Moraga-Orinda Fire District

SEQUOIA Ecological Consulting, Inc.

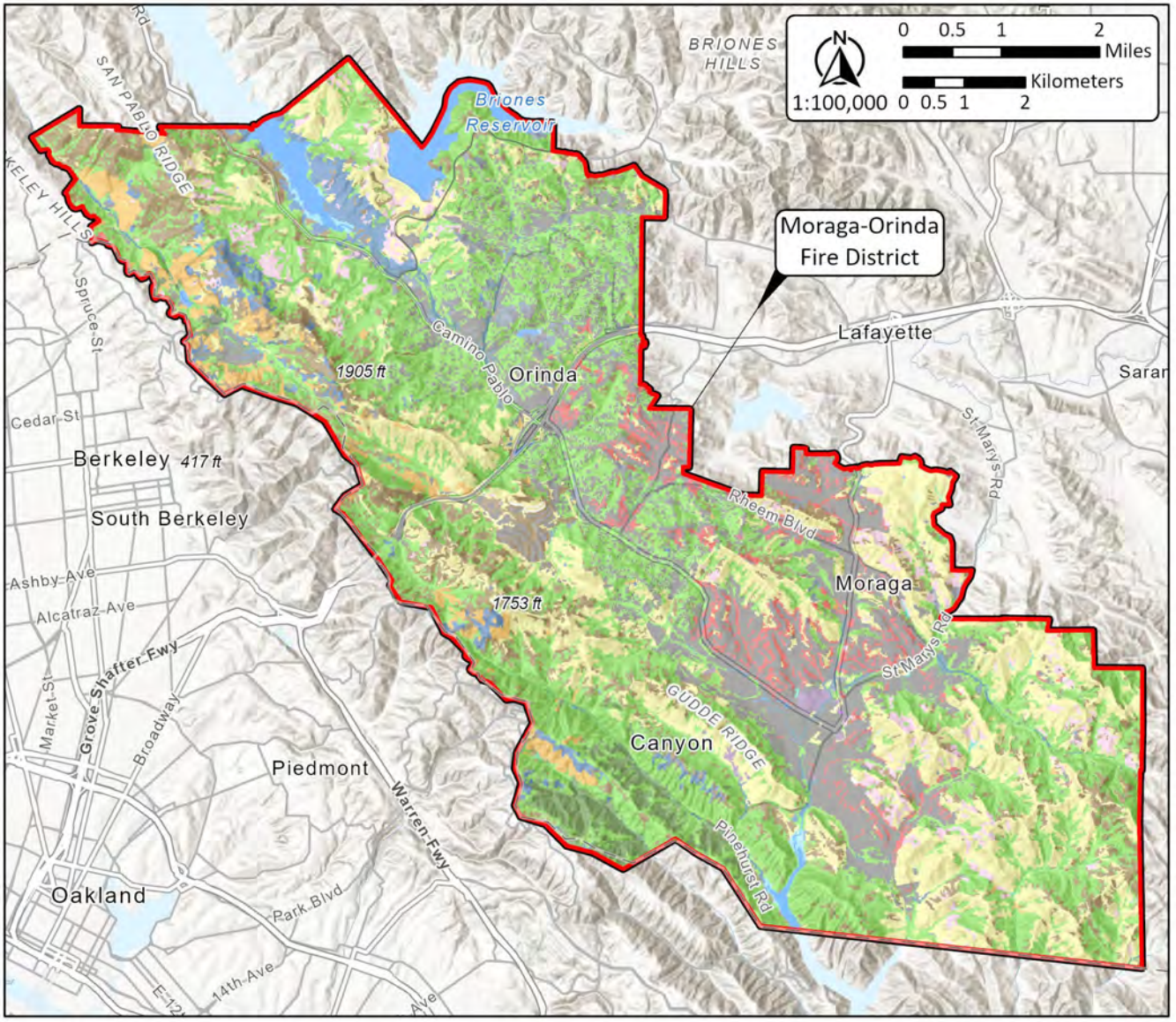
FIELD GUIDE TO

Best Practices for Environmental Protection During Wildfire Risk Reduction Activities

Fall 2023

Contents

MORAGA-ORINDA FIRE DISTRICT MAP



Modeled Land Cover Type (Enhanced Lifeform)

- Barren and Sparsely Vegetated
- Deciduous Hardwood
- Developed
- Eucalyptus
- Evergreen Hardwood
- Freshwater Herbaceous Wetland
- Herbaceous
- Major Road
- Non-native Forest
- Non-native Herbaceous
- Non-native Shrub
- Nursery or Ornamental Horticulture Area
- Orchard or Grove
- Pine/Cypress
- Redwood/Doug Fir
- Riparian Forest
- Riparian Shrub
- Row Crop
- Shrub
- Vineyard
- Water

SEQUOIA Ecological Consulting, Inc.

ABOUT THIS GUIDE

The Field Guide to Best Practices for Environmental Protection During Home Hardening Activities (Field Guide) is a quick reference that provides guidance for protecting sensitive plant and animal species and their habitats. It is not meant to be a comprehensive guide to species and only pertains to the habitats within the Moraga-Orinda Fire District (MOFD) (Map on Page 4). The guidance outlined includes avoidance and minimization measures (AMMs) that are best practices to follow in order to stay in compliance with state and federal laws during implementation. If you are unsure, it is recommended that you confirm with the California Department of Fish and Wildlife (CDFW) or the US Fish and Wildlife Service (USFWS) that you are in compliance with the Endangered Species Act. If impacts to wetlands, waters, or riparian areas are anticipated, it is recommended that you consult CDFW, the US Army Corps of Engineers (USACE), and/or the Regional Water Quality Control Board (RWQCB).

USING THIS GUIDE

This guide is intended as a companion for the MOFD Habitat/BMPs Web Tool, which is freely available to the public to assist with narrowing down the AMMs and guidance based on habitats that occur on your property. The tool allows you to search for your address, click on your parcel, and review a list of land cover types present on your property. During the launch phase of this tool, the next step will be for you to reference this Field Guide to search for the habitats and species present prior to implementation of vegetation management practices. In the near future, the web tool will allow you to click on the habitats present on your property which will automatically take you to a webpage to review the descriptions and recommended AMMs.

Each entry in this guide contains important information on the description of the habitat, the identification of the species, and recommended best management practices (BMPs) based on the habitat or species that is likely to occur there. Each species in this guide has been assigned one or more color-coded groupings based on the habitat(s) where they can be found. It is recommended to start with the habitats and then look at which species occur in those habitats.

When using this Field Guide it is important to maintain some flexibility as simply changing the timing or method of vegetation removal may greatly help in protecting sensitive species and their habitats.

The habitat types covered in this guide are:

- Barren and Sparsely Vegetated
- Deciduous Hardwood
- Developed
- Eucalyptus
- Evergreen Hardwood
- Freshwater Herbaceous Wetland
- Herbaceous
- Major Road
- Non-native Forest
- Non-native Herbaceous
- Nursery or Ornamental
- Non-native Shrub
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- Vineyard
- Water

Background and Limitations for the MOFD Habitat/BMPs Web Tool

GIS themes are for visualization and general analysis purposes only and are not accurate to surveying or engineering standards. Information is not guaranteed to be accurate, and use of this information is your responsibility. Mapped habitats are modeled from a variety of remote-sensed data (aerial imagery and LiDAR), and independent habitat assessments should be made with the assistance of this booklet.

GIS layer sources:

Assessor's Parcels

- Contra Costa County. Parcel. Last accessed date: October 2023.

Moraga-Orinda Fire District Boundary

- Moraga Orinda Fire District. MOFD Boundary. Last modified date: 2021.

Waterways

- United States Geological Survey. National

Hydrography Database. Last accessed date: 10/06/2023. https://apps.nationalmap.gov

Modeled Land Cover Types

- Tuckman Geospatial. Pacific Veg Map Draft – Enhanced Lifeform Map. Last modified date: 04/03/2023. https://pacificvegmap.org/
- Dataset Summary: https://www.tukmangeospatial.egnyte.com/dl/a9nMvGgaYY

If you have questions about any of the datasets or layers included in this tool, please contact the author of the dataset, listed as the first part of each citation above.

Planned Updates and Enhancements

This mapping tool is a work in progress, intended to make identification of habitat types and relevant BMPs easily identifiable. While MOFD and Sequoia Ecological Consulting, Inc. intend to make updates to this map to improve functionality, input layers will not be regularly updated. Planned updates and improvements for this web tool include:

- Addition of hyperlinks to all land cover types summarized in each parcel. Hyperlinks will open the relevant land cover type page in this booklet.
- Incorporation of additional relevant layers.

Additonal Resources

To view additional fuels and fuel mitigation information, please use the MOFD Fuel Mitigation Dashboard. This dashboard includes FireWise Neighborhoods, burn piles and chipping, broadcast burning, fuel breaks, FAC-A assessments, and inspection information.

HABITAT (LAND COVER) TYPES

Barren and Sparsely Vegetated

LAND COVER DESCRIPTION

Areas where shrub, forest, and herbaceous cover are each less than 10% absolute cover and the area is best characterized as bare land. Often characterized as deserts, rocky outcrops, or bare soil surfaces.

SPECIES LIKELY TO OCCUR

American badger • western burrowing owl • pallid bat • western bumble bee • golden eagle • nesting birds

Deciduous Hardwood

LAND COVER DESCRIPTION

Areas where tree species are at least 10% absolute cover; hardwoods either: strongly dominate the tree canopy (>70% relative tree cover when with redwood or Douglas fir) or co-dominate (>40% relative tree cover with pines or cypress); deciduous hardwoods dominate hardwood cover (>50% relative hardwood cover). These trees, such as oaks, maples, and beeches, contribute to diverse and dynamic forest ecosystems. A deciduous hardwood forest is dominated by broad-leafed trees that lose their leaves seasonally.

SPECIES LIKELY TO OCCUR

golden eagle • San Francisco dusky-footed woodrat • nesting birds • western bumble bee

Developed

LAND COVER DESCRIPTION

Human-made developed areas greater than 0.2 acres; areas covered by human-made structures, including residential, commercial, industrial, and infrastructure developments. it also includes irrigated lawns, heavily landscaped garden and patio areas, bocce courts, tennis courts, sport courts, developed horse riding arenas, baseball fields, soccer fields, golf courses, swimming pools, and playground areas.

FUN FACT

Golf courses often attract wildlife and the protected California red-legged frog has been observed in ponds within golf courses before.

SPECIES LIKELY TO OCCUR

California red-legged frog • western burrowing owl • California tiger salamander • nesting birds

Eucalyptus

LAND COVER DESCRIPTION

Areas where tree species are at least 10% absolute cover and *Eucalyptus* spp. dominates tree cover (>50% relative tree cover). These fast-growing, evergreen trees are characterized by their aromatic leaves and unique biodiversity.

SPECIES LIKELY TO OCCUR

San Francisco dusky-footed woodrat • nesting birds

Evergreen Hardwood

LAND COVER DESCRIPTION

Evergreen hardwood refers to regions primarily covered by broad-leaved trees that retain their leaves throughout the year, providing continuous canopy cover. These forests are characterized by the presence of trees like oak, Pacific madrone, and Douglas fir, which contribute to diverse and ecologically valuable ecosystems. Areas where tree species are at least 10% absolute cover; hardwoods either: strongly dominate the tree canopy (>70% relative tree cover when with redwood or Douglas fir) or co-dominate (>40% relative tree cover with pines and cypress); evergreen hardwoods dominate hardwood cover (>50% relative hardwood cover).

SPECIES LIKELY TO OCCUR

western bumble bee • nesting birds • Townsend's big-eared bat • pallid bat

Freshwater Herbaceous Wetland

LAND COVER DESCRIPTION

Areas that are depressional, wet all year long, and exhibit obvious herbaceous wetland vegetation. Absolute tree and shrub cover are both less than 10%. These ecosystems include marshes, swamps, bogs, ponds, and floodplains, and they play vital roles in maintaining water quality, regulating water flow, and providing habitat for diverse plant and animal species.

AVOIDANCE AND MINIMIZATION MEASURES

- Vegetation clearing should avoid impacts to all wetlands or waters of the US (creeks, rivers, lakes, ponds, etc.).
- To the extent feasible, maintain a no-disturbance buffer of 50 feet from wetlands, ponds, or riparian areas.

SPECIES LIKELY TO OCCUR

California red-legged frog • foothill yellow-legged frog • California tiger salamander • western pond turtle • nesting birds

AVOIDANCE AND MINIMIZATION MEASURES (CONTINUED)

- Avoid the use of chemicals and herbicides near water bodies.
- If any vegetation removal or work within a water body is needed, you will likely need a permit from the CDFW, the USACE, and/or the RWQCB.

Herbaceous

LAND COVER DESCRIPTION

The cover type is predominantly covered by non-woody plants, including various grasses, forbs, and other herbaceous vegetation. It encompasses areas where upland herbaceous vegetation is at least 10% absolute cover; absolute tree and shrub cover is less than 10%.

SPECIES LIKELY TO OCCUR

American badger • California tiger salamander • California red-legged frog • western burrowing owl • nesting birds

Major Road

LAND COVER DESCRIPTION

Major roads, highways, or other paved surfaces.

FUN FACT

- Major roads do not provide quality suitable habitat, however, some bird species, like killdeer (*Charadrius vociferus*), will lay eggs on gravel or highly disturbed areas. In addition, western burrowing owls have been documented using curb-side drains and other human-made or debris-like structures as cover.

SPECIES LIKELY TO OCCUR

nesting birds

Non-native Forest and Woodland

LAND COVER DESCRIPTION

Non-native forest and woodland refer to areas dominated by tree species that are not indigenous to the region. These forests typically consist of tree species introduced from other regions or countries, which may have been planted for timber production, aesthetic purposes, or other human activities. Areas where tree species are at least 10% absolute cover; tree cover dominated by ornamental non-native species (>50% relative tree cover).

SPECIES LIKELY TO OCCUR

nesting birds

Non-native Herbaceous

LAND COVER DESCRIPTION

The cover type is predominantly covered by non-woody plants, including various grasses, forbs, and other herbaceous vegetation that is not native to the region. Herbaceous vegetation is at least 10% absolute cover; non-native herbaceous species dominate the herbaceous stratum; absolute tree and shrub cover are both less than 10%.

SPECIES LIKELY TO OCCUR

American badger • California tiger salamander • California red-legged frog • western burrowing owl • nesting birds

Non-native Shrub

LAND COVER DESCRIPTION

The land cover type refers to areas dominated by shrub species that are not native to the region, often introduced intentionally or accidentally by human activities. These non-native shrubs can outcompete native vegetation and alter local ecosystems. The shrub species are at least 10% absolute cover; absolute tree cover is less than 10%.

SPECIES LIKELY TO OCCUR

nesting birds

Nursery or Ornamental Horticulture Area

LAND COVER DESCRIPTION

Horticultural areas such as nurseries do not provide suitable habitat for protected wildlife species, however, there is a slight chance that nesting birds could occasionally utilize the area. For example, killdeer will lay their eggs on gravel. Vegetation clearance in these areas will likely be limited to weed clearing.

SPECIES LIKELY TO OCCUR

nesting birds

Orchard or Grove

LAND COVER DESCRIPTION

Orchards and groves do not provide high quality suitable habitat for protected wildlife species, however, there is a potential for wildlife to use orchards as food sources and to use burrows within the orchards. Birds can potentially nest in these areas as well. In general, vegetation clearance in these areas will likely be limited to weed clearing and mowing.

SPECIES LIKELY TO OCCUR

Townsend's big-eared bat • American badger • nesting birds

Pine/Cypress

LAND COVER DESCRIPTION

The pine and cypress land cover class represents a significant component of the state's diverse ecosystems. Areas where tree species are at least 10% absolute cover; native pine (gray pine, knobcone pine, ponderosa pine, and native Monterey pine) and cypress species strongly dominate tree cover (>60% relative tree cover).

SPECIES LIKELY TO OCCUR

Townsend's big-eared bat • pallid bat • nesting birds

Redwood/Douglas Fir

LAND COVER DESCRIPTION

Redwood/Douglas fir land cover type represents forests dominated by two iconic coniferous tree species, the coast redwood and Douglas fir. Areas where tree species are at least 10% absolute cover; Douglas fir and/or redwood co-dominate or dominate tree cover (>30% relative tree cover).

SPECIES LIKELY TO OCCUR

Townsend's big-eared bat • pallid bat • nesting birds

Riparian Forest

LAND COVER DESCRIPTION

Riparian forest land cover type refers to wooded areas situated alongside rivers, streams, and other water bodies. Areas where tree species are at least 10% absolute cover; obligate riparian tree genera (alder, willow, cottonwood, ash, sycamore) dominate tree cover (>50% relative tree cover).

AVOIDANCE AND MINIMIZATION MEASURES

- Vegetation clearing should avoid impacts to all wetlands or waters of the US (creeks, rivers, lakes, ponds, etc.).
- To the extent feasible, maintain a no disturbance buffer of 50 feet from wetlands, ponds, or riparian areas.
- Avoid the use of chemicals and herbicides near water bodies.
- If any vegetation removal or work within a water body is needed, you will likely need a permit from the CDFW, the USACE, and/or the RWQCB.

SPECIES LIKELY TO OCCUR

San Francisco dusky-footed woodrat • foothill yellow-legged frog • California red-legged frog • western pond turtle • Townsend's big-eared bat • nesting birds

Riparian Shrub

LAND COVER DESCRIPTION

Riparian shrub land cover type denotes vegetated areas comprised predominantly of shrubs, found along the banks of rivers, streams, and other freshwater bodies. Areas where woody riparian shrub species are at least 10% absolute cover; obligate riparian genera (e.g., shrubby willow trees) dominate shrub cover (>50% relative shrub cover).

AVOIDANCE AND MINIMIZATION MEASURES

- Vegetation clearing should avoid impacts to all wetlands or waters of the US (creeks, rivers, lakes, ponds, etc.).
- To the extent feasible, maintain a no-disturbance buffer of 50 feet from wetlands, ponds, or riparian areas.
- Avoid the use of chemicals and herbicides near water bodies.
- If any vegetation removal or work within a water body is needed, you will likely need a permit from the CDFW, the USACE, and/or the RWQCB..

SPECIES LIKELY TO OCCUR

San Francisco dusky-footed woodrat • foothill yellow-legged frog • California red-legged frog • western pond turtle • Townsend's big-eared bat • nesting birds

Row Crops

LAND COVER DESCRIPTION

Row crops do not provide high quality suitable habitat for protected wildlife species since most of the fields are disced or tilled annually. However, there is a potential for wildlife, such as bats, raptors, and snakes to use row crops as food sources to catch the pests (bugs and rodents) that may be there. In general, vegetation clearance in these areas will likely be limited to weed clearing, mowing, or discing between plantings. Be mindful of wildlife in the area when clearing vegetation.

SPECIES LIKELY TO OCCUR

Townsend's big-eared bat • nesting birds

Shrub

LAND COVER DESCRIPTION

Shrub land cover type refers to areas dominated by woody plants characterized by relatively low stature compared to trees, typically having multiple stems and branches. Area where native upland woody shrubs are at least 10% absolute cover; absolute tree cover is less than 10%.

AVOIDANCE AND MINIMIZATION MEASURES

- Chaparral scrub and associated vegetation should be thinned to remove decadent vegetation and create a scrub island mosaic, to maintain suitable habitat for Alameda whipsnake.
- In patches of chaparral shrub/scrub habitat, it is recommended to start with removing the dead and dying vegetation first. Oftentimes this will achieve the desired results and live vegetation can remain.

SPECIES LIKELY TO OCCUR

San Francisco dusky-footed woodrat • Alameda whipsnake • western burrowing owl • western bumble bee • golden eagle • American badger • nesting birds

AVOIDANCE AND MINIMIZATION MEASURES (CONTINUED)

- The use of hand tools for vegetation clearing is allowable year-round. Where major vegetation clearance is warranted in this habitat type, work should be limited to warmer months (August 1- October 31) when snakes are most active and therefore more likely to be able to escape potential impacts.
- The use of mastication and other ground-disturbing equipment is highly discouraged in scrub habitat to avoid impacts to the species.
- Burrows and rock outcrops should be avoided. Vegetation immediately surrounding rock outcrops will be avoided.
- Keep an eye out for Alameda whipsnake. If you see one, leave it alone and allow it to vacate the area on its own volition.
- If piles of vegetation debris are left on-site for longer than 24 hours, then the piles should be checked for wildlife species that may have taken refuge in the debris prior to burning, chipping, or spreading.

Vineyard

LAND COVER DESCRIPTION

Vineyards do not provide high quality suitable habitat for protected wildlife species. In general, vegetation clearance in these areas will likely be limited to weed clearing and hand tool treatments.

While various frugivorous animals will spend time foraging among the vineyard grapes, these areas do not provide suitable habitat for most native species.

SPECIES LIKELY TO OCCUR

nesting birds

Water

LAND COVER DESCRIPTION

Water land cover type encompasses various aquatic environments, including lakes, rivers, streams, ponds, wetlands, and oceans, covering a substantial portion of the surface.

AVOIDANCE AND MINIMIZATION MEASURES

- Vegetation clearing should avoid impacts to all wetlands or waters of the US (creeks, rivers, lakes, ponds, etc.).
- To the extent feasible, maintain a no-disturbance buffer of 50 feet from wetlands, ponds, or riparian areas.
- Avoid the use of chemicals and herbicides near water bodies.
- If any vegetation removal or work within a water body is needed, you will likely need a permit from the CDFW, the USACE, and/or the RWQCB.

SPECIES LIKELY TO OCCUR

western pond turtle • California tiger salamander • foothill yellow-legged frog • California red-legged frog

ANIMAL SPECIES

STATUS DEFINITIONS

Federally Endangered: Any species which is in danger of extinction throughout all or a significant portion of its range

Federally Threatened: Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range

Federal Candidate for Listing: A species under consideration for official listing in under the federal endangered species act

State Candidate for Listing: A species under consideration for official listing in under the California endangered species act

California Endangered: A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease

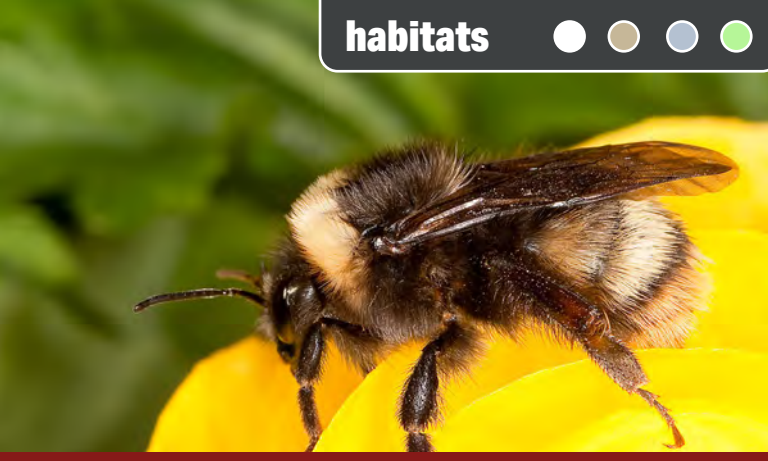
California Threatened: Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range

California Fully Protected: This is an designation that provides additional protection to animals that are rare or face possible extinction. Most fully protected species have also been listed as threatened or endangered under the California Endangered Species Act

California Species of Special Concern: A species, subspecies, or distinct population of an animal* native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- is extirpated from the State or, in the case of birds, is extirpated in its primary season or breeding role;
- is listed as Federally-, but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

**for the purposes of this document, "animal" means fish, amphibian, reptile, bird and mammal*



Western Bumble Bee

Bombus occidentalis

STATUS

- California candidate endangered species, US Forest Service sensitive species, and Xerces society imperiled.

SPECIES IDENTIFICATION AND DESCRIPTION

- Western bumble bee are sexually dimorphic, and both male and female exhibit a variety of colorations including black, yellow, and white.
- Western bumble bee is an important pollinator of greenhouse tomatoes, cranberries, alfalfa, avocados, apples, cherries, blackberries, blueberries, and other wild flowering plants.
- Western bumble bee are considered rare throughout much of their range and in decline, but may be locally common.

HABITAT REQUIREMENTS

- Need suitable nesting sites for the colonies, nectar and pollen from floral resources available throughout the duration of the colony period (February to late November), and suitable overwintering sites for the queens.
- Require plants that bloom and provide adequate nectar and pollen throughout the colony's life cycle, which is from early February to late November.

Western Bumble Bee

HABITAT REQUIREMENTS (CONTINUED)

- They nest underground in abandoned rodent burrows, or similar underground structures, and in open west-southwest slopes bordered by trees. Very little is known about the hibernacula, or overwintering sites.

AVOIDANCE AND MINIMIZATION MEASURES

- If you see a bee nest or bees coming out of holes in the ground, do not disturb them.

FUN FACT

These bees do not have hives like honeybees. They make their homes underground.

California Red-Legged Frog

Rana draytonii

STATUS

- Federally Threatened, California Species of Special Concern

SPECIES IDENTIFICATION AND DESCRIPTION

- Largest native frog in the western United States.
- The abdomen and hind legs of adults are often red or salmon pink.
- The back of this species is characterized by small black flecks and larger irregular dark blotches, with indistinct outlines on a brown, gray, olive, or reddish-brown background color.

HABITAT REQUIREMENTS

- Spends the bulk of its life in or near water sources like streams or stock ponds, which the species uses for breeding.
- The frog moves into neighboring upland areas to feed and shelter when stream flow levels are high.
- In the summer, they seek relief from the heat by hiding under rocks or boulders, leaf litter, small stream channels, or animal burrows.

California Red-Legged Frog

AVOIDANCE AND MINIMIZATION MEASURES

- When clearing vegetation within 100 feet of streams or creeks that have water, keep an eye out for frogs. If you see one, leave it alone and allow it to vacate the area on its own volition.
- Hand tools are the recommended method of clearance near water bodies.
- To the extent feasible, avoid deep ripping and ground disturbing vegetation removal methods near water bodies. It is important to preserve small mammal burrows within the uplands around ponds, creeks, streams, and wetlands as they provide suitable habitat for protected amphibian species like frogs and salamanders.
- The use of herbicide or chemical treatments is not recommended near water bodies. In addition, do not use them before or during rain events to prevent runoff into water features.
- Vegetation clearing in suitable habitat should be conducted when it is dry.

FUN FACT

These frogs can travel over a mile overland to get from pond to pond.

Foothill Yellow-Legged Frog

Rana boylii

STATUS

- Federally Threatened, California Endangered.

SPECIES IDENTIFICATION AND DESCRIPTION

- Small to medium-sized frog with rough, pebbly skin that is generally mottled gray, olive or brown, sometimes red.
- The frog gets its name from the yellow shading on its belly and underside of the rear legs.

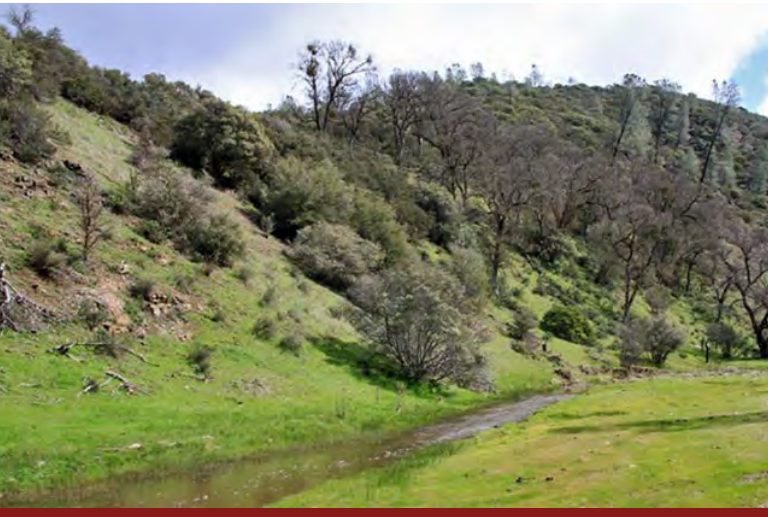
HABITAT REQUIREMENTS

- Found in or near rocky streams in a variety of habitats, including valley foothill hardwood, valley-foothill riparian, coastal scrub, mixed conifer, mixed chaparral, and wet meadows.
- The frog is closely associated with streams and is rarely observed far from the water's edge.
- Require shallow, flowing water in small to moderate-sized streams containing some cobble-sized substrate and portions of exposed sunlight for basking.

Foothill Yellow-Legged Frog

AVOIDANCE AND MINIMIZATION MEASURES

- When clearing vegetation within 100 feet of streams or creeks that have water, keep an eye out for frogs. If you see one, leave it alone and allow it to vacate the area on its own volition.
- Hand tools are the recommended method of clearance near water bodies.
- The use of herbicide or chemical treatments is not recommended near water bodies. In addition, do not use them before or during rain events to prevent runoff into water features.



FUN FACT

When disturbed, these frogs emit a smell similar to garlic.

California Tiger Salamander

Ambystoma californiense

STATUS

- Federally Endangered, California Threatened

SPECIES IDENTIFICATION AND DESCRIPTION

- Large, stocky, terrestrial salamander with a broad, rounded snout.
- Adults can grow to over 8 inches in total length.
- Coloration of adults consists of a black or dark grey body with yellow or white spotting.

HABITAT REQUIREMENTS

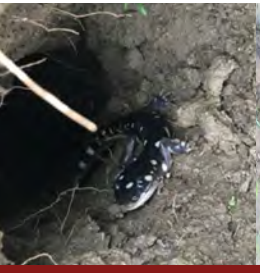
- Inhabits lowland grasslands, oak savannah, and mixed woodland habitats.
- Will spend most of their time underground in burrows created by other animals, such as ground squirrels, and use vernal pools or ponds for breeding.
- They are known to emerge from the ground during the rainy season from November to May to migrate towards ponds.

Not to be confused with the Arboreal salamander (*Aneides lugubris*)

California Tiger Salamander

AVOIDANCE AND MINIMIZATION MEASURES

- Hand tools are the recommended method of clearance near water bodies.
- To the extent feasible, avoid deep ripping and ground disturbing vegetation removal methods near water bodies. It is important to preserve small mammal burrows within the uplands around ponds, creeks, streams, and wetlands, as they provide suitable habitat for protected amphibian species like frogs and salamanders.
- The use of herbicide or chemical treatments is not recommended near water bodies. In addition, do not use them before or during rain events to prevent runoff into water features.
- Vegetation clearing in suitable habitat should be conducted when it is dry, as this species migrates and moves around when it rains or is wet out.



FUN FACT

Elusive species that is not often seen as it spends most of its time in ponds or in burrows. It can be seen on rainy nights migrating. This species has been found inside of telecommunication vaults and can fit into openings as small as 18 mm.

Alameda Whipsnake

Masticophis lateralis euryxanthus

STATUS

- Federally Threatened, California Threatened.

SPECIES IDENTIFICATION AND DESCRIPTION

- Fast-moving, slender, diurnal snake with a broad head, large eyes, and measures 2.5 to 5 feet in length.
- Dorsal coloration is brown to black with wide yellow-orange lateral stripes and an orange to pink underside becoming more brilliantly colored near the tail.
- It is distinguishable from similar garter snake species by the lack of a stripe on top of body.

HABITAT REQUIREMENTS

- It can be found in open areas in canyons, rocky hillsides, chaparral, open woodlands, pond edges, and stream courses and are restricted to the eastern counties of the San Francisco Bay Area.
- It uses small mammal burrows, rock outcrops, talus, and other forms of shelter as alternative habitat for temperature regulation, protection from predators, egg-laying, and hibernation.
- Whipsnakes will use grasslands, woodlands, riparian areas and the fringes of developed or disturbed land cover types to move to and from core habitat areas.

Alameda Whipsnake

AVOIDANCE AND MINIMIZATION MEASURES

- Removal of scrub vegetation patches should be limited due to the presence of the Alameda whipsnake.
- In patches of scrub habitat, it is recommended to start with removing the dead and dying vegetation first. Oftentimes this will achieve the desired results and live vegetation can remain.
- The use of hand tools for vegetation clearing is allowable year-round. Where major vegetation clearance is warranted in this habitat type, work should be limited to warmer months (August 1- October 31) when snakes are most active and therefore more likely to be able to escape potential impacts.
- The use of mastication and other ground-disturbing equipment is highly discouraged in scrub habitat to avoid impacts to the species.
- Burrows and rock outcrops should be avoided. Vegetation immediately surrounding rock outcrops will be avoided.
- Keep an eye out for Alameda whipsnake. If you see one, leave it alone and allow it to vacate the area on its own volition.
- If piles of vegetation debris are left on-site for longer than 24 hours, then the piles should be checked for wildlife species that may have taken refuge in the debris prior to burning, chipping, or spreading.

Alameda Whipsnake

COMMON LOOK-ALIKES

There are multiple other native snake species in the region which look rather similar to the Alameda whipsnake. The following images are of some common look-alikes. Note that these species have stripes on the top of their body, but the Alameda whipsnake does not.

valley garter snake

California red-sided garter snake

FUN FACT

While this species spends time on the ground, it is also found in trees!

Western Pond Turtle

Emys marmorata

STATUS

- California Species of Special Concern.

SPECIES IDENTIFICATION AND DESCRIPTION

- The only fresh-water turtle native to greater California.
- Dark brown to dull olive in coloration with a yellowish underside. The top of the shell is typically wide and the edges lack serrations. Males have a pale-yellow throat.

HABITAT REQUIREMENTS

- Inhabits rivers, streams, lakes, reservoirs, permanent and ephemeral wetlands, stock ponds, and sewage treatment plants.
- Prefers aquatic habitat with banks, submerged vegetation, and areas to bask on such as logs, rocks, and mud banks.
- Western pond turtles exhibit high site fidelity, returning in sequential years to the same terrestrial site to nest or overwinter.

Western Pond Turtle

AVOIDANCE AND MINIMIZATION MEASURES

- Hand tools are the recommended method of clearance near water bodies.
- Turtles can nest and overwinter in loose soils or shrubby areas around open water. When clearing vegetation near open water bodies, keep an eye out for turtles. If you see one, leave it alone and allow it to vacate the area on its own volition.
- The use of herbicide or chemical treatments is not recommended near water bodies. In addition, do not use them before or during rain events to prevent runoff into water features.

FUN FACT

These turtles can brumate (similar to hibernation) underwater.

Nesting Birds

REGULATORY REQUIREMENTS: MIGRATORY BIRD TREATY ACT OF 1918

The Migratory Bird Treaty Act (MBTA) (16 USC §703–711), as administered by the USFWS, makes it unlawful to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export at any time, or in any manner, any migratory bird, or any part, nest, or egg of any such bird." This includes direct and indirect acts, except for harassment and habitat modification, which are not included unless they result in direct loss of birds, nests, or eggs.

AVOIDANCE AND MINIMIZATION MEASURES

- If possible, conduct all vegetation clearing work from September 1 through January 31 to avoid disturbance to nesting raptors and songbirds.
- Low impact vegetation removal activities using hand tools that are unlikely to injure or impact nesting birds can be implemented year-round.

FUN FACT

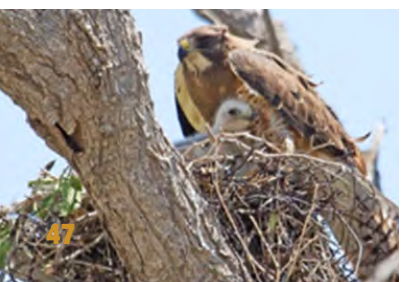
Nests come in all shapes and sizes. They can be made out of grass, sticks, hair, mud, and moss, among other materials. Different bird species can nest on the ground, in shrubs or trees, in cavities, or on the sides of bridges and buildings. Some birds, like Anna's hummingbird, can nest all year round.

Nesting Birds

AVOIDANCE AND MINIMIZATION MEASURES

- If work needs to occur during the nesting bird season, generally considered February 1- August 31, personnel trained in the identification of birds and their nesting habitats and behaviors should survey the habitat in and around the clearance zone to look for nesting birds. If active nests are observed, they should be avoided and provided with an adequate protection zone where disturbance will not occur.

NESTS OF VARIOUS SHAPES AND SIZES



Golden Eagle
Aquila chrysaetos

REGULATORY REQUIREMENTS: BALD AND GOLDEN EAGLE PROTECTION ACT OF 1940

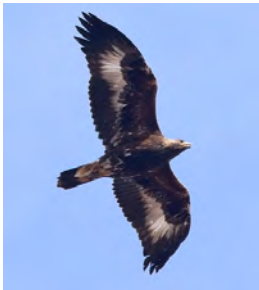
The Bald and Golden Eagle Protection Act (BGEPA; 16 USC. 668-668c) prohibits anyone from taking, possessing, or transporting a bald eagle (Haliaeetus leucocephalus) or golden eagle (Aquila chrysaetos), or the parts, nests, or eggs of such birds without prior authorization. This includes inactive nests as well as active nests. Take means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb. Activities that directly or indirectly lead to take are prohibited without a permit.

STATUS

- California Fully Protected.

SPECIES IDENTIFICATION AND DESCRIPTION

- Characterized by its large size, with a wingspan that can exceed 2 meters.
- Adults are typically dark brown with a golden-yellow nape patch.
- The juveniles, on the other hand, have a more mottled appearance, with white patches on the wings and a white tail with a dark terminal band.



Golden Eagle

HABITAT REQUIREMENTS

- Forage over grasslands, savannahs, oak and pine woodlands, and agricultural fields.
- They nest on cliffs and in large trees in open areas.
- Strong site fidelity and will reuse the same nest from year to year.
- These birds require large territories, with an average home range spanning over 60 square miles.

AVOIDANCE AND MINIMIZATION MEASURES

- See nesting bird AMMs.

Western Burrowing Owl
Athene cunicularia

STATUS
- California Species of Special Concern.

SPECIES IDENTIFICATION AND DESCRIPTION
- Small, ground-dwelling owl with long legs, round yellow eyes, and a prominent brow.
- Adults typically have mottled brown and white coloration.
- The juveniles, on the other hand, are less mottled than adults with buffy, yellow underparts and wing patch.

HABITAT REQUIREMENTS
- Rely on existing burrows excavated by fossorial mammals or reptiles, in particular, ground squirrels.
- Prefer well-drained terrain with short, sparse vegetation and underground burrows.
- Can be found in grasslands, low hillsides, deserts, urban vacant lots, earthen levees and berms, agricultural areas, and edges of public areas such as roads and golf courses.

FUN FACT
As their name implies, this owl lives in burrows, not in trees. It does not like digging if it can be avoided, so it often inhabits California ground squirrel burrows.

Roosting Bats

STATUS

California Species of Special Concern.

AVOIDANCE AND MINIMIZATION MEASURES

- Breeding season is March 1- July 31. If possible, avoid vegetation clearing of trees that could provide suitable roosting habitat under their bark during the breeding season.
- If a bat roost or individual bat is observed, stop work, and leave the bat(s) alone.
- If you want to know if your property provides suitable habitat for roosting bats, then reach out to a qualified biologist who can conduct a habitat assessment.

Peeling tree bark can serve as potential roosting bat habitat.

FUN FACT

Bats use different roosts to sleep in the day than they do at night. Night roosts are usually closer to food resources.

Pallid Bat
Antrozous pallidus

STATUS

California Species of Special Concern.

SPECIES IDENTIFICATION AND DESCRIPTION

- Medium-sized bat measuring 13 to 15 inches in wingspan.
- Pale or cream-colored fur with large, pointed ears.
- Faces are notable for an elongated snout, which distinguishes them from many other bat species.

HABITAT REQUIREMENTS

- Arid and semi-arid regions in deserts, scrublands, and grasslands.
- Choose variable shelter sites to rest and sleep, including caves, rock crevices, and human-made structures.
- Non-migratory, tend to stay in their range, may seek shelter in hibernation sites during winter to conserve energy.

AVOIDANCE AND MINIMIZATION MEASURES

- See roosting bats

FUN FACT
The pallid pat is now California's designated state bat! This bat can eat up to half its body weight in one night.

Townsend's Big-Eared Bat

Corynorhinus townsendii

STATUS

- California Species of Special Concern.

SPECIES IDENTIFICATION AND DESCRIPTION

- Clove-brown colored bat with distinguishably large ears that are joined across the forehead.
- Two lumps on the nose.

HABITAT REQUIREMENTS

- Roosts in caves, abandoned mines, tunnels, and buildings.
- Habitat selection is influenced by the availability of moths, their primary prey.
- Forages at night in a variety of landscapes, including arid deserts, coniferous and deciduous forests, and coastal areas.

AVOIDANCE AND MINIMIZATION MEASURES

- See roosting bats

FUN FACT

This bat can live up to 30 years in the wild. They have long ears that they roll up (which can look like horns of the big-horn sheep) when roosting. Summer maternity roosts are extremely sensitive to disturbance. These bats used to roost in basal hollows of giant redwoods but with less old growth redwood trees, old barns and abandoned buildings are preferred.

American Badger

Taxidea taxus

STATUS

- California Species of Special Concern.

SPECIES IDENTIFICATION AND DESCRIPTION

- Short, stocky build, with sharp, digging claws.
- Fur is typically grayish in color, with a white stripe running from their head down their back, flanked by black stripes on each side.

HABITAT REQUIREMENTS

- Highly adaptable to various habitats and commonly found in open landscapes such as grasslands, prairies, and deserts.
- Prefer habitats with loose, well-drained soils, as this makes it easier for them to excavate their burrows.
- American badgers are often associated with regions rich in rodent populations, as these small mammals form the primary component of their diet.

AVOIDANCE AND MINIMIZATION MEASURES

- Avoid impacts to large burrows that have claw marks or have been dug out and may provide suitable habitat for American badgers.

San Francisco Dusky-Footed Woodrat

Neotoma fuscipes annectens

STATUS

- California Species of Special Concern.

SPECIES IDENTIFICATION AND DESCRIPTION

- Medium-sized native rodent with large ears and a long, scantily haired tail.
- Dark fur on their backs and lighter underneath, and distinctive dusky feet.

HABITAT REQUIREMENTS

- Oak and riparian woodlands with a well-developed understory.
- They live in loosely-cooperative societies in stick nests that can be found on the ground or in trees.
- They tend to use the same nest year after year and continue to build on it.
- They are arboreal and good at climbing trees.

AVOIDANCE AND MINIMIZATION MEASURES

- If a San Francisco dusky-footed woodrat nest is observed, avoid direct impacts to the nest. Provide a minimum of 1 meter buffer around the nest while clearing vegetation.
- Be sure to look for nests on the ground as well as in the trees.

RARE PLANTS

RARE PLANT GUIDANCE

Before doing any earth moving or vegetation removal, we recommend reviewing the rare plants list and performing a walk-through of the clearance area to determine whether any rare species are located on your property. If you locate a rare plant or think you may have located a rare plant, do not remove it and avoid it completely. We recommend a no-work buffer of at least 2 meters around any suspected rare plant or rare plant population. If you need assistance with identification of a rare plant, you can look into hiring a botanist or environmental consulting firm to confirm plant ID.

If you want more information on rare plants in California, you can go to the California Native Plant Society's website here.

Antioch Dunes Evening-Primrose
Oenothera deltoides ssp. *howellii*

STATUS
- California Rare Plant Rating: 1B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- This short-lived perennial plant has thick stems from 4 to 40 inches in length. It is branched and has grayish-colored, lance-shaped leaves. The flowers are white with inch-long petals and yellow centers.
- Can be found most commonly in dunes at elevations less than 5,900 feet. Blooms from March to September.

Bent-Flowered Fiddleneck
Amsinckia lunaris

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- Annual herb that grows from 8 to 47 inches tall.
- Bristly with coiled flower clusters of tubular yellow to orange flowers.
- Flowers are approximately 1 centimeter long and less in width at the face.
- Can be found in cismontane woodlands, coastal bluff scrub, valley and foothill grasslands.
- Blooms from March until June.

Bristly Sedge
Carex comosa

STATUS
- California Rare Plant Rating: 2B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- Green triangular-stemmed sedge up to 120 cm tall with spiked cylindrical flowers. The flower cluster is up to 35 cm and has a long leaf, which is longer than the spikes.
- Can be found in wet places, including meadows and many types of wetlands. Blooms from May to September.

California Seablite
Suaeda californica

STATUS
- California Rare Plant Rating: 1B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- This mound-shaped shrub can grow up to 8 cm tall and has hairless or slightly hairy green or red-tinged herbage. The stems are woody and covered with knoblike bases of old leaves. Leaves are lance-shaped. Flowers occur between leaves along the stems. Each cluster comprises 1 to 5 flowers and is accompanied by a leaflike bract.
- Can be found most commonly in coastal salt swamps and marshes. Blooms from March to April through July to October.

Carquinez Goldenbush
Isocoma arguta

STATUS
- California Rare Plant Rating: 1B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- This compact shrub reaches about a half meter in height and is erect with multibranched stems. The stems are hairy and bear small, gray-green, non-fleshy, glandular leaves. Flowers come in thick, knobby clusters and present as golden yellow disc florets at one end.
- Can be found most commonly on alkali flats or other mineral-rich soils. Blooms from August to December.

Congdon's Tarplant
Centromadia parryi ssp. *congdonii*

STATUS
- California Rare Plant Rating: 1B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- This green spiny annual herb grows up to 70 cm tall and produces yellow daisy-like flowers. The leaves are toothed at the tips and look spiky.
- Can be found most commonly in valley and foothill grasslands. Blooms from May to October (or as late as November).

Contra Costa Goldfields
Lasthenia conjugens

STATUS
- California Rare Plant Rating: 1B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- This endangered herb has simple or freely branched, erect stems. They are up to 40 cm in height. Leaves are approximately 8 cm and are entirely or partially lobed. The flower presents as a solitary head with yellow petals.
- Can be found most commonly in vernal pool habitats at elevations of less than 100 meters above sea level. Blooms from March to June.

Diablo Helianthella
Helianthella castanea

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This yellow perennial herb is part of the sunflower family and boasts bright yellow, daisy-like flowers with ridged petals. These plants grow in clumps of green foliage and send flowers up on long stems of up to 1.6 feet tall.
- Can be found most commonly in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Blooms from March to June.

Fragrant Fritillary
Fritillaria liliacea

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This plant has bell-shaped white flowers with green stripes, set on a nodding stem of approximately 37 cm in height. It is a candidate for federal listing as an endangered species.
- Can be found most commonly in open, hilly grasslands, particularly in heavy soils, such as clays. Blooms from February to April.

Franciscan Thistle
Cirsium andrewsii

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This branching thistle can reach 2 m in height. It produces distinct dark purplish-pink flowers. The leaves are cobwebby and spiny around the edges.
- Can be found most commonly in coastal habitats such as sea bluffs and canyons and is sometimes found on serpentine soils. Blooms from March to July.

Jepson's Coyote-thistle
Eryngium jepsonii

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This perennial herb has erect, rounded, naked stems that occasionally branch and reach 10 cm to 1 meter in height. Leaves appear at the base and at nodes along the stem and tend to be long and serrated to toothed. The flowers are rounded with five to eight long, straight, spiky bracts, often with spiny edges. Flowers are white with white or purple styles.
- Can be found most commonly in wet places, such as vernal pools and flooded meadows. Blooms from June to August.

Loma Prieta Hoita
Hoita strobilina

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This rare legume species is a perennial herb that can grow up to 1 meter tall. The leaves are large and divided into three leaflets. The herbage is generally glandular and hairy. Flowers are purple and pea-like.
- Can be found most commonly in chaparral and woodland habitats. Blooms from March to July (or as late as August to October).

Long-styled Sand-Spurrey
Spergularia macrotheca var. *longistyla*

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This perennial herb produces a narrow stem that is up to 40 cm long with a woody, thickened base and taproot. They can grow upright or across the ground and are covered in sticky glandular hairs. Flowers occur in clusters at the end of the stem and in the leaf axilis and have five oval white petals.
- Can be found most commonly in alkaline marshes, mud flats, meadows, and hot springs. Blooms from February to May.

Most Beautiful Jewelflower
Streptanthus albidus ssp. *peramoenus*

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This annual herb can grow up to 2.6 feet tall. They have an erect form with lance-shaped basal leaves with toothed edges. Leaves farther up the stem are smaller and narrower and toothed or smooth-edged. Flowers occur at intervals along the upper stem, and each has curving pink petals emerging from the tip.

Mt. Diablo Fairy-Lantern
Calochortus pulchellus

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- Perennial lily up to 30 cm tall with yellow globe-shaped flowers where all petal tips are touching. The petals are hairy inside and often fringed with yellow hairs.
- Can be found in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland. Blooms from April to June.

Northern Slender Pondweed
Stuckenia filiformis ssp. *alpina*

STATUS
- California Rare Plant Rating: 2B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This slender perennial herb has rhizomes and can branch up to 65 cm in length. The leaves are linear to bristle-like. Flowers occur at the end of stems.
- Can be found most commonly in shallow freshwater, including marshes and swamps. Blooms from March to April through May to July.

Oregon Meconella
Meconella oregana

STATUS
- California Rare Plant Rating: 1B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- This small herb can grow up to 16 cm tall and has narrow, linear leaves. The white flowers are solitary and occur on long, thin stalks.
- Can be found most commonly on sandy bluffs, meadows, and stream banks. Blooms from March to April.

Oval-Leaved Viburnum
Viburnum ellipticum

STATUS
- California Rare Plant Rating: 2B.3

SPECIES IDENTIFICATION AND DESCRIPTION
- This shrub has deciduous leaves with oval or rounded blades that are 2 to 6 cm long. The leaves usually have three main veins and a toothed edge. The flowers present as a flat-topped bundle of many small, white flowers.
- Can be found most commonly in chaparral, cismontane woodland, and lower montane coniferous forest. Blooms from May to June.

Pallid Manzanita
Arctostaphylos pallida

STATUS
- California Rare Plant Rating: 1B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- Unique smooth, dark, rust-red bark and urn-shaped, downward-facing flowers. Can grow up to 13 feet in height. Pale green leaves completely surrounding the stem.
- Can be found in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grasslands. Blooms from December to March.

AVOIDANCE AND MINIMIZATION MEASURES
- Pallid manzanita is a protected species. If you are interested in knowing if the manzanita on your property is a pallid manzanita, you can contact a botanist or environmental firm to confirm the species.
- To the extent possible, large, mature manzanita should be left untouched.

Saline Clover
Trifolium hydrophilum

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This small annual herb looks much like one would expect a clover to look with fleshy leaves of three and small, lobed flowers that are purplish in color and fused at the base.
- Can be found most commonly in marshes and swamps, valley and foothill grasslands, particularly mesic and alkaline, and vernal pools. Blooms from April to June.

San Joaquin Spearscale
Extriplex joaquinana

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This annual herb can grow to 1 meter tall. The leaves are oval to triangular in shape with a scaly texture and a gray-green color. Leaf size reduces near the top of the plant. The flowers of the male are dense and spiked, whereas the females present small clusters of flowers.
- Can be found most commonly in alkaline soils of scrub, meadows and seeps, playas, and valley and foothill grassland. Blooms from April to October.

Santa Cruz Tarplant
Holocarpha macradenia

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This annual wildflower is endangered as well as federally threatened. It can grow up to 50 cm tall but is often much smaller. This species often has a single erect stem, while larger specimens have branching stems. Lower leaves have sharp, short teeth at their edges, while upper leaves have rolled back edges. Flowers are yellow. The Santa Cruz tarplant has distinctive glands that are not present on other similar species.
- Can be found most commonly in coastal or valley prairie grasslands with underlying sandy clay soils. Blooms from June to October.

Western Leatherwood
Dirca occidentalis

STATUS
- California Rare Plant Rating: 1B.2

SPECIES IDENTIFICATION AND DESCRIPTION
- This deciduous shrub can grow to over 3 m tall. It produces bright green, ovular-shaped leaves and small yellow flowers that develop into yellow-green berries.
- Can be found most commonly on moist and shaded slopes and is rare. Blooms from January to March (or as late as April).

Woodland Woollythreads
Monolopia gracilens

STATUS
- California Rare Plant Rating: 1B.1

SPECIES IDENTIFICATION AND DESCRIPTION
- This annual herb has slender, branching stems of up to 80 cm in height and is woolly in texture, as its common name suggests. The small, golden flowers occur at the end of the stem branches.
- Can be found most commonly in grasslands, chaparral, woodland, and other habitats, often on serpentine soils. Blooms from February or March to July.

INVASIVE PLANTS

INVASIVE SPECIES GUIDANCE

The California Invasive Plant Council (Cal-IPC) Inventory database defines invasive plants as: plants that are not native to an environment, and once introduced, they establish, quickly reproduce and spread, and cause harm to the environment, economy, or human health. Besides damaging wildlife habitat, these invasive plants can degrade our food and water supply and increase the risk of damage from wildfire and flooding, all of which can cause major economic damage to our state. In California, approximately 3% of the plant species growing in the wild are considered invasive, but they inhabit a much greater proportion of the landscape.

There are many invasive plants within Contra Costa County, but we have listed the top five plants that, in general, are the most common and flammable species in the area. Links to additional information on the species and how to manage them have been included in the species description pages. In addition, here is a link to the Cal-IPC Inventory database where you can learn more about invasive species in California: https://www.cal-ipc.org/plants/

Bull Thistle
Cirsium vulgare

CAL-IPC RATING
- Moderate

SPECIES IDENTIFICATION AND DESCRIPTION
- Bull thistle is most commonly found in coastal grasslands, meadows, and at the edges of brackish and fresh marshes, and is widespread throughout California. It thrives in areas of repeat disturbance, recently burned areas, overgrazed land, and clearcut areas in forests. It out-competes the native plants for every resource: water, space, and nutrients.

ADDITIONAL INFORMATION AND MANAGEMENT GUIDANCE
https://www.cal-ipc.org/plants/profile/cirsium-vulgare-profile/

French Broom
Genista monspessulana

CAL-IPC RATING
- High

SPECIES IDENTIFICATION AND DESCRIPTION
- French broom was originally introduced for its aesthetics for landscaping and it has aggressively spread. Found in many parts of California, including the San Francisco Bay Area and Sierra Nevada foothills. Where it establishes, thick stands are formed keeping both wildlife and native plants from coexisting. It increases the risk of fires and decreases the value of rangelands due to the fact that most livestock find it unpalatable.

Italian Thistle

Carduus pycnocephalus **ssp.** pycnocephalus

CAL-IPC RATING

- Moderate

SPECIES IDENTIFICATION AND DESCRIPTION

- It can be found along roadsides, annual grasslands, pastures, and waste areas throughout most of California. This thistle can help facilitate the spread of fire by acting as fuel.

ADDITIONAL INFORMATION AND MANAGEMENT GUIDANCE

https://www.cal-ipc.org/plants/profile/carduus-pycnocephalus-profile/

Poison Hemlock
Conium maculatum

CAL-IPC RATING
- Moderate

SPECIES IDENTIFICATION AND DESCRIPTION
- Poison hemlock can be found throughout California below 5,000 feet. Disturbed areas such as fields and roadsides are preferable, but it can thrive in meadows and pastures too. The plant in its entirety is toxic to both humans and animals if ingested. In some people it can cause contact dermatitis when handled. Once the plant is established it overtakes the area and keeps native plants from being established.

ADDITIONAL INFORMATION AND MANAGEMENT GUIDANCE
https://www.cal-ipc.org/plants/profile/conium-maculatum-profile/

Yellow Starthistle
Centaurea solstitialis

CAL-IPC RATING
- High

SPECIES IDENTIFICATION AND DESCRIPTION
- This winter annual is found in open hills and woodlands, grasslands, roadsides, and fields. Yellow starthistle is one of the more serious weeds within the state. It has a rapid propagation by seed; a large plant can produce up to 75,000 seeds. There has been little progress and success in the eradication of this plant.

ADDITIONAL INFORMATION AND MANAGEMENT GUIDANCE
https://www.cal-ipc.org/plants/profile/centaurea-solstitialis-profile/

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Barren and Sparsely Vegetated

James St. John

Deciduous Hardwood

Top: Sequoia Ecological Consulting, Inc.

Bottom: Sequoia Ecological Consulting, Inc.

Developed

Top: Andreas Praefcke

Bottom: Town of Moraga

Eucalyptus

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Evergreen Hardwood

United States Forest Service

Freshwater Wetland

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Herbaceous

Top: Sequoia Ecological Consulting, Inc.

Bottom: East Bay Regional Park District

Major Road

Craig Dietrich

Non-native Forest and Woodland

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Non-native Herbaceous

Matt Lavin

Non-native Shrubs

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Nursery or Ornamental Horticulture Area

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Riparian Forest

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Riparian Shrub

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Row Crops

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Roosting Bats

US Fish and Wildlife Service

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Townsend's Big-Eared Bat

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American Badger

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