CENTENNIAL INDUSTRIAL SITE CNPS RANKED PLANTS AND SPECIAL STATUS PLANT SURVEY REPORT

Prepared:
January 2021

Prepared for:
Rise Grass Valley, Inc.
PO Box 271
Grass Valley, CA 95945

Prepared by:
Wendy Boes
Botanical Consultant
21802 Purdon Road
Nevada City, CA 95959
Email:
wlbcarrot@gmail.com

Table of Contents

I. INTRODUCTION

In June of 2019, a botanical survey was initiated at the request of Rise Grass Valley, Inc. at their Centennial Industrial Site (hereafter referred to as "study area"), for rare, threatened and endangered and other CNPS ranked plants and special status plants. The study area is located in Nevada County, California. The botanical survey was conducted when CNPS ranked plants and special status vascular plant species having the potential to occur in the study area were identifiable. This report documents the methods and results of the botanical surveys conducted in July of 2019, and of prior reconnaissance surveys and botanical assessment conducted in December of 2018.

II. STUDY LOCATION

The study area is 56.4 acres and is located along Idaho Maryland Road on the northern boundary, Centennial Drive along the northeast boundary, DeMartini RV sales along the western boundary, commercial development along the eastern boundary, and privately owned industrial land along the southern boundary. It is shown on the *Grass Valley, California* 7.5-minute U.S. Geological Survey quadrangle in Township 16N, Range 8E, Sections 26. A general location map of the study area is presented as Figure 1.

III. DESCRIPTION OF THE STUDY AREA

Climate in the area is characterized as Mediterranean with cool, wet winters and hot, dry summers. Precipitation primarily occurs as rain with an average annual rainfall of approximately 53 inches. Annual average high temperature is approximately 68 degrees Fahrenheit (°F), while the average low is 42°F (Western Regional Climate Center 2019). Topography of the study area is flat to moderately sloping. Elevation of the study area is approximately 2,600 feet above mean sea level.

The study area is located in a portion of the historic Idaho-Maryland Mine, which operated between approximately 1862 and 1956. During much of this time, the Centennial Industrial Site was the location of the mine tailings storage area and pond for the larger mine site. The pond discharged water into the main stem of Wolf Creek via a decant tower, which is still in place in the northwest portion of the site. During the 1930s, the Idaho-Maryland Mine operated a mineral processing plant, located adjacent and to the east of to the Centennial Industrial Site. The results of historic mine tailing deposition in the Centennial Industrial Site can still be seen in the soils within the site, some of which have the appearance of many layers of deposited material of varying color.

SOIL

The USDA Soil Survey Mapper (USDA 2018) indicates that the study area includes 4 soil types: Cut and fill land (Ct), Placer diggings (Pr), Rock outcrop-Dubakella complex on 5 to 50 percent slopes (RrE), and Secca-Rock outcrop complex on 2 to 50 percent slopes (ScE). Soils in the Secca soils series are derived from gabbrodiorite parent material and soils in the Dubakella soils series are derived from serpentine parent material (see attached Soils Series Table from the Nevada County Soils Survey regarding parent material for specific soil series, August 1993) and therefore, areas within the Centennial Industrial Site mapped as Secca and Dubakella soils were included as a focal soils series during site surveys for potential special-status plant species that associate with those gabbro and serpentine derived soils. Stebbins' morning-glory, Chaparral sedge, Red Hills soaproot, and Pine Hill flannelbush (special-status plant species with potential to occur within the study area) have the potential to occur on the gabbro soils of the Dubakella and serpentine soils of the Secca-Rock complex soils.

PLANT COMMUNITIES

Plant communities were classified by Environmental Science Associates (ESA 2006) during a previous environmental review process encompassing the study area (hereby incorporated by reference). ESA (2006) mapped and classified wildlife habitats/vegetation types using the California Department of Fish and Game's (CDFG) *A Guide to Wildlife Habitats* (Mayer and Laudenslayer 1988). Their classifications and mapping were more accurate when compared in the field than the existing CWHR layers. Therefore, the ESA vegetation descriptions were used as background to determine initial vegetation types for the study area.

The study area does not contain any mapped CDFW sensitive communities (see Appendix C for a CDFW CNDDB map of the study area and a 5-mile buffer). Therefore, CDFW sensitive communities are not discussed within this reporting effort further given the lack of mapping provided for such sensitive communities by CDFW within and adjacent to the study area.

Primary upland habitats within the study area include the following habitats:

Ponderosa Pine

The structure and composition of the ponderosa pine forest varies widely according to the amount of soil moisture available during the summer. The canopy closure tends to be low in the study area ranging from 5-35%. In the study area black oak (*Quercus kelloggii),* madrone (*Arbutus menziesii),* foothill pine (*Pinus sabieniana),* and incense cedar (*Calocedrus decurrens)* are common associates of ponderosa pine. A variety of understory shrub species occur throughout the ponderosa pine forest. In the study area the more common understory shrubs are white leaf manzanita (*Arctostaphylos viscida* ssp. *viscida),* poison oak *(Toxicodendron diversilobum),* and honeysuckle (*Lonicera hispidula).* These understory shrubs form often dense, impenetrable stands, especially on open rocky slopes, and in areas of recent disturbance.

Montane Hardwood

Montane hardwood is characterized in the study area by stands of an overstory of black oak and occasionally canyon live oak (*Quercus chrysolepis).* There is often homogeneity in the canopy structure, and canopy closure is variable between seasons as the dominant overstories species is deciduous, ranging from 5-45%. Due to the historic disturbance, there is abundant Himalayan blackberry (*Rubus armenicus)* in the understory along with other nonnatives including bristly dogtail (*Cynosurus echinatus)* and hedgenettle (*Torilis arvensis).*

Montane Hardwood-Conifer

Montane hardwood-conifer habitat in the Sierra Nevada occurs at elevations between 1,000 and 4,000 feet above mean sea level. It is comprised of a mosaic of hardwoods and conifers and within the Study areas is likely a midpoint on the gradient between hardwood forest and conifer forest both hardwood and conifer tree species, often in a mosaic pattern with small pure stands of conifers interspersed with small stands of hardwoods. Species associated with montane hardwood-conifer include ponderosa pine, black oak, canyon live oak, madrone and Douglas fir.

Mixed chaparral

Mixed chaparral is primarily associated with the gabbro soils of the Secca and Dubekella complexes. In the gabbro this vegetation type is more or less intact and is characterized by whiteleaf manzanita, buck brush (*Ceanothus cuneatus),* Oregon white oak (*Quercus garryana* var. *semota),* chaparral pea (*Pickeringia montana),* occasionally with scattered foothill pine. McNab cypress (*Hesperocyparis macnabiana)* is occasional in the western portions of the Centennial Industrial site, but only a few individual trees are scattered, much less than the 50% cover required to put this in the McNab cypress woodland alliance (CNPS 2019b). With the

exception of occasional natural and manmade openings, the mixed chaparral forms almost continuous stands. Mixed chaparral is also present in heavily disturbed areas, both recent and those created by placer diggings. In these more rudural habitats there is a scattered formation of chaparral, usually characterized by whiteleaf manzanita with buck brush and coyote brush (*Baccharis pilularis).*

Annual Grassland

Annual grassland are open vegetation types that are dominated by annual plant species, often nonnative. These species will occur in the understory of other vegetation types, but in annual grasslands there is little to no overstory or shrub cover. This vegetation type is common in the study area where there has been historic disturbance and there is little to no water source other than rainfall. The fall rainfall will spark germination and plants will grow through the cool months and in spring will grow rapidly and flower, fruit and senesce. Common to the study area in this habitat type are yellow star thistle (*Centaurea solstitalis),* garden burnett (*Poterium sanguisorba),* soft chess (*Bromus hordeaceous),* bisnaga (*Ammi visnaga),* and patches of Himalayan blackberry.

Wetland associated habitats within the study area includes the following wetland habitats:

Montane Riparian

A structural gradient generally happens from neighboring vegetation into montane riparian, resulting in oaks or pines grading in with the more riparian species. This vegetation type is characterized along Wolf Creek. The montane riparian is characterized by black cottonwood (*Populus tremuloides),* red willow (*Salix laevigata),* arroyo willow *(Salix lasiolepis),* and occasionally ponderosa pine in the overstory. The montane riparian vegetation along both the main stem of Wolf Creek and the South Fork of Wolf Creek are dominated by white alder (*Alnus rhombifolia)* with other overstory species from adjacent vegetation types, including black oak, pine and Douglas fir. The understory of montane riparian along the creeks are dominated by Himalayan blackberry.

Wet Meadow and Seasonal Wetlands

Wet meadows generally are of a single vegetation stratum, generally dominated by forbs and gramanoids. Shrub and trees are sometimes present but generally a small portion of this vegetation type. This is typically a diverse plant community driven by hydrologic influences. The wet meadows in the study area are typically created where extreme disturbance has occurred in the past, diggings, or mill sites. These wet meadows are characterized by *Agrostis, Juncus* spp. and Baltic rush.

Freshwater Emergent Marsh Wetlands

Freshwater emergent marsh wetlands are characterized by hydrophilic plants and generally standing water. All emergent wetlands have soils that are saturated to the extent that the soils are

always anaerobic. They are dominated at the study area sites by cattails (*Typha* spp.), arroyo willow, and pacific rush (*Juncus effuses* ssp. *pacificus).*

IV. METHODS

Methods used in preparation of this report comprised a review of existing resource databases and vegetation community information gathered during its preparation of a biological resources assessment for the study. These reviews were followed by a protocol-level field survey for CNPS ranked plants and special-status plant species in the study area.

EXISTING RESOURCE REVIEW

For the purpose of this evaluation, special status plant species include plants that are: 1) listed as threatened or endangered under the California Endangered Species Act or the federal Endangered Species Act; 2) proposed for listing as endangered or threatened by the U.S. Fish and Wildlife Service; 3) designated as rare by the California Department of Fish and Wildlife (CDFW); 4) a state or federal candidate species for listing as threatened or endangered; and/or 5) have a California Rare Plant Rank (CRPR) of 1 or 2.

The following datasets were accessed to determine the special status plant species within the study area.

Idaho-Maryland Mine Special Status Plant Survey Report prepared by Environmental Science Associates (ESA) for study area (2006)

United States Fish and Wildlife Service list of federally protected species occurring near the study area (USFWS 2019, see appendices).

California Department of Fish and Wildlife's California Natural Diversity Database records search of the Study area and 5 miles radius around the Study area (CDFW 2019).

The California Native Plant Society's online Inventory of Rare and Endangered Plants of California for the Grass Valley, Nevada City, North Bloomfield, Chicago Park, Colfax, Rough and Ready, Lake Combie, French Corral, Camptonville, Challenge, Auburn, Greenwood and Wolf 7.5-minute USGS quadrangles (CNPS 2019a);

California Department of Fish and Wildlife's California Natural Diversity Database Biogeographic Information and Observation System (BIOS) 9 Quad search for Grass Valley, Nevada City, North Bloomfield, Chicago Park, Colfax, Rough and Ready, Lake Combie, French Corral and Wolf 7.5-minute USGS quadrangles (CDFW 2019).

The Consortium of California Herbaria records (Consortium of California Herbaria 2019).

CNPS RANKED PLANTS ABD SPECIAL STATUS PLANTS

Based on the results of the searches, 23 CNPS ranked plants and special status plants were identified (Appendix B). Ten of these plant species were dropped from further consideration due to a lack of suitable habitat in the study area, the study area being substantially outside of the known range and distribution for the plant species, or both. These plant species are:

Jepson's onion (*Allium jepsonii*)
Mosquin's clarkia (*Clarkia mosquinii)*
Ahart's buckwheat (*Eriogonum umbellatum* var. *ahartii)*
Jepson's coyote thistle (*Eryngium jepsonii)*
Minute pocket moss (*Fissidens pauperculus)*
Yosimite tarplant (*Jensia yosimitana)*
Inundated bog club-moss (*Lycopodiella inundata)*
Follett's monardella (*Monardella follettii)*[1]
Sticky pyrrocoma (*Pyrrocoma lucida)*
Oval-leaved viburnum (*Viburnum ellipticum)*

The remaining thirteen sensitive plant species having the potential to occur are considered in greater detail in Table 1. These plant species were emphasized when conducting field surveys in determining appropriate phenological timing for surveys and habitats to give full coverage surveys of.

The identification period for each of the species considered in Table 1 were determined through a review of the Calflora database, Consortium of California Herbaria, University of California Jepson eFlora Project, and was also based on the intimate knowledge of the lead botanist, Wendy Boes, for each target species within the greater project area. Wendy Boes most recently served as a US Forest Service botanist with the local Tahoe National Forest and has also been a local botanical expert consultant in the greater project area for many years.

In addition, 17 CNPS Rank 4 plant species were identified as having the potential to occur in the area. If these plants are identified during protocol level field surveys they have been documented and reported, though they are not listed at the state or federal level and are not considered rare or threatened.

[1] There is a record in CalFlora from an unidentified CNPS staff person from an Inventory with no specified date or location. There is no herbarium specimen or other supporting evidence to confirm its presence. The other closest known occurrences are from Plumas County. This species is easily confused with its close relatives (Boes, personal observation 2016) and it is dropped from consideration here as most likely an erroneous sighting.

TABLE 1. CNPS RANKED PLANTS AND SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE VICINITY OF THE STUDY AREAS.

Common and Scientific Name	Legal Status[1] Federal/State/ CNPS	Habitat Association	Identification Period	Potential for Species/Habitat Presence
Stebbins' morning-glory *Calystegia stebbinsii*	FE/CE/1.B2	Gabbroic or serpentinite soils. Openings in chaparral, cismontane woodland, lower montane coniferous forest, from 980-4,330 feet.	Apr- Jul	**Low.** Potential for occurrence in openings and under chaparral in gabbroic soils. Known 4 miles to east on gabbroic chaparral on Oceola Ridge. Was not observed during targeted 2019 protocol level field surveys.
Sierra arching sedge *Carex cyrtostachya*	--/--/1B.2	Lower montane mesic coniferous forest, meadows and seeps, marshes and swamps, Riparian forests (margin), from 2,000-4,460 feet.	May -Aug	**Low.** Potential for occurrence in mesic forests. Within the known distributional and elevational range for this species, though nearest known occurrence 16 miles to the north. This species was recently described so the full extent of its range and distribution are unlikely yet known. Marginal habitat present in study area, and it was not observed during 2019 protocol level field surveys.
Chaparral sedge *Carex xerophila*	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forests on serpentinite and gabbroic substrates, from 1,400 – 2,525 feet.	Mar- Jun	**Low.** Potential for occurrence in openings and under chaparral in gabbroic soils. Known 4 miles away on Oceola Ridge in gabbroic chaparral. Was not observed during 2019 protocol level field surveys.
Red Hills soaproot *Chlorogalum grandiflorum*	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forests on serpentinite and gabbroic substrates, from 800 – 5,545 feet.	May-Jun	**Low.** Potential for occurrence in openings and under chaparral in gabbroic soils. Known over 10 miles south in Bunch Canyon south of Colfax, with no known occurrences to north. Was not observed during 2019 protocol level field surveys.
Pine Hill flannelbush *Fremontodendron decumbens*	FE/CR/1B.2	Chaparral, cismontane woodland on serpentinite and gabbroic substrates, from 1,390 – 2,495 feet.	Apr- July	**High.** Potential for occurrence in openings and under chaparral in gabbroic soils in Idaho Maryland study area. Known from CNDDB Occurrence #14. Protocol level field surveys in 2019 expanded boundaries of known occurrence.

Common and Scientific Name	Legal Status[1] Federal/State/ CNPS	Habitat Association	Identification Period	Potential for Species/Habitat Presence
Butte County fritillary *Fritillaria eastwoodiae*	--/--/3.2	Openings in chaparral, cismontane woodland, and lower montane coniferous forest, sometimes serpentinite, from 160-4,920 feet.	Mar-Jun	**Low.** Potential for occurrence in open areas in the study area. There is a 1979 record for this species on the south side of the South Yuba River canyon approximately 7 miles north of the study area, and other occurrences on the Washington Ridge. Surveys were not conducted during the appropriate phenological period for this species (April-May), but fruits would have been visible for individuals from this genus and they were not observed during 2019 protocol level field surveys.
Finger rush *Juncus digitatus*	--/--/1B.1	Seasonal wet areas, cismontane woodland openings, openings in lower montane coniferous forest, xeric vernal pools, from 2,165-2,590 feet.	Apr-Jun	**Low.** Potential for the occurrence in gravelly, seasonally moist openings. Known less than one mile to the north near the intersection of Idaho Maryland and Brunswick. Was not observed during 2019 protocol level field surveys.
Dubious pea *Lathyrus sulphureus* var. *argillaceus*	--/--/3	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest, from 490-3,050 feet.	Apr-May	**Low.** Potential to occur in forested areas. Known within 3 miles of study areas from a 1926 collection. Also known to SW 5 miles away near Wolf Mountain. Plant list from 2006 surveys have a *Lathyrus sulfureus* with no variety designation, but not observed during 2019 protocol level field surveys.
Cantelow's lewisia *Lewisia cantelovii*	--/--/1B.2	Moist, granitic areas in broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest mesic, sometimes serpentinite seeps, from 1,080-4,495 feet.	May-Oct	**Low.** Potential for occurrence in any rocky outcrops with seeps on the parcel. There are records for this species in the Middle Yuba and South Yuba river canyons within 7 miles of the study area. The preferred habitat for this species in the study area has been disturbed and is of reduced quality. Was not observed during 2019 protocol level field surveys.

Common and Scientific Name	Legal Status[1] Federal/State/ CNPS	Habitat Association	Identification Period	Potential for Species/Habitat Presence
Cedar Crest popcornflower *Plagiobothrys glyptocarpus* var. *modestus*	--/--/3	Cismontane woodland, valley and foothill grasslands (mesic), from 2,850-2.855 feet.	Apr-Jun	**Moderate.** Known from historic collection potentially from nearby Cedar Ridge. Also known from historic collections in Nevada City. Suitable habitat for this species is present. Was not observed during 2019 protocol level field surveys.
Sierra blue grass *Poa sierrae*	--/--/1B.3	Openings in lower montane coniferous forest, 1,195-4,920 feet.	Apr-Jul	**Low.** There is only marginal suitable habitat for this species in the study area, primarily in the ponderosa pine forest, and in the forested areas along Wolf Creek. Known from Steephollow Creek from a collection from 1964. Was not observed during 2019 protocol level field surveys.
Brownish beaked-rush *Rhynchospora capitellata*	--/--/2B.2	Wet areas (marshes, swamps, meadows, and seeps) in montane coniferous forest, from 145-6,560 feet.	Jul-Aug	**Low.** Suitable habitat for this species in the perennial marsh wetlands. It is known 3 miles to the west near the Nevada County Fairgrounds from a report in 1973. Was not observed during 2019 protocol level field surveys.
Scadden Flat checkerbloom *Sidalcea stipularis*	--/CE/1B.1	Marshes and swamps (montane freshwater), from 2,295-2,395 feet.	Jul-Aug	**Low.** Suitable habitat for this species in the perennial marsh wetlands. It is known 3 miles to the west near the Nevada County Fairgrounds from a report in 1973. Was not observed during 2019 protocol level field surveys.

[1]Status explanations:

FE = Federally Endangered
CR = State Rare
CE = State Endangered
-- = no listing.

California Native Plant Society Rare Plant Rank (formerly known as CNPS lists)
1B = Rank 1B species: rare, threatened, or endangered in California and elsewhere.
2B = Rank 2B species: rare, threatened, or endangered in California but more common elsewhere.
3 = Rank 3 species are usually not considered rare or threatened and lack the necessary information to assign them to one of the other ranks.
4 = Rank 4 plants are not rare or threatened but may be of limited distribution or infrequent throughout a broader area in California.

0.1 = Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
0.2 = Moderately threatened in California (20%-80% occurrences threatened/moderate degree and immediacy of threat)

0.3 = Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Source: CNPS 2018; CNDDB 2019; USFWS 2019, and Calflora 2019.

BOTANICAL SURVEYS

The botanical field survey was conducted in general accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). Wendy Boes, botanist, served as the lead investigator for the botanical survey. Denise Della Santina, biologist, provided additional field assistance. The field survey was floristic in nature and consisted of identifying each species observed to the taxonomic level necessary to determine whether the plant is a federal or state listed special-status species or other CNPS ranked plants. Plant taxonomy followed Baldwin et al. (2012), including applicable errata and supplements (Jepson Flora Project 2019). The field surveys were performed by walking meandering transects through microhabitats with the potential to support CNPS ranked plants special-status plants. Survey intensity was heightened in areas corresponding to vegetation communities having the potential to support the CNPS ranked plants and special status plants identified in the pre-field resource review.

V. RESULTS

Reconnaissance level field surveys were conducted December 9-12, 18 & 19, 2018. These surveys were conducted in concurrence with wetland delineation efforts. The result of these surveys was to assess the potential habitat for CNPS ranked plants and special status plants but were not conducted within the appropriate phenological timeframe for detection and confirmation for most of the special status plants.

Protocol level field surveys were conducted by Wendy Boes and Denise Della Santina on July 1, 10, and 14, 2019. The field survey was conducted at a time when all potentially occurring CNPS ranked plants and special-status plant species could be identified if they were present, with the exception of Butte County fritillary. A nearby reference population of finger rush was visited on June 24th, prior to commencing field surveys to ensure this species was still detectable, which was confirmed. No other reference sites were required to be visited given the botanists local knowledge of the other target species as part of the survey effort. No adverse conditions (e.g., drought, herbivory) were encountered that would affect the identification of potential CNPS ranked plants and special-status plant species. A complete list of observed plant species identified in the study area during the botanical survey is provided as Appendix A.

CNPS RANKED PLANTS AND SPECIAL STATUS SPECIES

Based on the results of the reconnaissance-level botanical surveys conducted, historic surveys conducted in 2006, field surveys in 2019, and the desktop research using various resources, Pine Hill flannelbush is the only plant species of federal status known to occur in the study area (Figure 2). Two CRPR List 4 plant species, Sierra brodiaea and Humboldt lily, are also known to occur in the study area (Figure 3). These species are considered in greater detail below.

PINE HILL FLANNELBUSH (*FREMONTODENDRON DECUMBENS)*

Federal Status: Endangered; State Status: Rare; CNPS Status: 1B.2

A recovery plan has been developed for this species (USFWS 2002). The Recovery Plan states that the only verified location of this plant is near Pine Hill in western El Dorado County, and that the reported occurrences of this plant in Nevada County may be erroneous. It states: "Although there are some reports of F. californicum ssp. decumbens occurring in some small scattered populations in Yuba or Nevada County, other reports describe these individuals as aberrant F. californicum ssp. californicum (California flannelbush)." (Recovery Plan pp. II-13)

Genetic work has been conducted by Dr. Shannon Still (Bill Wilson, personal communication 2019) from U.C. Davis that has confirmed that Pine Hill flannelbush is known to occur in Nevada County, but this work is still in press. During protocol level field surveys in 2019, the plants in the population were confirmed to have morphological characteristics, the floral and habit, of the Pine Hill flannelbush. Based on the unpublished genetic results and the supporting morphological characteristics, we are assuming the identification of Pine Hill flannelbush, to be confirmed prior to project implementation.

Pine Hill flannelbush is known to occur in serpentine and gabbro soils in chaparral and cismontane woodlands, at elevations ranging from 1,390 to 2,495 feet. It is known from twelve occurrences in Eldorado, Nevada and Yuba Counties in the foothills of the Sierra Nevada. It is threatened by development and alteration of the fire regime (CNPS 2019a).

Pine Hill flannelbush blooms April to July, though is at its peak in June. It is a branched, spreading shrub that grows to 4 feet tall. The leaves are lobed, and dense star-shaped (stellate) hairs cover the leaves and younger twigs and branches. It has showy orange to reddish-brown flowers. Pine Hill flannelbush is thought to be fire dependent, with studies resulting in only 2 percent of seed germination in the absence of fire (Boyd 1987 in USFWS 2002).

The study area has highly suitable habitat in the Dubekella and Secca-Rock Outcrop complex soil series, a soil derived from gabbrodiorite parent material.

The known occurrence of Pine Hill flannelbush was located in December 2018 and tentatively identified due to its being an evergreen shrubby plant with characteristics (leaf morphology, plant habit, seeds, fruits) that allowed it to be somewhat confidently identified at this time of year. The identification was verified during its blooming period, and the whole of the population that occurs in the study area was mapped in July of 2019. Sixty individuals were counted in the study area, all mature, flowering plants. No seedling or juvenile individuals were encountered. They occupied an absolute area of 0.22 acres over approximately 4.5 acres in the southern portion of the study area, with one plant occurring disjunct from main population, in the center of the study area. The population extends beyond the study area into adjacent private properties. The population was not mapped or documented beyond the study area.

Seed collection was conducted on August 21, 2019 with Brett Hall[2] from the UC Santa Cruz Arboretum as a part of the UC Santa Cruz Native Plant Program. Six plants on the northern edge of the distributional limit of the population were selected for seed collection as there is the greatest potential for these individuals to be impacted. The seed had largely dispersed, but approximately 30-100 seeds were collected per plant, which was approximately 1 to 2 seeds per fruit. The seeds will be cleaned and stored in the seedbank at UC Santa Cruz for either future propagation efforts, or as a part of seed banking efforts.

[2] UCSC Arboretum has a MOU with CDFW permitting collecting of California Rare, Threatened, and Endangered Plants (10-01 M).

SIERRA BRODIAEA (*BRODIAEA SIERRA)*

Federal Status: not listed; State Status: not listed; CNPS Status: 4.3 (not rare or endangered)

Sierra brodiaea is known to occur usually on serpentinite or gabbroic soils in chaparral, cismontane woodland, land lower montane coniferous forests. It is known from Butte, Nevada and Yuba Counties ranging in elevation from 164-3,215 feet. It is potentially threatened by vehicles, road maintenance, widening, development, illegal dumping, horticultural collecting and hydrological alterations (CNPS 2019a).

Sierra brodiaea is a perennial bulb that blooms May through August. It is an herbaceous plant, with a broad umbel of purple, fluted flowers.

The study area has highly suitable habitat in the Secca-Rock Outcrop complex soil series, a soil derived from gabbrodiorite parent material. A large population with thousands of individuals covering almost a quarter of the study area (Figure 3) was mapped during 2019 field surveys.

HUMBOLDT LILY (*LILIUM HUMBOLDTII* SSP. *HUMBOLDTII)*

Federal Status: not listed; State Status: not listed; CNPS Status: 4.2 (not rare or endangered)

Humboldt lily is known to occur in openings in chaparral, cismontane woodland and lower montane coniferous forests. It is known from Amador, Butte, Calaveras, El Dorado, Fresno, Mariposa, Nevada, Placer, Tehama, Tuolumne, and Yuba Counties. It occurs at elevations ranging from 295-4,200 feet. Its threats include development, urbanization, horticultural collecting, deer browsing, nonnative plants, and road maintenance (CNPS 2019a).

Humboldt lily is a perennial bulb that blooms May through August. It can reach 7-8’ in height, and has bright orange lily flowers.

The study area has suitable habitat and a single occurrence consisting of 10 individuals in an area less than 10 sq. meters was documented in the study area (Figure 3).

VI. RECOMMENDATIONS AND PROTECTION MEASURES FOR SENSITIVE PLANT SPECIES

PRE CONSTRUCTION SURVEYS

Conduct pre-construction surveys for special status plants (any state or federally listed plant as well as any CNPS plant listed 1 or 2) in the appropriate phenological blooming period when each species is identifiable.

If any sensitive plants are identified during the pre-construction surveys, the following avoidance, minimization, and protection measures are recommended to avoid and minimize potential impacts to sensitive plants.

AVOIDANCE

Avoid impacts to sensitive plants where identified within the proposed disturbance areas. However, if avoidance and preservation is not possible, consultation with CDFW and USFWS will be required for impacts to Pine Hill flannelbush (*Fremontodendron decurrens).* Based on the consultation with CDFW and USFWS for this species, mitigation requirements could include, but may not be limited to the following: appropriate onsite enhancement for the species, site restoration for the species, and/or offsite compensation of impacts for the species. Consultation with CDFW and USFWS is also recommended for the development and implementation of other state and federally listed plant species or CNPS list 1 and 2 species identified within the project disturbance areas.

RECOMMENDATIONS FOR TRANSPLANTING AND REPLACEMENT

Protect all individuals of Pine Hill flannelbush and their habitat that occur outside of the disturbance footprint. The recovery plan for Pine Hill flannelbush (USFWS 2002) reports that the habitat in which this plant occurs is naturally and artificially limited, and conservation of not just the populations, but adjacent vacant habitat is beneficial to long-term persistence.

Collect seed for seedbanking, and for future replacement and recovery efforts.

Attempt to move the individuals of Pine Hill flannelbush that fall within the disturbance footprint to another site with similar soil, hydrologic, vegetation type and aspect. The transplantation site(s) selected should extend the known population spatially, in other words, planting beyond the known perimeters of the existing population is preferable, to maintain population coverage. Transplanting shall occur in the season deemed to have the greatest potential for success, generally the fall, after rains have commenced. Transplants will be monitored every month for the first six months, then subsequently, every two months for the first two years. After monitoring identifies successful establishment and flowering for the second season for each of the transplants, transplanting will have been deemed successful.

If these measures are not successful in maintaining the Pine Hill flannelbush population numbers, then the following measures will be taken.

Individuals will be grown from seed and transplanted out in a 100:1 ratio for those taken. Transplants of individuals grown from seed will be planted with similar soil, hydrologic, vegetation type and aspect. Transplanting shall occur in the season deemed to have the greatest potential for success, generally the fall, after rains have commenced. Transplants will be monitored every month for the first six months, then subsequently, every two months for the first two years. After two summer seasons of monitoring identifies successful establishment of 25% of the initial transplants, transplant seedlings will have been deemed successful.

Prior to transplanting or monitoring: 1.) Develop a Transplantation Plan and model for site selection for transplanting; and 2.) Develop a Monitoring Plan with criteria for "aliveness" and metrics of establishment.

REFERENCES

California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 22 August 2019].

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. TheJepson manual: vascular plants of California, second edition. University of California Press,Berkeley, California.

California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database. RareFind 5 [Internet]. California Department of Fish and Wildlife, Sacramento, California. https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed January 2019.

California Department of Fish and Wildlife (CDFW). 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. California Natural Resources Agency Department of Fish and Wildlife.

California Native Plant Society (CNPS), Rare Plant Program. 2019a. Inventory of Rare and Endangered Plants of California, online edition, v8-03 0.39. [Online]. http://www.rareplants.cnps.org. Accessed December 2018, July 2019 and August 2019.

California Native Plant Society (CNPS). 2019b. Manual of California Vegetation online. Available at http://vegetation.cnps.org/alliance/21. Accessed August 31, 2019.

Calflora. 2019. [Internet]. http://www.calflora.org. Accessed January 2019.

Consortium of California Herbaria. 2019. Consortium of California Herbaria Portal (CCH2). [Internet]. http://www.ucjeps.berkeley.edu/consortium/. Accessed January 2019.

Environmental Science Associates (ESA). 2006. *Idaho-Maryland Mine special-status plant survey report.* Prepared by ESA for Idaho-Maryland Mining Corporation for the Idaho-Maryland Mine Project Master Environmental Assessment.

Oswald, V. H. 2013. Selected Plants of Northern California and Adjacent Nevada, revised edition. Studies from the Herbarium. California State University, Chico, California.

University of California. 2019. Jepson eFlora Project. [Internet]. http://ucjeps.berkeley.edu/eflora/. Accessed July 2019.

United States Department of Agriculture (USDA). 2019. *Online soils mapper*.

United States Department of Agriculture (USDA). 1993. *Soil Survey of Nevada County Area, California. Reissued 1993.*

United States Fish and Wildlife Service (USFWS). 2002. *Recovery plan for gabbro soil plants of the central Sierra Nevada foothills.* Region 1. Portland, Oregon.

United States Fish and Wildlife Service. 2019. Information for Planning and Consultation. Available at: https://ecos.fws.gov/ipac/. Accessed August 21, 2019.

Western Regional Climate Center. 2019. Grass Valley #2, California (043573). Period of Record: 10/01/1966 to 06/10/2016. Accessed August 22, 2019. Available at https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3573

Wilson, Bill. 2019. Personal Communication via email. Board Member of Redbud Chapter of the California Native Plant Society. P.O. Box 2662, Nevada City, CA. 95959.

Appendices

APPENDIX A: VASCULAR PLANTS OCCURRING IN THE CENTENNIAL INDUSTRIAL SITE

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Acer macrophyllum	Bigleaf maple	native	Tree	-	FACU	-
Agoseris retrorsa	Spear leaved agoseris	native	perennial herb	-	-	-
Agrostis gigantea	Creeping bentgras	non-native	perennial grass	-	FAC	-
Ailanthus altissima	Tree of heaven	non-native (invasive)	Tree	-	FACU	Moderate
Aira caryophyllea	Silvery hairgrass	non-native (invasive)	annual grass	-	FACU	-
Allium amplectens	Narrow leaved onion	Native	perennial herb (bulb)	-	-	-
Alnus rhombifolia	White alder	Native	Tree	-	FACW	-
Ammi visnaga	Bisnaga	non-native	annual, biennial herb	-	-	-
Anaphalis margaritacea	Pearly everlasting	Native	perennial herb	-	FACU	-
Andropogon virginicus var. virginicus	Broomsedge bluestem	non-native	perennial grass	-	FAC	-
Arbutus menziesii	Madrono	Native	Tree	-	-	-
Arctostaphylos mewukka ssp. mewukka	Indian manzanita	Native	Shrub	-	-	-
Arctostaphylos viscida ssp. viscida	Smooth white leaf manzanita	Native	tree, shrub	-	-	-
Artemisia douglasiana	California mugwort	Native	perennial herb	-	FACW	-
Asclepias sp.	-	-	-	-	-	-
Asclepias speciosa	Showy milkweed	Native	perennial herb	-	FAC	-
Avena sp.	-	-	-	-	-	-
Baccharis pilularis	Coyote brush	Native	Shrub	-	-	-
Berberis aquifolium var. repens	Creeping oregon grape	Native	Shrub	-	FACU	-
Brodiaea minor	Low brodiaea	Native	perennial herb	-	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Brodiaea sierrae	Sierra foothills brodiaea	Native	perennial herb	Rank 4.3	-	-
Bromus hordeaceus	Soft chess	non-native (invasive)	annual grass	-	FACU	Limited
Bromus madritensis	Foxtail chess, foxtail brome	non-native	annual grass	-	FACU	-
Calocedrus decurrens	Incense cedar	Native	Tree	-	-	-
Calycadenia multiglandulosa	Rosin weed	Native	annual herb	-	-	-
Carex feta	Green sheathed sedge	Native	perennial grasslike herb	-	FACW	-
Ceanothus cuneatus	Buck brush	Native	Shrub	-	-	-
Ceanothus integerrimus	Deer brush	Native	Shrub	-	-	-
Ceanothus lemmonii	Lemmon's ceanothus	Native	Shrub	-	-	-
Centaurea solstitialis	Yellow starthistle	non-native (invasive)	annual herb	-	-	High
Centaurium tenuiflorum	Slender centaury	non-native	annual herb	-	FACW	-
Centranthus sp.	-	-	-	-	-	-
Centromadia fitchii	Spikeweed	Native	annual herb	-	FACU	-
Chlorogalum pomeridianum	Amole	Native	perennial herb	-	-	-
Chondrilla juncea	Skeleton weed	non-native (invasive)	perennial herb	-	-	Moderate
Cichorium intybus	Chicory	non-native	perennial herb	-	FACU	-
Cirsium vulgare	Bullthistle	non-native (invasive)	perennial herb	-	FACU	Moderate
Cornus nuttallii	Mountain dogwood	Native	Shrub	-	FACU	-
Cornus sericea	American dogwood	Native	Shrub	-	FACW	-
Cortaderia jubata	Andean pampas grass	non-native (invasive)	perennial grass	-	FACU	High
Crataegus monogyna	Hawthorn	non-native (invasive)	Shrub	-	FAC	Limited
Croton setiger	Turkey-mullein	Native	perennial herb	-	-	-
Cynodon dactylon	Bermuda grass	non-native (invasive)	perennial grass	-	FACU	Moderate
Cynosurus echinatus	Dogtail grass	non-native (invasive)	annual grass	-	-	Moderate
Cyperus eragrostis	Tall cyperus	Native	perennial grasslike herb	-	FACW	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Dactylis glomerata	Orchardgrass	non-native (invasive)	perennial grass	-	FACU	Limited
Danthonia californica	California oatgrass	Native	perennial grass	-	FAC	-
Deschampsia elongata	Hairgrass	Native	perennial grass	-	FACW	-
Elymus caput-medusae	Medusa head	non-native	annual grass	-	-	-
Elymus elymoides	Squirrel tail grass	Native	perennial grass	-	FACU	-
Elymus hispidus	Intermediate wheatgrass	non-native	perennial grass	-	-	-
Epilobium sp.	-	-	-	-	-	-
Epipactis gigantea	Stream orchid	Native	perennial herb	-	OBL	-
Eriodictyon californicum	Yerba santa	Native	Shrub	-	-	-
Eriophyllum lanatum	Wooly sunflower	Native	perennial herb	-	-	-
Euthamia occidentalis	Western goldenrod	Native	perennial herb	-	FACW	-
Festuca arundinacea	Reed fescue	non-native (invasive)	perennial grass	-	FAC	Moderate
Festuca idahoensis	Blue fescue	Native	perennial grass	-	FACU	-
Festuca microstachys	Small fescue	Native	annual grass	-	-	-
Ficus sp.	-	-	-	-	-	-
Frangula californica ssp. tomentella	Hoary coffeeberry	Native	Shrub	-	-	-
Frangula rubra	Red buckthorn	Native	Shrub	-	-	-
Fremontodendron decumbens	Pine hill flannelbush	Native	Shrub	FE, SR, Rank 1B.2	-	-
Galium porrigens	Climbing bedstraw	Native	vine, shrub	-	-	-
Gamochaeta sp.	-	-	-	-	-	-
Garrya fremontii	Fremont's silk tassel	Native	Shrub	-	-	-
Grindelia camporum	Gumweed	Native	perennial herb	-	FACW	-
Grindelia sp.	-	-	-	-	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Hedera helix	English ivy	non-native (invasive)	vine, shrub	-	FACU	-
Hemizonella minima	Opposite leaved tarweed	Native	annual herb	-	-	-
Hesperocyparis macnabiana	Macnab cypress	Native	tree, shrub	-	-	-
Hirschfeldia incana	Mustard	non-native (invasive)	perennial herb	-	-	Moderate
Holcus lanatus	Common velvetgrass	non-native (invasive)	perennial grass	-	FAC	Moderate
Hypericum perforatum ssp. perforatum	Klamathweed	non-native	perennial herb	-	FACU	-
Hypochaeris radicata	Hairy cats ear	non-native (invasive)	perennial herb	-	FACU	Moderate
Juncus articulatus ssp. articulatus	Jointed rush	Native	perennial grasslike herb	-	OBL	-
Juncus balticus ssp. ater	Baltic rush	Native	perennial grasslike herb	-	FACW	-
Juncus confusus	Colorado rush	Native	perennial grasslike herb	-	FAC	-
Juncus effusus ssp. pacificus	Pacific rush	Native	perennial grasslike herb	-	FACW	-
Juncus trilocularis	-	Native	annual grasslike herb	-	-	-
Lactuca serriola	Prickly lettuce	non-native (invasive)	annual herb	-	FACU	-
Lathyrus latifolius	Sweet pea	non-native	perennial herb	-	-	-
Leontodon saxatilis	Hawkbit	non-native	annual herb	-	FACU	-
Leucanthemum vulgare	Oxe eye daisy	non-native (invasive)	perennial herb	-	FACU	Moderate
Lilium humboldtii ssp. humboldtii	Humboldt lily	Native	perennial herb	Rank 4.2	-	-
Lonicera hispidula	Pink honeysuckle	Native	vine, shrub	-	FACU	-
Lonicera interrupta	Chaparral honeysuckle	Native	vine, shrub	-	-	-
Lotus corniculatus	Bird's foot trefoil	non-native (invasive)	perennial herb	-	FAC	-
Lysimachia arvensis	Scarlet pimpernel	non-native	annual herb	-	FAC	-
Madia gracilis	Gumweed	Native	annual herb	-	-	-
Melica californica	California melic	Native	perennial grass	-	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Melilotus albus	White sweetclover	non-native (invasive)	annual, biennial herb	-	-	-
Muhlenbergia rigens	Deergrass	Native	perennial grass	-	UPL	-
Panicum sp.	-	-	-	-	-	-
Parthenocissus sp.	-	-	-	-	-	-
Penstemon heterophyllus	Foothill penstemon	Native	perennial herb	-	-	-
Pickeringia montana	Chaparral pea	Native	Shrub	-	-	-
Pinus ponderosa	Yellow pine	Native	Tree	-	FACU	-
Pinus sabiniana	Bull pine	Native	Tree	-	-	-
Plantago lanceolata	Ribwort	non-native (invasive)	perennial herb	-	FACU	Limited
Polygala cornuta	Sierra milkwort	Native	perennial herb	-	FACW	-
Polypogon sp.	-	-	-	-	-	-
Populus fremontii ssp. fremontii	Cottonwood	Native	Tree	-	FAC	-
Poterium sanguisorba	Garden burnet	non-native	perennial herb	-	UPL	-
Prunella vulgaris	Self heal	Native	perennial herb	-	FACU	-
Prunus subcordata	Sierra plum	Native	tree, shrub	-	-	-
Pyracantha sp.	-	-	-	-	-	-
Quercus garryana var. semota	Oregon white oak	Native	Tree	-	FACU	-
Rhamnus crocea	Redberry	Native	Shrub	-	-	-
Rosa canina	Dog rose	non-native	Shrub	-	-	-
Rubus armeniacus	Himalayan blackberry	non-native (invasive)	Shrub	-	FACU	High
Rubus leucodermis	White bark raspberry	Native	Shrub	-	FACU	-
Rumex crispus	Curly dock	non-native (invasive)	perennial herb	-	FAC	Limited
Salix exigua	Narrowleaf willow	Native	tree, shrub	-	FACW	-
Salix laevigata	Polished willow	Native	Tree	-	FACW	-
Salix lasiolepis	Arroyo willow	Native	tree, shrub	-	FACW	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
Salvia sonomensis	Sonoma sage	Native	perennial herb	-	-	-
Schoenoplectus acutus var. occidentalis	Tule	Native	perennial grasslike herb	-	OBL	-
Scutellaria tuberosa	Dannie's scullcap	Native	perennial herb	-	-	-
Solidago sp.	-	-	-	-	-	-
Toxicodendron diversilobum	Poison oak	Native	vine, shrub	-	FAC	-
Tragopogon dubius	Goat's beard	non-native (invasive)	perennial herb	-	-	-
Trichostema lanceolatum	Vinegarweed	Native	annual herb	-	FACU	-
Trifolium hirtum	Rose clover	non-native (invasive)	annual herb	-	-	Limited
Trifolium sp.	-	-	-	-	-	-
Triteleia hyacinthina	Wild hyacinth	Native	perennial herb	-	FAC	-
Typha domingensis	Cattail	Native	perennial herb	-	OBL	-
Verbascum blattaria	Moth mullein	non-native	perennial herb	-	UPL	-
Verbascum thapsus	Woolly mullein	non-native (invasive)	perennial herb	-	FACU	Limited
Vitis californica	California wild grape	Native	vine, shrub	-	FACU	-
Wyethia angustifolia	Narrow leaved mule ears	Native	perennial herb	-	FACU	-
Wyethia bolanderi	Bolander's wyethia	Native	perennial herb	-	-	-

APPENDIX B: CNPS RANKED PLANTS AND SPECIAL STATUS PLANT SCOPING LIST

Scientific Name	Common Name	Justification	CRPR	CESA	FESA
Allium jepsonii	Jepson's onion	Known 16 miles to south and 44 miles to north. Suitable habitat of serpentinite or volcanic substrates not present in study area.	1B.2	None	None
Calystegia stebbinsii	Stebbins' morning-glory	known 4.5 miles to east on serpentine. Potential to occur. Surveyed for in 2006 with negative results.	1B.1	CE	FE
Carex cyrtostachya	Sierra arching sedge	Nearest known occurrence 16 miles to the north. Within known range of species and with marginal suitable habitat in the study area. Low to moderate potential for this species to occur.	1B.2	None	None
Carex xerophila	chaparral sedge	known 4 miles away. Was not surveyed for in 2006. High potential to occur.	1B.2	None	None
Chlorogalum grandiflorum	Red Hills soaproot	known over 10 miles south in Bunch Canyon south of Colfax, with no known occurrences to north. Surveyed for in 2006 with negative results. Very Low probability of occurrence.	1B.2	None	None
Clarkia mosquinii	Mosquin's clarkia	known 22 miles to the north, drop from consideration.	1B.1	None	None
Eriogonum umbellatum var. ahartii	Ahart's buckwheat	known 21 miles to the north. Habitat of serpentinite rocky outcrops no present. Drop from further consideration.	1B.2	None	None
Eryngium jepsonii	Jepson's coyote thistle	known 60+ miles to SW. Not sure why it was queried. Habitat also not present. Dropped from further consideration.	1B.2	None	None
Fissidens pauperculus	minute pocket moss	We are clearly south of known occurrences and beyond habitat preferences. Known 16 miles to north. Minute taxa with good probability of being overlooked. Not surveyed for in 2006 surveys. Unknown probability of occurring.	1B.2	None	None

Scientific Name	Common Name	Justification	CRPR	CESA	FESA
Fremontodendron decumbens	Pine Hill flannelbush	Known from study area from one occurrence. Potential for more to occur. One individual of unknown species determination noted during off season site visit, and should be checked during blooming period for ID confirmation	1B.2	CR	FE
Fritillaria eastwoodiae	Butte County fritillary	study area within range of species. Known 7 miles to the north. Surveyed for in 2006 but surveys were conducted out of season for this species.	3.2	None	None
Jensia yosemitana		Known from historic collection outside of Colfax. Otherwise known only far to the south, Dropped from further consideration.			
Juncus digitatus	finger rush	Known less than one mile to the north. Marginal habitat in seasonally wet areas. Moderate potential to occur.	1B.1	None	None
Lathyrus sulphureus var. argillaceus	dubious pea	Known within 3 miles of project areas from a 1926 collection. Also known to SW 5 miles away. Plant list from 2006 surveys have a *Lathyrus sulfureus* with no variety. Moderate to high potential to occur.	3	None	None
Lewisia cantelovii	Cantelow's lewisia	Known 7 miles to the north. Marginal suitable habitat for this plant is found in the study area. This species was surveyed for in the 2006 surveys but was not found. There is a (very) low potential for this species to occur.	1B.2	None	None
Lycopodiella inundata	inundated bog club-moss	Known from 9 miles to the north. The habitat present in the study area is not suitable for this plant. In area known from freshwater marsh created by hydraulic mining. No probability of occurring, dropped from further consideration.	2B.2	None	None
Monardella follettii	Follett's monardella	Closest confirmed occurrence over 40 miles to the north. The preferred habitat of rocky serpentinite not present in study area. Very low, to no potential for this species to occur.	1B.2	None	None
Plagiobothrys glyptocarpus var. modestus	Cedar Crest popcornflower	Known from historic collection potentially from nearby Cedar Ridge. Also known from historic collections in Nevada City. In a generic sense, the suitable habitat for this species is present in study area and has a moderate to high probability of occurring.	3	None	None
Poa sierrae	Sierra blue grass	Known 7 miles to the east of the Brunswick Rd. study area. There is only very marginal suitable habitat present for this species along Wolf Creek.	1B.3	None	None

Scientific Name	Common Name	Justification	CRPR	CESA	FESA
Pyrrocoma lucida	sticky pyrrocoma	Suitable habitat for this species not present. No probability of occurring in the study area.	1B.2	None	None
Rhynchospora capitellata	brownish beaked-rush	Suitable habitat for this species present in the perennial marsh wetlands in both areas. It is known 3 miles to the west. It has not been documented during the 2006 surveys, but does have a moderate potential to occur.	2B.2	None	None
Sidalcea stipularis	Scadden Flat checkerbloom	Suitable habitat for this species present in the perennial marsh wetlands in both areas. It is known 3 miles to the west. It has not been documented during the 2006 surveys, but does have a moderate potential to occur.	1B.1	CE	None
Viburnum ellipticum	oval-leaved viburnum	Known 18 miles to the south, than over 100 miles to the NNW. Based on known range and distribution, and the study area lying far beyond, this species will be dropped from further consideration.	2B.3	None	None

APPENDIX C: CNPS RANKED PLANTS AND SPECIAL STATUS PLANT SPECIES KNOWN FROM A FIVE MILE RADIUS.

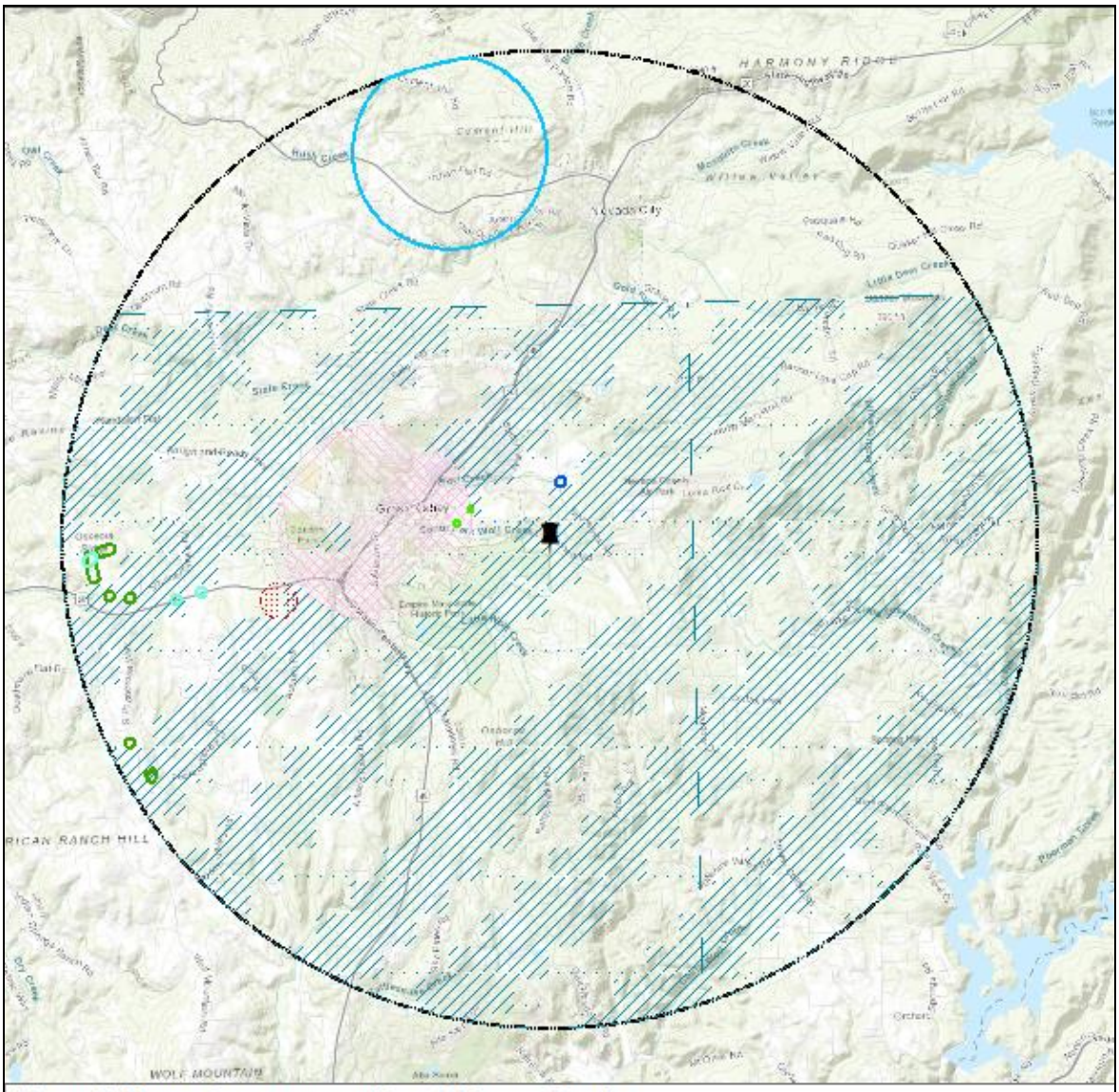


Figure X. Known Occurrences of Special Status Species

Legend

FiveMileProjectBuffer

Project Area

Common Name, Scientific Name, FESA, CESA, CNPS

Brandegee's clarkia, Clarkia biloba ssp. brandegeeae, none, none, 4.2

Pine Hill flannelbush, Fremontodendron decumbens, Endangered, Rare, 1B.2

Scadden Flat checkerbloom, Sidalcea stipularis, none, Endangered, 1B.1

Stebbins' morning-glory, Calystegia stebbinsii, Endangered, Endangered, 1B.1

brownish beaked-rush, Rynchospora capitellata, none, none, 2B.2

chaparral sedge, Carex xerophila, none, none, 1B.2

dubious pea, Lathyrus sulphureus var. argillaceus, none, none, 3

finger rush, Juncus digitatus, none, none, 1B1

0 1 2 Miles

1 in = 1 miles

APPENDIX D: PROJECT LOCATION AND CNPS RANKED PLANTS AND SPECIAL STATUS PLANT SPECIES LOCATION FIGURES

Grass Valley, CA
Grass Valley 7.5 minute USGS quadrangle
T16N, R8E Section 26

Coordinate System: NAD 83 Zone 10N
Projection: Transverse Mercator
Datum: D_North_American_1983

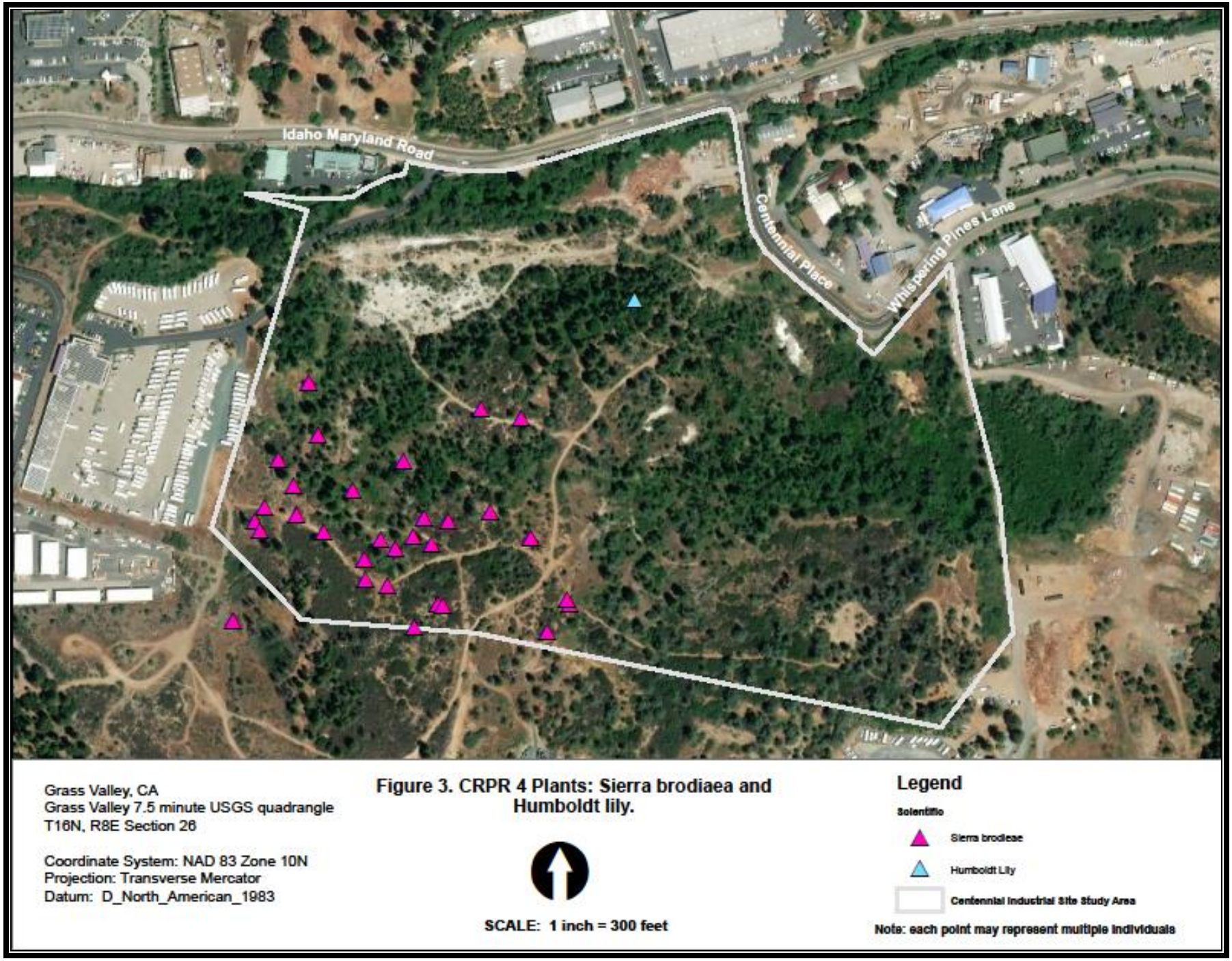
Figure 1. Overview of Study Area

SCALE: 1 inch = 300 feet

Legend

Centennial Industrial Site
Study Area, 56.4 ac.


Idaho Maryland Road
Centennial Place
Whispering Pines Lane
Grass Valley, CA
Grass Valley 7.5 minute USGS quadrangle
T16N, R8E Section 26
Coordinate System: NAD 83 Zone 10N
Projection: Transverse Mercator
Datum: D_North_American_1983
Figure 2. Pine Hill flannelbush
CNDDB Occurrence #14.
SCALE: 1 inch = 300 feet
Legend
Pine Hill flannelbush (individuals or clusters)
CNDDB mapped extant of Pine Hill flannelbush*
Centennial Industrial Site Study Area
*The mapped extent from digitization of 1988 paper map by Karen Callahan is likely cause for part of discrepency.


Idaho Maryland Road
Centennial Place
Whispering Pines Lane
Grass Valley, CA
Grass Valley 7.5 minute USGS quadrangle
T16N, R8E Section 26
Coordinate System: NAD 83 Zone 10N
Projection: Transverse Mercator
Datum: D_North_American_1983
Figure 3. CRPR 4 Plants: Sierra brodiaea and Humboldt lily.
SCALE: 1 inch = 300 feet
Legend
Scientific
Sierra brodiaea
Humboldt Lily
Centennial Industrial Site Study Area
Note: each point may represent multiple individuals

APPENDIX E: SERPENTINE AND GABBRODIORITE SOIL TYPES

Type of parent material	*Soil series or land type name*
Stratified mixed alluvium (recent)	Loamy and clayey alluvium
Stratified mixed alluvium (Tertiary river gravels)	Horseshoe
Andesitic conglomerate (Mehrten formation)	Ailken, Cohasset, Iron Mountain, Josephine, McCarthy
Granodiorite	Ahwahnee, Auberry, Chaix, Hoda, Hotaw, Musick, Sierra, Shenadoah, Trabuco
Gabbrodiorite	Boomer, Chaix variant, Secca, Sites
Serpentine	Dubakella, Dubakella variant
Slate (Mariposa group)	Mariposa, Josephine
Metamorphosed volcanic rock, greenstone, amphibolite schist	Auburn, Argonaut, Boomer, Cohasset, Josephine, Rescue, Secca, Sobrante, Sites
Slates and Schists (Calaveras group)	Mariposo, Maymen, Sites, Josephine

APPENDIX F: USFWS IPAC REPORT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Nevada County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Amphibians

NAME	STATUS

California Red-legged Frog Rana draytonii — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/2891

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened

Flowering Plants

NAME	STATUS
Pine Hill Flannelbush Fremontodendron californicum ssp. decumbens No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4818	Endangered
Stebbins' Morning-glory Calystegia stebbinsii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3991	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Cassin's Finch Carpodacus cassinii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Willow Flycatcher Empidonax traillii — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/3482

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

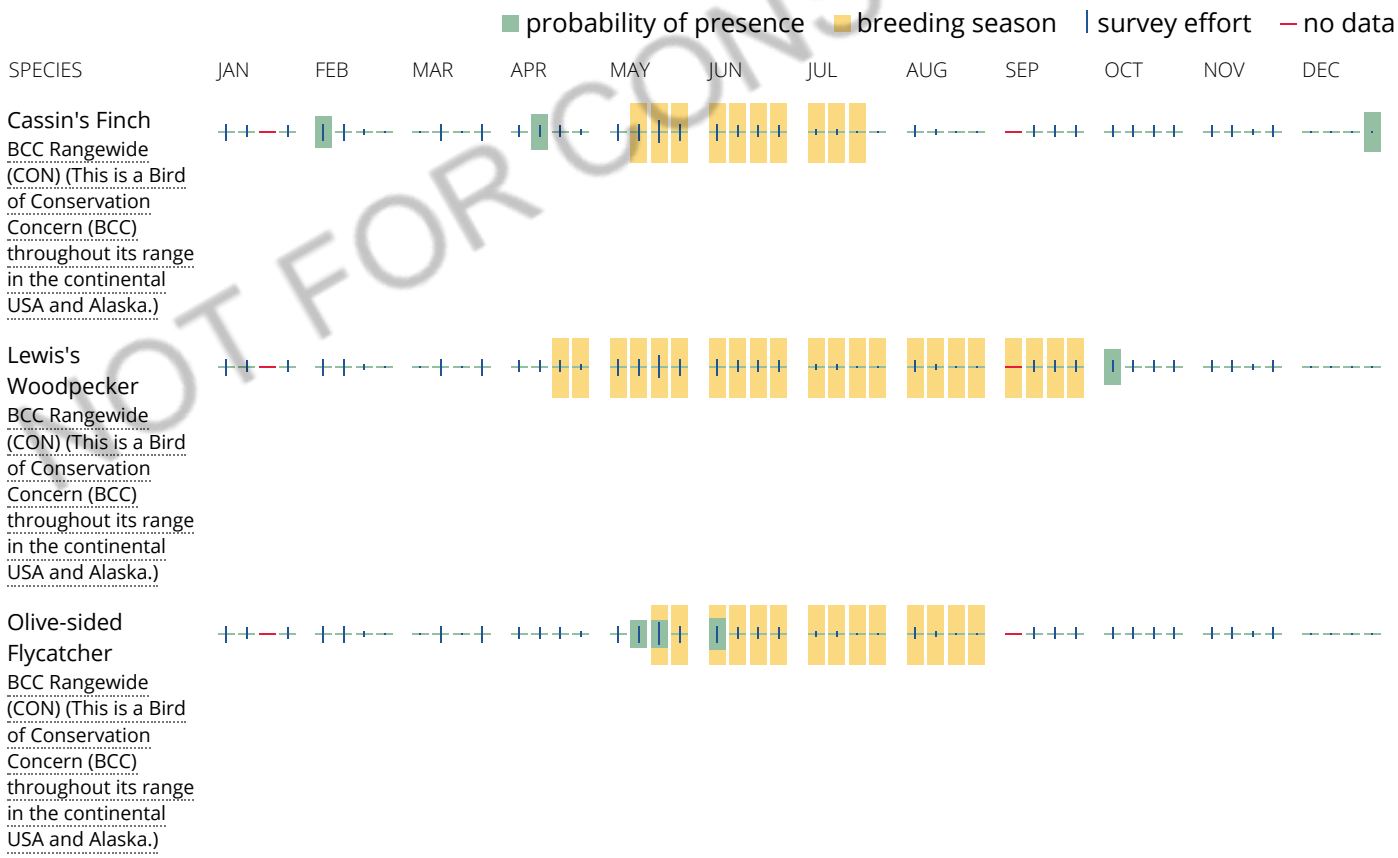
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

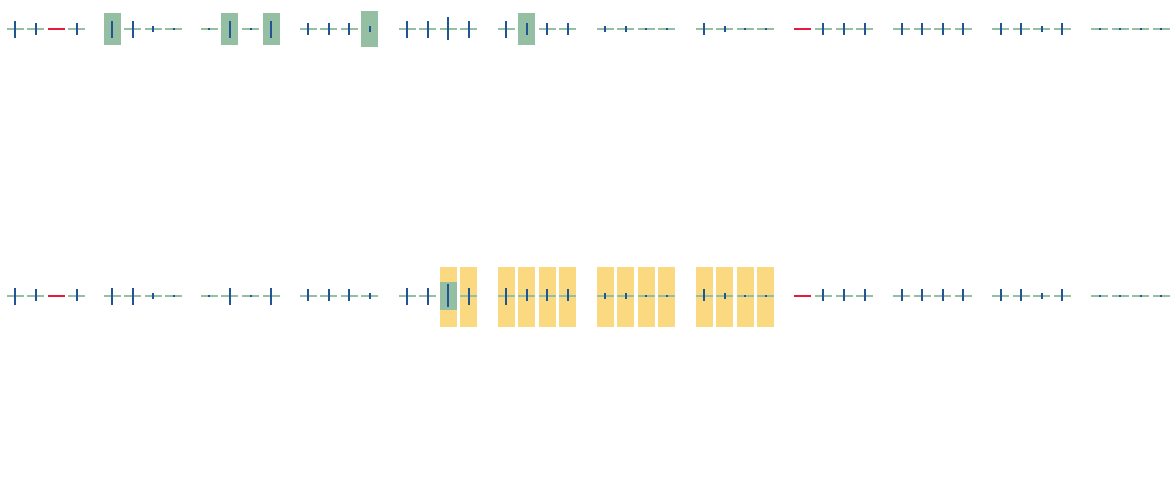
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willow Flycatcher
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to

confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1A

FRESHWATER FORESTED/SHRUB WETLAND

PFOC

FRESHWATER POND

PUBK

RIVERINE

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.