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Biological Resource Assessment

PDCON Enterprises LLC
APN: 222-156-013
CEQA Compliance

RECEIVED
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Humboldt County
PLANNING

Prepared by
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1/9/21

For
Hohman and Associates
Hydesville, CA

Signature: Corrina Kamoroff **Date:** 1/9/21

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1. Summary

This Biological Resource Assessment was prepared on behalf of PDCON Enterprises LLC whom is seeking permits for commercial cannabis cultivation under the Humboldt County Commercial Cannabis Land Use Ordinance (CCLUO, a.k.a Ordinance 2.0) for Assessor's Parcel Number 222-156-013. This document assesses habitats and potentially occurring special-status animals and identifies potential impacts of cultivation-related activities on biological resources.

The property is located west of Garberville, CA in southern Humboldt County. The property has the potential to support numerous special status animal species (details are provided in Section 4.3 Special Status Animals). Additional mitigation measures have been recommended to address potential impacts to biological resources. A table summarizing all mitigation measures recommended to reduce biological impacts to less-than-significant levels can be found in Section 5.2.

2. Introduction

2.1 Project Description

PDCON Enterprises LLC is seeking permits for Commercial Cannabis Cultivation on Assessor's Parcel Number (APN) 222-156-013. The parcel is approximately 43.4 acres. PDCON Enterprises LLC is proposing commercial cannabis cultivation in one (1) 150 ft. by 30 ft. hoop house, four (4) 200 ft. by 30 ft. hoop houses, 12 ft. by 12 ft. composting area, one (1) 500 gallon mixing tank, and a parking area placed in an open flat (1% grade) area on the southeastern portion of the parcel. No supplemental lighting for cannabis cultivation is proposed at this time. Water supply will be provided by the city of Garberville and electricity by PG&E.

2.2 Setting

The proposed project is located in Section 23, Township 4 South, Range 3 East HB&M; Humboldt County, on the Garberville USGS 7.5' quadrangle. The biogeographic region can be described using a three-tiered hierarchy of province, region and sub-region. This site lies within the California Floristic Province, Northwestern California region, and North Coast sub-region. The parcel lies to the west of the community of Garberville, 0.33 miles to the north of the Garberville Airport. The elevation ranges from approximately 520 ft. to 850 ft. Slopes on the property range from relatively flat (~1%) to moderately steep (~ 25%) and the aspect is primarily east-facing. The parcel contains a mixture of open grassland/tilled grassland and forested areas including pasture for cattle.

2.3 Zoning

The parcel is zoned for Agriculture Exclusive (AE).

2.4 Purpose

The primary purpose of this Biological Resource Assessment is to evaluate the potential effects of the applicant's cannabis cultivation operations on biological resources. The applicant is seeking permitting for commercial cultivation of cannabis in Humboldt County, and this is a

discretionary project subject to the California Environmental Quality Act (CEQA). This assessment provides the following information for the permitting process:

- An evaluation of biological resources on the site.
- Determinations of whether the project has the potential to significantly impact biological resources.
- Recommendations of additional surveys needed to adequately assess potential impacts.
- Recommended mitigations to avoid, minimize, or compensate for any potentially significant impacts.

2.5 Qualifications

The Biological Resource Assessment for this project was conducted by Corrina Kamoroff. Corrina Kamoroff is a Wildlife Biologist for Hohman and Associates Forestry Consultants. Corrina received her B.S. in Evolution, Ecology and Biodiversity from University of California, Davis. Corrina is currently pursuing her M.S. in Natural Resources with a concentration in Wildlife from Humboldt State University. Corrina has over 8 years of wildlife experience in Northern California, including over two years conducting biological surveys and evaluating potential impacts in fulfillment of CEQA requirements.

2.6 Terms

Biological Assessment Area (BAA): The area evaluated for potential impacts to biological resources, defined in this document as the property area surrounded by a 1.3 mile buffer.

Biological Resource Assessment: Referring to this document, a review of potential impacts to biological resources that informs agency review of discretionary projects subject to CEQA.

California Department of Fire (CDF) Sensitive: Species that warrant protection during timber harvest operations, listed in California Forest Practice Rules.

California Environmental Quality Act (CEQA): A state environmental law that applies to discretionary projects subject to state agency review. The purposes of CEQA include disclosing environmental impacts, minimizing environmental damage, and involving the public.

California Endangered Species Act (CESA): A state law that prohibits "take" of species protected by CDFW, including Threatened, Endangered, and Candidate Species.

California Department of Fish and Wildlife (CDFW): A trustee agency that protects California's fish and wildlife resources.

California Native Plant Society (CNPS): A non-profit organization dedicated to preserving and protecting native plants and their habitats. CNPS provides protocols and information relevant to plant conservation, including rankings of rare plants recognized by CDFW.

Commercial Medical Marijuana Land Use Ordinance (CMMLUO): "Ordinance 1.0," a Humboldt County ordinance that regulates commercial cultivation, processing, manufacturing and distribution of cannabis for medical use.

Commercial Cannabis Land Use Ordinance (CCLUO): "Ordinance 2.0," a Humboldt County ordinance regulating commercial cannabis cultivation for adult use.

Endangered: Taxa in immediate jeopardy of extinction in all or part of their range.

Federal Endangered Species Act (FESA): A federal law enacted in 1973 that protects species listed as Threatened or Endangered by the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS).

Fully Protected (FP): Take of species is strictly prohibited by CDFW.

NatureServe: A non-profit dedicated to providing scientific information to support informed decisions. NatureServe provides information on species and rankings of rare species (see Attachment D).

Special Animals: All animals tracked by CDFW, including threatened, endangered, rare, sensitive, and otherwise vulnerable species.

Species of Special Concern (SSC): Species considered by CDFW to be vulnerable because of declining populations, limited range, or other threats.

State Water Resources Control Board Order WQ 2019-0001-DWQ: The order sets requirements for waste discharge related to cannabis cultivation. The State Water Resources Control Board Cannabis Cultivation Regulatory Program will replace the regional program, which is no longer accepting enrollment. The state program has set similar standards to minimize impacts to water quality. Information is available on the website: https://www.waterboards.ca.gov/water_issues/programs/cannabis/

Streamside Management Area (SMA): Protective buffers around permanent or intermittent streams. The Humboldt County General Plan (2017) defines Streamside Management Areas as follows:

1. 100 feet, measured as the horizontal distance from the top of bank or edge of riparian drip-line whichever is greater on either side of perennial streams.

2. 50 feet, measured as the horizontal distance from the top of bank or edge of riparian drip-line whichever is greater on either side of intermittent streams.

3. The width of Streamside Management Areas shall not exceed 200 feet measured as a horizontal distance from the top of bank.

Threatened: Taxa likely to become endangered in the foreseeable future.

3. Methods

3.1 Biological Assessment Area

The Biological Assessment Area (BAA) for this project includes a 1.3-mile buffer area around the property. The assessment considers off-site impacts to habitats and species that may be in the BAA buffer area. Consideration of offsite impacts in the BAA is potentially relevant to sensitive species and habitats downslope or downstream of operations (e.g. riparian habitat or salmonids), and to species that require a large range and may be sensitive to disturbance (e.g. the northern spotted owl).

3.2 Database Search

A list of special-status animal species was downloaded from CNDDB for the Garberville 9-quad area. Potential habitats on the parcel and within the BAA for species occurring in the 9-quad areas were evaluated. The potential for the project to impact each species was evaluated based on the potential for the species to occur in the area of impact and sensitivity of the species to potential loss of habitat, disturbance, or other effects of operations. Surveys and mitigations needed are specified for species that could incur significant impacts. Attachment A contains a vegetation map showing the CALVEG (Classification and Assessment with LANDSAT of

Visible Ecological Groupings) dominant vegetation alliances for the parcel and surrounding area (U.S. Forest Service 2000), which was used to assess habitat in the surrounding area. Attachment B shows nearby occurrences of special status taxa as mapped in CNDDB. Attachment C shows northern spotted owl occurrences and activity centers within the BAA.

3.3 Field Surveys

The site was evaluated for potential habitat value to protected, endangered, threatened, rare, and sensitive species by walking around the project area to observe species, habitat types, and quality. Habitat and potential impacts were evaluated during a visit to the proposed cultivation site on December 9, 2020 by Wildlife Biologist, Corrina Kamoroff. Table 5.2 provides a list of surveys and mitigation measures needed to reduce the potential impact of the project on biological resources to less than significant. Attachments A, B and C provide maps with data from CNDDB and USFS CALVEG used in initial scoping for the project. Photos taken of the project footprint and surrounding habitat can be found in Attachment D. Attachment E provides an explanation of NatureServe rankings. Attachment F provides an aerial photo of the project area.

3.4 Trustee and Other Agency Consultation

No Trustee or other agency consultation is known of at this time.

4. Results

The southeast corner of the parcel has an existing outbuilding currently used for storage. There is a rocked road that allows access the western portion of the parcel. Approximately one sixth of the parcel is actively being grazed by cattle. Connick Creek Road bisects the parcel. There is an existing ~700,000-gallon rain catchment pond that according to aerial imagery appears to have been constructed after 2015. The existing pond is not proposed for cannabis cultivation use. There are eleven (11) water storage tanks used to store water for domestic and agricultural use. The proposed cannabis cultivation area is located at an existing ~0.4-acre orchard site on open graded flat. Young orchard trees are planned to be removed and hoop houses installed for cultivation, pending permits. The property is connected to power from PG&E, and water from the city of Garberville. Mitigation measures have been proposed for each potentially significant biological impact of current and planned operations on the property. Relevant mitigation measures for the impacts discussed in this report are listed in parentheses (e.g. BIO-1, BIO-2, etc.), and these mitigation measures can be found in the table of Section 5.2 Mitigation for Potentially Significant Impacts.

4.1Habitats

4.2.1 Upland Communities

Upland areas of the property contain open grassland, mixed coniferous forest with Douglas fir (*Pseudotsuga mensiesii),* black oak (*Quercus velutina*), and Tanoak (*Notholithocarpus densiflorus*). Over half of the parcel is comprised of an open grassland area, with tilled/disturbed grassland. Additionally, there are cattle actively being grazed on open grassland on the western portion of the parcel. Forested areas are concentrated on the eastern portion of the parcel near the residential structures.

4.2.2 Wetland and Riparian Communities

Two Class II drainages flow through the parcel. There are several intermittent class III drainages that flow down the western portion of the parcel. Additionally, there is a class III that flows into an estimated 700,000-gallon pond. The pond is not proposed as an irrigation source for the commercial cultivation.

4.3 Special Status Animals

Special status animals evaluated in this report include animal taxa listed or proposed for listing under Federal and State Endangered Species Acts, CDFW Fully Protected, CDFW Watch List, CDFW Species of Special Concern, California Department of Forestry and Fire Protection Sensitive Species, and other special species and other taxa tracked by CDFW. Impacts to special status animals are evaluated in this section based on their likelihood of occurrence in the area, habitat and life-history needs, and sensitivity to operations. Likelihood of inhabiting the area was based on documented occurrences in the Garberville 9-quad area (See Section 4.3.1, Tables 1-5), and availability of potential habitat. Details on potentially occurring taxa, potential impacts, and surveys and mitigations needed for these animals can be found in Section 4.3.2 Potential Impacts to Special Status Animals.

4.3.1 Special Status Animals Documented by CNDDB in the Garberville 9-Quad Areas

Table 1. Birds

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential in BAA
Accipiter cooperii	Cooper's hawk	None	None	WL	G5	S4	Yes
Aquila chrysaetos	golden eagle	None	None	FP; WL	G5	S3	Yes
Empidonax traillii brewsteri	little willow flycatcher	None	Endangered	-	G5T3T4	S1S2	Yes
Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	FP	G4T4	S3S4	Yes
Haliaeetus leucocephalus	Bald eagle	Delisted	Endangered	FP	G5	S3	Yes
Pandion haliaetus	osprey	None	None	WL	G5	S4	Yes
Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	FP	G4T3T4	S3	No-coastal
Psiloscops flammeolus	flammulated owl	None	None	-	G4	S2S4	Yes
Strix occidentalis caurina	northern spotted owl	Threatened	Threatened	SSC	G3T3	S2S3	Yes

Table 2. Mammals

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential in BAA
Antrozous pallidus	pallid bat	None	None	SSC	G5	S3	Yes
Arborimus pomo	Sonoma tree vole	None	None	SSC	G3	S3	Yes
Erethizon dorsatum	North American porcupine	None	None	-	G5	S3	Yes
Eumetopias jubatus	Steller (=northern) sea-lion	Delisted	None	-	G3	S2	No-Coastal
Myotis evotis	Long-eared myotis	None	None	-	G5	S3	Yes
Myotis thysanodes	Fringed myotis	None	None	-	G4	S3	Yes
Myotis yumanensis	Yuma myotis	None	None	-	G5	S4	Yes
Pekania pennanti	fisher - West Coast DPS	Endangered	Threatened	SSC	G5T2T3Q	S2S3	Yes

Table 3. Amphibians and Reptiles

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential
Ascaphus truei	Pacific tailed frog	None	None	SSC	G4	S3S4	Yes
Emys marmorata	Western pond turtle	None	None	SSC	G3G4	S3	Yes
Rana boylii	foothill yellow-legged frog	None	Endangered	SSC	G3	S3	Yes
Rhyacotriton variegatus	Southern torrent salamander	None	None	SSC	G3G4	S2S3	Yes
Taricha rivularis	Red-bellied newt	None	None	SSC	G4	S2	Yes

Table 4. Fish

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential
Entosphenus tridentatus	Pacific lamprey	None	None	SSC	G4	S4	Yes
Oncorhynchus kisutch pop. 2	coho salmon - southern Oregon / northern California ESU	Threatened	Threatened	-	G4T2Q	S2?	Yes
Oncorhynchus mykiss irideus pop. 16	steelhead - northern California DPS	Threatened	None	-	G5T2T3Q	S2S3	Yes
Oncorhynchus mykiss irideus pop. 36	summer-run steelhead trout	None	Candidate Endangered	SSC	G5T4Q	S2	Yes
Oncorhynchus tshawytscha pop. 17	chinook salmon - California coastal ESU	Threatened	None	-	G5	S1	Yes

Table 5. Invertebrates

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential
Bombus caliginosus	obscure bumble bee	None	None	-	G4?	S1S2	Yes
Bombus occidentalis	western bumble bee	None	Candidate Endangered	-	G2G3	S1	Yes

4.3.2 Potential Impacts to Special Status Animals

BIRDS

Potential impacts are evaluated for potentially occurring threatened, endangered, rare and sensitive bird species that have been documented in the surrounding 9-quad area.

1. **Cooper's hawk (*Accipiter cooperii*)**
   Special Status: CDFW Watch List; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S4
   Family: Accipitridae
   Habitat/Life-history Requirements: Cooper's hawks are common year-round residents in wooded areas of California, and they can be found in urban and suburban areas as well (Cornell Lab). The medium-sized hawk builds nests made of piles of sticks over two feet wide in tall trees, typically 25-50 feet off the ground (Cornell Lab). Nesting trees include pines, oaks and Douglas firs (Cornell Lab). Dense stands are typically used for nesting and patchy open areas are commonly used for hunting (Zeiner et al. 1988).
   Potential Impact/Mitigation: Habitat within the BAA could provide habitat for the Cooper's hawk. The raptor is on the CDFW Watch List and protected under the Migratory Bird Treaty Act (MBTA). The nearest occurrence mapped in CNDDB is over 10 miles away from the proposed project area. No vegetation or tree removal that willimpact potential nesting habitat for the species is proposed and thus no impacts to the species is expected.

2. **Golden eagle (*Aquila chrysaetos*)**
   Special Status: CDFW Fully Protected and Watch List; Protected under Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act; NatureServe Ranks: G5, S3
   Family: Accipitridae
   Habitat/Life-history Requirements: The golden eagle is an uncommon migrant and year-round resident (Zeiner et al. 1988). The golden eagle typically utilizes open habitats away from human environments (Sibley 2003). Small mammals are the primary prey for the golden eagle (Sibley 2003). One of the largest raptors in North America, the golden eagle builds massive nests, about 6 feet across (Cornell Lab). Nests are typically located on cliffs, but may also be found on trees, man-made structures, or on the ground (Cornell Lab).
   Potential Impact/Mitigation: Open areas for foraging of the species occur within the BAA. The nearest occurrence of the golden eagle is mapped in CNDDB ~ 7 miles from the project site. No vegetation or tree removal that will impact potential habitat for the species is proposed and thus no impacts to the species is expected.

3. **Little willow flycatcher (*Empidonax traillii brewsteri*)**
   Special Status: California Endangered, Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5T3T4, S1S2
   Family: Tyrannidae
   Habitat/Life-history Requirements: The little willow flycatcher is a rare to locally uncommon summer resident that breeds in the Cascades and the Sierra Nevada (Craig and Williams 1998). The little willow flycatcher breeds in wet meadows and montane riparian habitats at 2,000-8,000 feet elevation (Craig and Williams 1998). The riparian songbird requires dense willow thickets for nesting and roosting (Bombay et al. 2003, Zeiner et al.

1988). Destruction of riparian vegetation, modification of hydrology, and nest parasitism by brown headed cowbirds are the main threats to this species (Bombay et al. 2003).
Potential Impact/Mitigation: The BAA could provide habitat for the little willow flycatcher. No vegetation or riparian habitat disturbance is proposed and thus the project is not expected to impact the species.

4. **American peregrine falcon (*Falco peregrinus anatum*)**
Special Status: Federally Delisted, State Delisted, CDFW Fully Protected; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G4T4, S3S4
Family: Falconidae
Habitat/Life-history Requirements: The formerly federally endangered American peregrine falcon was delisted in 1999 due to recovery (USFWS ECOS). The American peregrine falcon is an uncommon year-round resident and migrant in California (Zeiner et al. 1988). Peregrine falcons typically use cliffs and ledges near bodies of water for cover and nesting areas, but they may also nest on buildings or bridges in the city (Sibley 2003, Cornell Lab). Peregrine falcons may breed in woodland, forest, or coastal habitat (Zeiner et al. 1988). Riparian and wetland areas are important habitat yearlong (Zeiner et al. 1988).
Potential Impact/Mitigation: Peregrine falcons may breed in a wide variety of habitats, and they have the potential to nest in the BAA on suitable ledges or other structures. No vegetation, tree removal or degradation of potential habitat is proposed. Thus, the project is not expected to impact the species.

5. **Bald eagle (*Haliaeetus leucocephalus*)**
Special Status: Federally Delisted, California Endangered, CDFW Fully Protected; Protected under Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act; NatureServe Ranks: G5, S3
Family: Accipitridae
Habitat/Life-history Requirements: Federally delisted, but still considered Endangered in California, bald eagles occur along rivers, large creeks, and coastlines throughout Northwestern California (Harris 2005). Fish are a primary source of prey, and bald eagles are typically found in forested areas near large fish-bearing waters (Cornell Lab). Bald eagles build large nests about 6 feet wide. Nests are typically found in large trees, but may be built on other available vegetation or structures (Cornell Lab).
Potential Impact: The BAA could provide habitat for the bald eagle. The closest occurrence in CNDDB is unprocessed in the Iron Peak Quad. No vegetation or tree removal is proposed that will impact the species habitat and thus the project is not expected to impact the bald eagle.

6. **Osprey (*Pandion haliaetus*)**
Special Status: CDFW Watch List; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S4
Family: Accipitridae
Habitat/Life-history Requirements: Ospreys primarily prey on fish and they require large fish-bearing waters for hunting (Zeiner et al. 1988). Ospreys typically make large nests in tall snags or trees high off the ground in open forest habitats (Zeiner et al.).

Potential Impact/Mitigation: Osprey may occur in the area, which has fish bearing waters and large trees. The nearest occurrence mapped in CNDDB is ~2.25 miles away on the South Fork Eel River. No vegetation or tree removal is proposed and thus the project is not expected to impact the Osprey or important habitat for the species.

7. **Flammulated owl (*Psiloscops flammeolus*)**
   Special Status: NatureServe Rankings: G4, S2S4
   Family: Strigidae
   Habitat/Life-history Requirements: The flammulated owl nests in montane regions at 6,000-10,000 feet with low to moderate canopy cover (Zeiner et al. 1988). This small owl nests in cavities or woodpecker holes in snags or trees, and it is frequently found on the edges of ponderosa pine forest (Zeiner et al. 1988).
   Potential Impact/Mitigation: There are no CNDDB recorded occurrences of flammulated owl in the 9-quad area. The Flammulated owl, however, may occur in the area of impact. The project should incorporate measures to reduce disturbance from noise and lights to birds and other sensitive wildlife (**BIO-1**).

8. **Northern spotted owl (*Strix occidentalis caurina)***
   Special Status: Federally Threatened, California Threatened, CDFW Species of Special Concern, Protected under Migratory Bird Treaty Act; NatureServe Ranks: G3T3, S2S3.
   Family: Strigidae
   Habitat/Life-history Requirements: Northern spotted owls typically nest or roost in multi-layered, mature coniferous forest with high canopy closure, large overstory trees, and broken-topped trees or other nesting platforms (USFWS 2012). Confirmed breeding areas are widespread throughout Humboldt County (Hunter et al. 2005). Northern spotted owls may use a broad range of habitats for foraging. Their favored prey, the dusky-footed woodrat (*Neotoma fuscipes*), typically inhabits the forest edge (Harris 2005).
   Potential Impact: UFWS protocol surveys are needed for any activity that may modify nesting, roosting, or foraging habitats for northern spotted owls (NSO) (USFWS 2012). There have been no documented NSO within 1.3 mi of the of the project area. There is potential NSO habitat within the BAA, however, the proposed project is unlikely to impact NSO as the proposed operations will not be removing NSO habitat. It is recommended that the project should incorporate measures to reduce disturbance from noise and lights to birds and other sensitive wildlife **(BIO-1).**

MAMMALS

Potential impacts are evaluated for potentially occurring threatened, endangered, rare and sensitive mammal species that have been documented in the surrounding 9-quad area.

1. **Pallid bat (*Antrozous pallidus*)**
   Special Status: CDFW Species of Special Concern, NatureServe Ranks: G5, S3
   Family: Vespertilionidae
   Habitat/Life-history Requirements: The pallid bat may occupy a wide range of low-elevation habitats, and roost in a wide variety of structures (Zeiner et al. 1988). The bat prefers to roost in outcrops, cliffs, and crevices with access to open areas for foraging (Zeiner et al. 1988).

Potential Impact/Mitigation: The pallid bat has been documented in the Garberville quad. The pallid bat has the potential to occur in the project area. The project should incorporate measures to reduce disturbance from noise and lights to birds and other sensitive wildlife (**BIO-1**).

2. **Sonoma tree vole (*Arborimus pomo*)**
   Special Status: CDFW Species of Special Concern, NatureServe Ranks: G3, S3
   Family: Muridae
   Habitat/Life-history Requirements: The Sonoma tree vole occurs along the North Coast in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood-conifer habitats (Zeiner et al. 1988). The small rodent specializes in feeding on Douglas-fir and grand fir needles, and typically constructs nests in Douglas-fir trees (Zeiner et al. 1988).
   Potential Impact/Mitigation: The arboreal rodent is unlikely to occur in the project area. The Sonoma tree vole may occur in the surrounding BAA. The nearest occurrence mapped in CNDDB is over 6 miles from the project. No impacts are expected.

3. **North American porcupine (*Erethizon dorsatum*)**
   Special Status: NatureServe Ranks: G5, S3
   Family: Erethizontidae
   Habitat/Life-history Requirements: The North American porcupine is most commonly found in montane conifer, Douglas-fir, alpine dwarf-shrub, and wet meadow habitats (Zeiner et al. 1988). The herbivore feeds on a wide variety of aquatic and terrestrial herbs, shrubs, fruits, leaves, and buds in the summer (Zeiner et al. 1988). During the winter, the porcupine diet includes evergreen leaves, twigs, bark, and cambium of trees, particularly conifers (Zeiner et al. 1988).
   Potential Impact/Mitigation: The North American porcupine could occur in the BAA. The North American porcupine has been documented in CNDDB ~1.3 miles from the project area. The proposed project will not likely impact the North American porcupine or potential habitat for the mammal.

4. **Long-ear myotis (*Myotis evotis)***
   Special Status: NatureServe Ranks: G5, S3.
   Family: Vespertilionidae
   Habitat/Life-history Requirements: The long-eared myotis is widespread in California, but uncommon. The insectivore nests in cavities, under bark, in snags, or in buildings (Zeiner et al. 1988).
   Potential Impact/Mitigation: The nearest occurrence mapped in CNDDB is less than one mile from the project. The project should incorporate measures to reduce disturbance from noise and lights to birds and other sensitive wildlife (**BIO-1**). With mitigations put in place the project is not expected to significantly impact the species.

5. **Fringed myotis (*Myotis thysanodes)***
   Special Status: NatureServe Ranks: G4, S3.
   Family: Vespertilionidae
   Habitat/Life-history Requirements: The fringed myotis uses a wide variety of open habitats, especially pinyon-juniper, valley foothill hardwood and hardwood-conifer habitats.

The insectivore requires water, and typically forages over lakes, streams, and ponds (Zeiner et al. 1988). The bat roosts in caves, mines, buildings, and crevices (Zeiner et al. 1988).
Potential Impact/Mitigation: There is potential habitat for the fringed myotis within the BAA. The proposed projects are not expected to impact the species. However, the project should incorporate measures to reduce disturbance from noise and lights to birds and other sensitive wildlife (**BIO-1**). With mitigations put in place the project is not expected to significantly impact the species.

6. **Yuma myotis (*Myotis yumanensis)***
   Special Status: NatureServe Ranks: G5, S4.
   Family: Vespertilionidae
   Habitat/Life-history Requirements: The Yuma myotis is common and widespread in low-elevation habitats of California (Zeiner et al. 1988). The bat requires water for drinking and foraging habitat, and roosting structures such as buildings, mines, caves, or crevices (Zeiner et al. 1988). Open woodlands and forests provide optimal habitat (Zeiner et al. 1988).
   Potential Impact/Mitigation: There is potential habitat for the Yuma myotis within the BAA. The proposed projects are not expected to impact the species. However, the project should incorporate measures to reduce disturbance from noise and lights to birds and other sensitive wildlife (**BIO-1**).

7. **Fisher – West Coast DPS (*Pekania pennanti*)**
   Special Status: Federally Endangered, State Threatened, CDFW Species of Special Concern; NatureServe Ranks: G5T2T3Q, S2S3
   Family: Mustelidae
   Habitat/Life-history Requirements: The fisher uses large expanses of forest with moderate to high canopy closure, and will avoid open forest, grasslands, and wetlands (USFWS 2014). Fishers use cavities in live trees, snags and down logs for reproductive dens (USFWS 2014). Structural complexity is a critical element of fisher habitat, necessary to provide cover for resting and denning, and habitat for prey (USFWS 2014).
   Potential Impact/Mitigation: The fisher has been documented in CNDDB ~ 7 miles from the project area within Richardson Grove State Park. There may be habitat within the BAA, but the project is not expected to impact structurally complex old growth forest with potential habitat structures for the fisher. The fisher is not expected to be impacted by the proposed project.

AMPHIBIANS AND REPTILES

Potential impacts are evaluated for potentially occurring threatened, endangered, rare and sensitive amphibian and reptile species that have been documented in the surrounding 9-quad areas. The South Fork Eel River, tributaries and ponds within the BAA and adjacent to the property could provide habitat for numerous rare and sensitive amphibians, as well as the western pond turtle.

1. **Pacific tailed frog (*Ascaphus truei*)**
   Special Status: CDFW Species of Special Concern; NatureServe Ranks: G4, S3S4
   Family: Ascaphidae

Habitat/Life-history Requirements: The Pacific tailed frog requires permanent, cool streams in conifer-dominated habitats including redwood, Douglas fir, mixed-conifer, and ponderosa pine habitats (Zeiner et al. 1988). They prefer turbulent waters with rocky substrates in steep-walled valleys with dense vegetation, where the water temperature remains low (Zeiner et al. 1988). Increased water temperature and siltation from logging pose threats to the amphibian (Zeiner et al. 1988). Additionally, invasive American bullfrogs may pose a threat to native amphibians through competition, predation, and spread of disease.
Potential Impact/Mitigation: Steep, densely vegetated streams in the surrounding area could provide habitat for the Pacific tailed frog. The nearest occurrence mapped in CNDDB is over 10 miles from the project area. Because the proposed project is further than 200 feet from any permanent, cool streams in conifer-dominated habitats, the Pacific tailed frog is not expected to be impacted by the proposed project.

2. **Western pond turtle (*Emys marmorata*)**
Special Status: CDFW Species of Special Concern; NatureServe Ranks: G3G4, S3
Family: Emydidae
Habitat/Life-history Requirements: The western pond turtle is associated with permanent or nearly permanent water in ponds, lakes, streams, irrigation ditches or permanent pools along streams (Zeiner et al. 1988). Invasive American bullfrogs prey upon hatchlings and juveniles (Zeiner et al. 1988).
Potential Impact/Mitigation: The BAA provides habitat for the western pond turtle. The nearest occurrence mapped in CNDDB is over 2 miles from the project along the South Fork Eel River. The proposed site is over 200 feet from any riparian areas, the Western pond turtle is not expected to be impacted by the proposed project.

3. **Foothill yellow-legged frog (*Rana boylii*)**
Special Status: State Endangered; CDFW Species of Special Concern; NatureServe Ranks: G3, S3
Family: Ranidae
Habitat/Life-history Requirements: The foothill yellow-legged frog primarily inhabits rocky streams or rivers with permanent water, and may be found in many habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadows (Zeiner et al. 1988). Breeding primarily occurs in low-velocity, shallow stream habitats with high habitat heterogeneity (Yarnell 2013). Foothill yellow-legged frogs may also travel substantial distances overland and use seasonally wet areas (Bourque 2008). The invasive American bullfrog and introduced fish species contribute to the reduction of foothill yellow-legged frog populations (Zeiner et al. 1988).
Potential Impact/Mitigation: Riparian areas are likely to provide habitat for the foothill yellow-legged frog. The nearest occurrence mapped in CNDDB is less than 1 mile from the project. The foothill yellow-legged frog may be impacted by any work in wetland or riparian environments, removal of vegetation cover within SMAs, or development that may inhibit dispersal through upland environments. Amphibian surveys are recommended prior to any road work on stream crossings or worth within the SMAs(**BIO-6).**

4. **Southern torrent salamander (*Rhyacotriton variegatus*)**
   Special Status: CDFW Species of Special Concern; NatureServe Ranks: G3G4, S2S3
   Family: Rhyacotritonidae
   Habitat/Life-history Requirements: The southern torrent salamander primarily occupies cold, shaded permanent streams and seeps in redwood, Douglas fir, mixed conifer, montane riparian and montane hardwood-conifer habitats in Sonoma, Mendocino, Humboldt and Lake Counties (Zeiner et al. 1988). The newt requires rapid, permanent streams with rocky substrate for breeding and larval development (Zeiner et al. 1988).
   Potential Impact/Mitigation: Permanent, rocky streams within the BAA could provide habitat for the southern torrent salamander. The nearest occurrence mapped in CNDDB is over 8 miles from the project, in the Mattole watershed. The Southern torrent salamander may be impacted by any work in wetland or riparian environments, removal of vegetation cover within SMAs, or development that may inhibit dispersal through upland environments. Amphibian surveys are recommended prior to any road work on stream crossings or worth within the SMAs(**BIO-6).**

5. **Red-bellied newt (*Taricha rivularis*)**
   Special Status: CDFW Species of Special Concern; NatureServe Ranks: G4, S2
   Family: Salamandridae
   Habitat/Life-history Requirements: The red-bellied newt primarily occupies redwood forest, but is also found within mixed conifer, valley-foothill woodland, montane hardwood and hardwood-conifer habitats (Zeiner et al. 1988). Although adults are terrestrial, the poisonous newt requires rapid, rocky permanent streams for breeding and larval development (Zeiner et al. 1988). During terrestrial stages, the newt may be found in coastal woodlands and forests. The newt will seek cover in moist habitats, such as under woody debris, rocks, or in animal burrows (Nafis 2019).
   Potential Impact/Mitigation: Permanent, rocky streams within the BAA could provide habitat for the red-bellied newt. The nearest occurrence mapped in CNDDB is over 7 miles from the project, in the Mattole watershed. The Red-bellied newt may be impacted by any work in wetland or riparian environments, removal of vegetation cover within SMAs, or development that may inhibit dispersal through upland environments. Amphibian surveys are recommended prior to any road work on stream crossings or worth within the SMAs(**BIO-6).**

FISH

Potential impacts are evaluated for potentially occurring threatened, endangered, rare, and sensitive fish species that have been documented in the surrounding 9-quad area. Numerous protected salmonid species, which are sensitive to sedimentation and pollution from erosion and runoff, may be found within the watershed. Preventing erosion and runoff by implementing proper winterization is necessary to avoid impacts to sensitive fish species downstream.

1. **Pacific lamprey (*Entosphenus tridentatus*)**
   Special Status: CDFW Species of Special Concern; NatureServe Ranks: G4, S4
   Family: Petromyzontidae

Habitat/Life-history Requirements: Pacific lampreys require cool, permanent streams with a variety of substrates and structural complexity (CalFish). Lampreys are anadromous and must have unimpeded access to the ocean (CalFish).
Potential Impact/Mitigation: The South Fork Eel River and its tributaries may provide habitat for the Pacific Lamprey. The nearest occurrence, which has not been processed or mapped in CNDDB, was located within the Garberville Quad. No activity within an SMA is proposed and thus the proposed project is not expected to impact the Pacific lamprey.

2. **Coho salmon – southern Oregon / northern California ESU (*Oncorhynchus kisutch pop. 2*)**
Special Status: Federally Threatened, State Threatened; NatureServe Ranks: G4T2Q, S2?
Family: Salmonidae
Habitat/Life-history Requirements: Coho salmon are a federally and state listed anadromous fish that occupy low gradient rivers and coastal streams (CDFW). The anadromous salmonids return to these watersheds in the fall and early winter to spawn in gravel substrate, after the first major rains (Moyle et al. 2008). Coho require cool, clear perennial streams and rivers with structural complexity for cover and low suspended sediment (Moyle et al. 2008). Juveniles are most abundant in well-shaded, deep pools with many structural elements that provide cover (Moyle et al. 2008). Sedimentation is a major threat to salmonids in their early life stages.
Potential Impact/Mitigation: The South Fork Eel River and its tributaries may provide habitat. No activity within an SMA is proposed and thus the proposed project is not expected to impact the Coho salmon.

3. **Steelhead – northern California DPS (*Oncorhynchus mykiss irideus pop. 16*)**
Special Status: Federally Threatened; NatureServe Ranks: G5T2T3Q, S2S3
Family: Salmonidae
Habitat/Life-history Requirements: Steelhead are anadromous rainbow trout that migrate to the ocean as juveniles and return to freshwater habitats to spawn. The Northern California Distinct Population Segment (DPS) ranges from Redwood Creek to just south of the Gualala River, and includes the Eel River watershed (Moyle et al. 2008). Salmonids, including steelhead, require cool, clear perennial streams and rivers with structural complexity for cover and low suspended sediment. Steelhead may swim upstream during the winter to spawn in stream segments that are not accessible to other salmonids during low flows (Moyle et al. 2008). Sedimentation is a major threat to salmonids in their early life stages.
Potential Impact/Mitigation: The South Fork Eel River and its tributaries may provide habitat for the steelhead. No activity within an SMA is proposed and thus the proposed project is not expected to impact the steelhead.

4. **Summer-run steelhead trout (*Oncorhynchus mykiss irideus pop. 36*)**
Special Status: State Candidate Endangered, CDFW Species of Special Concern; NatureServe Ranks: G5T4Q, S2
Family: Salmonidae
Habitat/Life-history Requirements: Summer-run steelhead trout remain in freshwater habitats until they reach maturity (Moyle et al. 2008). These steelhead have similar requirements during their juvenile stages, with an additional need for freshwater habitats to

remain suitable throughout the summer (Moyle et al. 2008). Summer-run steelhead are sensitive to human disturbance and typically are only found in the most remote areas of the watersheds (Moyle et al. 2008). Sedimentation is a major threat to salmonids in their early life stages.
Potential Impact/Mitigation: The South Fork Eel River and its tributaries may provide habitat. No activity within an SMA is proposed and thus the proposed project is not expected to impact the summer run steelhead.

5. **Chinook salmon – California coastal ESU (*Oncorhynchus tshawytscha pop. 17*)**
Special Status: Federally Threatened; NatureServe Ranks: G5, S1
Family: Salmonidae
Habitat/Life-history Requirements: The Federally Threatened Chinook salmon is the largest Pacific salmonid (Moyle et al. 2008). The California Coast Evolutionary Significant Unit (ESU) is composed of Chinook spawning in watersheds ranging from Redwood Creek south to the Russian River (Moyle et al. 2008). The anadromous salmonids return to these watersheds in the fall to spawn, after the first major rains (Moyle et al. 2008). Chinook, like other salmonids, require cool, clear perennial streams and rivers with structural complexity for cover and low suspended sediment (Moyle et al. 2008). Juvenile chinook may inhabit estuaries for an extended period (Moyle et al. 2008). Chinook are particularly sensitive to temperature and water quality, and require larger cobble and coarse gravel substrate for spawning compared to other salmonids (Moyle et al. 2008). Sedimentation is a major threat to salmonids in their early life stages.
Potential Impact/Mitigation: The South Fork Eel River and its tributaries may provide habitat. No activity within an SMA is proposed and thus the proposed project is not expected to impact the Chinook salmon.

INVERTEBRATES

Potential impacts are evaluated for potentially occurring threatened, endangered, rare, and sensitive insect pollinator species that have been documented in the surrounding 9-quad area. Pollinators are addressed in particular because they may be affected by development and agricultural activities. The western bumble bee is also a candidate for listing under CESA.

1. **Obscure bumble bee (*Bombus caliginosus*)**
Special Status: CDFW Special Animals List; NatureServe Ranks: G4?, S1S2
Family: Apidae
Habitat/Life-history Requirements: The obscure bumble bee occupies open grassy coastal prairies and Coast Range meadows (IUCN). This long-tongued species may pollinate flowers with elongated corollas, such as *Keckiella* spp. (IUCN). The obscure bumblebee does not fare well in agricultural or urban/suburban environments, where it is often outcompeted by more common bumblebees (NatureServe). The obscure bumblebee has declined in the San Francisco Bay area, and may be threatened by habitat loss from development (NatureServe).
Potential Impact/Mitigation: The Obscure bumble bee is mapped in CNDDB approximately 2.5 miles away from the proposed project area. The property has the potential to support many native pollinators. Adhering to restrictions and regulations of pesticide use in cannabis cultivation areas, including preventing drift to native vegetation, is expected to minimize the potential impact of cultivation in the area (**BIO-2**).

2. **Western bumble bee (*Bombus occidentalis*)**
   Special Status: State Candidate Endangered, NatureServe Ranks: G2G3, S1
   Family: Apidae
   Habitat/Life-history Requirements: The western bumble bee is a generalist short-tongued forager that may be found in open habitats such as grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows (IUCN). Like many bumble bees, the western bumble bee nests underground in abandoned rodent holes (IUCN). The western bumble bee is threatened by disease, habitat loss and degradation, and insecticides.
   Potential Impact/Mitigation: An occurrence of the Western bumble bee is mapped in CNDDB approximately ~0.25 miles from the project area. The property has the potential to support many native pollinators. Adhering to restrictions and regulations of pesticide use in cannabis cultivation areas, including preventing drift to native vegetation, is expected to minimize the potential impact of cultivation on pollinators (**BIO-2**).

4.4 Wildlife Movement and Connectivity

Riparian areas may serve as corridors for wildlife movement, and upland forested areas have increased value to wildlife. It is important to maintain native vegetation communities around riparian areas that may provide cover, forage, and other value to wildlife. It is important that wildlife movement to water and through riparian areas is not impeded by fencing or materials that could cause wildlife to become entangled. Additionally, no plastic bird/deer netting shall be used in cultivation because netting may become an entanglement hazard if it becomes litter in the natural environment, as stated in LSAAs.

5. Conclusions

5.1 Summary of Potential Impacts and Mitigations

Mitigation measures have been recommended to reduce potential impacts to sensitive species and wildlife movement to less-than-significant levels. The proposed project is not expected to impact any sensitive or rare species or their habitat. If mix light cultivation or generator use is proposed, light and noise pollution mitigation measures will be recommended (**BIO-1**). If pesticides are used for cannabis cultivation, mitigations for potential impacts of pesticides on pollinators or other sensitive species are recommended (**BIO-2**). Botanical surveys are recommended and if special status species are detected, appropriate protective buffers or other mitigation measures will be established in consultation with CDFW (**BIO-3**). Any ponds used for cannabis must be monitored for the invasive American Bullfrog. Ponds that are not completely drawn down by the end of the dry season must be surveyed for invasive American Bullfrogs annually (**BIO-4**). Plastic netting poses a risk to wildlife by potential entanglement in the fencing. All unused netting and fencing must be property stored in sheds or other containers where they do not pose a threat to wildlife. Use of plastic bird/deer netting at cultivation sites must be discontinued (**BIO-5**). Watercourses and wetland areas on the property could provide habitat for sensitive amphibian species. Amphibian surveys are recommended prior to any culvert work within a drainage (**BIO-6**). All additional mitigation measures recommended to reduce impacts to less-than-significant levels are listed in the table below (Table 5.2).

5.2 Recommended Surveys and Mitigation Measures for Potentially Significant Impacts

Name	Impact	Mitigation Description
BIO-1	Disturbance to wildlife from noise pollution or light pollution	It is recommended that the applicant follow guidelines for reducing light and noise pollution, which may impact sensitive species including bats, NSO, and other birds. Generator use will follow Humboldt County Performance Standards for Generator Noise. Additionally, the following measures are recommended: - The generator should be contained in an insulated structure to muffle noise, and it should be kept away from SMAs. - The measured generator noise at the forest edge should not exceed ambient levels (<50dB or equivalent to levels at the property edge without the generator). - Temporary noise disturbances (such as running power tools) should occur during daylight hours to minimize disturbance to foraging bats or NSO. - Noise levels from the project should not exceed 75dB at the forest edge during the bird breeding season (Feb. 1-Aug 31)
BIO-2	Potential impacts of pesticides on pollinators	Pesticides that may be used for cannabis cultivation are limited to low-risk exempt substances and those that are broadly labeled by the Department of Pesticide Regulation. The potential impact of insecticide use on pollinators shall be reduced by not spraying in the presence of pollinators and not allowing drift to flowering plants in the surrounding area.
BIO-3	Floristic Survey	Complete floristic surveys based on the Protocol for Surveying and Evaluating Impacts to Special Status native Plant Populations and Natural Communities (CDFW 2018).
BIO-4	American Bullfrog Survey	Ponds that are not completely drawn down by the end of the dry season must be surveyed for invasive American Bullfrogs annually.
BIO-5	Potential wildlife entanglement in netting and fencing	All unused netting and fencing must be properly stored in sheds or other containers where they do not pose a threat to wildlife. Any use of plastic bird/deer netting at cultivation sites must be discontinued.
BIO-6	Amphibian surveys	An individual qualified to identify amphibian species as well as Foothill yellow-legged frogs at all life stages shall walk at least 100 feet upstream and downstream of any crossing while visually scanning for FYLF and other amphibian species. Any amphibians encountered shall be identified to species level and documented.

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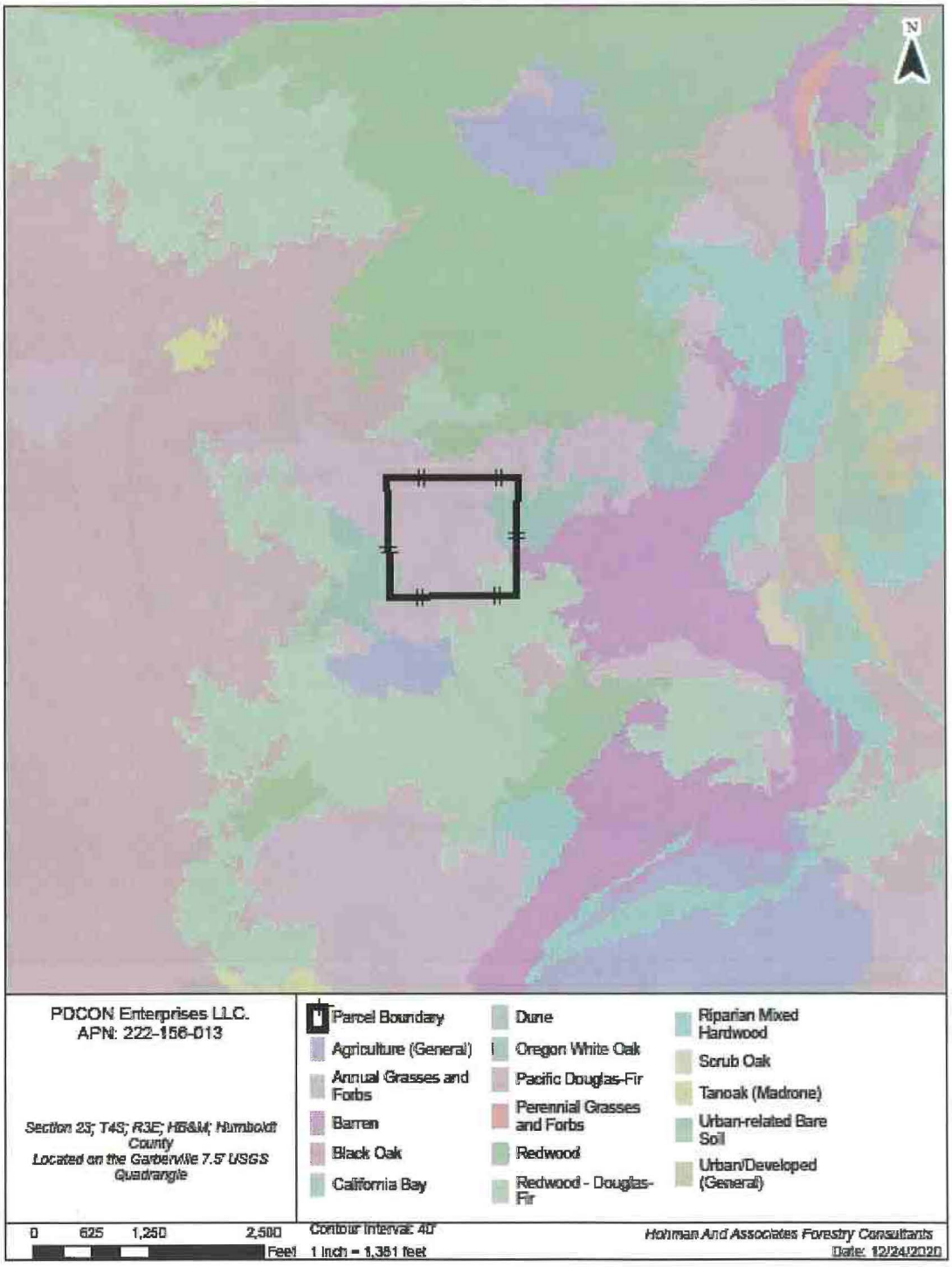
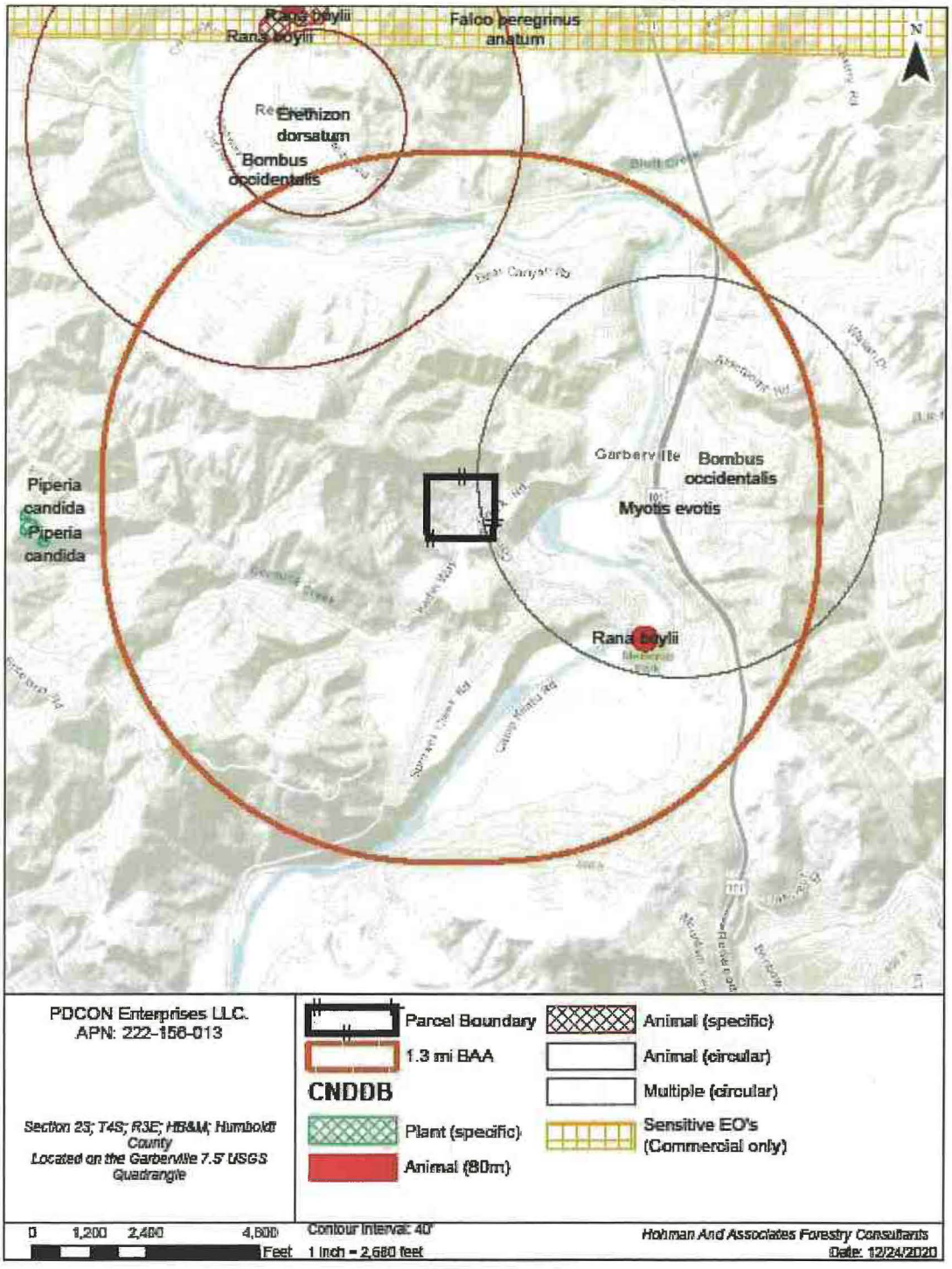
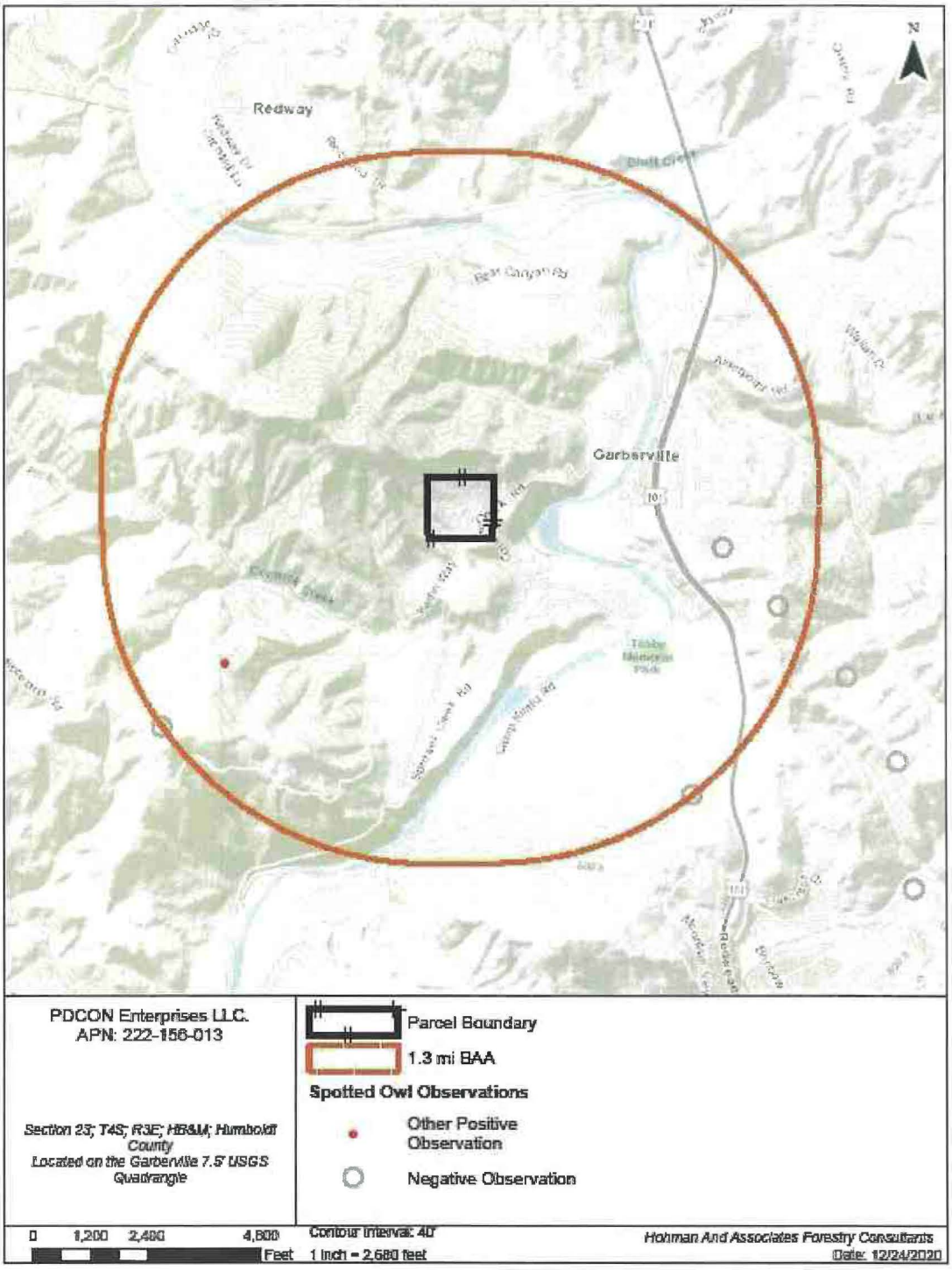
Attachment A. CALVEG Vegetation Alliance Map of Surrounding Area



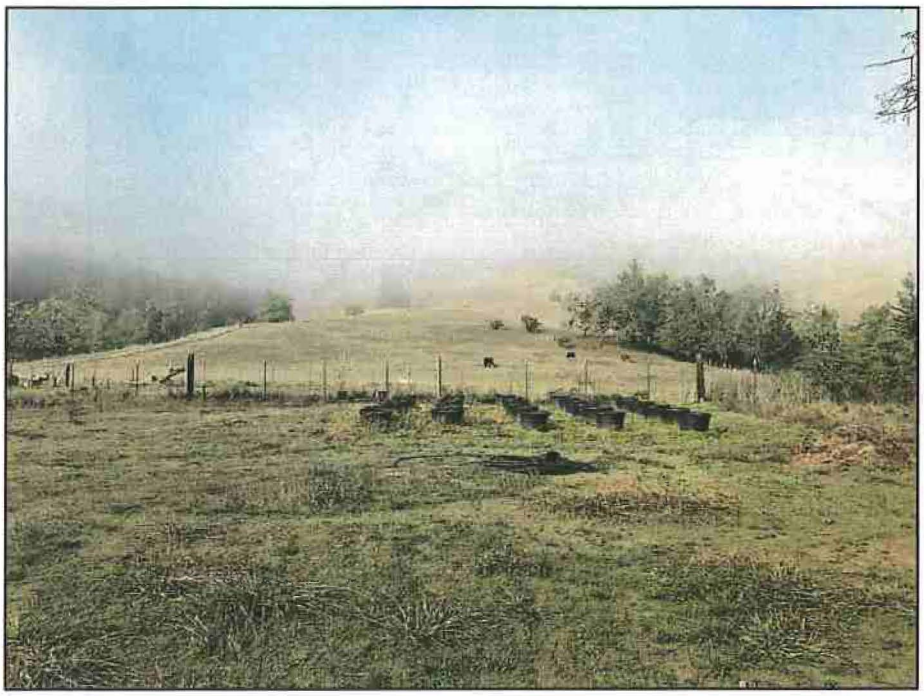
Attachment B. CNDDB Special Status Taxa Search Map

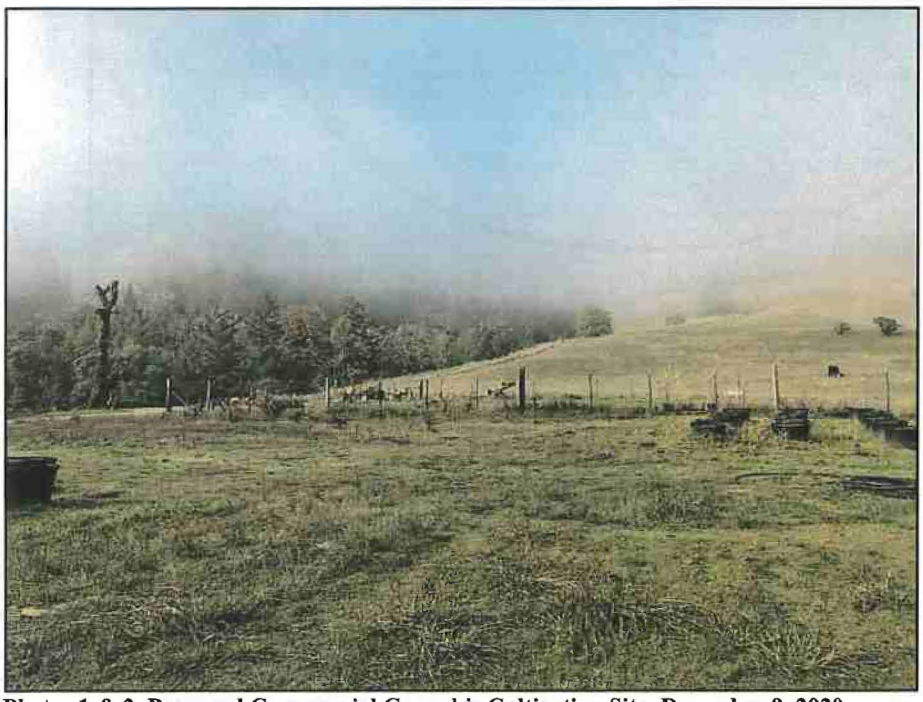


Attachment C. NSO Database Check Map



Attachment D. Habitat Photos





Photos 1 & 2. Proposed Commercial Cannabis Cultivation Site. December 9, 2020.

Photo 3. Upland habitat located on the parcel. December 9, 2020.

Photo 4. Drainage that flows along the southern portion of the parcel. December 9, 2020.

Attachment E. Rank Definitions

Listed below are definitions for interpreting NatureServe global (range-wide) conservation status ranks. These ranks are assigned by NatureServe scientists or by a designated lead office in the NatureServe network.

G1 **Critically Imperiled** – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 **Imperiled** – At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.

G3 **Vulnerable** – At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.

G4 **Apparently Secure** – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 **Secure** – Common; widespread and abundant.

G#G# **Range Rank** – A numeric range (e.g. G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).

Infraspecific Taxon Conservation Status Ranks

T# **Infraspecific Taxon** (trimonial) – The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species. For example, a G1T2 subrank should not occur. A vertebrate animal population, (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T-rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

Subnational (S) Conservation Status Ranks

S1 **Critically Imperiled** – Critically imperiled in the jurisdiction because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the jurisdiction.

S2 **Imperiled** – Imperiled in the jurisdiction because of rarity due to very restricted range, very few populations, steep declines, or other factors making it very vulnerable to extirpation from jurisdiction.

S3 **Vulnerable** – Vulnerable in the jurisdiction due to a restricted range, relatively few populations, recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 **Apparently Secure** – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 **Secure** – Common, widespread, and abundant in the jurisdiction.

S#S# **Range Rank** – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem. Ranges cannot skip more than two ranks (e.g., SU is used rather than S1S4).

Rank Qualifiers

? **Inexact Numeric Rank** – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status

Q **Questionable taxonomy that may reduce conservation priority** – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The "Q" modifier is only used at a global level and not at a national or subnational level.

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Invasive Species Report
PDCON Enterprises LLC
APN: 222-156-013
Cannabis Cultivation Project

Prepared by
Caitlyn Allchin
1/11/2021

For
Hohman and Associates
Hydesville, CA

Signature: Caitlyn Allchin **Date:** 1/11/2021

Attachment F. Aerial Imagery Map

PDCON Enterprises LLC.
APN: 222-156-013

Parcel Boundary

Section 23; T4S; R3E; HB&M; Humboldt County
Located on the Garberville 7.5' USGS Quadrangle

0 350 700 1,400 Feet

Contour Interval: 40'
1 inch = 751 feet

Holman And Associates Forestry Consultants
Date: 12/24/2020

Setting

The PDCON Enterprises LLC APN: 222-156-013 Cannabis Cultivation Project is located in Section 23, Township 4 South, Range 3 East HB&M, Humboldt County, on the Garberville USGS 7.5' quadrangle. The biogeographic region can be described using a three-tiered hierarchy of province, region, and sub-region. This site lies within the California Floristic Province, Northwestern California region, and North Coast sub-region. The parcel lies 0.82 miles to the west of the community of Garberville and 0.44 miles to the north of the Garberville Airport. The elevation ranges from 540 to 880 feet. Slopes on the property are gentle to moderate and the aspect is primarily southeast-facing. The property is composed of open grassland and mixed coniferous forest dominated by Douglas Fir (*Pseudotsuga menziesii*) (G5 S4) with California bay laurel (*Umbellularia californica*), Pacific madrone (*Arbutus menziesii*), tan oak (*Notholithocarpus densiflorus*), Oregon white oak (*Quercus garryana*), and black oak (*Quercus kelloggii*). Riparian areas are composed of red alder (*Alnus rubra*), and big-leaf maple (*Acer macrophyllum*). The property is approximately 43 acres.

Methods

The Humboldt County Commercial Land Use Ordinance requires that any invasive species on an applicant's parcel are identified, and a plan is implemented to control their spread. The invasive species survey and control plan for this project was conducted by Caitlyn Allchin. Caitlyn holds a B.S. in Biological Sciences with a concentration in Botany from Humboldt State University, where she is currently a graduate student. Caitlyn has taken relevant courses including plant taxonomy, principles of ecology, and general botany, and conducted her senior directed study on the pollination biology of *Petasites frigidus* var. *palmatus*. She has 2 years of botany experience in Northern California.

Invasive species were identified on the property by walking around the proposed conversion area and other areas of disturbance on 12/8/2020. Early detection and response are also recommended for invasive species with potential habitat in the area that are rated as *High* or *High-Alert* by the California Invasive Species Council (Cal-IPC) and listed as Regional Management Opportunities for Humboldt County. Please see Table 1 & 2 for a list of invasive species occurring on the property and potentially occurring early detection species. Invasive species are characterized in the tables as *Potential, Present, Limited Invasion Onsite*, or *Severe Invasion Onsite*. Invasive species on the parcel that have the potential to negatively impact habitat quality or that may be facilitated by cultivation-related activities are prioritized for control. Control methods, monitoring, and performance standards to meet by the end of the monitoring period have been recommended for priority species onsite. Please refer to the *Schedule for Implementation, Inspection, and Maintenance* in Table 3 when implementing control measures and monitoring. Weed Alert information from Cal-IPC has also been attached to help with identification of early detection species.

Results

Site Conditions

The parcel consists of open rolling grasslands, a single on-stream pond centrally located, and a small cultivation site and pole barn on the southeastern portion of the property. The pole-barn and pond have only been established for a few years and both appear in available imagery to at least 2019.

The footprint of human disturbance for cultivation and other uses contains many weedy and invasive species. The area to be cultivated was invaded with non-native and invasive grasses and herbaceous species including pennyroyal (*Mentha pulegium*), sweet vernal grass (*Anthoxanthum odoratum*), sheep sorrel (*Rumex acetosella*), curly dock (*Rumex crispus*), coastal heron's bill (*Erodium cicutarium*), slim oat (*Avena barbata*), common velvet grass (*Holcus lanatus*), rattlesnake grass (*Briza maxima*), hairy cat's-ear (*Hypochaeris radicata*), and ribwort (*Plantago lanceolata*). The grasslands were dominated by harding grass (*Phalaris aquatica*), intermixed with dogtail grass (*Cynosurus echinatus*) and klamathweed (*Hypericum perforatum*). There was a small area of bull thistle (*Cirsium vulgare*) beginning to establish on the perimeter of the on-stream pond, and a small but severe bull thistle invasion to the east of the proposed cultivation site. Himalayan blackberry (*Rubus armeniacus*) was dominating the riparian corridors, as well as surrounding the water tanks and in sporadic areas within the grasslands and near the proposed cultivation site.

Recommendations

1. Remove Himalayan Blackberry

Himalayan blackberry (*Rubus armeniacus,* Cal-IPC *High* rating) is present in high on the property. This invasive shrub is severely impacting the riparian corridors on the property and was surrounding the water tanks on the northwestern side of the property; it was also found within the grasslands and near the proposed cultivation site (Photos 1, 2, 3A, 3B, & 4). This invasive shrub may be identified by its thick angular canes and thick-based prickles. Himalayan blackberry brambles are beginning to establish along the eastern perimeter of the proposed cultivation area and should be dug out immediately to prevent their spread during conversion operations. The well-established invasive blackberry surrounding the water tanks should also be removed before it can spread further into the natural environment. Repeated, regular mowing of the aboveground biomass will suppress growth and may eventually kill Himalayan blackberry over a period of many years of retreatment (DiTomaso et al. 2013). Repeated removal of any aboveground biomass is one option for controlling the invasive plant. However, it is more effective to remove the canes by digging out the roots (DiTomaso et al. 2013). Because the hardy invasive shrub is widespread and appears to have established deep roots, a combination of cutting back or mechanically scraping the brambles around the water tanks and in the field, digging out root

crowns near the surface is recommended, and following up with repeated mowing is recommended. Canes may re-root if left on the ground, and it is important that cut canes are gathered and taken to the dump, fully composted in a covered pile to prevent re-sprouts, or burned appropriately with a regional air quality management district burn permit. Please see the Weed Alerts attached for more identification details and photos of this species.

Control Steps:

1. Cut back blackberry canes or use mechanical equipment to scrape the vegetation on the surface in the field where it has established, around the water tanks, and along the perimeter of the conversion area.
2. Dig up the roots as much as possible. If left in the ground, the blackberries can re-sprout from the roots.
3. Place the removed canes and roots in a covered compost pile, take them to the dump, or burn them in a permitted burn pile. Canes will easily root if left in moist soil.
4. Mow or cut back any blackberry re-sprouts until they exhaust their reserves and die back.
5. Bare dirt should be seeded with native grass such Pacific Coast Seed Native Erosion Control Mix.

Objective 1: Himalayan blackberry will be controlled in the proposed conversion site, around the water tanks, around the field, along the road, and wherever else found to prevent continued spread to natural areas.

Performance Measures: Himalayan blackberry will cover less than 10% of the area around the conversion area, around the water tanks, and in the field at the end of the five-year monitoring period.

Photo 1. Himalayan blackberry, Bull thistle, and pennyroyal were growing with many other invasive weedy species to the east of the proposed cultivation site.

Photo 2. Himalayan blackberry was beginning to establish within the grasslands of the property along the dirt road leading to the water tanks.

Photo 3A & 3B. Himalayan blackberry was well established around the water tanks in the northwestern side of the property. The highly invasive shrub is moderately spreading into the field nearby.

Photo 4. Himalayan blackberry was severely invading the riparian corridors on the property.

2. Remove Bull Thistle from The Pond and Conversion Site

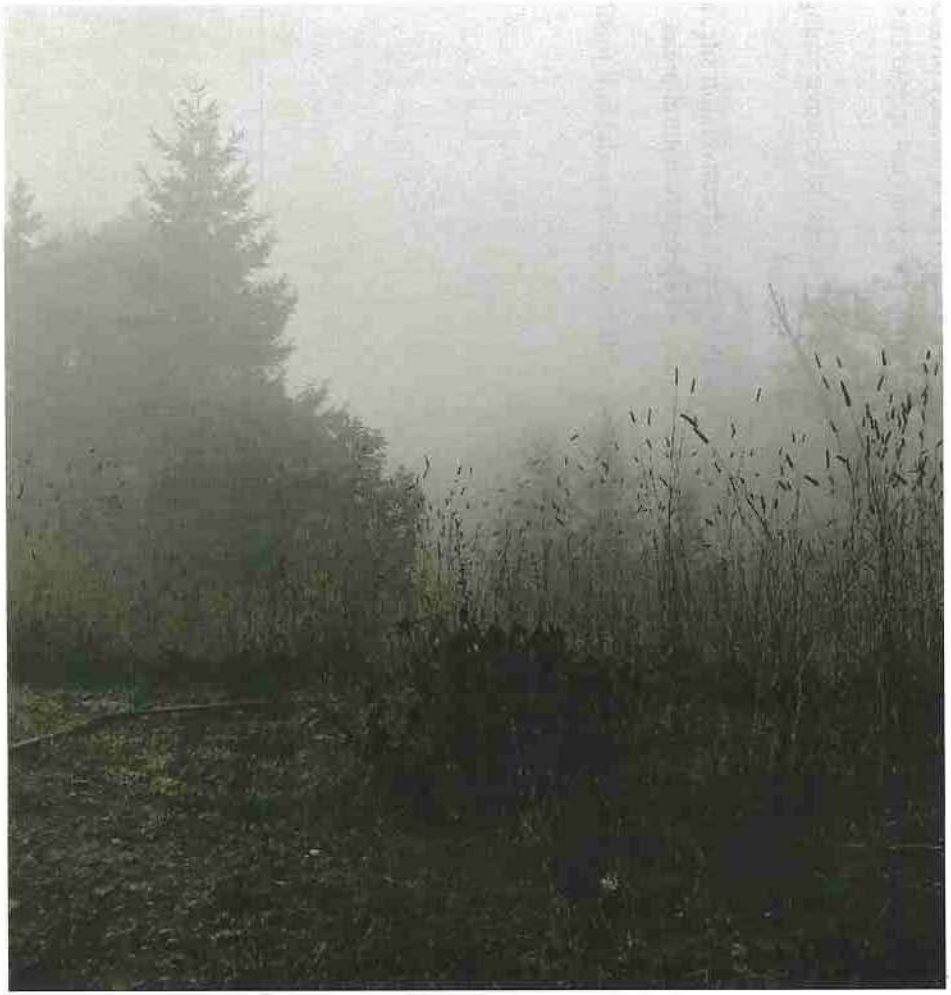
Bull thistle (*Cirsium vulgare,* Cal-IPC *Moderate* rating) is established in small amounts along the perimeter of the on-stream pond (Photo 5A & 5B), and severely invading the area to the east of the cultivation site (Photo 6). This widespread non-native biennial may be identified by its prickle covered stems and leaves, pink-magenta flower heads, and deeply lobed leaves. Bull thistle thrives in disturbed areas, roadsides, meadows, and riparian areas. It may out-compete native plants, alter the soil, and reduce forage potential of rangelands (DiTomaso et al. 2013). It is recommended that the invasive thistle be manually removed before they go to seed to prevent them from spreading and establishing a large population. Any non-native soil used for future cultivation that will not be planted immediately should be covered to prevent weeds from proliferating, and to prevent nutrients from leaching into the environment. Keeping any potting soil, compost, or other nutrient rich substrates covered and surrounded by a barrier to erosion can prevent the growth and spread of invasive plants and other troublesome weeds. This invasive plant is best removed by the roots because any rootstalks left behind will easily re-sprout (DiTomaso et al. 2013). Thistle may be removed by digging them out. Weed wrenches may be used to remove this invasive plant before it becomes well-established on the property.

Control Steps:

1. Pull or dig out invasive thistles near the pond and by the cultivation site, and wherever found on the property.
2. Thistle should be removed before it has a chance to go to seed. If it is already producing seed, remove and bag the thistle and take them to the dump so that they do not spread onsite. Plants without seeds may be left onsite in contained compost piles.
3. New bull thistle plants will need to be removed each year. It is best to remove young plants in the spring, before any plants have the opportunity to go to seed.

Objective 2: The bull thistle invasion surrounding the pond, near the proposed conversion site, and wherever found on the property, will be controlled to prevent continued spread to natural areas.

Performance Measures: No reproductively mature (i.e., plants with flowers or seeds) bull thistle will remain at the end of the five-year monitoring period.



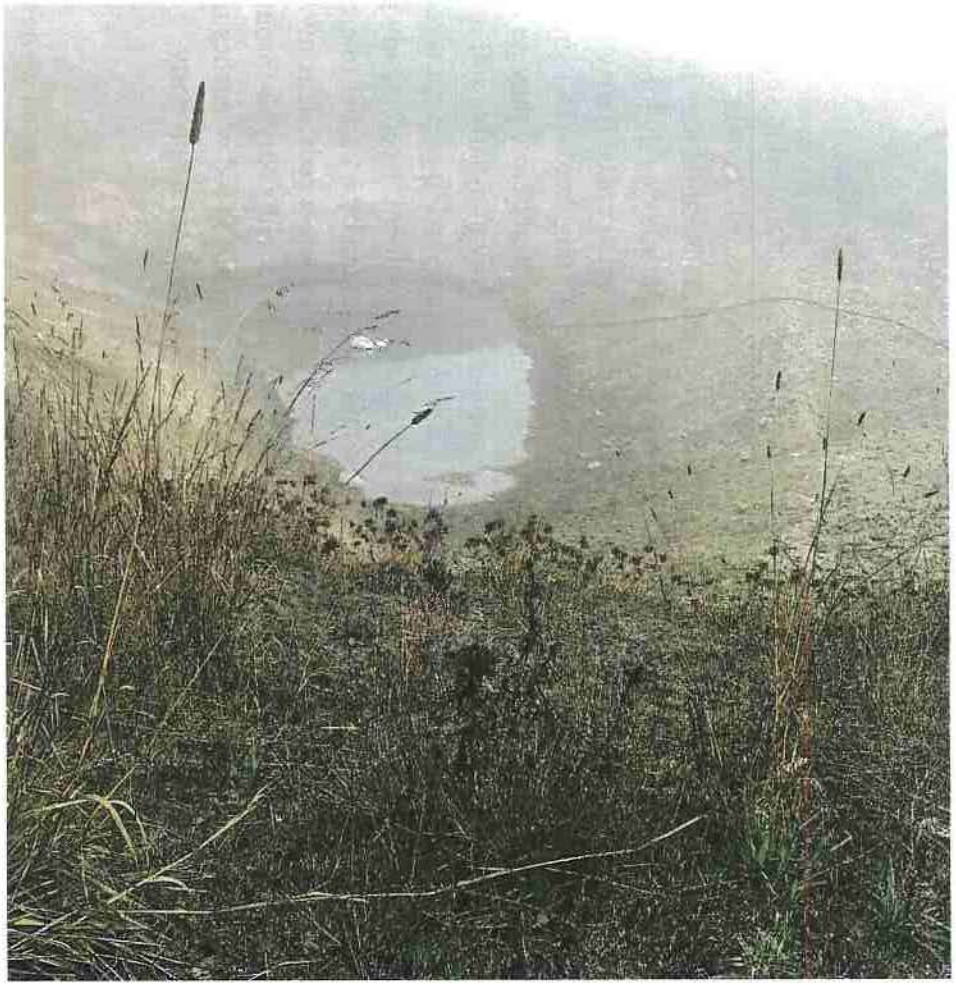


Photo 5A & 5B. Small patches of bull thistle were beginning to establish around the on-stream pond.

Photo 6. Bull thistle, klamathweed, and pennyroyal were growing with many other invasive weedy species to the east of the proposed cultivation area.

3. Remove Klamathweed

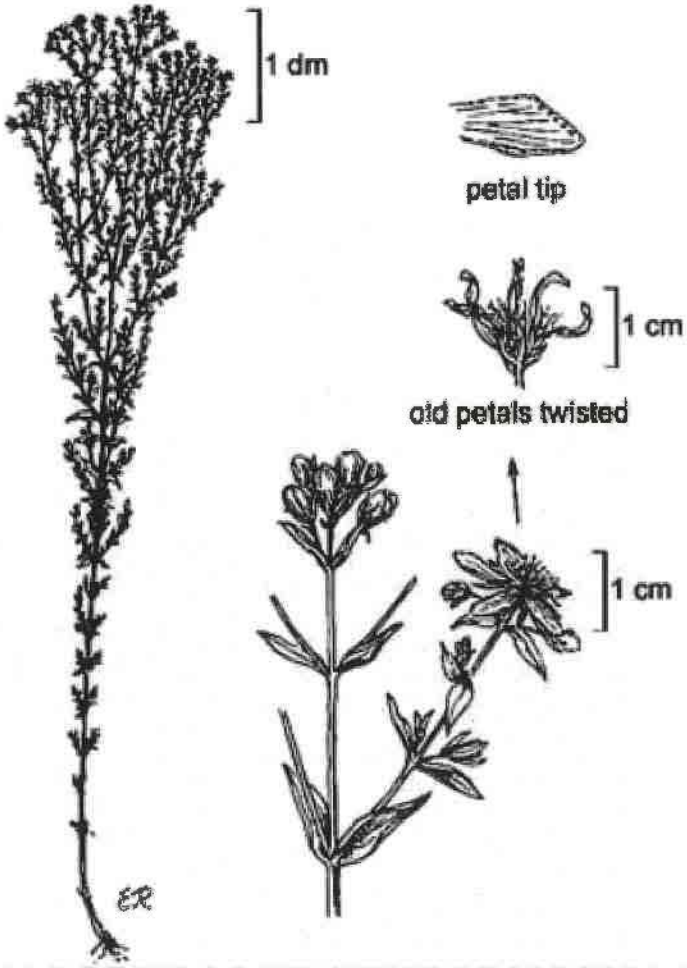
Klamathweed (*Hypericum perforatum*, CAL-IPC *Moderate* rating), also known as St. John's wort, is toxic to livestock and wildlife ((DiTomaso et al. 2013). This herbaceous plant is characterized by its bright yellow 5-petaled flowers with black dots on the margins, and opposite, light green linear leaves that appear to be perforated when held to the light. This non-native weed was observed growing in small clusters throughout the property among many other non-native invasive annuals and perennials (Photo 7A & 7B). This plant should be hand-pulled or dug up to remove its taproot, and periodically mowed in the spring to prevent its spread to natural areas. Please see the Weed Alerts attached for more identification details and photos of this species.

Control Steps:

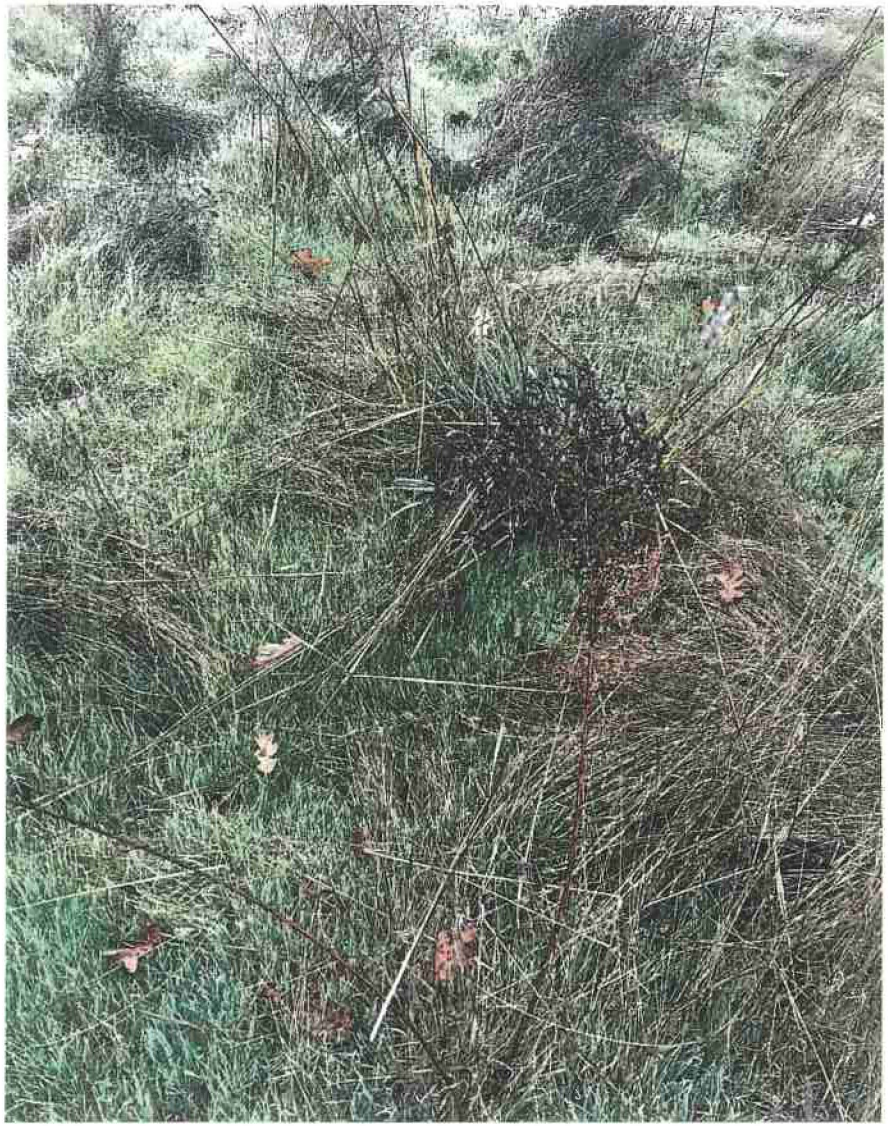
1. Pull or dig up any klamathweed nearing the flowering stage before they go to seed and spread.
2. Mow areas around the proposed conversion site in the spring and fall to reduce non-native species and prevent them from further spreading into natural areas.

Objective 3: Klamathweed will be controlled on the property to minimize its spread and impact on the natural environment.

Performance Measures: Mechanical control by pulling or mowing is implemented and documented each year.



H. perforatum, Regents of the University of California



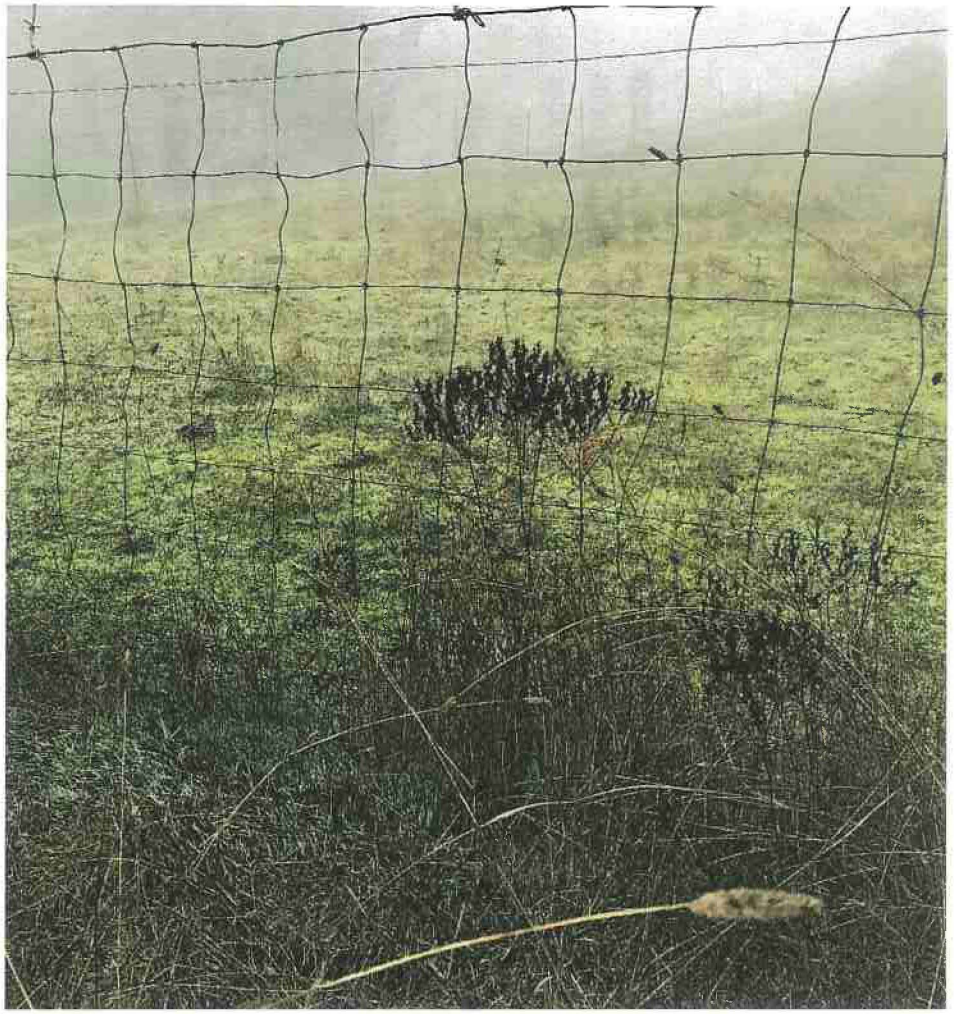


Photo 7A & 7B. Klamathweed, pennyroyal, sheep sorrel, harding grass, and many other weedy invasive species were growing in the proposed cultivation site and within the grassland area.

4. Remove Pennyroyal from Proposed Conversion Site

Pennyroyal (*Mentha pulegium*, CAL-IPC *Moderate* rating) was found growing in large mats around the proposed cultivation site (Photo 8). This widespread, aromatic herbaceous plant grows in disturbed areas, roadsides, pastures, and wetland habitats where it displaces native plants. Livestock tend to avoid consuming it, allowing it to further its population numbers and reduce the grazing capacity of these areas (DiTomaso et al. 2013). The oils can be toxic to humans if consumed and can cause dermatitis in sensitive individuals (DiTomaso et al. 2013). Pennyroyal can be easily identified by its aromatic leaves, square stems, and purple flowers that grow on the stem in head-like whorls. This herb grows by rhizome, stolon's, and long-lived soil seed banks. Manual removal can be effective, but the stems must be removed 3" below the ground to stunt the growth of the rhizome. Mowing is effective in late spring and early summer, with the exception of young plants that are still in the rosette stage. Tillage and cultivation with an offset rotary hoe can also be effective. One-way discs can fragment the rhizomes, increasing the population sizes. This plant should be hand-pulled or mowed in the spring to prevent its spread to natural areas. Please see the Weed Alerts attached for more identification details and photos of this species.

Control Steps:

1. Manually remove pennyroyal at least 3" below the ground in the spring before they bolt or continue propagating via rhizome and spread.
2. Late spring or early summer mowing or shallow tillage with an offset disc or rotary hoe can reduce population numbers. One-way discs can increase population numbers and is not recommended.
3. Removal in areas around the proposed conversion site should occur annually.

Objective 4: Pennyroyal will be controlled on the property to minimize its spread and impact on the natural environment.

Performance Measures: Mechanical control by pulling, tilling, or cultivation, is implemented and documented each year.

Photo 8. Pennyroyal, harding grass, and many other invasive and weedy species were established in the area surrounding the proposed cultivation site.

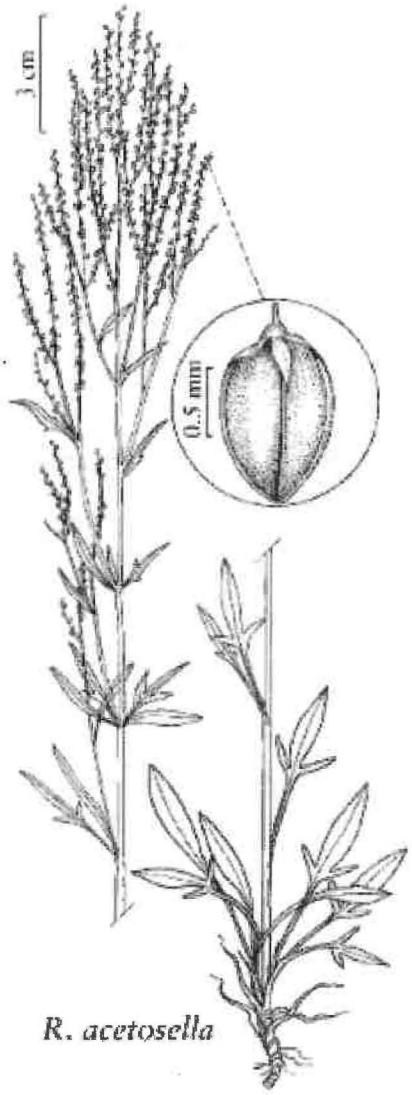
5. Remove Sheep Sorrel from Proposed Conversion Site

Sheep sorrel (*Rumex acetosella*, CAL-IPC *Moderate* rating) was found growing in large patches around the proposed cultivation site (Photo 9). This nearly cosmopolitan perennial plant grows in roadsides, fields, pastures, disturbed areas, and riparian areas. It readily displaces native plants and can be toxic to livestock when consumed in large amounts due to the high amounts of oxalic acid (DiTomaso et al. 2013). Sheep sorrel can be identified by its arrow-head shaped leaves, creeping growth pattern, and reddish flowering stems. This invasive plant spreads via rhizome and has long-lived seeds, making it difficult to eradicate (DiTomaso et al. 2013). Due to the low stature of the plants, mowing is not an effective means of removal, but cultivation during the dry season can weaken the root system and reduce population sizes. Cultivation during the wet season can promote root growth and lead to an increase in population numbers. Removal by hand is only effective if all of the stems, roots, and rhizomes are removed. Please see the attached

drawing for identification characteristics.

Control Steps:

1. Manually remove stems, roots, and rhizomes of sheep sorrel in the spring before they bolt or continue propagating via rhizome and spread.
2. Tillage with an offset disc or rotary hoe during the dry season can reduce population numbers. Do not till or cultivate during the wet season as this will promote growth.
3. Removal in areas around the proposed conversion site should occur annually.



Yevonn Wilson-Ramsey

Flora of North America Association

Objective 5: Sheep sorrel will be controlled on the property to minimize its spread and impact on the natural environment.

Performance Measures: Mechanical control by pulling or cultivation is implemented and documented each year.

Photo 9. Invasive sheep sorrel, harding grass, klamathweed, and many other invasive weedy species were established in the area surrounding the proposed cultivation site.

6. Remove Rough Cat's-Ear from Proposed Conversion Site

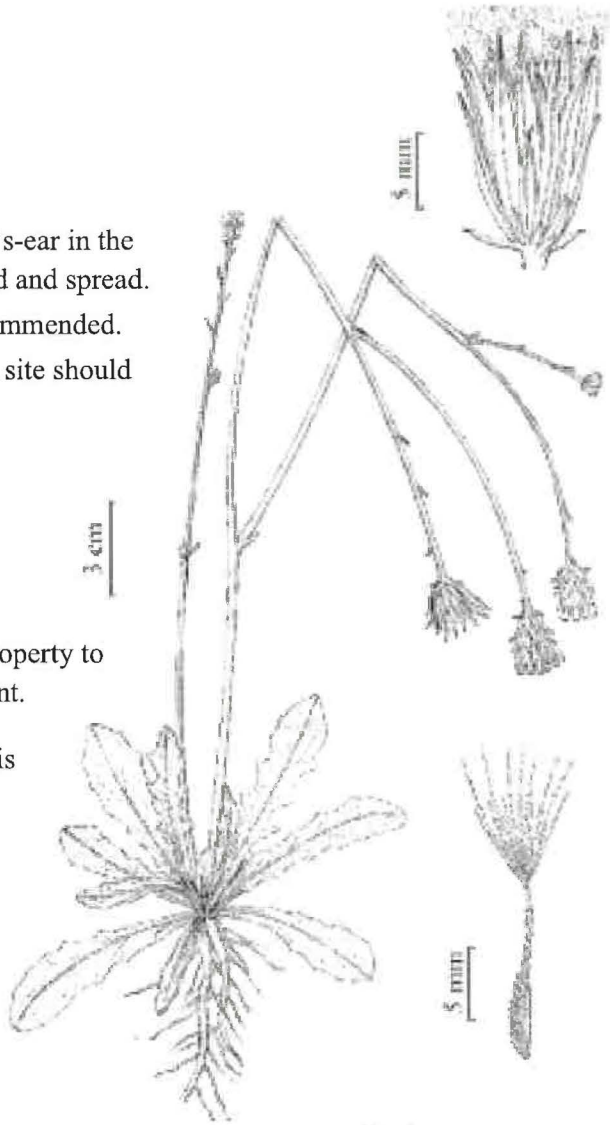
Rough cat's-ear (*Hypochaeris radicata*, CAL-IPC *Moderate* rating) was found growing around the proposed cultivation site. Rough cat's ear is a drought-tolerant, widespread invasive annual that occurs throughout California. This invasive herb moves into rangelands and outcompetes native forage species. It is found in disturbed places, roadsides, and agricultural fields. Rough cat's-ear resembles a common dandelion except that its flowering stems are branched, and its leaves are covered in rough, yellowish hairs. The rough cat's-ear has both fibrous and tap roots, a yellow, flowering head, and toothy to lobed leaves. Since rough cat's-ear has a taproot, successful removal can only be done manually with a shovel. Mowing and grazing can stimulate new growth and is not an effective means of removal. Please see the attached drawing for identification characteristics.

Control Steps:

1. Manually remove stems and taproots of rough cat's-ear in the spring or early summer before they bolt or set seed and spread.
2. Mowing can stimulate new growth and is not recommended.
3. Removal in areas around the proposed conversion site should occur annually.

Objective 6: Rough cat's-ear will be controlled on the property to minimize its spread and impact on the natural environment.

Performance Measures: Mechanical control by pulling is implemented and documented each year.



H. radicata, Bee F. Gunn,

Flora of North America Association

7. Remove Dogtail Grass from Proposed Conversion Site

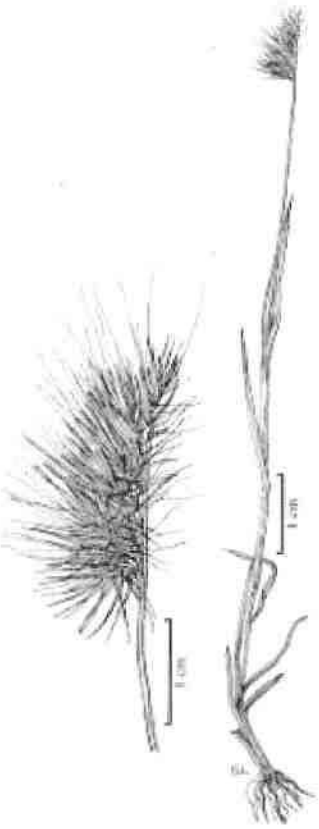
Dogtail grass (*Cynosurus echinatus*, CAL-IPC *Moderate* rating) was found growing around the proposed cultivation site. Dogtail grass is a widespread invasive grass that often invades oak woodlands and grasslands, where it may increase fuel loads and fire hazards (DiTomaso et al. 2013). This annual grows in roadsides, grasslands, oak woodlands, and disturbed areas. When dominating pasture lands, it can reduce more favorable forage species. This grass is easily recognized by its bristly hedgehog-like seed heads. Shallow cultivation in early spring and repeated in early summer can reduce population numbers. Hand pulling of small populations can be effective in early spring before seed set, and mowing can be effective if done in early summer. Please see the attached drawing for identification characteristics.

Control Steps:

1. Manually remove small populations of dogtail grass in the spring or early summer before they bolt or set seed and spread.
2. Mowing in early summer can reduce large populations.
3. Removal in areas around the proposed conversion site should occur annually.

Objective 7: Dogtail grass will be controlled on the property to minimize its spread and impact on the natural environment.

Performance Measures: Mechanical control by pulling is implemented and documented each year.



C. echinatus, Sandy Long, Utah State University

8. Remove Velvet Grass from Proposed Conversion Site

Velvet grass (*Holcus lanatus*, CAL-IPC *Moderate* rating) was found growing intermixed with many weedy and invasive species around the proposed cultivation site. Velvet grass is a widespread perennial grass that thrives in cultivated fields, roadsides, and

in disturbed areas. Velvet grass can form dense populations that reduce native plants and even young tree seedlings. Velvet grass can be easily identified by its soft, velvety stems and leaves, and its spreading flowers. Hand pulling of the stems and all roots is an effective means of removal, however portions of the basal shoot left behind can increase population numbers. Mowing and tillage can be effective, but can also spread the seeds into the soil, which remain viable for up to 10 years. Annual removal is recommended. Please see the attached drawing for identification characteristics.

H. lanatus, Hana Pazdírková, Linda Ann Vorobik, Utah State University

Control Steps:

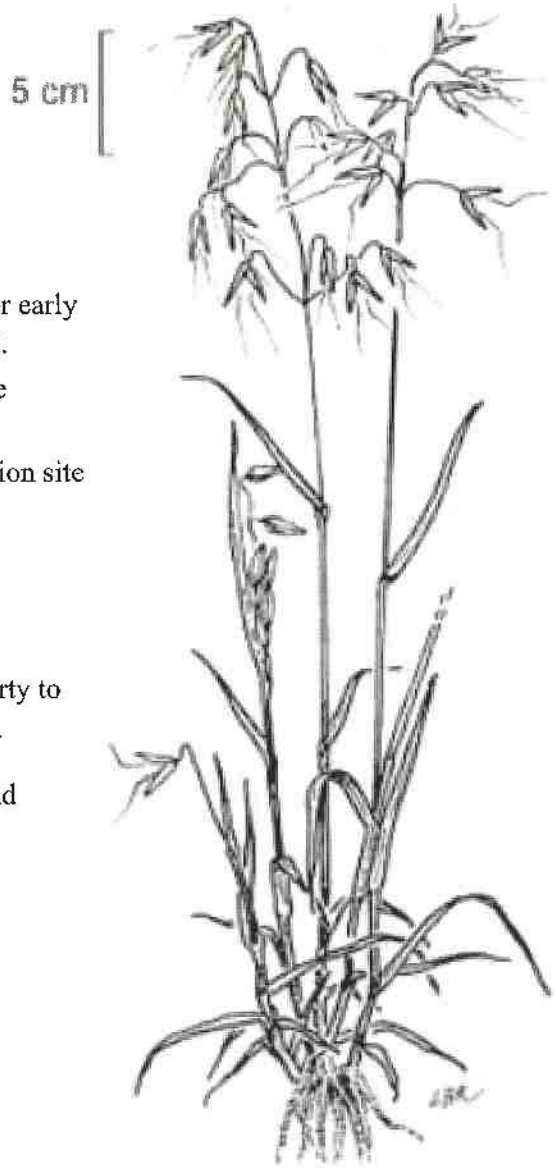
1. Manually remove velvet grass in the spring or early summer before they bolt or set seed and spread.
2. Mowing and tilling in early summer can reduce population numbers.
3. Removal in areas around the proposed conversion site should occur annually.

Objective 8: Velvet grass will be controlled on the property to minimize its spread and impact on the natural environment.

Performance Measures: Mechanical control by pulling and mowing is implemented and documented each year.

9. Remove Slim Oat Grass from Proposed Conversion Site

Slim oat grass (*Avena barbata*, CAL-IPC *Moderate* rating) was found growing intermixed with other invasive species around the proposed cultivation site. Slim oat grass is commonly found in grasslands, disturbed areas, roadsides, and crop fields. This annual grass can be detrimental to oat crops, but also makes good forage for rangelands (DiTomaso et al. 2013). Slim oat can be recognized by its open branching, pendulous flowering stem. Hand pulling and mowing in early summer before seed set are effective methods for removal. Please see the attached drawing for identification characteristics.



A. barbata, Regents of The University of California

Control Steps:

1. Manually remove slim oat grass in the spring or early summer before they bolt or set seed and spread.
2. Mowing and tilling in early summer can reduce population numbers.
3. Removal in areas around the proposed conversion site should occur annually.

Objective 9: Slim oat grass will be controlled on the property to minimize its spread and impact on the natural environment.

Performance Measures: Mechanical control by pulling and mowing is implemented and documented each year.

10. Mow Harding grass Within Proposed Conversion Site

Harding grass (*Phalaris aquatica*, CAL-IPC *Moderate* rating) was found dominating the grasslands on the property and was established in smaller patches around the cultivation site. This perennial can form dense patches via rhizomatous growth and displace native vegetation. Under drought conditions, it can produce toxic levels of alkaloids, making the soil unsuitable for native plants (DiTomaso et al. 2013). Harding grass can be identified by its dense, cylindrical spike-like panicles, and can grow up to 5 ft tall. This perennial grass should be manually pulled to remove smaller patches and mowed late in the season to prevent further spreading to natural areas.

Control Steps:

1. Hand pull smaller patches and close mow around the conversion sites late in the season to reduce the plants' vigor.
2. If appropriate, apply controlled burning with a permit in the early spring to suppress the populations.

Objective 10: Harding grass will be controlled on the property to minimize its spread and impact on the natural environment.

Performance Measures: Mowing is implemented every fall and documented each year.

Photo 10. Invasive harding grass was well established in the grassland area, with klamathweed and areas of Himalayan blackberry.

11. Bullfrog Monitoring and Removal

California Department of Fish and Wildlife (CDFW) has requested that all ponds are either drawn down annually at the end of the dry season or surveyed for invasive American bullfrogs (*Lithobates catesbeianus*). Ponds that persist throughout the year provide potential breeding habitat for the American bullfrog and may facilitate the spread of this invasive predator. One pre-existing on-stream pond can be found on the property. The on-stream pond will be drawn down annually. Bullfrog surveys will be needed in the event that the on-stream pond is maintained to full capacity. The surveyor should be able to identify bullfrogs and differentiate them from local native amphibians such as the foothill yellow legged frog and northern red legged frog. Adult bullfrogs can be distinguished by the large circular *tympanum* behind the eye (Nafis, 2000-2020). Photos and identification information can be found at <http://www.californiaherps.com/frogs/pages/l.catesbeianus.html> and <http://www.californiaherps.com/identification/frogsid/redandyellowleggedfrogs.html>. Recordings of bullfrog advertising calls can be found at <http://www.californiaherps.com/frogs/pages/l.catesbeianus.sounds.html>. If bullfrogs are identified on the property, CDFW should be contacted to initiate pond dewatering or direct bullfrog removal. Dates and times of bullfrog surveys completed as well as observations should be included in annual reports. Please see attached Exhibit A Bullfrog Monitoring and Management Plan as prepared by CDFW for additional information on identification and control methods.

Control Steps

1. Survey the pond area for invasive American bullfrogs after dusk by looking for eyeshine, movement, and listening for the distinctive low-pitched advertising call. Two nighttime surveys should be conducted during the months of May-July, and they should be at least 10 days apart.
2. Record video, if possible, to confirm identification of amphibians.
3. Contact CDFW to report the presence of any bullfrogs and initiate bullfrog management.

Objective 11: The invasive American bullfrog will be prevented from breeding on the property.

Performance Measures: Two appropriately timed surveys will be documented in annual reports, and any American bullfrog observations will be promptly reported to CDFW to initiate control methods.

Table 1. Invasive species observed on the parcel are listed below. Species targeted for management are in bold.

SPECIES	COMMON NAME	FAMILY	OPPORTUNITY	CAL-IPC RATING	Status Onsite
Anthoxanthum odoratum	Sweet vernal grass	Poaceae	containment	Limited	Limited Invasion
Avena barbata	**Slim oat**	**Poaceae**	**containment**	**Moderate**	**Limited Invasion**
Briza maxima	Rattlesnake grass	Poaceae	containment	Limited	Present
Cirsium vulgare	**Bullthistle**	**Asteraceae**	**containment**	**Moderate**	**Limited Invasion**
Cynosurus echinatus	**Dogtail grass**	**Poaceae**	**containment**	**Moderate**	**Limited Invasion**
Erodium cicutarium	Coastal heron's bill	Geraniaceae	containment	Limited	Limited Invasion
Holcus lanatus	**Common velvetgrass**	**Poaceae**	**containment**	**Moderate**	**Present**
Hypericum perforatum	**Klamathweed**	**Ericaceae**	**containment**	**Moderate**	**Limited Invasion**
Hypochaeris radicata	**Hairy cat's-ear**	**Asteraceae**	**containment**	**Moderate**	**Limited Invasion**
Mentha pulegium	**Pennyroyal**	**Lamiaceae**	**containment**	**Moderate**	**Limited Invasion**
Phalaris aquatica	**Harding grass**	**Poaceae**	**containment**	**Moderate**	**Severe Invasion**
Plantago lanceolata	Ribwort	Plantaginaceae	containment	Limited	Limited Invasion
Rubus armeniacus	**Himalayan blackberry**	**Rosaceae**	**containment**	**High**	**Severe Invasion**
Rumex acetosella	**Sheep sorrel**	**Polygonaceae**	**containment**	**Moderate**	**Limited Invasion**
Rumex crispus	Curly dock	Polygonaceae	containment	Limited	Severe Invasion

Table 2. Highly invasive species that may occur in Humboldt County that should be targeted for early detection. Please see attached Invasive Species Alert identification information from Cal-IPC.

SPECIES	COMMON NAME	FAMILY	OPPORTUNITY	CALIPC RATING	STATUS ONSITE
Aegilops triuncialis	barb goatgrass	Poaceae	surveillance	High	Potential
Ammophila arenaria	European beachgrass	Poaceae	containment	High	Potential
Arundo donax	giant reed	Poaceae	containment	High	Potential
Bromus madritensis ssp. rubens	red brome	Poaceae	containment	High	Potential
Bromus tectorum	downy brome, cheatgrass	Poaceae	containment	High	Potential
Carpobrotus edulis	Hottentot-fig, iceplant	Aizoaceae	containment	High	Potential
Centaurea solstitialis	yellow starthistle	Asteraceae	containment	High	Potential
Centaurea stoebe ssp. micranthos (= Centaurea maculosa)	spotted knapweed	Asteraceae	containment	High	Potential
Cortaderia jubata	jubatagrass	Poaceae	containment	High	Potential
Cortaderia selloana	pampasgrass	Poaceae	containment	High	Potential
Cytisus scoparius	Scotch broom	Fabaceae	containment	High	Potential
Delairea odorata	Cape-ivy	Asteraceae	containment	High	Potential
Ehrharta calycina	purple veldtgrass	Poaceae	surveillance	High	Potential
Elymus caput-medusae (= Taeniatherum caput-medusae)	medusahead	Poaceae	containment	High	Potential
Euphorbia virgata (= Euphorbia esula)	leafy spurge	Euphorbiaceae	containment	High-Alert	Potential
Genista monspessulana	French broom	Fabaceae	containment	High	Potential
Hedera helix and H. canariensis	English ivy, Algerian ivy	Araliaceae	containment	High	Potential
Lepidium latifolium	perennial pepperweed	Brassicaceae	containment	High	Potential
Limnobium spongia	South American spongeplant	Hydrocharitaceae	eradication	High-Alert	Potential

Ludwigia hexapetala and L. peploides	Uruguay and creeping water-primrose	Onagraceae	eradication	High-Alert	Potential
Lythrum salicaria	purple loosestrife	Lythraceae	containment	High	Potential
Myriophyllum aquaticum	parrotfeather	Haloragaceae	containment	High-Alert	Potential
Myriophyllum spicatum	Eurasian watermilfoil	Haloragaceae	containment	High	Potential
Onopordum acanthium	Scotch thistle	Asteraceae	eradication	High	Potential
Rubus armeniacus (= Rubus discolor)	Himalayan blackberry	Rosaceae	containment	High	Potential
Spartina alterniflora hybrids	smooth cordgrass and hybrids	Poaceae	eradication	High-Alert	Potential
Spartina densiflora	dense-flowered cordgrass	Poaceae	containment	High-Alert	Potential
Spartium junceum	Spanish broom	Fabaceae	containment	High	Potential
Tamarix parviflora	smallflower tamarisk	Tamaricaceae	eradication	High	Potential
Tamarix ramosissima	saltcedar, tamarisk	Tamaricaceae	containment	High	Potential
Ulex europaeus	gorse	Fabaceae	containment	High	Potential
Zostera japonica	dwarf eelgrass	Zosteraceae	containment	High-Alert	Potential

Table 3. Schedule for Implementation, Inspection, and Maintenance

Stage	Timing	Details
1. Invasive Species Removal	Spring-Fall 2021	Remove Himalayan blackberry, bull thistle, klamathweed, and other weedy invasives, and mow or hand pull invasive grasses.
2. Invasive Species Maintenance	Spring-Summer	It is easiest to remove invasive species coming up from the seed bank while they are young, and it is best to remove them before they set seed. Each site will need re-treatment each year.
3. American Bullfrog Monitoring	Two surveys >2 weeks apart in May-July	Walk the perimeter of the pond after dusk with a flashlight, looking for eyeshine and listening for bullfrog calls.
4. Annual Detection Patrol, Maintenance, and Photo-Documentation	Fall (September-November 15) for 5 years	Each fall, photo-document the removal areas, estimate percent cover of invasive species, and do any additional maintenance needed. Any bare areas should be seeded with native grass and straw mulched prior to November 15.
5. Winterization	By November 15	Winterization according to State Water Board guidelines must be completed prior to November 15. Proper soil/compost storage and wattles around the perimeter of cultivation areas are recommended.
6. Annual Monitoring Report Deadline	January 1st 2022-2027	Monitoring reports should be turned in by the end of each year, including a final report in year 5.

Monitoring and Reporting

Photo-document each invasive species removal area, provide a list of activities completed, and address recommended objectives 1-11 (listed above) and progress toward meeting performance measures in a report to be completed at the end of each year. Submit the report to CDFW and Humboldt County Planning Department by January 1 of 2022-2027.

Agencies to Receive Copies of Monitoring Report:

California Department of Fish and Game
619 Second St.
Eureka, CA 95501

(707) 445-6493 | FAX: (707) 445-6664
Humboldt County Planning and
Building Department
3015 H St.
Eureka, CA 95501

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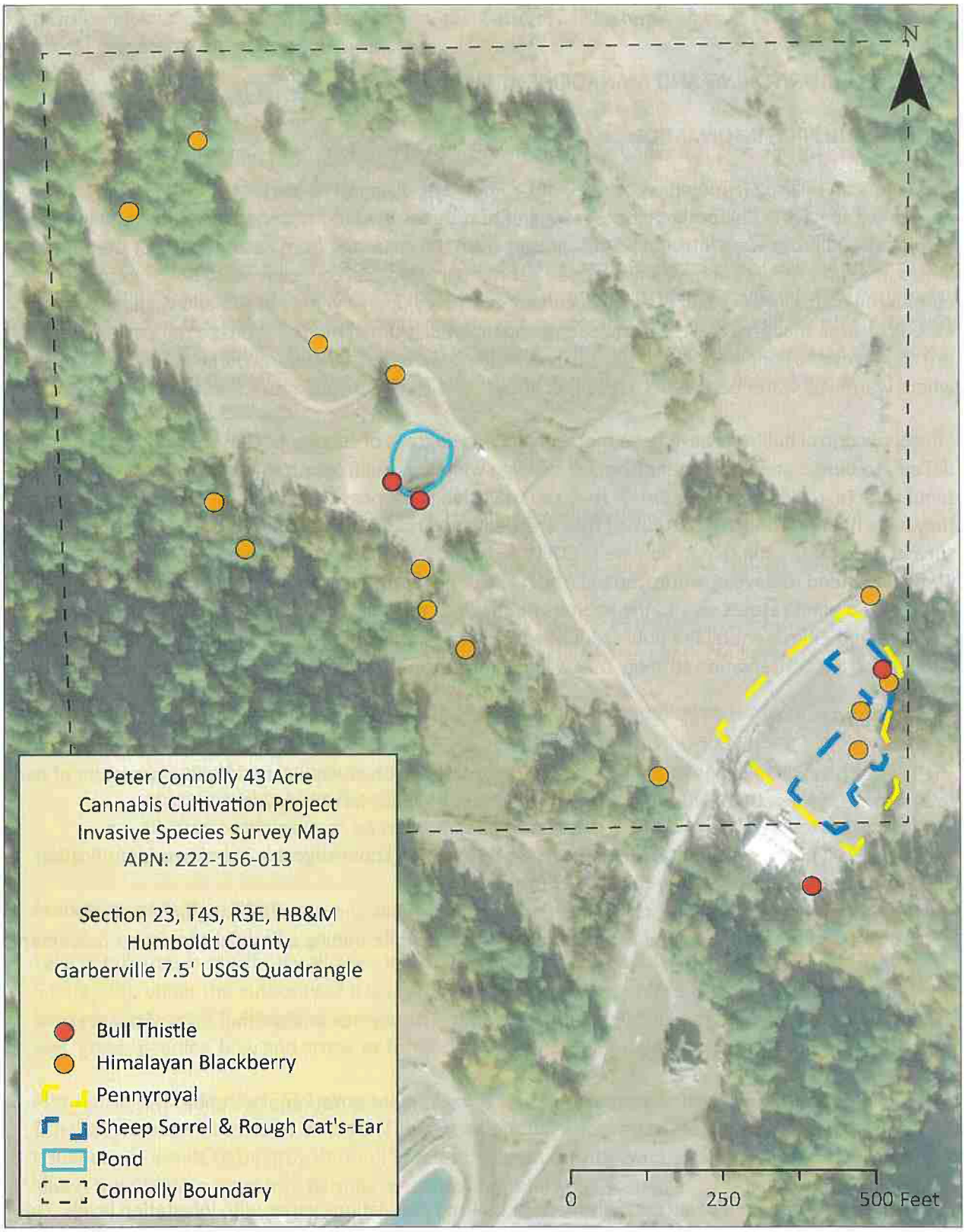


Figure 1 Invasive species mapped at the Connolly 43 Acre Cannabis Cultivation Site. Klamathweed and Invasive grasses are spread throughout and are therefore not indicated on the map.

Pond Dewatering

Pond dewatering may be appropriate if the reservoir can be successfully dewatered without adversely affecting stream resources. Careful planning and coordination with CDFW, is necessary to ensure potential impacts to stream resources can be addressed, prior to commencing with pond draining. Discharge of polluted water to waters of the state may require permitting from other agencies with permitting authority, such as the Regional Water Quality Control Board.

In general, bullfrog tadpoles require two years to develop into frogs, whereas native amphibians only require one year. Therefore, draining a reservoir every year is intended to interrupt bullfrog tadpole development, dramatically decrease bullfrog populations, and allow for reduced efforts as a measure of adaptive management. Typically, in Northern California, reservoir draining should occur in September through October to avoid impacts to sensitive native amphibian and fishery resources. While draining occurs, direct removal efforts should be employed as described above if possible.

REPORTING

A written log shall be kept of monitoring and management efforts and shall be provided to CDFW **each year** by December 31. The written log shall include: 1) date and time of each monitoring and management effort, 2) approximate number of each bullfrog life stage detected and/or removed per effort, and 3) amount of time spent for each monitoring and management effort.

APPENDIX A. BULLFROG REFERENCE PHOTOS

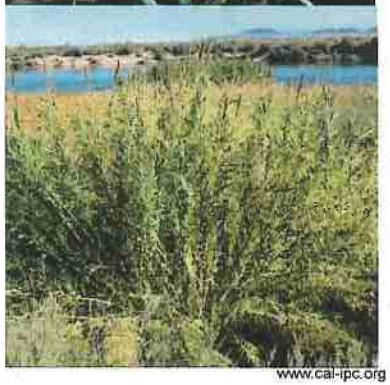
This is a photo of a Bullfrog tadpole. (Photo taken by Mike van Hattem).

The photos shown in this Appendix demonstrate a medium sized adult bullfrog that was removed from Ten Mile Creek, Mendocino County. Note the bullfrog has a large tympanum, (circular ear drum shown with an arrow) and **does not** have distinct ridges along its back (dorsolateral folds). Photo taken by Wes Stokes.

The bullfrog has somewhat distinct mottling and **the underside of the bullfrog's hind legs are not shaded pink or red.**

Cal-IPC Weed Alert Information for Early Detection of Highly Invasive Species and select Moderately Invasive Species in Humboldt County

Weed Alert!
Giant reed



www.cal-ipc.org

Giant reed
(Arundo donax)

Mature Size Shoulder

Description

- Large, clump-forming perennial grass 9-30 ft. tall
- Hollow stems divided by partitions like bamboo
- Plume-shaped creamy brown seedheads are 1-2 ft. long and lean to one side
- Pale green to blue-green leaves that "clasp" stem
- Leaves 1-2 in. wide and 1 ft. long; look like corn leaves from a distance
- Reproduces vegetatively from rhizomes and plant fragments
- Spread by water, horticulture
- Native to Europe

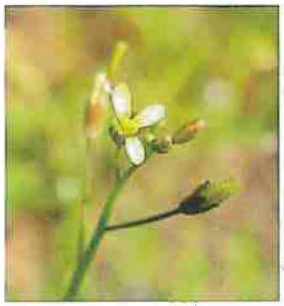
Bloom Period May - Jun

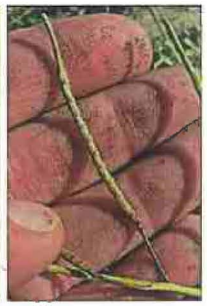
Habitat Moist places, including ditches, streams, riverbanks, estuaries

2-Minute Removal Dig

Image credits: Front top: Larry Allain, USDA-NRCS PLANTS Database; Front bottom: Steven Perkins, USDA-NRCS PLANTS Database; Back: © J.M. DiTomaso, Regents of the University of California; icons by Tim Hyland
These cards were adapted from a design by National Park Service.

Weed Alert!
Saharan mustard





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Saharan mustard
(Brassica tournefortii)

Mature Size Waist

Description

- Yellow-flowered annual herb to 3 ft. tall
- Small, inconspicuous flowers are dull yellow with four petals

- Seedpods up to 2 ¾ in. long, narrowed between seeds, with narrower smooth pointed section at top of seedpod
- Stiff white hairs perpendicular to stem at base and on leaves

- Deeply lobed basal leaves from 3-12 in. long with dots on leaves and a rough feel
- Few leaves grow on the stems
- Reproduces by seed
- Spread by roads and wind
- Native to the Mediterranean region and Eurasia

Bloom Period Dec - Aug

Habitat Grasslands, scrub

2-Minute Removal Pull

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These cards were adapted from a design by National Park Service.

Weed Alert!
Cheatgrass

www.cal-ipc.org

Cheatgrass
(Bromus tectorum)

Mature Size Knee

Description

- Up to 2.5 ft. annual grass with soft, drooping seedheads
- Yellowish-green seedheads are bristly, in a loose, branched cluster
- Seeds have slender, straight bristle at the tip that are 1/3-¾ in. long
- Seedheads turn reddish -purple as they mature
- Leaves densely covered with short, soft hairs
- Reproduces by seed
- Spread by construction equipment, roads, wind, wildlife, livestock, hay, forage, seed
- Native to Europe, southwestern Asia, and northern Africa

Bloom Period May - Jun

Habitat Scrub, chaparral, grassland, woodland, forest

2-Minute Removal Pull

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These cards were adapted from a design by National Park Service.

Weed Alert!
Yellow starthistle

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Yellow starthistle

(Centaurus solstilatus)

Mature Size Knee

Description

- 2-6 ft. annual with stiff wiry stems and spiny flowerheads that grow singly at stem tips
- Narrow yellow petals grow as a tuft above an oval, green, spine-covered bud
- Stiff spines up to 1 in. long
- A cottony white tuft remains above spines after flowers die
- Starts as a low cluster of leaves, like a dandelion rosette, but with white hairs
- Leaf bases extend down stems, giving them a winged appearance
- Leaves and stems gray to bluish green, covered with fine white cottony hairs
- Reproduces by seed
- Spread by recreation, roads, trails, wildlife, waterfowl, livestock, equipment, hay, forage
- Native to southern Europe

Bloom Period Apr - Sep

Habitat Chaparral, coastal prairie, grassland, riparian

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These cards were adapted from a design by National Park Service.

Weed Alert!

Pampas and Jubata grass

Pampas grass (*Cortaderia selloana*

Jubata grass (*Cortaderia jubata*)

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Pampas and Jubata grass

(*Cortaderia* species)

- Produce millions of seeds that can blow many miles in the wind
- Narrow bluish-green leaves sharply toothed, cut when rubbed the wrong way
- Reproduces by seed
- Spread by wind and horticulture
- Native to South America

Cortaderia selloana

Mature size Shoulder

- Bunching grass 6-13 ft. tall
- Tall, feathery plume barely above leaf clump, made of thousands of tiny, cream-colored seeds
- Wide, bright green leaves
- Erect fountain-like form

Cortaderia jubata

Mature size Shoulder

- Bunching grass 3-5 ft. tall
- Tall, feathery flower plume 2-4 ft. above leaf clump, made of thousands of tiny, pink-purple maturing to gold-white seeds
- Coiled, bluish-green leaves
- Sprawling, horizontal growth form

Bloom Period Sep - Feb/Mar

Habitat Bare and disturbed ground, roadsides, cut banks, coastal bluffs, rock outcrops, dunes, landslides

2-Minute Removal Dig

Image credits: J.M. DiTomaso ©2007 The Regents of the University of California; icons by Tim Hyland
These cards were adapted from a design by National Park Service.

Weed Alert!
Scotch broom

www.cal-ipc.org

Scoth broom
(Cystisus scoparius

Mature Size Shoulder

Description

- 5-10 ft. deciduous shrub with pea-like flowers
- Single or paired golden yellow flowers (or slightly to fully red), ¾-1¼ in. long
- Leaves generally composed of 3 leaflets, each less than 1 in. long
- Stems are star-shaped in cross-section
- Pods are ¾-2 in. long, flattened, dark brown to black, with silky hairs on the margin

- Reproduces by seed and by resprouting if damaged
- Spread by roads and trails, equipment, water, soil movement, animals, ants, horticulture
- Native to central and southern Europe and northern Africa

Bloom Period Mar - May

Habitat Coastal scrub and prairie, chaparral, riparian areas, oak woodland, coniferous forest

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Weed Alert!
Cape ivy

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Cape ivy
(Delairea odorata)

Mature Size Vine

Description

- Perennial hairless vine up to 30 ft., with winter-blooming yellow flowers
- 5-9 lobed leaves are glossy and light green with purplish stems
- Flowers arranged in flat clusters of 20-40
- Leaves are alternate, "ivy-shaped", 1-4 in. long
- Vines grow over trees and shrubs, forming dense mats and smothering other plants
- Reproduces mainly from rhizomes, stems, and plant fragments, or occasionally by seed in some areas
- Spread by wind, water, animals, garden waste, horticulture
- Native to South Africa

Bloom Period Nov - Mar

Habitat Coastal scrub and prairie, riparian, forest

2-Minute Removal Dig

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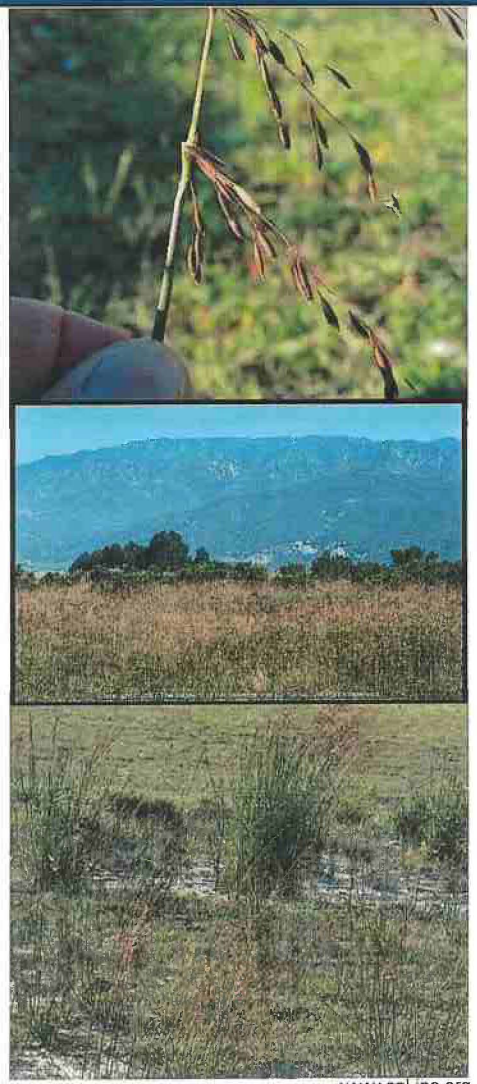
Weed Alert!

Perennial veldt grass



www.cal-ipc.org

Perennial veldt grass

(Ehrharta calycina)

Mature Size Knee

Description

- Tussock-forming grass 12-28 in. tall
- Flat, green to reddish-purple-tinged leaves, 3-8 in long
- Leaves wrinkled along blade edge
- Seedhead 4-6 in. long
- Small projection where leaf meets stem has tiny hairs
- Reproduces by seed and vegetatively from underground rhizomes
- Spread by roads, human activities, wind, wildlife
- Native to southern Africa

Bloom Period Mar - May

Habitat Sandy soils, chaparral, coastal scrub, disturbed sites

2-Minute Removal Dig

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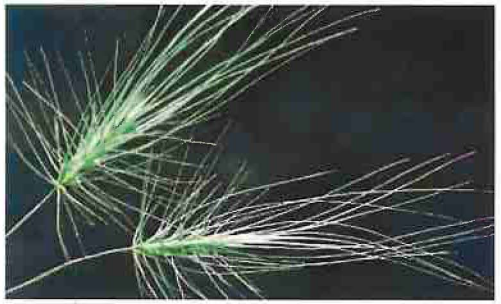
Weed Alert!
Medusahead



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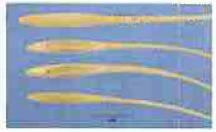
Medusahead

(Elymus caput-medusae)

Mature Size Knee

Description

- Up to 2 ft. annual grass
- Seedheads are spike-like with long bristles
- 1-3 in. seed bristles are straight when green and become wavy as they dry



- Short, stiff, straight bristles remain on stems long after seeds fall to the ground

- Yellowish-green dense stands are highly visible after other annual grasses die
- Reproduces by seed
- Spread by wildlife, waterfowl, livestock
- Native to the Mediterranean region

Bloom Period Apr - Jul

Habitat Scrub, chaparral, coastal regions, riparian areas, oak woodland

2-Minute Removal Pull

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These cards were adapted from a design by National Park Service.

Weed Alert!
Spurges

Leafy spurge (*Euphorbia virgata*)

Carnation spurge (*E. terracina*)

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Spurges
(*Euphorbia terracina*; *E. virgata*)

Mature Size Knee

Description

- Perennial herbs under 3 ft. with opposite leaves and milky sap (that can cause a rash)
- Tiny flowers surrounded by yellow or green petal-like leaf structures
- Leaves 2-3 in. long
- Reproduces by seed or from extensive creeping roots and root fragments
- Spread by roads, waterways, wildlife
- Native to Europe

Bloom Period *E. terracina* Mar - July; *E. virgata* May - Aug

Habitat Grasslands, scrub, woodland

2-Minute Removal Dig

Image credits: Front top: Bob Case, Front bottom and back top: © Regents of the University of California, Back bottom: Jean Tosti; icons by Tim Hyland
These cards were adapted from a design by National Park Service.

Weed Alert!
French broom

www.cal-ipc.org

French broom
(Genista monsplessulana)

Mature Size Shoulder

Description

- 3-8 ft. perennial shrub with bright yellow pea-like flowers
- Flowers in dense clusters of 4-10 on short branches
- Leaves composed of three leaflets ½-¾ in. long
- Leaves, stems, and seed pods covered with long, silky, silvery to reddish-gold hairs
- Stems green, erect, and typically leafy
- Seed pods brown, slightly flattened at maturity, and ¼-1 ¼ in. long
- Reproduces by seed
- Spread by water, roads, trails, equipment, horticulture, animals
- Native to the Mediterranean region and Azores Islands

Bloom Period Mar - May

Habitat Coastal scrub and prairie, chaparral, grassland, riparian and cismontane woodland, forest

2-Minute Removal Pull

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Weed Alert!
St. John's wort

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St. John's wort

(Hypericum perforatum)

Mature Size Waist

Description

- 2-5 ft. upright perennial with reddish woody base and bright yellow flowers
- Numerous flowers (25-100 per stem) are up to 1 in. wide with five petals, and have black dots along the edges

- Narrow yellow-green oblong leaves are up to 2 in. long, and have translucent dots that make the leaf appear perforated when held to the light
- Sticky seed capsule turns deep reddish-brown as it matures

- Reproduces by seed and vegetatively from rhizomes
- Spread by horticulture, livestock, hay, forage, equipment, roads

- Native to Europe and Asia

Bloom Period May - Sep

Habitat Coastal prairie, grassland, oak woodland, forest, disturbed sites

2-Minute Removal Dig

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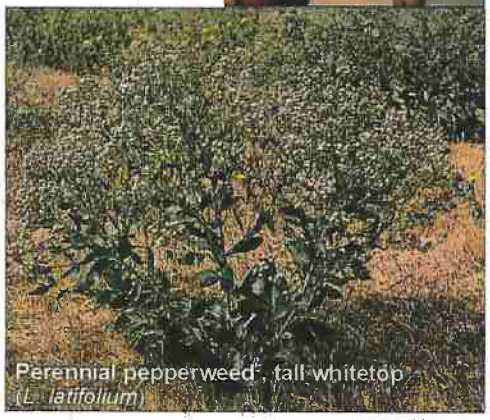
These cards were adapted from a design by National Park Service.

Weed Alert!
Whitetops



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Hairy whitetop or Perennial pepperweed
(Lepidum appelianum, L. latifolium)

Mature Size Shoulder

Description

- Perennials up to 5 ft. tall
- Small 4-petaled, white flowers in large clusters at top of plant
- Leaves alternate; small rounded or flattened fruits
- Reproduces by seed and vegetatively from rhizomes and root fragments
- Spread by roads, waterways, hay
- Native to Eurasia

Bloom Period Apr - Sep

Habitat Grasslands, wetlands, riparian

2-Minute Removal Dig

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Weed Alert!
Purple loosestrife

www.cal-ipc.org

Purple loosestrife
(Lythrum salicaria)

Mature Size Shoulder

Description

- 3-10 ft. perennial with showy purple-magenta flowers
- Many 5-7 petaled flowers, clustered on a spike 3 in. to 3. ft. tall
- Narrow leaves are opposite with smooth margins, ¾ -4 in. long

- Stems are erect, green to purple, square in cross-section
- Plant is deciduous and has a dense bushy appearance with a woody base
- Reproduces by seed and from rhizomes
- Spread by horticulture, wind, water
- Native to western Asia and eastern Europe

Bloom Period Jun - Sep

Habitat Lakes, rivers, estuaries, marshes, riparian woodland

2-Minute Removal Dig

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These cards were adapted from a design by National Park Service.

Weed Alert!
Pennyroyal

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Pennyroyal
(Mentha pulegium)

Mature Size Ankle

Description

- Perennial mint, low-growing and spreading to upright from 4-35 in. tall
- Pink, blue, or violet flowers in dense clusters in a circle around the stem
- Leaves opposite, round to oval, grey-green, covered in short hairs
- 4-angled stem
- Powerful mint odor
- Reproduces from seed and vegetatively from underground rhizomes, creeping stolons, and stem fragments
- Spread by water, machinery, horticulture, animals
- Native to Europe

Bloom Period Jun - Nov

Habitat Disturbed sites, seeps, streamsides, vernal pools, marshes, ditches

2-Minute Removal Dig

Image credits: Front top: Medical botany by William Woodville. London, James Phillips, 1793, 1. ed., vol. 3 (pl. 171); Front bottom/Back left: © Mandy Tu, The Nature Conservancy; Back right: Gary A. Monroe @ USDA-NRCS PLANTS Database; Icons by Tim Hyland
These cards were adapted from a design by National Park Service.

Weed Alert!
Scotch thistle

www.cal-ipc.org

Scotch thistle
(Onopordum acanthium)

Mature Size Shoulder

Description

- 6 ft. thistle with large spiny leaves that taper down stems as spiny wings and are covered in fine cottony hairs
- Showy globe-shaped purple flowers are 1 -3 in. wide
- Dark pink to lavender flowers are borne singly at the ends of flower stems or in clusters of 2-7
- Flowers produce seeds topped with feathery hairs, developing into a large cottony tuft
- Grows as a circle of basal leaves the first year
- Reproduces by seed
- Spread by wind, wildlife, waterfowl, livestock
- Native to Europe and Asia

Bloom Period May - Aug

Habitat Grassland, meadows and seeps

2-Minute Removal Dig

Image credits: Front top/center, back: J.M. DiTomaso ©2007 The Regents of the University of California, Front bottom: USDA APHIS PPQ Archive, USDA APHIS PPQ, Bugwood.org; Icons by Tim Hyland.
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Weed Alert!

Himalayan blackberry

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Himalayan blackberry

(Rubus armeniacus)

Mature Size Shoulder

Description

- Prickly perennial shrub that can form impenetrable thickets up to 15 ft. tall
- White to pale pink flowers have 5 petals and are 1 in. wide
- Leaves of 5 leaflets (sometimes 3) with white undersides

- 5-angled stem with stout, curved thorns
- Fruits are blackberries that ripen from green to black, and are ~ ½ in. wide
- Reproduces by seed and by rooting at stem nodes
- Spread by birds or other animals
- Native to Europe

Bloom Period Apr - Aug

Habitat Riparian, scrub, grassland, forest

2-Minute Removal Dig

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These cards were adapted from a design by National Park Service.

Weed Alert!
Red sesbania

www.cal-ipc.org

Red sesbania
(Sesbania punicea)

Mature Size Shoulder

Description

- Deciduous shrub or small tree to 15 ft. tall, member of the pea family
- Reddish-orange ½-1 in. long flowers grow in dense drooping clusters
- Seedpods are 3-4 in. long, dark brown and have 4 wings running longitudinally down the pod

- Alternate leaves with 5-20 pairs of 1 in. long dark-green leaflets
- Young branches are thin and green but turn dark red-brown with age
- Reproduces by seed
- Spread by waterways and horticulture
- Native to South America

Bloom Period Mar - Oct

Habitat Riparian

2-Minute Removal Dig

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Weed Alert!
Spanish broom

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Spanish broom
(Spartium junceum)

Mature Size Shoulder

Description

- 10-15 ft. deciduous shrub with yellow pea-like flowers
- Flowers are large, up to 1 in. long, on short stalks
- Leaves are sparse and small, ½-1 in. long, oval, with smooth edges, and fall off after 4 months or less, giving the plant a leafless look much of the year
- Seedpods are slightly flattened 1½-4 in. pods covered in long, silky, very fine silvery hairs
- Main stems are bright green, smooth, slender, cylindrical, and rush-like
- Reproduces by seed
- Spread by roads, trails, equipment, waterways
- Native to southern Europe, Asia, and northern Africa

Bloom Period Apr - Jun

Habitat Scrub, chaparral, riparian, desert woodland, coniferous forest

2-Minute Removal Dig

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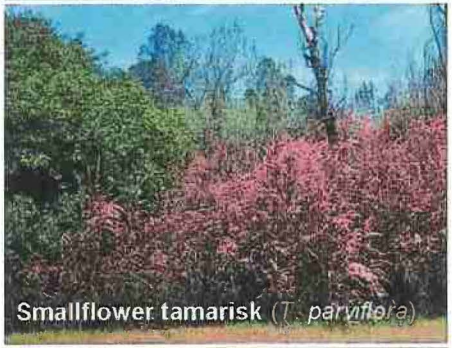
Weed Alert!
Tamarisks


Tamarisk (*Tamarix ramosissima*)


Smallflower tamarisk (*T. parviflora*)


Athel tamarisk (*T. aphylla*)

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Tamarisks

(*T. aphylla, T. parviflora, T. ramosissima*)

Mature Size Tree

Description

- Large perennial shrubs or trees
- Tiny flowers with white or pink petals
- Small scale-like leaves
- Ground underneath plants sometimes white-salty
- Reproduces by seed and sometimes from root sprouts and stem fragments; resprout vigorously when damaged
- Spread by wind, waterways, horticulture
- Native to Asia

Bloom Period Apr - Nov

Habitat Dunes, scrub, wetlands, rivers, desert washes

2-Minute Removal Dig

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Weed Alert!
Gorse

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Gorse
(Ulex europaea)

Mature Size Shoulder

Description

- Woody, evergreen shrub, up to 10 ft. tall
- Simple spiny leaves, 1/5-3/5 in. long
- Young plants produce normal clover-like leaves for the first few months

- Bright yellow pea-like flowers
- Brown, densely hairy pea-like seedpods are ½-1 in. long
- ½ in. long spines at base of leaves
- Intricately branched, green when young, turning brown with age
- Reproduces by seed and vegetatively by resprouting when damaged
- Spread by ants, birds, water, human activities
- Native to western Europe

Bloom Period Apr - Jul

Habitat Disturbed coastal soils; tolerates poor soils, including serpentine

2-Minute Removal Dig

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