

Edit November 1 2023: the table on page 5 of this memo was updated to correct and expand rarity rankings. Updated columns are in red

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From: Melissa Patten, Environmental Scientist, Natural Resources Division, California State Parks

Date: February 10, 2023

Subject: Vegetation Classification and Mapping Report for the Alameda-Tesla Area, 2022

INTRODUCTION

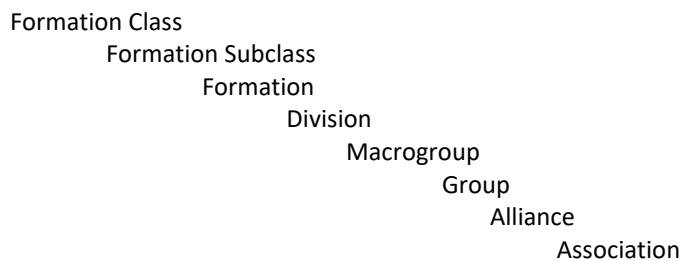
Purpose

This report describes the vegetation mapping methods and results for the Alameda-Tesla area, adjacent to Carnegie SVRA, conducted in 2021 and 2022. This mapping effort was part of a larger project within the Off Highway Motor Vehicle Division of State Parks to create updated vegetation maps and an inventory of native plant communities for each SVRA. When the mapping project began in 2021, the Alameda-Tesla area and Carnegie SVRA were sampled and analyzed together. However, results here are presented only for the Alameda-Tesla area, in order to inform the process of park classification. A full report for both areas will be added to the California Department of Fish and Wildlife Biogeographic Information and Observation System (BIOS) viewer (CDFW 1). GIS files are attached, and may also be viewed on ArcGIS Online here: [AlamedaTesla_CarnegieSVRA_VegCAMP \(arcgis.com\)](https://arcgis.com)

VegCAMP Background

In 2007, Fish and Game Code 1940 established a State Vegetation Standard which is now the industry standard from both a scientific and policy perspective and is compatible with the National Vegetation Classification System (NVCS). The California Department of Fish and Wildlife (CDFW) manages the Vegetation Classification and Mapping Program (VegCAMP) which develops and maintains a standard classification system and mapping methodology. This methodology is being employed statewide to meet the legislative goal of mapping the entire state of California. To date, approximately 60% of the state has been mapped with these methods. Data, reports, and maps may be found on the BIOS viewer (CDFW 1), the VegCAMP website (CDFW 2) and via the Manual of California Vegetation (MCV) online (CNPS 2022). The Manual of California Vegetation (MCV) is California's expression of the NVCS.

The NVCS is hierarchical, with “association” (a characteristic suite of species) at the most granular level. Associations are grouped into alliances, alliances into groups, and upward, as follows:



VegCAMP maps generally delineate vegetation stands at the Alliance level, but some types may be mapped at the association level, or at the group or macrogroup level, depending on what is known on the ground and distinguishable in aerial imagery.

VegCAMP at the Alameda-Tesla area

The vegetation types in the NVCS and the MCV are defined and grouped into the hierarchy by robust statistical analysis of eco-regional vegetation sampling data. As new regions are sampled and mapped, the database is updated. The Alameda county region where the Alameda-Tesla property is located, has not yet been analyzed for input into the classification system. Therefore, assigning classification types to the vegetation communities in the Alameda-Tesla area requires referring to vegetation types that have been defined for ecologically similar areas, such as the Central Valley region. Plans for the classification of Alameda and Contra Costa counties and the Central Coast region are underway by CDFW and are expected to be completed in the next few years. The resulting updates to the MCV may create additional vegetation alliances and associations that are more specific and appropriate for the Alameda-Tesla area than some of the types used in this report. Future updates to this data and crosswalks from previous nomenclature will be available on the BIOS viewer (CDFW 1).

Carnegie SVRA and the Alameda-Tesla area were previously mapped using VegCAMP methods in 2011-2012 (AECOM 2012), and the data is available on the BIOS viewer (CDFW 1).

METHODS

Overview

The VegCAMP mapping methods follow these general steps. Detailed standards and protocols may be found on the VegCAMP website (CDFW 2).

1. Vegetation stands are sampled in the field using standard relevé, rapid assessment, and reconnaissance protocols. Species cover and a range of environmental variables are recorded.
2. Vegetation data is analyzed and interpreted, producing a key or list of vegetation types for the project area.

3. Vegetation stands are delineated by heads-up digitizing, using high-resolution aerial photography in a Geographic Information System (GIS), which produces a map of vegetation type polygons.
4. An accuracy assessment is conducted in the field, and the map is finalized. A final accuracy of at least 80% is required.

Alameda-Tesla area sampling and mapping

Field sampling was conducted in Carnegie SVRA and in the Alameda-Tesla area by State Parks staff on May 3rd-6th, 2021. A total of 16 formal samples were collected, as well as many informal photo points. Vegetation types were assigned using the membership rules of the MCV (CNPS 2022) and by consulting with CDFW staff.

A draft map was developed in Fall 2021, drawn using NAIP 2020 imagery. Mapping followed VegCAMP standards defined in the “Survey of California Vegetation Classification and Mapping Standards” document (CDFW 2020). The minimum mapping unit was 1 acre for upland vegetation types and ¼ acre for wetland vegetation types. Polygons were divided based on a change in cover class according to Braun-Blanquet categories (<1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%). Breaks for the dominant overstory vegetation cover class required a 3-acre minimum mapping unit, and breaks for understory vegetation cover class required a 5-acre minimum mapping unit. Map attributes for the GIS database are found in Appendix B.

An accuracy assessment of the map was conducted on March 17, 2022 by confirming mapped types in previously unvisited polygons. These combined field efforts resulted in a map where >80% of the polygons had been confirmed on the ground.

RESULTS

Mapped vegetation types are summarized below in Figure 1 and Table 1. The attached GIS files include more attributes than displayed here.

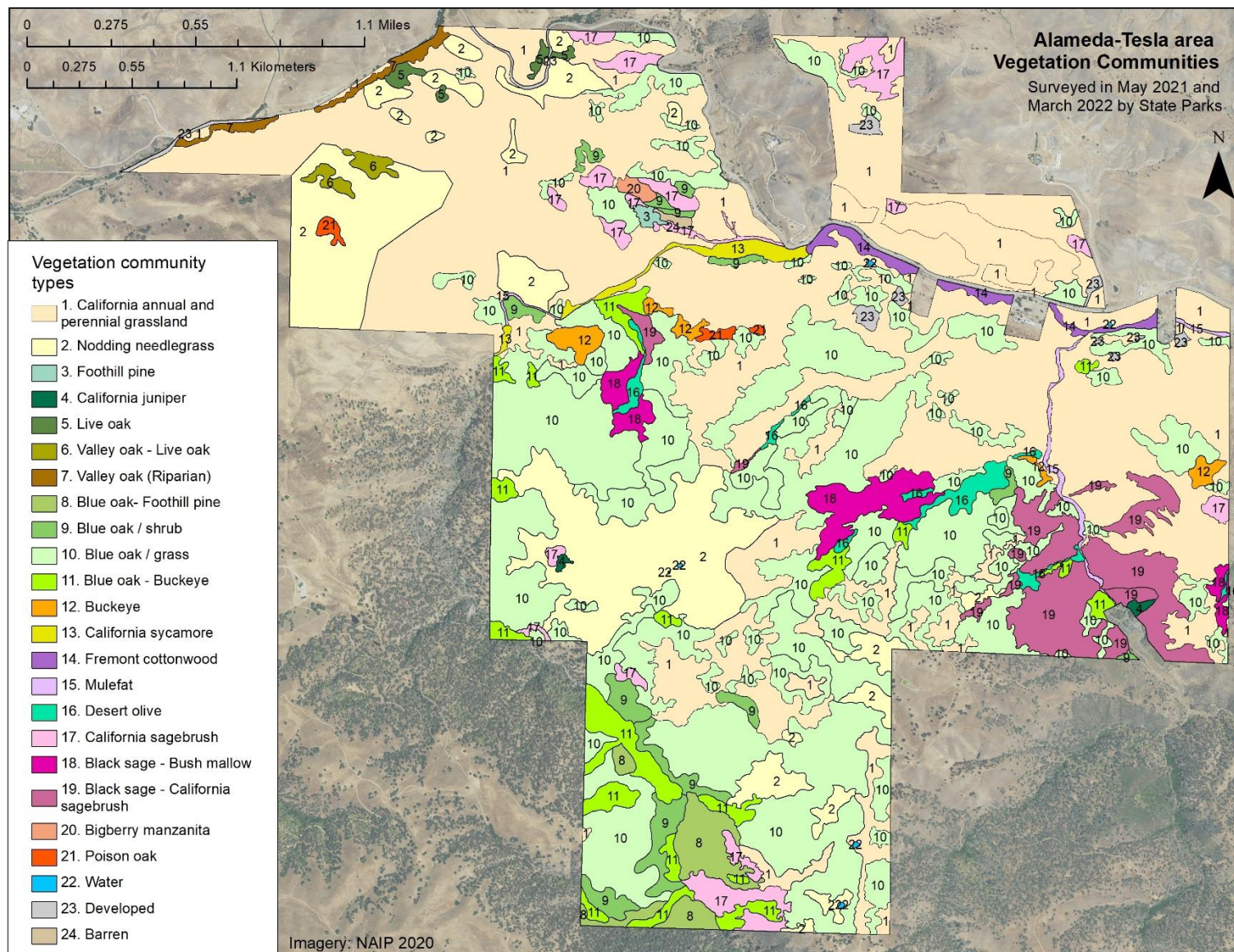


Figure 1: Vegetation community map in the Alameda-Tesla area

Table 1: Alameda-Tesla area vegetation types and acreage. Alliances in grey text are included for classification context. Columns in red were updated November 2023. Some communities are classified as “sensitive” before a precise rarity ranking is scored. Current rankings are available on the VegCAMP website (CDFW 2).

Vegetation Type	NVCS Name	State Rarity Ranking (if known)	Sensitive?	Common name map label	Total Acres
Tree Overstory (Woodland / Forest) Vegetation	Pinus sabiniana forest and woodland alliance	S4	no	Foothill pine	3
Tree Overstory (Woodland / Forest) Vegetation	Juniperus californica woodland alliance	S4	no	Juniper	3
Tree Overstory (Woodland / Forest) Vegetation	Quercus agrifolia woodland alliance	S4	no	Live oak	8
Tree Overstory (Woodland / Forest) Vegetation	Quercus lobata Riparian woodland alliance	S3	yes	Valley oak (Riparian)	13
Tree Overstory (Woodland / Forest) Vegetation	Quercus lobata forest and woodland alliance	blank cell	blank cell	blank cell	blank cell
Tree Overstory (Woodland / Forest) Vegetation	Quercus lobata - Quercus agrifolia association	blank cell	yes	Valley oak - live oak	10
Tree Overstory (Woodland / Forest) Vegetation	Quercus douglasii forest and woodland alliance	blank cell	blank cell	blank cell	blank cell
Tree Overstory (Woodland / Forest) Vegetation	Quercus douglasii - Pinus sabiniana association	blank cell	no	Blue oak - Foothill pine	46
Tree Overstory (Woodland / Forest) Vegetation	Quercus douglasii / Ericameria linearfolia association	blank cell	no	Blue oak / shrub	63
Tree Overstory (Woodland / Forest) Vegetation	Quercus douglasii / Mixed herbaceous association	blank cell	no	Blue oak / grass	1040
Tree Overstory (Woodland / Forest) Vegetation	Quercus douglasii - Aesculus californica / grass association	blank cell	no	Blue oak - Buckeye	92
Tree Overstory (Woodland / Forest) Vegetation	Aesculus californica forest and woodland alliance	S3	yes	Buckeye	20
Tree Overstory (Woodland / Forest) Vegetation	Platanus racemosa - Quercus agrifolia woodland alliance	S3	yes	California sycamore	17

Tree Overstory (Woodland / Forest) Vegetation	Populus fremontii - Fraxinus velutina - Salix gooddingii woodland alliance	S3	yes	Fremont cottonwood	19
Shrubland Vegetation	Baccharis salicifolia shrubland alliance	S4	no	Mulefat	11
Shrubland Vegetation	Rhus trilobata - Crataegus rivularis - Forestiera pubescens shrubland alliance	S3.2	yes	Desert Olive	26
Shrubland Vegetation	Artemisia californica - (Salvia leucophylla) shrubland alliance	blank cell	blank cell	blank cell	blank cell
Shrubland Vegetation	Artemisia californica association	S4	no	California sagebrush	82
Shrubland Vegetation	Salvia mellifera - Artemisia californica alliance	S4	no	Black sage - California sagebrush	135
Shrubland Vegetation	Salvia mellifera - Malacothamnus fasciculatus association	S3	yes	Black sage - Bush mallow	53
Shrubland Vegetation	Arctostaphylos glauca alliance	S4	no	Bigberry manzanita	4
Shrubland Vegetation	Toxicodendron diversilobum alliance	S4	no	Poison oak	6
Herbaceous Vegetation	California annual and perennial grassland macrogroup	blank cell	blank cell	California annual and perennial grassland	1383
Herbaceous Vegetation	Nassella spp. - Melica spp. Alliance	blank cell	blank cell	blank cell	blank cell
Herbaceous Vegetation	Nassella cernua association	blank cell	yes	Nodding needlegrass	395
Non-Vegetated	Barren	blank cell	NA	Barren	2
Non-Vegetated	Developed	blank cell	NA	Developed	17
Non-Vegetated	Water	blank cell	NA	Water	1

Vegetation communities

See the MCV online (CNPS 2022) for a full description of the vegetation alliances, including detailed membership rules. Below is a brief description of the vegetation types as they are observed in the Alameda-Tesla area, and how the membership rules were applied for this project.

Definitions

Absolute cover: The percent of the ground surface which is covered by the vertical projections of live plant material, including porousness of a tree/shrub canopy. (Imagine

the cover as the shadow cast on the ground if the sun were positioned perfectly overhead)

Relative cover: A measure of the cover of a species in relation to that of other species within a set area or sample of vegetation, within the same stratum. (Example: If the tree layer in a stand is 5% absolute cover of blue oak and 15% absolute cover of live oak, then the relative cover of blue oak is 25% and the relative cover of live oak is 75%)

Dominant: >50% relative cover in the stratum

Strongly dominant: >60% relative cover in the stratum

Co-Dominant: Two or three species are each 30-60% relative cover in the stand

Tree-Overstory (Woodland/Forest) Vegetation: Vegetation characterized by an even distribution of overstory trees. Tree canopy is generally greater than 10% absolute cover, but occasionally may be as low as 5% if evenly distributed.

Shrubland Vegetation: Vegetation characterized by woody shrubs in the canopy. Tree species, if present, generally total less than 10% absolute cover. Herbaceous species may total higher cover than shrubs. Shrubs are usually at least 5% absolute cover.

Herbaceous vegetation: Vegetation characterized by non-woody, herbaceous species in the canopy including grass, graminoids, and broad-leaved herbaceous species. Shrubs, if present, usually comprise <5% absolute cover. Trees, if present, generally compose <5% absolute cover.

Rarity rankings: VegCAMP assigns rankings to vegetation alliances based on rarity and scope of threat to the type. Rankings (within California) range from S1 (very rare and threatened) to S5 (demonstrably secure). Alliances with ranks S1-S3 are considered sensitive natural communities and should be addressed in environmental review processes. Rarity rankings are ongoing, and some communities are designated as “sensitive” before the precise rarity ranking is scored. For more information and updated lists of rankings see the VegCAMP website (CDFW 2)

Tree Overstory (Woodland/Forest) types:

***Pinus sabiniana* woodland alliance (Foothill pine)**

This type is mapped when foothill pines (*Pinus sabiniana*) are dominant in the tree canopy, and are at least 10% absolute cover. Here, this type occurs only in a small 3-acre stand in the former mine area, growing on or near mine tailings. Foothill pines do occur consistently throughout the Alameda-Tesla area, mixing with (but not dominating over) blue oak, buckeye, and California juniper (See the blue oak – foothill pine association, within the blue oak alliance).

***Juniperus californica* woodland alliance (California juniper)**

This type is mapped in areas where California juniper cover is dominant (>50% relative cover) in the tree stratum. In the Alameda-Tesla area, juniper is often mixed with blue oak, but there are only two small stands where juniper is dominant.

***Quercus agrifolia* woodland alliance (Live oak)**

This type is mapped in several small stands in the northwest part of the property where live oaks (*Quercus lobata*) are strongly dominant in the tree canopy. The understory is grassy, shrub cover is sparse or absent.

***Quercus lobata* Riparian alliance (Valley oak Riparian)**

Riparian valley oak stands are classified in a separate alliance from upland valley oak stands. Riparian valley oaks occur along Tesla road in the northwest part of the property, in the Arroyo Seco drainage. Some live oaks are mixed in the tree canopy.

***Quercus lobata* – *Quercus agrifolia* association (Valley oak – Live oak)**

This upland type, within the valley oak alliance, occurs in two small stands on grassy slopes in the northwest part of the property. Valley oaks and live oaks co-dominate with a sparse shrub layer and a grassy herbaceous layer.

***Aesculus californica* alliance (Buckeye)**

This type is mapped when buckeye (*Aesculus californica*) is dominant in the tree canopy. Blue oak (*Quercus douglasii*) may also be present. The shrub layer is sparse and the herbaceous layer is generally dominated by non-native grasses, with native forbs present in the spring.

***Quercus douglasii* – *Pinus sabiniana* association (Blue oak – Foothill pine)**

This type is mapped where foothill pine is at least 5% absolute cover and mixes with blue oak at up to 30% absolute cover. Buckeye is also a significant component. This type is mapped in the southern part of the property, on steep slopes with rocky outcroppings. The shrub layer varies from 5-15% cover is characterized by *Ericameria linearifolia*. Native grasses and forbs are present in the herbaceous layer and non-native species cover is relatively low.

***Quercus douglasii* / Mixed herbaceous association (Blue oak / grass)**

This type is mapped where blue oaks occur over a grassy or herbaceous understory. Blue oak is the dominant species in the tree stratum, but *Juniperus californica* (California juniper) and *Aesculus californica* (buckeye) are also present at low cover. If buckeye reaches >30% relative cover, see the blue oak – buckeye association. The canopy may be intermittent to continuous, or savannah-like, where tree cover is as low as 4% absolute cover, but is spatially consistent. The shrub layer is <10% (if higher, see the blue oak / shrub association). The understory is herbaceous, generally dominated by a mix of native and non-native grasses, with native forbs present in the spring.

***Quercus douglasii* – *Aesculus californica* / grass association (Blue oak – Buckeye)**

This type is mapped when blue oaks and buckeyes are co-dominant in the tree canopy, with a similar understory as in the blue oak / grass association. If buckeye relative cover is >50%, map as the buckeye alliance. Shrub cover is variable.

***Quercus douglasii* / *Ericameria linearifolia* association (Blue oak / shrub)**

This type is mapped when blue oaks are dominant in the tree stratum and are >10% absolute cover, and there is significant (>10%) shrub cover in the understory. In the Alameda-Tesla area, the shrubs in the understory for this type include *Artemisia californica* (California sagebrush), *Salvia mellifera* (black sage), *Ericameria linearifolia* (narrow-leaf goldenbush) and *Lonicera subspicata* var. *denudata* (chaparral honeysuckle).

***Populus fremontii* - *Fraxinus velutina* - *Salix gooddingii* Forest and woodland alliance (Fremont cottonwood)**

This type is characterized by Fremont cottonwood (*Populus fremontii*) in the tree layer. The shrub canopy is absent or may have sparse cover of mulefat (*Baccharis salicifolia*). The herbaceous layer may be sparse to intermittent, and tends to be weedy. This type occurs along Corral Hollow Creek, which is seasonally wet. When sycamores occur along this drainage, the MCV rules dictate that the alliance is classified as a sycamore type (see below).

***Platanus racemosa* - *Quercus agrifolia* woodland alliance (California sycamore)**

This type is mapped along the western span of the Corral Hollow Creek drainage where California sycamores (*Platanus racemosa*) and cottonwoods occur in low cover. The shrub and herb layers are similar as the Fremont cottonwood alliance above.

Shrubland types:

***Rhus trilobata* - *Crataegus rivularis* - *Forestiera pubescens* shrubland alliance (Desert olive).**

This semi-wetland type occurs in draws and drainages, often extending up adjacent slopes. At Carnegie SVRA, stands of this type are strongly dominated by desert olive (*Forestiera pubescens*), with additional cover of elderberry (*Sambucus nigra* ssp. *caerulea*), coyotebrush (*Baccharis pilularis*), and poison oak (*Toxicodendron diversilobum*). Buckeyes (*Aesculus californica*) may occur on edges. The shrub canopy is dense and there is little herbaceous understory.

***Baccharis salicifolia* shrubland alliance (Mulefat)**

This type is mapped along Mitchells ravine, however, shrub cover along this drainage is quite sparse and patchy. The herbaceous layer varies from sparse to intermittent and tends to be weedy. Tree tobacco (*Nicotiana glauca*), a non-native invasive species, is present in more disturbed areas. California poppy (*Eschscholzia californica*) patches are characteristic in the spring.

***Salvia mellifera* - *Malacothamnus fasciculatus* association (Black sage – Bush mallow)**

**Note that the species of bush mallow present at Carnegie SVRA and the Alameda -Tesla area is Malacothamnus fremontii, not M. fasciculatus. The association is named for and defined by communities of M. fasciculatus that occur in southern California and are ecologically similar to the bush mallow and Black sage – bush mallow communities found here. The MCV may add associations or alliances specifically for M. fremontii in the future when the Alameda county region is classified (See Introduction).*

This shrub association is mapped when black sage (*Salvia mellifera*) and bush mallow (*Malacothamnus fremontii*) together add up to >60% relative cover. California sagebrush (*Artemisia californica*) may be present at lower cover. Yerba santa (*Eriodictyon californicum*) is typically present at low cover. At Carnegie SVRA, this type was observed on slopes that had burned in the August 2015 Tesla fire, six years prior to surveys. Generally, bush mallow and yerba santa are present at higher cover in areas that burned more recently, and over time following a fire, the community composition shifts to higher proportions of black sage and California sagebrush (see below). The herbaceous layer is sparse and consists mostly of non-native grasses.

***Salvia mellifera* - *Artemisia californica* alliance (Black sage – California sagebrush)**

This shrub alliance is mapped when black sage (*Salvia mellifera*) and California sagebrush (*Artemisia californica*) together add up to >60% relative cover. Bush mallow (*Malacothamnus fremontii*) may also be present at lower cover, or the three species may have nearly equal cover in the shrub canopy. The herbaceous layer is sparse and consists mostly of non-native grasses.

***Artemisia californica* association (California sagebrush)**

This shrub association is mapped when California sagebrush is >60% relative cover in the shrub layer. Note that although this association is within the *Artemisia californica* - (*Salvia leucophylla*) shrubland alliance, *Salvia leucophylla* is not present at Carnegie SVRA. The herbaceous layer is sparse to dense and consists of non-native grasses and native forbs.

***Arctostaphylos glauca* alliance (Bigberry manzanita)**

One small stand of this type is mapped in the former mine area, where bigberry manzanita (*Arctostaphylos glauca*) is dominant in the shrub canopy, though at sparse absolute cover. Sediments in this stand are likely contaminated with mine tailings. The herbaceous layer is extremely sparse.

Herbaceous types:

***Nassella cernua* association (Nodding needlegrass)**

This type was mapped where nodding needlegrass (*Nassella cernua*, also known as *Stipa cernua*) was characteristic and at least 2% absolute cover, over an acre or more. The locations of these stands were mapped during spring 2021 native grassland surveys (MIG 2021).

California annual and perennial grassland macrogroup

Most of the grassland is mapped as this higher level classification, except for the native association described above. Grassland species composition and abundance varies spatially and temporally, and both native and non-native alliances and associations assemble in mosaics of small stands that are difficult to distinguish in imagery. For more details on native grasses see the 2021 native grassland surveys (MIG 2021).

Non-Vegetated types:

Barren

Polygons were designated “Barren” when there was <2% vegetation cover on native substrate across the minimum mapping unit of 1 acre.

Developed

Developed areas include roads, buildings, parking lots, tracks, and campgrounds.

Water

There are a few small ponds on the property which vary in size depending on recent rainfall.

DISCUSSION

Comparison to a previous vegetation map

A previous mapping effort conducted surveys in 2011 and digitized polygons with NAIP 2010 imagery, using VegCAMP methods to produce a map of vegetation types (from here on referred to as the 2011 map) (AECOM 2012). There are minor differences in mapping standards and project boundaries compared to the project described in this report (from here on referred to as the 2021 map), but the two maps are broadly comparable. Since 2011, there appear to have been negligible changes to the spatial extent of the blue oak woodland alliances, the grassland alliances, and the developed areas, despite fires that have covered a significant portion of the property.

For woodland vegetation, the 2021 project distinguishes between several blue oak alliances, whereas the 2011 map groups all these tree types as blue oak woodland. The 2021 project has also delineated a few juniper stands that were grouped into the surrounding alliances in the 2011 map. The 2021 project maps the desert olive patches at a smaller minimum mapping unit since it is a wetland type (1/4 acre compared to 1 acre), which resulted in more polygons of that alliance in the 2021 map than in the 2011 map, however, an examination of historic imagery (NAIP 2010) shows that the actual number and extent of the stands has not significantly changed in that time. Similarly, along Corral Hollow Creek, the 2021 project maps a sycamore type where the previous 2011 map shows a Fremont cottonwood type. This is due to

a different application of the alliance membership rules, not an actual change in tree species composition. Sycamores and cottonwoods are distinguishable from each other in some historic imagery on Google Earth.

The 2021 project maps five upland shrub community types (Bigberry manzanita, poison oak, bush mallow – black sage, black sage – California sagebrush, and California sagebrush), whereas the 2011 project only maps three (Choke cherry, Bush mallow and California sagebrush – black sage). Most of the differences in the shrubland polygons are due to differences in methods and image interpretation, however, some of the differences represent true compositional shifts due to succession and response to fire.

There have been two fires in the area since 2011: the Tesla fire in 2015 which burned in large swaths of the northern half of the property, and a small fire in 2018 (also called the Tesla fire) which burned a small area of mostly grassland in the northwest corner of the property. The small choke cherry (*Prunus virginiana*) stand mapped in 2011 was surveyed in 2021, but no choke cherry individuals were found, instead there was a small stand of poison oak, a few elderberry, and signs of scorched woody debris. It is likely that the 2015 Tesla fire killed all the choke cherry individuals in this stand.

Additionally, large stands of shrubland that were previously mapped as black sage – California sagebrush alliance in the 2011 map, were surveyed and mapped as black sage – bush mallow association in 2021. Bush mallow is a fire-following species, and its presence in the shrub stands likely increased following the 2015 Tesla fire. As discussed in the alliance and association descriptions above, these species composition in these shrub communities are dynamic and will continue to change over time and in response to fire.

Future mapping efforts

As mentioned in the methods section, there are expected to be additional vegetation classification projects in this region, which will define new vegetation types and add them to the MCV. Survey data from this 2021 map could potentially be re-interpreted and assigned different alliance or association names in the future, using regionally appropriate classifications. Any updated vegetation community maps of Carnegie SVRA should be made available on the BIOS viewer. Future regional maps associated with the VegCAMP program that cover this area would also be available on the BIOS viewer, with links to relevant reports and classification keys.

REFERENCES

AECOM. 2012. Vegetation Classification and Mapping Report, Carnegie SVRA. Technical memo submitted to Clint Elsholz, CA Department of Parks and Recreation

Buck-Diaz, J., and J. Evens. 2011. Carrizo Plain National Monument vegetation classification and mapping project. California Native Plant Society, Sacramento, CA. Available: http://www.cnps.org/cnps/vegetation/pdf/carrizo-vegetation_rpt2011.pdf

CDFW 1. Biogeographic Information and Observation System (BIOS). Available at wildlife.ca.gov/Data/BIOS and apps.wildlife.ca.gov/bios6

CDFW 2. Vegetation Classification and Mapping Program website. Available at wildlife.ca.gov/Data/VegCAMP

CDFW. 2020. Survey of California Vegetation Classification and Mapping Standards. Available at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=102342&inline>

CNPS. 2022. A Manual of California Vegetation, Online Edition. Available at vegetation.cnps.org

MIG. 2021. Carnegie State Vehicular Recreation Area Rare Plant and Native Grassland Survey Report October 2021. Report submitted to Clint Elsholz, CA Department of Parks and Recreation.

NAIP (National Agriculture Imagery Program) 2010. Aerial Imagery. U.S. Department of Agriculture

NAIP (National Agriculture Imagery Program) 2020. Aerial Imagery. U.S. Department of Agriculture

APPENDIX A: MAP ATTRIBUTE DEFINITIONS

More detailed mapping attribute definitions and a geodatabase template are available at the VegCAMP website (CDFW 2). These layers are viewable on ArcGIS online: [AlamedaTesla](#) [CarnegieSVRA](#) [VegCAMP \(arcgis.com\)](#)

Mapping Attributes	Definition
OBJECTID	Unique value for each polygon
ConifCover	Absolute cover of conifer tree species within the polygon. Attributed in 1% increments
HdwdCover	Absolute cover of hardwood tree species within the polygon. Attributed in 1% increments
TreeCover	Absolute cover of trees within the polygon. May be less than the sum of conifer + hardwood if there is overlap. Attributed in 1% increments
ShrubCover	Absolute cover of shrubs within the polygon, attributed in 1% increments. If the overstory tree cover is greater than 40%, shrubs would not be visible in aerial imagery and are not estimated.
HerbCover	Absolute cover of herbaceous vegetation in the polygon. May not be interpretable if shrub or tree cover is high. Cover values for herbaceous vegetation are recorded in the following cover classes: <2%, 2-9%, 10-40%, >40%
Roadedness	The cover of roads and trails in the polygon. Categories are: None visible; Low (at least 2/3 of the polygon without any roads); Moderate (1/3 to 2/3 of the polygon without any roads); High (Less than 1/3 of the polygon without any roads); Not Applicable/Not evaluated
MethodID	Attribution method: either the polygon was attributed through image interpretation, based on a field survey, or based on a less-formal field reconnaissance
Notes	Information, caveats, site history etc.
NVCS_Name	The mapping class name per NVCS. See vegetation.cnps.org to look up descriptions.
NVCS_Level	The NVCS hierarchy level of the NVCS_Name, e.g., Association, Alliance, Group, Macrogroup, etc
GlobalRank	The global rarity ranking for the vegetation alliance, from 1 (very rare and threatened) to 5 (demonstrably secure)
StateRank	The California state rarity ranking for the vegetation alliance, from 1 (very rare and threatened) to 5 (demonstrably secure). Natural communities with ranks of S1-S3 are considered Sensitive Natural Communities to be addressed in the environmental review processes of CEQA and its equivalents. More information on the VegCAMP website.
NVCSAlliance	The alliance name per NVCS. Will be null for polygons that are mapped at a higher level than alliance (group or macrogroup), or for non-vegetated polygons such as urban, developed, water etc.
NVCSGroup	The group name per NVCS. Will be null for polygons that are mapped at a higher level than group (macrogroup), or for non-vegetated polygons such as urban, developed, water etc.
NVCSMG	The macrogroup name per NVCS. Will be null for non-vegetated polygons such as urban, developed, water etc
MappingUnitName	A common name label developed specifically for this project
Field_Verified	"Yes" for polygons that have been verified in the field in sampling or during the accuracy assessment
Acres	Area in acres of the polygon

APPENDIX B: REPRESENTATIVE PHOTOS



Quercus douglasii – *Pinus sabiniana* association (Blue oak – Foothill pine), with *Ericameria linearifolia* in the shrub layer



Foothill pine (*Pinus sabiniana*) stand in the former mine area



A small buckeye (*Aesculus californica*) stand, with California sagebrush (*Artemisia californica*) in the foreground



California juniper (*Juniperus californica*)



Blue oak (*Quercus douglasii*) with California sagebrush in the understory



Upland valley oak (*Quercus lobata*) stand, with grassy understory



California sagebrush (*Artemisia californica*) shrubland



Black sage – Bush mallow association



Black sage, California sagebrush, and bush mallow co-dominating, which is mapped as the black sage – California sagebrush alliance.



Desert olive (*Forestiera pubescens*)



Blue oak with native forbs in the grassy understory



Mulefat (*Baccharis salicifolia*) and Fremont cottonwood (*Populus fremontii*) in the dry creek bed

