

**Final Results of the Environmentally
Sensitive Habitat Area Study Conducted
for the City of Carmel-by-the-Sea**

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Executive Summary

Jones & Stokes Associates was retained by the City of Carmel-by-the-Sea (City) to conduct an environmentally sensitive habitat area (ESHA) study and resource management evaluations at five undeveloped sites in the city: Pescadero Canyon, Rio Park, Mission Trails Park, Forest Hill Park, and Carmel Beach. The purpose of the study is to establish background information to assist the City in its formulation of policy and programs regarding ESHAs and its management of ESHAs, as required by the California Coastal Act (Public Resources Code, Sections 30240[a], [b]) and 30107.5).

In summary, the following sites support areas that would qualify as environmentally sensitive under the California Coastal Act (criteria used to identify ESHAs are described in Section 2 of this report):

- Pescadero Canyon supports Monterey pine forest on middle-aged dunes that provides watershed protection and a buffer for Pescadero Creek and is part of an important local wildlife habitat corridor, wetland drainage (Pescadero Creek), central coast arroyo willow riparian forest, and wet meadow.
- Rio Park supports central coast arroyo willow riparian forest along the Carmel River.
- Mission Trails Park supports Monterey pine forest (habitat for Monterey dusky-footed woodrat); central coast arroyo willow riparian forest along wetland drainages; coastal terrace prairie; wet meadow; and occurrences of Hickman's onion (*Allium hickmanii*), a federal candidate for listing as endangered (C1) and a species considered rare and endangered by the California Native Plant Society (CNPS) (List 1B), and Monterey dusky footed woodrat, a federal candidate for listing (C2).
- Carmel Beach supports dune scrub; unvegetated dunes; a known occurrence of Tidestrom's lupine (*Lupinus tidestromii* var. *tidestromii*), a state- and federal-listed endangered species and a species considered rare and endangered by CNPS (List 1B), and a reported occurrence of black legless lizard, a federal candidate for listing (C2) and a state species of special concern.

No environmentally sensitive habitat areas were identified at Forest Hill Park.

Section 1. Introduction and Regulatory Setting

The purpose of this environmentally sensitive habitat area (ESHA) study is to provide the City of Carmel-by-the-Sea (City) with background information that will assist in its formulation of policy and programs regarding ESHAs and its management of ESHAs, as required under the California Coastal Act (Public Resources Code, Sections 30240[a] and [b] and 30107.5). The City will use the information in this report to prepare its local coastal program land use plan and implementation plan. The City may also use this information during subsequent review of documents prepared in compliance with the California Environmental Quality Act.

ORGANIZATION OF STUDY

This ESHA study consists of eight sections:

- Section 1, "Introduction and Regulatory Setting", identifies the study sites and describes state and local policies related to environmentally sensitive habitats.
- Section 2, "Criteria Used to Identify Environmentally Sensitive Habitat Areas", describes the criteria used to identify ESHAs.
- Section 3, "Study Methods", identifies the goals and objectives of this study and the study methods.
- Section 4, "Regional and Local Setting", provides the regional and local setting for the city.
- Section 5, "Study Results and Resource Management Recommendations", discusses the results of the study, identifies which habitats are considered environmentally sensitive, and recommends management actions to protect and enhance ESHAs.
- Section 6, "Conclusions", presents the conclusions of this ESHA study.
- Section 7, "Citations", lists printed references and personal communications that are cited in this study.
- Section 8, "List of Preparers", identifies individuals involved in preparing this study.

STUDY SITES

This ESHA study evaluates the following five study sites (Figure 1):

- **Pescadero Canyon.** Pescadero Canyon consists of 10 acres of privately owned land (zoned R-1 [single-family residential]), divided into east and west segments, along the city's northern boundary.
- **Rio Park.** Rio Park includes 6.24 acres of undeveloped land that was recently acquired by the City and could be developed as a city park or parking lot or sold for development. This site is crossed by the Carmel River near its outflow to the Carmel Lagoon.
- **Mission Trails Park.** Mission Trails Park includes 36 acres that were acquired by the City in 1971 and zoned as a passive-use park (P-1 and P-2a) (except Flanders Mansion). This park is subdivided into four study units, identified by the City as Flanders Mansion/Arboretum, Park Proper, Martin Road Parcel, and Outlet Meadow.
- **Forest Hill Park.** Forest Hill Park consists of 2.4 acres zoned as an active-use park (P-2) and contains tennis courts and playground equipment.
- **Carmel Beach.** Carmel Beach includes 21.5 acres zoned as a passive-use park (P-1).

POLICIES GOVERNING ENVIRONMENTALLY SENSITIVE HABITAT AREAS

Several state and local policies provide guidance on appropriate activities and restrictions in designated ESHAs. Applicable policies are identified in the California Coastal Act (Public Resources Code, Sections 30240[a] and [b]); the City of Carmel-by-the-Sea Local Coastal Program Land Use Plan (1981); the City of Carmel-by-the-Sea General Plan (1990); and the Guide to the Management of Carmel's Forests, Parks and Beaches (Taylor and D'Ambrosio 1981). Each of these state and local policies that pertain to the ESHA study are discussed briefly below.

California Coastal Act

The California Coastal Act (Public Resources Code, Section 30107.5) defines ESHAs as:

areas in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which could be easily disturbed or degraded by human activities and developments. In addition, some

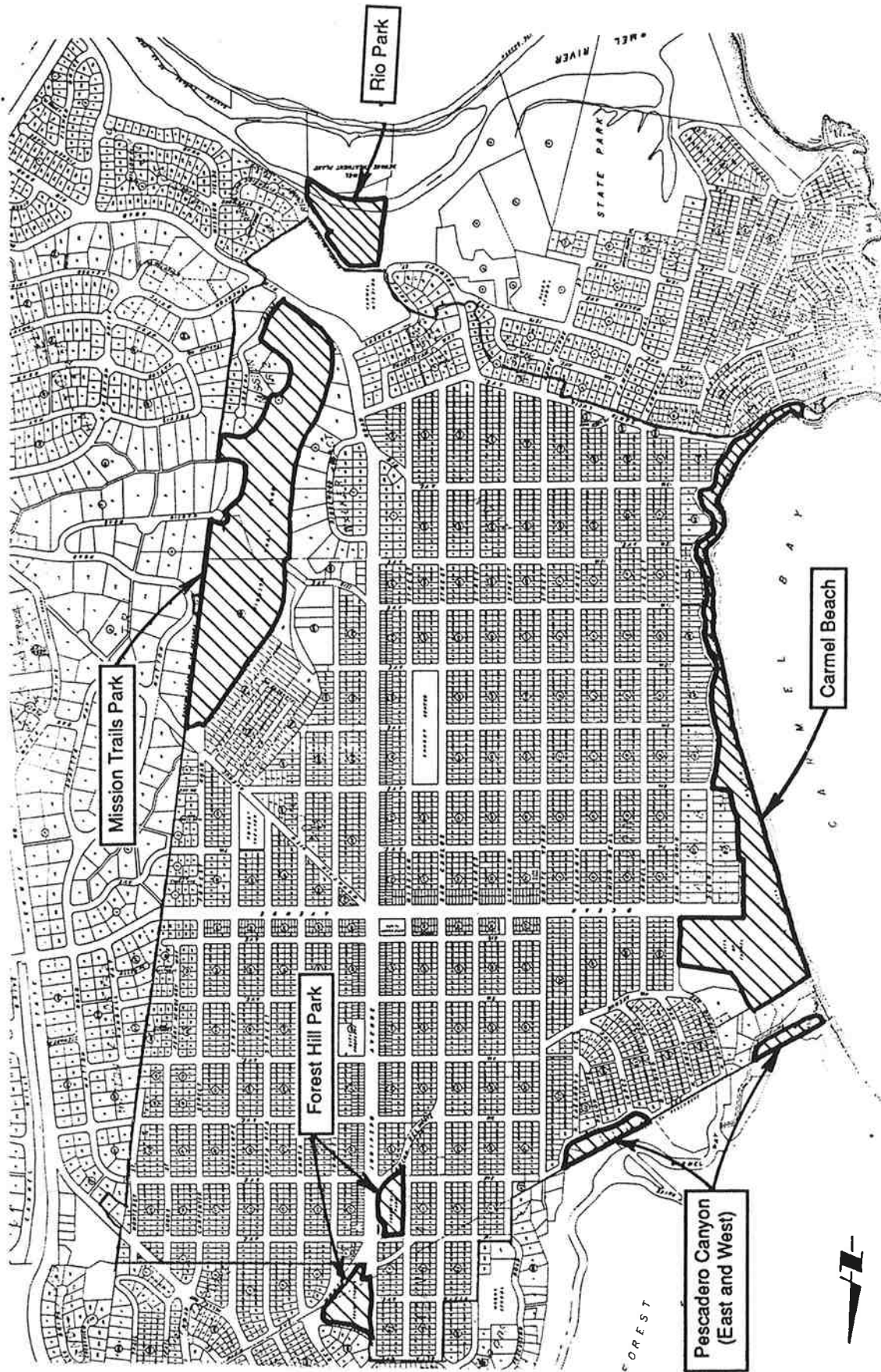


Figure 1.
Location of Environmentally Sensitive Habitat
Area Study Sites, Carmel-by-the-Sea

of these sensitive habitats require further protection from disturbance, and this subset of sensitive habitats is called environmentally sensitive habitat areas.

The following sections from the California Coastal Act pertain to the preservation and enhancement of natural habitat areas in the coastal zone.

Section 30231

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30240

- (a) ESHA[s] shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas; and
- (b) Development in areas adjacent to ESHAs and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

Public Resources Code, Section 30240(a) states that only uses dependent on ESHA resources will be allowed in these areas. *Dependent uses* is applied and interpreted in different ways by the California Coastal Commission (Otter pers. comm.). Examples of activities that may be considered compatible with ESHAs include habitat restoration and enhancement (relating to indigenous plants), interpretive trails, and informative signs (Otter pers. comm.). Most resource management recommendations that are provided in this report were discussed with individuals at the California Coastal Commission and would most likely be considered consistent with Public Resources Code, Sections 30231 and 30240(a) and (b).

Applicable City Policies

The City has identified the following policies and resource management plans as part of its local coastal plan to protect environmentally sensitive habitats (City of Carmel-by-the-Sea Community Planning and Building Department 1981):

1. **Public Park Uses and Zoning.** Environmentally sensitive habitats that occur in city parks are zoned as P-1 and P-2. In passive-use parks (P-1), the focus is on maintaining the park in its natural state, allowing only maintenance activities or improvements that would enhance or enable better enjoyment of this natural state. In addition to including all uses permitted in parks zoned as P-1, recreational parks (P-2) allow facilities and structures that are devoted to public recreation.
2. **Structures on Carmel Beach.** It is unlawful to construct, erect, or place any building, structure, or improvement of any kind on, over, or under any part of Carmel beachlands, except those determined by the City Council to be essential for public health, safety or welfare.
3. **Developable Lots.** Development of a lot with a slope greater than 30 degrees requires a use permit. The City reviews each submittal for compliance. This requirement applies to the environmentally sensitive habitat at Second Avenue that is zoned R-1.
4. **The Guide to the Management of Carmel's Forests, Parks and Beaches.** The City adopted a policy of continuously inventory the supply, mix, and condition of all trees in the City to preserve the quality and nature of its urban forest (Taylor and D'Ambrosio 1981). This plan includes environmentally sensitive habitats within the City's jurisdiction.

The net effect of these policies is to:

- prohibit alteration of the natural land forms;
- preserve the existing plant and marine life;
- encourage passive recreation within the P-1;
- prohibit structures or intensive development in the P-1 zone;
- limit structures to recreation facilities in the P-2 zone;
- replace trees that must be removed on public and private property¹; and

¹Under municipal ordinances, the City regulates the cutting of trees on certain private property. This applies to trees on vacant lots and trees on lots with an existing building that are proposed for expansion during remodeling or rebuilding. City regulations state "it shall be unlawful to cut down or otherwise destroy, or authorize the cutting down or destruction of any living tree of an average diameter greater than two inches, or a circumference greater than six and one-fourth inches, measured at a point 4.5 feet above the ground level." As a condition of the tree removal permit, the Forestry Commission may require replacement trees of a specific species and size. Other measures that apply to the protection of trees not permitted for removal on private property, including Monterey pine, are outlined under municipal ordinances. Several measures are presented to avoid and minimize impacts on trees during construction activities.

- establish "mini-parks", greenbelts, improvements, and sprinkling systems to further enhance the urban forest of the City.

5. **Acquisition of Private Lots.** The City's general plan supports acquiring available lots along Pescadero Canyon.

In addition to the policies described above, the City has adopted the following policies to further protect environmentally sensitive habitats:

- The City should prohibit the conversion of any portion of the Flanders/Doolittle property in Mission Trails Park and maintain the property as a passive recreation area.
- The City requires that a use permit be obtained before developable lots fronting on public open space and on Pescadero Canyon may be developed. Use permit standards are to be developed to minimize grading and other alteration of natural landforms, minimize coverage, maximize the retention of important public views, and maximize setbacks.

The City will continue to coordinate with agencies having jurisdiction over the Pescadero Canyon wetlands, the Carmel River wetlands, and the Carmel Bay Ecological Reserve, as recommended in the City's General Plan.

Section 2. Criteria Used to Identify Environmentally Sensitive Habitat Areas

For the purpose of this study, it was necessary to determine whether certain habitats would be subject to the California Coastal Act, Sections 30231 and 30240. ESHA criteria were identified based on a review of the ESHA definition provided in the California Coastal Act, Section 30107.5; contacts with the California Coastal Commission (Loomis and Otter pers. comms.) and California Department of Fish and Game (DFG) (Hillyard pers. comm.); a review of selected local coastal programs completed for sites in Monterey and Santa Cruz Counties; a review of state and federal regulations and policies that protect sensitive biological resources; and a consideration of local and regional sensitivity or uniqueness of biological resources found in the city.

Based on the sources described above, sites are considered environmentally sensitive in this ESHA study if they support one or more of the following:

- special-status species and habitats important to those species,
- wetlands,
- riparian habitats,
- dune habitats,
- coastal terrace prairie, or
- Monterey pine forest on uncommon geomorphic surfaces and soils in the Monterey region.

Definitions of these resources are provided in the following sections.

SPECIAL-STATUS SPECIES AND HABITATS IMPORTANT TO THOSE SPECIES

For the purpose of this study, the category "special-status species" includes plants and wildlife identified as rare, endangered, or threatened under state or federal endangered species acts. Habitats that are locally or regionally important for these species are also included in this category. After further evaluation, additional locally rare or unique species that may be considered endemic, relict,

or disjunct species may be included in this category. Other species to be considered may include plants and wildlife that are candidates for federal listing (Candidate 1 and Candidate 2) and plants that are considered rare and endangered in California (List 1B) by the CNPS.

Although the native Monterey pine is considered rare and endangered by CNPS (List 1B) and a candidate for federal listing (C2), this report focuses primarily on Monterey pine as part of a forest ecosystem rather than as an isolated species. Monterey pine located on uncommon geomorphic surfaces and associated soils are considered sensitive for the purpose of the ESHA study.

WETLANDS

Wetlands are considered environmentally sensitive habitats because they are a valuable natural resource that provide habitat for a variety of dependent plant and wildlife species. By one estimate, agricultural and urban development has resulted in the loss of nearly 90% of California's wetlands (Dahl 1990).

Under the U.S. Army Corps of Engineers' (Corps') definition, wetlands are a type of waters of the United States that support hydrophytic vegetation, hydric soils, and wetland hydrology. Plant communities that lack one of these criteria are referred to as "other waters of the United States" (e.g., unvegetated drainages, lakes, and rivers). The Corps regulates the discharge of dredged or fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act. Development projects that would result in the discharge of dredged or fill material into waters of the United States, including wetlands, require a Section 404 permit from the Corps. The federal government supports a policy of minimizing "the destruction, loss, or degradation of wetlands" (Executive Order 11990, May 24, 1977).

The California Coastal Commission defines *wetlands* as lands in the coastal zone that may be covered periodically or permanently with shallow water, including saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens (Public Resources Code, Section 30121).

RIPARIAN HABITATS

Riparian habitats are considered environmentally sensitive because they provide essential habitat for a variety of common and special-status wildlife in California and the Monterey region. Additionally, riparian habitats provide important ecological functions, such as streambank stabilization and flood control. DFG has a policy of "no net loss of riparian acreage or value" and regulates riparian habitats under Sections 1600-1607 of the California Fish and Game Code.

DUNE HABITATS

Vegetated and unvegetated dune habitats are considered environmentally sensitive because they are restricted in distribution compared to their historical extent along the California coast. In addition to habitat loss from agriculture and development activities, the introduction of non-native species (e.g., African ice plant and European beach grass) for dune stabilization has changed the ecological functions in natural dune systems and displaced native dune vegetation. Dune habitats in the Monterey Bay region also provide habitat for several special-status plant and wildlife species, including Tidestrom's lupine and black legless lizard, species found in the dune scrub habitat on Carmel Beach.

COASTAL TERRACE PRAIRIE

Similar to dune habitats, coastal terrace prairie is considered a sensitive natural community because substantial amounts of the habitat have been severely altered or lost as a result of agricultural and coastal development. Coastal terrace prairie community typically supports a diverse and unique assemblage of plant species, including some special-status species (e.g., Hickman's onion at Mission Trails Park).

MONTEREY PINE FOREST

Monterey pine forest is a habitat that has been the topic of many ecological studies and the focus of recent conservation efforts. Most recently, the primary issues surrounding Monterey pine forest are historical and potential future losses from development projects, lack of natural pine regeneration because of fire suppression activities, introduction and spread of diseases such as pitch canker, and genetic contamination from nursery stock.

A recent ecological study was commissioned by DFG and The Nature Conservancy to gain a better understanding of and acquire more information on:

- Monterey pine as a species,
- Monterey pine forest as a community,
- the extent and character of the contemporary Monterey pine forest,
- the extent and character of historical Monterey pine forest, and
- the nature and extent of alterations to the native Monterey pine forest (Jones & Stokes Associates 1994).

This ecological study presented new findings on the relationships between Monterey pine forest and geomorphic surfaces and associated soil types on the Monterey peninsula. Variations in Monterey pine forest on the different geomorphic surfaces were characterized and divided into ecological subtypes (Jones & Stokes Associates 1994). For a detailed discussion of these ecological subtypes, refer to the Monterey Ecological Staircase: The Nature of Different Geomorphic Surfaces of the Monterey Peninsula with an Emphasis on Monterey Pine (Jones & Stokes Associates 1994).

In summary, the ecological study determined the following:

- Monterey pine forest cannot be treated as a single entity but should be divided into ecological subtypes.
- Subtle but clear differences exist between Monterey pine forest subtypes on different geomorphic surfaces and soils.
- Historical losses of Monterey pine forest have not been distributed evenly across the various forest subtypes.
- Preserving representative stands of Monterey pine forest on each geomorphic surface would best achieve the goal of protecting the full range and diversity of Monterey pine forest.

For the purpose of this ESHA study, Monterey pine forest types on uncommon geomorphic surfaces and soils (that have not been substantially altered and have potential for restoration) in the Monterey region are considered environmentally sensitive. Monterey pine forests on the following geomorphic surfaces and soils are considered environmentally sensitive habitats because large amounts of these forest subtypes have been removed and little natural forest remains on these substrates: marine terraces 2, 3, 4, 5, and 6; middle-aged dunes; and oldest dunes (Jones & Stokes Associates 1994). Table 1 provides an estimate of remaining acres of undeveloped Monterey pine forest on each geomorphic surface. Also provided in this table is the percentage of Monterey pine forest on each geomorphic surface remaining compared to historical extent.

By one estimation, only 51% (approximately 9,405 acres) of the historical extent of undeveloped Monterey pine forest remains on the Monterey Peninsula (Jones & Stokes Associates 1994). Approximately 20 acres of indigenous Monterey pine forest occur on private and public lands in the city, which is less than 1% of the remaining undisturbed Monterey pine forest on the Monterey Peninsula.

The conservation and preservation of Monterey pine forest will undoubtedly be an evolving issue over the next few years. For this reason, the status of Monterey pine forest as an environmentally sensitive habitat will need to be reevaluated as new ecological information becomes available.

Table 1. Estimate of Extent of Monterey Pine Forest
in Undeveloped Areas by Geomorphic Surface

Geomorphic Surface	Areas (acres) ^a	Percentage of Historical Extent
Marine terrace 1	43	--
Marine terrace 2	170	16
Marine terrace 3	161	12
Marine terrace 4	318 ^b	20
Marine terrace 5	457	37
Marine terrace 6	82	31
Undetermined marine terraces	219	52
Youngest dunes	15	--
Middle-aged dunes	123	15
Oldest dunes	229	20
Inland shale	4,722	79
Inland granite	1,194	49
Other surfaces	1,430	92
Undetermined surfaces	242	43
Total extent of undeveloped forest	9,405	51

^a Estimates based on the overlap between areas mapped by Jones & Stokes Associates as undeveloped Monterey pine forest (forest with natural understory) and geomorphic surfaces as mapped by Dupre (1990).

^b Of this total, 80 acres are on granite-derived terraces and 238 on shale-derived terraces.

Section 3. Study Methods

GOALS AND OBJECTIVES

The City is conducting this ESHA study to:

- evaluate the resource values of each site relative to the ESHA criteria (identified in Section 2) and identify potential ESHA boundaries,
- assess whether biological resources can be sustained without management, and
- identify resource management requirements or mitigation measures needed for resource protection or enhancement.

To accomplish these goals, the following field survey objectives were identified:

- map habitats (vegetation types), landforms, and soil types for each site;
- conduct special-status plant surveys at each of the five sites during spring 1995;
- conduct special-status wildlife surveys at Pescadero Canyon East and West, Mission Trails Park, and wildlife habitat assessments at Forest Hill Park and Carmel Beach;
- evaluate current use, resource management practices, and resource management problems (e.g., erosion, introduction of invasive horticultural plant species, and habitat degradation) for each site;
- evaluate the potential to widen the zone of riparian vegetation along the Carmel River at Rio Park;
- evaluate the Martin Road parcel (Unit 1) and the Flanders Mansion/Arboretum parcel (Unit 2) at Mission Trails Park to determine whether they are appropriately designated as ESHAs;
- identify opportunities for mitigating impacts from single-family home development adjacent to Mission Trails Park;