mitigate for the anticipated impacts. The Plan includes conservation measures to protect 11 covered and 6 no-take plant species (Table 1).

[1] Covered species are plants proposed for coverage for which the plan provides for their conservation and management, and for which take authorization may be required during the term of the HCP/NCCP.

[2] No-take species are plants for which take is not authorized under the Natural Community Conservation Plan Act.

[3] The species *Navarretia nigelliformis* subsp. *nigelliformis* is no longer considered to occur within Contra Costa County based on specimen annotations at the UC and Jepson Herbaria at the University of California Berkeley as well as the opinions of experts in the genus. This taxon is now recognized as *Navarretia nigelliformis* subsp. *radians.* This change is discussed in more detail in Section 5 of this report.



Oakley
Keller Canyon
PG&E
Austin - Thomas North
Land Waste Management
Affinito
Thomas Central
Antioch Community
Antioch Municipal
Lone Tree
Contra Loma
Concord Pavillion & Open Space
Black Diamond Mines
Cowell
Clayton
Ang
Thomas Southern
Irish Canyon
Barron
Lentzner
Brentwood
Heritage
J. Douglas Adams
Roddy Ranch
Roddy Ranch
Smith
CCWD
Fan
Fox Ridge
Discovery Bay
Save Mt Diablo
Chaparral Springs
Clayton Ranch
County Farm
Cowell
Marsh Creek
Mount Diablo
Adrienne Galvin
Seeno
Galvin
Round Valley
Schwartz
Moss Rock
Los Vaqueros
Vaquero Farms North
Vaquero Farms Central
Martin
Souza 2
Byron
Alamo
Alamo Oaks
Diablo
Morgan Territory
Vaquero Farms South
Byron Airport
Danville
Blackhawk
Shapell
Souza 1
Souza 3
Grandmas Quarter
N
W
E
S
NOMAD

December 2014

2014 Covered Plant Inventory

Legend

- Acquisition Parcels
- Parcels Surveyed in 2014
- Public Land and Easements
- County Boundaries

Figure 1

Preserve Acquisitions

Surveyed in 2014

East Contra Costa County

Habitat Conservancy

East Contra Costa County Habitat Conservancy

1:95,040

0 0.75 1.5 Miles

Sources: NAIP 2009; Contra Costa County. Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

Table 1. Covered and No-Take Plant Species of the HCP/NCCP

SPECIES NAME	COMMON NAME
COVERED SPECIES	
Arctostaphylos auriculata	Mount Diablo manzanita
Atriplex depressa	brittlescale
Blepharizonia plumosa	big tarplant
California macrophylla	round-leaved filaree
Calochortus pulchellus	Mount Diablo fairy lantern
Delphinium recurvatum	recurved larkspur
Extriplex joaquinana	San Joaquin spearscale
Helianthella castanea	Diablo helianthella
Hesperolinon breweri	Brewer's dwarf flax
Madia radiata	showy madia
Navarretia nigelliformis subsp. *nigelliformis*[4]	adobe/shining navarretia
NO-TAKE SPECIES	
Amsinckia grandiflora	large-flowered fiddleneck
Astragalus tener var. *tener*	alkali milk-vetch
Eriogonum truncatum	Mount Diablo buckwheat
Eschscholzia rhombipetala	diamond-petaled poppy
Lasthenia conjugens	Contra Costa goldfields
Tropidocarpum capparideum	caper-fruited tropidocarpum

Conservation Strategy

As a component of the HCP/NCCP a conservation strategy, designed to achieve biological goals and objectives, was developed for each natural community and the covered species that each natural community supports. The conservation strategy was implemented to protect and recover listed covered species in the inventory area, and to help avoid the listing of non-listed covered species by protecting and, where appropriate, enhancing their populations. The conservation strategy is a program of conservation measures that, when implemented in concert, will achieve the biological goals and objectives of the Plan. Goals are broad, guiding principles based on the conservation needs of the resources. Biological objectives are expressed as conservation targets or actions. Objectives are measurable and achievable within a given time frame; they clearly state a desired result and will collectively achieve the biological goals (Jones & Stokes 2006).

The goals and objectives related to plan species of the HCP/NCCP are listed below. Based on these goals and objectives the Conservancy must ensure that an adequate number of populations of covered plants are included in the Preserve System. In order to meet these goals and objectives conducting baseline inventories of acquired properties is a crucial step of Plan implementation. After acquisitions are secured, baseline data will be used as a reference point from which to begin to measure Plan success by measuring the number of covered and no-take plant populations preserved.

[4] See footnote 3 above.

Goals and Objectives

Goals and objectives related to covered plant species of the HCP/NCCP include the following:

- Goal 9: Protect populations of adobe navarretia within wetlands
    - Objective 9.1: Identify, protect, and maintain populations of **adobe navarretia** in the inventory area
- Goal 17: Protect in the Preserve System at least 11 unprotected occurrences of grassland-dependent covered plants
    - Objective 17.1: Protect populations of covered plants that are at least as large and healthy[5] as populations lost to covered activities.
    - Objective 17.2: Protect at least **two** occurrences[6] of **brittlescale** outside currently protected public lands
    - Objective 17.3: Protect at least **three** occurrences of **big tarplant** outside currently protected public lands
    - Objective 17.4: Protect at least **two** occurrences of **recurved larkspur** outside currently protected public lands
    - Objective 17.5: Protect at least **two** occurrences of **round-leaved filaree** outside currently protected public lands
- Goal 18: Enhance populations of grassland-dependent covered plants
    - Objective 18.1: Increase population size and distribution of grassland-dependent covered plants, where feasible and biologically desirable.
- Goal 23: Protect populations of showy madia within oak woodland and grassland.
    - Objective 23.1: Identify and maintain or increase populations of **showy madia** in the inventory area
- Goal 27: Protect in the Preserve System at least eight occurrences of chaparral-dependent covered plants
    - Objective 27.1: Protect populations of covered plant that are at least as large and as healthy as populations lost to covered activities
    - Objective 27.2: Protect at least **two** occurrences of **Mt. Diablo manzanita** outside currently protected public lands
    - Objective 27.3: Protect at least **two** occurrences of **Diablo helianthella** outside currently protected public lands
    - Objective 27.4: Protect at least **three** occurrences of **Brewer's dwarf flax** outside currently protected public lands

[5] A healthy population of covered plants is defined as one that has a stable or increasing population growth rate or has a high potential to increase in size with improved management.

[6] A plant occurrence is defined in the same way as an element occurrence is defined by the California Department of Fish and Wildlife CDFW: a location record of a plant in the CNDDB that is a population or group of populations within 0.25 mile and not separated by significant habitat discontinuities.

- Objective 27.5: Protect at least **one** occurrence of **Mount Diablo fairy lantern** outside currently protected public lands

Section 2. STUDY METHODS

2.1. DATA RESOURCES

Background information on potentially occurring endangered, threatened and rare plant, and sensitive natural communities was compiled through a review of the following resources:

U.S. Fish and Wildlife Service (USFWS):

- Endangered and Threatened Wildlife and Plants (USFWS 1999, 2008)
- Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in Contra Costa County (USFWS 2014)

California Department of Fish and Wildlife (CDFW):

- State and Federally Listed Endangered, Threatened and Rare Plants of California (CDFW 2014a)
- Special Vascular Plants, Bryophytes, Lichens List (CDFW 2014b)
- California Natural Diversity Database (CNDDB) (CDFW 2014c)
- List of California Vegetation Alliances. The Vegetation Classification and Mapping Program (CDFG 2010)

Other Sources:

- The Jepson Manual: Vascular Plants of California (Baldwin et al. 2012)
- The California Native Plant Society's Inventory of Rare and Endangered Plants of California (CNPS 2001, 2014)
- Consortium of California Herbaria (CCH 2014)
- East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan (Jones & Stokes 2006)
- Annotated Checklist of the East Bay Flora, Second Edition (CNPS 2013)
- Unusual and Significant Plants of Alameda and Contra Costa Counties. Eighth Edition (Lake 2010)
- Flowering Plants and Ferns of Mount Diablo, California (Ertter and Bowerman 2002)

Botanical taxonomy and nomenclature conform to *The Jepson Manual* (Baldwin et al. 2012) and recent circumscriptions in the *Jepson eFlora* (JFP 2014). Common names of plant species are derived from *The Calflora Database* (Calflora 2014). Nomenclature for special-status plant species conform to the *Inventory of Rare and Endangered Plants of California* (CNPS 2001, 2014) and *Special Vascular Plants, Bryophytes and Lichens List* (CDFW 2014b).

2.2. SURVEY METHODOLOGY

2.2.1 PERSONNEL AND FIELD INVESTIGATIONS

The following personnel directed and conducted botanical surveys and/or report preparation:

Heath Bartosh
Senior Botanist
Nomad Ecology
832 Escobar Street
Martinez, CA 94553
(925) 228-1027

Erin McDermott
Botanist
Nomad Ecology

Brian Peterson
Botanist
Nomad Ecology

Covered and no-take plant species surveys were conducted by Nomad senior botanist Heath Bartosh (HB) and botanists Erin McDermott (EM), Brian Peterson (BP), and Gregg Weber (GW) during the months of March, April, May, June, and September 2014 (Table 2).

Table 2. 2014 Survey Effort Details for Covered Plant Species

SURVEY TIMING		LOCATION	TARGETS	PERSONNEL
MONTH	DAY(S)			
March	31	Roddy	large flowered fiddleneck round-leaved filaree diamond petaled poppy showy madia	HB, EM
April	1, 7-8	Roddy	large flowered fiddleneck round-leaved filaree diamond petaled poppy showy madia	HB, EM
April	9-10	Roddy Smith	large flowered fiddleneck round-leaved filaree diamond petaled poppy showy madia	HB
April	14-15	Smith	large flowered fiddleneck round-leaved filaree diamond petaled poppy showy madia adobe/shining navarretia	HB, BP
May	14	Roddy	Mount Diablo fairy lantern Diablo helianthella Brewer's dwarf flax adobe/shining navarretia	HB, EM

Survey Timing		Location	Targets	Personnel
Month	Day(s)			
May	15	Roddy	Mount Diablo fairy lantern Diablo helianthella Brewer's dwarf flax adobe/shining navarretia	HB, GW
May	20, 22	Barron Thomas South Roddy	Mount Diablo fairy lantern Diablo helianthella Brewer's dwarf flax adobe/shining navarretia	HB, BP
May	21	Thomas South	Mount Diablo fairy lantern Diablo helianthella Brewer's dwarf flax adobe/shining navarretia	BP
June	6	Thomas South	Brewer's dwarf flax	HB
September	24	Smith	big tarplant	HB, BP
September	25	Smith	big tarplant	BP

Covered and/or no-take species that were targeted during the course of these surveys were determined by recent preserve acquisitions, habitat present within the preserves, and the direction of Conservancy personnel with input from Nomad. Once the species or preserve was determined, the survey timing was identified by Nomad. Based on discussions with Conservancy staff, John Kopchick and Abigail Fateman, Roddy Ranch and the Smith Property were identified as high priority for inventorying (Table 3). Table 3 shows which preserves contain habitat for each target covered/no-take plant species. If habitat is present, either the entire or partial area of suitable habitat was surveyed in 2014. Table 3 only contains covered/no-take plant species for which there is suitable habitat present on the acquisitions, and does not include all 17 covered/no-take plant species. A narrative discussion of the survey timing and habitat targeted for each preserve is presented in Section 3.

The 2014 survey effort was primarily focused on the Smith property since it was the newest of the acquisitions, and had not been previously surveyed for rare plants. Properties acquired during past years including Barron, Roddy Ranch, and Thomas South, were also targeted as they had not been surveyed entirely, and therefore had a high probability of supporting populations of covered plant species still needed to meet the conservation objectives, i.e. round leaved filaree and Brewer's dwarf flax. Although precipitation totals were low during the 2013/2014 rainy season, reference populations indicated favorable conditions to survey for covered species, as discussed below. Although alkaline habitat had been identified on Smith during previous surveys, it was determined unsuitable for halophytic covered species, such as *Atriplex/Extriplex* and *Delphinium recurvatum*, due to the abundance of salt grass cover (*Distichlis spicata*), and distance outside of local distributions.

Since access of the Roddy Ranch property was not possibe until July 2013, early and late spring covered plant species surveys for round-leaved filaree, Brewer's dwarf flax, shining navarretia, and diablo helianthella were not possible. Therefore, surveys for these species, at the appropriate time, were conducted on Roddy Ranch during April and May 2014. Additionally, reference populations indicated

that 2014 was a suboptimal year for conducting big tarplant surveys. Therefore, minimal effort was spent on the Smith property attempting to locate populations of big tarplant.

Surveys for target species were conducted within suitable habitat (Table 4) by walking transects up to 10 meters apart depending on the topography or subject plant community. Visual surveys are considered adequate for determining the presence or absence of covered plant species that have a potential to occur within preserve acquisitions. Census information for all populations encountered were enumerated by direct count. All surveys generally began at 8:00 and concluded at approximately 16:00 each day (with short breaks for meals). Protocol-level surveys for special-status plants and animals were not conducted as part of this assessment. However, all plant species in bloom, or otherwise recognizable, were identified to a level necessary to determine their regulatory status. During these surveys an inventory of plant species observed was recorded. If encountered, other special-status species including State and federally-listed species or species included in the California Native Plant Society rare plant inventory were also recorded.

Table 3. High Priority Acquisition Properties Surveyed in 2014

TARGET SPECIES	BARRON	RODDY RANCH	THOMAS SOUTH	SMITH
Amsinckia grandiflora large-flowered fiddleneck	---	E	---	P
Blepharizonia plumosa big tarplant	---	----	---	P
California macrophylla round-leaved filaree	---	E	---	E
Calochortus pulchellus Mount Diablo fairy lantern	P	P	---	P
Eschscholzia rhombipetala diamond petaled poppy	---	P	---	P
Helianthella castanea Diablo helianthella	P	E	---	P
Hesperolinon breweri Brewer's dwarf flax	P	E	P	P
Madia radiata showy madia	---	P	---	P
Navarretia nigelliformis subsp. *radians*[7] shining navarretia	P	E	P	E

--- = suitable habitat either not present on property or area not surveyed
E = Entire area of suitable habitat surveyed within property in 2014.
P = Partial survey of suitable habitat within property in 2014.

[7] See footnote 3 above.

Table 4. Habitat Requirements of Survey Targets

SPECIES	LAND COVER TYPES	ADDITIONAL HABITAT NOTES
Amsinckia grandiflora large-flowered fiddleneck (N)	Annual grassland	None
Blepharizonia plumosa big tarplant (C)	Annual grassland	Elevation below 1,500 feet; almost always found on soils of the Altamont Series or Altamont-Fontana complex.
California macrophylla round-leaved filaree (C)	Annual grassland	Heavy clay soils
Calochortus pulchellus Mount Diablo fairy lantern	Annual grassland Chaparral and scrub Oak woodland Oak savanna	Elevation between 650 and 2,600 feet.
Eschscholzia rhombipetala diamond petaled poppy	Annual grassland	Not enough known about local habitat parameters to add specificity.
Helianthella castanea Diablo helianthella (C)	Chaparral and scrub Oak savanna Oak woodland	Elevation above 650 feet; typically found on the ecotone of these habitats.
Hesperolinon breweri Brewer's western flax (C)	Annual grassland Chaparral and scrub Oak woodland	Restricted to grassland areas within a 500+ foot buffer from oak woodland and chaparral scrub. Typically associated with foothill pine (*Pinus sabiniana*).
Madia radiata showy madia	Annual Grassland	Primarily occupies open grassland or grassland on edge of oak woodland.
Navarretia nigelliformis subsp. *radians* shining navaretia	Annual Grassland	Generally found on clay barrens in Annual Grassland.

2.2.2 REFERENCE SITES AND HERBARIUM SPECIMENS

To ensure the timing of surveys coincided with the flowering phenology of targeted HCP/NCCP covered and no-take species, reference populations and collection dates of herbaria specimens were examined.

Reference Sites

Known populations of round-leaved filaree (*California macrophylla*), Diablo helianthella (*Helianthella castanea*), Brewer's dwarf flax (*Hesperolinon breweri*), Mount Diablo fairy lantern (*Calochortus pulchellus*), and big tarplant (*Blepharizonia plumosa*) were visited at reference sites with similar characteristics to the acquisition properties such as habitat, topography, and climate.

On March 23, 2014, a previously unknown round-leaved filaree population was found on the north side of Black Diamond Mines Regional Park, east of Somersville Road. This occurrence is not recorded in the CNDDB though it lies between EONDX# 45807 and #67134, which are mapped as small isolated populations. Approximately 250 individuals were observed at the location with 50 percent in fruit, and 50 percent in flower. With the plants at this stage of flowering phenology it was determined that surveying within two to three weeks was appropriate survey timing for this species.

On April 12, 2014, a known population of shining navarretia was visited. This population is located within Black Diamond Mines Regional Preserve northwest of the intersection of Fredrickson Lane and

Contra Loma Boulevard at approximately 300 feet in elevation. It is recorded in the CNDDB (EONDX # 87633). A total of 150 plants were observed. Based on the condition of the individuals at, it was determined that surveys for this species should be conducted within the next three weeks on similar habitat and soil types.

On May 12, 2014, a known population of Diablo helianthella was evaluated at Lime Ridge Open Space in the City of Walnut Creek. This population is approximately 1,000 feet in elevation. This occurrence is not yet recorded in the CNDDB. Approximately 88 individuals were observed. A majority of these individuals were in flower. Based on this observation it was determined that surveys for this species should be conducted within one to two weeks of this observation.

On May 13, 2014, an extant population of Brewer's dwarf flax was visited in the Mitchell Canyon portion of Diablo State Park at approximately 800 feet in elevation. This is an existing CNDDB occurrence (EONDX #18647). Approximately 230 individuals were observed at this location in flower. Based on this observation it was determined that surveys for this species should be conducted within one to two weeks of this observation.

Also on May 13, 2014, a known population of Mt. Diablo fairy lantern was visited. The population is located within Mt. Diablo State Park near the mouth of Perkins Creek on the east side of the park. This occurrence is recorded in the CNDDB (EONDX #29947). Hundreds of individuals in peak flower were observed; therefore, it was determined that conducting surveys for this species within 1 week of this observation was suitable timing.

On September 19, 2014, an extant population of big tarplant was visited on the north side of Cowell Ranch State Park, which faces Briones Valley Road. This is an existing CNDDB occurrence (EONDX #25662). Approximately 10 individuals were observed, and 10 percent were in flower. Based on this information, it was determined that surveys for this species should be conducted within one to two weeks of this observation.

Observations made during big tarplant reference population visits indicated that surveys for this species would likely result in false negative survey results due to the absence or low abundance of individuals at the big tarplant reference population. As an annual species, these taxa may not germinate, grow, and set seed every year due to unfavorable precipitation and temperatures during winter and early spring. Based on these factors, Mr. Bartosh determined that a full September survey effort would not be undertaken in 2014, and instead recommended that surveys for these taxa be conducted in following years when conditions favor high abundance of the species at reference populations.

Herbaria Specimens

An examination of herbaria specimens was performed for the remaining potentially occurring taxa that did not have available reference populations to examine, using the Consortium of California Herbaria Database (CCH 2014). An estimation of blooming periods was attained by averaging the collection dates of herbarium specimens by month. Duplicate collections and specimens with label information lacking a collection month were not included in the averages. The purpose of this analysis to ensure survey timing corresponds with flowering and reproductive maturation since plant species are typically collected at peak flowering phenology. Specimen collection dates and corresponding survey timing are presented in Table 5 for HCP/NCCP covered and no-take species considered targets during the 2014 studies. All of the species appearing in Table 4 have peak blooming periods during the months of April which match the months during which botanical surveys were conducted.

Table 5. Herbaria Specimen Collection Dates and Correspondence of Survey Timing

Target Species	Herbaria Specimen Collections Averaged By Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Amsinckia grandiflora large-flowered fiddleneck (N)	0%	0%	25%	**60%**	15%	0%	0%	0%	0%	0%	0%	0%
Eschscholzia rhombipetala diamond-petaled poppy (N)	0%	9%	27%	**46%**	**18%**	0%	0%	0%	0%	0%	0%	0%
Madia radiata showy madia (C)	0%	0%	30%	**51%**	17%	1%	0%	1%	0%	0%	0%	0%

Note: Shaded areas indicate months when botanical surveys were conducted. Bolded numbers denote peak period(s) for survey. Species flowering phenology represented as a percent (%) by month, percentages are rounded; months where collection dates have not been reported are designated as 0%. Species followed by (C) are "Covered Species" and (N) are "No-Take Species" in the HCP/NCCP.

2.2.3 Data Collection

Data collected in the field conforms to reporting requirements appearing in Chapter 5 of the Plan, "Incorporating Covered Plant Populations in the Preserve System" (Jones and Stokes 2006). To ensure long-term survival of these populations, maintaining healthy populations is a goal of the Plan. Healthy populations are those that have a stable or increasing population growth rate, or have a high potential to increase in size with improved management. The Plan states that the determination of a healthy population cannot be determined in the field based on a single survey. The health of a plant population will be inferred in the field on the basis of five relevant characteristics. Several surveys per season or surveys over multiple years may be necessary to assess all relevant site and population characteristics to ensure that populations within preserves are healthier than populations lost to covered activities. The five relevant characteristics include:

- Physical Condition: Individuals in good or excellent physical condition for the species (e.g., little or no signs of disease, viruses, severe herbivory, nutrient deficiencies) are more likely to survive, achieve an average or above-average lifespan, and reproduce more successfully than individuals in poor physical condition.

- Age Structure: For perennial plants, having an age structure with many seedlings or juvenile plants relative to adults suggests a stable or positive rate of population growth. Seeds in the soil (*i.e.,* the seed bank) are also part of a plant population's age structure, but this component is generally very difficult to measure. Similarly, for the geophyte Mount Diablo fairy lantern, dormant bulbs in the soil are a stage of the population age structure.

- Reproductive Success: Populations with evidence of average or above average reproductive success for the species (*e.g.*, production of flowers per plant, seed production per flower or per plant, proportion of seeds that appear to be viable based on visual observations) are more likely to be increasing than populations with below-average reproductive success because this is often a key component of population growth rate. If reproductive success cannot be measured, plant size or other physical features may be an appropriate surrogate in some covered species.

- Availability of Suitable Habitat: In order for a plant population to remain stable or grow, enough suitable habitat must be present. Populations near unoccupied suitable habitat or without evidence of shrinking suitable habitat areas (e.g., exotic plants that may be expanding, native shrubs that may be advancing) will be considered more healthy than populations without these indicators.

- Diversity of Suitable Habitat: Populations that occupy a wide range of microhabitats for the species may exhibit relatively high genetic diversity and therefore population health. Populations that occupy unusual microhabitats for the species may indicate unusual genetic composition or adaptations that should be preserved.

Detailed notes and measurement of these five relevant characteristics were recorded for each population of covered plant species observed.

2.2.4 MAPPING

Geographic Information System shapefiles (ESRI ArcGIS 9.2) of covered plant species populations were created by incorporating global positioning system (GPS) point data collected in the field or by digitizing locations hand drawn on field maps in areas where accuracy was assured. These field maps depicted 2009 NAIP 1-meter resolution for Contra Costa County at 1:2,400 scale.

2.2.5 SPECIAL-STATUS SPECIES OCCURRENCES

Special-status plants and animals encountered within the study area were recorded using California Natural Diversity Database Field Survey Forms (Appendix G). A GPS data point was recorded for each occurrence and digital photographs were taken. Voucher specimens of the special-status plant species encountered within the study area were also collected and will be donated to the Jepson Herbarium at the University of California Berkeley.

2.2.6 HERBARIUM VOUCHERS

In addition to the collection of special-status species voucher specimens, other plant species with regional significance were collected during the course of our study. Plant species considered as having regional significance include those not previously known as occurring in Contra Costa County. A GPS data point was recorded for each of these locations.

2.2.7 LIMITATIONS

Survey efforts were carefully designed to maximize the likelihood that the timing and effort of the surveys coincided with the optimum timing of phenology and were conducted in appropriate locations for each of the target species. This subsection discusses the unavoidable limitations inherent in rare plant surveys, with respect to the specifics of this inventory.

Based on the timing of this assessment, a determination of presence/absence within the study area was possible for special-status plant species with blooming periods corresponding to the March, April, May, June, and September 2014 surveys. Based on the timing of the surveys, all plant species growing within the study area may not have been observed due to varying flowering phenologies and life forms, such as bulbs, biennials, and annuals. Annuals may be absent in some years due to annual variations in temperature and rainfall, which influence germination and plant phenology. Colonization of new populations within an area may also occur from year to year.

Some specific plant species identifications in this report are tentative due to the absence of morphological characters, resulting from immature reproductive structures or seasonal desiccation, which is required to make species level determinations. However, all plant species in bloom or otherwise recognizable were identified to a level necessary to determine their regulatory status.

Section 3. ENVIRONMENTAL SETTING

3.1. Setting

The four preserve acquisitions surveyed in 2014, represent a single Acquisition Zone, Zone 2:Watersheds of Northern Tributaries of Marsh Creek. Table 6 summarizes preserve acquisitions surveyed by Acquisition Zone.

Table 6. Acquisition Properties by Zone

ACQUISITION	ZONE 1: PITTSBURG HILLS	ZONE 2: WATERSHEDS OF NORTHERN TRIBUTARIES OF MARSH CREEK	ZONE 3: CLAYTON AREA, MOUNT DIABLO FOOTHILLS	ZONE 4: SLOPES OF MT. DIABLO AND MAIN STEM MARSH CREEK WATERSHED	ZONE 5: BYRON HILLS
Barron	---	●	---	---	---
Roddy Ranch	---	●	---	---	---
Smith	---	●	---	---	---
Thomas South	---	●	---	---	---

3.1.1 ZONE 2

Surveys conducted in Zone 2 included four properties: Roddy Ranch which is located west of Deer Valley Road, north of Briones Valley Road, and south of Empire Mine Road and shares its northwestern corner with Black Diamond Mines Regional Preserve; Barron, and Thomas South which are located north of Mount Diablo and Marsh Creek Road and connect East Bay Regional Park District's (EBRPD) Clayton Ranch Land Bank with Black Diamond Mines Regional Preserve; and the Smith Property which lies at the western end of Briones Valley Road and abuts Roddy Ranch on its southern boundary. Prominent geographic features on these properties include Horse, Deer, and Briones valleys; Kreigor Peak, headwaters of Irish Canyon, Keller Ridge, and Oil Canyon. The properties include land cover types such as grassland, alkali grassland, alkali wetland, chaparral, grassland, oak savanna, oak woodland, pond, and seasonal wetland. All of the properties are located near the boundary between the San Francisco Bay Area and San Joaquin Valley subregions of the California Floristic Province.

Surveys on the four properties focused on grassland habitat, in clay barrens of Altamont series/complex soils, during April and May for large-flowered fiddleneck, round-leaf filaree, showy madia, and shining navarretia. During the months of July and June scrubchaparral, woodland, and grassland habitats (and their ecotones) were targeted for Mount Diablo fairy lantern, Diablo helianthella, Brewer's dwarf flax, and shining navarretia, on various soil types. In the late summer, September, grasslands supported by Altamont Series and Altamont-Fontana Complex soils were surveyed for big tarplant.

Section 4. SURVEY FINDINGS

During plant surveys conducted in April, May, June, and September 2014, five covered species were observed by Nomad botanists. Covered species observed include big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Diablo helianthella (*Helianthella castanea*), Brewer's dwarf flax, and shining navarretia (*Navarretia nigelliformis* subsp. *radians*)[8]. Overall, a total of 13 populations of covered plant species were recorded with an estimated number of 3,284 individuals represented. Table 7 shows the number of covered species populations recorded on each acquisition property. No-take species were not observed during these surveys. It should be noted that the physical condition and population size and abundance may have been affected by poor rainfall patterns during the 2013/2014 rainy seasons.

Other special-status plant species including: Contra Costa manzanita (*Arctostaphylos manzanita* subsp. *laevigata*; CRPR[9] 1B.2), small-flowered morning glory (*Convolvulus simulans* CRPR 4.2), serpentine bedstraw (*Galium andrewsii* subsp. *gatense* CRPR 4.2), Lime Ridge navarretia (*Navarretia gowenii*; CRPR 1B.1), hogwallow starfish (*Hesperevax caulescens;* CRPR 4.2); sylvan microseris (*Microseris sylvatica;* CRPR 4.2); and Michael's rein orchid (*Piperia michaelii;* CRPR 4.2) were also observed within acquisition properties. Although not covered or no-take species they are considered rare by the California Native Plant Society and are therefore included in this inventory.

Table 7. Number of Covered Species Populations Recorded by Acquisition (2014)

TARGET SPECIES	BARREN	RODDY RANCH	SMITH RANCH	THOMAS SOUTH	TOTAL # OF POPULATIONS
Blepharizonia plumosa big tarplant	0	0	1	0	1
California macrophylla round leaved filaree	0	1	0	0	1
Helianthella castanea Diablo helianthella	1	2	0	0	3
Hesperolinon breweri Brewer's dwarf flax	0	2	0	1	3
Navarretia nigelliformis subsp. *radians* shining navarretia	0	3	1	1	5
Total	**1**	**8**	**2**	**2**	**13**

Details of each of these populations are discussed below. Voucher specimens of all covered plant species populations encountered were collected. Vouchers will be deposited at the UC/Jepson Herbaria at the University of California Berkeley. California Natural Diversity Database field forms were also filled out and are included in Attachment A.

[8] See footnote 3 above.
[9] CRPR = California Rare Plant Rank

4.1. COVERED PLANT POPULATION ASSESSMENTS

4.1.1 ZONE 2 – WATERSHEDS OF NORTHERN TRIBUTARIES OF MARSH CREEK

Barron

A single covered plant population was observed within the Barron Property (Table 8, Figure 2). No extant populations of rare plant species were known from this property prior to these studies based on CNDDB (2015) data. During 2014 surveys, a population comprising three separate colonies of the covered plant species Diablo helianthella was recorded along the southern boundary of the eastern portion of the property.

Table 8. Covered Plant Species Populations Recorded on the Barron Property

POPULATION NUMBER	SPECIES NAME	COMMON NAME	STATUS	NUMBER OF INDIVIDUALS
Heca10	*Helianthella castanea*	Mt. Diablo helianthella	Covered CRPR 1B.2	148

Diablo Helianthella (Heca10)

On May 22, 2014, a single population (Heca10) of Diablo helianthella was observed in the understory of blue oak woodland (*Quercus douglasii*) in the southeast corner of the Barron Property (Figure 2). Occurring as three distinct colonies, the population totaled an estimated 148 individuals and occupied approximately 500 square feet (0.01 acre). The population was observed in the shade of blue oak woodland on a steep north-facing slope, in filtered sunlight, between 1,100 to 1,150 feet (335 to 457 meters) in elevation. The three colonies were located near small ridges on convex positions on the slope. The overstory canopy cover wass intermittent. The underlying soils are of the Los Gatos series (USDA 1977). Other plant species associated with this population included narrowleaf goldenbush (*Ericameria linearifolia*), poison oak (*Toxicodendron diversilobum*), pacific pea (*Lathyrus vestitus* var. *vestitus*), California brome (*Broums carinatus* var. *carinatus*), and Italian thistle (*Carduus pycnocephalus* subsp. *pycnocephalus*[*]).

[*] Denotes a species with an origin other than California.

Population Number	Species Name	Common Name	Status	Number of Individuals
Heca10	*Helianthella castanea*	Mt. Diablo helianthella	Covered CRPR 1B.2	148

Thomas Southern

Barron

Lentzner

Heca 10

Heca 10

Heca 10

Chaparral Springs

Clayton Ranch

N

W

E

S

NOMAD ECOLOGY

December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species
Scientific Name
Helianthella castanea

Acquisition Parcels
Public Land and Easements
Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 2

Covered Plant Species
Observed on Barron Property

East Contra Costa County
Habitat Conservancy

1:7,200

0 300 600

Feet

East Contra Costa County
Habitat Conservancy

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

Photo 1. Heca10 in blue oak woodland understory with all individuals in fruit.

- Physical Condition: All plants appeared in excellent physical condition and all observed were mature individuals that had produced seed during the 2014 season. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Size of individuals ranged from approximately 12 inches to 28 inches tall, expressed as clustered plants.

- Age Structure: With 100 percent of the population considered mature, the age structure of the population suggests offspring are not being produced or not surviving to maturity. No assessment of the seed bank was attempted.

- Reproductive Success: 100 percent of the individuals that had produced an inflorescence, which was approximately 70, were fruiting at the time of observation. Some of the individuals had not flowered this year presumably due to drought conditions. If all of the fruiting heads observed set seed, the total number of seed potentially produced by this population would be 7,770 (number of fertile disk flowers in each inflorescence is estimated at 111). Based on the number of mature versus immature individuals, it is presumed this population is healthy. However, it may not be self-sustaining do to the lack of seedling and intermediate sized individuals.

- Availability of Suitable Habitat: Population Heca10 is small in relation to the unoccupied suitable habitat that is on the adjacent north facing slopes to the east and west (approximately 250 acres). There is also an abundance of loam soils with the appropriate vegetation associations throughout the 250 acres, particularly on the north-facing aspects in the woodland understory. Therefore, there is potential for expanding this population. No directly competing weed or native plant species were observed within or adjacent to the population.

- Diversity of Suitable Habitat: The population occupies habitat that is typical for this taxon in Contra Costa County.

Roddy Ranch

A total of eight populations of covered plant species were observed within the Roddy Ranch Property (Table 9, Figure 3). This total does not include big tarplant populations presented in the 2013 survey results. In addition to big tarplant populations several other extant populations of previously recorded rare plant populations were known from this property prior to these surveys. These include one round-leaved filaree population (Element occurrence (EO) #49), two populations of Diablo helianthella (EO #s 70 and 71), and one shining navarretia population ((EO #62). During 2014 surveys, the populations of Diablo helianthella and shining navarretia were confirmed however, the round-leaved filaree population (EO #49) was not relocated. A new, previously undocumented, location of round-leaved filaree was observed during the 2014 survey effort. Also during the 2014 survey effort previously undocumented populations of round-leaved filaree, Brewer's dwarf flax and shining navarretia were observed and recorded.

Table 9. Covered Plant Species Populations Recorded on the Roddy Ranch Property

Population Number	Species Name	Common Name	Status	Number of Individuals
Cama2	*California macrophylla*	round leaved filaree	Covered CRPR 1B.1	85
Heca11 (CNDDB EO#70)	*Helianthella castanea*	Mt. Diablo helianthella	Covered CRPR 1B.2	31
Heca12 (CNDDB EO#71)	*Helianthella castanea*	Mt. Diablo helianthella	Covered CRPR 1B.2	3
Hebr2	*Hesperolinon breweri*	Brewer's dwarf flax	Covered CRPR 1B.2	63
Hebr3	*Hesperolinon breweri*	Brewer's dwarf flax	Covered CRPR 1B.2	88
Nani2 (CNDDB EO#62)	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	200
Nani3	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	115
Nani4	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	100

Population Number	Species Name	Common Name	Status	Number of Individuals
Cama2	*California macrophylla*	round leaved filaree	Covered CRPR 1B.1	85
Heca11 (CNDDB EO#70)	*Helianthella castanea*	Mt. Diablo helianthella	Covered CRPR 1B.2	31
Heca12 (CNDDB EO#71)	*Helianthella castanea*	Mt. Diablo helianthella	Covered CRPR 1B.2	3
Hebr2	*Hesperolinon breweri*	Brewer's dwarf flax	Covered CRPR 1B.2	63
Hebr3	*Hesperolinon breweri*	Brewer's dwarf flax	Covered CRPR 1B.2	88
Nani2 (CNDDB EO#62)	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	200
Nani3	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	115
Nani4	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	100

December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species
Scientific Name
- Navarretia nigelliformis subsp. radians
- Hesperolinon breweri
- Helianthella castanea
- California macrophylla
- Acquisition Parcels
- Public Land and Easements
- Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 3
Covered Plant Species
Observed on Roddy Ranch
East Contra Costa County
Habitat Conservancy

1:14,000
0 600 1,200
Feet

East Contra Costa County Habitat Conservancy

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

Round-leaved filaree (Cama2)

On April 7, 2014, a previously undocumented population of round-leaved filaree was observed in the northwestern portion of the ranch near the head of Horse Valley (Figure 3). This population was comprised of one colony totaling 85 individuals by direct count, occupying approximately 17,700 square feet (0.41 acre) of grassland habitat. This population occupies grassland habitat on a west facing clay barren comprised by 30-50 percent total vegetative cover. It lies between 300 to 320 feet in elevation. The soils that support this population are of the Altamont-Fontana Complex (USDA 1977). Associate plant species observed include abundant long beaked filaree (*Erodium botrys*), dwarf cudweed (*Hesperevax sparsiflora* var. *sparsiflora*), bur clover (*Medicago polymorpha**), Chilean trefoil (*Acmispon wrangelianus*), and Douglas' silverpuffs (*Microseris douglasii* subsp. *douglasii*). Shining navarretia was also observed co-occurring with this population of round-leaved filaree and is discussed below.

Photo 2. Cama2 Looking east at the clay barren where this population occurs.

Photo 3. Round-leaved filaree individual in fruit.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were setting seed at the time of the observation. Size of individuals ranged from approximately 2 to 6 inches; however most were 4 inches tall on average.
- Age Structure: This characteristic is not applicable as round-leaved filaree is an annual species.
- Reproductive Success: At the time of the observation, approximately 50 percent of the individuals were flowering and 50 percent were fruiting. All of the fruits/seeds inspected were either mature or maturing. An average of 4 inflorescences was estimated per individual. The total number of seed potentially produced in each inflorescence is 1 (one seed per mericarp). Based on the number of individuals and average number of inflorescences at this population the total possible number of seeds produced is presumed to be 340 seeds (4 seeds per plant) could have been produced by this population in 2014. Even if all these plants successfully produce the maximum number of seed this seeding rate is low with only one mericarp/seed per flower. This could indicate why this once widespread California species is considered rare. It is unknown at this time whether this population, represented by 85 individuals is self-sustaining over the long term. However, given this is an annual plant population prone to fluctuations in population numbers based on climatic conditions and it was only observed at one time (not over multiple years) it is possible the seed bank is abundant enough to maintain this population over the long term.
- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers western to northern aspects on Altamont series, Altamont-Fontana complex, or Rincon series soils in annual grassland habitat (Bartosh pers. observation). The habitat typical of this soil type where round-leaved filaree occurs on clay barrens which are and anecdotally known ecological phenomenon

which little to no literature has been published on the subject. Locally, clay barrens (which can also be referred to as adobe clay lenses) are areas that have low overall vegetative cover (30-50 percent) dominated by native annual forb species with very low cover of non-native grasses and forbs. Population Cama2 appeared to be underutilizing available and unoccupied clay barren habitat within this portion of Horse Valley. However, there is an abundance of the highly invasive and competitive non-native species medusahead grass (*Elymus caput-medusae**) on the east facing slope of the hill this population occurs on, and a small amount of cover occupies the same area as Cama2. Population expansion is not recommended until an effort to control medusahead grass* has been attempted and this threat has been controlled. Management considerations should be directed at developing control strategies for medusahead grass to protect this population, which is currently one of two known populations under the Conservancy's stewardship, and the only one outside of the Byron area.

- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper slope, aspect, and soil types are fairly strict. This population occupies habitat that is typical for this taxon in Contra Costa County. Diversity of habitat that this taxon can occupy is limited to grasslands on west and north-facing aspects, on gentle slopes, and on Altamont series, Altamont-Fontana complex, or Rincon series. Surveys, acquisition, and any introduction activities related to this taxon should be directed by habitat limiting criteria.

Diablo helianthella (Heca11)

On May 20, 2014, CNDDB EO #70 was confirmed as extant within Roddy Ranch acquisition and is heretofore referenced as Heca11. This population comprises six colonies scattered over 0.9 mile along the southern boundary of Roddy Ranch south of Deer Valley (Figure 3). Based on CNDDB data, 10 colonies make up this population, which totaled 136 plants in 1998. During 2014, a total of six colonies were recorded totaling 31 individuals, enumerated by direct count. Each of these polygons contained few plants and based on the size of these small clusters this population occupied approximately 60 square feet of blue oak woodland and interior live oak understory with an intermittent canopy that is intermixed with occasional foothill pine (*Pinus sabiniana*). Some colonies are also on the chamise (*Adenostoma fasciculatum* var. *fasciculatum*) chaparral and grassland ecotone. Not all of the CNDDB polygons mapped in 1998 were relocated therefore the area occupied and number of individuals is less than a quarter of the individuals observed 16 years before. The six colonies observed in 2014 are located between 600 feet to 825 feet in elevation on a northeast facing slope that is moderately steep. The soils that support this population are of the Los Gatos Series (USDA 1977). Associate plant species observed include California buckeye (*Aesculus californica*), narrowleaf goldenbush, wild oats (*Avena fatua**), ripgut brome (*Bromus diandrus**), slender cottonweed (*Micropus californicus* var. *californicus*), and leafy fleabane (*Erigeron foliosus* var. *foliosus*).

Photo 4. A small colony indicative of Heca11

- Physical Condition: Although this population comprised small colonies with few individuals, all plants appeared in excellent physical condition and both mature and seedling stage individuals were observed. Of the mature individuals, all appeared to be producing seeds during the 2014 season. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Size of individuals ranged from approximately 8 inches to 22 inches tall, expressed mostly as individual plants.

- Age Structure: The age structure of this population comprised 61 percent mature (fruiting) and 39 percent seedling (immature) individuals. These numbers suggest a stable and positive rate of population growth. No assessment of the seed bank was attempted.

- Reproductive Success: Approximately 61 percent of the individuals of this population were fruiting. Had all of the potential fruiting flowers of each inflorescence (assuming one per plant) set seed the total number of seed potentially produced by this population is 13,653 (number of fertile disk flowers in each inflorescence is estimated at 111). Based on the number of mature versus immature individuals it is presumed this population is healthy and self-sustaining.

- Availability of Suitable Habitat: Population Heca11 is extremely small in relation to the unoccupied suitable habitat that is on the adjacent north facing slopes to the east and west (approximately 150 acres). There is also an abundance of loam soils with the appropriate vegetation associations throughout these 250 acres, particularly on the north-facing aspects in the woodland understory and chamise chaparral-grassland ecotones. Therefore there is potential for expanding this population. No directly competing weed or native plant species were observed within or adjacent to this population.

- Diversity of Suitable Habitat: This population occupies habitat that is typical for this taxon in Contra Costa County.

Diablo helianthella (Heca12)

On May 15, 2014, CNDDB EO #71 was confirmed as extant within Roddy Ranch acquisition and is heretofore referenced as Heca12. This is an isolated population of very few individuals along the slope south of Deer Valley and south of the inholding containing Roddy's house (Figure 3). Based on CNDDB data, this population totaled 36 plants in 1998. During 2014, the total number of individuals observed was 3 individuals. This small population totaled 30 square feet of occupied blue oak woodland habitat with an intermittent. The population observed in 2014 was located between 560 feet in elevation on a northwest facing slope that is moderately steep. The soils that support this population are of the Los Gatos Series (USDA 1977). Associate plant species observed included ripgut brome*, wild oats*, narrowleaved goldenbush, and California sagebrush (*Artemisia californica*).

Photo 4. A small colony indicative of Heca11

- Physical Condition: Although this population comprised small colonies with few individuals all plants appeared in excellent physical condition and both mature and seedling stage individuals were observed. All individuals, which were mature (fruiting), appeared to be producing seeds during the 2014 season. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Size of individuals averaged 10 inches tall.

- With 100 percent of the population considered mature the age structure of the population suggests offspring are not being produced or not surviving to maturity. No assessment of the seed bank was attempted.

- Reproductive Success: Each of the three individuals that comprised this population had produced 3 flowering heads that were fruiting at the time of the observation. Had all of the potential fruiting flowers of each inflorescence (set seed the total number of seed potentially produced by this population is 999 (number of fertile disk flowers in each inflorescence is estimated at 111). Based on the number of mature versus immature individuals it is presumed this population is

healthy; however it may not be self-sustaining do to the lack of seedling and intermediate sized individuals.

- Availability of Suitable Habitat: Population Heca12 is extremely small in relation to the unoccupied suitable habitat that is on the adjacent north facing slopes to the east and west (approximately 180 acres). There was also an abundance of loam soils with the appropriate vegetation associations throughout these 150 acres, particularly on the north-facing aspects in the woodland understory and chamise chaparral-grassland ecotones. Therefore there is potential for expanding this population. No directly competing weed or native plant species were observed within or adjacent to this population.
- Diversity of Suitable Habitat: This population occupies habitat that is typical for this taxon in Contra Costa County.

Brewer's dwarf flax (Hebr2)

On May 14, 2014, a previously undocumented population of Brewer's dwarf flax was observed in the northwestern portion of the ranch near the head of Horse Valley (Figure 3). This population was two colonies comprised of 63 individuals by direct count, occupying approximately 40 square feet. Each colony occupied grassland and blue oak woodland ecotone habitat. These colonies occupied northerly facing aspects on moderate slopes between 450 to 650 feet in elevation. The soils that support this population are of the Los Gatos series (USDA 1977). There are micro habitat differences between the two colonies. The eastern colony is on a slope of very erosive soils above a drainage on the margin of blue oak woodland, while the western population is directly shaded by the intermittent canopy of blue oak woodland. The colony on erosive soils is accompanied by species representing high native cover of grasses and forbs such as purple needlegrass (*Stipa pulchra*), one-sided bluegrass (*Poa secunda* subsp. *secunda*), small tarweed (*Madia exigua*), and purple navarretia (*Navarretia pubescens*). The western colony, located in blue oak woodland understory, was accompanied by species such as hollyleaf redberry (*Rhamnus ilicifolia*), yarrow (*Achillea millefolium*), wild oats*, false brome (*Brachypodium distachyon*), and red brome (*Hordeum madritensis* subsp. *rubens*).

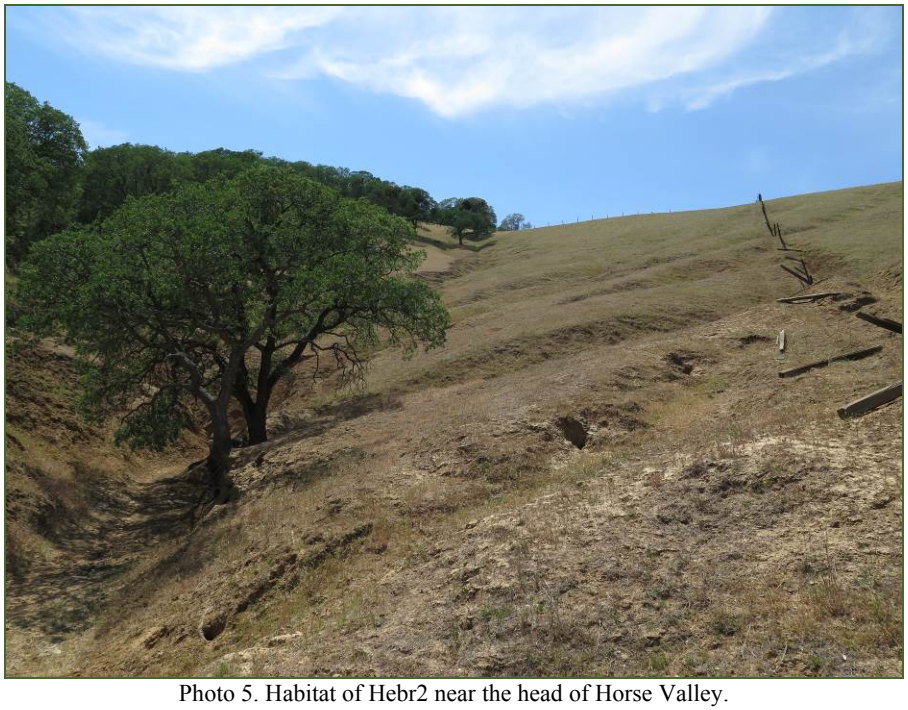


Photo 5. Habitat of Hebr2 near the head of Horse Valley.

Photo 6. Individual of Hebr2 in flower and bud.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were setting seed at the time of the observation. Size of individuals ranged from 3 to 5 inches.
- Age Structure: This characteristic is not applicable as Brewer's dwarf flax is an annual species.
- Reproductive Success: At the time of the observation, approximately 80 percent of the individuals were flowering and 20 percent were fruiting. All of the fruits/seeds inspected were either mature or maturing. An average of 3 inflorescences was estimated per individual. The total number of seed potentially produced in each inflorescence is 6. Based on the number of individuals and average number of inflorescences at this population it is presumed that 1,134 seeds (18 seeds per plant) could have been produced by this population in 2014. It is unknown at this time whether this population, represented by 63 individuals, is self-sustaining over the long term. However, given this is an annual plant population prone to fluctuations in population numbers based on climatic conditions and that it was only observed at one time (not over multiple years), it is possible the seed bank is abundant enough to maintain this population over the long term.
- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers western to northern aspects on loamy soils in the ecotone of blue oak-grassland, chaparral-grassland, or occasionally in open grassland (Bartosh pers. observation). Population Hebr2 appeared to be

underutilizing available and unoccupied ecotone habitat on loam soils within this portion of Horse Valley. Approximately 61 acres of unoccupied habitat is available for expansion in the immediate area. No directly competing weed or native plant species were observed within or adjacent to this population.

- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper slope, aspect, and soil types are not very strict, however the abundance of populations relative to unoccupied suitable habitat is high. Therefore, there are likely specific unknown micro habitat requirements this species needs in order to successfully occupy specific locations. This population occupies habitat that is typical for this taxon in Contra Costa County. Surveys, acquisition, and any introduction activities related to this taxon should be directed at these micro habitat criteria.

Brewer's dwarf flax (Hebr3)

On May 20, 2014, a previously undocumented population of Brewer's dwarf flax was observed in the southern portion of the ranch near below (sough) of the inholding in Deer Valley (Figure 3). This a discrete population of 88 individuals enumerated by direct count occupying approximately 100 square feet. It is located on a steep northwest facing aspect at approximately 575 feet in elevation. The soils that support this population are of the Los Gatos series (USDA 1977). This population occupied an island of grassland surrounded by blue oak and chamise. Other associate species included red brome*, wild oats*, purple navarretia, California sagebrush, and leafy fleabane.

Photo 6. Habitat of Hebr3 on the south side of Deer Valley.

Photo 7. Individual of Hebr3 in flower.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were setting seed at the time of the observation. Size of individuals ranged from 4 to 8 inches.
- Age Structure: This characteristic is not applicable as Brewer's dwarf flax is an annual species.
- Reproductive Success: At the time of the observation, approximately 25 percent of the individuals were flowering and 25 percent were fruiting. All of the fruits/seeds inspected were either mature or maturing. An average of 5 inflorescences was estimated per individual. The total number of seed potentially produced in each inflorescence is 6. Based on the number of individuals and average number of inflorescences at this population the total possible number of seeds produced is presumed to be 1,584 seeds (18 seeds per plant) could have been produced by this population in 2014. It is unknown at this time whether this population, represented by 88 individuals is self-sustaining over the long term. However, given this is an annual plant population prone to fluctuations in population numbers based on climatic conditions and it was only observed at one time (not over multiple years) it is possible the seed bank is abundant enough to maintain this population over the long term.
- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers western to northern aspects on loamy soils in the ecotone of blue oak-grassland, chaparral-grassland, or occasionally in open grassland (Bartosh pers. observation). Population Hebr3 appeared to be underutilizing available and unoccupied ecotone habitat on loam soils within this portion of Horse Valley. Approximately 170 acres of unoccupied habitat is available for expansion in the immediate area. No directly competing weed or native plant species were observed within or adjacent to this population.

- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper slope, aspect, and soil types which are not very strict however the abundance of populations relative to unoccupied suitable habitat is high. Therefore there are likely specific unknown micro habitat requirements this species needs in order to successfully occupy specific locations. This population occupies habitat that is typical for this taxon in Contra Costa County. Surveys, acquisition, and any introduction activities related to this taxon should be directed at these habitat criteria.

Shining navarretia (Nani2)

On April 17, 2014, CNDDB EO # 62 was confirmed as extant within Roddy Ranch acquisition and is heretofore referenced as Nani2. This population comprises three colonies located in the western end of Horse Valley at Roddy Ranch (Figure 3). Two of these colonies were associated with the CNDDB occurrence, the western and middle colonies. The third colony (eastern) was previously unknown and not a part of the CNDDB dataset. The western colony was not relocated. Based on 2008 CNDDB data the western and middle colonies totaled "hundreds" of plants. During 2014 a total of 200 individuals were recorded from the middle and eastern colonies, enumerated by direct count. Each of these colonies nearly 100 plants and together occupied approximately 0.20 acre of grassland habitat that could also be characterized as clay barren. These colonies are located between 320 feet to 360 feet in elevation. The middle and eastern colonies were observed on a combination of west to south facing aspects of gentle to moderately steep slopes. The soil that support this population are of the Los Gatos Series and Altamont Fontana complex (USDA 1977). Associate plant species observed include longbeak storksbill*, few flowered evax (*Hesperevax sparsiflora* var. *sparsiflora*), Douglas' microseris, bur clover*, and Chilean trefoil. The eastern colony was also the location of roud-leaved filaree (Cama2).

Photo 8. Nani2 prior to flowering.

Photo 9. Shining navarretia (Nani2) habitat.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were in flower and setting seed at the time of the observation. Size of individuals ranged from approximately 1 to 3 inches tall.
- Age Structure: This characteristic is not applicable as shining navarretia is an annual species.
- Reproductive Success: At the time of the observation, approximately 60 percent of the individuals were flowering and 20 percent were fruiting. All of the fruits/seeds inspected were either mature or maturing. An average of 6 flowers was estimated per individual. The total number of seed potentially produced in each capsule is 5. Based on the number of individuals and average number of inflorescences at this population the total possible number of seeds produced is presumed to be 6,000 seeds (30 seeds per plant) could have been produced by this population in 2014. It is unknown at this time whether this population, represented by 200 individuals is self-sustaining over the long term. However, given this is an annual plant population prone to fluctuations in population numbers based on climatic conditions and it was only observed at one time (not over multiple years) it is possible the seed bank is abundant to maintain this population over the long term.
- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers gentle slopes that are slightly elevated valley bottoms, aspects are less of a factor although a majority of populations in the region are southerly. The soil types that support this species in Contra Costa county include Altamont-Fontana complex and Los Gatos or Rincon series soils in annual grassland habitat (Bartosh pers. observation). The habitat typical of this soil type where shining navarretia is found is similar to where round-leaved filaree occurs, clay barrens in annual grassland habitat. Population Nani2 appeared to be underutilizing available and unoccupied clay barren habitat within this portion of Horse Valley. However, there is an abundance of the highly

invasive and competitive non-native species medusahead grass* in other clay barrens that may be an impediment to population expansion. There is also an infestation of medusahead grass* immediately adjacent (west) to the eastern colony of this population that while not currently co-occurring with shining navarretia has the potential to become established within this colony. Population expansion is not recommended until an effort to control these has been attempted and this threats have been controlled. Management considerations should be directed at developing control strategies for medusahead grass *. This effort should be focused on protecting this population which is the only known population in Horse Valley.

- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper slope, aspect, and soil types which are fairly strict. This population occupies habitat that is typical for this taxon in Contra Costa County. Therefore diversity of habitat that this taxon can occupy is limited to grasslands, on gentle slopes above valley bottoms, and on Altamont-Fontana complex and Los Gatos or Rincon series soils. Surveys, acquisition, and any introduction activities related to this taxon should be directed at these criteria.

Shining navarretia (Nani3)

On April 17, 2014, a previously undocumented population of shining navarretia was observed in the western portion of the ranch near the head of and the north side of Deer Valley (Figure 3). This population is comprised of five colonies clustered together flanking the northwest and southeast sides of a stockpond in clay barren habitat of annual grassland. A total of 115 individuals were enumerated, by direct count, occupying approximately 100 square feet of habitat. The low cover (30 to 40%) clay barren/grassland habitat this population occupies is on south facing aspects of gentle slopes immediately above the valley bottom between 290 to 320 feet in elevation. The soils that support this population are of the Altamont-Fontana Complex and Rincon Series (USDA 1977). Associate plant species observed include abundant soft chess (*Bromus hordeaceus**), few flowered evax, adobe popcornflower (*Plagiobothrys acathocarpa*), red stemmed filaree (*Erodium cicutarium**), shining pepperweed (*Lepidium nitidum*), Italian ryegrass (*Festuca perennis**), and sand pygmyweed (*Crassula connata*). The CRPR 4.2 species hogwallow starfish (*Hesperevax caulescens*) was also observed co-occurring with this population.

Photo 10. Nani3 occupied clay barren/annual grassland habitat.

Photo 11. Flowering individuals of Nani3.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were in flower and setting seed at the time of the observation. Size of individuals ranged from approximately 1 to 2 inches;
- Age Structure: This characteristic is not applicable as shining navarretia is an annual species.

- Reproductive Success: At the time of the observation, approximately 30 percent of the individuals were flowering and 70 percent were in bud. At the time of the observation no fruit had been forming yet. All of the fruits/seeds inspected were either mature or maturing. An average of 3 flowers was estimated per individual. The total number of seed potentially produced in each capsule is 5. Based on the number of individuals and average number of inflorescences at this population the total possible number of seeds produced is presumed to be 1,725 seeds (15 seeds per plant) could have been produced by this population in 2014. It is unknown at this time whether this population, represented by 115 individuals is self-sustaining over the long term. However, given this is an annual plant population prone to fluctuations in population numbers based on climatic conditions and it was only observed at one time (not over multiple years) it is possible the seed bank is abundant to maintain this population over the long term.
- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers gentle slopes that are slightly elevated valley bottoms, aspects are less of a factor although a majority of populations in the region are southerly. The soil types that support this species in Contra Costa county include Altamont-Fontana complex and Los Gatos or Rincon series soils in annual grassland habitat (Bartosh pers. observation). The habitat typical of this soil type where shining navarretia is found is similar to where round-leaved filaree occurs, clay barrens in annual grassland habitat. Population Nani3 appeared to be underutilizing available and unoccupied clay barren habitat within this portion of Deer Valley and no threats were observed within occupied habitat or unoccupied suitable habitat. Approximately 40 acres of unoccupied habitat is available for expansion in the immediate area. No directly competing weed or native plant species were observed within or adjacent to this population.
- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper slope, aspect, and soil types which are fairly strict. This population occupies habitat that is typical for this taxon in Contra Costa County. Therefore diversity of habitat that this taxon can occupy is limited to grasslands, on gentle slopes above valley bottoms, and on Altamont-Fontana complex and Los Gatos or Rincon series soils. Surveys, acquisition, and any introduction activities related to this taxon should be directed at these criteria.

Shining navarretia (Nani4)

On April 30, 2014, a previously undocumented population of shining navarretia was observed in the central portion of Deer Valley on south facing aspects north of the paved road and and north of the inholding containing Roddy's house (Figure 3). This population is comprised of two separate colonies totaling 100 individuals in clay barren/annual grassland habitat occupying approximately 8,000 square feet (0.18 acre). The low cover (30 to 40%) clay barren/grassland habitat this population occupies is on a south facing aspects of moderate slope immediately above the valley bottom between 175 to 280 feet in elevation. These two colonies are referred to as the western and eastern colonies. The western colony is located immediately north of Roddy's house on a moderately steep slope with little vegetative cover. The eastern polygon is located northeast of Roddy's house immediate west of a cross-fence and trough both north and south of an unpaved ranch access road. The soils that support the western colony are of the Altamont-Fontana Complex while the eastern colony occurs on areas mapped as Pescadero Series, which is presumed to be a mapping error as the characteristics on the ground where this colony is located appeared to be of the Rincon Series, which is immediately adjacent (USDA 1977). Associate plant species observed included Italian ryegrass*, longstemmed filaree*, Douglas' microseris, few flowered evax, adobe popcornflower, and red maids (*Calandrinia ciliata*). Minor amounts of charlock (*Sinapis arvensis**) were also observed co-occurring with this population.

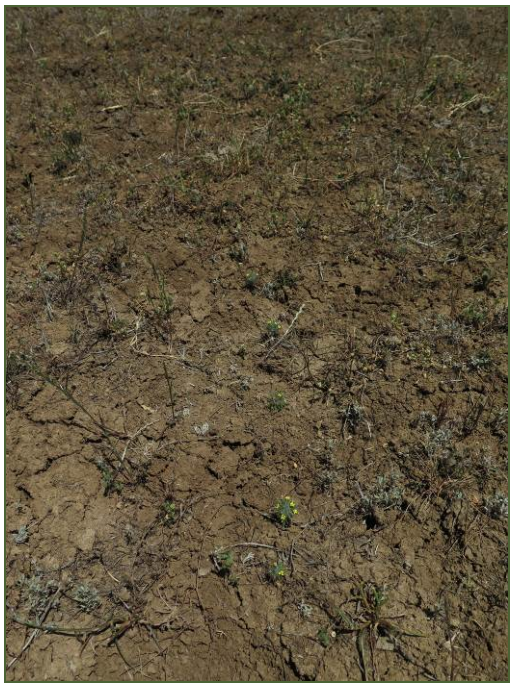


Photo 12. Nani4 occupied clay barren/annual grassland habitat.

Photo 13. Flowering individuals of Nani4.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were in flower and setting seed at the time of the observation. Size of individuals ranged from approximately 1 to 2 inches tall with some individuals having multi-branched inflorescences.

- Age Structure: This characteristic is not applicable as shining navarretia is an annual species.

- Reproductive Success: At the time of the observation, approximately 50 percent of the individuals were flowering and 50 percent were in fruit. All of the fruits/seeds inspected were either mature or maturing. An average of 7 flowers was estimated per individual. The total number of seed potentially produced in each capsule is 5. Based on the number of individuals and average number of inflorescences at this population the total possible number of seeds produced is presumed to be 3,500 seeds (35 seeds per plant) could have been produced by this population in 2014. It is unknown at this time whether this population, represented by 100 individuals is self-sustaining over the long term. However, given this is an annual plant population prone to fluctuations in population numbers based on climatic conditions and it was only observed at one time (not over multiple years), it is possible the seed bank is abundant enough to maintain this population over the long term.
- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers gentle slopes that are slightly elevated valley bottoms, aspects are less of a factor although a majority of populations in the region are southerly. The soil types that support this species in Contra Costa county include Altamont-Fontana complex and Los Gatos or Rincon series soils in annual grassland habitat (Bartosh pers. observation). The habitat typical of this soil type where shining navarretia is found is similar to where round-leaved filaree occurs, clay barrens in annual grassland habitat. Population Nani4 appeared to be underutilizing available and unoccupied clay barren habitat within this portion of Deer Valley. Although charlock* was identified as a co-occurring weed its abundance and stature did not appear to be threatening shining navarretia within these locations however it should be monitored to ensure that it does not become a competitor. Approximately 10 acres of unoccupied habitat is available for expansion in the immediate area to the east and west of this population on clay barren habitat.
- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper slope, aspect, and soil types which are fairly strict. This population occupies habitat that is typical for this taxon in Contra Costa County even though the eastern colony is mapped on Pescadero series soils that is considered an anomaly. Therefore diversity of habitat that this taxon can occupy is limited to grasslands, on gentle slopes above valley bottoms, and on Altamont-Fontana complex and Los Gatos or Rincon series soils. Surveys, acquisition, and any introduction activities related to this taxon should be directed at these habitat criteria.

Smith

A total of two covered plant populations were observed within the Smith Property (Table 10, Figure 4). Although an occurrence of round-leaved filaree (EO #57) is mapped as occurring within the Smith property it is a non-specific location based on a 1929 herbarium collection. An effort was made to locate any round-leaf filaree populations, but none were observed on the Smith property. Other than this non-specific historic occurrence no extant populations of rare plant species were known from this property prior to these surveys. During 2014 surveys, populations of big tarplant and shining navarretia were observed in the southern half of the property outside of Briones Valley proper.

Table 10. Covered Plant Species Populations Recorded on the Smith Property

Population Number	Species Name	Common Name	Status	Number of Individuals
Blpl12	*Blepharizonia plumosa*	big tarplant	Covered CRPR 1B.1	1
Nani5	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	400

Black Diamond Mines

Roddy Ranch

Roddy Ranch

Smith

CCWD

Nani 5

Blpl 12

Population Number	Species Name	Common Name	Status	Number of Individuals
Blpl12	*Blepharizonia plumosa*	big tarplant	Covered CRPR 1B.1	1
Nani5	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	400

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Legend

Covered Plant Species
Scientific Name

Navarretia nigelliformis subsp. radians

Blepharizonia plumosa

Acquisition Parcels

Public Land and Easements

Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 4

Covered Plant Species
Observed on the Smith Property

East Contra Costa County
Habitat Conservancy

1:12,000

0 600 1,200

Feet

East Contra Costa County
Habitat Conservancy

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

Big tarplant (Blpl12)

On September 24, 2014, a previously undocumented population of big tarplant was observed in the east-central portion of the Smith property in the valley to the south of Briones Valley. This population was observed on east side of the main northerly flowing drainage on a steep south facing aspect at approximately 650 feet in elevation. It occupied annual grassland habitat on a clay barren with 35 to 45 percent cover of annual grasses and forbs. The population was only represented by one individual, which is likely a result of poor germination due to precipitation and climatic conditions (Levine et al. 2008), as evidenced by reference populations in the region. This individual occupied a very small amount of habitat, however it is likely that a seed bank occupies more habitat than was represented by this single individual. The soils that support this population are of the Altamont Fontana Complex (USDA 1977). Associate plant species observed include black mustard (*Brassica nigra**), Italian ryegrass*, rose clover (*Trifolium hirtum**), wild oats*, and red brome*. There is also a low abundance of yellow starthistle (*Centaurea solsitialis**) occurring with big tarplant at this location.

Photo 14. Blpl12 occupied habitat in annual grassland looking east.

Photo 15. Blpl12 individual in fruit.

- Physical Condition: The plant at this location appeared in good condition although it appeared shorter statured than plants in average rain year. The lack of precipitation was a likely factor for the stunted appearance of this individual. Due to the presence of terpenoids produced by this plant species, they are unpalatable to cattle and are therefore not targeted for grazing by cattle. This individual is expected to survive and reproduce. This plant was eight inches tall.
- Age Structure: This characteristic is not applicable as big tarplant is an annual species.
- Reproductive Success: At the time of the observation, the single individual observed was 100 percent in fruit. All of the fruits/seeds inspected were either mature or maturing. Approximately 24 inflorescences were estimated on this individual. The total number of seed potentially produced in each inflorescence is 48, which includes the total number of disk and ray fruits (cypsela). Based on the number of individuals at this population and total possible number of seeds produced it is presumed that 1,152 seeds (1,152 seeds per plant) could have been produced by this population in 2014. However, it is unknown if a population represented by one individual is enough to maintain this population in the long term. Gathering additional census information during average precipitation years should be attempted to provide a better sense of the population size and its seed bank.
- Availability of Suitable Habitat: Throughout its range, especially within Contra Costa County, this taxon prefers northerly aspects on Altamont series or Altamont-Fontana complex soils in annual grassland habitat (Bartosh pers. observation). Population Blpl12 may be underutilizing the available suitable habitat in the vicinity however it is difficult to say that definitively because of low germination of big tarplant in the region this year. The presence of yellow starthislte* is a concern management considerations should be directed at developing monitoring and control strategies for this invasive species.

- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. Observation) habitat requirements for this taxon including slope, aspect, soil, and elevation (98 to 1,657 feet) are fairly strict. This population occupies habitat that is typical for this taxon in Contra Costa County. Therefore diversity of habitat that this taxon can occupy is limited to grasslands on north-facing aspects, slopes generally ranging between 30 to 50 percent, and on Altamont soils. Surveys, acquisition, and any introduction activities related to this taxon should be directed at these criteria.

Shining navarretia (Nani5)

On April 15, 2014, a previously undocumented population of shining navarretia was observed in the western portion of the Smith property in the valley south of Briones Valley proper (Figure 4). This population was comprised of a single colony on a south west aspect on a clay barren in annual grassland with 30 to 40 percent cover of annual grasses and forbs. A total of 400 individuals,enumerated by direct count, occupied approximately 34,000 square feet (0.80 acre) of habitat. This population is on moderate slopes at approximately 800 feet in elevation. The soils that support this population are of the Altamont-Fontana Complex (USDA 1977). Associate plant species observed include few flowered evax, red stemmed filaree*, ripgut brome (*Bromus diandrus**), and wild oats*.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were in flower and setting seed at the time of the observation. Size of individuals ranged from approximately 1 to 3 inches tall.

- Age Structure: This characteristic is not applicable as shining navarretia is an annual species.

- Reproductive Success: At the time of the observation, approximately 2 percent of the individuals were flowering while the remaining 98 percent were in bud. The difference in flowering phenology compared to other shining navarretia populations observed during 2014 is likely to the elevation Nani5 occupies. An average of 5 flowers was estimated per individual. The total number of seed potentially produced in each capsule is 5. Based on the number of individuals and average number of inflorescences at this population the total possible number of seeds produced is presumed to be 10,000 seeds (25 seeds per plant) could have been produced by this population in 2014. This is the largest population of shining navarretia documented during covered plant inventories to date. This population should be considered a core population in the region until more information on population dynamics is recorded. No directly competing weed or native plant species were observed within or adjacent to this population.

- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers gentle slopes that are slightly elevated valley bottoms, aspects are less of a factor although a majority of populations in the region are southerly. The soil types that support this species in Contra Costa County include Altamont-Fontana complex and Los Gatos or Rincon series soils in annual grassland habitat (Bartosh pers. observation). Population Nani5 appeared to be underutilizing available and unoccupied clay barren habitat within this portion of Deer Valley and no threats were observed within occupied habitat or unoccupied suitable habitat. Approximately 101,000 square feet (2.31 acres) of unoccupied habitat is available for expansion in the immediate area.

- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper slope, aspect, and soil types which are fairly strict. However, this population of shining navarretia

does occur at a higher elevation than is typical for this species and its conservation as a potential ecotype should be a priority. Therefore diversity of habitat that this taxon can occupy is limited to grasslands, on gentle slopes above valley bottoms (especially at lower elevations), and on Altamont-Fontana complex and Los Gatos or Rincon series soils. Surveys, acquisition, and any introduction activities related to this taxon should be directed at these habitat criteria.

Thomas South

A total of two populations of covered plant species were observed within the Thomas South property (Table 11, Figure 5) during 2014 surveys. These populations include the species Brewer's dwarf flax and shining navarretia. This total does not include rare plant populations documented by Nomad in 2011 – 2013 such as big tarplant and Diablo helianthella. Aside from these populations no previously known CNDDB occurrences are known from this property. During Nomad's previous years' surveys this property was referred to as Thomas Kreigor.

It should also be noted that a significant discovery of a non-covered, but special-status plant species population was made during 2014 surveys. This species is Lime Ridge navarretia (*Navarettia gowenii*) and is discussed in more detail in Section 4.2 below.

Table 11. Covered Plant Species Populations Recorded on the Thomas South Property

Population Number	Species Name	Common Name	Status	Number of Individuals
Hebr1	*Hesperolinon breweri*	Brewer's dwarf flax	Covered CRPR 1B.2	2,000
Nani1	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	50

Population Number	Species Name	Common Name	Status	Number of Individuals
Hebr1	*Hesperolinon breweri*	Brewer's dwarf flax	Covered CRPR 1B.2	2,000
Nani1	*Navarretia nigelliformis* subsp. *radians*	shining navarretia	Covered CRPR 1B.2	50

Black Diamond Mines
Hebr 1
Nani 1
Ang
Irish Canyon
Thomas Southern
Barron
Lentzner
Chaparral Springs
Clayton Ranch
N
W
E
S
NOMAD ECOLOGY

December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species
Scientific Name
Navarretia nigelliformis subsp. radians
Hesperolinon breweri

Acquisition Parcels
Public Land and Easements
Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 5
Covered Plant Species
Observed on Thomas Southern Property
East Contra Costa County
Habitat Conservancy

East Contra Costa County Habitat Conservancy

1:12,000
0 600 1,200
Feet

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

Brewer's dwarf flax (Hebr2)

On June 6, 2014, a previously undocumented population of Brewer's dwarf flax was observed along the northern boundary of the property north of the barn and paved road and between two stock ponds (Figure 5). This population is comprises a single colony of approximately 2,000 individuals, enumerated by direct count, occupying approximately 9,000 feet (0.21 acre) of annual grassland habitat. This colony is positioned on a northern aspect on a gentle slope flanking Kreigor Peak. This population lies at approximately 1,368 feet in elevation and is supported by Altamont Fontana Complex soils (USDA 1977) that can be characterized as clay barren. Associate species include threeray tarweed (*Deinandra lobbii*), Italian ryegrass*, Great Valley gumweed (*Grindelia camporum*), Jepson's coyote thistle (*Eryngium jepsonii*), soap plant (*Chlorogalum pomeridianum* subps. *pomeridianum*), soft chess*, and cream sacs (*Castilleja rubicundula* subsp. *lithospermoides*). A moderate abundance of medusahead grasss* was also recorded as occurring with this population.

Photo 16. Clay barren habitat of Hebr1.

Photo 17. Individuals of Hebr1 in flower and bud.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were setting seed at the time of the observation. Size of individuals averaged 10 inches which represents the largest average size of individuals for any population of Brewer's dwarf flax observed in 2014.

- Age Structure: This characteristic is not applicable as Brewer's dwarf flax is an annual species.

- Reproductive Success: At the time of the observation, approximately 90 percent of the individuals were flowering and 5 percent were fruiting, the remaining 5 percent of individuals had yet to produce reproductive structures. All of the fruits/seeds inspected were either mature or maturing. An average of 6 inflorescences was estimated per individual. The total number of seed potentially produced in each inflorescence is 6. Based on the number of individuals and average number of inflorescences at this population the total possible number of seeds produced by this population in 2014 is presumed to be 72,000seeds (36 seeds per plant). This is the most abundant population observed during 2014 surveys.

- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers western to northern aspects on loamy soils in the ecotone of blue oak-grassland, chaparral-grassland, or occasionally in open grassland (Bartosh pers. observation). Population Hebr1 appeared to be underutilizing available and unoccupied ecotone habitat on loam soils within the immediate northern slopes of Kriegor Peak. Approximately 10 acres of unoccupied habitat is available for expansion in the immediate area. However, any attempts at population expansion should be focused on abating the threat posed by medusahead grass* which was observed occurring with this population and in the surrounding vicinity.

- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper

slope, aspect, and soil types which are not very strict however the abundance of populations relative to unoccupied suitable habitat is high. Therefore, there are likely specific unknown micro habitat requirements this species needs in order to successfully occupy specific locations. This population occupies habitat that is typical for this taxon in Contra Costa County. Surveys, acquisition, and any introduction activities related to this taxon should be directed at these habitat criteria.

Shining navarretia (Nani1)

On May 23, 2014, a previously undocumented population of shining navarretia was observed in the in the same vicinity as Hebr1 near the northern boundary of the Thomas Smith property on the northern flank of Kriegor Peak but immediately south of the paved road and west of the western most stock pond in the area (Figure 5). This is population is comprised of a single colony totaling 50 individuals in clay barren/annual grassland habitat occupying approximately 300 square feet (0.01 acre). The habitat this population occupies is on a northeast facing aspect of moderate slope immediately above the paved road that heads east at approximately 1,497 feet in elevation. The soils that support the western colony are of the Altamont-Fontana Complex (USDA 1977). Associate plant species observed include Italian ryegrass*, soft chess*, red brome*, Great Valley gumweed*, Jepson's coyote thistle, and chaparral clarkia (*Clarkia affinis*). A low abundance of medusahead grass* was also observed co-occurring with this population and is a common component of the grasslands on the northern flank of Kriegor Peak.

Photo 18. Nani1 individuals in clay barren habitat.

- Physical Condition: All individuals of this population appeared in good condition. No signs of disease, virus, herbivory, or nutrient deficiencies were observed on any individuals. This population is expected to survive and reproduce. Individuals were in flower and setting seed at the time of the observation. Size of individuals ranged from approximately 1 to 2 inches tall with some individuals having multi-branched inflorescences.

- Age Structure: This characteristic is not applicable as shining navarretia is an annual species.

- Reproductive Success: At the time of the observation, approximately 80 percent of the individuals were flowering and 10 percent were in fruit, and the remainder had not yet produced reproductive structures. All of the fruits/seeds inspected were either mature or maturing. An average of 6 flowers was estimated per individual. The total number of seed potentially produced in each capsule is 5. Based on the number of individuals and average number of inflorescences at this population the total possible number of seeds that could have been produced by this population in 2014 is presumed to be 1,500 seeds (30 seeds per plant). It is unknown at this time whether this population, represented by 50 individuals is self-sustaining over the long term. However, given this is an annual plant population prone to fluctuations in population numbers based on climatic conditions and it was only observed at one time (not over multiple years) it is possible the seed bank is abundant enough to maintain this population over the long term.
- Availability of Suitable Habitat: Within Contra Costa County, this taxon prefers gentle slopes that are slightly elevated valley bottoms, aspects are less of a factor although a majority of populations in the region are southerly. The soil types that support this species in Contra Costa County include Altamont-Fontana complex and Los Gatos or Rincon series soils in annual grassland habitat (Bartosh pers. observation). Population Nani1 appeared to be underutilizing available and unoccupied clay barren habitat within this portion of the Thomas South property. However, efforts to control medusahead grass* in this vicinity should be made prior to any population expansion efforts. Approximately 10 acres of unoccupied habitat is available for expansion in the immediate area to the east and west of this population on clay barren habitat.
- Diversity of Suitable Habitat: Based on the information associated with specific California Natural Diversity Database (CNDDB) (CDFW) locations in Contra Costa County and personal observations (Bartosh pers. observation) habitat requirements for this taxon including the proper slope, aspect, and soil types which are fairly strict. This population occupies habitat that is atypical for the elevation ranges for this taxon in Contra Costa County. Therefore this population may represent an ecotype adapted to the climate of Kriegor Peak.

4.2. NON-COVERED RARE PLANT OCCURRENCES

In addition to covered plant species, seven rare plant species (Table 12) not covered by the HCP/NCCP were observed during 2014 surveys. These plant species are included in the California Native Plant Society's *Inventory of Rare and Endangered Plants* (CNPS 2001; 2014). These species include: Contra Costa manzanita (*Arctostaphylos manzanita* subp. *laevigata;* CRPR 1B.2), small-flowered morning glory (*Convolvulus simulans* CRPR 4.2), serpentine bedstraw (*Galium andrewsii* subsp. *gatense* CRPR 4.2), Lime Ridge navarretia (*Navarretia gowenii;* CRPR 1B.1), howgwallow starfish (*Hesperevax caulescens;* CRPR 4.2), sylvan microseris (*Microseris sylvatica*; CRPR 4.2), and Michael's rein orchid (*Piperia michaelii,* CRPR 4.2).

Table 12. Number of Non-Covered Rare Plant Populations Recorded by Acquisition (2014)

Non-Covered Rare Plants	Barron	Roddy Ranch	Smith	Thomas South	Total # of Populations
Arctostaphylos manzanita subsp. *laevigata* Contra Costa manzanita	0	1	0	0	1
Convolvulus simulans small-flowered morning glory	0	4	1	0	5
Galium andrewsii subsp. *gatense* serpentine bedstraw	0	2	0	0	2
Navarretia gowenii Lime Ridge navarretia	0	0	0	1	1
Hesperevax caulescens hogwallow starfish	0	2	0	0	2
Microseris sylvatica sylvan microseris	0	1	0	0	1
Piperia michaelii Michael's rein orchid	0	1	0	0	1

4.2.1 Contra Costa manzanita

During surveys conducted on May 14, 2014 one population (Arla2) of Contra Costa manzanita was recorded on Roddy Ranch (Table 13; Figure 6). A total of three individuals were observed. It should be noted that Contra Costa manzanita in this part of the Mount Diablo region is pushing the boundary of its southern distribution and many of the individuals observed on Roddy Ranch appeared to be intermediates between Contra Costa manzanita and the common manzanita species (*Arctostaphylos manzanita* subsp. *manzanita*) which is more abundant in Black Diamond Mines Regional Preserve. The three individuals identified as Contra Costa manzanita determined based on an average of three to four inflorescence branches and bright green leaves.

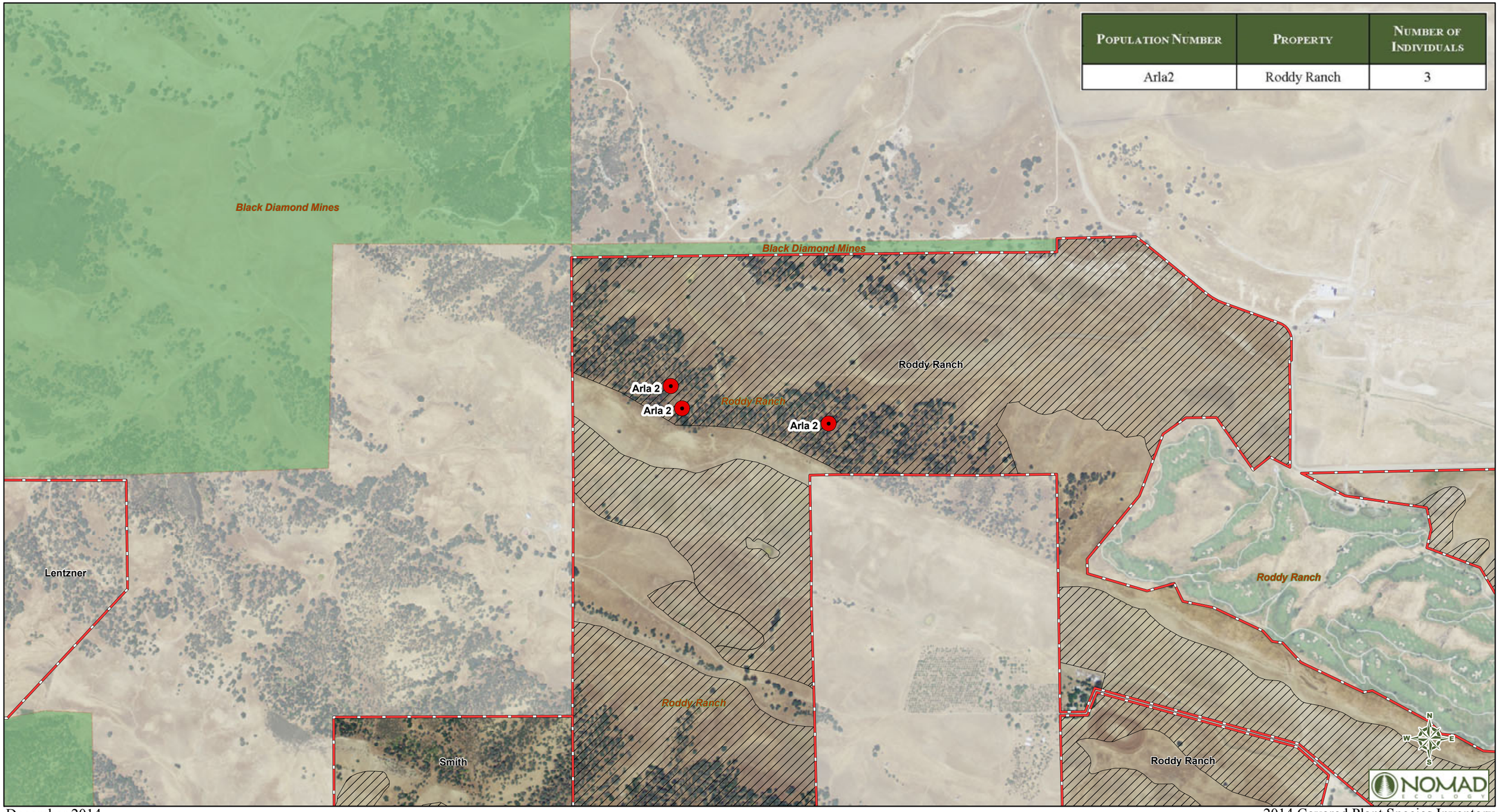
Table 13. Location of Contra Costa manzanita within Preserves

Population Number	Property	Number of Individuals
Arla2	Roddy Ranch	3

[+] Number of individuals determined by direct population count.

Population Arla2 was observed on Roddy Ranch property containing three individuals, supported by soils mapped as Los Gatos loam (USDA 1977). This population is located in the northwestern corner of Roddy Ranch on a steep north facing slope blue oak woodland ranging from 520 to 700 feet elevation.

Population Number	Property	Number of Individuals
Arla2	Roddy Ranch	3



December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species

Scientific Name

Arctostaphylos manzanita subsp. laevigata

Acquisition Parcels

Public Land and Easements

Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 6

Contra Costa Manzanita Locations

East Contra Costa County Habitat Conservancy

1:12,000

0 600 1,200 Feet

East Contra Costa County Habitat Conservancy

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

4.2.2 SMALL-FLOWERED MORNING GLORY

During surveys conducted April 10, 2014 a single population of small-flowered morning glory was recorded on the Smith property. (Table 14, Figure 7). During surveys conducted April 7, 9, and 10, 2014, four populations of small flowered morning glory were recorded on Roddy Ranch. Although this plant is widely distributed from the interior East Bay south to Baja California (Baldwin et al. 2012) it is extremely rare in Contra Costa County. Due to the results of the 2014 surveys this species in now considered more abundant than previously known data (CCH 2014) indicates.

Table 14. Locations of Small-Flowered Morning Glory within Preserves

POPULATION NUMBER	PROPERTY	NUMBER OF INDIVIDUALS
Cosi4	Roddy Ranch	182
Cosi5	Roddy Ranch	108
Cosi6	Roddy Ranch	750
Cosi8	Roddy Ranch	80
Cosi7	Smith Ranch	556

Population Cosi4 was observed on Roddy Ranch on April 7, 2014 totaling an estimated 182 individuals on clay barrens with sparse vegetation cover, supported by soils mapped as Altamont clay and Altamont-Fontana Complex (USDA 1977). This population is located on south and southeast facing aspects in and on the edges of Horse Valley ranging from 220 feet to 480 feet in elevation. A voucher specimen (Collection #912) was collected from this population.

Population Cosi5 was observed on Roddy Ranch on April 7, 2014 with an estimated 108 individuals on a silty-clay pocket with sparse vegetation cover, supported by soils mapped as Altamont clay and Altamont-Fontana Complex (USDA 1977). This population is located on south and southeast facing aspects of moderate slopes in the western end of Deer Valley ranging from 250 to 350 feet in elevation.

Population Cosi6 was observed on Roddy Ranch on April 9, 2014 with an estimated 750 individuals on clay barrens dominated by bur clover (*Medicago polymorpha**), supported by soils mapped as Pescadero clay loam and Altamont-Fontana Complex (USDA 1977). This population is located on south facing moderate slopes in Deer Valley ranging from 190 to 230 feet elevation. A voucher specimen (Collection #928) was collected from this population.

The population observed on Smith (Cosi7) was estimated at 556 individuals on clay barrens, with little grassland vegetative cover, supported by soils mapped as Altamont clay and Altamont-Fontana Complex (USDA 1977).This population is located on a south facing aspect in the west end of Briones Valley at approximately 500 feet elevation. This population is threatened by an infestation of charlock*. A voucher specimen (Collection #931) was collected within this population.

Population Cosi8 was observed on Roddy Ranch on April 10, 2014 with an estimated 80 individuals on clay barrens with low vegetation cover, supported by soils mapped as Altamont clay (USDA 1977). This population is located on a south facing moderate slope on the southern side of Deer Valley at approximately 460 feet elevation.

Population Number	Property	Number of Individuals
Cosi4	Roddy Ranch	182
Cosi5	Roddy Ranch	108
Cosi6	Roddy Ranch	750
Cosi8	Roddy Ranch	80
Cosi7	Smith Ranch	556

December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species
Scientific Name
Convolvulus simulans

Acquisition Parcels
Public Land and Easements
Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 7

Small Flowered Morning Glory

Locations

East Contra Costa County

Habitat Conservancy

East Contra Costa County Habitat Conservancy

1:14,000

0 600 1,200 Feet

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

4.2.3 SERPENTINE BEDSTRAW

During 2014 surveys two populations (Gaga5 & Gaga6) of serpentine bedstraw were recorded on Roddy Ranch (Table 15; Figure 8). Together these populations total 25 individuals. It should be noted that although the common name may imply this species is restricted to serpentine habitat is can also grow off serpentinite. This species is primarily distributed in the Diablo Range however it is also found in the Santa Cruz Mountains. It is uncommon in the Mount Diablo Region.

Table 15. Location of Serpentine Bedstraw within Preserves

POPULATION NUMBER	PROPERTY	NUMBER OF INDIVIDUALS
Gaga5	Roddy Ranch	10
Gaga6	Roddy Ranch	15

Population Gaga5 was observed on Roddy Ranch property on May 5, 2014 with an estimated 10 individuals, supported by soils mapped as Los Gatos loam (USDA 1977). This population is located in the northwestern portion of Roddy Ranch on a steep north facing aspects in blue oak woodland at approximately 645 feet elevation.

Population Gaga6 was observed on Roddy Ranch on May 5, 2014 with an estimated 15 individuals, supported by soils mapped as Los Gatos loam (USDA 1977). This population is located along the western boundary of Roddy Ranch and the Smith Property on a steep north facing slope in grey pine (*Pinus sabiniana*) and interior live oak woodland (*Quercus wislizeni* var. *wislizeni*) at approximately 670 feet elevation.

Population Number	Property	Number of Individuals
Gaga5	Roddy Ranch	10
Gaga6	Roddy Ranch	15

December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species

Scientific Name

Galium andrewsii subsp.gatense

Acquisition Parcels

Public Land and Easements

Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 8

Serpentine Bedstraw Locations

East Contra Costa County Habitat Conservancy

1:8,000

0 300 600

Feet

East Contra Costa County Habitat Conservancy

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

4.2.1 LIME RIDGE NAVARRETIA

During 2014 surveys one population (Nago1) of Lime Ridge navarretia was recorded on the Thomas South property (Table 16; Figure 9). This species is a recently described taxon new to science in 2007 and added to the CNPS Inventory in 2008 (CNPS 2014). Prior to this year's survey effort Lime Ridge had only been known from two locations Lime Ridge Open Space in Walnut Creek and Quito Canyon in Stanislaus County. Mr. Bartosh has been monitoring the Lime Ridge populations for the past three years and these populations have not produced more than 100 individuals in each of those years. Population counts are not available for the Quito Canyon population (CNDDB 2014). Based on the population count in this report the Lime Ridge navarretia population at the Thomas South property is the most abundant currently known in Contra Costa County. This discovery gives us the opportunity to learn more about a plant whose habitat requirements we are just beginning to understand.

Table 16. Location of Lime Ridge navarretia within Preserves.

POPULATION NUMBER	PROPERTY	NUMBER OF INDIVIDUALS
Nago1	Thomas Kriegor South	421

The population on the Thomas Southern property (Nago1) was observed on May 23, 2014 with an estimated 421 individuals on a clay barren in grassland with low vegetation cover, supported by soil mapped as Altamont-Fontana complex and Los Gatos loam (USDA 1977). This population is located on moderate to steep north facing slope ranging from 1450 to 1520 feet in elevation. Medusahead* occupies much of the habitat associated with this population. This species of invasive grass has been known to invade other harsh soil types in California and poses a threat to this rare plant population.

Population Number	Property	Number of Individuals
Nago1	Thomas Kriegor South	421

Black Diamond Mines

Nago 1

Nago 1

Nago 1

Nago 1

Nago 1

Nago 1

Nago 1

Ang

Thomas Southern

Irish Canyon

Barron

Leutzner

December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species

Scientific Name

Navarretia gowenii

Acquisition Parcels

Public Land and Easements

Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 9

Lime Ridge Navarettia

Locations

East Contra Costa County

Habitat Conservancy

1:12,000

0 600 1,200

Feet

East Contra Costa County Habitat Conservancy

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

4.2.2 HOGWALLOW STARFISH

During survey conducted in 2014 two populations (Hesc1 & Hesc2) of hogwallow starfish were recorded on Roddy Ranch (Table 17; Figure 10). Together these populations total 114 individuals. These populations co-occurred with either shining navarretia or round-leaved filaree.

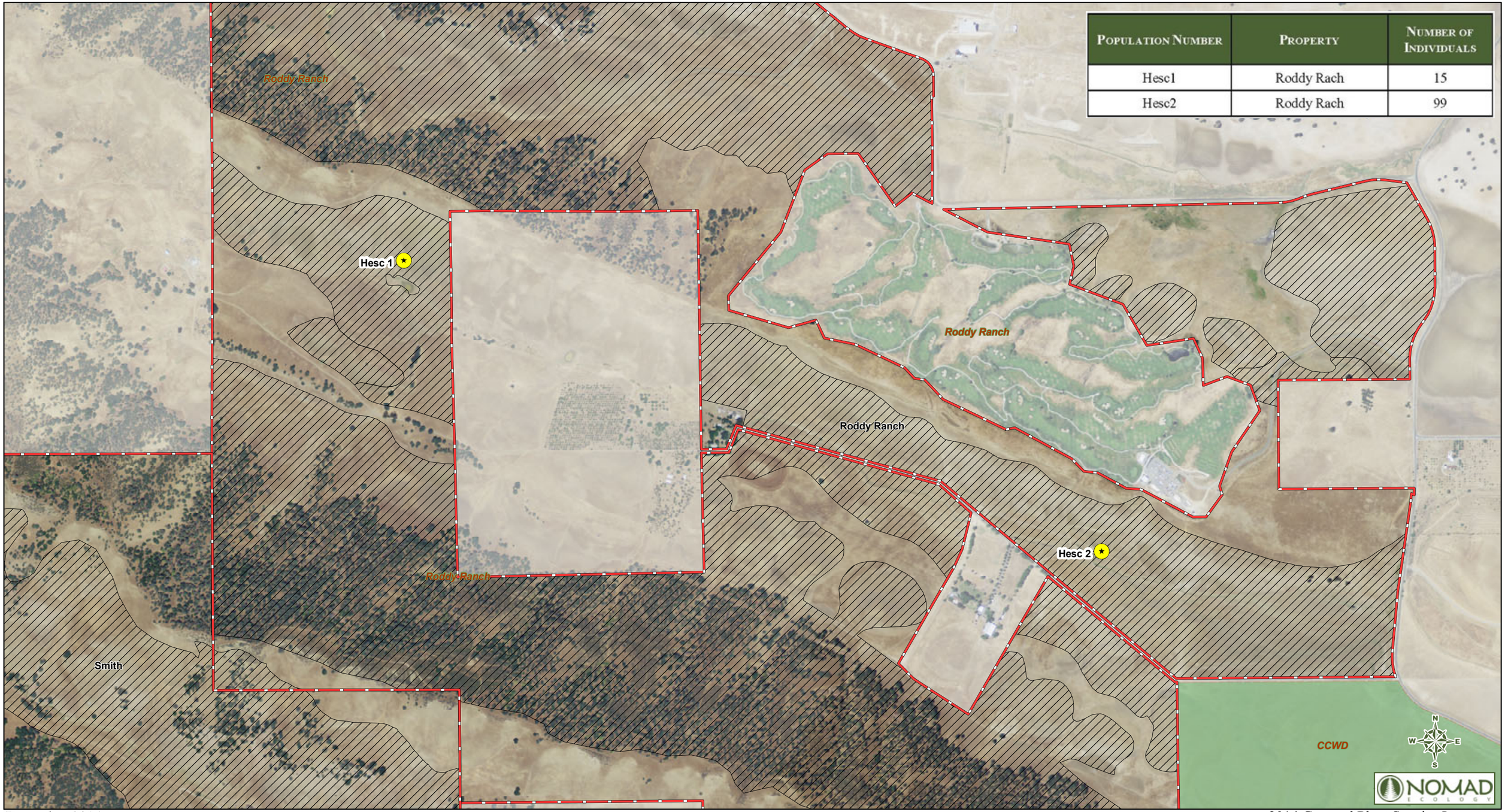
Table 17. Location of hogwallow starfish within Preserves

POPULATION NUMBER	PROPERTY	NUMBER OF INDIVIDUALS
Hesc1	Roddy Rach	15
Hesc2	Roddy Rach	99

Population Hesc1 was observed on Roddy Ranch on April 17, 2014 with an estimated 15 individuals on a clay barren pocket with sparse vegetation cover, supported by soils mapped as Altamont-Fontana Complex (USDA 1977).This population is located on south facing moderate slopes in the north end of Deer Valley at approximately 325 feet elevation.

Population Hesc2 was observed on Roddy Ranch on April 9, 2014 with an estimated 99 individuals, growing on the border of soils mapped as Rincon clay loam and Altamont-Fontana complex (USDA 1977). This population is located on south facing moderate slopes just north of Deer Creek at approximately 200 feet in elevation.

Population Number	Property	Number of Individuals
Hesc1	Roddy Rach	15
Hesc2	Roddy Rach	99



December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species
Scientific Name
Hesperevax caulescens

Acquisition Parcels
Public Land and Easements
Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 10
Hogwallow Starfish
Locations
East Contra Costa County
Habitat Conservancy

East Contra Costa County Habitat Conservancy

1:12,000
0 600 1,200
Feet

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

4.2.3 SYLVAN MICROSERIS

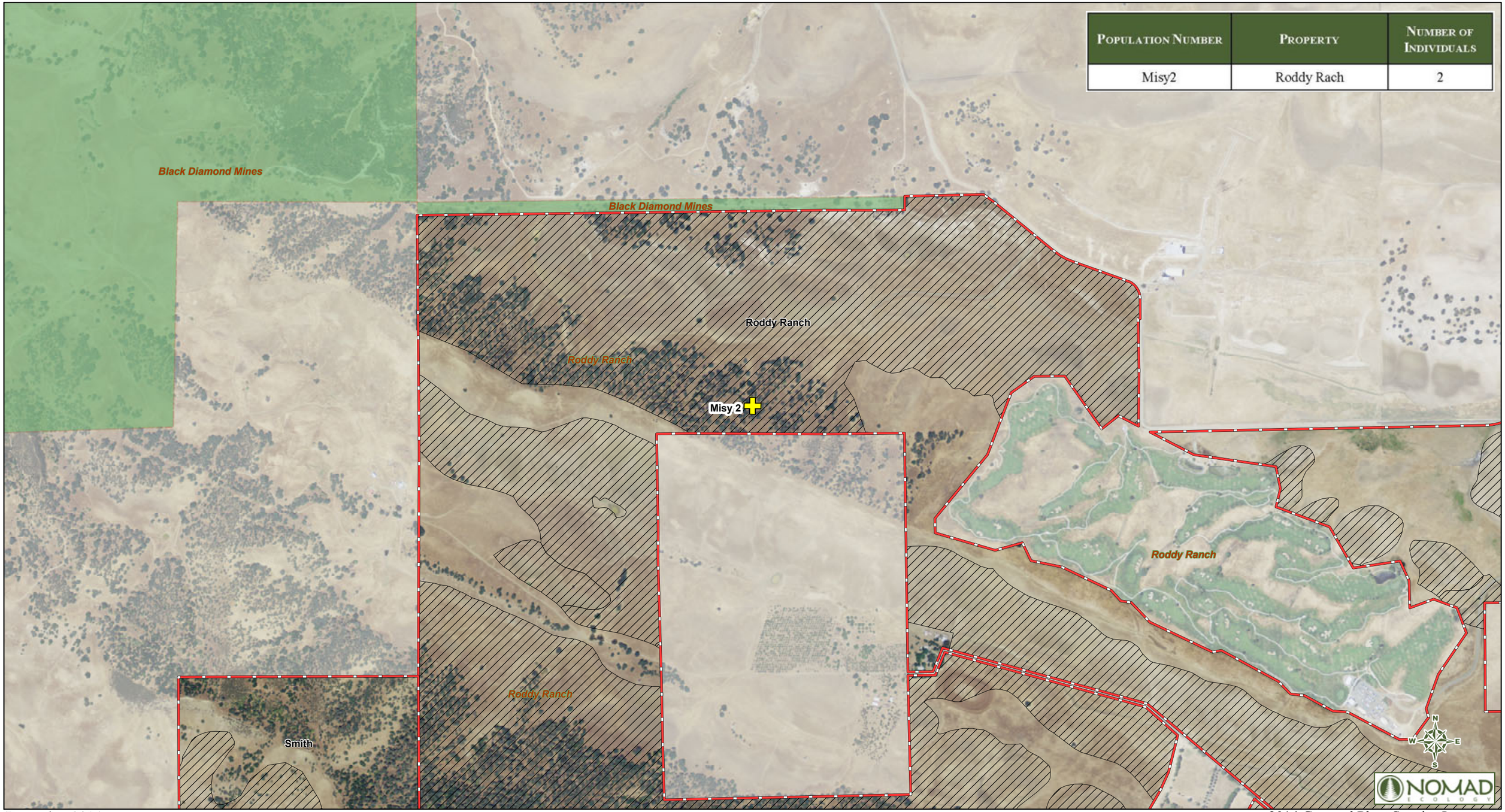
During 2014 surveys one population (Misy2) of sylvan microseris was recorded on Roddy Ranch (Table 18; Figure 11).

Table 18. Locations of sylvan microseris within Preserves

POPULATION NUMBER	PROPERTY	NUMBER OF INDIVIDUALS
Misy2	Roddy Rach	2

Population Misy2 was observed on Roddy Ranch property on May 14, 2014 with an estimated 2 individuals, supported by soils mapped as Los Gatos loam (USDA 1977). This population is located in the northern portion of Roddy Ranch on a steep north facing slope blue oak woodland at approximately 440 feet elevation.

Population Number	Property	Number of Individuals
Misy2	Roddy Rach	2



December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species
Scientific Name
Microseris sylvatica

Acquisition Parcels
Public Land and Easements
Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 11
Sylvan Microseris
Locations
East Contra Costa County
Habitat Conservancy

East Contra Costa County
Habitat Conservancy

1:12,000
0 600 1,200
Feet

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

4.2.4 MICHAEL'S REIN ORCHID

During 2014 surveys one population (Pimi1) of Michael's rein orchard was recorded on Roddy Ranch (Table 19; Figure 12).

Table 19. Locations of Michael's rein orchard within Preserves

POPULATION NUMBER	PROPERTY	NUMBER OF INDIVIDUALS
Pimi1	Roddy Rach	2

[+] Number of individuals determined by direct population count.

Population Pimi1 was observed on Roddy Ranch property on May14, 2014 containing 2 individuals, supported by soils mapped as Los Gatos loam (USDA 1977). This population is located in the southwestern portion of Roddy Ranch on a ridge top just off a dirt road in blue oak woodland at approximately 825 feet elevation.

Population Number	Property	Number of Individuals
Pimi1	Roddy Rach	2

December 2014

2014 Covered Plant Species Inventory

Legend

Covered Plant Species
Scientific Name
Piperia michaelii

Acquisition Parcels
Public Land and Easements
Survey Areas

A population is defined as a single or group of colonies within 0.25 mile of each other and not separated by significant habitat discontinuities.

Figure 12

Michael's Rein Orchid Locations

East Contra Costa County Habitat Conservancy

1:8,000

0 300 600

Feet

East Contra Costa County Habitat Conservancy

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North.

Contra Costa County, California

Section 5. SUMMARY AND RECOMMENDATIONS

5.1. SUMMARY

Based on the results of the 2014 surveys conducted during the months of March, April, May, June, and September, a total of 13 populations of covered plant species were recorded. To date, 74 percent of the population specific goals for all covered species have been met (Table 20). No population specific goals were identified for San Joaquin spearscale or shining (adobe) navarretia other than landscape- and community-level measures aimed at maintaining or enhancing its preserve populations. Overall, populations of covered plant species are considered healthy based on positive observations of physical condition, reproductive success, and abundance and diversity of suitable habitat. A majority of the populations of covered species recorded did not appear to be threatened by non-native invasive weeds, with the exception of some shining navarretia and the round-leaved filaree populations. These are discussed below.

Table 20. Summary of Biological Goals Met Based on 2011- 2014 Surveys.

SPECIES RECORDED	BIOLOGICAL GOALS – # OF POPULATIONS TARGETED FOR PROTECTION	2011 POPULATIONS RECORDED (NOMAD 2011)	2012 POPULATIONS RECORDED (NOMAD 2012)	2013 POPULATIONS RECORDED (NOMAD 2013)	2014 POPULATIONS RECORDED	POPULATIONS NEEDED TO MEET BIOLOGICAL GOALS
Arctostaphylos auriculata Mount Diablo manzanita	2	0	0	0	0	2
Atriplex depressa brittlescale	2	1	0	0	0	1
Extriplex joaquinana San Joaquin spearscale	N/A	6*	1	1	0	N/A
Blepharizonia plumosa big tarplant	5^	2	1	8	1	0
California macrophylla round-leaved filaree	2	1**	0	0	1	0
Calochortus pulchellus Mt. Diablo fairy lantern	1	0	1	3	0	0
Delphinium recurvatum recurved larkspur	2	0	0	0	0	2
Helianthella castanea Diablo helianthella	2	1	5	3	3	0
Hesperolinon breweri Brewer's dwarf flax	3	0	0	0	3	0
Navarretia nigelliformis subsp. *radians* shining navarretia	N/A	0	0	0	5	N/A

^ There is a discrepancy between Biological Goals as presented in Table 5-1 (3 populations) and page 5-126 (5 populations) of the HCP/NCCP.

* One of these populations a result of translocation efforts.

** Observation is a result from surveys by Insignia Environmental (2011).

5.2. RECOMMENDATIONS

Recommendations are based on details of field observations with the purpose of meeting biological goals as outlined in the HCP/NCCP, weed control, additional habitat models, and gathering information on undocumented rare vegetation types.

5.2.1 COVERED PLANT INVENTORIES

Since population specific biological goals have not been fully met, covered plant inventories should be conducted during the appropriate blooming periods, based on suitable habitat, in 2015. These surveys should be directed at unsurveyed Conservancy parcels, or at the remaining portions of surveyed Conservancy parcels, for relevant covered and no-take plant species. Covered and/or no-take species and preserves targeted for next year should be determined based on the current needs of the HCP/NCCP and the direction of Conservancy personnel. However, efforts in 2015 should focus on covered plant species that have yet to be found on Conservancy acquisitions, particularly, recurved larkspur and brittlescale on the Vaquero Farms preserves; and Mount Diablo manzanita on the Viera-Perley aquisition.

5.2.2 POPULATION MONITORING

Of the covered plant species populations recorded in 2014, seven were recorded as having small population numbers (Table 21), which we define as 100 individuals or less. Based on 2014 observations, it is possible these populations may either be in decline or too small to be viable for the long term. The HCP/NCCP states that several surveys per season or surveys over multiple years may be necessary to assess all relevant site and population characteristics to ensure that populations within potential preserves are healthier than populations lost to covered activities (Jones and Stokes 2006). Population monitoring should be conducted on a regular basis. However, priorities for monitoring should be based on populations that are in danger of becoming extirpated because of low population numbers or showing signs of decline. For these populations a census should be conducted annually and should result in recommendations for enhancing and/or expanding the population to ensure survivability. Populations that have large numbers of individuals or are known to be sustaining themselves based on existing data could be monitored less frequently, every two or three years.

It should be noted that low numbers for Brewer's dwarf flax and big tarplant may be due to below average rainfall totals for the 2013/2014 rainy season or unfavorable germination cues such as temperatures after the first major rainfall event (Levine et al. 2008). As annual plant species they are more susceptible to fluctuations in annual weather patterns and precipitation. Nevertheless these populations should be priorities for monitoring efforts. Management considerations for these taxa should be focused on annual population monitoring paying particular attention to number of individuals. These efforts should be conducted in all types of rainfall years to understand how these populations are affected by varying rainfall patterns.

Table 21. Covered Plant Species Populations with Low Population Numbers.

Population Number	Species Name/ Common Name	Property	Previous CNDDB Census Data (# of Individuals)	Number of Individuals (2014)
Blpl12	*Blepharizonia plumosa* big tarplant	Smith	No Data	1
Cama2	*California macrophylla*	Roddy Ranch	No Data	85
Hebr2	*Hesperolinon breweri* Brewer's dwarf flax	Roddy Ranch	No Data	63
Hebr3	*Hesperolinon breweri* Brewer's dwarf flax	Roddy Ranch	No Data	88
Heca11 (CNDDB EO#70)	*Helianthella castanea* Diablo helianthella	Roddy Ranch	136	64
Heca12 (CNDDB EO#71)	*Helianthella castanea* Diablo helianthella	Roddy Ranch	36	3
Nani1	*Navarretia nigelliformis* subsp. *radians* shining navarretia	Thomas South	No Data	50

5.2.3 Weed Control

During 2014 surveys several noxious weed species populations were recorded within preserve properties. The most abundant weed infestations were of medusahead grass (*Elymus caput-medusae**) on Roddy Ranch and Thomas South. This graminoid species has the ability covert native and non-native grasslands into monocultures of this invasive grass and can directly threaten covered plant species habitat. A low abundance of yellow starthistle* was observed threatening big tarplant on Smith. Management considerations for these weed species should concentrate on abatement and eventual eradication by first compiling known treatment strategies then determining which may be the most effective based on tools and budget available to the Conservancy. Fine scale information on local timing of germination of these weeds and the covered plant species they threatened should be collected to maximize weed abatement effectiveness while avoiding harm to rare plants. Additionally, charlock* may have a negative effect on shining navarretia habitat however little is known about how this species interacts with clay barrens therefore it should be monitored before taking action. Locations of these infestations are associated with the covered plant population numbers depicted below (Table 22).

Table 22. Noxious Weed Threats.

Weed Species Name/ Common Name	Property	Population Number	Recommended Activity
Centaurea solstitialis yellow starthistle	Smith	Blpl12	Abatement
Elymus caput-medusae medusahead grass	Roddy Ranch Thomas South	Cama2, Hebr2 Nani1 Nani2	Abatement
Sinapis arvensis charlock	Roddy Ranch	Nani4	Monitor

5.2.4 Lime Ridge Navarretia Habitat Model

Lime Ridge navarretia is a relatively recently recognized species and based on its currently known distribution may be naturally rare. Although Lime Ridge navarretia is not a covered species under this HCP/NCCP its recent recognition and narrow distribution make it one of the rarest plants in the inventory area and we recommend it be considered as an addition to the no-take species list as a part of the HCP/NCCP. To support this effort a habitat model should be developed to quantify the availability of potentially suitable within the inventory area. Habitat for this species is just beginning to be understood on a local scale, especially with the discovery of the population on Thomas South. With this new insight into Lime Ridge navarretia habitat, a habitat model based on vegetation, soil, and geology criteria could be developed to aid in locating additional populations. The development of a habitat model would increase the possibility of the discovery of additional populations within the HCP Inventory area.

5.2.5 Clay Barren Study

Clay barren habitat, as observed in the annual grasslands of HCP acquisition properties, supports an abundance of covered and other rare plant species. However, little is known about this type of habitat locally, and it is not described in the literature. Describing the composition and vegetative cover of this habitat would elevate its' prominence in the literature, which would further support its' recognition as a sensitive natural community.

Section 6. REFERENCES

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Personal Observations

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APPENDIX A CNDDB FIELD FORMS

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 5/14/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Arctostaphylos manzanita ssp. laevigata

Common Name: Contra Costa manzanita

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 3 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar St
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Western edge of Horse Valley on Roddy Ranch

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 640 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ⊘ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ⊘ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 603711
4199182

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing among Quercus douglasi and Rhamnus illicifolia

Please fill out separate form for other rare taxa seen at this site. shapefile = Arla 2

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ⊘ Good ○ Fair ○ Poor

Immediate AND surrounding land use: open land, grazing

Visible disturbances: none

Threats: none

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Mail to:
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California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 9/24/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Blepharizonia plumosa

Common Name: big tarplant

Species Found? (X) Yes ( ) No _____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ( ) Yes ( ) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # (X) No ( ) Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh/Nomad Ecology
Address: 832 Escobar Street
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information

Phenology:
_____ % vegetative 0 % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

( ) wintering ( ) breeding ( ) nesting ( ) rookery ( ) burrow site ( ) lek ( ) other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy
Quad Name: _____ Elevation: 653ft
T___ R___ Sec___, ___1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): _____
T___ R___ Sec___, ___1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: _____
DATUM: NAD27 ( ) NAD83 (Ø) WGS84 ( ) Horizontal Accuracy: _____ meters/feet
Coordinate System: UTM Zone 10 (Ø) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )
Coordinates: 610220
4196268

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*
Altamont clay. more sparsely vegetated than neighboring soil types. Dominants are Brassica nigra, Festuca perennis, Trifolium hirtum, Erodium cicutarium, Avena sp, Carduus pycnocephalus, Bromus madritensis rubens. A few Centaurea solstitialis plants are present.

Please fill out separate form for other rare taxa seen at this site. Shapefile = BigTP

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent (X) Good ( ) Fair ( ) Poor
Immediate AND surrounding land use: Open space / grazing
Visible disturbances: None
Threats: Non-native weeds
Comments: Site rated as good and not excellent because of the abundance of Brassica nigra

Determination: *(check one or more, and fill in blanks)*

- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ( ) yes ( ) no

Smith

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1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 4/7/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: California macrophylla

Common Name: round-leafed filaree

Species Found? ☒ Yes ○ No _____ If not found, why?

Total No. Individuals: 85 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 913 Number _____ Museum / Herbarium

Reporter: Heath Bartosh / Nomad Ecology

Address: 832 Escobar Street
Martinez, Ca 94553

E-mail Address: hbartosh@nomadecology.com

Phone: (925) 228-1027

Plant Information

Phenology:
0 % vegetative | 50 % flowering | 50 % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Roddy Ranch. Near western end of horse valley south of EBRPD easement

County: Contra Costa Landowner / Mgr: EBRPD / Contra Costa Conservancy

Quad Name: _____ Elevation: 317 feet

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ☒ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ☒ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 604551
4199391

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*
On west facing clay barren with 30-50% cover. With Erodium botrys, Navarretia (sp.) nigelliformis, Hesperevax sparsiflora var sparsiflora microseris douglasii ssp. douglasii Medicago polymorpha, Lotus wrangelianus,

Please fill out separate form for other rare taxa seen at this site. shapefile = Cama2

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ☒ Good ○ Fair ○ Poor

Immediate AND surrounding land use: Open space and grazing

Visible disturbances: Cattle hoof prints

Threats: Elymus caput-medusae on east facing slope on opposite hill but some in California macrophylla

Comments: patch

Determination: *(check one or more, and fill in blanks)*
- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

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1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 4/10/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Convolvulus simulans

Common Name: Small flowered Morning glory

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 556 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: 931 Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar st
Martinez, Ca 94553
E-mail Address: hbartosh@mandeecology.com
Phone: (925) 228-1027

Plant Information

Phenology:
20 % vegetative | 50 % flowering | 30 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
South/Dusty Ranch beyond the terminus of Briones Valley Rd at the west end of Briones Valley

County: Contra Costa Landowner / Mgr: EBRPD/ Conservancy
Quad Name: _____ Elevation: ~500 feet
T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____
T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____
DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: _____ meters/feet
Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○
Coordinates: 602620
4197517

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*
Clay Barren on South facing slope across creek/perm, low vegetation cover in 20-30% with Sinapis arvensis, Torilis nodosa, Erodium circutarium, Festuca perennis Sedums copper aspect.

Please fill out separate form for other rare taxa seen at this site. 5 simplifies Con 7

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ⊘ Fair ○ Poor
Immediate AND surrounding land use: Open space / grazing
Visible disturbances: Cattle grazing
Threats: Sinapis arvensis
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Smith

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1807 13th Street, Suite 202
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For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 4/7/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Convolvulus simulans

Common Name: Small flowered morning-glory

Species Found? ∅ Yes ○ No _____ If not found, why?

Total No. Individuals: 182 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: 912 Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar Street
Martinez, Ca 94553
E-mail Address: hbartosh@sunmadecology.com
Phone: (925) 229-1027

Plant Information

Phenology:
80 % vegetative | 20 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Horse valley just west of Empire mine road crossover

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 2477'

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 600500
4199592

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Clay barren with sparse vegetative cover with Toriles sp, Sinapis arvensis medicago polymorpha, Croton setigerus, Avena fatua, (3 banners) South facing

Please fill out separate form for other rare taxa seen at this site. 6 shapefile = Cosi 4

Site Information

Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ○ Fair ○ Poor

Immediate AND surrounding land use: Open space / grazing

Visible disturbances: Cattle foot prints

Threats: Toriles sp. Carduus pycnocephalus

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

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Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 4/7/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Convolvulus simulans

Common Name: Small flowered morning glory

Species Found? ○ Yes ○ No _____ If not found, why?

Total No. Individuals: 108 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar St
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology
Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

South east facing slope of moderate gradient

County: Contra Costa Landowner / Mgr: EBRPD / Contra Costa Conservancy

Quad Name: _____ Elevation: 335'±

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 Ø WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 Ø UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 603796
4198835

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Silty clay pocket with sparse vegetation cover (30-40%) with Bromus hordeaceus, Hesperevax sparsiflora sparsiflora, Plagiobothrys acanthocarpus, Erodium cicutarium, Lepidium nitidum, Festuca perennis, Crassula connata.

Please fill out separate form for other rare taxa seen at this site. shapefile = Cos. 5

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ○ Fair ○ Poor

Immediate AND surrounding land use: Open Space ; grazing

Visible disturbances: none

Threats: none

Comments: No serious threats.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

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Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 5/9/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Convolvulus simulans

Common Name: Small flowered morning glory

Species Found? ∅ Yes ○ No _____ If not found, why?

Total No. Individuals: 750 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: 928 Number _____ Museum / Herbarium

Reporter: Heath Bartosh

Address: 832 Escobar St
Martinez, Ca 94553

E-mail Address: hbartosh@nomadecology

Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
North side of deer valley on Roddy

County: Contra Costa Landowner / Mgr: EBRPD / Contra Costa Conservancy

Quad Name: _____ Elevation: 1885 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ∅ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ∅ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 606577
4197749

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

In clay Barren on South facing slope on north side of deer valley dominated by medicago polymorpha.

Please fill out separate form for other rare taxa seen at this site. shapefile Conv 6

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ∅ Good ○ Fair ○ Poor

Immediate AND surrounding land use: Open Space / grazing

Visible disturbances: None

Threats: None

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

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1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only			
Source Code:		Quad Code:	
Elm Code:		Occ No.:	
EO Index:		Map Index:	

Date of Field Work (mm/dd/yyyy): 4/10/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Convolvulus simulans

Common Name: Small flowered morning glory

Species Found? Ø Yes ○ No ______ If not found, why?

Total No. Individuals: 30 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: ______ Number ______ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar St
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information

Phenology:

20	50	30
% vegetative	% flowering	% fruiting

Animal Information

______ # adults ______ # juveniles ______ # larvae ______ # egg masses ______ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

West side of Roddy Ranch in deer Valley West of Sunnie South of Tower

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: ______ Elevation: 460 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H○ M○ S○ Source of Coordinates (GPS, topo. map & type): ______

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H○ M○ S○ GPS Make & Model: ______

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 604127
4198030

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

South facing Clay Barren with 30-40% cover Erodium cicutarium, Torilis nodosa, Hesperevax sparsiflora sparsiflora, Medicago polymorpha, Festuca perennis, Erodium botrys, Geranium molle

Please fill out separate form for other rare taxa seen at this site. 1 shapefile Cap. 8

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent Ø Good ○ Fair ○ Poor

Immediate AND surrounding land use: green space & grazing

Visible disturbances: None

Threats: Adjacent North slope has Elymus caput-medusae & Centaurea solstitialis

Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): ______
☐ Compared with specimen housed at: ______
☐ Compared with photo / drawing in: ______
☐ By another person (name): ______
☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

CDFW/BDB/1747 Rev. 8/10/2014

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For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 5/14/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Galium andrewsii subsp. gatense

Common Name: Serpentine bedstraw

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 10 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar st
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Western edge of horse Valley on Roddy Ranch

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 654 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ⊘ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ⊘ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 603491
4199368

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Quercus douglasii with Adenostoma fasciculatum and Rhamnus illicifolia

Please fill out separate form for other rare taxa seen at this site. Shapefile Gaga 5

Site Information Overall site/occurrence quality/viability (site + population): ⊘ Excellent ○ Good ○ Fair ○ Poor

Immediate AND surrounding land use: open space, grazing

Visible disturbances: none

Threats: none

Comments: Highly intact habitat

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Roddy

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1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 5/14/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Galium andrewsii subsp gatense

Common Name: Serpentine bedstraw

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 15 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh

Address: 832 Escobar
Martinez, Ca 94553

E-mail Address: hbartosh@nomadecology.com

Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

West side of Deer Valley on Roddy

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 675 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ⊘ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ⊘ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 603370
4197756

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Pinus sabiniana and Quercus wislizenii woodland.

Please fill out separate form for other rare taxa seen at this site.

shapefile = Gaga 6

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ⊘ Good ○ Fair ○ Poor

Immediate AND surrounding land use: open land, grazing

Visible disturbances: none

Threats: none

Comments: Good habitat, but lots of Bromus diandrus

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Roddy

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California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 5/15/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Helianthella castanea

Common Name: Diablo helianthella

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 3+ Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? 71 Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 332 Escobar st
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Deer Valley portion of Roddy Ranch up slope from Jacks house

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 550 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 605470
4197103

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On north west facing slope, steep on margin of Adenostoma fasciculatum in Quercus douglasii with Avena barbata, Daucus pusillus, Bromus diandrus, Trifolium laxa, Galium parisiense Sheracia arvensis

Please fill out separate form for other rare taxa seen at this site. 1 shape = heca 12

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ⊘ Good ○ Fair ○ Poor

Immediate AND surrounding land use: Open Space and grazing

Visible disturbances: none

Threats: None

Comments: Height 10", 3 heads per plant Good expansion potential within non-native grassland habitat

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Roddy

Mail to:
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Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code:		Quad Code:	
Elm Code:		Occ No.:	
EO Index:		Map Index:	

Date of Field Work (mm/dd/yyyy): 5/20/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Helianthella castanea

Common Name: Diablo helianthella

Species Found? ☒ Yes ◯ No ________ If not found, why?

Total No. Individuals: 31 Subsequent Visit? ◯ Yes ◯ No

Is this an existing NDDB occurrence? 70 Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: ________ Number ________ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar Street
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information

Phenology: 39 % vegetative 0 % flowering 61 % fruiting

Animal Information

____ # adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

West side of Deer Valley Road

County: Contra Costa County Landowner / Mgr: EBRPD / Contra Costa Conservancy

Quad Name: ________ Elevation: 630 feet

T___ R___ Sec___, ___ 1/4 of ___ 1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): ________

T___ R___ Sec___, ___ 1/4 of ___ 1/4, Meridian: H ◯ M ◯ S ◯ GPS Make & Model: ________

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ◯ Horizontal Accuracy: ________ meters/feet

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ ***OR*** Geographic (Latitude & Longitude) ◯

Coordinates: 604256
4197481

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Pinus sabiniana and Quercus wislizeni woodland, some near margins of Adenostoma fasciculatum chaparral margins, with Torilis arvensis, Aesculus californica, Bromus diandrus, Erigeron [illegible], Carduus pycnocephalus, Micropus californica, Leptosiphon ciliatus, Ericameria linearifolia, Triteleia laxa, Avena fatua.

Please fill out separate form for other rare taxa seen at this site. 6 shapefile He call

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ☒ Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Open Space grazing

Visible disturbances: none

Threats: None

Comments: Good expansion potential, good habitat but Bromus diandrus is abundant

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): ________
☐ Compared with specimen housed at: ________
☐ Compared with photo / drawing in: ________
☐ By another person (name): ________
☐ Other: ________

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Roddy

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California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
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Date of Field Work (mm/dd/yyyy): 5/22/14

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Helianthella castanea

Common Name: Diablo helianthella

Species Found? (X) Yes ( ) No _____ If not found, why?

Total No. Individuals: 148 Subsequent Visit? ( ) Yes ( ) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar Street
Martinez, Ca 94553
E-mail Address: hbartosh@mountdiablolaw.com
Phone: (925) 228-1027

Plant Information

Phenology:
10 % vegetative | 10 % flowering | 80 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Barron South of Lentzner

County: Contra Costa Landowner / Mgr: EBRP/Contra Costa Conservancy

Quad Name: _____ Elevation: 1145

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ *OR* Geographic (Latitude & Longitude) ○

Coordinates: 600150, 4198133

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On north facing slope in with intermittent canopy with Toxicodendron diversilobum, Avena fatua, Bromus carinatus, Lathyrus vestitus, Bromus diandrus, Cardus pycnocephalus Ericameria linearifolia

Please fill out separate form for other rare taxa seen at this site. 4 shepherdia Hecalo

Site Information

Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ○ Fair ○ Poor

Immediate AND surrounding land use: _____

Visible disturbances: _____

Threats: Lots of Bromus diandrus, A lot of Insect damage on fruits

Comments:
70 heads all mature

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Barron

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1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): 4/8/14

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Hesperevax caulescens

Common Name: hogwallow starfish

Species Found? ∅ Yes ○ No _____ If not found, why?

Total No. Individuals: 15 xx Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

On south east facing slope of moderate gradient

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 325 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ∅ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ∅ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 603990
4198794

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Silty clay pocket with sparse vegetation cover (30-40%) with Bromus hordeaceus, Hesperevax sparsiflora sparsiflora, Plagiobothrys acanthocarpus, Erodium cicutarium, Lepidium nitidum, Festuca perennis, Crassula connata.

Please fill out separate form for other rare taxa seen at this site. shapefile = Hesc 1

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ☒ Good ○ Fair ○ Poor

Immediate AND surrounding land use: open land, grazing

Visible disturbances: none

Threats: none

Comments: This location has no serious threats like invasive weeds. Soils seem atypical due to high silt content

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

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California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
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Date of Field Work (mm/dd/yyyy): 4/9/14

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Hesperevax caulescens

Common Name: hogwallow starfish

Species Found? (X) Yes ( ) No _____ If not found, why?

Total No. Individuals: 99 Subsequent Visit? ( ) Yes ( ) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh

Address: 832 Escobar
Martinez, Ca 94553

E-mail Address: hbartosh@nomadecology.com

Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

North side of deer valley on Roddy

County: Contra Costa Landowner / Mgr: EBRPD / Contra Costa Conservancy

Quad Name: _____ Elevation: 209 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: _____

DATUM: NAD27 ( ) NAD83 (Ø) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 (Ø) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )

Coordinates: 606342
4197836

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

In clay barren on south facing slope on north side of deer valley dominated by medicago polymorpha

Please fill out separate form for other rare taxa seen at this site. shapefile = Hesc 2

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent (Ø) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: open space & grazing

Visible disturbances: none

Threats: none

Comments:

Determination: *(check one or more, and fill in blanks)*

- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[ ]
Habitat	[ ]	[ ]	[ ]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? ( ) yes ( ) no

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California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 6/6/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Hesperolinon breweri

Common Name: Brewers dwarf flax

Species Found? (X) Yes ( ) No ______ If not found, why?

Total No. Individuals: 2000 Subsequent Visit? ( ) Yes ( ) No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: 1112 Number ______ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar st
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information
Phenology: 5 % vegetative 90 % flowering 5 % fruiting

Animal Information
___ # adults ___ # juveniles ___ # larvae ___ # egg masses ___ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
on north facing slope below road between Pond and Barn in open grassland on Thomas Kruger Southern

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy
Quad Name: ______ Elevation: 1368ft
T___ R___ Sec___, ___1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): ______
T___ R___ Sec___, ___1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: ______
DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: ______ meters/feet
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) **OR** Geographic (Latitude & Longitude) ( )
Coordinates: 597986
4200427

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On North facing slope below road between Pond and Barn in open grassland with Deinandra lobbii, Festuca perennis, Grindelia camporum, Eryngium jepsonii, chlorogalum pomeridianum, Bromus hordeaceus Calochortus argillosus, elymus caput-medusae, Epilobium brachycarpum, Castilleja rubicundula ssp. lithospermoides

Please fill out separate form for other rare taxa seen at this site. Clay barren habitat Shapefile = Hebr 1

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good ( ) Fair ( ) Poor
Immediate AND surrounding land use: open grazing land
Visible disturbances: none
Threats: Medusahead grass abundant in area
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): ______
☐ Compared with specimen housed at: ______
☐ Compared with photo / drawing in: ______
☐ By another person (name): ______
☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ( ) yes ( ) no

CDFW/BDB/1747 Rev. 8/10/2014

Thomas

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California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): 5/14/14

For Office Use Only
Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Hesperolinon breweri

Common Name: Brewers dwarf flax

Species Found? ☒ Yes ○ No ______ If not found, why?

Total No. Individuals: 63   Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 1001 ; 1002 (Number) UC JEPS (Museum / Herbarium)

Reporter: Heath Bartosh
Address: 832 Escobar Street
Martinez, CA 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information
Phenology: ___ % vegetative, 80 % flowering, 20 % fruiting

Animal Information
___ # adults ___ # juveniles ___ # larvae ___ # egg masses ___ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Western edge of Horse Valley on Roddy Ranch

County: Contra Costa   Landowner / Mgr: EBRPD/Contra Costa Conservancy
Quad Name: ______ Elevation: 467 feet
T___ R___ Sec___, ___1/4 of ___ 1/4, Meridian: H○ M○ S○   Source of Coordinates (GPS, topo. map & type): ______
T___ R___ Sec___, ___1/4 of ___ 1/4, Meridian: H○ M○ S○   GPS Make & Model: ______
DATUM: NAD27 ○ NAD83 ☒ WGS84 ○   Horizontal Accuracy: ______ meters/feet
Coordinate System: UTM Zone 10 ☒ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ○
Coordinates: 604023
4199235

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*
This point represents two colonies
1) East facing slope of erosive soil, south side of drainage with stipa pulchra, Poa secunda (Abundant), Bromus madritensis rubens, madia exigua, Arctostaphylos manzanita laevigata, [illegible]
2) North west facing slope in openings of quercus douglasii savanna w/ occasional Adenostoma fasciculatum, [illegible] Bromus diandrus, Rubus, Brachypodium distachyon, Sanicula bipinnatifida, Achillea millefolium.

Please fill out separate form for other rare taxa seen at this site.   shapefile = Heber 2

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ☒ Good ○ Fair ○ Poor
Immediate AND surrounding land use: open space grazing
Visible disturbances: None
Threats: Annual exotic grasses
Comments: 1) Highly intact habitat with few weeds
2) annual exotic grasses, needs some grazing

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): ______
☐ Compared with specimen housed at: ______
☐ Compared with photo / drawing in: ______
☐ By another person (name): ______
☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Roddy

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): 5/20/14

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Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Hesperolinon breweri

Common Name: Brewers dwarf flax

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 88 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: 1006 Number Jeps Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar street
Martinez, Ca 94553
E-mail Address: hbartosh@moundecology.com
Phone: (925) 228-1027

Plant Information

Phenology:

0	25	75
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

West end of Deer valley on Rocky Ranch West of Jacks house

County: Contra Costa Landowner / Mgr: EBRPD / Contra Costa Conservancy

Quad Name: _____ Elevation: 579 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ⊘ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ⊘ UTM Zone 11 ○ *OR* Geographic (Latitude & Longitude) ○

Coordinates: 604816 4197602

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On northwest facing steep slope in island of grassland surrounded by Quercus douglasii, Adenostoma fasciculatum, Bromus madritensis ssp. rubens, Avena fatua, Navarretia pubescens, Artemesia californica, Eriophyllum lanatum, Erigeron foliosus

Please fill out separate form for other rare taxa seen at this site. Shapefile = Hebr 3

Site Information Overall site/occurrence quality/viability (site + population): ⊘ Excellent ○ Good ○ Fair ○ Poor

Immediate AND surrounding land use: open space grazing

Visible disturbances: none

Threats: none

Comments: most plants 4-5 inches with 3-4 bigger ones up to 20 flowers

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Rocky

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California Dept. of Fish & Wildlife
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Sacramento, CA 95811
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For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 5/14/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Microseris sylvatica

Common Name: Sylvan scorzonella

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 2 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar st
Martinez, Ca 94553
E-mail Address: hbartosh@mmmecology.com
Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Western edge of Horse Valley on Roddy ranch

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 442

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ⊘ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ⊘ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 604466
4179057

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Quercus douglasi and Rhamnus illicifolia

Please fill out separate form for other rare taxa seen at this site.

shapefile = Misy 2

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ⊘ Good ○ Fair ○ Poor

Immediate AND surrounding land use: ~~open~~ land & grazing

Visible disturbances: none

Threats: none

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

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Date of Field Work (mm/dd/yyyy): 5/22/14

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Navarretia gowenii

Common Name: Lime Ridge navarretia

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 106 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: 1007 Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar St
Martinez Ca 94553
E-mail Address: hbartosh@swanndecology.com
Phone: (925) 228-1027

Plant Information

Phenology:
40 % vegetative | 50 % flowering | 10 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

On Thomas Kriegor acquisition East of Carla and Barn

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy
Quad Name: _____ Elevation: 1435 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____
T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ⊘ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ⊘ UTM Zone 11 ○ *OR* Geographic (Latitude & Longitude) ○

Coordinates: 598362
4200321

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

North facing slope on clay barren near Quercus douglasii but in grassland with low vegetation cover. Associates are Festuca perennis, Bromus hordeaceus, Chloragalum pomeridian, Calocharius argillosus, Poa secunda, Bromus madritensis rubens, Clay lens to east also has 27 + 2a

Please fill out separate form for other rare taxa seen at this site.

shapefile = Nago 1

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ○ Fair ○ Poor

Immediate AND surrounding land use: open space & grazing
Visible disturbances: none
Threats: Elymus caput-medusae
Comments: Elymus caput-medusae on margin of barren, but it can potentially invade heavy clay habitat. Revisit needed

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Thomas

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Sacramento, CA 95811
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Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 05/23/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Navarretia nigelliformis subsp. radians

Common Name: Adobe navarretia

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 50 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 1009 Number _____ Museum / Herbarium

Reporter: Heath Bartosh

Address: 832 Escobar St.
Martinez, Ca 94553

E-mail Address: hbartosh@monumentecology.com

Phone: (925) 228-1027

Plant Information

Phenology:

10	80	10
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Contra Costa Landowner / Mgr: Conservancy / EBRPD

Quad Name: _____ Elevation: 1497 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 597744
4120 0340

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Clay lens in grassland. Dominates: Festuca perennis, Bromus madritensis rubens, Bromus hordeaceous, Elymus caput-medusa
Associates: Grindelia camporum, Eryngium aristulatum, Calochortus argillosus, poa secunda, Clarkia affinis
North east facing with a slope between 5-10

Please fill out separate form for other rare taxa seen at this site.

shapefile: Nav 1

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ⊘ Fair ○ Poor

Immediate AND surrounding land use: open space and grazed grassland

Visible disturbances: _____

Threats: Elymus caput-medusae is well established, observations have been made in the

Comments: Clay lens annual where it has fully established and seemingly supressing germination of annuals

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Thomas

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Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/15/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Navarretia nigelliformis subsp. radians

Common Name: Adobe navarretia

Species Found? (X) Yes ( ) No _____ If not found, why?

Total No. Individuals: 406 Subsequent Visit? ( ) Yes ( ) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Brian Peterson

Address: 832 Escobar St
Martinez Ca 94553

E-mail Address: hbartech@sonomaecology.com

Phone: (925) 228-1827

Plant Information

Phenology:

98	2	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Smith Ranch South of Briones Valley

County: Contra Costa County Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 350 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: etrex 20

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )

Coordinates: 603177
4194066

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

South west slope, open non-native grassland with Erodium cicutarium, Hesperevax sparsiflora var. sparsiflora, Bromus diandrus, Avena fatua
Clay loam Cover ~ 30 - 40%

Please fill out separate form for other rare taxa seen at this site. shapefile = Nav. 5

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (X) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Open Space & grazing

Visible disturbances: Cattle grazing

Threats: none.

Comments:

Determination: *(check one or more, and fill in blanks)*

- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[ ]
Habitat	[ ]	[ ]	[ ]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? ( ) yes ( ) no

Smith

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Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 4/30/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Navarretia nigelliformis subsp. radians

Common Name: Adobe navarretia

Species Found? (Ø) Yes ( ) No _____ If not found, why?

Total No. Individuals: 100 Subsequent Visit? ( ) Yes ( ) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: 966 Number _____ Museum / Herbarium

Reporter: Heath Bartosh

Address: 832 Escobar St
Martinez Ca 94553

E-mail Address: hbartosh@mommadecology.com

Phone: (925) 228-1027

Plant Information

Phenology:

% vegetative	% flowering	% fruiting
0	50	50

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 271 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: _____

DATUM: NAD27 ( ) NAD83 (Ø) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 (Ø) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )

Coordinates: 606531
4197779

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

South facing clay barren west of a trough. Vegetation cover 30%-40%, with high native integrity with Hesperevax sparsiflora sparsiflora, Plagiobothrys acanthocarpus, Microseris douglasii douglasii, Eriophyllum lanatum. Minor amounts of Sinapis arvensis, Festuca perennis, Erodium cicutarium.

Please fill out separate form for other rare taxa seen at this site. Shapefile = Nanig

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: open land & grazing

Visible disturbances: none

Threats: none

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ( ) yes ( ) no

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Date of Field Work (mm/dd/yyyy): 4/17/14

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Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Navarretia nigelliformis subsp. radians

Common Name: Alkali navarretia

Species Found? ⊘ Yes ○ No _____ If not found, why?

Total No. Individuals: 115 Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: 958 Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar st
Martinez, Ca 94553
E-mail Address: hbartosh@nomadecology.com
Phone: (925) 228-1027

Plant Information

Phenology:
70 % vegetative | 20 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

On South east facing slope of moderate gradient

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: _____ Elevation: 320' ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: _____

DATUM: NAD27 ○ NAD83 ⊘ WGS84 ○ Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ⊘ UTM Zone 11 ○ ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 603862
4198512

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Silty clay pocket with sparse vegetation cover (30-40%) with Bromus hordeaceous, Hesperevax sparsiflora sparsiflora, Plagiobothrys acanthocarpus, Erodium cicutarium, Lepidium nitidum, Festuca perennis, Crassula connata, Hesperevax caulescens
Plants mainly single headed although few with multiple inflorescence 1-2" tall. Suitable silty clay Barren in immediate vicinity.

Please fill out separate form for other rare taxa seen at this site.

shape map 3

Site Information

Overall site/occurrence quality/viability (site + population): ○ Excellent ⊘ Good ○ Fair ○ Poor

Immediate AND surrounding land use: open land / grazing

Visible disturbances: none

Threats: none

Comments: This location has no serious threats like invasive weeds, no mistaked co-occurring Soils seem atypical due to high silt content

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

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Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 4/17/14

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Navarretia nigelliformis subsp. radians

Common Name: Adobe navarretia

Species Found? ☒ Yes ○ No — If not found, why? ____

Total No. Individuals: 200 — Subsequent Visit? ○ Yes ○ No

Is this an existing NDDB occurrence? 62 (Yes, Occ. #) ☐ No ☐ Unk.

Collection? If yes: 971 (Number) ____ (Museum / Herbarium)

Reporter: Heath Bartosh
Address: 832 Escobar St, Martinez Ca 94553
E-mail Address: hbartosh@[illegible]ecology
Phone: (925) 228-1027

Plant Information

Phenology: 20 % vegetative, 60 % flowering, 20 % fruiting

Animal Information

adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown ____

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

South facing slope on Roddy Ranch

County: Contra Costa — Landowner / Mgr: EBRPD/Contra Costa Conservancy

Quad Name: ____ Elevation: 321 ft

T____ R____ Sec____, ____1/4 of ____ 1/4, Meridian: H○ M○ S○ — Source of Coordinates (GPS, topo. map & type): ____

T____ R____ Sec____, ____1/4 of ____ 1/4, Meridian: H○ M○ S○ — GPS Make & Model: ____

DATUM: NAD27 ○ NAD83 ☒ WGS84 ○ — Horizontal Accuracy: ____ meters/feet

Coordinate System: UTM Zone 10 ☒ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ○

Coordinates: 604567
4197351

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On west facing clay barren with 30-60% cover. With Erodium botrys, Hesperevax sparsiflora sparsiflora, microseris douglasii subsp douglasii, medicago polymorpha, Lotus wrangelianus

Please fill out separate form for other rare taxa seen at this site.

shape - Navarretia

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ☒ Fair ○ Poor

Immediate AND surrounding land use: Open space + grazing

Visible disturbances: Cattle hoof prints

Threats: Elymus caput-medusae on east facing slope on opposite hill.

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): ____
☐ Compared with specimen housed at: ____
☐ Compared with photo / drawing in: ____
☐ By another person (name): ____
☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

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1807 13th Street, Suite 202
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Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): 5/14/14

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: Piperia michaelii

Common Name: Michael's rein orchid

Species Found? (X) Yes ( ) No _____ If not found, why?

Total No. Individuals: 2 Subsequent Visit? ( ) Yes ( ) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh
Address: 832 Escobar
Martinez, Ca 94553
E-mail Address: hbartosh@moundecology.com
Phone: (925) 228-1027

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

west side of Deer Valley on Roddy Ranch

County: Contra Costa Landowner / Mgr: EBRPD/Contra Costa Conservation

Quad Name: _____ Elevation: 825 ft

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: _____

DATUM: NAD27 ( ) NAD83 (X) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 (X) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )

Coordinates: 603635
4197558

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Quercus douglasii just off dirt road

Please fill out separate form for other rare taxa seen at this site. shapefile = Pmi 1

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent (X) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: open space, grazing

Visible disturbances: none

Threats: none

Comments:

Determination: *(check one or more, and fill in blanks)*

- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[ ]
Habitat	[ ]	[ ]	[ ]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? ( ) yes ( ) no

Rabbler