BIOLOGICAL SCOPING & BOTANICAL SURVEY REPORT

for

46801 Iversen Drive
Gualala, California
APN: 142-033-17-05
Mendocino County

Property Owner:
Lars Holberg-Olsen
127 Forty-Fourth Street
Newport Beach, CA 92663

Report Prepared By:
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January 28, 2022

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1. PROJECT SUMMARY

A biological survey was conducted on parcel APN 142-033-17 by Wynn Coastal Planning & Biology (WCPB) to locate potential Environmentally Sensitive Habitat Areas (ESHAs) - special status plants and communities, wetlands and riparian areas, and special status animals and/or their habitats and to determine if they have been directly or indirectly impacted by Major Vegetation Removal (MVR) that has occurred on the parcel without benefit of a Coastal Development Permit (CDP).

The study area (**Figure 1**) is located at 46801 Iversen Drive, Gualala, CA. The parcel is east of Highway One within the Coastal Zone and 5.5 miles south of Point Arena. The parcel can be accessed from Iversen Drive and is located within a rural residential subdivision.

WCPB staff biologists conducted an initial biological scoping survey on November 25, 2020. Additional floristic surveys were conducted on April 16, June 24, and August 06, 2021, for a total of 9.17 person hours. After all surveys were completed, five types of presumed ESHA were identified within the study area according to the definitions by the California Coastal Act (CCA) and Mendocino County Local Coastal Plan (LCP) (**Figure 2**).

Stream ESHA – Two **ephemeral drainages** with permanent bed and bank features were present within the study area. Both drainages originate from culverts beneath Iversen Drive and neither have bed and bank features north of this road. One drainage is off the subject parcel toward the northwest, roughly parallel with the parcel boundary, and the second divides the parcel, with the residence and developed area of the parcel to its east and the undeveloped portion of the parcel where MVR has occurred to its west.

Wetland ESHA – One area of presumed **Coastal Act wetlands** was present within the study area. An area with more rushes and sedges that the surrounding grassland was present in the western portion of the parcel. No wetland delineation work was conducted, wetland boundaries were based on observations of differences in vegetation.

Plant Community ESHA – Two special status plant communities were identified in the study area: **Bishop pine forest** and a small area with **pinegrass meadow** that was likely Bishop pine forest understory but is now daylighted due to the MVR. A number of Bishop pine trees have been removed on this parcel, reducing the total area of this plant community.

Special Status Plant ESHA – Around ten checkerbloom plants presumed to be **purple checkerbloom** (*Sidalcea malviflora* spp. *purpurea* CRPR 1B.2) were present near the western corner of the subject parcel.

Special Status Animal Habitat – A number of harlequin lotus (*Hosackia gracilis* CRPR 4.2) plants, the presumed larval host plant for the federally endangered **lotis blue butterfly**, was present in the western portion of the subject parcel. A couple early blue violet (*Viola adunca*) plants were present within the area with harlequin lotus. Early blue violet is a common plant but is the larval host plant for the federally endangered **Behren's silverspot butterfly**, which occurs along the southern coast of Mendocino County.

This analysis has been performed by WCPB, and is the culmination of our professional opinion, research, and data collection. The County of Mendocino (County), California Department of Fish and Wildlife (CDFW), and U.S. Fish and Wildlife Service (USFWS) should also be consulted regarding this project to obtain all necessary permits and obtain their concurrence with our findings and recommendations, and to make recommendations of their own, including concurrence of the boundaries of the sensitive areas and appropriate avoidance and protective measures.

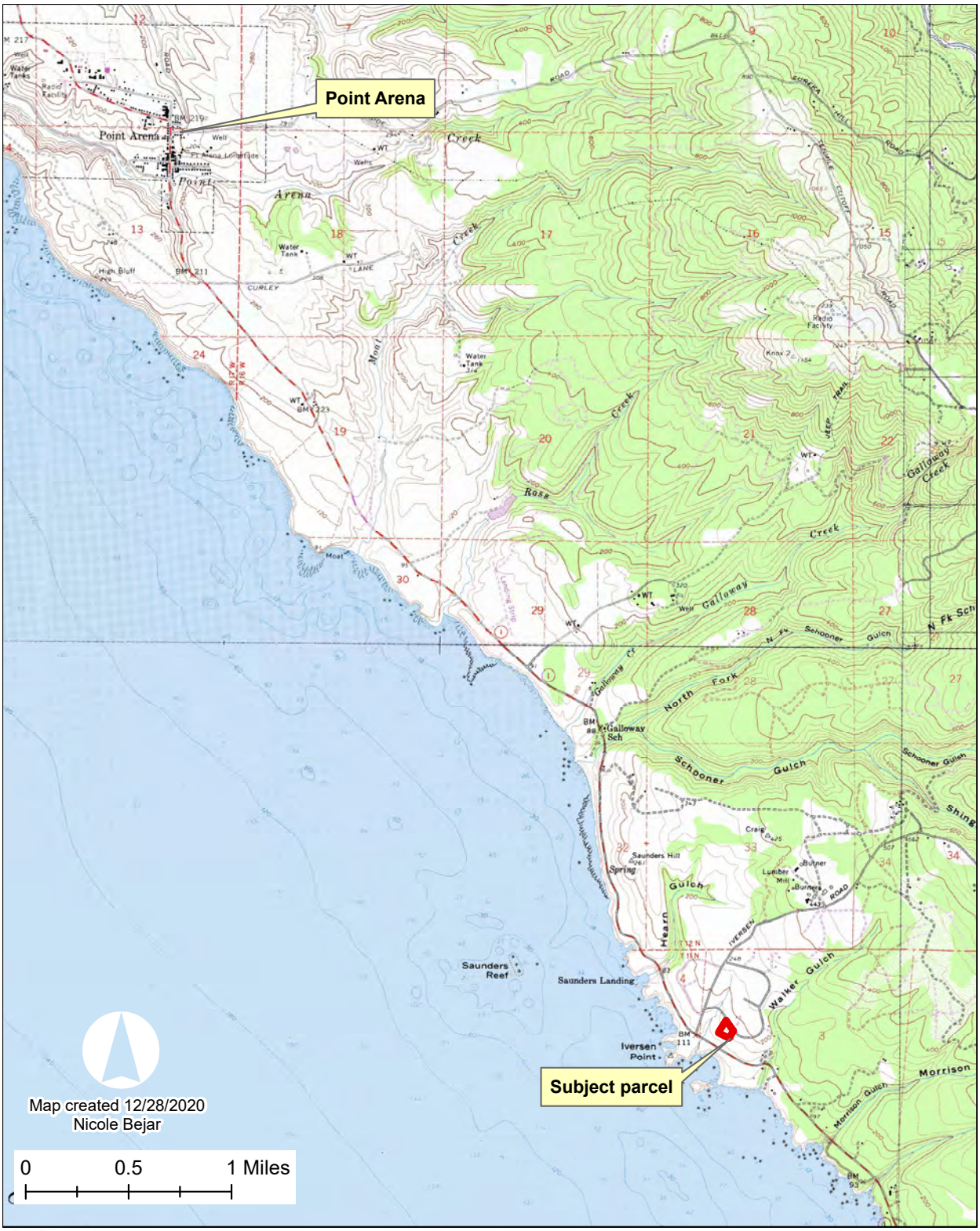

Figure 1. Location of the subject parcel in relation to the City of Point Arena.

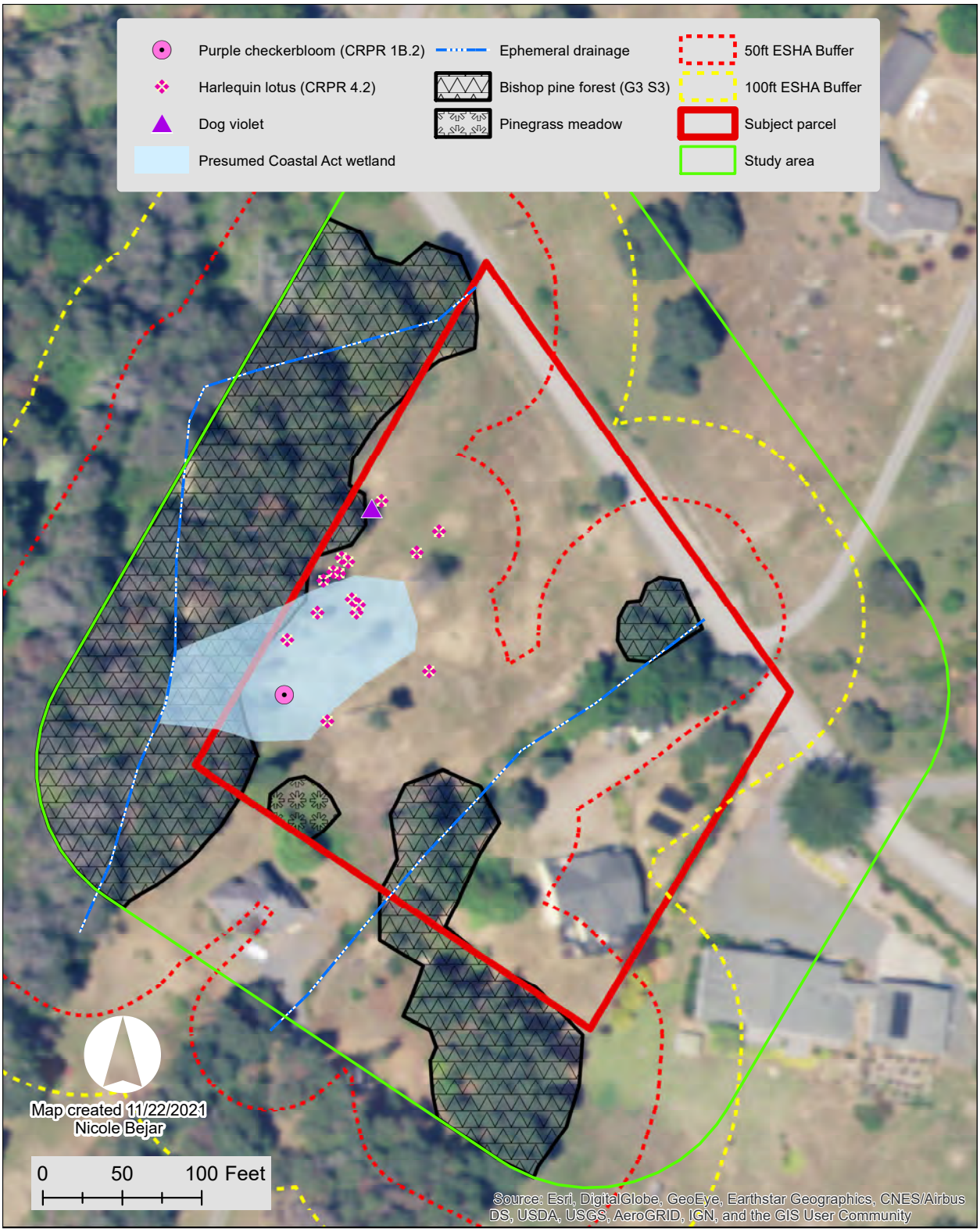

Figure 2. Potential and presumed ESHA within the study area.

2. PROJECT DESCRIPTION

No additional development is proposed. This report is being produced as a result of Major Vegetation Removal that occurred at the subject parcel without benefit of a permit to help agencies determine what resources were present before the MVR, what impacts may have occurred due to the MVR, and what resources remain in the study area at the time of this survey. WCPB recommends, and has prepared, a Mitigation Monitoring and Reporting Plan for the restoration of the Bishop pine forest habitat that was present on the parcel prior to the MVR.

3. STUDY AREA DESCRIPTION

3.1. General Site Description

The parcel is 5.6 acres in size, and is located east of Highway One, in a residential subdivision within the Coastal Zone, and 5.5 miles south of Point Arena. The study area is relatively flat with an elevation of 160 feet above sea level with a gentle, southwest facing slope of approximately 5%. The parcel is currently developed with a single-family residence, shed, driveway, and solar panels and surrounded by similar residential development. An incised ephemeral drainage running from northeast to southwest divides the parcel. The portion of the parcel with the residence and other buildings, roughly 1/3 of the area, is on the east side of the drainage while the western ~2/3 of the parcel is undeveloped, except for the septic leach fields and perimeter fence. The MVR occurred on the western portion of the parcel.

3.2. Land-Use History

The subject parcel was created in 1961, as a part of the subdivision of Island Cove Estates as approved by the County of Mendocino Planning Commission. According to an interview with a neighbor to the north of the subject parcel many pines were planted in this area around the time of the subdivision. WCPB senior biologist Asa Spade has noted that a number of the pines on the parcel to the north of the subject parcel have greener foliage than is typical of Bishop pines in Mendocino County. The Manual of California Vegetation notes that “Trees to the north [of the Sea Ranch] have leaves with a blue cast (blue race), and those to the south have greenish leaves (green race).” Some Bishop pine trees in the area of the subject parcel appear to be “southern race” Bishop pines planted here.

An aerial photograph from 1998 (**Figure 3**) shows that the residence on the subject parcel was there at that time. The Bishop pine forest was similar in extent then as it was up until the MVR. **Figure 4** depicts the same area in 2013, again, prior to the MVR. In June 2018, most of the Bishop pine trees within the parcel boundary were removed without benefit of a Coastal Development Permit due to the potential hazards posed by the trees that were dying from disease and other factors. **Figure 5** is an aerial photo of the same area from 2021, after the MVR has occurred. It should also be noted in the 2021 photo that there is a wide swath of dead and declining Bishop pines present on the parcels directly to the west of the subject parcel. Finally, **Figure 6** is a drone photo of the MVR area taken by WCPB during the November 25, 2020, site visit. The probable condition of the Bishop pine trees removed on the subject parcel can be inferred by the forest to the west, which are a part of the same stand of Bishop pine forest. In this remaining portion of the stand it appears that roughly half of the trees are dead and another quarter are in decline.

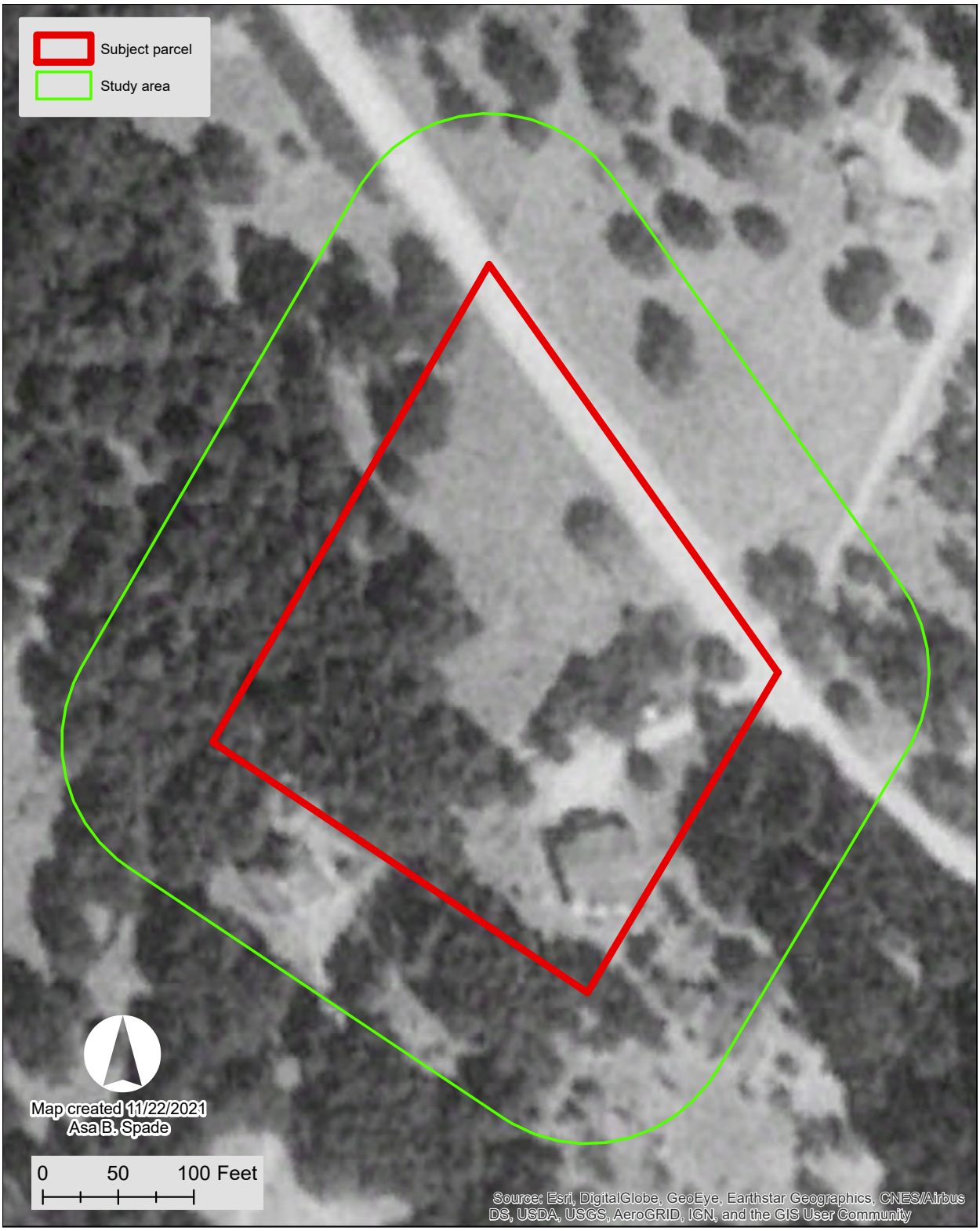

Figure 3. Aerial photograph from 1998 showing the residence and Bishop pine forest at that time.

Figure 4. Aerial photo of the study area in 2013. The Bishop pine forest looks relatively healthy at this time.

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2021 Aerial Photo

Figure 5. Aerial photograph from 2021, after the MVR. Note also the huge swath of dead Bishop pine trees on the adjacent parcels to the west.

Figure 6. Drone photo taken November 2020. The residence on the subject parcel can be seen at the bottom of the photo, the area where MVR occurred through the middle of the photo and in the upper left of the photo can be seen the declining Bishop pine forest, with many dead trees, on the adjacent parcel to the west of the subject parcel.

3.3. Topography and Soils

The elevation of the study area is about 160 feet above sea level. One type of soil has been mapped by the Natural Resource Conservation Service in the study area: Cabrillo-Heeser complex, 0 to 5% slopes. This map unit is on marine terraces. According to Soil Survey of Mendocino County, Wester Part: “The vegetation is mainly perennial grasses and forbs.” “This unit is about 50 percent Cabrillo sandy loam and 30 percent Heeser sandy loam. The Cabrillo and Heeser soils occur as areas so intricately intermingled that it was not practical to map them separately at the scale used.” “The Cabrillo soil is very deep and is somewhat poorly drained. It formed in marine sediments.” “The effective rooting depth is limited by saturation for brief or long periods following episodes of heavy rain from December through April.” (Rittiman 2006) This soil complex has slow permeability and is listed on the hydric soils list due to the inclusion of Tropaquepts soils, which make up 3% of the complex. (USDA Natural Resource Conservation Service, 2001; **Appendix A**). It should be noted that when a given soil

is listed on the National Hydric Soils List as a hydric soil, that does not necessarily mean a wetland is present. Soil complexes are mapped at a coarse resolution and contain a number of components, any one of which may or may not be hydric, and may or may not be present in the particular mapped location.

3.4. Climate and Hydrology

The Mendocino Coast has a Mediterranean climate with average annual precipitation of 40.24 inches (WRCC, Station Fort Bragg 5N, average for years 1895-2016), with the majority of rain occurring in winter months (November through March).

The USFWS National Wetlands Inventory (**Appendix B**) was consulted but does not indicate any wetlands or streams documented within the study area. Two ephemeral drainages were observed – one northwest of the parcel boundary and the other one in the southern portion of the parcel just north of the driveway. Both drainages were fed by culverts through Iversen Drive, however, defined channels were not observed east of the road. The southern drainage is an incised 6ft deep by 4ft wide channel with bed and bank features. The northwestern drainage is an incised 7ft deep by 7ft wide channel with bed and bank features.

Vegetation associated with wetlands, including coast rush (*Juncus hesperius*), western rush (*J. occidentalis*), and wonder woman sedge (*Carex gynodynama*) were observed in an area between the two drainages leading downhill toward the northern drainage. Wetland delineation work was not conducted, instead this area was presumed to be Coastal Act wetland for the purpose of this scoping survey and ESHA analysis.

3.5. Vegetation and Natural Communities

The majority of the subject parcel and several areas of neighboring parcels are vegetated with non-native invasive grassland and a mixture of lawn and landscaping plants. Areas of Bishop pine forest are present on the parcel to west of the subject parcel and surrounding the residence on the subject parcel to its south and west. A small stand of redwoods stood to the west of the residence. A small patch of pinegrass was present near the southwest corner of the subject parcel. Some rushes and sedges were present within a portion of the grassland on the western side of the subject parcel and this area is presumed to be Coastal Act wetland. Plant communities and vegetation in the study area are mapped in **Figure 7**.

Figure 7. Plant communities and vegetation present in the study area.

3.6. Adjacent Lands

The parcels to the north, east and south of the subject parcel are all developed with single family residences. The parcel to the west of the subject parcel is vegetated with declining Bishop pine forest and, while currently undeveloped, a single family residence was recently approved to be built on that parcel.

3.7. Existing Development

Fencing is present along Iversen Drive and between the subject parcel and the parcels to the south and east of it. A single family residence, a couple attending outbuilding, and two solar panels are present on the east side of the parcel. Septic leach fields are present on the parcel west of an ephemeral drainage that divides the parcel. A small foot bridge allows access across the drainage.

4. SURVEY METHODOLOGY

4.1. Scoping Tables

Scoping tables were created for the special-status plant species and wildlife with the potential to occur in the study area by reviewing the most up-to-date species lists for the California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS).

For purposes of this evaluation, special-status plant species are vascular plants that are (1) designated as rare, threatened, or endangered by the state or federal governments; or (2) are proposed for rare, threatened, or endangered status; and/or (3) are state or federal candidate species, and/or (4) considered species of concern by the USFWS and/or (5) are included on the California Rare Plant Rank (CRPR) List 1A, 1B, & 2.

Maps were created using the California Natural Diversity Database CNDDB for records within 1 mile of the study area (**Figure 8** and **Figure 9**). The CNDDB is a database consisting of historical observations of special-status plant species, wildlife species, and natural plant communities. CNDDB was used to help compile a list of special status plants and animals with potential to occur in the study area. This list was not limited to species presented in the maps, it includes all species indicated by a search of all quads with similar geology, habitats, and vegetation to those found in the project area. Because the CNDDB is limited to reported sightings, it is not a comprehensive list of plant species that may occur in a particular area. However, it is useful in refining the list of special-status plant species that have the potential to occur on a particular site.

A database search was performed using the CNPS *Electronic Inventory*, which allows users to query the *Inventory of Rare and Endangered Plants of California* using a set of search criteria (e.g., quad name, habitat type). A target list of special-status plant species with the potential to occur on the site was developed through interpretation of the CNDDB and CNPS query results. The biological scoping tables with special status resources potential occurrences in the study area are presented in **Appendix C: Tables 1, 2, and 3.** While directed by query results, surveys were not restricted only to those species indicated by this literature review. Field surveys and subsequent reporting were comprehensive and floristic in nature.

Additional information, (e.g. morphological characteristics, range, habitat and bloom period) was collected for each of the special-status plant species that had the potential to occur within the study area. WCPB staff botanists reviewed these characteristics for each of the plants on the target list prior to initiating fieldwork.

The botanical survey of the study area was conducted primarily adhering to the protocol described by the California Department of Fish and Wildlife in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (2018).* Plant communities were further analyzed using the *CDFW-CNPS Protocol for the Combined Vegetation Rapid Assessment and Relevé Field Form (2019)*(**Appendix D**).

Additional database review was conducted to assess the potential for wetlands to occur in the area prior to field work. Aerial photography was assessed for features with "wet" characteristics and the Inventory of National Wetlands database was viewed within the study area to see if any previously documented wetlands occur in the study area.

4.2. Field Surveys

WCPB staff biologists conducted an initial biological scoping survey on November 25, 2020. Additional floristic surveys were conducted on April 16, June 24, and August 06, 2021, for a total of 9.17 person hours, to compile a full floristic list of plants occurring in the study area and to identify any rare resources having the potential to meet the LCP ESHA definitions. To ensure potential special status plants were evident and identifiable, offsite **reference plant populations** were visited prior to the project field surveys. Verified offsite reference site plants observed by WCPB staff during the 2020 and 2021 floristic seasons included: short-leaved evax (*Hesperevax sparsiflora* var*. brevifolia*), Mendocino coast paintbrush (*Castilleja mendocinensis*), harlequin lotus (*Hosackia gracilis*), headland wallflower (*Erysimum concinnum*), Menzies' wallflower (*E. menziesii*), coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*), Blasdale's bent grass *(Agrostis blasdalei*), Point Reyes blennosperma (*Blennosperma nanum* var*. robustum*), coast lily (*Lilium maritimum*), deceiving sedge (*Carex saliniformis*), Lyngbye's sedge (*C. lyngbyei*), California sedge (*C. californica*), Howell's spineflower (*Chorizanthe howellii*), round-headed Chinese houses (*Collinsia corymbosa*), swamp harebell (*Campanula californica),* Point Reyes horkelia (*Horkelia marinensis*), thin-lobed horkelia (*H. tenuiloba*), perennial goldfields (*Lasthenia californica* ssp*. macrantha*), great burnet (*Sanguisorba officinalis*), early blue violet (*Viola adunca*), nodding-semaphore grass (*Pleuropogon refractus*), stag's-horn clubmoss (*Lycopodium clavatum*), north coast semaphore grass (*Pleuropogon hooverianus*), Canadian bunchberry (*Cornus canadensis*), Pacific blue field gilia (*Gilia capitata* ssp. *pacifica*), manyleaf gilia (*G. millefoliata*), redwood lily (*Lily rubescens*), pygmy manzanita (*Arctostaphylos nummularia* ssp. *mendocinoensis*), Bolander pine (*Pinus contorta* ssp. *bolanderi*), Mendocino cypress (*Hesperocyparis pygmaea*), leafy Bishop's cap (*Mitellastra caulescens*), Bolander's reed grass (*Calamagrostis bolanderi*), pink sand verbena (*Abronia umbellata* var. *beviflora),* white beak sedge (*Rhynchospora alba*), Oregon goldthread (*Coptis laciniata*), Point Reyes sidalcea (*Sidalcea calycosa* ssp. *rhizomata*), purple stemmed checkerbloom (*S. malviflora ssp. purpurea*), Maple-leaved checkerbloom (*S. malachroides*), Whitney's farewell-to-spring (*Clarkia amoena ssp. whitneyi*), supple daisy (*Erigeron supplex*), coast fawn lily (*Erythronium revolutum*), American manna grass (*Glyceria grandis*), North Coast phacelia (*Phacelia insularis var. continentis*) Gairdner's yampah (*Perideridia gairdneri ssp. gairdneri*), and corn lily *(Veratrum fimbriatum*).

All identifiable plant species located during the surveys were identified to the lowest taxonomic level necessary to determine the presence of special status plant species and are listed in **Table 1 (Appendix C**). *The Jepson Manual: Vascular Plants of California* (Baldwin 2012) was used to determine the taxonomic nomenclature. *A Manual of California Vegetation Second Edition* (Sawyer 2009), *Classification of the Vegetation Alliances and Associations of Sonoma County, CA, V. 2* (Klein 2015) and the *California Natural Communities List* (CDFW 2021) were used to classify and describe representative plant communities present. A potential for false negative survey results exists. For example, a rare plant could be eaten by deer around the time when they would have been evident and identifiable and therefore not be detected during surveys. Some plants remain dormant and do not become evident and identifiable every year. Climatic conditions are different each year and may have unpredictable effects on the bloom windows of each species. Heavy rains, for example, may cause one species to bloom early and another species to bloom later than in normal years. Well timed site visits and frequent observations at known reference sites reduce the chance of error.

4.3. Wetland and Riparian Delineation

Protocol level wetland delineation was not conducted. Areas of presumed wetland were determined through observations of topography and searching for surface hydrology and hydrophytic plants. WCPB Senior Biologist Asa Spade is trained in Army Corps wetland delineation and advanced wetland delineation. The ACOE recognizes wetlands where hydrophytic vegetation, hydric soils, and hydrology are all present. In the California Coastal Zone, wetlands are recognized if any one of the three ACOE parameters (hydrophytic vegetation, hydric soils, or hydrology) is present. Wetlands reported and mapped in this report are Coastal Act wetlands and may or may not be Army Corps wetlands; a distinction is made where important.

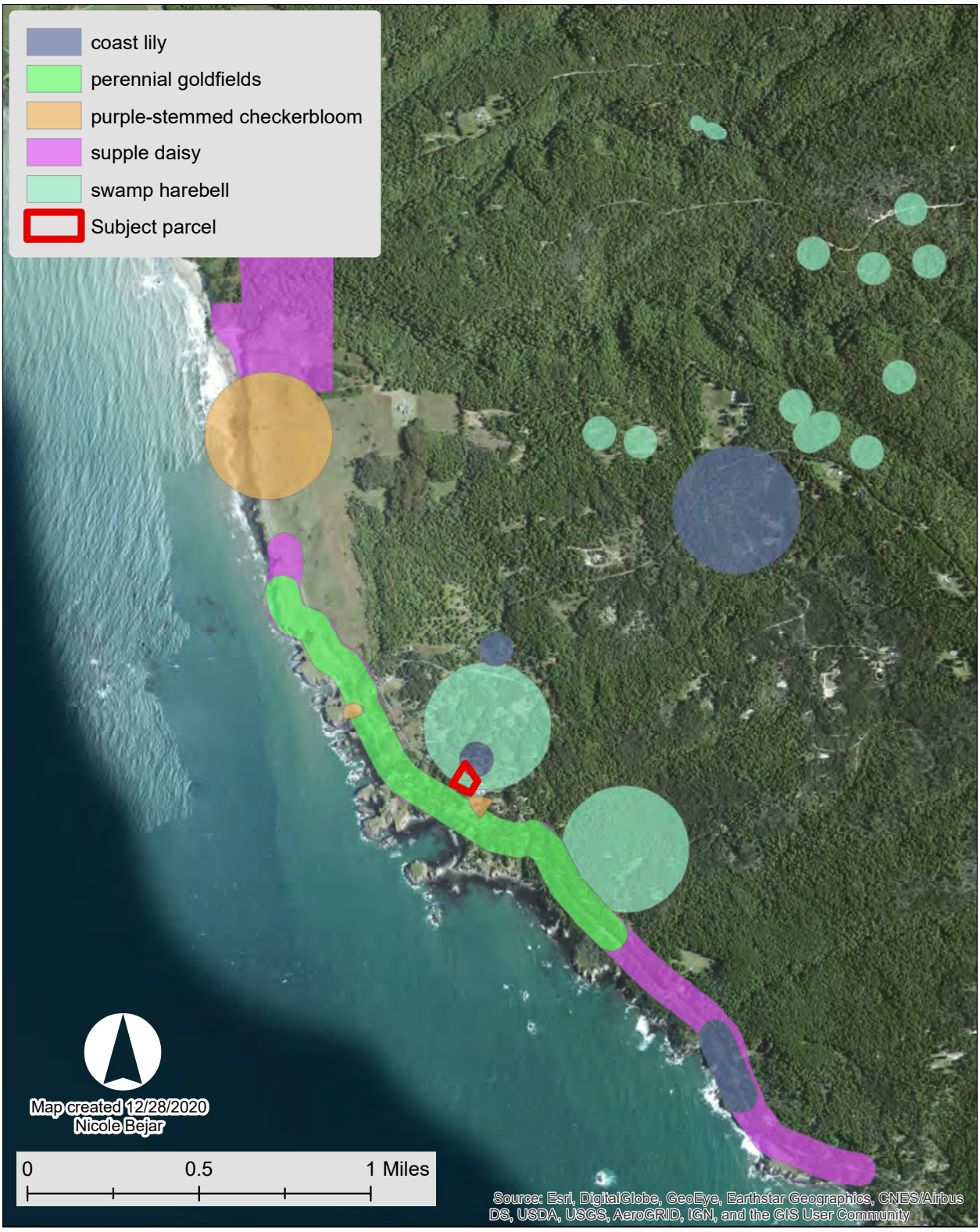
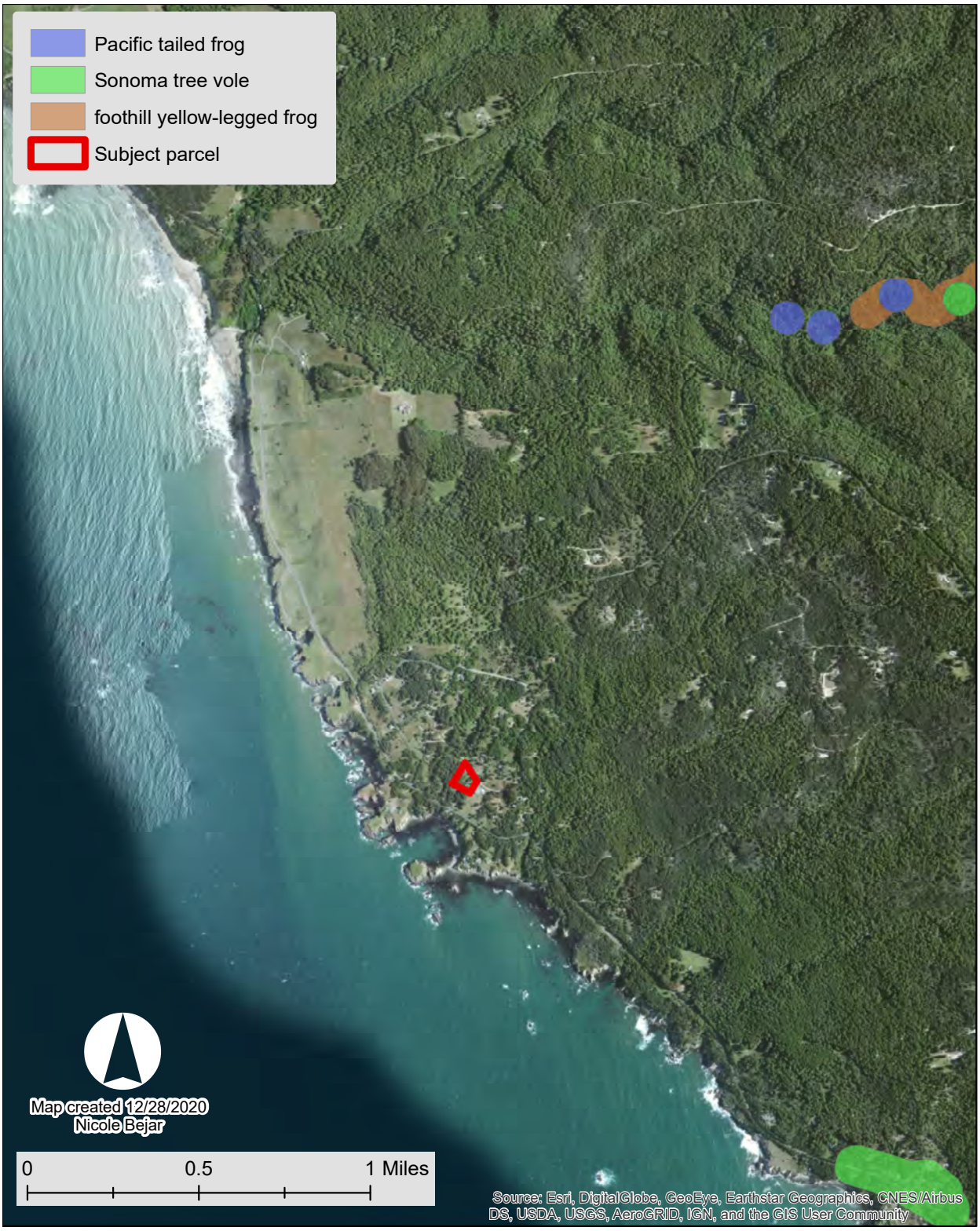


Figure 8. Rare flora reported to CDFW in the proximity of the study area and recorded in the CNDDB database.



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CNDDB Fauna

Figure 9. Rare fauna reported to CDFW in the proximity of the study area and recorded in the CNDDB database.

5. SURVEY RESULTS

Biological Field Surveys were performed that identified the following: plants, plant communities, presumed wetlands, special status animals and animal habitat in the study area.

5.1. Plants – Presumed ESHAs observed

The CDFW's California Native Diversity Database (CNDDB) BIOS, *Version 5* (2016), was used to inform the search on special status flora previously reported in the vicinity of the project area. Eighty species of herbs, grasses, sedges, rushes, ferns, shrubs, trees, and lichens were identified in the study area and are listed in **Appendix E**. One special status plant species and one watch list species were observed during the floristic surveys: **purple checkerbloom** (*Sidalcea malviflora* ssp. *purpurea* CRPR 1B.2), and **harlequin lotus** (*Hosackia gracilis* CRPR 4.2). Two common species of plants that are potential or known larval host plants of federally endangered butterflies were observed: Early blue violet (*Viola adunca*) and common Pacific pea (Lathyrus vestitus). The watch list species harlequin lotus is also the presumed larval host plant of the federally endangered lotis blue butterfly. Locations where special status plants were observed are mapped in **Figure 2**.

5.1.1. Purple checkerbloom (*Sidalcea malviflora* ssp*. purpurea* CRPR 1B.2)

Around ten checkerbloom plants were found within the study area in the western quadrant of the subject parcel (**Figure 10**). The plant was positively identified as *Sidalcea malviflora* and was presumed to be the rare subspecies *purpurea* based on this subspecies occurring coastally, records of this rare subspecies in the area, and ±purple calyxes of the flowers. This plant had a number of flowers on each inflorescence however, while the inflorescences of subspecies *purpurea* are described as being "generally few flowered" (Jepson 2021). This report presumes the plant is of the rare subspecies, and presumes it is an ESHA.

Figure 10. Checkerbloom observed at the site, presumed to be the rare purple checkerbloom.

5.1.2. Harlequin lotus (*Hosackia gracilis* CRPR 4.2)

Formerly known as *Lotus formosissimus,* this plant is the presumed larval host plant of the Lotis blue butterfly. Harlequin lotus was observed in several locations in grassland habitat in and around the edges of the presumed wetland that occurred within the western part of the study area (**Figure. 11**). At least 15 small patches of this plant were observed with an estimated population of 50-100 individual plants. WCPB generally sees this species of plant in areas with sparse or no overstory.

While they do sometimes occur in the understory of pine forests WCPB Senior Biologist Asa Spade believes this species may have benefited from the removal of Bishop pine trees on the subject parcel, providing more sunlight to the area where they were found and allowing them to flourish.

Figure. 11 Harlequin lotus within the study area.

5.1.3. Common Pacific pea (*Lathyrus vestitus*)

Common Pacific pea is listed as a potential larval host plant for the federally endangered lotis blue butterfly in the *Draft Protocol for Presence-Absence Surveys of the Endangered Lotis Blue Butterfly* written for the USFWS by Dr. Richard Arnold (Arnold 2008). A small patch of this species was present in the southern most of the two ephemeral drainages, near the southwestern parcel boundary (**Figure 12**).

Figure 12. Pacific common pea in the southern ephemeral drainage.

5.1.4. Early blue violet (*Viola adunca*)

Early blue violet is the larval host plant for the federally endangered Behren's silverspot butterfly. Only a few plants of this species were present; north of the presumed wetland area, along the northwestern parcel boundary (**Figure 13**). WCPB consulted with USFWS Endangered Species Biologist Clint Pogue who agreed with Mr. Spade that the *Viola* population at this site is too small to be likely to support a Behren's silverspot population.

Figure 13. Early blue violet observed at the subject parcel.

5.2. Plant Communities Observed

The plant community descriptions below are for the current conditions of the communities within the study are at the time of the surveys, post Major Vegetation Removal.

5.2.1. Bishop pine forest (Pinus muricata Forest Association G3? S3?)

Bishop pine forest was present to the west of the subject parcel as well as a smaller stand along the easternmost ephemeral drainage and to the south of the corner of the subject parcel. A few Bishop pine trees were present in the western corner of the parcel along the ephemeral drainage. The areas mapped as Bishop pine forest (**Figure 7**) had an overstory dominated by Bishop pine and also included some Monterey pine (*Pinus radiata*), blue gum eucalyptus (*Eucalyptus globulus*), and tan oak (*Notholithocarpus densiflorus*) in some areas. The shrub layer was sparse and included cascara sagrada (*Frangula purshiana*), hairy honeysuckle (*Lonicera hispidula*), evergreen huckleberry (*Vaccinium ovatum*), California wax myrtle (*Morella californica*), thimbleberry (*Rubus parviflorus*), California blackberry (*R. ursinus*), coyote brush (*Baccharis pilularis*), and cotoneaster (*Cotoneaster franchetii*). The understory (**Figure 14**) was also sparse, containing sword fern (*Polystichum munitum*), lady fern (*Ethereum filix-femina*), common velvetgrass *(Holcus lanatus*), blue wild rye (*Elymus glaucus*), bull thistle (*Cirsium vulgare*), dune goldenrod (*Solidago spathulata*), and bracken fern (*Pteridium aquilinum*). Many Bishop pines in the overstory (**Figure 15**) were dead or declining. Perhaps 1/3 were healthy, 1/3 declining, and the other 1/3 dead. In the northern portion of the stand to the west of the subject parcel a number of non-native Monterey pines (**Figure 16**) were present and some Bishop pines with greener foliage than is usual for this area of the Mendocino coast. The presence of these trees may indicate that at least a portion of these trees were planted. The neighboring land owner to the north confirmed that many pines were planted around the time the subdivision was created. Monterey pine seedlings (**Figure 17**) were present in the understory but no Bishop pine seedlings were noted.

Figure 14. Bishop pine forest understory.

Figure 15. Bishop pine forest overstory with many dead or declining trees.

Figure 16. Non-native Monterey pines with greener foliage and larger cones were present within the Bishop pine forest.

Figure 17. Non-native Monterey pine seedlings in the understory of the pine forest. Monterey pines have three needles per fascicle (bundle) while the native Bishop pines have only two needles per fascicle.

5.2.2. Sweet vernal grass – common velvet grass grassland (*Anthoxanthum odoratum* – *Holcus lanatus* Herbaceous Association)

Non-native grassland (**Figure 18** & **Figure 19**) dominated by sweet vernal grass and common velvet grass was the most abundant plant community within the subject parcel and was also present to the north and the south of the parcel.). Other herbaceous species present included colonial bentgrass (*Agrostis capillaris*), wild oats (*Avena barbata*), purple awned wallaby grass

(*Rytidosperma penicillatum*), ox-eyed daisy (*Leucanthemum vulgare*), short podded lotus (*Acmispon brachycarpus*), brome fescue (*Festuca bromoides*), wonder woman sedge (*Carex gynodynama*), western rush (*Juncus occidentalis*), spreading rush (*Juncus patens*), cutleaf burnweed (*Senecio glomeratus*), bird's foot trefoil (*Lotus corniculatus*), bracken fern (*Pteridium aquilinum*), bull thistle (*Cirsium vulgare*), hairy cat's ear (*Hypochaeris radicata*), pale flax (*Linum bienne*), English plantain (*Plantago lanceolata*), common sheep sorrel (*Rumex acetosella*), blue-eyed grass (*Sisyrinchium bellum*), little quaking grass (*Briza minor*), rattlesnake grass (*B. maxima*), California blackberry was present at low density.

A portion of the sweet vernal grass common velvet grass grassland (**Figure 20** & **Figure 21**) had a higher proportion of, and some additional species of, plants characteristic of wetter soils and is mapped and treated in this report as a presumed Coastal Act wetland. In this area coast rush, wonder woman sedge, and western rush were more apparent. Vegetation relevés were conducted in both the drier and wetter portions of the grassland and, while there was a visual difference in how apparent rushes were in this area, analysis of plant cover and dominant species led WCPB to conclude that this area should still be classified as sweet vernal grass – common velvet grass grassland; there are more rushes, but they are not a dominant species in terms of vegetative cover.

Figure 18. Non-native grassland dominated by sweet vernal grass and common velvet grass.

Figure 19. Non-native grassland with common velvet grass, sweet vernal grass, and hairy cat's ear flowers apparent.

Figure 20. Portion of the non-native grassland that also had some rushes and other vegetation adapted for wetlands.

Figure 21. Portion of the presumed wetland area of the non-native grassland, later in the season than the previous photograph.

5.2.3. Pinegrass meadow (*Calamagrostis rubescens* Herbaceous Association)

A small area (~1,000 ft2) in the western corner of the parcel was dominated by pinegrass (*Calamagrostis rubescens*) (**Figure 22**). The current California Natural Community List does not include pinegrass; it may more often occur as an understory species within pine forests, hence the name pinegrass. At this site, due to the Bishop pine overstory removal, it appears that the patch of pinegrass may be temporarily thriving, with its additional sunlight. Over time, however, Mr. Spade believes that the invasive grasses present over most of the rest of the parcel may be more fit for the sunny conditions and may eventually outcompete the pinegrass. Other species present in, or nearby, the pinegrass meadow included bracken fern, Monterey pine seedlings, Douglas iris (*Iris douglasiana*), California blackberry, and salal. The woody plants mentioned were present at low cover.

Figure 22. Pinegrass meadow

5.2.4. Lawn/Landscaping, Redwood Trees, and other vegetation areas

Some areas mapped in **Figure 7** are marked as Lawn/Landscaping. For the most part these areas were grasslands off the subject parcel where access was limited and grass and other vegetation was kept mown short and therefore less identifiable. It is likely that most of these areas, if left to grow out, would show themselves to be sweet vernal grass – common velvet grass meadow similar to that on the subject parcel. Other vegetation included in this mapping unit are the ornamental plants around the residences in the study area and a small patch of native trees along the eastern drainage, north of the residence on the subject parcel. This small cluster of trees included a few Douglas fir (*Pseudotsuga menziesii*), Bishop pine, and planted Monterey pine and Monterey cypress (*Hesperocyparis macrocarpa*). Just west of residence on the subject parcel is a small stand of redwood trees, also likely planted at some point.

5.3. Wildlife - Potential Occurrences

The California Department of Fish and Wildlife (CDFW) California Native Diversity Database (CNDDB) BIOS, Version 5 (2016), was used to inform the search on fauna previously reported in the vicinity of the project area (**Figure 9**). No special-status wildlife was observed during the field biological surveys but potential habitat for special status wildlife species was identified. Descriptions below are for wildlife species with moderate to high potential to occur, and for State or Federally Endangered or Threatened Species with potential to occur. A complete list of special status wildlife with the potential to occur at the project site can be found in **Table 3 of Appendix C**.

5.3.1. Invertebrates

5.3.1.1. Lotis Blue butterfly (*Lycaeides argyrognomon lotis*) (G5TH SH)

This Federally Endangered butterfly species has not been seen since 1983, it is primarily from Mendocino County but historically recorded in northern Sonoma and possibly Marin Counties. This species inhabits wet meadows, damp coastal prairie, and potentially bogs or poorly-drained sphagnum-willow bogs where soils are waterlogged and acidic. The presumed host

plant is Harlequin lotus (*Hosackia gracilis*), a number of which were observed in and north of the presumed Coastal Act wetland on the western edge of the subject parcel. Another plant which is listed in the USFWS survey protocol as a potential larval host plant for this butterfly, common Pacific pea, was present within the eastern drainage, at the southern edge of the subject parcel. Because this butterfly species has not been seen since 1983 and was last seen in Caspar, CA, not very near the Iversen subdivision, it is unlikely that it is present within this study area. However, there is still some potential. The removal of Bishop pine trees from the area has already occurred and no additional development is proposed. WCPB has prepared a Bishop pine forest restoration Mitigation, Monitoring, and Reporting Plan. Consideration of and measures for the avoidance of impact to the Lotis blue butterfly are included.

5.3.1.2. Behren's silverspot butterfly (*Speyeria zerene behrensii*) (G5T1 S1)

Behren's silverspot is known historically from the town of Mendocino, Mendocino County, south to the area of Salt Point State Park, Sonoma County. Now presumed to be from Manchester south to the Salt Point area. This species inhabits coastal terrace prairie with caterpillar host plant early blue violet, and adult nectar sources such as thistles, asters, etc. A few early blue violet (*Viola adunca*) plants were found on the western portion of the subject parcel. The small number of plants is unlikely to support Behren's silverspot butterflies but there is still a possibility that they could be present. WCPB has prepared a Bishop pine forest restoration Mitigation, Monitoring, and Reporting Plan. Consideration of and measures for the avoidance of impact to the Behren's silverspot butterfly are included.

5.3.1.3. Western Bumblebee (*Bombus occidentalis*) (G2G3 S1)

Western bumblebee (*Bombus occidentalis*) is not a Federal or State protected species but is listed as a California Natural Diversity Database S1 species, an indication that there are limited known occurrences in California. The project area is in the former historical range of this species. Bumblebees observed during botanical surveys did not demonstrate the field markings of the western bumble bee, which include a conspicuous white tip of the abdomen. No further surveys are recommended at this time.

5.3.1.4. Obscure bumblebee (*Bombus caliginosus*) (G4? S1S2)

Obscure bumblebee (*Bombus caliginosus*) is also not a Federal or State protected species but is listed as a California Natural Diversity Database S1S2 species indicating that known occurrences are limited in California. This species is very similar to the common yellow-faced bumblebee (*Bombus vosnesenskii*) and can only be differentiated by the structure of the male genitalia. No bumblebee colonies were observed during the field surveys. No additional surveys for this species are recommended.

5.3.2. Fish

5.3.2.1.

No aquatic habitat capable of supporting fish was observed within the study area.

5.3.3. Amphibians

5.3.3.1. 5.4.3.1. California red-legged frog (Rana draytonii) (Federally Threatened; G4T2T3 S2S3)

California red-legged frog (*Rana draytonii*) is federally listed as a Threatened Species under the Endangered Species Act as of May 23, 1996. Critical habitat has been designated and the project area is not located in a critical habitat area for California Red Legged Frog. According to the US Fish and Wildlife, within Mendocino County, California red-legged frog is known to occur in the following Hydrographic Units: Point Arena, Garcia, and Gualala. Upland dispersal habitat can include forest debris and small mammal burrows.

The property is within the range for California red-legged frog. Neither of the ephemeral drainages present would support breeding for this species. Red-legged frogs disperse overland between bodies of water and have been found up to two-miles from water, therefore, all portions of the project area may be dispersal habitat for California red-legged frog. WCPB has prepared a Bishop pine forest restoration Mitigation, Monitoring, and Reporting Plan. Consideration of and measures for the avoidance of impact to the California red-legged frog are included.

5.3.3.2. Southern Torrent Salamander (*Rhyacotriton variegatus*) (G3G4 S2S3)

This Species of Special Concern occurs primarily in cold, well-shaded permanent streams and spring seepages in redwood, Douglas fir, mixed conifer, montane riparian and montane hardwood-conifer habitats. On land it normally occurs only within the splash zone or on moss-covered rock rubble with trickling water. No suitable habitat for this species occurs in the study area.

5.3.3.3. Red-bellied newt (*Taricha rivularis*) (G2 S2)

This Species of Special Concern inhabits primarily redwood forest, but also found within mixed conifer, valley-foothill woodland, montane hardwood and hardwood-conifer habitats. Rapid-flowing, permanent streams are required for breeding and larval development. No suitable breeding habitat was present within the study area. This species may range up to a mile from streams and may therefore be found in upland habitat during some times of the year.

5.3.3.4. Pacific tailed frog (*Ascaphus truei*) (G4 S3S4)

This Species of Special Concern occurs in montane hardwood-conifer, redwood, Douglas-fir, and ponderosa pine habitats. Pacific tailed frogs are found on the coast from Anchor Bay to the Oregon border. The species requires rocky high-gradient streams and there is therefore no suitable habitat for this species in the study area.

5.3.3.5. California giant salamander (Dicamptodon ensatus) (G3 S2S3)

The California giant salamander is primarily found in damp, coastal forests including Douglas fir and redwood forests. In Mendocino County, the range is limited to the southernmost portion of the County. They are primarily nocturnal. The adult form is found under surface litter and in underground tunnels. Eggs are concealed under rocks or debris in cold, slow moving streams. In areas with perennial streams adults may retain their gills. California giant salamanders breed between March and May. The property is within the range for California giant salamander, the habitat present is inadequate for breeding of this species.

5.3.4. Mammals

5.3.4.1. Sonoma tree vole (*Arborimus pomo) (G3 S3)*

The Sonoma tree vole range is located along the coast from Sonoma County through Mendocino, Humboldt, and Trinity County. Preferred habitat is considered mesic old growth Douglas fir forest, however Sonoma tree voles are known to live in other coniferous forests.
The total population is unknown but is estimated at over 10,000. This Species of Special concern requires fresh Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), Sitka spruce (*Picea sitchensis*), Monterey pine (*Pinus radiata*), or Bishop pine (*P. muricata*) needles for food. Sonoma tree voles live in the tree canopy and are thought to have limited dispersal capabilities, and so are threatened by canopy removal and fragmentation (Blois and Natureserve 2008). The state listing indicates the species is considered vulnerable in its range due to a restricted range, relatively few populations, recent and widespread declines or other factors.

Bishop pines, Monterey pines, and Douglas fir trees are present within the study area. No evidence of Sonoma tree vole, such as clumps of needle resin ducts were observed during the surveys. Tree removal has already occurred on the parcel and no additional tree removal or development is proposed. WCPB has prepared a Bishop pine forest restoration Mitigation, Monitoring, and Reporting Plan. No portion of the plan contains activities with potential to negatively impact Sonoma tree voles.

6. PREVIOUS WCPB ANALYSES

A Biological Scoping Survey Report and Report of Compliance was produced on January 15, 2021, after an initial Biological Scoping Survey was conducted to address impacts from MVR to the presumed ESHAs identified at that time. Three ESHAs were identified during this initial site visit: **Bishop pine forest pine grass meadow**, and **streams**. The Bishop pine forest used to extend into the parcel boundary; however, in June of 2018 most of the Bishop pine trees were removed without benefit of a Coastal Development Permit due to the potential hazards posed by the trees that were dying from disease and other factors. It was determined that the Bishop pine forest onsite was converted into a non-native common velvet grass meadow after tree removal. A small patch of native pinegrass meadow was observed on the southern property line and two ephemeral streams were identified draining through the northern and southern edges of the parcel. Since the initial survey was conducted during a time of the year when not all special status plants would have been evident or identifiable, WCPB recommended additional site visits during the spring and summer blooming period which were completed in 2021 and the results are described in this Biological Report.

After the initial site visit, WCPB biologists concluded that the Bishop pine forest was directly impacted by the removal of the Bishop pine forest onsite and the pinegrass meadow and ephemeral stream may have been indirectly impacted by MVR due to the proximity of impact. A Report of Compliance was completed to address impacts to the presumed ESHAs identified at the time and to guide restoration actions. WCPB recommended a Preliminary Mitigation, Monitoring, Reporting Plan to guide Bishop pine forest restoration which was completed as **Appendix G** of this Biological Report

7. DISCUSSION

Five types of presumed ESHAs were identified within the study area:

Stream ESHA – Two **ephemeral drainages** with permanent bed and bank features were present within the study area. Both drainages originate from culverts beneath Iversen Drive and neither have bed and bank features north of this road. One drainage is off the subject parcel toward the northwest, roughly parallel with the parcel boundary, and the second divides the parcel, with the residence and developed area of the parcel to its east and the undeveloped portion of the parcel where MVR has occurred to its west.

Wetland ESHA – One area of presumed **Coastal Act wetlands** was present within the study area. An area with more rushes and sedges that the surrounding grassland was present in the western portion of the parcel. No wetland delineation work was conducted, wetland boundaries were based on observations of differences in vegetation.

Plant Community ESHA – Two special status plant communities were identified in the study area: **Bishop pine forest** and a small area with **pinegrass meadow** that was likely Bishop pine forest understory but is now daylighted due to the MVR. A number of Bishop pine trees have been removed on this parcel, reducing the total area of this plant community.

Special Status Plant ESHA – Around ten checkerbloom plants presumed to be **purple checkerbloom** (*Sidalcea malviflora* spp. *purpurea* CRPR 1B.2) were present near the western corner of the subject parcel.

Special Status Animal Habitat – A number of harlequin lotus (*Hosackia gracilis* CRPR 4.2) plants, the presumed larval host plant for the federally endangered **lotis blue butterfly**, was present in the western portion of the subject parcel. A couple early blue violet (*Viola adunca*) plants were present within the area with harlequin lotus. Early blue violet is a common plant but is the larval host plant for the federally endangered **Behren's silverspot butterfly**, which occurs along the southern coast of Mendocino County.

WCPB biologists observed ~53 stumps with a greater than 12-inch diameter and ~10 stumps less than 12-inches in diameter within the subject parcel where Major Vegetation Removal has occurred. By comparing aerial photographs from before and after the MVR occurred (**Figure 23)** it is estimated that ~23,622 ft^2 of Bishop pine canopy was removed. A number of standing dead and dying trees are present in the uncut Bishop pine forest to the west of the subject parcel, and some standing dead trees remain on the subject parcel. It is likely that the Bishop pine forest on and surrounding the subject parcel was rapidly declining when the Major Vegetation Removal was conducted. The owners say that they removal was undertaken because of safety concerns. The neighbor to the north of the subject parcel was interviewed and said that many of the pines present on the subject parcel were planted around the time of the subdivision that created the subject parcel was approved.

The Bishop pine removal occurred in area that was special status Bishop pine forest community presumed ESHA, and portions of the removal area are presumed Coastal Act wetlands, pine grass meadow natural community, and habitat for rare purple checkerbloom, and for several plants that are or are thought to be larval host plants for Federally Endangered butterflies. The MVR also occurred within 100 feet of two ephemeral drainages. WCPB believes that it is unlikely that any negative impact as a consequence of the MVR has occurred to the pinegrass meadow, ephemeral drainages, presumed Coastal Act wetland, purple checkerbloom, lotis blue butterfly, or Behren's silverspot butterfly. No evidence of sediment resultant from the MVR was observed in the ephemeral drainages or presumed wetland. The removal of Bishop pine trees has increased sunlight to the pinegrass meadow, purple checkerbloom, harlequin lotus, early blue violet, and common Pacific pea plants present. These plants sometimes struggle in the understory of forest habitat and likely have benefitted from the tree removal. The pinegrass meadow may be more vulnerable to replacement by non-native invasive grasses that could take advantage of the additional sunlight.

Special status resources and their buffers were impacted by the removal of the Bishop pine forest onsite. A Biological Scoping Survey Report and Report of Compliance was produced on January 15, 2021, after an initial Biological Scoping Survey was conducted to address impacts from MVR to the presumed ESHAs identified at that time. Bishop pine forest, pinegrass meadow, and ephemeral drainage presumed ESHAs were addressed in the ROC. Additional presumed ESHAs, presumed Coastal Act wetland, purple checkerbloom, and potential butterfly habitat were observed and documented within 100 feet of the MVR in subsequent floristic surveys conducted by WCPB. WCPB concludes that no evidence of significant impact to these additional resources was observed and significant impact to these resources is unlikely to have occurred. WCPB has prepared a Bishop pine forest restoration Mitigation, Monitoring, and Reporting Plan to direct the restoration of the Bishop pine forest through natural recruitment of new pines at a sustainable rate conducive of a healthy mixed-age community in the area where the MVR occurred. All potential or presumed ESHAs documented are considered and measures to avoid any new impacts to these resources are included in the MMRP.

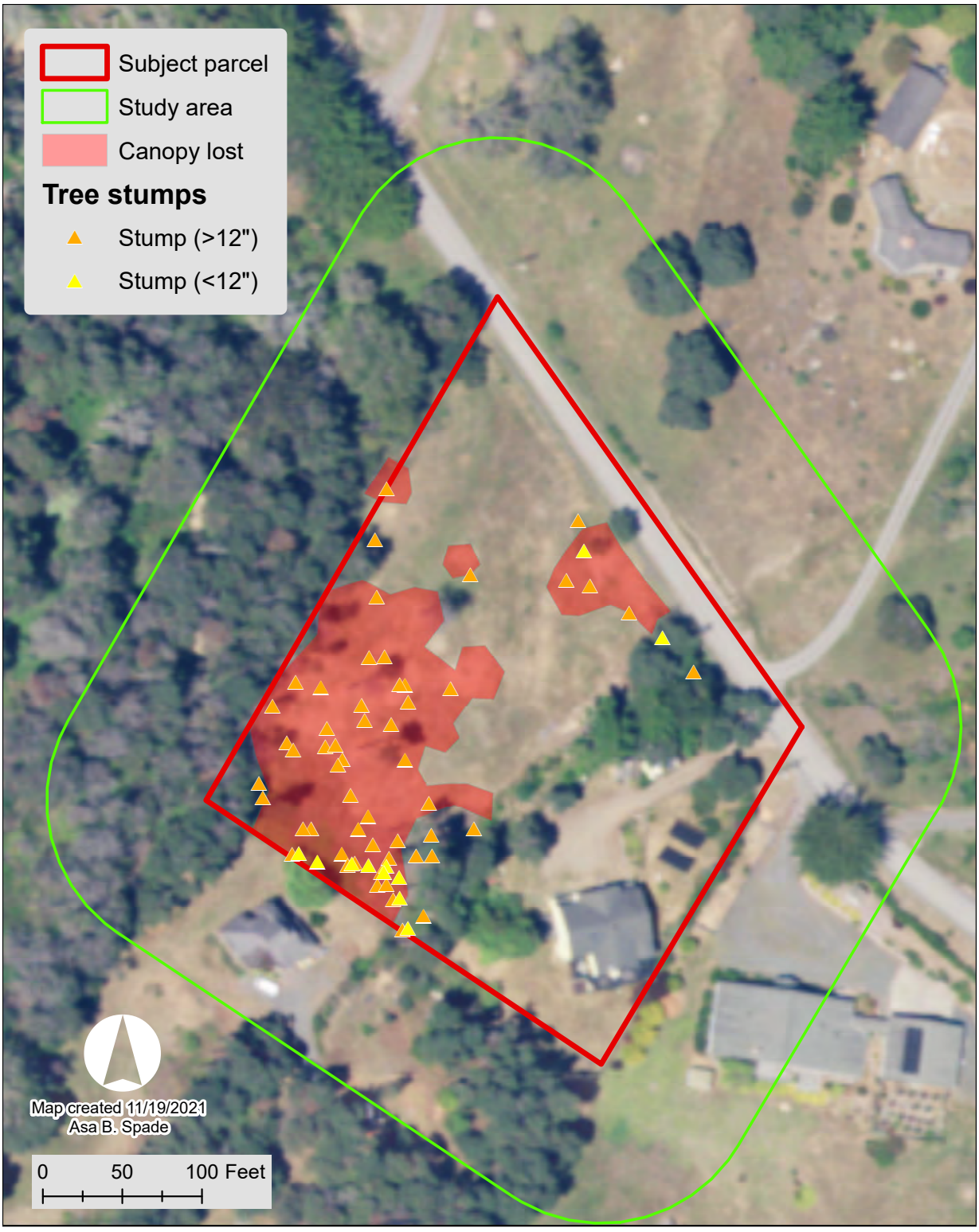

Figure 23. This map shows the approximate area where tree canopy was present in a 2013 aerial photograph and is no longer present in the 2021 aerial photo. Approximate locations of stumps observed is also shown.

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9. INVESTIGATOR BIOGRAPHIES

Contributing Biologists

Asa B Spade graduated from Humboldt State University with a Bachelor's Degree in Environmental Science, with a concentration in Landscape Ecosystems as well as a minor in Botany. Since that time, he has been working in the natural resources field, first with Mendocino County Environmental Health and later with California State Parks and the Department of Fish and Game. He has been trained in Army Corps wetland delineation by the Coastal Training Program at Elkhorn Slough and in Advanced Wetland Delineation by the Wetland Science and Coastal Training Program. He has been trained in the environmental compliance process for wetland projects in San Francisco bay and outer coastal areas. In 2011 Asa completed training to survey for California red-legged frog held by Elkhorn Slough Coastal Program. In 2015 he attended a Townsend's big eared bat basal hollow habitat assessment and survey methods workshop taught by Michael Baker, Leila Harris, and Adam Hutchins. Asa has trained with the Carex Working Group in identifying grasses and sedges of Northern California as well as a CNPS sedge workshop taught by CA Fish and Wildlife staff biologist Gordon Leppig. In 2019, he completed a training for burrowing owls taught by Dr. Lynne Trulio through the Elkhorn Slough Coastal Training Program and completed foothill yellow legged frog training taught by David Cook and Jeff Alvarez. Asa conducted field work for the Classification and Mapping of Mendocino Cypress Woodland and Related Vegetation using CNPS/CDFW Rapid Assessment/Relevé protocol. In 2021 Asa completed training by Jeff Alverez and Jeff Wilcox on the eradication of bullfrogs within the range of California red-legged and foothill yellow legged frog. He is on the Fish and Wildlife Service approved list for Point Arena mountain beaver surveys and has done surveys for Behren's silverspot butterfly, Northern spotted owl, Sonoma tree vole, foothill yellow-legged frog and the California red-legged frog. He has contributed natural resources expertise to more than 200 coastal development projects in Mendocino County.

Nicole Bejar graduated from Gonzaga University with a Bachelor's Degree in Environmental Studies and a minor in Biology. After graduating, she worked as an intern for The Nature Conservancy conducting vegetation monitoring for the endangered golden-cheeked warbler. She served as an AmeriCorps member for the Watershed Stewards Program which aims to conserve, restore, and enhance anadromous watersheds for future generations. She worked as a fisheries technician conducting salmonid monitoring and habitat restoration for various agencies, including the California Department of Fish and Wildlife, Pacific States Marine Fisheries Commission, and the Bureau of Land Management. She also has experience planning and implementing northern spotted owl, Sonoma tree vole, and amphibian surveys. She is on the U.S. Fish and Wildlife Service's approved list for Point Arena mountain beaver and Behren's silverspot butterfly surveys. She completed the Bullfrog Control in California Field Workshop 2021 led by Jeff Alvarez and Jeff Wilcox held at a UC Berkeley Field Station.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Mendocino County, Western Part, California

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Mendocino County, Western Part, California
Survey Area Data: Version 15, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 3, 2019—Jul 5, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
117	Cabrillo-Heeser complex, 0 to 5 percent slopes	16.6	92.5%
139	Dystropepts, 30 to 75 percent slopes	0.8	4.4%
235	Yellowhound-Kibesillah complex, 50 to 75 percent slopes, MLRA 4B	0.6	3.1%
Totals for Area of Interest		**18.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Mendocino County, Western Part, California

117—Cabrillo-Heeser complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: hmkm
Elevation: 20 to 240 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 250 to 330 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cabrillo and similar soils: 50 percent
Heeser and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cabrillo

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fluviomarine deposits derived from sandstone

Typical profile

H1 - 0 to 26 inches: sandy loam
H2 - 26 to 35 inches: sandy clay loam
H3 - 35 to 50 inches: sandy clay loam
H4 - 50 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 30 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Ecological site: R004XB060CA - Sandy Loam Terrace (Perennial Grass)
Hydric soil rating: No

Description of Heeser

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits derived from sandstone

Typical profile

H1 - 0 to 34 inches: sandy loam
H2 - 34 to 65 inches: sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R004XB060CA - Sandy Loam Terrace (Perennial Grass)
Hydric soil rating: No

Minor Components

Crispin

Percent of map unit: 5 percent
Hydric soil rating: No

Biaggi

Percent of map unit: 5 percent
Hydric soil rating: No

Sirdrak

Percent of map unit: 4 percent
Hydric soil rating: No

Tropaquepts

Percent of map unit: 3 percent
Landform: Marine terraces
Hydric soil rating: Yes

Unnamed, gentler or steeper slopes

Percent of map unit: 3 percent
Hydric soil rating: No

139—Dystropepts, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: hmlk
Elevation: 10 to 1,500 feet
Mean annual precipitation: 35 to 55 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 250 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Dystropepts and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dystropepts

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Minor Components

Rock outcrop

Percent of map unit: 10 percent
Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Vizcaino

Percent of map unit: 8 percent
Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser

Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Abalobadiah

Percent of map unit: 7 percent
Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

235—Yellowhound-Kibesillah complex, 50 to 75 percent slopes, MLRA 4B

Map Unit Setting

National map unit symbol: 2w91l
Elevation: 200 to 2,000 feet
Mean annual precipitation: 39 to 58 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 220 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Yellowhound and similar soils: 45 percent
Kibesillah and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yellowhound

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Convex, concave
Across-slope shape: Convex, concave
Parent material: Colluvium derived from conglomerate and/or colluvium derived from sandstone and/or residuum weathered from sandstone and/or residuum weathered from conglomerate

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 7 inches: gravelly loam
AB - 7 to 16 inches: gravelly loam
Bt1 - 16 to 29 inches: very gravelly loam
Bt2 - 29 to 46 inches: extremely gravelly loam
BCt - 46 to 54 inches: extremely gravelly loam
R - 54 to 64 inches:

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 39 to 59 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Kibesillah

Setting

Landform: Hills, mountains
Down-slope shape: Convex, concave
Across-slope shape: Convex, concave
Parent material: Colluvium derived from sandstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material
A1 - 0 to 4 inches: very gravelly loam
A2 - 4 to 13 inches: very gravelly loam
Bt1 - 13 to 19 inches: very gravelly loam
Bt2 - 19 to 26 inches: extremely gravelly clay loam
R - 26 to 39 inches:

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ornbaun

Percent of map unit: 7 percent
Landform: Hills, mountains
Down-slope shape: Convex, concave
Across-slope shape: Convex, concave
Hydric soil rating: No

Zeni

Percent of map unit: 7 percent
Landform: Hills, mountains
Down-slope shape: Convex, concave
Across-slope shape: Convex, concave
Hydric soil rating: No

Rock outcrop

Percent of map unit: 6 percent
Hydric soil rating: No

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U.S. Fish and Wildlife Service
National Wetlands Inventory

Holberg-Olsen NWI Map

November 25, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

WYNN COASTAL PLANNING & BIOLOGY

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Appendix C. Species Rarity Ranking System and Definitions

FED: federal status includes federally rare (**FR**), threatened (**FT**), or endangered (**FE**)

STATE: California state status includes rare (**CR**), threatened (**CT**), or endangered (**CE**)

CNPS: California Native Plant Society ranked inventory of native California plants thought to be at risk

CNPS Ranking

List 1A (1A) Presumed extinct in California.

List 1B (1B) Rare, threatened, or endangered in California and elsewhere.

List 2 (2) Rare, threatened or endangered in California but more common elsewhere.

List 3 (3) More information needed, a review list.

List 4 (4) Species of limited distribution, a watch list.

Threat Code extensions and their meanings:

.1 - Seriously endangered in California

.2 – Fairly endangered in California

.3 – Not very endangered in California

G-RANK: Global Ranking - The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range.

SPECIES OR NATURAL COMMUNITY LEVEL

G1 = Less than 6 viable element occurrences (Eos) OR less than 1,000 individuals OR less than 2,000 acres.

G2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres.

G3 = 21-80 Eos OR 3,000-10,000 individuals OR 10,000-50,000 acres.

G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.

G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

GH - All sites are historical so possibly extinct; the element has not been seen for at least 20 years, but suitable habitat still exists (**SH** = All California sites are historical and possibly extinct).

GX - All sites are extirpated; this element is extinct in the wild (**SX** = All California sites are extirpated).

Appendix C. Species Rarity Ranking System and Definitions

GXC - Extinct in the wild; exists in cultivation.

G1Q - The element is very rare, but there are taxonomic questions associated with it.

T - Rank applies to a subspecies or variety.

S-RANK: STATE RANKING - The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

S1 = Less than 6 viable Eos OR less than 1,000 individuals OR less than 2,000 acres

S1.1 = very threatened

S1.2 = threatened

S1.3 = not very threatened OR no current threats known

S2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres

S2.1 = very threatened

S2.2 = threatened

S2.3 = not very threatened OR no current threats known

S3 = 21-80 Eos or 3,000-10,000 individuals OR 10,000-50,000 acres

S3.1 = very threatened

S3.2 = threatened

S3.3 = not very threatened OR no current threats known

S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat.

S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

Notes:

1. Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. It is important to take a bird's eye or aerial view when ranking sensitive elements rather than simply counting Eos.
2. Uncertainty about the rank of an element is expressed in two major ways:
By expressing the rank as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less than S2.
3. Other symbols

Special Status Plant Scoping List

Scientific Name *(Synonyms)* Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Observed?
Abronia umbellata var.breviflora Pink sand-verbena	Coastal dunes	Jun-Oct	1B.1	N	N	S2	G4G5T2	No
Agrostis blasdalei Blasdale's bent grass	Coastal dunes, coastal bluff scrub, coastal prairie.	May- Jul	1B.2	N	N	S2	G2	No
Arctostaphylos nummularia ssp. Mendocinoensis Pygmy manzanita	Closed-cone coniferous forest. Acidic sandy-clay soils in dwarfed coniferous forest.	Jan	1B.2	N	N	S1	G3?T1	No
Astragalus agnicidus Humboldt milk- vetch	Openings, disturbed areas, roadsides,broadleafed upland forest, North coast coniferous forest	Apr-Sep	1B.1	N	CE	S2	G2	No
Astragalus pycnostachyus var. pyncnostachyus Coastal marsh milk-vetch	Coastal dunes (mesic), coastal scrub, coastal salt marshes and swamps, and streamsides	Apr-Oct	1B.2	N	N	S2	G2T2	No
Blennosperma nanum var.robustum Point Reyes blennosperma	Coastal prairie, coastal scrub	Feb-Apr	1B.2	N	CR	S2	G4T2	No
Calamagrostis crassiglumis Thurber's reed grass	Coastal scrub (mesic), freshwater marshes and swamps.	May-Aug	2B.1	N	N	S2	G3Q	No
Calystegia purpurata ssp. saxicola Coastal bluff morning-glory	Coastal bluff scrub, Coastal dunes, Coastal scrub, North Coast coniferous forest.	Mar-Sep	1B.2	N	N	S2S3	G4T2T3	No
Campanula californica Swamp harebell	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, freshwater marshes and swamps, and North Coast coniferous forests.	Jun-Oct	1B.2	N	N	S3	G3	No
Carex californica California sedge	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (often on margins or drier areas).	May-Aug	2B.2	N	N	S2	G5	No
Carex lenticularis var.limnophila Lagoon sedge	Shores, beaches, often gravelly, bogs and fens, marshes and swamps, North Coast coniferous forest.	Jun-Aug	2B.2	N	N	S1	G5T5	No
Carex livida Livid sedge	Bogs and Fens	Jun	2A	N	N	SH	G5	No
Carex lyngbyei Lyngbye's sedge	Brackish or freshwater marshes and swamps	Apr-Aug	2B.2	N	N	S3	G5	No
Carex saliniformis Deceiving sedge	Mesic sites of coastal prairie, coastal scrub, and meadows, seeps, marshes and swamps (coastal salt)	Jun-Jul	1B.2	N	N	S2	G2	No
Carex viridula ssp. viridula Green yellow sedge	Bogs and fens, marshes and swamps (freshwater), north coast coniferous forest (mesic).	Jun-Nov	2B.3	N	N	S2	G5T5	No
Castilleja litoralis Oregon coast paintbrush	Sandy sites in coastal bluff scrub and coastal scrub; coastal dunes.	Jun	2B.2	N	N	S3	G3	No
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	Coastal salt marshes and swamps.	Apr-Aug	1B.2	N	N	S2	G4T2	No
Castilleja mendocinensis ***(Castilleja latifolia ssp. Mendocinensis)*** Mendocino Coast paintbrush	Coastal bluff scrub, coastal scrub, closed-cone coniferous forest, coastal dunes, coastal prairie.	Apr-Aug	1B.2	N	N	S2	G2	No

Scientific Name (Synonyms) Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Observed?
Chorizanthe howellii Howell's spineflower	Sandy, often disturbed, areas of coastal prairie and coastal scrub, and coastal dunes	May - Jul	1B.2	FE	CT	S1	G1	No
Clarkia amoena ssp. whitneyi Whitney's farewell-to- spring	Coastal bluff scrub, coastal scrub.	Jun-Aug	1B.1	N	N	S1	G5T1	No
Collinsia corymbosa Round-headed Chinese-houses	Coastal dunes, coastal prairie.	Apr-June	1B.2	N	N	S1	G1	No
Cornus canadensis Bunchberry	Bogs and fens, meadows and seeps, North Coast coniferous forest.	May-Jul	2B.2	N	N	S2	G5	No
Cuscuta pacifica var. papillata Mendocino dodder	Coastal dunes (interdune depressions).	Jul-Oct	1B.2	N	N	S1	G5T1	No
Erigeron supplex Supple daisy	Coastal bluff scrub, coastal prairie.	May-Jul	1B.2	N	N	S2	G2	No
Erysimum concinnum Headland wallflower	Coastal bluff scrub, coastal dunes, coastal prairie.	Feb-Jul	1B.2	N	N	S2	G3	No
Erysimum menziesii (Erysimum menziesii ssp. eurekense, Erysimum menziesii ssp. menziesii, Erysimum menziesii ssp. yadonii) Menzies' wallflower	Localized on coastal dunes and coastal strand.	Mar-Sep	1B.1	FE	CE	S1	G1	No
Erythronium revolutum Coast fawn lily	Mesic, streambanks. Bogs and fens; broadleafed upland forests; North Coast coniferous forest.	Mar-Aug	2B.2	N	N	S3	G4G5	No
Fritillaria roderickii (Fritallaria biflora var. biflora) Roderick's fritillary	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	Mar-May	1B.1	N	CE	S1	G1Q	No
Gilia capitata ssp.chamissonis Blue coast gilia	Coastal dunes, coastal scrub.	Apr-Jul	1B.1	N	N	S2	G5T2	No
Gilia capitata ssp. pacifica Pacific gilia	Coastal bluff scrub, openings in chaparral, coastal prairie, valley and foothill grassland.	Apr-Aug	1B.2	N	N	S2	G5T3	No
Gilia capitata ssp.tomentosa Woolly-headed gilia	Serpentinite, rocky, outcrops of coastal bluff scrub and calley and foothill grassland.	May-Jul	1B.1	N	N	S2	G5T2	No
Gilia millefoliata Dark-eyed gilia	Coastal dunes	Apr-Jul	1B.2	N	N	S2	G2	No
Glyceria grandis American manna grass	Bogs and fens, wet meadows and seeps, marshes, swamps,streambanks, and lake margins	Jun-Aug	2B.3	N	N	S3	G5	No
Hemizonia congesta ssp. congesta Seaside tarplant	Sometimes roadsides.Valley and foothill grassland	Apr-Nov	1B.2	N	N	S2	G5T2	No
Hesperevax sparsiflora var. brevifolia Short-leaved evax	Sandy coastal bluffs; coastal dunes, coastal dune mat, and sandy openings in wet dune meadows. Coastal bluff scrub. Rocky, grassy slopes. In areas of sparse vegetation cover in sandy substrate.	Mar-Jun	1B.2	N	N	S3	G4T3	No
Hesperocyparis pygmaea (Cupressus pygmaea, Cupressus goveniana ssp. pigmaea, Callitropsis pygmaea) Pygmy cypress	Closed-cone coniferous forests, usually podzol-like	NA	1B.2	N	N	S1	G1	No

Scientific Name *(Synonyms)* **Common Name**	**Habitat found**	**Blooming Period**	**CRPR**	**Fed. Listing**	**State Listing**	**State Rank**	**Global Rank**	**Observed?**
Horkelia marinensis Point Reyes horkelia	Sandy, coastal dunes, coastal scrub, coastal prairire	May-Sep	1B.2	N	N	S2	G2	No
Horkelia tenuiloba Thin-lobed horkelia	Mesic openings or sandy sites in broadleafed upland forests, chaparral, and valley and foothill grassland.	May-Aug	1B.2	N	N	S2	G2	No
Hosackia gracilis ***(Lotus formosissimus)*** Harlequin lotus	Wetlands, roadsides, Broadleafed upland forest, Coastal bluff scrub, Closed-cone coniferous forest, Cismontane woodland, Coastal prairie, Coastal scrub, Meadows and seeps, Marshes and swamps, North Coast coniferous forest, Valley and foothill grassland	Mar-Jul	4.2	N	N	S3	G3G4	Yes
Juncus supiniformis Hair-leaved rush	Bogs and fens; freshwater marshes and swamps near the coast.	Apr-Jul	2B.2	N	N	S1	G5	No
Kopsiopsis hookeri ***(Boschniakia hookeri)*** Small groundcone	North Coast conferous forest	Apr-Aug	2B.3	N	N	S1S2	G4?	No
Lasthenia californica ssp.bakeri Baker's goldfields	Openings in closed-cone coniferous forest; coastal scrub; meadows and seeps; marshes and swamps.	Apr-Oct	1B.2	N	N	S1	G3T1	No
Lasthenia californica ssp. macrantha Perennial goldfields	Coastal bluff scrub, coastal dunes, and coastal scrub.	Jan-Nov	1B.2	N	N	S2	G3T2	No
Lasthenia conjugens Contra Costa goldfields	Mesic sites in cismontane woodlands, alkaline playas, valley and foothill grasslands, vernal pools	Mar-Jun	1B.1	FE	N	S1	G1	No
Lathyrus palustris Marsh Pea	Bogs and fens; mesic sites of coastal prairies, coastal scrub, lower montane coniferous forests, and North Coast coniferous forests.	Mar- Aug	2B.2	N	N	S2	G5	No
Lilium maritimum Coast lily	Broadleafed upland forests, closed-cone coniferous forests, coastal prairies, coastal scrub, freshwater marshes and swamps. Roadsides and roadside ditches.	May-Aug	1B.1	N	N	S2	G2	No
Microseris paludosa Marsh microseris/silverpuffs	Closed-cone coniferous forests, cismontane woodlands, coastal scrub, valley and foothill grasslands. *(A 1968 collection from Point Arena (3.2 km to N, between Hwy. 1 and beach) is the northernmost occurrence and is disjunct from southern populations.*	Apr-Jul	1B.2	N	N	S2	G2	No
Oenothera wolfii Wolf's evening- primrose	Sandy, usually mesic sites in coastal bluff scrub, coastal dunes, coastal prairie, and lower montane coniferous forests. *(Along roads on vertical cutbanks and in grassy median. On disturbed sterile soil; upper stabilized dunes; rocky slopes protected above strand; vertical cliffs above the ocean.)*	May-Oct	1B.1	N	N	S1	G2	No
Packera bolanderi var.bolanderi ***(Senecio bolanderi var. bolanderi)*** Seacoast ragwort	Sometimes roadsides, Coastal Scrub, North coast coniferous forest	Jan-Aug	2B.2	N	N	S2S3	G4T4	No
Phacelia insularis var.continentis North Coast phacelia	Sandy, sometimes rocky, sites in coastal bluff scrub; coastal dunes. *(Rocky, thin soil with native and non-native grasses and forbs. Sandy pastureland and grazed coastal prairie.)*	Mar-May	1B.2	N	N	S2	G2T2	No
Pinus contorta ssp.bolanderi Bolander's beach pine	Closed-cone coniferous forests with podzol-like soils. Associated with Mendocino cypress and bishop pine, and Mendocino pygmy cypress forests.	Jul-Aug	1B.2	N	N	S2	G5T2	No
Piperia candida White-flowered rein orchid	Sometimes serpentinite, Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	Mar-Sep	1B.2	N	N	S3	G3	No

Scientific Name (Synonyms) **Common Name**	**Habitat found**	**Blooming Period**	**CRPR**	**Fed. Listing**	**State Listing**	**State Rank**	**Global Rank**	**Observed?**
Pleuropogon hooverianus North Coast semaphore grass	open areas, mesic, broadleafed upland forest, meadows and seeps, North coast coniferous forest.	Apr-Jun	1B.1	N	CT	S2	G2	No
Potamogeton epihydrus Ribbonleaf pondweed	Marshes and swamps (assorted shallow freshwater)	Jun-Sep	2B.2	N	N	S2S3	G5	No
Puccinellia pumila Dwarf alkali grass	Coastal salt marshes and swamps; meadows and seeps, mineral spring meadows.	Jul	2B.2	N	N	SH	G4?	No
Rhynchospora alba White beaked-rush	Bogs and fens (sometimes in Mendocino pygmy forests); meadows and seeps; marshes and swamps (freshwater).	Jul-Aug	2B.2	N	N	S2	G5	No
Sanguisorba officinalis Great burnet	Bogs and fens,broadleafed upland forests, meadows and seeps, marshes and swamps, North Coast coniferous forests, riparian forests, Serpentine seepage areas and along stream borders.	Jul-Oct	2B.2	N	N	S2	G5?	No
Sidalcea calycosa ssp.rhizomata Point Reyes checkerbloom	Freshwater marshes and swamps near the coast.	Apr-Sep	1B.2	N	N	S2	G5T2	No
Sidalcea malviflora ssp.patula Siskiyou checkerbloom	Often roadcuts, coastal bluff scrub; coastal prairie; North coast coniferous forest	May-Aug	1B.2	N	N	S2	G5T2	No
Sidalcea malviflora ssp. purpurea Purple-stemmed checkerbloom	Broadleafed upland forest, coastal prairie	May-Jun	1B.2	N	N	S1	G5T1	Yes
Trifolium buckwestiorum Santa Cruz clover	Gravelly margins of broadleafed upland forests, cismontane woodlands, coastal prairie. *(Common associates include Juncus bufonius, Soliva sessilis, Danthonia californica, and Bromus hordeaceus. In Mendocino Co., most collections from ~5 miles up Garcia River.)*	Apr-Oct	1B.1	N	N	S2	G2	No
Trifolium trichocalyx Monterey clover	Closed-cone coniferous forest (sandy, openings, burned areas).	Apr-Jun	1B.1	FE	CE	S1	G1	No
Triquetrella californica Coastal triquetrella	Soil of Coastal bluff scrub, coastal scrub,	NA	1B.2	N	N	S2	G2	No
Viola adunca Western dog violet	Yellow pine forest, red fir forest, lodgepole forest, redwood forest, mixed evergreen forest, subalpine forest, alpine fell-fields, wetland riparian. Common and widespread on open sea bluffs to red fir forest.	Apr-Aug	not ranked	N	N	?	?	No
Viola palustris Alpine marsh violet	Coastal Bogs and Fens; Coastal Scrub (mesic)	Mar-Aug	2B.2	N	N	S1S2	G5	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	**Association Scientific Name**	**Alliance Common Name**	**Alliance Global Rank**	**Alliance State Rank**	**Associciation Global Rank**	**Association Rank State**	**Rare ?**	**Present?**
Woodland and Forest Alliances, Associations, and Stands								
Abies grandis	*Abies grandis – Picea sitchensis / Gaultheria shallon / Polystichum munitum*	Grand fir forest	G4	S2	G1	S1	Y	No
	Abies grandis – Tsuga heterophylla / Polystichum munitum	Grand fir forest	G4	S2	G2	S1	Y	No
Acer macrophyllum	*Acer macrophyllum*	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Adenocaulon bicolor	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Corylus cornuta	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Dryopteris arguta	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Philadelphus lewisii	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Polystichum munitum	Bigleaf maple forest	G4	S3			Y	No
Acer negundo	*Acer negundo*	Box-elder forest	G5	S2			Y	No
	Acer negundo – Salix gooddingii	Box-elder forest	G5	S2			Y	No
Aesculus californica	*Aesculus californica*	California buckeye groves	G3	S3			Y	No
	Aesculus californica – Umbellularia californica / Diplacus aurantiacus	California buckeye groves	G3	S3	G3	S3?	Y	No
	Aesculus californica – Umbellularia californica / Holodiscus discolor	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Datisca glomerata	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Lupinus albifrons	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Toxicodendron diversilobum / moss	California buckeye groves	G3	S3			Y	No
Alnus rhombifolia	*Alnus rhombifolia*	White alder groves	G4	S4	G2Q		Y	No
	Alnus rhombifolia – Acer macrophyllum	White alder groves	G4	S4			N	No
	Alnus rhombifolia – Fraxinus latifolia	White alder groves	G4	S4			N	No
	Alnus rhombifolia – Platanus racemosa	White alder groves	G4	S4	G3	S3	Y	No
	Alnus rhombifolia – Platanus racemosa – Quercus chrysolepis	White alder groves	G4	S4			N	No
	Alnus rhombifolia – Platanus racemosa – Salix laevigata	White alder groves	G4	S4			Y	No
	Alnus rhombifolia – Pseudotsuga menziesii	White alder groves	G4	S4			N	No
	Alnus rhombifolia – Pseudotsuga menziesii – Calocedrus decurrens	White alder groves	G4	S4			N	No
	Alnus rhombifolia – Pseudotsuga menziesii / Darmera peltata	White alder groves	G4	S4			N	No
	Alnus rhombifolia – Pseudotsuga menziesii / Rubus armeniacus	White alder groves	G4	S4			N	No
	Alnus rhombifolia – Quercus chrysolepis	White alder groves	G4	S4			N	No
	Alnus rhombifolia – Salix laevigata	White alder groves	G4	S4			Y	No
	Alnus rhombifolia / Aruncus dioicus	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Baccharis salicifolia	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Carex nudata	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Carex spp.	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Cornus sericea	White alder groves	G4	S4			Y	No
	Alnus rhombifolia / Cornus sessilis	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Darmera peltata	White alder groves	G4	S4			Y	No
	Alnus rhombifolia / Galium triflorum	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Galium triflorum – Stachys ajugoides	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Leucothoe davisiae	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Polypodium californicum	White alder groves	G4	S4			Y	No
	Alnus rhombifolia / Pteridium aquilinum	White alder groves	G4	S4			N	No
	Alnus rhombifolia / Rhododendron occidentale	White alder groves	G4	S4			Y	No
	Alnus rhombifolia / Salix exigua – (Rosa californica)	White alder groves	G4	S4			Y	No
	Calocedrus decurrens – Alnus rhombifolia	White alder groves	G5	S5	G3?		Y	No
	Umbellularia californica – Alnus rhombifolia	White alder groves	G5	S5	G3	S3	Y	No
Alnus rubra	*Alnus rubra – Pseudotsuga menziesii / Acer circinatum / Claytonia sibirica*	Red alder forest	G5	S4			Y	No
	Alnus rubra / Gaultheria shallon	Red alder forest	G5	S4			Y	No
	Alnus rubra / Rubus spectabilis – Sambucus racemosa	Red alder forest	G5	S4	G3G4		Y	No
	Alnus rubra / Salix lasiolepis / Rubus spp.	Red alder forest	G5	S4	G4	S3	Y	No
Arbutus menziesii	*Arbutus menziesii – (Quercus agrifolia)*	Madrone forest	G4	S3	G3	S3?	Y	No
	Arbutus menziesii – Umbellularia californica	Madrone forest	G4	S3			Y	No
Eucalyptus spp. – Ailanthus altissima – Robinia pseudoacacia	*Ailanthus altissima*	Eucalyptus – tree of heaven – black locust groves	GNA	SNA	GNA	SNA	N	No
	Eucalyptus (globulus, camaldulensis)	Eucalyptus – tree of heaven – black locust groves	GNA	SNA	GNA	SNA	N	No
	Robinia pseudoacacia	Eucalyptus – tree of heaven – black locust groves	GNA	SNA	GNA	SNA	N	No
	Acacia melanoxylon	Eucalyptus – tree of heaven – black locust groves	GNA	SNA	GNA	SNA	N	No
Fraxinus latifolia	*Fraxinus latifolia*	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia – Alnus rhombifolia	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia / Cornus sericea	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia - Salix laevigata	Oregon ash groves	G4	S3			Y	No
Hesperocyparis macrocarpa	*Hesperocyparis macrocarpa*	Monterey cypress stands	G1	S1	GNA	SNA	Y	No
Hesperocyparis pigmaea	*Hesperocyparis pigmaea – Pinus contorta ssp. bolanderi – Pinus muricata / Rhododendron macrophyllum*	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea – Pinus contorta ssp. bolanderi / Rhododendron columbianum	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea – Pinus muricata / Arctostaphylos nummularia	Mendocino pygmy cypress woodland	G1	S1			Y	No
Notholithocarpus densiflorus	*Notholithocarpus densiflorus*	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Acer circinatum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Acer macrophyllum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Arbutus menziesii	Tanoak forest	G4	S3	G3	S3	Y	No
	Notholithocarpus densiflorus – Arbutus menziesii / Ceanothus integerrimus	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Calocedrus decurrens / Festuca californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Chamaecyparis lawsoniana	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Chrysolepis chrysophylla	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Cornus nuttallii	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Cornus nuttallii / Toxicodendron diversilobum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Pinus lambertiana / Toxicodendron diversilobum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Quercus chrysolepis	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Quercus kelloggii	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Umbellularia californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Corylus cornuta	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Frangula californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Gaultheria shallon	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Mahonia nervosa	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Quercus vaccinifolia – Rhododendron macrophyllum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Toxicodendron diversilobum – Lonicera hispidula var. vacillans	Tanoak forest	G4	S3			Y	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	Association Scientific Name	Alliance Common Name	Alliance Global Rank	Alliance State Rank	Associciation Global Rank	Association Rank State	Rare ?	Present?
	Notholithocarpus densiflorus / Vaccinium ovatum	Tanoak forest	G4	S3			Y	No
Picea sitchensis	*Picea sitchensis – Tsuga heterophylla*	Sitka spruce forest	G5	S2			Y	No
	Picea sitchensis / Maianthemum dilatatum	Sitka spruce forest	G5	S2			Y	No
	Picea sitchensis / Polystichum munitum	Sitka spruce forest	G5	S2	G4?		Y	No
	Picea sitchensis / Rubus spectabilis	Sitka spruce forest	G5	S2	G3		Y	No
Pinus contorta ssp. contorta	*Pinus contorta ssp. contorta*	Beach pine forest	G5	S3			Y	No
	Pinus contorta ssp. contorta – Picea sitchensis	Beach pine forest	G5	S3			Y	No
Pinus muricata – Pinus radiata	*Pinus muricata*	Bishop pine – Monterey pine forest	G3	S3	G3?	S3?	Y	Yes
	Pinus muricata – (Arbutus menziesii) / Vaccinium ovatum	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata – Chrysolepis chrysophylla / Arctostaphylos nummularia	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata – Notholithocarpus densiflorus	Bishop pine – Monterey pine forest	G3	S3	G3	S3	Y	No
	Pinus muricata – Pseudotsuga menziesii	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Arctostaphylos glandulosa	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata / Arctostaphylos spp.	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Comarostaphylis diversifolia ssp. planifolia	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Xerophyllum tenax	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata – Pinus muricata / Arctostaphylos tomentosa – Arctostaphylos hookeri	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata – Quercus agrifolia / Toxicodendron diversilobum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata / Arctostaphylos tomentosa – Vaccinium ovatum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata / Toxicodendron diversilobum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata plantations	Bishop pine – Monterey pine forest	G3	S3	GNR	SNR	N	No
Pinus ponderosa	*Pinus ponderosa – Abies concolor / Notholithocarpus densiflorus var. echinoides*	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Alnus rhombifolia	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Notholithocarpus densiflorus	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus contorta ssp. murrayana / Amelanchier alnifolia	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa – Pinus jeffreyi / Achnatherum occidentale	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus jeffreyi / Artemisia tridentata ssp. vaseyana – Purshia tridentata var. tridentata	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa – Pinus jeffreyi / Balsamorhiza sagittata	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus jeffreyi / Cercocarpus ledifolius / Pseudoroegneria spicata	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus jeffreyi / Frangula rubra / Poa secunda	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus jeffreyi / Purshia tridentata var. tridentata / Festuca idahoensis	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa – Pinus jeffreyi / Purshia tridentata var. tridentata / Senecio integerrimus / granite	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus jeffreyi / Quercus vacciniifolia	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus jeffreyi / Quercus vacciniifolia / Wyethia mollis	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus lambertiana – Quercus chrysolepis / Notholithocarpus densiflorus var. echinoides	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa – Pinus lambertiana / Arctostaphylos patula – Notholithocarpus densiflorus var. echinoides	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa / Achnatherum nelsonii	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Amelanchier alnifolia – Mahonia repens / Arnica cordifolia	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Amelanchier alnifolia – Prunus virginiana	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Arctostaphylos patula – Chamaebatia foliolosa	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Arctostaphylos viscida	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa / Artemisia tridentata	Ponderosa pine forest	G5	S4	GNR		Y	No
	Pinus ponderosa / Artemisia tridentata ssp. vaseyana – Purshia tridentata var. tridentata	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Artemisia tridentata ssp. vaseyana / Festuca idahoensis	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Bromus carinatus	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Ceanothus cuneatus	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Ceanothus prostratus	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Ceanothus velutinus / Achnatherum nelsonii	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Cercocarpus ledifolius – Purshia tridentata var. tridentata / Festuca idahoensis	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Cercocarpus ledifolius / Pseudoroegneria spicata	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Chamaebatia foliolosa	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Galium angustifolium	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Notholithocarpus densiflorus var. echinoides	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa / Purshia tridentata var. tridentata	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Purshia tridentata var. tridentata – Arctostaphylos patula / Achnatherum nelsonii	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Purshia tridentata var. tridentata – Ceanothus velutinus	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Purshia tridentata var. tridentata – Prunus virginiana / Bromus orcuttianus	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa / Purshia tridentata var. tridentata – Ribes cereum / Bromus orcuttianus	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Purshia tridentata var. tridentata / Achnatherum nelsonii / pumice	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Purshia tridentata var. tridentata / Balsamorhiza sagittata	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Purshia tridentata var. tridentata / Galium bolanderi	Ponderosa pine forest	G5	S4			N	No
	Pinus ponderosa / Purshia tridentata var. tridentata / Senecio integerrimus / granite	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa / Symphoricarpos longiflorus	Ponderosa pine forest	G5	S4			Y	No
	Pinus ponderosa stream terrace	Ponderosa pine forest	G5	S4			N	No
Pseudotsuga menziesii	*Pseudotsuga menziesii*	Douglas fir forest	G5	S4	G4	S4	N	No
	Pseudotsuga menziesii – Arbutus menziesii	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Chrysolepis chrysophylla – Notholithocarpus densiflorus	Douglas fir forest	G5	S4	G3	S3	Y	No
	Pseudotsuga menziesii – Chrysolepis chrysophylla – Notholithocarpus densiflorus / Mahonia nervosa	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Chrysolepis chrysophylla / Rhododendron macrophyllum – Gaultheria shallon	Douglas fir forest	G5	S4			N	No
	Pseudotsuga menziesii – Chrysolepis chrysophylla / Rhododendron macrophyllum – Mahonia nervosa	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Chrysolepis chrysophylla / Rhododendron macrophyllum – Quercus sadleriana – Gaultheria shallon	Douglas fir forest	G5	S4			Y	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	Association Scientific Name	Alliance Common Name	Alliance Global Rank	Alliance State Rank	Associciation Global Rank	Association Rank State	Rare ?	Present?
	Pseudotsuga menziesii – Chrysolepis chrysophylla / Rhododendron macrophyllum – Quercus sadleriana – Xerophyllum tenax	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Chrysolepis chrysophylla / Xerophyllum tenax	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Quercus agrifolia	Douglas fir forest	G5	S4	G3	S3?	Y	No
	Pseudotsuga menziesii – Quercus chrysolepis	Douglas fir forest	G5	S4	G3?		Y	No
	Pseudotsuga menziesii – Quercus chrysolepis – Acer macrophyllum / Toxicodendron diversilobum	Douglas fir forest	G5	S4			N	No
	Pseudotsuga menziesii – Quercus chrysolepis – Arbutus menziesii / Toxicodendron diversilobum	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Quercus chrysolepis – mixed conifer / Polystichum munitum	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Quercus chrysolepis – Notholithocarpus densiflorus	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Quercus chrysolepis / Arctostaphylos manzanita	Douglas fir forest	G5	S4			N	No
	Pseudotsuga menziesii – Quercus garryana var. garryana / grass	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Quercus garryana var. garryana / Holodiscus discolor	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Quercus kelloggii	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Umbellularia californica	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii – Umbellularia californica / Frangula californica	Douglas fir forest	G5	S4			N	No
	Pseudotsuga menziesii – Umbellularia californica / Holodiscus discolor	Douglas fir forest	G5	S4			N	No
	Pseudotsuga menziesii – Umbellularia californica / Polystichum munitum	Douglas fir forest	G5	S4	G4	S4?	N	No
	Pseudotsuga menziesii – Umbellularia californica / Toxicodendron diversilobum	Douglas fir forest	G5	S4	G4	S4?	N	No
	Pseudotsuga menziesii / Acer circinatum – Mahonia nervosa	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Achlys triphylla	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Arctostaphylos patula	Douglas fir forest	G5	S4	G4		N	No
	Pseudotsuga menziesii / Baccharis pilularis	Douglas fir forest	G5	S4	G4		N	No
	Pseudotsuga menziesii / Chimaphila umbellata	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Corylus cornuta	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Gaultheria shallon	Douglas fir forest	G5	S4	G3G4		Y	No
	Pseudotsuga menziesii / Linnaea borealis	Douglas fir forest	G5	S4	G4		Y	No
	Pseudotsuga menziesii / Mahonia nervosa	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Notholithocarpus densiflorus var. echinoides / Iris douglasiana	Douglas fir forest	G5	S4			N	No
	Pseudotsuga menziesii / Quercus vaccinilfolia	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Quercus vaccinilfolia – Notholithocarpus densiflorus var. echinoides	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Quercus vaccinilfolia – Rhododendron macrophyllum	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Rhododendron spp.	Douglas fir forest	G5	S4			Y	No
	Pseudotsuga menziesii / Vancouveria planipetala	Douglas fir forest	G5	S4			Y	No
Pseudotsuga menziesii – Notholithocarpus densiflorus	*Pseudotsuga menziesii – Notholithocarpus densiflorus*	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Acer macrophyllum) / Polystichum munitum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Calocedrus decurrens) / Festuca californica	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Alnus rubra) / riparian	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Tsuga heterophylla) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Umbellularia californica) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Acer circinatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Mahonia nervosa / Linnaea borealis	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium ovatum – Rhododendron occidentale	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium parvifolium	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Pteridium aquilinum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Rhododendron macrophyllum – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Pinus lambertiana)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Mahonia nervosa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Mahonia nervosa – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / rockpile	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis, Quercus kelloggii) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus kelloggii) / Rosa gymnocarpa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Umbellularia californica) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Iris	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – Thuja plicata / Vaccinium ovatum – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No

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	Pseudotsuga menziesii – Notholithocarpus densiflorus / Acer circinatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Achlys triphylla	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Aralia californica	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Chimaphila umbellata	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Cornus nuttallii	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Corylus cornuta	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Mahonia nervosa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Quercus vaccinilfolia – Holodiscus discolor	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Rhododendron macrophyllum	Douglas fir – tanoak forest	G3	S3	G2	S2	Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Taxus brevifolia	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Toxicodendron diversilobum – (Lonicera hispidula)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Vaccinium ovatum – (Gaultheria shallon)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Whipplea modesta	Douglas fir – tanoak forest	G3	S3			Y	No
Quercus (agrifolia, douglasii, garryana, kelloggii, lobata, wislizeni)	*Mixed oak – Aesculus californica / grass*	Mixed oak forest	G4	S4			N	No
	Mixed oak – Pinus sabiniana / grass	Mixed oak forest	G4	S4			N	No
	Mixed oak – Quercus agrifolia / Toxicodendron diversilobum	Mixed oak forest	G4	S4			N	No
	Mixed oak – Quercus kelloggii / grass	Mixed oak forest	G4	S4			N	No
	Mixed oak / Baccharis pilularis – Toxicodendron diversilobum	Mixed oak forest	G4	S4			N	No
	Mixed oak / grass	Mixed oak forest	G4	S4			N	No
	Quercus agrifolia – Quercus garryana – Quercus kelloggii	Mixed oak forest	G4	S4			Y	No
	Quercus douglasii – Quercus lobata – Quercus agrifolia / Toxicodendron diversilobum	Mixed oak forest	G4	S4			N	No
Quercus chrysolepis (tree)	*Pinus ponderosa – Quercus chrysolepis / Arctostaphylos viscida*	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis – Arbutus menziesii	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis – Arbutus menziesii – Notholithocarpus densiflorus var. densiflorus	Canyon live oak forest	G5	S5	G4	S4?	N	No
	Quercus chrysolepis – Calocedrus decurrens	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis – Pinus jeffreyi	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis – Pinus lambertiana	Canyon live oak forest	G5	S5			Y	No
	Quercus chrysolepis – Pinus ponderosa	Canyon live oak forest	G5	S5			Y	No
	Quercus chrysolepis – Pinus sabiniana	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis – Quercus garryana var. garryana / Pentagramma triangularis	Canyon live oak forest	G5	S5			Y	No
	Quercus chrysolepis – Quercus kelloggii – Acer macrophyllum	Canyon live oak forest	G5	S5			Y	No
	Quercus chrysolepis – Quercus kelloggii / (Toxicodendron diversilobum)	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis – Quercus lobata / Vitis californica	Canyon live oak forest	G5	S5			Y	No
	Quercus chrysolepis – Quercus wislizeni	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis – Umbellularia californica	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis – Umbellularia californica / Vitis californica	Canyon live oak forest	G5	S5			Y	No
	Quercus chrysolepis / Arctostaphylos mewukka	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis / Arctostaphylos patula	Canyon live oak forest	G5	S5	G3?		Y	No
	Quercus chrysolepis / Arctostaphylos viscida	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis / Ceanothus integerrimus	Canyon live oak forest	G5	S5			Y	No
	Quercus chrysolepis / Dryopteris arguta	Canyon live oak forest	G5	S5	G3?		Y	No
	Quercus chrysolepis / Notholithocarpus densiflorus var. echinoides	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis / Polystichum imbricans	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis / Rhamnus ilicifolia	Canyon live oak forest	G5	S5			N	No
	Quercus chrysolepis / Styrax redivivus	Canyon live oak forest	G5	S5			Y	No
	Quercus chrysolepis / Toxicodendron diversilobum	Canyon live oak forest	G5	S5			N	No
Quercus douglasii	*Quercus ×eplingii / Grass*	Blue oak woodland	G4	S4			Y	No
	Quercus douglasii – Aesculus californica / Asclepias fascicularis	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Aesculus californica / grass	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Juniperus californica	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Juniperus californica / Ceanothus cuneatus	Blue oak woodland	G4	S4			Y	No
	Quercus douglasii – Juniperus californica / Cercocarpus montanus	Blue oak woodland	G4	S4	G3	S3	Y	No
	Quercus douglasii – Juniperus californica / Ericameria linearifolia	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Juniperus californica / Quercus john-tuckeri	Blue oak woodland	G4	S4	G3	S3	Y	No
	Quercus douglasii – Pinus sabiniana	Blue oak woodland	G4	S4	G4?		N	No
	Quercus douglasii – Pinus sabiniana / Arctostaphylos viscida	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Pinus sabiniana / Ceanothus cuneatus – Cercocarpus montanus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Pinus sabiniana / Cercocarpus montanus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Quercus agrifolia	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Quercus lobata	Blue oak woodland	G4	S4			Y	No
	Quercus douglasii – Quercus wislizeni	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Quercus wislizeni – Pinus sabiniana	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Quercus wislizeni / Bromus spp. – Daucus pusillus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Quercus wislizeni / Ceanothus cuneatus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii – Quercus wislizeni / Lithophragma cymbalaria	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Achnatherum lemmonii	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Amsinckia menziesii var. intermedia – Plagiobothrys nothofulvus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Arctostaphylos manzanita / herbaceous	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Brachypodium distachyon	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Bromus hordeaceus – Lolium perenne	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Bromus hordeaceus – Madia gracilis	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Bromus hordeaceus – Triteleia laxa	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Bromus spp. – Daucus pusillus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Ceanothus cuneatus	Blue oak woodland	G4	S4			N	No

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	Quercus douglasii / Cercocarpus montanus / Bowlesia incana – Lithophragma affine	Blue oak woodland	G4	S4			Y	No
	Quercus douglasii / Collinsia sparsiflora – Rigiopappus leptocladus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Delphinium parryi – Phacelia imbricata	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Ericameria linearifolia	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Eriogonum elongatum / Lotus subpinnatus – Plantago erecta	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Eriogonum fasciculatum / herbaceous	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Erodium moschatum – Hordeum murinum ssp. leporinum	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Euphorbia spathulata – Pentagramma triangularis	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Galium andrewsii – Lupinus concinnus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / grass	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Hordeum murinum ssp. leporinum – Viola pedunculata	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Lotus wrangelianus – Nassella pulchra	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Lupinus concinnus – Trifolium ciliolatum	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Ribes californicum / Bromus diandrus	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / Selaginella hansenii – Navarretia pubescens	Blue oak woodland	G4	S4			Y	No
	Quercus douglasii / Toxicodendron diversilobum / grass	Blue oak woodland	G4	S4			N	No
	Quercus douglasii / understory oak	Blue oak woodland	G4	S4			N	No
Quercus kelloggii	*Quercus kelloggii*	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Arbutus menziesii – Quercus agrifolia	California black oak forest	G4	S4	G3	S3	Y	No
	Quercus kelloggii – Calocedrus decurrens	California black oak forest	G4	S4	G4?		N	No
	Quercus kelloggii – Pinus coulteri	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Pinus coulteri / Arctostaphylos glandulosa	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Pinus coulteri / Arctostaphylos pringlei	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Pinus ponderosa	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Pinus ponderosa / Arctostaphylos viscida	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Pinus ponderosa / Ceanothus integerrimus	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Pinus sabiniana / Styrax redivivus – Toxicodendron diversilobum	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Pseudotsuga menziesii	California black oak forest	G4	S4			Y	No
	Quercus kelloggii – Pseudotsuga menziesii – Acer macrophyllum	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Pseudotsuga menziesii – Umbellularia californica	California black oak forest	G4	S4			Y	No
	Quercus kelloggii – Quercus agrifolia – pine / Holodiscus discolor	California black oak forest	G4	S4			Y	No
	Quercus kelloggii – Quercus chrysolepis	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Quercus chrysolepis / Toxicodendron diversilobum	California black oak forest	G4	S4			N	No
	Quercus kelloggii – Quercus lobata / grass	California black oak forest	G4	S4			Y	No
	Quercus kelloggii / annual grass – herb	California black oak forest	G4	S4			N	No
	Quercus kelloggii / Arctostaphylos mewukka / Chamaebatia foliolosa	California black oak forest	G4	S4			N	No
	Quercus kelloggii / Arctostaphylos patula	California black oak forest	G4	S4	G3?		Y	No
	Quercus kelloggii / Arctostaphylos viscida	California black oak forest	G4	S4			N	No
	Quercus kelloggii / Ceanothus integerrimus	California black oak forest	G4	S4			N	No
	Quercus kelloggii / Ceanothus integerrimus – Toxicodendron diversilobum / Pteridium aquilinum	California black oak forest	G4	S4			N	No
	Quercus kelloggii / Heteromeles arbutifolia – Toxicodendron diversilobum	California black oak forest	G4	S4			N	No
	Quercus kelloggii / Toxicodendron diversilobum	California black oak forest	G4	S4			N	No
	Quercus kelloggii / Toxicodendron diversilobum – Styrax redivivus / Triteleia laxa	California black oak forest	G4	S4			Y	No
	Quercus kelloggii / Toxicodendron diversilobum / grass	California black oak forest	G4	S4			N	No
	Quercus kelloggii/ Triteleia spp.	California black oak forest	G4	S4			N	No
Quercus wislizeni (tree)	*Quercus wislizeni – Aesculus californica*	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Arbutus menziesii / Toxicodendron diversilobum	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Pinus ponderosa	Interior live oak woodland	G4	S4			Y	No
	Quercus wislizeni – Pinus sabiniana / annual grass – herb	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Pinus sabiniana / Arctostaphylos manzanita	Interior live oak woodland	G4	S4			Y	No
	Quercus wislizeni – Pinus sabiniana / Arctostaphylos viscida	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Quercus chrysolepis – Pinus coulteri	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Quercus chrysolepis tree	Interior live oak woodland	G4	S4	G4	S4	N	No
	Quercus wislizeni – Quercus douglasii – Aesculus californica	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Quercus douglasii – Pinus sabiniana / (grass)	Interior live oak woodland	G4	S4	G4?		N	No
	Quercus wislizeni – Quercus douglasii – Pinus sabiniana / Toxicodendron diversilobum	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Quercus douglasii / herbaceous	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Quercus douglasii / Toxicodendron diversilobum	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Quercus kelloggii	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Quercus kelloggii / Heteromeles arbutifolia – Toxicodendron diversilobum	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni – Salix laevigata / Frangula californica	Interior live oak woodland	G4	S4			Y	No
	Quercus wislizeni / Arctostaphylos viscida	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni / Eriodictyon californicum	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni / Heteromeles arbutifolia	Interior live oak woodland	G4	S4	G4	S4	N	No
	Quercus wislizeni / Toxicodendron diversilobum	Interior live oak woodland	G4	S4			N	No
	Quercus wislizeni / Toxicodendron diversilobum / Centaurea solstitialis	Interior live oak woodland	G4	S4			N	No
Salix laevigata	*Salix laevigata*	Red willow thickets	G3	S3	GNR		Y	No
	Salix laevigata – Cornus sericea / Scirpus microcarpus	Red willow thickets	G3	S3	G3	S3?	Y	No
	Salix laevigata – Salix lasiolepis	Red willow thickets	G3	S3			Y	No
	Salix laevigata – Salix lasiolepis / Artemisia douglasiana – Rubus ursinus	Red willow thickets	G3	S3			Y	No
	Salix laevigata – Salix lasiolepis / Baccharis salicifolia	Red willow thickets	G3	S3			Y	No
	Salix laevigata / Rosa californica	Red willow thickets	G3	S3			Y	No
	Salix laevigata / Salix lasiolepis / Artemisia douglasiana	Red willow thickets	G3	S3			Y	No
Sequoia sempervirens	*Sequoia sempervirens*	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Acer macrophyllum – Umbellularia californica	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Acer macrophyllum / Polypodium californicum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Alnus rubra / Rubus spectabilis	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Arbutus menziesii	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Arbutus menziesii / Vaccinium ovatum	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Chrysolepis chrysophylla / Arctostaphylos glandulosa	Redwood forest	G3	S3	G2	S2?	Y	No
	Sequoia sempervirens – Hesperocyparis pigmaea	Redwood forest	G3	S3	G1	S1	Y	No
	Sequoia sempervirens – Notholithocarpus densiflorus / Carex globosa – Iris douglasiana	Redwood forest	G3	S3			Y	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	**Association Scientific Name**	**Alliance Common Name**	**Alliance Global Rank**	**Alliance State Rank**	**Associciation Global Rank**	**Association Rank State**	**Rare ?**	**Present?**
	Sequoia sempervirens – Notholithocarpus densiflorus / Vaccinium ovatum	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Pinus muricata	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Arbutus menziesii	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Notholithocarpus densiflorus	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Notholithocarpus densiflorus – Chamaecyparis lawsoniana / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Umbellularia californica	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Gaultheria shallon	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Rhododendron macrophyllum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Polystichum munitum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Rubus spectabilis	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Umbellularia californica	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens / (Pteridium aquilinum) – Woodwardia fimbriata	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens / Blechnum spicant	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Mahonia nervosa	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Marah fabaceus – Vicia sativa ssp. nigra	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Oxalis oregana	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Polystichum munitum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Pteridium aquilinum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Pteridium aquilinum – Trillium ovatum	Redwood forest	G3	S3			Y	No
Sequoiadendron giganteum	*Sequoiadendron giganteum – Pinus lambertiana / Cornus nuttallii*	Giant sequoia forest	G3	S3			Y	No
Tsuga heterophylla	*Tsuga heterophylla – Pseudotsuga menziesii – Chamaecyparis lawsoniana*	Western hemlock forest	G5	S2			Y	No
Umbellularia californica	*Umbellularia californica*	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Acer macrophyllum	California bay forest	G4	S3	G3	S3?	Y	No
	Umbellularia californica – Aesculus californica / Holodiscus discolor	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Alnus rhombifolia	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Arbutus menziesii	California bay forest	G4	S3			Y	No
	Umbellularia californica – Juglans californica / Ceanothus spinosus	California bay forest	G4	S3	G3		Y	No
	Umbellularia californica – Notholithocarpus densiflorus	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Platanus racemosa	California bay forest	G4	S3	G3		Y	No
	Umbellularia californica – Pseudotsuga menziesii / Rhododendron occidentale	California bay forest	G4	S3	G3	S3?	Y	No
	Umbellularia californica – Quercus agrifolia	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / (Genista monspessulana)	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / Heteromeles arbutifolia – Toxicodendron diversilobum / Melica torreyana	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / Toxicodendron diversilobum (Corylus cornuta)	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus chrysolepis	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus wislizeni	California bay forest	G4	S3			Y	No
	Umbellularia californica / Ceanothus oliganthus	California bay forest	G4	S3			Y	No
	Umbellularia californica / Polystichum munitum	California bay forest	G4	S3			Y	No
	Umbellularia californica / Toxicodendron diversilobum	California bay forest	G4	S3			Y	No
Shrub Alliance, Associations, and Stands								
Arctostaphylos (nummularia, sensitiva)	*Arctostaphylos nummularia*	Glossy leaf manzanita chaparral	G2G3	S2S3	G2	S2	Y	No
Baccharis pilularis	*Baccharis pilularis*	Coyote brush scrub	G5	S5	G4		N	No
	Baccharis pilularis – Artemisia californica	Coyote brush scrub	G5	S5	G5		N	No
	Baccharis pilularis – Artemisia californica – Heteromeles arbutifolia	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis – Artemisia californica – Toxicodendron diversilobum / Monardella villosa	Coyote brush scrub	G5	S5	G4	S4	N	No
	Baccharis pilularis – Ceanothus thyrsiflorus	Coyote brush scrub	G5	S5	G3	S3?	Y	No
	Baccharis pilularis – Corylus cornuta	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis – Frangula californica – Rubus spp.	Coyote brush scrub	G5	S5			Y	No
	Baccharis pilularis – Holodiscus discolor	Coyote brush scrub	G5	S5			Y	No
	Baccharis pilularis – Lotus scoparius	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis – Lupinus arboreus	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis – Prunus ilicifolia	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis – Rubus ursinus / weedy herb	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis – Salvia mellifera	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis – Toxicodendron diversilobum	Coyote brush scrub	G5	S5	G5		N	No
	Baccharis pilularis / (Nassella pulchra – Elymus glaucus – Bromus carinatus)	Coyote brush scrub	G5	S5	G3	S3	Y	No
	Baccharis pilularis / Ammophila arenaria	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis / Annual grass – herb	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis / Carex obnupta – Juncus patens	Coyote brush scrub	G5	S5			Y	No
	Baccharis pilularis / Danthonia californica	Coyote brush scrub	G5	S5			Y	No
	Baccharis pilularis / Deschampsia cespitosa	Coyote brush scrub	G5	S5	G2		Y	No
	Baccharis pilularis / Dudleya farinosa	Coyote brush scrub	G5	S5			N	No
	Baccharis pilularis / Eriophyllum staechadifolium	Coyote brush scrub	G5	S5			Y	No
	Baccharis pilularis / Leymus triticoides	Coyote brush scrub	G5	S5			Y	No
	Baccharis pilularis / Polystichum munitum	Coyote brush scrub	G5	S5	G3		Y	No
	Baccharis pilularis / Scrophularia californica	Coyote brush scrub	G5	S5			N	No
	Gaultheria shallon – Baccharis pilularis – Ceanothus thyrsiflorus	Coyote brush scrub	G5	S5			N	No
Ceanothus integerrimus	*Ceanothus integerrimus*	Deer brush chaparral	G4	S4	G4?		N	No
	Ceanothus integerrimus – Arctostaphylos viscida	Deer brush chaparral	G4	S4			N	No
	Ceanothus integerrimus – Quercus garryana var. fruticosa	Deer brush chaparral	G4	S4			Y	No
	Ceanothus integerrimus / Notholithocarpus densiflorus – Arbutus menziesii	Deer brush chaparral	G4	S4			N	No
	Ceanothus integerrimus / Quercus chrysolepis / Elymus glaucus	Deer brush chaparral	G4	S4			N	No
Ceanothus thyrsiflorus	*Ceanothus arboreus*	Blue blossom chaparral	G4	S4			Y	No
	Ceanothus incanus	Blue blossom chaparral	G4	S4			Y	No
	Ceanothus thyrsiflorus – Baccharis pilularis – Toxicodendron diversilobum	Blue blossom chaparral	G4	S4	G4?		N	No
	Ceanothus thyrsiflorus – Rubus ursinus	Blue blossom chaparral	G4	S4	G3	S3?	Y	No
	Ceanothus thyrsiflorus – Vaccinium ovatum – Rubus parviflorus	Blue blossom chaparral	G4	S4	G3	S3?	Y	No
Ceanothus velutinus	*Ceanothus velutinus*	Tobacco brush or snow bush chaparral	G5	S4	GNR		N	No
	Ceanothus velutinus – Prunus emarginata – Artemisia tridentata	Tobacco brush or snow bush chaparral	G5	S4			N	No
Chrysolepis chrysophylla	*Chrysolepis chrysophylla – Arctostaphylos glandulosa*	Golden chinquapin thickets	G2	S2			Y	No
	Chrysolepis chrysophylla / Vaccinium ovatum	Golden chinquapin thickets	G2	S2			Y	No
Cornus sericea	*Cornus sericea*	Red osier thickets	G4	S3?			Y	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	**Association Scientific Name**	**Alliance Common Name**	**Alliance Global Rank**	**Alliance State Rank**	**Associciation Global Rank**	**Association Rank State**	**Rare ?**	**Present?**
	Cornus sericea – Salix exigua	Red osier thickets	G4	S3?			Y	No
	Cornus sericea – Salix lasiolepis	Red osier thickets	G4	S3?			Y	No
	Cornus sericea / Senecio triangularis	Red osier thickets	G4	S3?			Y	No
Diplacus aurantiacus	*Diplacus aurantiacus*	Bush monkeyflower scrub	G3	S3?	G3		Y	No
Frangula californica	*Frangula californica – Baccharis pilularis / Scrophularia californica*	California coffee berry scrub	G4	S4			Y	No
	Frangula californica ssp. tomentella	California coffee berry scrub	G4	S4			N	No
	Frangula californica ssp. tomentella / Cirsium fontinale var. campylon – Mimulus guttatus	California coffee berry scrub	G4	S4			N	No
	Frangula californica ssp. tomentella / Holta macrostachya	California coffee berry scrub	G4	S4			Y	No
Garrya elliptica		Coastal silk tassel scrub	G3?	S3?				No
Holodiscus discolor	*Holodiscus discolor – Arctostaphylos patula*	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor – Keckiella corymbosa	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor – Sambucus racemosa	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Achnatherum occidentale – Eriogonum nudum	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Mimulus suksdorfii	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Sedum obtusatum ssp. boreale – Cryptogramma acrostichoides	Ocean spray brush	G4	S3			Y	No
Lupinus albifrons	*Lupinus albifrons*	Silver bush lupine scrub	G4	S4			N	No
	Lupinus albifrons – Senecio flaccidus var. douglasii	Silver bush lupine scrub	G4	S4			N	No
	Lupinus albifrons coastal	Silver bush lupine scrub	G4	S4			N	No
	Lupinus arboreus	Yellow bush lupine scrub	G4	S4			N	No
	Lupinus arboreus – Ericameria ericoides	Yellow bush lupine scrub	G4	S4			Y	No
	Lupinus arboreus / Anthoxanthum odoratum	Yellow bush lupine scrub	G4	S4			N	No
	Lupinus arboreus / Bromus diandrus	Yellow bush lupine scrub	G4	S4			N	No
	Lupinus arboreus / Scrophularia californica	Yellow bush lupine scrub	G4	S4			N	No
Lupinus chamissonis – Ericameria ericoides	*Ericameria ericoides*	Silver dune lupine – mock heather scrub	G3	S3			Y	No
	Lupinus chamissonis	Silver dune lupine – mock heather scrub	G3	S3			Y	No
	Lupinus chamissonis – Ericameria ericoides	Silver dune lupine – mock heather scrub	G3	S3	G2		Y	No
Morella californica	*Morella californica*	Wax myrtle scrub	G3	S3			Y	No
Quercus chrysolepis (shrub)	*Quercus chrysolepis*	Canyon live oak chaparral	G3	S3			Y	No
	Quercus chrysolepis – Ceanothus integerrimus	Canyon live oak chaparral	G3	S3			Y	No
Rhododendron columbianum	*Rhododendron columbianum*	Western Labrador-tea thickets	G4	S2?			Y	No
	Rhododendron columbianum / Pinus contorta ssp. murrayana	Western Labrador-tea thickets	G4	S2?			Y	No
Rhododendron occidentale		Western azalea patches	G3	S2?				No
Rosa californica	*Rosa californica*	California rose briar patches	G3	S3			Y	No
	Rosa californica – Baccharis pilularis	California rose briar patches	G3	S3			Y	No
	Rosa californica / Schoenoplectus spp.	California rose briar patches	G3	S3			Y	No
Rubus (parviflorus, spectabilis, ursinus)	*Gaultheria shallon – Rubus spectabilis – Rubus parviflorus*	Coastal brambles	G4	S3			Y	No
	Ribes aureum	Coastal brambles	G4	S3			Y	No
	Rubus parviflorus	Coastal brambles	G4	S3			Y	No
	Rubus parviflorus – Rubus spectabilis – Rubus ursinus	Coastal brambles	G4	S3			Y	No
	Rubus spectabilis	Coastal brambles	G4	S3			Y	No
	Rubus ursinus	Coastal brambles	G4	S3			Y	No
Rubus armeniacus – Sesbania punicea – Ficus carica	*Ficus carica*	Himalayan blackberry – rattlebox – edible fig riparian scrub	GNR	SNR	GNR	SNR	N	No
	Rubus armeniacus	Himalayan blackberry – rattlebox – edible fig riparian scrub	GNR	SNR	GNR	SNR	N	No
	Rubus armeniacus – Rubus ursinus	Himalayan blackberry – rattlebox – edible fig riparian scrub	GNR	SNR	GNR	SNR	N	No
	Sesbania punicea	Himalayan blackberry – rattlebox – edible fig riparian scrub	GNR	SNR	GNR	SNR	N	No
Salix exigua	*Salix exigua*	Sandbar willow thickets	G5	S4	GNR		N	No
	Salix exigua – (Salix lasiolepis) – Rubus armeniacus	Sandbar willow thickets	G5	S4			N	No
	Salix exigua – Arundo donax	Sandbar willow thickets	G5	S4			N	No
	Salix exigua – Brickellia californica	Sandbar willow thickets	G5	S4			Y	No
	Salix exigua – Salix melanopsis	Sandbar willow thickets	G5	S4			N	No
	Salix exigua / Baccharis sergiloides	Sandbar willow thickets	G5	S4			N	No
	Salix exigua / Mesic graminoids	Sandbar willow thickets	G5	S4			N	No
Salix lasiolepis	*Salix lasiolepis*	Arroyo willow thickets	G4	S4			Y	No
	Salix lasiolepis – Artemisia douglasiana	Arroyo willow thickets	G4	S4			N	No
	Salix lasiolepis – Baccharis pilularis – Rubus ursinus	Arroyo willow thickets	G4	S4	G3	S3	Y	No
	Salix lasiolepis – Baccharis salicifolia	Arroyo willow thickets	G4	S4	G4		N	No
	Salix lasiolepis – Malosma laurina	Arroyo willow thickets	G4	S4			N	No
	Salix lasiolepis – Rosa californica	Arroyo willow thickets	G4	S4			N	No
	Salix lasiolepis – Rubus spp.	Arroyo willow thickets	G4	S4	G4		N	No
	Salix lasiolepis – Salix lucida	Arroyo willow thickets	G4	S4	G3		Y	No
	Salix lasiolepis / Barren Ground	Arroyo willow thickets	G4	S4			Y	No
	Salix lasiolepis / Rosa woodsii / Mixed Herbs	Arroyo willow thickets	G4	S4			Y	No
Salix sitchensis	*Salix sitchensis*	Sitka willow thickets	G4	S3?			Y	No
Sambucus nigra	*Sambucus nigra*	Blue elderberry stands	G3	S3			Y	No
	Sambucus nigra – Heteromeles arbutifolia	Blue elderberry stands	G3	S3			Y	No
	Sambucus nigra / Leymus condensatus	Blue elderberry stands	G3	S3			Y	No
Toxicodendron diversilobum	*Toxicodendron diversilobum – Artemisia californica / Leymus condensatus*	Poison oak scrub	G4	S4	G3		Y	No
	Toxicodendron diversilobum – Baccharis pilularis	Poison oak scrub	G4	S4			N	No
	Toxicodendron diversilobum – Baccharis pilularis – Rubus parviflorus	Poison oak scrub	G4	S4	G3		Y	No
	Toxicodendron diversilobum – Diplacus aurantiacus	Poison oak scrub	G4	S4			N	No
	Toxicodendron diversilobum – Philadelphus lewisii	Poison oak scrub	G4	S4			N	No
	Toxicodendron diversilobum / Bromus hordeaceus – Micropus californicus	Poison oak scrub	G4	S4			N	No
	Toxicodendron diversilobum / Bromus hordeaceus – Vicia villosa – Madia gracilis	Poison oak scrub	G4	S4			N	No
	Toxicodendron diversilobum / herbaceous	Poison oak scrub	G4	S4			N	No
	Toxicodendron diversilobum / Pteridium aquilinum	Poison oak scrub	G4	S4			N	No
Herbaceous Alliance, Associations, and Stands								
Abronia latifolia – Ambrosia chamissonis	*Abronia latifolia – Erigeron glaucus*	Dune mat	G3	S3			Y	No
	Abronia latifolia – Leymus mollis	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Abronia maritima – Cakile maritima	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Abronia umbellata	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Eriophyllum staechadifolium – (Lupinus arboreus)	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Malacothrix incana – Carpobrotus chilensis – Poa douglasii	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Calystegia soldanella	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Cardionema ramosissimum	Dune mat	G3	S3	G3		Y	No
	Artemisia pycnocephala – Ericameria ericoides	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Poa douglasii	Dune mat	G3	S3			Y	No

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	Artemisia pycnocephala – Polygonum paronychia	Dune mat	G3	S3			Y	No
	Cakile maritima – Abronia maritima	Dune mat	G3	S3			Y	No
	Cakile maritima – Ambrosia chamissonis – Carpobrotus edulis	Dune mat	G3	S3			Y	No
	Calystegia macrostegia – Erigeron glaucus – Malacothrix incana	Dune mat	G3	S3			Y	No
	Poa douglasii – Lathyrus littoralis	Dune mat	G3	S3			Y	No
Agrostis (gigantea, stolonifera) – Festuca arundinacea	*Agrostis gigantea*	Bent grass – tall fescue meadows					N	No
	Agrostis stolonifera	Bent grass – tall fescue meadows					N	No
	Agrostis stolonifera – Festuca arundinacea	Bent grass – tall fescue meadows					N	No
	Festuca arundinacea	Bent grass – tall fescue meadows					N	No
Ammophila arenaria	*Ammophila arenaria*	European beach grass swards					N	No
	Ammophila arenaria – Cardionema ramosissimum	European beach grass swards			GNA		N	No
	Ammophila arenaria – Erechtites minimus	European beach grass swards					N	No
	Ammophila arenaria – Lupinus variicolor	European beach grass swards					N	No
Amsinckia (menziesii, tessellata) – Phacelia spp.	*Amsinckia (intermedia, menziesii)*	Fiddleneck - Phacelia Fields	G4	S4	G4	S4	N	No
	Amsinckia menziesii – Erodium spp.	Fiddleneck - Phacelia Fields	G4	S4			N	No
	Amsinckia menziesii – Vulpia bromoides – Plagiobothrys canescens	Fiddleneck - Phacelia Fields	G4	S4			N	No
	Amsinckia tessellata – Erodium cicutarium	Fiddleneck - Phacelia Fields	G4	S4	G4	S4	N	No
	Astragalus didymocarpus – Lotus wrangelianus	Fiddleneck - Phacelia Fields	G4	S4			Y	No
	Phacelia ciliata	Fiddleneck - Phacelia Fields	G4	S4			Y	No
	Phacelia tanacetifolia	Fiddleneck - Phacelia Fields	G4	S4			Y	No
Atriplex prostrata – Cotula coronopifolia	*Atriplex prostrata*	Fields of fat hen and brass buttons					N	No
	Atriplex prostrata / annual grasses	Fields of fat hen and brass buttons					N	No
	Atriplex prostrata / Bolboschoenus maritimus	Fields of fat hen and brass buttons					N	No
	Atriplex prostrata / Distichlis spicata	Fields of fat hen and brass buttons					N	No
	Atriplex prostrata / Sesuvium verrucosum	Fields of fat hen and brass buttons					N	No
	Cotula coronopifolia	Fields of fat hen and brass buttons					N	No
Avena (barbata, fatua)	*Avena barbata*	Wild oats grasslands					N	No
	Avena barbata – Avena fatua	Wild oats grasslands					N	No
	Avena barbata – Bromus hordeaceus	Wild oats grasslands					N	No
	Avena fatua	Wild oats grasslands					N	No
Azolla (filiculoides, microphylla)	*Azolla (filiculoides, microphylla)*	Mosquito fern mats	G5	S5	G5	S5	N	No
Brassica nigra – Raphanus spp.	*Brassica nigra*	Upland mustards and other ruderal forbs	GNR	SNR	G5		N	No
	Brassica nigra – Bromus diandrus	Upland mustards and other ruderal forbs	GNR	SNR	G5		N	No
	Raphanus sativus	Upland mustards and other ruderal forbs	GNR	SNR			N	No
Bromus (diandrus, hordeaceus) – Brachypodium distachyon	*Brachypodium distachyon*	Annual brome grasslands					N	No
	Brachypodium distachyon – Bromus diandrus / Quercus douglasii	Annual brome grasslands					N	No
	Bromus diandrus	Annual brome grasslands			G5		N	No
	Bromus diandrus – Avena spp.	Annual brome grasslands			G5		N	No
	Bromus diandrus – Mixed herbs	Annual brome grasslands					N	No
	Bromus hordeaceus – (Vicia villosa – Lolium perenne) – Trifolium hirtum	Annual brome grasslands					N	No
	Bromus hordeaceus – Aira caryophyllea	Annual brome grasslands					N	No
	Bromus hordeaceus – Amsinckia menziesii – Hordeum murinum	Annual brome grasslands					N	No
	Bromus hordeaceus – Bromus tectorum	Annual brome grasslands					N	No
	Bromus hordeaceus – Dichelostemma multiflorum	Annual brome grasslands					N	No
	Bromus hordeaceus – Erodium botrys	Annual brome grasslands					N	No
	Bromus hordeaceus – Erodium botrys – Plagiobothrys fulvus	Annual brome grasslands					N	No
	Bromus hordeaceus – Hordeum spp. – Medicago polymorpha	Annual brome grasslands					N	No
	Bromus hordeaceus – Leontodon saxatilis	Annual brome grasslands					N	No
	Bromus hordeaceus – Limnanthes douglasii	Annual brome grasslands					N	No
	Bromus hordeaceus – Taeniatherum caput-medusae	Annual brome grasslands					N	No
	Bromus hordeaceus – Vulpia myuros var. hirsuta	Annual brome grasslands					N	No
	Hypochaeris glabra – Vulpia bromoides	Annual brome grasslands					N	No
Bromus carinatus – Elymus glaucus	*Bromus carinatus*	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Elymus glaucus	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Pteridium aquilinum – Grass	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Thermopsis californica – Bromus carinatus – Annual Brome	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
Bromus rubens – Schismus (arabicus, barbatus)	*Bromus rubens*	Red brome or Mediterranean grass grasslands					N	No
	Bromus rubens – mixed herbs	Red brome or Mediterranean grass grasslands					N	No
Bromus tectorum – Taeniatherum caput-medusae	*Bromus tectorum*	Cheatgrass – medusahead grassland	GNR	SNR	GNA		N	No
	Bromus tectorum – Bromus diandrus	Cheatgrass – medusahead grassland	GNR	SNR			N	No
Cakile (edentula, maritima)		Sea rocket sands						No
Calamagrostis canadensis	*Calamagrostis canadensis*	Bluejoint reed grass meadows	G5	S3	GNR		Y	No
Calamagrostis canadensis	*Calamagrostis canadensis – Carex utriculata*	Bluejoint reed grass meadows	G5	S3			Y	No
	Calamagrostis canadensis – Dodecatheon redolens	Bluejoint reed grass meadows	G5	S3			Y	No
	Calamagrostis canadensis – Scirpus microcarpus	Bluejoint reed grass meadows	G5	S3			Y	No
Calamagrostis nutkaensis	*Calamagrostis nutkaensis*	Pacific reed grass meadows	G4	S2			Y	No
	Calamagrostis nutkaensis – Carex (obnupta) – Juncus (patens)	Pacific reed grass meadows	G4	S2			Y	No
	Calamagrostis nutkaensis / Baccharis pilularis	Pacific reed grass meadows	G4	S2			Y	No
Calamagrostis rubescens	*Calamagrostis rubescens*	Pinegrass meadows					Y	Yes
Camassia quamash	*Camassia quamash / Sphagnum subsecundum*	Small camas meadows	G4?	S3?			Y	No
Carex barbarae	*Carex barbarae*	White-root beds	G2?	S2?			Y	No
Carex densa	*Carex densa – Juncus xiphioides*	Dense sedge marshes	G2?	S2?			Y	No
	Carex densa – Lolium perenne – Juncus spp.	Dense sedge marshes	G2?	S2?			Y	No
Carex nudata	*Carex nudata*	Torrent sedge patches	G3	S3			Y	No
Carex obnupta	*Carex obnupta*	Slough sedge swards	G4	S3			Y	No
	Carex obnupta – Juncus lescurii	Slough sedge swards	G4	S3			Y	No
	Carex obnupta – Juncus patens	Slough sedge swards	G4	S3			Y	No
Centaurea (solstitialis, melitensis)	*Centaurea melitensis – Brassica nigra*	Yellow star-thistle fields	GNR	SNR			N	No
	Centaurea solstitialis	Yellow star-thistle fields	GNR	SNR			N	No
	Centaurea spp. – Brachypodium distachyon	Yellow star-thistle fields	GNR	SNR			N	No
Conium maculatum – Foeniculum vulgare	*Conium maculatum*	Poison hemlock or fennel patches					N	No
	Foeniculum vulgare	Poison hemlock or fennel patches					N	No
Corethrogyne filaginifolia – Eriogonum (elongatum, nudum)	*Corethrogyne filaginifolia*	Sand-aster and perennial buckwheat fields	G4	S4			N	No
	Eriogonum nudum	Sand-aster and perennial buckwheat fields	G4	S4			N	No
Cortaderia (jubata, selloana)	*Cortaderia (jubata, selloana)*	Pampas grass patches					N	No
Cynosurus echinatus	*Cynosurus echinatus – (Danthonia pilosa – Nassella manicata)*	Annual dogtail grasslands					N	No
	Cynosurus echinatus – Bromus hordeaceus – Avena fatua	Annual dogtail grasslands					N	No
	Cynosurus echinatus – Bromus hordeaceus – Madia elegans	Annual dogtail grasslands					N	No
	Cynosurus echinatus – Bromus hordeaceus – Taeniatherum caput-medusae	Annual dogtail grasslands					N	No
	Cynosurus echinatus – Bromus hordeaceus – Taraxacum officinale	Annual dogtail grasslands					N	No
	Cynosurus echinatus – Lagophylla ramosissima	Annual dogtail grasslands					N	No

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	Cynosurus echinatus – Linum bienne – Brodiaea elegans	Annual dogtail grasslands					N	No
Danthonia californica	*Danthonia californica*	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – (Briza maxima – Vulpia bromoides)	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Aira caryophyllea	California oat grass prairie	G4	S3	G3		Y	No
	Danthonia californica – Arrhenatherum elatius	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Elymus elymoides	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Nassella pulchra	California oat grass prairie	G4	S3			Y	No
Darlingtonia californica	*Darlingtonia californica*	California pitcher plant fens	G4?	S3			Y	No
Deschampsia cespitosa	*Deschampsia cespitosa*	Tufted hair grass meadows	G5	S4?	G4		Y	No
	Deschampsia cespitosa – Anthoxanthum odoratum	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Bistorta bistortoides	Tufted hair grass meadows	G5	S4?			N	No
	Deschampsia cespitosa – Danthonia californica	Tufted hair grass meadows	G5	S4?	G2	S2	Y	No
	Deschampsia cespitosa – Eryngium armatum	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Holcus lanatus	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Horkelia marinensis	Tufted hair grass meadows	G5	S4?	G3	S1?	Y	No
	Deschampsia cespitosa var. holciformis	Tufted hair grass meadows	G5	S4?			Y	No
Distichlis spicata	*Distichlis spicata*	Salt grass flats	GU	S4	G5		N	No
	Distichlis spicata – Ambrosia chamissonis	Salt grass flats	GU	S4			Y	No
	Distichlis spicata – annual grasses	Salt grass flats	GU	S4			N	No
	Distichlis spicata – Atriplex triangularis	Salt grass flats	GU	S4			N	No
	Distichlis spicata – Bromus diandrus	Salt grass flats	GU	S4			N	No
	Distichlis spicata – Cotula coronopifolia	Salt grass flats	GU	S4			N	No
	Distichlis spicata – Hordeum murinum	Salt grass flats	GU	S4			N	No
	Distichlis spicata – Jaumea carnosa	Salt grass flats	GU	S4			Y	No
	Distichlis spicata – Juncus arcticus var. balticus (J. arcticus var. mexicanus)	Salt grass flats	GU	S4			N	No
	Distichlis spicata – Sarcocornia pacifica	Salt grass flats	GU	S4			Y	No
	Distichlis spicata (– Baccharis douglasii – Equisetum hymenale)	Salt grass flats	GU	S4			Y	No
Eleocharis macrostachya	*Eleocharis macrostachya*	Pale spike rush marshes	G4	S4			N	No
	Eleocharis macrostachya – (Pleuropogon californicus)	Pale spike rush marshes	G4	S4			Y	No
	Eleocharis macrostachya – Lasthenia glaberrima	Pale spike rush marshes	G4	S4			Y	No
Elymus (elymoides, multisetus)	*Elymus multisetus – (Eschscholzia californica – Plantago erecta)*	Squirreltail patches	G4	S4?			Y	No
	Elymus multisetus – Plantago erecta – Lolium perenne	Squirreltail patches	G4	S4?			Y	No
Deschampsia cespitosa	*Deschampsia cespitosa*	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Anthoxanthum odoratum	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Bistorta bistortoides	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Danthonia californica	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Eryngium armatum	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Holcus lanatus	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Horkelia marinensis	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa var. holciformis	Tufted hair grass meadows	G5	S4?			Y	No
Elymus glaucus Montane	*Elymus glaucus – Carex feta*	Blue wild rye montane meadows	G3?	S3?	G2?		Y	No
	Elymus glaucus – Carex pellita	Blue wild rye montane meadows	G3?	S3?			Y	No
	Elymus glaucus – Heracleum maximum	Blue wild rye montane meadows	G3?	S3?			Y	No
Eryngium aristulatum	*Eryngium aristulatum – Lupinus bicolor*	California button-celery patches	G2	S2			Y	No
	Hemizonia congesta	California button-celery patches	G2	S2			Y	No
Eschscholzia (californica) – Lupinus (nanus)	*Bromus hordeaceus – Lupinus nanus – Trifolium spp.*	California poppy – lupine fields	G4	S4			N	No
	Eschscholzia californica	California poppy – lupine fields	G4	S4			N	No
	Lupinus bicolor	California poppy – lupine fields	G4	S4	G3	S3	Y	No
Festuca idahoensis	*Festuca californica*	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Achillea millefolium	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Bromus carinatus	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Danthonia californica	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Festuca rubra	Idaho fescue grassland	G4	S3?			Y	No
Festuca rubra	*Festuca rubra*	Red fescue grassland	G4	S3?			Y	No
Frankenia salina	*Frankenia salina*	Alkali heath marsh	G4	S3			Y	No
	Frankenia salina – Distichlis spicata	Alkali heath marsh	G4	S3			Y	No
	Frankenia salina – Limonium californicum – Monanthochloe littoralis – Sarcocornia pacifica	Alkali heath marsh	G4	S3			Y	No
Glyceria (elata, striata)	*Glyceria elata*	Manna grass meadows	G4	S3?			Y	No
	Glyceria elata – Lotus oblongifolius	Manna grass meadows	G4	S3?			Y	No
	Glyceria elata – Scirpus microcarpus	Manna grass meadows	G4	S3?			Y	No
	Glyceria striata	Manna grass meadows	G4	S3?			Y	No
Grindelia (camporum, stricta)	*Grindelia stricta*	Gum plant patches	G2G3	S2S3			Y	No
Heterotheca (oregona, sessiliflora)	*Heterotheca oregona*	Goldenaster patches	G3	S3	G3	S3	Y	No
	Heterotheca sessiliflora	Goldenaster patches	G3	S3	G3	S3	Y	No
Holcus lanatus – Anthoxanthum odoratum	*Holcus lanatus*	Common velvet grass – sweet vernal grass meadows					N	No
	Holcus lanatus – Anthoxanthum odoratum	Common velvet grass – sweet vernal grass meadows					N	Yes
Hordeum brachyantherum	*Hordeum brachyantherum*	Meadow barley patches	G2	S2	G2		Y	No
	Hordeum brachyantherum – Poa pratensis	Meadow barley patches	G2	S2			Y	No
	Hordeum brachyantherum – Polypogon monspeliensis	Meadow barley patches	G2	S2			Y	No
Hydrocotyle (ranunculoides, umbellata)	*Hydrocotyle ranunculoides*	Mats of floating pennywort	G4	S3?			Y	No
	Hydrocotyle ranunculoides – Schoenoplectus pungens	Mats of floating pennywort	G4	S3?			Y	No
Isoetes (bolanderi, echinospora, howellii, nuttallii, occidentalis)		Quillwort beds	G3	S3?				No
Juncus (oxymeris, xiphioides)	*Juncus oxymeris*	Iris-leaf rush seeps	G2?	S2?			Y	No
	Juncus xiphioides	Iris-leaf rush seeps	G2?	S2?			Y	No
Juncus arcticus (var. balticus, mexicanus)	*Juncus arcticus var. balticus*	Baltic and Mexican rush marshes	G5	S4	G5		N	No
	Juncus arcticus var. balticus – Argentina egedii	Baltic and Mexican rush marshes	G5	S4			N	No
	Juncus arcticus var. balticus – Conium maculatum	Baltic and Mexican rush marshes	G5	S4			N	No
Juncus effusus	*Juncus effusus*	Soft rush marshes	G4	S4?			N	No
Juncus lescurii	*Juncus (lescurii) – Distichlis spicata*	Salt rush swales	G3	S2?			Y	No
	Juncus lescurii	Salt rush swales	G3	S2?			Y	No
Juncus patens		Western rush marshes	G4?	S4?				No
Lasthenia californica – Plantago erecta – Vulpia microstachys	*Erigeron glaucus – Lasthenia californica*	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No
	Erodium cicutarium – Vulpia microstachys	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			N	No
	Hemizonia congesta – Lolium perenne	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			N	No
	Lasthenia (californica, gracilis)	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No
	Lasthenia californica – Lupinus bicolor – Layia platyglossa – Bromus spp.	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No
	Lasthenia californica – Plantago erecta – Hesperevax sparsiflora	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No

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	Lasthenia minor	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No
	Layia platyglossa	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No
	Micropus californicus	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No
	Vulpia microstachys	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No
	Vulpia microstachys – Plantago erecta	California goldfields – dwarf plantain – small fescue flower fields	G4	S4			Y	No
Lasthenia glaberrima	*Lasthenia glaberrima – Lupinus bicolor*	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
	Lasthenia glaberrima – Pleuropogon californicus	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
	Lasthenia glaberrima – Trifolium variegatum	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
Lemna (minor) and Relatives	*Lemna (minor)*	Duckweed blooms	G5	S4?			N	No
Leymus cinereus – Leymus triticoides	*Leymus triticoides – Bromus spp. – Avena spp.*	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Carduus pycnocephalus – Geranium dissectum	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Lolium perenne	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Poa secunda	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
Leymus condensatus	*Leymus condensatus*	Giant wild rye grassland	G3	S3			Y	No
Leymus mollis	*Leymus mollis – Abronia latifolia – (Cakile sp.)*	Sea lyme grass patches	G4	S2			Y	No
	Leymus mollis – Ammophila arenaria	Sea lyme grass patches	G4	S2			Y	No
	Leymus mollis – Carpobrotus edulis	Sea lyme grass patches	G4	S2			Y	No
Lolium perenne	*Lolium perenne*	Perennial rye grass fields					N	No
	Lolium perenne	Perennial rye grass fields					N	No
	Lolium perenne – Bromus hordeaceus	Perennial rye grass fields					N	No
	Lolium perenne – Centaurium muehlenbergii	Perennial rye grass fields					N	No
	Lolium perenne – Festuca arundinacea	Perennial rye grass fields					N	No
	Lolium perenne – Hordeum marinum – Ranunculus californicus	Perennial rye grass fields					N	No
	Lolium perenne – Lepidium latifolium	Perennial rye grass fields					N	No
	Lolium perenne – Leymus triticoides	Perennial rye grass fields					N	No
	Lolium perenne – Lotus corniculatus	Perennial rye grass fields					N	No
Lotus unifoliolatus	*Lotus unifoliolatus*	Spanish clover fields	G4?	S4?			N	No
Mesembryanthemum spp. – Carpobrotus spp.	*Carpobrotus (edulis)*	Ice plant mats	GNR	SNR			N	No
	Carpobrotus spp. – Mesembryanthemum crystallinum	Ice plant mats	GNR	SNR			N	No
	Mesembryanthemum crystallinum – Malva parviflora – Hordeum murinum	Ice plant mats	GNR	SNR			N	No
Mimulus (guttatus)	*Mimulus guttatus*	Common monkey flower seeps	G4?	S3?			Y	No
	Mimulus guttatus – (Mimulus spp.)	Common monkey flower seeps	G4?	S3?			Y	No
	Mimulus guttatus – Vulpia microstachys	Common monkey flower seeps	G4?	S3?			Y	No
Nassella spp. – Melica spp.	*Melica californica*	Needle grass - melic grass grassland	G4	S4			Y	No
	Melica torreyana	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella lepida	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Achnatherum lemmonii	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Avena spp. – Bromus spp.	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Corethrogyne filaginifolia	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Distichlis spicata – Bromus spp.	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Erodium spp. – Avena barbata	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Hemizonia congesta	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Leontodon saxatilis	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Lolium perenne – (Trifolium spp.)	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Lolium perenne – Astragalus gambelianus – Lepidium nitidum	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Lolium perenne – Plantago erecta Serpentine	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Melica californica – annual grass	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Plantago lanceolata	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra – Sanicula bipinnatifida	Needle grass - melic grass grassland	G4	S4			Y	No
	Nassella pulchra / Baccharis pilularis	Needle grass - melic grass grassland	G4	S4			Y	No
North Coast Bluff Scrub								No
Nuphar lutea		Yellow pond-lily mats	G5	S3?				No
Oenanthe sarmentosa	*Oenanthe sarmentosa*	Water-parsley marsh	G4	S2?			Y	No
Oxyria digyna	*Draba lemmonii – Oxyria digyna*	Mountain sorrel patches	G4	S3?			Y	No
Phalaris aquatica – Phalaris arundinacea	*Phalaris aquatica*	Harding grass – Reed Canary grass swards	GNR	SNR	GNR	SNR	N	No
	Phalaris aquatica – Avena barbata	Harding grass – Reed Canary grass swards	GNR	SNR	GNR	SNR	N	No
	Phalaris aquatica – Bromus hordeaceus – Centaurea solstitialis	Harding grass – Reed Canary grass swards	GNR	SNR	GNR	SNR	N	No
	Phalaris arundinacea	Harding grass – Reed Canary grass swards	GNR	SNR	GNR	SNR	N	No
Plagiobothrys nothofulvus	*Plagiobothrys nothofulvus – Castilleja exserta – Lupinus nanus*	Popcorn flower fields	G4	S4			Y	No
	Plagiobothrys nothofulvus – Daucus pusillus – Trifolium microcephalum	Popcorn flower fields	G4	S4			N	No
Poa pratensis	*Poa pratensis*	Kentucky blue grass turf					N	No
	Poa pratensis – Juncus patens – Luzula comosa	Kentucky blue grass turf					N	No
	Poa pratensis – Potentilla gracilis	Kentucky blue grass turf					N	No
Poa secunda	*Poa secunda – Bromus rubens*	Curly blue grass grassland	G4	S3?			Y	No
	Poa secunda ssp. secunda	Curly blue grass grassland	G4	S3?			Y	No
Sarcocornia pacifica (Salicornia depressa)	*Salicornia bigelovii*	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Atriplex prostrata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Bolboschoenus maritimus	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Brassica nigra	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Cotula coronopifolia	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Distichlis spicata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Echinochloa crus-galli – Polygonum – Xanthium strumarium	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Frankenia salina	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Grindelia stricta	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Jaumea carnosa	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Jaumea carnosa – Distichlis spicata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Lepidium latifolium	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Spartina foliosa	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica / algae	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica / annual grasses (Polypogon, Hordeum, Lolium)	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica Managed	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica Tidal	Pickleweed mats	G4	S3			Y	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	**Association Scientific Name**	**Alliance Common Name**	**Alliance Global Rank**	**Alliance State Rank**	**Associciation Global Rank**	**Association Rank State**	**Rare ?**	**Present?**
Schoenoplectus (acutus, californicus)	*Schoenoplectus californicus*	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Schoenoplectus acutus	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Schoenoplectus acutus / Rosa californica	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Typha latifolia	Hardstem and California bulrush marshes	GU	S3S4			Y	No
Scirpus microcarpus	*Scirpus microcarpus*	Small-fruited bulrush marsh	G4	S2	G4		Y	No
Sedum spathulifolium		Coast Range stonecrop draperies	G4?	S4?				No
Solidago canadensis	*Solidago canadensis – Achillea millefolium*	Canada goldenrod patches	G4?	S4?	G4?		N	No
Sparganium (angustifolium)	*Sparganium angustifolium*	Mats of bur-reed leaves	G4	S3?			Y	No
Trifolium variegatum	*Trifolium variegatum*	White-tip clover swales	G3?	S3?			Y	No
	Trifolium variegatum – Juncus bufonius	White-tip clover swales	G3?	S3?			Y	No
	Trifolium variegatum – Lolium perenne – Leontodon saxatilis	White-tip clover swales	G3?	S3?			Y	No
Typha (angustifolia, domingensis, latifolia)	*Typha (latifolia, angustifolia)*	Cattail marshes	G5	S5			N	No
	Typha angustifolia – Distichlis spicata	Cattail marshes	G5	S5			N	No
	Typha angustifolia – Typha latifolia – Typha domingensis	Cattail marshes	G5	S5			N	No

Special-Status Wildlife with Potential Occurrence on the Project Site.								
Scientific name	Common Name	**Federal Status**	**State Status**	**G**	**S**	**Organization: Code**	**Habitat**	**Observed?**
INVERTEBRATES								
Bombus caliginosus	Obscure Bumblebee	None	None	G4?	S1S2	IUCN:VU	Inhabits open grassy coastal prairies and Coast Range meadows. Nesting occurs underground as well as above ground in abandoned bird nests. Males patrol circuits in search of mates. Reported to DFW as within 5 miles of project site.is an This species is very similar to the common yellow-faced bumblebee (Bombus vosnesenskii), differentiated by the structure of the male genitalia. he obscure bumblebee tends to have longer hairs, however, and yellow hairs are found on the underside of the abdomen.	No
Bombus occidentalis	Western bumble bee	None	Candidate Endangered	G2G3	S1	USFS:S	Populations in central California have declined since the 1990's. It visits flowers in a variety of habitats. Identified by a white patch on its abdomen hind tip. None recorded from coastal Mendocino County at http://www.xerces.org/bumblebees.	No
Coelus globosus	Globose dune beetle	None	None	G1G2	S1S2	IUCN:VU	Subterranean beetle that tunnels through sand under dune vegetation. Since coastal dune habitat in California is diminishing, the beetle is a special-status species.	No
Danaus plexippus pop. 1	monarch - California overwintering population	None	None	G4T2T3	S2S3	USFS:S	Ranges from North and South America and the Caribbean to Australia, New Zealand, the oceanic islands of the Pacific, Mauritius, the Canary Islands of the Atlantic, and, most recently, Western Europe. A predominantly open country, frost intolerant species whose range of breeding habitats is greatly dependent upon the presence of asclepiad flora (milkweeds). The monarch requires dense tree cover for overwintering, and the majority of the present sites in California are associated with Eucalyptus trees, specifically the blue gum, Eucalyptus globulus. These trees were introduced from Australia and have filled the role of native species that have been reduced by logging.	No
Helminthoglypta arrosa pomoensis	Pomo bronze shoulderband snail	None	None	G2G3T1	S1	IUCN:DD	Found near the coast in heavily-timbered redwood canyons of Mendocino County, from Big River and Russian Gulch watersheds. Found under redwoods. Generally, in somewhat moist duff. Found in scrub in forest opening under a power line in Russian Gulch.	No
Lycaeides argyrognomon lotis	lotis blue butterfly	Endangered	None	G5TH	SH	XERCES:CI	Not seen since 1983, it is primarily from Mendocino County but historically from northern Sonoma and possibly Marin Counties. Inhabits wet meadows, damp coastal prairie, and potentially bogs or poorly-drained sphagnum-willow bogs where soils are waterlogged and acidic. Presumed host plant is *Hosackia gracilis*.	No
Noyo intersessa	Ten Mile shoulderband snail	None	None	G2	S2	None	Known from a few locations in Mendocino County with limited habitat information. Known from Ten Mile Dunes.	No
Speyeria zerene behrensii	Behren's silverspot butterfly	Endangered	None	G5T1	S1	XERCES:CI	Historically from near the City of Mendocino, Mendocino County, south to the area of Salt Point State Park, Sonoma County. Now presumed to be from Manchester south to Salt Point area. Inhabits coastal terrace prairie with caterpillar host plants: violet (*Viola adunca*) and adult nectar sources: thistles, asters, etc.	No
FISH								
Cottus gulosus	riffle sculpin	None	None	G5	S3S4	CDFW:SSC	Found in many increasingly isolated watersheds in the Central Valley drainage and the central coast. Lives in permanent, cool, headwater streams where riffles and rocky substrates predominate. Such streams are clear and shaded, with moderate gradients.	No
Entosphenus tridentatus	Pacific lamprey	None	None	G4	S4	AFS:VU BLM:S CDFW:SSC USFS:S	Anadromous lamprey found in freshwater rivers around the Pacific Rim, from Japan to Baja California. Adult Pacific Lamprey spawn in habitat similar to salmon: low gradient stream reaches, in gravel, often at the tailouts of pools and riffles.	No
Eucyclogobius newberry	tidewater goby	Endangered	None	G3	S3	AFS:EN IUCN:VU	Brackish water habitats along the California coast from Agua Hedionda lagoon, San Diego Co. to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	No
Lampetra ayresii	River lamprey	None	None	G5	S3	AFS:VU CDFW:SSC	Anadromous lamprey that uses riffle and side channel habitats for spawning and for ammocoete rearing where good water quality is essential. Adult Pacific Lamprey spawn in habitat similar to salmon: low gradient stream reaches, in gravel, often at the tailouts of pools and riffles.	No
Lampetra richardsoni	western brook lamprey	None	None	G4G5	S3S4	CDFW:SSC USFS:S	Live in coastal streams from southeastern Alaska south to California and inland in the Columbia and Sacramento-San Joaquin River drainages. Need clear, cold water in little disturbed watersheds as well as clean gravel near cover (boulders, riparian vegetation, logs etc.) for spawning. Additionally, they need habitats with slow moving water and fine sediments for rearing.	No
Lavinia symmetricus navarroensis	Navarro roach	None	None	G4T1T2	S2S3	CDFW:SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams. Found in the lower, warmer reaches of streams in the Russian and Navarro River drainages.	No
Lavinia symmetricus parvipinnis	Gualala roach	None	None	G4T1T2	S2S3	CDFW:SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams.	No
Oncorhynchus gorbuscha	pink salmon	None	None	G5	S1	None	In North America, they're found from the Arctic coast in Alaska and territories in Canada to central California, although they do not reproduce in significant numbers south of Puget Sound. Pink salmon do not reside in fresh water for an extended period. Require beds of loose, silt-free, coarse gravel for spawning.	No
Oncorhynchus kisutch pop. 4	coho salmon - central California coast ESU	Endangered	Endangered	G5T2T3Q	S2	AFS:EN	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	No
Oncorhynchus mykiss irideus pop. 16	steelhead-northern California DPS	Threatened	None	G5T2T3Q	S2S3	AFS:TH	Cool, swift, shallow water and clean loose gravel for spawning.	No
Oncorhynchus tshawytscha pop. 17	chinook salmon – California coastal ESU	Threatened	None	G5T2Q	S2	AFS:TH	Adults depend on pool depth and volume, amount of cover, and proximity to gravel. Water temps >27° C lethal to adults.	No
Spirinchus thaleichthys	longfin smelt	Candidate	Threatened	G5	S1	None	Inhabits estuaries along the Pacific Coast, from San Francisco Bay to Alaska. Open water of estuaries, both in seawater and freshwater areas, typically in the middle or deeper areas of the water column.	No
AMPHIBIANS & REPTILES								
Rhyacotriton variegatus	southern torrent (=seep) salamander	None	None	G3G4	S2S3	CDFW:SSC IUCN:LC USFS:S	Found in Coastal redwood, Douglas fir, mixed conifer, montane riparian, and montane hardwood-conifer forests from northern California south to Point Arena. Aquatic habitat includes permanent cold creeks, steams and seepages with low water flow; associated with moss-covered rocks within trickling water and the splash zone of waterfalls; old-growth coniferous forests with closed canopy; <50% cobble in creeks, remainder mixture of pebble, gravel and sand.	No
Ascaphus truei	Pacific tailed frog	None	None	G4	S3S4	CDFW:SSC IUCN:LC	Occurs in montane hardwood-conifer, redwood, Douglas-fir and ponderosa pine habitats. Coastal from Anchor Bay, Mendocino Co. to Oregon border. Cold, clear, rocky streams in wet forests. They do not inhabit ponds or lakes. A rocky streambed is necessary for cover for adults, eggs, and larvae. After heavy rains, adults may be found in the woods away from the stream.	No
Dicamptodon ensatus	California giant salamander	None	None	G3	S2S3	CDFW:SSC IUCN:NT	Found along the West Coast of North America from northern California to southern British Columbia. Found in a variety of aquatic habitats, including lakes, ponds, rivers, and streams. They prefer fast moving water to slow moving water. Cover is used for hiding, protection from the sun, and brooding eggs.	No
Rana aurora	northern red-legged frog	None	None	G4	S3	CDFW:SSC USFS:S	Found in humid forests, woodlands, grasslands, and streamsides in northwestern California. Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season. Integration zone between northern and California species is between Manchester and Elk.	No

Scientific name	Common Name	Federal Status	State Status	G	S	Organization: Code	Habitat	Observed?
Rana boylii	foothill yellow-legged frog	None	Endangered	G3	S3	BLM:S CDFW:SSC IUCN:NT USFS:S	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying.	No
Rana draytonii	California red-legged frog	Threatened	None	G2S3	S2S3	CDFW:SSC IUCN:VU	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	No
Taricha rivularis	red-bellied newt	None	None	G2	S2	CDFW:SSC IUCN:LC	Occur in coastal California north of San Francisco Bay, in Sonoma, Lake, Mendocino, and Humboldt counties, at elevations between 150–450. Range confined to the coast redwood belt, but not restricted to redwood forests. Adults migrate from terrestrial to aquatic habitats seasonally for breeding.	No
Emys marmorata marmorata	western pond turtle	None	None	G3G4	S3	BLM:S CDFW:SSC IUCN:VU USFS:S	Former scientific name: *Clemmys marmorata marmorata*. Associated with permanent or nearly permanent water in a wide variety of habitats. Requires basking sites. Nests sites may be found up to 0.5 km from water.	No
BIRDS								
Accipiter cooperii	Cooper's hawk (nesting)	None	None	G5	S4	CDFW:WL IUCN:LC	Nesting: woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	No
Accipiter gentilis	northern goshawk (nesting)	None	None	G5	S3	BLM:S CDF:S CDFW:SSC IUCN:LC USFS:S	Nesting: within and in vicinity of coniferous forest. Uses old nests, and maintains alternate sites. Usually nests on north slopes, near water. Red fir, lodge pole pine, Jeffrey pine, and aspens are typical nest trees. Northern goshawks typically nest in conifer forests containing large trees and an open understory on the west slope of the Sierra. There is historic nesting in Big River and Pudding Creek. Winter migrant on the coast.	No
Accipiter striatus	sharp-shinned hawk (nesting)	None	None	G5	S4	CDFW:WL IUCN:LC	Nesting: ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffrey pine habitats. Prefers riparian areas. North-facing slopes, with plucking perches are critical requirements. Nests usually within 275 ft. of water. Nests in dense, even-aged, single- layered forest canopy, usually nests in dense, pole and small-tree stands of conifers, which are cool, moist, well shaded, with little ground-cover, near water.	No
Agelaius tricolor	tricolored blackbird (nesting colony)	None	Threatened	G1G2	S1S2	BLM:S CDFW:SSC IUCN:EN NABCI:RWL USFWS:BCC	Nesting colony: highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, such as cattails and foraging area with insect prey within a few km of the colony. Known inland from McGuire's Pond.	No
Ammodramus savannarum	grasshopper sparrow (nesting)	None	None	G5	S3	CDFW:SSC IUCN:LC	Nesting: dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting. Summer (breeding) resident in Mendocino County known from north of Ten Mile River.	No
Aquila chrysaetos	golden eagle (nesting & wintering)	None	None	G5	S3	BLM:S CDF:S CDFW:FP CDFW:WL IUCN:LC	Nesting and wintering: rolling foothills mountain areas, sage-juniper flats, desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	No
Ardea alba	great egret (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	No
Ardea herodias	great blue heron (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	No
Artemisiospiza belli belli	Bell's sage sparrow	None	None	G5T2T3	S3	CDFW:WL USFWS:BCC	Found from western United States to northwestern Mexico. Breed in coastal sagebrush, chaparral, and other open, scrubby habitats. In chaparral.	No
Asio flammeus	short-eared owl (nesting)	None	None	G5	S3	CDFW:SSC IUCN:LC	Found throughout much of North America and Eurasia. Prefer to live in marshes and bogs; they inhabit open, treeless areas.	No
Asio otus	long-eared owl (nesting)	None	None	G5	S3?	CDFW:SSC IUCN:LC	Range extends throughout temperate North America, through Europe and the former Soviet Union as far east as Japan. Inhabit dense vegetation close to grasslands, as well as open forests shrub lands from sea level up to 2000 m elevation.	No
Athene cunicularia	burrowing owl (burrow sites and some winter sites)	None	None	G4	S3	BLM:S CDFW:SSC IUCN:LC USFWS:BCC	Burrow sites: open, dry annual or perennial grasslands, deserts and scrublands, and dunes characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	No
Brachyramphus marmoratus	marbled murrelet (nesting)	Threatened	Endangered	G3	S2	CDF:S IUCN:EN NABCI:RW	Nesting: feeds near-shore; nests inland along coast, from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir. Presence of platforms (flat surface at least four inches in diameter) appears to be the most important stand characteristic for predicting murrelet presence. Stands can be: 1) mature (with or without an old- growth component); 2) old-growth; 3) young coniferous forests with platforms; and 4) include large residual trees in low densities sometimes less than one tree per acre.	No
Buteo regalis	ferruginous hawk (wintering)	None	None	G4	S3S4	CDFW:WL IUCN:LC USFWS:BCC	Usually east of the coastal belt, uncommon migrant in coastal Mendocino County seen in open areas such as Bald Hill and Manchester. Feeding habitat in open, treeless areas. Does not breed in California.	No
Cerorhinca monocerata	rhinoceros auklet (nesting colony)	None	None	G5	S3	CDFW:WL IUCN:LC	Breeds from California (the Channel Islands) to the Aleutian Islands in Alaska in North America. Winters both in offshore and inshore waters, exhibiting some migration. Nests in burrows dug into the soil, or in natural caves and cavities between 1 and 5 m deep.	No
Chaetura vauxi	Vaux's swift (nesting)	None	None	G5	S2S3	CDFW:SSC IUCN:LC	Nesting: redwood, Douglas fir, and other coniferous forests. Nests in large hollow trees and snags. Often nests in flocks. Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes.The most important habitat requirement appears to be an appropriate nest-site in a large, hollow tree. Forages over most terrains and habitats, often high in theair. Shows an apparent preference for foraging over rivers and lakes.	No
Charadrius nivosus nivosus	western snowy plover (nesting)	Threatened	None	G3T3	S2	CDFW:SSC NABCI:RWL USFWS:BCC	Nesting: federal listing applies only to the pacific coastal population. Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting. Sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths are the preferred coastal habitats for nesting. Less common nesting habitat includes salt pans, coastal dredged spoil disposal sites, dry salt ponds, and salt pond levees and islands.	No
Circus hudsonius	Northern harrier (nesting)	None	None	G5	S3	CDFW:SSC IUCN:LC	Northern harriers prefer sloughs, wet meadows, marshlands, swamps, prairies, plains, grasslands, and shrublands and perch on structures such as fence posts.Nesting habitat: nest on the ground, usually near water, or in tall grass, open fields, clearings, or on the water on a stick foundation, willow clump, or sedge tussock. Most nests built within patches of dense, often tall, vegetation (e.g., cattails) in undisturbed areas. They usually nest near hunting grounds.Foraging: They need open, low woody or herbaceous vegetation for nesting and hunting.	No
Contopus cooperi	olive-sided flycatcher (nesting)	None	None	G4	S3	CDFW:SSC IUCN:NT NABCI:YWL USFWS:BCC	Breeds in montane and northern coniferous forests, at forest edges and openings, such as meadows and ponds. Tall standing dead trees are used as perch trees for catching flying insects. Accordingly, an open canopy is a key components of suitable habitat. Nest is an open cup of twigs, rootlets, and lichens, placed out near tip of horizontal branch of a tree.	No
Egretta thula	Snowy egret (nesting colony)	None	None	G5	S4	IUCN:LC	Rookery: colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	No
Elanus leucurus	white-tailed kite (nesting)	None	None	G5	S3S4	BLM:S CDFW:FP IUCN:LC	Nesting: rolling foothills/valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland, open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching. Winter congregation of at least 20 birds seen at Manchester State Park in early 2000's. One nest known from a THP in Albion ~2006; nest was at the edge of conifer forest with no pasture immediately adjacent.	No

Scientific name	Common Name	Federal Status	State Status	G	S	Organization: Code	Habitat	Observed?
Falco columbarius	Merlin (wintering)	None	None	G5	S3S4	CDFW:WL IUCN:LC	General wintering habitat: Uncommon winter migrants on the coast. Habitat apparently similar to breeding habitat, (open forest and grasslands). Regularly hunts prey (e.g., shorebirds) concentrated on tidal flats. Often winters in cities throughout its range, where frequently perches on buildings, power poles, and tall trees. Also winters in open woodland, grasslands, open cultivated fields, marshes, estuaries, and seacoasts. Frequents open habitats at low elevation near water and tree stands.	No
Falco peregrinus anatum	American peregrine falcon (nesting)	Delisted	Delisted	G4T4	S3S4	CDF:S CDFW:FP USFWS:BCC	Nesting: near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape on a depression or ledge in an open site.	No
Fratercula cirrhata	tufted puffin (nesting colony)	None	None	G5	S1S2	CDFW:SSC IUCN:LC	Nesting colony: open-ocean bird; nests along the coast on islands, islets, or (rarely) mainland cliffs free of human disturbance and mammalian predators. Nests in burrows or rock crevices when sod or earth in unavailable for burrowing. Occurs year-road offshore near breeding colonies in northern California, but more common in winter.Breeding records from Goat Rock, Mendocino Headlands State Park.	No
Haematopus bachmani	Black oystercatcher (nesting)	None	None	G5	SNR	IUCN:LC USFWS:BCC	From the Aleutian Islands to Baja California, the forage on intertidal macroinvertebrates along gravel or rocky shores and in the southern part of their range nest primarily on rocky headlands and offshore rocks.	No
Haliaeetus leucocephalus	bald eagle (nesting & wintering)	Delisted	Endangered	G5	S3	BLM:S CDF:S CDFW:FP IUCN:LC USFS:S USFWS:BCC	Nesting and wintering: ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter. Known from winter in Lake Cleone, MacKerricher State Park and Little River.	No
Hydrobates homochroa	ashy storm-petrel (nesting colony)	None	None	G2	S2	BLM:S CDFW:SSC IUCN:EN NABCI:RWL USFWS:BCC	Nests on several islands off the coast of California in the USA and northern Mexico. Usually found out on the open ocean, and nests on rocky island terrain.	No
Icteria virens	yellow-breasted chat (nesting)	None	None	G5	S3	CDFW:SSC IUCN:LC	Breeds from the southern plains of Canada to central Mexico. Breeds in areas of dense shrubbery, including abandoned farm fields, clearcuts, powerline corridors, fencerows, forest edges and openings, swamps, and edges of streams and ponds. Its habitat often includes blackberry bushes.	No
Larus californicus	California gull (nesting)	None	None	G5	S4	CDFW:WL IUCN:LC	Colony nesters and usually occurring on an island or vegetated offshore rock.	No
Melanerpes lewis	Lewis' woodpecker (nesting)	None	None	G4	S4	IUCN:LC NABCI:YWL USFWS:BCC	Breed in open ponderosa pine forests and burned forests with a high density of standing dead trees (snags). They also breed in woodlands near streams, oak woodlands, orchards, and pinyon-juniper woodlands.	No
Pandion haliaetus	Osprey (nesting)	None	None	G5	S4	CDF:S CDFW:WL IUCN:LC	Nesting: ocean shore, bays, fresh-water lakes, and larger streams.Large nests built in tree-tops within 6-7 to 15 miles of good fish-producing body of water. Flattened portions of partially broken off snags, trees, rocks, dirt pinnacles, cacti, and numerous man-made structures such as utility poles and duck blinds are used for nests. Furthest nest inland may be McGuire's Pond.	No
Passerculus sandwichensis alaudinus	Bryant's savannah sparrow	None	None	G5T2T3	S2S3	CDFW:SSC	Breeds widely across northern and central North America and winters primarily in the southern United States, Baja California, and mainland Mexico south to Guatemala and northern Honduras. Breed in open areas with low vegetation, including most of northern North America from tundra to grassland, marsh, and farmland.	No
Pelecanus occidentalis californicus	California brown pelican (nesting colony & communal roosts)	Delisted	Delisted	G4T3T4	S3	BLM:S CDFW:FP USFS:S	Range extends from British Columbia, Canada to Nayarit, Mexico, while their breeding range is between the Channel Islands and Central Mexico, Typically found on rocky or vegetated offshore islands, in harbors and marinas, in estuaries, and in shallow breakwaters and sheltered bays.	No
Phalacrocorax auritus	double-crested cormorant (nesting colony)	None	None	G5	S4	CDFW:WL IUCN:LC	Rookery site: colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	No
Picoides nuttallii	Nuttall's woodpecker (nesting)	None	None	G4G5	SNR	ABC:WLBCC IUCN:LC	Ranging from west of the Cascade mountains and in the Sierra Nevada from southern Oregon to Northern Baja California. Nests are excavated in dead branches or snags of various trees, usually in close association with oak woodlands and riparian zone, habitat vulnerable to development. At least one Mendocino Coast record from 2011 Audubon Christmas Bird Count.	No
Progne subis	purple martin (nesting)	None	None	G5	S3	CDFW:SSC IUCN:LC	Nesting: inhabits woodlands, low elevation coniferous forest of Douglas fir, Ponderosa pine, and Monterey pine. Nests in old woodpecker cavities mostly, also in human- made structures such as weep holes in bridges. Nest often located in tall, isolated trees and snags. Nesting on the Mendocino Coast known, in part, from Juan Creek, Ten Mile, Noyo, and Big River, and snags from Ten Mile River to Pudding Creek. Need open foraging habitats.	No
Riparia riparia	bank swallow (nesting)	None	Threatened	G5	S2	BLM:S IUCN:LC	Near water; fields, marshes, streams, lakes. Typically seen feeding in flight over (or near) water at all seasons. Nests in colonies in vertical banks of dirt or sand, usually along rivers or ponds, seldom away from water.	No
Selasphorus rufus	rufous hummingbird (nesting)	None	None	G5	S1S2	IUCN:LC USFWS:BCC	Breeds in open or shrubby areas, forest openings, yards and parks, and sometimes in forests, thickets, and meadows. Late winter and spring migrant on the California coast. Breeding range from southeast Alaska and as far south as northwestern California.	No
Selasphorus sasin	Allen's hummingbird (nesting)	None	None	G5	SNR	ABC:WLBCC IUCN:LC USFWS:BCC	Breeds only along a narrow strip of coastal California and southern Oregon. Nests in densely vegetated areas and forests. An early migrant compared with most North American birds, arriving in summer breeding grounds as early as January. Breeds in moist coastal areas, scrub, chaparral, and forests. Winters in forest edge and scrub clearings with flowers.	No
Setophaga occidentalis	hermit warbler (nesting)	None	None	G4G5	SNR	CDFW:SSC	Breeding range is relatively limited to the Pacific Coast and the Cascade and Sierra Nevada mountain ranges of Washington, Oregon, and California. Some winter along the coastal central and southern California, but most winter primarily in the mountains of western Mexico and Central America. Nesting habitats in Pacific northwest are coniferous forests with a high canopy volume, generally preferring mature stands of pine and Douglas fir. Avoids areas with a high	No
Setophaga petechia	yellow warbler (nesting)	None	None	G5	S3S4	CDFW:SSC USFWS:BCC	Nests from the Arctic Circle to Mexico. Bushes, swamp edges, streams, gardens. Breeds in a variety of habitats in east, including woods and thickets along edges of streams, lakes, swamps, and marshes, favoring willows, alders, and other moisture-loving plants.	No
Sphyrapicus ruber	red-breasted sapsucker (nesting)	None	None	G5	S4	None	Breeds primarily in coniferous forests, but also uses deciduous and riparian habitat, as well as orchards and power line corridors. The nest is a hole usually dug in a live deciduous tree (e.g. alder, willow, madrone) with possible preference for larger trees showing decay-softened wood.	No
Strix occidentalis caurina	northern spotted owl	Threatened	Threatened	G3G4T3	S2	CDF:S IUCN:NT NABCI:YWL	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests w/patches of big trees. High, multistory canopy dominated by big trees, many trees w/cavities or broken tops, woody debris, and space under	No

Scientific name	Common Name	Federal Status	State Status	G	S	Organization: Code	Habitat	Observed?
Mammals								
Antrozous pallidus	pallid bat	None	None	G4	S3	BLM:S CDFW:SSC IUCN:LC USFS:S WBWG:H	A wide variety of habitats deserts, grasslands, shrublands, woodlands and forests from sea level up through mixed conifer forests. Most common in open, dry habitats with rocky areas for roosting. A yearlong resident in most of the range. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings where there is protection from high temperatures.	No
Aplodontia rufa nigra	Point Arena mountain beaver	Endangered	None	G5T1	S1	CDFW:SSC IUCN:LC	Generally known from 2 miles north of Bridgeport Landing to 5 miles south of the town of Point Arena. Coastal areas often near springs or seepages; mesic coastal scrub, northern dune scrub, edges of conifer forests, and riparian plant communities. North facing slopes of ridges and gullies with friable soils and thickets of undergrowth.	No
Arborimus pomo	Sonoma tree vole	None	None	G3	S3	CDFW:SSC IUCN:NT	Species split into red tree vole and Sonoma tree vole; approximate boundary between two species is Klamath River. Inhabits north coast fog belt from Oregon border to Somona Co. in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood-conifer habitats. Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of pine, grand fir, hemlock or spruce.	No
Antrozous pallidus	pallid bat	None	None	G4	S3	BLM:S CDFW:SSC IUCN:LC USFS:S WBWG:H	Occur in semi-arid and arid landscapes in western North America. They are found primarily in grasslands, shrub-steppe, and desert environments with rocky outcrops, but also dry open oak or ponderosa forest, and open farmland. Roosts are most commonly rock crevices but buildings, bridges, live trees and snags are also used.	No
Corynorhinus townsendi	Townsend's big-eared bat	None	None	G4	S2	BLM:S CDFW:SSC IUCN:LC USFS:S WBWG:H	Generally found in the dry uplands throughout the West, but also occur in mesic coniferous and deciduous forest habitats along the Pacific coast. Unequivocally associated with areas containing caves and cave-analogs for roosting habitat. Requires spacious cavern-like structures for roosting during all stages of its life cycle. Typically, they use caves and mines, but have been noted roosting in large hollows of redwood trees, attics and abandoned buildings, lava tubes, and under bridges. Extremely sensitive to disturbance.	No
Eumetopias jubatus	Steller (=northern) sealion	Delisted	None	G3	S2	IUCN:EN MMC:SSC	Inhabit the colder temperate to subarctic waters of the North Pacific Ocean. They need both terrestrial and aquatic habitats. They mate and give birth on land, at traditional sites called rookeries. Haulout and rookery sites usually consist of beaches (gravel, rocky, or sand), ledges, and rocky reefs.	No
Eumops perotis californicus	western mastiff bat	None	None	G4G5T4	S3S4	BLM:S CDFW:SSC WBWG:H	Found from the coast of the southwestern United States into central Mexico and southeast to Cuba. Suitable habitat for the western mastiff bat consists of extensive open areas with potential roost locations having vertical faces to drop off from and take flight, such as crevices in rock outcropings and cliff faces, tunnels and tall buildings. Habitats include coastal and desert scrublands, annual and perennial grasslands, conifer and deciduous woodlands, as well as palm oases.	No
Lasionycteris noctivagans	silver-haired bat	None	None	G3G4	S3S4	IUCN:LC WBWG:M	Ranges throughout California in coastal and montane forests. May be found anywhere in California during spring and fall migrations. Primarily a forest (tree-roosting) bat associated with north temperate zone conifer and mixed conifer/hardwood forests. Prefers forested (frequently coniferous) areas adjacent to lakes, ponds, and streams. During migration, sometimes occurs in xeric areas.Roosts in dead or dying trees with exfoliating bark, extensive vertical cracks, or cavities, rock crevices, and occasionally under wood piles, in leaf litter, under foundations, and in buildings, mines and caves.The primary threat is likely loss of roosting habitat due to logging practices that fail to accommodate	No
Lasiurus blossevillii	western red bat	None	None	G4	S3	CDFW:SSC IUCN:LC WBWG:H	Locally common in some areas of California from Shasta County south to the Mexican border. California Central Valley is the species' primary breeding region.Species appears to be strongly associated with riparian habitats for roosting and foraging, particularly mature stands/large diameter of	No
Lasiurus cinereus	hoary bat	None	None	G3G4	S4	IUCN:LC WBWG:M	Most widespread North American bat. Solitary species that winters along the coast and in southern California. Roosts in foliage of trees near ends of branches. Blends with the bark of trees. Highly associated with forested habitats but can be found in suburbs with old, large trees.	No
Martes caurina humboldtensis	Humboldt marten	Proposed Threatened	Endangered	G4G5T1	S1	CDFW:SSC USFS:S	Endemic to the coastal forests of northwestern California with a historical range described as "the narrow northwest humid coast strip, chiefly within the redwood belt" from the Oregon border to northern Sonoma county. However, the one known remnant Humboldt marten population occurs in the north-central portion of the described range in an area dominated by Douglas-fir and tanoak. Typically associated with closed-canopy, late-successional, mesic coniferous forests with complex physical structure near the ground. Very rare on the Mendocino coast.	No
Myotis evotis	long-eared myotis bat	None	None	G5	S3	BLM:S IUCN:LC WBWG:M	Widespread in California, but generally is believed to be uncommon in most of its range. It avoids the arid Central Valley and hot deserts, occurring along the entire coast and interior mountains. Found in nearly all brush, woodland, and	No

Key for Counties: MEN: Mendocino, SO: Sonoma, CL: Clear Lake, HB: Humboldt, TR: Trinity

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: **Relevé** or (RA)

Database #:	Date: 11/25/20	Name of recorder: N. Beier
		Other surveyors: A. Spade
	UID: RA1	Location Name: Holberg-Olsen

GPS name: Pomosnail — For Relevé only: **Bearing°**, left axis at ID point___ **of Long / Short** side

UTME ___ **UTMN** ___ **Zone: 11** **NAD83** GPS error: **ft./ m./ PDOP** ____

Decimal degrees: **LAT** 38°.50.883' **LONG** 120°.38.540'

GPS within stand? (Yes) / **No** If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** _____ **Projected UTMs: UTME** ___ **UTMN** ___

Camera Name: asa cam **Cardinal photos at ID point:** 284 - 287

Other photos:

615 ft

Stand Size (acres): <1, (1-5)?, >5 | **Plot Area (m²):** 100 / _____ | **Plot Dimensions** ___ x ___ m | **RA Radius** ___ m

Exposure, Actual °: 212 NE NW SE (SSW) Flat Variable | **Steepness, Actual °:** 9 0° 1-5° (>5-25°) >25

Topography: Macro: top upper (mid) lower bottom | **Micro:** convex flat (concave) undulating

Geology code: _____ **Soil Texture code:** _____ | (Upland) or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H20: 0 **BA Stems:** 3 **Litter:** 94 **Bedrock:** 0 **Boulder:** 0 **Stone:** 0 **Cobble:** 0 **Gravel:** 0 **Fines:** 3 **=100%**

% Current year bioturbation (0) **Past bioturbation present?** Yes / (No) | **% Hoof punch** Ø

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

W/in subdivision. Some planted monterey pines & eucalyptus at periphery of similar age/size.

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), (T4) (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Bishop pine Forest Alliance

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: non-native grassland + landscaping / E ; Bishop pine / Doug Fir; Mont Cyp S; E Bishop pine N

Confidence in Alliance identification: L M (H) **Explain:** _____

Phenology (E,F,L): Herb___ **Shrub**___ **Tree** L **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)

Database #: _____ SPECIES SHEET RA1

IV. VEGETATION DESCRIPTION

% NonVasc cover: Ø **Total % Vasc Veg cover:** 55

% Cover - **Conifer tree / Hardwood tree:** 35 / Ø **Regenerating Tree:** 2 **Shrub:** 27 **Herbaceous:** 15

Height Class - Conifer tree / Hardwood tree: 8 / Ø **Regenerating Tree:** 3 **Shrub:** 3 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular
% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T	Pinus muricata	34		
T	Pinus radiata	1		
T	Eucalyptus globulus	r		
T	Notholipocarpus densiflorus	r		
A	Notholipocarpus densiflorus	2		
E	Pinus radiata	r		
S	Frangula purshiana	>+		
S	Rubus parviflorus	r		
S	Morella californica	>+		
S	Baccharis pilularis	1		
S	cotoneaster franchetii	r		
S	Rubus ursinus	25		
H	Polystichum munitum	3		
H	Ethyrium felix-femina	r		
H	Holcus lanatus	10		
H	Lonicera hispidula	r		
H	Elymus glaucus	>+		
H	Cirsium vulgare	>+		
H	Solidago spathulata	r		
H	Pteridium aquilinum	1		

Unusual species: _____

Figure 1. RA01 looking north.

Figure 2. RA01 looking east.

Figure 3. RA01 looking south.

Figure 4. RA01 looking west.

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 6/24/2021	Name of recorder: N. Bgor
		Other surveyors: A Spade
	UID: REØ1	Location Name: Holberg-Olsen

GPS name: Pomosnap1 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME 38°50.8931 UTMN 123°38.5131 Zone: 11 NAD83 GPS error: ft./ m./ PDOP ____

Decimal degrees: LAT ____ . ____ LONG ____ . ____

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m)____ bearing °____ inclination °____

and record: Base point ID ____ Projected UTMs: UTME ____ UTMN ____

Camera Name: BHWA Cardinal photos at ID point: 1210-1213

Other photos: SW to NE 1214

Stand Size (acres): <1, (1-5), >5 | Plot Area (m²): (100) / ____ | Plot Dimensions 10 x 10 m | ~~RA Radius~~ ____ m

Exposure, Actual °: 220 NE NW SE (SW) Flat Variable | Steepness, Actual °: 11 0° 1-5° (>5-25°) >25

Topography: Macro: top upper (mid) lower bottom | Micro: convex flat (concave) undulating

Geology code: ____ Soil Texture code: ____ | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 BA Stems: 2 Litter: 33 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: 0 Fines: 65 =100%

% Current year bioturbation Ø Past bioturbation present? Yes / (No) | % Hoof punch Ø

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

WAS BISHOP pine forest until trees died and were removed by property owner without benefit of permit. This relevé effort is to inform restoration. This relevé performed in the drier portion of the grassland present

Disturbance code / Intensity (L,M,H): ____/____ ____/____ ____/____ ____/____ ____/____ "Other" ____/____

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), (H2) (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Holcus lanatus-Anthoxanthum odoratum Herbaceous Alliance

Field-assessed Association name (optional): ~~Anthoxanthum odoratum~~ Holcus lanatus-Anthoxanthum odoratum Herbaceous Association

Adjacent Alliances/direction: declining Pinus muricata Forest / W ____

Confidence in Alliance identification: L M (H) Explain: ____

Phenology (E,P,L): Herb P Shrub ____ Tree ____ Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)
SPECIES SHEET RE01

Database #: _____

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 Total % Vasc Veg cover: 26

% Cover - Conifer tree / Hardwood tree: 0 / 0 Regenerating Tree: 0 Shrub: 1 Herbaceous: 25

Height Class - Conifer tree / Hardwood tree: 0 / 0 Regenerating Tree: 0 Shrub: 1 Herbaceous: 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular
% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
S	Rubus ursinus	1		
H	Holcus lanatus	8		
H	Agrostis capillaris	7		
H	Anthoxanthum odoratum	4		
H	Rytidosperma penicillatum	2		
H	Leucanthemum vulgare	1		
H	Acmispon brachycarpus	r		
H	Sisyrinchium bellum	r		
H	Cirsium vulgare	r		
H	Hypochaeris radicata	3		
H	Festuca bromoides	+		
H	Plantago lanceolata	+		
H	Carex gynodynamica	r		
H	Briza minor	r		
H	Briza maxima	r		
H	Juncus occidentalis	r		
H	Linum bienne	r		
H	Avena barbata	r		
H	Juncus patens	r		
H	Senecio glomeratus	r		
H	Lotus corniculatus	+		
H	Pseudognaphalium spp.	r		

Unusual species: _____

Figure 5. RE01 looking north.

Figure 6. RE01 looking east.

Figure 7. RE01 looking south.

Figure 8. RE01 looking west.

Figure 9. Looking across RE01 from southwest corner toward the northeast corner.

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 6/24/2021	Name of recorder: N. Bejar
		Other surveyors: A Spade
	UID: RE02	Location Name: Holberg-Olsen

GPS name: Pomosnap1 — For Relevé only: Bearing°, left axis at ID point ____ of Long / Short side

UTME 38°50.878' UTMN 123°38.524' Zone: 11 NAD83 GPS error: ft./ m./ PDOP ____

Decimal degrees: LAT ____ . ____ LONG ____ . ____

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID ____ Projected UTMs: UTME ____ UTMN ____

Camera Name: BHWA Cardinal photos at ID point: 1217-1220

Other photos: SW to NE 1221

Stand Size (acres): (<1), 1-5, >5 | Plot Area (m²): (100) / ____ | Plot Dimensions 10 x 10 m | RA Radius ____ m

Exposure, Actual °: 220 NE NW SE (SW) Flat Variable | Steepness, Actual °: 11 0° 1-5° (>5-25°) >25

Topography: Macro: top upper (mid) lower bottom | Micro: convex flat (concave) undulating

Geology code: ____ Soil Texture code: ____ | Upland or (Wetland/Riparian) (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 BA Stems: 2 Litter: 49 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: 0 Fines: 49 =100%

% Current year bioturbation Ø Past bioturbation present? Yes / (No) | % Hoof punch Ø

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Same as RE01

This relevé was performed in an area that was somewhat wetter than the surrounding grassland and included some plants that sometimes or usually occur in wetlands.

Disturbance code / Intensity (L,M,H): ____/____ ____/____ ____/____ ____/____ ____/____ "Other" ____/____

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), (H2) (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Holcus lanatus-Anthoxanthum odoratum Herbaceous Alliance

Field-assessed Association name (optional): Holcus lanatus-Anthoxanthum odoratum Herbaceous Association

Adjacent Alliances/direction: surrounded by dry-Holcus lanatus-Anthoxanthum odoratum Grassland, Declining Pinus muricata forest/W

Confidence in Alliance identification: L M (H) Explain: ____

Phenology (E,P,L): Herb P Shrub P Tree ____ Other identification or mapping information: ____

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)
SPECIES SHEET REØZ

Database #: _____

IV. VEGETATION DESCRIPTION

% NonVasc cover: Ø Total % Vasc Veg cover: 26

% Cover - Conifer tree / Hardwood tree: Ø / Ø Regenerating Tree: Ø Shrub: 1 Herbaceous: 25

Height Class - Conifer tree / Hardwood tree: Ø / Ø Regenerating Tree: Ø Shrub: 2 Herbaceous: 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular
% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
S	Morella californica	1		
S	Rubus ursinus	r		
H	Holcus lanatus	5		
H	Anthoxanthum odoratum	4		
H	Juncus hesperus	3		
H	Juncus patens	+		
H	Juncus occidentale	+		
H	Hypochaeris radicata	5		
H	Acmispon brachycarpus	4		
H	Sisyrinchium bellum	+		
H	Leucanthemum vulgare	+		
H	Agrostis capillaris	3		
H	Rhytidocarpa procumbens	+		
H	Prunella vulgaris	+		
H	Plantago lanceolata	r		
H	Panicum accuminatum	+		
H	Senecio glomerata	+		
H	Sonchus asper	r		
H	Scirpus sinuca	r		Isolepis cernua
H	Cyperus eragrostis	r		
H	Pseudognaphalium spp.	r		
H	Hosackia gracilis	r		
H	Rumex acetosella	+		
H	Carex gynodynama	r		
H	Trifolium repens	r		

Unusual species: _____

Figure 10. RE02 looking north.

Figure 11. RE02 looking east.

Figure 12. RE02 looking south.

Figure 13. RE02 looking west.

Figure 14. Looking across RE02 from the southwest corner toward the northeast corner.

Floristic List

FERNS AND ALLIES		
	Blechnaceae	
	Struthiopteris spicant	deer fern
	Woodwardia fimbriata	giant chain fern
	Dennstaedtiaceae	
	Pteridium aquilinum var. pubescens	bracken; western bracken; hairy bracken fern
	Dryopteridaceae	
	Athyrium filix-femina	lady fern
	Polystichum munitum	western sword fern
GYMNOSPERMS		
	Cupressaceae	
	Hesperocyparis macrocarpa	Monterey cypress
	Pinaceae	
	Pinus muricata	Bishop pine; prickle-cone pine; bull pine
	Pinus radiata	Monterey pine
	Pseudotsuga menziesii var. menziesii	Douglas fir
DICOTS		
	Aizoaceae	
	Carpobrotus edulis	sea fig, hottentot fig, iceplant
	Apiaceae	
	Conium maculatum	poison hemlock
	Heracleum maximum	common cow parsnip
	Asteraceae	
	Baccharis pilularis	coyote brush
	Cirsium vulgare	bull thistle
	Hypochaeris radicata	rough cat's ear, hairy cat's ear
	Leucanthemum vulgare	ox eye daisy, oxeye daisy
	Pseudognaphalium luteoalbum	Jersey cudweed
	Senecio glomeratus	cut-leafed erechtites, New Zealand fireweed
	Senecio minimus	little erechtites, Australian fireweed
	Senecio vulgaris	common groundsel, Old man of spring
	Silybum marianum	milk thistle
	Solidago spathulata ssp. spathulata	coast goldenrod, dune goldenrod
	Sonchus asper ssp. asper	prickly sow thistle
	Caprifoliaceae	
	Lonicera hispidula	hairy honeysuckle
	Ericaceae	
	Gaultheria shallon	salal
	Vaccinium ovatum	California huckleberry
	Euphorbiaceae	
	Euphorbia peplus	petty spurge
	Fabaceae	
	Acmispon brachycarpus	Short podded lotus
	Hosackia gracilis	coastal lotus
	Lathyrus vestitus	common Pacific pea
	Lotus corniculatus	bird's-foot trefoil, Birdfoot deervetch
	Trifolium dubium	shamrock, Shamrock clover, Suckling clover
	Trifolium repens	white clover
	Trifolium subterraneum	subterranean clover
	Vicia sativa	vetch

Floristic List

Fagaceae		
	Notholithocarpus densiflorus var. densiflorus	tanoak
Geraniaceae		
	Erodium botrys	long-beaked filaree, big heron bill, longbeak stork's bill
	Geranium dissectum	cut-leaved geranium
Lamiaceae		
	Prunella vulgaris var. lanceolata	lance-leaf self-heal
	Clinopodium douglasii	yerba buena
	Stachys rigida	rough hedgenettle
Linaceae		
	Linum bienne	pale flax, narrow leaved flax
	Sidalcea malivflora ssp. purpurea	purple checkerbloom
Myricaceae		
	Morella californica	wax-myrtle
Myrtaceae		
	Eucalyptus globulus	blue gum, Tasmanian bluegum
Plantaginaceae		
	Plantago lanceolata	English plantain, ribwort, narrow leaved plantain, ribgrass
Polygonaceae		
	Rumex acetosella	common sheep sorrel
Portulacaceae		
	Calandrinia menziesii	red maids
Rhamnaceae		
	Frangula purshiana	cascara buckthorn
Rosaceae		
	Cotoneaster franchetii	Francheti cotoneaster
	Rubus parviflorus	thimbleberry
	Rubus ursinus	California blackberry
Salicaceae		
	Salix sitchensis	Sitka willow
Violaceae		
	Viola adunca	western dog violet
MONOCOTS		
Agavaceae		
	Camassia quamash ssp. quamash	Suksdorf's large camas
Alliaceae		
	Allium triquetrum	three cornered leek, white flowered onion
	Carex gynodynama	wonder woman sedge, Olney's hairy sedge
	Cyperus eragrostis	tall flatsedge
	Isolepis cernua	low lateral bulrush
Iridaceae		
	Iris douglasiana	Douglas' iris
	Sisyrinchium bellum	blue-eyed grass
	Sisyrinchium californicum	California golden-eyed grass
Juncaceae		
	Juncus hesperius	coast or bog rush
	Juncus effusus	common rush
	Juncus occidentalis	slender juncus, Western rush
	Juncus patens	common rush, spreading rush
Poaceae		

Floristic List

Agrostis capillaris	colonial bentgrass
Agrostis stolonifera	creeping bentgrass
Anthoxanthum odoratum	sweet vernal grass
Avena barbata	slender wild oat
Briza maxima	big quaking grass; rattlesnake grass
Briza minor	little quaking grass; quaking grass
Calamagrostis nutkaensis	Pacific reedgrass
Calamagrostis rubescens	pine-grass
Cortaderia jubata	Andes grass, purple pampass grass
Elymus glaucus ssp. glaucus	blue wildrye; blue wild rye
Festuca bromoides	brome fescue
Holcus lanatus	velvet grass
Panicum acuminatum var. acuminatum	western panicum
Rytidosperma penicillatum	purple awned wallaby grass; hairy oat grass

ENVIRONMENTALLY SENSITIVE HABITAT AREAS DEFINED

Definition of Environmentally Sensitive Habitat Area

The Mendocino County Local Coastal Plan (LCP) and the California Coastal Act (CCA) define an Environmentally Sensitive Habitat Area (ESHA) as:

> "any area in which plant or animal life or their habitats are **either** rare **or** especially valuable because of their special nature or role in an ecosystem **and** which could be easily disturbed or degraded by human activities and developments".
>
> [**emphasis given]**

The Mendocino County LCP and California Coastal Commission (CCC) have identified specific types of ESHAs including: wetlands, sand dunes, estuaries, streams, rivers, lakes, open coastal waters, coastal waters, riparian habitats, other resource areas, special status species, and the habitat of special status species. For the purpose of this report, the following definitions were used to assess potential ESHAS present in the study area.

Wetland ESHAs

The Mendocino County Local Coastal Plan (LCP) and the California Coastal Act (CCA) define wetlands as:

> *"Lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens."*

California Coastal Commission Administrative Regulations (Section 13577 (b)) provide the following detailed definition:

> *"Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats." In summary, a wetland in the coastal zone falls under CCA jurisdiction if any of the following conditions are present: wetland hydrology, dominance of wetland vegetation (hydrophytes), and/or presence of hydric soils."*

The Statewide Interpretive Guidelines for Identifying and Mapping Wetlands and Other Wet Environmentally Sensitive Habitat Areas (CCC 1981) use the CCA definition to establish technical criteria to delineate wetlands. These guidelines consider wetland hydrology as the most important parameter to identify a wetland within the coastal zone: "the single feature that most wetlands share is soil or substrate that is at least periodically saturated with or covered by water, and this is the feature used to describe wetlands in the Coastal Act. The water creates severe physiological problems for all plants and animals except those that are adapted for life in water or in saturated soil, and therefore only plants adapted to these wet conditions (hydrophytes) could thrive in these wet (hydric) soils. Thus, the presence or absence of hydrophytes and hydric soils make excellent physical parameters upon which to judge the existence of wetland habitat areas for the purposes of the Coastal Act, but they are not the sole criteria." The saturation of soil in a wetland must be at or near the surface (approximately one foot or less) for a period of time (usually more than two weeks) in order to facilitate anaerobic

soil reduction processes that produce wetland conditions.

Identifying the presence of either wetland classified plants or hydric soils is referred to as the "one parameter approach." This approach can be useful because wetland plants, wetland hydrology, and/or hydric soils often co-occur, especially in natural undisturbed areas. However, situations do exist where wetland classified plants are found in the absence of other wetland conditions. These areas are not wetlands and a delineation study must carefully scrutinize whether the wetland classified plants that are growing as hydrophytes in anaerobic soil conditions caused by wetland hydrology or not.

Examples of hydrophytic plants growing in non-wetland conditions include:

1) Deep-rooted trees (e.g., willows), capable of persisting in the presence of surface water or in dry conditions by tapping into deep groundwater sources; and,

2) Wetland-classified plants that are also salt-tolerant (e.g., alkali heath) can grow in the presence of either wetland conditions or saline soil conditions, but not necessarily both.

Similarly, hydric soils can be found in the absence of wetland hydrology or wetland classified plants. For example, hydric soils have been observed in upland areas where historic disturbances exposed substratum and in densely vegetated grasslands (Mollisols). A wetland delineation must determine if the hydric soil indicators are a result of frequent anaerobic conditions in the presence of hydrology or due to another cause.

In the Coastal Zone, the California Coastal Commission presumes an area is a wetland if any one of the following three-wetland indicators is present: wetland hydrology, wetland plants, or hydric soils. Exceptions to this exist if there is strong positive evidence of upland conditions, which should be obtained during the wet season. Evidence of upland conditions could include the following observations: a given area saturates only ephemerally following a substantial rainfall, soil is very permeable with no confining layer, or the land is steep and drains rapidly.

Hydrology: Depressions, seeps, and topographic low areas in the Study Area are surveyed for primary and secondary hydrological indicators. Primary indicators of wetland hydrology that offer direct evidence include: visible inundation or saturation, surface sediment deposits, oxidized root channels, and drift lines. Secondary indicators that offer indirect evidence include algal mats, shallow restrictive layers in the soil, or vegetation meeting the FAC-neutral test.

Soils: The Study Area is examined for hydric soil indicators according to Natural Resources Conservation Service guidelines (USDA 2006) where horizon depths, color, redoximorphic features, and texture characterize soil profiles. Soils formed under anaerobic wetland conditions generally have a low chroma matrix color, designated 0, 1, or 2, and contain mottles or other redoximorphic features. Soil color and chroma was determined using a Munsell soil color chart (Gretag Macbeth 2000) to identify soils as hydric.

Plants: The US Army Corps of Engineers developed a classification system for plant species known to occur in wetlands. The plant species are categorized based on the frequency that they have been observed in wetlands. Species classified as obligate (OBL), Facultative Wetland (FACW), and Facultative (FAC) are considered hydrophytic. If more than 50 percent of the plant species in a given area are hydrophytic, the area meets the wetland vegetation criterion and is presumed to be a jurisdictional wetland under the CCA.

Areas identified as potential wetlands by the presence of wetland plants are also examined for indicators of wetland hydrology. Positive indicators of wetland hydrology can include direct evidence (primary indicators) such as surface water, saturation, sediment deposits, and surface soil cracks, or indirect evidence (secondary indicators) such as drainage patterns and water-stained leaves.

Riparian ESHAs

The Mendocino County LCP recognizes drainages with associated riparian vegetation to be ESHAs. The Technical Criteria (CCC 1981) defines riparian vegetation as:

> *"that association of plant species which grows adjacent to freshwater watercourses, including perennial and intermittent streams, lakes, and other freshwater bodies. Riparian plant species and wetland plant species either require or tolerate a higher level of soil moisture than dryer upland vegetation, and are therefore generally considered hydrophytic."*

Special Status Species ESHAs

Special status species and their habitats are defined as ESHAs by the CCA and Mendocino County LCP. Special-status species include those species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing by the USFWS or CDFW. In addition, CDFW Species of Special Concern are given special consideration under the California Environmental Quality Act (CEQA). Species of Concern may only be protected as ESHAs if they are ranked by CDFW as imperiled in California (S3 or less). Plant species on California Native Plant Society (CNPS) Lists 1 or 2 are also considered special status species and are protected as ESHAs.

PRELIMINARY MITIGATION, MONITORING, & REPORTING PLAN

for

Bishop Pine Forest Restoration

at

46801 Iversen Drive
Gualala, California
APN: 142-033-17-05
Mendocino County

Property Owner:
Lars Holberg-Olsen
127 Forty-Fourth Street
Newport Beach, CA 92663

Report Prepared By:
Asa Spade - Senior Biologist
December 16, 2021

Wynn Coastal Planning & Biology
703 North Main Street, Fort Bragg CA 95437
ph: 707-964-2537 fx: 707-964-2622
www.WCPlan.com

Table of Contents

1. PROJECT SUMMARY

The subject parcel is located at 46801 Iversen Drive, Gualala, CA (**Figure 1**). The parcel, which is in the Coastal Zone, is currently developed with a single-family residence, shed, driveway, and solar panels and surrounded by similar residential development. A number of Bishop pine trees were removed without benefit of permit. The owners state, and examination of the area by Wynn Coastal Planning and Biology biologists support, that the Bishop pine trees were dead and/or dying within the area they were removed. Regardless, the action can be considered Major Vegetation Removal (MVR), which is a type of development that requires a Coastal Development Permit within the Coastal Zone of California. This Bishop pine forest restoration plan was created to guide the restoration, maintenance and reporting to compensate for the loss of Bishop pine forest habitat on site, and to guide avoidance of further potential impact to the Bishop pine forest and other special status resources documented or presumed to be present on the site.

2. BACKGROUND

A site visit to the 2.05 -acre parcel was performed on November 25, 2020, by Senior Biologist Asa Spade & Biologist Nicole Bejar. Follow-up surveys were conducted on April 16, June 24, and August 06, 2021. **Figure 2** shows a map updated to include potential and presumed ESHA resources documented through the 2021 surveys. The purpose of the site visits was to identify the extent of vegetation removal within the Bishop pine forest, the effect the removal had on the resource, and to develop strategies to mitigate for any impacts. This report has been created to provide guidance to revegetating areas within, and proximate to, the ESHA habitat present. Guidance is provided for the enhancement of habitat. Recommendations and performance criteria are provided to restore the habitat to a higher quality and functionality than existed on the parcel at the time the major vegetation removal occurred.

Responsible Parties

The party responsible for making sure Restoration and Monitoring Plan performance goals are met is:

Lars Holberg-Olsen
127 Forty-Fourth Street
Newport Beach, CA 92663

This restoration and monitoring plan was written by:

Asa Spade
Wynn Coastal Planning & Biology
703 North Main Street
Fort Bragg, CA 95437
707-964-2537
Asa@WCPlan.com

3. PREVIOUS AND EXISTING ECOLOGICAL CONDITIONS

The parcel was developed with a single-family residence, shed, driveway, and solar panels prior to the MVR, all of which were located east of an incised seasonal drainage. Wynn Coastal Planning & Biology conducted site visits and documented seven potential or presumed ESHAs – **Bishop pine forest** (*Pinus muricata* forest alliance G3 S3.2), **Pinegrass meadow** (*Calamagrostis rubescens* Herbaceous Association), **purple checkerbloom** (*Sidalcea malviflora* ssp. *purpurea* CRPR 1B.2), Harlequin lotus (*Hosackia gracilis* CRPR 4.2) which is the presumed larval host plant for the **lotis blue butterfly** (*Lycaeides argyrognomon lotis* Federally Endangered), early blue violet (Viola adunca) which is the larval host plant for the **Behren's Silverspot Butterfly (**Speyeria zerene behrensii Federally Endangered), presumed **Coastal Act wetland**, and two intermittent **streams**. These potential or presumed ESHAs are mapped in **Figure 2.**

Prior to MVR (**Figure 3**), the Bishop pine forest (Pinus muricata Forest and Woodland Association G3? S3?) presumed ESHA dominated the area west of the eastern drainage. In June 2018, most of the Bishop pine trees within the parcel boundary were removed without benefit of a Coastal Development Permit due

to the potential hazards posed by the trees that were dying from disease and other factors. A map **Figure 4** was created comparing the bishop pine forest before and after vegetation removal, illustrating that most of the forest was cleared to the property edge (**Figure 5**). Tree stumps and mounds that contained multiple tree stumps were observed throughout the property (**Figure 6**). Based on aerial imagery prior to MVR it is presumed that many of these stumps are from Bishop pine trees. A handful of trees were left standing near the southern property boundary, along the southern stream drainage, and sporadically throughout the area. Through observation and documentation of stumps on site and comparison of aerial photographs Wynn Coastal Planning & Biology (WCPB) estimates that ~53 trees with a greater than 12-inch diameter and ~10 trees with a less than 12-inch diameter have been cut on the subject parcel and that ~23,622 ft^2 (0.54 acres) of Bishop pine canopy was removed. Some stumps may remain from trees cut during maintenance of the property in years prior to the MVR and some stumps may be of tree species other than Bishop pines; Monterey pines for example, were present on the parcel just to the north of the subject parcel and would be difficult to distinguish which species of pine a particular stump belonged to.

The most recent aerial imagery depicts a significant increase in the amount of a dead Bishop pine trees in areas adjacent to where the MVR was conducted indicating that the forest as a whole in this area is declining most likely due to pathogens, drought, and/or other causes. Western gall rust, veiled polypore (*Cryptoporus volvatus*) fruiting bodies, and resinosis were all observed on the Bishop pine trees in the study area reinforcing that many of the Bishop pine trees are unhealthy and dying. A number of trees left standing after the MVR, which were likely left because they were alive, are now standing dead.

Bishop pine forest on the adjacent parcel to the north was examined because it is presumed that the forest on the subject parcel would have been similar prior to tree removal and mowing. In this forest Bishop pine trees were dominant. Other trees species present included: Monterey pine (*Pinus radiata*), blue gum eucalyptus (*Eucalyptus globulus*), and tanoak (*Notholithocarpus densiflorus*). Tan oak sapling and Monterey pine seedlings were regenerating under the canopy layer. The understory was thick with shrubs in places and more sparse with only duff and patches of grass sticking through the ground in other places. The shrub layer was dominated by California blackberry (*Rubus ursinus*). Other species present in the shrub layer included: Cascara buckthorn (*Frangula purshiana*), thimbleberry (*Rubus parviflorus*), California wax myrtle (*Morella californica*), coyote brush (*Baccharis pilularis*), cotoneaster (*Cotoneaster franchetii*), and pink honeysuckle (*Lonicera hispidula*). Herbaceous vegetation present included: sweet vernal grass (*Holcus lanatus*), western sword fern (*Polystichum munitum*), bracken fern (*Pteridium aquilinum*), lady fern (*Athyrium filix-femina*), blue wildrye (*Elymus glaucus*), bull thistle (*Cirsium vulgare*), and dune goldenrod (*Solidago spathulata*).

A patch of pinegrass meadow was observed near the southwest corner of the subject parcel. Pinegrass is usually an understory vegetation and may be enjoying some temporary expansion due to receiving more sunlight after the MVR. This advantage may be temporary, however, if invasive grasses present become established in its area and outcompete the pinegrass.

Approximately ten purple checkerbloom plants were observed in the southwestern quadrant of the parcel. This plant was likely within the understory of the Bishop pine forest prior to the MVR.

Harlequin lotus is a watchlist plant that would not necessarily be considered an ESHA due to its rarity ranking but it is the presumed larval hostplant of the federally endangered lotis blue butterfly, which has not been documented since 1983. Little is known about this butterfly, harlequin lotus may or may not be its larval host plant, no larva or eggs have ever been observed. Another potential larval host plant, common Pacific pea (*Lathyrus vestitus*), was also present on the subject parcel.

Early blue violet, the known hostplant for the federally endangered Behren's silverspot butterfly, was observed at low density on the subject parcel. While observations of butterflies present were part of the scoping survey, no protocol level butterfly surveys were conducted.

Two ephemeral drainages were observed – one west of the western parcel boundary and the other one in the southern portion of the parcel to the west of the residence and driveway. Both drainages were fed by culverts through Iversen Drive, however, defined channels were not observed east of the road. The

easternmost drainage is an incised 6ft deep by 4ft wide channel with bed and bank features. The western drainage is an incised 7ft deep by 7ft wide channel with bed and bank features.

Vegetation associated with wetlands (**Figure 7**), including coast rush (*Juncus hesperius*), western rush (*J. occidentalis*), and wonder woman sedge (*Carex gynodynama*) (**Figure 8**) were observed in an area between the two drainages leading downhill toward the western drainage. Wetland delineation work was not conducted, instead this area was presumed to be Coastal Act wetland for the purpose of this MMRP.

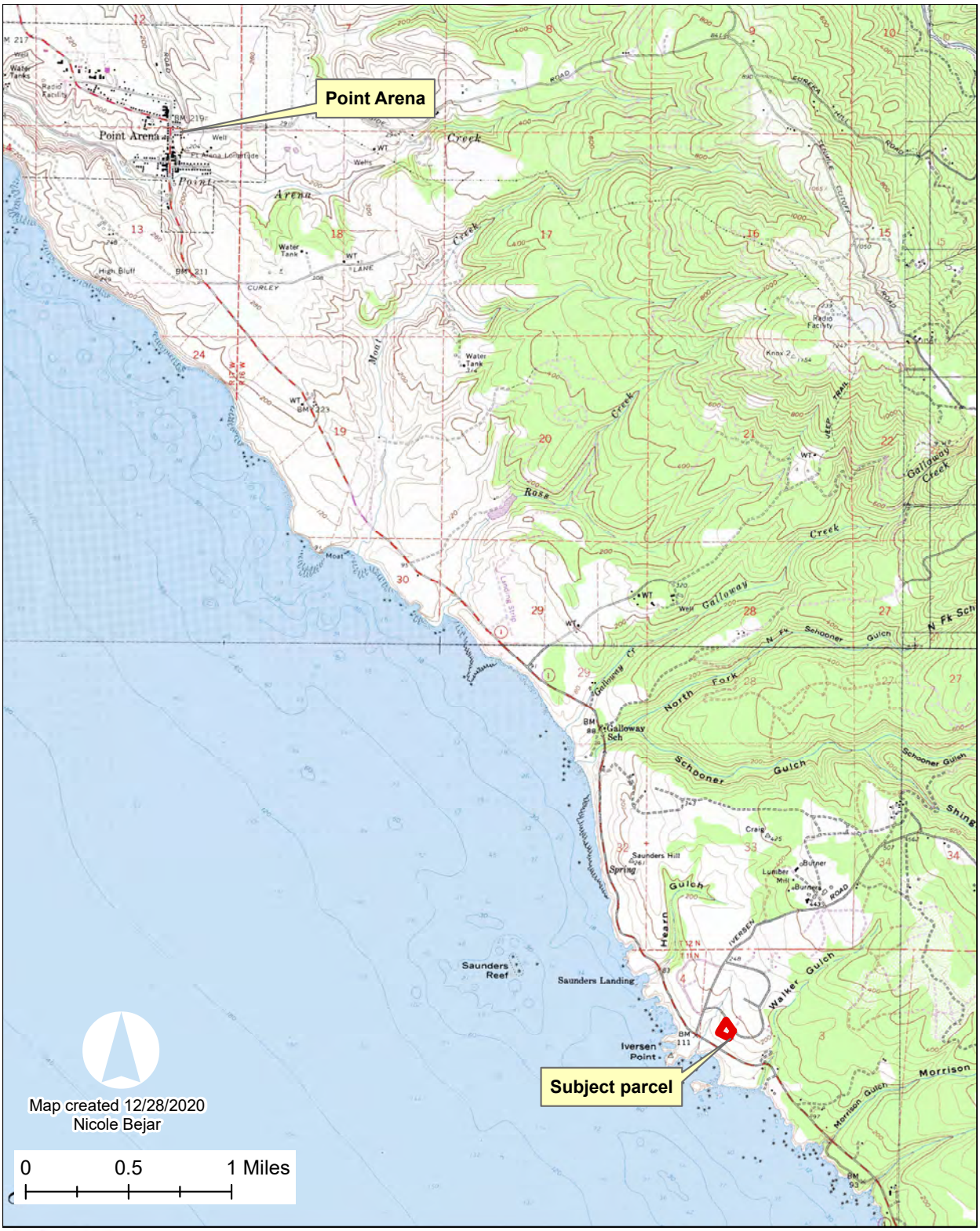


Figure 1. Location of the subject parcel in relation to the City of Point Arena.

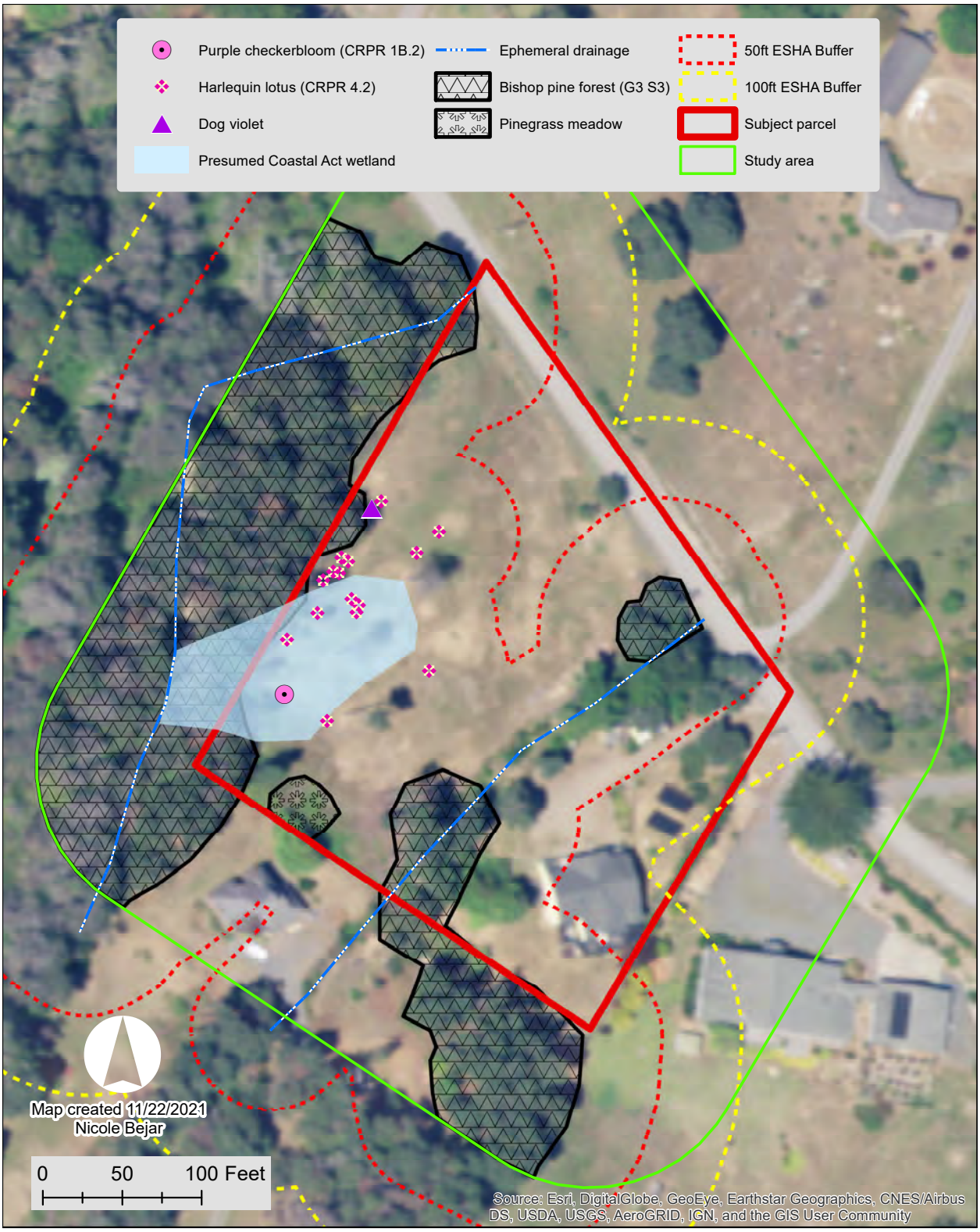
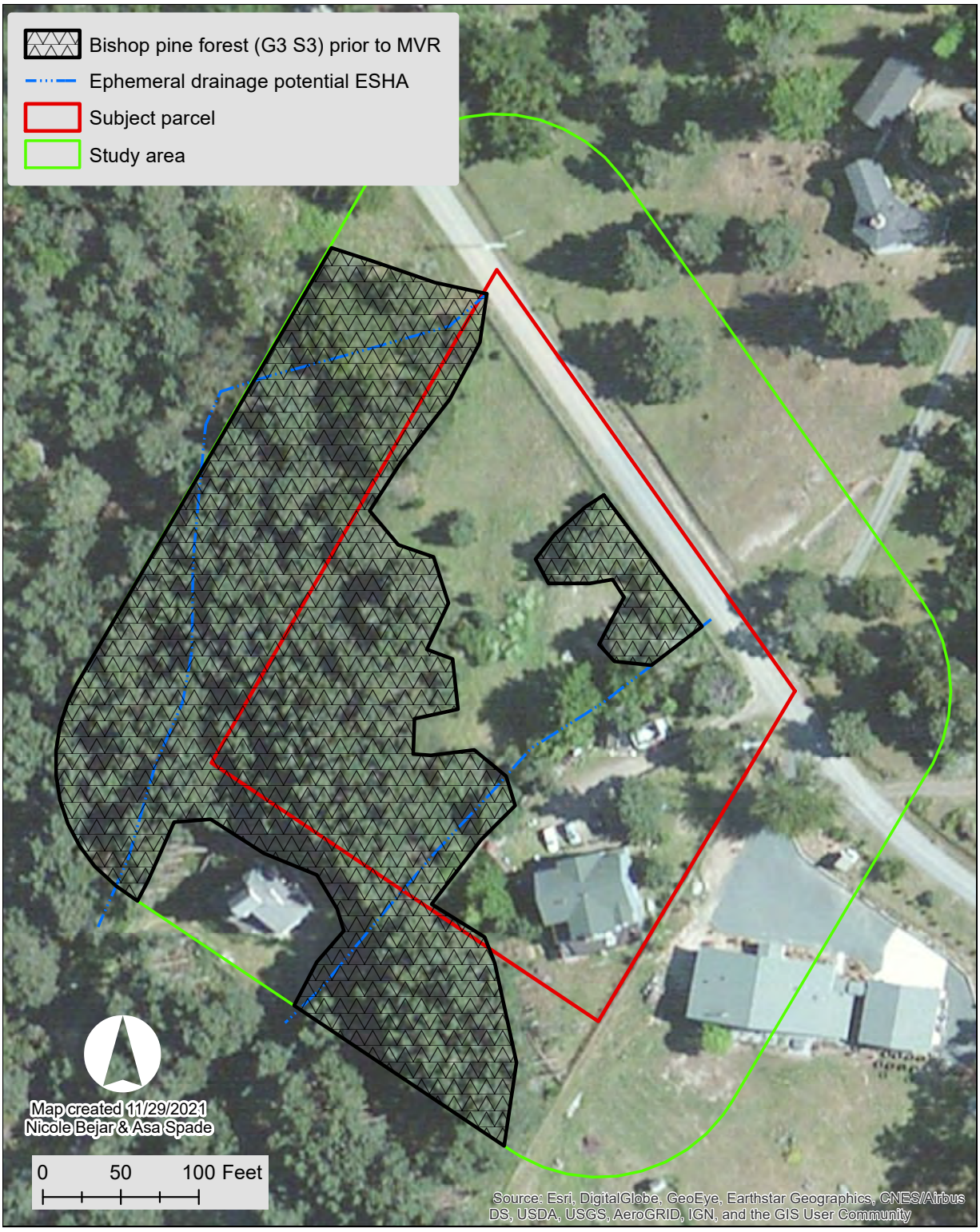


Figure 2. Map showing potential and presumed ESHAs present in the study area.



CLIENT: Holberg-Olsen
APN: 142-033-17-05
ADDRESS: 46801 Iversen Drive
Gualala, CA

Pre-Major Vegetation Removal
Bishop Pine Forest Canopy Map
Note: Property lines are approximate.

Figure 3. Map with aerial photograph taken prior to the MVR.

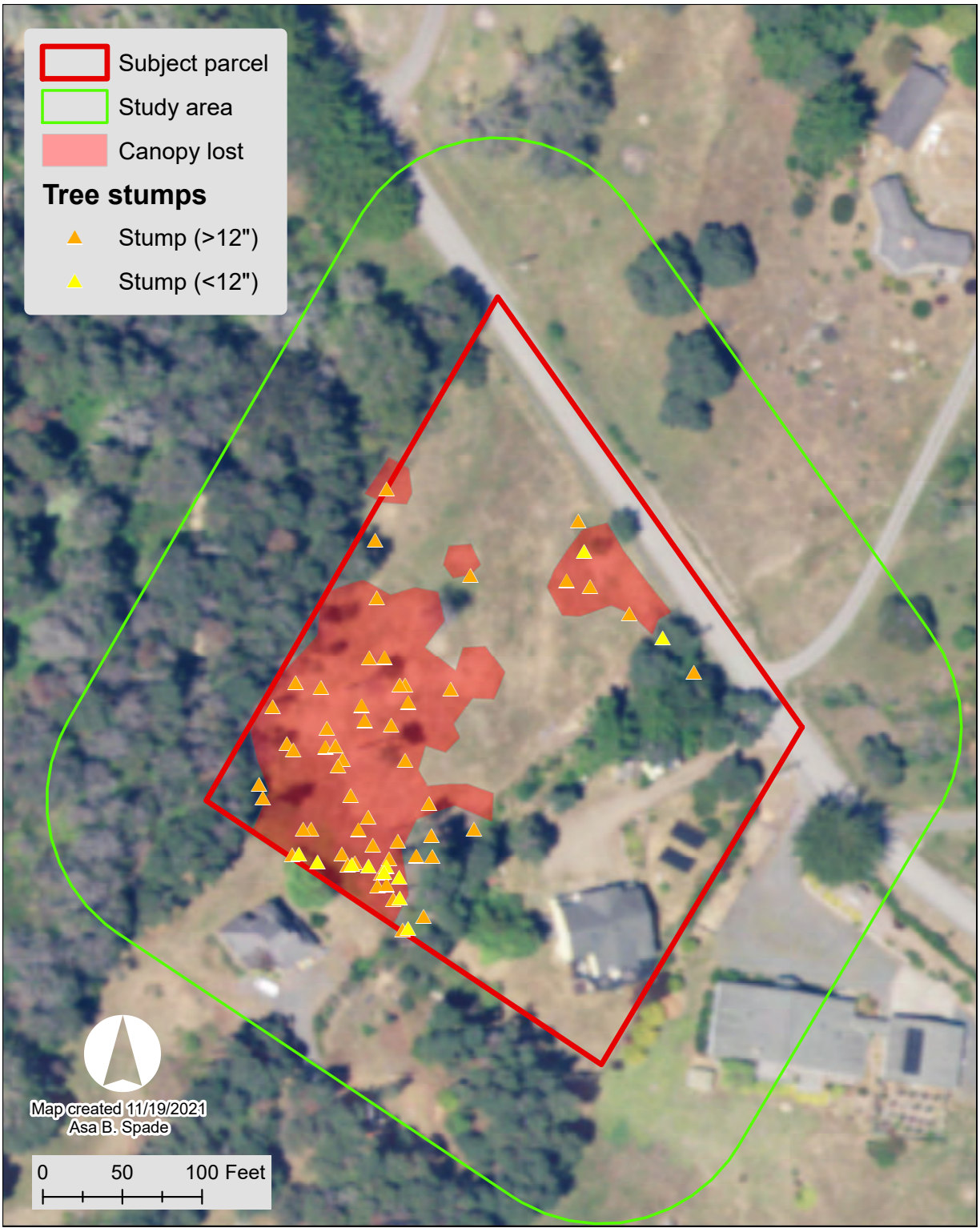


Figure 4. Recent aerial photo overlaid with extent of the Bishop pine forest on site before the MVR. Stumps documented are also depicted.

Figure 5. Subject parcel is mostly cleared of Bishop pine trees with dense forest on the neighboring parcel in the background.

Figure 6. Stumps and earthen mounds were observed throughout the area where aerial photographs taken prior to the MVR show Bishop pine trees once were.

Figure 7. Photo taken during the winter with a presumed Coastal Act wetland with rushes apparent in the center of the photo.

Figure 8. Presumed wetland habitat later in the season with rushes and sedges apparent.

4. RESTORATION POTENTIAL

The aim of this restoration plan as written is to restore the Bishop pine forest that was cut in June of 2018 to a pre-Major Vegetation Removal condition. Some consideration should be made, however, about the appropriateness of this goal. According to the Soil Survey of Mendocino County, Western Part, the subject parcel is underlain with soils of the Cabrillo-Heeser complex 0-5% slopes. Cabrillo soils have moderate to slow permeability and the "effective rooting depth is limited by saturation for brief or long periods following episodes of heavy rain from December through April." "The vegetation is mainly perennial grasses and forbs." (Rittiman 2006). A historical T-Sheet map of the area from 1880 shows that at that time the area that is now the Iversen subdivision was grassland or pasture (**Figure 9**). The Bishop pine trees to the north of the subject parcel are in heavy decline, with many recently dead standing trees. The soils present on the subject parcel, the historical map, and current Bishop pine decline on the site all indicate that this area was, and may now be more appropriate for, grassland habitat rather than forest. According to UC Cooperative Extension Forestry Advisor Michael Jones, changes in land use have facilitated the expansion of Bishop pine into lower quality sites with soils indicative of grasslands, sites impacted by agriculture, or other uses. In communication with Mr. Jones about this project he also cautioned that stands of pure Bishop pine are more vulnerable to disease and that if a goal of restoring forest is desired, a more diverse stand would be more resilient.

According to *Watching the demise of a coastal forest type – Bishop Pine* by University of California Forester Greg Giusti "Being a serotinous species Bishop pines normally, but not always, regenerate following a fire. A number of large fires occurred along the coast of Sonoma and Mendocino counties following WWII. As a result many stands of even-aged Bishop pine cohorts are common. A relatively short lived tree (~80-100 years) many of these stands are simultaneously nearing the end of their life cycle." Older, even aged stands are more vulnerable to the spread of naturally occurring pathogens such as pitch canker, dwarf mistletoe, Western gall rust, and bark beetles. Thick needle duff and dense understory vegetation prevent seeds from germinating and becoming established.

The MVR that has occurred at this site can be thought of as somewhat analogous to the removal of mature trees that would occur in a wildfire. Replacement of the Bishop pine stand can be accomplished by promoting conditions that will be conducive of natural Bishop pine tree recruitment. Rather than an even-aged stand which could be more vulnerable to disease, however, stand replacement should be accomplished by incremental recruitment that will promote diversity and resilience within the stand.

While the majority of trees that were present on the parcel have been removed, a significant number of Bishop pine trees are present along the majority of the subject parcel's western boundary. Seed will naturally fall from these trees onto the project site, and/or can be introduced to areas furthest from the portions of the Bishop pine stand that remains. Many Monterey pine seedlings, which have three needles per fascicle, were present in the understory of the Bishop pine forest and were present in some locations on the subject parcel. Non-native species, especially Monterey pines, which can harbor and spread pathogens that affect the native Bishop pines, should be removed to the greatest extent practicable. Because mature Monterey pines are present adjacent to, but off the subject parcel, continuous removal of Monterey pine seedlings and/or cooperation with neighboring landowners to remove mature Monterey pines will be necessary. Planting of Bishop pine trees obtained from off site is not recommended. Relocation of very young seedlings from areas of the site where dense germination occurs to other areas on the site may be helpful in reestablishing Bishop pines in areas farther from seed trees.

The restoration area should be at least as large an area as the estimated canopy loss: ~23,622 ft^2 (0.54 acres). Other special status natural resources were documented on the site and the reestablishment of Bishop pine canopy may be in direct conflict with the preservation of these other resources. For example, it is probable that the population of harlequin lotus (*Hosackia gracilis*) plants on the site has increased due to the availability of sunlight to areas where the pine canopy was removed. Measures are included to avoid any direct impact to special status resources that are, or may be, present, but some indirect impacts may be inevitable. Bishop pine forest and coastal grasslands are both disturbance dependent plant communities; succession from one habitat type to another is a normal part of the natural history of an area. Management in favor of any one species or community is often management against another.

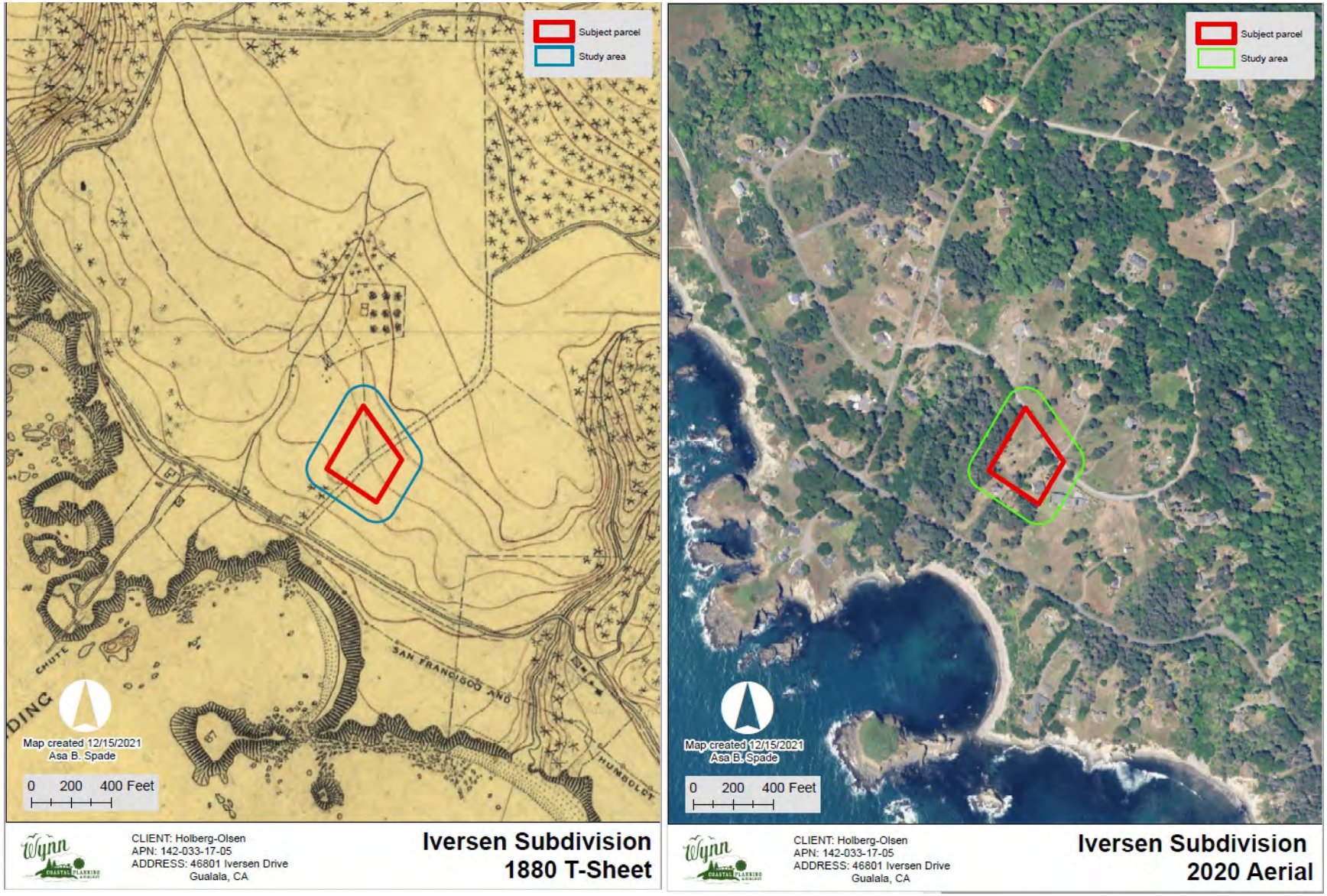


Figure 9. A comparison of forest extent depicted on an 1880 T-Sheet Map as compared to a 2020 aerial photo.

5. RESTORATION PLAN

5.1. Basis for Design

The intent of this plan is to provide guidance on restoring the site after the Major Vegetation Removal which has occurred. This plan outlines performance goals and suggests methods for the property owner to meet these goals in order to reestablish healthy Bishop pine forest on the site.

The proposed plan is performance-based, which allows for management to be carried out in an adaptive manner whereby monitoring provides feedback and shows the manager areas within which efforts are successful, as well as areas that may need a different approach in order to meet the performance goals. Monitoring and restoration should occur for a minimum of five years to meet the performance goals.

5.2. Performance Goals and Success Criteria

The restoration area is mapped in **Figure 10** and is similar in size and extent to the Bishop pine forest canopy lost through the MVR. The area differs in that it avoids the existing septic leach field and leaves an area for a replacement leach field. Vegetation cover will be determined using the methods laid out in the "CDFW-CNPS Protocol for the Combined Vegetation Rapid Assessment and Relevé Field Form." Goals for active management are as follows:

1. **Remove all Monterey pines and other target invasive non-native plants from the subject parcel west of the eastern drainage:** Seedling Monterey pines were present in several locations on the subject parcel, particularly in the northern corner of the parcel and the western corner of the parcel. Reproductive adult Monterey pines are present at the eastern corner of the parcel adjacent to the subject parcel and will continue to be a source of new seeds while they are present. Cooperation with the owner of the neighboring parcel with the goal of removing the Monterey pines should be obtained if possible.
   Success Criteria: No Monterey pine trees or seedlings are detectable on the subject parcel west of the eastern drainage at the end of the monitoring period.

   Iceplant and pampas grass were present in the southern portion of the restoration area and eucalyptus and cotoneaster were present in the Bishop pine forest adjacent to the restoration area.
   Success Criteria: No iceplant, pampas grass, eucalyptus, or cotoneaster are detectable on the subject parcel west of the eastern drainage at the end of the monitoring period.

2. **Encourage natural recruitment of Bishop pine seedlings and reestablish understory:** Encourage natural recruitment of Bishop pine seedlings through existing adult seed trees (Self and Ezell 2020). Cone pollination generally occurs from April to June. Pine seedlings need bare soil to sprout and grow (Cope 1993). Approximately 63 tree stumps of various sizes were observed in the area where the MVR occurred.
   Success Criteria: After the first year of monitoring at least ten Bishop pine seedlings should be established in the restoration area. The number should increase by 10-15 seedlings yearly until a goal of ≥63 Bishop pine seedlings are established in the restoration area by the end of the monitoring period. A minimum of five seedlings will be established in each of the seven restoration zones depicted in Figure 10 by the end of the monitoring period.

3. **Reestablish native Bishop pine understory:** Reestablish native understory plants appropriate to Bishop pine forest. Any introduced plantings shall be locally sourced. At the time of the rapid assessment and relevé surveys conducted by WCPB (November 2020 and June 2021) the drier portion of the non-native grassland to be restored to Bishop pine forest was 96% relative cover non-native plants and 4% native. The wetter portion of the non-native grassland was 64% relative cover non-native plants and 36% native. The shrub and herbaceous understory of the Bishop pine forest on the adjacent parcel to the west, which should be seen as an example of what the restoration should achieve, was 23% relative cover of non-native plants and 77% native.
   Success Criteria: After the first year of monitoring, relative cover of native plants in the shrub and herbaceous strata should be >10% and increase by 10-20% yearly until the goal of ≥77% within the restoration area is reached by the end of the monitoring period.

   The Manual of California Vegetation describes Bishop pine forest shrub layers as ranging from sparse [1%-10%] to continuous [>66%] and herbaceous layer from sparse to abundant. Absolute cover within the shrub layer of the sampled Bishop pine forest west of the subject parcel was 27%.
   Success Criteria: After the first year of monitoring, absolute cover within the shrub layer should be >2% and increase by 2-10% yearly until the goal of ≥27% within the restoration area is reached by the end of the monitoring period.

4. **Monitoring -** The monitoring period shall begin when the Mitigation Monitoring and Reporting Plan is approved in its final form. The monitoring period shall run for a minimum of 5 years. Failure to meet and maintain Success Criteria by the end of the monitoring period will result in the requirement of an additional year restoration/management and monitoring.

5. **Reporting** - Produce a yearly record of management activities and site performance and submit this information to the planning department on a yearly basis for the duration of the restoration project. Photo points shall be established depicting a view across each restoration zone. The annual report shall include qualitative and quantitative data regarding each of the performance criterion outlined above including: number of Monterey pine seedlings removed and remaining on the subject parcel west of the eastern drainage, number of Bishop pine seedlings established in each of the seven restoration zones, total number of Bishop pine seedlings in the overall restoration area, relative cover of native vs. non-native plants in the restoration zone shrub and herbaceous layers, absolute cover within the shrub layer in the restoration zone. The report should include discussion about which success criteria are and are not on track and provide suggestions for adaptive management to achieve the success criteria.

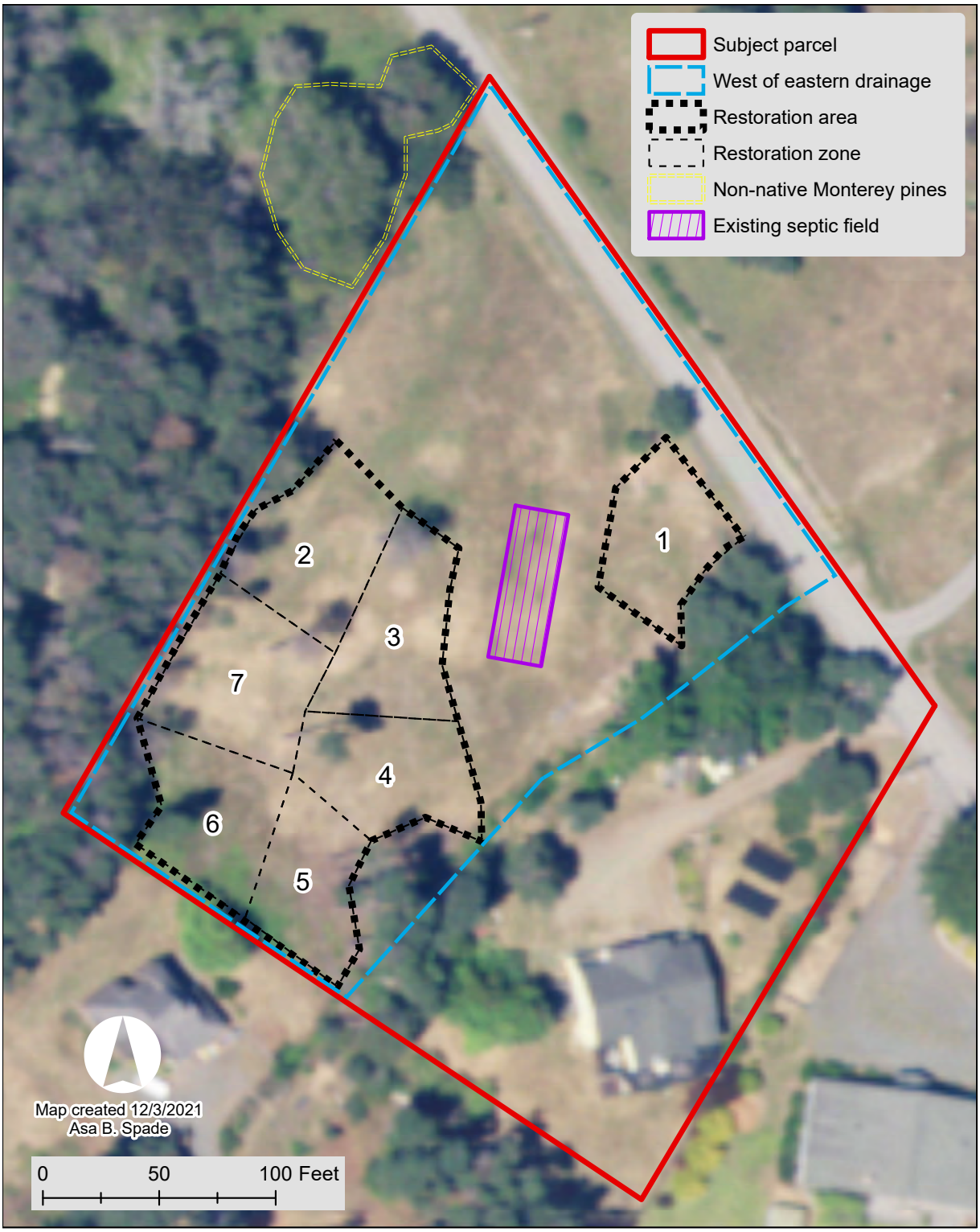


Figure 10. Bishop pine forest restoration area.

6. IMPLEMENTATION

Suggested implementation procedures for the restoration project are outlined below. Completion of these procedures is a means and not an end; other ways to meet the goals and performance criteria outlined above may be utilized. Some adaptive management based on results is appropriate and expected. Conditions at the site, weather, and plant performance will all inform management decisions.

6.1. Monterey Pine and Other Invasive Non-Native Species Removal

For each year of the restoration effort, someone with the ability to differentiate between Monterey pines and Bishop pines will remove all Monterey pine seedlings on the subject parcel west of the eastern drainage in order to reduce competition with, and potential disease vectors affecting, Bishop pines.

Removal of Monterey pine seedlings should be relatively easy to accomplish as they can be pulled or cut at ground level with hand tools and do not have the ability to resprout. Care must be taken to positively identify Monterey pine seedlings and differentiate them from the Bishop pines that are being encouraged by this plan. Monterey pines have three needles per fascicle and are somewhat more green, while Bishop pines have two needles per fascicle and have a somewhat blue cast to their green needles. It should be noted that the number of needles per any particular fascicle may vary occasionally, especially among very young plants; more than one fascicle from each plant should be examined. If there is a question about the identity of a pine seedling then the tree should be marked, with survey ribbon for example, and someone with pine identification experience should be consulted and agreement as to the identity of the plant reached before action is taken to eliminate the individual.

At least two large adult Monterey pines were present off the subject parcel near the northern corner of the subject parcel. These trees are likely to be a source of new seeds falling onto the subject parcel, as well potentially being a host to disease pathogens that may affect the heath and viability of Bishop pine seedlings on the subject parcel. If possible cooperation with the land owner that hosts the Monterey pine trees should be obtained with the goal of removing these and potentially other Monterey pine trees along the shared parcel boundary.

Other species of invasive non-native plants should also be removed. Effort should be made to eliminate invasive non-native species for which there is a realistic expectation for their elimination to be possible. Iceplant (*Carpobrotus edulis*) was present in Zone 5 & 6 and can be eliminated by pulling by hand. Iceplant is high in moisture and can easily re-root if left in contact with soil. It should therefore be removed from the site in a legal manner, such as placing in garbage service green bins. Pampas grass was present in the southern portion of the parcel and should be dug out and/or killed by tarping. There are eucalyptus trees on adjacent parcels and any eucalyptus seedlings that become established west of the eastern drainage should be cut or pulled. Cotoneaster (*Cotoneaster sp.*) should be treated likewise. There are other invasive non-native plants that are unlikely to be successfully removed; for example common velvet grass (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*) and birds foot trefoil (*Lotus corniculatus*). These plants can be mowed and can be removed in small areas to prepare soil for Bishop pine seeds and around native plantings.

6.2. Encourage natural recruitment of Bishop pine seedlings and reestablish understory

Bishop pines require bare mineral soil with needle duff or grass less than one inch deep over the soil. The well-established grasses present in many areas will provide a challenge at this site. Bare soil can be created by mowing very short and raking in some areas and by burning small piles of vegetation in others. When the burning of piles is complete the remaining ashes can be raked outward to reduce their depth.

The restoration map in **Figure 10** breaks the restoration area into seven roughly equal area zones. The overall restoration area should be delineated on site by the placement of wooden stakes around Zone 1 and along the outside edge of the remaining cluster of zones not already delineated by the parcel boundary fence. The other individual zones do not need to be delineated but a labeled wooden stake should be placed in the approximate center of each of the zones in a location where photos taken across the zone will include the labeled stake. The purpose of the zones is to assure that Bishop pines are established throughout the restoration area rather than a concentration of trees in one smaller area.

It is likely that at some point during the restoration project a number of seedlings will become established within a small area where individual plants would not have enough room to grow to full size without interfering with each other's growth. Seedlings can be moved from these densely populated areas into areas that seeds have had a more difficult time reaching and/or becoming established within. Another strategy that could be used to aid in more dispersed establishment is to place cones gathered from Bishop pine trees on or near the site into the areas further from cone bearing trees. Branches with cones that have been broken off in wind storms are one potential source for these cones. Small "teepees" of branches can be created to keep cones off the soil and allow seed to drop to bare soil beneath. Obtaining and planting bishop pine seedlings from off site is not recommended as it can introduce new pathogens and genetics that may not be the best for the site and may have unintended consequences for the future of the stand. Gathering seed on site, sowing it into pots with soil from the site, and planting the resulting seedlings out when they are very young may be an effective strategy. Seed can be obtained from closed cones gathered on site by cooking the cones in an oven at the lowest temperatures the oven can maintain. Seeds obtained in this manner can be planted in pots and/or sown directly onto areas of base soil on the site.

Seedlings can be vulnerable to a few natural predators, especially voles, pocket gophers, and deer. Protecting seedlings with wire cages can be an effective way to deter deer. Caution must be taken to keep vegetation away from the base of seedlings as it can provide hiding places for voles that may then gnaw the bases of the seedlings.

If not caged, seedlings should at least be marked to prevent them from being weed whacked or mowed during maintenance of the property. Any personnel performing maintenance of vegetation west of the eastern drainage should be apprised of the restoration plan and warned against removal of Bishop pine seedlings/trees. Mowing of grass within the restoration area is likely to be necessary to allow for the germination and establishment of Bishop pine seedlings. Personnel performing the mowing should begin the process by examining and marking any seedlings within the area to be mowed so that they can be avoided. It may be helpful to weed around and mulch around Bishop pine seedlings to reduce competition from surrounding vegetation. Mulch should not be so deep as to provide refugia for voles that might damage the pines.

6.3. Establish Native Bishop Pine Forest Understory Plants Within the Restoration Area

It may be necessary to introduce seed and/or install plants raised in pots off site in order to increase the absolute cover in the shrub layer and to increase the relative cover of native plants vs. non-native plants in the shrub and herbaceous layers within the restoration area. Seed and plants introduced to the site should originate from as close to the site as possible and must be appropriate to the coastal ecotype. Non-native plants should not be planted within the restoration area.

Generally, the best time to install new plants will be in the fall when rains begin, in order to minimize the necessity for watering and to maximize plant survival. When planting natives, a hole should be dug twice as large as the pot. All native plants installed should receive 3" of bark mulch at a minimum 1ft radius surrounding the center of the plant. Plants should be kept moist for two weeks following planting and then watered well once per week until the rainy season begins.

Table 1 is a list of appropriate native plants for the habitat present and Bishop pine forest habitat to be achieved.

Table 1. Site appropriate shrub and herbaceous plants for the restoration area.

Scientific name	**Common name**
Frangula purshiana	cascara sagrada
Gaultheria shallon	salal
Morella californica	wax myrtle
Ribes sanguineum	pink flowering current
Rosa nutkana var. nutkana	Nootka rose
Rubus parviflorus	thimbleberry
Vaccinium ovatum	evergreen huckleberry
Achillea millefolium	yarrow
Anaphalis margaritacea	pearly everlasting
Anthoxanthum occidentale	vanilla grass
Bromus carinatus	California brome
Calamagrostis nutkaensis	Pacific reedgrass
Calandrinia ciliate	red maids
Clinopodium douglasii	yerba buena
Elymus glaucus	blue wild rye
Fragaria vesca	strawberry
Iris douglasiana	Douglas iris
Lathyrus vestitus	common Pacific pea
Maianthemum dilatatum	Pacific may lily
Polystichum munitum	western sword fern
Prunella vulgaris var. *lanceolata*	lance leaf self-heal
Scrophularia californica	California bee plant
Sisyrinchium bellum	blue-eyed grass
Solidago spathulata	coast goldenrod
Stachys rigida	hedge nettle

6.4. Protection of Other Resources Present

This restoration plan has been designed so that it can be accomplished with methods that are unlikely to impact special status resources present or potentially present. Special status resources documented at the site include two ephemeral drainages, one to the east and one to the west of the restoration area, presumed coastal act wetland in the western portion of the restoration area, purple checkerbloom plants in the southern portion of the restoration area, and pinegrass meadow natural community in the southern portion of the restoration area. Three species of plants that are the known, or potential host plants of Federally endangered butterflies were present within the restoration area: early blue violet (*Viola adunca*), harlequin lotus (*Hosackia gracilis* aka *Lotus formosissimus*), and common pacific pea (*Lathyrus vestitus*) (**Figure 11** - **Figure 14**). The restoration area may also provide habitat for nesting birds and migrating amphibians.

The following measures should be taken to avoid impact to special natural resources within and surrounding the restoration area:

6.4.1. Heavy equipment shall not enter the restoration area

6.4.2. No grading shall occur within the restoration area

6.4.3. No pesticides or herbicides shall be used in the restoration area

6.4.4. Personnel performing vegetation management within the restoration area should be familiar with Monterey pines, Bishop pines, purple checkerbloom, early blue violets, harlequin lotus, common pacific pea, iceplant, pampas grass, eucalyptus, and cotoneaster

6.5. Project Adaptation

Using the yearly monitoring procedure, active management components will be assessed based upon the performance goals. If the performance goals are not being achieved or if there is evidence that they are vulnerable to failure, a consultation with CA Department of Fish and Wildlife should occur whereupon criteria may be reassessed based upon current and projected conditions.

6.6. Monitoring

Personnel qualified to perform the CDFW- CNPS Rapid Assessment/Relevé protocol should evaluate the site yearly. A record of management activities and site performance will be submitted to the Mendocino County Planning Department on a yearly basis for the duration of the restoration project. Photo points shall be established depicting a view across each restoration zone. The annual report shall include qualitative and quantitative data regarding each of the performance criterion outlined above including: number of Monterey pine seedlings removed and remaining on the subject parcel west of the eastern drainage, number of Bishop pine seedlings established in each of the seven restoration zones, total number of Bishop pine seedlings in the overall restoration area, relative cover of native vs. non-native plants in the restoration zone shrub and herbaceous layers, absolute cover within the shrub layer in the restoration zone. Barriers to achieving the performance goals should be identified, described, and strategies to overcome these barriers shall be developed and implemented. Annual monitoring and reporting shall continue for a minimum of five years and until all success criteria are met. One or more additional years of monitoring and reporting will be required if success criteria are not met.

Figure 11. Purple checkerbloom.

Figure 12. Harlequin lotus.

Figure 13. Early blue violet.

Figure 14. Common Pacific pea.

7. SCHEDULE

The table below gives an approximate outline of when in the life of the project each component of the restoration plan should be undertaken.

Table 2. Restoration plan implementation schedule.

Phase	Tentative Implementation Date	Description
Phase 1 – Pre-Monitoring and Restoration		
Delineate the restoration area on site and establish photo points	Before other restoration activities	Wooden stakes will be placed around Zone 1 and along the northern boundary of the remainder of the restoration area. A labeled wooden stake will be placed in the approximate center of each of the seven restoration zones in a location where monitoring photos taken across the restoration zone will include the labeled stake.
Identify, mark, and map Bishop pines	Before other restoration activities	Personnel with the ability to differentiate between Bishop pine and Monterey pine seedlings will make an initial inventory of Bishop pine seedlings within the restoration zones. Bishop pines should be marked in some manner such as flagging or stakes so that they can be avoided when mowing or other vegetation maintenance occurs. The locations of Bishop pine seedlings should be recorded on a map of the restoration area.
Remove Monterey pine seedlings	Year 1-5+	Remove Monterey pine seedlings and other invasive plants (e.g. eucalyptus, cotoneaster and iceplant). Monterey pine seedling can be pulled or cut at ground level with hand tools and piled and burned on site in a safe and legal manner. This effort should be repeated at least yearly as necessary to achieve success criteria.
Prepare areas of soil for Bishop pine seeds	Year 1-5+	Rake areas of leaf litter, mow and/or pull invasive non-native grasses, and burn small piles of vegetation to create areas of bare mineral soil where Bishop pine seed can fall and become established. Introduction of seed obtained from cones on site and/or placement of closed cones obtained on site into these areas of bare soil may help Bishop pines to become established in areas more distant from potential seed trees. This effort should be repeated at least yearly as necessary to achieve success criteria.
Plant and seed native understory plants	Year 1-5+	After areas of bare mineral soil are created some areas should be seeded or planted with native Bishop pine forest understory plants. If this occurs during the dry portion of the year watering should occur until rains have sufficiently saturated the ground. General guidelines for planting are listed in **Section 6.3**. This effort should be repeated at least yearly as necessary to achieve success criteria.
Watering seeded and planted areas	Fall/Winter Year 1-5+	Plants should be kept moist for two weeks following planting and then watered well once per week until the rainy season begins. This effort should be repeated at least yearly as necessary to achieve success criteria.
Document efforts	Winter Year 1-5+	Qualified personnel will document restoration efforts through photographs, number and location of plants installed, record qualitative and quantitative data for each success criteria..
Yearly reporting	Winter Year 1-5+	Provide all documentation recorded in yearly monitoring to the appropriate authority as discussed in the reporting section below. success criteria.
Final Report	Winter Year 5+	Write and submit a final report when success criteria have been achieved. If success criteria have not been achieved at the end of the 5th year then the restoration efforts shall continue until these criteria are met. If it becomes apparent that some criteria will not be met then coordination with County Planning shall occur to determine how criteria can be met and/or to re-assess what goals must be achieved for the restoration to be considered successful.

8. REPORTING

Reporting will occur on an annual basis, and reports will be received by the County of Mendocino Planning & Building Department by December 31 of each year for a minimum of five years, and until all performance goals have been met.

Reports will be sent by US Mail to:

Attn: Juliana Cherry, Planner
Planning & Building Department
County of Mendocino
124 West Fir Street
Fort Bragg, CA 95437

Reports will include the following information:

- Name and contact information of person in charge of monitoring activities, and name and contact information of reporting party.
- Evaluation of each of the performance criterion; along with recommendations for meeting each of the criterion not already met: Number of Monterey pine seedlings removed and remaining on the subject parcel west of the eastern drainage, number of Bishop pine seedlings established in each of the seven restoration zones, total number of Bishop pine seedlings in the overall restoration area, relative cover of native vs. non-native plants in the restoration zone shrub and herbaceous layers, absolute cover within the shrub layer in the restoration zone.
- Color photos across each of the seven restoration zones
- A summary of any issues encountered and management steps taken during the reporting period.
- Any new invasive plant species observed or evidence of other potential problems will be described.

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10. INVESTIGATOR BIOGRAPHIES

Contributing Biologists

Asa B Spade graduated from Humboldt State University with a Bachelor's Degree in Environmental Science, with a concentration in Landscape Ecosystems as well as a minor in Botany. Since that time, he has been working in the natural resources field, first with Mendocino County Environmental Health and later with California State Parks and the Department of Fish and Game. He has been trained in Army Corps wetland delineation by the Coastal Training Program at Elkhorn Slough and in Advanced Wetland Delineation by the Wetland Science and Coastal Training Program. He has been trained in the environmental compliance process for wetland projects in San Francisco bay and outer coastal areas. In 2011 Asa completed training to survey for California red-legged frog held by Elkhorn Slough Coastal Program. In 2015 he attended a Townsend's big eared bat basal hollow habitat assessment and survey methods workshop taught by Michael Baker, Leila Harris, and Adam Hutchins. Asa has trained with the Carex Working Group in identifying grasses and sedges of Northern California as well as a CNPS sedge workshop taught by CA Fish and Wildlife staff biologist Gordon Leppig. In 2019, he completed a training for burrowing owls taught by Dr. Lynne Trulio through the Elkhorn Slough Coastal Training Program and completed foothill yellow legged frog training taught by David Cook and Jeff Alvarez. Asa conducted field work for the Classification and Mapping of Mendocino Cypress Woodland and Related Vegetation using CNPS/CDFW Rapid Assessment/Relevé protocol. In 2021 Asa completed training by Jeff Alverez and Jeff Wilcox on the eradication of bullfrogs within the range of California red-legged and foothill yellow legged frog. He is on the Fish and Wildlife Service approved list for Point Arena mountain beaver surveys and has done surveys for Behren's silverspot butterfly, Northern spotted owl, Sonoma tree vole, foothill yellow-legged frog and the California red-legged frog. He has contributed natural resources expertise to more than 200 coastal development projects in Mendocino County.

Nicole Bejar graduated from Gonzaga University with a Bachelor's Degree in Environmental Studies and a minor in Biology. After graduating, she worked as an intern for The Nature Conservancy conducting vegetation monitoring for the endangered golden-cheeked warbler. She served as an AmeriCorps member for the Watershed Stewards Program which aims to conserve, restore, and enhance anadromous watersheds for future generations. She worked as a fisheries technician conducting salmonid monitoring and habitat restoration for various agencies, including the California Department of Fish and Wildlife, Pacific States Marine Fisheries Commission, and the Bureau of Land Management. She also has experience planning and implementing northern spotted owl, Sonoma tree vole, and amphibian surveys. She is on the U.S. Fish and Wildlife Service's approved list for Point Arena mountain beaver and Behren's silverspot butterfly surveys. She completed the Bullfrog Control in California Field Workshop 2021 led by Jeff Alvarez and Jeff Wilcox held at a UC Berkeley Field Station.