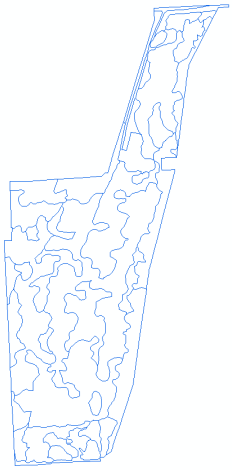
Heber Dunes SVRA

Vegetation Mapping Report 2022

California State Parks



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fieldwork, data analysis, report
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fieldwork, data analysis
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fieldwork

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Finescale Vegetation Mapping at the SVRAs (arcgis.com)

Introduction

Goals and Purpose

This finescale vegetation map for Heber Dunes SVRA was developed by California State Park staff in 2022. Its development was prompted by the passage of Senate Bill 249, in which California Department of Parks and Recreation's Off-Highway Motor Vehicle Recreation Division (OHMVRD) was charged with meeting new legislative mandates to ensure resources compliance within all State Vehicular Recreation Areas (SVRAs). These mandates require (among other things) that OHMVRD compile an inventory of native plant communities within each SVRA [PRC 5090.35 (c)(1)]. To meet this requirement, OHMVRD has consulted the California Department of Fish and Wildlife's Vegetation Classification and Mapping Program (VegCAMP) to source finescale vegetation maps that cover the SVRA footprint, or, if not available, used the VegCAMP methods to develop a new finescale vegetation map.

The finescale vegetation map and associated data is intended to provide an inventory of native plant communities, inform the park's natural resource management planning including the Wildlife Habitat Protection Plan (WHPP), and establish a baseline for measuring future vegetation change.

Summary of Vegetation Mapping Effort

July 2021	Review existing maps and vegetation surveys and develop a draft map
March 28, 2022	Conduct field surveys to sample vegetation and groundtruth draft map
July 2022	Finalize vegetation types and finalize map

Description of Heber Dunes SVRA

Heber Dunes SVRA is a small, 364-acre park in unincorporated Imperial County, seven miles northeast of Calexico, and is surrounded by agricultural fields, irrigation canals, and an undeveloped parcel owned by California Department of Transportation (CalTrans). It consists of open sand dunes, planted athel tamarisk (*Tamarix aphylla*) trees, and native and exotic desert scrub vegetation. The entire park is designated as open riding for off-highway vehicles.

Methods

Existing data

Currently there is no existing finescale vegetation map from VegCAMP that covers the footprint of the park. A vegetation map consisting of 6 community types was created for the park's General Plan in 1998. However, when reviewing it against current aerial imagery, this map appears outdated and the minimum mapping unit is much larger than VegCAMP standards. Since the park is so small, state park staff developed an updated draft map without conducting a field visit by using the

park's past vegetation transect surveys and photo points, and by interpreting aerial imagery (NAIP 2020), with the intention of groundtruthing in Spring 2022.

Fieldwork

A field visit was conducted on March 28, 2022 in order to sample vegetation, confirm vegetation types, and groundtruth the draft map. Four reconnaissance samples were taken (see Appendix D) and every polygon was visited to confirm vegetation type.

Data interpretation and linework

Since no vegetation classification exists for the area, the classification for the Mojave Desert was used in order to assign vegetation alliances (Menke et al 2013), as well as the descriptions in the Manual of California Vegetation online (California Native Plant Society). NAIP 2020 imagery was used to delineate polygons and interpret vegetation cover when field data for cover was not available. Google Earth historic imagery was used as a supplement to view seasonal color changes that distinguish some species.

Linework followed the mapping standards found in the "Survey of California Vegetation Classification and Mapping Standards"(CDFW b) as much as possible. The minimum mapping unit was 1 acre. Shrub and tree polygons were split if there was a change in cover class using the Braun-Blanquet categories (1=<1%, 2=1-5%, 3=>5-15%, 4=>15-25%, 5=>25-50%, 6=>50-75%,

7=>75%). The minimum mapping unit required for cover class breaks was 3 acres for overstory cover and 5 acres for understory cover.

Vegetation Types and Descriptions

***Pluchea sericea* (Arrow weed thickets) Shrubland Alliance**

This alliance is strongly dominated by arrow weed (*Pluchea sericea*), with low cover of other shrubs including quailbush (*Atriplex lentiformis*) and willow baccharis (*Baccharis salicina*). This alliance covers 31 acres of Heber Dunes SVRA, primarily along the park edges near the perimeter roads. Arrow weed stands form dense thickets in the park, especially along the eastern and western sides of the park. Some parts of the stands on the east side of the park have significant dead material, likely related to drought stress.

***Larrea tridentata* (Creosote bush scrub) Shrubland Alliance**

This alliance is dominated by creosote bush (*Larrea tridentata*), and covers 52 acres of Heber Dunes SVRA, mostly along the western and southern boundaries of the unit. Stands are open to intermittent, with evenly spaced shrubs and a sparse to absent herbaceous layer.

***Atriplex lentiformis* (Quailbush scrub) Shrubland Alliance**

This alliance is dominated by quailbush (*Atriplex lentiformis*), mixed with a lower cover of arrow weed (*Pluchea sericea).* Stands cover 5 acres of Heber Dunes SVRA, at the southern end of the park. Canopy cover is dense to intermittent.

***Suaeda moquinii* (Bush seepweed scrub) Shrubland Alliance**

This alliance is dominated by bush seepweed (*Suaeda moquinii* alt. *S. nigra).* There is one stand of this alliance at the SVRA, covering 4 acres, with sparse cover. At the time of sampling, shrubs were mature to decadent, with significant amounts of dead material, likely related to drought stress.

***Tamarix spp. (*Tamarisk thickets) Semi-Natural Alliance**

At Heber Dunes SVRA, two species of non-native tamarisk are present: athel tamarisk (*Tamarix aphylla*) and saltcedar (*Tamarix ramosissima*). The NVCS classifies all tamarisk species under one alliance and association. However, because of the distinct difference in height of the two species at Heber Dunes SVRA, stands of each species were mapped separately. Total cover for both species is 168 acres.

Athel Tamarisk

Athel tamarisk (*Tamarix aphylla*) stands are widely distributed in the SVRA, covering 143 acres. Athel tamarisk trees are tall (5-10 meters) and occur in dense clusters with close to 100% cover. Due to the size of athel tamarisk present at the SVRA, it is presumed to be historical, likely planted as a wind barrier. This non-native species is of minor management concern as it does not spread rapidly at the SVRA.

Saltcedar

Saltcedar (*Tamarix ramosissima*) stands cover 25 acres of the SVRA. This species is more shrub-like than athel tamarisk, at 2-4 meters in height. Stands are dense to intermittent. This species is of greater management concern as it tends to be invasive throughout the southwest. However, historic imagery available on Google Earth (see imagery taken in December-February for distinctive rusty foliage color) shows that stands at the SVRA have not significantly expanded in the past 20 years.

Non-Vegetated mapping units

Bare Sand

Bare sand covers 64 acres of the SVRA, primarily towards the center of both the northern and southern parts of the park. Bare sand areas consist of open dunes with less than 1% vegetation cover.

Developed

Developed areas consist of park facilities, including paved roads, and covers 10 acres of the SVRA. There are two primary developed areas identified in the SVRA, with a smaller area towards the northern part of the unit and a larger developed area in the park center.

References

Link to GIS data files

Finescale Vegetation Mapping at the SVRAs (arcgis.com)

California Native Plant Society. A Manual of California Vegetation Online. Available at https://vegetation.cnps.org/. Accessed July 2021 – July 2022.

CDFW a. "Combined Vegetation Rapid Assessment and Relevé Field Form". Available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18598&inline

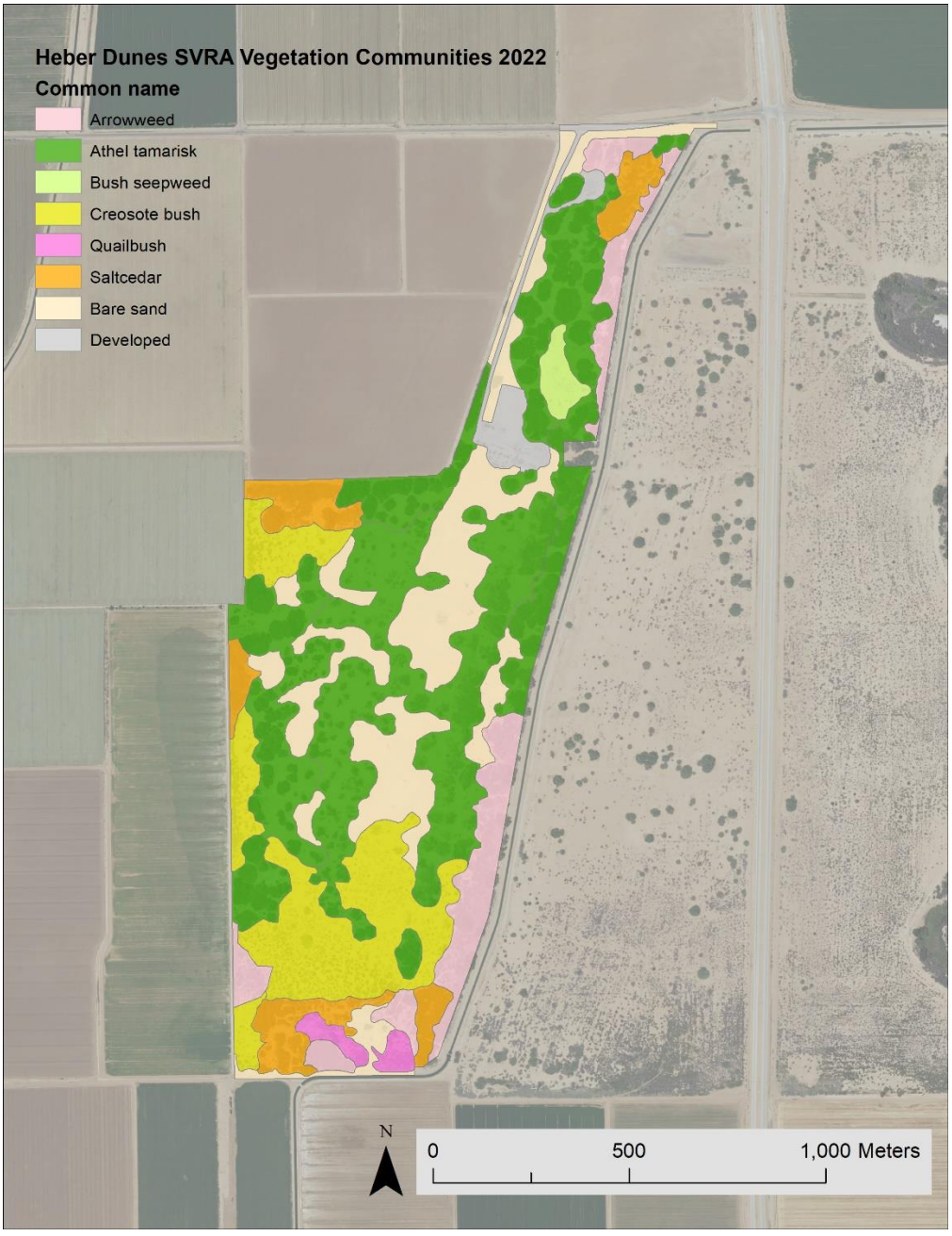
CDFW b. "Survey of California Vegetation Classification and Mapping Standards" Available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=102342&inline

CDFW-CNPS. "CDFW-CNPS Protocol for the Combined Vegetation Rapid Assessment and Relevé Field Form" Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18599&inline

Menke, J., E. Reyes, A. Glass, D. Johnson, and J. Reyes. 2013. 2013 California Vegetation Map in Support of the Desert Renewable Energy Conservation Plan. Final Report. Prepared for the California Department of Fish and Wildlife Renewable Energy Program and the California Energy Commission. Aerial Information Systems, Inc., Redlands, CA. Available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=62826&inline

Appendices

Appendix A: Map Figures



Appendix B: Field datasheets

RECON FIELD FORM (March 6, 2019, with slope/aspect)

Recorder: MP **Other Surveyors:** Casey, Leah **Date:** 3-28-22 **Return?** ☐

Waypoint ID: HD01

UID:

Location Name:

GPS Name MP phone **Projected?** (No) / Yes / Base / Digitized

If Yes, enter: **Bearing (°):** _____ **Distance (m):** _____ **Inclination (°):** _____

If Yes or Digitized, enter: **Base Waypoint ID:** _____

Base / Projected (circle one) Record either UTMs or Decimal Degrees GPS error: **ft./ m./ PDOP** 30

UTMs: UTME _____ **UTMN** _____

Decimal degrees: **LAT** 32.724981 **LONG -** 115.388072

Stand Size: <1 1–5 >5 **Camera:** MP phone **Photos:** (N) **View Radius** _____

Exposure, Actual °: _____ NE NW SE SW Flat (Variable) | **Steepness, Actual °:** varies 0° 1-5° > 5-25° > 25

Field Alliance name: Suaeda moquinii

Comments: 4% Lots of bare sand, dead bushes, no saltbush. Alliance isn't a perfect fit - not a playa, etc. OHV activity, rabbit tracks mounds, rolling. Creosote is mostly in southern end of stand.

% Cover: Conifer 0 Hardwood 0 Total Tree 0 Regen Tree 0 Shrub 4 Herb 0 Total Veg 4% Exotics (L,M,H) L

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
	Suaeda mog.	2		found 1 atriplex leptoformis on edge				
	Pluchea sericea	1.5						
	L. tridentata	.5						

Recorder: MP **Other Surveyors:** LG, CP **Date:** 3-28-22 **Return?** ☐

Waypoint ID: HD02

UID:

Location Name: Hebes

GPS Name MP phone **Projected?** No / Yes / Base / Digitized

If Yes, enter: **Bearing (°):** _____ **Distance (m):** _____ **Inclination (°):** _____

If Yes or Digitized, enter: **Base Waypoint ID:** _____

Base / Projected (circle one) Record either UTMs or Decimal Degrees GPS error: **ft./ m./ PDOP** 20

UTMs: UTME _____ **UTMN** _____

Decimal degrees: **LAT** _____ **LONG -** _____

Stand Size: <1 (1–5) >5 **Camera:** **Photos:** 220° 320° **View Radius** _____

Exposure, Actual °: _____ NE NW SE SW (Flat) Variable | **Steepness, Actual °:** _____ (0°) 1-5° > 5-25° > 25

Field Alliance name: Pluchea sericea

Comments: Dense arrowweed, some atriplex. Not seeing any Baccharis. Some dead material, see photos taken from road

% Cover: Conifer ~ Hardwood ~ Total Tree ~ Regen Tree ~ Shrub 40 Herb 0 Total Veg 40 Exotics (L,M,H) L

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
	Pluchea sericea	33						
	Atriplex lentiformis	7						

RECON FIELD FORM (March 6, 2019, with slope/aspect)

Recorder: **Other Surveyors:** **Date:** 3.28.22 **Return?** ☐

Waypoint ID: HD03

UID:

Location Name:

GPS Name _____ **Projected? No / Yes / Base / Digitized**

If Yes, enter: **Bearing (°):** _____ **Distance (m):** _____ **Inclination (°):** _____

If Yes or Digitized, enter: **Base Waypoint ID:** _____

Base / Projected (circle one) Record either UTMs or Decimal Degrees GPS error: **ft./ m./ PDOP** _____

UTMs: UTME _____ **UTMN** _____

Decimal degrees: **LAT** _____ **LONG -** _____

Stand Size: <1 1–5 >5 **Camera:** **Photos:** (N) **View Radius** _____

Exposure, Actual °: _____ NE NW SE SW Flat Variable | **Steepness, Actual °:** _____ 0° 1-5° > 5-25° > 25

Field Alliance name:

Comments: Creosote stand, variable mounds, hummocky, OHV tracks. Creosote is mix of S3 and S4 (decadent) (mature)

% Cover: Conifer Hardwood Total Tree Regen Tree Shrub 8 Herb — Total Veg 8 Exotics (L,M,H) L

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
	Larrea tridentata	8						

Recorder: **Other Surveyors:** **Date:** 3.28.22 **Return?** ☐

Waypoint ID: HD04

UID:

Location Name:

GPS Name _____ **Projected? No / Yes / Base / Digitized**

If Yes, enter: **Bearing (°):** _____ **Distance (m):** _____ **Inclination (°):** _____

If Yes or Digitized, enter: **Base Waypoint ID:** _____

Base / Projected (circle one) Record either UTMs or Decimal Degrees GPS error: **ft./ m./ PDOP** _____

UTMs: UTME _____ **UTMN** _____

Decimal degrees: **LAT** _____ **LONG -** _____

Stand Size: <1 1–5 >5 **Camera:** **Photos:** **View Radius** _____

Exposure, Actual °: _____ NE NW SE SW Flat Variable | **Steepness, Actual °:** _____ 0° 1-5° > 5-25° > 25

Field Alliance name:

Comments:

% Cover: Conifer Hardwood Total Tree Regen Tree Shrub Herb Total Veg 10 Exotics (L,M,H)

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
	Atriplex lentiformis	4						
	Baccharis sp.	1						
	Pluch. sericea	1						

Appendix C: Plant species list

Heber Dunes SVRA Plant Species List – assembled from historic surveys and surveys for this vegetation mapping project.

Common Name	Scientific name	Lifeform
Fourwing Saltbush	Atriplex canescens	Perennial
Wheelscale	Atriplex elegans	Perennial
Desert Holly	Atriplex hymenelytra	Perennial
Quail Bush	Atriplex lentiformis	Perennial
Saltbush	Atriplex polycarpa	Perennial
Willow baccharis	Baccharis salicina	Perennial
Black Mustard	Brassica nigra	Annual
Palo Verde	Cercidium floridum	Perennial
Sand Mat, Prostrate Spurge	Chamaesyce polycarpa	Perennial
Desert Willow	Chilopsis linearis ssp. Arcuata	Perennial
Forget Me Not	Cryptantha sp.	Annual
Teddy-Bear Cholla	Cylindropuntia bigelovii	Perennial
Gander's Cholla	Cylindropuntia ganderi	Perennial
Brittlebush, Incienso	Encelia farinosa	Perennial
Rayless Encelia	Encelia frutescens	Perennial
Barrel cactus	Ferocactus cylindraceus	Perennial
Ocotillo	Fouquieria splendens	Perennial
Common Sunflower	Helianthus annuus	Annual
Desert Lily	Hesperocallis undulata	Annual
Cheesebush, Winged Ragweed	Hymenoclea salsola	Perennial
Desert-Lavender	Hyptis emoryi	Perennial
Alkali Goldenbush	Isocoma acradenia	Perennial
White Rhatany	Krameria grayi	Perennial
Creosote	Larrea tridentata	Perennial
Desert Thorn	Lycium brevipes	Perennial
Leaved Cambess	Oligomeris linifolia	Annual
Ironwood	Olneya tesota	Perennial
Beavertail cactus	Opuntia basilaris	Perennial
Desert Fir-Pygmy Cedar	Peucephyllum schotti	Perennial
Mistletoe	Phoradendrum californicum	Perennial
Big Galleta Grass	Pleuaphis rigida	Perennial
Arrowweed	Pluchea sericea	Perennial
Fremont Cottonwood	Populus fremontii	Perennial
Honey Mesquite	Prosopis glandulosa	Perennial

Common Name	Scientific name	Lifeform
Dye Plant	Psorothamnus emoryi	Perennial
Indigo Bush	Psorothamnus schottii	Perennial
Smoke Tree	Psorothamnus spinosa	Perennial
Goodding's Black Willow	Salix gooddingii	Perennial
Russian Thistle, Tumbleweed	Salsola tragus	Perennial
Common Mediterranean Grass	Schismus barbatus	Annual
Apricot mallow, Desert Mallow	Sphaeralcea ambigua	Annual
Bush Seepweed	Suaeda nigra	Perennial
Bush Seepweed	Sueda nigra aka Sueda moquinii	Perennial
Athel Tamarisk	Tamarix aphylla	Perennial
Saltcedar Tamarisk	Tamarix ramosissima	Perennial
Tiquilia	Tiquilia palmeri	Perennial
Tiquilia	Tiquilia plicata	Perennial
California Fan Palm	Washingtonia filifera	Perennial
Orcutt's Woody Aster	Xylorhiza orcutti	Perennial

Appendix D: Reconnaissance protocol and field form

Protocols and blank forms for the “Recon” protocol, a shortened version of the Relevé/Rapid Assessment survey, is included here, since it is not published on the VegCAMP website.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE PROTOCOL FOR

RECON FIELD FORM

(March 30, 2017)

This protocol describes the methodology for the reconnaissance technique as recorded in the Recon Field Form dated March 30, 2017. Reconnaissance surveys (recons) are complementary to relevés and rapid assessments, but collect only a small subset of the data gathered using the more detailed methods. Recons are generally used as an aid to digital vegetation mapping, to determine the boundaries of a stand, or to illustrate a particular vegetation signature. For more background on the relevé and rapid assessment sampling methods, see the relevé and rapid assessment protocol at http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18599.

Definitions of fields in the form

LOCATIONAL/ENVIRONMENTAL DESCRIPTION

Recorder: The full name of the recorder should be provided for the first field form for the day. On successive forms, initials can be recorded.

Other Surveyors: The full name of each person assisting should be provided for the first field form for the day. On successive forms, initials of each person assisting can be recorded.

Date: Date of the sampling.

Return?: Check this box if team members should return to this spot at a later date to take a recon or RA/relevé. This can be used if the phenology is not conducive to identification of the major species, or if there is not enough time to take the survey.

Waypoint ID: The Waypoint ID in this format: GPS device name + date (yymmdd) + time (hhmm). For example, for a survey taken on iPad "V" on March 27 at 1:45 in the afternoon, the Waypoint ID will be "V1803271345."

UID: The ID number of a reference point or polygon which this reconnaissance describes.

Location Name: The name of the property, park, or the location within large holdings (like USFS or BLM properties).

GPS name: The name/number assigned to the GPS unit.

Projected? Yes / No / Base / Digitized: Circle the appropriate option:

> **Yes** - The point is a projected, or offset point. The surveyor used a bearing and distance to project the point to match what they are describing with the survey.

No - The surveyors are in the vegetation they are describing and the point is where the observer was standing for photographs. This location can also be used as a base location for an offset survey.

Base - Base point only. This is where a surveyor was standing when taking an offset survey to describe vegetation not at that point. No plant data or vegetation descriptions are associated with this location. However, cardinal photos taken at this point will be stored in a directory of this name.

Digitized – An offset point was created on the GPS unit without taking bearing and distance readings. This option should only be used when the imagery on the GPS unit is unique and unmistakable.

Bearing (°): The compass bearing from the Base point to the Projected point.

Distance (m): The distance in meters from the Base point to the Projected point, determined by use of a range finder.

Inclination (°): The vertical offset from the Base point to the Projected point.

Base Waypoint ID: For a projected or digitized point, this is the location where the surveyor was standing when the information was collected. Cardinal photographs will be taken at this point and will be stored on the computer under this ID. Photographs of the stand vegetation will be taken from this point and will be stored on the computer under the Projected point's ID.

Base / Projected UTMs or Decimal degrees: If the point is projected or digitized, circle whether the coordinates of the base point or the offset point have been recorded. These will generally be for the offset point.

GPS error: ft./m./PDOP: The accuracy of the GPS location. Record the error reading and circle the appropriate units.

GPS coordinates: Record either UTM coordinates, easting (**UTME**) and northing (**UTMN**), or decimal degrees, **LAT** (latitude) and **LONG** (longitude). Record this information from a GPS unit.

Stand Size: Estimate the size of the entire stand in which the sample is taken and circle the appropriate range. As a measure, one acre is similar in size to a football field.

View Radius: Enter the radius, in meters, of the viewable area of the stand from the survey point; the radius should be a minimum of 20 meters.

Camera/Photos: Write the name camera, JPG numbers, and direction of photos. Take four photos in the main cardinal directions (N, E, S, W) clockwise from the north, from the GPS location. This symbol can be used to indicate the cardinal photos: 

. If additional photos are taken in other directions, please note the JPG numbers and a description of each photo.

HABITAT AND VEGETATION DESCRIPTION

Field alliance name: Name of alliance following the most recent Manual of California Vegetation (Sawyer, Keeler-Wolf, and Evens 2009), using scientific nomenclature, *e.g., Quercus agrifolia*. An alliance is based on the dominant or diagnostic species of the stand, and usually reflects the uppermost and/or dominant height stratum. A dominant species covers the greatest area. A diagnostic species is consistently found in some vegetation types but not others.

Please note: The field-assessed alliance name may not exist in the present classification, in which case you can provide a new alliance name in this field.

Comments: Briefly describe the stand age/seral stage, disturbance history, nature and extent of land use, and other site environmental and vegetation factors that will aid in the mapping effort.

% Cover:

Conifer: The total cover of all the conifer trees taking into consideration the porosity, or the holes, in the vegetation. This is an estimate of the absolute conifer cover, disregarding the overlap[1] of individual trees.

Hardwood: The total cover of all the hardwood trees taking into consideration the porosity, or the holes, in the vegetation. This is an estimate of the absolute hardwood tree cover, disregarding the overlap[1] of individual trees.

Total Tree: The total cover of all the trees taking into consideration the porosity, or the holes, in the vegetation. This is an estimate of the absolute tree cover, disregarding the overlap[1] of individual trees.

Regen Tree: The total foliar cover of seedlings and saplings, disregarding overlap[1] of individual recruits. See seedling and sapling definitions below.

Shrub: The total cover of all the shrubs taking into consideration the porosity, or the holes, in the vegetation. This is an estimate of the absolute shrub cover, disregarding the overlap[1] of individual shrubs.

Herb: The total cover of all the herbs taking into consideration the porosity, or the holes, in the vegetation. This is an estimate of the absolute herbaceous cover, disregarding the overlap[1] of individual herbs.

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[1] Porosity reduces the total cover of the canopy. Overlapping strata should not be included in the total cover percent; for instance, if a shrub is growing under a tree, only the cover of the tree will be added into the total; the cover of the shrub will be disregarded, except for the amount by which it fills in the porosity of the tree canopy.

Total Veg: The total cover of all vascular vegetation taking into consideration the porosity, or the holes, in the vegetation. This is an estimate of the absolute vegetation cover, disregarding the overlap[1] of the various tree, shrub, and/or herbaceous layers and species.

Exotics (L,M,H): The extent to which the stand is impacted by exotic/non-native species.

Divide the total exotic cover (e.g. 25% Bromus diandrus + 8% Bromus madritensis + 5% Centaurea melitensis = 38% total exotics) by the Total Veg cover (e.g. 80% total) and multiply by 100 to get the % relative cover of exotics (e.g. 38% total exotics / 80% total cover = 48% relative exotic cover). **L** = 0-33% *relative* cover of exotics; **M** =34-66% relative cover, and **H** = >66% relative cover.

Species List and Coverage

List the species that are dominant or that are characteristically consistent throughout the stand. This list is used if there is some uncertainty in the field-assessed alliance name, so the most common species should be listed. In the interests of time and efficiency, this species list should not be exhaustive.

Strata:

T = Tree. A woody perennial plant that has a single trunk.

A = SApling. 1" - <6" dbh and young in age, OR small trees that are <1" dbh, are clearly of appreciable age, and are kept short by repeated browsing, burning, or other disturbance. Includes trees that are re-sprouting from roots or stumps following fire, logging or other disturbance. These re-sprouts may exhibit a shrubby form, with multiple small trunks, but are species that are generally considered trees. If a majority of the trunks are >6" dbh, then the re-sprouts would be recorded under the "Tree" stratum.

E = SEedling. A tree species clearly of a very young age that is < 1" dbh or has not reached breast height. Applies only to trees propagating from seed; re-sprouts are not recorded here even if they meet the size requirements.

S = Shrub. A perennial, woody plant, that is multi-branched and doesn't die back to the ground every year.

H = Herb. An annual or perennial that dies down to ground level every year.

N = Non-vascular. Includes moss, lichen, liverworts, hornworts, cryptogammic crust, and algae.

When one or more tree species are regenerating, the Tree, Seedling and/or Sapling strata may be noted on the same line, e.g.:

Strata	Species	%Cover	C
T/A/E	Quercus douglasii	40/<1/<1	

Species: Use Jepson Manual nomenclature. When uncertain of an identification (which you intend to confirm later) use parentheses to indicate what part of the determination needs to be confirmed. For example, you could write out *Brassica* (*nigra*) if you are sure it is a *Brassica* but you need further clarification on the specific epithet.

% cover: provide the % absolute aerial cover for each species listed. All species percent covers may total over 100% because of overlap.

Collections: If a species collection is made, it should be indicated in the blank column next to "% cover" with a "C" (for collected). If the species is later keyed out, cross out the species name or description and write the keyed species name in pen on the data sheet. Do not erase what was written in the field, because this information can be used if specimens get mixed up later. If the specimen is then thrown out, add a "T" to the "C" in that column (CT = thrown out after

confirmation) or cross out the "C". If the specimen is kept but is still not confidently identified, add a "U" to the "C" (CU = collected and unconfirmed). In this case the unconfirmed species epithet should be put in parentheses [e.g *Hordeum (murinum)*]. If the specimen is kept and is confidently identified, add a "C" to the existing "C" (CC = collected and confirmed). If the specimen is later deposited in an herbarium, add a "D" to the existing "C" (CD = collected and deposited) and note the receiving herbarium.

RECON FIELD FORM (March 6, 2019, with slope/aspect)

Recorder:	**Other Surveyors:** **Date:** **Return?** ☐
Waypoint ID: **UID:** **Location Name:**	**GPS Name** _____ **Projected? No / Yes / Base / Digitized** If Yes, enter: **Bearing (°):** _____ **Distance (m):** _____ **Inclination (°):** _____ If Yes or Digitized, enter: **Base Waypoint ID**: _____ **Base / Projected** (circle one) Record either UTMs or Decimal Degrees GPS error: **ft./ m./ PDOP** _____ **UTMs: UTME** ___ ___ ___ ___ ___ ___ **UTMN** ___ ___ ___ ___ ___ ___ ___ Decimal degrees: **LAT** ___ ___ . ___ ___ ___ ___ ___ ___ **LONG** - ___ ___ ___ . ___ ___ ___ ___ ___ ___
Stand Size: <1 1–5 >5	**Camera:** **Photos:** **View Radius** _____
Exposure, Actual °: _____ **NE NW SE SW Flat Variable | Steepness, Actual °:** _____ **0° 1-5° > 5-25° > 25**	
Field Alliance name:	
Comments:	

% Cover: Conifer_____ Hardwood_____ Total Tree_____ Regen Tree_____ Shrub_____ Herb_____ Total Veg_____ Exotics (L,M,H)_____

Strata	Species	% cover		Strata	Species	% cover		Strata	Species	% cover