

6.11 CORONA HEIGHTS

GENERAL DESCRIPTION AND LOCATION

Corona Heights is a 12.6-acre park located in the central portion of San Francisco in the Corona Heights neighborhood. Just north of Corona Heights is Buena Vista Park (Figure 1-1). Corona Heights is bounded in part by Flint Street on the east, Roosevelt Way to the north, and 16th Street to the south. Primary access to Corona Heights is from States, Flint, Beaver, and 16th streets, DeForest Steps, and Roosevelt and Museum ways. Elevations within Corona Heights range from near 300 feet at the base of the hill to approximately 520 feet above sea level at the summit. Corona Heights Playground and the Randall Museum are located in the southern third of the park. The Natural Area of Corona Heights, which is approximately 9.6 acres, is primarily composed of grasslands with scrub, and tree-dominated areas around the periphery (Figure 6.11-1). A designated fenced Dog Play Area (DPA) exists adjacent to the north-west side of the Natural Area. Corona Heights has high natural resources and recreational values for the citizens of San Francisco that include: high levels of recreational trail use; diverse native plant grassland community; important habitat for native plants and populations of sensitive plant species; habitat for a wide variety of bird species, including foraging habitat for raptors; extensive grasslands providing habitat for butterflies and other insects; and outstanding City views.

GEOLOGY, HYDROLOGY, AND TRAILS

This Natural Area is almost entirely underlain by Franciscan chert bedrock (Figure 6.11-2). Small areas of Franciscan sandstone and greenstone (an altered volcanic rock) occur at lower elevations at the northwest end of the park, but most of the rock is buried under a layer of slope debris (mapped as “thin rocky soil over bedrock”). Steep escarpments mark the northern and southern edges of the park. There is a large area of bare ground in the Amphitheater (an old quarry) in the middle of the Natural Area. The bedrock slopes at Corona Heights are very steep, and ancient soil slips can be seen on most of the hillsides.

There are seeps on most of the escarpments in the park, but only one area of wet ground. This is caused by a build-up of water in the soil thinly overlying the bedrock. It is at the base of a draw with gullies, drainage ways, and numerous animal burrows that channel runoff from the chert outcrop (“the corona”) on the top of the Natural Area. Most other drainage is by overland flow, with numerous small gullies having developed on the slopes denuded of vegetation.

An extensive network of well-defined informal earth trails (approximately 6,700 feet) has developed throughout the park, with many trails formed on very steep terrain. Extensive foot traffic has worn the trails through the thin soil and into the underlying bedrock. Runoff channeled along these trails runs straight down the hillsides and greatly increases erosion problems.

VEGETATION

Based on aerial photo interpretation and ground-truthing, the vegetation of Corona Heights was classified into 17 series (Table 6.11-1; Figure 6.11-3). These series are within five sub-formations: approximately 50 percent of the area is grassland; 27 percent is forest; 10 percent is scrub; 3 percent is mosaic; and 10 percent is classified as “other” (developed, bare ground, and rock outcroppings). Only three of the 17 series at Corona Heights are dominated by native species.

Forest

Five forest series were mapped at Corona Heights and cover a total of approximately 2.58 acres. The mixed exotic series is the most abundant of these, accounting for approximately 2.01 acres, mostly on the northern side of the Natural Area. Other non-native forest series (blue gum, cypress, and pine forest) combine for another 0.41 acres. A small area of native coast live oak forest (0.16 acres) can be found in the central portion of Corona Heights.

Mosaic and Scrub

Scrub and mosaic series account for a total of 1.22 acres at Corona Heights. Of the three scrub series that were mapped, French broom scrub (0.78 acres) accounts for most of the habitat. Four small patches of poison oak scrub, the only scrub series dominated by native plants, can be found within and on the periphery of the wild oat grassland of Corona Heights.

Grassland and Herbaceous

Six grassland and herbaceous series were mapped at Corona Heights and cover almost 5 acres. The majority of the acreage was mapped as wild oat grassland (3.49 acres) and mixed exotic herbaceous (0.77 acres). A very small patch of purple needlegrass prairie (0.03 acres) found within the grassland on the northwestern side of Corona Heights is the only series within these formations dominated by native vegetation. When all species in the grasslands were sampled (data points), native species accounted for 30 out of 59 total species; however, the invasive species account for 72 percent of the cover.

Other

Two series were mapped as “other” habitats at Corona Heights: developed areas and rock outcrops. The rock outcrops (0.97 acres) are exposed chert and other escarpments typically the result of human activities that exposed the underlying bedrock.

Sensitive Plant Species

The California Natural Diversity Data Base (CNDDDB) does not report the occurrence of any sensitive plant species (CNDDDB 2005); however, sensitive species are known to occur at Corona

Heights. Small populations of San Francisco gumplant (*Grindelia hirsutula* var. *maritima*) and Johnny-jump-up (*Viola pedunculata*) are found in two areas on the southern grasslands of Corona Heights (Table 6.11-2; Figure 6.11-4). San Francisco gumplant is a federal species of concern and has been categorized by the California Native Plant Society as rare or endangered in California. Johnny-jump-up is considered a sensitive species within San Francisco because it is one of the larval host plants for the San Francisco silverspot butterfly. Likewise, annual hairgrass (*Deschampsia danthonioides*) occurs on the site and is considered a locally significant species.

Invasive Plant Species

Fourteen vegetation series dominated by invasive species account for just over 8.4 acres of land cover at Corona Heights, not including developed areas. Of these, 6.5 acres are covered by wild oat grassland, mixed exotic forest, and French broom scrub. The remaining areas of invasive vegetation are a mixture of nine different series with no single series accounting for more than 1 acre.

WILDLIFE

Birds

The varied habitats of the Corona Heights Natural Area provide suitable foraging, nesting, and roosting habitat for a wide range of species. The grassland and scrub habitats of Corona Heights provide foraging habitat for raptors while the forests on the lower slopes provide potential nesting habitat for these species. Habitat for smaller birds (passerines) is available in the scrub and mosaic habitats throughout the park.

Sensitive Bird Species and Important Bird Habitat

Seven bird species considered sensitive have been reported from Corona Heights (Table 6.11-2). Of these seven, barn swallow (*Hirundo rustica*), lesser goldfinch (*Carduelis psaltria*), and pygmy nuthatch (*Sitta pygmaea*) breed within the Natural Area and red-breasted nuthatch (*Sitta canadensis*) is a winter resident. The CNDDDB does not report the occurrence of any special-status species of birds from Corona Heights (CNDDDB 2005).

Two areas of important bird habitat have been delineated at Corona Heights (Figure 6.11-4). The first encompasses the oak woodlands, rock outcrops, and scrub on the southern side of the Natural Area. This habitat provides important foraging areas and cover for California quail (*Callipepla californica*). The second area of important bird habitat takes in part of the grassland, the wild oat/French broom mosaic and the edge of the mixed exotic forest. This area provides habitat for red-breasted nuthatch and Hutton's vireo (*Vireo huttoni*).

Mammals

Evidence of mammals at Corona Heights was collected during reptile and amphibian surveys and during site visits. Evidence of small rodents (burrows and gopher mounds) was observed in the grassland and mosaic habitats at Corona Heights (EIP field visit, May 10, 1999). Larger mammals found in this park such as raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*) and Virginia opossum (*Didelphis virginiana*) are typical of urbanized parks. Free-roaming cats have been observed on site and are relatively common. No special-status mammal species have been observed or reported from this area (CNDDDB 2005).

Reptiles/Amphibians

A survey of the area by EIP biologists on May 10, 1999, did not locate any reptiles or amphibians; however, common reptiles and amphibians are expected to occur at Corona Heights. For example, California slender salamanders (*Batrachoseps attenuatus*) are the most common species of salamander in San Francisco, typically found in moist soils under rocks, logs, and other debris. Also western fence lizard (*Sceloporus occidentalis*) and northern alligator lizard (*Gerrhonotus multicarinatus*) may occur at Corona Heights. No sensitive reptiles or amphibian species has been documented, nor are they expected to exist at Corona Heights (CNDDDB 2005).

Invertebrates

Sensitive Invertebrate Species

At least three special-status species of butterflies potentially occur within the City of San Francisco: mission blue butterfly (*Icaricia icarioides missionensis*), San Bruno elfin butterfly (*Callophrys mossii bayensis*), and bay checkerspot butterfly (*Euphydryas editha bayensis*). None of these species have been observed at Corona Heights. Larval host plants for the mission blue and bay checkerspot butterflies are relatively common (various lupines, plantain, owl's clover, etc.) (Garth and Tilden 1986).

MANAGEMENT AREAS

Management Areas (MAs) at Corona Heights have been delineated based on the sensitive species distribution within the grasslands (Figure 6.11-4). Three MA-1 areas have been delineated that encompass the most sensitive species and habitats. Surrounding most of the MA-1 areas are MA-2 areas that buffer the MA-1s and allow for preservation of existing resources. The MA-3 areas at Corona Heights are mapped to include the urban forest and grasslands around most of the Natural Area perimeter.

ISSUES AND RECOMMENDATIONS

Several conservation and recreation-related issues have been identified for Corona Heights. Recommendations developed for each of these issues will guide restoration, enhancement, and

maintenance work. In the following discussion, system-wide issues and recommendations (GR-1 for example; see Chapter 5) that apply to the entire Natural Area at Corona Heights are presented first within each topic area, followed by site-specific issues and recommendations. Site-specific recommendations are keyed to the Management Area in which they should occur.

Site Improvements – Implementation of management recommendations at Corona Heights would not change significantly the overall look of the park and would result in:

- an increase of native grassland species within the existing grassland habitats;
- improved habitat for passerines (songbirds) by creating a complex, multi-storied habitat;
- improved access on designated trails;
- no change in the existing DPA;
- limit of the ongoing loss of topsoil through revegetation of exposed soils;
- increased and more sustainable populations of sensitive plants;
- beautification of some park entry points with designed native plant gardens; and
- improved educational opportunities.

Overall, implementation of the following recommendations would lead to increased populations of native grasses and sensitive species, reductions in erosion, and increases in habitat complexity that would benefit birds and mammals. At the same time, trail access would be formalized and improved with no changes in the existing DPA. The goal is to achieve native grassland diversity and function similar to that of nearby grasslands such as San Bruno Mountain and Marin Headlands.

Vegetation

Issues relating to vegetation management at Corona Heights involve the protection of sensitive species and habitats, typically through the control of invasive plants (GR-1) and management of sensitive species and vegetation series of limited distribution (GR-2). Additionally, grassland management (GR-3) will be important to the overall success of this plan. Issues relating to the general safety of visitors and surrounding homes, fire hazards posed by vegetation and trees, and illicit activities must be considered during management of the Natural Areas (GR-13).

Management of the urban forests at Corona Heights (MA-3b) will follow the general urban forest management practices (GR-15). In addition to these general recommendations, the following site-specific issues should be addressed.

Issue CH-1: Native grasslands such as the purple needlegrass prairie, and populations of sensitive plants such as San Francisco gumplant and Johnny-jump-up, are at risk of diminishing or being lost because of habitat loss and invasive species. Invasive vegetation occurs throughout Corona Heights.

Recommendation CH-1a: Within all MA-1 and MA-2 areas, woody and herbaceous invasive plant species shall be reduced and contained. Reduction efforts shall target, but not be limited to, French broom (*Genista monspessulana*), Bermuda buttercup (*Oxalis pes-caprae*), radish (*Raphanus sativus*), and pampas grass (*Cortaderia selloana*). Additionally, invasive trees shall be prevented from becoming established in all Management Areas except the existing urban forest in MA-3b. Within MA-3 areas, especially MA-3a, MA-3c, and MA-3d, some invasive plants that are important nectar, seed, and larval habitat for wildlife may remain in place. However, they shall be monitored to prevent encroachment into sensitive habitats and managed accordingly.

Recommendation CH-1b: To help supplement the sensitive species populations at Corona Heights, consider augmentation of existing sensitive plant populations by direct seeding or planting. The species to utilize would be muilla (*Muilla maritima*), Johnny-jump-up, and San Francisco gumplant because they currently exist within MA-1a, MA-1b, and MA-1c.

Recommendation CH-1c: In order to reduce the potential for local extinction of sensitive species in San Francisco, consider reintroduction of rare plants such as silk tassel bush (*Garrya elliptica*), alumroot (*Heuchera micrantha*), and leafy daisy (*Erigeron foliosus*) (MA-1b, MA-1c, and MA-2d).

Recommendation CH-1d: Maintain diverse native grassland within all MA-1 areas in regions where invasive plants have been removed. Revegetate using appropriate native grasses. In the MA-2a, MA-2b, MA-2c, MA-2d, and MA-3d areas, enhance native grasslands and maintain mosaic habitats of coastal scrub-grassland-oaks. Oak woodlands should be maintained and enhanced within MA-2c; MA-3a should continue to support coastal scrub communities. Within MA-3c, maintain the existing urban forest-grassland mosaic (see GR-15).

Recommendation CH-1e: Remove one Monterey pine from MA-1a, four Monterey pines from MA-2c, and 10 Monterey pines from MA-2d. Approximately 185 trees including many pines will remain in MA-2d and all the MA-3 areas. No trees will be removed from any other Management Area at Corona Heights.

Wildlife

Wildlife issues at Corona Heights involve the protection and enhancement of habitat. Vegetation management during the breeding season can impact nesting birds (GR-4); however, vegetation management also can provide materials to create artificial habitat for ground-dwelling birds, small mammals, and reptiles (GR-9). Installation of plants that provide food sources for larva and adult butterflies can help sustain populations of these species (GR-10). Finally, reduction in predation pressures will benefit all animals within the Natural Area (GR-7). In addition to these general recommendations, the following site-specific issues should be addressed.

Birds

Issue CH-2: Corona Heights Natural Area does not have complex mosaics of forest, scrub, and grassland. The open grasslands provide foraging habitat, but minimal cover. The forests provide cover, but minimal foraging habitat. The overall habitat complexity at Corona Heights is limited and likely limits bird use of this Natural Area.

Recommendation CH-2a: Create complex, multi-storied habitat that would provide food sources, nesting, roosting, and escape habitat for a variety of species. Install plant species such as oaks, toyon, coffeeberry, oceanspray, snowberry, beeplant, and huckleberry. This activity should be focused along the margins of existing forests (MA-2d and MA-3b). Also, consider planting shrubs and trees between existing shrub habitat within MA-3d to create more contiguous less fragmented habitat.

Recommendation CH-2b: Increase oak woodland along the margin of MA-2b and MA-2d to increase habitat for wildlife, especially birds.

Soils, Erosion, and Public Use

The erosion and soil issues at Corona Heights all relate to the trail system (approximately 6,700 feet) and public use. A network of designated and social trails winds through all Management Areas (Figure 6.11-5). The issue of erosion and habitat impacts related to 1,845 feet of social trails is addressed through the recommended closure of these social trails and the implementation of GR-11 and GR-12. Interpretive signs regarding the ecosystem of Corona Heights should also be considered (GR-14). This plan proposes no changes to the existing fenced DPA adjacent to the Corona Heights Natural Area.

Issue CH-3: There are several areas on the western slopes of Corona Heights (MA-1b, MA-1c, and MA-2b) where high levels of recreational foot and dog traffic have reduced the vegetation cover to almost bare ground. High levels of traffic combine to compact soils, trample plants, and generally impede the development of a stable native vegetation community.

Recommendation CH-3a: To discourage non-trail use by dogs and people of these erosion-prone sensitive areas, install signs and temporary barriers at the preferred access points (MA-1b and MA-2b). If signage and temporary barriers prove to be ineffective, a permanent fence may be required at the base of the hill (MA-1b and MA-2b).

Table 6.11-1. Vegetation series mapped at Corona Heights.

	Vegetation Series	Total Acreage
Forest	coast live oak forest*	0.16
	blue gum forest	0.25
	cypress forest	0.10
	mixed exotic forest	2.01
	pine forest	0.06
	Subtotal	2.58
Scrub	poison oak scrub*	0.17
	French broom scrub	0.78
	willow scrub	0.00
	Subtotal	0.95
Mosaic	wild oat/French broom mosaic	0.27
Grassland	Italian ryegrass grassland	0.20
	purple needlegrass prairie*	0.03
	wild oat grassland	3.49
	Subtotal	3.72
Other Herbaceous	mixed exotic herbaceous	0.77
	giant pea	0.03
	wild radish	0.23
	Subtotal	1.03
Other	developed	0.02
	rock outcrop	0.97
	Subtotal	0.99
Grand Total		9.54

* Indicates vegetation type is dominated by native species.
 Shaded entries indicate coverage of less than 0.005 acres.

Table 6.11-2. Sensitive species historically and presently known to occur at Corona Heights.

Species	Common Name	Status Federal, State, CNPS	Occurrence Status
ANIMALS			
<i>Hirundo rustica</i>	Barn Swallow	LS	Presently breeds
<i>Carduelis psaltria</i>	Lesser Goldfinch	LS	Presently breeds
<i>Empidonax difficilis</i>	Pacific-slope Flycatcher	LS	Presently occurs
<i>Carpodacus purpureus</i>	Purple Finch	LS	Presently occurs
<i>Sitta pygmaea</i>	Pygmy Nuthatch	LS	Presently breeds
<i>Sitta canadensis</i>	Red-breasted Nuthatch	LS	Winter resident
<i>Wilsonia pusilla</i>	Wilson's Warbler	LS	Presently occurs
PLANTS			
<i>Deschampsia danthonioides</i>	Annual Hairgrass	LS	Presently occurs.
<i>Grindelia hirsutula</i> var. <i>maritima</i>	San Francisco Gumplant	FSC, CNPS List 1B	Presently occurs.
<i>Muilla maritima</i>	Muilla	LS	Presently occurs
<i>Viola pedunculata</i>	Johnny-Jump-Up		Presently occurs.

Status Key:

Federal Status

- FE* Endangered. Species in danger of extinction throughout all or significant portion of its range.
- FT* Threatened. Species likely to become endangered within foreseeable future throughout all or a significant portion of its range.
- FPE* Proposed for listing as endangered.
- FC* Candidate for listing as endangered. Candidate information now available indicates that listing may be appropriate with supporting data currently on file.
- FSC* Species of Concern. Former Category 2 Candidate for listing as endangered.
- FPD* Proposed de-listing.

California State Status

- SE* Endangered. Species whose continued existence in California is jeopardized.
- ST* Threatened. Species, although not presently threatened with extinction, that is likely to become endangered in the foreseeable future.
- SSC* Species of Concern.
- SFP* State Fully Protected under Sections 3511 and 4700 of the Fish and Game Code.
- Sens* Considered a sensitive species by the California Department of Forestry.

California Native Plant Society

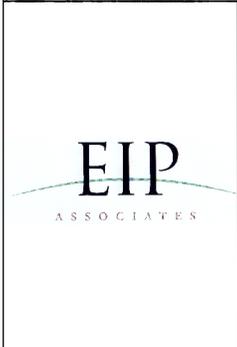
- 1A Plants presumed extinct in California
- 1B Plants that are rare or endangered in California and elsewhere.
- 2 Plants that are endangered in California, but more common elsewhere.
- 3 Plants about which more information is needed.
- 4 Plants of limited distribution (a watch list).
- LS Locally Significant.

Golden Gate Audubon Society

- LS Locally Significant.



- - - Natural Area Boundary
- SFRPD Jurisdiction (SF City Property)
- - - — Natural Area Boundary and SFRPD Jurisdiction (SF City Property)
- 10-Foot contour line



Source: Aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution, 2001; property boundary data derived by San Francisco Recreation and Park Department (RPD) 2005 from data provided by San Francisco Department of Telecommunications and Information Services, 2002; natural area boundary data created by San Francisco State University Institute for GISc from information provided by RPD's Natural Areas Program (NAP), 2005; contour lines provided by San Francisco Department of Conservation; all data are California State Plane Zone III, NAD 83.

Created by Debra Dwyer, San Francisco State University Institute for GISc, May 4, 2002, revised June 10, 2005.

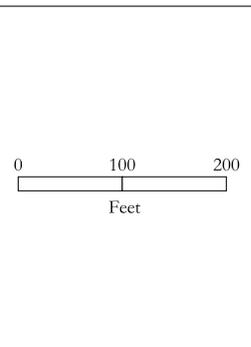


FIGURE 6.11 - 1
AERIAL PHOTOGRAPH,
PROPERTY BOUNDARIES,
AND NATURAL AREAS
Corona Heights
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California

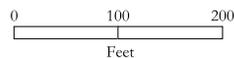


Soils, Land Features, and Trails

- | | | | | | |
|--|--------|----------------------------------|--|----|----------------------------|
| | 1C | escarpment | | 3J | parking lot |
| | 4A | chert | | | asphalt path |
| | 4B | sandstone | | | earthen road |
| | 5 | bare ground | | | primary earthen trail |
| | 7 | drainages, creeks | | | steps |
| | 12, 1A | wet/seepage or marsh area, slope | | | secondary earthen trail |
| | 13 | burrows | | | closed trail |
| | 14 | thin rocky soils over bedrock | | | Natural Area boundary |
| | | | | | vegetation series boundary |

Source: Vegetation data collected by San Francisco Department of Recreation and Parks Significant Natural Areas Program (NAP), San Francisco State University Biology Department, and EIP Associates, 1999-2000; soil and land features data collected by EIP Associates, 1999 - 2002; trails data collected by NAP, 2005; data layers digitized by Geotopo, Inc., 1999 - 2000; edited and corrected by San Francisco State University Institute for GISc (SFSUGIS), 2000, 2005; trails data digitized by SFSUGIS, 2005; natural area boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView Street-Map 2000 Data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created by D. Dwyer, San Francisco State University Institute for GISc, August 24, 2001, revised December 10, 2005.

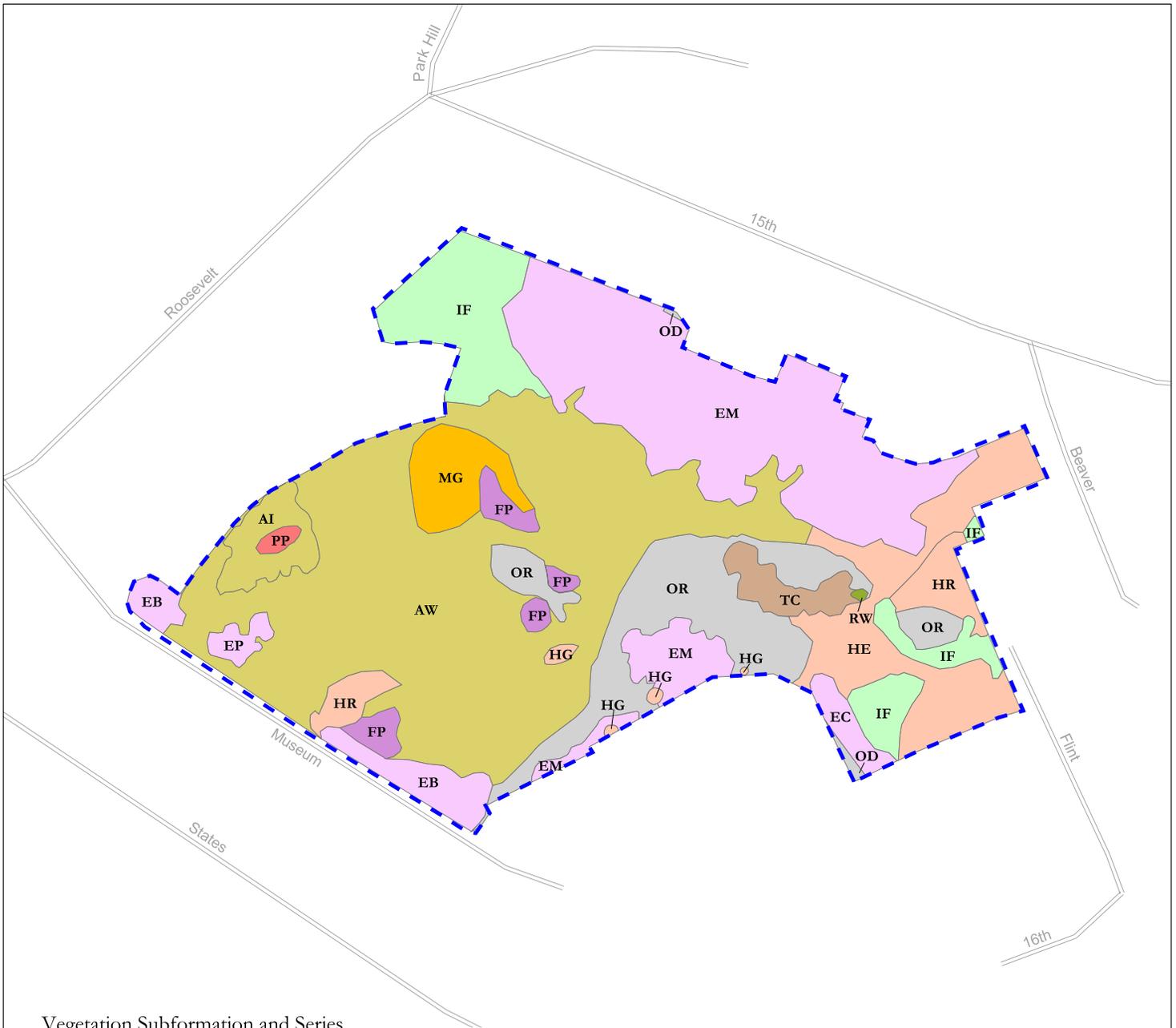


**FIGURE 6.11 - 2
SOILS, LAND FEATURES,
AND TRAILS**

Corona Heights

**Significant Natural Resource Areas
Management Plan**

San Francisco, California



Vegetation Subformation and Series

Annual Grassland

- AI** Italian ryegrass grassland
- AW** wild oat grassland

Perennial Grassland

- PP** purple needlegrass prairie

Central Coast Riparian Scrub

- RW** willow scrub

Northern Franciscan Coastal Scrub

- FP** poison oak scrub

Native Forest

- TC** coast live oak forest

Mosaic

- MG** wild oat/French broom mosaic

Non-native Forest

- EB** blue gum forest
- EC** cypress forest
- EM** mixed exotic forest
- EP** pine forest

Non-native Scrub

- IF** French broom scrub

Other

- OD** developed
- OR** rock outcrop

Other Herb

- HE** mixed exotic herbaceous
- HG** giant pea
- HR** wild radish

- - - Natural Area boundary



Source: Vegetation data collected by San Francisco Department of Recreation and Parks Significant Natural Areas Program (NAP), San Francisco State University Biology Department and EIP Associates, 1999-2000; data layers digitized by Geotopo, Inc., 2000; edited and corrected by San Francisco State Institute for GISc (SFSUGIS), 2000 - 2002; natural area boundary created by SFSUGIS from data provided by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 data from Environmental Systems Research Institute, Inc., copyright 1998-2001.

Created by D. Dwyer, San Francisco State University Institute for GISc June 6, 2001, revised August 21, 2005.

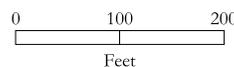
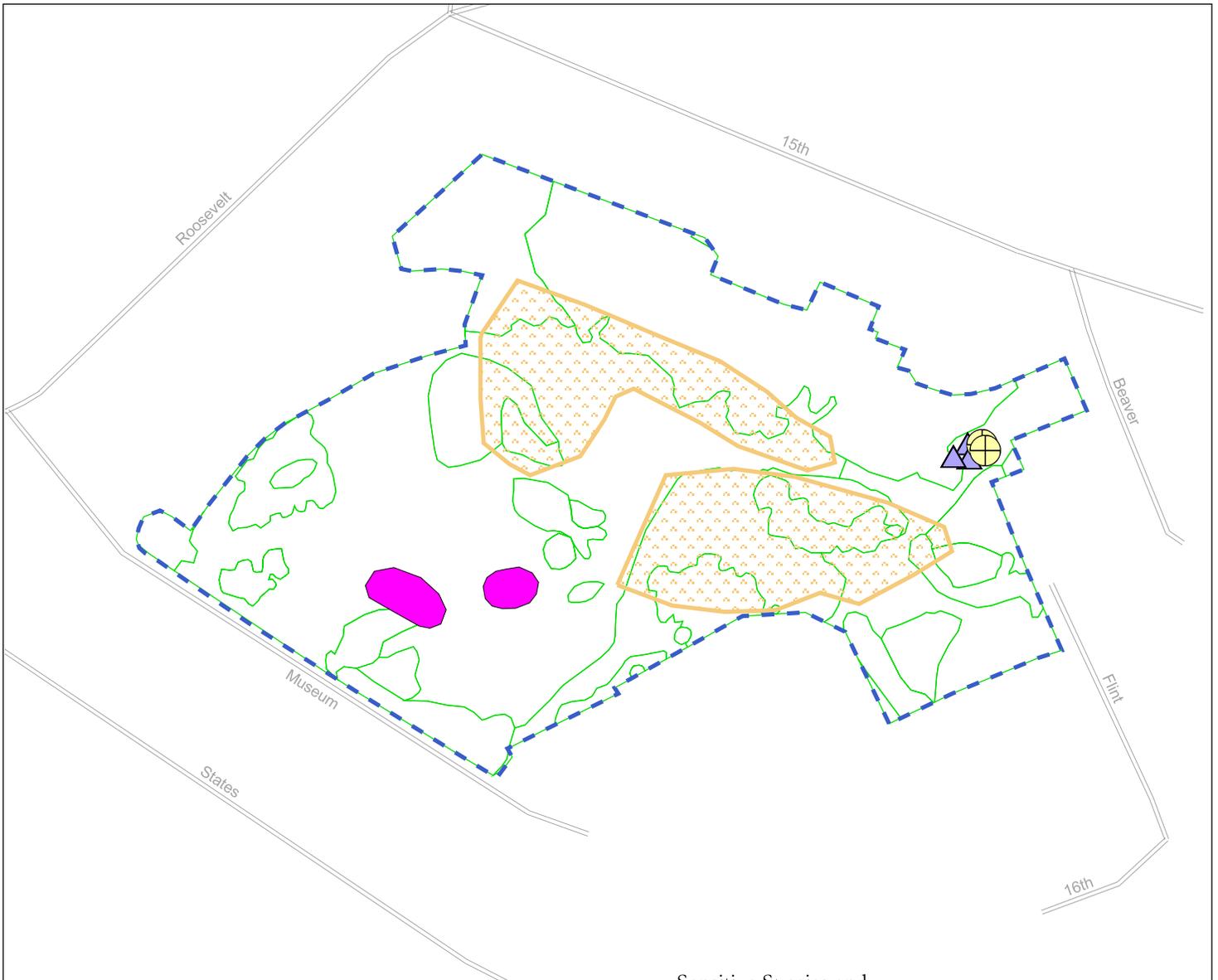
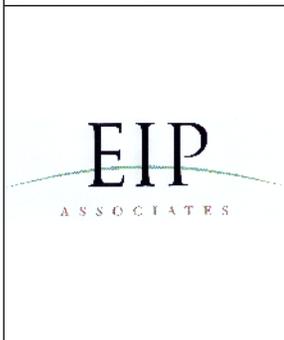


FIGURE 6.11 - 3
VEGETATION
Corona Heights
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



Sensitive Species and Important Bird Habitat

-  Natural Area
-  Common Muilla
-  Johnny-Jump-Up
-  San Francisco Gumplant and Johnny-Jump-Up
-  Important Bird Habitat
-  vegetation series boundary



Source: Vegetation data collected by San Francisco Recreation and Park Department Natural Areas Program (NAP), San Francisco State University Biology Department and EIP Associates, 1999-2000; data layers digitized by Geotopo, Inc., 2000; edited and corrected by San Francisco State Institute for GISc (SFSUGIS), 2000 - 2002; natural area boundaries created by SFSUGIS from data provided by NAP, 2005.

Created by D. Dwyer, San Francisco State University Institute for GISc, June 6, 2001, revised June 7, 2005.

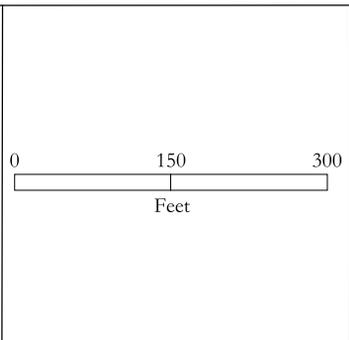


FIGURE 6.11 - 4
SENSITIVE SPECIES
AND IMPORTANT
BIRD HABITAT
Corona Heights
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



Mgmt Area	Action
MA-1a	<ul style="list-style-type: none"> Remove 1 invasive tree Maintain diverse native grassland Augment sensitive plant populations
MA-1b	<ul style="list-style-type: none"> Maintain diverse native grassland Augment sensitive plant populations Reintroduce sensitive species Discourage use of steep western slopes by dogs and people. Install fences if necessary
MA-1c	<ul style="list-style-type: none"> Maintain diverse native grassland Augment sensitive plant populations Reintroduce sensitive species Discourage use of steep western slopes by dogs and people. Install fences if necessary
MA-2a	<ul style="list-style-type: none"> Maintain and enhance coastal scrub-grassland mosaic
MA-2b	<ul style="list-style-type: none"> Maintain and enhance coastal scrub-grassland mosaic, with oaks at margin for wildlife Discourage use of steep western slopes by dogs and people. Install fences if necessary
MA-2c	<ul style="list-style-type: none"> Remove 4 invasive trees Maintain and enhance oak woodland
MA-2d	<ul style="list-style-type: none"> Remove approximately 10 invasive trees Maintain and enhance grassland-coastal scrub-oak woodland mosaic Reintroduce sensitive plants

Mgmt Area	Action
MA-3a	<ul style="list-style-type: none"> Maintain and enhance coastal scrub
MA-3b	<ul style="list-style-type: none"> Maintain and enhance urban forest
MA-3c	<ul style="list-style-type: none"> Maintain and enhance urban forest-grassland mosaic Allow important nectar/larval/seed invasive plants to persist for wildlife
MA-3d	<ul style="list-style-type: none"> Maintain and enhance coastal scrub-grassland-urban forest mosaic Allow important nectar/larval/seed invasive plants to persist for wildlife Plant shrubs and trees to connect wildlife habitat

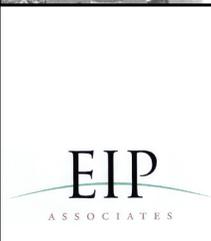
- Natural Area Wide Management Actions**
- Reduce and contain herbaceous and woody weeds
 - No invasive tree removal unless specified above
 - Prevent recruitment of invasive trees unless specified above
 - Total trails to remain: 4,856 linear-feet
 - Provide access on designated trails only
 - Social trails subject to closure
 - Total invasive trees to remove: 15; Total invasive trees to remain: 185
 - Implement erosion control as required (GR-12)
 - Implement wildlife enhancements as appropriate
 - No change to existing Dog Play Area

Management Areas

- management area 1
- management area 2
- management area 3

Trails

- primary
- secondary



Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

0 37.5 75 150
Feet

**FIGURE 6.11 - 5
MANAGEMENT AREAS
AND TRAIL PLAN**

Corona Heights
Significant Natural Resource Areas
Management Plan

San Francisco, California