

San Mateo County Parks Vegetation Resources



**Prepared for
County of San Mateo
Environmental Services Agency
Parks & Recreation Division**

**by
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1. INTRODUCTION

The San Mateo County Department of Parks and Recreation operates seventeen parks in San Mateo County. These parks contain a diverse group of plant communities, reflecting the wide variation in elevation, marine influence, soils, and other environmental factors across the San Francisco Peninsula as well as differences in land use and fire history. Several plant communities within the parks are rare in California, including coastal salt marsh, serpentine bunchgrass grassland, coastal prairie, and maritime chaparral. In addition, many of the parks provide habitat for rare species, including eight Federally Endangered and seven Federally Threatened plants and animals known to occur within the park system.

The purpose of this document is to summarize and update available vegetation information for thirteen County parks. This task includes: 1) classifying and mapping plant communities; 2) assessing the condition of the vegetation; 3) mapping non-native plant infestations; and 4) mapping known locations of sensitive and endangered plant and animal species. The vegetation maps and plant community descriptions herein will provide the foundation for a Vegetation Management Plan. The Vegetation Management Plan, in turn, will establish vegetation management objectives, develop Best Management Practices, and identify opportunities for pilot projects, collaborative projects, and community involvement. The thirteen parks described in this document are listed below. Pescadero Creek, Sam MacDonald, and Memorial Parks are treated as a single park complex.

Coyote Point Recreation Area
Crystal Springs Park
Edgewood Preserve
Fitzgerald Marine Reserve
Flood Park
Huddart Park
Junipero Serra Park

Memorial Park
Pescadero Creek Park
Sam McDonald Park
San Bruno Mountain State and County Park
San Pedro Park
Wunderlich Park

2. METHODS

2.1 Inventory

An inventory of aerial photographs, electronic database records, park documents, and other relevant literature was performed for each park. Databases used included the California Natural Diversity Database (CNDDDB) “RareFind” (CDFG 2001a) and California Native Plant Society (CNPS) Rare Plant Electronic Inventory (2000).

Lists of special status plant and animal species were compiled for each park. These lists included rare species recognized by the U.S. Fish and Wildlife Service, California Department of Fish and Game (CDFG July 2001ab), or California Native Plant Society (CNPS 2001). The location and spatial distribution of special status species were mapped based on: 1) database records; 2) park documents and records; 3) observations made by park staff or volunteers assisting with this project; and 4) observations made by Rana Creek Habitat Restoration staff during reconnaissance-level surveys in late fall, 2001.

A list of all plant species known to occur in each park was compiled from park documents, data collected by park staff and volunteers, and information gathered during reconnaissance-level surveys performed by Rana Creek Habitat Restoration. Animal species lists were also compiled from park documents and records. However, no focused animal surveys were performed for this report.

2.2 Vegetation Classification and Condition

Vegetation classification and mapping were completed in three stages. In the first stage, aerial imagery and park boundaries provided by the County were incorporated into GIS layers by Rana Creek Habitat Restoration. Using these aerial photographs, polygons were created delineating apparent differences in vegetation in the photographs. In the next phase, maps of each park with the vegetation polygons were provided to park staff and volunteers for use in vegetation mapping. These booklets asked that volunteers identify the dominant species and vegetation type within each polygon as well as any exotic or rare species present. In the third phase, these volunteer booklets were subjected to limited ground-truthing by Rana Creek Habitat Restoration in the late fall of 2001. GPS was used to confirm mapped locations and to map areas of special interest such as exotic species infestations. In addition, the vegetation descriptions provided by park staff and volunteers were confirmed and a set of vegetation classes adopted. Finally, a revised vegetation map for each park was prepared by Rana Creek Habitat Restoration using TNTmips® and ArcView® GIS. Vegetation was classified based on Holland-type communities (Holland, 1986) where appropriate. However, few Holland classifications exist for areas dominated by non-native species. Therefore, in disturbed areas, classes were based on the dominant species.

For each park, two additional maps summarize known locations of: 1) rare plant and animal species; and 2) introduced invasive plant species and pathogens. The introduced species map was prepared using information from the volunteer booklets as well as from observations made during ground-truthing surveys. Only those species known to be invasive or posing special management problems for the park were mapped. The rare species map was prepared from records in the California Natural Diversity Database (CDFG 2001a), information in the volunteer booklets, and conversations with park staff.

The *Jepson Manual* (Hickman, 1993) was the principal taxonomic reference used for botanical work. Information gathered from literature review, park staff, volunteers, and reconnaissance-level surveys was used to describe the existing conditions of the botanical resources.

3. COYOTE POINT RECREATION AREA

3.1 LOCATION AND FEATURES OF COYOTE POINT RECREATION AREA

Coyote Point Recreation Area is located in the City of San Mateo on the west shore of San Francisco Bay, three miles northwest of the San Mateo Bridge and across from the San Mateo Municipal Golf Course. The 715-acre park includes trails, picnicking areas, and a marina at the eastern end of the park. Recreational uses include swimming, windsurfing, picnicking, bicycling, jogging, fishing, and sailing.

Shell mounds indicate that this area was used by the Ohlone Native American tribe thousands of years ago. These people navigated the shores of San Francisco Bay in tule canoes, hunting and fishing the abundant resources of the bay. Until late in the nineteenth century, the area known as Coyote Point was an island surrounded by salt marsh. However, during the late 1800s the marsh between the island and mainland was drained and converted to dairy pasture. Other changes to the landscape occurred during this time period. A pier was built for lumber loading and blue gum eucalyptus (*Eucalyptus globulus*), Monterey cypress (*Cupressus macrocarpa*), and pines (*Pinus* spp.) were planted at the eastern end of the park. Between 1880 and 1962, Coyote Point served as a bathing area, amusement park, Merchant Marine Cadet School, and college. In 1962 San Mateo County acquired the property for use as a park and recreation area.

The primary plant community types documented in the park are depicted in Figure 3.1 and are listed below in Table 3.1. The vegetation of Coyote Point Recreation Area has been highly altered by urbanization. Although once a salt marsh, much of the park is now on compacted fill soil. In addition, most of the park has been landscaped with non-native species. Very little natural vegetation remains. However, valuable coastal salt marsh habitat occurs east of the marina. In addition, a small area of arroyo willows, freshwater marsh, and seasonal wetland occurs at the western end of the park. The latter communities are supported by winter runoff and summer irrigation passing through the park's drainage system.

The greatest threat to salt marsh (and adjacent mudflats) in the park is smooth cord grass (*Spartina alterniflora*). This invasive intertidal species from the Atlantic and Gulf Coast of North America has spread through much of south San Francisco Bay where it has hybridized with California cord grass (*Spartina foliosa*). The hybrid form is common in the marshes of Coyote Point Recreation Area (San Francisco Estuary Invasive Spartina Project, 2001). Smooth cord grass has been placed on List A by the California Exotic Pest Plant Council, indicating that it is one of the most invasive wildland pest plants of California (Bossard et al. 2000).

No rare plant species are known to occur within the park. However, there has been at least one sighting of the State- and Federally Endangered San Francisco Garter Snake (William Crawford, pers. comm.). In addition, Monarch butterflies have been reported wintering in the eucalyptus grove (CDFG 2001a). Finally, potential habitat exists in the salt marsh for three other rare species: 1) the State- and Federally Endangered Salt-marsh Harvest Mouse; 2) the State- and Federally Endangered California Clapper Rail; and 3) the State Threatened California Black Rail.

Table 3.1 Principal Vegetation Types Identified in Coyote Point Recreation Area

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Coastal Salt Marsh with Disturbed Upland Margin	pickleweed, cordgrass, alkali heath, jaumea, salt grass, gum plant	16.5	Sensitive under County Code; wetland under Coastal Act; considered sensitive by CDFG and COE
Seasonal Wetland	pickleweed, spearscale, salt grass	0.7	Sensitive if providing habitat for rare plants; considered sensitive by CDFG and COE
Elements of Arroyo Willow Riparian Woodland	arroyo willow	0.3	Sensitive under County Code; CDFG sensitive
Elements of Freshwater Marsh	prairie bulrush, brass buttons, salt grass	0.01	Sensitive under County Code; wetland under Coastal Act
Non-Native Grassland	wild oats, soft brome, filaree, California poppy, lupine	11.5	Sensitive if providing habitat for rare plants
Eucalyptus	blue gum eucalyptus, Monterey pine, French broom, toyon	39.4	No protective status for botanical resources
Landscaped	Aleppo pine, manzanita, Carmel creeper, Torrey pine, alder, poplar	22.2	No protective status for botanical resources
Developed	None: buildings, pavement, trails	51	No protective status for botanical resources
Sand Beach (littoral zone)	drift algae: <i>Ulva</i> sp. and <i>Enteromorpha</i> sp.	0.7	No protective status for botanical resources

3.2 VEGETATION CLASSIFICATION AND CONDITION

3.2.1 Upland Forest and Woodland Communities

Eucalyptus

An extensive stand of blue gum eucalyptus (*Eucalyptus globulus*) occurs just west of the marina. Although eucalyptus trees dominate this area, other introduced trees such as Monterey cypress (*Cupressus macrocarpa*) and pines (*Pinus* spp.) are also present.

Tree canopy in the grove varies from fairly open to nearly closed. Dense stands of eucalyptus occur throughout much of the grove, increasing the risk of fire in this area. In general, the southeastern portion of the grove has a more open canopy. Non-native annual grasses and forbs such as wild oats (*Avena fatua*), soft chess brome (*Bromus hordeaceus*), and oxalis (*Oxalis pes-caprae*) occur in the understory here. In addition, French broom (*Genista monspessulana*), an invasive non-native shrub, forms dense stands in several areas.

Few native shrubs and herbs grow within the eucalyptus grove. However, toyon (*Heteromeles arbutifolia*), coyote brush (*Baccharis pilularis*), soap root (*Chlorogalum pomeridianum*), and poison oak (*Toxicodendron diversilobum*) occur scattered among the eucalyptus. A particularly dense stand of soap root grows behind the Coyote Point Museum, while a few small stands of purple needlegrass (*Nassella pulchra*) occur across from the golf course near the entrance to the parking lot for the Coyote Point Museum.

3.2.2 Grassland

Non-native Grassland

This classification refers to areas dominated by introduced grasses and forbs such as wild oats (*Avena sativa*), rye (*Lolium* spp.), and plantain (*Plantago* spp). Fennel (*Foeniculum vulgare*), radish (*Raphanus sativus*), and French broom (*Genista monspessulana*) are common invasive species in these areas. Although grasslands in the park are dominated by non-native species, some native wildflowers grow scattered among the annual grasses. These natives include blue-eyed grass (*Sisyrinchium bellum*), California poppy (*Eschscholzia californica*), and yarrow (*Achillea millefolium*).

3.2.3 Riparian and Wetland Communities

Wetlands are afforded protection by the U. S. Army Corp of Engineers under section 404 of the Clean Water Act which regulates discharge of dredged or fill material into the waters of the United States (U.S. Army Corps of Engineers 1987). Procedures for identifying and delineating wetlands are described in the *Corps of Engineers Wetlands Delineation Manual* (U.S. Army Corps of Engineers, 1987).

Elements of Arroyo Willow Riparian Woodland

Arroyo willow riparian woodland occurs along intermittent and perennial streams near the coast as well as along the margins of seasonally flooded ditches and ponds. Most of the species that characterize this community are dependent on an extended period of soil moisture in these areas. Arroyo willow (*Salix lasiolepis*) is often the only tree within this community and forms a low but dense canopy. Rushes (*Juncus* spp.), sedges (*Carex* spp.), and umbrella sedge (*Cyperus* sp.) occur in the understory. Blackberry (*Rubus ursinus*) and poison oak (*Toxicodendron diversilobum*) often form thickets below the willows. Coyote brush (*Baccharis pilularis*) is also a common shrub within this community.

A small area of arroyo willows occurs along an artificial drainage near the Peninsula Humane Society. These native willows were planted in 1983 (William Crawford, pers. comm.). Weeping willow (*Salix babylonica*), an introduced species, has been planted next to the native arroyo willows. Further west, bulrush (*Scirpus robustus*) and salt grass (*Distichlis spicata*) grow within the drainage.

Coastal Salt Marsh with Disturbed Upland Margin

Salt marshes are tidally influenced plant communities that occur along wave-sheltered margins of bays, lagoons, and estuaries where they occupy the upper intertidal zone. Coastal wetlands in California have been severely altered by extensive diking, ditching, draining, and filling. Less than 10% of coastal wetlands present in California in the 1780s remain today (National Research Council 1995).

Tidal inundation in salt marshes affects soil aeration and chemistry and influences plant growth (Adam 1990). Few plants are able to survive in this environment. In central California, California cord grass (*Spartina foliosa*) often dominates the lower marsh, while pickleweed (*Salicornia virginica*), a succulent perennial herb less than 2 ft. high, occurs in the mid- to high marsh. Other common salt marsh species of the mid-high marsh in central California include salt grass (*Distichlis spicata*), fleshy jaumea (*Jaumea carnosa*), alkali heath (*Frankenia salina*), and gum-plant (*Grindelia stricta*).

Coastal salt marsh occurs at the west and east ends of the park and along the edges of the marina. Smooth cord grass hybrid (*Spartina alterniflora* x *S. foliosa*) and California cord grass (*Spartina foliosa*) grow in the low marsh and interspersed with pickleweed in the mid-marsh. Smooth cord grass (*Spartina alterniflora*) is a highly invasive species from the Atlantic and Gulf Coast of North America that has hybridized with California cord grass in San Francisco Bay (Bossard et al. 2000). Smooth cord grass is

capable of growing at lower tidal elevations than California cord grass and has spread to mudflats in the Bay, degrading shorebird feeding habitat (Bossard et al. 2000).

The mid-high marsh in the park is dominated by pickleweed (*Salicornia virginica*). Fleshy jaumea (*Jaumea carnosa*) and gum-plant (*Grindelia stricta*) also grow in the high marsh but are much less common. Introduced grasses and forbs dominate the upland margin of salt marsh in the park. Radish (*Raphanus sativa*), fennel (*Foeniculum vulgare*), ice plant (*Carpobrotus edulis*), salsola (*Salsola soda*), and brass buttons (*Cotula coronopifolia*) are among the non-native species growing in these areas

Coastal salt marsh is considered a sensitive community by the California Department of Fish and Game (CDFG 1999) and provides habitat for rodents, shorebirds, crustaceans, and a variety of insects. The Federally- and State Endangered San Francisco garter snake has been reported near salt marsh within the park. In addition, three listed animal species inhabit coastal salt marshes in the San Francisco Bay area and may occur within the park. These species are: California Clapper Rail, Black Rail, and Salt-marsh Harvest Mouse. The California Clapper Rail typically occurs in cord grass marsh, while the Salt-marsh Harvest Mouse utilizes pickleweed marsh and the adjacent uplands.

Elements of Freshwater Marsh

Freshwater marsh typically occurs in ponds and within estuaries where freshwater flow is strong enough to exclude saltwater. These areas are dominated by monocots dependent on high soil moisture. Cattail (*Typha latifolia*), tall cyperus (*Cyperus eragrostis*), spike rush (*Eleocharis* sp.), sedges (*Carex* spp.), rushes (*Juncus* spp.), small-fruited bulrush (*Scirpus microcarpus*), and prairie bulrush (*Scirpus robustus*) are common plants in freshwater marsh.

No natural freshwater marsh occurs within the park. However, a drainage ditch at the western end of the park contains some freshwater marsh vegetation supported by the park's drainage system. Runoff from turf irrigation passes through this drainage ditch in summer months, allowing wetland species to persist. Prairie bulrush (*Scirpus robustus*) dominates the lower channel with salt grass (*Distichlis spicata*) and brass buttons (*Cotula coronopifolia*) above along the banks. Common reed (*Phragmites australis*) grows near the southern end of the ditch.

Seasonal Wetland

A small area of seasonal wetland occurs in a low area at the western end of the park near the drainage channel mentioned above. This area is dominated by low-growing, salt-tolerant species, indicating alkali soil. Pickleweed (*Salicornia virginica*) accounts for at least 90% of the vegetative cover in the wetland. Spearscale (*Atriplex triangularis*) and salt grass (*Distichlis spicata*) are also important species. This area is an artificial wetland supported by occasional flooding from the adjacent pump station. Soils in this area are saline, as much of the park occurs on filled salt marsh.

3.2.4 Other Categories

Landscaped

This category refers to all lawns and landscaped areas. Plants used in landscaping are mostly introduced species. Some species are native to California but introduced to the park (e.g. Monterey Cypress). Certain species used within the landscaping such as myoporum (*Myoporum laetum*) and acacia (*Acacia* spp.) are invasive species.

Developed

This category refers to all buildings, pavement, trails, and picnic areas. Developed areas account for approximately 51 acres within the park. Note that a small remnant patch of native vegetation exists north of the museum on the bluff near the overlook. Blue elderberry (*Sambucus mexicana*) and California bay (*Umbellularia californica*) occur here.

Sand Beach (Littoral Zone)

Sand beach occurs at the western end of the park. Other sections of the waterfront are more developed.

3.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

3.3.1 Special Status Plant Species

No rare plants have been reported within the park or the immediate vicinity (CDFG 2001a). Most of the park is developed or landscaped and experiences high visitor use. It is unlikely that any rare plant species occur within the park.

3.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity.

Coastal Salt Marsh

Coastal salt marshes are considered sensitive habitats according to the County of San Mateo and CDFG. This status is due to the value of these areas to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. Coastal salt marshes are considered areas of high biological quality, warranting preservation and management.

Seasonal Freshwater Marsh, Elements of Arroyo Willow Riparian, Elements of Freshwater Marsh

Riparian and wetland habitats are considered sensitive by the County of San Mateo and CDFG. This status is due to the value of these areas to wildlife and the relatively limited (and declining) distribution of these habitats at the local and statewide level. The presence of freshwater and extended growing season in these areas create valuable habitat for a diverse group of wildlife.

3.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

A list of rare animal species known or with potential to occur within the park (Table 3.2) was compiled based on available habitat for State and federally listed species as well as those species listed by the California Department of Fish and Game as species of California Special Concern (CDFG July 2001b). Known locations of the species listed below are mapped in Figure 3.2.

Table 3.2: Special Status Animal Species Known or With Potential to Occur in Coyote Point Recreation Area

Species	Status	Known/Potential Occurrence in Park	Typical Habitat
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE; SE	Known	Many habitats – typically found near water.
California Black Rail (<i>Laterallus jamaicensis coturniculus</i>)	ST	Potential	Marsh and wet meadow
California Clapper Rail (<i>Rallus longirostris obsoletus</i>)	FE; SE	Potential	Coastal salt marsh with cord grass (<i>Spartina foliosa</i>)
Salt-marsh Harvest Mouse (<i>Reithrodontomys raviventris</i>)	FE; SE	Potential	Coastal salt marsh with dense pickleweed (<i>Salicornia virginica</i>)
Harbor Seal (<i>Phoca vitulina</i>)	FM	Known	Nearshore waters and inlets; haul out on beaches and rocks along coast.
Monarch Butterfly (<i>Danaus plexippus</i>)	None	Known. Reported wintering in eucalyptus grove (Fig. 3.2).	Roosts in wind-protected groves of eucalyptus, Monterey pine, or cypress near water and nectar sources.

FE: Federally Endangered; ST: State Threatened; SE: State Endangered; FM: Protected under the Federal Marine Mammal Protection Act of 1972.

3.5 INVASIVE, NON-NATIVE PLANT SPECIES AND PATHOGENS

3.5.1 Invasive, Non-native Plant Species

Exotic Pest Plant Species List

Exotic pest plant species are mapped in Figure 3.3. Only those species known to be invasive or posing special management problems for the park were mapped. Much of the information used in this map came from polygon descriptions in the volunteer booklets and is of low resolution. For instance, if French broom (*Genista monspessulana*) was reported in a particular polygon, the entire polygon was classified as containing French broom. During limited ground-truthing surveys, GPS was used to define the limits of exotic species infestations more precisely. The following species are mapped in Figure 3.3:

acacias (<i>Acacia</i> spp.)	mustard (<i>Brassica nigra</i>)
Australian tea tree (<i>Leptospermum laevigatum</i>)	myoporum (<i>Myoporum laetum</i>)
blue gum eucalyptus (<i>Eucalyptus globulus</i>)	Pampas grass (<i>Cortaderia jubata</i>)
bull thistle (<i>Cirsium vulgare</i>)	poison hemlock (<i>Conium maculatum</i>)
Cape ivy (<i>Senecio mikanioides/Delairea odorata</i>)	radish (<i>Raphanus sativus</i>)
fennel (<i>Foeniculum vulgare</i>)	smooth cord grass hybrid (<i>Spartina alterniflora</i> x <i>S. foliosa</i>)
French broom (<i>Genista monspessulana</i>)	yellow star thistle (<i>Centaurea solstitialis</i>)
iceplant/hottentot fig (<i>Carpobrotus edulis</i>)	

3.6 PLANT SPECIES LIST

The following source was used to compile Table 3.3: *Environmental Impact Report: Coyote Point Marina, County of San Mateo, California* (Environmental Planning and Management, Inc., c. 1972)

TABLE 3.3: PLANT SPECIES OF COYOTE POINT RECREATION AREA

Trees

<i>Acacia baileyana</i> *	Bailey's acacia
<i>Acacia</i> sp.*	acacia
<i>Aesculus californica</i>	California buckeye
<i>Alnus</i> sp.	alder
<i>Cupressus macrocarpa</i> ¹	Monterey cypress
<i>Eucalyptus globulus</i> *	blue gum eucalyptus
<i>Juniperus</i> sp.*	juniper
<i>Leptospermum laevigatum</i> *	tea tree
<i>Myoporum laetum</i> *	Myoporum
<i>Myrica californica</i>	wax myrtle
<i>Pinus contorta</i> ssp. <i>contorta</i>	shore pine
<i>Pinus halepensis</i> *	Aleppo pine
<i>Pinus muricata</i> ¹	Bishop pine
<i>Pinus radiata</i> ¹	Monterey pine
<i>Pinus torreyana</i> ¹	Torrey pine
<i>Platanus</i> (?) <i>acerifolia</i> *	plane tree
<i>Populus</i> sp. ¹	cottonwood
<i>Populus</i> sp.*	poplar
<i>Quercus agrifolia</i>	coast live oak
<i>Salix babylonica</i> *	weeping willow
<i>Salix lasiolepis</i>	arroyo willow
<i>Sambucus mexicana</i>	blue elderberry
<i>Umbellularia californica</i>	California bay
she oak*	

Shrubs

<i>Arctostaphylos montereyensis</i> ¹	Monterey Manzanita
<i>Arctostaphylos</i> sp.	manzanita
<i>Baccharis pilularis</i>	coyote brush
<i>Ceanothus</i> sp.	wild lilac
<i>Ceanothus</i> sp. ¹	Carmel creeper
<i>Cercis occidentalis</i> ¹	redbud
<i>Genista monspessulana</i> *	French broom
<i>Heteromeles arbutifolia</i>	toyon
<i>Mimulus aurantiacus</i>	sticky monkey flower
<i>Rhamnus californica</i>	California coffeeberry
<i>Rhus integrifolia</i> ¹	lemonade berry
<i>Toxicodendron diversilobum</i>	poison oak

Herbs

<i>Achillea millefolium</i>	yarrow
<i>Agapanthus</i> *	Agapanthus
<i>Ambrosia chamissonis</i>	beach bur
<i>Asclepias</i> sp.	milkweed
<i>Atriplex triangularis</i>	sparscale
<i>Avena</i> sp.*	wild oats
<i>Brassica nigra</i> *	mustard
<i>Carpobrotus edulis</i> *	Iceplant/hottentot fig
<i>Centaurea solstitialis</i> *	yellow star thistle
<i>Chlorogalum pomeridianum</i>	soap root
<i>Cirsium vulgare</i> *	bull thistle
<i>Cistus creticus</i> *	rock rose
<i>Conium maculatum</i> *	poison hemlock
<i>Cortaderia jubata</i> *	Pampas grass
<i>Cotula coronopifolia</i> *	brass buttons
<i>Dietes</i> sp.*	fortnight lily
<i>Distichlis spicata</i>	salt grass
<i>Erodium</i> sp.*	filaree
<i>Erysimum</i> sp.	wallflower
<i>Eschscholzia californica</i>	California poppy
<i>Foeniculum vulgare</i> *	fennel
<i>Glecoma hederacea</i> *	creeping charlie
<i>Grindelia stricta</i>	gum plant
<i>Hordeum</i> sp.*	foxtail
<i>Iris douglasiana</i>	Douglas iris
<i>Jaumea carnosa</i>	Jaumea
<i>Lolium</i> sp.*	rye grass
<i>Lupinus</i> sp.	lupine
<i>Pennisetum clandestinum</i> *	Kikuyu grass
<i>Phragmites australis</i>	common reed
<i>Picris echinoides</i> *	bristly ox-tongue
<i>Plantago coronopus</i> *	cut-leaved plantain
<i>Plantago lanceolata</i> *	English plantain
<i>Raphanus sativus</i> *	wild radish
<i>Salicornia virginica</i>	pickleweed
<i>Salsola soda</i> *	salsola
<i>Scirpus robustus</i>	prairie bulrush
<i>Sedum</i> sp.	stonecrop
<i>Senecio mikanioides</i> (= <i>Delairea odorata</i>)*	Cape ivy
<i>Sisyrinchium bellum</i>	blue-eyed grass
<i>Sonchus oleraceus</i> *	common sow thistle
<i>Sorghum bicolor</i> *	Milo weed
<i>Spartina alterniflora</i> x <i>S. foliosa</i> *	smooth cord grass hybrid
<i>Spartina foliosa</i>	California cord grass

Algae

<i>Enteromorpha</i> sp.	Enteromorpha
<i>Ulva</i> sp.	sea lettuce

¹ native to California but not to area * not native to California

3.7 ANIMAL SPECIES LIST

The following sources were used to compile Table 3.4: *Environmental Impact Report: Coyote Point Marina, County of San Mateo, California* (Environmental Planning and Management, Inc., c. 1972) and personal communication with William Crawford.

TABLE 3.4 ANIMAL SPECIES OF COYOTE POINT RECREATION AREA

MARINA BASIN

Invertebrates

Colonial <i>ascidians</i>	Sea Pork
<i>Balanus</i> sp.	Barnacle
<i>Bugula</i> sp.	Moss Animal
<i>Caprellid amphipods</i>	Skeleton Shrimp
<i>Diadumene</i> sp.	Sea Anemone
<i>Gammarid amphipods</i>	Beach Hoppers and Sand Fleas
<i>Molgula</i> sp., <i>Ciona intestinalis</i>	Sea Squirt
<i>Pachygrapsus crassipes</i>	Striped Shore Crab

Fish

Family Atherinidae	Silversides and Top Smelt
Family Embiotocidae	Surf Perch
<i>Morone saxatilis</i>	Striped Bass
<i>Mustelus henlei</i>	Brown Smoothhound Shark
<i>Syngnathus griseolineatus</i>	Pipefish
<i>Triakis semifacata</i>	Leopard Shark
<i>Myleobatis californicus</i>	Bat Ray

Birds

Common Loon
Red-throated Loon
Western Grebe
Eared Grebe
Horned Grebe
Pied-billed Grebe
Red-necked Grebe
Brown Pelican
Double-crested Cormorant
Bufflehead
Canvasback
Cinnamon Teal
Greater Scaup
Lesser Scaup
Mallard
Pintail
Ruddy Duck

Surf Scoter
White-winged Scoter
Red-breasted Merganser
American Coot
Northern Phalarope
Bonaparte's Gull (Also on mudflats, grasslands and pilings)
California Gull (Also on mudflats, grasslands and pilings)
Herring Gull (Also on mudflats, grasslands and pilings)
Ring-billed Gull (Also on mudflats, grasslands and pilings)
Western Gull (Also on mudflats, grasslands and pilings)
Caspian Tern (Also on mudflats)
Forster's Tern (Also on mudflats)

MARSH AND MUDDLATS

Invertebrates

Phylum Nematoda
Family Nereidae
Macoma inconspicua
Macoma nasuta
Mya arenaria

Barnea subtruncata
Petricola pholadiformis

unidentified pulmonate (lung-bearing) snail
Order Cumacea
Gammarid amphipods
Hemigrapsus oregonensis

Round Worms
Clam Worms
Mudflat Clam
Bent-nose Clam
Soft-shell Clam (Also among
rocks)
Piddock (boring clam in clay)
False Angel Wing (burrowing
clam)

shrimp-like crustaceans
Beach Hoppers and Sand Fleas
Bay Shore Crab (Also among
rocks)

Fish

Family Atherinidae

Silversides

Birds

Common Egret
Snowy Egret
Black-crowned Night Heron
Great Blue Heron
Green Heron
American Avocet
Black-bellied Plover
Semipalmated Plover
Killdeer
Whimbrel
Marbled Godwit
Willet
Greater Yellowlegs
Dowitcher

Long-billed Curlew
Black Turnstone
Ruddy Turnstone
Dunlin
Sanderling
Least Sandpiper
Western Sandpiper

PARK LAND AREA

Mammals

Raccoon
Opossum
Striped Skunk
Gray Squirrel
Pocket Gopher
Mole
(Feral) Cat

Birds

Canada Goose
Red-shouldered Hawk
Red-tailed Hawk
Great Horned Owl
Turkey Vulture
American Crow
American Kestrel

FILLED GRASSLAND AREA NEAR YACHT CLUB

Birds

Mourning Dove
Rock Dove
Western Meadowlark
American Goldfinch
Golden-crowned Sparrow
White-crowned Sparrow
Starling
Brewer's Blackbird
House Finch (Linnet)
Lesser Goldfinch

Amphibians

Slender Salamander
Western Toad
Pacific Treefrog

Reptiles

Western Fence Lizard
Pacific Gopher Snake
Garter Snake

Mammals

Microtus californicus

Meadow Mouse

ON OR NEAR ROCKS AT COYOTE POINT

Invertebrates

Microciona microjoanna
Phylum Platyhelminthes
Micrura sp.
Family Polynoidae
Family Nereidae
Balanus sp.
Ligyda occidentalis
Flabelliferan isopods
Gammarid amphipods
Palaemon macrodactylum
Pagurus hirsutiussculus
Hemigrapsus nudus
Mytilus edulis
Ostrea lurida
Acmaea persona
Littorina scutulata
Crepidula fornicata
Thais lamellosa
Urosalpinx cinereus
Alcyonidium sp.

Redbeard Sponge
Flat Worms
Nemertean (ribbon worm)
Scale Worms
Clam Worms
Barnacle
Sea Slater
Marine Pill Bugs
Sand Hopper and Beach Fleas
Shrimp
Hermit Crab
Purple Shore Crab
Blue Mussel
Olympic Oyster
Limpet
Checkered Periwinkle Snail
Eastern Slipper Shell
Wrinkled Rock Shell
Oyster Drill
Moss Animal

Fish

Family Embiotocidae

Surf Perch

Mammals

Rattus sp

Wharf Rat

OPEN WATER

Invertebrates

Polyorchis penicillatus
Lyonsia californica
Musculus senhousei
colonial bryozoans

Bay Jellyfish
Dipper Shell
Mussel
Moss Animals

Mammals

Harbor Seal

GENERAL DISTRIBUTION

Birds

Belted Kingfisher

Barn Swallow

4. CRYSTAL SPRINGS PARK

4.1 LOCATION AND FEATURES OF CRYSTAL SPRINGS PARK

Crystal Springs Park (Sawyer Camp and San Andreas Trails) extends for approximately 8 miles along Crystal Springs and San Andreas Lakes just west of Hwy 280 in San Mateo County. The park consists of a trail for non-motorized recreation set in a narrow public easement through property owned by the San Francisco Water Company. The Crystal Springs watershed surrounding the trail is recognized by the California Department of Fish and Game as a Wildlife Refuge and is considered a Biosphere Reserve.

Crystal Springs Park is dominated by coast live oak woodland. The park also extends through beautiful mixed evergreen forest, grassland, riparian forest, and coastal scrub (Table 4.1). The Jepson Laurel is one of the most famous landmarks along Sawyer Camp Trail. This tree is over 600 years old, making it the oldest and largest known California bay laurel in California.

Three rare plant species occur within the park. Crystal Springs lessingia (*Lessingia arachniodea*) and white-rayed pentachaeta (*Pentachaeta bellidiflora*) occur in grasslands within and adjacent to the park, while western leatherwood (*Dirca occidentalis*) occurs in mixed evergreen forest in the northern part of the park. Rare animals reported in the park include San Francisco Garter Snake, Red-legged Frog, and the Mission Blue Butterfly.

Table 4.1. Principal Vegetation Types Identified in Crystal Springs Park

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Coast Live Oak Woodland	coast live oak, buckeye, California bay, California blackberry, coffeeberry	281.9	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Mixed Evergreen Forest	madrone, tan oak, California bay, coast live oak, Douglas fir	58.5	Sensitive if supporting rare species
Mixed Exotic Forest	leptospermum, blackwood acacia, Monterey pine, eucalyptus	79.9	No protective status for botanical resources
Mixed Exotic Forest/Coast Live Oak Woodland	leptospermum, blackwood acacia, Monterey pine, coast live oak, toyon	18.5	Sensitive if supporting rare species
Coyote Brush Scrub	coyote brush, poison oak	99.6	Sensitive if supporting rare species
Non-Native Grassland	wild oats, soft brome, Harding grass, filaree, California poppy, lupine	54.8	Sensitive if providing habitat for rare plants
Non-Native Grassland with Some Native Grasses	purple needlegrass, wild oats, softchess brome, filaree, blue wildrye, California poppy, lupine	13.2	Sensitive if providing habitat for rare plants
Needlegrass Grassland (non-serpentine)	purple needlegrass, wild oats, California poppy, lupine	5.1	Sensitive if providing habitat for rare plants; considered sensitive by CDFG
Serpentine and Non-serpentine Needlegrass Grassland	purple needlegrass, California poppy, lupine, purple owls clover, California plantain	47.3	Sensitive; habitat for rare plants and insects; considered sensitive by CDFG
Arroyo Willow Riparian Woodland	arroyo willow, creek dogwood, poison oak, coyote brush	2.3	Sensitive under County Code and according to CDFG
Mixed Willow Riparian Woodland	arroyo willow, Pacific willow, dogwood, elderberry, Oregon ash, California blackberry, stinging nettle	63.6	Sensitive under County Code and according to CDFG
Freshwater Marsh	bulrush, sedge, cattail	0.6	Sensitive under County Code; wetland under Coastal Act; CDFG and COE sensitive.
Seasonal Freshwater Wetland	rush, sedge, umbrella sedge	1.1	Sensitive if providing habitat for rare plants; considered sensitive by CDFG and COE

4.2 VEGETATION CLASSIFICATION AND CONDITION

4.2.1 Upland Forest and Woodland Communities

Coast Live Oak Woodland

Coast live oak woodland occurs throughout the park but varies in quality and diversity. The woodland ranges from small oak stands with occasional exotic trees and shrubs in the southern portion of the park to the large, intact woodland just north of the mixed evergreen forest. Coast live oak woodland is dominated by coast live oak (*Quercus agrifolia*) in all areas, but California bay (*Umbellularia californica*), buckeye (*Aesculus californica*) and madrone (*Arbutus menziesii*) are often present as associate species. Understory plants include wild blackberry (*Rubus ursinus*), snowberry (*Symphoricarpos mollis*), wood fern (*Dryopteris arguta*), blue wild rye (*Elymus glaucus*), and poison oak (*Toxicodendron diversilobum*). Toyon (*Heteromeles arbutifolia*) is common in openings.

The largest threats to coast live oak woodland within the park are: 1) competition with introduced species such as Monterey pine (*Pinus radiata*), eucalyptus (*Eucalyptus globulus*), leptospermum (*Leptospermum laevigatum*), and blackwood acacia (*Acacia melanoxylon*); and 2) sudden oak death syndrome caused by the fungus, *Phytophthora novum*. At least one oak tree observed has this fungus (Fig. 3). Sudden oak syndrome spreads rapidly and may become a serious threat to the health of coast live oak, tan oak, California bay laurel, and madrone trees within the park in the near future.

Mixed Evergreen Forest

Hardwoods such as oaks (*Quercus* spp.), tan oak (*Lithocarpus densiflora*), California bay (*Umbellularia californica*), and madrone (*Arbutus menziesii*) dominate mixed evergreen forest. Douglas fir trees (*Pseudotsuga menziesii*) are scattered within the canopy. Typical understory plants include hazelnut (*Corylus cornuta*), hounds tongue (*Cynoglossum grande*), wood fern (*Dryopteris arguta*), climbing bedstraw (*Galium porrigens*), cream bush (*Holodiscus discolor*), hillside pea (*Lathyrus vestitus*), California polypody (*Polypodium californicum*), sword fern (*Polystichum munitum*), western bracken fern (*Pteridium aquilinum*), thimbleberry (*Rubus parviflorus*), snowberry (*Symphoricarpos mollis*), and poison oak (*Toxicodendron diversilobum*).

An extensive, diverse area of mixed evergreen forest occurs on the western side of the trail in the center of the park. Mixed willow riparian woodland extends for some distance along the opposite side of the trail making this section of the park extremely valuable wildlife habitat. In addition, western leatherwood (*Dirca occidentalis*), a rare shrub, grows next to the western side of the trail below a ridge covered with mixed chaparral. Pacific ninebark (*Physocarpus capitatus*), an uncommon species within the park, is also found along this section of trail.

Mixed evergreen forest often varies greatly in composition of tree species along a dry to wet gradient. A forest of Douglas fir mixed with madrone and tan oak may gradually intergrade with redwood forest in more sheltered canyons near the coast or live oak woodland in slightly more exposed areas with drier soils. Tree composition within the park is also somewhat variable. California bay (*Umbellularia californica*) is often more concentrated in slightly moister soils in drainages. In addition, a large grove of California bays occurs in the center of the mixed evergreen forest. The Jepson Laurel, a 600-year-old California bay, is located in this grove. Another area that stands out from the surrounding forest is “Buckeye Flats”. California buckeye (*Aesculus californica*) dominates this area.

Mixed Exotic Forest

A number of areas within the park are dominated by introduced trees such as blackwood acacia (*Acacia melanoxylon*), leptospermum (*Leptospermum laevigatum*), blue gum eucalyptus (*Eucalyptus globulus*), and Monterey pine (*Pinus radiata*). These areas have been mapped as mixed exotic forest on the vegetation map (Fig. 4.1) but are mapped according to the particular exotic species present in the map of invasive species and pathogens (Fig. 4.3).

Mixed Exotic Forest/Coast Live Oak Woodland

This category is similar to mixed exotic forest except that coast live oak, toyon (*Heteromeles arbutifolia*), coffeeberry (*Rhamnus californica*), and other characteristic species of coast live oak woodland occur mixed with the introduced trees. For more detailed information on which exotic tree species occur within particular areas, see the map of exotic species and pathogens (Fig. 4.3).

4.2.2 Chaparral and Scrub Communities

Coyote Brush Scrub

Coyote brush scrub occurs in openings and at the edges of coast live oak woodland and mixed evergreen forest. This community varies from a dense thicket of coyote brush (*Baccharis pilularis*) and poison oak (*Toxicodendron diversilobum*) to more open scrubland intermixed with patches of grassland. Coyote brush typically makes up 30% or more of the vegetative cover in this community. Other common species include poison oak and blackberry (*Rubus ursinus*). Toyon (*Heteromeles arbutifolia*) occasionally occurs scattered among the coyote brush in openings within the coast live oak woodland.

Coyote brush scrub often invades grasslands in the absence of grazing, mowing, or periodic fire. Cessation of grazing and fire suppression within the watershed over the last century has likely contributed to expansion of scrub into native grassland.

4.2.3 Grassland Communities

Perennial grasslands in California are among the most endangered ecosystem in the United States (Noss et al. 1995, Peters and Noss 1995). An area of approximately 7,000,000 ha (about 25% of the area of California) has been converted to annual grassland dominated by non-native annuals primarily of Mediterranean origin (Huenneke 1989). These plants include brome grass (*Bromus diandrus*, *B. hordeaceus*, and *B. madritensis rubens*), wild oats (*Avena barbata*, *A. fatua*), fillaree (*Erodium cicutarium*, *E. botrys*) and rat tail fescue (*Vulpia myuros*) (Heady et al. 1992), many of which were brought to North America in fodder for grazing animals. Conversion to non-native annual grassland was so fast, extensive, and complete that the original extent and species composition of native perennial grasslands are unknown (Burcham 1957, Barry 1972, Keeley 1989, Heady 1992, Holland and Keil 1995). Few studies have been published that describe the original grassland composition or that of presumed extant relicts (Heady 1988).

A variety of grasslands occur within and immediately adjacent to Crystal Springs Park. These grasslands range from areas dominated by annual and perennial exotic species to those dominated by native bunchgrasses such as California oatgrass (*Danthonia californica*) and needlegrasses (*Nassella* spp.). For mapping purposes, the grassland within the park has been divided into four types. The first two described are in the poorest condition and are dominated by weeds. The last two represent native grassland communities.

Non-native Grassland

Non-native grassland occurs on disturbed soils within the park and in areas where Harding grass (*Phalaris aquatica*), a non-native perennial, has invaded previously native grasslands. Dominant species in this community vary but include Harding grass (*Phalaris aquatica*), wild oats (*Avena* spp.), annual fescues (*Vulpia* spp.), ripgut brome (*Bromus diandrus*), and softchess brome (*Bromus hordeaceus*). Filaree (*Erodium* spp.), plantain (*Plantago* spp.), and Fuller's teasel (*Dipsacus sativus*) are also common.

Non-native Grassland with Some Native Grasses

This category is similar to the above except that native bunchgrasses such as California oatgrass and needlegrass are scattered throughout the area. These grasslands are common in mowed areas close to the trail. Although a number of non-native species exist in these areas, mowing likely reduces their ability to compete with the perennial natives. In addition, most of these areas occur on soil that has not been severely disturbed.

Needlegrass Grassland (non-serpentine)

Needlegrass grassland typically occurs on fine-textured soils. Needlegrass grassland is dominated by the perennial bunchgrass, purple needlegrass (*Nassella pulchra*), with both native and exotic annuals occurring among the bunchgrasses. Other common native species include foothill needlegrass (*Nassella lepida*), California poppy (*Eschscholzia californica*), melic grass (*Melica californica*), soap root (*Chlorogalum pomeridianum*), and yarrow (*Achillea millefolium*). Common non-native species include softchess brome (*Bromus hordeaceus*) and wild oats (*Avena fatua*). Approximately 5 acres of this community occur within the area mapped in Figure 4.1. One of the best examples is in the far southern part of the park.

Needlegrass grassland is a sensitive community protected by the California Department of Fish and Game (CDFG 1999).

Serpentine and Non-serpentine Needlegrass Grassland

Serpentine soils are derived from serpentine rock. They are ultra basic, nutrient-poor, and have a low calcium to magnesium ratio (USFWS, 1988). Serpentine soils may also be high in heavy metals. These soil properties make it difficult for plants to survive there. A number of native species have evolved adaptations that allow them to grow in this difficult environment. In addition, because few introduced species found in non-native grassland grow well in these soils, weed competition is reduced for those natives that can tolerate the adverse soil conditions. Serpentine grassland provides habitat for rare plants and animals and is considered sensitive by the California Department of Fish and Game (CDFG 1999).

Serpentine grassland is visible along the south-west facing slope to the east of Crystal Springs Reservoir. In some areas serpentine soils extend into the park. Because the distribution of serpentine in this area is patchy, these grasslands have been mapped as “serpentine and non-serpentine needlegrass grassland”. The serpentine areas are typically lower in total vegetative cover than the non-serpentine areas but are often higher in cover of native species. As in non-serpentine needlegrass grassland, perennial bunchgrasses (e.g. *Nassella* spp.) dominate. Other plant species found in this community include the rare Crystal Springs lessingia (*Lessingia arachnoidea*), flax-flowered linanthus (*Linanthus liniflorus*), hairy seed lomatium (*Lomatium dasycarpum*), Douglas’ microseris (*Microseris douglasii*), and Crystal Springs flax (*Hesperolinon spergulinum*). The federally-threatened Bay Checkerspot Butterfly is restricted to grasslands with serpentine outcrops in the vicinity of San Francisco Bay and may occur along this ridge. Other rare animals that are known to occur within grasslands in the park are the Edgewood Blind Harvestman and the Mission Blue Butterfly (CDFG 2001a).

Coyote brush scrub often invades grasslands in the absence of grazing, mowing, or periodic fire. Cessation of grazing and fire suppression within the watershed over the last century has likely contributed to expansion of scrub into native grassland.

4.2.4 Riparian and Wetland Communities

Wetlands are afforded protection by the U.S. Army Corp of Engineers under section 404 of the Clean Water Act which regulates discharge of dredged or fill material into the waters of the United States (Environmental Laboratory of U.S. Army Corps of Engineers 1987). Procedures for identifying and delineating wetlands are described in the *Corps of Engineers Wetlands Delineation Manual* (U.S. Army Corps of Engineers, 1987).

Arroyo Willow Riparian Woodland

Arroyo willow riparian woodland is dominated by arroyo willow (*Salix lasiolepis*). Creek dogwood (*Cornus sericea*) is often common and may form large thickets. Other common species within this community include blackberry (*Rubus ursinus*), mugwort (*Artemisia douglasiana*), and poison oak (*Toxicodendron diversilobum*). Pacific willow (*Salix lucida* ssp. *lasiandra*) may occur scattered among arroyo willows but is never dominant or co-dominant. Brown dogwood (*Cornus glabrata*), an uncommon species within the park, occurs within arroyo willow riparian woodland.

Approximately 2.3 acres of arroyo willow woodland occurs within or immediately adjacent to park boundaries. Harding grass (*Phalaris aquatica*), an invasive perennial grass, occupied the margins of these woodlands in some areas. Overall, the riparian woodland within the park was in fair condition.

Mixed Willow Riparian Woodland

This community is dominated by willow species (*Salix lasiolepis*, *S. lucida* ssp. *lasiandra*, and *S. laevigata*), cottonwood (*Populus* spp.), Oregon ash (*Fraxinus latifolia*), and creek dogwood (*Cornus sericea*) also occur here. An extensive area of mixed willow riparian occurs on the eastern side of the trail in the central portion of the park. This area lies immediately opposite the large tract of mixed evergreen forest and forms valuable wildlife habitat. Although field surveys were limited to park boundaries, this community appeared to be in excellent condition throughout. Both the canopy and understory were well-developed. Few weeds were observed.

Seasonal Freshwater Wetland

Seasonal freshwater wetland is characterized by large seasonal fluctuations in water levels. During the winter these areas hold standing water, but by summer they are mostly or completely dry. Species adapted to these conditions include rushes (*Juncus* spp.) sedges (*Carex* spp.), and umbrella sedge (*Cyperus eragrostis*). The largest seasonal wetland within the park is within a detention pond at the southern end of the park.

Freshwater Marsh

Approximately 0.6 acres of freshwater marsh occurs just outside of the park at the edge of San Andreas Reservoir. Freshwater marsh is found in areas permanently flooded by freshwater and is dominated by emergent wetland species such as tule (*Scripus acutus*, *S. californicus*), bulrush (*S. robustus*), and cattails (*Typha* spp.).

4.2.5 Other Categories

Developed

This category refers to buildings, parking areas, trails, and picnic areas.

4.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

4.3.1 Special Status Plant Species

Some of the park provides habitat for species of concern, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered. The special status plant species known or with potential to occur in the vicinity of the park are listed below in Table 4.2.

Several more common species that are uncommon in the park (Charles Brock and Dr. John Salzer pers. comm.) are included with special status plant species in Table 4.2 and Figure 4.2. These include Pacific ninebark, box elder, Fremont cottonwood, and Crystal Springs flax.

Table 4.2: Rare and Uncommon Plant Species that Occur in the Park and Immediate Vicinity

Species	Status	Potential/Known Occurrence
western leatherwood (<i>Dirca occidentalis</i>)	CNPS 1B	Occurs in park.
Crystal Springs lessingia (<i>Lessingia arachnoidea</i>)	CNPS 1B	Occurs in park.
white-rayed pentachaeta (<i>Pentachaeta bellidiflora</i>)	CNPS 1B	Occurs in park.
fragrant fritillary (<i>Fritillaria liliacea</i>)	CNPS 1B	Reported near southern end of park in <i>Draft Peninsula Watershed Mgmt. Plan.</i>
fountain thistle (<i>Cirsium fontinale</i>)	CNPS 1B	Reported near southern end of park in <i>Draft Peninsula Watershed Mgmt. Plan.</i>
Marin dwarf flax (<i>Hesperolinon congestum</i>)	FT; ST; CNPS 1B	Reported near central area of park in <i>Draft Peninsula Watershed Mgmt. Plan.</i>
San Mateo wooly sunflower (<i>Eriophyllum latilobum</i>)	FE; SE; CNPS 1B	Reported near central area of park in <i>Draft Peninsula Watershed Mgmt. Plan.</i>
Crystal Springs flax (<i>Hesperolinon spergulinum</i>)	None; unusual in park	Occurs in park.
Fremont cottonwood (<i>Populus fremontii</i>)	None; unusual in park	Occurs in park.
chia (<i>Salvia columbariae</i>)	None; unusual in park	Occurs in park.
silk tassel (<i>Garrya elliptica</i>)	None; unusual in park	Occurs in park.
Pacific ninebark (<i>Physocarpus capitatus</i>)	None; unusual in park	Occurs in park.
box elder (<i>Acer negundo</i>)	None; unusual in park	Occurs in park.
gumplant (<i>Grindelia camporum</i>)	None; unusual in park	Occurs in park.
psoralea (<i>Hoita orbicularis</i>)	None; unusual in park	Occurs in park.

FT: Federally Threatened; FE: Federally Endangered; ST: State Threatened; SE: State Endangered; CNPS 1B: California Native Plant Society List 1B (rare, threatened, or endangered in CA).

4.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. Four of the plant communities within the park – oak woodland, needlegrass grassland (both serpentine and non-serpentine), riparian woodland, and seasonal freshwater wetlands – are sensitive communities. Although freshwater marsh is also a sensitive community, this area is outside of the park on the shore of San Andreas Reservoir.

Coast Live Oak Woodland

The oak woodlands on the project site are typical of similar areas of California. Due to changes in land use, however, their distribution and habitat quality has been reduced, such that the community is considered significant by CDFG.

Riparian Woodland

Riparian woodland is considered sensitive by the County of San Mateo and CDFG. This status is due to the value of these forests to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

Serpentine and Non-serpentine Needlegrass Grassland

Both serpentine needlegrass grassland and non-serpentine needlegrass grassland are considered sensitive habitats according CDFG due to the prevalence of native plant species. Serpentine needlegrass grassland is especially sensitive due to this community's known and potential for rare, threatened or endangered species and its limited distribution within the region. These areas exhibit native perennial bunchgrasses and contain other native herbaceous plant species.

Seasonal Wetlands

Seasonal wetland is sensitive habitat according to the County of San Mateo and CDFG. This status is due to the value of these wet areas to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

4.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

Some of the park provides habitat for species of concern, including those listed by the USFWS or CDFG as rare, threatened, or endangered. The special status animal species known or with potential to occur in the park are listed in Table 4.3. Those reported in the park are mapped in Figure 4.2.

Table 4.3: Rare Animal Species That May Occur in Crystal Springs Park

Species	Status	Known/Potential Occurrence	Typical Habitat
Edgewood Blind Harvestman (<i>Calcina minor</i>)	None*	Reported in park.	Open grassland on the underside of moist serpentine rock near permanent springs.
Mission Blue Butterfly (<i>Icaricia icarioides missionensis</i>)	FE	Reported in park.	Grasslands with lupine food-plants (<i>Lupinus albifrons</i> , <i>L. formosus</i> , & <i>L. variicolor</i>)
California Tiger Salamander (<i>Ambystoma tigrinum californiense</i>)	DFG CSC, Protected	Potential habitat occurs in park.	Grassland or foothill woodland near seasonal or permanent water
California Red-legged Frog (<i>Rana aurora draytoni</i>)	FT	Reported at Crystal Springs Dam.	Grassland, woodland, or forest in or near water
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE; SE	Reported in park.	Grassland, scrub, chaparral, woodland, or forest near water
Western Pond Turtle (<i>Clemmys marmorata</i>)	DFG CSC, Protected	Reported in park.	Ponds, lakes, streams, irrigation ditches with aquatic vegetation
Cooper's Hawk (<i>Accipiter cooperii</i>)	DFG CSC ¹	Breeds in park vicinity.	Woodland, forest
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	DFG CSC ¹	Reported in park. Suspected breeding species.	Mixed woodlands
Purple Martin (<i>Progne subis</i>)	DFG CSC ¹	Reported in park. Breeding status unknown.	Colonial cavity nester
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	DFG CSC; USFWS MNBMC	Occurs in park.	Open, brushy fields and the edges of woods
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	USFWS MNBMC ¹	Reported in park. Suspected breeding species.	Coniferous forest, bogs
White-tailed Kite (<i>Elanus leucurus</i>)	USFWS MNBMC; DFG Fully Protected ¹	Reported in park. Breeding status unknown.	Brushy grasslands

FT: Federally Threatened; FE: Federally Endangered; FSC: Federal Species of Concern; SE: State Endangered; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Fully Protected/Protected: CA Dept. of Fish and Game fully protected or protected species; USFWS MNBMC: U.S. Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern.

* former category 2 federal Candidate species. This designation is no longer in use. However, this species may become a Candidate at a later date.

¹ status applies to nesting birds

4.5 INVASIVE, NON-NATIVE PLANT SPECIES AND PATHOGENS

4.5.1 Invasive, Non-native Plant Species

Invasive, non-native species that occur in the park are listed below and mapped in Figure 4.3.

Only those species known to be invasive or posing special management problems for the park are mapped. Much of the information used in this map came from polygon descriptions in the volunteer booklets and is of low resolution. For instance, if French broom (*Genista monspessulana*) was reported in a particular polygon, the entire polygon was classified as containing French broom. During ground-truthing surveys, GPS was used to define the limits of exotic species infestations more precisely. However, it was not possible to map all invasive species infestations, particularly those just outside the park, within the time allotted to these surveys.

acacia species (<i>Acacia</i> spp.)	iceplant/hottentot fig (<i>Carpobrotus edulis</i>)
blackwood acacia (<i>Acacia melanoxylon</i>)	Italian thistle (<i>Carduus pycnocephalus</i>)
bull thistle (<i>Cirsium vulgare</i>)	Leptospermum/Australian tea (<i>Leptospermum laevigatum</i>)
Bailey's acacia (<i>Acacia baileyana</i>)	Monterey cypress (<i>Cupressus macrocarpa</i>)
Cape ivy/German ivy (<i>Senecio mikanoides/Delairea odorata</i>)	Monterey pine (<i>Pinus radiata</i>)
cotoneaster (<i>Cotoneaster</i> sp.)	Pampas grass (<i>Cortaderia jubata</i>)
English ivy (<i>Hedera helix</i>)	poison hemlock (<i>Conium maculatum</i>)
blue gum eucalyptus (<i>Eucalyptus globulus</i>)	periwinkle (<i>Vinca major</i>)
French broom (<i>Genista monspessulana</i>)	Scotch broom (<i>Cytisus scoparius</i>)
fennel (<i>Foeniculum vulgare</i>)	California Oak Mortality/Sudden Oak Death (<i>Phytophthora</i> sp.)
Fuller's teasel (<i>Dipsacus sativus</i>)	yellow star thistle (<i>Centaurea solstitialis</i>)
Harding grass (<i>Phalaris aquatica</i>)	

4.5.2 Pathogens

California Oak Mortality disease, formerly known as Sudden Oak Death disease, is present within the park on at least one tree (Fig. 4.3). The pathogen responsible for this disease is either a new or newly introduced species of water mold fungus in the genus *Phytophthora*. This disease was first noticed to be present in the County in 1997 or 1998 and has, in some areas, since reached epidemic proportions.

California Oak Mortality is known to infect tanoak (*Lithocarpus densiflorus*) (which is extremely susceptible), coast live oak (*Quercus agrifolia*), Shreve oak (*Q. parvula shrevei*), and black oak (*Q. kelloggii*). Also affected, but apparently with less mortality, are California bay (*Umbellularia californica*) and madrone (*Arbutus menziesii*). Recently the disease has been found on wild evergreen huckleberry (*Vaccinium ovatum*) and manzanita (*Arctostaphylos*) shrubs, and nursery stock of rhododendrons (*Rhododendron* spp.). To prevent spread of the disease into Oregon, the Oregon Department of Agriculture has imposed an emergency Sudden Oak Death quarantine against California that regulates the host oak species, some of their associated wood products, and rhododendron stock.

The disease was first detected in 1995 on tanoaks in Marin County. The disease has subsequently spread both locally and regionally throughout central coastal California. It has now been discovered in portions of Sonoma, Napa, San Mateo, Santa Clara, Santa Cruz, and Monterey Counties. California Oak Mortality is believed to take three or more years to kill a tree, and many infected oaks and tanoaks show no visible external symptoms. The symptoms of California Oak Mortality are illustrated on the California Oak Mortality Task Force web page located at www.suddenoakdeath.org. Additional symptoms include total or partial discoloration of the live crown, with the dead leaves remaining on the tree for a period of time, especially in tanoak. This set of symptoms is used to determine the presence of the syndrome, although only DNA testing can accurately determine the presence of this new species of *Phytophthora*. A "black

zonal line” bordering lesions in the wood, observed by cutting away the bark, is diagnostic of this and other *Phytophthora* infections. A microbial culture of tissue from the zonal line may be used to confirm the diagnosis. California Oak Mortality is known to spread via infected wood and via “resting asexual spores” in soil or water. The California Oak Mortality *Phytophthora* has been found in rainwater runoff below infected oak trees. Its ability to spread in soil or water makes California Oak Mortality similar to the better-studied Port Orford cedar disease. However, unlike Port Orford cedar disease, California Oak Mortality also appears to have an aerial component of spread, perhaps through detached sporangia that become airborne.

California Oak Mortality is present within the park. Opportunities exist to inform park managers and visitors on measures to prevent/control the spread of this fungus.

(Note: The information used to prepare the above account of COM was derived from Steve Singer, forest ecologist, and from Garbelotto et al. 2001, Management and Regulations Committee of the California Oak Mortality Task Force 2001).

4.6 PLANT SPECIES LIST

The following list was compiled from field notes taken by Charles Brock, park ranger at Crystal Springs Park, and Dr. John Salzer, volunteer at Crystal Springs Park.

Scientific names follow Hickman (1993).

TABLE 4.4 PLANT SPECIES OF CRYSTAL SPRINGS PARK

Trees

<i>Acacia baileyana</i> *	Bailey's acacia
<i>Acacia melanoxylon</i> *	blackwood acacia
<i>Acacia</i> sp.*	acacia
<i>Acer macrophyllum</i>	big leaf maple
<i>Acer negundo</i>	box elder
<i>Aesculus californica</i>	California buckeye
<i>Arbutus menziesii</i>	madrone
<i>Cupressus macrocarpa</i> *	Monterey cypress
<i>Eucalyptus camaldulensis</i> *	red gum eucalyptus
<i>Eucalyptus globulus</i> *	blue gum eucalyptus
<i>Fraxinus latifolia</i>	Oregon ash
<i>Leptospermum laevigatum</i> *	Leptospermum/Australian tea tree
<i>Lithocarpus densiflora</i>	tanbark oak
<i>Myrica californica</i>	Pacific wax myrtle
<i>Olea europaea</i> *	European olive
<i>Pinus halepensis</i> *	Allepo pine
<i>Pinus radiata</i> *	Monterey pine
<i>Populus fremontii</i>	Fremont cottonwood
<i>Populus</i> sp.*	Lombardy poplar
<i>Prunus ilicifolia</i>	holly leaf cherry
<i>Prunus</i> sp.*	domestic plum
<i>Pseudotsuga menziesii</i>	Douglas fir
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus</i> sp.	"white oak" (possibly <i>Q. garryana</i> ?)
<i>Salix lasiolepis</i>	arroyo willow
<i>Salix lucida</i> ssp. <i>lasiandra</i>	Pacific/yellow willow
<i>Sequoia sempervirens</i>	coast redwood
<i>Umbellularia californica</i>	California bay

Shrubs

<i>Adenostoma fasciculatum</i>	chamise
<i>Arctostaphylos</i> sp.*	manzanita (introduced)
<i>Artemisia californica</i>	California sagebrush
<i>Baccharis pilularis</i>	coyote brush
<i>Ceanothus cuneatus</i>	buckbrush
<i>Ceanothus integerrimus</i>	deerbrush
<i>Ceanothus thyrsiflorus</i>	blue blossom
<i>Cornus glabrata</i>	brown dogwood
<i>Cornus sericea</i>	creek dogwood
<i>Corylus cornuta</i> var. <i>californica</i>	hazelnut

*Cotoneaster pannosa**
*Cytisus scoparius**
Dirca occidentalis
Eriodictyon californicum
Euonymus occidentalis
Garrya elliptica
*Genista monspessulana**
Heteromeles arbutifolia
Holodiscus discolor
Lepechinia calycyna
Lonicera hispidula
Mimulus aurantiacus
Oemleria cerasiformis
Physocarpus capitatus
*Pyracantha angustifolia**
Rhamnus californica
Rhamnus crocea
Ribes sp.
Ribes sp.
Rosa gymnocarpa
Rubus parviflorus
Rubus ursinus
Sambucus mexicana
Symphoricarpos albus
Symphoricarpos mollis
Thermopsis macrophylla
Toxicodendron diversilobum

cotoneaster
Scotch broom
western leatherwood
yerba santa
burning bush
silktassel
French broom
toyon
ocean spray/cream bush
pitcher sage
honeysuckle
sticky monkey flower
oso berry
Pacific ninebark
firethorn
coffeeberry
redberry
currant
gooseberry
wood rose
thimbleberry
blackberry
blue elderberry
snowberry
creeping snowberry
false-lupine
poison oak

Herbs

Achillea millefolium
Adiantum jordanii
Agoseris heterophylla
*Aira caryophylla**
*Anagallis arvensis**
Anaphalis margaritacea
Angelica hendersonii
Aquilegia formosa
Aristida sp.
Artemisia douglasiana
Asclepias fascicularis
Aster chilensis
Aster radulinus
*Avena barbata**
*Avena fatua**
*Avena sativa**
Baccharis douglasii
*Bellardia trixago**
*Brassica rapa**
*Briza maxima**
*Bromus diandrus**
*Bromus hordaceus**

common yarrow
maidenhair fern
mountain dandelion
hair grass
scarlet pimpernel
pearly everlasting
angelica
columbine
three-awn grass
mugwort
narrow-leaved milkweed
California aster
white aster
slender wild oat
wild oat
cultivated oat
Douglas' baccharis
bellardia
field mustard
big quaking grass
ripgut brome
soft chess

<i>Bromus madritensis</i> ssp. <i>rubens</i> *	red brome
<i>Bromus</i> spp.	brome grass
<i>Calochortus albus</i>	globe lily
<i>Calochortus luteus</i>	yellow mariposa lily
<i>Calystegia subacaulis</i>	hill morning glory
<i>Camissonia ovata</i>	sun cup
<i>Cardamine californica</i>	milkmaids, toothwort
<i>Carduus pycnocephalus</i> *	Italian thistle
<i>Carex</i> spp.	sedges
<i>Carpobrotus edulis</i> *	iceplant/hottentot fig
<i>Castilleja affinis</i>	Indian paintbrush
<i>Centaurea calcitrapa</i> *	purple star thistle
<i>Centaurea solstitialis</i> *	yellow star thistle
<i>Centaureum davyi</i>	centaury
<i>Chamomilla suaveolens</i> *	pineapple weed
<i>Chlorogalum pomeridianum</i>	soap plant
<i>Chrysanthemum leucanthimum</i> *	ox eye daisy
<i>Cirsium occidentale</i> var. <i>venustum</i>	Venus thistle
<i>Cirsium vulgare</i> *	bull thistle
<i>Clarkia rubicunda</i>	clarkia
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Clematis ligusticifolia</i>	virgin's bower
<i>Conium maculatum</i> *	poison hemlock
<i>Conyza canadensis</i>	horseweed
<i>Corallorhiza striata</i>	striped coral root
<i>Cordylanthus rigidus</i>	rigid cordylanthus
<i>Cortaderia jubata</i> *	Pampas grass
<i>Cortaderia selloana</i> *	Pampas grass
<i>Cynoglossum grande</i>	hound's tongue
<i>Cynosurus echinatus</i> *	hedgehog dogtail grass
<i>Cyperus</i> sp.	umbrella sedge
<i>Dactylis glomerata</i> *	orchard grass
<i>Danthonia californica</i>	California oat grass
<i>Delphinium hesperium</i>	western larkspur
<i>Dicentra formosa</i>	bleeding heart
<i>Dichelesteremma capitatum</i>	blue dicks
<i>Dipsacus sativus</i> *	Fuller's teasel
<i>Disporum hookeri</i>	fairy bells
<i>Disporum smithii</i>	fairy lantern
<i>Dryopteris arguta</i>	coastal wood fern
<i>Ehrharta</i> sp.*	ehrharta
<i>Elymus glaucus</i>	blue wildrye
<i>Epipactis helleborine</i> *	orchid
<i>Equisetum</i> sp.	horetail
<i>Eragrostis</i> sp.*	love grass
<i>Eriophyllum confertiflorum</i>	golden yarrow
<i>Erodium cicutarium</i> *	red-stemmed filaree
<i>Erodium moschatum</i> *	white-stemmed filaree
<i>Eriogonum nudum</i>	naked-stemmed buckwheat
<i>Eriogonum</i> sp.	red buckwheat
<i>Eschscholzia californica</i>	California poppy
<i>Foeniculum vulgare</i> *	fennel

<i>Fragaria vesca</i>	wood strawberry
<i>Fritillaria biflora</i>	mission bells
<i>Galium aparine</i> *	goose grass
<i>Galium porrigens</i>	climbing bedstraw
<i>Geranium molle</i> *	cranesbill
<i>Gnaphalium stramineum</i>	cotton-batting plant
<i>Grindelia camporum</i>	gumplant
<i>Guillenia lasiophylla</i>	California mustard
<i>Hedera helix</i> *	English ivy
<i>Hedypnois cretica</i> *	Crete weed
<i>Helenium puberulum</i>	sneezeweed
<i>Heracleum lanatum</i>	cow parsnip
<i>Hesperolinon spergulinum</i>	Crystal Springs flax
<i>Heuchera micrantha</i>	alum root
<i>Hoita orbicularis</i>	psoralea
<i>Holcus lanatus</i> *	velvet grass
<i>Hordeum murinum</i> ssp. <i>leporinum</i> *	foxtail
<i>Hordeum vulgare</i> *	cultivated barley
<i>Hypochaeris glabrata</i> *	smooth cat's ear
<i>Hypochaeris radicata</i> *	hairy cat's ear
<i>Iris douglasiana</i>	Douglas iris
<i>Iris</i> sp.*	iris (introduced)
<i>Juncus patens</i>	spreading rush
<i>Juncus</i> spp.	rushes
<i>Koeleria macrantha</i>	June grass
<i>Lactuca</i> sp.	prickly lettuce
<i>Lathyrus vestitus</i>	hillside pea
<i>Lessingia arachnoidea</i>	Crystal Springs lessingia
<i>Leymus triticoides</i>	creeping wildrye
<i>Linanthus liniflorus</i>	flax-flowered linanthus
<i>Linum usitatissimum</i> *	common flax
<i>Lolium perenne</i> *	ryegrass
<i>Lomatium dasycarpum</i>	hairy seed lomatium
<i>Lotus corniculatus</i>	bird's foot trefoil
<i>Lotus scoparius</i>	deerweed
<i>Lotus</i> sp.	lotus
<i>Lupinus bicolor</i>	bicolor lupine
<i>Lupinus formosus</i>	summer lupine
<i>Lupinus</i> sp.	lupine
<i>Lythrum hyssopifolium</i> *	loosestrife/grass poly
<i>Madia elegans</i> ssp. <i>densifolia</i>	common madia
<i>Madia madioides</i>	woodland madia
<i>Marah fabaceus</i>	wild cucumber
<i>Marah oreganus</i>	coast manroot
<i>Medicago polymorpha</i> *	bur clover
<i>Melica californica</i>	melic grass
<i>Melica</i> sp.	melic grass
<i>Melilotus officinalis</i> *	yellow sweetclover
<i>Microseris douglasii</i>	Douglas' microseris
<i>Mimulus guttatus</i>	monkey flower
<i>Monardella villosa</i>	coyote mint
<i>Muhlenbergia</i> sp.	muhly

<i>Myosotis latifolia</i> *	forget-me-not
<i>Nassella lepida</i>	foothill needlegrass
<i>Nassella pulchra</i>	purple needlegrass
<i>Osmorhiza chilensis</i>	sweet cicely
<i>Panicum sp.*</i>	panic grass
<i>Pedicularis densiflora</i>	indian warrior
<i>Pennisetum villosum</i> *	pennisetum
<i>Pentachaeta bellidiflora</i>	white-rayed pentachaeta
<i>Pentagramma triangularis</i>	goldenback fern
<i>Phalaris aquatica</i> *	Harding grass
<i>Phalaris californica</i>	California phalaris
<i>Picris echoides</i> *	bristly ox-tongue
<i>Plantago erecta</i>	California plantain
<i>Plantago lanceolata</i> *	English plantain
<i>Plantago major</i> *	common plantain
<i>Polypodium californicum</i>	California polypody
<i>Polystichum munitum</i>	western sword fern
<i>Potentilla glandulosa</i>	sticky cinquefoil
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern
<i>Ranunculus californicus</i>	California buttercup
<i>Rumex acetosella</i> *	sheep sorrel
<i>Rumex conglomeratus</i> *	green dock
<i>Rumex crispus</i> *	curly dock
<i>Salvia columbariae</i>	chia
<i>Sanicula crassicaulis</i>	Pacific sanicle
<i>Satureja douglasii</i>	yerba buena
<i>Senecio mikanioides</i> (= <i>Delairea odorata</i>)*	German/Cape ivy
<i>Scrophularia californica</i>	California bee plant
<i>Silene californica</i>	California Indian pink
<i>Silybum marianum</i> *	milk thistle
<i>Sisyrinchium bellum</i>	blue-eyed grass
<i>Smilacina racemosa</i>	fat Solomon's seal
<i>Smilacina stellata</i>	thin Solomon's seal
<i>Solanum umbelliferum</i>	purple nightshade
<i>Sonchus asper</i> *	prickly sow thistle
<i>Sonchus oleraceus</i> *	common sow thistle
<i>Spergularia rubra</i> *	sand-spurry
<i>Stachys bullata</i>	hedge nettle
<i>Tellima grandiflora</i>	fringe cups
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	meadow rue
<i>Torilis arvensis</i> *	hedge parsley
<i>Tragopogon porrifolius</i> *	salsify
<i>Trientalis latifolia</i>	Pacific star flower
<i>Trifolium campestre</i> *	hop clover
<i>Trifolium hirtum</i> *	rose clover
<i>Trifolium variegatum</i>	clover
<i>Trillium chloropetalum</i>	giant trillium
<i>Triteleia laxa</i>	Ithuriel's spear
<i>Urtica dioica</i> ssp. <i>holosericea</i>	hoary nettle
<i>Verbena lasiostachys</i>	vervain
<i>Veronica americana</i>	American brooklime
<i>Vicia sp.</i>	vetch

*Vinca major**
*Vulpia bromoides**
Woodwardia fimbriata
Wyethia angustifolia
Zigadenus fremontii

periwinkle
annual fescue
giant chain fern
mule ears
star lily

* introduced species

4.7 ANIMALS SPECIES LIST

No previous reports for Crystal Springs Park contain animal species lists. The park does have a bird list, which served as the sole source for the bird list below. Only a short list of other animals was available for the park (Charles Brock pers. comm.). Therefore, an asterisk (*) has been placed next to all non-avian animals that have actually been recorded within the park according to this short list. All other non-avian animals listed have the potential to occur within the park.

TABLE 4.5: ANIMAL SPECIES OF CRYSTAL SPRINGS PARK

Amphibians

<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Aneides lugubris</i>	Arboreal Salamander
<i>Bufo boreas halophilus</i>	California Toad
<i>Hyla regilla</i>	Pacific Tree Frog
<i>Rana aurora draytoni</i>	California Red-legged Frog*
<i>Rana catespeiana</i>	Bullfrog

Reptiles

<i>Sceloporus occidentalis occidentalis</i>	N.W. Fence Lizard
<i>Eumeces skiltonianus skiltonianus</i>	Western Skink*
<i>Gerrhonotus multicarinatus multicarinatus</i>	California Alligator Lizard
<i>Gerrhonotus coeruleus coeruleus</i>	San Francisco Alligator Lizard
<i>Coluber constrictor mormon</i>	Western Yellow-bellied Racer*
<i>Pituophis melanoleucus catenifer</i>	Pacific Gopher Snake
<i>Lampropeltis getulus californiae</i>	California Kingsnake*
<i>Lampropeltis zonata multifasciata</i>	Coast Mountain Kingsnake*
<i>Thamnophis sirtalis tetrataenia</i>	San Francisco Garter Snake*
<i>Thamnophis elegans terrestris</i>	Coast Garter Snake
<i>Thamnophis couchi atratus</i>	Santa Cruz Garter Snake
<i>Crotalus viridis oregonus</i>	Northern Pacific Rattlesnake*
<i>Clemmys marmorata</i>	Western Pond Turtle*

Birds

Red-breasted Nuthatch
Pygmy Nuthatch
Brown Creeper
Rock Wren
Bewick's Wren
Winter Wren
Golden-crowned Kinglet
Ruby-crowned Kinglet
Hermit Thrush
Swainson's Thrush
American Robin
Varied Thrush
Wrentit
California Thrasher
American Pipit

Loggerhead Shrike
European Starling
Hutton's Vireo
Warbling Vireo
Orange-crowned Warbler
Yellow-rumped Warbler
Black-throated Gray Warbler
Townsend's Warbler
Common Yellowthroat
Wilson's Warbler
Western Tanager
Rose-breasted Grosbeak
Black-headed Grosbeak
Lazuli Bunting
Spotted Towhee
California Towhee
Fox Sparrow
Song Sparrow
Lincoln's Sparrow
White-throated Sparrow
Golden-crowned Sparrow
White-crowned Sparrow
Dark-eyed Junco
Red-winged Blackbird
Western Meadowlark
Brewer's Blackbird
Bullock's Oriole
Purple Finch
House Finch
Pine Siskin
Lesser Goldfinch
American Goldfinch
Pacific Loon
Common Loon
Pie-billed Grebe
Horned Grebe
Red-necked Grebe
Eared Grebe
Western Grebe
Clark's Grebe
Double-crested Cormorant
Great Blue Heron
Great Egret
Snowy Egret
Green-backed Heron
Black-crowned Heron
Canada Goose
Wood Duck
Green-winged Teal
Mallard
Northern Pintail
Northern Shoveler

Gadwall
American Wigeon
Canvasback
Ring-necked Duck
Common Goldeneye
Bufflehead
Hooded Merganser
Common Merganser
Red-breasted Merganser
Ruddy Duck
Turkey Vulture
Osprey
White-tailed Kite
Bald Eagle
Sharp-shinned Hawk
Cooper's Hawk
Red-shouldered Hawk
Red-tailed Hawk
American Kestrel
California Quail
American Coot
Killdeer
Greater Yellowlegs
Willet
Spotted Sandpiper
Long-billed Dowitcher
Ring-billed Gull
California Gull
Western Gull
Caspian Tern
Forster's Tern
Band-tailed Pigeon
Mourning Dove
Barn Owl
Great Horned Owl
White-throated Swift
Anna's Hummingbird
Allen's Hummingbird
Belted Kingfisher
Acorn Woodpecker
Nuttall's Woodpecker
Downy Woodpecker
Hairy Woodpecker
Northern Flicker
Olive-sided Flycatcher
Western Wood-pewee
Pacific-slope Flycatcher
Black Phoebe
Say's Phoebe
Ash-throated Flycatcher
Eastern Phoebe
Purple Martin

Violet-green Swallow
Cliff Swallow
Barn Swallow
Steller's Jay
Scrub Jay
American Crow
Common Raven
Chestnut-backed Chickadee
Oak Titmouse
Bushtit

Mammals

Didelphis marsupialis
Sorex ornatus
Scapanus latimanus
Eptesicus fuscus
Lepus californicus
Sylvilagus audubonii
Sylvilagus bachmani
Eutamias merriami
Sciurus griseus
Otospermophilus beecheyi
Thomomys bottae
Reithrodontomys megalotis
Peromyscus californicus
Peromyscus boylii
Peromyscus maniculatus
Neotoma fuscipes
Microtus californicus
Perognathus californicus
Mus musculus
Urocyon cinereoargenteus
Canis latrans
Procyon lotor
Mustela frenata
Taxidea taxus
Mephitis mephitis
Felis concolor
Lynx rufus
Odocoileus hemionus columbianus

Common Opossum*
Ornate Shrew
Broad-handed Mole
Big Brown Bat
Black-tailed Hare
Audubon Cottontail
Brush Rabbit
Merriam Chipmunk
Western Gray Squirrel
California Ground Squirrel
Botta Pocket Gopher
Western Harvest Mouse
California Deer Mouse
Brush Mouse
Deer Mouse
Dusky-footed Wood Rat*
California Meadow Mouse
California Pocket Mouse
House Mouse
Gray Fox*
Coyote*
Raccoon*
Long-tailed Weasel*
Badger
Striped Skunk*
Mountain Lion*
Bobcat*
Black-tailed Deer*

5. EDGEWOOD PRESERVE

5.1 LOCATION AND FEATURES OF EDGEWOOD PRESERVE

Edgewood Preserve and Natural Preserve encompasses approximately 467 acres. The preserve is situated in the southeast of the intersection of Interstate 280 and Edgewood Road near the City of Redwood City. The preserve lies in the northern portion of the Santa Cruz Mountains and abuts other open space lands, including lands owned by the San Francisco Water District and Midpeninsula Regional Open Space District (Pulgas Ridge Open Space). The preserve has a complex geologic composition and soil distribution that supports a mosaic of plant community types. A special feature of the preserve is the presence of serpentine-derived soil, which supports many endemic species, some under Federal and State protection. The grassland, in particular, attracts many park visitors in the spring when its native wildflowers are blooming.

The lands that are now Edgewood Preserve were historically utilized by Native Americans and then by Mexican and European settlers for ranching. Other recent uses include off road vehicles. Prior to the sites declaration as a natural preserve in 1993, the park was proposed for a State college, then a golf course. Currently, the Preserve provides passive recreational uses, including picnicking and hiking. The preserve is also used for nature study and research, particularly related to the serpentine endemic special status plant and animal species (e.g., Bay Checkerspot Butterfly).

The preserve lands are undeveloped and support seventeen twenty principal plant community types (based on the classification system by Holland, 1986). The primary plant community types documented in the preserve are depicted on Figure 5.1 (Vegetation Communities) and are listed below on Table 5.1.

The main vegetation types (i.e., those covering the most area) are oak woodland, chaparral, scrub and grassland, as portrayed in Table 5.1. In addition to native vegetation types, there are also areas showing evidence of past disturbance, such as areas dominated by invasive, non-native plants (e.g., French broom scrub). As depicted on the plant community map (Figure 5.1), the preserve contains a diverse assemblage of primary plant community types. The diverse assemblage of community types is the result of differences in the site's topography, substrate (e.g., presence of serpentine-derived soils), fire history, and past land uses.

The historic land uses within portions of the preserve lands (e.g., cattle ranching as described in the *Edgewood Park and Natural Preserve Master Plan*, County of San Mateo, 1997) has resulted in the planting and subsequent natural revegetation of non-native trees and understory plants. The most notable non-native trees in the preserve are the blue gum eucalyptus. These trees occur along the perimeter of the preserve. The preserve also supports numerous non-native shrubs and groundcovers, including some species that are considered invasive pests. The dominant invasive species are yellow star thistle, Italian thistle, bull thistle, French and Spanish broom.

Despite the incursion of human-induced vegetation, the preserve supports several sensitive upland habitats and special status plant species. The preserve land affords considerable plant biodiversity including examples of plant communities and species that are indigenous to the region. The preserve is known to support plant communities that are considered sensitive; these include: serpentine bunchgrass grassland, serpentine chaparral, serpentine rock outcrops and oak woodland. The serpentine grassland supports rare species unique to this region of the world, including those listed under either Federal or State Endangered Species Acts. The species known to occur in the preserve include Bay Checkerspot Butterfly, San Mateo thornmint, Marin western flax, white-rayed pentachaeta, and fragrant fritillary (*Edgewood Park and Natural Preserve Master Plan*, County of San Mateo, 1997). The occurrence of

these species, as well as other locally unique plant species, underscores the importance of these habitats to the region's diversity.

Table 5.1. Principal Plant Community Types Identified in Edgewood Preserve

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Serpentine Chaparral	chamise, leather oak, buckbrush, chaparral pea	18.1	Sensitive, known habitat for rare plants
Chamise Chaparral	chamise, buckbrush, yerba santa, deerweed, coyote brush	27.2	Sensitive if supporting rare species
Coastal Scrub	coyote brush, California sage, sticky monkey flower, coffeeberry, poison oak, California blackberry	8	Sensitive if supporting rare species
Coyote Brush Scrub	coyote brush, poison oak	3.4	Sensitive if supporting rare species
Coastal Sagebrush Scrub	California sagebrush, poison oak, sticky monkey flower, buckwheat	5.7	Sensitive if supporting rare species
French Broom Scrub	French broom, Spanish broom, coyote brush	0.8	No protective status for botanical resources
Coast Live Oak Woodland	coast live oak, buckeye, California bay, California blackberry, coffeeberry	201.1	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Mixed Oak Woodland	coast live oak, valley oak, California bay, poison oak, toyon, California blackberry, coffeeberry	2.5	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Serpentine Bunchgrass Grassland	purple needlegrass, big squirreltail, Italian ryegrass, California poppy, lupine, purple owls clover, California plantain, goldfields, tidy tips	144.4	Sensitive; habitat for rare plants and insects; considered sensitive by CDFG
Non-Native Grassland	wild oats, soft brome, Italian ryegrass, filaree, yellow star thistle, California poppy, lupine, sow thistle, false purple brome	21.3	Sensitive if providing habitat for rare plants
Non-Native Grassland, with natives	Purple needlegrass, wild oats, Italian ryegrass. Soft brome, filaree, Kellogg's yampah, wild rye California poppy, lupine	21.6	Sensitive if providing habitat for rare plants
Native Grassland	purple needlegrass, wild rye, meadow barley, Kellogg's yampah, California poppy, lupine	1.8	Sensitive if providing habitat for rare plants; considered sensitive by CDFG
Eucalyptus Tree Groves	blue gum eucalyptus, Monterey pine, French broom	2.0	No protective status for botanical resources
Redwood Tree Grove	coast redwood	0.001	No protective status for botanical resources
California Bay Forest	California bay, coast live oak, madrone, buckeye	2.5	No protective status for botanical resources
Wet Meadow/Seasonal wetland	sedge, rush, California oatgrass, Harding grass, triteleia, fiddle dock, common monkey flower, Kellogg's yampah	8.0	Sensitive if providing habitat for rare plants; considered sensitive by CDFG and COE
Willow Riparian Woodland	Willow, dogwood	<1	considered sensitive by CDFG and COE

5.2 VEGETATION CLASSIFICATION AND CONDITION

5.2.1 Upland Forest and Woodland Communities

Coast Live Oak Woodland

The preserve contains approximately 201 acres of woodland dominated by coast live oak (Table 5.1). The woodland primarily occurs throughout the preserve. While the overstory is dominated by coast live oak (*Quercus agrifolia*), the density of the trees varies from open tree groves to dense, shaded woods. Associated tree species include California buckeye (*Aesculus californica*) and California bay (*Umbellularia californica*). There are also areas where valley oak (*Quercus lobata*) and leather oak (*Quercus durata*) (note: leather oak occurs where serpentine substrates are found within the oak woodland) were documented within the woodland. Compared to the chaparral and scrub areas, the oak woodland occurs in areas having deeper soil profiles that are rich in organic matter, and have a thick duff layer. The understory is diverse with shrubs and subshrubs, such as poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), sticky monkey flower (*Mimulus aurantiacus*), hillside gooseberry (*Ribes californica*), toyon (*Heteromeles arbutifolia*), and coyote brush (*Baccharis pilularis*). The groundcover is equally diverse with annual and perennials, including California lomatium (*Lomatium californicum*), Douglas iris (*Iris douglasiana*), Hooker's fairy bells (*Disporum hookeri*), coastal wood fern (*Dryopteris arguta*), creeping snowberry (*Symphoricarpos mollis*), miners lettuce (*Montia perfoliata*), sword fern (*Polystichum munitum*), hairy honeysuckle (*Lonicera hispidula*) and yerba buena (*Satureja douglasii*).

Several plant species that are of botanical interest due to their limited occurrences and/or beauty were noted within the coast live oak woodland by park staff, preserve docents and other volunteers. These plants include: red columbine (*Aquilegia formosa*), striped and spotted coral root (*Corallorrhiza striata* and *C. maculata*), elegant piperia (*Piperia elegans*), California pink (*Silene californica*), Chinese houses (*Collinsia multicolor*), golden brodiaea (*Triteleia ixioides*), Indian warrior (*Pedicularis densiflorus*), snapdragon (*Antirrhinum vexillo-cayculatum*), goldenrod (*Euthamia occidentalis*), and tiger lily (*Lilium pardalinum*).

Invasive, non-native plant species were also noted within the oak woodland; the most prevalent species are French broom (*Genista monspessulanus*), scattered non-native pines (*Pinus* sp.), bull thistle (*Cirsium vulgare*), yellow star thistle (*Centaurea solstitialis*) (where oak woodland abuts grasslands) and rock rose (*Cistus creticus*).

The CDFG recognizes coast live oak woodland as a significant habitat type that has been reduced in extent compared to historical levels. The CDFG typically has a policy of "no net loss" to protect oak forests. Although the oak woodland supports occurrences of invasive, non-native plant species, the overall condition of the plant community is considered good. The oak woodland offers opportunities to remove and/or control the spread of these invasive understory plant species. The oak woodland also offers opportunities for the preservation and management of special status plant species.

Mixed Oak Woodland

The preserve contains approximately 2.5 acres of mixed oak woodland (Table 5.1). The woodland is co-dominated by coast live oak and valley oak, yet also contains California buckeye (*Aesculus californica*) and California bay. The understory is diverse with shrubs and subshrubs, most commonly noted are poison oak, toyon, California blackberry, coyote brush, blue elderberry (*Sambucus mexicana*), wood rose (*Rosa californica*) and coffeeberry (*Rhamnus californica*). In open areas, the understudy is diverse with annual and perennials similar to the coast live oak woodland, discussed above. Herbaceous species recorded from the woodland include Pacific sanicle (*Sanicula crassicaulis*) and Indian warrior (T. Corelli, comments on draft plan, 2002).

Invasive, non-native plant species were also noted within the mixed oak woodland; the most prevalent species are French broom, bull thistle and yellow star thistle (where oak woodland abuts grasslands).

The CDFG recognizes mixed oak woodland as a significant habitat type that has been reduced in extent compared to historical levels. The CDFG typically has a policy of "no net loss" to protect oak forests. As discussed for the coast live oak woodland, above, the mixed oak woodland supports occurrences of invasive, non-native plant species, however, the overall condition of the plant community is considered good. The mixed oak woodland offers opportunities to remove and/or control the spread of these invasive understory plant species. The oak woodland also offers opportunities for the preservation and management of special status plant species.

Eucalyptus Tree Groves

The eucalyptus tree groves within the preserve, covering approximately 2 acres (Table 5.1), are dominated by blue gum eucalyptus (*Eucalyptus globulus*). These tree groves are non-native, with most planted in the early-mid 1900's. The eucalyptus tree groves are most prevalent along the perimeter of the preserve, as noted on the vegetation map. Although the blue gum eucalyptus is the dominant tree species, other trees were also observed within these groves, such as pines (*Pinus* sp.). The understory is typically sparse due to the dense litter and bark peels from the eucalyptus trees.

The non-native eucalyptus tree is adapted to natural fire. In their native habitat (i.e., Australia), eucalyptus tree forests are subject to natural fires. The tree's seed is released from its cap after a fire and, as also occurs with the Monterey pine seed, is adapted to germinating in open, fire scorched soil. The thick duff beneath the trees (comprised of leaf and bark litter) as well as the numerous bark peels on the tree trunk provides favorable conditions for crown fires. In recognition of the fire danger these trees pose to nearby residential areas and the fact that these groves are non-native, there are opportunities to remove these trees and re-establish native woodlands (e.g., oak woodland) or grassland (where the tree occur amid grassland areas).

Redwood Tree Grove

The Preserve supports a small redwood tree grove. This grove is comprised of coast redwood (*Sequoia sempervirens*). One grove was documented in the preserve in the northeast corner; the grove covers approximately 0.001 acre (Table 5.1). The tree grove occurs in a previously developed area and was most likely planted in the mid 1900's. The grove abuts coast live oak woodland and coastal scrub.

California Bay Forest

The preserve contains approximately 2.5 acres of California bay forest (Table 5.1). The forest occurs along the eastern property line and abuts coast live oak woodland. The forest is dominated by California bay, yet also contains lesser amounts of coast live oak, buckeye and madrone. The understory is comprised of shrubs, such as California blackberry, poison oak, and snowberry (*Symphoricarpos alba*) (T. Corelli, comments on draft plan, 2002). The bay forest has few recorded occurrences of invasive, non-native plant species and the overall condition of the plant community is therefore considered good.

5.2.2 Chaparral and Scrub Communities

Serpentine Chaparral

The serpentine chaparral grows in serpentine terrain; the preserve contains approximately 18.1 acres of serpentine chaparral (Table 5.1).

The serpentine chaparral within the preserve is comprised of dense, impenetrable stands of shrubs, most notable a mixture of chamise (*Adenostoma fasciculatum*) and leather oak (*Quercus durata*). Associated species include buckbrush (*Ceanothus cuneatus*), chaparral pea (*Pickeringia montana*), poison oak, toyon, coffeeberry, pitcher sage (*Lepechinia calycina*), sticky monkey flower and yerba santa (*Eriodictyon californicum*). Other plants are present, but in lesser quantities, such as soap plant (*Chlorogalum pomeridianum*), Fremont star lily (*Zigadenus fremontii*), deerweed (*Lotus scoparius*), coyote mint (*Monardella villosa*), foothill needlegrass (*Nassella lepida*), lomatium (*Lomatium dasycarpum*) and California bee-plant (*Scrophularia californica*).

The serpentine chaparral has been reported to support some occurrences of invasive, non-native plant species; however these occurrences are less than in non-serpentine areas. Species recorded from the serpentine chaparral include yellow star thistle and Italian thistle (*Carduus pycnocephalus*) (volunteer notebooks). These plants thrive in sunny, previously disturbed soils, such as along roads, cut slopes and in other previously disturbed areas. As the plants grow into dense stands and exclude the growth of most native plant species, their presence reduces the plant diversity of the habitat. Overall the condition of the serpentine chaparral is considered good in terms of species diversity and minimal infestation by invasive plant species. The chaparral within the preserve offers opportunities to remove and/or control the spread of these invasive understory plant species. The chaparral also offers opportunities for the preservation and management of special status plant species.

Plant species growing in these areas have adaptations to survive the dry, rocky soils; their long root systems obtain moisture from deep fractures in the rock. The chaparral is dominated by stump (or crown)-sprouting shrubs that grow new stems from buds on the root crown, and as such, are adapted to, and respond well, to wildfire. Typical stump (crown)-sprouting shrubs include chamise, toyon, poison oak and buck brush. Plants, such as deerweed and sticky monkey flower, are shallow-rooted and shorter lived than the other shrubs. Many annual plants are also adapted to wildfire. Their seeds lie dormant underground from one fire to the next, sprouting in the post-fire open areas of the shrub lands. The chaparral community may pose a fire hazard to residential areas, where houses abut these natural areas.

Special status plant species endemic to serpentine substrates have been documented on rocky outcrops within this plant community type in the preserve. Serpentine chaparral is considered a "threatened" community by the California Department of Fish and Game (CDFG 1999) due to the predominance of rare or endangered species.

Chamise Chaparral

This chaparral type is comprised of dense, impenetrable stands of chamise with little or no understory. This series grows on the non-serpentine ridges and south-facing slopes of the preserve. The chamise is distinguished from most other shrubs by its thin, needle-like leaves. Other shrubs are present, but in lesser quantities, such as buck brush, yerba santa, deerweed (*Lotus scoparius*) and holly-leaved cherry (*Prunus illicifolia*). Other species include coyote brush, toyon, coffeeberry, poison oak and some California sagebrush (*Artemisia californica*) and pitcher sage. The chamise chaparral is adapted to natural fire, as the chamise and many of the other shrubs sprout from rootstock following a fire. The chaparral community may pose a fire hazard to residential areas, where houses abut these natural areas. Overall the condition of the chamise chaparral is considered good in terms of species diversity and minimal infestation by invasive plant species.

Approximately 27.2 acres of this series occur on the preserve.

Coyote Brush Scrub

Thickets of coyote brush scrub occur on hillsides within the preserve. The scrub habitat is dominated by coyote brush, but also includes scattered occurrences of poison oak, coffeeberry, California blackberry, California sagebrush, sanicle (*Sanicula* sp.), common yarrow (*Achillea millefolium*), hedge nettle (*Stachys* sp.) and California bee plant. Non-native plants include French broom, Italian thistle and pampas grass. The condition of the scrub is considered fair, due to the occurrences of invasive plant species. The scrub offers opportunities for removal and control of these species.

The preserve supports approximately 3.4 acres of coyote brush scrub.

Coastal Scrub

The preserve supports areas of scrub habitat that are dominated by soft and semi-soft evergreen shrubs. These areas occur along the south-facing slopes in the preserve. The preserve contains approximately 8 acres of coastal scrub (Table 5.1).

Shrubs of coyote brush, coffeeberry, California sagebrush, and poison oak interspersed with California blackberry are the dominant plant species that were observed in the scrub habitat of the preserve. Associated species include sticky monkey flower, flowering currant, yerba santa, chaparral clematis (*Clematis lasiantha*), sticky monkey flower and toyon. Grasses and forbs are not prevalent within the coastal scrub. However, plants such as foothill needlegrass, California cudweed (*Gnaphalium californicum*), hedge nettle (*Stachys bullata*), Fremont's star lily and sanicle have been noted to occur in the preserve.

The scrub areas within the preserve are subject to infestation from invasive, non-native plant species. In some areas, yellow star thistle occurs along the perimeter of the scrub. Invasive biennial plants were also observed in the scrub habitats, including bull thistle. These plants grow well in the previously disturbed soils. As these plants grow into dense stands, they successfully compete with, and over time, exclude the growth of the native plant species, such that their presence reduces the plant diversity of the habitat. The coastal scrub areas within the preserve offer opportunities to remove and/or control the spread of these invasive plant species.

Coastal Sage Scrub

The preserve supports areas of scrub habitat that are dominated by soft shrubs, primarily California sagebrush. These areas occur along the south-facing slopes in the preserve and abut oak woodland, grassland and chaparral habitats. The preserve contains approximately 5.7 acres of coastal scrub (Table 5.1).

Shrubs of California sagebrush dominate the scrub, however coyote brush, coffeeberry, and poison oak are also present. California blackberry is also present in the scrub. Associated species include silver bush lupine (*Lupinus albifrons*), sticky monkey flower and toyon. The condition of the scrub is considered good, due to the low occurrences of invasive plant species.

5.2.3 Grassland Communities

Several areas within the preserve are comprised of grassland. Based on the review of the aerial photographs and the volunteer's field reconnaissance surveys, approximately 189 acres of grassland occur in the preserve (Table 5.1).

The grassland communities in the preserve have been modified by historical land uses, particularly

Mexican land grant cattle grazing and the subsequent introduction of non-native European grasses and forbs. More recently, the grasslands have become infested with non-native pests, including yellow star thistle, Italian thistle and French broom. In some areas of the preserve, primarily on non-serpentine soils, the grasslands are dominated by annual, non-native grass species (primarily of European origin). Where the grasslands are situated on serpentine-derived soils, native grasses have persisted, particularly purple needlegrass and squirrel tail grass (*Elymus multisetus*). In moist grassland areas, California oatgrass (*Danthonia californica*), a native perennial grass, is also present. Three grassland types have been distinguished in the preserve: non-native grassland, non-native grassland with native component and serpentine bunchgrass grassland.

All of the grasslands within the preserve are subject to infestation from invasive, non-native plant species. In some areas, perennial plants, such as velvet grass (*Holcus lanatus*) were noted by volunteers. Invasive annual plants were also noted, including yellow star thistle, wild mustard and Italian thistle. These plants grow well in the previously disturbed soils. As these plants grow into dense stands, they successfully compete with, and over time, exclude the growth of the native plant species, such that their presence reduces the plant diversity of the habitat. All the grasslands within the preserve offer opportunities to remove and/or control the spread of these invasive plant species.

Non-Native Grassland

The non-native grasslands are dominated by annual non-native species and are considered California annual grassland, or non-native grassland. Approximately 21.3 acres of this community occur within the preserve, as depicted on Figure 5.1.

The non-native grasslands are dominated by non-native grass species, such as wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), Harding/canary grass (*Phalaris* spp.), rattail fescue (*Vulpia myuros*) and Italian ryegrass (*Lolium multiflorum*). Other non-native species observed within the grasslands include wild mustard (*Brassica* sp.), sow thistle (*Sonchus asper*), ripgut brome (*Bromus diandrus*), sheep sorrel (*Rumex acetosella*), redstem filaree (*Erodium cicutarium*), cut-leaved geranium (*Geranium dissectum*), English plantain (*Plantago lanceolata*), rattlesnake grass (*Briza maxima*), bristly ox-tongue (*Picris echioides*), Italian thistle, bull thistle, dog tail grass (*Cynosurus echinatus*), cat's ear (*Hypochaeris* sp.) and hawk's beard (*Crepis vesicaria* spp. *taraxacifolia*).

The grasslands also support native plants, including patches of native grasses and annual wildflowers; species noted include California brome (*Bromus carinatus*), blue wild rye (*Elymus glaucus*), purple needlegrass (*Nassella pulchra*) and California poppy (*Eschscholzia californica*).

Non-Native Grassland with Native Component

Some grasslands within the preserve (that are not in serpentine areas) are dominated by a mixture of native perennial grasses (i.e., purple needlegrass) and annual non-native grasses, such as wild oat, Italian ryegrass, soft chess and rattail fescue. Native plant species are also common within the grassland. These species include blue-eyed grass (*Sisyrinchium bellum*), blue dicks (*Dichelostemma capitatum*), bicolor lupine (*Lupinus bicolor*), yarrow (*Achillea millefolium*), sun cups (*Camissonia ovata*), Ithuriel's spear (*Triteleia laxa*), farewell to spring (*Clarkia rubicunda*), California poppy and soap plant.

Some areas support dense areas of owl's clover (*Castilleja densiflora*), goldfields (*Lasthenia californica*) and Kellogg's yampah (*Perideridia kelloggii*).

Serpentine Bunchgrass Grassland

Much of the native perennial grassland area within the preserve occurs along in the southern and central areas. The grassland also intermixes with the oak woodland. The serpentine area bunchgrass supports a unique flora adapted to a substrate derived from serpentine soils. Some of the plant species have a very limited distribution and subsequently are considered rare.

The presence of serpentine-derived soils and a high frequency of perennial and annual native grasses and forbs characterize the grassland. Where the soils are derived from serpentine bedrock, the reddish or greenish rock weathers to very infertile soils. Due to the thinness of the soil layer, a low moisture-holding capacity and a unique chemical composition (i.e., relatively high concentrations of iron and manganese and low levels of calcium, potassium and phosphates) the serpentine areas support numerous endemic plant species. These species are capable of growing under these conditions and benefit from less competition from other plants, particularly European grasses and other non-native species.

During the spring months, the grassland is notable by the presence of California plantain (*Plantago erecta*), owls clover (*Castilleja densiflora*), purple owls clover (*Castilleja exserta*), tidy tips (*Layia platyglossa*), goldfields (*Lasthenia californica*), cream cups (*Platystemon californicum*), yarrow, California poppy, common muilla (*Muilla maritima*) and lomatium (*Lomatium* sp.).

Native grasses include purple needlegrass and squirreltail grass (*Elymus multisetus*). Other native plant species are present, such as blue-eyed grass, California gilia (*Gilia capitata*), fringed checkerbloom (*Sidalcea diploscypha*), California melic (*Melica californica*), popcorn flower (*Plagiobothrys* sp.), phacelia (*Phacelia imbricata*) and serpentine linanthus (*Linanthus ambiguous*). Non-native grasses are also present, including Italian ryegrass and wild oats.

In addition to the high diversity of native flowering plants within the serpentine grasslands, the grasslands on the preserve were confirmed to support occurrences of special status plant species. Colonies of serpentine linanthus (*Linanthus ambiguous*), fragrant fritillary (*Frittilaria liliacea*), Marin dwarf flax (*Hesperolinum congestum*), white-rayed pentachaeta (*Pentachaeta bellidiflora*), and woolly headed lessingia (*Lessingia hololeuca*), all rare plant species, have been documented in the grasslands. The grassland also contains some rocky outcrops amid the serpentine grassland. The outcrops were vegetated with herbaceous plant species typical of the adjacent serpentine grassland, with the addition of native species typical of shrub lands.

Approximately 144 acres of serpentine grassland occur on the preserve.

5.2.4 Riparian and Wetland Communities

Wet meadow/Seasonal Wetland

Typical plant species observed in this meadow type include brown-headed rush (*Juncus phaeocephalus*), iris-leaved rush (*Juncus xiphioides*), spreading rush (*Juncus patens*), willow dock (*Rumex salicifolius*), meadow barley (*Hordeum brachyantherum*), common monkey flower (*Mimulus guttatus*), bristly ox-tongue (*Picris echioides*), California buttercup (*Ranunculus californicus*) and Italian ryegrass (*Lolium multiflorum*).

Approximately 8 acres of this plant community have been identified in the preserve.

Willow Riparian Woodland

Patches of willow riparian woodland have been documented in the preserve, as per notes from volunteers. The dominant species are willow (*Salix* sp.) and dogwood (*Cornus* sp.).

5.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

5.3.1 Special Status Plant Species

Some of the preserve provides habitat for species of concern, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered. In addition, some of the lands provide habitat for plants recognized as rare or locally unique by CDFG or CNPS. The special status plant species known or with potential to occur in the vicinity of the preserve are listed in Table 5.2. California Natural Diversity Database records of these species are mapped in Figure 5.2.

In addition to special status plant species that are listed on CNPS List 1B, there are species that local botanists, including the local chapters of the California Native Plant Society, consider to be specialty plants of the region. Such species may have limited occurrences within the Santa Cruz Mountains (locally rare), or may be endemic to the preserve area. These plants are typically on CNPS List 4, a watch list. Spring surveys would be needed to confirm the presence of any of these resources on preserve.

Table 5.2. List of Special Status Plant Species Known or With Potential to Occur in Edgewood Preserve, San Mateo County, California

Species	Status	Observed on Site/Potential Habitat
Blasdale's bentgrass (<i>Agrostis blasdalei</i>)	List 1B	Potential
San Mateo thornmint (<i>Acanthomintha duttonii</i>)	List 1B; FE	Known Occurrences
Serpentine linanthus (<i>Linanthus ambiguus</i>)	List 4	Known Occurrences
Marin dwarf flax (<i>Hesperolinom congestum</i>)	List 1B; FT	Known Occurrences
White-rayed pentchaeta (<i>Pentachaeta bellidiflora</i>)	List 1B; FE	Known Occurrences
Coast lily (<i>Lilium maritimum</i>)	List 1B	Potential
San Francisco popcorn flower (<i>Plagiobothrys diffusus</i>)	List 1B; SE	No/Potential
Fragrant fritillary (<i>Fritillaria liliacea</i>)	List 1B	Known Occurrences
Woolly headed lessingia (<i>Lessingia hololeuca</i>)	List 4	Known Occurrences
King's Mountain manzanita (<i>Arctostaphylos regismontana</i>)	List 4	Known Occurrences
Kellogg's horkelia (<i>Horkelia cuneata ssp. sericea</i>)	List 1B	Potential
Marin checkerbloom (<i>Sidalcea hickmanii ssp. viridis</i>)	List 1B	Potential
Pt. Reyes horkelia (<i>Horkelia marinensis</i>)	List 4	Potential
Gairdner's yampah (<i>Perideridia gairdneri ssp. gairdneri</i>)	List 4	Potential
Pt. Reyes meadowfoam (<i>Limnanthes douglasii sulphurea</i>)	List 1B; SE	No/Unlikely
San Francisco gumplant (<i>Grindelia hirsutula var. maritima</i>)	List 1B	No/Unlikely
San Francisco campion (<i>Silene verecunda ssp. verecunda</i>)	List 1B	Potential; historic occurrence in Preserve
San Francisco owl's clover (<i>Triphysaria floribunda</i>)	List 1B	Potential
Santa Cruz clover (<i>Trifolium buckwestiorum</i>)	List 1B	No/Unlikely
Santa Cruz microseris (<i>Stebbinososeris decipiens</i>)	List 1B	No/Unlikely
Artists popcornflower (<i>Plagiobothrys chorisianus var. chorisianus</i>)	List 3	No/Potential
Arcuatebush mallow (<i>Malacothamnus arcuatus</i>)	List 4	Known Occurrences
western leatherwood (<i>Dirca occidentalis</i>)	List 1B	Known Occurrences in Preserve
Fountain thistle (<i>Cirsium fontinale</i>)	List 1B	Potential; historic occurrence in Preserve

FE: Federally Endangered FT: Federally Threatened SE: State Endangered

CNPS Status:

List 1B: These plants (predominately endemic) are rare through their range and are currently vulnerable or have a high potential for vulnerability due to limited or threatened habitat, few individuals per population, or a limited number of populations. List 1B plants meet the definitions of Section 1901, Chapter 10 of the CDFG Code.

List 3: This is a review list of plants that lack sufficient data to assign them to another list.

List 4: List 4 is a watch list of plants with limited distribution in the state that has low vulnerability and threat at this time. These plants are uncommon, often significant locally, and should be monitored.

5.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. Four of the principal plant communities within the preserve—oak woodland, serpentine chaparral, serpentine grassland and wet meadow/seasonal wetlands—are designated as a high priority in the CNDDDB (CDFG 1999). This category contains native plant communities that are regarded by CDFG as having special significance under the California Environmental Quality Act. Serpentine habitats, as well as habitats supporting rare species, are also considered sensitive under the County of San Mateo General Plan.

Wet Meadows/Seasonal Wetlands and Willow Riparian Woodland

The wet meadows/seasonal wetlands and riparian woodlands are all considered as sensitive habitats according to the County of San Mateo and CDFG. This status is due to the value of these wet areas to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management. The wet meadows that occur within the serpentine-derived soils are particularly sensitive due to the known and potential occurrence of rare, threatened or endangered species and its limited distribution within the region. Due to the importance of these wetland resources, management activities should include preservation of these areas through the control of human impacts, including degradation from adjacent urban runoff.

Serpentine Chaparral

The serpentine series of chaparral is an uncommon plant community found only in greater San Francisco Bay region. Serpentine chaparral is considered a "threatened" plant community by the California Department of Fish and Game (CNDDDB, 2000). Due to the importance of this botanical resource, management activities should include preservation of the habitat through the control of human impacts and maintenance of natural processes, including fire, for habitat management purposes.

Coast Live Oak and Mixed Oak Woodland

The oak woodlands on the project site are typical of similar areas of California. Due to changes in land use, however, their distribution and habitat quality has been reduced, such that the community is considered significant by CDFG. Due to the importance of this botanical resource, management activities should include preservation of the habitat through the control of human impacts and removal and control of invasive plant species.

Serpentine Grassland

The serpentine grassland within the preserve is considered a sensitive habitat according CDFG due to the prevalence of native plant species, known and potential for rare, threatened or endangered species and its limited distribution within the region. The grassland contains native grass stands with the highest density of native plants. These areas are considered the areas of highest botanical quality, as depicted on Figure 5.2. These areas exhibit native perennial bunchgrasses and contain other native herbaceous plant species. Due to the importance of this botanical resource, management activities should include preservation of the habitat through the control of human impacts, removal and control of invasive plant species, and minimizing impacts from recreational uses.

5.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

Some of the preserve provides habitat for species of concern, including those listed by the USFWS or CDFG as threatened or endangered. The special status animal species known to occur in the park are listed in Table 5.3. California Natural Diversity Database records of these species are mapped in Figure 5.2.

Table 5.3 was compiled using the following sources:

Edgewood Park and Natural Preserve Master Plan (Environmental Services Agency, Parks and Recreation Division, 1997)

California Natural Diversity Database (CDFG 2001a)

Table 5.3: Special Status Animal Species Known to Occur in Edgewood Preserve

Species	Status	Known/Potential Occurrence in Park	Typical Habitat
Bay Checkerspot Butterfly (<i>Euphydryas editha bayensis</i>)	FT	Known	Serpentine soils. Feeds on <i>Plantago erecta</i> and <i>Castilleja densiflora</i> .
Edgewood Blind Harvestman Spider (<i>Calicina minor</i>)	None*	Known	Open grassland on the underside of moist serpentine rock near permanent springs.
Edgewood Park micro-blind harvestman (<i>Microcina edgewoodensis</i>)	None*	Known	Grassland
Northern Harrier (<i>Circus cyaneus</i>)	DFG CSC ¹	Known. Breeding status unknown.	Grassland, marsh
Cooper's Hawk (<i>Accipiter cooperii</i>)	DFG CSC ¹	Known. Breeding status unknown.	Woodland, forest
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	DFG CSC ¹	Known. Breeding status unknown.	Mixed woodlands
White-tailed Kite (<i>Elanus caeruleus</i>)	DFG Fully protected; USFWS MNBMC ¹	Known. Breeding status unknown.	Grasslands, farmlands

FT: Federally Threatened; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Fully Protected: CA Dept. of Fish and Game fully protected species; USFWS MNBMC: U.S. Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern.

* former category 2 Federal Candidate species. This designation is no longer in use. However, these species could become Candidates at a later date.

¹ status applies to nesting birds

5.5 INVASIVE, NON-NATIVE PLANT SPECIES AND PATHOGENS

5.5.1 Invasive Non-native Plant Species

The preserve supports several invasive, non-native plant species. The most notable are yellow star thistle, Italian thistle, blue gum eucalyptus, bull thistle, pampas grass and French broom. Their occurrences are discussed in the plant community type description. Other species documented within the preserve include Harding grass and non-native pines. The distribution of these plants, based on the volunteer field reconnaissance surveys and limited ground-truthing is depicted on Figure 5.3.

5.5.2 Pathogens

California Oak Mortality disease, formerly known as Sudden Oak Death disease, is potentially within the preserve lands. The pathogen responsible for this disease is either a new or newly introduced species of water mold fungus in the genus *Phytophthora*. This disease was first noticed to be present in the County in 1997 or 1998 and has, in some areas, since reached epidemic proportions.

California Oak Mortality is known to infect tanoak (*Lithocarpus densiflorus*) (which is extremely susceptible), coast live oak (*Quercus agrifolia*), Shreve oak (*Q. parvula shrevei*), and black oak (*Q. kelloggii*). Also affected, but apparently with less mortality, are California bay (*Umbellularia californica*) and madrone (*Arbutus menziesii*). Recently the disease has been found on wild evergreen huckleberry (*Vaccinium ovatum*) and manzanita (*Arctostaphylos*) shrubs, and nursery stock of rhododendrons (*Rhododendron* spp.). To prevent spread of the disease into Oregon, the Oregon Department of Agriculture has imposed an emergency Sudden Oak Death quarantine against California that regulates the host oak species, some of their associated wood products, and rhododendron stock.

The disease was first detected in 1995 on tanoaks in Marin County. The disease has subsequently spread both locally and regionally throughout central coastal California. It has now been discovered in portions of Sonoma, Napa, San Mateo, Santa Clara, Santa Cruz, and Monterey Counties. California Oak Mortality is believed to take three or more years to kill a tree, and many infected oaks and tanoaks show no visible external symptoms. The symptoms of California Oak Mortality are illustrated on the California Oak Mortality Task Force web page located at www.suddenoakdeath.org. Additional symptoms include total or partial discoloration of the live crown, with the dead leaves remaining on the tree for a period of time, especially in tanoak. This set of symptoms is used to determine the presence of the syndrome, although only DNA testing can accurately determine the presence of this new species of *Phytophthora*. A “black zonal line” bordering lesions in the wood, observed by cutting away the bark, is diagnostic of this and other *Phytophthora* infections. A microbial culture of tissue from the zonal line may be used to confirm the diagnosis. California Oak Mortality is known to spread via infected wood and via “resting asexual spores” in soil or water. The California Oak Mortality *Phytophthora* has been found in rainwater runoff below infected oak trees. Its ability to spread in soil or water makes California Oak Mortality similar to the better-studied Port Orford cedar disease. However, unlike Port Orford cedar disease, California Oak Mortality also appears to have an aerial component of spread, perhaps through detached sporangia that become airborne.

California Oak Mortality may occur in the oak woodland of the preserve now or in the future. If California Oak Mortality becomes prevalent within the preserve in the future, the oak woodland would be susceptible to death. Opportunities exist in the preserve to inform preserve managers and visitors on measures to prevent/control the spread of this fungus.

(Note: The information used to prepare the above account of COM was derived from Steve Singer, forest ecologist, and from Garbelotto et al. 2001, Management and Regulations Committee of the California Oak Mortality Task Force 2001).

5.6 PLANT SPECIES LIST

The source of the following table is *The Flora of Edgewood Park, San Mateo County, California* compiled by Toni Corelli for the Santa Clara Valley Chapter of the California Native Plant Society (1993, rev. 1996).

Scientific names follow Hickman (1993).

TABLE 5.4 PLANT SPECIES OF EDGEWOOD PRESERVE

FAMILY/GENUS SPECIES	COMMON NAME
Aceraceae [Maple Family] <i>Acer macrophyllum</i>	bigleaf maple
Aizoaceae [Carpet Weed Family] <i>Dorotheanthus bellidiformis*</i>	Livingston daisy
Anacardiaceae [Sumac Family] <i>Toxicodendron diversilobum</i>	poison oak
Apiaceae [Carrot Family] <i>Angelica tomentosa</i> <i>Anthriscus caucalis*</i> <i>Bowlesia incana</i> <i>Conium maculatum*</i> <i>Daucus pusillus</i> <i>Foeniculum vulgare*</i> <i>Lomatium californicum</i> <i>Lomatium caruifolium</i> <i>Lomatium dasycarpum</i> <i>Lomatium macrocarpum</i> <i>Lomatium utriculatum</i> <i>Osmorhiza chilensis</i> <i>Perideridia kelloggii</i> <i>Sanicula bipinnatifida</i> <i>Sanicula crassicaulis</i> <i>Sanicula laciniata</i> <i>Sanicula tuberosa</i> <i>Scandix pecten-veneris*</i> <i>Tauschia kelloggii</i> <i>Torilis arvensis*</i> <i>Torilis nodosa*</i> <i>Yebea microcarpa</i>	wood angelica bur-chervil bowlesia poison hemlock rattlesnake weed fennel California lomatium caraway-leaved lomatium woolly-fruited lomatium large-fruited lomatium bladder parsnip sweet cicely yampah purple sanicle Pacific sanicle coast sanicle turkey pea Venus' needle Kellogg's tauschia hedge parsley knotted hedge parsley California hedge parsley
Apocynaceae [Dogbane Family] <i>Vinca major*</i>	periwinkle
Araceae [Calla or Arum Family] <i>Zantedeschia aethiopica*</i>	calla lily

Areaceae [Palm Family]

*Erythea edulis**

Guadalupe Island palm

Asclepiadaceae [Milkweed Family]

Asclepias fascicularis

narrow-leaved milkweed

Asteraceae [Sunflower Family]

Achillea millefolium

yarrow

Achyrrachaena mollis

blow wives

Adenocaulon bicolor

trail plant

Agoseris heterophylla

mountain dandelion

Artemisia californica

California sagebrush

Artemisia douglasiana

mugwort

Aster chilensis

common California aster

Aster radulinus

rough-leaved aster

Baccharis douglasii

marsh baccharis

Baccharis pilularis

coyote brush

Calycadenia multiglandulosa

rosin weed

*Carduus pycnocephalus**

Italian thistle

*Centaurea calcitrapa**

purple star-thistle

*Centaurea solstitialis**

yellow star-thistle

*Chamomilla suaveolens**

pineapple weed

*Cichorium intybus**

chicory

Cirsium fontinale

fountain thistle

*Cirsium vulgare**

bull thistle

*Crepis vesicaria taraxacifolia**

hawk's beard

Eriophyllum confertiflorum

golden yarrow

*Filago gallica**

narrow-leaved filago

*Gazania linearis**

gazania

Gnaphalium canescens benelens

fragrant everlasting

Gnaphalium stramineum

cotton-batting plant

Grindelia camporum

gumplant

Grindelia hirsutula

hirsute grindelia

Helenium puberulum

sneezeweed

Helianthus californicus

California sunflower

Hemizonia congesta luzulifolia

hayfield tarweed

Hesperevax sparsiflora

erect evax

*Hypochaeris glabra**

smooth cat's ear

*Hypochaeris radicata**

rough cat's ear

Lactuca saligna

willow lettuce

Lagophylla ramosissima

common hareleaf

Lasthenia californica

goldfields

Layia platyglossa

tidy-tips

Lessingia hololeuca

woolly-headed lessingia

Madia elegans densifolia

common madia

Madia exigua

threadstream madia

Madia gracilis

slender tarweed

Madia sativa

coast tarweed

Micropus californicus

slender cottonweed

Microseris douglasii

Douglas' microseris

Monolopia gracilens

woodland monolopia

Monolopia major

cupped monolopia

<i>Pentachaeta bellidiflora</i>	white-rayed pentachaeta
<i>Picris echioides*</i>	bristly ox-tongue
<i>Psilocarphus brevissimus</i>	dwarf woolly-heads
<i>Rigiopappus leptocladus</i>	rigiopappus
<i>Senecio aronicoides*</i>	groundsel
<i>Senecio breweri*</i>	Brewer's butterweed
<i>Senecio mikanioides*</i>	German-ivy
<i>Senecio vulgaris*</i>	common groundsel
<i>Silybum marianum*</i>	milk thistle
<i>Solidago californica</i>	California goldenrod
<i>Sonchus asper*</i>	prickly sow thistle
<i>Sonchus oleraceus*</i>	common sow thistle
<i>Stephanomeria virgata</i>	tall stephanomeria
<i>Tragopogon porrifolius*</i>	salsify/oyster Plant
<i>Wyethia angustifolia</i>	narrow-leaved mule ears
<i>Wyethia glabra</i>	mule ears

Boraginaceae [Borage Family]

<i>Amsinckia menziesii intermedia</i>	fiddleneck
<i>Cryptantha flaccida</i>	nievitas
<i>Cynoglossum grande</i>	hound's tongue
<i>Plagiobothrys nothofulvus</i>	popcornflower

Brassicaceae [Mustard Family]

<i>Barbarea orthoceras</i>	winter cress
<i>Brassica rapa*</i>	field mustard
<i>Capsella bursa-pastoris*</i>	sheperd's purse
<i>Cardamine californica</i>	milk maids
<i>Cardamine oligosperma</i>	bitter-cress
<i>Guillenia lasiophylla</i>	California mustard
<i>Lepidium nitidum nitidum</i>	shining peppergrass
<i>Lobularia maritima*</i>	sweet alyssum
<i>Raphanus sativus*</i>	radish
<i>Rorippa nasturtium-aquaticum</i>	water cress
<i>Sisymbrium altissimum*</i>	tumble mustard

Caprifoliaceae [Honeysuckle Family]

<i>Lonicera hispidula vacillans</i>	hairy honeysuckle
<i>Sambucus mexicana</i>	blue elderberry
<i>Symphoricarpos albus laevigatus</i>	snowberry
<i>Symphoricarpos mollis</i>	creeping snowberry

Caryophyllaceae [Pink Family]

<i>Cerastium arvense</i>	field chickweed
<i>Minuartia californica</i>	dwarf sandwort
<i>Minuartia douglasii</i>	Douglas' sandwort
<i>Sagina apetala</i>	dwarf pearlwort
<i>Sagina decumbens occidentalis</i>	western pearlwort
<i>Silene californica</i>	California Indian pink
<i>Silene gallica*</i>	windmill pink
<i>Spergula arvensis*</i>	spurrey
<i>Spergularia rubra*</i>	purple sand-spurrey

<i>Stellaria media</i> *	chickweed
<i>Stellaria nitens</i>	shining chickweed
Chenopodiaceae [Goosefoot Family]	
<i>Chenopodium californium</i>	goosefoot
Cistaceae [Rock-rose Family]	
<i>Helianthemum scoparium</i>	peak rush-rose
Convolvulaceae [Morning-glory Family]	
<i>Calystegia occidentalis</i>	chapparal morning-glory
<i>Calystegia subacaulis</i>	hill morning glory
Cornaceae [Dogwood Family]	
<i>Cornus sericea</i>	American dogwood
<i>Cornus glabrata</i>	brown dogwood
Crassulaceae [Stonecrop Family]	
<i>Crassula connata</i>	pygmy-weed
Cupressaceae [Cypress Family]	
<i>Cupressus macrocarpa</i>	Monterey cypress
Curcubitaceae [Gourd Family]	
<i>Marah fabaceus</i>	California man-root
<i>Marah oreganus</i>	coast man-root
Cuscutaceae [Dodder Family]	
<i>Cuscuta californica</i>	dodder
Cyperaceae [Sedge Family]	
<i>Carex</i> sp.	sedge
<i>Eleocharis acicularis</i>	needle spike-rush
<i>Eleocharis montevidensis</i>	spike-rush
Dipsacaceae [Teasel Family]	
<i>Dipsacus fullonum</i> *	teasel
Dryopteridaceae [Wood Fern Family]	
<i>Dryopteris arguta</i>	coastal wood fern
<i>Polystichum munitum</i>	western sword fern
Equisetaceae [Horsetail Family]	
<i>Equisetum telmateia braunii</i>	giant horsetail
Ericaceae [Heath Family]	
<i>Arbutus menziesii</i>	madrone
<i>Arctostaphylos regismontana</i>	Kings Mountain manzanita
<i>Arctostaphylos tomentosa crinita</i>	manzanita
Euphorbiaceae [Spurge Family]	
<i>Eremocarpus setigerus</i>	turkey mullein

*Euphorbia peplus**

petty spurge

Fabaceae [Legume Family]

*Acacia baileyana**

Bailey acacia

*Acacia dealbata**

silver wattle

*Acacia melanoxylon**

black acacia

*Acacia verticillata**

star acacia

Astragalus gambelianus

Gambell's dwarf locoweed

*Cytisus scoparius**

Scotch broom

*Genista monspessulana**

French broom

Lathyrus vestitus

hillside pea

Lathyrus vestitus ochropetalus

wild pea

Lotus corniculatus

birdfoot trefoil

Lotus humistratus

short-podded trefoil

Lotus micranthus

small-flowered trefoil

Lotus purshianus

Spanish clover

Lotus scoparius

California broom/deerweed

Lotus wrangelianus

Chile trefoil

Lupinus albifrons

bush Lupine

Lupinus bicolor

bicolor Lupine

Lupinus formosus

summer Lupine

Lupinus microcarpus densiflorus

chick lupine

Lupinus succulentus

arroyo lupine

*Medicago lupulina**

black medick

*Medicago polymorpha**

burclover

*Medicago sativa**

alfalfa

*Melilotus officinalis**

yellow sweetclover

Pickeringia montana

chaparral pea

*Robinia pseudoacacia**

black locust

Rupertia physodes

California tea

Trifolium albopurpureum dichotomum

Indian clover

Trifolium barbigerum

bearded clover

Trifolium bifidum decipiens

deceptive clover

*Trifolium campestre**

hop clover

Trifolium depauperatum amplexans

sack clover

Trifolium fucatum

sour clover

*Trifolium hirtum**

rose clover

Trifolium microdon

Valparaiso clover

*Trifolium pratense**

red clover

Trifolium variegatum

white-tipped clover

Trifolium willdenovii

tomcat clover

*Vicia americana americana**

American vetch

*Vicia benghalensis**

purple vetch

*Vicia sativa**

spring vetch

Fagaceae [Oak Family]

Quercus agrifolia

coast live oak

Quercus berberidifolia

scrub oak

Quercus douglasii

blue oak

Quercus durata durata

leather oak

Quercus lobata

valley oak

Garryaceae [Silk Tassel Family]

Garrya elliptica

coast silk tassel

Gentianaceae [Gentian Family]

Centaurium davyi

Davy's centaury

Centaurium muehlenbergii

June centaury

Cicendia quadrangularis

timwort

Geraniaceae [Geranium Family]

*Erodium botrys**

long-beaked filaree

*Erodium cicutarium**

red-stemmed filaree

*Erodium moschatum**

white-stemmed filaree

*Geranium dissectum**

cut-leaved geranium

*Geranium molle**

cranesbill

Grossulariaceae [Gooseberry Family]

Ribes californicum

hillside gooseberry

Ribes malvaceum

chaparral current

Ribes menziesii

bay gooseberry

Ribes sanguineum glutinosum

flowering current

Hippocastanaceae [Buckeye Family]

Aesculus californica

California buckeye

Hydrophyllaceae [Waterleaf Family]

Eriodictyon californicum

yerba santa

Nemophila heterophylla

variable-leaved nemophila

Nemophila menziesii atomaria

baby blue-eyes

Nemophila pedunculata

meadow nemophila

Phacelia californica

California phacelia

Phacelia distans common

phacelia

Phacelia divaricata

divaricate phacelia

Phacelia imbricata

imbricate phacelia

Pholistoma auritum

fiesta flower

Iridaceae [Iris Family]

Iris douglasiana

Douglas' iris

*Iris germanica**

bearded iris

Sisyrinchium bellum

blue eyed grass

Juglandaceae [Walnut Family]

*Juglans sp.**

walnut

Juncaceae [Rush Family]

Juncus bufonius

toad rush

Juncus effusus pacificus

rush

Juncus patens

common rush

Juncus xiphioides

iris-leaved rush

Luzula comosa

common wood rush

Lamiaceae [Mint Family]

Acanthomintha duttonii

San Mateo thornmint

Lepechinia calycina
*Mentha pulegium**
Monardella villosa
Pogogyne serpylloides
Satureja douglasii
Scutellaria tuberosa
Stachys ajugoides rigida
Stachys pycnantha

pitcher sage
pennyroyal
coyote-mint
pogogyne
yerba buena
Dannie's skull cap
rigid hedge nettle
short-spiked hedge nettle

Lauraceae [Laurel Family]

Umbellularia californica

California bay

Liliaceae [Lily Family]

Allium falcifolium
Allium dichlamydeum
Allium lacunosum
*Allium triquetrum**
Brodiaea coronaria
Brodiaea elegans elegans
Brodiaea terrestris
Calochortus albus
Calochortus luteus
Calochortus venustus
Chlorogalum pomeridianum
Dichelostemma capitatum
Dichelostemma congestum
Disporum hookeri
Fritillaria affinis
Fritillaria liliacea
*Kniphofia uvaria**
Lilium pardalinum
Muilla maritima
*Narcissus jonquilla**
*Narcissus pseudonarcissus**
Smilacina racemosa
Smilacina stellata
Trillium chloropetalum
Triteleia hyacinthina
Triteleia ixioides
Triteleia laxa
Triteleia peduncularis
Zigadenus fremontii

sickle leaved onion
coastal onion
pitted onion
wild onion
coronary brodiaea
harvest brodiaea
dwarf brodiaea
white globe lily/fairy lantern
yellow mariposa lily
white mariposa lily
amole/soap plant
blue dicks
ookow
Hooker's fairy bells
mission bells/checker lily
fragrant fritillary
red hot poker
leopard lily
muilla
daffodil
daffodil
fat Solomon seal
slim Solomon seal
giant trillium
wild hyacinth
golden brodiaea
Ithuriel's spear
long-rayed hyacinth
Fremont's star lily

Linaceae [Flax Family]

Hesperolinon congestum
Hesperolinon micranthum
*Linum bienne**

Marin dwarf flax
small-flowered flax
Narrow-leaved Flax

Malvaceae [Mallow Family]

Malacothamnus fasciculatus
Sidalcea diploscypha
Sidalcea malvaeflora

chaparral mallow
fringed sidalcea
checker mallow

Myricaceae [Wax Myrtle Family]

Myrica californica

California wax myrtle

Myrtaceae [Myrtle Family]

*Eucalyptus globulus**

blue gum

Oleaceae [Olive Family]

*Olea europaea**

olive

Onagraceae [Evening Primrose Family]

Camissonia graciliflora

slender flowered primrose

Camissonia ovata

sun cups

Clarkia purpurea quadrivulnera

gour-spotted clarkia

Clarkia purpurea viminea

large godetia

Clarkia rubicunda

farewell-to-spring

Epilobium brachycarpum

willow herb

Epilobium canum

California fuchsia

Epilobium ciliatum

northern willow herb

Epilobium densiflorum

dense-flowered boisduvalia

Epilobium minutum

minute willow herb

Orchidaceae [Orchid Family]

Corallorhiza maculata

spotted coralroot

Corallorhiza striata

striped coralroot

*Epipactis helleborine**

orchid

Piperia elegans

elegant piperia

Orobanchaceae [Broom-Rape Family]

Orobanche californica jepsonii

Jepson's broom-rape

Orobanche fasciculata

clustered broom-rape

Orobanche fasciculata franciscana (not recognized as a variety in Jepson Manual)

Orobanche uniflora

naked broom-rape

Oxalidaceae [Wood Sorrel Family]

*Oxalis pes-caprae**

Bermuda buttercup

Papaveraceae [Poppy Family]

Eschscholzia californica

California poppy

Platystemon californicus

cream cups

Pinaceae [Pine Family]

Pseudotsuga menziesii

Douglas fir

Plantaginaceae [Plantain Family]

Plantago erecta

California plantain

*Plantago lanceolata**

English plantain

Poaceae [Grass Family]

Agrostis hallii

Hall's bent grass

*Aira caryophyllea**

silver European hairgrass

*Avena barbata**

slender wild oat

*Avena fatua**

wild oat

<i>Avena sativa</i> *	cultivated oat
<i>Brachypodium distachyon</i> *	purple falsebrome
<i>Briza maxima</i> *	rattlesnake grass
<i>Briza minor</i> *	little quaking grass
<i>Bromus carinatus carinatus</i>	California brome
<i>Bromus diandrus</i> *	rippgut grass
<i>Bromus hordeaceus</i> *	soft chess
<i>Bromus laevipes</i>	woodland brome
<i>Bromus madritensis</i> *	Spanish brome
<i>Bromus madritensis rubens</i> *	red brome
<i>Bromus sterilis</i> *	barren brome
<i>Cortaderia</i> sp.*	Pampas grass
<i>Cynosurus echinatus</i> *	hedgehog dogtail
<i>Danthonia californica</i>	California oatgrass
<i>Deschampsia danthonioides</i>	annual hairgrass
<i>Deschampsia elongata</i>	slender hairgrass
<i>Elymus glaucus</i>	blue wildrye
<i>Elymus glaucus</i> X <i>E. multisetus</i>	squirreltail
<i>Elymus multisetus</i>	big squirreltail
<i>Eragrostis</i> sp.*	lovegrass
<i>Festuca californica</i>	California fescue
<i>Gastridium ventricosum</i> *	nit grass
<i>Holcus lanatus</i> *	velvet grass
<i>Hordeum brachyantherum</i>	meadow barley
<i>Hordeum marinum gussoneanum</i> *	Mediterranean barley
<i>Hordeum murinum leporinum</i> *	farmer's foxtail
<i>Hordeum vulgare</i> *	common barley
<i>Koeleria macrantha</i>	Junegrass
<i>Leymus triticoides</i>	alkali ryegrass
<i>Lolium perenne</i> *	Italian ryegrass
<i>Melica californica</i>	California melic
<i>Melica imperfecta</i>	small-flowered melica
<i>Melica torreyana</i>	Torrey's melica
<i>Nassella lepida</i>	foothill needlegrass
<i>Nassella pulchra</i>	purple needlegrass
<i>Phalaris aquatica</i> *	Harding grass
<i>Phalaris californica</i>	California canary grass
<i>Phalaris canariensis</i> *	canary grass
<i>Phalaris miqnor</i> *	Mediterranean canary Grass
<i>Phleum pratense</i> *	cultivated timothy
<i>Poa annua</i> *	annual bluegrass
<i>Poa secunda</i>	pine bluegrass
<i>Polypogon monspeliensis</i> *	annual beard grass
<i>Scribneria bolanderi</i>	Scribner's grass
<i>Taeniatherum caput-medusae</i> *	medusa head
<i>Vulpia bromoides</i> *	six-weeks fescue
<i>Vulpia microstachys pauciflora</i>	few-flowered fescue
<i>Vulpia myuros</i> *	rattail fescue
<i>Vulpia myuros hirsuta</i>	western six-weeks fescue

Polemoniaceae [Phlox Family]

<i>Eriastrum abramsii</i>	Abrams' eriastrum
<i>Gilia clivorum</i>	gilia
<i>Gilia tricolor</i>	bird's eye gilia
<i>Linanthus ambiguus</i>	serpentine linanthus
<i>Linanthus androsaceus</i>	common linanthus
<i>Linanthus bicolor</i>	bicolored linanthus
<i>Linanthus liniflorus</i>	flax-flowered linanthus
<i>Linanthus parviflorus</i>	small-flowered linanthus
<i>Linanthus pygmaeus</i>	pigmy linanthus
<i>Navarretia heterodoxa</i>	Calistoga navarretia
<i>Navarretia squarrosa</i>	skunkweed
<i>Phlox gracilis</i>	slender phlox

Polygonaceae [Buckwheat Family]

<i>Eriogonum latifolium</i>	coast buckwheat
<i>Eriogonum nudum</i>	naked-stemmed buckwheat
<i>Eriogonum vimineum</i>	wicker buckwheat
<i>Pterostegia drymarioides</i>	pterostegia
<i>Rumex acetosella</i> *	sheep sorrel
<i>Rumex conglomeratus</i> *	green dock
<i>Rumex crispus</i> *	curly dock

Polypodiaceae [Fern Family]

<i>Polypodium californicum</i>	California polypody
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Portulacaceae [Purslane Family]

<i>Calandrinia ciliata</i>	red maids
<i>Claytonia exigua glauca</i>	common montia
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Lewisia rediviva</i>	bitterroot

Primulaceae [Primrose Family]

<i>Anagallis arvensis</i> *	scarlet pimpernel
<i>Dodecatheon clevelandii patulum</i>	lowland shooting star
<i>Dodecatheon clevelandii sanctarum</i>	Padres shooting star
<i>Dodecatheon hendersonii</i>	shooting star
<i>Trientalis latifolia</i>	Pacific starflower

Pteridaceae [Brake Family]

<i>Adiantum jordanii</i>	California maiden-hair
<i>Pellaea andromedifolia</i>	coffee fern
<i>Pellaea mucronata</i>	bird's-foot fern
<i>Pentagramma triangularis</i>	goldback fern

Ranunculaceae [Buttercup Family]

<i>Aquilegia eximia</i>	columbine
<i>Aquilegia formosa</i>	crimson columbine
<i>Clematis lasiantha</i>	virgin's bower
<i>Delphinium californicum</i>	California larkspur
<i>Delphinium hesperium hesperium</i>	western larkspur
<i>Delphinium patens</i>	spreading larkspur

Delphinium variegatum variegatum
Ranunculus californicus
Ranunculus hebecarpus
*Ranunculus muricatus**
Thalictrum fendleri polycarpum

royal larkspur
California buttercup
pubescent-fruited buttercup
prickle-fruited buttercup
meadow rue

Rhamnaceae [Buckthorn Family]

Ceanothus cuneatus
Rhamnus californica
Rhamnus crocea

buckbrush
coffeeberry
spiney redberry

Rosaceae [Rose Family]

Adenostoma fasciculatum
Aphanes occidentalis
*Cotoneaster pannosa**
Heteromeles arbutifolia
Holodiscus discolor
Horkelia cuneata
Oemleria cerasiformis
Physocarpus capitatus
Potentilla glandulosa
Prunus ilicifolia
Prunus subcordata
*Pyracantha coccinea**
Rosa californica
Rosa gymnocarpa
Rosa spithamea
*Rubus discolor**
Rubus ursinus
*Sanguisorba minor muricata**

chamise/greeseewood
lady's mantel
cotoneaster
toyon/Christmas berry
oceanspray/cream bush
wedge-leaved horkelia
oso berry
Pacific ninebark
sticky cinquefoil
holly-leaved cherry
Sierra plum
pyracantha
California wild rose
wood rose
ground rose
Himalya berry
Pacific blackberry
garden burnet

Rubiaceae [Madder Family]

Galium aparine
Galium porrigens
*Sherardia arvensis**

bedstraw
climbing bedstraw
field madder

Salicaceae [Willow Family]

Salix sp.

willow

Saxifragaceae [Saxifrage Family]

Lithophragma affine
Lithophragma heterophyllum
Saxifraga californica

woodland star
hill star
California saxifrage

Scrophulariaceae [Figwort Family]

Antirrhinum vexillo-calyculatum
*Bellardia trixago**
Castilleja affinis
Castilleja densiflora
Castilleja exserta
Castilleja foliolosa
Castilleja latifolia

wiry snapdragon
bellardia
Indian paint brush
owl's clover
common owl's clover
woolly paint brush
seaside paint brush

<i>Castilleja rubicundula lithospermoides</i>	cream sacs
<i>Collinsia heterophylla</i>	purple & white Chinese houses
<i>Collinsia multicolor</i>	San Francisco collinsia
<i>Collinsia sparsifolia collina</i>	Chinese houses
<i>Cordylanthus pilosus</i>	hairy bird's-beak
<i>Cordylanthus rigidus</i>	stiffly-branched bird's-beak
<i>Linaria sp.</i>	toadflax
<i>Mimulus aurantiacus</i>	sticky monkeyflower
<i>Mimulus douglasii</i>	purple mouse ears
<i>Mimulus guttatus</i>	large monkey flower
<i>Pedicularis densiflora</i>	Indian warrior
<i>Scrophularia californica</i>	bee plant
<i>Triphysaria eriantha</i>	butter-and-eggs
<i>Triphysaria pusilla</i>	dwarf orthocarpus
<i>Veronica americana</i>	American brooklime
<i>Veronica persica*</i>	Persian speedwell
Simaroubaceae [Simarouba Family]	
<i>Ailanthus altissima*</i>	tree of heaven
Solanaceae [Nightshade Family]	
<i>Solanum umbelliferum</i>	blue witch
Taxodiaceae [Bald Cypress Family]	
<i>Sequoia sempervirens</i>	coast redwood
Thymelaeaceae [Mezereum Family]	
<i>Dirca occidentalis</i>	leatherwood
Typhaceae [Cattail Family]	
<i>Typha sp.</i>	cattail
Urticaceae [Nettle Family]	
<i>Urtica dioica</i>	stinging nettle
<i>Parietaria judaica</i>	pellitory
Valerianaceae [Valerian Family]	
<i>Centranthus ruber*</i>	red valerian
<i>Plectritis ciliosa</i>	long-spurred plectritis
<i>Plectritis macrosera</i>	white plectritis
Verbenaceae [Vervain Family]	
<i>Verbena lasiostachys</i>	western vervain

*non-native species

5.7 ANIMAL SPECIES LIST

The following species list was compiled using the sources below:

Birds of Edgewood Preserve (Sequoia Audobon Society, Inc. 1995) (birds)

Edgewood Park and Natural Preserve Master Plan (Environmental Services Agency, Parks and Recreation Division, 1997) (insects, arachnids, amphibians, reptiles, mammals)

TABLE 5.5 ANIMAL SPECIES OF EDGEWOOD PRESERVE

Insects

Hymenoptera

<i>Vespula</i> sp.	Yellow Jacket
<i>Pepsis</i> sp. or <i>Hemipepsis</i> sp.	Tarantula Hawk Wasp
<i>Apis mellifera</i>	Honeybee
Not identified to species	native solitary bees
Not identified to species	Black Ant

Lepidoptera

<i>Euphydryas editha bayensis</i>	Bay Checkerspot
<i>Danaus plexippus</i>	Monarch
<i>Papilio rutulus</i>	Tiger Swallowtail
<i>Eurytides marcellus</i>	Zebra Swallowtail
Not identified to species	blue butterflies
? <i>Erynnis</i> sp.	Dusky Wing (Skipper?)
<i>Junonia coenia</i>	Buckeye
<i>Vanessa cardui</i>	Painted Lady
<i>Nymphalis antiopa</i>	Mourning Cloak
<i>Adelpha bredowi</i>	California Sister

Arachnids

Not identified to species	Argopiope
Not identified to species	Tarantula
<i>Calcina minor</i>	Blind Harvestman
<i>Microcina edgewoodensis</i>	Edgewood micro-blind harvestman

Amphibians

<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Taricha torosa</i>	California Newt
<i>Hyla regilla</i>	Pacific Tree Frog
<i>Bufo boreas</i>	Western Toad

Reptiles

<i>Gerrhonotus coeruleus</i>	Northern Alligator Lizard
<i>Sceloporus occidentalis</i>	Western Fence Lizard
<i>Lampropeltis getulus californiae</i>	California Common Kingsnake

Pituophis melanoleucus
Diadophis punctatus
Crotalus atrox
Thamnophis sp.
Charina bottae
Not identified to species

Pacific Gopher Snake
Western Ringneck
Western Rattlesnake
Garter Snake
Rubber Boa
Green Water Snake

Birds

Cathartes aura
Accipiter striatus
Accipiter cooperii
Buteo jamaicensis
Buteo lineatus
Falco sparverius
Lophortyx californicus
Columba fasciata
Columba livia
Zenaida macroura
Bubo virginianus
Calypte anna
Selasphorus sasin
Colaptes auratus
Dendrocopos villosus
Dendrocopos pubescens
Dendrocopos nuttallii
Myiarchus cinerascens
Sayornis nigricans
Contopus sordidulus
Tachycinetta thalassina
Stelgidopteryx ruficollis
Hirundo rustica
Cyanocitta stelleri
Aphelocoma coerulescens
Corvus corax
Corvus brachyrhynchos
Parus rufescens
Parus inornatus
Psaltriparus minimus
Certhia familiaris
Chamaea fasciata
Thryomanes bewickii
Mimus polyglottos
Toxostoma redivivum
Turdus migratorius
Ixoreus naevius
Catharus guttatus
Catharus ustulatus
Sialia mexicana
Polioptila caerulea
Regulus satrapa
Regulus calendula

Turkey Vulture
Sharp-shinned Hawk
Cooper's Hawk
Red-tailed Hawk
Red-shouldered Hawk
American Kestrel
California Quail
Band-tailed Pigeon
Rock Dove
Morning Dove
Great Horned Owl
Anna's Hummingbird
Allen's Hummingbird
Common Flicker
Hairy Woodpecker
Downy Woodpecker
Nuttall's Woodpecker
Ash-throated Flycatcher
Black Phoebe
Western Wood Pewee
Violet-green Swallow
Rough-winged Swallow
Barn Swallow
Steller's Jay
Scrub Jay
Common Raven
Common Crow
Chestnut-backed Chickadee
Plain Titmouse
Bushtit
Brown Creeper
Wrentit
Bewick's Wren
Mockingbird
California Thrasher
American Robin
Varied Thrush
Hermit Thrush
Swainson's Thrush
Western Bluebird
Blue-gray Gnatcatcher
Golden-crowned Kinglet
Ruby-crowned Kinglet

Sturnus vulgaris
Vireo huttoni
Vermivora celata
Dendroica coronata
Dendroica townsendi
Wilsonia pusilla
Sturnella neglecta
Icterus galbula
Euphagus cyanocephalus
Pheucticus melanocephalus
Carpodacus purpureus
Passer domesticus
Spinus pinus
Spinus tristis
Spinus psaltria
Pipilo erythrophthalmus
Pipilo fuscus
Passerculus sandwichensis
Chondestes grammacus
Junco hyemalis
Spizella passerina
Zonotrichia leucophrys
Zonotrichia atricapilla
Passerella iliaca
Melospiza melodia
Larus occidentalis
Larus argentatus
Charadrius vociferus

Mammals

Didelphis marsupialis
Not identified to species
Sorex sp.
Not identified to species
Sylvilagus audubonii
Lepus californicus
Sciurus griseus
Thomomys bottae
Microtus californicus
Reithrodontomys megalotis
Neotoma fuscipes
Procyon lotor
Urocyon cinereoargenteus
Vulpes fulva
Canis latrans
Lynx rufus
Odocoileus hemionus columbianus

European Starling
Hutton's Vireo
Orange-crowned Warbler
Yellow-rumped Warbler
Townsend's Warbler
Wilson's Warbler
Western Meadowlark
Northern Oriole
Brewer's Blackbird
Black-headed Grosbeak
Purple Finch
House Sparrow
Pine Siskin
American Goldfinch
Lesser Goldfinch
Rufous-sided Towhee
Brown Towhee
Savannah Sparrow
Lark Sparrow
Dark-eyed Junco
Chipping Sparrow
White-crowned Sparrow
Golden-crowned Sparrow
Fox Sparrow
Song Sparrow
Western Gull
Herring Gull
Kildeer

Common Opossum
Mole
Shrew
Bats
Desert Cottontail
Black-tailed Hare
Western Gray Squirrel
Botta Pocket Gopher
California Meadow Vole
Western Harvest Mouse
Dusky-footed Wood Rat
Raccoon
Gray Fox
Red Fox
Coyote
Bobcat
Black-tailed Deer

6. FITZGERALD MARINE RESERVE

6.1 LOCATION AND FEATURES OF FITZGERALD MARINE RESERVE

The Fitzgerald Marine Reserve encompasses approximately 402 acres. The reserve is situated adjacent to the town of Moss Beach and extends southward to near Pillar Point, in the Half Moon Bay area of San Mateo County. The reserve encompasses approximately 35 acres of terrestrial areas along the coastline and approximately 370 acres of intertidal areas. The reserve abuts residential land uses in the north and undeveloped and open space lands to the south. The reserve contains the westernmost port of San Vicente Creek (in the Moss Beach area) and the majority of the Pillar Point Marsh (in the Pillar Point area). Sunshine Creek drains into the reserve from Sunshine Valley and Montara Mountain.

The shoreline and bluffs within the reserve have been used by humans for many centuries, from Native Americans (as evidenced in four cultural resource sites dating about 5,800 years) to current uses of the site for nature exploration (Brady/LSA, 1999). The Pillar Point Marsh was dammed by farmers in the early part of the century to improve farming conditions in the coastal valley areas. Subsequently, the US Air Force constructed an access road across the dam to reach the military installation on the coastal bluff. Additionally, in 1950, the U.S. Army Corps of Engineers constructed the breakwater around Pillar Point Harbor. The Fitzgerald Marine Reserve was established in 1969. Since then, additional uplands have been added to the north and south. The northern addition (approximately 2 acres) was added in 1996 and extends along Sunshine Creek from California Avenue to the ocean.

The reserve provides passive recreational uses, including intertidal exploration, picnicking, surf access and hiking. The intertidal zone receives high use due to its close proximity to the San Francisco Bay Area (Fitzgerald Marine Reserve and Pillar Point Marsh Master Plan, Brady & Associates, 1999)

The majority of the reserve land is undeveloped. The terrestrial portion of the reserve supports seven principal plant community types. The primary plant community types documented in the reserve are depicted on Figure 6.1 and are listed below in Table 6.1.

The primary vegetation types are willow riparian woodland, coastal scrub, coastal bluff scrub, coastal salt marsh, freshwater marsh, coastal terrace prairie and landscape tree groves. In addition to native vegetation types, there are also areas that are developed as parking.

Water resources on Reserve consist of a portion of Pillar Point Marsh, creeks and a section of the intertidal area of the Pacific Ocean near Moss Beach.

The historic land uses within portions the northern portion of the reserve (i.e., residential use) has resulted in the planting and subsequent natural revegetation of non-native trees and understory plants. The most notable non-native trees in the reserve is the large grove of Monterey cypress. The cypresses were planted over 75 years ago as a windbreak for an old home site. These trees have altered the coastal bluff landscape. The reserve also supports numerous non-native shrubs and groundcovers, including some species that are considered invasive pests. The dominant invasive species are Cape ivy, poison hemlock, sea fig, pampas grass, periwinkle, and pampas grass.

Despite the incursion of human-induced vegetation, the reserve supports several sensitive upland habitats and special status plant species. The reserve land affords considerable plant biodiversity including examples of plant communities that are indigenous to the region. The reserve is known to support plant communities that are considered sensitive; these include: riparian woodlands along watercourses, coastal salt marsh, coastal terrace prairie and freshwater marsh.

Table 6.1. Principal Plant Community Types Identified within Fitzgerald Marine Reserve

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Mixed Riparian Woodland	willow, California blackberry, stinging nettle	0.2	Sensitive under County Code
Landscape Tree Groves	Monterey cypress (planted) and eucalyptus	20.5	No protective status for botanical resources
Coastal Scrub	coyote brush, California sage, coffeeberry, poison oak	3	Sensitive if supporting rare species
Coastal Bluff Scrub	seaside daisy, lizard tail, California blackberry, yarrow, gumplant	7.3	Sensitive if supporting rare species
Coastal Salt Marsh	pickleweed, alkali heath, fat hen	13.4	Sensitive under County Code; wetland under Coastal Act
Freshwater Marsh	willow, slough sedge, cattail, bulrush, Pacific silverweed	17.7	Sensitive under County Code; wetland under Coastal Act

6.2 VEGETATION CLASSIFICATION AND CONDITION

6.2.1 Upland Forest and Woodland Communities

Landscape Tree Groves

The landscape tree groves within the reserve, covering approximately 20.5 acres (Table 6.1), are dominated by Monterey cypress (*Cupressus macrocarpa*). The majority of these trees were planted as windbreaks; a large grove occurs in the northern portion of the reserve. These tree groves are non-native, although native groves of Monterey cypress occur in southern San Mateo County and northern Santa Cruz County. The cypress tree groves occur in areas that historically were vegetated with coastal terrace prairie. Currently, the understory is sparse, although revegetation efforts have been initiated in some areas. Native understory plant species include native strawberry (*Fragaria chilensis*), Douglas iris (*Iris douglasiana*) and yarrow (*Achillea millefolium*). Non-native species also occur, including velvet grass (*Holcus lanatus*), Italian ryegrass (*Lolium multiflorum*), Australian tea tree (*Leptospermum laevigatum*), periwinkle (*Vinca major*), soft chess (*Bromus hordeaceus*), and wild radish (*Raphanus sativus*).

6.2.2 Scrub Communities

Coastal Scrub

Thickets of coastal scrub vegetation occur on the coastal hillsides within the reserve. The scrub habitat is dominated by coyote brush (*Baccharis pilularis*), yellow bush lupine (*Lupinus arboreus*), poison oak (*Toxicodendron diversilobum*), coffee berry (*Rhamnus californica*), California blackberry (*Rubus ursinus*) and California sage (*Artemisia californica*). Associated species include sanicle (*Sanicula* sp.), common yarrow (*Achillea millefolium*), hedge nettle (*Stachys* sp.), California bee plant (*Schrophularia californica*) and pampas grass (*Cortaderia jubata*).

The reserve supports approximately 3 acres of coastal scrub.

The coastal scrub within the reserve is subject to infestation from invasive, non-native plant species. Perennial plants of pampas grass (*Cortaderia jubata*), poison hemlock (*Conium maculatum*), and velvet grass were observed in some areas. Invasive biennial plants were also observed in the scrub habitats, including wild mustard (*Brassica* spp.) and wild radish. These plants grow well in the previously

disturbed soils. As these plants grow into dense stands, they successfully compete with, and over time, exclude the growth of the native plant species, such that their presence reduces the plant diversity of the habitat. The coastal scrub areas within the reserve offer opportunities to remove and/or control the spread of these invasive plant species.

Coastal Bluff Scrub

The reserve supports areas of scrub habitat that grows along the sea cliff. Plant species include sea lettuce (*Dudleya cespitosa*), prostrate coyote brush, native strawberry, Pacific grindelia (*Grindelia stricta* var. *platyphylla*) and Douglas iris (*Iris douglasiana*).

Shrubs of coyote brush, coffeeberry, California sage and poison oak occur in more protected sea cliff areas. Hillside seepage often creates mesic areas that support bracken fern (*Pteridium aquilinum*) and California polypody (*Polypodium californicum*).

6.2.3 Riparian and Wetland Communities

Cold season deciduous forests occur along San Vicente Creek (in the northern portion of the reserve) and in the upper ends of Pillar Point Marsh (in the southern portion of the reserve). These forests are commonly referred to as *riparian forests*. This streamside vegetation typically grows up to the bank full-flow line and may extend beyond this line if soil moisture levels are high or frequent flooding occurs, such as along the floodplain of Pillar Point Marsh. Characteristic woody vegetation species within the reserve are arroyo willow (*Salix lasiolepis*). The San Vicente Creek channel exhibits evidence of scour and/or deposition. The high water regime of a stream is an important component in the species composition along a watercourse, as most riparian plant species are adapted to colonizing recently disturbed (i.e., flooded, scoured or depositional areas) portions of a stream.

These deciduous forests typically occur along perennial and intermittent streams shown as a solid or dashed blue line on USGS 1:24,000 scale topographical maps and some ephemeral streams with well-defined channels. Figure 6.1 displays the occurrences of riparian woodland within the reserve based on the volunteer surveys and limited ground-truthing. Approximately 0.2 acres of riparian woodland occur in the reserve.

Mixed Riparian Woodland

Where this riparian type occurs along San Vicente Creek, willows (*Salix* spp.) are the dominant trees. Understory plant species include California polypody (*Polypodium californicum*), California blackberry, stinging nettle (*Urtica doioica*), scouring rush (*Equisetum arvense*), hedge nettle, and California bee plant (*Scrophularia californica*). Invasive, non-native plant species were observed along the creek, most notable are Cape/German ivy (*Delaireia odorata* / *Senecio mikanioides*), poison hemlock (*Conium maculatum*), pampas grass, mustard and garden nasturtium (*Trapeaolum majus*).

The northern portion of Pillar Point Marsh supports a willow riparian woodland, interspersed with patches of freshwater marsh. The woodland is dominated by arroyo willow. Associated species include California blackberry, stinging nettle, Pacific silverweed (*Potentilla anserine*), and Cape ivy.

Coastal Salt Marsh

The coastal salt marsh occurs at the mouth of Pillar Point Marsh and extends upstream to West Point Road, encompassing approximately 13.4 acres. The marsh is dominated by plant species tolerant of high salinity, such as pickleweed (*Salicornia virginica*), fleshy jaumea (*Jaumea carnosa*), alkali heath (*Frankenia grandiflora*), coastal gumplant (*Grindelia latifolia*) and salt grass (*Distichlis spicata*). The

marsh receives seawater inflow from the Pacific Ocean (when the marsh is open to the ocean), as well as significant freshwater inflow during the winter months. Depending upon the tidal inundation level, mud flats may be visible adjacent to the marsh plain. Pickleweed is adept at colonizing these open areas, and its extent depends upon the duration and magnitude of tidal inundation.

The coastal salt marsh within the reserve has been significantly reduced in distribution since pre-European settlement. Historically, the marsh probably occupied a larger area. Agricultural uses and construction of the Air Force access road probably confined the extent of the marsh.

The marsh plain was observed to support some occurrences of invasive, non-native plant species. Iceplant was observed in some locations. The slopes along the roads were observed to support stands of poison hemlock and some pampas grass. The marsh offers several opportunities for restoration through the removal of occurrences of invasive, non-native plant.

The salt marsh areas are identified as “sensitive habitat” in the County of San Mateo LCP.

Freshwater Marsh

This vegetation type consists of areas dominated by perennial, non-woody plant species that are adapted to growing in wet conditions. The plants grow in permanently saturated soil, such as within portions of San Vicente creek and in the upper areas of Pillar Point Marsh. Winter inundations, creek flows and spring/seeps provide the moisture for the marsh species.

Within the reserve, the Pillar Point Marsh area supports a dense cattail/bulrush habitat. The most common species are California bulrush (*Scirpus californicus*) and cattail (*Typha latifolia*). The distribution of these plant species is primarily a function of historical land uses, source of water (i.e., groundwater, surface runoff) and water depth. The occurrence of other plant species also varies by water depth and the duration of inundation. Along the edges of the bulrush/cattail stands where periodic flooding often occurs, other wetland plant species are present. Common monkey flower (*Mimulus guttatus*), Pacific silverweed, watercress (*Rorippa nasturtium-aquaticum*), western goldenrod (*Euthamia occidentalis*), brown-headed rush and waterweed (*Polygonum lapathifolium*) occur in these areas. In open water areas, pondweed (*Lemna* sp.) is also prevalent.

Approximately 17.7 acres of this community occurs within the reserve. All areas supporting freshwater marsh vegetation are identified as “sensitive habitat” in the County of San Mateo LCP (wetlands).

In some areas, the freshwater marsh areas support thickets of poison hemlock, wild mustard and wild radish, three invasive, non-native plant species. The watershed offers several opportunities for restoration of the freshwater marsh areas through the removal of occurrences of invasive, non-native plant species.

6.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

6.3.1 Special Status Plant Species

Although no special status plant species, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered, have been documented from the reserve, some habitats provide potential habitat. In addition, some of the lands provide potential habitat for plants recognized as rare or locally unique by CDFG or CNPS.

The special status plant species with potential to occur in the vicinity of the reserve are listed in Table 6.2.

In addition to special status plant species that are listed on CNPS List 1B, there are species that local botanists, including the local chapters of the California Native Plant Society, consider to be specialty plants of

the region. Such species may have limited occurrences within the region (locally rare), or may be endemic to the reserve area. These plants are typically on CNPS List 4, a watch list. Spring surveys would be needed to confirm the presence of any of these resources on reserve lands.

Table 6.2. List of Special Status Plant Species Known or With Potential to Occur in Fitzgerald Marine Reserve, San Mateo County, California

Species	Status	Observed on Site/Potential Habitat
Blasdale's bentgrass (<i>Agrostis blasdalei</i>)	List 1B	Potential
Coast lily (<i>Lilium maritimum</i>)	List 1B	Potential
Coast wallflower (<i>Erysimum ammophilium</i>)	List 1B	Potential
San Francisco popcorn flower (<i>Plagiobothrys diffusus</i>)	List 1B; SE	Potential
Fragrant fritillary (<i>Fritillaria liliacea</i>)	List 1B	Potential
Hickman's cinquefoil (<i>Potentilla hickmanii</i>)	List 1B; SE; FE	Potential
Kellogg's horkelia (<i>Horkelia cuneata ssp. sericea</i>)	List 1B	Unlikely
Marin checkerbloom (<i>Sidalcea hickmanii ssp. viridis</i>)	List 1B	Potential
Pt. Reyes horkelia (<i>Horkelia marinensis</i>)	List 4	Potential
Coast yellow linanthus (<i>Linanthus croceus</i>)	List 1B	Known from only one occurrence on bluffs at North end of Reserve near Juliana St.; reported by Toni Corelli (Breen, pers. comm.)
Gairdner's yampah (<i>Perideridia gairdneri ssp. gairdneri</i>)	List 4	Potential
Pt. Reyes meadowfoam (<i>Limnanthes douglasii sulphurea</i>)	List 1B; SE	No/Unlikely
San Francisco gumplant (<i>Grindelia hirsutula var. maritima</i>)	List 1B	Potential
San Francisco campion (<i>Silene verecunda ssp. verecunda</i>)	List 1B	Potential
San Francisco owl's clover (<i>Triphysaria floribunda</i>)	List 1B	Potential
Santa Cruz clover (<i>Trifolium buckwestiorum</i>)	List 1B	Potential
Santa Cruz microsaris (<i>Stebbinososeris decipiens</i>)	List 1B	Potential
Artists popcornflower (<i>Plagiobothrys chorisianus var. chorisianus</i>)	List 3	Potential

SE: State Endangered FE: Federally Endangered

CNPS Status:

List 1B: These plants (predominately endemic) are rare through their range and are currently vulnerable or have a high potential for vulnerability due to limited or threatened habitat, few individuals per population, or a limited number of populations. List 1B plants meet the definitions of Section 1901, Chapter 10 of the CDFG Code.

List 3: This is a review list of plants that lack sufficient data to assign them to another list.

List 4: List 4 is a watch list of plants with limited distribution in the state that has low vulnerability and threat at this time. These plants are uncommon, often significant locally, and should be monitored.

6.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. Four of the principal plant communities within the reserve–riparian woodland, oak woodland, northern maritime chaparral and coastal terrace prairie– are designated as high priority communities in the CNDDDB (CDFG 1999). This category contains native plant communities that are regarded by CDFG as having special significance under the California Environmental Quality Act. Riparian and wetland habitats are also considered sensitive under the County of San Mateo General Plan and Local Coastal Plan.

Riparian Forests

The riparian forests are all considered as sensitive habitats according to the County of San Mateo and CDFG. This status is due to the value of these forests to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

Coastal Salt Marsh and Freshwater Marsh

The coastal salt and freshwater marshes are considered sensitive habitats according to the County of San Mateo and CDFG. This status is due to the value of these areas to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

6.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

Some of the reserve provides habitat for species of concern, including those listed by the USFWS or CDFG as threatened or endangered. The special status animal species known or with potential to occur in the reserve are listed in Table 6.3. Two species, the Red-legged Frog and the San Francisco Common Yellowthroat, are reported within the park in the California Natural Diversity Database. These occurrences are mapped in Figure 6.2.

Table 6.3 was compiled using the following sources:

Fitzgerald Marine Reserve Draft Master Plan (Brady/LSA August, 1999)

Fitzgerald Marine Reserve Final EIR (Dept. of Parks and Recreation, San Mateo County 1976)

California Natural Diversity Database

Table 6.3: Special Status Animal Species that May Occur in Fitzgerald Marine Reserve or Pillar Pt. Marsh

Species	Status	Known/Potential Occurrence	Typical Habitat
Myrtle's Silverspot Butterfly (<i>Speyeria zerene myrtleae</i>)	FE	Potential	Coastal forest and wooded areas
Mission Blue Butterfly (<i>Icaricia icarioides missionensis</i>)	FE	Potential	Grasslands with larval food-plants (<i>Lupinus albifrons</i> , <i>L. formosus</i> , & <i>L. variicolor</i>)
California Red-legged Frog (<i>Rana aurora draytoni</i>)	FT	Known	Grassland, woodland, or forest in or near water
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE; SE; DFG Fully Protected	Known	Grassland, woodland, or scrub near ponds, marshes, streams, wet meadows, or other water sources
Western Pond Turtle (<i>Clemmys marmorata</i>)	DFG CSC, Protected	Potential	Ponds, marshes, rivers, or streams with aquatic vegetation
Double-crested Cormorant (<i>Phalacrocorax auritus</i>) Rookery Site	DFG CSC	Known	Estuaries, lakes, ponds, and rivers
American Bittern (<i>Botaurus lentiginosus</i>)	FWS: MNBMC	Known	Marsh
California Black Rail (<i>Laterallus jamaicensis coturniculus</i>)	ST	Potential	Marsh and wet meadow
California Clapper Rail (<i>Rallus longirostris obsoletus</i>)	FE; SE; DFG: Fully protected	Potential	Grassy marsh
Western Snowy Plover (<i>Charadrius alexandrinus nivosus</i>)	FT; DFG CSC; FWS MNBMC ¹	Potential	Sandy beaches
California Gull (<i>Larus californicus</i>)	DFG CSC ¹	Known. Breeding status unknown.	Near water
Elegant Tern (<i>Thalasseus elegans</i>) nesting colony	DFG CSC; FWS: MNBMC ¹	Known. Breeding status unknown	Near water

Species	Status	Known/Potential Occurrence	Typical Habitat
Golden Eagle (<i>Aquila chrysaetos</i>)	DFG CSC, Fully protected ²	Known. Breeding status unknown.	Hunts over open areas in hilly or mountainous country
Osprey (<i>Pandion haliaetus</i>)	DFG CSC ¹	Known. Breeding status unknown	Near fresh or saltwater
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	SE; FWS MNBMC; DFG Fully protected ¹	Known. Breeding status unknown.	Wetlands and open areas with cliffs or other high perches
Merlin (<i>Falco columbarius</i>)	DFG CSC ³	Potential	Variety of habitats
Cooper's Hawk (<i>Accipiter cooperii</i>)	DFG CSC ¹	Known. Breeding status unknown.	Woodland, forest
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	DFG CSC ¹	Known. Breeding status unknown.	Mixed woodlands
White-tailed Kite (<i>Elanus caeruleus</i>)	DFG Fully protected; FWS MNBMC ¹	Known. Breeding status unknown.	Grasslands, farmlands
Northern Harrier (<i>Circus cyaneus</i>)	DFG CSC ¹	Known. Breeding status unknown.	Grassland, marsh
Long-eared Owl (<i>Asio otus</i>)	DFG CSC ¹	Potential	Roosts in thick woods; hunts over open fields
Short-eared Owl (<i>Asio flammeus</i>)	DFG CSC; FWS MNBMC ¹	Known. Breeding status unknown.	Open areas of marsh, grassland, or tundra
Burrowing Owl (<i>Athene unicularia</i>) Burrow Sites	DFG CSC; FWS MNBMC	Known	Open grassland; nests on ground in abandoned animal burrows and crevices.
Tri-colored Blackbird (<i>Agelaius tricolor</i>)	DFG CSC; USFWS MNBMC ¹	Known. Breeding status unknown.	Ponds, lakes, and marshes with cattails or bulrush
Willow Flycatcher (<i>Empidonax traillii</i>)	SE ¹	Potential	Brush, often near water
Olive-sided Flycatcher (<i>Nuttallornis borealis</i>)	USFWS MNBMC ¹	Known. Breeding status unknown.	Typically found in coniferous forest, bogs
California Horned Lark (<i>Eremophila alpestris actia</i>)	DFG CSC	Known	Barren ground with short grass and few bushes
San Francisco (=Salt Marsh) Common Yellowthroat (<i>Geothlypis trichas sinuosa</i>)	DFG CSC	Known	Grassland, scrub, marshes
Yellow Warbler (<i>Dendroica petechia</i>)	DFG CSC ¹	Known. Breeding status unknown.	Wet habitats (especially with willows and alders), open woodlands, gardens
Bank Swallow (<i>Riparia riparia</i>)	ST ¹	Known. Breeding status unknown.	Nest in holes in earthen banks near water.
Black Swift (<i>Cypseloides niger</i>)	DFG CSC; USFWS MNBMC ¹	Known. Breeding status unknown.	Nests in crevices in cliffs, often below waterfalls or on sea cliffs.

Species	Status	Known/Potential Occurrence	Typical Habitat
Vaux's Swift (<i>Chaetura vauxi</i>)	DFG CSC; USFWS MNBMC ¹	Known. Breeding status unknown.	Woodlands near lakes, rivers, streams
White-throated Swift (<i>Aeronautes saxatalis</i>)	DFG CSC; USFWS MNBMC ¹	Known. Breeding status unknown.	Nest in cliff crevices and small holes in building walls or concrete bridges.
Purple Martin (<i>Progne subis</i>)	DFG CSC ¹	Known. Breeding status unknown.	Colonial cavity nester
Rufous Hummingbird (<i>Selasphorus rufus</i>)	USFWS MNBMC ¹	Known. Breeding status unknown.	Forests, edges of woods, thickets
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	DFG CSC; USFWS MNBMC	Known	Open, brushy fields and the edges of woods
Townsend's Western Big-eared Bat (<i>Corynorhinus (=Plecotus) townsendii townsendii</i>)	DFG CSC	Potential	Dwells in caves, buildings.
Salt-marsh Harvest Mouse (<i>Reithrodontomys raviventris</i>)	FE; SE	Potential	Coastal salt marsh with dense pickleweed (<i>Salicornia virginica</i>)
San Francisco Dusky-footed Woodrat (<i>Neotoma fuscipes annectens</i>)	DFG CSC	Potential	Forest and scrub
California Sea Lion (<i>Zalophus californianus</i>)	FM	Known	Coastal waters and inlets; haul out on beaches and rocks along coast.
Harbor Seal (<i>Phoca vitulina</i>)	FM	Known. Breeds within the reserve.	Nearshore waters and inlets; haul out on beaches and rocks along coast.
Northern Elephant Seal (<i>Mirounga angustirostris</i>)	FM	Known	Breeds on coastal islands. There is a breeding colony at Año Nuevo.
Southern Sea Otter (<i>Enhydra lutris</i>)	FT; DFG Fully Protected; FM	Known	Nearshore waters and inlets in regions where kelp forests occur
Steller's Sea Lion (<i>Eumetopias jubatus</i>)	FM; FT(rookery)	Known	Typically feeds in offshore waters but sometimes seen near shore. There is a breeding colony on Año Nuevo.

FT: Federally Threatened; FE: Federally Endangered; SE: State Endangered; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Fully Protected: CA Dept. of Fish and Game fully protected species; USFWS MNBMC: U.S. Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern; FM: Protected under the Federal Marine Mammal Protection Act of 1972.

¹ status applies to nesting birds

² status applies to nesting and wintering birds

³ status applies to wintering birds

6.5 INVASIVE, NON-NATIVE PLANT SPECIES AND PATHOGENS

6.5.1 Invasive, Non-native Plant Species

Pampas grass, poison hemlock and Cape ivy, three invasive non-native plant species, have become established in several locations within the reserve. Their occurrences are discussed in the plant community type description. Other species observed within the reserve include scattered occurrences of periwinkle, yellow star thistle, Harding grass, velvet grass, garden nasturtium and Monterey cypress. The distribution of these plants, based on the volunteer field reconnaissance surveys and limited ground-truthing is depicted in Figure 6.3.

6.6 PLANT SPECIES LIST

Table 6.4 was compiled using the following sources:

Fitzgerald Marine Reserve Final EIR (Dept. of Parks and Recreation, San Mateo County 1976)

Fitzgerald Marine Reserve Draft Master Plan (Brady/LSA August, 1999)

Scientific names follow Hickman (1993).

TABLE 6.4 PLANT SPECIES OF FITZGERALD MARINE RESERVE AND PILLAR POINT MARSH

Trees

<i>Castanea</i> sp.*	chestnut
<i>Cupressus macrocarpa</i> *	Monterey cypress
<i>Eucalyptus globulus</i> *	blue-gum eucalyptus
<i>Leptospermum laevigatum</i> *	Australian tea tree
<i>Myrica californica</i>	wax myrtle
<i>Phoenix canariensis</i> *	Canary Island palm
<i>Pinus radiata</i> *	Monterey pine
<i>Pseudotsuga menziesii</i>	Douglas fir
<i>Salix coulteri</i>	Coulter's willow
<i>Salix lasiolepis</i>	arroyo willow

Shrubs

<i>Artemisia californica</i>	California sagebrush
<i>Baccharis pilularis</i>	coyote brush
<i>Eriophyllum staechadifolium</i>	lizard tail
<i>Genista monspessulana</i> *	French broom
<i>Lavatera arborea</i> *	tree-mallow
<i>Lonicera involucrata</i>	twinberry
<i>Lupinus arboreus</i>	yellow bush lupine
<i>Mimulus aurantiacus</i>	sticky monkey flower
<i>Pittosporum</i> sp.*	pittosporum
<i>Rhamnus californica</i>	coffeeberry
<i>Rosa californica</i>	California rose
<i>Rubus ursinus</i>	California blackberry
<i>Sambucus racemosa</i>	red elderberry
<i>Toxicodendron diversilobum</i>	poison oak
<i>Ulex europaeus</i> *	gorse

Herbs

<i>Abronia latifolia</i>	yellow sand verbena
<i>Achillea millefolium</i>	yarrow
<i>Allium triquetrum</i> *	wild onion
<i>Alyssum</i> sp.*	sweet alyssum
<i>Ambrosia chamissonis</i>	beach bur
<i>Anagallis arvensis</i> *	scarlet pimpernel
<i>Anaphalis margaritacea</i>	pearly everlasting
<i>Angelica hendersonii</i>	coast angelica

<i>Apium graveolens*</i>	celery
<i>Artemisia douglasiana</i>	mugwort
<i>Artemisia pycnocephala</i>	beach sagewort
<i>Aster chilensis</i>	common aster
<i>Astragalus nuttalli</i> var. <i>virgatus</i>	San Francisco rattleweed
<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	western lady fern
<i>Atriplex californica</i>	California saltbush
<i>Atriplex leucophylla</i>	beach saltbush
<i>Atriplex patula</i> var. <i>patula</i>	spear oracle
<i>Avena barbata*</i>	slender wild oat
<i>Brassica rapa*</i>	field mustard
<i>Brassica nigra*</i>	black mustard
<i>Briza minor*</i>	quaking grass
<i>Bromus diandrus*</i>	ripgut brome
<i>Bromus hordaceus*</i>	soft chess
<i>Cakile maritima*</i>	sea rocket
<i>Calandrinia ciliata</i>	red maids
<i>Camissonia cheiranthifolia</i>	beach evening primrose
<i>Carex densa</i>	dense sedge
<i>Carex obnupta</i>	slough sedge
<i>Carpobrotus chilensis*</i>	sea fig/iceplant
<i>Carpobrotus edulis*</i>	hottentot fig/iceplant
<i>Castilleja affinis</i>	Indian paint brush
<i>Castilleja ambigua</i>	Johnny-nip
<i>Castilleja subinclusa</i> ssp. <i>franciscana</i>	Franciscan paint brush
<i>Castilleja wightii</i>	Wight's paint brush
<i>Centaurea solstitialis*</i>	yellow star thistle
<i>Chamomilla suaveolens*</i>	pineapple weed
<i>Chenopodium murale*</i>	nettle-leaved goosefoot
<i>Chlorogalum pomeridianum</i>	soap plant
<i>Cicuta douglasii</i>	water-hemlock
<i>Cirsium vulgare*</i>	bull thistle
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Conium maculatum*</i>	poison hemlock
<i>Convolvulus arvensis*</i>	bindweed
<i>Conyza canadensis*</i>	horseweed
<i>Coprosma</i> sp.*	mirror plant
<i>Cortaderia jubata*</i>	Pampas/jubata grass
<i>Cortaderia selloana*</i>	Pampas grass
<i>Cotula coronopifolia*</i>	brass buttons
<i>Cuscuta salina</i> var. <i>major</i>	salt marsh dodder
<i>Delairea odorata</i> / <i>Senecio mikanioides*</i>	Cape/German ivy
<i>Distichlis spicata</i>	salt grass
<i>Dudleya farinosa</i>	bluff lettuce
<i>Dryopteris arguta</i>	coastal wood fern
<i>Echium</i> sp.*	viper's bugloss/pride of Madeira
<i>Epilobium brachycarpum</i>	panicked willow herb
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	California willow herb
<i>Epilobium ciliatum</i> ssp. <i>watsonii</i>	San Francisco willow herb
<i>Epilobium densiflorum</i>	dense-flowered boisduvalia
<i>Erigeron glaucus</i>	seaside daisy
<i>Erigeron philadelphicus</i>	fleabane

<i>Eriogonum latifolium</i>	coast buckwheat
<i>Erodium cicutarium</i> *	red-stemmed filaree
<i>Eschscholzia californica</i>	California poppy
<i>Equisetum telmateia</i> ssp. <i>braunii</i>	giant horsetail
<i>Euthamia occidentalis</i>	western goldenrod
<i>Foeniculum vulgare</i> *	fennel
<i>Fragaria chiloensis</i>	beach strawberry
<i>Frankenia grandifolia</i>	alkali heath
<i>Galium aparine</i> *	goose grass
<i>Geranium dissectum</i> *	cut-leaf geranium
<i>Gnaphalium californicum</i>	California cudweed
<i>Gnaphalium luteo-album</i> *	weedy cudweed
<i>Gnaphalium purpureum</i>	purple cudweed
<i>Gnaphalium ramosissimum</i>	pink everlasting
<i>Gnaphalium stramineum</i>	cotton-batting plant
<i>Grindelia stricta</i> var. <i>platyphylla</i>	Pacific grindelia
<i>Hedera helix</i> *	English ivy
<i>Helenium puberulum</i>	sneezeweed
<i>Heliotropium curassavicum</i>	seaside heliotrope
<i>Heracleum lanatum</i>	cow-parsnip
<i>Hierochloa occidentalis</i>	vanilla grass
<i>Holcus lanatus</i> *	velvet grass
<i>Hordeum murinum</i> ssp. <i>leporinum</i> *	foxtail
<i>Horkelia californica</i>	California horkelia
<i>Hypochaeris radicata</i> *	rough cat's-ear
<i>Iris longipetala</i>	coast iris
<i>Iris douglasiana</i>	Douglas iris
<i>Jaumea carnosa</i>	fleshy jaumea
<i>Juncus bufonius</i>	toad rush
<i>Juncus effusus</i> var. <i>brunneus</i>	bog rush
<i>Juncus falcatus</i>	sickle-leaved rush
<i>Juncus leseurii</i>	salt rush
<i>Juncus patens</i>	spreading rush
<i>Juncus tenuis</i>	western rush
<i>Lasthenia californica</i>	goldfields
<i>Lepidium strictum</i>	wayside peppergrass
<i>Leymus mollis</i>	American dune grass
<i>Linanthus croceus</i>	coast yellow linanthus
<i>Linum bienne</i> *	small-flowered flax
<i>Lobularia maritima</i> *	sweet alyssum
<i>Lolium multiflorum</i> *	Italian rye grass
<i>Lolium perenne</i> *	perennial wild rye
<i>Lomatium dasycarpum</i>	wooly-fruited lomatium
<i>Lotus corniculatus</i> *	bird's foot trefoil
<i>Lupinus variicolor</i>	varicolor lupine
<i>Lythrum hyssopifolia</i> *	Hyssop loosestrife
<i>Lythrum salicaria</i> *	purple loosestrife
<i>Madia gracilis</i>	slender tarweed
<i>Madia madioides</i>	woodland madia
<i>Madia sativa</i>	coast tarweed
<i>Marah fabaceus</i>	wild cucumber
<i>Malva nicaeensis</i> *	bull mallow

<i>Medicago polymorpha</i> *	bur clover
<i>Melilotus indica</i> *	sweet clover
<i>Mentha arvensis</i>	marsh/field mint
<i>Mesembryanthemum</i> sp.*	iceplant
<i>Mimulus guttatus</i>	yellow monkey flower
<i>Navarretia squarrosa</i>	skunkweed
<i>Oenanthe sarmentosa</i>	Pacific oenanthe
<i>Osmorhiza chilensis</i>	wood sweet cicely
<i>Oxalis pes-caprae</i> *	Bermuda buttercup
<i>Phacelia malvifolia</i>	stinging phacelia
<i>Phalaris angusta</i>	
<i>Phalaris aquatica</i> *	Harding grass
<i>Picris echioides</i> *	bristly ox-tongue
<i>Piperia elegans</i>	Rein orchid
<i>Plantago lanceolata</i> *	English plantain
<i>Plantago coronopus</i> *	cut-leaved plantain
<i>Plantago major</i> *	common plantain
<i>Plantago maritima</i> var. <i>californica</i>	California seaside plantain
<i>Polygonum arenastrum</i> *	common knotweed
<i>Polygonum amphibium</i> var. <i>emersum</i>	water smartweed
<i>Polygonum punctatum</i>	water smartweed
<i>Polypogon monspeliensis</i> *	rabbit's foot grass
<i>Polystichum munitum</i>	sword fern
<i>Potentilla egedii</i> var. <i>grandis</i>	Pacific silverweed
<i>Prunella vulgaris</i> *	self-heal
<i>Pteridium aquilinum</i>	bracken fern
<i>Raphanus sativus</i> *	wild radish
<i>Rorippa nasturtium-aquaticum</i>	water-cress
<i>Rumex acetosella</i> *	sheep sorrel
<i>Rumex crispus</i> *	curly dock
<i>Rumex salicifolius</i> var. <i>crassus</i>	willow dock
<i>Salicornia virginica</i> *	pickleweed
<i>Sanicula crassicaulis</i>	gambleweed/Pacific sanicle
<i>Scirpus californicus</i>	California tule/bulrush
<i>Scirpus cernuus</i>	low club rush
<i>Scirpus koilolepis</i>	dwarf/keeled club rush
<i>Scirpus microcarpus</i>	panicked/small-fruited bulrush
<i>Scirpus robustus</i>	prairie bulrush
<i>Scrophularia californica</i>	California bee plant
<i>Sidalcea malvaeflora</i>	checker bloom
<i>Silene gallica</i> *	windmill pink
<i>Silybum marianum</i> *	milk thistle
<i>Sisyrinchium bellum</i>	blue-eyed grass
<i>Solanum americanum</i>	small-flowered nightshade
<i>Solanum umbelliferum</i>	blue witch
<i>Solidago canadensis</i> ssp. <i>elongata</i>	Canada goldenrod
<i>Sonchus oleraceus</i> *	common sow thistle
<i>Sparganium eurycarpum</i>	broad-fruited burreed
<i>Spergularia macrotheca</i>	large-flowered sand spurry
<i>Spergularia marina</i>	salt-marsh sand spurry
<i>Stachys chamissonis</i>	coast hedge nettle
<i>Stachys rigida</i>	rigid hedge nettle

<i>Stellaria media</i> *	common chickweed
<i>Tetragonia tetragonioides</i> *	New Zealand spinach
<i>Trifolium willdenovii</i>	tomcat clover
<i>Tropeolum majus</i> *	garden nasturtium
<i>Typha angustifolia</i>	narrow-leaved cattail
<i>Typha latifolia</i>	broad-leaved cattail
<i>Urtica dioica</i> ssp. <i>gracilis</i>	hoary nettle
<i>Vicia benghalensis</i> *	purple vetch
<i>Vicia gigantea</i>	giant vetch
<i>Vicia sativa</i> *	spring vetch
<i>Vinca major</i> *	periwinkle
<i>Vulpia myuros</i> var. <i>hirsuta</i>	six-weeks fescue
<i>Woodwardia fimbriata</i>	giant chain fern

*introduced species

6.7 ANIMAL SPECIES LIST

Table 6.5 was compiled from the following sources:

Fitzgerald Marine Reserve Final EIR (Dept. of Parks and Recreation, San Mateo County 1976)

Fitzgerald Marine Reserve Draft Master Plan (Brady/LSA August, 1999)

TABLE 6.5 ANIMAL SPECIES THAT MAY OCCUR IN FITZGERALD MARINE RESERVE OR PILLAR PT. MARSH

Insects

<i>Danaus plexippus</i>	Monarch Butterfly
<i>Icaricia icarioides missionensis</i>	Mission Blue Butterfly
<i>Speyeria zerene myrtleae</i>	Myrtle's Silverspot Butterfly
<i>Plebeajus (=Icaricia) icarioides pheres</i>	Pheres Blue Butterfly
<i>Incisalia mossi baysensis</i>	San Bruno Elfin Blue Butterfly
<i>Trichocorixa</i> sp.	Water Boatman

Aquatic Invertebrates (excluding insects)

Polychaetes
Marine Oligochaetes
Amphipods
Copepods
Ostracods
Cladocerans
Nematodes

Fish

<i>Gasterosteus aculeatus</i>	Three-spined Stickleback
<i>Cottus</i> sp.	Sculpin

Amphibians

<i>Taricha torosa</i>	California Newt
<i>Ensatina eschscholtzi xanthoptica</i>	Yellow-eyed Salamander
<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Aneides lugubris</i>	Arboreal Salamander
<i>Bufo boreas halophilus</i>	California Toad
<i>Hyla regilla</i>	Pacific Tree Frog
<i>Rana aura draytoni</i>	California Red-legged Frog

Reptiles

<i>Clemmys marmorata</i>	Western Pond Turtle
<i>Sceloporus occidentalis occidentalis</i>	N.W. Fence Lizard
<i>Eumeces skiltonianus skiltonianus</i>	Western Skink
<i>Gerrhonotus multicarinatus multicarinatus</i>	California Alligator Lizard
<i>Gerrhonotus coeruleus coeruleus</i>	San Francisco Alligator Lizard
<i>Charina bottae bottae</i>	Pacific Rubber Boa
<i>Diadophis punctatus amabilis</i>	Pacific Ringneck Snake

Contia tenuis
Coluber constrictor mormon
Pituophis melanoleucus catenifer
Lampropeltis getulus californiae
Thamnophis sirtalis tetrataenia
Thamnophis elegans terrestris
Thamnophis couchi atratus

Birds

Podilymbus podiceps
Phalacrocorax auritus
Phalacrocorax penicillatus
Phalacrocorax pelagicus
Ardea herodias
Ardea alba
Butorides virescens
Egretta thula
Nycticorax nycticorax
Botaurus lentiginosus
Anser albifrons
Anas platyrhynchos
Anas strepera
Anas acuta
Anas crecca
Anas discors
Anas cyanoptera
Anas americana
Anas clypeata
Aythya americana
Aythya valisneria
Aythya marila
Aythya affinis
Bucephala albeola
Oxyura jamaicensis
Cathartes aura
Elanus leucurus
Accipiter striatus
Accipiter cooperii
Buteo jamaicensis
Buteo lineatus
Buteo lagopus
Aquila chrysaetos
Circus cyaneus
Pandion haliaetus
Falco columbarius
Falco peregrinus
Falco sparverius
Lophortyx californicus
Phasianus colchicus
Rallus limicola
Porzana carolina

Sharp-tailed Snake
Western Yellow-bellied Racer
Pacific Gopher Snake
California Kingsnake
San Francisco Garter Snake
Coast Garter Snake
Santa Cruz Garter Snake

Pied-billed Grebe
Double-crested Cormorant
Brandt's Cormorant
Pelagic Cormorant
Great Blue Heron
Great Egret
Green Heron
Snowy Egret
Black-crowned Night Heron
American Bittern
White-fronted Goose
Mallard
Gadwall
Pintail
American Green-winged Teal
Blue-winged Teal
Cinammon Teal
American Widgeon
Northern Shoveler
Redhead
Canvasback
Greater Scaup
Lesser Scaup
Bufflehead
Ruddy Duck
Turkey Vulture
White-tailed Kite
Sharp-shinned Hawk
Cooper's Hawk
Red-tailed Hawk
Red-shouldered Hawk
Rough-legged Hawk
Golden Eagle
Northern Harrier
Osprey
Merlin
Peregrine Falcon
American Kestrel
California Quail
Ring-necked Pheasant
Virginia Rail
Sora

Laterallus jamaicensis
Rallus longirostris obsoletus
Gallinula chloropus
Fulica americana
Haematopus bachmani
Charadrius semipalmatus
Charadrius alexandrinus
Charadrius vociferus
Pluvialis dominica
Pluvialis squatarola
Aphriza virgata
Arenaria interpres
Arenaria melanocephala
Capella gallinago
Numenius americanus
Numenius phaeopus
Actitis macularia
Heteroscelus incanus
Catoptrophorus semipalmatus
Tringa melanoleucos
Tringa flavipes
Calidris canutus
Calidris ptilocnemis
Calidris melanotos
Calidris bairdii
Calidris minutilla
Calidris alpina
Calidris mauri
Calidris alba
Limnodromus griseus
Limnodromus scolopaceus
Limosa fedoa
Recurvirostra americana
Himantopus mexicanus
Phalaropus fulicarius
Steganopus tricolor
Lobipes lobatus
Larus glaucescens
Larus occidentalis
Larus argentatus
Larus thayeri
Larus californicus
Larus delawarensis
Larus canus
Larus philadelphia
Larus heermanni
Rissa tridactyla
Sterna forsteri
Sterna hirundo
Thalasseus elegans
Hydroprogne caspia
Cephus columba

Black Rail
California Clapper Rail
Common Gallinule
American Coot
Black Oystercatcher
Semipalmated Plover
Snowy Plover
Killdeer
American Golden Plover
Black-bellied Plover
Surfbird
Ruddy Turnstone
Black Turnstone
Common Snipe
Long-billed Curlew
Whimbrel
Spotted Sandpiper
Wandering Tattler
Willet
Greater Yellowlegs
Lesser Yellowlegs
Red Knot
Rock Sandpiper
Pectoral Sandpiper
Baird's Sandpiper
Least Sandpiper
Dunlin
Western Sandpiper
Sanderling
Short-billed Dowitcher
Long-billed Dowitcher
Marbled Godwit
American Avocet
Black-necked Stilt
Red Phalarope
Wilson's Phalarope
Northern Phalarope
Glaucous-winged Gull
Western Gull
Herring Gull
Thayer's Gull
California Gull
Ring-billed Gull
Mew Gull
Bonaparte's Gull
Heermann's Gull
Black-legged Kittiwake
Forster's Tern
Common Tern
Elegant Tern
Caspian Tern
Pigeon Guillemot

<i>Columba fasciata</i>	Band-tailed Pigeon
<i>Columba livia</i>	Rock Dove
<i>Zenaida macroura</i>	Morning Dove
<i>Tyto alba</i>	Barn Owl
<i>Bubo virginianus</i>	Great Horned Owl
<i>Speotyto cunicularia</i>	Burrowing Owl
<i>Asio flammeus</i>	Short-eared Owl
<i>Asio otus</i>	Long-eared Owl
<i>Cypseloides niger</i>	Black Swift
<i>Chaetura vauxi</i>	Vaux's Swift
<i>Aeronautes saxatalis</i>	White-throated Swift
<i>Calypte anna</i>	Anna's Hummingbird
<i>Selasphorus rufus</i>	Rufous Hummingbird
<i>Selasphorus sasin</i>	Allen's Hummingbird
<i>Megasceryle alcyon</i>	Belted King Fisher
<i>Colaptes auratus</i>	Common Flicker "Yellow Shafted"
<i>Colaptes auratus</i>	Common Flicker "Red Shafted"
<i>Sphyrapicus nuchalis</i>	Red-naped Sapsucker
<i>Dendrocopos villosus</i>	Hairy Woodpecker
<i>Dendrocopos pubescens</i>	Downy Woodpecker
<i>Tyrannus verticalis</i>	Western Kingbird
<i>Tyrannus melancholicus</i>	Tropical Kingbird
<i>Myiarchus cinerascens</i>	Ash-throated Flycatcher
<i>Empidonax difficilis</i>	Western Flycatcher
<i>Contopus sordidulus</i>	Western Wood Pewee
<i>Sayornis nigricans</i>	Black Phoebe
<i>Sayornis saya</i>	Say's Phoebe
<i>Empidonax hammondii</i>	Hammond's Flycatcher
<i>Empidonax difficilis</i>	Western Flycatcher
<i>Empidonax traillii</i>	Willow Flycatcher
<i>Nuttallornis borealis</i>	Olive-sided Flycatcher
<i>Eremophila alpestris</i>	Horned Lark
<i>Tachycinetta thalassina</i>	Violet-green Swallow
<i>Iridoprocne bicolor</i>	Tree Swallow
<i>Riparia riparia</i>	Bank Swallow
<i>Stelgidopteryx serripennis</i>	Rough-winged Swallow
<i>Hirundo rustica</i>	Barn Swallow
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow
<i>Progne subis</i>	Purple Martin
<i>Cyanocitta stelleri</i>	Steller's Jay
<i>Aphelocoma coerulescens</i>	Scrub Jay
<i>Corvus corax</i>	Common Raven
<i>Corvus brachyrhynchos</i>	Common Crow
<i>Parus rufescens</i>	Chestnut-backed Chickadee
<i>Parus inornatus</i>	Plain Titmouse
<i>Psaltriparus minimus</i>	Bushtit
<i>Sitta canadensis</i>	Red-breasted Nuthatch
<i>Sitta carolinensis</i>	White-breasted Nuthatch
<i>Sitta pygmaea</i>	Pygmy Nuthatch
<i>Certhia familiaris</i>	Brown Creeper
<i>Chamaea fasciata</i>	Wrentit
<i>Troglodytes aedon</i>	House Wren

Troglodytes troglodytes
Thryomanes bewickii
Cisthorus palustris
Salpinctes obsoletus
Mimus polyglottos
Toxostoma redivivum
Turdus migratorius
Ixoreus naevius
Catharus guttatus
Catharus ustulatus
Sialia mexicana
Regulus satrapa
Regulus calendula
Anthus spinoletta
Bombycilla cedrorum
Lanius ludovicianus
Sturnus vulgaris
Vireo huttoni
Vireo solitarius
Vireo gilvus
Mniotilta varia
Vermivora peregrina
Vermivora celata
Vermivora ruficapilla
Dendroica petechia
Dendroica magnolia
Dendroica caerulescens
Dendroica coronata
Dendroica coronata
Dendroica nigrescens
Dendroica townsendi
Dendroica occidentalis
Dendroica fusca
Dendroica pensylvanica
Dendroica striata
Dendroica discolor
Dendroica palmarum
Seiurus noveboracensis
Oporornis tolmiei
Geothlypis trichas sinuosa
Wilsonia citrina
Wilsonia pusilla
Setophaga ruticilla
Passer domesticus
Dolichonyx oryzivorus
Sturnella neglecta
Xanthocephalus xanthocephalus
Agelaius phoeniceus
Agelaius tricolor
Icterus galbula
Euphagus cyanocephalus
Molothrus ater

Winter Wren
Bewick's Wren
Long-billed Marsh Wren
Rock Wren
Mockingbird
California Thrasher
American Robin
Varied Thrush
Hermit Thrush
Swainson's Thrush
Western Bluebird
Golden-crowned Kinglet
Ruby-crowned Kinglet
Water Pipit
Cedar Waxwing
Loggerhead Shrike
Starling
Hutton's Vireo
Solitary Vireo
Warbling Vireo
Black & White Warbler
Tennessee Warbler
Orange-crowned Warbler
Nashville Warbler
Yellow-Warbler
Magnolia Warbler
Black-throated Blue Warbler
Yellow-rumped Warbler "Myrtle"
Yel.-rumped Warbler "Audubon's"
Black-throated Gray Warbler
Townsend's Warbler
Hermit Warbler
Blackburnian Warbler
Chestnut-sided Warbler
Blackpoll Warbler
Prairie Warbler
Palm Warbler
Northern Waterthrush
Mac Gillivray's Warbler
Saltmarsh Common Yellowthroat
Hooded Warbler
Wilson's Warbler
American Redstart
House Sparrow
Bobolink
Western Meadowlark
Yellow-headed Blackbird
Red-winged Blackbird
Tri-colored Blackbird
Northern Oriole
Brewer's Blackbird
Brown-headed Cowbird

Piranga ludoviciana
Pheucticus melanocephalus
Carpodacus purpureus
Carpodacus mexicanus
Spinus pinus
Spinus tristis
Spinus psaltria
Loxia curvirostra
Pipilo erythrophthalmus
Pipilo fuscus
Calamospiza melanocorys
Passerculus sandwichensis
Pooecetes gramineus
Chondestes grammacus
Junco hyemalis
Zonotrichia albicollis
Zonotrichia leucophrys
Zonotrichia atricapilla
Passerella iliaca
Melospiza lincolnii
Melospiza melodia
Calcarius sp.

Western Tanager
Black-headed Grosbeak
Purple Finch
House Finch
Pine Siskin
American Goldfinch
Lesser Goldfinch
Red Crossbill
Rufous-sided Towhee
Brown Towhee
Lark Bunting
Savannah Sparrow
Vesper Sparrow
Lark Sparrow
Dark-eyed Junco
White-throated Sparrow
White-crowned Sparrow
Golden-crowned Sparrow
Fox Sparrow
Lincoln's Sparrow
Song Sparrow
Longspur

Mammals

Didelphis virginiana
Sorex vagrans
Sorex ornatus
Sorex trowbridgii
Scapanus latimanus
Neurotrichus gibbsii
Myotis thysanodes
Myotis californicus
Myotis volans
Myotis evotis
Myotis yumanensis
Lasiurus cinereus
Lasiurus borealis
Eptesicus fuscus
Pipistrellus hesperus
Antrozous pallidus
Plecotus townsendii
Corynorhinus (=Plecotus) townsendii townsendii
Tadarida brasiliensis
Sylvilagus audubonii
Sylvilagus bachmani
Eutamias merriami
Spermophilus beecheyi
Thomomys bottae
Reithrodontomys megalotis
Peromyscus californicus
Peromyscus boylii

Virginia Opossum
Vagrant Shrew
Ornate Shrew
Trowbridge Shrew
Broad-footed Mole
Shrew-Mole
Fringed Myotis
California Myotis
Long-legged/Hairy winged Myotis
Long-eared Myotis
Yuma Myotis
Hoary Bat
Red Bat
Big Brown Bat
Western Pipistrelle
Pallid Bat
Lump-nosed Bat
Townsend's Western Big-eared Bat
Brazilian Free-tailed Bat
Desert Cottontail
Brush Rabbit
Merriam Chipmunk
California Ground Squirrel
Botta Pocket Gopher
Western Harvest Mouse
California Deer Mouse
Brush Mouse

Peromyscus maniculatus
Peromyscus truei
Neotoma fuscipes
Microtus californicus
Perognathus californicus
Dipodomys venustus
Rattus rattus
Rattus norvegicus
Mus musculus
Urocyon cinereoargenteus
Canis latrans
Procyon lotor
Mustela frenata
Mephitis mephitis
Spilogale putorius
Felis rufus
Felis catus
Phoca vitulina
Zalophus californianus
Eumetopias jubatus
Mirounga angustirostris
Enhydra lutris
Odocoileus hemionus columbianus

Deer Mouse
Pinon Mouse
Dusky-footed Wood Rat
California Meadow Mouse
California Pocket Mouse
Narrow-faced Kangaroo Rat
Black Rat
Norway Rat
House Mouse
Gray Fox
Coyote
Raccoon
Long-tailed Weasel
Striped Skunk
Spotted Skunk
Bobcat
Domestic House Cat
Harbor Seal
California Sea Lion
Steller's Sea Lion
Northern Elephant Seal
Southern Sea Otter
Black-tailed Deer

7. FLOOD PARK

7.1 LOCATION AND FEATURES OF FLOOD PARK

Flood Park is located in Menlo Park, San Mateo County, California. The 21-acre park, originally part of the 600-acre Flood estate, was purchased in the early 1930s. Facilities development began during the Great Depression, approximately 1936, and continued into the 1950s with the addition of a baseball field, softball field, and tennis courts. The park provides for a number of recreational activities including picnicking, softball, baseball, tennis, volleyball, horseshoes, and petanque. There is also a playground in the park.

Much of the landscaping in the park consists of non-native species. However, Flood Park is well known for its heritage coast live oaks (*Quercus agrifolia*) and valley oaks (*Q. lobata*), as well as its large California bays (*Umbellularia californica*). These trees are remnants of what natural vegetation existed in the area prior to surrounding urbanization and are the greatest natural resource within the park. These heritage groves, classified according to dominant tree species, are mapped in Figure 7.1 and listed below in Table 7.1. Other areas mapped include the planted redwood and Monterey pine groves.

Table 7.1. Principal Plant Community Types Identified within Flood Park

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Coast Live Oak and/or Valley Oak	coast live oak (<i>Quercus agrifolia</i>), valley oak (<i>Q. lobata</i>)	6.6	Sensitive under County Code.
Mixed Valley Oak/Coast Live Oak/California Bay	coast live oak (<i>Quercus agrifolia</i>), valley oak (<i>Q. lobata</i>), California bay (<i>Umbellularia californica</i>)	0.6	Sensitive under County Code.
Mixed California Bay and Redwood	California bay (<i>Umbellularia californica</i>), coast redwood (<i>Sequoia sempervirens</i>)	0.6	Sensitive under County Code.
Mostly Landscaped/ Scattered Oaks and California Bays	strawberry tree (<i>Arbutus unedo</i>), glossy privet (<i>Leptospermum laevigatum</i>), coast live oak (<i>Quercus agrifolia</i>), California bay (<i>Umbellularia californica</i>)	1.1	No protective status for botanical resources Heritage trees sensitive under County Code.
Monterey Pine	Monterey pine (<i>Pinus radiata</i>)	0.8	No protective status for botanical resources
Redwood	coast redwood (<i>Sequoia sempervirens</i>)	0.1	Sensitive under County Code.
Landscaped/Developed	mostly parking areas, buildings, baseball field, tennis courts	14.6	No protective status for botanical resources
Restoration Area	coast live oak (<i>Quercus agrifolia</i>) and coast live oak understory species	0.1	No protective status for botanical resources

7.2 VEGETATION CLASSIFICATION AND CONDITION

7.2.1 Areas Dominated by Naturally Occurring, Native Trees

A fairly even-aged stand of large coast live oaks, valley oaks, and California bays dominates the southern half of the park. These tall trees are all that remains of what may have been a mixed coast live oak and valley oak woodland with associated tree and understory species such as California bay (*Umbellularia californica*), California rose (*Rosa californica*), California coffeeberry (*Rhamnus californica*), blackberry

(*Rubus ursinus*), snowberry (*Symphoricarpos mollis*), bracken fern (*Pteridium aquilinum*), blue wild rye (*Elymus glaucus*), and poison oak (*Toxicodendron diversilobium*). Native understory species and naturally recruiting oaks and bays have been cleared from this area. However, the existing canopy and lack of invasive weeds make this area the easiest to restore to natural conditions. To date, two areas of the park have been planted with native understory and tree species. These areas are designated as “restoration areas” in Figure 7.1. Other areas of the heritage tree grove are mapped according to the dominant trees within the canopy as designated below.

Coast Live Oak and/or Valley Oak

This classification corresponds to areas dominated by coast live oaks (*Quercus agrifolia*) and valley oaks (*Q. lobata*). Most of this area occurs in the southern portion of the park and is characterized by large oaks with little or no native understory. A few small clusters of coast live oaks also occur along the northern edge of the parking lot and adjacent to the entryway near the baseball field. These oaks are much younger.

Mixed Valley Oak/Coast Live Oak/California Bay

This category is almost identical to the above category except that several large California bays (*Umbellularia californica*) are interspersed among the oaks. This area is in the southeastern portion of the park.

Mixed California Bay, Redwood, and California Buckeye

This is an area of naturally occurring California bays interspersed with several large, planted coast redwoods (*Sequoia sempervirens*) in the southeastern corner of the park. Several California buckeyes (*Aesculus californica*) also occur here.

7.2.2 Areas Dominated by Introduced Trees and Shrubs

Mostly Landscaped/ Scattered Oaks and California Bays

This category refers to areas dominated by exotic species but with occasional native trees such as California bay, coast live oak, and valley oak. A few of the planted landscaping species, left unattended, may pose a threat to restoration efforts within the heritage oak grove. Glossy privet (*Ligustrum japonica*) has already spread to many areas of the park (Diane Bradley, pers. comm.). Heavenly bamboo (*Nandina domestica*), English ivy (*Hedera helix*), and acacia (*Acacia retinodes*) can also be invasive. Not all invasive exotics in the park were planted for landscaping purposes. Birds have brought cotoneaster (*Cotoneaster* spp.) and Himalayaberry (*Rubus discolor*) to the park by dropping seed collected from surrounding areas (Pam Noyer, pers. comm.). The latter two species have been placed on List A by the California Exotic Pest Plant Council, indicating that they are two of the most invasive wildland pest plants of California (Bossard et al. 2000).

Monterey Pine

This category refers to the stands of planted Monterey pine within the park. Although Monterey pines are native to San Mateo County (near Point Ano Nuevo), they have been introduced to the park.

Redwood

In addition to the redwoods that occur in the area labeled “Mixed California Bay, Redwood, and California Buckeye,” a small stand of redwoods occurs along the eastern edge of the park near the tennis court. These have been labeled “Redwood.”

7.2.3 Other Categories

Landscaped/Developed

This category refers to buildings, parking areas, play fields, picnic areas, and all areas landscaped with non-native species.

Restoration Area

Two areas within the park are being restored with native oak woodland species. These areas occur near the southwestern edge of the park. Potential exists for expansion of restoration areas and planting of additional species within these areas. These issues should be addressed in the Vegetation Management Plan.

7.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

7.3.1 Special Status Plant Species

No special status plant species occur within a one-mile radius of the park (CDFG 2001a).

7.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity.

No sensitive plant communities occur in the park. However, Valley Oak Woodland occurs approximately one mile south of the park (CDFG 2001a).

7.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

No special status animal species are likely to occur within Flood Park due to its urban location and developed grounds. The only special status animal species located within one mile of the study area is the Salt-marsh Harvest Mouse (CDFG 2001a), a species that lives in coastal areas within pickleweed marsh.

7.5 INVASIVE, NON-NATIVE PLANT SPECIES

Exotic pest plant species are mapped in Figure 7.2. A number of introduced species occur in the park, most of which were planted as part of the park landscaping and are considered park resources. However, some of these plants are potentially invasive. Glossy privet (*Ligustrum japonica*) has already spread to many areas of the park (Diane Bradley, pers. comm.). Heavenly bamboo (*Nandina domestica*) is a somewhat drought tolerant bamboo that may compete for water with native trees. English ivy (*Hedera helix*), left unattended, can spread rapidly over large areas. Acacia (*Acacia retinodes*) can also be invasive.

Not all invasive exotics in the park were planted for landscaping purposes. Birds have brought cotoneaster (*Cotoneaster* spp.) and Himalayaberry (*Rubus discolor*) to the park by dropping seed collected from surrounding areas (Pam Noyer, pers. comm.). The latter two species have been placed on List A by the California Exotic Pest Plant Council, indicating that they are two of the most invasive wildland pest plants of California (Bossard et al. 2000).

Finally, Monterey pine is mapped because this species is known to develop pitch canker and may pose a safety and fire hazard should the pines contract this disease and die.

Few common ruderal weeds present a problem in the park, as the park is well-maintained. Some mustard (*Brassica* sp.) occurs within the park and is mapped in Figure 7.2.

7.6 PLANT SPECIES LIST

The following table was compiled using the *Flood County Park Master Plan* (San Mateo County Parks and Recreation 1983) and the *Flood Park Tree Survey* (Watson 1998).

TABLE 7.2: PLANT SPECIES OF FLOOD PARK

Trees

<i>Acacia retinodes</i> *	acacia / water wattle
<i>Acer macrophyllum</i>	big leaf maple
<i>Acer platanoides</i> *	Norway maple
<i>Aesculus californica</i>	California buckeye
<i>Albizia julibrissin</i> *	silk tree
<i>Araucaria araucana</i> *	monkey puzzle tree
<i>Araucaria bidwillii</i> *	bunya-bunya
<i>Arbutus menziesii</i>	madrone
<i>Arbutus unedo</i> *	strawberry tree
<i>Betula populifolia</i> *	gray birch
<i>Calocedrus decurrens</i> ¹	incense cedar
<i>Cercis occidentalis</i> ¹	western redbud
<i>Chamaecyparis lawsoniana</i> ¹	Port Oxford cedar
<i>Cordyline australis</i> *	Dracaena palms
<i>Crataegus cordata</i> *	Washington hawthorne
<i>Cupressus arizonica</i> *	Arizona cypress
<i>Eriobotrya japonica</i> *	loquat
<i>Eucalyptus citridora</i> *	lemon-scented eucalyptus
<i>Fraxinus pennsylvanica</i> *	red ash
<i>Gleditsia triacanthos</i> *	honey locust
<i>Heteromeles arbutifolia</i>	toyon
<i>Juglans californica</i> var. <i>hindsii</i>	Northern California black walnut
<i>Koelreuteria paniculata</i> *	golden rain tree
<i>Leptospermum laevigatum</i> *	Australian tea tree
<i>Ligustrum japonica</i> *	glossy privet
<i>Liquidambar styraciflua</i> *	sweet gum
<i>Magnolia grandiflora</i> *	southern magnolia
<i>Pinus nigra</i> *	Austrian black pine
<i>Pinus ponderosa</i> ¹	Ponderosa pine
<i>Pinus radiata</i> ¹	Monterey pine
<i>Pistacia chinensis</i> *	Chinese pistach
<i>Pittosporum undulatum</i> *	Victorian box
<i>Platanus acerifolia</i> *	London plane tree
<i>Populus nigra</i> 'Italica'*	Lombardy poplar
<i>Prunus atropurpurea</i> *	Japanese plum
<i>Prunus ilicifolia</i> ssp. <i>ilicifolia</i>	holly-leaved cherry
<i>Prunus ilicifolia</i> ssp. <i>lyonii</i> ¹	Catalina cherry
<i>Prunus pissardi</i> *	purple leaf plum
<i>Prunus subcordata</i> ¹	Sierra plum
<i>Pseudotsuga menziesii</i>	Douglas fir
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus douglasii</i> ¹	blue oak
<i>Quercus engelmannii</i> ¹	mesa oak

<i>Quercus lobata</i>	valley oak
<i>Quercus velutina</i> *	black oak
<i>Sambucus mexicana</i>	blue elderberry
<i>Sapium sebiferum</i> *	Chinese tallow
<i>Schinus molle</i> *	pepper tree
<i>Sequoia gigantea</i> ¹	giant sequoia
<i>Sequoia sempervirens</i> ¹	coast redwood
<i>Sequoiadendron giganteum</i> ¹	giant sequoia
<i>Taxus sp.</i> * ^{or 1}	yew
<i>Umbellularia californica</i>	California bay
	cultivated almond

Shrubs and Vines

<i>Agapanthus orientalis</i> *	lily of the Nile
<i>Albelia grandiflora</i> *	glossy albelia
<i>Cotoneaster lacteus</i> *	wax leaf cotoneaster
<i>Elaegnus angustifolia</i> *	Russian olive
<i>Hedera helix</i> *	English ivy
<i>Hypericum moserianum</i> *	gold flower
<i>Juniperus sp.</i> *	Juniper
<i>Ligustrum lucidum</i> *	wax leaf privet
<i>Nandina domestica</i> *	heavenly bamboo
<i>Nerium oleander</i> *	oleander
<i>Photinia serrulata</i> *	photinia
<i>Pittosporum tobira</i> *	pittosporum
<i>Pyracantha coccinea</i> *	firethorn
<i>Rubus discolor</i> *	Himalyaberry
<i>Toxicodendron diversilobum</i>	poison oak

¹native to California but introduced to park

* not native to California

7.7 ANIMAL SPECIES LIST

TABLE 7.3: ANIMAL SPECIES OF FLOOD PARK

Birds

California Quail
House Sparrow
Mockingbird
Brewer’s Blackbird
Mourning Dove
California Towhee (Brown Towhee)
American Robin
Black-capped Chickadee
Oak Titmouse (Plain Titmouse)
Scrub Jay
Redtail Hawk

Birds (cont’d)

Redshouldered Hawk
American Kestrel

Mammals

Eastern Gray Squirrel
Western Gray Squirrel
Douglas Squirrel

8. HUDDART COUNTY PARK

8.1 LOCATION AND FEATURES OF HUDDART COUNTY PARK

Huddart County Park is located off King’s Mountain Road near Woodside in San Mateo County. The 974-acre park, situated on the eastern slope of the Santa Cruz Mountains, was logged between 1850 and 1860, decimating much of the redwood forest that existed at that time. Logging was especially intense between 1853 and 1860 when 5 sawmills operated near the present park borders (The Planning Collaborative 1982). By 1870, much of the eastern slope had been harvested, and logging operations moved to the western slope. King’s Mountain Road (formerly the Summit Springs Turnpike) was built to access these new areas (The Planning Collaborative 1982).

In 1944, James Huddart, a wealthy lumberman, bequeathed the property for Huddart County Park to San Mateo County, with the stipulation that the property be used as parkland. San Mateo County eventually accepted the gift and completed most of the development within the park in the late 1950s and early 1960s. Park recreational facilities presently include trails for hiking and horseback riding, picnic areas, a campground, and an archery range.

The trails at Huddart County Park offer visitors the opportunity visit the park’s diverse native plant communities (Fig. 8.1; Table 8.1). Mixed evergreen forest covers most of the park, but redwood forest may be found in moister soils along creeks and drainages. In addition, several small areas of chaparral occur on the drier ridges and in openings in the mixed evergreen forest. Finally, a large area of live oak woodland is situated along King’s Mountain Road in the eastern section of the park.

Table 8.1 Principal Plant Community Types Identified in Huddart County Park

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Live Oak Woodland	coast live oak, interior live oak, black oak, buckeye, California bay, California blackberry	23.9	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Mixed Evergreen Forest	madrone, tan oak, California bay, coast live oak, Douglas fir	577.7	Sensitive if supporting rare species
Redwood Forest	coast redwood, Douglas fir	302.9	Considered sensitive by CDFG
Chaparral	toyon, coyote brush, manzanita, blue blossom	69.6	Sensitive if supporting rare species
Landscaped/Developed	wild oat, wild rye, French broom	20.5	No protective status for botanical resources

8.2 VEGETATION CLASSIFICATION AND CONDITION

8.2.1 Upland Forest and Woodland Communities

Redwood Forest

Redwood forest typically occupies coastal areas where fog drip and precipitation create humid conditions and salt spray is limited. Redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*) dominate the canopy, their fallen needles forming a thick layer of litter. Several hardwood tree species are also associated with redwood forest although much less frequent than the conifers. Hardwood species include tan oak (*Lithocarpus densiflorus*), California bay (*Umbellularia californica*), big leaf maple (*Acer macrophyllum*), madrone (*Arbutus menziesii*), and interior live oak (*Quercus wislizenii*). The understory of redwood forest is formed of scattered shrubs and herbs that may include huckleberry (*Vaccinium*

ovatum), hazelnut (*Corylus cornuta*), thimbleberry (*Rubus parviflorus*), sword fern (*Polystichum munitum*), and redwood sorrel (*Oxalis oregana*). Redwood violet (*Viola sempervirens*), western trillium (*Trillium ovatum*), red clintonia (*Clintonia andrewsiana*), and several fern species (*Adiantum padatum aleuticum*, *Woodwardia fimbriata*) often occur on moister slopes along ravines.

Unlike more coastal areas of redwood forest, inland redwood forest is often restricted to canyons and north-facing slopes. Huddart Park, which is situated on the eastern slope of the mountains, is isolated from coastal fog. As a result, the park's redwood forest is limited to the more sheltered and moist soils of Squealer Gulch Creek, McGarvey Gulch Creek, West Union Creek, and their tributaries. Above these canyons, redwood forest transitions into the surrounding mixed evergreen forest.

The park was logged between 1850 and 1860, destroying much of the redwood forest. Most of the forest has been logged at least once, and many trees are stump sprouts. However, remnants of old growth redwood forest still exist within the park. Some of the largest trees are located at the upper end of McGarvey Gulch.

Live Oak Woodland

Live oak woodland makes up a small proportion of the park, accounting for approximately 24 acres. The only large area of live oak woodland occurs in the eastern section of the park along Kings Mountain Road. Coast live oak (*Quercus agrifolia*) and interior live oak (*Q. wislizenii*) dominate the canopy of this community. California black oak (*Quercus kelloggii*), California buckeye (*Aesculus californica*), and bigleaf maple (*Acer macrophyllum*) occur scattered among the live oaks. Poison oak (*Toxicodendron diversilobum*) and blackberry (*Rubus ursinus*) are common species within the understory.

Mixed Evergreen Forest

Mixed evergreen forest is a more open canopy forest than redwood forest and may vary greatly in composition of tree species along a dry to wet gradient. Coast live oak (*Quercus agrifolia*), tan oak (*Lithocarpus densiflora*), madrone (*Arbutus menziesii*), and California bay (*Umbellularia californica*) are common trees in the mixed evergreen forest in the park. Douglas fir (*Pseudotsuga menziesii*), California black oak (*Quercus kelloggii*), interior live oak (*Quercus wislizenii*), and bigleaf maple (*Acer macrophyllum*) are scattered in the canopy. Typical understory plants of mixed evergreen forest include wood rose (*Rosa gymnocarpa*), wood fern (*Dryopteris arguta*), ocean spray (*Holodiscus discolor*), western bracken fern (*Pteridium aquilinum*), yerba buena (*Satureja douglasii*), snowberry (*Symphoricarpos mollis*), and poison oak (*Toxicodendron diversilobum*). Blue blossom (*Ceanothus thyrsiflorus*) and toyon (*Heteromeles arbutifolia*) are common in openings.

Mixed evergreen forest covers most of the park area. Some of the mixed evergreen forest within the park is likely an artifact of previous logging. Harvesting conifers allows more light to reach the forest floor, supporting the growth of shorter, hardwood species.

8.2.2 Chaparral and Scrub Communities

Chaparral

Chaparral is typically found on the edge of steep ridges on poor, thin soils. This vegetation forms a nearly impenetrable mass of shrubs, vines, and herbs. Fire plays an important role in the composition and make-up of chaparral, and the vegetation is naturally prone to wildfire. After fire, a greater abundance and diversity of flowering forbs, native grasses, and wildflowers emerge. These species are then slowly

crowded out as the stumps of the burned brush resprout. In rural areas natural fire frequency may occur once every 10-40 years (Muller et al. 1968).

A number of shrub species characterize the chaparral within the park. These species include coyote brush (*Baccharis pilularis*) chamise (*Adenostoma fasciculatum*), toyon (*Heteromeles arbutifolia*), manzanita (*Arctostaphylos* sp.), coffeeberry (*Rhamnus californica*), yerba santa (*Eriodictyon californicum*), poison oak (*Toxicodendron diversilobum*), golden chinquapin (*Chrysolepis chrysophylla*), and chaparral pea (*Pickeringia montana*). Young coast live oaks also occur within the chaparral.

Chaparral in Huddart Park occurs in openings in the mixed evergreen forest and adjacent to the live oak woodland. Much of the chaparral in the park appears to be in transition to mixed evergreen forest. Most of the chaparral contains at least scattered madrones, tan oaks, or firs. In some areas, chaparral species now form the understory of mixed evergreen forest. In the absence of fire, selective timber harvest, or other disturbance, mixed evergreen forest will likely continue to spread into the chaparral.

8.2.3 Other Categories

Landscaped/Developed

This category includes the campground, picnic areas, buildings, parking areas, trails, and Werder lawn. Several exotic species have invaded or been planted in the developed areas of the park. French broom (*Genista monspessulana*) is scattered along trails and roads in several areas of the park (Fig. 8.3). The edge of the Werder lawn area has been planted with Monterey pine (*Pinus radiata*). The Oak Group Area contains the highly invasive yellow star thistle (*Centaurea solstitialis*). Pampas grass (*Cortaderia jubata*), an exotic perennial grass, occurs along Richard's Road and the road to the campground.

8.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

8.3.1 Special Status Plant Species

Some of the park provides habitat for species of concern, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered. No special status species have been reported in the park (CDFG 2001a). Special status plants with potential to occur in the park are listed in Table 8.2.

Table 8.2 Rare Plant Species That May Occur in Huddart County Park

Species	Status	Potential/Known Occurrence
western leatherwood (<i>Dirca occidentalis</i>)	CNPS 1B	Potential habitat exists in park.
California bottle-brush grass (<i>Elymus californicus</i>)	CNPS 4	Potential habitat exists in park.
Diablo helianthella (<i>Helianthella castanea</i>)	CNPS 1B	Potential habitat exists in park.
Dudley's lousewort (<i>Pedicularis dudleyi</i>)	SR; CNPS 1B	Potential habitat exists in park.
white-flowered rein orchid (<i>Piperia candida</i>)	CNPS 4	Potential habitat exists in park.
Michael's rein orchid (<i>Piperia michaelii</i>)	CNPS 4	Potential habitat exists in park.
Santa Cruz manzanita (<i>Arctostaphylos andersonii</i>)	CNPS 1B	Potential habitat exists in park.

SR: State Rare; CNPS 1B: California Native Plant Society List 1B (rare, threatened, or endangered in CA) CNPS 4: California Native Plant Society List 4 (Watch List). Watch List species are of limited distribution (CNPS 2001).

8.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. Two of the plant communities within the park – live oak woodland and redwood forest – are sensitive communities.

Live Oak Woodland

The oak woodland on the project site is typical of similar areas of California. Due to changes in land use, however, their distribution and habitat quality has been reduced, such that the community is considered significant by CDFG.

Redwood Forest

Redwood forest is considered a high priority community for inventory in the California Natural Diversity Database (CDFG 1999). This category contains native plant communities that are regarded by CDFG as having special significance under the California Environmental Quality Act.

8.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

Some of the park provides habitat for species of concern, including those listed by the USFWS or CDFG as threatened or endangered. No special status animals have been reported in the park (CDFG 2001a). Special status animal species with potential to occur in the park are listed in Table 8.3.

Table 8.3 Special Status Animal Species That May Occur in Huddart County Park

Species	Status	Known/Potential Occurrence	Typical Habitat
California Tiger Salamander (<i>Ambystoma tigrinum californiense</i>)	DFG CSC, Protected	Potential	Grassland or open woodland near seasonal or permanent water
California Red-legged Frog (<i>Rana aurora draytoni</i>)	FT	Potential	Grassland, woodland, or forest in or near water
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE; SE; DFG Fully Protected	Potential	Grassland, woodland, or scrub near ponds, marshes, streams, wet meadows, or other water sources
Cooper's Hawk (<i>Accipiter cooperii</i>)	DFG CSC ¹	Potential	Woodland, forest
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	DFG CSC ¹	Potential	Mixed woodlands
Rufous Hummingbird (<i>Selasphorus rufus</i>)	USFWS MNBMC ¹	Potential	Forests, edges of woods, thickets
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	DFG CSC; USFWS MNBMC	Potential	Open, brushy fields and the edges of woods
Lawrence's Goldfinch (<i>Carduelis lawrencei</i>)	USFWS MNBMC	Potential	Grassy slopes and chaparral

FT: Federally Threatened; FE: Federally Endangered; SE: State Endangered; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Protected/Fully Protected: CA Dept. of Fish and Game protected or fully protected species; USFWS MNBMC: U.S. Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern.

¹ status applies to nesting birds

8.5 INVASIVE, NON-NATIVE PLANT SPECIES

The park supports several invasive, non-native plant species. These are listed below and mapped in Figure 8.2. Only those species known to be invasive or posing special management problems for the park were mapped. Much of the information used in this map came from polygon descriptions in the volunteer booklets and is of low resolution. For instance, if French broom (*Genista monspessulana*) was reported in a particular polygon, the entire polygon was classified as containing French broom. During ground-truthing surveys, GPS was used to define the limits of exotic species infestations more precisely. However, it was not possible to cover the entire park within the time allotted to these surveys.

Monterey pine (*Pinus radiata*)

French broom (*Genista monspessulana*)

thistle (*Carduus pycnocephalus* or *Cirsium vulgare*)

yellow star thistle (*Centaurea solstitialis*)

Pampas grass (*Cortaderia jubata*)

8.6 PLANT SPECIES LIST

The following plant list consists of species recorded in the volunteer handbook, the *Natural Resources Management Plan for Huddart County Park*, or observed during ground-truthing surveys. This list represents only the most common plants of the park.

TABLE 8.4: PLANT SPECIES OF HUDDART COUNTY PARK

Trees

<i>Acer macrophyllum</i>	big leaf maple
<i>Aesculus californica</i>	California buckeye
<i>Alnus</i> sp.	alder
<i>Arbutus menziesii</i>	madrone
<i>Calocedrus decurrens</i>	incense cedar
<i>Lithocarpus densiflora</i>	tanoak
<i>Pinus halepensis</i> *	Aleppo pine
<i>Pinus pinea</i> *	Italian stone pine
<i>Pinus radiata</i> *	Monterey pine
<i>Pseudotsuga menziesii</i>	Douglas fir
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus kelloggii</i>	California black oak
<i>Quercus wislizenii</i>	interior live oak
<i>Sequoia sempervirens</i>	coast redwood
<i>Umbellularia californica</i>	California bay

Shrubs

<i>Adenostoma fasciculatum</i>	chamise
<i>Arctostaphylos</i> sp.	manzanita
<i>Baccharis pilularis</i>	coyote brush
<i>Ceanothus thyrsiflorus</i>	blue blossom
<i>Chrysolepis chrysophylla</i>	golden chinquapin
<i>Eriodictyon californicum</i>	yerba santa
<i>Genista monspessulana</i> *	French broom
<i>Heteromeles arbutifolia</i>	toyon
<i>Mimulus aurantiacus</i>	sticky monkey flower
<i>Pickeringia montana</i>	chaparral pea
<i>Rhamnus californica</i>	coffeeberry
<i>Rosa gymnocarpa</i>	wood rose
<i>Rubus ursinus</i>	blackberry
<i>Toxicodendron diversiloba</i>	poison oak

Herbs

<i>Avena fatua</i> *	wild oat
<i>Bromus diandrus</i> *	ripgut brome
<i>Bromus hordaceus</i> *	soft chess brome
<i>Centaurea solstitialis</i> *	yellow star thistle
<i>Cirsium vulgare</i> *	bull thistle
<i>Cortaderia jubata</i> *	Pampas grass
<i>Cynoglossum grande</i>	hound's tongue

<i>Dryopteris arguta</i>	coastal wood fern
<i>Eschscholzia californica</i>	California poppy
<i>Gnaphalium</i> sp.	cudweed
<i>Pedicularis densiflora</i>	indian warrior
<i>Polystichum munitum</i>	western sword fern
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern
<i>Zigadenus fremontii</i>	star lily

*introduced species

8.7 ANIMAL SPECIES LIST

An inventory of previous plans for Huddart County Park was conducted to compile an animal species list. However, no animal species lists were provided within the plans reviewed. Therefore, only a few of the more common animals expected to occur in the park are listed below.

TABLE 8.5: ANIMAL SPECIES EXPECTED TO OCCUR IN HUDDART COUNTY PARK

Amphibians

<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Bufo boreas halophilus</i>	California Toad
<i>Hyla regilla</i>	Pacific Tree Frog

Reptiles

<i>Sceloporus occidentalis occidentalis</i>	N.W. Fence Lizard
<i>Gerrhonotus coeruleus</i>	Northern Alligator Lizard
<i>Pituophis melanoleucus catenifer</i>	Pacific Gopher Snake
<i>Thamnophis elegans terrestris</i>	Coast Garter Snake

Birds

<i>Cathartes aura</i>	Turkey Vulture
<i>Accipiter striatus</i>	Sharp-shinned Hawk
<i>Accipiter cooperii</i>	Cooper's Hawk
<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Buteo lineatus</i>	Red-shouldered Hawk
<i>Falco sparverius</i>	American Kestrel
<i>Lophortyx californicus</i>	California Quail
<i>Columba fasciata</i>	Band-tailed Pigeon
<i>Zenaida macroura</i>	Morning Dove
<i>Bubo virginianus</i>	Great Horned Owl
<i>Calypte anna</i>	Anna's Hummingbird
<i>Colaptes auratus</i>	Common Flicker
<i>Melanerpes formicivorus</i>	Acorn Woodpecker
<i>Sayornis nigricans</i>	Black Phoebe
<i>Cyanocitta stelleri</i>	Steller's Jay
<i>Aphelocoma coerulescens</i>	Scrub Jay
<i>Corvus brachyrhynchos</i>	Common Crow
<i>Parus rufescens</i>	Chestnut-backed Chickadee
<i>Parus inornatus</i>	Plain Titmouse
<i>Psaltriparus minimus</i>	Bushtit
<i>Chamaea fasciata</i>	Wrentit
<i>Regulus calendula</i>	Ruby-crowned Kinglet
<i>Vermivora celata</i>	Orange-crowned Warbler
<i>Dendroica coronata</i>	Yellow-rumped Warbler
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird
<i>Carpodacus mexicanus</i>	House Finch
<i>Pipilo erythrophthalmus</i>	Rufous-sided Towhee
<i>Pipilo fuscus</i>	Brown Towhee
<i>Junco hyemalis</i>	Dark-eyed Junco

Zonotrichia leucophrys
Zonotrichia atricapilla
Melospiza melodia

White-crowned Sparrow
Golden-crowned Sparrow
Song Sparrow

Mammals

Didelphis marsupialis
Sorex vagrans
Sorex ornatus
Scapanus latimanus
Eptesicus fuscus
Lepus californicus
Sylvilagus bachmani
Eutamias merriami
Sciurus griseus
Otospermophilus beecheyi
Thomomys bottae
Reithrodontomys megalotis
Peromyscus californicus
Peromyscus boylii
Peromyscus maniculatus
Neotoma fuscipes
Microtus californicus
Perognathus californicus
Mus musculus
Sylvilagus bachmani
Sylvilagus audubonii
Procyon lotor
Mephitis mephitis
Urocyon cinereoargenteus
Canis latrans
Lynx rufus
Odocoileus hemionus columbianus

Common Opossum
Vagrant Shrew
Ornate Shrew
Broad-handed Mole
Big Brown Bat
Black-tailed Jackrabbit
Brush Rabbit
Merriam Chipmunk
Western Gray Squirrel
California Ground Squirrel
Botta Pocket Gopher
Western Harvest Mouse
California Deer Mouse
Brush Mouse
Deer Mouse
Dusky-footed Wood Rat
California Meadow Mouse
California Pocket Mouse
House Mouse
Brush Rabbit
Audubon Cottontail
Raccoon
Striped Skunk
Gray Fox
Coyote
Bobcat
Black-tailed Deer

9. JUNIPERO SERRA PARK

9.1 LOCATION AND FEATURES OF JUNIPERO SERRA PARK

Junipero Serra Park consists of 108 acres of coast live oak woodland, grassland, arroyo willow riparian, and coyote brush scrub (Fig. 9.1; Table 9.1) in the bayside foothills of the Santa Cruz Mountains. The park is located just east of Highway 280, between the cities of San Bruno and Millbrae in San Mateo County. Recreational activities within Junipero Serra Park include hiking, picnicking, and use of meadow/playfield areas.

During the early 1800s, cattle, sheep, and horses were grazed on the land now occupied by the park (EDAW, Inc. and Harvey-Stanley Associates 1981). Grazing of cattle or dairy cows continued until the mid-1950s when the property was purchased by San Mateo County to serve as a recreation area. Junipero Serra Park was developed soon after purchase in the late 1950s and early 1960s.

Two of the park's most valuable resources are its 58-acre coast live oak woodland and El Zanjon Creek, both of which are in the western portion of the park. The oaks here form a nearly closed canopy with a diverse understory. Close to the creek, arroyo willow riparian woodland occurs in an interrupted band up to 60 feet wide. This riparian area and the surrounding oak woodland serve as a valuable wildlife corridor for deer, bobcat, and coyote (Shawn Witaschek, pers. comm.).

Several introduced species threaten the oak woodland in Junipero Serra Park. Monterey pine (*Pinus radiata*), Monterey cypress (*Cupressus macrocarpa*), and blue gum eucalyptus (*Eucalyptus globulus*) planted in the first half of the twentieth century have spread into the oak woodland from the eastern side. Many of the pines have pitch canker, a disease caused by the fungus (*Fusarium circinatum*). Although this fungus does not infect oaks, it may pose a threat to the oak woodland by killing pines and increasing the likelihood of fire.

Introduced species that threaten the arroyo willow riparian woodland include the invasive shrubs Scotch broom (*Cytisus scoparius*) and French broom (*Genista monspessulana*) as well as Cape Ivy (*Senecio mikanioides/Delairea odorata*) and English Ivy (*Hedera helix*). French broom and Scotch broom are also present within areas of coyote brush scrub and grassland in the eastern portion of the park adjacent to residential development.

TABLE 9.1. Principal Plant Community Types Identified within Crystal Springs Park

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Coast Live Oak Woodland	coast live oak, buckeye, California bay, California blackberry, coffeeberry	57.6	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Coast Live Oak Woodland with some Monterey Pine	coast live oak, Monterey pine, California blackberry, poison oak, toyon	0.6	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Arroyo Willow Riparian Woodland	arroyo willow, blackberry, rush, horsetail, sedge	3.3	Sensitive under County Code; CDFG sensitive
Eucalyptus	eucalyptus, poison oak	6.7	No protective status for botanical resources
Monterey Pine	Monterey pine, coyote brush, poison oak	1.5	No protective status for botanical resources
Eucalyptus/Monterey Pine	Eucalyptus, Monterey pine	12.6	No protective status for botanical resources
Redwood (planted)	coast redwood	0.5	Sensitive if supporting rare species
Coyote Brush Scrub	coyote brush, California blackberry, poison oak	7.1	Sensitive if supporting rare species
Non-Native Grassland	wild oats, soft brome, Harding grass, filaree, California poppy, lupine	3.5	Sensitive if providing habitat for rare plants
Non-Native Grassland with Elements of Coastal Prairie	purple needlegrass, California oatgrass, wild oats, softchess brome, filaree, blue wildrye, California poppy, lupine	5.2	Sensitive if providing habitat for rare plants
Exotic Landscaping Species	miscellaneous landscaping shrubs from adjacent homes, French broom	0.23	No protective status for botanical resources
Landscaped/Developed	exotic annual grasses such as wild oats, wild rye, some coast live oaks	9.2	No protective status for botanical resources

9.2 VEGETATION CLASSIFICATION AND CONDITION

9.2.1 Upland Forest and Woodland Communities

Coast Live Oak Woodland

Coast live oak woodland occurs throughout much of the northern and western areas of the park. Coast live oak woodland is dominated by coast live oak (*Quercus agrifolia*) in all areas, but California bay (*Umbellularia californica*), buckeye (*Aesculus californica*), and madrone (*Arbutus menziesii*) are often present as associate species. Understory plants include wild blackberry (*Rubus ursinus*), hedge nettle (*Stachys bullata*), wood fern (*Dryopteris arguta*), and poison oak (*Toxicodendron diversilobum*). Toyon (*Heteromeles arbutifolia*) is common in openings.

The largest threat to coast live oak woodland within the park is competition from introduced species. Monterey pine (*Pinus radiata*) and blue gum eucalyptus (*Eucalyptus globulus*) planted in the center of the park are invading more intact areas of oak woodland to the north and west. Since many of the Monterey pines are dying from pitch canker, these introduced trees may also increase the likelihood of fire in these areas. Another potential threat to coast live oak woodland in the park is sudden oak death syndrome caused by the fungus, *Phytophthora novum*. Sudden oak syndrome has killed coast live oaks, tan oaks, California bay laurels, and madrones in many areas of California. The fungus spreads rapidly and may spread to Junipero Serra Park in the future.

Coast Live Oak Woodland with Some Monterey Pine

This category refers to an area of oak woodland in the center of the park that has a number of Monterey pines interspersed with coast live oaks. Monterey pines are invasive and threaten this and other areas of coast live oak woodland within the park.

Exotic Forest

This category refers to areas dominated primarily by introduced blue gum eucalyptus (*Eucalyptus globulus*) and Monterey pine (*Pinus radiata*). Monterey cypress (*Cupressus macrocarpa*) and acacia (*Acacia* spp.) are additional non-native tree species present in some areas. The occasional coast live oak, toyon, and poison oak in the exotic forest understory are remnants of the coast live oak woodland that once existed in some areas now dominated by exotic trees.

Monterey pine and eucalyptus continue to threaten adjacent areas of coast live oak woodland. Eucalyptus are highly invasive and create favorable conditions for crown fires by producing copious amounts of peeling bark that clings to tree trunks or falls in a thick layer of litter around the trees. Furthermore, many of the Monterey pines are dying from pitch canker, increasing the likelihood of fire in the park's wooded areas. In recognition of the fire danger these trees pose to nearby residential areas, and the fact that these species are introduced to the park, opportunities exist to remove these trees and re-establish coast live oak woodland.

Areas of exotic forest are mapped according to three subcategories:

Eucalyptus: those areas dominated by blue gum eucalyptus

Monterey pine: those areas dominated by Monterey pine

Eucalyptus/Monterey pine: those areas in which eucalyptus and Monterey pine co-dominate

Redwood

This is a small grove of planted redwood (*Sequoia sempervirens*) near the Lower Meadow View picnic area.

9.2.2 Chaparral and Scrub Communities

Coyote Brush Scrub

Coyote brush scrub refers to brushy areas in which coyote brush (*Baccharis pilularis*) accounts for at least 30% of the vegetative cover. Poison oak (*Toxicodendron diversiloba*) and toyon (*Heteromeles arbutifolia*) are also common within this community in Junipero Serra Park. The largest and most diverse area of coyote brush scrub occurs in a large opening within the oak woodland at the north end of the park. Sticky monkey flower (*Mimulus aurantiacus*), honeysuckle (*Lonicera involucrata*), and toyon occur here as do several small oaks. In the absence of fire, this area of coastal scrub may develop into coast live oak woodland. French broom and Monterey pine are invading this area and should be removed.

Coyote brush scrub also occurs in several spots in the eastern section of the park. These areas are more degraded and less diverse than the scrub in the northern part of the park. Eucalyptus, Monterey pine, fennel (*Foeniculum vulgare*), and French broom are pest plants within these areas.

Escaped Landscaping Species

These areas occur in the eastern portion of the park, adjacent to residential development, and are dominated by various escaped landscaping species including the highly invasive shrub, French broom (*Genista monspessulana*). A few toyon (*Heteromeles arbutifolia*) and small coast live oaks are scattered in these areas, but exotics dominate. The French broom in these areas is a threat to adjacent grasslands.

9.2.3 Grassland Communities

Perennial grasslands in California are among the most endangered ecosystem in the United States (Noss et al. 1995, Peters and Noss 1995). An area of approximately 7,000,000 ha (about 25% of the area of California) has been converted to annual grassland dominated by non-native annuals primarily of Mediterranean origin (Huenneke 1989). These include brome grass (*Bromus diandrus*, *B. hordeaceus*, and *B. madritensis rubens*), wild oats (*Avena barbata*, *A. fatua*), fillaree (*Erodium cicutarium*, *E. botrys*) and rat tail fescue (*Vulpia myuros*) (Heady et al. 1992), many of which were brought to North America in fodder for grazing animals. Conversion to non-native annual grassland was so fast, extensive, and complete that the original extent and species composition of native perennial grasslands are unknown (Burcham 1957, Barry 1972, Keeley 1989, Heady 1992, Holland and Keil 1995). Few studies have been published that describe the original grassland composition or that of presumed extant relicts (Heady 1988).

The grassland at Junipero Serra park has been divided into two types: 1) non-native grassland; and 2) non-native grassland with elements of coastal prairie. Irrigated areas of grass are classified as landscaped/developed and are not included within either grassland category.

Non-native Grassland

Dominant species within this community include exotic annual grasses such as wild oats (*Avena* spp.), annual fescue (*Vulpia* spp.), ripgut brome (*Bromus diandrus*), and softchess brome (*Bromus hordeaceus*). Filaree (*Erodium* spp.) and plantain (*Plantago* spp.) are also common. These areas were probably once occupied by coastal prairie. In addition to the many exotic annuals, Harding Grass (*Phalaris aquatica*), an invasive perennial, has also been introduced to park grasslands.

Although the grasslands within the park are dominated by non-native grasses, a number of native wildflowers are also present. Native wildflower species include: California poppy (*Eschscholzia californica*), blue-eyed grass (*Sisyrinchium bellum*), Johnny jump-up (*Viola pedunculata*), wine cup clarkia (*Clarkia purpurea*), checkerbloom (*Sidalcea malviflora*), and purple owl's clover (*Castilleja exserta* ssp. *exserta*).

Non-native Grassland with Elements of Coastal Prairie

This grassland is located in the eastern portion the park and is similar to the above grasslands except that coastal prairie species such as California oatgrass (*Danthonia californica*), June grass (*Koeleria macrantha*) and purple needlegrass (*Nassella pulchra*) are scattered throughout the area. Many of these grasslands are mowed (personal observation). Apparently, mowing has reduced competition from non-native species, allowing native grasses persist.

Coastal prairie is a native grassland composed of both turf and bunch grasses and occurs in relatively moist soils within a few miles of the coast, typically on marine terraces and bald hills. California oatgrass (*Danthonia californica*), Pacific reedgrass (*Calamagrostis nutkaensis*), hairgrass (*Deschampsia cespitosa* ssp. *holciformis*), red fescue (*Festuca rubra*), Idaho fescue (*Festuca idahoensis*) and purple needlegrass (*Nassella pulchra*) are among the native grasses that occur within this community.

Intact coastal prairie is a rare community considered sensitive by the California Department of Fish and Game (CDFG 1999). The grasslands within the park contain only remnants of this sensitive community, but offer seed sources for coastal prairie restoration.

9.2.4 Riparian and Wetland Communities

Wetlands are afforded protection by the U.S. Army Corp of Engineers under section 404 of the Clean Water Act which regulates discharge of dredged or fill material into the waters of the United States (U.S. Army Corps of Engineers 1987). Procedures for identifying and delineating wetlands are described in the *Corps of Engineers Wetlands Delineation Manual* (U.S. Army Corps of Engineers, 1987).

Arroyo Willow Riparian Woodland

Arroyo willow riparian woodland is dominated by arroyo willow (*Salix lasiolepis*). Blackberry (*Rubus ursinus*), horsetail (*Equisetum* sp.), sedges (*Carex barbarae*, *C.* sp.), and rushes (*Juncus* spp.) are common understory species. Arroyo willow riparian woodland occurs intermittently in a 6-60 foot wide band along El Zanjon Creek, a perennial stream. El Zanjon Creek extends from property owned by the San Francisco Water District to the south of the park, through Junipero Serra and San Bruno City Parks, and out to the San Francisco Bay. The year-round source of water and cover make this riparian habitat a valuable wildlife corridor for coyote, bobcat, and deer (Shawn Witaschek, pers. comm.).

A second, smaller area of degraded arroyo willow woodland is located at the lower end of a drainage in the far eastern corner of the park. This area is heavily infested with English ivy (*Hedera helix*). Both English ivy and Cape ivy (*Senecio mikanioides*) threaten this small drainage and the riparian woodland along El Zanjon Creek. In addition, French broom (*Genista monspessulana*), Scotch broom (*Cytisus scoparius*), and Pampas grass (*Cortaderia jubata*) grow in disturbed areas along El Zanjon Creek.

9.2.5 Other Categories

Landscaped/Developed

This category includes trails, parking lots, buildings, picnic areas, irrigated meadows, and other landscaped areas.

9.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

9.3.1 Special Status Plant Species

Some of the park provides habitat for species of concern, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered. The special status plants with potential to occur in the vicinity of the park are listed in Table 9.2. No special status species have been reported within the park (CDFG 2001a), nor were any observed during ground-truthing surveys. An orchid has been reported near El Zanjon Creek (Shawn Witaschek pers. comm.). This orchid should be keyed to species to determine whether it is one of the rare orchids listed below.

Table 9.2 Rare Plant Species That May Occur Within Junipero Serra Park

Species	Status	Potential/Known Occurrence
western leatherwood (<i>Dirca occidentalis</i>)	CNPS 1B	Potential habitat exists in park.
California bottle-brush grass (<i>Elymus californicus</i>)	CNPS 4	Potential habitat exists in park.
Diablo helianthella (<i>Helianthella castanea</i>)	CNPS 1B	Potential habitat exists in park.
Dudley's lousewort (<i>Pedicularis dudleyi</i>)	SR; CNPS 1B	Potential habitat exists in park.
white-flowered rein orchid (<i>Piperia candida</i>)	CNPS 4	Potential habitat exists in park.
Michael's rein orchid (<i>Piperia michaelii</i>)	CNPS 4	Potential habitat exists in park.
Santa Cruz manzanita (<i>Arctostaphylos andersonii</i>)	CNPS 1B	Potential habitat exists in park.

SR: State Rare; CNPS 1B: California Native Plant Society List 1B (rare, threatened, or endangered in CA) CNPS 4: California Native Plant Society List 4 (Watch List). Watch List species are of limited distribution (CNPS 2001).

9.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. Two of the plant communities within the park – live oak woodland and arroyo willow riparian woodland – are sensitive communities.

Live Oak Woodland

The oak woodland on the project site is typical of similar areas of California. Due to changes in land use, however, their distribution and habitat quality has been reduced, such that the community is considered significant by CDFG.

Arroyo Willow Riparian Woodland

Riparian woodland is a sensitive habitat according to the County of San Mateo and CDFG. This status is due to the value of these woodlands to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

9.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

Some of the park provides habitat for species of concern, including those listed by the USFWS or CDFG as rare, threatened, or endangered. The special status animal species known or with potential to occur in the vicinity of the park are listed in Table 9.3.

Table 9.3 Special Status Animal Species That May Occur Within Junipero Serra Park

Species	Status	Known/Potential Occurrence	Typical Habitat
California Tiger Salamander (<i>Ambystoma tigrinum californiense</i>)	DFG CSC, Protected	Potential	Grassland or foothill woodland near seasonal or permanent water
California Red-legged Frog (<i>Rana aurora draytoni</i>)	FT	Potential	Grassland, woodland, or forest in or near water
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE;SE	Potential	Grassland, scrub, chaparral, woodland, or forest near water
Cooper's Hawk (<i>Accipiter cooperii</i>)	DFG CSC ¹	Potential	Woodland, forest
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	DFG CSC ¹	Potential	Mixed woodlands
Rufous Hummingbird (<i>Selasphorus rufus</i>)	USFWS MNBMC ¹	Potential	Forests, edges of woods, thickets
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	DFG CSC; USFWS MNBMC	Potential	Open, brushy fields and the edges of woods
Lawrence's Goldfinch (<i>Carduelis lawrencei</i>)	USFWS MNBMC	Potential	Grassy slopes and chaparral

FT: Federally Threatened; FE: Federally Endangered; SE: State Endangered; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Protected/Fully Protected: CA Dept. of Fish and Game protected or fully protected species; USFWS MNBMC: U.S. Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern.

¹ status applies to nesting birds

9.5 INVASIVE, NON-NATIVE PLANT SPECIES AND PATHOGENS

9.5.1 Invasive, Non-native Plant Species

The park supports several invasive, non-native plant species. These are listed below and mapped in Figure 9.2. Only those species known to be invasive or posing special management problems for the park were mapped. Much of the information used in this map came from polygon descriptions in the volunteer booklets and is of low resolution. For instance, if French broom (*Genista monspessulana*) was reported in a particular polygon, the entire polygon was classified as containing French broom. During ground-truthing surveys, GPS was used to define the limits of exotic species infestations more precisely. However, it was not possible to cover the entire park within the time allotted to these surveys.

acacia species (<i>Acacia</i> spp.)	Harding grass (<i>Phalaris aquatica</i>)
blue gum eucalyptus (<i>Eucalyptus globulus</i>)	Italian thistle (<i>Carduus pycnocephalus</i>)
bull thistle (<i>Cirsium vulgare</i>)	Monterey cypress (<i>Cupressus macrocarpa</i>)
Cape ivy/German ivy (<i>Senecio mikanioides/Delairea odorata</i>)	Monterey pine (<i>Pinus radiata</i>)
English ivy (<i>Hedera helix</i>)	Pampas grass (<i>Cortaderia jubata</i>)
fennel (<i>Foeniculum vulgare</i>)	pitch canker
French broom (<i>Genista monspessulana</i>)	Scotch broom (<i>Cytisus scoparius</i>)
	yellow star thistle (<i>Centaurea solstitialis</i>)

9.6 PLANT SPECIES LIST

The following plant list was compiled from the *Junipero Serra County Recreation Area Master Plan*, completed volunteer books, and ground-truthing surveys. Scientific names follow Hickman (1993).

TABLE 9.4 PLANT SPECIES OF JUNIPERO SERRA PARK

Trees

<i>Abies concolor</i> *	white fir
<i>Acacia melanoxydon</i> *	black acacia
<i>Aesculus californica</i>	California buckeye
<i>Arbutus menziesii</i>	madrone
<i>Betula</i> sp.*	birch
<i>Calocedrus decurrens</i> *	incense cedar
<i>Cupressus macrocarpa</i> *	Monterey cypress
<i>Eucalyptus globulus</i> *	blue gum eucalyptus
<i>Myrica californica</i>	wax myrtle
<i>Pinus radiata</i> *	Monterey pine
<i>Pseudotsuga menziesii</i>	Douglas fir
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus lobata</i>	valley oak
<i>Salix babylonica</i> *	weeping willow
<i>Salix lasiolepis</i>	arroyo willow
<i>Sequoia sempervirens</i>	coast redwood
<i>Umbellularia californica</i>	California bay

Shrubs

<i>Arctostaphylos</i> sp.	manzanita
<i>Baccharis pilularis</i> var. <i>consanguinea</i>	coyote brush
<i>Ceanothus leucodermis</i>	chaparral whitethorn
<i>Ceanothus</i> sp.	California lilac
<i>Corylus cornuta</i>	hazelnut
<i>Cytisus scoparius</i> *	Scotch broom
<i>Genista monspessulana</i> *	French broom
<i>Heteromeles arbutifolia</i>	toyon
<i>Holodiscus discolor</i>	ocean spray
<i>Lonicera hispidula</i>	honeysuckle
<i>Mimulus aurantiacus</i>	sticky monkey flower
<i>Rhamnus californica</i>	coffeeberry
<i>Ribes</i> sp.	gooseberry
<i>Rosa californica</i>	California rose
<i>Rubus parviflorus</i>	thimbleberry
<i>Rubus ursinus</i>	blackberry
<i>Sanicula crassicaulis</i>	Pacific sanicle
<i>Spartium junceum</i> *	Spanish broom
<i>Symphoricarpos albus</i>	snowberry
<i>Toxicodendron diversiloba</i>	poison oak

Herbs

<i>Acaena californica</i>	California acaena
<i>Achillea millefolium</i>	common yarrow
<i>Adiantum jordanii</i>	maidenhair fern
<i>Agrostis</i> sp.	bent grass
<i>Agrostis viridus</i> *	water bent grass
<i>Aira caryophyllea</i> *	hair grass
<i>Anagallis arvensis</i> *	scarlet pimpernel
<i>Aster chilense</i>	common California aster
<i>Avena barbata</i> *	slender wild oat
<i>Avena fatua</i> *	wild oat
<i>Bellardia trixago</i> *	bellardia
<i>Bellis perennis</i> *	English daisy
<i>Briza maxima</i> *	big quaking grass
<i>Briza minor</i> *	little quaking grass
<i>Brodiaea terrestris</i>	dwarf brodiaea
<i>Bromus carinatus</i>	California brome
<i>Bromus diandrus</i> *	rippgut brome
<i>Bromus hordaceus</i> *	soft chess
<i>Bromus rubens</i> *	red brome
<i>Calochortus albus</i>	white globe lily
<i>Calystegia subacaulis</i>	hill morning glory
<i>Camissonia ovata</i>	sun cups
<i>Carduus pycnocephalus</i> *	Italian thistle
<i>Carex barbarae</i>	Santa Barbara sedge
<i>Castilleja densiflora</i>	owl's clover
<i>Castilleja exserta</i>	purple owl's clover
<i>Castilleja foliosa</i>	wooly paintbrush
<i>Centaurea solstitialis</i> *	yellow star thistle
<i>Cerastium viscosum</i> *	mouse-ear chickweed
<i>Chamomilla suaveolens</i> *	pineapple weed
<i>Chlorogalum pomeridianum</i>	soap plant
<i>Cirsium occidentale</i>	cobweb thistle
<i>Cirsium quercetorum</i>	brownie thistle
<i>Cirsium</i> spp.*	thistles
<i>Clarkia purpurea</i>	wine cup clarkia
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Collinsia heterophylla</i>	Chinese houses
<i>Conium maculatum</i> *	poison hemlock
<i>Convolvulus arvensis</i> *	field bindweed
<i>Cornopus didymus</i> *	lesser watercress
<i>Cortaderia jubata</i> *	Pampas grass
<i>Cynodon dactylon</i> *	Bermuda grass
<i>Cynosurus echinatus</i> *	hedgehog dogtail grass
<i>Cynoglossum grande</i>	hound's tongue
<i>Dactylis glomerata</i> *	orchard grass
<i>Danthonia californica</i>	California oat grass
<i>Deschampsia caespitosa</i> ssp. <i>holciformis</i>	California hair grass
<i>Dipsacus sativus</i> *	Fuller's teasel
<i>Dryopteris arguta</i>	coastal wood fern
<i>Elymus glaucus</i>	blue wildrye

<i>Elymus multisetus</i>	big squirreltail
<i>Equisetum</i> sp.	horesetail
<i>Eriogonum nudum</i>	naked-stemmed buckwheat
<i>Erodium botrys</i> *	long-beaked filaree
<i>Erodium cicutarium</i> *	red-stemmed filaree
<i>Erodium moschatum</i> *	white-stemmed filaree
<i>Eschscholzia californica</i>	California poppy
<i>Festuca rubra</i>	red fescue
<i>Filago gallica</i> *	narrow-leaved filago
<i>Fragaria vesca</i>	wood strawberry
<i>Fritillaria affinis</i>	checker lily
<i>Galium aparine</i> *	goose grass
<i>Geranium dissectum</i> *	cut-leaved geranium
<i>Gnaphalium purpureum</i>	purple cudweed
<i>Gnaphalium stramineum</i>	cotton-batting plant
<i>Grindelia hirsutula</i>	hirsute grindelia
<i>Hedera helix</i> *	English ivy
<i>Helenium puberulum</i>	sneezeweed
<i>Holcus lanatus</i> *	velvet grass
<i>Hordeum brachyantherum</i>	meadow barley
<i>Hordeum geniculatum</i> *	Mediterranean barley
<i>Hordeum murinum</i> ssp. <i>leporinum</i> *	foxtail
<i>Horkelia</i> sp.	horkelia
<i>Hypochaeris glabra</i> *	smooth cat's ear
<i>Hypochaeris radicata</i> *	hairy cat's ear
<i>Iris douglasiana</i>	Douglas iris
<i>Juncus patens</i>	spreading rush
<i>Koeleria macrantha</i>	June grass
<i>Lathyrus vestitus</i>	common Pacific pea
<i>Leymus triticoides</i>	creeping wildrye
<i>Linum bienne</i> *	small-flowered flax
<i>Lolium multiflorum</i> *	Italian ryegrass
<i>Lolium perenne</i> *	English ryegrass
<i>Lolium temulentum</i> *	darnell
<i>Lonicera</i> sp.	honeysuckle
<i>Lupinus affinis</i>	meadow lupine
<i>Lupinus arboreus</i> var. <i>eximius</i>	Davy's bush lupine
<i>Lupinus arboreus</i>	bush lupine
<i>Lupinus bicolor</i>	blue and white lupine
<i>Lupinus formosus</i>	summer lupine
<i>Lupinus microcarpus</i>	chick lupine
<i>Luzula multiflora</i>	common wood rush
<i>Madia gracilis</i>	slender tarweed
<i>Malva nicaeensis</i> *	bull mallow
<i>Marah fabaceus</i>	wild cucumber
<i>Medicago polymorpha</i> *	bur clover
<i>Melica torreyana</i>	Torrey's melic grass
<i>Melilotus indicus</i> *	indian melilot
<i>Mimulus guttatus</i>	yellow monkey flower
<i>Monardella villosa</i>	coyote mint
<i>Nassella pulchra</i>	purple needlegrass
<i>Phalaris aquatica</i> *	Harding grass

<i>Phalaris canariensis</i> *	Canary grass
<i>Picris echoides</i> *	bristly ox-tongue
<i>Pityrogramma triangularis</i>	goldenback fern
<i>Plantago coronopus</i> *	cut-leaved plantain
<i>Plantago erecta</i>	California plantain
<i>Plantago lanceolata</i> *	English plantain
<i>Plantago major</i> *	common plantain
<i>Poa annua</i> *	annual poa
<i>Poa pratensis</i> *	Kentucky bluegrass
<i>Poa scabrella</i>	pine bluegrass
<i>Polygonum aviculare</i> *	common knotweed
<i>Polypodium californicum</i>	California polypody
<i>Polypogon monspeliensis</i> *	rabbit's foot grass
<i>Polystichum munitum</i>	sword fern
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern
<i>Ranunculus californicus</i>	California buttercup
<i>Raphanus sativus</i> *	wild radish
<i>Rorippa nasturtium-aquaticum</i>	water cress
<i>Rumex acetosella</i> *	sheep sorrel
<i>Rumex crispus</i> *	curly dock
<i>Rumex pulcher</i> *	fiddle dock
<i>Satureja douglasii</i>	yerba buena
<i>Scrophularia californica</i>	California bee plant
<i>Senecio mikanioides</i> *	German/cape ivy
<i>Sherardia arvensis</i> *	field madder
<i>Sidalcea malviflora</i>	checkerbloom
<i>Silene gallica</i> *	windmill pink
<i>Silybum marianum</i> *	milk thistle
<i>Sisyrinchium bellum</i>	blue-eyed grass
<i>Solanum furcatum</i> *	forked nightshade
<i>Soliva sessilis</i> *	common soliva
<i>Sonchus asper</i> *	prickly sow thistle
<i>Sonchus oleraceus</i> *	common sow thistle
<i>Spergula arvensis</i> *	spurry
<i>Stachys ajugoides</i> var. <i>rigida</i>	rigid hedge nettle
<i>Stachys bullata</i>	hedge nettle
<i>Stellaria media</i> *	common chickweed
<i>Triphysaria pusilla</i>	dwarf owl's clover
<i>Triteleia hyacinthina</i>	white brodiaea
<i>Triteleia laxa</i>	Ithuriel's spear
<i>Veronica americana</i>	American brooklime
<i>Vicia sativa</i> *	spring vetch
<i>Vicia villosa</i> *	wooly vetch
<i>Viola pedunculata</i>	Johnny jump-up
<i>Vulpia bromoides</i> *	annual fescue
<i>Vulpia myuros</i> var. <i>hirsuta</i> *	six-weeks fescue
<i>Vulpia myuros</i> *	rattail fescue
<i>Woodwardia fimbriata</i>	giant chain fern
<i>Wyethia angustifolia</i>	narrow-leaved mule ears
<i>Zantedeschia aethiopica</i> *	calla lily

* introduced species

9.7 ANIMAL SPECIES LIST

Previous plans for Junipero Serra Park did not contain animal species lists, nor was there a bird species list for the park. Therefore, only a few of the more common animals expected to occur in the park are listed below.

TABLE 9.5 ANIMAL SPECIES OF JUNIPERO SERRA PARK

Amphibians

<i>Aneides lugubris</i>	Arboreal Salamander
<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Taricha granulosa granulosa</i>	Northern Rough-skinned Newt
<i>Bufo boreas halophilus</i>	California Toad
<i>Hyla regilla</i>	Pacific Tree Frog

Reptiles

<i>Sceloporus occidentalis occidentalis</i>	N.W. Fence Lizard
<i>Gerrhonotus coeruleus</i>	Northern Alligator Lizard
<i>Pituophis melanoleucus catenifer</i>	Pacific Gopher Snake
<i>Thamnophis elegans terrestris</i>	Coast Garter Snake

Birds

<i>Cathartes aura</i>	Turkey Vulture
<i>Accipiter striatus</i>	Sharp-shinned Hawk
<i>Accipiter cooperii</i>	Cooper's Hawk
<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Buteo lineatus</i>	Red-shouldered Hawk
<i>Falco sparverius</i>	American Kestrel
<i>Zenaidura macroura</i>	Morning Dove
<i>Bubo virginianus</i>	Great Horned Owl
<i>Calypte anna</i>	Anna's Hummingbird
<i>Melanerpes formicivorus</i>	Acorn Woodpecker
<i>Sayornis nigricans</i>	Black Phoebe
<i>Aphelocoma coerulescens</i>	Scrub Jay
<i>Corvus brachyrhynchos</i>	Common Crow
<i>Parus inornatus</i>	Plain Titmouse
<i>Psaltriparus minimus</i>	Bushtit
<i>Regulus calendula</i>	Ruby-crowned Kinglet
<i>Vermivora celata</i>	Orange-crowned Warbler
<i>Dendroica coronata</i>	Yellow-rumped Warbler
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird
<i>Carpodacus mexicanus</i>	House Finch
<i>Pipilo erythrophthalmus</i>	Rufous-sided Towhee
<i>Pipilo fuscus</i>	Brown Towhee
<i>Junco hyemalis</i>	Dark-eyed Junco
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow
<i>Zonotrichia atricapilla</i>	Golden-crowned Sparrow

Melospiza melodia

Song Sparrow

Mammals

Didelphis marsupialis

Sorex vagrans

Sorex ornatus

Scapanus latimanus

Sylvilagus audubonii

Sciurus griseus

Otospermophilus beecheyi

Thomomys bottae

Reithrodontomys megalotis

Peromyscus californicus

Peromyscus boylii

Peromyscus maniculatus

Neotoma fuscipes

Microtus californicus

Perognathus californicus

Mus musculus

Procyon lotor

Mephitis mephitis

Canis latrans

Lynx rufus

Odocoileus hemionus columbianus

Common Opossum

Vagrant Shrew

Ornate Shrew

Broad-handed Mole

Audubon Cottontail

Western Gray Squirrel

California Ground Squirrel

Botta Pocket Gopher

Western Harvest Mouse

California Deer Mouse

Brush Mouse

Deer Mouse

Dusky-footed Wood Rat

California Meadow Mouse

California Pocket Mouse

House Mouse

Raccoon

Striped Skunk

Coyote

Bobcat

Black-tailed Deer

10. PESCADERO CREEK COUNTY PARK

10.1 LOCATION AND FEATURES OF PESCADERO CREEK COUNTY PARK

Pescadero Creek County Park is located between highways 35 and 1 in southern San Mateo County approximately nine miles east of Pebble State Beach. For the purpose of this document Pescadero Creek County Park will refer to the 8,020-acre park complex made up of Sam McDonald, Memorial, and Pescadero Creek County Parks. Primary recreation activities within the park complex include hiking, camping, and horseback riding. In addition, limited bicycling is permitted on designated service roads. A men's correctional facility exists on site. This facility is owned by San Mateo County and operated by the Sheriff's Office.

Pescadero Creek Park is situated in the northern Santa Cruz Mountains within the coastal fog zone. The park area is dominated by redwood forest, but several other vegetation communities occur there including mixed evergreen forest, live oak woodland, coyote brush scrub, chaparral, riparian forest, and grassland (Fig. 10.1; Table 10.1). In addition, a small area of knobcone pine forest and a stand of federally endangered Santa Cruz cypress (*Cupressus abramsiana*) grow on Butano Ridge in the southwestern portion of the park. Pescadero Creek, which runs through the center of the park, serves as a spawning run for the federally endangered Steelhead and Coho Salmon. The federally threatened Red-legged Frog and Marbled Murrelet also occur in the park.

Much of Pescadero Creek Park has been logged for redwood and Douglas fir. Logging began in 1856 and continued intermittently until the early 1970s (WESCO 1983). The most intensive harvest occurred between the mid 1920s and mid 1950s when large areas were clear-cut. Some areas of redwood forest were spared from logging due to fire scars on the bark. Approximately 704 acres of old growth redwood forest remain in the park (WESCO 1983), much of which is in Memorial Park. The oldest tree in this grove is over 1600 years old. Other areas of old growth redwood forest include the area along Pomponio Trail north of the County Jail, Tarwater Creek, Towne Creek, and Jones Gulch.

Table 10.1. Principal Plant Community Types Identified in Pescadero Creek County Park

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Live Oak Woodland	coast live oak, interior live oak, buckeye, California bay, California blackberry	624.5	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Mixed Evergreen Forest	madrone, tan oak, California bay, coast live oak, Douglas fir	1532.4	Sensitive if supporting rare species
Redwood Forest	coast redwood, Douglas fir	4536.9	Considered sensitive by CDFG
Santa Cruz Cypress Grove (= Northern Interior Cypress Forest)	Santa Cruz Cypress, knobcone pine, chamise	6.9	Considered sensitive by CDFG, the rare Santa Cruz Cypress grows here
Knobcone Pine Forest	knobcone pine, chamise, manzanita	12.6	Sensitive if supporting rare species
Alder/Willow Riparian	red alder, arroyo willow, sedge	228.7	Sensitive under County Code. CDFG and COE sensitive.
Coyote Brush Scrub	coyote brush, California blackberry	245.5	Sensitive if supporting rare species
Coastal Prairie	California oatgrass, purple needlegrass	6.4	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Non-native Grassland with Elements of Coastal Prairie	wild oat, softchess brome, California oatgrass	140.5	Sensitive if supporting rare species
Developed	wild oat, annual fescue, French broom, Harding grass, bull thistle	25.1	No protective status for botanical resources

10.2 VEGETATION CLASSIFICATION AND CONDITION

10.2.1 Upland Forest and Woodland Communities

Redwood Forest

Redwood forest typically occupies coastal canyons and ridges where fog drip and precipitation create humid conditions and salt spray is limited. Within the park, the climate is sufficiently moderated by coastal fog to allow redwoods to grow at all aspects and on ridges unlike more inland redwood forest which may be restricted to canyons and north-facing slopes. Redwood forest occupies much of the park but is highly variable depending on slope, aspect, soil, and logging history of the area. Memorial Park contains one of the largest areas of old growth forest within the park. This forest has a somewhat open canopy of redwood (*Sequoia sempervirens*) with an understory dominated by huckleberry (*Vaccinium ovatum*) and tanoak (*Lithocarpus densiflorus*). Other understory plants of more open redwood forest include hazelnut (*Corylus cornuta*), thimbleberry (*Rubus parviflorus*), sword fern (*Polystichum munitum*), sweetgrass (*Hierochloë occidentalis*), and redwood sorrel (*Oxalis oregana*). Redwood violet (*Viola sempervirens*), western trillium (*Trillium ovatum*), red clintonia (*Clintonia andrewsiana*), and several fern species (*Adiantum padatum aleuticum*, *Woodwardia fimbriata*) may be found on moister slopes along ravines. In contrast to the old growth forest in Memorial Park, logged areas along the Old Haul Road in Pescadero Park are dense forests of young Douglas fir (*Pseudotsuga menziesii*) and redwood, mostly less than 18” dbh. Little light reaches the forest floor in these areas and few understory plants are present.

Redwood forest within the park intergrades with live oak woodland and mixed evergreen forest. Associated plants from all three habitats may be present in redwood forest. Dominant tree species are redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*). Associate tree species include California bay (*Umbellularia californica*), big leaf maple (*Acer macrophyllum*), buckeye (*Aesculus*

californica), madrone (*Arbutus menziesii*), interior live oak (*Quercus wislizenii*), and tan oak (*Lithocarpus densiflorus*). Blue blossom (*Ceanothus thyrsiflorus*) grows in forest openings. The redwood forests in the park complex consist mostly of second growth redwood and Douglas fir with scattered understory shrubs. According to estimates made by WESCO (1983), the park complex contains approximately 704 acres of old growth, 2,147 acres of second growth, and 1,046 acres of selectively cut second growth forest.

Although there has been no logging in the park since 1973, large amounts of slash remain in many areas greatly increasing the risk of fire. In addition, logging debris could wash down slope into creeks during a large storm, impede stream flow, and cause severe bank erosion (Kenney, pers. comm.).

French broom (*Genista monspessulana*), although not a large problem in the park, occurs scattered in openings and along roads/trails within the redwood forest. There are two areas where French broom forms larger infestations. The first is in the area near the foot of Jones Gulch. The second is at the edge of the park along Wurr Road. English ivy (*Hedera helix*) and periwinkle (*Vinca major*) also occur here. These species have probably escaped from residential areas across the street.

Redwood forest is listed as a sensitive community by the California Department of Fish and Game (CDFG 1999). In addition, the federally threatened Marbled Murrelet (*Brachyramphus marmoratum*) nests in redwood forest in the park (Kenney, pers. comm.).

Mixed Evergreen Forest

Mixed evergreen forest is dominated by hardwoods such as oaks (*Quercus* spp.), tan oak (*Lithocarpus densiflora*), California bay (*Umbellularia californica*) and madrone (*Arbutus menziesii*) with scattered Douglas fir (*Pseudotsuga menziesii*). Typical understory plants include hazelnut (*Corylus cornuta*), wood fern (*Dryopteris arguta*), ocean spray (*Holodiscus discolor*), California polypody (*Polypodium californicum*), western bracken fern (*Pteridium aquilinum*), snowberry (*Symphoricarpos mollis*), and poison oak (*Toxicodendron diversilobum*). Mixed evergreen forest may vary greatly in composition of tree species along a dry to wet gradient. A forest of Douglas fir mixed with madrone and tan oak may gradually intergrade with redwood forest in more sheltered canyons near the coast or live oak woodland in slightly more exposed areas with drier soils.

Mixed evergreen forest within the park occurs along some of the drier ridges within the park and at the edge of redwood forest where it opens onto grassland or scrub. Mixed evergreen forest also occurs in small patches within the redwood forest where logging of redwood and Douglas fir opened the canopy enough to support this community. However, young Douglas fir and redwood are growing in many of these areas, often making it difficult to distinguish mixed evergreen forest from the surrounding redwood forest. In the absence of logging or fire, many of these patches of mixed evergreen forest may complete the transition to redwood forest, leaving mixed evergreen forest to the drier ridges and the edges of redwood forest.

Live Oak Woodland

This community occurs intermixed with the mixed evergreen forest community, particularly along borders between redwood forest and grassland or scrub. Live oak woodland makes up a small proportion of the park, accounting for approximately 624.5 acres. Coast live oak (*Quercus agrifolia*) and interior live oak (*Q. wislizenii*) dominate the canopy. Other tree species include California bay (*Umbellularia californica*) and madrone (*Arbutus menziesii*). Toyon (*Heteromeles arbutifolia*) and blue blossom (*Ceanothus thyrsiflorus*) are common in openings. Blackberry (*Rubus ursinus*), snowberry (*Symphoricarpos mollis*), wood fern (*Dryopteris arguta*), blue wild rye (*Elymus glaucus*), and poison oak (*Toxicodendron diversilobum*) grow in the understory.

Knobcone Pine Forest

Knobcone pine forest is usually found on thin soils on dry, rocky slopes. Knobcone pine forest is a fire-dependent (closed-cone) community. A temperature of at least 200 F is required to open the resin-sealed cone scales (Lanner, 1999). As a result, knobcone pine forest tends to form even-aged stands after fires. Within the park, a single area of knobcone pine forest occurs in a small area of shallow, disturbed soil on the western end of Butano Ridge. This forest is dominated by knobcone pine (*Pinus attenuata*) and chaparral shrubs such as yerba santa (*Eriodictyon californica*), chamise (*Adenostoma fasciculatum*), and manzanita (*Arctostaphylos* sp.). This pine forest may be over a hundred years old, as the last fire in the park was in the mid-late 1800s.

Santa Cruz Cypress Grove

The federally endangered Santa Cruz cypress (*Cupressus abramsiana*) occurs in a small grove on Butano Ridge in very shallow soil above Butano sandstone (Western Ecological Services Company 1983). This 5-acre grove is one of ten or fewer known stands, all of which occur in the Santa Cruz Mountains (CNPS 2001). Santa Cruz cypress (*Cupressus abramsiana*) and knobcone pine (*Pinus attenuata*) are the dominant trees in this grove. These trees grow interspersed among chaparral shrubs such as yerba santa (*Eriodictyon californica*), chamise (*Adenostoma fasciculatum*), and manzanita (*Arctostaphylos* sp.). Flannel bush (*Fremontodendron californica*) is also present.

10.2.2 Chaparral and Scrub Communities

Coyote Brush Scrub

Coyote brush scrub is a dense to open brushland dominated by coyote brush (*Baccharis pilularis*). Other common species include: blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), bracken fern (*Pteridium aquilinum* var. *pubescens*), sticky monkey flower (*Mimulus aurantiacus*), elderberry (*Sambucus mexicana*), coffeeberry (*Rhamnus californica*), and mugwort (*Artemisia douglasiana*). This community occurs along grassland edges and occasionally in openings within mixed evergreen forest or oak woodland. Coyote brush scrub within the park is more open where it has recently spread over grassland, as in the northeastern corner of Pescadero Park near the Camp Pomponio Road gate. Older stands of coyote brush scrub are much denser and more diverse in shrub species.

10.2.3 Grassland Communities

Perennial grasslands in California are among the most endangered ecosystem in the United States (Noss et al. 1995, Peters and Noss 1995). An area of approximately 7,000,000 ha (about 25% of the area of California) has been converted to annual grassland dominated by non-native annuals primarily of Mediterranean origin (Huenneke 1989). These plants include brome grass (*Bromus diandrus*, *B. hordeaceus*, and *B. madritensis rubens*), wild oats (*Avena barbata*, *A. fatua*), fillaree (*Erodium cicutarium*, *E. botrys*) and rat tail fescue (*Vulpia myuros*) (Heady et al. 1992), many of which were brought to North America in fodder for grazing animals. Conversion to non-native annual grassland was so fast, extensive, and complete that the original extent and species composition of native perennial grasslands are unknown (Burcham 1957, Barry 1972, Keeley 1989, Heady 1992, Holland and Keil 1995). Few studies have been published that describe the original grassland composition or that of presumed extant relicts (Heady 1988).

Both native and non-native grasslands occur within the park. For mapping purposes, the grassland in the park has been divided into three types. The first one described, coastal prairie is one of California's native grassland communities. The remaining two are dominated by exotic species.

Coastal Prairie

Coastal prairie is a grassland composed of both turf and bunch grasses and occurs in relatively moist soils within a few miles of the coast, typically on marine terraces and bald hills. California oatgrass (*Danthonia californica*), Pacific reedgrass (*Calamagrostis nutkaensis*), hairgrass (*Deschampsia cespitosa* ssp. *holciformis*), red fescue (*Festuca rubra*), purple needlegrass (*Nassella pulchra*), and Idaho fescue (*Festuca idahoensis*) are among the native grasses that occur within this community in coastal California. Native wildflowers such as California poppy (*Eschscholzia californica*), yarrow (*Achillea millefolium*), sun cups (*Camissonia ovata*), and blue-eyed grass (*Sisyrinchium bellum*) are often scattered among the grasses. Coastal prairie communities dominated by California oatgrass are considered sensitive by the California Department of Fish and Game (CDFG 1999).

Only one area of relatively intact perennial grassland occurs within the park complex. This area is within the northeastern portion of Pescadero Park. California oatgrass and purple needlegrass dominate the grassland. Annual exotic grasses such as wild oats (*Avena fatua*), softchess brome (*Bromus hordeaceus*), and ripgut brome (*Bromus diandrus*) grow among the bunchgrasses. Much of this area has been invaded by coyote brush scrub. Management of this sensitive community should be addressed in the upcoming Vegetation Management Plan.

Non-native Grassland

Non-native grassland is dominated by introduced grasses and forbs. Common species within this community include exotic annual grasses such as wild oats (*Avena* spp.), annual fescue (*Vulpia* spp.), ripgut brome (*Bromus diandrus*), and softchess brome (*Bromus hordeaceus*). Filaree (*Erodium* spp.) and plantain (*Plantago* spp.) are also common.

The largest areas of non-native grassland within the park complex occur in Sam McDonald Park on steep slopes that are not mowed. Adjacent, flatter areas typically contain scattered perennial bunchgrasses that apparently benefit from periodic mowing. Appropriately timed mowing and grazing can be valuable tools in reducing competition from annual grasses as well as preventing coastal scrub from invading grassland.

Non-native Grassland with Elements of Coastal Prairie

This category is similar to the above except that native perennial grasses such as California oat grass (*Danthonia californica*), purple needlegrass (*Nassella pulchra*), and blue wildrye (*Elymus glaucus*) are scattered through the area. These grasslands were most likely occupied by coastal prairie before exotic species spread to the area. Most of these grasslands occur in mowed areas within Sam McDonald Park.

Several dense stands (>25% cover) of California oatgrass and purple needlegrass were found within the grasslands of Sam McDonald Park. These stands of native grass may serve as valuable seed collection sites for coastal prairie restoration. Continued mowing will help to preserve and expand these valuable areas by reducing competition from exotic grasses and forbs as well as preventing encroachment by coastal scrub. A detailed restoration and management plan for these areas should be included in the upcoming Vegetation Management Plan.

Invasive weeds that occur within or at the edges of the mowed grasslands within the park include Harding grass (*Phalaris aquatica*), bull thistle (*Cirsium vulgare*), Italian thistle (*Carduus pycnocephalus*), and French broom (*Genista monspessulana*). Although mowing has prevented these weeds from invading many of the flatter areas, they are common along grassland edges and steep slopes where tractor mowing is not possible.

Pig routing was observed throughout the grasslands of Sam McDonald and Pescadero County Parks. Pigs turn the soil, ripping out native grasses and leaving the soil open to invasion by exotic species. A pig control program for the park is pending (John Kenney pers. comm.).

10.2.4 Riparian and Wetland Communities

Wetlands are afforded protection by the U.S. Army Corp of Engineers under section 404 of the Clean Water Act which regulates discharge of dredged or fill material into the waters of the United States (U.S. Army Corps of Engineers 1987). Procedures for identifying and delineating wetlands are described in the *Corps of Engineers Wetlands Delineation Manual* (U.S. Army Corps of Engineers, 1987).

Alder/Willow Riparian Woodland

Within the park, a distinct riparian community is often difficult to distinguish from the surrounding redwood forest. Riparian trees and herbs such as arroyo willow (*Salix lasiolepis*), red alder (*Alnus rubra*), coltsfoot (*Petasites frigidus*), and sedge (*Carex* sp.) occur along creeks and drainages but are limited to narrow, often broken strips immediately adjacent to the channel. Redwood forest species such as California bay (*Umbellularia californica*), big-leaf maple (*Acer macrophyllum*), and redwood (*Sequoia sempervirens*) typically dominate within a short distance of the channel.

A few areas support well-developed stands of riparian trees, primarily red alders. These occur along Pescadero Creek at the start of Old Haul Road as well as along the following drainages where they intersect Old Haul Road: Piney Creek, Harwood Creek, Dark Gulch, Carriger Creek, and Keystone Creek. In addition, there is a large stand of arroyo willows (*Salix lasiolepis*) in a depression near the intersection of Old Haul Road and Bridge Trail. Pacific willow (*Salix lucida* ssp. *lasiandra*) and sedge (*Carex* sp.) also occur here.

The presence of surface water and variety of habitat make riparian forest valuable to a diverse group of animals. Riparian forests are critical to breeding birds, migrating songbirds, turtles, and amphibians. Rare species that occur in riparian forest within the park include Yellow Warbler, Foothill Yellow-legged Frog, and the federally threatened California Red-legged Frog.

Riparian woodlands and forests dominated by arroyo willow or red alder are designated as sensitive communities by the California Department of Fish and Game (CDFG 1999). In addition, wetlands are afforded protection by the U.S. Army Corp of Engineers under section 404 of the Clean Water Act which regulates discharge of dredged or fill material into the waters of the United States (U.S. Army Corps of Engineers 1987).

10.2.5 Other

Developed

This category includes buildings, parking areas, picnic areas, trails, roads, and pullouts.

10.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

10.3.1 Special Status Plant Species

Some of the park provides habitat for species of concern, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered. The special status plant species known or with potential to occur in the park are listed in Table 10.2. Known locations of rare plant and animal species are mapped in Figure 10.2.

Table 10.2: Rare Plant Species That May Occur in Pescadero Creek Park

Species	Status	Known/Potential Occurrence
Santa Cruz manzanita (<i>Arctostaphylos andersonii</i>)	CNPS 1B	Potential habitat exists in park.
Santa Cruz cypress (<i>Cupressus abramsiana</i>)	FE; SE; CNPS 1B	Occurs in park on Butano Ridge.
Diablo helianthella (<i>Helianthella castanea</i>)	CNPS 1B	Potential habitat exists in park.
western leatherwood (<i>Dirca occidentalis</i>)	CNPS 1B	Potential habitat exists in park.
California bottle-brush grass (<i>Elymus californicus</i>)	CNPS 4	Potential habitat exists in park.
white-flowered rein orchid (<i>Piperia candida</i>)	CNPS 4	Potential habitat exists in park.
Michael's rein orchid (<i>Piperia michaelii</i>)	CNPS 4	Potential habitat exists in park.
Dudley's lousewort (<i>Pedicularis dudleyi</i>)	SR; CNPS 1B	Reported nearby in Portola State Park. Potential habitat exists in park.
white-rayed pentachaeta (<i>Pentachaeta bellidiflora</i>)	FE; SE; CNPS 1B	Potential habitat exists in park.

FT: Federally Threatened; FE: Federally Endangered; ST: State Threatened; SE: State Endangered; SR: State Rare; CNPS 1B: California Native Plant Society List 1B (rare, threatened, or endangered in CA); CNPS 4: California Native Plant Society List 4 (Watch List). Watch List species are of limited distribution (CNPS 2001).

10.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity.

Coast Live Oak Woodland

The oak woodlands on the project site are typical of similar areas of California. Due to changes in land use, however, their distribution and habitat quality has been reduced, such that the community is considered significant by CDFG.

Alder/Willow Riparian Forest

Riparian forests are considered sensitive habitats according to the County of San Mateo and CDFG. This status is due to the value of these forests to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

Redwood Forest

Redwood forest is designated as a high priority in the CNDDDB (CDFG 1999). This category contains native plant communities that are regarded by CDFG as having special significance under the California Environmental Quality Act.

Santa Cruz Cypress Stand

The Santa Cruz cypress stand on Butano Ridge is a type of Northern Interior Cypress Forest. Northern Interior Cypress Forest is designated as a high priority community in the CNDDDB (CDFG 1999). This category contains native plant communities that are regarded by CDFG as having special significance under the California Environmental Quality Act. In addition, Santa Cruz cypress is a Federally Endangered species (Table 10.2).

Coastal Prairie

The coastal prairie within the park is considered a sensitive habitat according CDFG due to the prevalence of native plant species, potential for rare, threatened or endangered species, and its limited distribution within the region.

10.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

Some of the park provides habitat for species of concern, including those listed by the USFWS or CDFG as threatened or endangered. The special status animal species known or with potential to occur in the park are listed in Table 10.3. Those reported within the park in the Natural Diversity Database are mapped in Figure 10.2.

Table 10.3 was compiled using the following sources:

Draft EIR for Proposed Additions: Sam McDonald County Park (Dept. Parks & Rec., San Mateo Co. 1975)

Pescadero Creek Park Final EIR (JARA 1975)

Natural Resources Management Program for Pescadero Creek County Park (WESCO 1983)

California Natural Diversity Database (CDFG 2001a)

Table 10.3 Rare Animal Species that May Occur in Pescadero Creek Park

Species	Status	Known/Potential Occurrence	Typical Habitat
Steelhead-Central CA Coast ESU (<i>Oncorhynchus mykiss</i>)	FT	Spawn in Pescadero Creek and Alpine Creek.	Rivers, estuarine and marine waters.
Coho Salmon-Central CA Coast ESU (<i>Oncorhynchus kisutch</i>)	FT; SE	Spawn in Pescadero Creek.	Rivers, estuarine and marine waters.
California Tiger Salamander (<i>Ambystoma tigrinum californiense</i>)	DFG CSC, Protected	Potential habitat exists in park.	Grassland or open woodland near seasonal or permanent water
California Red-legged Frog (<i>Rana aurora draytoni</i>)	FT	Reported in park.	Grassland, woodland, or forest in or near water
Foothill Yellow-legged Frog (<i>Rana boylei</i>)	DFG CSC, Protected	Reported in park.	Woodland, chaparral, and forest near water
Western Pond Turtle (<i>Clemmys marmorata</i>)	DFG CSC, Protected	Potential habitat occurs in park.	Ponds, marshes, rivers, or streams with aquatic vegetation
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE; SE; DFG Fully Protected	Potential habitat exists in park near Pescadero Creek.	Grassland, woodland, or scrub near ponds, marshes, streams, wet meadows, or other water sources
Northern Harrier (<i>Circus cyaneus</i>)	DFG CSC ¹	Occurs in park year-round. Breeding status unknown.	Grassland, marsh.
Cooper's Hawk (<i>Accipiter cooperii</i>)	DFG CSC ¹	Occurs in park year-round. Nesting status unknown.	Woodland, forest
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	DFG CSC ¹	Reported in park. Breeding status unknown.	Mixed woodlands
Golden Eagle (<i>Aquila chrysaetos</i>)	DFG CSC, Fully Protected ²	Potential habitat occurs in park.	Hunts over open areas in hilly or mountainous country
Ferruginous Hawk (<i>Buteo regalis</i>)	DFG CSC ³	Reported in park. Wintering and nesting status unknown.	Arid grasslands
Long-eared Owl (<i>Asio otus</i>)	DFG CSC ¹	Potential habitat occurs in park.	Roosts in thick woods; hunts over open fields

Species	Status	Known/Potential Occurrence	Typical Habitat
California Spotted Owl (<i>Strix occidentalis occidentalis</i>)	DFG CSC; USFWS MNBMC	Potential habitat occurs in park.	Nests in old-growth forest.
Vaux's Swift (<i>Chaetura vauxi</i>)	DFG CSC; USFWS MNBMC ¹	Potential habitat occurs in park.	Woodlands near lakes, rivers, streams
Marbled Murrelet (<i>Brachyramphus marmoratum</i>)	FT; SE; USFWS MNBMC ¹	Breeds in park.	Nests in old-growth redwood and Douglas-fir forest on mossy branches.
Rufous Hummingbird (<i>Selasphorus rufus</i>)	USFWS MNBMC ¹	Potential habitat exists in park.	Forests, edges of woods, thickets
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	USFWS MNBMC ¹	Reported as common summer visitor. Breeding status unknown.	Typically found in coniferous forest, bogs
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	DFG CSC; USFWS MNBMC	Occurs in park.	Open, brushy fields and the edges of woods
California Horned Lark (<i>Eremophila alpestris actia</i>)	DFG CSC	Reported in park.	Barren ground with short grass and few bushes
Purple Martin (<i>Progne subis</i>)	DFG CSC ¹	Reported in park. Breeding status unknown.	Colonial cavity nester
Yellow Warbler (<i>Dendroica petechia</i>)	DFG CSC ¹	Reported in park. Nesting status unknown.	Wet habitats (especially with willows and alders), open woodlands, gardens
Lawrence's Goldfinch (<i>Carduelis lawrencei</i>)	USFWS MNBMC	Potential habitat exists in park.	Grassy slopes and chaparral

FT: Federally Threatened; FE: Federally Endangered; SE: State Endangered; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Fully Protected: CA Dept. of Fish and Game fully protected species; USFWS MNBMC: U.S. Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern.

¹ status applies to nesting birds

² status applies to nesting and wintering birds

³ status applies to wintering birds

10.5 INVASIVE NON-NATIVE PLANT SPECIES

The park supports several invasive, non-native plant species, particularly in disturbed grasslands. These are listed below and mapped in Figure 10.3. Only those species known to be invasive or posing special management problems for the park were mapped.

Cape ivy/German ivy (*Delairea odorata/Senecio mikanioides*)

Himalyaberry (*Rubus discolor*)

French broom (*Genista monspessulana*)

poison hemlock (*Conium maculatum*)

Italian thistle (*Carduus pycnocephalus*)

yellow star thistle (*Centaurea solstitialis*)

bull thistle (*Cirsium vulgare*)

Pampas grass (*Cortaderia selloana*)

Harding grass (*Phalaris aquatica*)

periwinkle/vinca (*Vinca major*)

fennel (*Foeniculum vulgare*)

10.6 PLANT SPECIES LIST

The following species list was compiled using the sources below:

Draft EIR for Proposed Additions: Sam McDonald County Park (Dept. Parks & Rec., San Mateo Co. 1975)

Pescadero Creek Final EIR (JARA 1975)

TABLE 10.4 PLANT SPECIES OF PESCADERO CREEK PARK

Trees

<i>Acer macrophyllum</i>	big leaf maple
<i>Acer negundo</i>	box elder
<i>Aesculus californica</i>	California buckeye
<i>Alnus rubra</i>	red alder
<i>Arbutus menziesii</i>	madrone
<i>Cupressus abramsiana</i>	Santa Cruz Cypress
<i>Lithocarpus densiflora</i>	tanbark oak
<i>Pinus attenuata</i>	knobcone pine
<i>Populus fremontii</i>	Fremont cottonwood
<i>Pseudotsuga menziesii</i>	Douglas fir
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus chrysolepis</i>	canyon live oak
<i>Quercus wislizenii</i>	interior live oak
<i>Salix lasiolepis</i>	arroyo willow
<i>Salix lucida</i> ssp. <i>lasiandra</i>	Pacific/yellow willow
<i>Sequoia sempervirens</i>	coast redwood
<i>Torreya californica</i>	California nutmeg
<i>Umbellularia californica</i>	California bay

Shrubs

<i>Adenostoma fasciculatum</i>	chamise
<i>Arctostaphylos</i> spp.	manzanita
<i>Artemisia californica</i>	California sagebrush
<i>Baccharis pilularis</i> var. <i>consanguinea</i>	coyote brush
<i>Ceanothus cuneatus</i>	buckbrush
<i>Ceanothus integerrimus</i>	deerbrush
<i>Ceanothus papillosus</i>	wart-leaf ceanothus
<i>Ceanothus thyrsiflorus</i>	blue blossom
<i>Cercocarpus betuloides</i>	mountain mahogany
<i>Chrysolepis chrysophylla</i>	golden chinquapin
<i>Corylus cornuta</i> var. <i>californica</i>	hazelnut
<i>Dendromecon rigida</i>	bush poppy
<i>Eriodictyon californicum</i>	yerba santa
<i>Fremontodendron californica</i> ssp. <i>californicum</i>	flannelbush
<i>Garrya elliptica</i>	silktassel
<i>Genista monspessulana</i> *	French broom
<i>Heteromeles arbutifolia</i>	toyon
<i>Holodiscus discolor</i>	ocean spray
<i>Lonicera hispidula</i>	honeysuckle
<i>Mimulus aurantiacus</i>	sticky monkey flower

Oemleria cerasiformis
Rhamnus californica
Rhododendron macrophyllum
Ribes sp.
Ribes menziesii
Rosa californica
Rosa gymnocarpa
Rubus parviflorus
Rubus ursinus
Salvia mellifera
Sambucus racemosa
Symphoricarpos albus
Symphoricarpos mollis
Toxicodendron diversiloba
Vaccinium ovatum

oso berry
coffeeberry
California rhododendron
currant
canyon gooseberry
California rose
wood rose
thimbleberry
blackberry
black sage
red elderberry
snowberry
creeping snowberry
poison oak
California huckleberry

Herbs

Achillea millefolium
Actaea rubra
Adiantum aleuticum
*Aira caryophylla**
Amsinckia menziesii var. *intermedia*
*Anagallis arvensis**
*Anthriscus caucalis**
Aquilegia formosa var. *truncata*
Artemisia douglasiana
*Avena barbata**
*Avena fatua**
*Briza minor**
*Bromus diandrus**
*Bromus hordaceus**
Bromus laevipes
Bromus vulgaris
Bromus spp.
Calandrinia ciliata var. *menziesii*
Calystegia occidentalis
Camissonia ovata
*Carduus pycnocephalus**
Carex spp.
*Centaurea calcitrapa**
*Centaurea solstitialis**
Chlorogalum pomeridianum
*Cirsium vulgare**
Claytonia perfoliata
Clintonia andrewsiana
*Conium maculatum**
Corallorhiza striata
*Cortaderia selloana**
Cynoglossum grande
Cyperus eragrostis
*Dactylis glomerata**

common yarrow
baneberry
five-finger fern
hair grass
rancher's fireweed
scarlet pimpernel
bur chervil
columbine
mugwort
slender wild oat
wild oat
little quaking grass
ripgut brome
soft chess
woodland brome
narrow-flowered brome
brome grass
red maids
western morning-glory
sun cup
Italian thistle
sedges
purple star thistle
yellow star thistle
soap plant
bull thistle
miner's lettuce
red clintonia
poison hemlock
striped coral root
Pampas grass
hound's tongue
umbrella sedge
orchard grass

<i>Danthonia californica</i>	California oatgrass
<i>Delairea odorata</i> (=Senecio mikanioides)*	Cape/German ivy
<i>Dentaria californica</i>	milkmaids, toothwort
<i>Dichelestemma capitatum</i>	blue dicks
<i>Digitalis purpurea</i> *	foxglove
<i>Dipsacus sativus</i> *	Fuller's teasel
<i>Disporum hookeri</i>	fairy bells
<i>Disporum smithii</i>	fairy lantern
<i>Dryopteris arguta</i>	coastal wood fern
<i>Elymus glaucus</i>	blue wildrye
<i>Equisetum</i> sp.	horetail
<i>Erodium</i> sp.*	filaree
<i>Eschscholzia californica</i>	California poppy
<i>Foeniculum vulgare</i> *	fennel
<i>Fragaria vesca</i>	wood strawberry
<i>Fritillaria affinis</i>	checker lily
<i>Galium aparine</i> *	goose grass
<i>Galium porrigens</i>	climbing bedstraw
<i>Gastridium ventricosum</i> *	nit grass
<i>Geranium molle</i> *	cranesbill
<i>Gnaphalium</i> sp.	cudweed
<i>Heracleum lanatum</i>	cow parsnip
<i>Heuchera micrantha</i>	alum root
<i>Hierochloë occidentalis</i>	sweetgrass
<i>Holcus lanatus</i> *	velvet grass
<i>Hordeum murinum</i> ssp. <i>leporinum</i> *	foxtail
<i>Hordeum</i> sp.*	wild barley
<i>Hypochaeris radicata</i> *	hairy cat's ear
<i>Iris douglasiana</i>	Douglas iris
<i>Juncus balticus</i>	Baltic rush
<i>Juncus bufonius</i>	toad rush
<i>Juncus patens</i>	spreading rush
<i>Juncus</i> spp.	rushes
<i>Lathyrus vestitus</i>	hillside pea
<i>Lolium multiflorum</i> *	Italian ryegrass
<i>Lotus purshianus</i>	Spanish clover
<i>Lotus scoparius</i>	deerweed
<i>Madia madioides</i>	woodland madia
<i>Marah fabaceus</i>	wild cucumber
<i>Marah oreganus</i>	western wild cucumber
<i>Medicago polymorpha</i> *	bur clover
<i>Monardella villosa</i>	coyote mint
<i>Myosotis latifolia</i> *	forget-me-not
<i>Nassella pulchra</i>	purple needlegrass
<i>Osmorhiza chilensis</i>	sweet cicely
<i>Oxalis oregana</i>	redwood sorrel
<i>Petasites frigidus</i>	coltsfoot
<i>Phalaris aquatica</i> *	Harding grass
<i>Pityrogramma triangularis</i>	goldenback fern
<i>Plantago lanceolata</i> *	English plantain
<i>Polygala californica</i>	milkwort
<i>Polypodium californicum</i>	California polypody

<i>Polystichum munitum</i>	western sword fern
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern
<i>Ranunculus californicus</i>	California buttercup
<i>Ranunculus muricatus</i> *	prickle-fruited buttercup
<i>Rumex acetosella</i> *	sheep sorrel
<i>Sanicula bipinnatifida</i>	purple sanicle
<i>Sanicula crassicaulis</i>	Pacific sanicle
<i>Satureja douglasii</i>	yerba buena
<i>Scrophularia californica</i>	California bee plant
<i>Sherardia arvensis</i> *	field madder
<i>Silybum marianum</i> *	milk thistle
<i>Sisyrinchium bellum</i>	blue-eyed grass
<i>Smilacina racemosa</i>	fat Solomon's seal
<i>Smilacina stellata</i>	thin Solomon's seal
<i>Solanum umbelliferum</i>	purple nightshade
<i>Stachys bullata</i>	hedge nettle
<i>Stellaria media</i> *	common chickweed
<i>Tellima grandiflora</i>	fringe cups
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	meadow rue
<i>Trientalis latifolia</i>	Pacific star flower
<i>Trillium ovatum</i>	western trillium
<i>Triteleia laxa</i>	Ithuriel's spear
<i>Urtica dioica</i> ssp. <i>holosericea</i>	hoary nettle
<i>Vicia</i> sp.	vetch
<i>Viola sempervirens</i>	redwood violet
<i>Vulpia bromoides</i> *	annual fescue
<i>Woodwardia fimbriata</i>	giant chain fern
<i>Zigadenus fremontii</i>	star lily

* introduced species

10.7 ANIMAL SPECIES LIST

The following species list was compiled using the sources below:

Draft EIR for Proposed Additions: Sam McDonald County Park (Dept. Parks & Rec., San Mateo Co. 1975)

Pescadero Creek Park Final EIR (JARA 1975)

TABLE 10.5 ANIMAL SPECIES THAT MAY OCCUR IN PESCADERO CREEK PARK

Fish

<i>Oncorhynchus kisutch</i>	Coho Salmon-Cntrl. CA Coast ESU
<i>Oncorhynchus mykiss</i>	Steelhead-Central CA Coast ESU

Amphibians

<i>Ambystoma tigrinum californiense</i>	California Tiger Salamander
<i>Dicamptodon ensatus</i>	Pacific Giant Salamander
<i>Taricha granulosa granulosa</i>	Northern Rough-skinned Newt
<i>Taricha torosa torosa</i>	Coast Range Newt
<i>Ensatina eschscholtzi xanthoptica</i>	Yellow-eyed Salamander
<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Aneides flavipunctatus</i>	Santa Cruz Black Salamander
<i>Aneides lugubris</i>	Arboreal Salamander
<i>Bufo boreas halophilus</i>	California Toad
<i>Hyla regilla</i>	Pacific Tree Frog
<i>Rana aura draytoni</i>	California Red-legged Frog
<i>Rana boylei</i>	Foothill Yellow-legged Frog
<i>Rana catespeiana</i>	Bullfrog

Reptiles

<i>Sceloporus occidentalis occidentalis</i>	N.W. Fence Lizard
<i>Eumeces skiltonianus skiltonianus</i>	Western Skink
<i>Gerrhonotus multicarinatus multicarinatus</i>	California Alligator Lizard
<i>Gerrhonotus coeruleus coeruleus</i>	San Francisco Alligator Lizard
<i>Charina bottae bottae</i>	Pacific Rubber Boa
<i>Diadophis punctatus amabilis</i>	Pacific Ringneck Snake
<i>Contia tenuis</i>	Sharp-tailed Snake
<i>Coluber constrictor mormon</i>	Western Yellow-bellied Racer
<i>Pituophis melanoleucus catenifer</i>	Pacific Gopher Snake
<i>Lampropeltis getulus californiae</i>	California Kingsnake
<i>Lampropeltis zonata multifasciata</i>	Coast Mountain Kingsnake
<i>Thamnophis sirtalis infernalis</i>	Calif. Red-sided Garter Snake
<i>Thamnophis sirtalis tetrataenia</i>	San Francisco Garter Snake
<i>Thamnophis elegans terrestris</i>	Coast Garter Snake
<i>Thamnophis couchi atratus</i>	Santa Cruz Garter Snake
<i>Crotalus viridis oregonus</i>	Northern Pacific Rattlesnake
<i>Clemmys marmorata</i>	Western Pond Turtle

Birds

<i>Aix sponsa</i>	Wood Duck
<i>Cathartes aura</i>	Turkey Vulture
<i>Accipiter striatus</i>	Sharp-shinned Hawk
<i>Accipiter cooperii</i>	Cooper's Hawk
<i>Aquila chrysaetos</i>	Golden Eagle
<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Buteo lineatus</i>	Red-shouldered Hawk
<i>Buteo lagopus</i>	Rough-legged Hawk
<i>Buteo regalis</i>	Ferruginous Hawk
<i>Buteo swainsoni</i>	Swainson's Hawk
<i>Aquila chrysaetos</i>	Golden Eagle
<i>Falco sparverius</i>	American Kestrel
<i>Lophortyx californicus</i>	California Quail
<i>Columba fasciata</i>	Band-tailed Pigeon
<i>Zenaidura macroura</i>	Morning Dove
<i>Tyto alba</i>	Barn Owl
<i>Otus asio</i>	Screech Owl
<i>Bubo virginianus</i>	Great Horned Owl
<i>Aegolius acadicus</i>	Saw-whet Owl
<i>Glaucidium gnoma</i>	Pygmy Owl
<i>Phalaenoptilus nuttallii</i>	Poor-will
<i>Chaetura vauxi</i>	Vaux's Swift
<i>Aeronautes saxatalis</i>	White-throated Swift
<i>Calypte anna</i>	Anna's Hummingbird
<i>Selasphorus rufus</i>	Rufous Hummingbird
<i>Selasphorus sasin</i>	Allen's Hummingbird
<i>Archilochus alexandri</i>	Black-chinned Hummingbird
<i>Megasceryle alcyon</i>	Belted King Fisher
<i>Colaptes auratus</i>	Common Flicker
<i>Dryocopus pileatus</i>	Pileated Woodpecker
<i>Asyndesmus lewis</i>	Lewis' Woodpecker
<i>Melanerpes formicivorus</i>	Acorn Woodpecker
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker
<i>Dendrocopos villosus</i>	Hairy Woodpecker
<i>Dendrocopos pubescens</i>	Downy Woodpecker
<i>Dendrocopos nuttallii</i>	Nuttall's Woodpecker
<i>Myiarchus cinerascens</i>	Ash-throated Flycatcher
<i>Empidonax difficilis</i>	Western Flycatcher
<i>Empidonax traillii</i>	Willow Flycatcher
<i>Contopus sordidulus</i>	Western Wood Pewee
<i>Sayornis saya</i>	Say's Phoebe
<i>Contopus cooperi</i>	Olive-sided Flycatcher
<i>Tachycinetta thalassina</i>	Violet-green Swallow
<i>Iridoprocne bicolor</i>	Tree Swallow
<i>Stelgidopteryx ruficollis</i>	Rough-winged Swallow
<i>Hirundo rustica</i>	Barn Swallow
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow
<i>Progne subis</i>	Purple Martin
<i>Cyanocitta stelleri</i>	Steller's Jay
<i>Aphelocoma coerulescens</i>	Scrub Jay

<i>Corvus corax</i>	Common Raven
<i>Corvus brachyrhynchos</i>	Common Crow
<i>Parus rufescens</i>	Chestnut-backed Chickadee
<i>Parus inornatus</i>	Plain Titmouse
<i>Psaltriparus minimus</i>	Bushtit
<i>Sitta canadensis</i>	Red-breasted Nuthatch
<i>Sitta carolinensis</i>	White-breasted Nuthatch
<i>Sitta pygmaea</i>	Pygmy Nuthatch
<i>Certhia familiaris</i>	Brown Creeper
<i>Cinclus mexicanus</i>	Dipper
<i>Chamaea fasciata</i>	Wrentit
<i>Troglodytes aedon</i>	House Wren
<i>Troglodytes troglodytes</i>	Winter Wren
<i>Thryomanes bewickii</i>	Bewick's Wren
<i>Catherpes mexicanus</i>	Canyon Wren
<i>Salpinctes obsoletus</i>	Rock Wren
<i>Mimus polyglottos</i>	Mockingbird
<i>Toxostoma redivivum</i>	California Thrasher
<i>Turdus migratorius</i>	American Robin
<i>Ixoreus naevius</i>	Varied Thrush
<i>Catharus guttatus</i>	Hermit Thrush
<i>Catharus ustulatus</i>	Swainson's Thrush
<i>Piranga ludoviciana</i>	Western Tanager
<i>Hesperiphona vespertina</i>	Evening Grosbeak
<i>Sialia mexicana</i>	Western Bluebird
<i>Eremophila alpestris</i>	Horned Lark
<i>Regulus satrapa</i>	Golden-crowned Kinglet
<i>Regulus calendula</i>	Ruby-crowned Kinglet
<i>Bombycilla cedrorum</i>	Cedar Waxwing
<i>Lanius ludovicianus</i>	Loggerhead Shrike
<i>Vireo huttoni</i>	Hutton's Vireo
<i>Vireo gilvus</i>	Warbling Vireo
<i>Vermivora celata</i>	Orange-crowned Warbler
<i>Dendroica petechia</i>	Yellow-Warbler
<i>Dendroica coronata</i>	Yellow-rumped Warbler
<i>Dendroica nigrescens</i>	Black-throated Gray Warbler
<i>Dendroica townsendi</i>	Townsend's Warbler
<i>Wilsonia pusilla</i>	Wilson's Warbler
<i>Sturnella neglecta</i>	Western Meadowlark
<i>Agelaius phoeniceus</i>	Red-winged Blackbird
<i>Icterus galbula</i>	Northern Oriole
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird
<i>Molothrus ater</i>	Brown-headed Cowbird
<i>Pheucticus melanocephalus</i>	Black-headed Grosbeak
<i>Passerina amoena</i>	Lazuli Bunting
<i>Carpodacus purpureus</i>	Purple Finch
<i>Carpodacus mexicanus</i>	House Finch
<i>Spinus pinus</i>	Pine Siskin
<i>Spinus tristis</i>	American Goldfinch
<i>Spinus lawrencei</i>	Lawrence's Goldfinch
<i>Spinus psaltria</i>	Lesser Goldfinch
<i>Pipilo erythrophthalmus</i>	Rufous-sided Towhee

Pipilo fuscus
Ammodramus savannarum
Passerculus sandwichensis
Pooecetes gramineus
Chondestes grammacus
Aimophila ruficeps
Junco hyemalis
Spizella passerina
Zonotrichia albicollis
Zonotrichia leucophrys
Zonotrichia atricapilla
Passerella iliaca
Melospiza lincolnii
Melospiza melodia
Charadrius vociferus
Brachyramphus marmoratus

Brown Towhee
Grasshopper Sparrow
Savannah Sparrow
Vesper Sparrow
Lark Sparrow
Rufous-crowned Sparrow
Dark-eyed Junco
Chipping Sparrow
White-throated Sparrow
White-crowned Sparrow
Golden-crowned Sparrow
Fox Sparrow
Lincoln's Sparrow
Song Sparrow
Killdeer
Marbled Murrelet

Mammals

Didelphis marsupialis
Sorex vagrans
Sorex ornatus
Sorex trowbridgii
Scapanus latimanus
Neurotrichus gibbsii
Myotis lucifugus
Myotis thysanodes
Myotis californicus
Myotis volans
Myotis evotis
Myotis yumanensis
Lasiurus cinereus
Lasiurus borealis
Eptesicus fuscus
Pipistrellus hesperus
Antrozous pallidus
Plecotus townsendii
Tadarida brasiliensis
Lepus californicus
Sylvilagus audubonii
Oryctolagus cuniculus
Sylvilagus bachmani
Eutamias merriami
Sciurus griseus
Otospermophilus beecheyi
Thomomys bottae
Reithrodontomys megalotis
Peromyscus californicus
Peromyscus boylii
Peromyscus maniculatus
Neotoma fuscipes
Microtus californicus

Common Opossum
Vagrant Shrew
Ornate Shrew
Trowbridge Shrew
Broad-handed Mole
Shrew-Mole
Little Brown Bat
Fringed Myotis
California Myotis
Hairy winged Myotis
Long-eared Myotis
Yuma Myotis
Hoary Bat
Red Bat
Big Brown Bat
Western Pipistrelle
Pallid Bat
Lump-nosed Bat
Brazilian Free-tailed Bat
Black-tailed Hare
Audubon Cottontail
Domestic Rabbit
Brush Rabbit
Merriam Chipmunk
Western Gray Squirrel
California Ground Squirrel
Botta Pocket Gopher
Western Harvest Mouse
California Deer Mouse
Brush Mouse
Deer Mouse
Dusky-footed Wood Rat
California Meadow Mouse

Perognathus californicus
Dipodomys venustus
Mus musculus
Urocyon cinereoargenteus
Canis latrans
Procyon lotor
Bassariscus astutus
Mustela frenata
Taxidea taxus
Mephitis mephitis
Spilogale putorius
Felis concolor
Lynx rufus
Odocoileus hemionus columbianus

California Pocket Mouse
Santa Cruz Kangaroo Rat
House Mouse
Gray Fox
Coyote
Raccoon
Ringtail
Long-tailed Weasel
Badger
Striped Skunk
Spotted Skunk
Mountain Lion
Bobcat
Black-tailed Deer

11. SAN BRUNO MOUNTAIN STATE AND COUNTY PARK

11.1 LOCATION AND FEATURES OF SAN BRUNO MOUNTAIN STATE AND CO. PARK

San Bruno Mountain State and County Park (elev. 1,314 ft) lies at the north end of the Santa Cruz Mountains less than 1 mile south of San Francisco. The park forms a 2,326-acre, open-space “island” surrounded by the cities of Brisbane, South San Francisco, and Daly City. Trails provide hikers with striking views of the San Francisco Bay area as well as a chance to explore several native plant communities including rare intact areas of coastal prairie and needlegrass grassland.

San Bruno Mountain hosts a number of rare animals and plants including three endangered butterfly species: the Mission Blue (*Icaricia icarioides missionensis*), Callippe Silverspot (*Speyeria callippe callippe*), and San Bruno Elfin (*Incisalia mossii bayensis*). The Federally Threatened Bay Checkerspot butterfly (*Euphydryas editha bayensis*) was also identified on San Bruno Mountain in 1982 but has not been observed there since (Royston, Hanamoto, Alley, & Abey 2000). Several rare plants grow on the mountain. One species, the San Bruno Mountain manzanita (*Arctostaphylos imbricata*) is endemic. Other rare plants include Montara manzanita (*A. montarensis*), coast rock cress (*Arabis blepharophylla*), San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*), and San Francisco wallflower (*Erysimum franciscanum*).

Coastal scrub, coastal prairie, and needlegrass grassland cover most of the mountain (Table 11.1). Oak woodland, riparian scrub, dune scrub, maritime chaparral, and wetland communities are also present within the park. Several plant communities on San Bruno Mountain are rare and protected by the California Department of Fish and Game. These communities include coastal prairie, needlegrass grassland, central dune scrub, and maritime chaparral. In addition, wetlands are afforded protection by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act.

Gorse (*Ulex europaea*), Scotch broom (*Cytisus scoparius*), French broom (*Genista monspessulana*), blue gum eucalyptus (*Eucalyptus globulus*), and other exotics infest large areas of the park, particularly in “the Saddle”. A 66.3-acre infestation of gorse covers much of this area (Fig. 11.1). The spread of invasive species to intact native vegetation remains the greatest threat to the park.

Table 11.1 Principal Plant Community Types Identified within San Bruno Mountain Park

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Coast Live Oak Woodland	coast live oak, buckeye, California bay, California blackberry, coffeeberry	13.7	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Eucalyptus	eucalyptus	57	No protective status for botanical resources
Mixed Exotic Forest	eucalyptus, Monterey pine, Monterey cypress, acacia	25.7	No protective status for botanical resources
Northern Coastal Scrub	coyote brush, poison oak, lizard tail, sticky monkey flower	1518.6	Sensitive if supporting rare species
Blue Blossom Chaparral	blue blossom	17.7	Sensitive if supporting rare species
Northern Maritime Chaparral	bearberry, blue blossom, huckleberry	0.1	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Central Coast Riparian Scrub	arroyo willow, Sitka willow, elderberry	40.4	wetland under Coastal Act Sensitive if supporting rare species
Central Dune Scrub	lupine, mock heather	13.8	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Gorse	gorse	66.3	No protective status for botanical resources
Coastal Prairie	Pacific reedgrass, California oatgrass, red fescue, Idaho fescue	282.3	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Needlegrass Grassland	purple needlegrass, wild oats, California poppy, lupine	94.5	Sensitive if providing habitat for rare plants; considered sensitive by CDFG
Non-Native Grassland	wild oats, softchess brome, radish, teasel, filaree, California poppy, lupine	7.0	Sensitive if providing habitat for rare plants
Non-Native Grassland with elements of Coastal Prairie	wild oats, softchess brome, California oatgrass, red fescue	1.1	Sensitive if providing habitat for rare plants
Non-Native Grassland with Some Needlegrass	wild oats, purple needlegrass, softchess brome, filaree, California poppy, lupine	12.0	Sensitive if providing habitat for rare plants
Freshwater Marsh	cattail, bulrush, oenante	1.4	Sensitive under County Code; wetland under Coastal Act; considered sensitive by CDFG and COE
Seasonal Wetland	rushes, sedge, nutsedge	2.0	Sensitive if providing habitat for rare plants; considered sensitive by CDFG and COE

11.2 VEGETATION CLASSIFICATION AND CONDITION

11.2.1 Upland Forest and Woodland Communities

Coast Live Oak Woodland

Coast live oak woodland within the park is dominated by coast live oak (*Quercus agrifolia*), California bay (*Umbellularia californica*), California buckeye (*Aesculus californica*), and holly-leaved cherry (*Prunus*

ilicifolia). Associated shrubs and herbs include coffeeberry (*Rhamnus californica*), chaparral currant (*Ribes malvaceum*), California rose (*Rosa californica*), blue wild rye (*Elymus glaucus*), and poison oak (*Toxicodendron diversilobum*). Coast live oak woodland makes up approximately 13.7 acres of the park and occurs in Buckeye and Owl Canyons south of Valley Drive.

Mixed Exotic Forest

A number of areas within the park are dominated by one or more introduced trees, primarily blue gum eucalyptus (*Eucalyptus globulus*), Monterey cypress (*Cupressus macrocarpa*), Monterey pine (*Pinus radiata*), and other pine species. In addition, Acacia (*Acacia retinodes*) occurs in some areas just north of the east fork of Colma Creek. These areas are classified as mixed exotic forest on the vegetation map (Fig. 11.1). The specific weeds within these polygons are identified on the invasive species map (Fig. 11.3).

Eucalyptus and Monterey cypress trees were probably planted in the park in the late 1800s or early 1900s (McClintock et al. 1990). These trees have formed dense groves in the Saddle Area. The invasive vines Cape ivy (*Delairea odorata*) and English ivy (*Hedera helix*) are common in the understory of these groves.

Eucalyptus

This class is similar to mixed exotic forest. However, areas classified as eucalyptus have canopies of nearly 100% blue gum eucalyptus.

11.2.2 Chaparral and Scrub Communities

Northern Coastal Scrub

Northern coastal scrub is a dense scrub with scattered openings that grows on hills and bluffs within the influence of coastal fog. On San Bruno Mountain, northern coastal scrub is low and mounded due to strong winds. Common shrubs include coyote brush (*Baccharis pilularis*), lizard tail (*Eriophyllum staechadifolium*), California sagebrush (*Artemisia californica*), sticky monkey flower (*Mimulus aurantiacus*), poison oak (*Toxicodendron diversilobum*), and coffeeberry (*Rhamnus californica*). California blackberry (*Rubus ursinus*) often grows among the shrubs, particularly on north-facing slopes. Blue blossom (*Ceanothus thyrsiflorus*) occurs scattered within this community but may dominate after fire (see “Blue Blossom Chaparral”). Pacific reedgrass (*Calamagrostis nutkaensis*) and California polypody (*Polypodium californicum*) grow in openings, but are more common within coastal prairie which occurs interspersed with coastal scrub on the mountain.

Northern coastal scrub, the most common plant community on San Bruno Mountain, accounts for approximately 1519 acres of the park. Although the Ridge Trail east of the Summit extends through diverse, intact coastal scrub, much of the coastal scrub (and coastal prairie) in the Saddle Area has been overtaken by gorse (*Ulex europea*), blue gum eucalyptus (*Eucalyptus globulus*) and other invasive exotic species.

Blue Blossom Chaparral

Blue blossom chaparral is a dense scrub community up to 12 feet high in which blue blossom (*Ceanothus thyrsiflorus*) accounts for nearly 100% of the vegetative cover. Blue blossom seed germinates readily after fire. In 1964, a fire swept through a large area of coastal scrub on the east-facing slope below the Summit, releasing blue blossom seed from dormancy (McClintock et al. 1990). Blue blossom quickly filled the cleared area forming dense thickets. Over time, however, much of the blue blossom has

senesced, allowing coyote brush and other coastal scrub species to spread back into the area (McClintock et al. 1990). Currently most of this area has returned to coastal scrub with only scattered blue blossom. However, a few stands of dense, nearly monospecific blue blossom still occur on slopes in this area. These areas have been classified as blue blossom chaparral.

Northern Maritime Chaparral

Holland (1986) describes this community as a fairly open chaparral that occurs in areas of summer fog and is dominated by manzanita (*Arctostaphylos* spp.) and ceanothus (*Ceanothus* spp.). Although this community is not fully developed on San Bruno Mountain, small stands occur within coastal prairie and coastal scrub on rocky outcrops. These areas are dominated by manzanitas (*Arctostaphylos uva ursi* and *A. imbricata*) and huckleberry (*Vaccinium ovatum*). Blue blossom may also be present. Only small patches of maritime chaparral occur on San Bruno Mountain. The rare *Arctostaphylos imbricata* occurs in several of these. Montara manzanita (*Arctostaphylos montarensis*) also occurs in one location within this community (Fig. 11.2). Maritime chaparral is considered a sensitive community by the California Department of Fish and Game (CDFG 1999).

Central Dune Scrub

This community consists of shrubs and herbs forming a low-growing scrub with occasional patches of bare sand. Central dune scrub typically grows on the leeward side of active sand dunes along the immediate coast. Within the park this community occurs on an unconsolidated sand deposit potentially blown from dunes in San Francisco (McClintock et al. 1990). Blue beach lupine (*Lupinus chamissonis*), yellow bush lupine (*Lupinus arboreus*), mock heather (*Ericameria ericoides*), and beach evening primrose (*Camissonia* spp.) are among the dune species growing in this community at the western side of the park. The rare San Francisco spineflower (*Chorizanthe cuspidata* var. *cuspidata*) is also found here (Royston et al. 2000, McClintock et al. 1990).

Central dune scrub is considered a sensitive community by the California Department of Fish and Game (CDFG 1999).

Gorse

Gorse (*Ulex europaeus*) forms dense thickets in the Saddle Area where it is joined by French broom (*Genista monspessulana*) and Scotch broom (*Cytisus scoparius*). A program of gorse removal was begun in the early 1980s (McClintock et al. 1990). However, much work remains before these areas can be returned to grassland.

11.2.3 Grassland Communities

A variety of native and non-native grasslands occur on San Bruno Mountain. For mapping purposes, the grassland within the park has been divided into four types. The first two described, coastal prairie and needlegrass grassland, represent native grassland communities. The remaining two are dominated by exotic species.

Coastal Prairie

Coastal prairie is a diverse grassland composed of both turf and bunch grasses and occurs in relatively moist soils within a few miles of the coast, typically on marine terraces and bald hills. California oatgrass (*Danthonia californica*), Pacific reedgrass (*Calamagrostis nutkaensis*), hairgrass (*Deschampsia caespitosa* ssp. *holciformis*), red fescue (*Festuca rubra*) and Idaho fescue (*Festuca idahoensis*) are among the native grasses that occur within this community on San Bruno Mountain. Other species include

California polypody (*Polypodium californicum*), seaside daisy (*Erigeron glaucus*), California plantain (*Plantago erecta*), goldenrod (*Solidago* sp.), rein orchid (*Piperia elegans*), and larkspur (*Delphinium decorum*).

Coastal prairie is considered a sensitive community by the California Department of Fish and Game (CDFG 1999). Rare plants growing in coastal prairie on San Bruno Mountain include Franciscan wallflower (*Erysimum franciscanum*) and coast rock cress (*Arabis blepharophylla*). In addition, the endangered San Bruno Elfin Butterfly utilizes rock outcrops where its host plant stonecrop (*Sedum spathulifolium*) grows. San Bruno Mountain coastal prairie is among the most diverse in California (Stromberg, Kephart, Yadon 2001).

Coastal prairie occurs interspersed with coastal scrub on the north side of East Ridge and Summit Trails as well as in the far southeastern portion of the park. Invasive non-native species such as gorse, Scotch broom, and French broom cover large areas of former coastal prairie in the Saddle and continue to endanger this community in surrounding areas. A second threat to coastal prairie is the expansion of coastal scrub, which has been spreading over native grasslands on the mountain since the cessation of grazing and fire in the mid-1960s (San Bruno Mountain HCP Steering Committee 1991; Royston et al. 2000). Alteration of natural succession will be necessary to protect native grasslands and the butterfly species that depend on them.

Needlegrass Grassland

Needlegrass grassland typically occurs on fine-textured soils on south and southwest facing slopes. Purple needlegrass (*Nassella pulchra*), a perennial bunchgrass, is the dominant species in this community with both native and exotic annuals interspersed among the bunchgrasses. Other common native species include foothill needlegrass (*Nassella lepida*), June grass (*Koeleria macrantha*), California poppy (*Eschscholzia californica*), melic grass (*Melica californica*), soap root (*Chlorogalum pommeridianum*), and blue dicks (*Dichelostemma pulchellum*). Common non-native species include softchess brome (*Bromus hordeaceus*) and wild oats (*Avena fatua*). Extensive needlegrass grassland occurs on the southeastern portion of the main ridge on San Bruno Mountain.

Needlegrass grassland is considered a sensitive community by the California Department of Fish and Game. (CDFG 1999). In addition, Johnny jump-up (*Viola pedunculata*), the host plant for the endangered Callippe Silverspot, occurs in this community on San Bruno Mountain.

Much of the grassland adjacent to the industrial park and quarry has been converted to non-native grassland. Italian thistle (*Carduus pycnocephalus*), radish (*Raphanus sativus*), and fennel (*Foeniculum vulgare*) have spread over parts of the lower grassland. Scotch broom (*Cytisus scoparius*) and French broom (*Genista monspessulana*) grow just outside the park boundary within the industrial park and threaten to move into the park in this area.

Non-native Grassland

Non-native grassland occurs in areas where soil disturbance has allowed introduced grasses and forbs to spread into native grasslands. Dominant species within this community include exotic annual grasses such as wild oats (*Avena* spp.), annual fescue (*Vulpia* spp.), ripgut brome (*Bromus diandrus*), and softchess brome (*Bromus hordeaceus*). Filaree (*Erodium* spp.), plantain (*Plantago* spp.), and fennel (*Foeniculum vulgare*) are also common.

Non-native Grassland with Elements of Coastal Prairie

This category is similar to non-native grassland except that native grasses such as California oatgrass (*Danthonia californica*), red fescue (*Festuca rubra*), Idaho fescue (*Festuca idahoensis*) and occasionally purple needlegrass (*Nassella pulchra*) are scattered through the area. These grasslands occur in areas formerly occupied by coastal prairie. Although these grasslands consist primarily of non-native species, much of the soil has been left intact, allowing native grasses to persist.

Non-native Grassland with Some Needlegrass

This category is similar to non-native grassland except that purple needlegrass (*Nassella pulchra*) is scattered through the area. These grasslands occur in areas formerly occupied by needlegrass grassland.

11.2.4 Riparian and Wetland Communities

Wetlands are afforded protection by the U.S. Army Corp of Engineers under section 404 of the Clean Water Act which regulates discharge of dredged or fill material into the waters of the United States (U.S. Army Corps of Engineers 1987). Procedures for identifying and delineating wetlands are described in the *Corps of Engineers Wetlands Delineation Manual* (U.S. Army Corps of Engineers, 1987).

Central Coast Riparian Scrub

Central coast riparian scrub is a dense, closed-canopy scrub that occurs adjacent to streams and marshes where soils remain wet or moist during most of the year. This community is dominated by arroyo willow (*Salix lasiolepis*). Sitka willow (*S. sitchensis*) and Pacific wax myrtle (*Myrica californica*) are also common canopy species within the park. Understory plants include cow parsnip (*Heracleum lanatum*), California blackberry (*Rubus ursinus*), and rushes (*Juncus effusus* and *Juncus balticus*).

Riparian scrub provides valuable habitat for amphibians and other wildlife. High soil moisture allows plants to grow through most of the year providing ample food for small mammals and insects. Insects in turn attract a number of warblers, sparrows, and other birds to these areas.

Freshwater Marsh

Freshwater marsh is found in areas permanently flooded by freshwater and is dominated by emergent monocots adapted to living in anaerobic soils. Common species include tule (*Scripus acutus*, *S. californicus*), bulrush (*S. robustus*), sedge (*Carex* sp.), Oenanthe (*Oenanthe sarmentosa*) and cattails (*Typha* spp.). Freshwater marsh occurs along the Bog Trail in the northern section of the park near Guadalupe Canyon Parkway.

Freshwater Seep

Seep soils are wet or moist throughout the year as a result of groundwater escaping to the soil surface in these areas. Seeps are dominated by rushes (*Juncus patens*, *J. phaeocephalus*), horsetail (*Equisetum* sp.), and sedges (*Carex* spp.). Seeps are scattered within the park but typically occur near the base of the mountain.

Seasonal Wetland

Seasonal wetland corresponds to the Holland class, vernal marsh, and is characterized by large seasonal fluctuations in water levels. During the winter these areas hold standing water, but by summer they are mostly or completely dry. Species adapted to these conditions include rushes (*Juncus* spp.) sedges (*Carex*

spp.), and umbrella sedge (*Cyperus eragrostis*). Seasonal wetland occurs at the northern end of the park near the East Fork of Colma Creek.

11.2.5 Other Categories

Developed

This category refers to buildings, parking areas, trails, and picnic areas.

Logged Eucalyptus

This 37.7-acre area is a restoration site where blue gum eucalyptus (*Eucalyptus globulus*) has been removed to allow regeneration of native vegetation.

11.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

11.3.1 Special Status Plant Species

Some of the park provides habitat for species of concern, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered. The special status plant species known to occur in the park are listed below in Table 11.2 and mapped in Figure 11.2. Coast rock cress, S.F. wallflower, and S.F. grindelia have been reported in Colma Canyon in the northwest portion of the park (Del Davis Assoc., Inc. and Keoseyan, Dillingham and Seyfarth 1976) but are not mapped due to imprecise location information.

Table 11.2 Special Status Plant Species Known to Occur in San Bruno Mountain State and County Park

Species	Status	Typical Habitat/Comments
coast rock cress (<i>Arabis blepharophylla</i>)	CNPS 4	Coastal prairie, coastal scrub, broadleaved upland forest, coastal bluff scrub
San Bruno Mountain manzanita (<i>Arctostaphylos imbricata</i>)	SE	Rocky areas within chaparral and coastal scrub
Montara manzanita (<i>Arctostaphylos montarensis</i>)	CNPS 1B	Maritime chaparral, coastal scrub
San Francisco Bay spineflower (<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>)	CNPS 1B	Sandy areas within coastal bluff scrub, coastal dunes, coastal prairie, and coastal scrub
San Francisco collinsia (<i>Collinsia multicolor</i>)	CNPS 1B	Closed-cone coniferous forest, coastal scrub; sometimes on serpentinite
San Francisco lessingia (<i>Lessingia germanorum</i>)	FE; SE; CNPS 1B	Coastal scrub (remnant dunes)
San Francisco wallflower (<i>Erysimum franciscanum</i>)	CNPS 4	Chaparral, coastal dunes, coastal scrub, and grassland; often on serpentinite or granitic soil
San Francisco gum plant (<i>Grindelia hirsutula</i> var. <i>maritima</i>)	CNPS 1B	Sandy or serpentinite soil in coastal bluff scrub, coastal scrub, and grassland
Diablo helianthella (<i>Helianthella castanea</i>)	CNPS 1B	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, grassland
Choris's popcorn flower (<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>)	CNPS 1B	Chaparral, coastal prairie, coastal scrub
San Francisco campion (<i>Silene verecunda</i> ssp. <i>verecunda</i>)	CNPS 1B	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, grassland
San Francisco owl's clover (<i>Triphysaria floribunda</i>)	CNPS 1B	Coastal prairie, coastal scrub, grassland; usually on serpentinite. Not seen on San Bruno Mountain since 1960s

FT: Federally Threatened; FE: Federally Endangered; ST: State Threatened; SE: State Endangered; CNPS 1B: California Native Plant Society List 1B (rare, threatened, or endangered in CA) ; CNPS 4: California Native Plant Society List 4 (Watch List). Watch List species are of limited distribution (CNPS 2001).

11.3.2 Larval Food Plants for Rare Butterflies

Known stands of larval food plants for the Mission Blue, San Bruno Elfin, Callippe Silverspot, and Bay Checkerspot Butterflies are mapped with special status species in Figure 11.2.

Table 11.3 Larval Food Plants for Rare Butterflies of San Bruno Mountain

Source: *A Flora of the San Bruno Mountains*

Plant Species	Importance to Butterflies
Lupine (<i>Lupinus albifrons</i> , <i>L. formosus</i> , & <i>L. variicolor</i>)	Larval food plants for the Mission Blue
Stonecrop (<i>Sedum spathulifolium</i>)	Larval food plant for the San Bruno Elfin
Johnny jump-up (<i>Viola pedunculata</i>)	Larval food plant for the Callippe Silverspot
California plantain (<i>Plantago erecta</i>)	Larval food plant for the Bay Checkerspot
Owl's clover (<i>Castilleja densiflora</i>)	Larval food plant for the Bay Checkerspot

11.3.3 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity.

Coast Live Oak Woodland

The oak woodlands on the project site are typical of similar areas of California. Due to changes in land use, however, their distribution and habitat quality has been reduced, such that the community is considered significant by CDFG.

Seasonal Wetlands

Seasonal wetland is sensitive habitat according to the County of San Mateo and CDFG. This status is due to the value of these wet areas to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

Needlegrass Grassland

Needlegrass grassland is considered sensitive habitat according CDFG (CDFG 1999) due to the prevalence of native plant species. These areas exhibit native perennial bunchgrasses and contain other native herbaceous plant species.

Coastal Prairie

The coastal prairie within the park is considered a sensitive habitat according CDFG due to the prevalence of native plant species, potential for rare, threatened or endangered species, and its limited distribution within the region.

Freshwater Marsh

Freshwater marsh is considered sensitive habitat according to the County of San Mateo and CDFG. This status is due to the value of these areas to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

11.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

The special status animal species with potential to occur in the park are listed below in Table 11.4. Table 11.4 was compiled from the following sources:

A Flora of the San Bruno Mountains (McClintock et al. 1990)

Final EIR San Bruno Mountain County Park (Del Davis and Associates, Inc. and Keoseyan, Dillingham and Seyfarth 1976)

Doug Allshouse, Friends of San Bruno Mountain (pers. comm. 2001)

California Natural Diversity Database (CDFG 2001a)

Table 11.4 Special Status Animal Species That May Occur in San Bruno Mountain State & Co. Park

Species	Status	Known/Potential Occurrence	Typical Habitat
Northern Harrier (<i>Circus cyaneus</i>)	DFG CSC ¹	Known. Breeds in park.	Grassland, marsh.
Burrowing Owl (<i>Athene cunicularia</i>)	DFG CSC; FWS MNBMC (applies to burrow sites)	Known	Open grassland. Nests and roosts in abandoned burrows, crevices
Rufous Hummingbird (<i>Selasphorus rufus</i>)	USFWS MNBMC ¹	Known. Potentially breeding in park.	Forests, edges of woods, thickets
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	USFWS MNBMC ¹	Known. Breeds in park.	Typically found in coniferous forest, bogs
Loggerhead Shrike	DFG CSC; FWS MNBMC	Known	Open, brushy fields and the edges of woods
California Horned Lark (<i>Eremophila alpestris actia</i>)	DFG CSC	Known. Potentially breeding in park.	Barren ground with short grass and few bushes
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE; SE; DFG Fully Protected	Potential. Reported in vicinity of park.	Grassland, woodland, or scrub near ponds, marshes, streams, wet meadows, or other water sources.
Coast Range Newt (<i>Taricha torosa torosa</i>)	DFG CSC	Known	Ponds and slow-moving streams
California Red-legged Frog (<i>Rana aurora draytoni</i>)	FT	Known	Grassland, woodland, or forest in or near water

Species	Status	Known/Potential Occurrence	Typical Habitat
Mission Blue Butterfly (<i>Icaricia icarioides missionensis</i>)	FE	Known. Breeds in park	Grasslands with larval food-plants (<i>Lupinus albifrons</i> , <i>L. formosus</i> , & <i>L. variicolor</i>)*
San Bruno Elfin Butterfly (<i>Incisalia mossii bayensis</i>)	FE	Known. Breeds in park	North-facing exposed rock with larval food plant <i>Sedum spathulifolium</i> .*
Callippe Silverspot butterfly (<i>Speyeria callippe callippe</i>)	FE	Known. Breeds in park	Grassy slopes with its food-plant, <i>Viola pedunculata</i> *
Bay Checkerspot Butterfly (<i>Euphydryas editha bayensis</i>)	FT	Potential: identified in park in 1982 but not reported since. Host plants grow in park.	Serpentine soils. Feeds on <i>Plantago erecta</i> and <i>Castilleja densiflora</i> .

FT: Federally Threatened; FE: Federally Endangered; SE: State Endangered; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Fully Protected: CA Dept. of Fish and Game fully protected species; FWS MNBMC: Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern.

¹ status applies to nesting birds

* The ranges of rare butterflies on San Bruno Mountain have been mapped in detail by Royston, Hanamoto, Alley, & Abey in the Draft San Bruno Mountain State and County Park Master Plan (April 2000).

11.5 INVASIVE, NON-NATIVE PLANT SPECIES AND INSECT PESTS

The park supports several invasive, non-native plant species (listed below). Many of these species are mapped in Figure 11.3. Only those species known to be invasive or posing special management problems for the park were mapped. Much of the information used in this map came from polygon descriptions in the volunteer booklets and is of low resolution. For instance, if gorse (*Ulex europaeus*) was reported in a particular polygon, the entire polygon was classified as containing gorse. During ground-truthing surveys, GPS was used to define the limits of exotic species infestations more precisely. However, it was not possible to cover the entire park within the time allotted to these surveys.

Note that the Western Tussock Moth has been included below. This species has infested *Arctostaphylos imbricata* in one are of the park and is mapped in Figure 11.3.

acacia (<i>Acacia</i> spp.)	Italian thistle (<i>Carduus pycnocephalus</i>)
bull thistle (<i>Cirsium vulgare</i>)	Monterey cypress (<i>Cupressus macrocarpa</i>)
Cape ivy (<i>Delairea odorata</i>)	mustard (<i>Brassica rapa</i>)
cotoneaster (<i>Cotoneaster</i> sp.)	ox-eye daisy (<i>Leucanthemum vulgare</i>)
ehrharta (<i>Ehrharta erecta</i>)	oxalis/Bermuda buttercup (<i>Oxalis pes-caprae</i>)
English ivy (<i>Hedera helix</i>)	Pampas grass (<i>Cortaderia jubata</i>)
blue gum eucalyptus (<i>Eucalyptus globulus</i>)	poison hemlock (<i>Conium maculatum</i>)
French broom (<i>Genista monspessulana</i>)	purple loosestrife (<i>Lythrum salicaria</i>)
fennel (<i>Foeniculum vulgare</i>)	pine species (<i>Pinus</i> spp.)
Australian fireweed (<i>Erechtites minima</i>)	radish (<i>Raphanus sativus</i>)
gorse (<i>Ulex europaeus</i>)	rattlesnake grass (<i>Briza maxima</i>)
single-seed hawthorn (<i>Crataegus monogyna</i>)	Scotch broom (<i>Cytisus scoparius</i>)
Himalayaberry (<i>Rubus discolor</i>)	yellow star thistle (<i>Centaurea solstitialis</i>)
ice plant (<i>Carpobrotus edulis</i>)	Western Tussock Moth

11.6 PLANT SPECIES LIST

The plant species list below is only a partial list of the flora of San Bruno Mountain. For a more comprehensive list, the reader is referred to *A Flora of the San Bruno Mountains* by McClintock et al. (1990). The following sources were used to compile Table 11.5:

A Partial Flora of San Bruno Mountain (Himes and Caldwell 2000)
 Volunteer data collected by Doug Allshouse as part of this project

Scientific names follow Hickman (1993).

TABLE 11.5 PLANT SPECIES OF SAN BRUNO MOUNTAIN

Trees

<i>Acacia</i> spp.*	acacia
<i>Aesculus californica</i>	California buckeye
<i>Cupressus macrocarpa</i> *	Monterey cypress
<i>Eucalyptus globulus</i> *	blue gum eucalyptus
<i>Myrica californica</i>	Pacific wax myrtle
<i>Pinus radiata</i> *	Monterey pine
<i>Prunus ilicifolia</i>	holly-leaved cherry
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus chrysolepis</i>	canyon oak
<i>Quercus kelloggii</i> x <i>Q. wislizeni</i>	oracle oak
<i>Quercus wislizenii</i>	interior live oak
<i>Salix lasiolepis</i>	arroyo willow
<i>Salix sitchensis</i>	Sitka willow
<i>Sambucus callicarpa</i>	red elderberry
<i>Umbellularia californica</i>	California bay

Shrubs

<i>Amelanchier utahensis</i>	Utah service-berry
<i>Arctostaphylos andersonii</i>	Santa Cruz manzanita
<i>Arctostaphylos imbricata</i>	San Bruno Mountain manzanita
<i>Arctostaphylos montaraensis</i>	Montara manzanita
<i>Arctostaphylos uva-ursi</i>	bearberry
<i>Artemisia californica</i>	California sagebrush
<i>Baccharis pilularis</i>	coyote brush
<i>Berberis pinnata</i>	coast barberry
<i>Ceanothus thyrsiflorus</i>	blue blossom
<i>Cytisus scoparius</i> *	Scotch broom
<i>Eriophyllum staechadifolium</i>	lizard-tail
<i>Gaultheria shallon</i>	salal
<i>Cytisus scoparius</i> *	French broom
<i>Holodiscus discolor</i>	ocean spray
<i>Lupinus albifrons</i> var. <i>collinus</i>	hill bush lupine
<i>Lupinus chamissonis</i>	blue beach lupine
<i>Mimulus aurantiacus</i>	sticky monkey flower
<i>Oemleria cerasiformis</i>	oso berry
<i>Rhamnus californica</i>	coffeeberry

<i>Ribes malvaceum</i>	chaparral currant
<i>Rosa californica</i>	California rose
<i>Salvia spathacea</i>	pitcher sage
<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	snowberry
<i>Toxicodendron diversilobum</i>	poison oak
<i>Ulex europaea</i> *	gorse
<i>Vaccinium caespitosum</i>	dwarf bilberry
<i>Vaccinium ovatum</i>	California huckleberry

Herbs

<i>Achillea millefolium</i>	yarrow
<i>Anagallis arvensis</i> *	scarlet pimpernel
<i>Anaphalis margaritacea</i>	pearly everlasting
<i>Aphanes occidentalis</i>	western lady's mantle
<i>Arabis blepharophylla</i>	coast rock cress
<i>Arabis glabra</i>	tower mustard
<i>Artemisia douglasiana</i>	mugwort
<i>Avena fatua</i>	wild oat
<i>Bromus diandrus</i> *	ripgut brome
<i>Bromus hordeaceus</i> *	softchess
<i>Calmagrostis nutkaensis</i>	Pacific reedgrass
<i>Calandrinia ciliata</i>	red maids
<i>Cardamine californica</i> var. <i>integrifolia</i>	milk-maids
<i>Cardamine oligosperma</i>	bitter cress
<i>Carduus pycnocephalus</i> *	Italian thistle
<i>Carex barbarae</i>	sedge
<i>Castilleja wightii</i>	Wight's paint brush
<i>Centaurea solstitialis</i> *	yellow star thistle
<i>Chlorogalum pomeridianum</i>	soap plant
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	San Francisco spineflower
<i>Cirsium brevistylum</i>	Indian thistle
<i>Cirsium vulgare</i> *	bull thistle
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Cortaderia jubata</i> *	Pampas grass
<i>Cotula australis</i> *	Australian cotula
<i>Crassula connata</i>	pigmyweed
<i>Cyperus eragrostis</i>	umbrella sedge/nutsedge
<i>Danthonia californica</i>	California oat grass
<i>Delairea odorata</i> *	Cape ivy
<i>Deschampsia cespitosa</i> ssp. <i>holciformis</i>	tufted hairgrass
<i>Dichelostemma capitatum</i>	blue dicks
<i>Dudleya farinosa</i>	powdery Dudleya
<i>Equisetum</i> sp.	horsetail
<i>Erechtites minima</i> *	Australian fireweed
<i>Erigeron glaucus</i>	seaside daisy
<i>Eriogonum latifolium</i>	wild buckwheat
<i>Eriophyllum confertiflorum</i>	golden yarrow
<i>Erodium cicutarium</i> *	red-stemmed Filaree
<i>Erysimum franciscanum</i>	Franciscan wallflower
<i>Eschscholzia californica</i>	California poppy
<i>Festuca rubra</i>	red fescue

<i>Foeniculum vulgare*</i>	sweet fennel
<i>Fragaria californica</i>	California strawberry
<i>Fritillaria affinis</i>	checker lily
<i>Galium aparine*</i>	goose grass/bedstraw
<i>Galium californicum</i>	California bedstraw
<i>Gnaphalium californicum</i>	green everlasting
<i>Grindelia hirsutula</i>	gum plant
<i>Hedera helix*</i>	English ivy
<i>Heracleum lanatum</i>	cow-parsnip
<i>Heterotheca sessiliflora</i> ssp. <i>bolanderi</i>	golden aster
<i>Hypochaeris radicata*</i>	hairy cat's-ear
<i>Hypochaeris glabra*</i>	smooth cat's-ear
<i>Iris douglasiana</i>	Douglas iris
<i>Iris longipetala</i>	coast iris
<i>Juncus balticus</i>	Baltic rush
<i>Juncus patens</i>	spreading rush
<i>Juncus effusus</i>	common rush
<i>Lactuca virosa*</i>	lettuce
<i>Lathyrus vestitus</i>	wild pea
<i>Ligusticum apiifolium</i>	wild celery
<i>Lobularia maritima*</i>	alyssum
<i>Lomatium caruifolium</i>	caraway-leaved lomatium
<i>Lomatium dasycarpum</i>	lace parsnip
<i>Lomatium utriculatum</i>	common lomatium
<i>Lonicera hispidula</i> var. <i>vacillans</i>	hairy honeysuckle
<i>Lupinus variicolor</i>	Lindley's varied lupine
<i>Luzula comosa</i>	wood rush
<i>Marah fabaceus</i>	wild cucumber
<i>Melica californica</i>	melic grass
<i>Monardella villosa</i>	coyote mint
<i>Nassella lepida</i>	foothill needlegrass
<i>Nassella pulchra</i>	purple needlegrass
<i>Oxalis pes-caprae*</i>	Bermuda buttercup
<i>Phacelia californica</i>	California phacelia
<i>Piperia unalascensis</i>	Rein orchid
<i>Plantago coronopus*</i>	cut-leaved plantain
<i>Plantago erecta</i>	California plantain
<i>Plantago lanceolata*</i>	English plantain
<i>Polypodium scouleri</i>	leather-leaf fern
<i>Polypodium californicum</i>	California polypody
<i>Polystichum munitum</i>	sword fern
<i>Potentilla glandulosa</i>	cinquefoil
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern
<i>Ranunculus californicus</i>	California buttercup
<i>Raphanus sativus*</i>	radish
<i>Rubus ursinus</i>	California blackberry
<i>Sanicula arctopoides</i>	footsteps-of-spring
<i>Sanicula crassicaulis</i>	Pacific sanicle
<i>Scrophularia californica</i>	bee plant
<i>Sedum spathulifolium</i>	stonecrop
<i>Senecio aronicoides</i>	butterweed
<i>Senecio vulgaris*</i>	groundsel

<i>Sidalcea malvaeflora</i>	checkerbloom
<i>Smilacina stellata</i>	slim Solomon's seal
<i>Solanum americanum</i>	nightshade
<i>Solanum umbelliferum</i>	blue witch
<i>Solidago canadensis</i> ssp. <i>elongata</i>	Canada goldenrod
<i>Solidago spathulata</i> ssp. <i>spathulata</i>	coast goldenrod
<i>Sonchus asper</i> *	prickly sow thistle
<i>Stachys ajugoides</i> var. <i>rigida</i>	hedge nettle
<i>Stellaria media</i> *	common chickweed
<i>Taraxacum officinale</i> *	red-seeded dandelion
<i>Triphysaria pusilla</i>	dwarf owl's clover
<i>Vicia americana</i> var. <i>americana</i>	American vetch
<i>Viola adunca</i>	blue violet
<i>Viola pedunculata</i>	Johnny jump-up
<i>Vulpia</i> spp*	annual fescue

* introduced species

11.7 ANIMALS SPECIES LIST

Table 11.6 was compiled from the following sources:

- A Flora of the San Bruno Mountains* (McClintock et al. 1990) (butterflies, amphibians, reptiles, mammals)
Final EIR San Bruno Mountain County Park (Del Davis and Associates, Inc. and Keoseyan, Dillingham and Seyfarth 1976) (amphibians, reptiles, mammals)
Doug Allshouse, Friends of San Bruno Mountain (birds)
Draft San Bruno Mountain State and County Park Master Plan (original source: Philip S. Ward) (ants)

TABLE 11.6 ANIMAL SPECIES OF SAN BRUNO MOUNTAIN

Ants

Ponerinae:

Hypoponera opacior

Myrmicinae:

Aphaenogaster occidentalis

Crematogaster coarctata

Leptothorax andrei

Leptothorax nevadensis

Messor andrei

Monomorium ergatogyna

Pheidole californica

Solenopsis molesta

Stenamma diecki

Stanamma punctatoventre

Tetramorium caespitum

Formicinae:

Camponotus clarithorax

Camponotus semitestaceus

Camponotus vicinus

Formica accreta

Formica argentea

Formica integroides

Formica lasioides

Formica moki

Formica neogagates

Formica subelongata

Formica subpolita

Lasius alienus

Prenolepis imparis

Dolichoderinae:

Linepithema humile

Tapinoma sessile

Butterflies

Hesperiidae:

Erynnis tristis
Pyrgus communis
Hylephila phyleus
Hesperia comma dodgei
Polites sabuleti
Ochlodes sylvanoides
Ochlodes agricola
Paratrytone melane
Lerodea eufala

Mournful Dusky-wing
Common Checkered Skipper
Fiery Skipper
Dodge's Skipper
Sandhill Skipper
Woodland Skipper
Rural Skipper
Umber Skipper
Eufala Skipper

Papilionidae:

Battus philenor hirsuta
Papilio zelicaon
Pterourus rutulus
Pterourus eurymedon

Hairy Pipe-vine Swallowtail
Anise Swallowtail
Western Tiger Swallowtail
Pale Swallowtail

Pieridae:

Pontia protodice
Artogeia rapae
Euchloe ausonides
Colias eurytheme

Common White
Cabbage White
Large Marble
Alfalfa Butterfly

Lycaenidae:

Gaeides xanthoides
Satyrium saepium
Callophrys viridis
Incisalia augustus iroides
Incisalia mossii bayensis
Strymon melinus pudica
Everes comyntas
Celastrina ladon echo
Glaucopsyche lygadamus incognitus
Icaricia icarioides missionensis
Icaricia acmon

Great Copper
hedge-row Hairstreak
Green Hairstreak
Western Brown Elfin
Bay Region Elfin
Common Hairstreak
Eastern Tailed Blue
Echo Blue
Behr's Blue
Mission Blue
Acmon Blue

Nymphalidae:

Speyeria callippe
Phyciodes campestris
Phyciodes mylitta
Occidryas chalcedona
Euphydryas editha bayensis
Nymphalis californica
Nymphalis antiopa
Vanessa virginiensis
Vanessa cardui
Vanessa annabella
Vanessa atalanta rubria
Junonia coenia

Callippe Fritillary
Field Crescent
Mylitta Crescent
Chalcedon Checkerspot
Bay Checkerspot
California Tortoise Shell
Mourning Cloak
American Painted Lady
Painted Lady
West Coast Lady
Red Admiral
Buckeye

Satyridae:

Coenonympha californica

Danaus plexippus

California Ringlet

Monarch

Amphibians

Arboreal Salamander

California Newt

California Red-legged Frog

California Slender Salamander

Coast Range Newt

Pacific Tree Frog

Western Toad

Reptiles

California King Snake

California Red-sided Garter Snake

Coast Horned Lizard

Common Garter Snake

Gopher Snake

Northern Alligator Lizard

Northwestern Fence Lizard

Ring-neck Snake

Rubber Boa

Sagebrush Lizard

Southern Alligator Lizard

Western Aquatic Garter Snake

Western Skink

Western Terrestrial Garter Snake

Western Yellow-bellied Racer

Mammals

Audobon Cottontail

Black-tailed Jack Rabbit

Botta's Pocket Gopher

Brush Rabbit

California Ground Squirrel

California Meadow Vole

Deer Mouse

Feral House Cat

Gray Fox

Harvest Mouse

House Mouse

Parasitic Mouse

Long-tailed Weasel

Raccoon

Striped Skunk

Trowbridge's Shrew

Opossum

Birds

Breeds	SPECIES	Breeds	SPECIES	Breeds	SPECIES
?	Bunting, Lazuli		Martin, Purple		Vireo, Warbling
	Bunting, Painted		Merlin		Vulture, Turkey
B	Bushtit	B	Mockingbird, Northern		Warbler, Black-throated Blue
B	Chickadee, Chestnut-backed	B	Nuthatch, Pygmy		Warbler, Black-Throated Gray
B	Cowbird, Brown-headed		Nuthatch, Red-breasted		Warbler, Blue-winged
	Creeper, Brown	B	Oriole, Northern (Bullock's)		Warbler, Chestnut-sided
	Crossbill, Red		Osprey		Warbler, Hermit
	Crow, American		Owl, Barn		Warbler, MacGillivray's
B	Dove, Mourning		Owl, Burrowing		Warbler, Magnolia
	Dove, Rock	B	Owl, Great-horned		Warbler, Nashville
	Eagle, Bald		Owl, Northern Saw-whet	B	Warbler, Orange-crowned
	Eagle, Golden		Parula, Northern		Warbler, Palm
	Falcon, Peregrine		Phoebe, Black		Warbler, Townsend's
	Falcon, Prairie		Phoebe, Say's	B	Warbler, Wilson's
B	Finch, House		Pigeon, Band-tailed		Warbler, Yellow
B	Finch, Purple		Poorwill, Common		Warbler, Yellow-rumped
	Flicker, Northern	B	Quail, California		Audubon's
B	Red-shafted	B	Raven, Common		Myrtle
	Yellow-shafted		Redstart, American		Waxwing, Bohemian
	Flycatcher, Ash-throated	B	Robin, American		Waxwing, Cedar
	Flycatcher, Gray		Sapsucker, Red-breasted		Woodpecker, Acorn
	Flycatcher, Hammond's		Shrike, Loggerhead	B	Woodpecker, Downy
B	Flycatcher, Olive-sided		Sisken, Pine		Woodpecker, Hairy
	Flycatcher, Pacific-slope		Snipe, Common	?	Wood-Pewee, Western
	Flycatcher, Willow		Solitaire, Townsend's	B	Wren, Bewick's
B	Gnatcatcher, Blue-gray		Sparrow, Chipping	?	Wren, Rock
B	Goldfinch, American		Sparrow, Fox	B	Wren, Winter
	Goldfinch, Lawrence's		Sparrow, Golden-crowned	B	Wrentit
B	Goldfinch, Lesser		Sparrow, Grasshopper	B	Yellowthroat, Common
	Goshawk, Northern		Sparrow, Lark		LOCAL TRANSIENTS
	Grosbeak, Black-headed		Sparrow, Lincoln's		Blackbird, Brewer's
	Grosbeak, Rose-breasted		Sparrow, Sage		Blackbird, Red-winged
B	Harrier, Northern		Sparrow, Savannah		Bluebird, Mountain
	Hawk, Broad-winged	B	Sparrow, Song		Bluebird, Western
	Hawk, Cooper's	B	Sparrow, White-crowned		Cormorant, Double-crested
	Hawk, Ferruginous		Sparrow, White-throated		Duck, Ruddy
B	Hawk, Red-shouldered	B	Starling, European		Egret, Cattle
B	Hawk, Red-tailed	B	Swallow, Barn		Egret, Great
	Hawk, Sharp-shinned	B	Swallow, Cliff		Goose, Canada
	Hawk, Swainson's		Swallow, Northern Rough-winged		Grebe, Western
B	Hummingbird, Allen's		Swallow, Tree		Gull, California
B	Hummingbird, Anna's		Swallow, Violet-green		Gull, Glaucous-winged
	Hummingbird, Calliope		Swift, Black		Gull, Herring
?	Hummingbird, Rufous		Swift, Vaux's		Gull, Mew
B	Jay, Scrub	B	Swift, White-throated		Gull, Ring-billed
B	Jay, Steller's		Tanager, Western		Gull, Western
B	Junco, Dark-eyed	B	Thrasher, California		Heron, Great Blue
B	Kestrel, American		Thrasher, Sage		Loon, Common
	Killdeer		Thrush, Hermit		Parakeet, Green
	Kingbird, Western	B	Thrush, Swainson's		Pheasant, Ring-necked
	Kinglet, Golden-crowned		Thrush, Varied		Pipit, Water
	Kinglet, Ruby-crowned	B	Towhee, California		Rail, Virginia
	Kite, White-tailed		Towhee, Green-tailed		Sparrow, House
?	Lark, Horned	B	Towhee, Spotted		Tern, Caspian
	Meadowlark, Western	B	Vireo, Hutton's		Tern, Forster's
	Mallard		Vireo, Solitary (Cassin's)		Whimbrel

12. SAN PEDRO PARK

12.1 LOCATION AND FEATURES OF SAN PEDRO PARK

San Pedro Park encompasses approximately 1,250 acres, of which approximately 433 acres (including much of the South Fork of San Pedro Creek) are leased from the North Coast County Water District. The park is situated in the foothills of Pacifica, in the coastal portion of northern San Mateo County. The park lies in the northern portion of the Santa Cruz Mountains and abuts other open space lands, including lands owned by the Golden Gate National Recreation Area (GGNRA) (e.g., Sweeney Ridge), the North Coast County Water District, California State Parks Department (e.g., McNee Ranch State Park) and the San Francisco Water District. The park contains the South and Middle Forks of San Pedro Creek; both of these creeks have perennial streamflow.

The lands that are now San Pedro Park were historically utilized by native Americans, then mission and European settlers for farming. More recently, the South Fork of San Pedro Creek was used for a trout farm. The valley that extends along the Middle Fork of San Pedro Creek was used for grazing and commercial farming (i.e., Weiler Ranch).

San Pedro Park provides passive recreational uses, including picnicking and hiking. Bicycle use is restricted to the Weiler Ranch Road and asphalt surfaces. Special attractions include the South and Middle Forks of San Pedro Creek, which provide spawning areas for migratory steelhead. During the rainy season, Brooks Falls is an attraction as the fall drops 175 feet in three tiers.

The majority of the park land is undeveloped and supports nine principal plant community types. The primary plant community types documented in the park are depicted in Figure 12.1 and are listed below in Table 12.1.

The primary vegetation types are riparian woodland, coast live oak woodland, maritime chaparral, coastal scrub, coyote brush scrub, non-native grassland, coastal prairie and eucalyptus tree groves. In addition to native vegetation types, there are also areas showing evidence of past disturbance, such as areas dominated by invasive, non-native plants. Old residential areas, fire roads and old agricultural lands occur in the park, resulting in areas dominated by non-native plant species. As depicted on the plant community map (Figure 12.1), the park contains a diverse assemblage of primary plant community types. The diverse assemblage of community types are the result of differences in the site's topography, substrate, fire history, and past land uses.

The historic land uses within portions of the park lands (i.e., farming, residential use, trout farming) has resulted in the planting and subsequent natural revegetation of non-native trees and understory plants. The most notable non-native trees in the park are the blue gum eucalyptus and Monterey pine. These trees have altered portions of the valley and hillside landscape. The park also supports numerous non-native shrubs and groundcovers, including some species that are considered to be invasive pests. The dominant invasive species are Cape ivy, periwinkle, French broom and pampas grass.

Despite the incursion of human-induced vegetation, the park supports several sensitive upland habitats and special status plant species. The park land affords considerable plant biodiversity including examples of plant communities and species which are indigenous to the region. The park is known to support plant communities that are considered sensitive; these include: riparian woodlands along watercourses, oak woodland, coastal terrace prairie and maritime chaparral. The maritime chaparral supports rare species unique to this region of the world, including Montara manzanita and heart-leaved manzanita, two evergreen shrubs. The occurrence of these two species, as well as other locally unique plant species, underscores the importance of these habitats to the region's botanical diversity.

Table 12.1 Principal Plant Community Types Identified within San Pedro Park

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Mixed Riparian Woodland	willow, dogwood, red elderberry, California blackberry, stinging nettle	65.6	Sensitive under County Code
Alder/Willow Riparian Woodland Scrub	red alder, willow, California blackberry	2.2	Sensitive under County Code
Maritime Chaparral	Montara manzanita, heart-leaved manzanita, coffee berry, buckbrush	535.1	Sensitive, known habitat for rare plants
Coast Live Oak Woodland	coast live oak, buckeye, California blackberry, coffeeberry	4.7	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Coastal Terrace Prairie	California oatgrass, purple needlegrass, various wildflowers	1.1	Sensitive if habitat for rare plants; considered sensitive by CDFG
Non-Native Grassland	wild oats, soft brome, filaree, California poppy, lupine	26.5	Sensitive if providing habitat for rare plants
Eucalyptus Tree Groves	blue gum eucalyptus, Monterey pine, French broom	79.7	No protective status for botanical resources
Coastal Scrub	coyote brush, California sage, oceanspray, coffeeberry, poison oak	357.5	Sensitive if supporting rare species
Coyote Brush Scrub	coyote brush, poison oak	60.3	Sensitive if supporting rare species

12.2 VEGETATION CLASSIFICATION AND CONDITION

12.2.1 Upland Forest and Woodland Communities

Coast Live Oak Woodland

The park contains approximately 4.7 acres of woodland dominated by coast live oak (Table 12.1). The woodland primarily occurs on a north and northwest-facing slope near the park entrance. The overstory is dominated by coast live oak (*Quercus agrifolia*) and there are occurrences of young coast redwood (*Sequoia sempervirens*). The canopy cover tends to be dense, greater than 50 percent. In the park, the woodland abuts the more mesic riparian woodland along San Pedro Creek. Compared to the chaparral and coastal scrub areas, the oak woodland occurs in areas having deeper soil profiles that are rich in organic matter, and have a thick duff layer. The common shrub species are poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), bracken fern (*Pteridium aquilinum*), Douglas iris (*Iris douglasiana*), hazel (*Corylus cornuta*), sword fern (*Polystichum munitum*), gooseberry (*Ribes glutinosum*), and yerba buena (*Satureja douglasii*).

Invasive, non-native plant species were not prevalent within the oak woodland.

The CDFG recognizes coast live oak woodland as a significant habitat type that has been reduced in extent compared to historical levels. The CDFG typically has a policy of "no net loss" to protect oak forests.

Eucalyptus Tree Groves

The eucalyptus tree groves within the park, covering approximately 79.7 acres (Table 12.1) are dominated by blue gum eucalyptus (*Eucalyptus globulus*). These tree groves are non-native, with most planted in the early-mid 1900's for firewood and as landscape trees. The eucalyptus tree groves occur in areas that historically were vegetated with coast live oak woodland or maritime chaparral. Although the blue gum

eucalyptus is the dominant tree species, other trees were also observed within these groves, such as Monterey pine (*Pinus radiata*), young coast live oaks, young Douglas firs (*Pseudotsuga menziesii*) and coast redwood (near the former trout farm). Other associated understory species observed in the eucalyptus tree groves are California mugwort (*Artemisia douglasiana*), California blackberry, toyon (*Heteromeles arbutifolia*), coyote brush (*Baccharis pilularis*), Douglas iris, and velvet grass (*Holcus lanatus*).

Large expanses of eucalyptus groves occur along the ridge south of the visitor center. Smaller groves of eucalyptus also occur in the upper park areas and along the perimeter of the park where the park abut residential areas.

The non-native eucalyptus tree is adapted to natural fire. In their native habitat (i.e., Australia), eucalyptus tree forests are subject to natural fires. The tree's seed is released from its cap after a fire and, as the Monterey pine seed discussed above, is adapted to germinating in open, fire scorched soil. The thick duff beneath the trees (comprised of leaf and bark litter) as well as the numerous bark peels on the tree trunk provides favorable conditions for crown fires. In recognition of the fire danger these trees pose to nearby residential areas and the fact that these groves are non-native, there are opportunities to remove these trees and re-establish native woodlands (e.g., oak woodland) or maritime chaparral.

12.2.2 Chaparral and Scrub Communities

Northern Maritime Chaparral

The chaparral community is characterized by the presence of dense evergreen shrubs, typically manzanita. The parklands support northern maritime chaparral. The park contains approximately 535.1 acres of chaparral, primarily along the south-facing slopes and uppermost ridges based on the volunteer surveys and review of aerial photos (Table 12.1).

The chaparral within the park is comprised of dense, impenetrable stands of shrubs, including heart-leaved manzanita (*Arctostaphylos andersonii*), Montara manzanita (*Arctostaphylos montaraensis*), chinquapin (*Chrysolepis chysophylla*), oceanspray (*Holodiscus discolor*), poison oak, huckleberry (*Vaccinium ovatum*) western leatherwood (*Dirca occidentalis*) blue blossom Ceanothus (*Ceanothus thrysiflorus*), and shaggy-bark manzanita (*Arctostaphylos tomentosa* ssp. *crinita*). Other plants are present, but in lesser quantities, such as bracken fern, mock heather (*Ericameria ericoides*), yerba santa (*Eriodictyon californicum*), California blackberry, salal (*Gautheria shallon*) and silk tassel (*Garryea elliptica*).

Montara manzanita, a plant species endemic to the decomposed granitic soils between San Bruno and Montara Mountain, occurs within the park.

The maritime chaparral supports occurrences of invasive, non-native plant species, most notably pampas grass (*Cortaderia jubata*). These perennial plants thrive in sunny, previously disturbed soils, such as along roads, cut slopes and in other previously disturbed areas. As the pampas grass grows into dense stands and excludes the growth of most native plant species, its presence reduces the plant diversity of the habitat. The chaparral within the park offers opportunities to remove and/or control the spread of these invasive understory plant species. The chaparral also offers opportunities for the preservation and management of special status plant species (e.g., Montara and heart-leaved manzanitas).

Plant species growing in these areas have adaptations to survive the dry, rocky soils; their long root systems obtain moisture from deep fractures in the rock. The chaparral is dominated by stump (or crown)-sprouting shrubs that grow new stems from buds on the root crown, and as such, are adapted to, and respond well, to wildfire. Typical stump (crown)-sprouting shrubs include chamise, brittle-leaved manzanita, toyon, poison oak and buck brush. Other plant species have seeds adapted to periodic burning; water easily penetrates the

seed coat following exposure to intense heat from a fire (e.g., Montara manzanita and heart-leaved manzanita). Plants, such as deerweed and sticky monkey flower, are shallow-rooted and shorter lived than the other shrubs. Many annual plants are also adapted to wildfire. Their seeds lie dormant underground from one fire to the next, sprouting in the post-fire open areas of the shrub lands.

According to the CNDDDB, maritime chaparral is considered a "threatened" community by the CNDDDB (CNDDDB, 1999), due to the predominance of rare or endangered species, such as Montara and heart-leaved manzanita.

Coyote Brush Scrub

Thickets of coyote brush scrub dominate the hillsides within the park. The scrub habitat is dominated by coyote brush, but also includes scattered occurrences of poison oak, coffee berry (*Rhamnus californica*), California blackberry, California sage (*Artemisia californica*), sanicle (*Sanicula* sp.), common yarrow (*Achillea millefolium*), hedge nettle (*Stachys* sp.), California bee plant (*Schrophularia californica*) and pampas grass.

The park supports approximately 60.3 acres of coyote brush scrub.

Coastal Scrub

The park supports areas of scrub habitat that are dominated by soft and semi-soft evergreen shrubs. These areas occur along the south-facing slopes in the park. The park contains approximately 357.5 acres of coastal scrub (Table 12.1).

Shrubs of coyote brush, coffeeberry, California sage (*Artemisia californica*), red elderberry (*Sambucus callicarpa*), oceanspray and poison oak interspersed with California blackberry and bracken fern are the dominant plant species that were observed in the scrub habitat of the park. Associated species include chaparral clematis (*Clematis lasiantha*), mugwort, dogwood, sticky monkey flower (*Mimulus aurantiacus*), and toyon.

Grasses and forbs are not prevalent within the coastal scrub. However, plants such as pearly everlasting (*Gnaphalium bicolor*), hedge nettle (*Stachys bullata*), Fremont's star lily (*Zigadenus fremontii*) and sanicle (*Sanicula bipinnatifida*) are expected to occur in the park.

The scrub areas within the park are subject to infestation from invasive, non-native plant species. In the lower elevation areas where scrub has naturally colonized previously grazed side slopes, perennial plants of poison hemlock (*Conium maculatum*) were observed. Other pest plants, such as velvet grass, canary grass (*Phalaris* spp.) and Italian thistle (*Carduus pycnocephalus*) were observed in some areas. Invasive biennial plants were also observed in the scrub habitats, including wild mustard (*Brassica* spp.) and wild radish (*Raphanus sativa*). These plants grow well in the previously disturbed soils. As these plants grow into dense stands, they successfully compete with, and over time, exclude the growth of the native plant species, such that their presence reduces the plant diversity of the habitat. The coastal scrub areas within the park offer opportunities to remove and/or control the spread of these invasive plant species.

12.2.3 Grassland Communities

Several areas within the park are comprised of grassland. Based on the review of the aerial photographs and the volunteer's field reconnaissance surveys, approximately 27.6 acres of grassland occur in the park (Table 12.1). Some of these grasslands are expected to be comprised of native grasses, however, surveys that are more detailed would be necessary to determine this.

Non-Native Grassland

The grassland community within the lower elevation parklands has been modified by historical land uses. Where these grasslands are situated on coastal marine terraces, they probably historically supported a dense growth of native perennial bunchgrasses and other native herbaceous species. Termed “coastal terrace prairie”, these grasslands were characterized by the presence of California oatgrass (*Danthonia californica*), a native perennial grass that is considered by many botanists to be indicative of coastal terrace prairie. In most locations, these historic prairie grasslands were converted to agricultural land uses. Most areas were subject to intensive cattle grazing during the rancho/land grant period, and then a gradual conversion to row crops and orchards on the terrace-tops during the post-European period. Currently, the grasslands in the lower elevation park areas occur on fallow agricultural fields on the terrace-tops and on previously grazed side-slopes. The previous land uses significantly altered the plant composition of the historic prairie such that the grasslands now support only pockets of native perennial grasses or forbs that would be typical of an intact coastal terrace prairie. The existing grasslands are now dominated by annual, non-native grass species (primarily of European origin). Although the lower elevation park areas may have historically supported a native prairie, the grasslands would be considered California annual grassland (CDFG, 1997), or non-native grassland. Approximately 26.5 acres of this community occur within the park, as depicted on figure 12.1.

The non-native grasslands are dominated by non-native grass species, such as wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), Harding/canary grass (*Phalaris* spp.), rattail fescue (*Vulpia myuros*) and Italian ryegrass (*Lolium multiflorum*). Other non-native species observed within the grasslands include wild mustard (*Brassica* sp.), wild radish (*Raphanus sativa*), ripgut brome (*Bromus diandrus*), bindweed (*Convolvulus arvensis*), sheep sorrel (*Rumex acetosella*), redstem filaree (*Erodium cicutarium*), cut-leaved geranium (*Geranium dissectum*), English plantain, rattlesnake grass (*Briza maxima*), bristly ox-tongue (*Picris echioides*), narrow-leaved clover (*Trifolium angustifolium*), sow thistle (*Sonchus asper*), Italian thistle, bull thistle (*Cirsium vulgare*), cat’s ear (*Hypochaeris* sp.), and dandelion (*Taraxacum officinale*). Scattered throughout the grassland are some native plants; species observed include California poppy (*Eschscholtzia californica*), hairy vetch (*Vicia villosa*), coyote brush, California rose (*Rosa californicum*) and wild rye (*Elymus glaucus*).

All of the grasslands within the park are subject to infestation from invasive, non-native plant species. In areas left fallow, perennial plants, such as poison hemlock, fennel, velvet grass and Harding grass are commonly observed. Invasive annual plants were also observed, including yellow star thistle (*Centaurea solstitialis*), wild mustard and wild radish. These plants grow well in the previously disturbed soils. As these plants grow into dense stands, they successfully compete with, and over time, exclude the growth of the native plant species, such that their presence reduces the plant diversity of the habitat. The grasslands within the park offer opportunities to remove and/or control the spread of these invasive plant species.

Coastal Terrace Prairie

Some areas within the lower elevation areas still support plants typical of remnant coastal terrace prairie. This area was observed to support dense stands of California oatgrass and purple needlegrass (*Nassella pulchra*). Other plant species typical of prairie habitats may also occur, such as slender rush (*Juncus tenuis*), bi-color lupine (*Lupinus bicolor*), owl’s clover (*Castilleja densiflora*), suncups (*Camissonia ovata*), horkelia (*Horkelia* sp.), goldfields (*Lasthenia californica*), Kellogg’s yampah (*P. kelloggii*) and footsteps of spring (*Sanicula arctopoides*).

As discussed above for non-native grassland, the prairie areas would benefit from the removal of invasive, non-native plants.

12.2.4 Riparian and Wetland Communities

Cold season deciduous forests occur along the stream channels within the park. These forests are commonly referred to as *riparian forests*. This streamside vegetation typically grows up to the bank full-flow line and may extent beyond this line if soil moisture levels are high or frequent flooding occurs. Characteristic woody vegetation species could include (but are not limited to): various types of willow (*Salix* sp.), red alder (*Alnus rubra*), red elderberry and dogwood (*Cornus* sp.). The stream channels usually exhibit some evidence of scour and/or deposition. The high water regime of a stream is an important component in the species composition along a watercourse, as most riparian plant species are adapted to colonizing recently disturbed (i.e., flooded, scoured or depositional areas) portions of a stream.

These deciduous forests typically occur along perennial and intermittent streams shown as a solid or dashed blue line on USGS 1:24,000 scale topographical maps and some ephemeral streams with well-defined channels. Figure 12.1 displays the occurrences of riparian woodland within the park based on the volunteer surveys and limited ground-truthing. Approximately 67.8 acres of riparian woodland occur in the park.

Mixed Riparian Woodland

This riparian type occurs along both perennial and intermittent creeks in the park. Willows (*Salix* spp.) are the dominant trees; arroyo willow (*Salix lasiolepis*) and yellow willow (*Salix lucida* ssp. *lasiandra*) are the most common species within the park. Other common plant species include poison oak and coffee berry. Along perennial streams, such as the South and Middle Forks of San Pedro Creek, red alder (*Alnus rubra*) is co-dominant with willow. Other trees are also evident, such as dogwood and red elderberry. Understory plant species include California polypody (*Polypodium californicum*), California blackberry, stinging nettle (*Urtica dioica*), scouring rush (*Equisetum arvense*), hedge nettle, flowering currant (*Ribes sanguineum*), hazelnut, thimbleberry (*Rubus parviflorus*). The forest grows as narrow corridors along the stream edge.

12.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

12.3.1 Special Status Plant Species

Some of the parklands provide habitat for plant species of concern, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered. In addition, some of the lands provide habitat for plants recognized as rare or locally unique by CDFG or CNPS.

The special status plant species known or with potential to occur in the vicinity of the park are listed in Table 12.2. Three of these, the Montara manzanita, heart-leaved manzanita and western leatherwood are Federal Species of Concern and are on CNPS List 1B. None of the species are listed under the State or Federal Endangered Species Acts.

In addition to special status plant species that are listed on CNPS List 1B, there are species that local botanists, including the local chapters of the California Native Plant Society, consider to be specialty plants of the region. Such species may have limited occurrences within the Santa Cruz Mountains (locally rare), or may be endemic to the parkland area. These plants are typically on CNPS List 4, a watch list. Spring surveys would be needed to confirm the presence of any of these resources on parklands.

Table 12.2 lists the specialty plant species that have been documented, observed or have potential to occur in the park. Figure 12.2 illustrates reported locations of special status plant species and plant communities in the park.

Table 12.2. List of Special Status Plant Species Known or With Potential to Occur in San Pedro Park, San Mateo County, California

Species	Status	Observed on Site/Potential Habitat
Blasdale's bentgrass (<i>Agrostis blasdalei</i>)	List 1B; FSC	Potential
Coast lily (<i>Lilium maritimum</i>)	List 1B; FSC	Potential
Coast wallflower (<i>Erysimum ammophilium</i>)	List 1B; FSC	No/Unlikely
San Francisco popcorn flower (<i>Plagiobothrys diffusus</i>)	List 1B; SE; FSC	No/Potential
Fragrant fritillary (<i>Fritillaria liliacea</i>)	List 1B; FSC	Potential
Hickman's cinquefoil (<i>Potentilla hickmanii</i>)	List 1B; SE; FE	No/Unlikely Potential
Kellogg's horkelia (<i>Horkelia cuneata ssp. sericea</i>)	List 1B; FSC	Potential
Marin checkerbloom (<i>Sidalcea hickmanii ssp. viridis</i>)	List 1B; FSC	Potential
Pt. Reyes horkelia (<i>Horkelia marinensis</i>)	List 4; FSC	Potential
Gairdner's yampah (<i>Perideridia gairdneri ssp. gairdneri</i>)	List 4; FSC	Potential
Pt. Reyes meadowfoam (<i>Limnanthes douglasii sulphurea</i>)	List 1B; SE; FSC	No/Unlikely
San Francisco gumplant (<i>Grindelia hirsutula var. maritima</i>)	List 1B; FSC	No/Unlikely
San Francisco champion (<i>Silene verecunda ssp. verecunda</i>)	List 1B; FSC	Potential
San Francisco owl's clover (<i>Triphysaria floribunda</i>)	List 1B; FSC	Potential
Santa Cruz clover (<i>Trifolium buckwestiorum</i>)	List 1B	No/Unlikely
Santa Cruz microseris (<i>Stebbinososeris decipiens</i>)	List 1B; FSC	No/Unlikely
Artists popcornflower (<i>Plagiobothrys chorisianus var. chorisianus</i>)	List 3	No/Potential
Montara manzanita (<i>Arctostaphylos montaraensis</i>)	List 1B; FSC	Known occurrences in park
Heart-leaved manzanita (<i>Arctostaphylos andersonii</i>)	List 1B; FSC	Known occurrences in park
western leatherwood (<i>Dirca occidentalis</i>)	List 1B; FSC	Known occurrences in park

FSC: Federal Species of Concern

FE: Federally Endangered

SE: State Endangered

CNPS Status:

List 1B: These plants (predominately endemic) are rare through their range and are currently vulnerable or have a high potential for vulnerability due to limited or threatened habitat, few individuals per population, or a limited number of populations. List 1B plants meet the definitions of Section 1901, Chapter 10 of the CDFG Code.

List 3: This is a review list of plants that lack sufficient data to assign them to another list.

List 4: List 4 is a watch list of plants with limited distribution in the state that has low vulnerability and threat at this time. These plants are uncommon, often significant locally, and should be monitored.

12.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. Four of the principal plant communities within the park—riparian woodland, oak woodland, northern maritime chaparral and coastal terrace prairie—are designated as a high priority in the CNDDDB (CDFG 1999). This category contains native plant communities that are regarded by CDFG as having special significance under the California Environmental Quality Act. Riparian habitats, as well as habitats supporting rare species, are also considered sensitive under the County of San Mateo General Plan and Local Coastal Plan.

Riparian Forests

The riparian forests are all considered as sensitive habitats according to the County of San Mateo and CDFG. This status is due to the value of these forests to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level. These habitat types are considered areas of high biological quality, warranting preservation and management.

Northern Maritime Chaparral

The Montara manzanita series of maritime chaparral is an uncommon plant community found only in greater Montara Mountain region. Maritime chaparral is considered a "threatened" plant community by the California Department of Fish and Game (CNDDDB, 2000). According to the CNDDDB, Montara manzanita-dominated chaparral is continues to be reduced in extent due human activities (i.e., developments).

Coast Live Oak Woodland

The oak woodland on the project site is typical of similar areas of California. Due to changes in land use, however, their distribution and habitat quality has been reduced, such that the community is considered significant by CDFG.

Coastal Terrace Prairie

The coastal terrace prairie within the park is considered a sensitive habitat according CDFG due to the prevalence of native plant species, potential for rare, threatened or endangered species and its limited distribution within the region. The prairie habitat contains native grass stands with the highest density of native plants. These areas exhibit native perennial bunchgrasses and contain other native herbaceous plant species.

12.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

Some of the park provides habitat for species of concern, including those listed by the USFWS or CDFG as threatened or endangered. The special status animal species known or with potential to occur in the park are listed in Table 12.3.

Table 12.3 Special Status Animal Species That May Occur in San Pedro Park

Species	Status	Known/Potential Occurrence	Typical Habitat
Steelhead-Central CA Coast ESU (<i>Oncorhynchus mykiss</i>)	FT	Known: San Pedro Creek (EDAW, Inc. 1975)	Rivers, estuarine and marine waters.
California Tiger Salamander (<i>Ambystoma tigrinum californiense</i>)	DFG CSC, Protected	Potential	Grassland or open woodland near seasonal or permanent water
California Red-legged Frog (<i>Rana aurora draytoni</i>)	FT	Potential	Grassland, woodland, or forest in or near water
Western Pond Turtle (<i>Clemmys marmorata</i>)	DFG CSC, Protected	Potential	Ponds, marshes, rivers, or streams with aquatic vegetation
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE; SE; DFG Fully Protected	Potential	Grassland, woodland, or scrub near ponds, marshes, streams, wet meadows, or other water sources
Northern Harrier (<i>Circus cyaneus</i>)	DFG CSC ¹	Potential	Grassland, marsh.
Cooper's Hawk (<i>Accipiter cooperii</i>)	DFG CSC ¹	Potential	Woodland, forest
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	DFG CSC ¹	Potential	Mixed woodlands
Vaux's Swift (<i>Chaetura vauxi</i>)	DFG CSC; USFWS MNBMC ¹	Potential	Woodlands near lakes, rivers, streams
Rufous Hummingbird (<i>Selasphorus rufus</i>)	USFWS MNBMC ¹	Potential	Forests, edges of woods, thickets
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	DFG CSC; USFWS MNBMC	Potential	Open, brushy fields and the edges of woods
Yellow Warbler (<i>Dendroica petechia</i>)	DFG CSC ¹	Potential	Wet habitats (especially with willows and alders), open woodlands, gardens
Lawrence's Goldfinch (<i>Carduelis lawrencei</i>)	USFWS MNBMC	Potential	Grassy slopes and chaparral

FT: Federally Threatened; FE: Federally Endangered; SE: State Endangered; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Fully Protected: CA Dept. of Fish and Game fully protected species; USFWS MNBMC: U.S. Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern.

¹ status applies to nesting birds

12.5 INVASIVE, NON-NATIVE PLANT SPECIES AND PATHOGENS

12.5.1 Invasive, Non-native Plant Species

Blue gum eucalyptus, pampas grass and French broom (*Genista monspessulanus*), three invasive non-native plant species, have become established in several locations within the park. Their occurrences are discussed in the plant community type description. Other species observed within the park include scattered occurrences of periwinkle, Italian thistle, wandering Jew, yellow star thistle, English ivy, Cape ivy, poison hemlock, Harding grass, Monterey cypress and Monterey pine. The distribution of these plants, based on the volunteer field reconnaissance surveys and limited ground-truthing, is depicted in Figure 12.3.

12.5.2 Pathogens

California Oak Mortality disease, formerly known as Sudden Oak Death disease, is potentially within the parklands. The pathogen responsible for this disease is either a new or newly introduced species of water mold fungus in the genus *Phytophthora*. This disease was first noticed to be present in the County in 1997 or 1998 and has, in some areas, since reached epidemic proportions.

California Oak Mortality is known to infect tanoak (*Lithocarpus densiflorus*) (which is extremely susceptible), coast live oak (*Quercus agrifolia*), Shreve oak (*Q. parvula shrevei*), and black oak (*Q. kelloggii*). Also affected, but apparently with less mortality, are California bay (*Umbellularia californica*) and madrone (*Arbutus menziesii*). Recently the disease has been found on wild evergreen huckleberry (*Vaccinium ovatum*) and manzanita (*Arctostaphylos*) shrubs, and nursery stock of rhododendrons (*Rhododendron* spp.). To prevent spread of the disease into Oregon, the Oregon Department of Agriculture has imposed an emergency Sudden Oak Death quarantine against California that regulates the host oak species, some of their associated wood products, and rhododendron stock.

The disease was first detected in 1995 on tanoaks in Marin County. The disease has subsequently spread both locally and regionally throughout central coastal California. It has now been discovered in portions of Sonoma, Napa, San Mateo, Santa Clara, Santa Cruz, and Monterey Counties. California Oak Mortality is believed to take three or more years to kill a tree, and many infected oaks and tanoaks show no visible external symptoms. The symptoms of California Oak Mortality are illustrated on the California Oak Mortality Task Force web page located at www.suddenoakdeath.org. Additional symptoms include total or partial discoloration of the live crown, with the dead leaves remaining on the tree for a period of time, especially in tanoak. This set of symptoms is used to determine the presence of the syndrome, although only DNA testing can accurately determine the presence of this new species of *Phytophthora*. A “black zonal line” bordering lesions in the wood, observed by cutting away the bark, is diagnostic of this and other *Phytophthora* infections. A microbial culture of tissue from the zonal line may be used to confirm the diagnosis. California Oak Mortality is known to spread via infected wood and via “resting asexual spores” in soil or water. The California Oak Mortality *Phytophthora* has been found in rainwater runoff below infected oak trees. Its ability to spread in soil or water makes California Oak Mortality similar to the better-studied Port Orford cedar disease. However, unlike Port Orford cedar disease, California Oak Mortality also appears to have an aerial component of spread, perhaps through detached sporangia that become airborne.

Although no trees were observed with obvious signs of California Oak Mortality during the 2001 field survey, it may occur in the oak woodland of the park now or in the future. If California Oak Mortality becomes prevalent within the park in the future, the oak woodland would be susceptible to death. Opportunities exist in the park to inform park managers and visitors on measures to prevent/control the spread of this fungus.

(Note: The information used to prepare the above account of COM was derived from Steve Singer, forest ecologist, and from Garbelotto et al. 2001, Management and Regulations Committee of the California Oak Mortality Task Force 2001).

12.6 PLANT SPECIES LIST

The plant list below was compiled using the following source:

Environmental Impact Report San Pedro Valley County Park San Mateo County Parks & Recreation Department (EDAW, Inc. 1975)

TABLE 12.4 PLANT SPECIES OF SAN PEDRO PARK

Trees

<i>Alnus oregona</i>	red alder
<i>Arbutus menziesii</i>	madrone
<i>Cupressus macrocarpa*</i>	Monterey Cypress
<i>Eucalyptus globulus*</i>	blue gum
<i>Myrica californica</i>	California wax myrtle
<i>Pinus radiata*</i>	Monterey pine
<i>Pseudotsuga menziesii</i>	Douglas fir
<i>Quercus agrifolia</i>	coast live oak
<i>Salix lasiolepis</i>	arroyo willow
<i>Salix scouleriana</i>	Scouler's willow
<i>Sequoia sempervirens</i>	coast redwood
<i>Umbellularia californica</i>	California bay

Shrubs

<i>Arctostaphylos andersonii</i>	heartleaf manzanita
<i>Arctostaphylos montarensis</i>	Montara manzanita
<i>Arctostaphylos tomentosa</i>	shaggybarked manzanita
<i>Artemisia californica</i>	California sagebrush
<i>Baccharis pilularis</i> var. <i>consanguinea</i>	coyote brush
<i>Ceanothus thyrsiflorus</i>	blue blossom
<i>Chrysolepis chrysophylla</i>	golden chinquapin
<i>Cornus sericea</i> ssp. <i>sericea</i>	creek dogwood
<i>Corylus cornuta</i> var. <i>californica</i>	hazelnut
<i>Eriodictyon californicum</i>	yerba santa
<i>Eriophyllum confertiflorum</i>	golden yarrow
<i>Euonymus occidentalis</i>	western burning bush
<i>Garrya elliptica</i>	silktassel
<i>Heteromeles arbutifolia</i>	toyon
<i>Holodiscus discolor</i>	ocean spray
<i>Lepechinia calycina</i>	pitcher sage
<i>Lonicera hispidula</i>	hairy honeysuckle
<i>Lonicera involucrata</i>	twinberry
<i>Lupinus arboreus</i>	yellow bush lupine
<i>Mimulus aurantiacus</i>	sticky monkey flower
<i>Oemleria cerasiformis</i>	oso berry
<i>Rhamnus californica</i>	coffeeberry
<i>Ribes sanguineum</i> var. <i>glutinsum</i>	red flowering currant
<i>Ribes malvaceum</i>	chaparral currant
<i>Ribes menziesii</i>	canyon gooseberry
<i>Rubus parviflorus</i>	thimbleberry
<i>Rubus ursinus</i>	California blackberry

Sambucus mexicana
Sambucus racemosa
Symporicarpus albus
Toxicodendron diversiloba
Vaccinium ovatum

blue elderberry
red elderberry
snowberry
poison oak
California huckleberry

Herbs

Acaena pinnatifida californica
Achillea millefolium
Adiantum aleuticum
Adiantum jordanii
Artemisia douglasiana
Aster chilensis
Athyrium filix-femina var. *cyclosorum*
Bromus laevipes
Calystegia occidentalis
Camissonia ovata
Cardimine oligosperma
Castilleja affinis
Castilleja subinclusa ssp. *franciscana*
*Chamomilla suaveolens**
Chlorogalum pomeridianum
Collomia heterophylla
Cryptantha clevelandii
Cynoglossum grande
Delphinium nudicaule
Dentaria californica
Dichelestemma capitatum
Disporum hookeri
Dryopteris arguta
Dudleya farinosa
Epilobium brachycarpum
Epilobium ciliatum ssp. *watsonii*
Equisetum hymale ssp. *affine*
Equisetum telmateia ssp. *braunii*
Eriophyllum lanatum
Eschscholzia californica
Fragaria vesca
Galium porrigens
Gnaphalium bicolor
Gnaphalium californicum
Helenium puberulum
Heracleum lanatum
Heuchera micrantha
Hieracium albiflorum
Hierochloë occidentalis
Iris douglasiana
Juncus bufonius
Juncus patens
Lathyrus vestitus
Layia hieracioides

California acaena
common yarrow
five-finger fern
maidenhair fern
mugwort
common California aster
western lady fern
woodland brome
western morning-glory
sun cup
few-seeded bitter cress
Indian paintbrush
Franciscan paintbrush
pineapple weed
soap plant
varied-leaved collomia
Cleveland's cryptantha
hound's tongue
red larkspur
milkmaids, toothwort
blue dicks
Hooker's fairy bell
coastal wood fern
sea lettuce
panicled willow herb
Watson's willow herb
western scouring rush
giant horsetail
common wooly sunflower
California poppy
wood strawberry
climbing bedstraw
Bioletti's cudweed
California cudwed
sneezeweed
cow parsnip
alum root
white-flowered hawkweed
sweetgrass
Douglas iris
toad rush
spreading rush
hillside pea
tall layia

<i>Lemna gibba</i>	duckweed
<i>Lithophragma heterophylla</i>	woodland star
<i>Lotus micranthus</i>	small-flowered trefoil
<i>Lotus purshianus</i>	Spanish clover
<i>Lotus subpinnatus*</i>	Chile trefoil
<i>Lupinus latifolius</i>	broad-leaved lupine
<i>Lupinus succulentus</i>	Arroyo lupine
<i>Lupinus variicolor</i>	Lindley's varied lupine
<i>Luzula comosa</i>	common wood rush
<i>Madia exigua</i>	threadstem madia
<i>Marah fabaceus</i>	wild cucumber
<i>Marah oreganus</i>	western wild cucumber
<i>Melica torreyana</i>	Torrey's melic
<i>Mimulus guttatus</i>	common large monkey flower
<i>Monardella villosa</i>	coyote mint
<i>Navarretia squarrosa</i>	skunkweed
<i>Pityrogramma triangularis</i>	goldenback fern
<i>Plantago erecta</i>	California plantain
<i>Polypodium californicum</i>	California polypody
<i>Polystichum munitum</i>	western sword fern
<i>Potentilla glandulosa</i>	sticky cinquefoil
<i>Prunus virginiana</i> var. <i>demissa</i>	western choke cherry
<i>Psilocarphus tenellus</i>	slender wool-heads
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern
<i>Rafinesquia californica</i>	California chicory
<i>Ranunculus californicus</i>	California buttercup
<i>Sanicula crassicaulis</i>	Pacific sanicle
<i>Satureja douglasii</i>	yerba buena
<i>Scirpus microcarpus</i>	small-fruited bulrush
<i>Scrophularia californica</i>	California bee plant
<i>Sedum spathulifolium</i>	Pacific stonecrop
<i>Sherardia arvensis*</i>	field madder
<i>Sidalcea malvaeflora</i>	checkerbloom
<i>Sisyrinchium bellum</i>	blue-eyed grass
<i>Smilacina racemosa</i>	fat Solomon's seal
<i>Smilacina stellata</i>	thin Solomon's seal
<i>Solanum douglasii</i>	forked nightshade
<i>Solanum umbelliferum</i>	blue witch/purple nightshade
<i>Stachys ajugoides</i> var. <i>rigida</i>	rigid hedge nettle
<i>Stachys bullata</i>	hedge nettle
<i>Tellima grandiflora</i>	fringe cups
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	meadow rue
<i>Trientalis latifolia</i>	Pacific star flower
<i>Trillium ovatum</i>	western trillium
<i>Triphysaria pusilla</i>	dwarf owl's clover
<i>Urtica dioica</i> ssp. <i>holosericea</i>	hoary nettle
<i>Veronica americana</i>	American brooklime
<i>Vicia gigantea</i>	giant vetch
<i>Woodwardia fimbriata</i>	giant chain fern

* introduced species

12.7 ANIMAL SPECIES LIST

The following table lists animals likely to occur in the park and was compiled using the following source:
Environmental Impact Report San Pedro Valley County Park San Mateo County Parks & Recreation Department (EDAW, Inc. 1975)

TABLE 12.5 ANIMAL SPECIES THAT MAY OCCUR IN SAN PEDRO PARK

Fish

<i>Cottus</i> sp.	Freshwater Sculpin
<i>Gasterosteus aculeatus</i>	Three-spine Stickleback
<i>Lampetra tridentata</i>	Lamprey (larvae)
<i>Oncorhynchus mykiss</i>	Steelhead-Central CA Coast ESU
<i>Platichthys stellatus</i>	Starry Flounder

Amphibians

<i>Taricha torosa</i>	California Newt
<i>Ensatina eschscholtzi</i>	Ensatina
<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Aneides flavipunctatus</i>	Santa Cruz Black Salamander
<i>Bufo boreas</i>	Western Toad
<i>Hyla regilla</i>	Pacific Tree Frog
<i>Rana aurora draytoni</i>	California Red-legged Frog

Reptiles

<i>Sceloporus occidentalis</i>	Western Fence Lizard
<i>Eumeces skiltonianus</i>	Western Skink
<i>Gerrhonotus coeruleus</i>	Alligator Lizard
<i>Charina bottae</i>	Rubber Boa
<i>Coluber constrictor</i>	Racer Snake
<i>Diadophis amabilis</i>	Western Ringneck Snake
<i>Pituophis catenifer</i>	Gopher Snake
<i>Lampropeltis getulus</i>	Common Kingsnake
<i>Thamnophis sirtalis</i>	Common Garter Snake
<i>Crotalus viridis oregonus</i>	Western Rattlesnake
<i>Clemmys marmorata</i>	Western Pond Turtle

Birds

<i>Cathartes aura</i>	Turkey Vulture
<i>Accipiter striatus</i>	Sharp-shinned Hawk
<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Falco sparverius</i>	American Kestrel
<i>Lophortyx californicus</i>	California Quail
<i>Charadrius vociferus</i>	Killdeer
<i>Columba fasciata</i>	Band-tailed Pigeon
<i>Columba livia</i>	Domestic Pigeon
<i>Zenaida macroura</i>	Mourning Dove
<i>Bubo virginianus</i>	Great Horned Owl

<i>Calypte anna</i>	Anna's Hummingbird
<i>Selasphorus</i> spp.	Hummingbirds
<i>Colaptes auratus</i>	Common Flicker
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker
<i>Dendrocopos pubescens</i>	Downy Woodpecker
<i>Empidonax difficilis</i>	Western Flycatcher
<i>Contopus sordidulus</i>	Western Wood Pewee
<i>Tachycinetta thalassina</i>	Violet-green Swallow
<i>Iridoprocne bicolor</i>	Tree Swallow
<i>Cyanocitta stelleri</i>	Steller's Jay
<i>Aphelocoma coerulescens</i>	Scrub Jay
<i>Corvus brachyrhynchos</i>	Common Crow
<i>Parus rufescens</i>	Chestnut-backed Chickadee
<i>Psaltriparus minimus</i>	Bushtit
<i>Cinclus mexicanus</i>	Dipper
<i>Chamaea fasciata</i>	Wrentit
<i>Troglodytes troglodytes</i>	Winter Wren
<i>Thryomanes bewickii</i>	Bewick's Wren
<i>Turdus migratorius</i>	American Robin
<i>Regulus satrapa</i>	Golden-crowned Kinglet
<i>Regulus calendula</i>	Ruby-crowned Kinglet
<i>Bombycilla cedrorum</i>	Cedar Waxwing
Parulidae (several spp. in this family expected)	Wood Warblers
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird
<i>Pheucticus melanocephalus</i>	Black-headed Grosbeak
<i>Coccothraustes vespertinus</i>	Evening Grosbeak
<i>Carpodacus purpureus</i>	Purple Finch
<i>Carpodacus mexicanus</i>	House Finch
<i>Spinus tristis</i>	American Goldfinch
<i>Pipilo erythrophthalmus</i>	Rufous-sided Towhee
<i>Pipilo fuscus</i>	Brown Towhee
<i>Passerculus sandwichensis</i>	Savannah Sparrow
<i>Junco hyemalis</i>	Dark-eyed Junco
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow
<i>Zonotrichia atricapilla</i>	Golden-crowned Sparrow
<i>Passerella iliaca</i>	Fox Sparrow
<i>Melospiza melodia</i>	Song Sparrow
<i>Passer domesticus</i>	House Sparrow

Mammals

<i>Sorex vagrans</i>	Vagrant Shrew
<i>Scapanus latimanus</i>	Broad-handed Mole
<i>Myotis</i> spp. a. o.	Bats
<i>Lepus californicus</i>	Black-tailed Hare
<i>Sylvilagus bachmani</i>	Brush Rabbit
<i>Otospermophilus beecheyi</i>	California Ground Squirrel
<i>Thomomys bottae</i>	Botta Pocket Gopher
<i>Reithrodontomys megalotis</i>	Western Harvest Mouse
<i>Peromyscus maniculatus</i>	Deer Mouse
<i>Neotoma fuscipes</i>	Dusky-footed Wood Rat
<i>Microtus californicus</i>	California Meadow Mouse

Urocyon cinereoargenteus
Procyon lotor
Mustela frenata
Taxidea taxus
Mephitis mephitis
Spilogale putorius
Felis concolor
Lynx rufus
Odocoileus hemionus columbianus

Gray Fox
Raccoon
Long-tailed Weasel
Badger
Striped Skunk
Spotted Skunk
Mountain Lion
Bobcat
Black-tailed Deer

13. WUNDERLICH PARK

13.1 LOCATION AND FEATURES OF WUNDERLICH PARK

Wunderlich Park
4040 Woodside Road
Woodside, CA. 94062

Wunderlich Park is located on mostly forested hillsides between Woodside Road, Bear Gulch Road and Skyline Blvd. The 942-acre park is situated on the eastern slope of the Santa Cruz Mountains.

The first users of Wunderlich Park were the Costanoan Indians who were numerous in the area. Woodside Valley entered current recorded history on November 6, 1769, when the first Portola expedition camped in the valley.

One of the first prominent settlers was John Copinger, who was granted the Canada de Raymundo Rancho on August 4, 1840 by Governor Alvarado. This rancho consisted of most of the eastern slopes and valleys in the Woodside area, including Wunderlich Park. In 1846 Charles Brown received from Copinger a formal deed to 2,880 acres of timbered slopes and valley range, which contained Wunderlich Park.

In 1872 Simon Jones purchased 1,500 acres of the western portion of the property and named it "Hazel Wood Farm". He went on to prove that it had value beyond its lumber. Under his guiding hand the mountainside bloomed. Utilizing Chinese labor, he cleared the matted natural growth, built rock retaining walls, planted grapes and fruit trees and developed the property into a working ranch. Some of the buildings still remain and some of the planting is still evident to this day.

Jones died in 1890 and his son Everett sold the property to James A Folger II on October 12, 1902, Folger came to California in 1850 and had gone into the coffee business in San Francisco. Under Folger's ownership, the land changed roles, becoming a recreation area, suited to the family's taste. Wagon trails and old skid roads became riding and carriage trails. Weekend campouts were quite common in the area of Alambique Creek.

In 1904 Folger developed the first hydroelectric power system in this part of California. Waters from Alambique Creek were used to develop this power.

The next owner of the property was contractor Martin Wunderlich, who purchased the property from the Folgers in November 1956. In 1974 he graciously tendered it for public recreation by deeding 942 acres to San Mateo County for use as park and open space. (*Historical information obtained from San Mateo County Dept. of Parks and Recreation website 3 December 2001*)

Wunderlich Park affords over 900 acres of coastal mountain environment for a variety of activities. Many miles of trails afford even the experienced hiker many hours of pleasure. Many of the trails are also open to equestrian use, making this park one of the favorite destinations of the local equestrian community.

Table 13.1 Principal Plant Community Types Identified within Wunderlich County Park

Plant Community Type	Commonly Observed Plant Species	Acreage	Status
Coyote Brush Scrub	coyote brush, toyon, Monkey flower	54.3	Sensitive if supporting rare species
Developed	black lotus tree, non-native grass, some oaks	11.5	No protective status for botanical resources
Eucalyptus	<i>Eucalyptus globulus</i>	18.1	Sensitive if supporting rare species, not likely
Mixed Evergreen Forest	madrone, tan oak, California bay, coast live oak, Douglas fir	629.2	Sensitive if supporting rare species
Mixed Evergreen Forest (Disturbed)	mixed evergreen with a high component of Eucalyptus, Acacia, or broom.	16.9	Sensitive if supporting rare species
Non-native Grassland with elements of Coastal prairie	California oat-grass, non-native grasses	21.2	Sensitive if supporting rare species
Oak Woodland	coast live oak, buckeye, California bay, California blackberry	8.0	Sensitive, potential habitat for rare plants; considered sensitive by CDFG
Redwood Forest	coast redwood, Douglas fir	162.9	Considered sensitive by CDFG

13.2 VEGETATION CLASSIFICATION AND CONDITION

13.2.1 Upland Forest and Woodland Communities

Mixed Evergreen Forest

Mixed evergreen forest covers most of the park area (Fig. 13.1). Mixed evergreen forest is a more open canopy forest than redwood forest and may vary greatly in composition of tree species along a dry to wet gradient. Coast live oak (*Quercus agrifolia*), tan oak (*Lithocarpus densiflora*), madrone (*Arbutus menziesii*), and California bay (*Umbellularia californica*) are common in these areas. Douglas fir (*Pseudotsuga menziesii*), coast redwood (*Sequoia sempervirens*), California black oak (*Quercus kelloggii*), and bigleaf maple (*Acer macrophyllum*) are scattered within the canopy. Typical understory plants of mixed evergreen forest include toyon (*Heteromeles arbutifolia*), hazelnut (*Corylus cornuta*), wood fern (*Dryopteris arguta*), ocean spray (*Holodiscus discolor*), western bracken fern (*Pteridium aquilinum*), yerba buena (*Satureja douglasii*), snowberry (*Symphoricarpos mollis*), and poison oak (*Toxicodendron diversilobum*).

In the western section of the park, mixed evergreen forest is the dominant plant community. This area of the park has undulating hills and the forest grows in bands dependent on slope and aspect alternating from conifer dominated mixed evergreen forest with many Douglas fir (*Pseudotsuga menziesii*), coast redwood (*Sequoia sempervirens*), mixed with scattered and understory hardwoods to slopes dominated by coast live oak (*Quercus agrifolia*), tan oak (*Lithocarpus densiflora*), madrone (*Arbutus menziesii*), and California bay (*Umbellularia californica*) with scattered fir and redwoods. Because these areas comprise of a larger uninterrupted forest, and the stands were not uniform enough to call them Douglas fir forest, they were classified together as mixed evergreen forest.

Mixed Evergreen Forest (Disturbed)

There are areas of non-native plant infestations within the mixed evergreen forest. Most of these areas are directly next to, or within approximately 100 m of the trails. The Alambique Trail and Meadow trail had particularly bad areas. Short sections of the Alambique Trail have periwinkle (*Vinca major*) growing as a strip of ground cover along a narrow strip on the sides of the trail. The main problem plants of these areas are stands of *Eucalyptus globulus* and *Acacia decurrens*. There are small areas of French broom (*Genista monspessulana*), and more extensive areas of Spanish broom (*Spartium junceum*) on the edges of the forest that should be a high priority for control.

Redwood Forest

Redwood forest typically occupies coastal areas where fog drip and precipitation create humid conditions and salt spray is limited. Redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*) dominate the canopy, their fallen needles forming a thick layer of litter. Several hardwood tree species are also associated with redwood forest although much less frequent than the conifers. Hardwood species include tan oak (*Lithocarpus densiflorus*), California bay (*Umbellularia californica*), big leaf maple (*Acer macrophyllum*), and madrone (*Arbutus menziesii*). The understory of redwood forest is formed of scattered shrubs and herbs including hazelnut (*Corylus cornuta*), thimbleberry (*Rubus parviflorus*), sword fern (*Polystichum munitum*), and redwood sorrel (*Oxalis oregana*). Redwood violet (*Viola sempervirens*), western trillium (*Trillium ovatum*), and several fern species (*Adiantum padatum aleuticum*, *Woodwardia fimbriata*) occur on moister slopes along ravines.

Within the park, redwood forest is mostly limited to the north west area of the park.

Redwood forest is sensitive community protected by the California Department of Fish and Game (CDFG 1999).

Oak Woodland

Live oak woodland makes up a small proportion of the park, accounting for approximately 8 acres. The only area of live oak woodland occurs in the central area of the park known as The Meadows. Coast live oak (*Quercus agrifolia*) dominate the canopy of this community. California black oak (*Quercus kelloggii*), California buckeye (*Aesculus californica*), and bigleaf maple (*Acer macrophyllum*) occur scattered among the live oaks. Poison oak (*Toxicodendron diversilobium*), toyon (*Heteromeles arbutifolia*), and wild blackberry (*Rubus ursinus*) are common species within the understory.

Eucalyptus

An 18-acre stand of blue gum eucalyptus (*Eucalyptus globulus*) grows in the eastern end of the park. Other invasive species growing in this area include acacia (*Acacia decurrens*) and periwinkle (*Vinca major*). Eucalyptus and acacia have spread north of this stand [see Mixed Evergreen Forest (Disturbed)] and threaten to spread further into native forest.

13.2.2 Scrub Communities

Coyote Brush Scrub

Coyote brush scrub is typically found on the edge grasslands and mixed evergreen forest on poor, thin soils. Fire plays an important role in the composition and make-up of chaparral, and the vegetation is naturally prone to wildfire. After fire, a greater abundance and diversity of flowering forbs, native grasses, and wildflowers emerge. These species are then slowly crowded out as the stumps of the burned

brush resprout. In rural areas natural fire frequency may occur once every 10-40 years (Muller et al 1968).

A number of shrub species characterize the coyote brush scrub within the park. These species include coyote brush (*Baccharis pilularis*), chamise (*Adenostoma fasciculatum*), toyon (*Heteromeles arbutifolia*), coffeeberry (*Rhamnus californica*), yerba santa (*Eriodictyon californicum*), poison oak (*Toxicodendron diversiloba*), golden chinquapin (*Chrysolepis chrysophylla*), and chaparral pea (*Pickeringia montana*). Young coast live oaks also occur within the scrub.

Coyote brush scrub within Wunderlich Park occurs within openings in the mixed evergreen forest and adjacent to the live oak woodland. In some areas, chaparral shrubs now form the understory of mixed evergreen forest. Mixed evergreen forest may continue to overtake chaparral in the absence of fire, timber harvest or other disturbance.

13.2.3 Grassland Communities

Non-native Grassland with Elements of Coastal Prairie

Non-native grassland is dominated by introduced grasses and forbs. Common species within this community include exotic annual grasses such as wild oats (*Avena* spp.), annual fescue (*Vulpia* spp.), ripgut brome (*Bromus diandrus*), and softchess (*Bromus hordeaceus*). Filaree (*Erodium* spp.) and plantain (*Plantago* spp.) are also common.

The largest areas of non-native grassland within the park occur in the area known as The Meadows. Most of the grassland areas of Wunderlich Park contain some remnant native perennial grasses such as California oat grass (*Danthonia californica*), and blue wildrye (*Elymus glaucus*). These grasslands were most likely occupied by coastal prairie before exotic species spread to the area. Most of these grasslands occur in areas adjacent to coyote brush scrub where the shrubs are colonizing the grasslands.

Invasive weeds that occur within or at the edges of the mowed grasslands within the park include bull thistle (*Cirsium vulgare*), Italian thistle (*Carduus pycnocephalus*), yellow starthistle (*Centaurea solstitialis*) and Spanish broom (*Spartium junceum*). Although mowing has prevented these weeds from invading many of the flatter areas, they are common along grassland edges and steep slopes where tractor mowing is not possible.

13.2.4 Other Categories

Landscaped/Developed

This category includes the Vortac Station equestrian area and park buildings and parking lots. This area has some oaks and mixed evergreen forest trees mixed with non-native landscaping plants.

13.3 SENSITIVE, RARE AND ENDANGERED BOTANICAL RESOURCES

13.3.1 Special Status Plant Species

There are no records from the California Department of Fish and Game Natural Diversity Database within Wunderlich Park. There were three species of plant within the database that occurred within a mile of the park. They are Santa Cruz manzanita (*Arctostaphylos andersonii*), western leatherwood (*Dirca occidentalis*), and Franciscan onion (*Allium peninsulare* var. *franciscanum*). Of these species, Santa Cruz

manzanita (*Arctostaphylos andersonii*) was observed in the park during the verification surveys (Fig. 13.2).

The following table includes those species likely to occur within the park and listed in the *California Native Plant Society's Inventory of Rare and Endangered Plants of California* (CNPS 2001).

Some of the park provides habitat for species of concern, including those listed by the USFWS, CDFG and/or CNPS as rare, threatened or endangered. The special status plant species with potential to occur in the park are listed in Table 13.2. No special status species have been reported within the park (CDFG 2001a).

Table 13.2 Rare Plant Species That May Occur in Wunderlich Park

Species	Status	Potential/Known Occurrence
California bottle-brush grass (<i>Elymus californicus</i>)	CNPS 4	Potential habitat exists in park.
Diablo helianthella (<i>Helianthella castanea</i>)	CNPS 1B	Potential habitat exists in park.
Dudley's lousewort (<i>Pedicularis dudleyi</i>)	SR; CNPS 1B	Potential habitat exists in park.
Franciscan onion (<i>Allium peninsulare</i> var. <i>franciscanum</i>).	CNPS 1B	Potential habitat exists in park.
Kellogg's horkelia (<i>Horkelia cuneata</i> ssp. <i>sericea</i>)	CNPS List 1B	Potential habitat exists in park.
Michael's rein orchid (<i>Piperia michaelii</i>)	CNPS 4	Potential habitat exists in park.
Santa Cruz manzanita (<i>Arctostaphylos andersonii</i>)	CNPS 1B	Exists in park.
western leatherwood (<i>Dirca occidentalis</i>)	CNPS 1B	Potential habitat exists in park.
white-flowered rein orchid (<i>Piperia candida</i>)	CNPS 4	Potential habitat exists in park.

SR: State Rare

CNPS Status:

List 1B: These plants (predominately endemic) are rare through their range and are currently vulnerable or have a high potential for vulnerability due to limited or threatened habitat, few individuals per population, or a limited number of populations. List 1B plants meet the definitions of Section 1901, Chapter 10 of the CDFG Code.

List 3: This is a review list of plants that lack sufficient data to assign them to another list.

List 4: List 4 is a watch list of plants with limited distribution in the state that has low vulnerability and threat at this time. These plants are uncommon, often significant locally, and should be monitored.

13.3.2 Sensitive Plant Communities

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. Two of the plant communities within the park – live oak woodland and redwood forest – are sensitive communities.

Live Oak Woodland

The oak woodland on the project site is typical of similar areas of California. Due to changes in land use, however, their distribution and habitat quality has been reduced, such that the community is considered significant by CDFG.

Redwood Forest

Redwood forest is designated as a high priority in the CNDDDB (CDFG 1999). This category contains native plant communities that are regarded by CDFG as having special significance under the California Environmental Quality Act.

13.4 SENSITIVE, RARE AND ENDANGERED ANIMAL SPECIES

No special status animals have been reported in the park (CDFG 2001a). Special status animal species with potential to occur in the park are listed in Table 13.3.

Table 13.3 Rare Animal Species that May Occur in Wunderlich Park

Species	Status	Known/Potential Occurrence	Typical Habitat
California Tiger Salamander (<i>Ambystoma tigrinum californiense</i>)	DFG CSC, Protected	Potential habitat exists in park.	Grassland or open woodland near seasonal or permanent water
California Red-legged Frog (<i>Rana aurora draytoni</i>)	FT	Potential habitat exists in park.	Grassland, woodland, or forest in or near water
San Francisco Garter Snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE; SE; DFG Fully Protected	Potential habitat exists in park.	Grassland, woodland, or scrub near ponds, marshes, streams, wet meadows, or other water sources
Cooper's Hawk (<i>Accipiter cooperii</i>)	DFG CSC ¹	Potential habitat exists in park.	Woodland, forest
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	DFG CSC ¹	Potential habitat exists in park.	Mixed woodlands
Lawrence's Goldfinch (<i>Carduelis lawrencei</i>)	USFWS MNBMC	Potential habitat exists in park.	Grassy slopes and chaparral

FT: Federally Threatened; FE: Federally Endangered; SE: State Endangered; DFG CSC: CA Dept. of Fish and Game species of concern; DFG Protected/Fully Protected: CA Dept. of Fish and Game protected or fully protected species; USFWS MNBMC: U.S. Fish & Wildlife Serv. Migratory Nongame Birds of Management Concern.

¹ status applies to nesting birds

13.5 INVASIVE, NON-NATIVE PLANT SPECIES

Exotic pest plant species are mapped in Figure 13.3. Only those species known to be invasive or posing special management problems for the park were mapped. Much of the information used in this map came from polygon descriptions in the volunteer booklets and is of low resolution. For instance, if *Eucalyptus globulus* was reported in a particular polygon, the entire polygon was classified as containing *Eucalyptus*. During verification surveys, GPS was used to define the limits of exotic species infestations more precisely. However, it was not possible to cover the entire park within the time allotted to these surveys.

The main problem exotic species of the park are *Eucalyptus globulus* and *Acacia decurrens*, Spanish broom (*Spartium junceum*), French broom (*Genista monspessulana*), and yellow starthistle (*Centaurea solstitialis*). In the volunteer booklets, the surveyors wrote broom and did not specify if it was French broom, or Spanish broom. For this reason, the weed layers of the maps refer to broom and could mean the polygon contains only one or both kinds.

13.6 PLANT SPECIES LIST

The following plant list consists of species recorded in the volunteer handbook, the *Natural Resources Management Plan for Wunderlich County Park*, or observed during groundtruthing surveys. This list represents only the most common plants of the park.

TABLE 13.3 PLANT SPECIES OF WUNDERLICH PARK

Trees

<i>Acacia decurrens</i> *	green wattle
<i>Acer macrophyllum</i>	big leaf maple
<i>Aesculus californica</i>	California buckeye
<i>Arbutus menziesii</i>	madrone
<i>Cupressus macrocarpa</i> *	Monterey cypress
<i>Eucalyptus globulus</i> *	Blue gum
<i>Lithocarpus densiflora</i>	tanoak
<i>Pinus radiata</i> *	Monterey pine
<i>Pseudotsuga menziesii</i>	Douglas fir
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus kelloggii</i>	California black oak
<i>Sequoia sempervirens</i>	coast redwood
<i>Umbellularia californica</i>	California bay

Shrubs

<i>Adenostoma fasciculatum</i>	chamise
<i>Arctostaphylos andersonii</i> var. <i>andersonii</i>	Santa Cruz manzanita
<i>Baccharis pilularis</i>	coyote brush
<i>Chrysolepis chrysophylla</i>	golden chinquapin
<i>Eriodictyon californicum</i>	yerba santa
<i>Genista monspessulana</i> *	French broom
<i>Heteromeles arbutifolia</i>	toyon
<i>Rhamnus californica</i>	coffeeberry
<i>Rubus ursinus</i>	blackberry
<i>Toxicodendron diversiloba</i>	poison oak

Herbs

<i>Avena fatua</i> *	wild oat
<i>Bromus diandrus</i> *	ripgut brome
<i>Bromus hordaceus</i> *	soft chess brome
<i>Centaurea solstitialis</i> *	yellow star thistle
<i>Cirsium vulgare</i> *	bull thistle
<i>Eschscholzia californica</i>	California poppy
<i>Gnaphalium</i> sp.	cudweed
<i>Polystichum munitum</i>	western sword fern
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern
<i>Satureja douglasii</i>	yerba buena
<i>Silybum marianum</i> *	milk thistle

*introduced species

13.7 ANIMAL SPECIES LIST

Previous plans for Wunderlich Park did not contain animal species lists, nor was there a bird species list for the park. Therefore, only a few of the more common animals expected to occur in the park are listed below.

Table 13.4 ANIMAL SPECIES EXPECTED TO OCCUR IN WUNDERLICH PARK

Amphibians

<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Bufo boreas halophilus</i>	California Toad
<i>Hyla regilla</i>	Pacific Tree Frog

Reptiles

<i>Sceloporus occidentalis occidentalis</i>	N.W. Fence Lizard
<i>Gerrhonotus coeruleus</i>	Northern Alligator Lizard
<i>Pituophis melanoleucus catenifer</i>	Pacific Gopher Snake
<i>Thamnophis elegans terrestris</i>	Coast Garter Snake

Birds

<i>Cathartes aura</i>	Turkey Vulture
<i>Accipiter striatus</i>	Sharp-shinned Hawk
<i>Accipiter cooperii</i>	Cooper's Hawk
<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Buteo lineatus</i>	Red-shouldered Hawk
<i>Falco sparverius</i>	American Kestrel
<i>Lophortyx californicus</i>	California Quail
<i>Columba fasciata</i>	Band-tailed Pigeon
<i>Zenaida macroura</i>	Morning Dove
<i>Bubo virginianus</i>	Great Horned Owl
<i>Calypte anna</i>	Anna's Hummingbird
<i>Colaptes auratus</i>	Common Flicker
<i>Melanerpes formicivorus</i>	Acorn Woodpecker
<i>Sayornis nigricans</i>	Black Phoebe
<i>Cyanocitta stelleri</i>	Steller's Jay
<i>Aphelocoma coerulescens</i>	Scrub Jay
<i>Corvus brachyrhynchos</i>	Common Crow
<i>Parus inornatus</i>	Plain Titmouse
<i>Psaltriparus minimus</i>	Bushtit
<i>Regulus calendula</i>	Ruby-crowned Kinglet
<i>Vermivora celata</i>	Orange-crowned Warbler
<i>Dendroica coronata</i>	Yellow-rumped Warbler
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird
<i>Carpodacus mexicanus</i>	House Finch
<i>Pipilo erythrophthalmus</i>	Rufous-sided Towhee
<i>Pipilo fuscus</i>	Brown Towhee
<i>Junco hyemalis</i>	Dark-eyed Junco
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow

Zonotrichia atricapilla
Melospiza melodia

Golden-crowned Sparrow
Song Sparrow

Mammals

Didelphis marsupialis
Sorex vagrans
Sorex ornatus
Scapanus latimanus
Eptesicus fuscus
Sylvilagus audubonii
Sciurus griseus
Otospermophilus beecheyi
Thomomys bottae
Reithrodontomys megalotis
Peromyscus californicus
Peromyscus boylii
Peromyscus maniculatus
Neotoma fuscipes
Microtus californicus
Perognathus californicus
Mus musculus
Sylvilagus bachmani
Sylvilagus audubonii
Procyon lotor
Mephitis mephitis
Urocyon cinereoargenteus
Canis latrans
Odocoileus hemionus columbianus

Common Opossum
Vagrant Shrew
Ornate Shrew
Broad-handed Mole
Big Brown Bat
Audubon Cottontail
Western Gray Squirrel
California Ground Squirrel
Botta Pocket Gopher
Western Harvest Mouse
California Deer Mouse
Brush Mouse
Deer Mouse
Dusky-footed Wood Rat
California Meadow Mouse
California Pocket Mouse
House Mouse
Brush Rabbit
Audubon Cottontail
Raccoon
Striped Skunk
Gray Fox
Coyote
Black-tailed Deer

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15. PERSONAL COMMUNICATION

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