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# Flora and Fauna Baseline Study of Fort Ord, California



*Prepared by:*



**U.S. Army Corps of Engineers  
Sacramento District  
Sacramento, California**

**December 1992**

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**Flora and Fauna Baseline Study  
of Fort Ord, California**

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# **Introduction**

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## **PURPOSE OF THE ENVIRONMENTAL BASELINE STUDIES**

This environmental baseline study has been prepared to describe the baseline, or existing conditions, on the Fort Ord Military Reservation, a U.S. Army base located along the Pacific Ocean in northern Monterey County, California.

The baseline studies are informational documents to provide for the continued management of the Army's enclave (to be defined), to provide baseline information of various resource categories to local planning agencies for reuse planning of Fort Ord, and to serve as the baseline to be integrated into the Fort Ord disposal and reuse environmental impact statement (EIS).

The Army has encouraged local agency review and input of the draft baseline studies through distribution of the draft baseline studies, workshops, and informal interviews. The purposes of review include sharing expertise, disclosing agency analyses, checking for accuracy, detecting omissions, discovering issues, and providing inputs on potential reuse concepts for inclusion in the draft EIS.

## **AGENCIES THAT WILL USE THE ENVIRONMENTAL BASELINE STUDIES**

The Army is responsible for preparing the baseline studies. The baseline studies are intended to be used by local agencies surrounding Fort Ord in reuse planning.

This baseline study, which incorporates local agency inputs, will be used by the Army as the foundation of the draft EIS. A repository has been established at the following address:

Seaside Branch Library  
550 Harcourt Avenue  
Seaside, CA 93955  
408/899-2055

## ORGANIZATION OF THE ENVIRONMENTAL BASELINE STUDIES

This baseline study is part of a series of five separate baseline studies. The five baseline studies are outlined below:

- Land Use Baseline Study;
- Flora and Fauna Baseline Study;
- Air Quality Baseline Study;
- Soils Baseline Study; and
- Other Physical Attributes Baseline Study
  - Public Services and Utilities;
  - Traffic and Transportation Conditions;
  - Environmental Noise;
  - Climate and Topography;
  - Seismic and Geologic Conditions;
  - Hydrology, Drainage, and Water Quality;
  - Hazardous Materials Documentation;
  - Visual Resources; and
  - Coastal Resources.

Baseline information on cultural and historical resources and socioeconomics will be contained in the draft EIS.

Each baseline study contains the following:

- baseline study (of resource category),
- list of report preparers,
- citations, and
- technical appendices (where necessary).

## INFORMATION SOURCES

Information sources of the baseline studies were obtained from a variety of sources, including:

- site visits;
- informal interviews with Army, local agencies, and individuals;



- existing documents and previous studies; and
- maps.

More detail is provided in each baseline study on information sources.

## SUPPLEMENT

A supplement to the Flora and Fauna Baseline Study will be available after additional botanical surveys are completed in spring 1993. The supplement will clarify taxonomic questions concerning Monterey spineflower and robust spineflower and document changes in distribution and abundance of special-status plant species between 1992 and 1993. Additional wildlife surveys may also be undertaken in spring 1993. Wildlife surveys would provide additional information on the distribution of California linderiella and the black legless lizard at Fort Ord and determine the nesting status of western snowy plovers on the beaches between the coastal Ammunition Supply Point and the southern base boundary. The supplement to the Flora and Fauna Baseline Study will be completed by summer 1993.



# Flora and Fauna Baseline Study

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## INTRODUCTION

General vegetation and wildlife resources at Fort Ord are described in this baseline study. The information presented was derived from published and unpublished reports, personal communications with local experts, Jones & Stokes Associates file data, and field surveys conducted in spring and summer 1992.

Unusual combinations and a wide range of climatic, topographic, and soil conditions at Fort Ord have resulted in unique biological communities and locally endemic species (Stebbins and Major 1965). Fog protects many coastal areas from the effects of the summer dry season, but inland areas, sheltered by hills, are hot and dry. Much of the base is underlaid by sand deposits of Pleistocene origin (Howitt and Howell 1964). The southeastern portion of Fort Ord is dominated by claypan soils on Paso Robles sandstone (Griffin 1976). Several of Fort Ord's unique biological communities are associated with these substrates. (Refer to "Soils Baseline Study" for further description of soils found at Fort Ord.)

Fort Ord is located on California's central coast, a floristically diverse and unusual region. Botanical surveys have identified over 450 plant taxa at Fort Ord. Ten species of plants known from Fort Ord are endemic to north coastal Monterey County and adjacent coastal Santa Cruz County. One hundred and forty-six plant species reach their most southern and 156 plant species reach their most northern distributional limits in Monterey County, and at least 34 plant taxa are endemic to Monterey County (Howitt and Howell 1964, 1973). A list of native and naturalized plant species known from Fort Ord is presented in Appendix A.

The diverse habitat conditions at Fort Ord support a broad array of wildlife species. Ongoing wildlife surveys have identified over 260 vertebrate species at Fort Ord, including 24 species of reptiles and amphibians, 209 species of resident and migratory birds, and 28 species of terrestrial mammals (U.S. Department of the Army, Fort Ord, Directorate of Facilities and Engineering 1975; Natural Diversity Data Base 1992; Fort Ord Parklands Group 1992). Several of these species are adapted to specific habitat conditions found on the central coast. Two terrestrial mammals and one reptile found at Fort Ord occur only on California's central coast and are Category 2 candidates for federal listing as threatened or endangered. One federally listed endangered insect found at Fort Ord occurs almost exclusively in Monterey County. Many common wildlife species that are rare in Monterey County are also found in relatively high densities at Fort Ord. A list of native and naturalized wildlife species known from Fort Ord is presented in Appendix B.

## **SURVEY METHODS**

### **Botanical Resources**

Field surveys were conducted April 20-24, May 4-8, May 25-26, June 8-9, and August 13, 1992. The purpose of the surveys was to identify the locations of special-status plant species, map vegetation types, and expand the existing list of plant species occurring at Fort Ord. Plant species targeted during botanical surveys are listed in Table 1. Because Fort Ord supports an abundance of special-status plant species with overlapping populations, a survey method was developed using survey areas, or polygons, premapped on aerial photographs (Figure 1). Survey polygons were mapped and numbered on clear overlays affixed to color aerial photographs (1:1,200 scale). Each aerial photograph was coded to a data sheet. Botanists in the field identified the habitat type and scored the abundance of all special-status plant species for each polygon. Abundance categories used for special-status plants were "uncommon," "occasional," and "abundant". Because polygon sizes vary and the abundance estimated by the botanist is an approximation of density, the numbers of plants per polygon vary as a function of density and polygon size. For example, a large polygon scored as uncommon may have the same number of individual plants as a small polygon scored as abundant. Uncommon occurrence or low density is estimated at one to hundreds of plants per acre for herbaceous species and one to tens of plants per acre for shrub species. Occasional occurrence or medium density is estimated at hundreds to thousands of plants per acre for herbaceous species and tens to hundreds of plants per acre for shrub species. Abundant occurrence or high density is estimated at thousands to over ten thousands of plants per acre for herbaceous species and hundreds to over thousands of plants per acre for shrub species. Low density could indicate that a species is either sparsely and evenly distributed throughout the survey polygon or occurs as one to a few small, dense patches in the survey polygon. High density could indicate that a species is densely populated throughout the survey polygon or densely populated over a large portion of the survey polygon.

Survey polygon boundaries were visually rectified and transferred to a clear topographic map at the same scale. Survey boundaries and data sheet information were then digitally entered into a computerized geographic information system (GIS). The GIS was used to generate a biological communities map and distributional maps of special-status plant species.

### **Wildlife Resources**

Field surveys were conducted January 21-24, March 26-28, April 21-23, and May 19-22, 1992. Surveys for several different wildlife species were conducted during each visit. Survey methods for each resource or group of species are described in the following section.

Table 1. Target Special-Status Plant Species Used for Plant Surveys Potentially Occurring in the Fort Ord Study Area

Scientific and Common Name	Listing Status*		Habitat	Period Identifiable	Distribution
	Federal/State/CNPS				
<i>Allium hickmanii</i> Hickman's onion	C1/--/1b		Closed-cone conifer forest, chaparral, and grass-lands	April	Monterey Peninsula and near Jolon, Monterey County
<i>Arctostaphylos montereyensis</i> Toro manzanita	C2/--/1b		Chaparral, oak woodland, and coastal scrub	Year round	Monterey and San Luis Obispo Counties
<i>Arctostaphylos pajaroensis</i> Pajaro manzanita	--/--/4		Sandy hills in chaparral	Year round	Monterey County
<i>Arctostaphylos crizenis</i> Arroyo de la Cruz manzanita	C2/--/1b		Broadleafed upland and closed-cone coniferous forests, chaparral, coastal scrub, and grassland	Year round	Monterey and San Luis Obispo Counties; known from less than 20 sites
<i>Arctostaphylos hooveri</i> Hoover's manzanita	--/--/4		Chaparral	Year round	Monterey and San Luis Obispo Counties
<i>Arctostaphylos edmundsii</i> var. <i>edmundsii</i> Little Sur manzanita	C2/--/1b		Coastal bluff scrub and chaparral	Year round	Monterey County
<i>Arctostaphylos pumila</i> ( <i>A. uva-ursi</i> var. <i>pumila</i> ) Sandmat manzanita	C2/--/1b		Closed-cone conifer forest, coastal scrub, and coastal dunes	Year round	About Monterey Bay
<i>Arctostaphylos edmundsii</i> var. <i>parvifolia</i> Hanging gardens manzanita	C2/R/3		Chaparral	Year round	Monterey County
<i>Arctostaphylos hookeri</i> ssp. <i>hookeri</i> Hooker's manzanita	--/--/1b		Chaparral, closed-cone coniferous forest, and coastal scrub	Year round	Near the coast in Monterey and Santa Cruz Counties
<i>Astragalus tener</i> var. <i>titi</i> Coastal dunes milk vetch	C1/E/1b		Coastal dunes	May-May	Monterey Bay and San Diego Bay
<i>Benittoa occidentalis</i> Benittoa	C3c/--/4		Cismontane woodland on hot, dry, exposed serpentine or clay hillsides from 500-2,500 feet	Jun-Nov	Diablo Range in San Benito, Monterey, and Fresno Counties
<i>Calystegia collina</i> ssp. <i>venusta</i> South Coast Range morning-glory	C2/--/3		Unknown	May-Jun	Monterey to Fresno Counties and in Santa Barbara County
<i>Ceanothus rigidus</i> Monterey ceanothus	C2/--/4		Widespread in maritime chaparral; closed-cone conifer forest on sandy hills and flats	Year round	Monterey Peninsula
<i>Centrostegia insignis</i> Indian Valley spineflower	--/--/4		Cismontane woodland	Feb-Sept	Monterey and Santa Cruz Counties
<i>Chorizanthe douglasii</i> Douglas' spineflower	--/--/4		Cismontane woodland and lower coniferous forest on sandy or gravelly slopes	Apr-Jun	San Benito and Monterey Counties to San Luis Obispo County below 500 feet
<i>Chorizanthe rectispina</i> One-awned spineflower	C2/--/1b		Chaparral, oak woodland, and grassland	Jun-Aug	Coast Ranges of Monterey and San Luis Obispo Counties

Scientific and Common Name	Listing Status*		Habitat	Period Identifiable	Distribution
	Federal/State/CNPS				
<i>Chorizanthe robusta</i> var. <i>robusta</i> Robust spineflower	PE/--/4		Coastal dunes and scrub on dry, sandy places below 1,000 feet	May-Sept	Coastal Santa Cruz and Monterey Counties
<i>Chorizanthe pungens</i> var. <i>pungens</i> Monterey spineflower	PE/--/1b		Chaparral, oak woodland, and grassland	Apr-Jun	Monterey Peninsula and coastal north Monterey County
<i>Clarkia lewisii</i> Lewis' clarkia	--/4		Coastal scrub	May	Monterey County
<i>Collinsia franciscana</i> San Francisco collinsia	--/4		Dry, stony and grassy slopes in coastal scrub and closed-cone coniferous forest	Apr-May	San Francisco County to San Mateo County
<i>Cordyanthus rigidus</i> var. <i>littoralis</i> Seaside bird's-beak	C1/E/1b		Coastal scrub, closed-cone conifer frst, oak woodland, and chaparral on dry, sandy soils below 3,000 feet	Aug-Sept	Coast Ranges of Monterey and Santa Barbara Counties
<i>Cryptantha rautanii</i> Rautan's cryptantha	--/4		Grassland and cismontane woodland	Mar-Jun	Watershed of Salinas and Carmel Rivers, Monterey and west Merced Counties
<i>Delphinium hutchinsoniae</i> Hutchinson's larkspur	C2/--/1b		Coastal scrub, coastal prairie, and mixed ever- green forest	Unknown	Monterey County
<i>Delphinium umbraculorum</i> Umbrella larkspur	--/4		Cismontane woodland; usually shaded places	Year round	Monterey and San Luis Obispo Counties
<i>Eriastrum virgatum</i> Virgate eriastrum	--/4		Coastal dunes	April-June	Monterey, San Benito, Ventura, and Los Angeles Counties
<i>Ericameria fasciculata</i> Eastwood's ericameria	C2/--/1b		Closed-cone conifer forest, chaparral, and coastal scrub	Year round	Monterey and Carmel Bays
<i>Eriogonum buttersworthianum</i> Butterworth's buckwheat	C2/R/1b		Chaparral	Unknown	Monterey County
<i>Erysimum menziesii</i> Menzies' wallflower	E/E/1b		Coastal dunes	Mar-Jun	Monterey County and from Fort Bragg to north of Humboldt Bay
<i>Erysimum ammophilum</i> Coast wallflower	C2/--/1b		Coastal dunes	Feb-May	Coastal areas of Monterey and Santa Cruz County, and Santa Rosa Island
<i>Fruittaria liliacea</i> Fragrant fritillary	C2/--/1b		Coastal scrub and grassland; often on ultramafic soils	Feb-Apr	Sonoma County to Monterey County

Table 1. Continued

Scientific and Common Name	Listing Status*		Habitat	Period Identifiable	Distribution
	Federal/State/CNPS				
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i> Sand gilia	E/T/1b		Coastal dunes and scrub	Apr-May	About Monterey Bay
<i>Hemizonia pentactis</i> Salinas River tarplant	--/4		Dry, barren hills of grassland	May-Oct	Monterey and San Luis Obispo Counties
<i>Holocarpha macradenia</i> Santa Cruz tarweed	C1/E/1b		Coastal prairie, coastal scrub, and grasslands on heavy clay soils	Jun-Oct	Along the coast in Monterey, Santa Cruz, and Contra Costa Counties
<i>Horkelia cuneata</i> ssp. <i>sericea</i> Wedge-leaved horkelia	C2/--/1b		Sandy and gravelly places in coastal scrub and closed-cone coniferous forest	Apr-Sept	Along the coast from Sonoma County to Santa Barbara County
<i>Layia camosa</i> Beach layia	E/E/1b		Widely scattered stations on coastal sand dunes	May-Jun	Humboldt County to San Francisco County and historically to Point Concepcion
<i>Layia jonesii</i> Jones' layia	C2/--/1b		Chaparral and grassland	Mar-May	Monterey and San Luis Obispo Counties
<i>Lomatium parvifolium</i> Small-leaved tomatium	--/4		Closed-cone conifer forest	Mar-Jun	Monterey, Santa Cruz, and San Luis Obispo Counties
<i>Lupinus tidestromii</i> var. <i>tidestromii</i> Tidestrom's lupine	E/E/1b		Coastal dunes	May-Jun	Monterey Peninsula
<i>Malacothamnus palmeri</i> var. <i>involutus</i> Carmel Valley bush mallow	C2/--/1b		Cismontane woodland	Year round	Monterey and San Luis Obispo Counties
<i>Malacothrix saxatilis</i> var. <i>arachnoidea</i> Carmel Valley malacothrix	C2/--/1b		Rocky open banks of chaparral and mixed ever- green forest	May-Sept	Monterey and Santa Barbara Counties
<i>Microseris decipiens</i> Santa Cruz microseris	C2/--/1b		Mixed evergreen forest, closed-cone pine forest, chaparral, coastal prairies, coastal scrub, and grasslands	Apr-May	Near the coast in Marin, Santa Cruz, and Monterey Counties
<i>Mimulus rattanii</i> var. <i>decurtatus</i> Santa Cruz County monkeyflower	--/4		Chaparral and conifer forest	May-Sept	Santa Cruz and Monterey Counties
<i>Monardella undulata</i> var. <i>undulata</i> Curly-leaved monardella	--/4		Chaparral and coastal dunes and scrub below 500 feet	May-Aug	Near the coast from Marin County to Santa Barbara County
<i>Ophioglossum lusitanicum</i> ssp. <i>californicum</i> California's adder's-tongue fern	C3c/--/4		Vernal pools	Dec-Apr	Ione, Amador County, Monterey, and San Diego to Mexico

Table 1. Continued

Scientific and Common Name	Listing Status*		Habitat	Period Identifiable	Distribution
	Federal/State/CNPS				
<i>Perideridia pringlei</i> Pringle's yampah	C3c/--/4		Canyons and open slopes of chaparral, coastal scrub, and cismontane	Apr-Jun	North Los Angeles County to Monterey County
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i> Gairdner's yampah	C2/--/1b		Chaparral and broadleafed upland forest, typically on wet, heavy soils	Jun-Jul	San Diego County north to Sonoma County
<i>Piperia yadoni</i> Yadon's piperia	--/--/1b		Chaparral and coastal scrub	May-Sept	Coastal Monterey County
<i>Piperia elongata</i> ssp. <i>michaelii</i> Purple-flowered piperia	--/--/4		Coastal bluff scrub	May-Sept	Humboldt and Alameda Counties and from Marin to San Luis Obispo County
<i>Plagiobothrys uncinatus</i> Hooked popcornflower	C2/--/3		Chaparral and possibly grassland and cismontane woodland	Apr-May	Monterey and San Benito Counties
<i>Quercus lobata</i> Valley oak	--/--/4		Cismontane woodland and riparian forest	Year round	Widespread throughout Central Valley and surrounding foothills
<i>Ribes divaricatum</i> var. <i>pubiflorum</i> Straggly gooseberry	--/--/4		Broadleafed upland and north coast coniferous forests	Mar-May	Coast ranges from Santa Barbara County north to Oregon
<i>Sidalcea hickmanii</i> Hickman's checkerbloom	C3c/--/1b		Hillsides in chaparral	May-Jun	Monterey County
<i>Trifolium grayi</i> Gray's clover	--/--3		Wet meadows near coast below 2,000 feet	Apr-Jun	Mendocino County to Monterey County

\* Status definitions:

**Federal**

E = listed as endangered under the federal Endangered Species Act.

PI = proposed for federal listing as endangered under the federal Endangered Species Act.

C1 = Category 1 candidate for federal listing. Category 1 includes species for which USFWS has on file enough substantial information on biological vulnerability and threat to support proposals to list them.

C2 = Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.

C3 = no longer a candidate for federal listing. Category 3 species have been dropped from the candidate list because they are extinct (C3a), taxonomically invalid or do not meet the USFWS definition of a "species" (C3b), or too widespread or not threatened at this time (C3c).

\* = USFWS is drafting a listing proposal for this species (Chambers pers. comm.).



Table 1. Continued

State

E = listed as endangered under the California Endangered Species Act.

R = listed as rare under the California Endangered Species Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

California Native Plant Society

1b = List 1b species: rare, threatened, or endangered in California and elsewhere.

3 = List 3 species: plants about which more information is needed to determine their status.

4 = List 4 species: plants of limited distribution that may be considered rare under CEQA.

## **Small Mammal Surveys**

Small mammal surveys were conducted on January 22-24, March 26, April 23, and May 20 and 21, 1992. Four-inch Sherman box traps were set in a variety of habitats using either a grid or line configuration. From 24 to 60 traps were used in each trapping area, with two traps set side by side at each station. Traps were set at dusk and checked the following morning. Locations of trapping effort and date surveyed are shown in Figure 2.

Trapping effort was distributed among all habitat types to achieve trapping effort proportionate to the occurrence of the habitat at Fort Ord. A total of 572 trap nights were spent at various locations at Fort Ord: 30 trap nights were spent in dune habitat, 94 trap nights in coastal scrub, 144 trap nights in maritime chaparral, 30 trap nights in inland coast live oak woodland, 132 trap nights in coastal coast live oak woodland, 82 trap nights in grasslands, 30 trap nights in mixed riparian forest, and 30 trap nights in oak riparian forest. Occasionally, the traps appeared to be disturbed by skunks or other predators; however, trapping in these locations was included in trapping effort totals.

Animals captured were measured, keyed to species (or subspecies if appropriate) and released. In some cases, measurements were not taken if identification was possible from morphology or the animal escaped while being handled. There were no mortalities.

Numbers of species captured in each habitat relative to trapping effort, capture locations, and measurement of captured animals when available are listed in Appendix C.

## **Shrew Surveys**

Surveys for Monterey ornate shrew were conducted on April 20 and 21, 1992. A memorandum of understanding was obtained from the California Department of Fish and Game (DFG) for trapping the Monterey ornate shrew, which is a federal Category 2 candidate for threatened or endangered status. Fifteen pitfall traps were set in Pilarcitos Canyon, and 10 traps were set in Merrill Ranch Canyon (Figure 3). Traps were left open for 4 hours each night (8:00 p.m.-12:00 a.m.), for a total of 200 trapping hours (25 traps x 4 hours/night x two nights).

Pitfall traps consisted of 1/2-gallon plastic tubs, and were set in areas of microhabitat where shrews would be expected to be found. Traps were baited with catfood and checked approximately every 2 hours.

## **Reptile Surveys**

Surveys were conducted for both coast horned lizard and black legless lizard. No formal survey method was followed for coast horned lizards. Observations of coast horned lizards were made as other surveys were being carried out. All observations were recorded and mapped.

Surveys for black legless lizards were conducted on May 20, 21, and 22. Areas of appropriate habitat were surveyed on Fritzsche Army Airfield, in the developed portion of the base and in housing areas, and on the dunes west of State Route (SR) 1 (Figure 3). On May 22, Stephen Ruth, Ph.D., a local herpetologist, aided in the dune surveys. Areas under bushes, shrubs, and trees were raked with potato rakes to turn up legless lizards under the duff and soil. Survey effort totaled 17.0 person-hours.

### **Wetland Wildlife Surveys**

Wetland wildlife surveys were conducted on March 25-27 and April 20 and 21, 1992. A total of 26 permanent and ephemeral water bodies were surveyed for California tiger salamander, fairy shrimp, California red legged frog, and southwestern pond turtle. Water bodies surveyed and the number or name given to each pool or pond are shown in Figure 4.

Fairy shrimp were found only during the March surveys. It is likely that by the April surveys fairy shrimp had completed their annual life cycle and died. Therefore, fairy shrimp may occur in more areas than these surveys initially indicate.

The circumference of each water body was walked, and a dip net was used to sample for fairy shrimp and amphibian larvae in the water. Amphibian larvae and adults were identified onsite and invertebrates were preserved in alcohol for later identification. Where possible, one or both biologists walked into the water and collected samples with the dip net. Fairy shrimp were identified to species by Jones & Stokes Associates biologists, Stephanie Myers and Brent Helm, who are included on the U.S. Fish and Wildlife Service (USFWS) brief list of recognized specialists in fairy shrimp identification.

Immature fairy shrimp were found at Jack's Pond and could not be identified to species at that time. Soil samples were taken at a later date and the species present was identified by the eggs. Data sheets for wetland surveys are presented in Appendix D.

### **General and Riparian Bird Surveys**

General bird surveys were conducted continuously while on Fort Ord. General locations of common bird sightings were recorded, and sightings of special-status bird species were recorded and mapped.

Riparian bird surveys were conducted on May 19-21, 1992. Areas surveyed are shown in Figure 3. Two biologists walked through the habitat area and recorded all birds observed. Location and breeding status of all special-status bird species were recorded and mapped.

## Grassland Surveys

Specific grassland surveys were conducted on April 23 and 24, 1992, although observations of, and evidence indicating the presence of, special-status species in grassland habitats were recorded during all field visits.

During the grassland surveys, three biologists walked various portions of the habitat area (Figure 3) and recorded observations of, or evidence indicating the presence of American badger, burrowing owl, loggerhead shrike, and California horned lark.

## Western Snowy Plover Surveys

The stretch of beach from Stilwell Hall south to the southern end of the Ammunition Supply Point was surveyed for western snowy plovers on May 22, 1992 (Figure 3). Two biologists walked the beach from the water line to the foot of the dunes scanning for western snowy plovers or evidence of nesting. All other birds and animals observed and remains of dead marine birds and mammals were recorded.

## BIOLOGICAL COMMUNITIES

The plant and wildlife components of biological communities occurring at Fort Ord are described below. Community classification is modified from Holland (1986), Barbour and Major (1988), and Griffin (1978). Descriptions are specific to examples of the communities found at Fort Ord during field surveys conducted in 1992. Wildlife habitat associations are based on field surveys and data from Roberson (1985), Ingles (1965), and Zeiner et al. (1988, 1990a, and 1990b).

Figure 5 depicts the locations of general biological communities at Fort Ord. Distribution of specific biological communities are given in Figures 6-11 and acreages are given in Table 2.

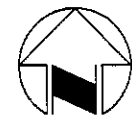
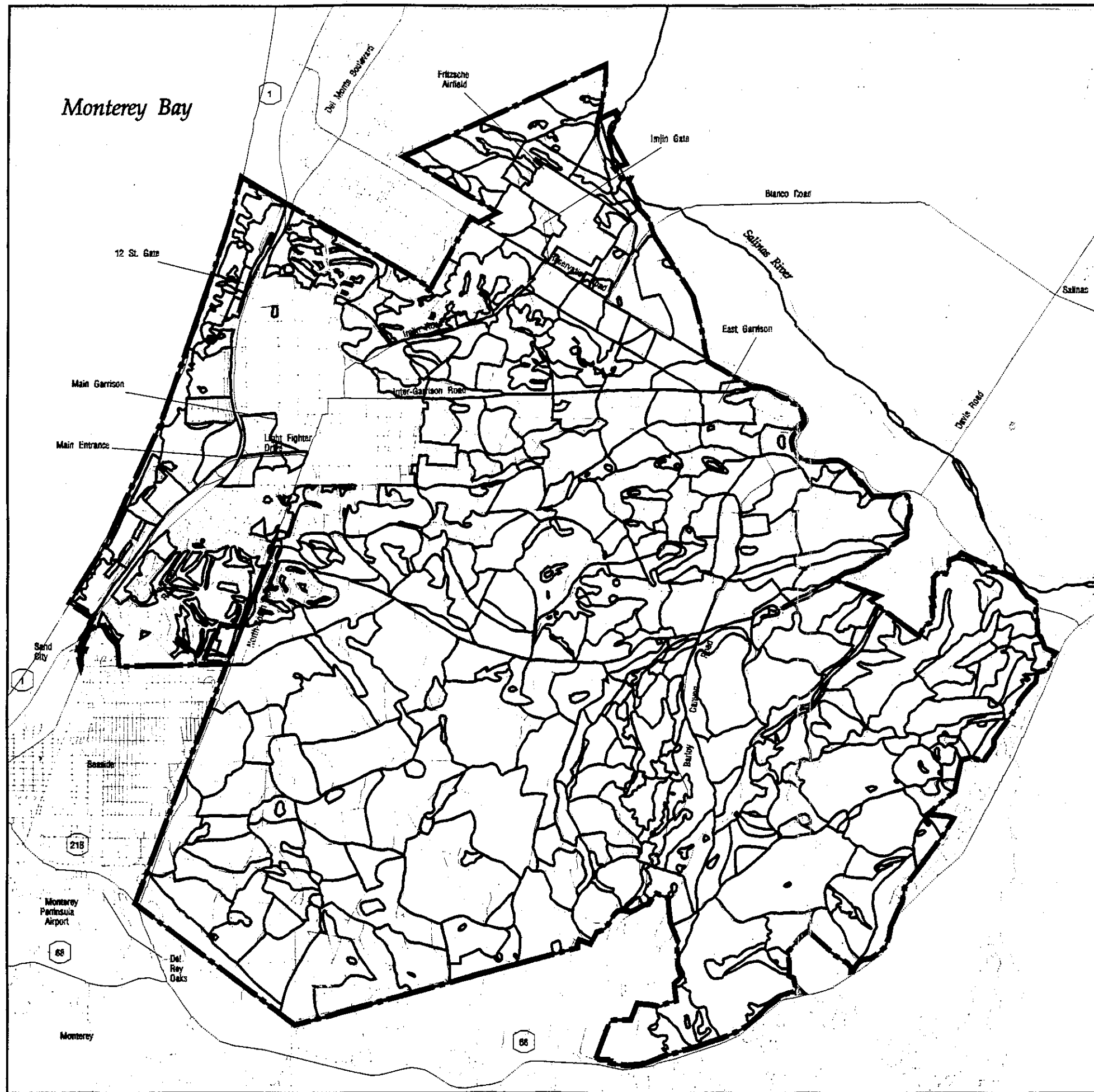
### Coastal Strand and Dune Communities

Coastal strand and dune communities occur adjacent to Monterey Bay, west of the Pacific Coast Highway (Figure 6). The vegetation that characterizes dune habitats is adapted to the harsh environmental conditions resulting from salt spray, strong winds, shifting sand, and low soil moisture. Adaptive features of dune plants include extensive root systems; low-growing habit; hairy or waxy stems and leaves; and small, fleshy leaves.

The native dune vegetation at Fort Ord is mostly absent or degraded because of the aggressive growth of African ice plant. Native plants have been largely excluded except in scattered patches and at the far north end of the dunes.

Figure 1

Survey Polygons used for Field Studies at Fort Ord



Scale 1:60,000

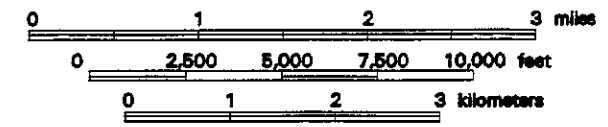
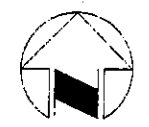
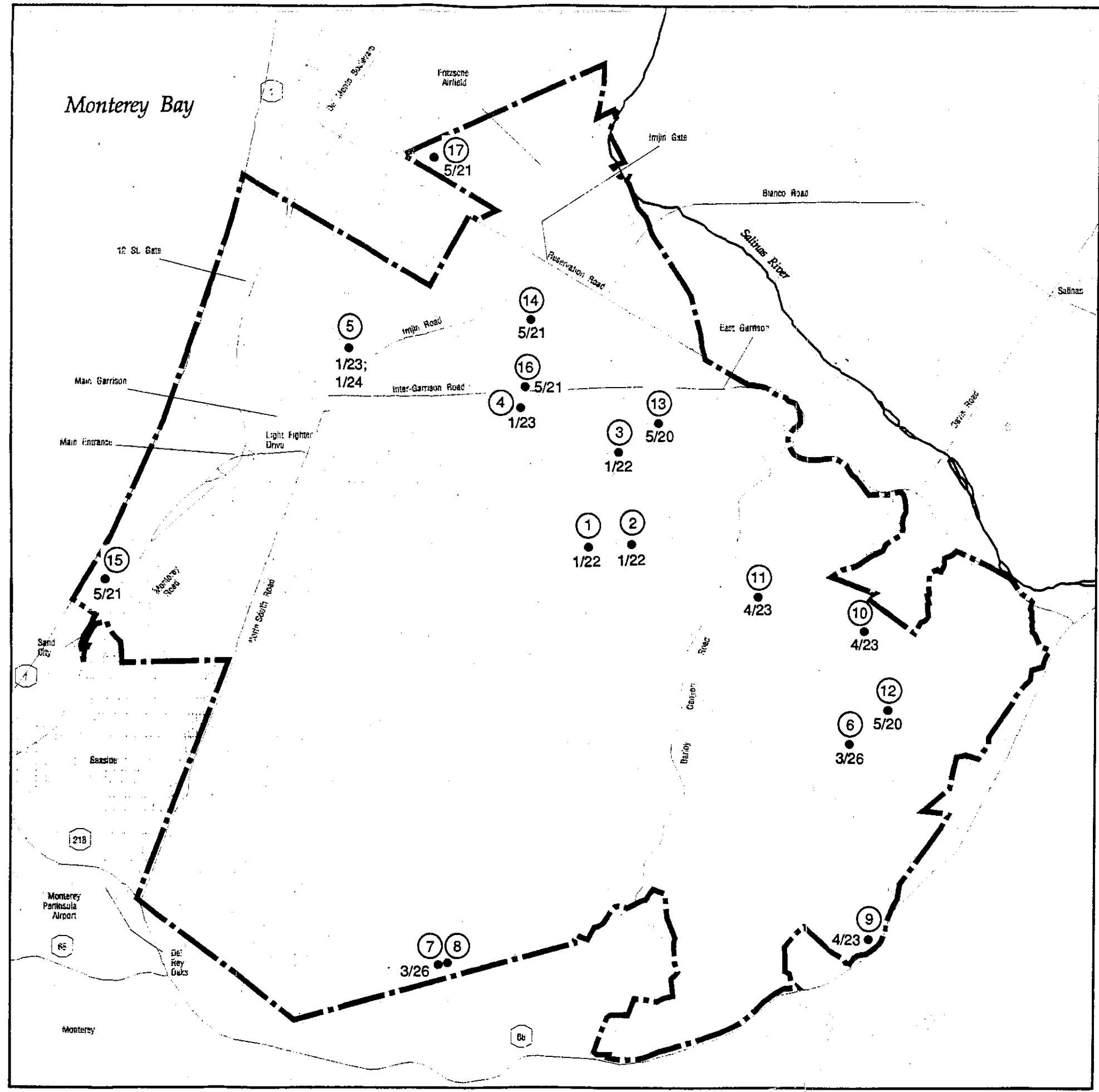


Figure 2

### Small Mammal Survey Locations at Fort Ord and Date Surveyed



Scale 1:60,000

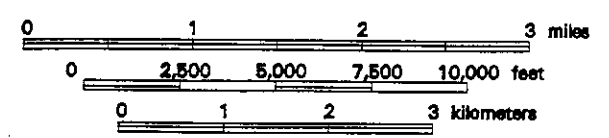
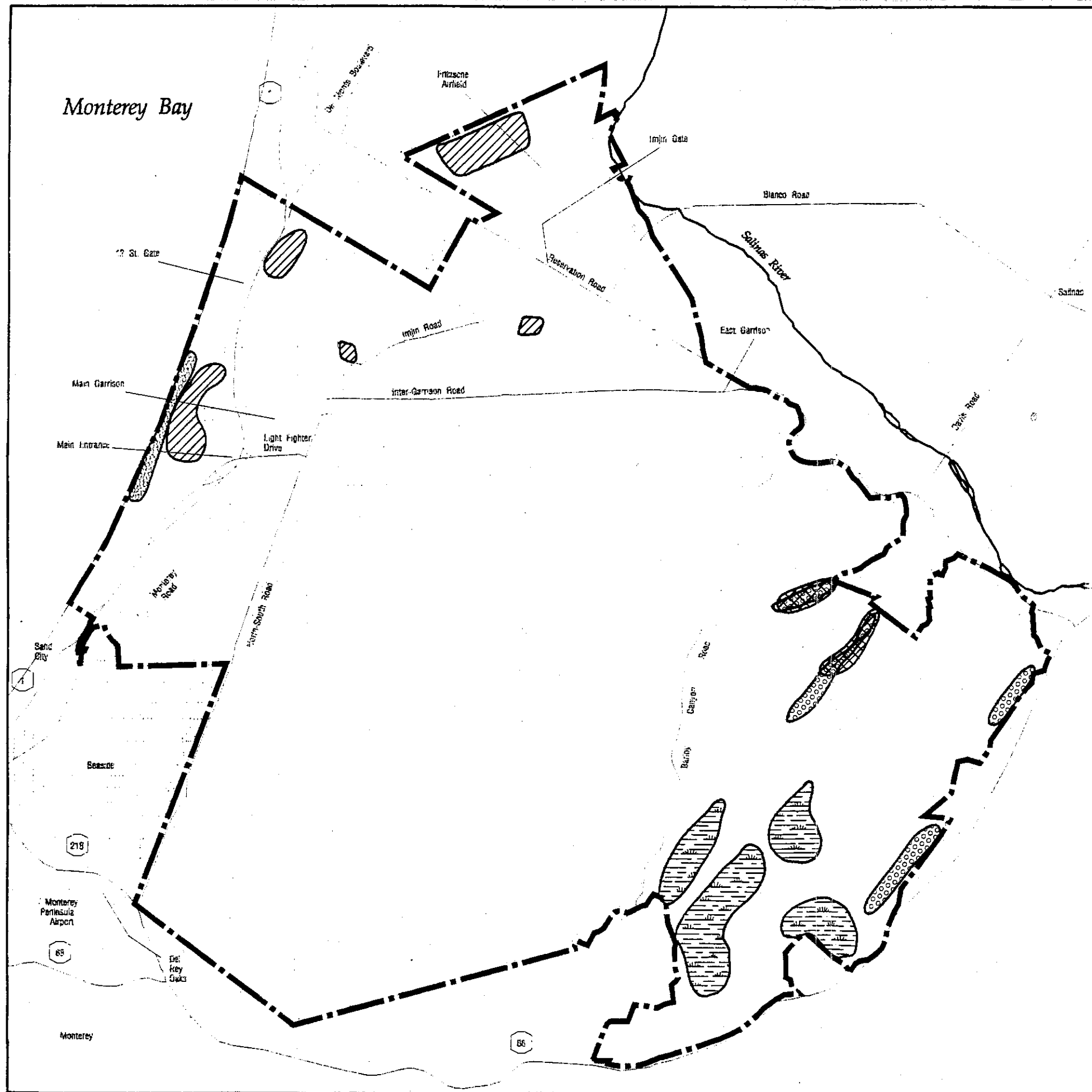






Figure 3

Locations of Wildlife Survey Effort at Fort Ord



LEGEND

-  Black legless lizard
-  Monterey ornate shrew
-  Western snowy plover
-  Riparian bird
-  Grassland



Scale 1:60,000

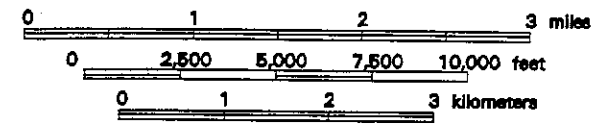
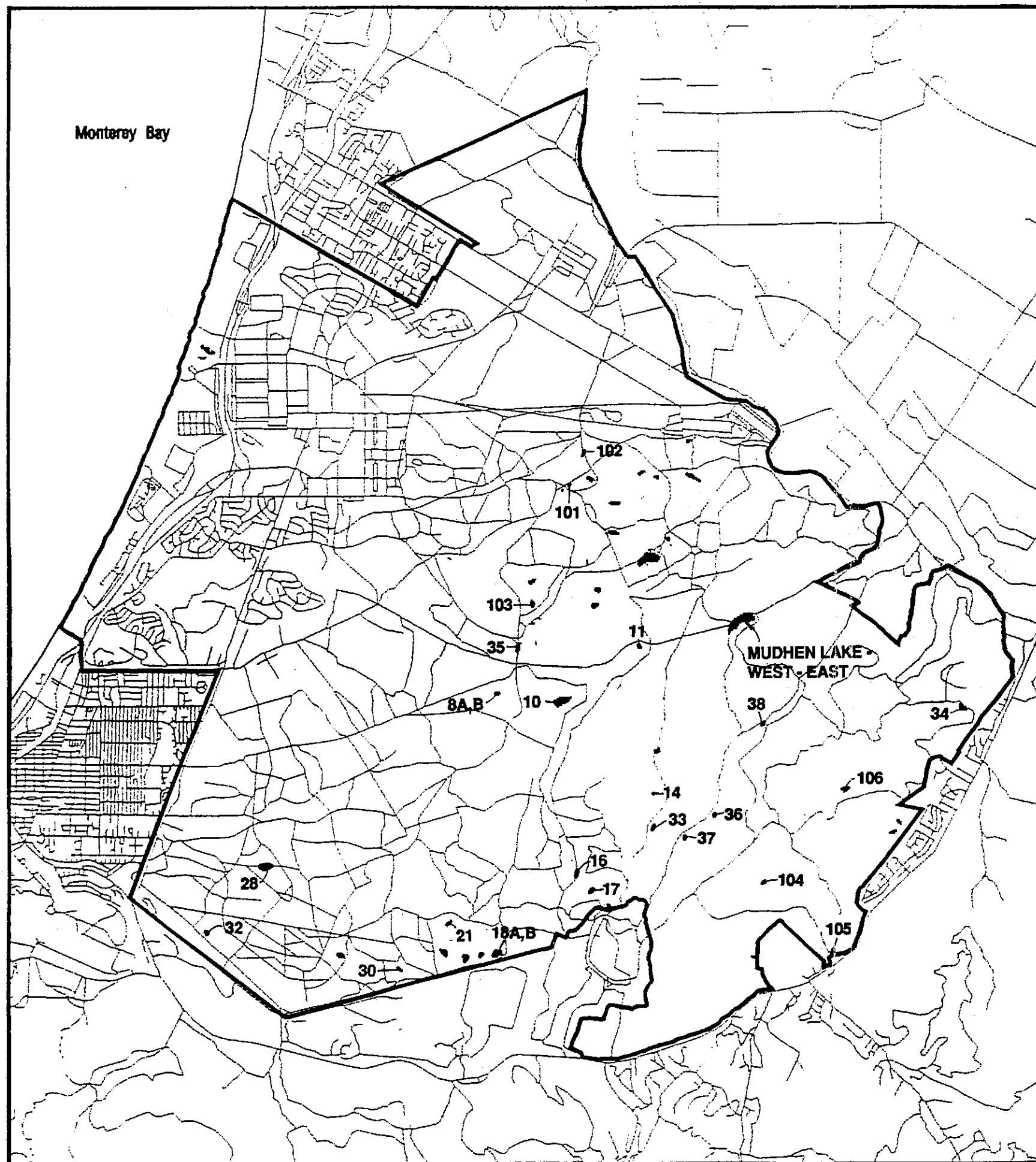


Figure 4

Vernal Pools and Ponds Surveyed for  
Freshwater Aquatic Wildlife



Scale 1:60,000

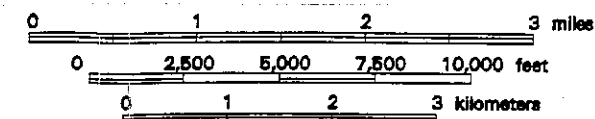
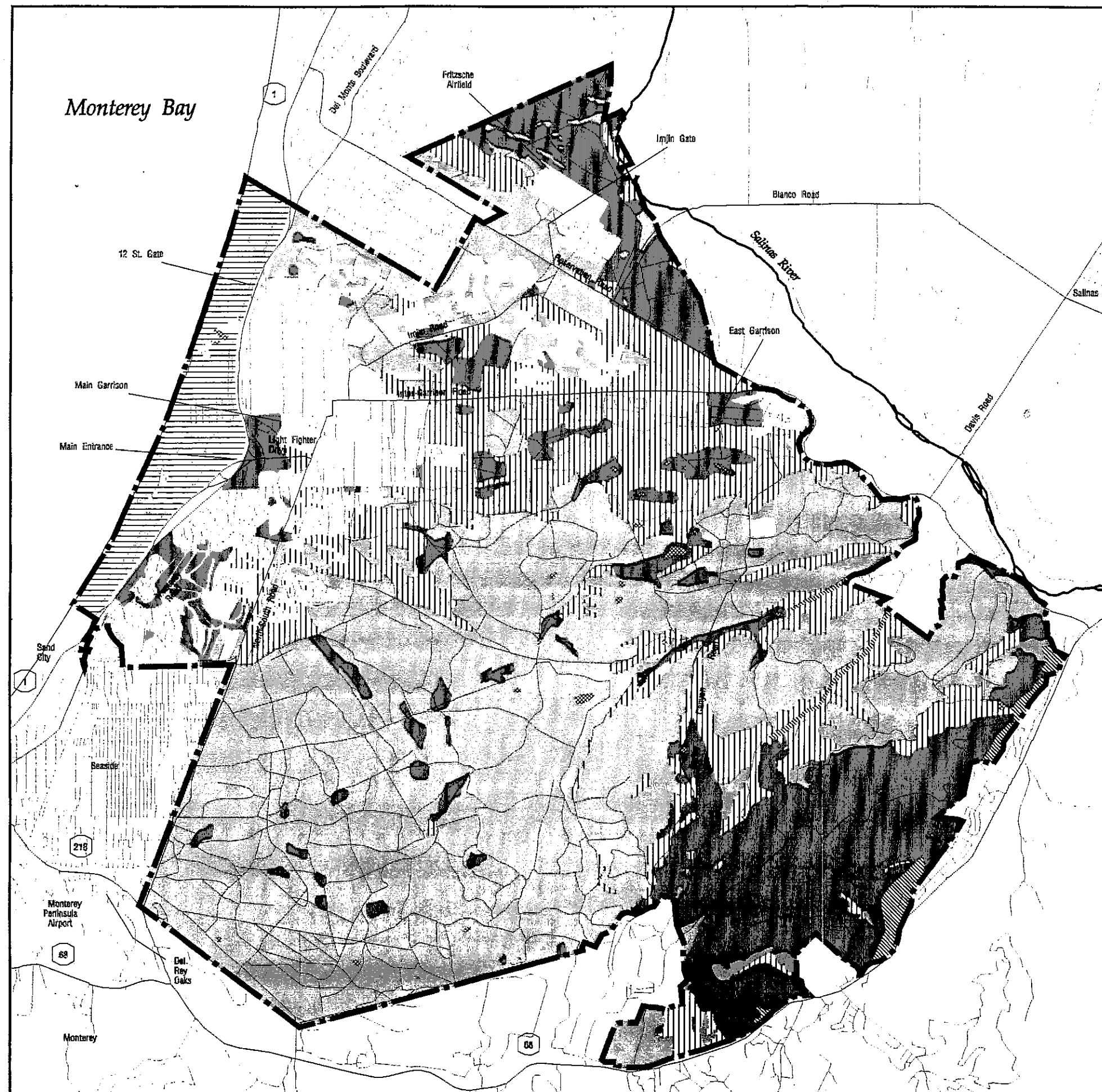











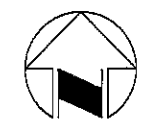
Figure 5

General Biological Communities at Fort Ord



Habitat Legend

-  Coastal strand and dune
-  Chaparral and coastal scrub
-  Coast live oak woodland and savanna
-  Grasslands
-  Riparian
-  Wetland and open water
-  Developed



Scale 1:60,000

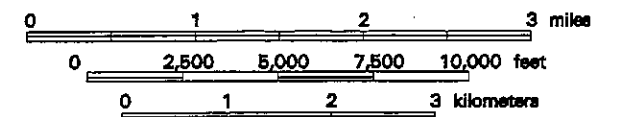


Figure 6  
Coastal Strand and Dune at Fort Ord

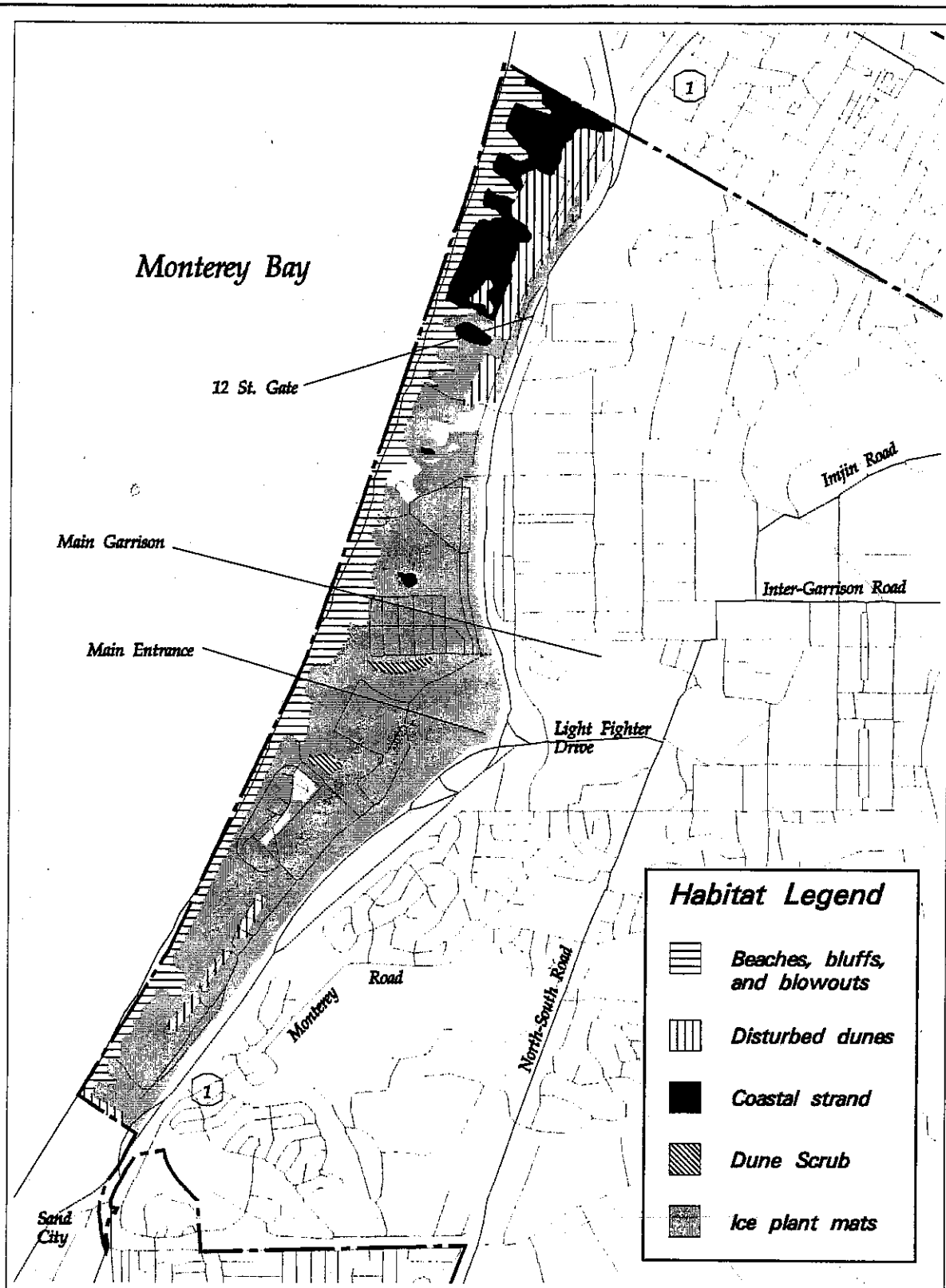
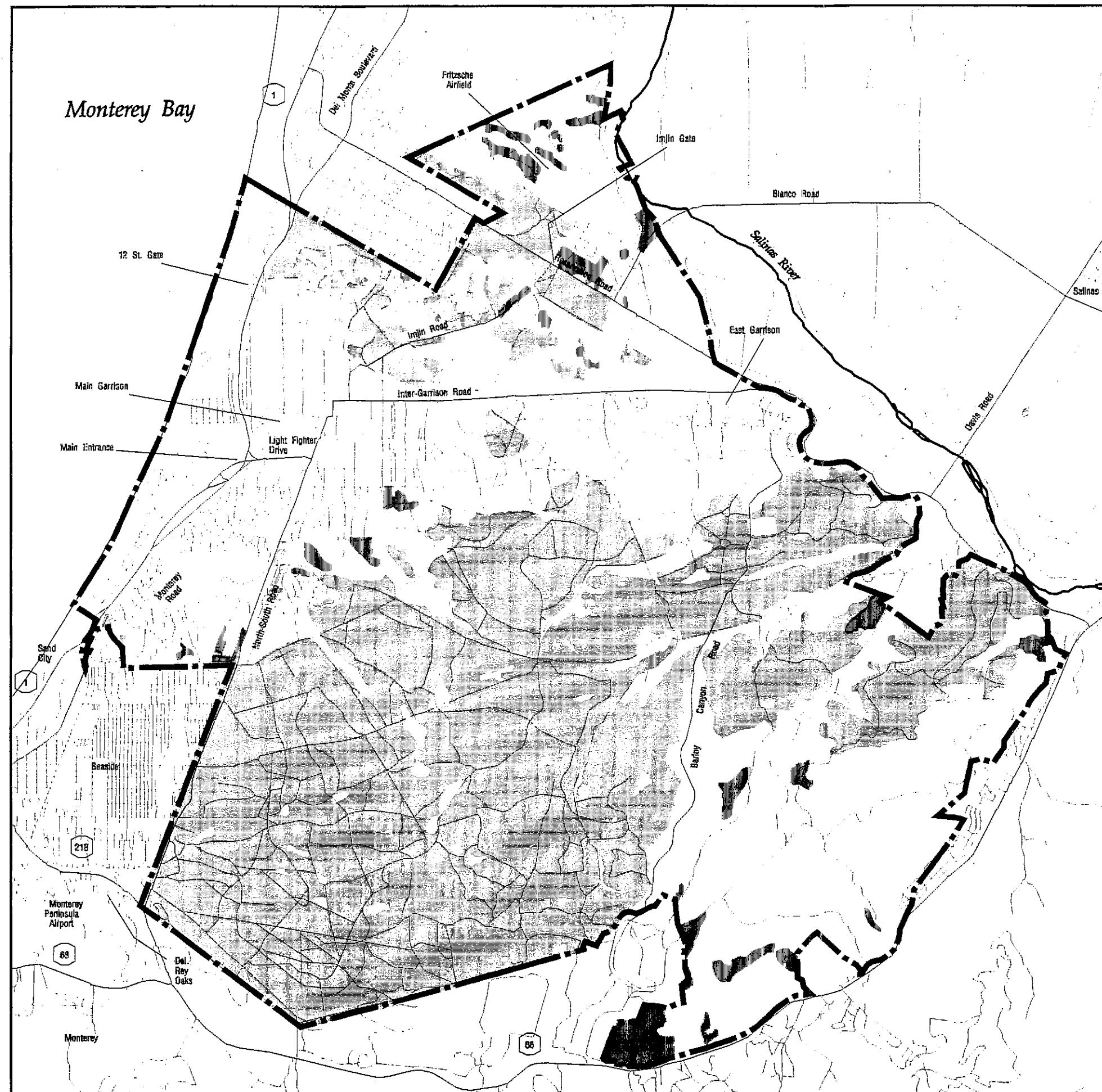




Figure 7

Maritime Chaparral and Coastal Scrub at Fort Ord



Habitat Legend

-  Maritime chaparral
-  Coastal scrub

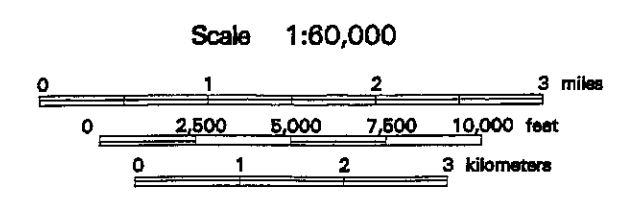
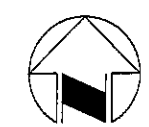
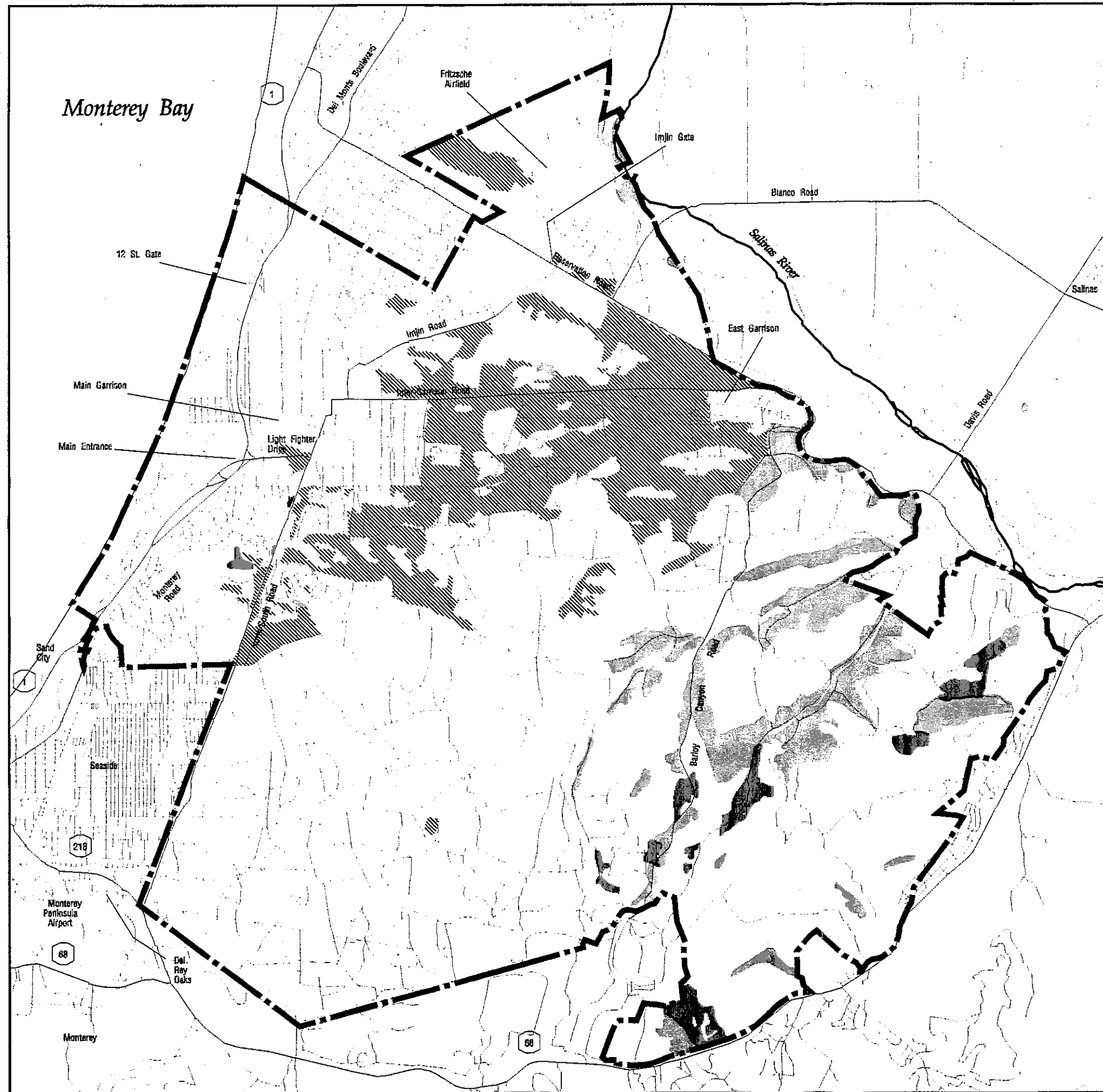





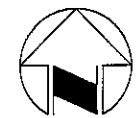
Figure 8

Oak Woodland and Savannah at Fort Ord



**Habitat Legend**

-  Coastal coast live oak woodland
-  Inland coast live oak woodland
-  Coast live oak savanna



Scale 1:60,000

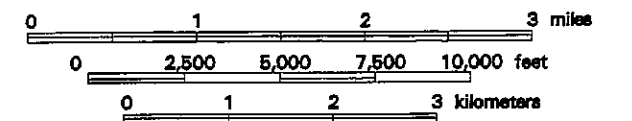
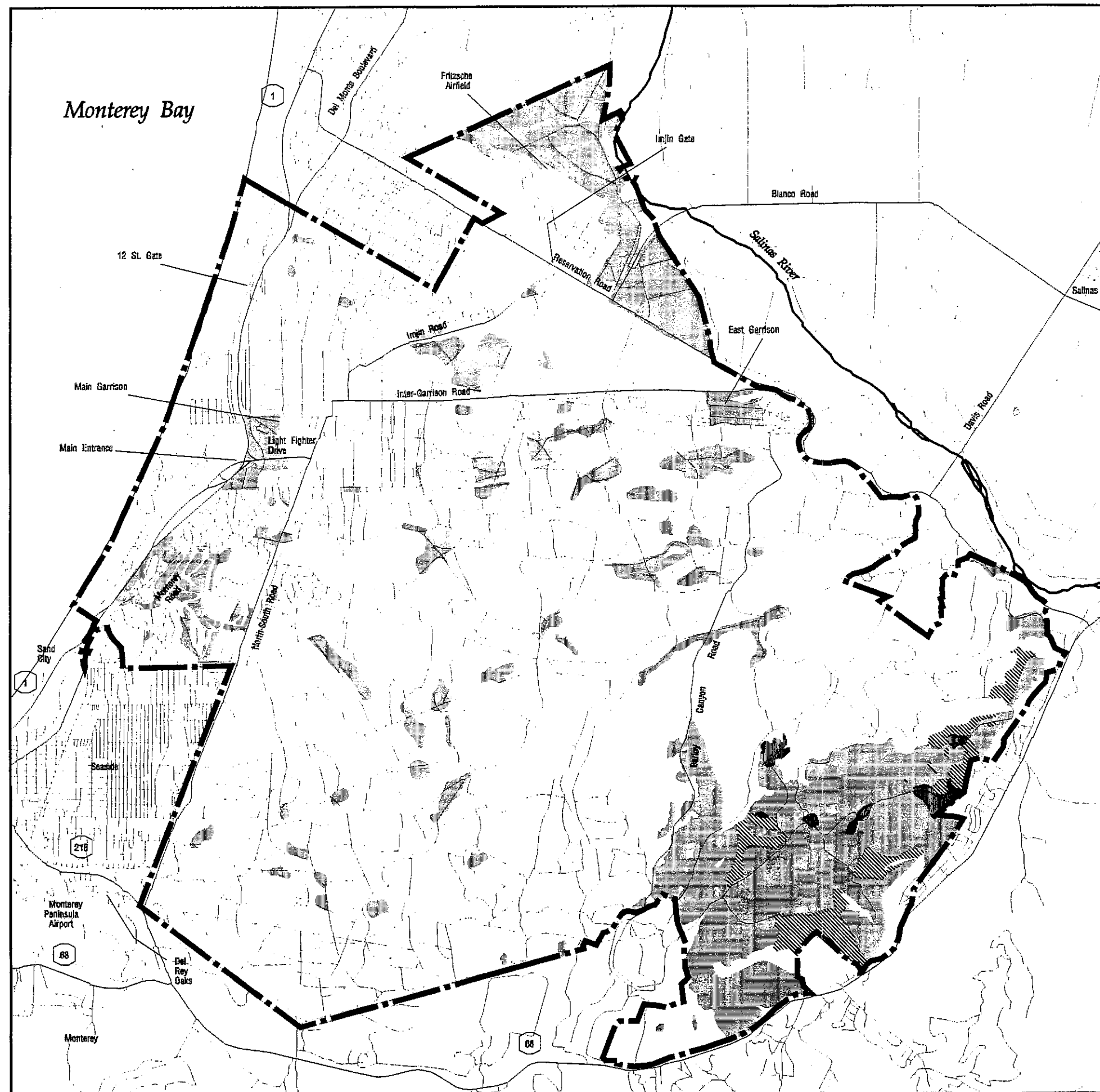





Figure 9

Grasslands at Fort Ord



Habitat Legend

-  Valley needlegrass grassland
-  Annual grassland
-  Blue wildrye grassland



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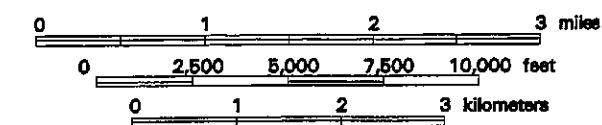
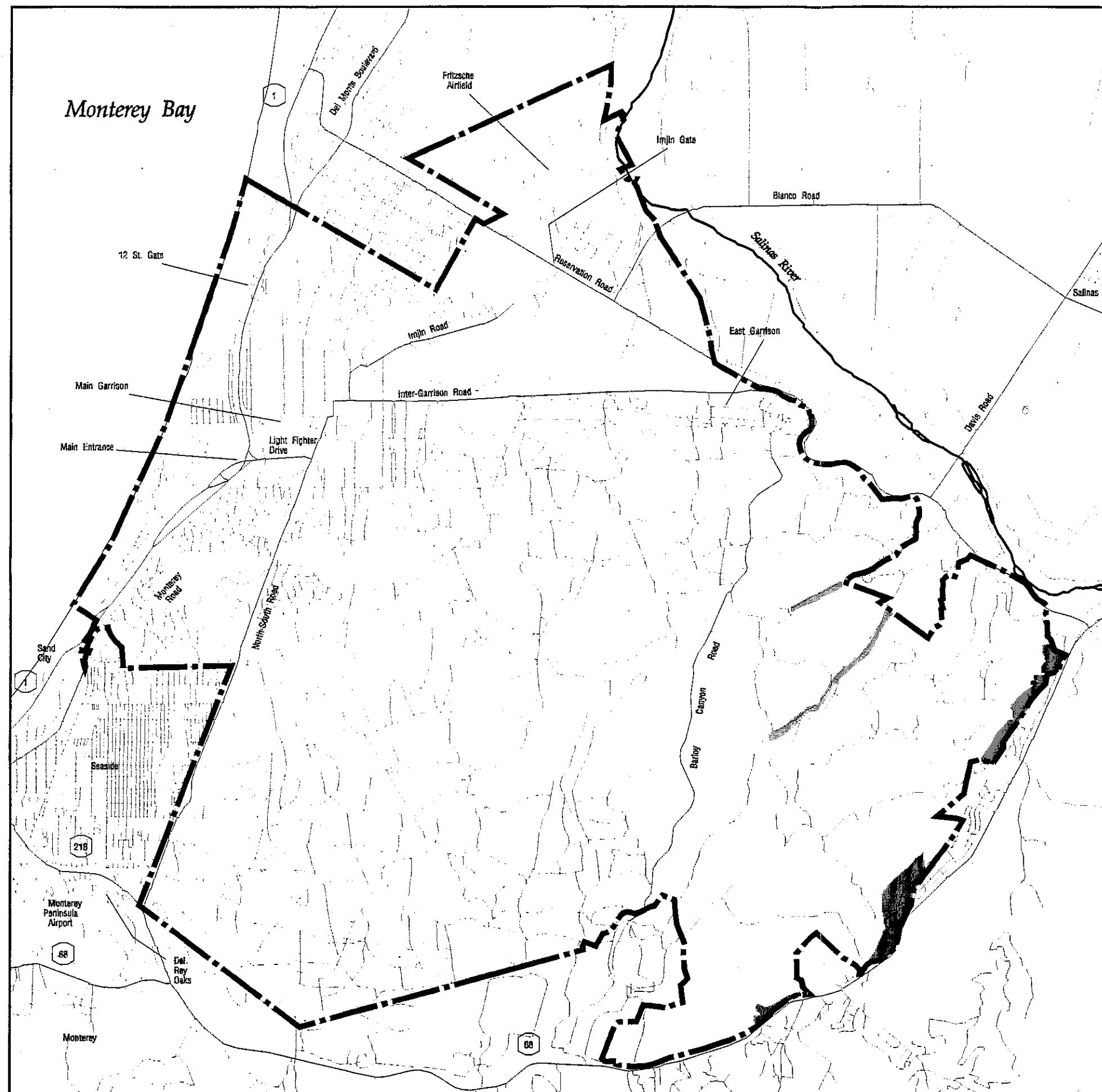




Figure 10

Riparian Habitats at Fort Ord



Habitat Legend

-  *Coast live oak riparian forest*
-  *Mixed riparian forest*



Scale 1:60,000

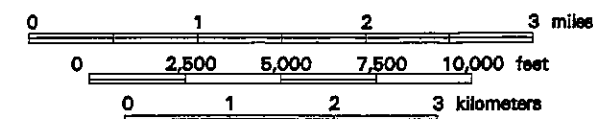
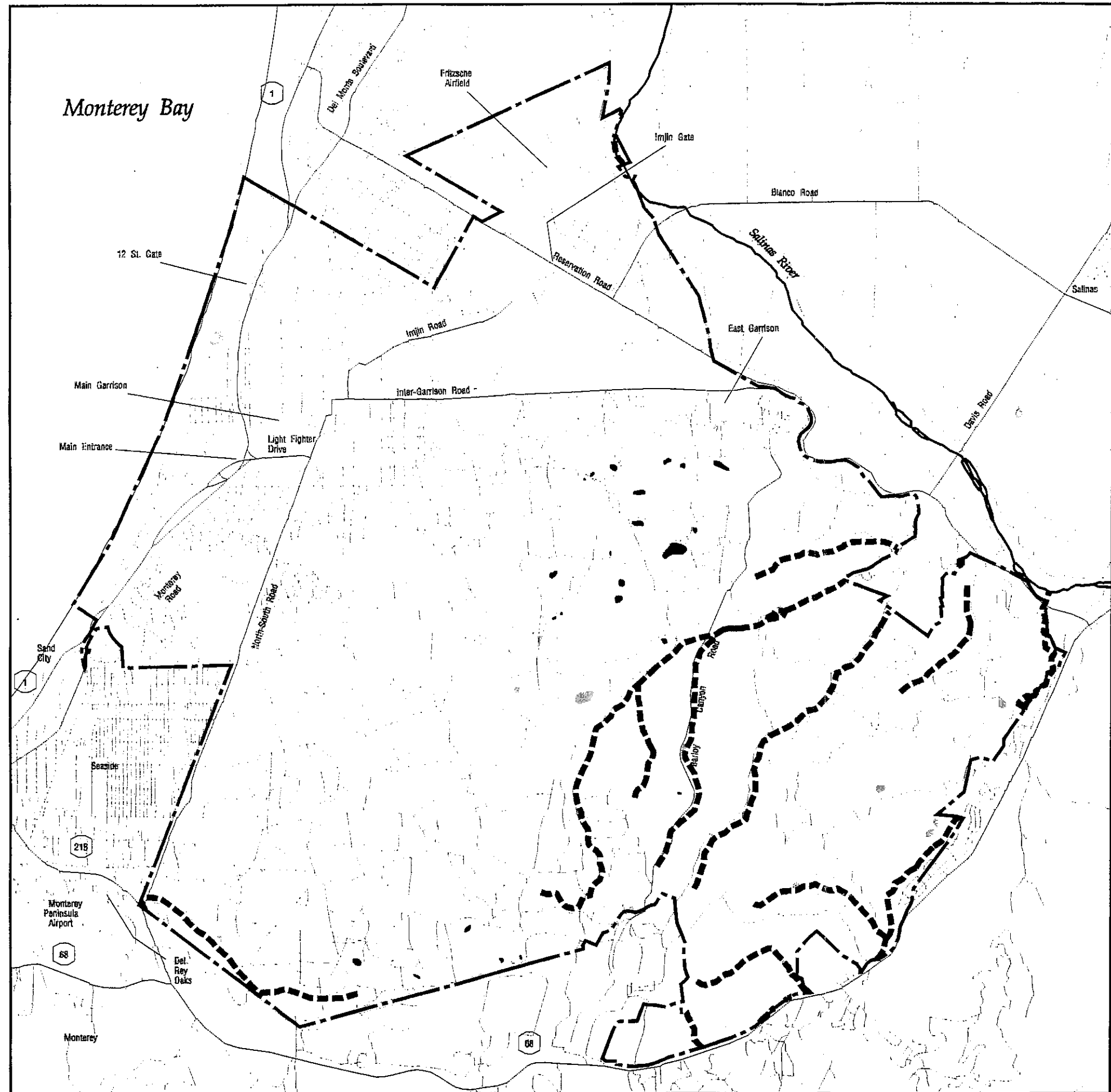







Figure 11

Vernal Pools, Streams, and Ponds and Freshwater Marsh at Fort Ord



Habitat Legend

-  Vernal pools
-  Ponds and freshwater marsh
-  Stream courses

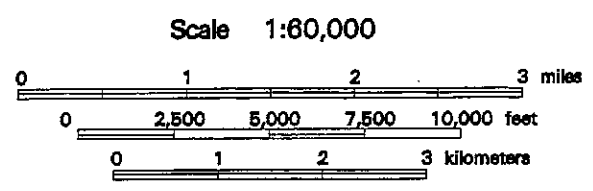
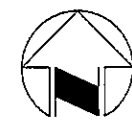


Table 2. Habitat Acreage at Fort Ord

Habitat	Acreage
Beaches, Bluffs, and Blowouts	199
Disturbed Dune	101
Ice Plant Mats	638
Dune Scrub	8
Native Coastal Strand	89
Coastal Scrub	572
Maritime Chaparral	12,596
Coastal Oak Woodland	2,972
Inland Oak Woodland	1,435
Oak Savanna	308
Annual Grassland	4,323
Valley Needlegrass Grassland	388
Blue Wildrye Grassland	74
Mixed Riparian Forest	191
Oak Riparian	42
Vernal Pool	34
Ponds and Freshwater Marsh	<u>30</u>
Total Area of Natural Habitats	24,000
Area of Developed Nonhabitat	<u>3,726</u>
Total	27,726



Active dune communities at Fort Ord include the beaches, bluffs, and blow outs along the bay edge and coastal cliffs and artificially disturbed dunes on the coastal terrace. Stabilized dune communities include the non-native ice plant mats and native coastal strand and dune scrub habitats on the coastal terrace.

### **Beaches, Bluffs, and Blow Outs**

Blowing sand of beaches, blow outs, and steep, eroding sea bluffs are mostly devoid of vegetation because of the frequently moving substrates. Sea rocket is typically the first colonizer of these habitats and is sometimes the only species present. Other plants found in these habitats at Fort Ord include African ice plant, Douglas' bluegrass, deer weed, beach primrose, purple everlasting, beach sagebrush, annual fescue, and chorethrogne.

Wildlife that use the beaches and bare dunes include shorebirds, such as sanderlings, marbled godwits, and American avocet that forage along the waterline and western gulls and California gulls that commonly fly over and forage on the beach and coastline. Red foxes and coyote forage on the beaches for carrion washed up on shore.

### **Disturbed Dunes**

Disturbed dune habitats are sites within the zone of stabilized dunes where Army activities have removed perennial vegetation. These habitats result from frequent or intense ground disturbance in firing ranges, around structures, and in borrow pits. The plant community supports species tolerant of frequent ground disturbance, such as soft chess, ripgut brome, annual fescue, and kukuya grass. Monterey spineflower also can occur in disturbed dune habitat.

Wildlife species that occur in the disturbed dune habitat are also typically tolerant of frequent human disturbance. Common species include California ground squirrel, deer mouse, and red fox. Feral cats also use these disturbed areas at Fort Ord.

### **Coastal Strand**

Only small patches of dune vegetation dominated by native plants occur at Fort Ord. Some areas of stabilized dunes are dominated by native perennial herbs and subshrubs and is referred to as "coastal strand". This native coastal strand habitat supports wild buckwheat, seacliff buckwheat, California croton, deer weed, sea lettuce, broadleaf paintbrush, wavy-leafed paintbrush, Douglas' bluegrass, sand verbena, yarrow, and coast gum plant. The non-native African ice plant occurs frequently in this community, degrading its biological value and threatening its existence.

Wildlife species that use disturbed dune and dune scrub communities are also found in coastal strand.

## Dune Scrub

Another native perennial dune community of limited extent at Fort Ord is dune scrub, a shrub-dominated habitat. Dune scrub supports bush lupine, chamisso bush lupine, deer weed, mock heather, coyote bush, and bracken fern. Dune scrub was likely historically extensive on the coastal area of Fort Ord and on the sites that are now the cantonment area, Marina, and Seaside. Only a few small patches remain at Fort Ord. Dune scrub historically intergraded with coastal scrub and maritime chaparral in areas that are now developed.

Wildlife diversity increases in the central dune scrub relative to other dune communities because soils are more stable and vegetation is more abundant. White-crowned sparrows are a common nesting species and golden-crowned sparrow are a common winter visitor in the dune scrub. Deer mouse and brush rabbit burrow in the more stable soils and feed on seeds and native vegetation. Western fence lizards are also common. These small animals are prey for red foxes and coyote that den in the dune scrub.

## Ice Plant Mats

Most of the coastal areas of Fort Ord support a stabilized dune community dominated by the non-native, aggressive African ice plant. At many sites, it is the only species present. African ice plant spreads as large, thick mats derived from individual seeds or vegetative clones. It crowds out native perennial species by usurping space, water, and light and eliminates habitat for native annual species by stabilizing dune sands. Much of the African ice plant was planted by the Army in the 1940s and 1950s to stabilize the dunes.

Ice plant mats provide only marginal wildlife habitat because although they provide cover for some species, they provide little forage for wildlife. Many wildlife species found in other dune communities do not occur in the ice plant mats or are found only occasionally and in much lower numbers than in habitats containing native vegetation.

## Chaparral and Coastal Scrub Communities

Chaparral and coastal scrub communities are the most widespread habitats at Fort Ord (Table 2 and Figures 5 and 7). Chaparral and coastal scrub communities at Fort Ord are characterized by moderate to low-growing evergreen and drought-deciduous shrubs with scattered trees and patchy herbaceous cover. Chaparral is dominated by evergreen, sclerophyllus (hard-leaved) shrubs, such as chamise, manzanita, and ceanothus. Coastal scrub is dominated by soft-leaved, drought-deciduous shrubs, such as California sagebrush and black sage, and winter-deciduous shrubs, such as tree lupine and chamisso bush lupine. Chaparral typically requires slightly more moisture than coastal sage scrub (Pase and Brown 1982, Pase 1982). Maritime chaparral occurs in locations where coastal fogs increase available moisture at low elevations near the coast (Griffin 1978). These communities form on

shallow soils, along dry rocky slopes and ridges, on sand hills, and on the Aromas red sand formation.

Chaparral and scrub plant species are adapted to fire and many require fire for successful regeneration. Shrub species respond by crown-sprouting or germinating from a dormant seed bank. Herbaceous species are most abundant in the years immediately after fires. If natural disturbances such as fire are restricted or prescribed burns not implemented, species diversity in scrub and chaparral communities declines and succession from scrub and chaparral communities to coast live oak woodland may ensue (Griffin 1978).

The greatest diversity of wildlife species at Fort Ord occurs in chaparral communities. Many species associated with chaparral are also found in coastal scrub, although in lower densities because many areas of coastal scrub occur in small pockets surrounded by development or other habitat types. Birds such as orange-crowned warbler, rufous-sided towhee, California thrasher, California quail, and wrentit feed and nest in chaparral and coastal scrub. The only population of greater roadrunner in coastal Monterey occurs in the chaparral at Fort Ord (Fort Ord Parklands Group 1992). California mouse, brush rabbit, Heerman's kangaroo rat, and brush mouse find forage and cover in dense chaparral, while narrow-faced kangaroo rats favor sparsely vegetated openings within the thick vegetation. These small mammals serve as prey for gray fox, bobcat, spotted skunk, and western rattlesnake. Chaparral communities also provide important forage and cover for resident black-tailed deer.

Three types of chaparral and scrub communities occur at Fort Ord: sand hill maritime chaparral, Aromas formation maritime chaparral, and coastal scrub. The distinguishing characteristics of the three chaparral and scrub communities are described in the following sections.

### **Maritime Chaparral**

Maritime chaparral, Fort Ord's dominant vegetation type, is characterized by a wide variety of sclerophyllus shrubs occurring in moderate to high density. At Fort Ord, this community occupies sites that have sandy, well-drained substrates within the zone of coastal summer fog (Griffin 1978). Maritime chaparral intergrades with coastal scrub and coast live oak woodland.

This community is primarily dominated by shaggy-barked manzanita. Other species found in the shrub layer include chamise, Toro manzanita, sandmat manzanita, toyon, blue-blossom ceanothus, Monterey ceanothus, dwarf ceanothus, black sage, bush monkey-flower, coyote bush, poison-oak, coast silk tassel, rush rose, and California sagebrush. Many special-status plant species occur in this community, including Toro manzanita, sandmat manzanita, Hooker's manzanita, Monterey ceanothus, Eastwood's ericameria, Monterey spineflower, virgate eriastrum, sand gilia, Seaside bird's-beak, curly-leaved monardella, Douglas' spineflower, purple-flowered piperia, small-leaved lomatium, and coast wallflower (see "Special-Status Plant Species"). Coast live oak occurs sporadically, usually as stunted

small trees. Herbaceous cover is usually low with common species including golden yarrow, purple needlegrass, and Fremont's zygadene.

Unfavorable soils and disturbances, such as fire, wind, and pest attacks, favor the occurrence of this community over pine and oak woodlands. The limited distribution and pressures for development in maritime chaparral warrant its listing as a special-status native biological community by DFG.

The maritime chaparral at Fort Ord can be subdivided into two weakly differentiated subtypes based on substrate and indicator shrub species: sand hill maritime chaparral and Aromas formation maritime chaparral.

**Sand Hill Maritime Chaparral.** Pleistocene sand deposits create a soft rolling landscape. These sand hills support maritime chaparral typically dominated by shaggy-barked manzanita, chamise, and sandmat manzanita. Older stands usually support an impenetrable growth of shaggy-barked manzanita and chamise. Recently burned or cleared sites support sandmat manzanita as part of the dominant cover. Toro manzanita is rarely found in sand hill maritime chaparral.

**Aromas Formation Maritime Chaparral.** The red sandstone Aromas Formation creates a more rugged, sometimes badlands, landform than the sand hills. The sandy substrate is more strongly cemented and rocky than the loose sand hills. Aromas Formation is typically inland of the sand hills. The Aromas formation maritime chaparral is also dominated by shaggy-barked manzanita and chamise, but toro manzanita is present as a codominant or sometimes in nearly pure stands. Hooker's manzanita occurs in this community and rarely in sand hill maritime chaparral. Sandmat manzanita is uncommon in the Aromas Formation maritime chaparral.

## **Coastal Scrub**

Coastal scrub is characterized by sparse to dense cover of soft-leaved, low-stature shrubs on sandy or rocky soils. Dominant shrubs at Fort Ord are coyote bush, California sagebrush, mock heather, tree lupine, chamisso bush lupine, and black sage. Other common shrubs include California coffeeberry, bush monkeyflower, and poison-oak.

Coastal scrub at Fort Ord occurs on sandy soils near the coast, intergrading with grassland, maritime chaparral, coast live oak woodland and dune scrub. More inland areas of Fort Ord support coastal sage scrub on rocky slopes as habitat patches within annual grassland and oak woodland.

The coastal scrub at Fort Ord is classified as Lucian or Central coastal scrub in Holland's (1986) classification. Lucian coastal scrub is locally abundant on the west side of the Santa Lucia range between Monterey and Point Conception. This scrub habitat is threatened by a variety of factors, especially development. Coastal scrub is considered an important natural community because it provides habitat for several special-status plants, provides forage for wildlife, and stabilizes sandy soils and steep slopes.

## Coast Live Oak Woodland and Savanna Communities

The coast live oak is the dominant tree of woodlands and savannas at Fort Ord, usually occurring in pure stands. Woodland is a partially open-canopy to mostly closed-canopy community with grass or shrub understory. Savanna is a transitional community between grassland and woodland with scattered trees at less than 10% cover and a grassy understory. For the purposes of this study, three coast live oak communities are recognized at Fort Ord: coastal coast live oak woodland, inland coast live oak woodland, and coast live oak savanna (Figure 8).

Oak woodlands and savannas are considered important natural communities because they provide a variety of ecological, aesthetic, and economic values. The extent of oak woodlands in California has declined, however, as a result of agricultural conversion, urban development, fuelwood harvesting, and grazing activities. In response to this loss, the California Department of Forestry and Fire Protection, California Native Plant Society (CNPS), and The Nature Conservancy have identified the conservation and management of oak woodlands as major issues. The California State Senate passed a resolution identifying the conservation of oak woodlands as a priority of state agencies when authorizing actions and projects (Senate Concurrent Resolution No. 17, January 18, 1989).

Oak habitats in general are important to a variety of wildlife species. Oaks provide nesting sites and cover for birds and cover for many mammals. Acorns are an important dietary component of many wildlife species, such as black-tailed deer, California quail, acorn woodpeckers, scrub jays, and wild turkeys.

### Coastal Coast Live Oak Woodland

The coast live oaks growing in unprotected sites near the coast are exposed to the combined stresses of strong winds; salt spray; and sterile, sandy soils. These environmental factors create an oak woodland characterized by short, wind-pruned trees. This coastal coast live oak woodland community intergrades with the coastal scrub community and maritime chaparral.

The coastal coast live oak woodland canopy is dominated by an open to nearly closed canopy of coast live oak with occasional Monterey pine and Monterey cypress. The shrub layer includes California sage, black sage, poison-oak, and coyote brush. Annual grassland species occur as the dominant understory at some sites. Where coastal coast live oak woodland intergrades with maritime chaparral the understory supports chaparral shrubs.

Wildlife that use the coastal coast live oak woodland favor a dense canopy structure, or use the dense shrubby understory. Species common in the understory include hermit thrush, canyon towhee, California pocket mouse, and California mouse. Plain titmouse, blue-gray gnatcatcher, and lazuli bunting nest and forage in the canopy. Typical predators such as gray fox and striped skunk forage in the understory.

## **Inland Coast Live Oak Woodland**

Inland coast live oak woodland occurs beyond the influence of strong coastal winds and salt spray on better soils than the coastal coast live oak woodland. The oak trees grow tall and stately rather than low and wind pruned as in coastal areas. Inland coast live oak woodland communities occur in ravines and protected sites on soils that retain more moisture than the surrounding open grassland areas.

The dominant tree is coast live oak, usually in pure stands. The understory supports grasses and herbs typical of the annual grassland and shrubs, such as poison-oak, coyote bush, silver lupine, bush monkeyflower, and blue witch.

The thick vegetation and moist conditions associated with the inland coast live oak woodland at Fort Ord allow for an abundance of wildlife species. Dark-eyed junco, plain titmouse, ash throated flycatcher, and Nuttall's woodpecker forage and nest in the canopy. Mourning dove, scrub jay, California quail, and northern flicker forage in the grassy understory. The understory also supports deer mouse, California mouse, southern alligator lizard, and western skink. The relatively moist conditions also support Pacific tree frog and arboreal salamander. Striped skunks are a common predator, but bobcat and mountain lion probably also occur.

## **Coast Live Oak Savanna**

Coast live oak savannas are likely the result of intermediate moisture conditions between woodland and grassland, but may also have resulted from woodcutting activity. Woodland habitats are usually protected sites with greater and longer duration soil moisture resulting in more favorable conditions for oak seedling establishment. Grassland habitats are dryer for a greater portion of the year resulting in conditions less favorable for oak seedling establishment. Historic tree removal and grazing practices have also influenced the woodland, savanna, and grassland boundaries.

The dominant tree in coast live oak savanna is coast live oak. The understory is dominated by annual grasses, including slender wild oat, ripgut brome, soft chess, annual fescue, and silver hair grass, and annual forbs, such as redstem filaree and broadleaf filaree.

The open canopy and grassy understory of oak savannas provide favorable conditions for many grassland-related species, such as California ground squirrel, California vole, and black-tailed hare. Red tailed hawks and other raptors use the scattered trees as perching and scanning points while hunting for these species. Western bluebird, mourning dove, and olive-sided flycatcher are also found in the inland oak savannas.

## Grassland Communities

Grasslands are herbaceous communities that support a variety of annual or perennial grasses with associated forbs. Fort Ord supports mostly annual grassland of non-native grasses with some areas supporting a good component of native perennial bunchgrasses. Grasslands occur at the most inland, southeast section of Fort Ord; at Fritzsche Army Airfield; and as scattered, small meadows within coast live oak woodland and maritime chaparral (Figure 9).

Common rodents found in annual and perennial grassland include the California vole, California ground squirrel, broad-footed mole, Botta's pocket gopher, Heerman's and narrow-faced kangaroo rats, and black-tailed hares. Western meadowlarks nest and forage in grassland habitats. Raptors such as red-tailed hawks, kestrels, and great horned owls forage over the grasslands, and coyotes and bobcats take hares and rodents while hunting there.

### Annual Grassland

Annual grassland is dominated by mostly non-native annual grasses and perennial and annual forbs. The largest occurrences of annual grassland are on heavy clay soils of hillsides in the southeast portion of Fort Ord and on sandy soils at Fritzsche Army Airfield (Figure 9).

This community is dominated by soft chess, slender wild oat, wild oat, broad-leaf filaree, redstem filaree, hare barley, ripgut brome, silver hairgrass, and slender fescue. A host of annual and perennial forbs occur as common associates in the grassland, including sky lupine, clovers, California poppy, American vetch, owl's clover, cream cups, and brodiaeas. Perennial bunchgrasses also occur in the annual grassland on the southeastern portion of Fort Ord; however, grasslands were mapped as annual types where perennial grasses comprised less than 10% of the vegetative cover.

Annual grassland is an abundant natural community with a statewide distribution. The community protects the soil from erosion and provides the primary source of forage for grazing wildlife and domestic livestock.

### Perennial Grassland

Perennial grasslands are communities that support native perennial grass species as dominant or important components of the vegetative cover. Valley needlegrass grassland and blue wildrye grassland occur in the southeast region of Fort Ord (Figure 9).

**Valley Needlegrass Grassland.** Valley needlegrass grassland is a community dominated by the native perennial bunchgrasses purple needlegrass and foothill needlegrass. At Fort Ord, this community typically occurs on soils with lower clay content and better drainage in the surface horizon than soils supporting annual grassland. Perennial grassland intergrades with annual grassland, oak savanna, and oak woodland on hills at the southeast

portion of Fort Ord. Small occurrences of perennial grassland are also in grassland areas characterized by mima mound topography.

The boundaries between patches of valley needlegrass grassland and annual grassland are rarely distinct. To approximate the boundary of needlegrass grassland with annual grassland, a cut off of 10% cover by needlegrasses was used. Sites with greater than 10% needlegrass cover were delineated as valley needlegrass grassland. Additionally, valley needlegrass grasslands were subdivided into low- and high-quality sites by mapping 10-30% needlegrass cover sites separately from 30% or greater needlegrass cover sites.

Valley needlegrass grassland was once the dominant grassland community throughout lowland, cismontane California and has been nearly entirely replaced by the non-native annual grassland community. By one estimate, native grassland once covered over 5 million hectares, or approximately 13% of the state's land area, and less than 1% remains (Barbour 1987). Remnant patches of valley needlegrass grassland hint at the past floral composition of this community. Many of the known occurrences have only 10-15% bunchgrass cover. Valley needlegrass grassland is considered an important natural community because it has been so greatly reduced from its historic extent. The DFG's Natural Diversity Data Base (NDDDB) monitors the status and distribution of known stands and lists valley needlegrass grassland as a special-status biological community.

**Blue Wildrye Grassland.** Blue wildrye grassland is a perennial grassland type dominated by blue wildrye and occurs primarily in protected ravines and under oak woodlands in the southeastern part of Fort Ord. The blue wildrye grasslands mapped at Fort Ord are characterized by more than 30% perennial grass cover.

### Riparian Communities

Riparian communities occur on the banks of creeks and drainages that seasonally flood and provide a perennial high water table (Figure 10). In mature condition, this streamside vegetation is characterized by multilayered strata consisting of tree, shrub, and herbaceous layers.

The moist conditions associated with riparian areas provide habitat for California newt, Pacific tree frogs, California slender salamander, and arboreal salamander. The thickly vegetated understory is used by Wilson's warbler, dark-eyed junco, common bushtits, and blue-gray gnatcatcher for nesting and cover. Riparian corridors provide important forage, cover, and water to resident black-tailed deer, as well as serve as travel corridors for predators such as mountain lions and coyotes.

Riparian forest communities are considered important natural communities because they help stabilize creekbank soils, maintain water quality through filtration, and provide habitat for a variety of resident and migrant wildlife.



Once found throughout California's waterways, riparian communities are now limited to a minor fraction of their former extent. This loss is attributed to agricultural conversion, urbanization, and flood control activities. Substantial statewide decline of riparian communities in recent years has increased concerns for dependent plant and wildlife species, leading DFG and USFWS to adopt no-net-loss policies to help arrest further declines.

### **Mixed Riparian Forest**

Mixed riparian forest is the dominant community along Toro Creek. Along the southwestern banks of Toro Creek, the canopy layer is dominated by sycamores. Interspersed along the gravel bars and sandy deposits are thickets of willow. Toro Creek's eastern segment is characterized by a denser canopy composed of California buckeye, coast live oak, black cottonwood, and sycamore. California buckeye, arroyo willow, and occasional California box-elder form a subcanopy layer. Understory species include Himalaya berry, California blackberry, mugwort, western vervain, and California figwort.

A narrow strip of cottonwoods and willows occurs along the west bank of the Salinas River at Fort Ord.

### **Coast Live Oak Riparian Forest**

Coast live oak riparian forest is found along intermittent streams in Pilarcitos and Merrill Ranch Canyons. Coast live oak is the dominant tree and forms dense stream-associated forests. Willows are located occasionally in the stream channel, and California box-elder is also found along the streambanks.

## **Wetland and Open Water Communities**

Wetland and open water communities are located at scattered sites throughout Fort Ord and range in size from small vernal pools to large artificial ponds. Wetlands include sites of both permanent and seasonal inundation. The known locations of wetland and open water habitats at Fort Ord are given in Figure 11.

Four major types of wetlands and open water habitats exist at Fort Ord: vernal pools, freshwater marsh, ephemeral drainages, and artificial ponds. A brief discussion of regulatory jurisdiction is given below, followed by descriptions of the wetland and open water communities.

### **Jurisdictional Status of Wetland and Open Water Communities**

The federal government supports a policy of minimizing "the destruction, loss, or degradation of wetlands" (Executive Order 11990, May 24, 1977). The U.S. Army Corps of

Engineers (Corps) and U.S. Environmental Protection Agency (EPA) regulate the placement of dredge or fill material into "waters of the United States", including wetlands, under Section 404 of the Clean Water Act. Jurisdictional wetlands are defined for regulatory purposes as areas "inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3, 40 CFR 230.3).

Sites qualifying for Corps regulatory jurisdiction must support positive indicators of wetland hydrology, hydric soils, and hydrophytic vegetation. Unvegetated stream channels, mud flats, and open water (such as ponds and lakes) are not considered wetlands, but may come under Corps and EPA jurisdiction as waters of the United States. In the absence of adjacent wetlands, the jurisdictional limits of stream channels and lakes are delineated at the ordinary high-water mark (OHWM) (33 CFR 328.4). The OHWM is "indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3).

Formal delineations for wetlands and other waters of the United States have not been conducted at Fort Ord. Delineations of representative samples of vernal pools were conducted and all similar sites were mapped as vernal pools. All vernal pool and freshwater marsh habitats at Fort Ord are potentially jurisdictional wetlands. Stock ponds created by damming natural drainages and ephemeral drainages with well-defined banks and bed are potentially jurisdictional waters of the United States. Toro Creek is a water of the United States. The sites of potential jurisdictional waters of the United States, including wetlands, are presented in Figure 11.

### **Vernal Pool**

Vernal pools are internally drained basins in low-lying grassland areas that collect rainfall and surface runoff. Water accumulates in these depressions because of an impervious soil layer that prevents infiltration of water into the soil profile. The frequency and duration of this seasonal inundation varies among vernal pools, depending on the size of the basin and its watershed, soil depth to the impervious layer, and patterns of rainfall. Vernal pools provide habitat for plants and wildlife adapted to complete their life cycle under the extreme conditions of winter and spring inundation and summer and fall desiccation.

At Fort Ord, vernal pools are most common on sites mapped by SCS as Antioch soils in isolated grassland patches within a matrix of maritime chaparral. These large, shallow pools support characteristic vernal pool-adapted species, including common spike-rush as the dominant cover and associated hyssop loosestrife, Vasey's coyote thistle, bugle hedgeneetle, common toad rush, Howell's meadow foxtail, water buttercup, large water starwort, curly dock, rayless goldfields, quillwort, and flowering quillwort. The largest of these vernal pools is at Machine Gun Flats.

Vernal pools provide important seasonal habitat for wildlife that are water dependent during their larval stage. Western spadefoot toad, Pacific tree frog, and western toad use vernal pools for egg laying and larval development. These aquatic species serve as prey for great blue heron, snowy egret, garter snakes, and raccoons. Northern rough-winged swallows and violet-green swallows forage for insects over vernal pools.

Vernal pools at Fort Ord would likely qualify as jurisdictional wetlands based on vegetation and soil sampling and hydrologic indicators of vernal pools at the corner of Watkins Gate and Hennekens Ranch Roads and at Machine Gun Flats (Appendix E). Vernal pools are considered an important natural community because they have been greatly reduced from historic extent, provide habitat for wildlife and rare plant species, and continue to be threatened by urban and agricultural conversion.

### **Freshwater Marsh**

Freshwater marshes are dominated by perennial, emergent plants that thrive in areas that are permanently flooded or saturated by fresh water. At Fort Ord, freshwater marsh occurs around the perimeter of ponds and in patches in the channels of Toro Creek and the Salinas River. During periods of low water levels, the bed of the Salinas River becomes increasingly dominated by tules and cattails. Dominant plant species in the freshwater marsh include water smartweed, broad-leaved cattail, tules, and pondweed.

Cattails and rushes growing in freshwater marshes provide nesting habitat and cover for soras, red-winged blackbirds, and marsh wrens. Mallards, Canada geese, and cinnamon teal nest along the edges of the marsh habitat. The same aquatic species described for vernal pools also use freshwater marshes.

Freshwater marshes typically qualify as jurisdictional wetland under Section 404 of the Clean Water Act. Freshwater marsh is considered an important natural community because of its water filtering and flood storage functions and high wildlife habitat value. Losses of freshwater marsh in California have resulted from draining to create agricultural land, diversion and retention of water by dams, and the groundwater withdrawal for irrigation purposes.

### **Streams**

Drainages at Fort Ord include perennial, intermittent, and ephemeral streams. Perennial streams carry water year round. The Salinas River at Fort Ord is a perennial stream. Intermittent streams carry water during the rainy season. Streams in Pilarcitos and Merrill Ranch Canyons are intermittent. Ephemeral streams are watercourses that convey runoff during and immediately after rainfall events to higher order intermittent and perennial creeks. Ephemeral streams occur in areas adjacent to Toro Creek and the Salinas River, supplementing these major watercourses with seasonal water.

Poorly defined drainages are dominated by upland plants including soft chess, Italian wildrye, barley, and wild oats. More well-defined drainages support more mesic-adapted species, including rabbitsfoot grass and Mediterranean barley. Deeply cut drainages that transport larger amounts of water support dense bank vegetation, including coast live oak, California blackberry, and coyote brush.

Drainages are considered important habitat because they provide seasonal moist conditions for wildlife species similar to those found in wetland communities.

Most of the ephemeral drainages at Fort Ord probably do not meet the criteria for jurisdictional wetlands, but would likely qualify as other waters of the United States.

### **Artificial Ponds**

Artificially constructed ponds occur at scattered sites at Fort Ord and provide a perennial water source for livestock and wildlife. Most of these ponds occur in the southeast portion of Fort Ord, within the grazing lease. The largest pond at Fort Ord is Mudhen Lake. This artificial pond is filled by direct precipitation and has not held permanent water for 4 years (Littlefield pers. comm.).

The immediate edges of most of these ponds are typically unvegetated because of widely fluctuating water levels. Other ponds support freshwater marsh species at their upper edges. Mudhen Lake is mostly devoid of vegetation with water smartweed occurring around its perimeter.

When ponds and reservoirs are full, mallards, cinnamon teal, canvasback, pintail, and other waterfowl forage and rest on the open water. Shorebirds, such as California gulls and marbled godwits, may be attracted inland by the open water. Other species that use freshwater marsh habitat around rivers and vernal pools also will use the limited marsh habitat available at ponds and reservoirs.

Artificial ponds usually qualify as waters of the United States if they result from impoundment of natural drainages and if they maintain themselves without active water input (i.e., pumped water).

## **SPECIAL-STATUS BIOLOGICAL RESOURCES**

Special-status biological resources are those resources that receive various levels of protection under local, state, or federal laws, regulations, or policies. Special-status biological resources include special-status plant and wildlife species, special native biological communities, native plant and butterfly reserves, significant natural areas (SNAs), and the proposed Monterey Bay Marine Sanctuary. Definitions and occurrences of these resources are discussed in the following sections.

## Special-Status Plant Species

Special-status plants are species in the following categories:

- plants listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.12 [listed plants] and various notices in the Federal Register [proposed species]);
- plants that are Category 1 or 2 candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (55 Federal Register [FR] 6184, February 21, 1990);
- plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5);
- plants listed under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- plants that meet the definitions of rare or endangered under the California Environmental Quality Act (CEQA) (State CEQA Guidelines, Section 15380);
- plants considered by CNPS to be "rare, threatened, or endangered in California" (Lists 1b and 2 in Smith and Berg 1988 as updated by CNPS pers. comm.); and
- plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in Smith and Berg 1988, as updated by Skinner pers. comm.), which may be included as special-status species on the basis of local significance or recent biological information.

Botanical surveys conducted in spring 1992 identified populations of 22 special-status plant species at Fort Ord (Table 3). The distribution at Fort Ord and known ranges of special-status plant species are given in Appendix F. The relative importance of Fort Ord populations to the species as a whole is presented in Table 3. The Acres of habitat occupied by special-status plants species at Fort Ord are given in Table 4. Four of the species found are listed or proposed for listing as threatened or endangered under the federal or state endangered species acts. These four species are Monterey spineflower, proposed for federal listing as endangered, sand gilia, federally listed as endangered and state listed as threatened, Seaside bird's-beak, candidate (Category 1) for federal listing as threatened or endangered and state listed as endangered, and robust spineflower, proposed for federal listing as endangered.

Species profiles of Monterey spineflower, sand gilia, Seaside bird's-beak, and robust spineflower are given in the following sections.

Table 3. Special-Status Plant Species Identified at Fort Ord during 1992 Surveys and the Relationship of Fort Ord to Known Distributions

Plant Species	Listing Status	Approximate Percent of Range at Fort Ord	Distribution	Importance of Fort Ord Population	Data Source*
	Federal/State/CNPS				
<b>Federally Listed or Proposed Species</b>					
Sand gilia <i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	E/T/1b	50-70	Coastal dunes and scrub around Monterey Bay, Salinas River Beach, Asilomar State Beach, from Point Pinos to Point Joe, and Fort Ord	Fort Ord provides suitable habitat for sand gilia and constitutes a substantial portion of its range (at least half)	1, 2, 9
Monterey spineflower <i>Chorizanthe pungens</i> var. <i>pungens</i>	PE/--/1b	75-95	Along the coast of southern Santa Cruz and northern Monterey Counties and inland to the coastal plain of the Salinas Valley	Fort Ord supports the largest populations of Monterey spineflower known	1, 4, 7, 8
Robust spineflower <i>Chorizanthe robusta</i> var. <i>robusta</i>	PE/--/4	<1	Historically from Alameda and San Mateo Counties south to Santa Cruz County and near the coast from southern Santa Cruz County to northern Monterey County, much of which is now developed	Only several plants of robust spineflower were found at one site on Fort Ord; Fort Ord does not provide important habitat for this species	4, 5, 7, 8
<b>State-Listed Species</b>					
Seaside bird's-beak <i>Cordylanthus rigidus</i> var. <i>littoralis</i>	C1/E/1b	30-50 <sup>b</sup>	Monterey and Santa Barbara Counties, including Fort Ord, Monterey Airport, and between Carmel and Elkhorn Slough in Monterey County, and on Burton Mesa in Santa Barbara County	A substantial portion of the range of Seaside bird's-beak is found at Fort Ord	1, 2

Plant Species	Listing Status		Approximate Percent of Range at Fort Ord	RED Code	Distribution	Importance of Fort Ord Population	Data Source <sup>a</sup>
	Federal/State/CNPS						
<b>Federal Candidate Species</b>							
Toro manzanita <i>Arctostaphylos montereyensis</i>	C2/--/1b		70-90	3-2-3	Maritime chaparral in Monterey County, including Fort Ord, Toro Regional Park, and Monterey Airport	Fort Ord supports the largest expanse of Toro manzanita in existence	1, 3
Sandmat manzanita <i>Arctostaphylos punnita</i>	C2/--/1b		70-90	3-2-3	Scattered locations around Monterey Peninsula and an extensive area on Fort Ord	A large and important part of the range of sandmat manzanita is found on Fort Ord	1, 3
Hickman's onion <i>Allium hickmanii</i>	C1/--/1b		<5	2-2-3	Monterey Peninsula, Fort Ord, Monterey Airport, and San Luis Obispo County	Some suitable habitat for Hickman's onion is found on Fort Ord (e.g., Machine Gun Flats), but this species has many occurrences outside Fort Ord	1
Monterey ceanothus <i>Ceanothus rigidus</i>	C2/--/4		50-70	1-2-3	Monterey County along the coast and Fort Ord, Toro Regional Park, Monterey Airport, and near Prunedale	The most abundant and probably most vigorous population of Monterey ceanothus is found on Fort Ord	3, 6
Eastwood's ericameria <i>Ericameria fasciculata</i>	C2/--/1b		70-90	3-3-3	Coastal scrub, chaparral, and closed-cone conifer forest in Del Monte Forest, Monterey Airport, Toro Regional Park, near Prunedale, and Fort Ord	Fort Ord supports most of the remaining individuals of Eastwood's ericameria	1, 3
Coast wallflower <i>Erysimum annophilum</i>	C2/--/1b		10-30	2-2-3	Coastal dunes of Monterey Bay and Santa Rosa Island, and coastal scrub on Fort Ord	Fort Ord provides a moderate amount of suitable habitat for coast wallflower and may constitute an important portion of its range because of the limited extent and high degree of disturbance to its habitat in California	10, 11

Table 3. Continued

Plant Species	Listing Status		Approximate Percent of Range at Fort Ord	Distribution	Importance of Fort Ord Population	Data Source <sup>a</sup>
	Federal/State/CNPS	RED Code				
Wedge-leaved horkelia <i>Horkelia cuneata</i> ssp. <i>sericea</i>	C2/--/1b	3-3-3	<10	Sandy and gravelly places in coastal scrub, maritime chaparral, and closed-cone coniferous forest along coast from Sonoma County to Santa Barbara County	Wedge-leaved horkelia is widely distributed; Fort Ord likely comprises only a small part of its range	10
Yadon's piperia <i>Piperia yadoni</i>	--/--/1b	N/A	<1	Chaparral and coastal scrub in coastal Monterey County	Less than 1% of the individuals of Yadon's piperia are found on Fort Ord; it is noteworthy that its habitat on Fort Ord is intermediate between that of its occurrence in chaparral and pine forest habitats	7
<b>CNPS-Listed Species</b>						
Hooker's manzanita <i>Arctostaphylos hookeri</i> ssp. <i>hookeri</i>	--/--/1b	3-2-3	15-35	Hillsides and open pine woods of Del Monte Forest, Monterey Peninsula, near Prunedale, Fort Ord, and the Larkin Valley	Fort Ord supports large populations of Hooker's manzanita; although it is more common on the Monterey Peninsula and near Prunedale than on Fort Ord, Fort Ord provides important habitat for Hooker's manzanita	3, 6
Pajaro manzanita <i>Arctostaphylos pajaroensis</i>	--/--/4	1-2-3	<1	Sandy hills in Monterey County south of the Pajaro River; especially important in the Prunedale Hills	One Pajaro manzanita plant was found on Fort Ord (probably planted); Fort Ord does not support important habitat for Pajaro manzanita	6
Monterey Indian paintbrush <i>Castilleja latifolia</i>	--/--/4	1-1-3	?	Coastal dunes of Monterey and Santa Cruz Counties	Fort Ord may constitute an important part of the range of Monterey Indian paintbrush because of the limited extent and high degree of disturbance to coastal dunes in central California	10



Plant Species	Listing Status		Approximate Percent of Range at Fort Ord	Distribution	Importance of Fort Ord Population	Data Source <sup>a</sup>
	Federal/State/CNPS	RED Code				
Douglas' spineflower <i>Chorizanthe douglasii</i>	--/--/4	1-1-3	<1	Gravelly or sandy slopes of southern coast ranges from San Benito and Monterey Counties to San Luis Obispo County	Has a large range on California's central coast; the small number of individuals at Fort Ord indicates that the installation does not constitute a large portion of Douglas' spineflower habitat	10, 11
Lewis' clarkia <i>Clarkia lewisii</i>	--/--/4	1-1-3	<5	Coastal scrub and oak woodland in Monterey County	Few individuals were found at Fort Ord; Fort Ord probably does not constitute an important part of the species' habitat, although more investigation is needed to determine the actual range and number of individuals	12
Virgate eriastrum <i>Eriastrum virgatum</i>	--/--/4	1-1-3	?	Sand hills and mesas in Monterey, San Benito, Ventura, and Los Angeles Counties	Fort Ord provides a large area of suitable habitat, but this species has a relatively wide distribution	10, 11
Small-leaved lomatium <i>Lomatium parvifolium</i>	--/--/4	1-2-3	?	Chaparral and open pine forests in Monterey, Santa Cruz, and San Luis Obispo Counties	Fort Ord provides a large amount of suitable habitat for small- leaved lomatium, but this species appears to have a wide distribu- tion on the central California coast	10, 11
Santa Cruz monkeyflower <i>Mimulus rattanii</i> var. <i>decurtatus</i>	--/--/4	1-1-3	<1	Chaparral and conifer forest in Santa Cruz and Monterey Counties	Only one small population of Santa Cruz monkeyflower was found at Fort Ord; Fort Ord probably does not provide important habitat for this species	10, 11

Table 3. Continued

Plant Species	Listing Status		Approximate Percent of Range at Fort Ord	Distribution	Importance of Fort Ord Population	Data Source <sup>a</sup>
	Federal/State/CNPS	RED Code				
Curly-leaved monardella <i>Monardella undulata</i> var. <i>undulata</i>	--/--/4	1-1-3	<5	Chaparral and coastal dunes and scrub near the coast from Marin to northern Santa Barbara County	Curly-leaved monardella has a wide, scattered distribution along the central California coast; the Fort Ord occurrence is probably a small portion of its total numbers	10, 11
Purple-flowered piperia <i>Piperia elongata</i> ssp. <i>michaellii</i>	--/--/4	1-2-3	<1	Coastal scrub and chaparral in Humboldt and Alameda Counties and from Marin to San Luis Obispo County	Purple-flowered piperia is charac- terized by a wide, scattered distri- bution; Fort Ord comprises a small part of its range but sup- ports large areas of suitable habitat	10, 11

Notes:

? = unknown.

## RED Code:

## Rarity (R)

- 1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
- 2 = Occurrence confined to several populations or to one extended population.
- 3 = Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

## Endangerment (E)

- 1 = Not endangered.
- 2 = Endangered in a portion of its range.
- 3 = Endangered throughout its range.

## Distribution (D)

- 1 = More or less widespread outside California.
- 2 = Rare outside California.
- 3 = Endemic to California.

Table 3. Continued

Status explanations (see the "Definitions of Special-Status Species" section above for citations):

**Federal**

- E = listed as endangered under the federal Endangered Species Act.
- PE = proposed for federal listing as endangered under the federal Endangered Species Act.
- C1 = Category 1 candidate for federal listing. Category 1 includes species for which USFWS has on file enough substantial information on biological vulnerability and threats to support proposals to list them.
- C2 = Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.

-- = no designation.

**State**

T = listed as threatened under the California Endangered Species Act.

**California Native Plant Society**

- 1b = List 1b species: rare, threatened, or endangered in California and elsewhere.
- 4 = List 4 species: plants of limited distribution.

<sup>a</sup> Data sources:

- 1 = Natural Diversity Data Base 1992.
- 2 = Hillyard 1992.
- 3 = Griffin 1976.
- 4 = Reveal and Hardham 1989.
- 5 = Thomas 1961.
- 6 = Griffin 1978.
- 7 = Morgan 1992.
- 8 = U.S. Fish and Wildlife Service 1991.
- 9 = U.S. Fish and Wildlife Service 1992.
- 10 = Munz and Keck 1968.
- 11 = Abrams 1940.
- 12 = Matthews 1992.

<sup>b</sup> This estimate incorporates locations of Seaside bird's-beak in Santa Barbara County, which may have formed as a result of hybridization; the estimate based on Monterey County above would increase the percent of range at Fort Ord to 60-80%.

<sup>c</sup> Listing package is in preparation by USFWS (U.S. Fish and Wildlife Service pers. comm.).

Table 4. Acres of Habitat Occupied by Special-Status Plant Species at Fort Ord

Species	Listing Status	Density <sup>b</sup>			Total Acreage
	Federal/State/CNPS <sup>a</sup>	Low	Medium	High	
Sand Gilia	E/T/1B	3,285	309	162	3,756
Monterey Spineflower	PE/--/1B	5,941	3,535	980	10,456
Seaside Bird's-beak	C1/E/1B	625	16	641	1,282
Toro Manzanita	C2/--/1B	2,320	2,174	1,948	6,442
Sandmat Manzanita	C2/--/1B	2,133	3,207	3,448	8,788
Hickman's Onion	C1/--/1B	273	121	0	394
Monterey Ceanothus	C2/--/4	2,469	6,836	2,484	11,789
Eastwood's Ericameria	C2/--/1B	3,566	2,279	23	5,868
Coast Wallflower	C2/--/1B	494	226	51	771
Wedge-leaved Horkelia	C2/--/1B	2,438	1,202	0	3,640
Yadon's Piperia	--/--/1B	14	0	0	14
California Native Plant Society List 3 and 4 Species with No Federal or State Status	--/--/3 or 4	--	--	--	14,870

<sup>a</sup> See Table 4.11-2 for status definitions.

<sup>b</sup> Occupied habitat refers to survey polygons in which plants of the given species occur. Low density is estimated at one to hundreds of plants per acre for herbaceous species and one to tens of plants per acre for shrub species. Medium density is estimated at hundreds to thousands of plants per acre for herbaceous species and tens to hundreds of plants per acre for shrub species. High density is estimated at thousands to over ten-thousands of plants per acre for herbaceous species and hundreds to over thousands of plants per acre for shrub species.

Low density could indicate that a species is either sparsely and evenly distributed throughout the survey polygon or occurs as one to a few small, dense patches in the survey polygon. High density could indicate that a species is densely populated throughout the survey polygon or densely populated over a large portion of the survey polygon.

## Sand Gilia

Sand gilia is a small, erect annual of the Phlox family.

**Status and Distribution.** Sand gilia is listed as endangered under the federal Endangered Species Act and is listed as threatened under the California Endangered Species Act (57 FR 27848-27858, June 22, 1992; California Department of Fish and Game 1991). CNPS considers sand gilia as rare and endangered in California and elsewhere, qualifying it for CNPS's List 1b.

Sand gilia occurs as scattered small populations in dune scrub, coastal scrub, and maritime chaparral. DFG reported only 10 known occurrences in 1991 in coastal areas between the mouth of the Salinas River and the Monterey Peninsula (California Department of Fish and Game 1991). Most of these populations are on private land and are unprotected. Populations also occur at Marina State Beach and Salinas River State Beach in proposed natural preserves. The known range of sand gilia is given in Appendix F-2.

**Occurrence at Fort Ord.** Sand gilia occurs at scattered locations throughout most of Fort Ord (Appendix F-1). Only one small population was found in dune habitats west of Highway 1. Sand gilia occurs in maritime chaparral, oak woodland, and coastal scrub. Populations occur in sandy openings within these communities. Most populations are small and localized. The largest populations are at the southwest portion of Fritzsche Army Airfield. Sand gilia occurs along roadsides, on the cut banks of sandy ephemeral drainages, in recently burned chaparral, and in other disturbed patches. Although it often co-occurs with Monterey spineflower, it is much more restricted and differs in microhabitat requirements. Sand gilia is often found with virgate eriastrum, a species that appears to have similar ecological requirements.

Many of the populations of sand gilia found at Fort Ord support individuals with characteristics intermediate with the related subspecies slender-flowered gilia (*Gilia tenuiflora* ssp. *tenuiflora*), mixed with individuals of sand gilia and slender-flowered gilia (California Academy of Sciences and San Jose State University pers. comms.). Slender-flowered gilia is an inland subspecies known to occur near Fort Ord in sandy washes of woodlands in the Salinas Valley. It is possible that Fort Ord is a zone of intergradation between these two subspecies.

**Reasons for Decline.** Loss of populations and habitat have resulted from coastal urban development and sand mining operations. Golf course construction has resulted in the loss of populations. Recreational users, such as off-road vehicle users, hikers, and equestrians, threaten populations and habitat. The introduction of the aggressive African ice plant and European beach grass for dune stabilization has altered habitats to unsuitable conditions for sand gilia. Commercial and residential development near Marina, Seaside, Sand City, and the Monterey Peninsula threaten remaining sand gilia populations.

## Monterey Spineflower

Monterey spineflower is a small, prostrate annual of the Buckwheat Family.

**Status and Distribution.** Monterey spineflower was proposed for listing as endangered under the federal Endangered Species Act on October 24, 1991 (56 FR 55107-55114). CNPS considers Monterey spineflower as rare and endangered in California and elsewhere qualifying it for their List 1b (Smith and Berg 1988).

Monterey spineflower populations occur scattered within coastal dune, coastal scrub, grassland, and maritime chaparral communities along and adjacent to the coast of southern Santa Cruz and northern Monterey Counties and inland to the coastal plain of the Salinas River Valley (Reveal and Hardham 1989) (Appendix F-4). Monterey spineflower colonizes recently disturbed sandy soils.

**Occurrence at Fort Ord.** Monterey spineflower is abundant at Fort Ord. It is likely that Fort Ord supports the largest known populations of the species. The relatively wet spring of 1992 resulted in much larger populations of this annual species than were present in the 5 previous drought years (Jones & Stokes Associates file data). Monterey spineflower occurs in almost all undeveloped areas of the western half of Fort Ord (Appendix F-4). It occurs in maritime chaparral, coastal coast live oak woodland, coastal scrub, grassland, and coastal dune habitats and colonizes open sandy sites in these habitats.

In grasslands, Monterey spineflower occurs along roadsides, in firebreaks, and other disturbance patches. It is crowded out of mature grassland vegetation. In chaparral, scrub, and oak woodland habitats, Monterey spineflower occurs in sandy openings between shrubs. In older stands that have avoided fire long enough to have dense, closed shrub or tree canopies, Monterey spineflower is restricted to roadsides and firebreaks. In dune habitats at Fort Ord, Monterey spineflower prefers disturbed sites within otherwise stabilized dune habitats. The presence of large mats of African ice plant greatly reduces the numbers of plants and amount of suitable habitat.

Monterey spineflower is similar in appearance to cuspidate spineflower (*Chorizanthe cuspidata*) (Zoger and Paulic 1987). Populations of Monterey spineflower at Fort Ord may support a mix of these two species; however, Reveal and Hardham (1989) state that cuspidate spineflower does not occur south of San Mateo County.

**Reasons for Decline.** Urban development in coastal cities and at Fort Ord have resulted in the loss of large portions of the species range. Introduction of non-native species for dune stabilization, such as African ice plant and European beach grass, has altered habitats to unsuitable conditions for Monterey spineflower. Historic occurrences in the Salinas Valley have been extirpated, primarily because of conversion of natural habitat to agricultural land use (Reveal and Hardham 1989).

## Seaside Bird's-Beak

Seaside bird's-beak is a tall, diffuse annual of the Figwort family.

**Status and Distribution.** Seaside bird's-beak is a federal candidate (Category 1) for listing as threatened or endangered and is listed as endangered under the California Endangered Species Act. CNPS considers Seaside bird's-beak as rare and endangered in California and elsewhere qualifying it for its List 1b.

Seaside bird's-beak occurs in sandy soils of stabilized dunes in maritime chaparral and close-cone pine forest communities. Populations are usually small and scattered in recently disturbed openings in these communities. Seaside bird's-beak's known range is restricted to the area between Carmel and Elkhorn Slough in northern Monterey County and at Burton Mesa and Vandenberg Air Force Base in Santa Barbara County (California Department of Fish and Game 1991) (Appendix F-8). Santa Barbara County populations of Seaside bird's-beak may be introductions and appear to be hybrids (California Department of Fish and Game pers. comm.)

**Occurrence at Fort Ord.** Seaside bird's-beak occurs at Fort Ord as scattered localized populations in maritime chaparral and coastal oak woodlands (Appendix F-7).

**Reasons for Decline.** Urban development has resulted in the loss of Monterey County populations of Seaside bird's-beak. Populations in Santa Barbara County are threatened by urban development, energy projects, off-road vehicles, and military operations (California Department of Fish and Game 1991).

## Robust Spineflower

Robust spineflower is an erect to spreading small annual of the Buckwheat family.

**Status and Distribution.** Robust spineflower was proposed for listing as endangered under the federal Endangered Species Act on October 24, 1991 (56 FR 55107-55114). CNPS considers robust spineflower as rare and endangered in California and elsewhere qualifying it for CNPS's List 1b.

Robust spineflower occurs in coastal dune and coastal scrub habitats along and adjacent to the coast of southern Santa Cruz County (Appendix F-6). The largest known population is at Sunset State Beach with important smaller populations near Manresa State Beach and northeast of the City of Santa Cruz. Robust spineflower was historically collected in Alameda and San Mateo Counties, but none of these occurrences have been relocated in over 80 years and the sites are now mostly urbanized (Reveal and Hardham 1989).

**Occurrence at Fort Ord.** Only a few individuals of robust spineflower were found on the dunes south of Stilwell Hall within a population of Monterey spineflower (Appendix F-5). These plants could not be unequivocally identified as robust spineflower

and displayed some characteristics intermediate with Monterey spineflower. Small populations of robust spineflower have been reported from this area of the dunes, but were not relocated in 1992.

**Reasons for Decline.** Most of the populations and habitat of robust spineflower have been eliminated from the historic range by urban development. Urban development, recreational activities, and the introduction of aggressive non-native plants threaten remaining populations.

### Special-Status Wildlife Species

Special-status animals are species in the following categories:

- animals listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.11 [listed animals] and various notices in the Federal Register [proposed species]);
- animals that are Category 1 or 2 candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (54 FR 554, January 6, 1989);
- animals that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- animals listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5);
- animal species of special concern to DFG (Remsen 1978 [birds] and Williams 1986 [mammals]); and
- animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Twenty-three special-status wildlife species are known to occur or have potential to occur in terrestrial and freshwater environments at Fort Ord. Four special-interest species are also considered in this document. Special-interest wildlife species are animals that have been identified as rare or declining in the Monterey Bay region but have no formal legal status. The names, legal status, habitat requirements, distribution, and occurrence at Fort Ord for these species are given in Table 5. The southern sea otter is also included in Table 5. Other special-status marine species are discussed in the "Marine Environment" section.

Known locations of special-status wildlife species at Fort Ord are shown in Figure 12. Appendix H shows potential habitat and known locations (if available) for all special-status and special-interest wildlife species. The known ranges for the Smith's blue butterfly, black



Table 5. Special-Status Terrestrial and Freshwater Wildlife Species Known to Occur or Potentially Occurring at Fort Ord, California

Common and Scientific Name	Legal Status* State/Federal	Habitat	Distribution	Occurrence at Fort Ord
Monterey Ornate Shrew <i>Sorex ornatus satarius</i>	--/C2	Found in a variety of riparian, woodland, and upland communities where there is thick duff or downed logs	Restricted to the Monterey Bay region; historical occurrences at the mouth of the Salinas River and Moss Landing in Monterey County	May occur at Fort Ord <sup>b</sup>
Monterey Dusky-Footed Woodrat <i>Neotoma fuscipes luciana</i>	--/C2	Uses habitats with moderate to dense cover and abundant dead wood for nest construction; maritime chaparral and coastal live oak woodland at Fort Ord	Restricted to Monterey County and northern San Luis Obispo County	Found in maritime chaparral and coastal coast live oak woodland habitats throughout Fort Ord <sup>c</sup>
American Badger <i>Taxidea taxus</i>	SSC/--	Uses open, grassy areas with scattered shrubs or trees for cover and loose soil for digging	Found throughout California except in parts of Del Norte, Humboldt, and Siskiyou Counties; widespread throughout the United States west of the Mississippi River	Uses grasslands, oak savannas, and coastal live oak woodland habitats throughout Fort Ord <sup>c</sup>
Southern Sea Otter <i>Enhydra lutris nereis</i>	--/FT	Nearshore marine environments where invertebrate food sources are abundant and dense kelp beds are available	Coastal waters from Point Año Nuevo in Santa Cruz County to Point Sal in Santa Barbara County	One area of sea otter concentration is south of the Fort Ord Marine Impact Area offshore from the City of Monterey; southern sea otters may occasionally feed offshore from Fort Ord <sup>d</sup>
Sharp-Shinned Hawk <i>Accipiter striatus</i>	SSC/--	Found in riparian forests, conifer forests, and oak woodlands	Permanent resident in the Sierra Nevada, Cascade, Klamath, and north Coast Ranges, as well as along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties; winters over the rest of the state except at high elevations; breeds and winters throughout North America	May winter at Fort Ord using oak woodland or riparian habitats <sup>b</sup>

Table 5. Continued

Common and Scientific Name	Legal Status <sup>a</sup> State/Federal	Habitat	Distribution	Occurrence at Fort Ord
Cooper's Hawk <i>Accipiter cooperi</i>	SSC/--	Nests in riparian forests and dense canopy oak woodlands; forages in open woodlands	Found in all parts of California except high altitudes in the Sierra Nevada; winters in the Central Valley, southern desert regions, and the plains east of the Cascade Range; permanent resident throughout the lower 48 states	Occurs in riparian forests of Toro Creek and inland oak woodland canyons at Fort Ord <sup>c</sup> ; probably also occurs along the Salinas River
Norther Harrier <i>Circus cyaneus</i>	SSC/--	Marshes and grasslands	Majority of breeding population is concentrated in ungrazed portions of California and federal wildlife refuges; rare breeder in the lower Salinas Valley; winters and breeds throughout North America	May winter at Fort Ord <sup>b</sup>
Golden Eagle <i>Aquila chrysaetos</i>	SSC/--	Nests in cliffs and large oaks; forages in annual grasslands, chaparral, and oak woodlands with abundant medium-sized and large mammals for prey	Inhabits inland valleys and mountains of Coast Ranges and Sierra Nevada of California; occurs throughout the United States except along the eastern coastal states	Forages over open areas throughout Fort Ord and may nest in inland oak savannas and woodlands <sup>e</sup>
Peregrine Falcon <i>Falco peregrinus anatum</i>	SE/FE	Nests and roosts on protected ledges on high cliffs, usually adjacent to water sources that support large bird populations	Permanent resident on the north and south Coast Ranges; winters in the Central Valley south through the Transverse and Peninsular Ranges and the plains east of the Cascade Range; occurs along both coasts of the United States and parts of Alaska, Arizona, Colorado, and the borders of Idaho	May forage on Fort Ord beaches and passes through Fort Ord during seasonal migration <sup>f</sup>
Prairie Falcon <i>Falco mexicanus</i>	SSC/--	Nests in cliffs and escarpments; forages in grasslands, pastures, savannas, and desert scrub	Inhabits inland valleys and foothills of the Coast Ranges and Sierra Nevada, Modoc Plateau, and southern deserts of California; widespread west of Nebraska and into Mexico	Forages at Fort Ord <sup>f</sup>
Western Snowy Plover <i>Charadrius alexandrinus nivostis</i>	SSC/FPT	Found along beaches above the high tide limit; also uses shores of salt ponds and alkali or brackish inland lakes	Intermittent nesting sites along the Pacific Coast from Washington to Baja California	Nests along the beaches at Fort Ord north of Stillwell Hall <sup>g</sup>

Common and Scientific Name	Legal Status <sup>a</sup> State/Federal	Habitat	Distribution	Occurrence at Fort Ord
Burrowing Owl <i>Athene cucularia</i>	SSC/--	Nests in abandoned ground squirrel burrows in dry, flat grasslands, deserts, and agricultural areas	Permanent resident throughout California valleys and lowlands; summer range includes Siskiyou, Lassen, Plumas, and Sierra Counties	Found in grassland habitats at Fort Ord <sup>b</sup>
Loggerhead Shrike <i>Lanius ludovicianus</i>	--/C2	Prefers open woodland habitats with scattered trees, shrubs, posts, fences, or other perches	Permanent populations throughout California except in the Sierra Nevada, Cascade, and Klamath Ranges, and the north Coast Range north of Mendocino County; some individuals winter along the coast from Sonoma to Del Norte Counties; uncommon in Monterey County; occurs from southern Canada into Mexico	Uncommon at Fort Ord; occurs at Fritzsche Army Airfield and in maritime chaparral, coastal, and scrub habitat <sup>c</sup>
California Horned Lark <i>Eremophila alpestris actia</i>	--/C2	Grasslands, rangelands, and other open habitats with low, sparse cover	Resident along the California coast range from Humboldt to San Diego County and the San Joaquin Valley	Observed at Fritzsche Army Airfield at Fort Ord <sup>d</sup>
Coast Horned Lizard <i>Phrynosoma coronatum</i>	SSC/--	Occurs areas with sandy soils and moderate cover	Uses Central Valley from Tehama County south to Tulare County and Coast Ranges from Sonoma County south to San Diego County	Occurs in appropriate habitat (primarily coastal scrub and maritime chaparral) throughout Fort Ord <sup>e, b</sup>
Yellow Warbler <i>Dendroica petechia</i>	SSC/--	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders; may also use oaks, conifers, and urban areas if they are near stream courses	Nests throughout California except the Central Valley, the Mojave Desert region, and high altitudes in the Sierra Nevada; winters along the Colorado River and in parts of Imperial and Riverside Counties; also has small permanent populations in San Diego and Santa Barbara Counties; occurs throughout North America except in the southeast states	Nests in inland oak woodland canyons and possibly riparian forests at Toro Creek and the Salinas River <sup>f</sup>

Common and Scientific Name	Legal Status <sup>a</sup> State/Federal	Habitat	Distribution	Occurrence at Fort Ord
Tricolored Blackbird <i>Agelaius tricolor</i>	SSC/C2	Nests in freshwater marshes with heavy growths of cattails and tules; other forms of dense vegetation may also be used for nesting; nesting areas must be large enough to support a colony of at least 50 pairs; birds forage in grasslands and fields surrounding the colony	Occurs only in California; resides permanently in the Central Valley from Butte through Kern Counties, on the south Coast and Peninsular Ranges, and in parts of San Diego, Los Angeles, Alameda, Sonoma, and Lake Counties; breeding colonies are in Siskiyou and Lassen Counties, around the San Francisco Bay from Marin to Santa Cruz Counties, and east through the Delta to Solano County;	One nesting colony is known approximately 2 miles northeast of Laguna Seca at Fort Ord <sup>c</sup>
California Tiger Salamander <i>Ambystoma tigrinum californiense</i>	SSC/C2 (LP)	Favors open woodlands and grasslands; requires water for breeding and burrows or cracks in the soil for summer dormancy	Occurs only in California from the coastline to the Sierra Nevada crest and from Sonoma to Santa Barbara Counties	Occurs in ponds and vernal pools throughout Fort Ord <sup>c,1</sup>
California Red-Legged Frog <i>Rana aurora draytoni</i>	SSC/C1 (LP)	Requires cold water ponds with emergent and submergent vegetation and riparian vegetation at the edges	Found along the coast and coastal mountain ranges from Humboldt to San Diego Counties, and in the Sierra Nevada from Butte to Fresno Counties	May occur at Fort Ord <sup>b</sup>
Southwestern Pond Turtle <i>Clemmys marmorata pallida</i>	SSC/C1 (LP)	Requires aquatic habitats such as ponds, marshes, or streams, with rocky or muddy bottoms and vegetation for cover and food	In California, occurs along the central coast east to the Sierra Nevada, and along the south coast, inland to the Mojave and Colorado Deserts; occurs in southwestern California and northern Baja California	Occurs at Merrill Ranch just off base, known previously at Mudhen Lake; two turtles were transplanted to East Garrison Lake <sup>b</sup> ; may occur at the Salinas River
California Black Legless Lizard <i>Anniella pulchra nigra</i>	SSC/C2 (LP)	Requires moist, warm habitats with loose soil for burrowing and prostrate plant cover; may be found on beaches, in chaparral, pine oak woodland, or riparian areas	Restricted to small populations along the coast in Monterey and northern San Luis Obispo Counties; one population in Contra Costa County	Found in stabilized dunes and maritime chaparral with sandy soils at Fort Ord <sup>c,j</sup>

Common and Scientific Name	Legal Status <sup>a</sup> State/Federal	Habitat	Distribution	Occurrence at Fort Ord
Smith's Blue Butterfly <i>Euphilotes enoptes smithi</i>	--/FE	Uses coastal dunes and hillsides that support seacliff buckwheat ( <i>Eriogonum parvifolium</i> ) or coast buckwheat ( <i>Eriogonum latifolium</i> ); these plants are used as a nectar source for adults and host plant for larvae	Restricted to localized populations along the coast of Monterey County; single populations reported in Santa Cruz and San Mateo Counties	Known to occur near the northern boundary of Fort Ord and from Giggling Siding to the southern base boundary <sup>l</sup>
California Linderiella <i>Linderiella occidentalis</i>	--/FPE	Ephemeral freshwater habitats such as vernal pools, rock outcrop pools, swales, and ponds	Found in the Central Valley from Tehama to Madera Counties, and the central and south Coast Ranges from Lake to Riverside County	Known from five vernal pools at Fort Ord <sup>e</sup>
Salinas Harvest Mouse <i>Reithrodontomys megalotis distichlis</i>	None (special-interest species)	Inhabits freshwater and saltwater marshes, annual grasslands, scrub, and oak woodlands	Known to occur near the mouth of the Salinas River	Rare at Fort Ord <sup>e</sup>
Greater Roadrunner <i>Geococcyx californianus</i>	None (special-interest species)	Arid, brushy habitats such as deserts, coastal scrub, and chaparral	Occurs in California throughout the Central Valley, south coast and transverse ranges, and the southeastern deserts; occurs throughout the southwestern United States to central Mexico	The only coastal Monterey population occurs in maritime chaparral and inland live oak woodlands at Fort Ord <sup>k</sup>
Swainson Thrush <i>Cathartes ustulatus</i>	None (special-interest species)	Riparian habitats and dense shrubs	In California nests in the Cascade, Klamath, north and south Coast, and Transverse Ranges, also the eastern Sierra Nevada	Occurs in riparian corridors at Fort Ord; declining in the Monterey Bay area <sup>k</sup>
Common Yellowthroat <i>Geothlypis trichas</i>	None (special-interest species)	Riparian habitats and marshlands	Nests throughout California except in the Sierra Nevada and the southeastern deserts; widespread across North America	Occurs in riparian corridors at Fort Ord; declining in the Monterey Bay area <sup>k</sup>

<sup>a</sup> Status definitions:

-- = No designation.

Common and Scientific Name	Legal Status <sup>a</sup> State/Federal	Habitat	Distribution	Occurrence at Fort Ord
FE	= listed as endangered under the federal Endangered Species Act.			
FT	= listed as threatened under the federal Endangered Species Act.			
FPE	= federally proposed for listing as endangered.			
FPT	= federally proposed for listing as threatened.			
LP	= listing package being reviewed by U.S. Fish and Wildlife Service.			
C1	= Category 1 candidate for federal listing. Category 1 includes species for which USFWS has on file enough substantial information on biological vulnerability and threat to support proposals to list them.			
C2	= Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.			
SE	= listed as endangered under the California Endangered Species Act.			
SSC	= California Department of Fish and Game species of special concern.			
<sup>b</sup>	Not found during field surveys.			
<sup>c</sup>	Encountered during field surveys.			
<sup>d</sup>	Source: U.S. National Oceanic and Atmospheric Administration 1990.			
<sup>e</sup>	Source: Roberson pers. comm.			
<sup>f</sup>	Source: Jurek, Walton pers. comms.			
<sup>g</sup>	Source: George pers. comm.			
<sup>h</sup>	Source: Littlefield pers. comm.			
<sup>i</sup>	Source: Bury 1985.			
<sup>j</sup>	Source: Arnold 1983.			
<sup>k</sup>	Source: Fort Ord Parklands 1992.			
<sup>l</sup>	Source: Stanley pers. comm.			

legless lizard, Monterey dusky-footed woodrat, and Monterey ornate shrew are also shown in Appendix H. Potential habitat figures were derived using the GIS system. Descriptions of how habitat models were derived and current acres of potential habitat available at Fort Ord for each species are given in Table 6.

Two species, the Smith's blue butterfly and American peregrine falcon, are federally listed as endangered (Natural Diversity Data Base 1992); the southern sea otter is federally listed as threatened (Natural Diversity Data Base 1992); the California linderiella has been proposed for listing as endangered by the USFWS (57 FR 19856, May 8, 1992); and coastal populations of the Western snowy plover have been proposed for listing as threatened by the USFWS (57 FR 1443, January 14, 1992).

Species profiles for the Smith's blue butterfly, American peregrine falcon, southern sea otter California linderiella, and Western snowy plover are given in the following section.

### Smith's Blue Butterfly

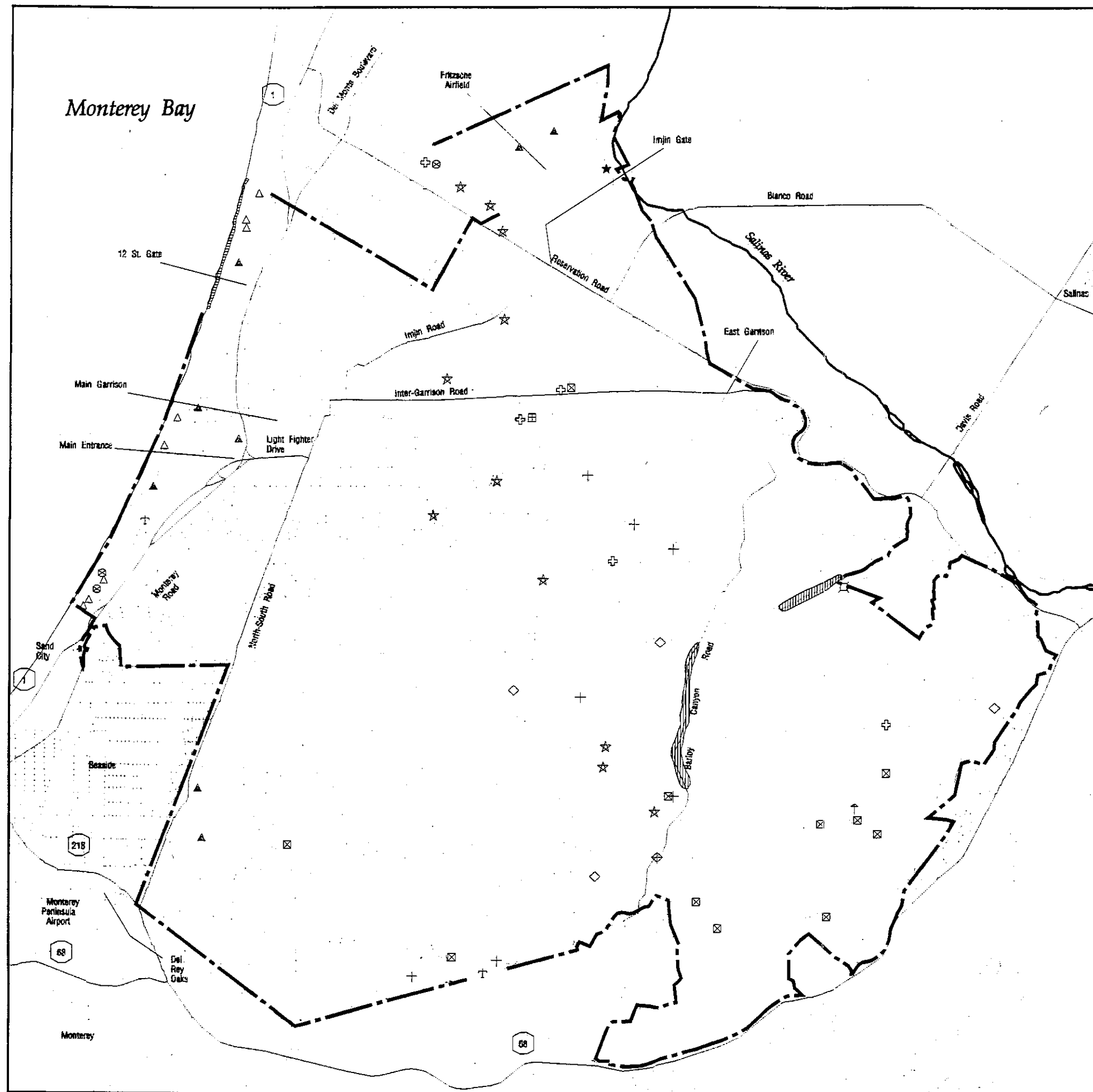
**Taxonomic History.** The Smith's blue butterfly (*Euphilotes enoptes smithi*) is a variety of the widely distributed species *Euphilotes enoptes*. *E. enoptes* occurs throughout the northwest from the Rocky Mountains to the west coast. Although the genus designation (*Euphilotes*) has been revised several times since 1954, the Smith's blue butterfly, has always been considered a distinct subspecies. Two races of Smith's blue butterflies have been identified at Fort Ord (Arnold 1980), and other races may exist in other parts of the range. Genetic studies are needed to determine whether these races warrant refined subspecies designations (U.S. Fish and Wildlife Service 1984).

**Status and Distribution.** The Smith's blue butterfly is endemic to several inland and coastal sand dune, serpentine grassland, and cliffside chaparral communities along the central California coast. At the time of its listing under the federal Endangered Species Act in 1976, the Smith's blue butterfly was known primarily from coastal sand dunes in Monterey County. Subsequent surveys have extended its range to Santa Cruz and San Mateo Counties and shown its association with inland habitats (Appendix H-2). Populations have been found along coastal sand dunes at Marina, Marina State Beach, Fort Ord, Sand City, and the Naval Postgraduate School in Monterey County (U.S. Fish and Wildlife Service 1984). Occurrences at Fort Ord are shown in Figure 12, and in Appendix H, Figure H-2.

**Habitat Requirements.** The Smith's blue butterfly is completely dependant on seacliff buckwheat (*Eriogonum parvifolium*), coast buckwheat (*Eriogonum latifolium*), and an undescribed ecotype of coast buckwheat for oviposition, food for larvae, and as a nectar source for adults. Eggs are laid and develop in the flower heads of the host plant. Larvae may pupate in the flower head or in leaf litter on the ground. Adults emerge to breed in synchrony with the flowering of the host plant and consume their nectar during courtship and breeding.

Smith's blue butterflies occur in discrete colonies associated with stands of the host plant. Not all stands of suitable habitat are occupied every year. Potential habitat was

Known Locations of Special-Status Wildlife Species at Fort Ord

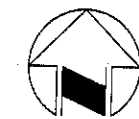


WILDLIFE LOCATIONS

- |   |                                      |   |                             |
|---|--------------------------------------|---|-----------------------------|
| ◇ | <i>California linderella</i>         | ↑ | <i>Tricolored blackbird</i> |
| + | <i>California tiger salamander</i>   | ☆ | <i>Coast horned lizard</i>  |
| ▤ | <i>Salinas harvest mouse</i>         | ▲ | <i>Loggerhead shrike</i>    |
| ▥ | <i>Monterey dusky footed woodrat</i> | ⊕ | <i>Golden eagle</i>         |
| ▧ | <i>Black legless lizard</i>          | ★ | <i>Horned lark</i>          |
| ▨ | <i>American badger</i>               | ▨ | <i>Western snowy plover</i> |
| ▩ | <i>Yellow warbler</i>                | ▩ | <i>Cooper's hawk</i>        |
| ▫ | <i>Smith's blue butterfly</i>        |   |                             |

Wildlife location data collected by Jones & Stokes Associates, 1992, and digitized at 1:24000 scale. Universal Transverse Mercator projection, zone 10, 1000-meter grid ticks. North American Datum of 1927.

August 5, 1992.



Scale 1:60,000

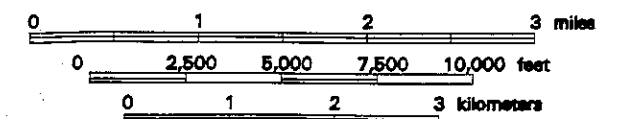




Table 6. Determination of Habitat Models for Special-Status Wildlife Species at Fort Ord

Species	Potential Habitat	Approximate Acres of Potential Habitat	GIS Parameters
Smith's blue butterfly	Buckwheat in dune habitats <sup>a</sup>	180	Medium and high densities of <i>Eriogonum</i> within dune habitats
California linderella and California tiger salamander	Vernal pools and ponds <sup>b</sup>	65	All vernal pools and ponds
Western snowy plover	Beaches above the high-tide line <sup>a</sup>	--	Habitat parameters have not been quantified
Black legless lizard	Native dune vegetation and where coastal scrub and maritime chaparral grow on loose sandy soils <sup>b</sup>	2,980 <sup>c</sup>	Where native dune vegetation occurs and where coastal scrub and maritime chaparral overlap with Baywood Sands and Oceana soils; these parameters indicate appropriate microhabitat conditions
Monterey dusky-footed woodrat	Maritime chaparral and coastal coast live oak woodland <sup>b</sup>	15,590	All maritime chaparral and coastal coast live oak woodland
Monterey ornate shrew	Mixed riparian and oak riparian forest and coastal and inland coast live oak woodland with downed logs or thick ground cover or duff <sup>c</sup>	4,590 <sup>c</sup>	All mixed riparian and oak riparian forest and coastal and inland coast live oak woodland; these parameters indicate appropriate microhabitat conditions
Loggerhead shrike	Dunes, grasslands, coastal scrub, and maritime chaparral <sup>b</sup>	18,990	All dune habitats, coastal scrub, and maritime chaparral
Tricolored blackbird	Grasslands for foraging and dense vegetation near water for nesting <sup>b</sup>	2,750	Large area of grasslands in the southeast portion of Fort Ord where the known nesting colony occurs
California horned lark, northern harrier, and burrowing owl <sup>a</sup>	Grassland habitats (California horned lark <sup>b</sup> ; northern harrier and burrowing owl <sup>a</sup> )	4,770	All grasslands
California red-legged frog and southwestern pond turtle	Ponds and the Salinas River <sup>a</sup>	30	All ponds and where the Salinas River crosses installation boundaries
Cooper's hawk and yellow warbler	Mixed riparian and oak riparian forest and inland coast live oak woodland <sup>a</sup>	230	All mixed riparian and oak riparian forest and Barloy Canyon

Table 6. Continued

Species	Potential Habitat	Approximate Acres of Potential Habitat	GIS Parameters
Wintering sharp-shinned hawk	Mixed riparian and oak riparian forest and canyon bottom inland coast live oak woodland <sup>a</sup>	1,820	All mixed riparian and oak riparian forest and inland coastal coast live oak woodland
Golden eagle	Oak savanna, grasslands, inland coast live oak woodlands, maritime chaparral, and coastal scrub <sup>b</sup>	19,690	All oak savanna, grasslands, inland coast live oak woodland, mixed and oak riparian forest, maritime chaparral, and coastal scrub
Prairie falcon	Only foraging habitat is available at Fort Ord; potential habitat includes grasslands and oak savanna <sup>a</sup>	5,060	All grasslands and oak savanna
American badger	Grasslands, oak savanna, and coastal coast live oak woodlands <sup>b</sup>	8,050	All grasslands, oak savanna, and coastal coast live oak woodland
Coast horned lizard	Where coastal scrub and maritime chaparral grow on sandy soils <sup>b</sup>	10,440 <sup>c</sup>	Where coastal scrub and maritime chaparral overlap with Baywood Sands, Arnold Enez, and Oceana soils; these parameters indicate appropriate microhabitat conditions
Salinas harvest mouse	Coastal coast live oak woodland <sup>b</sup>	2,970	All coastal coast live oak woodland
Greater roadrunner	Maritime chaparral and inland coast live oak woodland <sup>a</sup>	14,000	All maritime chaparral and inland coast live oak woodland
Swainson's thrush and common yellowthroat	Dense riparian forest <sup>a</sup>	190	All mixed riparian forest

<sup>a</sup> Described in the literature or by local experts.

<sup>b</sup> Observed during field surveys and described in the literature or by local experts.

<sup>c</sup> Acres of potential habitat likely to contain appropriate microhabitat conditions.

considered to be areas supporting moderate to high densities of buckwheat. Some point locations from 1983 and 1987 surveys occur in areas not considered potential habitat because low buckwheat densities. These butterfly sightings may occur in small areas of high buckwheat density within an area dominated by low densities of the host plant. Removal of the host plant makes the habitat unsuitable for the butterfly.

Two different races of Smith's blue butterflies have been identified during studies at Fort Ord: one race is associated with seacliff buckwheat, and the other race with coast buckwheat (Arnold 1980). Adult butterflies emerge to breed as the host plants bloom. Because the two buckweats bloom up to 1 month apart, the two races of butterflies have partially differentiated breeding seasons.

Little is known of the habitat requirements for populations found inland and in serpentine grassland and cliffside chaparral habitats.

**Reasons for Decline.** Populations of Smith's blue butterfly have declined because of habitat loss and degradation. The major cause of decline has been urban and residential development in dune habitats resulting in the loss of seacliff and coast buckwheat stands. Where coastal dunes remain competition between buckweats and introduced species, such as ice plant and Holland dune grass, have limited buckwheat stands and reduced available habitat. Recreational activities such as hiking, off-road vehicle use, and hang gliding have also damaged suitable dune habitats. At Fort Ord, competition with introduced plants and military activities on the dunes have limited the availability of suitable habitat.

**Current Management Direction.** Because Smith's blue butterfly is a federally listed endangered species, management direction is prescribed under the federal Endangered Species Act of 1973, and a recovery plan has been developed by USFWS (1984) pursuant to Section 4 of the Endangered Species Act.

**Endangered Species Act.** The Endangered Species Act establishes limits on activities that may affect Smith's blue butterfly and provides procedures for coordinating with the USFWS, which is responsible for administering the Endangered Species Act.

The Smith's blue butterfly is fully protected as a listed endangered species. Section 9 of the Endangered Species Act prohibits the "taking" of any species of wildlife listed as endangered. Take is broadly defined to mean harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such activity. The term "harm" includes destruction of habitat that prevents an endangered species from recovering (16 USC 1532, 50 CFR 17.3).

Activities that may affect Smith's blue butterfly must be reviewed by USFWS. Because the proposed activities involve a federal agency (i.e., U.S. Army), the federal agency is responsible for coordinating the USFWS review through the procedures identified in Section 7 of the Endangered Species Act. Section 7 provides direction for coordination, consultation, and the preparation of a biological assessment. Biological assessments provide the basis for the USFWS to determine if an activity will adversely affect a listed species (16 USC 1536, 50 CFR 402).

If a federal agency is not involved with the proposed activities, the USFWS review must be facilitated through Section 10 of the Endangered Species Act. Section 10 identifies the circumstances that allow the incidental take of endangered species and provides direction for preparation of a habitat conservation plan. Habitat conservation plans must be prepared if an incidental take will occur and are used to identify impacts on endangered species, how those impacts will be mitigated, and how the species will be conserved in the future (16 USC 1539, 50 CFR 13).

**Smith's Blue Butterfly Recovery Plan.** The Smith's blue butterfly recovery plan identifies the objectives that must be achieved to prevent the extinction of the species and safely remove it from the endangered species list. In summary, the species will be considered for delisting when:

- colonies at 18 sites identified in the recovery plan, including those existing at Fort Ord, have been secured; colonies are considered secured when viable, self-sustaining populations are maintained for 10 consecutive years and no foreseeable threats exist to the colony;
- colonies at 18 alternative sites are secured; alternative sites must be comparable to sites identified in the recovery plan; or
- colonies in any combination of identified and alternative sites are secured totaling 18 secured colonies.

Fort Ord provides occupied habitat and potential habitat. This habitat can be used to achieve the recovery plan objectives by securing occupied sites and possibly providing suitable habitat for alternative sites.

### **American Peregrine Falcon**

**Status and Distribution.** The American peregrine falcon is listed as endangered by both USFWS and DFG. The American peregrine falcon is a year-round resident of California; however, the population is increased in winter by migrating individuals from the north (Grinnell and Miller 1944). It formerly nested throughout most of California (California Department of Fish and Game 1980), with breeding pairs concentrated along the coast and around the Channel Islands (Grinnell and Miller 1944). Interior nesting locations included Tule Lake in Siskiyou County, Mono Lake in Mono County, and the inner Coast Ranges in Kern County (Grinnell and Miller 1944).

Approximately 140 pairs of American peregrine falcons are currently known to breed in California (Walton pers. comm.). They occur chiefly in the central and north Coast Ranges and Cascade Range (California Department of Fish and Game 1987). The population has increased significantly since 1969 when fewer than 10 active nests were recorded (California Department of Fish and Game 1980).

**Occurrence at Fort Ord.** Ten known pairs of American peregrine falcons nest in Monterey County (Walton pers. comm.). The nearest pair to Fort Ord is approximately 15 miles south of the base (Jurek pers. comm.). Although peregrine falcons may pass over Fort Ord during migration or forage there in winter, no appropriate nesting habitat exists for peregrine falcons on the installation (Walton pers. comm.).

**Habitat Requirements.** American peregrine falcons nest on protected ledges of high cliffs, primarily in woodland, forest, and coastal habitats (California Department of Fish and Game 1980). They have been known to nest as high as 10,000 feet elevation, but most currently occupied nest sites are below 4,000 feet (Shimamoto and Airola 1981). These wide-ranging birds may travel many miles from their nesting grounds to forage on pigeons, shorebirds, waterfowl, and songbirds (Grinnell and Miller 1944, California Department of Fish and Game 1980).

Peregrine falcons prefer to nest near marshes, lakes, and rivers that support an abundance of birds. Coastal and inland marsh habitats are especially important in fall and winter when they attract large concentrations of water birds (California Department of Fish and Game 1980).

**Reasons for Decline.** Eggshell thinning and nesting failures associated with DDT contamination are commonly cited reasons for the decline of peregrine falcons. Other causes of decline include illegal shooting, illegal falconry activities, and habitat destruction (California Department of Fish and Game 1980).

### **Southern Sea Otter**

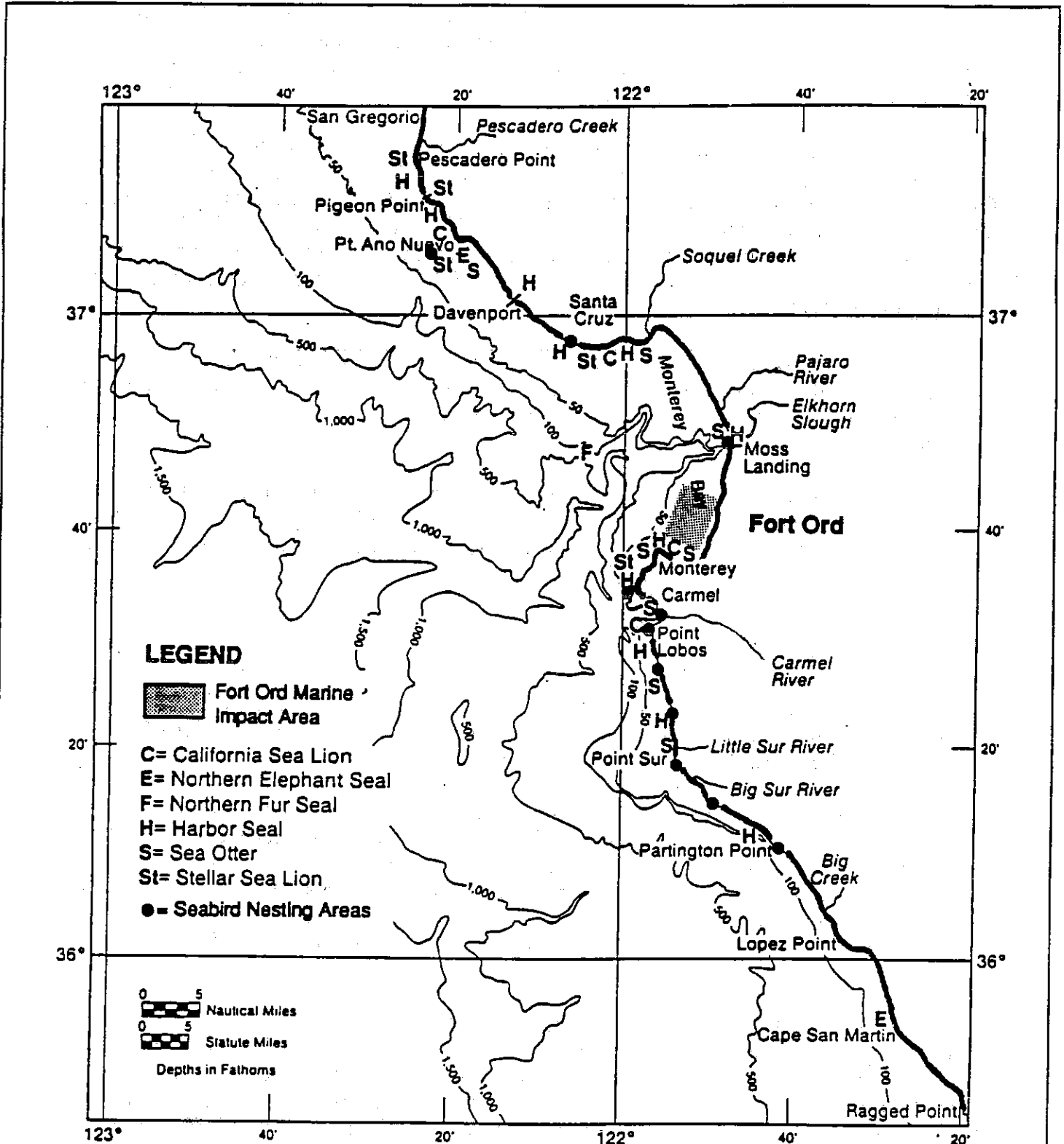
**Status and Distribution.** The southern sea otter is listed as threatened by USFWS. The species currently occurs in coastal waters from Point Ano Nuevo in Santa Cruz County to Point Sal in Santa Barbara County (Zeiner et al. 1990b).

Sea otters were once abundant along the Pacific Coast from Alaska to Baja California. Extensive commercial hunting in the 1700s and 1800s decimated sea otter populations. The southern sea otter was thought extinct in California until a small population was discovered near Big Sur in 1911. Primarily because of protection efforts since that time, the range of the southern sea otter has consistently expanded (Cicin-Sain 1981). In 1986, between 1,300 and 1,400 animals occurred in California (51 FR 29362, August 15, 1986).

**Occurrence at Fort Ord.** The southern sea otter is a breeding, year-round resident in Monterey Bay. Monterey Bay has four primary areas of sea otter concentrations (U.S. National Oceanic and Atmospheric Administration 1990). The area of concentration nearest Fort Ord occurs south of the Marine Impact Area offshore from the City of Monterey (Figure 13). Southern sea otters may occasionally use the areas offshore from Fort Ord for feeding or while moving between feeding areas. However, the sandy bottom and lack of dense kelp stands in the Marine Impact Area provide marginal habitat conditions for sea otters.

Figure 13

Principal Sea Otter, Seal, and Sea Lion Areas of Concentration and Seabird Nesting Areas in Monterey Bay Area



Source: U.S. Department of Commerce 1990.

**Habitat Requirements.** The southern sea otter occurs in nearshore marine environments where invertebrate food sources are abundant and dense kelp beds are available (Zeiner et al. 1990b). Common prey species include abalones, sea urchins, crabs, and clams (Wild and Ames 1974). Areas with rocky substrates are favored because the rock crevices provide refugia for prey species allowing for consistent and abundant prey populations (Zeiner et al. 1990b). Sea otters typically feed in water depths of 5-40 feet (Miller 1974). Sites with sandy bottoms are also occasionally used for feeding (Wild and Ames 1974).

Kelp beds are used by the southern sea otter as cover from both predators and rough surf conditions (Zeiner et al. 1990b). Kelp is also used as an anchor to prevent the animal from drifting while resting or sleeping (Kenyon 1969).

**Reasons for Decline.** The initial cause of decline in southern sea otter populations is attributed to extensive commercial hunting to support the fur trade in the 1700s and 1800s. Although sea otter populations have typically increased in California, a slowing in overall population growth and population declines in some areas were recorded from the mid-1970s to mid-1980s. Drowning during entanglement with fishing nets was determined to contribute significantly to these declines (51 FR 29362, August 15, 1986). Regulations on fishing methods have decreased incidents of otters drowning in fishing nets.

Currently, the most significant threat to southern sea otter populations is the potential for a large-scale oilspill within the range of the species. Oil penetrates the fur of the otter and allows water to reach the skin of the animal, eliminating the thermoregulatory benefits of the fur. Sea otters quickly die from exposure if they contact an oilspill. A large oilspill within the range of the species could decimate southern sea otter populations (51 FR 29362, August 15, 1986).

### California Linderiella Fairy Shrimp

**Status and Distribution.** California supports 21 species of fairy shrimp, seven of which occur only in California. USFWS recently proposed four species of fairy shrimp, the longhorn (*Branchinecta longiantenna*), Conservancy (*Branchinecta conservation*), vernal pool (*Branchinecta lynchi*), and California linderiella fairy shrimp for endangered status.

The California linderiella is the only member of the fairy shrimp family Linderiellidae in North America. This species occurs in various vernal pools and swales in the Central Valley from Tehama County to Madera County, and the Central and South Coast Ranges from Lake County south to Riverside County (Eng et al. 1990).

**Occurrence at Fort Ord.** California linderiella is the only fairy shrimp known at Fort Ord. They have been found in five ephemeral water bodies on the installation (Figures 12 and H-3). More extensive surveys will likely find California linderiella, and possibly other fairy shrimp species, in suitable habitat at Fort Ord.

**Habitat Requirements.** Fairy shrimp live in ephemeral, freshwater aquatic habitats, such as vernal pools, rock outcrop pools, swales, and ponds. They are adapted to the temporary presence of water and to a species-specific set of environmental parameters (e.g., salinity, temperature, and alkalinity) (Simovich and Fugate 1992). Many fairy shrimp species appear to exist for a single generation, emerging in response to their species-specific environmental cues, producing resting eggs, then dying. Once the aquatic habitat has dried, the eggs overwinter in a resistant egg stage and hatch only when the required environmental cues in their aquatic habitat are reestablished (Zedler 1987).

California linderiella have been found in ephemeral pools and swales under a variety of conditions. Pools may have a grass or mud bottom, or occur in sandstone depressions, and range in size from 10 square feet to 98 acres. Water may be clear to slightly turbid (57 FR 19856, May 8, 1992). The water in pools inhabited by this species has very low alkalinity, conductivity, and total dissolved solids.

All pools where California linderiella have been found are filled by winter and spring rains and may hold water until June. Adult California linderiella have been observed in pools between late October to early May.

**Reasons for Decline.** Loss of vernal pool habitat to urban development, water supply/flood control activities, and conversion of land to agricultural uses are the primary causes for the decline of fairy shrimp populations (57 FR 19856, May 8, 1992), including the California linderiella.

A secondary reason for decline is impacts of off-road vehicle use on fairy shrimp habitat. Off-road vehicles can cut deep ruts in vernal pools, compact soils, destroy native vegetation, and alter pool hydrology. Fire fighting, security patrols, military maneuvers, and recreational activities have also damaged vernal pools in many areas (57 FR 19856, May 8, 1992).

## Western Snowy Plover

**Status and Distribution.** The USFWS proposed coastal populations of the western snowy plover (*Charadrius alexandrius nivosus*) for federal listing as threatened in January 1992 (57 FR 1443, January 14, 1992). Western snowy plovers are also a DFG California species of special concern.

Coastal populations of the western snowy plover nest on sandy beaches from Washington to Baja California; however, coastal breeding sites within the range are very limited. Interior populations breed at inland water bodies throughout many of the western states. Pacific coast populations of the western snowy plover are considered distinct from interior breeding populations (57 FR 1443, January 14, 1992).

Snowy plovers currently breed throughout California; however, most populations nest at inland water bodies (Page and Stenzel 1981, Page et al. 1991). Twenty coastal breeding



sites have been identified in California (Page et al. 1991). Monterey Bay is considered one of eight primary coastal California nesting areas (57 FR 1443, January 14, 1992).

**Occurrence at Fort Ord.** Western snowy plovers have been observed nesting on the beaches at Fort Ord between Stilwell Hall and the northern base boundary (Figures 12 and H-4) during nesting surveys conducted in 1988, 1990, and 1991 (George pers.comm.). From 5 to 16 nests have been recorded at Fort Ord during the breeding season. No western snowy plovers were observed during surveys between Stilwell Hall and the coast Ammunition Supply Point (ASP); however, no nesting surveys have been conducted between the ASP and the southern base boundary.

**Habitat Requirements.** Coastal populations of snowy plovers breed on the upper portions of flat sandy beaches above the high tide line (Grinnell and Miller 1944). Vegetation and driftwood is usually sparse or absent at nesting sites (57 FR 1443, January 14, 1992). Snowy plovers nest where there is an abundance of brine flies and other aquatic invertebrates for feeding (Purdue 1976).

**Reasons for Decline.** Coastal populations of snowy plovers have declined significantly from historical numbers. Snowy plovers were not found breeding at 33 of the 53 survey locations with breeding records before 1970 (Page and Stenzel 1981). The estimated population size in 1988-1989 for Washington, Oregon, and California was about 20% lower than in 1977-1980 (Page et al. 1991).

Disturbance from human activity, such as walking, jogging, the presence of pets, and off-road vehicle use in breeding areas, as well as direct destruction of nest sites and breeding habitat through coastal development and beach raking, are major factors contributing to the decline of coastal western snowy plover populations (57 FR 1443, January 14, 1992). Nesting success can be significantly reduced by human intrusion and disturbance at nesting sites (57 FR 1443, January 14, 1992). Predation by red foxes, American crows, and ravens have also contributed to reduced nesting success at many colonies.

### **Special Native Biological Communities**

Special native biological communities are habitats that are considered important because of their high species diversity, high productivity, unusual nature, limited distribution, declining status, or some combination of these qualities. These habitats are recognized by state and federal agencies as important. DFG's NDDDB maintains a list of rare natural communities. USFWS considers certain habitats, such as wetland and riparian communities, as important to wildlife. The Corps and EPA consider wetland habitats to be important for water quality and wildlife.

The special native biological communities at Fort Ord are:

- coastal strand,
- dune scrub,

- maritime chaparral,
- valley needlegrass grassland,
- mixed riparian forest,
- coast live oak riparian forest,
- vernal pool, and
- freshwater marsh.

These communities are described above under "Biological Communities".

Only small patches of native coastal strand and dune scrub remain in the coastal dune areas of Fort Ord west of Highway 1 (Figure 6). Historically, these were likely the most extensive communities of the coastal dunes.

Maritime chaparral is the most extensive habitat at Fort Ord, but it is an extremely uncommon community (Figure 7). Maritime chaparral of the type at Fort Ord is known only from sites immediately inland of Monterey Bay and just south of the Monterey Peninsula (Griffin 1978). A similar type of central maritime chaparral occurs at scattered locations in southern San Luis Obispo and northern Santa Barbara Counties (Holland 1986).

Valley needlegrass grassland occurrences are restricted to the southeast portion of Fort Ord (Figure 9). Valley needlegrass grassland occurs as patches of often poorly defined habitat within non-native annual grassland.

Mixed riparian forest is only well developed at Fort Ord along Toro Creek and coast live oak riparian forest occurs along streams in Pilarcitos and Merrill Ranch Canyons (Figure 10).

Vernal pools occur at scattered locations in the central portion of Fort Ord (Figure 11). The vernal pools at Fort Ord are unique because of their large size and apparent isolation from any similar vernal pools.

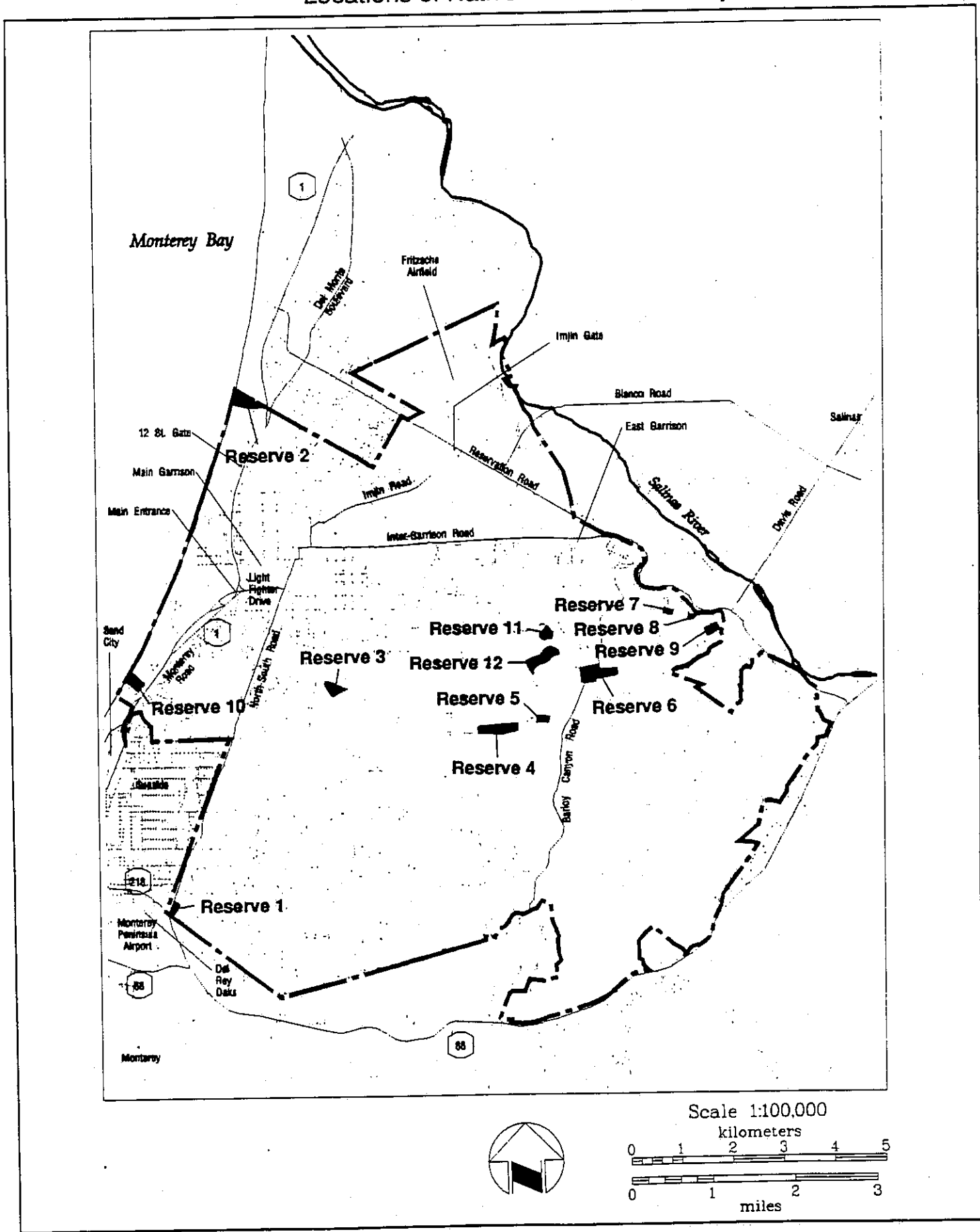
Freshwater marshes occur at the margins of some of the artificial ponds and in the Salinas River channel at Fort Ord (Figure 11). Outside of Fort Ord, the Salinas River and Salinas Lagoon support large areas of freshwater marsh habitat.

### **Native Plant and Butterfly Reserves**

Recognizing that large portions of unique and declining biological resources occur at Fort Ord, the U.S. Army has identified 11 native plant reserves and one butterfly reserve and afforded protection to them as long as there is no overriding military need for the sites (Griffin 1976).

The plant reserves are scattered from the coastal strand through the center of Fort Ord to the extreme eastern boundary (Figure 14). Most of the plant reserves are in maritime chaparral habitat.

Locations of Native Plant and Butterfly Reserves at Fort Ord



Descriptions of the vegetation of each plant reserve are given in Appendix I.

### Significant Natural Areas

The Significant Natural Areas Program is administered by DFG and designed to encourage recognition of the state's most significant natural areas and to seek perpetuation of these areas (California Fish and Game Code 1930-1932). SNAs have no legal status, rather they have been identified in response to a legislative mandate (AB 1039) to raise the level of awareness about California's natural diversity and to identify opportunities where cooperative efforts can conserve important biological resources.

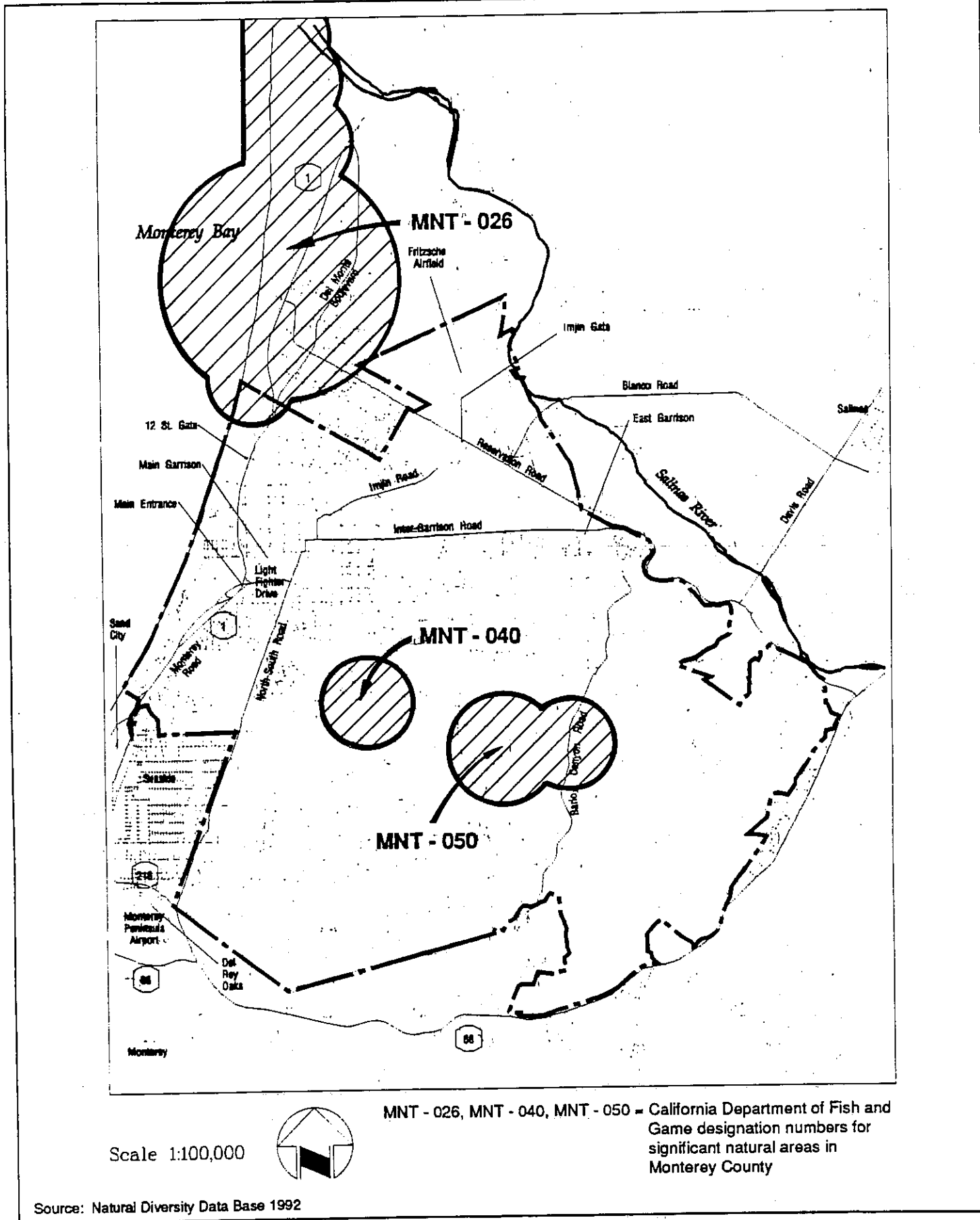
DFG has used only the NDDDB to identify SNAs and the exact boundaries of SNAs have not been established because thorough field surveys have not been completed. SNAs have been identified on the basis of biological value alone; geological or cultural resource values have not been included in the inventory. To qualify as an SNA, a site must meet one of the following four criteria:

- the species or community (element) is extremely rare,
- there is an assemblage of three or more rare elements,
- the element is the best example (relatively undisturbed condition), or
- the element is a center of high diversity.

DFG has identified 43 SNAs in Monterey County, and three are on Fort Ord (Figure 15). The Marina Dunes, West Eucalyptus Road, and Central Eucalyptus Road SNAs at Fort Ord are described in the following sections.

- **Marina Dunes (MNT-026).** This SNA includes the Marina Dunes along the northern boundary of Fort Ord. In addition to a part of Fort Ord, this area includes private lands and lands belonging to the City of Marina and the California Department of Parks and Recreation's Marina State Beach. This SNA is reported by NDDDB to contain eight rare elements, including the federally listed endangered Smith's blue butterfly, sand gilia, and Menzie's wallflower and Monterey spineflower and western snowy plover, which are federally proposed for listing as endangered and threatened. The other rare elements identified by NDDDB are Salinas harvest mouse, black legless lizard, and central dune scrub habitat.
- **West Eucalyptus Road (MNT-040).** This SNA encompasses a general area along Eucalyptus Road directly east of the developed area of Fort Ord. It is reported by NDDDB to contain one rare element: sandmat manzanita.
- **Central Eucalyptus Road (MNT-050).** This SNA encompasses a general area centered about 1.5 miles east of the West Eucalyptus Road SNA. The site is reported by NDDDB to include the rare central maritime chaparral habitat and two rare plant species, Eastwood's ericameria and sandmat manzanita.

General Locations of Significant Natural Areas at Fort Ord



MNT - 026, MNT - 040, MNT - 050 = California Department of Fish and Game designation numbers for significant natural areas in Monterey County

Scale 1:100,000

Source: Natural Diversity Data Base 1992

## **Marine Environment**

The marine environment of Monterey Bay is widely recognized as important habitat for an array of marine wildlife and is within the Monterey Bay National Marine Sanctuary. The nutrient-rich waters, availability of food, diversity of habitat types, and strategic location for migratory birds and mammals all contribute to the diversity of marine wildlife that occur near Fort Ord (U.S. National Ocean and Atmospheric Administration 1990).

Approximately 27 species of marine mammals and 94 species of seabirds are known to occur in the Monterey Bay Region, including nine species of special-status mammals, 17 special-status birds, and three endangered sea turtles (Table 7). Most species occur as non-breeding residents or spring and fall migrants. All of the special-status bird species may fly over the marine impact area at Fort Ord or float in the open water, and southern sea otters may feed in the marine impact area; however, no important marine mammal haul-out (resting) or breeding areas or seabird nesting colonies occur at Fort Ord (Figure 13).

## **VEGETATION AND WILDLIFE MANAGEMENT**

The Directorate of Engineering and Housing, Plans Division, Environmental Office at Fort Ord is responsible for administering and managing vegetation and wildlife management programs for Fort Ord and Fort Hunter Liggett. These include livestock grazing, woodcutting, prescribed burning, and hunting and fishing programs.

### **Fort Ord Grazing Program**

#### **Historical Perspective**

Livestock have been grazed on Fort Ord for the last 50 years. Cattle were grazed initially; however, sheep have been grazed since the mid-1950s. The livestock grazing capacity was estimated approximately 20 years ago by range specialists and adjusted to fit changes in range productivity.

#### **Description of Fort Ord's Grazing Lease**

Livestock grazing is considered an important component of Fort Ord's natural resource program. Grazing lessees are selected through a sealed bid process, with the lease awarded to the highest bidder. The annual lease fee is based on grazing capacities, which are expressed as animal unit-months (AUMs). An AUM is the amount of forage consumed by a 1,000 pound cow in 1 month; an adult sheep is equivalent to 0.2 AUM.

Table 7. Special-Status Wildlife Species Known to Occur in the Marine Environment in Monterey Bay

Common and Scientific Name	Legal Status*	Occurrence
Northern Sea Lion <i>Eumentopsis jubatus</i>	FT	Nonbreeding resident/visitor
Guadalupe Fur Seal <i>Arctocephalus townsendi</i>	FT, ST	Rare seasonal transient
Southern Sea Otter <i>Enhydra lutris nereis</i>	FT	Breeding year-round resident
Gray Whale <i>Eschrichtius robustus</i>	FE	Seasonal migrant
Blue Whale <i>Balaenoptera musculus</i>	FE	Seasonal migrant
Fin Whale <i>Balaenoptera physalus</i>	FE	Seasonal migrant
Hump-Backed Whale <i>Megaptera novaeangliae</i>	FE	Seasonal migrant
Pacific Right Whale <i>Balaena glacialis japonica</i>	FE	Rare seasonal migrant
Sperm Whale <i>Physeter macrocephalus</i>	FE	Rare seasonal migrant
Double-Crested Cormorant <i>Phalacrocorax auritus</i>	SSC	Breeding
Caspian Tern <i>Sterna caspia</i>	*	Breeding
Forster's Tern <i>Sterna forsteri</i>	*	Breeding
Marbled Murrelet <i>Brachyramphus marmoratus</i>	FPT, SE	Breeding
Rhinoceros Auklet <i>Cerohinea monocerata</i>	SSC	Breeding
Tufted Puffin <i>Fratercula cirrhata</i>	SSC	Breeding
Common Loon <i>Gavia immer</i>	SSC	Nonbreeding resident/visitor
Western Grebe <i>Aechmophorus occidentalis</i>	*	Nonbreeding resident/visitor
California Brown Pelican <i>Pelecanus occidentalis californicus</i>	FE, SE	Nonbreeding resident/visitor
California Gull <i>Larus californicus</i>	SSC	Nonbreeding resident/visitor
Elegant Tern <i>Sterna elegans</i>	C2, SSC	Nonbreeding resident/visitor

Table 7. Continued

Common and Scientific Name	Legal Status <sup>a</sup>	Occurrence
Xantus' Murrelet <i>Synthliboramphus hypoleucus</i>	*	Nonbreeding resident/visitor
Ashy Storm-Petrel <i>Oceanodroma homochroa</i>	SSC	Nonbreeding resident/visitor
Laughing Gull <i>Larus atricilla</i>	SSC	Seasonal migrant
California Least Tern <i>Sterna antillarum browni</i>	SE, FE	Seasonal migrant
Short-Tailed Albatross <i>Diomedea albatrus</i>	FE	Rare visitor
Black Skimmer <i>Rynchops niger</i>	SSC	Rare visitor
Green Turtle <i>Chelonia mydas</i>	FE	Rare visitor
Leatherback Turtle <i>Dermochelys coriacea</i>	FE	Rare visitor
Pacific Ridley Turtle <i>Lepidochelys olivacea</i>	FE	Rare visitor

<sup>a</sup> Status explanations (see the "Definitions of Special-Status Species" section above for citations):

FE = listed as endangered under the federal Endangered Species Act.

FT = listed as threatened under the federal Endangered Species Act.

C2 = Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Species that are possibly extinct are indicated with an asterisk (\*). Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.

SE = listed as endangered under the California Endangered Species Act.

ST = listed as threatened under the California Endangered Species Act.

FPT = proposed as threatened by the federal government.

SSC = California state species of special concern.

\* = Taxa that fall into one or more of the following categories: taxa that are biologically rare, very restricted in distribution, or declining throughout their range; populations in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation within California; taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old-growth forests).



Approximately 7,500 acres is available for sheep grazing on the east side of Fort Ord (Figure 16). The grazing season is from February 1 through June 30; however, only 25% of the permitted AUMs can occur within the first 30 days. Grazing capacity at Fort Ord has been established by the government to be 2,700 AUMs, and a minimum of 500 pounds per acre of residual dry matter (RDM) (litter and mulch) must be left on the range after the grazing season. RDM reduces soil erosion from the first rains, provides an organic material to maintain soil fertility, and provides a microclimate for seed germination.

The lessee may graze up to three bands of sheep, with approximately 900 sheep per band. A herder must be present with all bands, and the sheep cannot bed in one location for more than three consecutive nights. One permanent corral is adjacent to El Toro Creek, and temporary fences are used to enclose bedding areas.

### **Levels of Actual Use**

Actual grazing use at Fort Ord has fluctuated widely during the last 14 years (Figure 17) because leases have been issued only for 2- to 3-year periods. The actual grazing use was below the maximum capacity of 2,700 AUMs, except for 3 years. Low use of the Fort Ord lease is consistent with statewide trends in sheep production for the last 30 years because of lower demand for red meat, rising costs of transporting livestock from ranges to markets, maintenance of range improvements (California Department of Forestry and Fire Protection 1988), and the recent drought.

### **Woodcutting**

Fort Ord does not have any forest stands capable of producing commercial lumber; therefore, woodcutting is limited to firewood. Firewood is produced on approximately 4,700 acres of oak woodland and savannas that are generally dominated by coast live oak and is obtained in two ways. Trees removed or trimmed for construction projects are brought to the landfill area where up to one cord of firewood can be purchased by military personnel or civilians. Approximately 250 cords of wood are sold annually from the landfill.

Firewood also can be obtained by purchasing a permit to cut one cord of wood from dead and downed trees in designated cutting areas during fall. Forested areas are surveyed by personnel from Fort Ord and the amount of wood in each cutting area is determined. Approximately 100 cords of firewood are sold under this program; the demand is high and permits are generally sold out soon after the woodcutting season opens.

### **Fire Management Program**

The objective of Fort Ord's fire management program is to reduce potential hazards to areas within Fort Ord and surrounding lands from wildfires caused by training activities

Figure 16  
Sheep Grazing Lease at Fort Ord

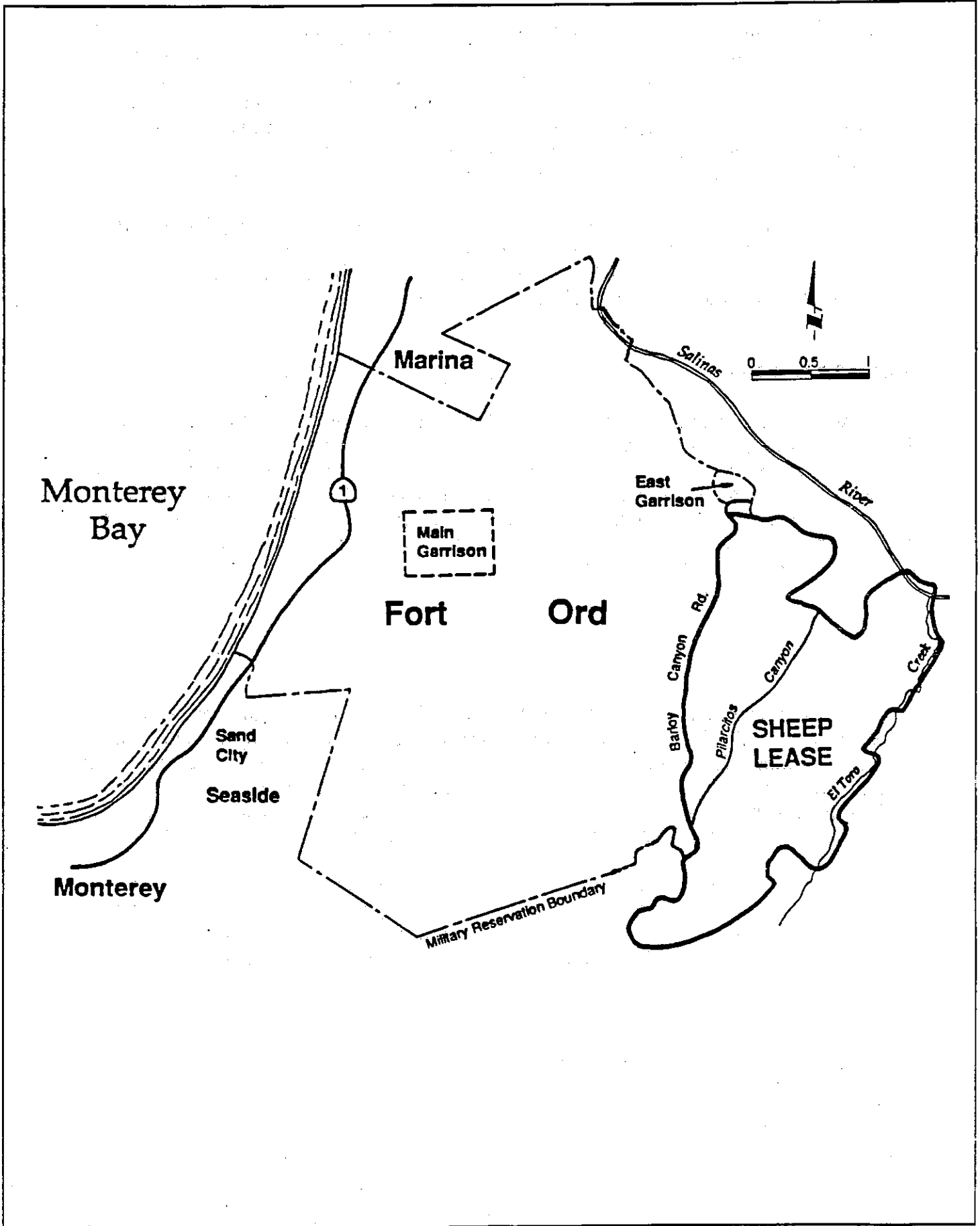
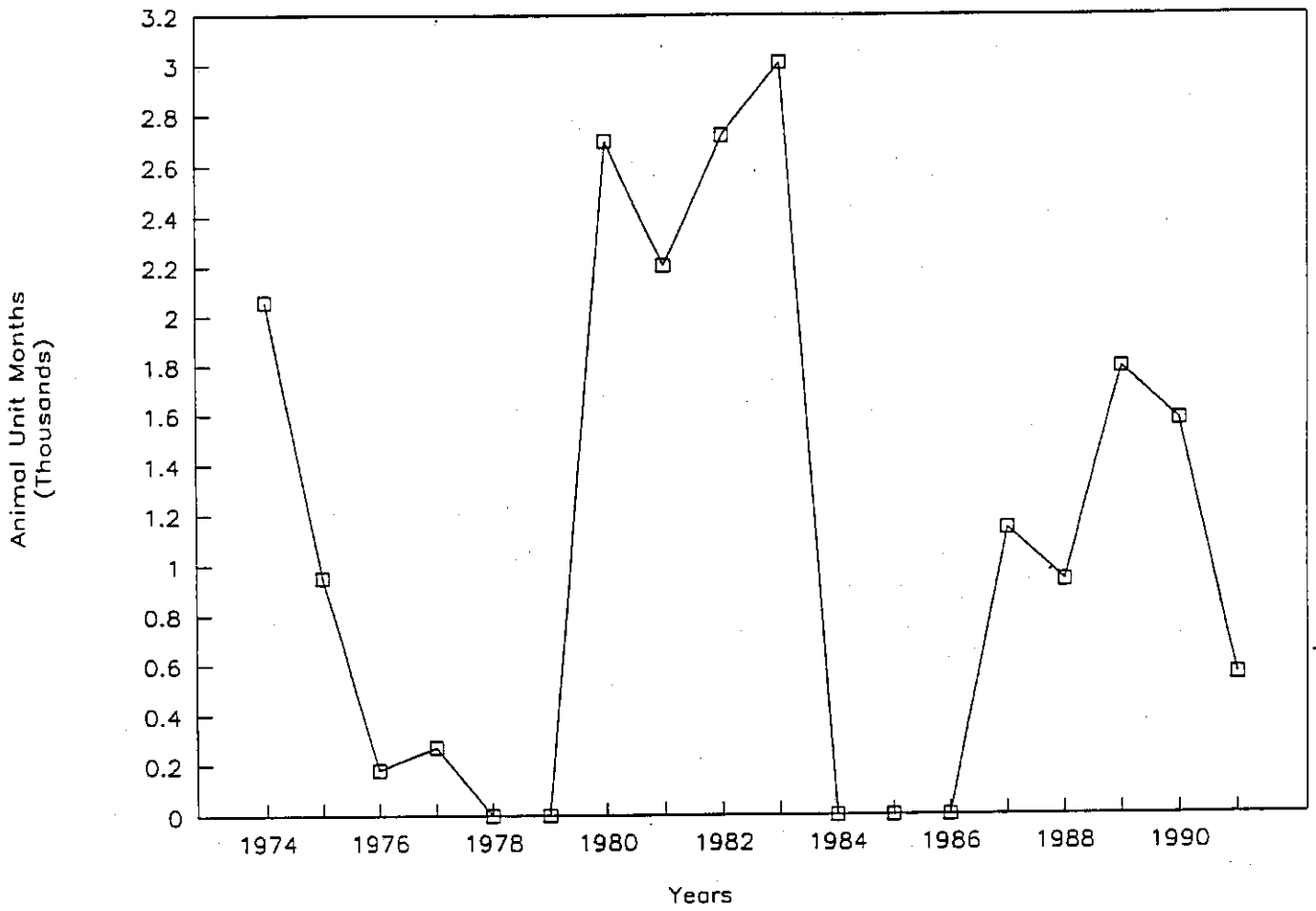


Figure 17  
Summary of Actual Grazing Use at Fort Ord



or natural factors. The key methods of fire control are the construction of fuel breaks and fire roads, controlled burning, and fire suppression.

An annual fire management plan is developed each January by representatives from Range Control, the Fort Ord Fire Department, and the Environmental Office. Areas of the base are targeted for controlled burns and fire road and fuel brake maintenance and construction. Most controlled burns occur in the inland range area because of the fire hazards created by chaparral vegetation and high risks associated with training activities. Areas that are expected to ignite from flares, tracer rounds, or other incendiary devices routinely used during military training are often burned before the training exercise.

Areas outside the inland range area may be identified for controlled burns if fuel densities are high or a potential threat exists to military or civilian property. Chaparral habitats are typically targeted for controlled burns outside the inland range area.

Controlled burns are not used for fire prevention in the grasslands on Fort Ord; fuel levels are modified through the grazing program. However, small areas of the grasslands are burned annually as part of a local interagency firefighter training program.

Once an annual fire management plan has been drafted, a letter report describing the plan is sent to the Monterey Bay Air Pollution Control District (MBAPCD). The MBAPCD identifies the conditions under which controlled burns can take place, such as temperature and wind direction, and provides a permit to the Fort Ord Environmental Office. The Army may request amendments to the burn permit if controlled burns not identified in the annual fire management plan are required later in the year.

The current fire management program at Fort Ord has had a beneficial impact on vegetation and wildlife on many parts of the base. Chaparral habitats, especially in the inland range area, include a mosaic of age classes caused by the variable burn schedule used on base. Younger age classes of chaparral show a higher diversity of plant species and support a greater density of rare plants. These areas of younger chaparral intergrade with older or decadent stands providing a variety of habitat conditions for wildlife. Disturbance caused by fire road and fuelbreak construction and maintenance also allows rare plants such as the Monterey spineflower (federally proposed for endangered status) to establish in otherwise densely vegetated areas. Terminating the fire management program at Fort Ord would allow chaparral habitats on base to grow toward uniform old age classes and reduce habitat suitability for a variety of wildlife and special-status plants.

### **Estimate of the Amount of Vegetation Burned Annually**

Maritime chaparral and coastal scrub are fire dependent communities. These communities evolved under conditions that included periodic disturbance from fire. Because of the annual variability of the Fort Ord fire management program, accurate estimates do not exist for the number of acres of various habitat types affected by controlled burns, wildfires, and fuelbreak and fire road construction at Fort Ord. Therefore, an estimate of

the number of acres burned annually was developed using available data and several assumptions.

Between 1986 and 1992, the number of wildfires on Fort Ord ranged from 98 to 178, with an annual average of 131. Approximately 75% of the wildfires occurred in the inland range. Most of the wildfires were limited to 0.25 acre; although some were several hundred acres.

In 1991, approximately 200 acres were treated with prescribed fire. In 1992, approximately 280 acres were scheduled for treatment with prescribed fire; 80 acres of chaparral-oak savanna, 120 acres of chaparral-oak savanna in the inland range, and 80 acres of grasslands.

Approximately 300 acres were assumed to burn annually because of accidental causes. If 75% occur in the inland range (225 acres), then 75 acres burn on the remainder of the base. One-half of the acres outside the inland range were assumed to burn in chaparral and the remainder in the oak woodland and savanna.

The estimated total number of acres burned annually at Fort Ord would be approximately 580 acres (Table 8). Approximately 80% (462 acres) of all fires would occur in chaparral and coastal scrub and 60% of all acres burned would be in the inland range.

The average rotation (the period between fires at a given site) of all chaparral and coastal scrub (13,184 acres) at Fort Ord is approximately 29 years. However, rotations are shorter in the inland range because of the higher frequency of prescribed burning and wildfires that start from training activities. When the inland range is considered separately, the average rotation for chaparral and coastal scrub is 20 years in the inland range and approximately 52 years for the remainder of the base.

### **Fort Ord Hunting and Fishing Programs**

Fort Ord provides hunting and fishing opportunities for military personnel and civilians. The program is coordinated with DFG and USFWS, under guidance provided by the Sikes Act (16 USC 670).

Hunting and fishing seasons generally correspond to the dates established by the California Fish and Game Commission (Commission); however, the length of seasons can be restricted to protect local game species. All changes are coordinated through the local DFG biologist and approved by the Commission through its regulatory process.

Freshwater anglers and hunters must possess valid state licenses and tags and must purchase a Fort Ord Complex Fishing or Hunting Permit. Surf anglers are not required to purchase a Fort Ord Complex Fishing Permit. Revenue from sale of the permits is used for fish-stocking programs, habitat improvement, and permit administration.

Table 8. Estimated Average Number of Acres  
Burned Annually at Fort Ord

	Prescribed Fire (1992)	Estimated Wildfire (1986-1992)	Total
Inland Range			
Chaparral/coastal scrub	120	225	345
Remainder of Fort Ord			
Chaparral/coastal scrub	80	37	47
Oak woodlands		37	37
Grasslands	<u>80</u>	—	<u>80</u>
Total	280	299	579

## **Fishing Program**

Normally, East Garrison Reservoir and Mudhen Lake are available for fishing, but because of the drought, only East Garrison Reservoir has remained open. East Garrison is a 1-acre reservoir stocked annually with approximately 3,000 pounds each of 1- to 1.5-pound catfish and 0.75-pound trout. Approximately 2,000 freshwater angler-days (one person fishing 8 hours per day) are recorded annually.

Surf fishing is allowed on weekdays only along the beach below Stilwell Hall. On weekends, surf fishing is allowed along the entire beach within Fort Ord's boundary.

## **Hunting Program**

Approximately 11,500 acres of Fort Ord are open to hunting during legal hunting seasons. Game species, in order of importance, include California quail, cottontail rabbit, mourning dove, black-tailed deer, and waterfowl (mallards and cinnamon teal). Black-tailed bucks are harvested during the regular A zone season and during an additional season that follows closure of the A zone. Hunting pressure normally is low, with an average of 10 bucks harvested each year. Wild turkeys recently have been observed on Fort Ord near El Toro Creek, but a hunting season has not been recommended because the population is small and unestablished. Approximately 1,000 hunter-days (one person hunting 8 hours per day) are recorded annually at Fort Ord.

## **Management Units**

Management units and management compartments for Fort Ord have been developed as a means of incorporating biological and physiological factors, proposed land uses, and future development and management considerations to aid in the design of action plans during closure and environmental documentation. Management units are large areas (usually greater than 400 acres) with similar existing land uses and within the jurisdiction of a city or Monterey County. Whenever possible existing political boundaries or roads were used to define the boundaries of each unit. Management compartments are specific biological communities within each management unit.

The locations of the 14 management units were determined by examining existing and potential future land uses, city limits or spheres of influence, and biological and soil characteristics (Figure 18). Descriptions of each management unit are given in Table 9. Once the location of the Army's proposed Presidio of Monterey annex footprint is finalized, it can be described as a separate unit.

Important biological resources were identified within each management unit and compartment to aid in future management decisions (Tables 10 through 23).

Table 9. Description of Boundaries and Characteristics of Proposed Management Units

Unit and Boundary	Characteristics
<b>Fritzsche Army Airfield</b> Base boundary, Marina SOI, and Reservation Road	Entirely within the Marina SOI; moderately developed with an existing airport; future metro airport could restrict other construction activities
<b>City of Marina/Developed</b> Base boundary, 1st Street, 3rd Street, Inter-Garrison Road, and Imjin Road	Entirely within the Marina SOI; highly developed
<b>Marina - Undeveloped</b> Inter-Garrison Road, Old County Road, and Imjin Road	Entirely within the Marina SOI; primarily undeveloped land; dominated by oak woodlands
<b>Coast</b> Base boundary and west of SR 1	Entirely within Monterey County; activities regulated by California Coastal Commission; unstable soil; concentration of special-status biological resources
<b>Seaside - Developed</b> Base boundary, Eucalyptus Road, and 7th Avenue	Entirely within Seaside City limits; highly developed
<b>Seaside - Undeveloped</b> Base boundary, Eucalyptus Road, and Seaside city limits	Entirely within Seaside City limits and impact area (hazardous waste); undeveloped; dominated by chaparral with potentially high biological value
<b>Monterey County - Impact</b> Base boundary, Barloy Canyon Road, and Eucalyptus Road	Entirely within Monterey County and impact area (hazardous waste); undeveloped; dominated by chaparral with potentially high biological value
<b>El Toro</b> Base boundary, Jack's Road, Eucalyptus Road, and Barloy Canyon Road	Entirely within Monterey County; undeveloped; dominated by slopes greater than 30%; existing grazing lease; dominated by grasslands and chaparral
<b>East Garrison</b>	Original portion of Fort Ord
<b>Monterey County - Undeveloped</b> East Garrison, base boundary, Imjin Road, and Old County Road	Entirely within Monterey County, undeveloped, dominated by live oak woodlands, concentration of special-status plants
<b>Gigling</b> Inter-Garrison Road, Watkins Gate Road, and Parker Flats Road	Entirely within Monterey County; primarily undeveloped land; dominated by coastal live oak woodland
<b>Barloy Canyon</b> Base boundary, Inter-Garrison Road, Hennekins Ranch Road, Barloy Canyon Road, and Eucalyptus Road	Entirely within Monterey County; primarily undeveloped land; high biological diversity; significant vernal pool/wetlands; potentially high biological value associated with chaparral and vernal pools



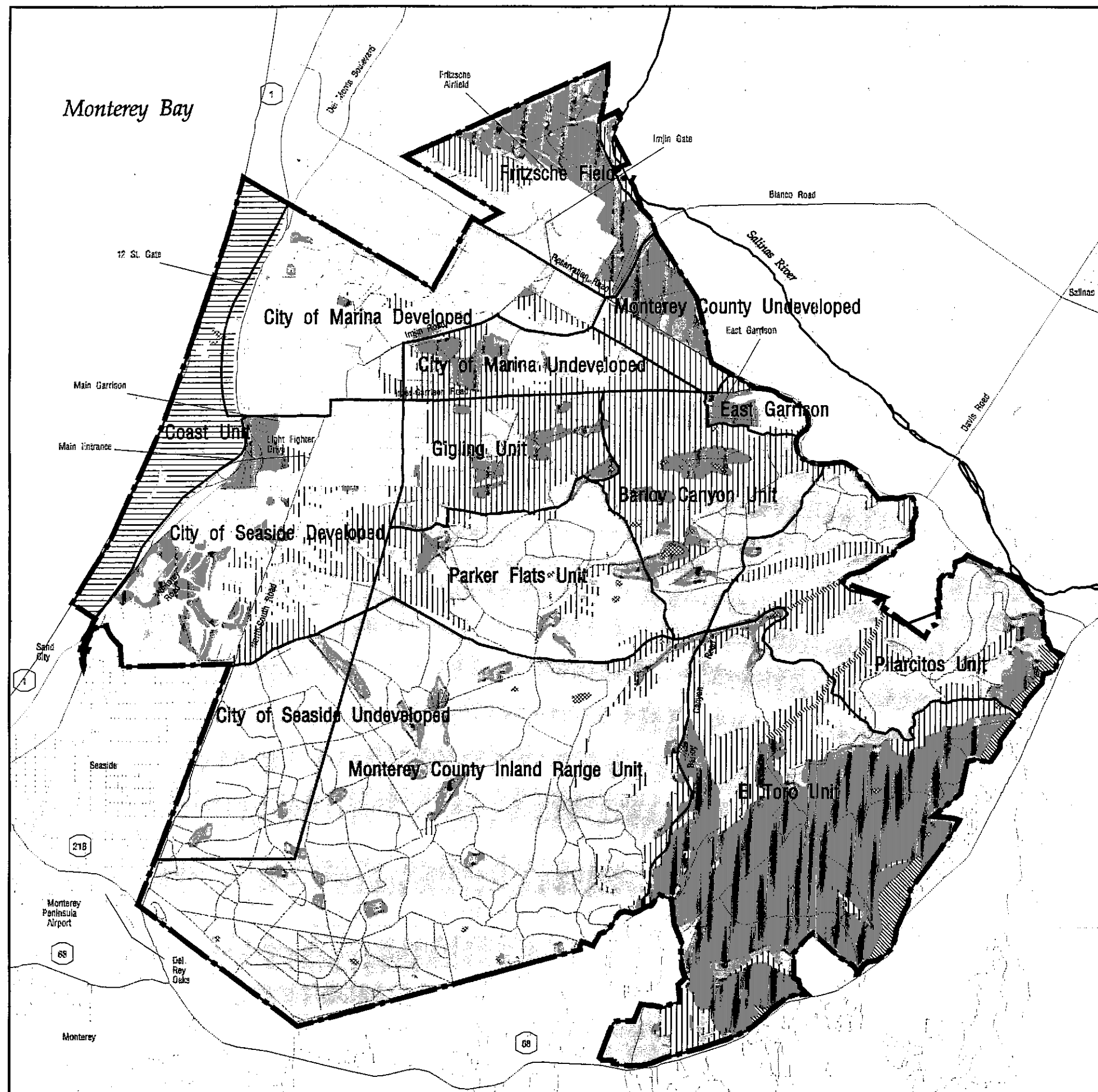
Table 9. Continued

Unit and Boundary	Characteristics
<p><b>Parker Flats</b> Eucalyptus Road, Hennekins Ranch Road, and Parker Flats Road</p>	<p>Entirely within Monterey County; primarily undeveloped land; dominated by chaparral with potentially high biological value</p>
<p><b>Pilarcitos</b> Base boundary, Barloy Canyon Road, and Jacks Road</p>	<p>Entirely within Monterey County; primarily undeveloped land; dominated by chaparral and inland coast live oak; dominated by slopes greater than 30%; potentially high biological value associated with chaparral</p>











Figure 18

Proposed Fort Ord Management Units  
and General Biological Communities  
at Fort Ord



**Habitat Legend**

-  Coastal strand and dune
-  Chaparral and coastal scrub
-  Coast live oak woodland and savanna
-  Grasslands
-  Riparian
-  Wetland and open water
-  Developed
-  Management Unit Boundaries



Scale 1:60,000

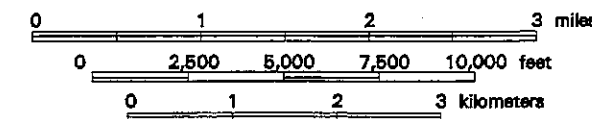


Table 10. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within Fritzsche Army Airfield Management Unit

	Total Acres	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Salinas River	Developed
Acres of habitat in each management compartment*	1,331	137	238	160	8	562	not quantified	226

Plant Species

Sand gilia  
 Monterey spineflower  
 Sandmat manzanita  
 Monterey ceanothus  
 Eastwood's ericameria  
 Lewis' clarkia  
 Virgate eriastrum  
 Purple-flowered piperia

K K  
 K K  
 K K  
 K K  
 K K  
 K K  
 K K  
 K K

Animal Species

Black legless lizard  
 Monterey duskey-footed woodrat  
 Monterey ornate shrew

P  
 K, P  
 K, P  
 P  
 P

Table 10. Continued

	Total Acres	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Salinas River	Developed
Loggerhead shrike		K, P	P			K, P		
California horned lark						K, P		
California red-legged frog							P	
Southwestern pond turtile							P	
Northern harrier						P		
Burrowing owl						P		
Sharp-shinned hawk					P			
Golden eagle		P	P		P			
Prairie falcon						P		
American badger				P		P		
Coast horned lizard		P	K, P					
Salinas harvest mouse				P				
Greater roadrunner			P		P			

\* Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.

Table 11. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within City of Marina Developed Management Unit

	Total Acres	Disturbed Dune	Ice Plant Maps	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Annual Grassland	Developed
Acres of habitat in each management compartment*	2,116	24	61	14	600	81	26	1,310

**Plant Species**

Sand gilia					K	K		
Monterey spineflower			K		K	K		
Toro manzanita					K			
Sandmat manzanita			K		K			
Monterey ceanothus			K		K	K		
Eastwood's ericameria					K			
Coast wallflower					K		K	
Wedge-leaved horkelia					K		K	
Yadon's piperia					K			
Hooker's manzanita			K		K			
Virgate eriogonum			K		K			
Small-leaved tomatium								K
Purple-flowered piperia					K			

Table 11. Continued

	Total Acres	Disturbed Dune	Ice Plant Mats	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Annual Grassland	Developed
<b>Animal Species</b>								
Black legless lizard		P		P	P			
Monterey duskey-footed woodrat					P	P		
Monterey ormate shrew						P		
Loggerhead shrike		P		P	P		P	
California horned lark							P	
Northern harrier							P	
Burrowing owl							P	
Golden eagle				P	P		P	
Prairie falcon							P	
American badger							P	
Coast horned lizard				P	P			
Salinas harvest mouse								P
Greater roadrunner					P			

\* Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.

Table 12. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within City of Marina Undeveloped Management Unit

Acres of habitat in each management compartment*	Total Acres	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland		Inland Coast Live Oak Woodland		Annual Grassland	Developed
				Oak Woodland	Oak Woodland	Oak Woodland	Oak Woodland		
786	3	143	336	5	121	178			

**Plant Species**

Sand gilia	K	K	K					
Monterey spinesflower	K	K	K				K	
Sandmat manzanita	K	K	K				K	
Monterey ceanothus	K	K	K				K	
Eastwood's ericameria				K				
Douglas' spineflower					K			
Virgate eriogonum	K			K				
Small-leaved tomatium				K				
Purple-flowered piperia				K				K
Coast wallflower	K			K				

**Animal Species**

Black legless lizard	P							
Monterey duskey-footed woodrat				P			K, P	
Monterey ornate shrew							P	P



Table 12. Continued

	Total Acres	Coastal Scrub	Maritime Chaparral	Coastal Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Salinas River	Developed
Loggerhead shrike		P	P			P		
California horned lark						P		
Northern harrier						P		
Burrowing owl						P		
Sharp-shinned hawk					P			
Golden eagle		P	P		P	P		
Prairie falcon						P		
American badger				K, P		P		
Coast horned lizard		P	K, P					
Salinas harvest mouse				P				
Greater roadrunner			P		P			

\* Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.

Table 13. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within Coast Management Unit

	Total Acres	Beaches, Bluffs, and Blowouts	Disturbed Dunes	Ice Plant Mats	Dune Scrub	Native Coastal Strand	Pond and Freshwater Marsh	Developed
Acres of habitat in each management compartment*	976	199	77	567	8	89	4	32
<b>Plant Species</b>								
Sand gilia						K		
Monterey spineflower			K	K		K		
Robust spineflower				K				
Sandmat manzanita				K				
Coast wallflower				K	K	K		
Monterey Indian paintbrush			K	K		K		
<b>Animal Species</b>								
Smith's blue butterfly		K, P	P	K, P		K, P		
California linderella							P	
Western snowy plover		K, P						
Black legless lizard			K, P		P			
Loggerhead shrike			P	K, P	P	K, P		
California tiger salamander								P

Table 13. Continued

	Total Acres	Beaches, Bluffs, and Blowouts	Disturbed Dunes	Ice Plant Mats	Dune Scrub	Native Coastal Strand	Pond and Freshwater Marsh	Developed
California red-legged frog							P	
Southwestern pond turtle							P	

\* Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.

Table 14. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within City of Seaside Developed Management Unit

	Total Acres	Ice Plant Mats	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Oak Savannah	Annual Grassland	Developed
Acres of habitat in each management compartment*	2,654	10	70	126	399	2	13	311	1,723
<b>Plant Species</b>									
Monterey spineflower			K	K	K			K	
Sandmat manzanita			K	K					
Eastwood's ericameria				K	K				
Wedge-leaved hoikelia				K					
Virgate eriastrum			K	K	K				
Purple-flowered piperia			K	K					
Monterey ceanothus			K	K					
<b>Animal Species</b>									
Black legless lizard			P	P					
Monterey dusky-footed woodrat				P	P				
Monterey ornate shrew					P	P			
Loggerhead shrike		P	P	P					P
California horned lark									P
Northern harrier									P

Table 14. Continued

	Total Acres	Ice Plant Mats	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Oak Savannah	Annual Grassland	Developed
Burrowing owl								P	
Golden eagle			P	P		P	P	P	
Prairie falcon							P	P	
American badger					P		P	P	
Coast horned lizard			P	P					
Salinas harvest mouse					P				
Greater roadrunner				P		P	P	P	

\* Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.

Table 15. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within City of Seaside Undeveloped Management Unit

	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Annual Grassland
Areas of habitat in each management compartment*	1,394	1,347	1	46
<b>Plant Species</b>				
Sand gilia		K		K
Monterey spineflower		K		K
Seaside bird's-beak				K
Toro manzanita		K		
Sandmat manzanita		K		
Monterey ceanothus		K		
Eastwood's ericameria		K		
Coast wallflower		K		
Wedge-leaved horkelia		K		
Pajaro manzanita		K		
Virgate eriastrum		K		K
Small-leaved lomatium				
Purple-flowered piperia				K

Table 15. Continued

	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Annual Grassland
<b>Animal Species</b>				
Black legless lizard		P		
Monterey duskey-footed woodrat		P	P	
Monterey ormate shrew			P	
Loggerhead shrike		K, P		K, P
California homed lark				P
Northern harrier				P
Burrowing owl				P
Golden eagle		P		P
Prairie falcon				P
American badger			P	K, P
Coast horned lizard		P		
Salinas harvest mouse			P	
Greater roadrunner		P		

\* Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.

Table 16. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within Monterey County Impact Management Unit

Acres of habitat in each management compartment*	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland		Oak Savanna	Annual Grassland	Vernal Pool	Ponds and Freshwater Marsh		Developed
	6,713	6,230	8	168	49	227	6	11	14		

Plant Species

Sand gilia	K			K								K
Monterey spineflower	K		K									K
Seaside bird's-beak	K											K
Toro manzanita	K											K
Sandmat manzanita	K		K									
Monterey ceanothus	K											K
Eastwood's ericameria	K											K
Coast wallflower												K
Wedge-leaved horkelia	K											
Hooker's manzanita	K											K
Douglas' spineflower	K											K
Virgate eriogonum	K											
Small-leaved lomatium	K											
Purple-flowered piperia	K											



Table 16. Continued

Animal Species	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland		Inland Coast Live Oak Woodland		Oak Savanna	Annual Grassland	Vernal Pool	Ponds and Freshwater Marsh		Developed
			Live Oak Woodland	Live Oak Woodland	Live Oak Woodland	Live Oak Woodland				Freshwater Marsh	Freshwater Marsh	
California linceriella									K, P		P	
Black legless lizard		P										
Monterey duskey-footed woodrat		P	P									
Monterey ormate shrew			P		P							
Loggerhead shrike		K, P						K, P				
Tricolored blackbird								P				
California horned lark								P				
California tiger salamander									K, P		K, P	
California red-legged frog											P	
Southwestern pond turtle											P	
Northern harrier									P			
Burrowing owl									P			
Cooper's hawk												
Sharp-shinned hawk												
Golden eagle		K, P										
Prairie falcon												
American badger												K, P
Coast horned lizard		K, P										

Table 16. Continued

	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Oak Savanna	Annual Grassland	Vernal Pool	Ponds and Freshwater Marsh	Developed
Salinas harvest mouse			P						
Greater roadrunner		P		P					

• Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.



Table 17. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within El Toro Management Unit

Total Acres	Coastal Scrub	Maritime Chaparral		Inland Coast Live Oak Woodland		Oak Savanna	Annual Grassland	Valley Needlegrass	Blue Wildrye Grassland		Mixed Riparian Forest	Oak Riparian	Ponds and Freshwater Marsh
		477	595	184	2,190				353	86			
4,338	278												
Acres of habitat in each management compartment*													

Plant Species

Sand gilia	K												
Monterey spineflower	K		K										
Seaside bird's-beak	K		K										
Toro manzanita	K		K										
Monterey ceanothus	K												
Eastwood's ericameria	K		K				K						
Wedge-leaved horkelia	K												
Hooker's manzanita	K												
Small-leaved lomatium	K												

Animal Species

California linderella													K, P
Monterey duskey-footed woodrat	P												
Monterey ornate shrew			P								P		P

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Table 18. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within East Garrison Management Unit

	Total Acres	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Developed
Areas of habitat in each management compartment*	194	23	11	66	94
<b>Plant Species</b>					
No species occur in this management unit					
<b>Animal Species</b>					
Monterey duskey-footed woodrat		P			
Monterey ornate shrew		P	P		
Loggerhead shrike				P	
California horned lark				P	
Northern harrier				P	
Burrowing owl				P	
Sharp-shinned hawk			P		
Golden eagle			P		P
Prairie falcon					P
American badger		P			P
Salinas harvest mouse		P			P
Greater roadrunner			P		

Table 15. Continued

Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Annual Grassland
* Habitats less than 1 acre were not included in the table.			
K = species known to occur in the habitat type within the management unit.			
P = species has potential to occur in the habitat type within the management unit.			

Table 19. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within Monterey County Undeveloped Management Unit

	Total Acres	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland
Acres of habitat in each management compartment*	494	3	10	201	4	276
<b>Plant Species</b>						
Sand gilia				K		
Monterey spineflower			K	K		K
Sandmat manzanita				K		
Monterey ceanothus				K		
Coast wallflower				K		
Wedge-leaved horkelia				K		
Purple-flowered piperia				K		
<b>Animal Species</b>						
Black legless lizard		P				
Monterey duskey-footed woodrat			P	P		
Monterey ormate shrew				P	P	
Loggerhead shrike		P	P			P
California horned lark						P
Northern harrier						P
Burrowing owl						P
Sharp-shinned hawk					P	



Table 19. Continued

	Total Acres	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland
Golden eagle		P	P		P	P
Prairie falcon						P
American badger				P		P
Coast horned lizard		P				
Salinas harvest mouse				P		
Greater roadrunner			P		P	

• Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.



Table 20. Continued

	Total Acres	Coastal Scrub	Maritime Chaparral	Coastal Live Oak Woodland	Annual Grassland	Vernal Pool	Developed
California horned lark					P		
California tiger salamander						K, P	
Northern harrier					P		
Burrowing owl					P		
Golden eagle		P	P		P		
Prairie falcon					P		
American badger				P	P		
Coast horned lizard		P	K, P				
Salinas harvest mouse				K, P			

• Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.

Table 21. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within Barlow Canyon Management Unit

	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Vernal Pool	Pond and Freshwater Marsh	Developed
Acres of habitat in each management compartment*	1,567	458	741	150	166	20	1	31
<b>Plant Species</b>								
Sand gilia		K	K					
Monterey spineflower			K		K			
Seaside bird's-beak		K						
Toro manzanita		K	K	K				
Sandmat manzanita		K	K		K			
Hickman's onion			K		K			
Monterey ceanothus		K						
Eastwood's ericameria		K						
Wedge-leaved horkelia		K						
Hooker's manzanita		K						
Douglas' spineflower		K						
Virgate eriastrum		K						
Small-leaved lomatium		K		K				
Purple-flowered piperia		K						

Table 21. Continued

Animal Species	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland		Inland Coast Live Oak Woodland		Annual Grassland	Vernal Pool	Pond and Freshwater Marsh	Developed
			P	P	P	P				
California linderella									P	
Monterey duskey-footed woodrat		P	P					P		
Monterey ormate shrew			P		P					
Loggerhead shrike						P				
California horned lark						P				
California tiger salamander							K, P		P	
California red-legged frog									P	
Southwestern pond turtle									P	
Northern harrier								P		
Burrowing owl								P		
Sharp-shinned hawk										
Golden eagle		P								
Prairie falcon										
American badger										
Coast horned lizard		P								
Salinas harvest mouse										P
Greater roadrunner		P								P

Table 21. Continued

Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Vernal Pool	Pond and Freshwater Marsh	Developed

• Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.



Table 22. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within Parker Flats Management Unit

	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Vernal Pool	Ponds and Freshwater Marsh	Coastal Scrub
Acres of habitat in each management compartment*	1,751	1,380	254	22	87	6	2	1

**Plant Species**

Sand gilia	K							
Monterey spineflower	K	K			K			K
Toro manzanita	K				K			
Sandmat manzanita	K							
Hickman's onion					K			
Monterey ceanothus	K	K			K			
Eastwood's ericameria	K							
Wedge-leaved hortelia	K	K			K			
Hooker's manzanita	K	K		K	K			
Virgate eriastrum	K	K						K
Small-leaved formatium	K	K		K				
Purple-flowered piperia	K							



Table 22. Continued

	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Vernal Pool	Ponds and Freshwater Marsh	Coastal Scrub
<b>Animal Species</b>								
California lindenella						P	P	
Black legless lizard		P						
Monterey duskey-footed		K, P	P					
Monterey ormate shrew			P	P				
Loggerhead shrike		P			P			
California horned lark					P			
California tiger salamander						P	P	
California red-legged frog							P	
Southwestern pond turtle							P	
Northern harrier					P			
Burrowing owl					P			
Sharp-shinned hawk				P				
Golden eagle		P	P	P	P			
Prairie falcon				P	P			
American badger			P		P			
Coast horned lizard		K, P						

Table 22. Continued

	Total Acres	Maritime Chaparral	Coastal Live Oak Woodland	Inland Coast Live Oak Woodland	Annual Grassland	Vernal Pool	Ponds and Freshwater Marsh	Coastal Scrub
Salinas harvest mouse			P					
Greater roadrunner		P		P				

\* Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.



Table 23. Special-Status Plant and Wildlife Species Known to Occur or with Potential to Occur within Pilarcitos Management Unit

	Total Acres	Coastal Scrub	Maritime Chaparral	Inland Live Oak Woodland	Oak Savanna	Annual Grassland	Valley Needlegrass	Mixed Riparian Forest	Oak Riparian
Acres of habitat in each management compartment*	2,221	59	1,480	420	62	91	39	45	25

Plant Species

Sand gilia	K								
Monterey spineflower				K					
Seaside bird's-beak	K								
Toro manzanita				K					
Hickman's onion	K								
Monterey ceanothus	K								
Eastwood's ericameria	K			K					
Wedge-leaved horkelia	K								
Hooker's manzanita	K			K					
Douglas' spineflower	K								
Virgate eriastrum	K								
Small-leaved lomatium	K			K					
Purple-flowered piperia	K								

Table 23. Continued

	Total Acres	Coastal Scrub	Maritime Chaparral	Inland		Annual Grassland	Valley Needlegrass	Mixed Riparian Forest	Oak Riparian
				Live Oak Woodland	Oak Savanna				
<b>Animal Species</b>									
Monterey duskey-footed woodrat			K, P						
Monterey ormate shrew			P	P				P	P
Loggerhead shrike		P	P		P	P			
California horned lark					P	P			
Northern harrier					P	P			
Burrowing owl					P	P			
Cooper's hawk								P	K, P
Yellow warbler								P	K, P
Sharp-shinned hawk								P	P
Golden eagle		P	P	P	P	P		P	P
Prairie falcon									
American badger									
Coast homed lizard			P						
Greater roadrunner			P						
Swainson's thrush								P	
Common yellowthroat								P	

Table 23. Continued

Total Acres	Coastal Scrub	Maritime Chaparral	Inland Live Oak Woodland	Oak Savanna	Annual Grassland	Valley Needlegrass	Mixed Riparian Forest	Oak Riparian

\* Habitats less than 1 acre were not included in the table.

K = species known to occur in the habitat type within the management unit.

P = species has potential to occur in the habitat type within the management unit.



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## Appendix A. Plant Species Known to Occur at Fort Ord and Habitats Where Found

### Appendix A. Plant Species Known to Occur at Fort Ord and Habitats Where Found

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord *
<i>Abronia latifolia</i>	Coastal sand-verbena	AD
<i>Abronia umbellata</i>	Pink sand verbena	AD
<i>Acacia</i> sp.	Golden wattle	H, R
<i>Acaena californica</i>	California acaena	G
<i>Acer negundo</i> var. <i>californicum</i>	California box-elder	R
<i>Achillea millefolium</i> var. <i>californica</i>	California white yarrow	G, OW, MC, SD
<i>Adenostoma fasciculatum</i>	Chamise	MC
<i>Aesculus californica</i>	California buckeye	OW, R
<i>Agoseris apargioides</i>	Seaside dandelion	SD, G
<i>Agoseris grandiflora</i>	Bigflower dandelion	G
<i>Agoseris heterophylla</i>	Mountain dandelion	G, R
<i>Agrostis diegoensis</i>	Thingrass	G
<i>Agrostis exarata pacifica</i>	Western bent grass	G
<i>Aira caryophylla</i>	Silver hairgrass	G
<i>Alchemilla arvensis</i>	Lady's mantle	R
<i>Allium hickmanii</i>	Hickman's onion	G
<i>Alopecurus howellii</i>	Howell's meadow-foxtail	VP
<i>Ambrosia chamissonis</i>	Beach bur/bursage	AD
<i>Anthriscus caucalis</i>	Bur-cherbil	OW
<i>Ammophila arenaria</i>	European beach grass	SD
<i>Amsinckia intermedia</i>	Common fiddleneck	G, OW
<i>Amsinckia spectabilis</i>	Seaside fiddleneck	G, OW
<i>Amsinckia</i> sp. ( <i>lunaris</i> ?)	Bent-flowered fiddleneck	G, OW
<i>Anagallis arvensis</i>	Scarlet pimpernel	G, OW
<i>Anagallis</i> ( <i>Centunculus</i> ) <i>minima</i>	Chaffweed	G
<i>Anaphalis margaritaceae</i>	Pearly everlasting	G, OW, CS



## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Apiastrum angustifolium</i>	Wild celery	OW, CS, G, MC
<i>Arabis glabra</i>	Tower mustard	OW
<i>Arctostaphylos hookeri</i>	Hooker's manzanita	MC
<i>Arctostaphylos montereyensis</i>	Toro manzanita	MC
<i>Arctostaphylos pumila</i>	Sandmat manzanita	MC
<i>Arctostaphylos tomentosa</i> ssp. <i>crinita</i>	Woollyleaf manzanita	MC
<i>Arctostaphylos tomentosa</i> ssp. <i>crustacea</i>	Brittleleaf manzanita	MC
<i>Arctostaphylos tomentosa</i> ssp. <i>tomentosa</i>	Shaggy-barked manzanita	MC
<i>Armeria maritima</i> ssp. <i>californica</i>	Sea thrift	SD
<i>Artemisia californica</i>	California sagebrush	CS
<i>Artemisia douglasiana</i>	Mugwort	OW, R
<i>Artemisia pycnocephala</i>	Beach sagewort	AD, SD
<i>Aster subspicatus</i>	Douglas' aster	CS
<i>Astragalus nuttallii</i>	Nuttall's locoweed	G
<i>Athysanus pusillus</i>	Dwarf athysanus	MC, G, CS
<i>Atriplex californica</i>	California saltbush	SD, CS
<i>Atriplex leucophylla</i>	Beach saltbush	SD, CS
<i>Atriplex semibaccata</i>	Australian saltbush	SD, CS
<i>Avena barbata</i>	Slender wild oat	G, OW
<i>Avena fatua</i>	Wild oat	G, OW
<i>Baccharis glutinosa</i>	Mule fat/seep-willow	R
<i>Baccharis pilularis</i> var. <i>consanguinea</i>	Coyote brush/chaparral broom	CS, SD, OW, MC
<i>Brassica geniculata</i>	Summer mustard	G, SD
<i>Brassica nigra</i>	Black mustard	G, SD
<i>Briza maxima</i>	Big quakinggrass	G, OW
<i>Briza minor</i>	Little quakinggrass	G
<i>Brodiaea coronaria</i>	Harvest brodiaea	G
<i>Brodiaea terrestris</i>	Earth brodiaea	G, OW
<i>Bromus carinatus</i>	California brome	G
<i>Bromus diandrus</i>	Ripgut brome	G, SD
<i>Bromus hordeaceus</i>	Soft chess	G, SD
<i>Bromus racemosus</i>	Smooth chess	G

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Bromus rubens</i>	Red brome	G, MC
<i>Cakile maritima</i>	European sea rocket	AD
<i>Calamagrostis rubescens</i>	Pinegrass	MC, OW
<i>Calandrinia breweri</i>	Brewer's redmaids	G
<i>Calandrinia ciliata</i>	Redmaids	G, OW
<i>Callitriche heterophylla</i>	Large water-starwort	VP
<i>Callitriche marginata</i>	California water-starwort	VP
<i>Calochortus albus</i>	White globe lily	G, MC
<i>Calochortus luteus</i>	Yellow mariposa-lily	G
<i>Calochortus uniflorus</i>	Large-flowered star tulip	G
<i>Calyptridium monandrum</i>	Common calyptridium	MC, R
<i>Calystegia soldanella</i>	Beach morning-glory	AD
<i>Calystegia subacaulis</i>	Hill morning-glory	G
<i>Camissonia cheiranthifolia</i>	Beach evening primrose	AD
<i>Camissonia contorta</i>	Contorted evening primrose	CS, MC, G
<i>Camissonia micrantha</i>	Miniature evening primrose	CS, MC, G
<i>Camissonia ovata</i>	Coast sun cup	G, MC, CS
<i>Cardamine (Dentaria) californica</i>	Milkmaids	OW
<i>Cardamine oligosperma</i>	Western bitter-cress	VP
<i>Cardionema ramosissimum</i>	Sand mat	CS, SD, MC
<i>Carduus pycnocephalus</i>	Italian thistle	G
<i>Carex barbarae</i>	Santa Barbara sedge	G
<i>Carex brevicaulis</i>	Short-ligule sedge	G
<i>Carex globosa</i>	Round-fruited sedge	G
<i>Carpobrotus aequilaterus</i>	Sea fig	SD, AD
<i>Carpobrotus edulis</i>	African ice plant/Hottentot fig	SD, AD
<i>Carpobrotus elongata</i>	Longleaf ice plant	SD
<i>Castilleja affinis</i>	Coastal paintbrush	SD, G
<i>Castilleja foliolosa</i>	Woolly/felt paintbrush	SD, G, MC
<i>Castilleja latifolia</i>	Broadleaf paintbrush	MC
<i>Caucalis microcarpa</i>	California hedge parsely	MC, R
<i>Ceanothus dentatus</i>	Cropleaf ceanothus	MC

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Ceanothus dentatus</i> var. <i>floribundus</i>	Cropleaf ceanothus	MC
<i>Ceanothus incanus</i>	Coast whitethorn	MC
<i>Ceanothus rigidus</i>	Monterey ceanothus	MC
<i>Ceanothus thrysiflorus</i>	Blue-blossom ceanothus	MC
<i>Centaurea melitensis</i>	Tocalote	G
<i>Centaureum davyi</i>	Davy's centaury	MC, CS
<i>Cerastium arvense</i>	Mouse-ear chickweed	G, R, OW
<i>Chenopodium californicum</i>	California soap plant	OW, CS
<i>Chlorogalum pomeridianum</i>	Soap plant	G, OW, MC
<i>Chorizanthe coriacea</i>	Lasterriaca	MC
<i>Chorizanthe diffusa</i>	Diffuse spine-flower	MC, CS
<i>Chorizanthe douglasii</i>	Douglas spine-flower	MC
<i>Chorizanthe (robusta?)</i>	Robust spine-flower	SD
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spine-flower	MC, CS, SD, G
<i>Cirsium brevistylum</i>	Edible thistle	G
<i>Cirsium occidentale</i>	Cobweb thistle	CS, MC, OW
<i>Cirsium proteanum</i>	Red thistle	MC
<i>Cirsium quercetorum</i>	Oak thistle	G
<i>Cirsium vulgare</i>	Bull thistle	G, OW, CS
<i>Clarkia lewisii</i>	Lewis' clarkia	G, OW
<i>Clarkia purpurea</i> ssp.	Four-spotted godetia	G
<i>Claytonia perfoliata</i>	Miner's lettuce	OW, G, SD
<i>Collinsia bartsiaefolia</i>	White chinese houses	G
<i>Collinsia heterophylla</i>	Chinese houses	OW
<i>Conium maculatum</i>	Poison-hemlock	OW, CS, R
<i>Conyza bonariensis</i>	South American horseweed	R
<i>Conyza canadensis</i>	Western horseweed	R, G
<i>Cordylanthus rigidus</i> var. <i>littoralis</i>	Seaside bird's beak	MC, G
<i>Corethrogyne californica</i>	California cudweed-aster	MC, AD, SD
<i>Corethrogyne filaginifolia</i>	Cudweed aster	MC, AD, SD
<i>Cortaderia atacamensis</i>	Pampas grass	D
<i>Cotula australis</i>	Australian brass-buttons	VP

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Cotula coronopifolia</i>	African brass-buttons	VP
<i>Crassula aquatica</i>	Water pygmy-stonecrop	VP
<i>Crassula erecta</i>	Sand pygmy-stonecrop	MC, CS, AD
<i>Croton californicus</i>	California croton	MC, CS, AD, G, SD
<i>Cryptantha hispidissima</i>	Cleveland's cryptantha	G, MC, CS
<i>Cryptantha micromeres</i>	Minute-flowered cryptantha	MC, CS
<i>Cupressus macrocarpa</i>	Monterey cypress	H
<i>Cuscuta</i> sp.	Dodder	MC
<i>Cynoglossum grande</i>	Western houndstongue	OW
<i>Cytisus monspessulanus</i>	French broom	D, CS, G, MC
<i>Danthonia californica</i>	California oatgrass	SD, G
<i>Datisca glomerata</i>	Durango root	R
<i>Daucus pusillus</i>	Rattlesnake weed	OW, SD, G, R
<i>Delphinium parryi</i> (?)	Purple larkspur	MC, G, CS
<i>Delphinium patens</i>	Coast larkspur	OW
<i>Deschampsia danthonioides</i>	Annual hairgrass	FM
<i>Dichelostemma pulchellum</i>	Blue dicks	OW, G, MC
<i>Dichondra donnelliana</i>	California dichondra	G
<i>Dipsacus fullonum</i>	Fuller's teasel	G
<i>Distichlis spicata</i>	Saltgrass	VP
<i>Dodecatheon hendersonii</i>	Henderson's shooting star	G
<i>Dryopteris arguta</i>	California wood fern	OW
<i>Dudleya caespitosa</i>	Sea lettuce	AD
<i>Dudleya lanceolata</i>	Lanceleaf live-forever	MC
<i>Eleocharis macrostachya</i>	Common spike-rush	VP
<i>Eleocharis</i> sp.	Spike-rush	VP
<i>Elymus condensatus</i>	Giant ryegrass	G, OW, CS
<i>Elymus glaucus</i>	Woodland/blue rye-grass	G, OW, CS
<i>Elymus mollis</i>	Dune ryegrass	AD
<i>Elymus pacificus</i>	Pacific ryegrass	SD
<i>Elymus triticoides</i>	Creeping ryegrass	G, OW
<i>Emmenanthe penduliflora</i>	California bush sunflower	MC

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Erechtites arguta</i>	New Zealand fireweed	CS
<i>Erechtites hieracifolia</i>		R
<i>Eremalche exilis</i>	White mallow	R
<i>Eremalche parryi</i>	Parry's mallow	OW
<i>Eremocarpus setigerus</i>	Turkey mullien	G
<i>Eriastrum virgatum</i>	Virgate's eriastrum	MC, CS
<i>Ericameria ericoides</i>	Heather goldenbush/mock heather	SD, CS, MC, G
<i>Ericameria fasciculata</i>	Eastwood's ericameria	MC, CS, SD
<i>Erigeron foliosus</i>	Slender fleabane	CS, MC, OW
<i>Eriodictyon californicum</i>	California yerba santa	MC
<i>Eriogonum latifolium</i>	Wild buckwheat	AD, SD
<i>Eriogonum nudum</i>	Naked buckwheat	AD, CS, MC
<i>Eriogonum parvifolium</i>	Seacliff buckwheat	AD, SD
<i>Eriophyllum confertiflorum</i>	Golden yarrow	CS, MC
<i>Eriophyllum staechadifolium</i>	Lizard tail/woolly sunflower	CS, SD
<i>Erodium botrys</i>	Broadleaf filaree	G
<i>Erodium cicutarium</i>	Redstem filaree	G
<i>Erodium moschatum</i>	Broadleaf filaree	G
<i>Eryngium vaseyi</i>	Vasey's coyote-thistle	VP
<i>Erysimum ammophilum</i>	Coast wallflower	MC, SD
<i>Eschscholzia californica</i>	California poppy	G
<i>Eschscholzia californica</i> var. <i>maritima</i>	Beach poppy	AD, SD
<i>Eucalyptus globulus</i>	Blue gum	
<i>Eucrypta chrysanthemifolia</i>	Common eucrypta	OW
<i>Evax acaulis</i>	Dwarf evax	G
<i>Femontodendron californicum</i>	California flannel bush	MC
<i>Festuca (Vulpia) megalura</i>	Foxtail fescue	G
<i>Festuca (Vulpia) octoflora</i>	Six-weeks fescue	G, SD, AD
<i>Festuca (Vulpia) pacifica</i>	Pacific fescue	G
<i>Filago californica</i>	California fluffweed	MC, CS, SD
<i>Filago gallica</i>	Woolly filago	MC, CS, G, SD
<i>Fragaria vesca</i> ssp. <i>californica</i>	California strawberry	OW

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Fritillaria lanceolata</i>	Purple mission bells	MC
<i>Galium aparine</i>	Catchweed bedstraw	OW
<i>Galium californicum</i>	California bedstraw	OW, CS, MC
<i>Galium nuttalli</i>	Climbing bedstraw	OW, CS, MC
<i>Garya elliptica</i>	Wavy/coast silktassel	MC
<i>Gastridium ventricosum</i>	Nit grass	G, D
<i>Geranium dissectum</i>	Dissected geranium	G, OW
<i>Gilia capitata</i>	Head gilia	MC
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	Sand gilia	MC
<i>Gnaphalium beneolens</i>	Fragrant everlasting	G
<i>Gnaphalium californicum</i>	Green everlasting	MC, CS
<i>Gnaphalium chilense</i>	Cotton-batting cudweed	MC, SD, CS, AD
<i>Gnaphalium luteo-album</i>	Cudweed everlasting	G
<i>Gnaphalium palustre</i>	Lowland cudweed	G, VP
<i>Gnaphalium purpureum</i>	Purple everlasting	MC, CS, SD, AD
<i>Gnaphalium ramosissimum</i>	Pink everlasting	MC, CS
<i>Gnaphalium stramineum</i>		R
<i>Grindelia latifolia</i>	Coast gum plant	SD
<i>Haplopappus ericoides</i>	Mock heather	CS, G, SD
<i>Helianthemum scoparium</i>	Rush rose	MC, OW, CS
<i>Heliotropium curassavicum</i>	Heliotrope	G
<i>Hemizonia corymbosa</i>	Coast tarplant	G
<i>Hemizonia fasciculata</i>	Fascicled tarplant	G
<i>Heteromeles arbutifolia</i>	Toyon	MC, OW
<i>Heterotheca (Chrysopsis) villosa</i>	Hairy golden aster	G
<i>Heterotheca grandiflora</i>	Telegraph weed	OW, G, CS, MC, D
<i>Hordeum brachyantherum</i>	Meadow barley	G, VP
<i>Hordeum hystrix</i>	Mediterranean barley	G, VP
<i>Hordeum jubatum</i>	Foxtail barley	G
<i>Hordeum leporinum</i>	Hare barley	G
<i>Horkelia cuneata</i> var. <i>sericea</i>	Wedge-leaf horkelia	MC, CS
<i>Horkelia cuneata</i> var. <i>cuneata</i>	Common wedge-leaf horkelia	MC, G, CS

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Hypochoeris glabra</i>	Smooth cat's-ear	G, OW
<i>Hypochoeris radicata</i>	Hairy cat's-ears	G
<i>Iris douglasianna</i>	Douglas' iris	OW, MC
<i>Isocoma menziesii</i>	Coast isocoma	MC, CS
<i>Isocoma veneta</i> var. <i>vernonioides</i>	Coastal goldenbush	CS
<i>Isoetes</i> sp.	Quillwort	VP
<i>Juncus balticus</i>	Baltic rush	VP, G
<i>Juncus bufonius</i>	Common toad rush	VP
<i>Juncus capitatus</i>	Capped rush	VP
<i>Juncus occidentalis</i>	Slender rush	VP
<i>Juncus patens</i>	Spreading rush	FM
<i>Juncus phaeocephalus</i>	Brown-headed rush	VP
<i>Juncus rugulosus</i>	Wrinkled rush	VP
<i>Koeleria cristata</i>	Junegrass	MC, CS
<i>Lastarriaea coriacea</i>	Spine-flower	MC, CS, G
<i>Lasthenia californica</i>	California goldfields	G
<i>Lasthenia glaberrima</i>	Rayless goldfields	VP
<i>Lasthenia glabrata</i>	Yellow-ray goldfields	VP
<i>Lathyrus littoralis</i>	Beach pea	AD, SD
<i>Lathyrus vestitus</i>	Pacific peavine	G
<i>Lavatera assurgentiflora</i>	California tree-mallow/malva rosa	AD
<i>Layia hieracioides</i>	Tall layia	CS, MC
<i>Layia platyglossa</i>	Tidy tips	G, VP
<i>Leontodon leysleri</i>	Hairy hawkbit	R
<i>Lepechinia calycina</i>	Pitcher sage	MC
<i>Lepidium lasiocarpum</i>	Hairy pod peppergrass	G
<i>Lepidium nitidum</i>	Common peppergrass	G
<i>Lessingia glandulifera</i> var. <i>pectinata</i>	Valley lessingia	MC, CS
<i>Lilaea scilloides</i>	Flowering quillwort	VP
<i>Linanthus androsaceus</i>	Common linanthus/flax flower	G, OW
<i>Linanthus bicolor</i>	Bicolored linanthus	G
<i>Linanthus grandiflorus</i>	Large-flowered linanthus	G

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Linanthus parviflorus</i>	Common linanthus	G
<i>Linaria canadensis</i>	Toadflax	G, MC
<i>Lithophragma affine</i>	Woodland star	OW
<i>Lobularia maritima</i>	Sweet alyssum	SD
<i>Loeflingia squarrosa</i>	California loeflingia	CSS, G
<i>Lolium multiflorum</i>	Italian ryegrass	G
<i>Lomatium caruifolium</i>	Caraway leaf lomatium	G
<i>Lomatium parvifolium</i>	Small-leaved lomatium	MC
<i>Lomatium utriculatum</i>	Common lomatium	OW
<i>Lonicera interrupta</i>	Chaparral honeysuckle	OW
<i>Lotus heermannii</i>	Heerman's lotus	SD, G
<i>Lotus heermannii</i> var. <i>eriophorus</i>	Woolly lotus	SD
<i>Lotus humistratus</i>	Short-podded lotus	G
<i>Lotus micranthus</i>	Tiny lotus	G
<i>Lotus purshianus</i>	Pursh's lotus	G
<i>Lotus scoparius</i>	Deerweed	MC, CS
<i>Lotus scoparius</i> forma <i>prostratus</i>	Prostrate deerweed	MC, SD, AD
<i>Lotus strigosus</i>	Strigose lotus	G, SD
<i>Lotus subpinnatus</i>	California lotus	G
<i>Lupinus albifrons</i>	Silver bush lupine	CS, OW
<i>Lupinus arboreus</i>	Bush lupine	SD, CS
<i>Lupinus bicolor</i>	Bicolored lupine	G
<i>Lupinus chamissonis</i>	Chamisso bush lupine	SD, CS
<i>Lupinus nanus</i>	Sky lupine	G, SD
<i>Lupinus polycarpus</i>	Small-flowered lupine	G
<i>Lupinus truncatus</i>	Collar lupine	MC
<i>Lupinus subvexus</i>	Whorled lupine	G
<i>Luzula subsessilis</i>	Woodrush	G, OW
<i>Lythrum hyssopifolia</i>	Hyssop loosestrife	VP
<i>Madia capitata</i>	Coast tarplant	SD
<i>Madia exigua</i>	Little tarplant	G, MC, CS
<i>Madia gracilis</i>	Gumweed, slender madia	G, MC, CS



## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Madia madioides</i>	Woodland tarplant	G
<i>Malacothrix californica</i>	California cliff-aster	MC
<i>Malacothrix floccifera</i>	Woolly malacothrix	G
<i>Malva parviflora</i>	Cheeseweed	G, D
<i>Marah fabaceus</i>	Man-root	OW
<i>Marrubium vulgare</i>	Horehound	CS, D
<i>Marsilea vestita</i>	Hairy pepperwort	FM
<i>Meconella linearis</i>	Narrow-leaved meconella	G, MC
<i>Melica californica</i>	California melic grass	G, MC, CS
<i>Melica imperfecta</i>	Coast/small-flowered melic grass	G, MC, CS
<i>Melica torreyana</i>	Torrey melic	MC, CS
<i>Melilotus indica</i>	Yellow sweet clover	OW, CS
<i>Microcala (Cicendia) quadrangularis</i>	Cicendia, American microcala	G
<i>Micropus californicus</i>	Slender cottonseed	MC, CS
<i>Microseris douglasii</i>	Douglas' microseris	G
<i>Microseris elegans</i>	Elegant microseris	G
<i>Microseris lindleyi</i>	Uropappus	G
<i>Microseris paludosa</i>	Marsh scorzonella	G, VP
<i>Mimulus aurantiacus</i>	Sticky monkeyflower	CS, MC, OW
<i>Mimulus rattanii</i> var. <i>decurtatus</i>	Santa Cruz County monkeyflower	MC
<i>Minuartia (Arenaria) californica</i>	California sandwort	MC, CS
<i>Minuartia (Arenaria) douglasii</i>	Douglas sandwort	AD, MC
<i>Minuartia (Arenaria) pusilla</i>	Sandwort	AD, MC
<i>Monardella undulata</i>	Curly-leaved monardella	CS, MC
<i>Monardella villosa</i>	Coyote mint	MC, CS
<i>Muilla maritima</i>	Common muilla	G
<i>Navarretia atractyloides</i>	Rough navarretia	MC
<i>Navarretia hamata</i>	Hooked navarretia	CS, MC
<i>Navarretia intertexta</i>	Needle-leaved navarretia	G, MC
<i>Navarretia mitracarpa</i>	Mitre-fruited navarretia	MC
<i>Nemophila menziesii</i>	Baby blue-eyes	OW
<i>Orobanche bulbosa</i>	Chaparral broomrape	MC

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Orobanche fasciculata</i>	Franciscan clustered broom-rape	MC
<i>Orthocarpus attenuatus</i>	Narrow-leaved owl's clover	G
<i>Orthocarpus castillejoides</i>	Paintbrush owl's clover	CS, MC
<i>Orthocarpus densiflorus</i>	Owls clover	G
<i>Orthocarpus erianthus</i>	Johnny tuck	G
<i>Orthocarpus purpurascens</i> var. <i>pallidus</i>	White common owl's clover	G, MC, SD
<i>Orthocarpus purpurascens</i> var. <i>purpurascens</i>	Common owl's clover/escobita	G, MC, SD
<i>Orthocarpus pusillus</i>	Dwarf owl's clover	G
<i>Osmaronia cerasiformis</i>	Oso berry	OW
<i>Oxalis pes-caprae</i>	Bermuda buttercup, sour-grass	D
<i>Oxalis pilosa</i>	Hairy California wood-sorrel	G
<i>Papaver californicum</i>	Western poppy	MC
<i>Pectocarya linearis</i>	Slender pectocarya	G, OW
<i>Pectocarya penicillata</i>	Winged pectocarya	MC
<i>Pedicularis densiflora</i>	Indian warrior	MC, OW
<i>Pellaea mucronata</i>	Birdsfoot cliffbrake	OW
<i>Pennisetum clandestinum</i>	Kikuyu grass	G, D, SD, R
<i>Pentachaeta alsinoides</i>	Tiny pentachaeta	G, CS
<i>Petunia parviflora</i>	Wild petunia	G, VP
<i>Phacelia brachyloba</i>	Short-lobed phacelia	MC
<i>Phacelia distans</i>	Wild heliotrope	MC
<i>Phacelia douglasii</i>	Douglas' phacelia	SD
<i>Phacelia griseus</i>	Santa Lucia phacelia	MC
<i>Phacelia malvifolia</i>	Stinging phacelia	OW
<i>Phacelia ramosissima</i>	Branching phacelia	OW
<i>Phalaris lemmonii</i>	Lemmon's canarygrass	G
<i>Pholistoma auritum</i>	Common fiesta flower	OW
<i>Pilularia americana</i>	American pillwort	FM
<i>Pinus radiata</i>	Monterey pine	H, SD, CS, OW
<i>Piperia elongata</i> ssp. <i>michaelii</i>	Purple-flowered piperia	MC, SD, CS

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Piperia yadonii</i>	Yadon's piperia	MC, CS
<i>Pityrogramma triangularis</i>	Goldenback fern	OW
<i>Plagiobothrys canescens</i>	Bracted popcornflower	G
<i>Plagiobothrys chorisianus</i> var. <i>hickmanii</i>	Hickman's popcornflower	G
<i>Plagiobothrys tenellus</i>	Slender popcornflower	G, MC
<i>Plagiobothrys trachycarpus</i>	Rough-fruited popcornflower	FM, VP
<i>Plantago coronopus</i>	Cutleaf plantain	AD, SD
<i>Plantago erecta</i>	California plantain	AD, G, SD
<i>Plantago lanceolata</i>	Narrowleaf plantain	G, D
<i>Plantago major</i>	Broadleaf plantain	D, G
<i>Platanus racemosa</i>	Western sycamore	R
<i>Platystemon californicus</i>	Cream cups	OW
<i>Plectris</i> sp.	Plectris	G
<i>Plectritis congesta</i>	Pink plectritis	G, OW
<i>Poa douglasii</i>	Douglas' bluegrass	AD
<i>Poa littoralis</i>		SD
<i>Poa scabrella</i>	Pine bluegrass	OW, G
<i>Poa unilateralis</i>	San Francisco bluegrass	CS, SD, G
<i>Pogogyne douglasii</i>	Douglas' pogogyne	VP
<i>Pogogyne serpylloides</i>	Thyme-like mesamint	MC, OW
<i>Polycarpon depressum</i>	California polycarp	MC, CS, SD
<i>Polycarpon tetraphyllum</i>	Four-leaved polycarp	D, SD
<i>Polygala californica</i>	California milkwort	MC, OW
<i>Polygonum amphibium</i>	Water smartweed	FM
<i>Polygonum paronychia</i>	Beach knotweed	SD
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	Black cottonwood	R
<i>Potamogeton</i> sp.	Pondweed	FM
<i>Potentilla glandulosa</i>	Sticky cinquefoil	G, CS, OW
<i>Potentilla rivalis</i> var. <i>millegrana</i>	Diffuse river cinquefoil	R
<i>Psilocarphus brevissimus</i>	Woolly marbles	VP
<i>Psilocarphus tenellus</i>	Slender woolly heads	MC, CS
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	Bracken fern	CS, OW, G, MC, SD

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Pterostegia drymarioides</i>	Fairy mist	G, OW, MC, CS
<i>Quercus agrifolia</i>	Coast live oak	OW
<i>Ranunculus aquatilis</i> var. <i>capillaceus</i>	Water buttercup	VP
<i>Ranunculus californicus</i>	California buttercup	OW, G
<i>Ranunculus hebecarpus</i>	Downy buttercup	OW
<i>Raphanus sativus</i>	Wild radish	G, D
<i>Rhamnus californica</i>	California coffeeberry	MC, OW, CS
<i>Rhamnus californica</i> ssp. <i>tomentella</i>	Chaparral coffeeberry	MC
<i>Rhamnus crocea</i>	Redberry	MC, OW
<i>Ribes divericatum</i> var. <i>divericataum</i>	Straggly gooseberry	OW
<i>Ribes malvaceum</i>	Chaparral currant	OW, MC
<i>Ribes speciosum</i>	Fuchsia-flowered gooseberry	OW
<i>Rorippa curvisiliqua</i>	Curve-pod yellow-cress	VP
<i>Rosa californica</i>	California wild rose	R, OW, CS
<i>Rubus ursinus</i>	Pacific blackberry	OW, R
<i>Rumex acetosella</i>	Sheep sorrel	VP, G
<i>Rumex crispus</i>	Curly dock	G, VP
<i>Rumex salicifolius</i>	Willow dock	G, VP
<i>Sagina apetala</i>	Dwarf pearlwort	D
<i>Salix lasiolepis</i>	Arroyo willow	R
<i>Salvia columbariae</i>	Chia	CS, MC
<i>Salvia mellifera</i>	Black sage	MC, CS
<i>Sambucus mexicana</i>	Blue elderberry	MC, R, OW
<i>Sanguisorba minor</i>	Small burnet	G
<i>Sanicula arctopoides</i>	Yellow mats	OW, G
<i>Sanicula crassicaulis</i>	Pacific sanicle	OW
<i>Sanicula laciniata</i>	Coast sanicle	MC
<i>Satureja douglasii</i>	Yerba buena	OW
<i>Saxifraga californica</i>	California saxifrage	OW, G
<i>Schismus barbatus</i>	Abu mashi	R
<i>Scirpus koilopepis</i>	Keeled bulrush	FM
<i>Scleropoa rigida</i>		R

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Scrophularia californica</i>	California figwort	OW, R, CS
<i>Scutellaria tuberosa</i>	Dannie's skullcap	MC
<i>Senecio aronicoides</i>	California butterweed	CS
<i>Senecio breweri</i>	Brewer's butterweed	OW
<i>Senecio vulgaris</i>	Common groundsel	D, G
<i>Sida hederacea</i>	Alkali mallow	G, VP
<i>Sidalcea malviflora</i>	Checker bloom	G
<i>Silene gallica</i>	Windmill pink	G
<i>Silene multinerva</i>	Multinerved catchfly	G
<i>Silybum marianum</i>	Milk thistle	G, OW
<i>Sisyrinchium bellum</i>	Blue-eyed grass	G, OW
<i>Sitanion hystrix</i>	Bottlebrush squirreltail	G
<i>Sitanion jubatum</i>	Big squirreltail	G
<i>Smilacina stellata</i>	Starry false-Solomon's-seal	OW
<i>Solanum umbelliferum</i>	Blue witch	OW, CS
<i>Solidago californica</i>	California goldenrod	OW
<i>Solidago occidentalis</i>	Western goldenrod	OW
<i>Soliva sessilis</i>	Common soliva	D
<i>Sonchus asper</i>	Prickly sow-thistle	D, G, CS, SD
<i>Sonchus oleraceus</i>	Common sow-thistle	D, G, CS, SD
<i>Spergula arvensis</i>	Corn sandspurry	G
<i>Spergularia macrotheca</i>	Beach sandspurry	SD, AD, MC, D
<i>Spergularia rubra</i>	Purple sandspurry	D, MC, CS, SD
<i>Stachys ajugoides</i>	Bugle hedgenettle	VP
<i>Stachys bullata</i>	California hedgenettle	G, OW
<i>Stellaria media</i>	Common chickweed	G, OW
<i>Stellaria nitens</i>	Shining chickweed	G, OW
<i>Stipa cernua</i>	Nodding needlegrass	MC, CS
<i>Stipa lepida</i>	Foothill needlegrass	MC, CS, G
<i>Stipa pulchra</i>	Purple needlegrass	G, CS, MC
<i>Styllocine gnaphalioides</i>	Everlasting nest-straw	MC
<i>Symphoricarpos mollis</i>	Trailing snowberry	OW, R

## Appendix A. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
<i>Tetragonia tetragonioides</i>	New Zealand spinach	AD, SD
<i>Thelypodium lasiophyllum</i>	Shaggy-leaved jewelflower	OW, G
<i>Thysanocarpus curvipes</i>	Lace pod	MC, G, OW, CS
<i>Tillaea erecta</i>	Sand pygmy-stonecrop	G, MC, R
<i>Torilis nodosa</i>	Rattlesnake weed	G
<i>Toxicodendron diversilobum</i>	Poison-oak	OW, CS, MC
<i>Tragopogon porrifolius</i>	Salsify/oyster plant	G
<i>Trifolium amplexens</i>	Dwarf sack clover	G
<i>Trifolium barbigenum</i>	Bearded clover	G
<i>Trifolium ciliolatum</i>	Tree clover	G
<i>Trifolium dubium</i>	Shamrock	G
<i>Trifolium gracilentum</i>	Pin-point clover	G
<i>Trifolium macraei</i>	MacCrae's or double-headed clover	G
<i>Trifolium microcephalum</i>	Small-head clover	G
<i>Trifolium pratense</i>	Red clover	G
<i>Trifolium repens</i>	White clover	G
<i>Trifolium subterraneum</i>	Subterranean clover	G
<i>Trifolium tridentatum</i>	Tomcat clover	G, OW
<i>Trifolium variegatum</i>	White tip clover	G
<i>Triteleia hyacinthina</i>	White triteleia	G
<i>Triteleia ixiooides</i>	Golden brodiaea	G
<i>Tunica prolifera</i>	Wild carnation	D
<i>Typha latifolia</i>	Broad-leaved cattail	FM
<i>Vaccinium ovatum</i>	Huckleberry	CS
<i>Verbena lasiostachys</i>	Western vervain	R
<i>Vicia americana</i>	American vetch	G, OW
<i>Vicia angustifolia</i>	Sweet or spring vetch	G, OW
<i>Vicia beghalensis</i>	Mediterranean vetch	G, OW
<i>Viola adunca</i>	Hooked-spur violet	G, OW
<i>Viola pendunculata</i>	Johnny jump-up	G, OW
<i>Wyethia angustifolia</i>	Narrowleaf mule-ears	OW, G
<i>Zygadenus fremontii</i>	Fremont's zygadene	MC

Appendix A. Continued

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Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>
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<sup>a</sup> Habitat types: AD = active dune.  
SD = stabilized dune.  
CS = coastal scrub.  
MC = maritime chaparral.  
OW = oak woodland.  
G = grassland.  
VP = vernal pool.  
R = riparian forest.  
FM = freshwater marsh.  
D = disturbed sites.  
H = horticultural planting.

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## Appendix B. List of Wildlife Species Known to Occur at Fort Ord

Common Name	Scientific Name
<b>TURTLES, LIZARDS, AND SNAKES (REPTILIA)</b>	
<b>Turtles (Testudines)</b>	
Southwestern pond turtle	<i>Clemmys marmorata pallida</i>
<b>Lizards and Snakes (Squamata)</b>	
Western fence lizard	<i>Sceloporus occidentalis</i>
Coast horned lizard	<i>Phrynosoma coronatum</i>
Western skink	<i>Eumeces skiltonianus</i>
Southern alligator lizard	<i>Gerrhonotus multicarinatus</i>
California legless lizard	<i>Anniella pulchra</i>
Black legless lizard	<i>Anniella pulchra nigra</i>
Rubber boa	<i>Charina bottae</i>
Racer	<i>Coluber constrictor</i>
California whipsnake	<i>Masticophis lateralis</i>
Gopher snake	<i>Pituophis melanoleucus</i>
Common kingsnake	<i>Lampropeltis getulus</i>
California mountain kingsnake	<i>Lampropeltis zonata</i>
Common garter snake	<i>Thamnophis sirtalis</i>
Western rattlesnake	<i>Crotalus viridis</i>
<b>SALAMANDERS, TOADS, AND FROGS (AMPHIBIA)</b>	
<b>Salamanders (Caudata)</b>	
California tiger salamander	<i>Ambystoma tigrinum californiense</i>
California newt	<i>Taricha torosa</i>
California slender salamander	<i>Batrachoseps attenuatus</i>
Arboreal salamander	<i>Aneides lugubris</i>



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Common Name

Scientific Name

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**Toads and Frogs (Salientia)**

Western spadefoot	<i>Scaphiopus hammondi</i>
Western toad	<i>Bufo boreas</i>
Pacific treefrog	<i>Hyla regilla</i>
Bullfrog	<i>Rana catesbeiana</i>

**BIRDS (AVES)**

**Loons (Gaviiformes)**

Red-throated loon	<i>Gavia stellata</i>
Pacific loon	<i>Gavia pacifica</i>
Common loon	<i>Gavia immer</i>

**Grebes (Podicipediformes)**

Pied-billed grebe	<i>Podilymbus podiceps</i>
Horned grebe	<i>Podiceps auritus</i>
Red-necked grebe	<i>Podiceps grisegena</i>
Eared grebe	<i>Podiceps nigricollis</i>
Western grebe	<i>Aechmophorus occidentalis</i>
Clark's grebe	<i>Aechmophorus clarkii</i>

**Albatrosses, Shearwaters, Petrels, and  
Relatives (Procellariiformes)**

Northern fulmar	<i>Fulmarus glacialis</i>
Sooty shearwater	<i>Puffinus griseus</i>
Pink-footed shearwater	<i>Puffinus creatopus</i>
Buller's shearwater	<i>Puffinus bulleri</i>
Short-tailed shearwater	<i>Puffinus tenuirostris</i>
Black-vented shearwater	<i>Puffinus opisthomelas</i>

**Tropicbirds, Pelicans, and Relatives (Pelecaniformes)**

California brown pelican	<i>Pelecanus occidentalis californicus</i>
Brandt's cormorant	<i>Phalacrocorax penicillatus</i>
Pelagic cormorant	<i>Phalacrocorax pelagicus</i>
American white pelican	<i>Pelecanus erythrorhynchos</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>

Common Name	Scientific Name
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Magnificent frigatebird	<i>Fregata magnificens</i>
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**Hérons, Storks, Ibises, and Relatives (Ciconiiformes)**

Great blue heron	<i>Ardea herodias</i>
Snowy egret	<i>Egretta thula</i>
Green-backed heron	<i>Butorides striatus</i>
Black-crowned night-heron	<i>Nycticorax nycticorax</i>
Great egret	<i>Casmerodius albus</i>

**Screamers, Ducks, and Relatives (Anseriformes)**

Wood duck	<i>Aix sponsa</i>
Green-winged teal	<i>Anas crecca</i>
Mallard	<i>Anas platyrhynchos</i>
Northern pintail	<i>Anas acuta</i>
Cinnamon teal	<i>Anas cyanoptera</i>
American wigeon	<i>Anas americana</i>
Canvasback	<i>Aythya valisineria</i>
Lesser scaup	<i>Aythya affinis</i>
Oldsquaw	<i>Clangula hyemalis</i>
Surf scoter	<i>Melanitta perspicillata</i>
White-winged scoter	<i>Melanitta fusca</i>
Common goldeneye	<i>Bucephala clangula</i>
Bufflehead	<i>Bucephala albeola</i>
Common merganser	<i>Mergus merganser</i>
Red-breasted merganser	<i>Mergus serrator</i>
Ruddy duck	<i>Oxyura jamaicensis</i>
Snow goose	<i>Chen caerulescens</i>
Ross' goose	<i>Chen rossii</i>
Brant	<i>Branta bernicla</i>
Canada goose	<i>Branta canadensis</i>
Gadwall	<i>Anas strepera</i>
Black scoter	<i>Melanitta nigra</i>

**Vultures, Hawks, and Falcons (Falconiformes)**

Turkey vulture	<i>Cathartes aura</i>
Black-shouldered kite	<i>Elanus caeruleus</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Cooper's hawk	<i>Accipiter cooperii</i>

Common Name	Scientific Name
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Golden eagle	<i>Aquila chrysaetos</i>
American kestrel	<i>Falco sparverius</i>
American peregrine falcon	<i>Falco peregrinus anatum</i>
Osprey	<i>Pandion haliaetus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Northern harrier	<i>Circus cyaneus</i>
Ferruginous hawk	<i>Buteo regalis</i>
Merlin	<i>Falco columbarius</i>

#### Megapodes, Curassows, Pheasants, and Relatives (Galliformes)

California quail	<i>Callipepla californica</i>
Wild turkey	<i>Meleagris gallopavo</i>

#### Cranes, Rails, and Relatives (Gruiformes)

Virginia rail	<i>Rallus limicola</i>
American coot	<i>Fulica americana</i>
Sora	<i>Porzana carolina</i>

#### Shorebirds, Gulls, and Relatives (Charadriiformes)

Snowy plover	<i>Charadrius alexandrinus</i>
Killdeer	<i>Charadrius vociferus</i>
American black oystercatcher	<i>Haematopus bachmani</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Wandering tattler	<i>Heteroscelus incanus</i>
Whimbrel	<i>Numenius phaeopus</i>
Marbled godwit	<i>Limosa fedoa</i>
Black turnstone	<i>Arenaria melanocephala</i>
Surfbird	<i>Aphriza virgata</i>
Sanderling	<i>Calidris alba</i>
Western sandpiper	<i>Calidris mauri</i>
Least sandpiper	<i>Calidris minutilla</i>
Short-billed dowitcher	<i>Limnodromus griseus</i>
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>
Common snipe	<i>Gallinago gallinago</i>
Red-necked phalarope	<i>Phalaropus lobatus</i>

Common Name	Scientific Name
Red phalarope	<i>Phalaropus fulicaria</i>
Bonaparte's gull	<i>Larus philadelphia</i>
Heermann's gull	<i>Larus heermanni</i>
Mew gull	<i>Larus canus</i>
Ring-billed gull	<i>Larus delawarensis</i>
California gull	<i>Larus californicus</i>
Herring gull	<i>Larus argentatus</i>
Western gull	<i>Larus occidentalis</i>
Glaucous-winged gull	<i>Larus glaucescens</i>
California least tern	<i>Sterna antillarum browni</i>
Common murre	<i>Uria aalge</i>
Pigeon guillemot	<i>Cepphus columba</i>
Rhinoceros auklet	<i>Cerorhinca monocerata</i>
Black-bellied plover	<i>Pluvialis squatarola</i>
Black-necked stilt	<i>Himantopus mexicanus</i>
American avocet	<i>Recurvirostra americana</i>
Spotted sandpiper	<i>Actitis macularia</i>
Long-billed curlew	<i>Numenius americanus</i>
Ruddy turnstone	<i>Arenaria interpres</i>
Dunlin	<i>Calidris alpina</i>
Parasitic jaeger	<i>Stercorarius parasiticus</i>
Thayer's gull	<i>Larus thayeri</i>
Caspian tern	<i>Sterna caspia</i>
Elegant tern	<i>Sterna elegans</i>
Common tern	<i>Sterna hirundo</i>
Forster's tern	<i>Sterna forsteri</i>
Thick-billed murre	<i>Uria lomvia</i>
Marbled murrelet	<i>Brachyramphus marmoratus</i>
Cassin's auklet	<i>Ptychoramphus aleuticus</i>

#### Pigeons and Doves (Columbiformes)

Rock dove	<i>Columba livia</i>
Band-tailed pigeon	<i>Columba fasciata</i>
Mourning dove	<i>Zenaida macroura</i>

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Common Name

Scientific Name

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**Cuckoos and Relatives (Cuculiformes)**

Greater roadrunner *Geococcyx californianus*

**Owls (Strigiformes)**

Barn owl *Tyto alba*  
Western screech-owl *Otus kennicottii*  
Great horned owl *Bubo virginianus*  
Northern pygmy-owl *Glaucidium gnoma*  
Burrowing owl *Athene cunicularia*  
Northern saw-whet owl *Aegolius acadicus*

**Goatsuckers and Relatives (Caprimulgiformes)**

Common poorwill *Phalaenoptilus nuttallii*

**Swifts and Hummingbirds (Apodiformes)**

White-throated swift *Aeronautes saxatalis*  
Anna's hummingbird *Calypte anna*  
Allen's hummingbird *Selasphorus sasin*

**Kingfishers and Relatives (Coraciiformes)**

Belted kingfisher *Ceryle alcyon*  
Acorn woodpecker *Melanerpes formicivorus*  
Nuttall's woodpecker *Picoides nuttallii*  
Downy woodpecker *Picoides pubescens*  
Hairy woodpecker *Picoides villosus*  
Northern flicker *Colaptes auratus*

**Perching Birds (Passeriformes)**

Olive-sided flycatcher *Contopus borealis*  
Black phoebe *Sayornis nigricans*  
Say's phoebe *Sayornis saya*  
Horned lark *Eremophila alpestris*  
Tree swallow *Tachycineta bicolor*  
Cliff swallow *Hirundo pyrrhonota*  
Barn swallow *Hirundo rustica*

Common Name	Scientific Name
Steller's jay	<i>Cyanocitta stelleri</i>
Scrub jay	<i>Aphelocoma coerulescens</i>
Yellow-billed magpie	<i>Pica nuttalli</i>
American crow	<i>Corvus brachyrhynchos</i>
Mountain chickadee	<i>Parus gambeli</i>
Chestnut-backed chickadee	<i>Parus rufescens</i>
Plain titmouse	<i>Parus inornatus</i>
Bushtit	<i>Psaltriparus minimus</i>
Pygmy nuthatch	<i>Sitta pygmaea</i>
Brown creeper	<i>Certhia americana</i>
Bewick's wren	<i>Thryomanes bewickii</i>
House wren	<i>Troglodytes aedon</i>
Marsh wren	<i>Cistothorus palustris</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Western bluebird	<i>Sialia mexicana</i>
Swainson's thrush	<i>Catharus ustulatus</i>
Hermit thrush	<i>Catharus guttatus</i>
American robin	<i>Turdus migratorius</i>
Wrentit	<i>Chamaea fasciata</i>
Northern mockingbird	<i>Mimus polyglottos</i>
California thrasher	<i>Toxostoma redivivum</i>
Water pipit	<i>Anthus spinoletta</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
European starling	<i>Sturnus vulgaris</i>
Hutton's vireo	<i>Vireo huttoni</i>
Warbling vireo	<i>Vireo gilvus</i>
Orange-crowned warbler	<i>Vermivora celata</i>
Yellow warbler	<i>Dendroica petechia</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>
Townsend's warbler	<i>Dendroica townsendi</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Wilson's warbler	<i>Wilsonia pusilla</i>
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>
Canyon towhee	<i>Pipilo fuscus</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Fox sparrow	<i>Passerella iliaca</i>
Song sparrow	<i>Melospiza melodia</i>
Lincoln's sparrow	<i>Melospiza lincolnii</i>
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>

Common Name	Scientific Name
Dark-eyed junco	<i>Junco hyemalis</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Tricolored blackbird	<i>Agelaius tricolor</i>
Western meadowlark	<i>Sturnella neglecta</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Purple finch	<i>Carpodacus purpureus</i>
House finch	<i>Carpodacus mexicanus</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
American goldfinch	<i>Carduelis tristis</i>
House sparrow	<i>Passer domesticus</i>
Western wood-pewee	<i>Contopus sordidulus</i>
Pacific-slope flycatcher	<i>Empidonax difficilis</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>
Western kingbird	<i>Tyrannus verticalis</i>
Violet-green swallow	<i>Tachycineta thalassina</i>
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>
White-breasted nuthatch	<i>Sitta carolinensis</i>
Winter wren	<i>Troglodytes troglodytes</i>
Golden-crowned kinglet	<i>Regulus satrapa</i>

**MAMMALS (MAMMALIA)**

**Opossums and Kangaroos (Marsupialia)**

Virginia opossum *Didelphis virginiana*

**Shrews and Moles (Insectivora)**

Broad-footed mole *Scapanus latimanus*

**Rabbits, Hares, and Pikas (Lagomorpha)**

Brush rabbit *Sylvilagus bachmani*  
 Desert cottontail *Sylvilagus audubonii*  
 Black-tailed hare *Lepus californicus*

Common Name	Scientific Name
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**Squirrels, Rats, Mice, and Relatives (Rodentia)**

California ground squirrel	<i>Spermophilus beecheyi</i>
Botta's pocket gopher	<i>Thomomys bottae</i>
Narrow-faced kangaroo rat	<i>Dipodomys venustus</i>
California pocket mouse	<i>Perognathus californicus</i>
Western harvest mouse	<i>Reithrodontomys megalotis</i>
Salinas harvest mouse	<i>Reithrodontomys megalotis distichlis</i>
California mouse	<i>Peromyscus californicus</i>
Dusky-footed woodrat	<i>Neotoma fuscipes</i>
California vole	<i>Microtus californicus</i>
Heermann's kangaroo rat	<i>Dipodomys heermanni</i>
Deer mouse	<i>Peromyscus maniculatus</i>
Brush mouse	<i>Peromyscus boylii</i>

**Baleen Whales (Mysticeti)**

Gray whale	<i>Eschrichtius robustus</i>
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**Toothed Whales (Odontoceti)**

Common dolphin	<i>Delphinus delphis</i>
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>
Killer whale	<i>Orcinus orca</i>

**Carnivores (Carnivora)**

Coyote	<i>Canis latrans</i>
Gray fox	<i>Urocyon cinereoargenteus</i>
Red fox	<i>Vulpes vulpes</i>
Ringtail	<i>Bassariscus astutus</i>
Raccoon	<i>Procyon lotor</i>
Long-tailed weasel	<i>Mustela frenata</i>
American badger	<i>Taxidea taxus</i>
Western spotted skunk	<i>Spilogale gracilis</i>
Striped skunk	<i>Mephitis mephitis</i>
Southern sea otter	<i>Enhydra lutris nereis</i>
Mountain lion	<i>Felis concolor</i>
Bobcat	<i>Lynx rufus</i>
Northern sea lion	<i>Eumetopis jubatus</i>
California sea lion	<i>Zalophus californianus</i>



Common Name	Scientific Name
Harbor seal	<i>Phoca vitulina</i>
Northern elephant seal	<i>Mirounga angustirostris</i>
<b>Pigs, Deer, and Relatives (Artiodactyla)</b>	
Black tailed deer	<i>Odocoileus hemionus columbianus</i>
<b>INVERTEBRATES</b>	
<b>Crustaceans (Crustacea)</b>	
California linderiella	<i>Linderiella occidentalis</i>
<b>Insects (Insecta)</b>	
Smith's blue butterfly	<i>Euphilotes enoptes smithi</i>

## Appendix C. Results of Small Mammal Trapping at Fort Ord

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### Dunes

30 trap nights

3 *Peromyscus maniculatus*

### Coastal Scrub

124 trap nights (3 of 4 nights nothing captured)

3 *Peromyscus boylii*  
1 *Neotoma fuscipes luciana*

### Maritime Chaparral

114 trap nights

11 *Peromyscus maniculatus*  
5 *Neotoma fuscipes luciana*  
8 *Peromyscus boylii*  
4 *Perognathus californicus*  
8 *Peromyscus californicus*  
2 *Dipodomys heermanii*  
1 *Dipodomys venustus*  
2 *Dipodomys sp.*  
1 Unknown

## Oak Woodland and Savanna

138 trap nights (2 of 5 nights nothing captured)

8	<i>Peromyscus boylii</i>
2	<i>Neotoma fuscipes luciana</i>
1	<i>Reithrodontomys megalotis</i>

## Grassland

82 trap nights

8	<i>Peromyscus maniculatus</i>
8	<i>Dipodomys venustus</i>
2	<i>Peromyscus californicus</i>
2	<i>Dipodomys heermanii</i>

## Riparian Forest

60 trap nights

1	<i>Peromyscus maniculatus</i>
1	<i>Perognathus californicus</i>
2	<i>Microtus californicus</i>
1	<i>Microtus sp.</i>

Appendix C. Capture Data for Small Mammal Surveys at Fort Ord in 1992

Capture Location (Figure 2)	Habit Where Captured	Date Captured	Sex	Weight (grams)	Body (mm)	Tail (mm)	Hind Foot (mm)	Ear (mm)
<i>Peromyscus maniculatus</i>								
1	Maritime chaparral	1/22	F	N	75	58	N	13
1	Maritime chaparral	1/22	F	N	75	60	19	12
2	Grassland	1/22	F	N	73	60	15	10
6	Grassland	3/26	M	28	70	64	18	15
7	Grassland	3/26	M	29	N	N	N	N
7	Grassland	3/26	F	26	88	83	17	16
7	Grassland	3/26	M	N	75	75	20	17
7	Grassland	3/26	M	22	74	74	19	17
7	Grassland	3/26	F	22	78	69	18	16
7	Grassland	3/26	F	25	N	N	N	N
8	Maritime chaparral	3/26	F	28	N	N	N	N
8	Maritime chaparral	3/26	M	24	N	N	N	N
8	Maritime chaparral	3/26	F	26	N	N	N	N
8	Maritime chaparral	3/26	F	23	N	N	N	N
8	Maritime chaparral	3/26	F	23	N	N	N	N
8	Maritime chaparral	3/26	F	25	N	N	N	N
8	Maritime chaparral	3/26	F	25	N	N	N	N
8	Maritime chaparral	3/26	F	22	N	N	N	N
9	Mixed riparian	4/23	N	N	N	N	N	N
12	Maritime chaparral	5/20	M	N	N	N	N	N
12	Maritime chaparral	5/20	N	N	N	N	N	N
15	Dune	5/21	N	N	75	60	19	15
15	Dune	5/21	M	N	80	70	20	15
15	Dune	5/21	M	N	80	70	19	16
<i>Peromyscus boylii</i>								
1	Maritime chaparral	1/22	F	N	75	84	20	14
1	Maritime chaparral	1/22	F	N	75	82	21	17
1	Maritime chaparral	1/22	N	N	75	80	N	N
1	Maritime chaparral	1/22	M	N	85	90	22	N
1	Maritime chaparral	1/22	N	N	69	86	21	17
1	Maritime chaparral	1/22	N	N	N	90	24	16
4	Coastal coast live oak woodland	1/23	N	N	N	N	N	N
4	Coastal coast live oak woodland	1/23	N	N	N	N	N	N
12	Maritime chaparral	5/20	M	N	100	120	25	19
12	Maritime chaparral	5/20	N	N	100	116	23	17
13	Coastal coast live oak woodland	5/20	N	N	87	85	23	20
13	Coastal coast live oak woodland	5/20	M	N	80	85	22	20
13	Coastal coast live oak woodland	5/20	M	N	88	90	22	19
16	Coastal coast live oak woodland	5/21	M	N	80	88	22	17
16	Coastal coast live oak woodland	5/21	F	N	91	100	22	21
17	Maritime chaparral	5/21	M	N	80	76	22	17
17	Maritime chaparral	5/21	F	N	90	92	24	20
17	Maritime chaparral	5/21	F	N	80	95	23	21
17	Maritime chaparral	5/21	N	N	87	95	22	21

## Appendix C. Continued

Capture Location (Figure 2)	Habit Where Captured	Date Captured	Sex	Weight (grams)	Body (mm)	Tail (mm)	Hind Foot (mm)	Ear (mm)
<i>Peromyscus californicus</i>								
1	Maritime chaparral	1/22	M	N	100	N	25	N
1	Maritime chaparral	1/22	M	N	N	N	25	22
1	Maritime chaparral	1/22	M	N	98	118	24	22
7	Grassland	3/26	N	54	N	N	N	N
7	Grassland	3/26	N	N	N	N	N	N
8	Maritime chaparral	3/26	M	41	N	N	N	N
12	Maritime chaparral	5/20	M	N	90	125	25	20
12	Maritime chaparral	5/20	N	N	110	130	22	22
12	Maritime chaparral	5/20	M	N	113	115	25	23
<i>Perognathus californicus</i>								
8	Maritime chaparral	3/26	F	20	80	100	21	11
9	Mixed riparian	4/23	N	33	N	N	N	N
12	Mixed riparian	5/20	M	N	78	110	26	10
12	Mixed riparian	5/20	N	N	N	N	N	N
12	Maritime chaparral	5/20	N	N	N	N	N	N
<i>Reithrodontomys megalotis distichlis</i>								
4	Coastal coast live oak woodland		N	N	N	N	N	N
<i>Dipodomys venustus</i>								
6	Grassland	3/26	M	98	132	187	45	15
6	Grassland	3/26	M	68	100	150	41	11
6	Grassland	3/26	M	84	122	180	41	14
6	Grassland	3/26	M	85	125	180	42	13
6	Grassland	3/26	M	90	109	185	42	12
6	Grassland	3/26	N	100	105	175	42	14
6	Grassland	3/26	M	80	110	180	40	13
6	Grassland	3/26	M	90	140	180	45	17
6	Grassland	3/26	N	N	N	N	N	N
<i>Dipodomys heermanii</i>								
1	Maritime chaparral	1/22	M	N	120	180	38	11
2	Grassland	1/22	N	N	115	180	40	10
7	Grassland	3/26	M	76	125	152	39	13
8	Maritime chaparral	3/26	M	90	132	150	38	12
<i>Dipodomys sp.</i>								
7	Grassland	3/26	N	N	N	N	N	N
8	Maritime chaparral	3/26	M	80	175	170	44	17
<i>Microtus californicus</i>								
9	Mixed riparian	4/23	N	50	N	N	N	N
9	Mixed riparian	4/23	M	52	100	50	23	15
10	Oak riparian	4/23	F	51	90	49	19	9

## Appendix C. Continued

Capture Location (Figure 2)	Habit Where Captured	Date Captured	Sex	Weight (grams)	Body (mm)	Tail (mm)	Hind Foot (mm)	Ear (mm)
<i>Neotoma fuscipes luciana</i>								
1	Maritime chaparral	1/22	N	N	N	180	N	N
1	Maritime chaparral	1/22	N	N	N	N	N	N
4	Coastal coast live oak woodland	1/23	N	N	N	N	N	N
12	Coastal coast live oak woodland	1/23	N	N	N	N	N	N
12	Maritime chaparral	5/20	N	N	N	N	N	N
12	Maritime chaparral	5/20	N	N	N	N	N	N
16	Coastal coast live oak woodland	5/21	N	N	N	N	35	N
17	Maritime chaparral	5/21	N	N	N	N	33	N
<b>Unknown species</b>								
1	Maritime chaparral	1/22	M	N	N	120	23	N

Note: mm = millimeter.

N = data not recorded.



**Appendix D. Wetland Wildlife Data Forms**

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Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord #3 pond Range 40 Impact Area  
Rifle Range

Date: 3/25/92 Time: 11:10 Observer(s): S. Beeble, J. Clifton

Sample Number: #49 Location: Impact Area Fort Ord, CA

Sampling Method: fish net, dip net, sien, other:

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: Ditch, Detonation Crater

Substrate: Sandy soil

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Disturbed Grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, 77.1 cups  
other: Detonation Crater, Contaminated with oil and gasoline

Water Conditions: Water depth: 30 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 15 by 15 ft.

Turbidity: none, slight, moderate, extreme other: \_\_\_\_\_

Water temperature: 18.5 °F / 1°C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 20 °F / °C Wind speed: 5-10

Wind direction (from): E Cloud cover: light

Vegetative Cover: Total: 1-3 % (of water area)

Algae: 0 % (of total vegetative cover)

Submergent vascular plants: 1-3 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: 0 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: Western Toad in burrows nearby

Pacific tree frog, A lot of mosquito larvae

Saw 1 shrimp as came in but didn't catch any

Collected very small tadpoles and fish looking things in  
gel → pacific tree frog larvae

General Comments: whenever disturb soil oil rise up, very

toxic looking

Have been using gas explosives in area

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord Impact Area Range 40

Date: 3/25/92 Time: 3/25/92 Observer(s): A. R. White, Clifton, 9244

Sample Number: \_\_\_\_\_ Location: Fort Ord, CA

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: \_\_\_\_\_

Substrate: Sandy Soil

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Disturbed Grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: disturbed, adjacent grading

Water Conditions: Water depth: 5 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 30 by 1 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 21 °F/°C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 21 °F/°C Wind speed: 5-10

Wind direction (from): E Cloud cover: slight

Vegetative Cover: Total: 30 % (of water area)

Algae: 2 % (of total vegetative cover)

Submergent vascular plants: 50 % (of total vegetative cover)

Dominant species: Grasses

Floating vascular plants: 2 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 50 % (of total vegetative cover)

Dominant species: Grasses

Taxa Collected or Observed: Small swale in grassland on rifle range 75 ft east of 9a

clam shrimp, fairy shrimp, tree frog eggs  
very productive pool

numerous ♀ L. occidentalis, some ♂'s

General Comments: water over grasses

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord Training Area Pond #10

Date: 3/25/92 Time: 1400 Observer(s): M. D. Clifton

Sample Number: \_\_\_\_\_ Location: Pond #10 near bleacher area

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: well developed large pond

Substrate: mud

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: chaparral - border of grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: moderately to heavily disturbed

Water Conditions: Water depth: ? in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 3.7 by 6.3 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 21 °F / °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 20 °F / °C Wind speed: 10-15 W

Wind direction (from): W Cloud cover: Slight

Vegetative Cover: Total: 15 % (of water area)

Algae: 2-3 % (of total vegetative cover)

Submergent vascular plants: 2-3 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 95 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: Canada goose Mallards

Clam Shrimp

1.0 Tiger Salamander Larvae - know by gold and yellow all the way around iris

(one has bc - it has just gold flecks)

bullfrogs, pacific tree frog, toad tadpoles  
tree frog tadpoles

General Comments: large pool small area of grassland  
around border

Project or Site Name & Location: Fort Ord Impact Area Pond #11

Date: 3/25/92 Time: 1215 Observer(s): Betha Clifton Hall

Sample Number: pond #11 Location: pond #11 Fort Ord Impact Area

Sampling Method: fish net, dip net, sien, other: walk into pond

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: seasonal pond

Substrate: soil

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Grassland oak woodland, shrub

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: \_\_\_\_\_

Water Conditions: Water depth: 2 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 1 acre by \_\_\_\_\_ ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 22.5 °F / 10 °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 21.5 °F / 7 °C Wind speed: 0-5

Wind direction (from): E Cloud cover: slight

Vegetative Cover: Total: 70 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: 50 % (of total vegetative cover)

Dominant species: grasses

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 50 % (of total vegetative cover)

Dominant species: grasses

Taxa Collected or Observed: Clam Shrimp tree frog tadpoles

2 counting red tail hawks in area

mesquite larvae, diving beetle larval and adults

Fairy Shrimp (mating)

Mollusks

♀ L. occidentalis

General Comments: Oil Film in parts

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: First Ord Impact Area pond # 14

Date: 3/27/92 Time: 1045 Observer(s): Beckta, Clifton

Sample Number: \_\_\_\_\_ Location: Impact Area pond # 14

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: pond, natural depression

Substrate: Soil, grass

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: grassland oak woodland, chaparral

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: great habitat

Water Conditions: Water depth: 18 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 75 by 100 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 17 °F / 10 °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 17 °F / 10 °C Wind speed: 0-5

Wind direction (from): w Cloud cover: clear

Vegetative Cover: Total: 60 % (of water area)

Algae: 10 % (of total vegetative cover)

Submergent vascular plants: 50 % (of total vegetative cover)

Dominant species: submerged grass grass

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 70 % (of total vegetative cover)

Dominant species: grass

Taxa Collected or Observed: daphnia, tree frog tadpoles (very small)

\* Got a CA tiger salamander larvae (w/ inch long) very young  
already had gold around iris  
only found 1 by habitat. would expect more

\* Badgers in area

General Comments: great pool, would expect to be jumping with salamanders

Project or Site Name & Location: Fort Ord Impact Area #16 pond

Date: 3/26/92 Time: 1255 Observer(s): Robert C. Jones

Sample Number: \_\_\_\_\_ Location: Fort Ord Impact Area

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: \_\_\_\_\_

Substrate: Mud

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Scrub & annual grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: slightly disturbed by military activity

Water Conditions: Water depth: ~36 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 300 by 300 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 20 °F °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 21 °F °C Wind speed: 0-5

Wind direction (from): W Cloud cover: Slight → overcast

Vegetative Cover: Total: 15 % (of water area)

Algae: 0 % (of total vegetative cover)

Submergent vascular plants: 0-5 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: 0 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 95 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: Boarter Snake

Fairy Shrimp (land shrimp), Spittlefoot larva

Daphnia

21 L. occidentalis, 10 Daphnia young

General Comments: \_\_\_\_\_

# Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: FT. COL. CA Transect # 17

next to Laguna SCA.

Date: 3/25/92 Time: 1204 Observer(s): Holt, Clifton, P. ...

Sample Number: \_\_\_\_\_ Location: \_\_\_\_\_

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: Pond at the end of a small area ...

Substrate: \_\_\_\_\_

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Disturbed annual grassland scattered coyote brush

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: \_\_\_\_\_

Water Conditions: Water depth: 24-30 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 40 by 40 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 17°C / 63°F pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 17°C / 63°F Wind speed: \_\_\_\_\_

Wind direction (from): S Cloud cover: 85-90

Vegetative Cover: Total: 25 % (of water area)

Algae: 10 % (of total vegetative cover)

Submergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 90 % (of total vegetative cover)

Dominant species: Rushes, cattails

Taxa Collected or Observed: tree frog tadpole, diving beetle, leeches, damselfly larvae

General Comments: Pond water ≈ 2.5' - 3' deep, soft, sandy bottom  
Smells eutrophic 3-4 willows surrounding pond  
Dorsal fin observed on surface (green sunfish?)  
Water from drainage & culverts



Project or Site Name & Location: FA Co., CA Adjacent to field, 1/2 mi west of Laguna Seca by Range 30 18A  
Date: MAR 25, 92 Time: 1340 Observer(s): Cleifton Bechta Hall  
Sample Number: \_\_\_\_\_ Location: \_\_\_\_\_  
Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale pool in stream, roadside ditch, stock pond, other: Seasonal pond  
Substrate: Mud  
When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_  
Adjacent upland: Disked grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: \_\_\_\_\_

Water Conditions: Water depth: 8-10 in. Surface area: 300 ft<sup>2</sup> or \_\_\_\_\_ by \_\_\_\_\_ ft.  
Turbidity: none, slight, moderate, extreme, other: oil film  
Water temperature: 16 °F / 10 °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O: \_\_\_\_\_

Weather Conditions: Air temperature: 15 °F / 10 °C Wind speed: 0.5  
Wind direction (from): \_\_\_\_\_ Cloud cover: 90%

Vegetative Cover: Total: 50 % (of water area)  
Algae: 5 % (of total vegetative cover)  
Submergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)  
Dominant species: \_\_\_\_\_  
Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)  
Dominant species: \_\_\_\_\_  
Emergent vascular plants: 50 % (of total vegetative cover)  
Dominant species: Curly dock, wheat grass

Taxa Collected or Observed: Toad frog larvae, Daphnia  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

General Comments: Pooled water at base of a small watershed  
Black 1820  
\_\_\_\_\_  
\_\_\_\_\_

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: TT. OF 1003 1813 on Range 30

Date: 3/25/92 Time: 1410 Observer(s): Beckler, Clifton, Hurd

Sample Number: \_\_\_\_\_ Location: \_\_\_\_\_

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: or ephemeral pond

Substrate: FIPba

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: MARSHLAND CHARACTERISTIC W.S.E ANNUAL GRASS ON N

Habitat Condition: undisturbed SCATTERED BARS ON WEST SIDE slightly/moderately/heavily trampled, contains trash, other: \_\_\_\_\_

Water Conditions: Water depth: 4-6 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 100 by 100 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 50 °F / 10 °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 18 °F / 6 °C Wind speed: 0-5

Wind direction (from): W Cloud cover: 80%

Vegetative Cover: Total: 95 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 100 % (of total vegetative cover)

Dominant species: can't determine

Taxa Collected or Observed: Tree frog, Woodpecker, Salamanders, Lizards

General Comments: Area may be a vernal pool - however no Annual flowers evident - Recent activity abundant - no ground squirrels

Project or Site Name & Location: Fort Ord Impact Area #21 pond

Date: 3/27/93 Time: 0900 Observer(s): Beattie, Clifton

Sample Number: \_\_\_\_\_ Location: pond #31, Fort Ord, CA

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: Wet Meadow

Substrate: Soil, grass

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: single scrub, Chaparral small stand oak to N

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: \_\_\_\_\_

Water Conditions: Water depth: 8 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 100 by 150 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 15 °F / 10 °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 18 °F / 10 °C Wind speed: 0-5

Wind direction (from): W Cloud cover: cloudy (~90%)

Vegetative Cover: Total: 90 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: 30 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 70 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed:

Triton tadpole, daphnia, frog tadpole  
nothing exciting  
\* Badger hole in area

General Comments: wet meadow like pond  
looks like prairie meadow in pond.

# Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Ft Ord Pond # 30 Range 28

Date: 3/25 Time: 1445 Observer(s): Beckler, Clifton Hall

Sample Number: \_\_\_\_\_ Location: \_\_\_\_\_

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: \_\_\_\_\_

Substrate: FIRMA

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: MARINE CHEOPERMAL on slope, annual grassland in extensive flat

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: PAMPAS grass in uplands to W

Water Conditions: Water depth: 4 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or PO by 25 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 22 °F / °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: \_\_\_\_\_ °F / °C Wind speed: 5-10

Wind direction (from): W Cloud cover: 80%

Vegetative Cover: Total: 60 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 100 % (of total vegetative cover)

Dominant species: GRASS

Taxa Collected or Observed: Western toad: tadpoles, salamanders  
tadpoles & one still in fibro egg sacks

General Comments: 2 small ponds connected by wet meadow

extensive rodent burrows in grassland, scattered Coyote bush  
ground squirrel burrows in cut bank

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord Impact Area - pond # 35  
Old Quarry

Date: 3/27/72 Time: 1000 Observer(s): Rehder, Clifton

Sample Number: \_\_\_\_\_ Location: pond 35, impact area, old quarry

Sampling Method: fish net, (dip net) sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: old quarry / borrow area pond

Substrate: mud / sand

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: disturbed, nonpans grass, sand

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, (contains trash), other: heavily disturbed

Water Conditions: Water depth: 36 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 200 by 100 ft.

Turbidity: none, slight, moderate, (extreme), other: \_\_\_\_\_

Water temperature: 15 °F / (10) °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 18 °F / (10) °C Wind speed: 0-5

Wind direction (from): W Cloud cover: moderate

Vegetative Cover: Total: 50 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 100 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: Mallards, Cane stilings

tree frog and toad tadpoles

General Comments: nothing interesting

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord, Pond #33 just east of impact area

Date: 3/27/92 Time: 1130 Observer(s): Beckler, Clifford

Sample Number: \_\_\_\_\_ Location: pond #33, Fort Ord, CA

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: stream dammed

Substrate: soil, decayed matter

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Oak wood land, grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: slightly disturbed by troops, M&E Bags Around

Water Conditions: Water depth: >36 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 75 by 50 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 47 °F / 10 °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 16.5 °F / 10 °C Wind speed: 0-5

Wind direction (from): W Cloud cover: slight cloud cover

Vegetative Cover: Total: 10 % (of water area)

Algae: 50 % (of total vegetative cover)

Submergent vascular plants: 10 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 40 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: \_\_\_\_\_

Fairy shrimp

CA. tiger salamander ~ 1.5 inch

gold around iris

tree frog

giant diving beetle

numerous ♀ L. occidentalis, few ♂'s

numerous young

General Comments: nice little pond

Project or Site Name & Location: Fort Blvd Pond #34  
at intersection of Jack's Road and gravel road  
 Date: 3/27/92 Time: 12:40 Observer(s): Nichols (1st time)  
 Sample Number: \_\_\_\_\_ Location: Pond by Jack's Ranger Station  
 Sampling Method: fish net, (dip net), sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: Large pond at end of stream  
 Substrate: soil, decaying veg.  
 When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_  
 Adjacent upland: Grassland & Oak Woodland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: slightly disturbed, trash, foot traffic

Water Conditions: Water depth: 36 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 300 by 400 ft.  
 Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_  
 Water temperature: 24 °F (10°C) pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 17 °F (10°C) Wind speed: 5-10  
 Wind direction (from): NW Cloud cover: clear

Vegetative Cover: Total: 30 % (of water area)  
 Algae: 5 % (of total vegetative cover)  
 Submergent vascular plants: 5 % (of total vegetative cover)  
 Dominant species: \_\_\_\_\_  
 Floating vascular plants: 5 % (of total vegetative cover)  
 Dominant species: \_\_\_\_\_  
 Emergent vascular plants: 95 % (of total vegetative cover)  
 Dominant species: grasses

Taxa Collected or Observed: clam shrimp tree frog

tadpoles - most likely red legged - Mark Littlefield  
saw red-legged looking frogs at pond several  
years ago  
pink iridescence dorsal, gold around iris  
pink on tail and new legs

numerous young fairy shrimp seen

General Comments: Littlefield says pond dry for several  
years, this first year really full, a lot of  
rotting veg. on bottom

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: <sup>from 2</sup> 35 Fort Ord, Parker Flats Road  
0.25 mile north of range control

Date: 3-27-92 Time: 1630 Observer(s): Berata / Olfson

Sample Number: 35 Location: \_\_\_\_\_

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch,  
stock pond, other: Large pond in low drainage

Substrate: soil/mud

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Oak woodland w/ chaparral

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash,  
other: slightly disturbed

Water Conditions: Water depth: 36 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 50 by 300 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 18 °F / 1 °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 15 °F / 1 °C Wind speed: 10-15 mph

Wind direction (from): W Cloud cover: 100%

Vegetative Cover: Total: 1-2 % (of water area)

Algae: 0 % (of total vegetative cover)

Submergent vascular plants: 0 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: 0 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 1-2 % (of total vegetative cover)

Dominant species: annual grasses

Taxa Collected or Observed: Hyle fragilis, 4 other tadpoles,  
dragon fly nymphs

General Comments: \_\_\_\_\_



Project, or Site Name & Location: FORT ORD SAMPLE # 36  
Pilaraites Cyo.  
Date: 3-28-92 Time: 0800 Observer(s): BICHTA / CURTIS  
Sample Number: 36 Location: \_\_\_\_\_  
Sampling Method: fish net, tip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch,  
stock pond, other: Stock Pond in Stream Channel  
Substrate: MUDDY SOIL  
When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_  
Adjacent upland: GRASSLAND on E; OAK & MIMICRUS on W

Habitat Condition: undisturbed, slightly moderately/heavily trampled, contains trash,  
other: sheep

Water Conditions: Water depth: 48+ in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 80 by 200 ft.  
Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_  
Water temperature: 15 °F / 15 °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 16 °F / 16 °C Wind speed: 0  
Wind direction (from): \_\_\_\_\_ Cloud cover: 100%

Vegetative Cover: Total: 5 % (of water area)  
Algae: 1 % (of total vegetative cover)  
Submergent vascular plants: 1 % (of total vegetative cover)  
Dominant species: \_\_\_\_\_  
Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)  
Dominant species: \_\_\_\_\_  
Emergent vascular plants: 4 % (of total vegetative cover)  
Dominant species: Annual grasses

Taxa Collected or Observed: Mallard Drake w hen  
daphnia, water boatman, chironomidae larvae.

General Comments: E edge surrounded by willows  
sheep grazing nearby

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: FORT OKO #37, Pilgrimage Canyon

Date: 3-28-92 Time: 0830 Observer(s): CLIFTON BECUTA

Sample Number: 37 Location: \_\_\_\_\_

Sampling Method: fish net, (dip net) sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch,

(stock pond) other: in creek channel

Substrate: sand/mud

When Inubdated: \_\_\_\_\_

When Desiccated: \_\_\_\_\_

Adjacent upland: grassland

Habitat Condition: undisturbed, slightly/(moderately)/heavily trampled, contains trash,

other: sheep at pond

Water Conditions: Water depth: 48+ in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 150 by 200 ft.

Turbidity: none, slight, moderate, (extreme), other: \_\_\_\_\_

Water temperature: 14 °F / (C) pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 17 °F / (C) Wind speed: 1-2 mph

Wind direction (from): S Cloud cover: 100%

Vegetative Cover: Total: 1-2 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 1-2 % (of total vegetative cover)

Dominant species: Juncus/annual grasses

Taxa Collected or Observed: California Newt caught in kick net,  
Dragonfly larvae, daphnia, chironomids larvae

(C) Collected unknown from Phyllopodia in sample.

1 pair of Canada geese at pond

Found 3 different types of amphibian eggs attached  
to piece of barbed-wire.

Leeches in H<sub>2</sub>O!

General Comments: At least 2,000 sheep at pond.

Brand -

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Project or Site Name & Location: Fort Ord Pond #38 Pilarcitos Canyon

Date: 3/24/92 Time: 0905 Observer(s): Bentley, Clifton

Sample Number: \_\_\_\_\_ Location: Pilarcitos Canyon, Fort Ord

Sampling Method: fish net, (dip net) sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, (pool in stream), roadside ditch, stock pond, other: dammed up where road crosses

Substrate: mud & decaying plant matter

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: riparian, oak woodland, grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, (other) slightly disturbed

Water Conditions: Water depth: 36 in. Surface area: ~~40~~ ft<sup>2</sup> or 100 by 100 ft.

Turbidity: none, slight, moderate, (extreme), other: \_\_\_\_\_

Water temperature: 14 °F / (C) pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 16 °F / (C) Wind speed: 0-1

Wind direction (from): SW Cloud cover: 100%

Vegetative Cover: Total: 50 % (of water area)

Algae: — % (of total vegetative cover)

Submergent vascular plants: — % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: — % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 50 % (of total vegetative cover).

Dominant species: Salix sp. & other? grasses?

Taxa Collected or Observed: garter snake, lots of Woodrat nest on E edge of pond on slope in edge of chaparral

General Comments: actually this pond meanders in & out of a wet willow thicket. 100' x 100' at its greatest dimensions. The entire Pilarcitos Cyn is good riparian willow thicket

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord Mudhen Lake, East

Date: 3/21/92 Time: 1700 Observer(s): Bachita Clifton

Sample Number: \_\_\_\_\_ Location: Fort Ord, CA, Mudhen Lake

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: stock pond/Reservoir

Substrate: Mud, decaying matter

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Annual grassland, oak woodland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: slightly disturbed, dam, roads nearby, tracks into lake

Water Conditions: Water depth: 7 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 400 by 100 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 24 °F (°C) pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 18 °F (°C) Wind speed: 0-5

Wind direction (from): w Cloud cover: slight haze

Vegetative Cover: Total: 15 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: 10 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 90 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: Mallard's

Tree frog

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

General Comments: water smells bad, bottom all decaying

in the very little life

Project or Site Name & Location: Fort Ord MUDHEN LAKE WEST

Date: 3/26/92 Time: 1635 Observer(s): Bechta, Clifton

Sample Number: \_\_\_\_\_ Location: Fort Ord, CA Mudhen Lake

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: Pond/Reservoir

Substrate: Mud

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Annual Grassland, Oak Woodland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: slightly disturbed, dam, roads nearby

Water Conditions: Water depth: 30 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 200 by 100 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 54 °F (10 °C) pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 18 °F (10 °C) Wind speed: 0-5

Wind direction (from): W Cloud cover: slight haze

Vegetative Cover: Total: 20 % (of water area)

Algae: 1-2 % (of total vegetative cover)

Submergent vascular plants: 10 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 90 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: Tree frog tadpoles  
Some fish looking things in gel

General Comments: overall pond very dead  
Found almost nothing

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord Pond 101

Intersection of Watkins Gate Rd. & Hennikins Ranch Rd.

Date: 4/22/92 Time: 1215 Observer(s): A. Buchta, S. Clifton

Sample Number: \_\_\_\_\_ Location: Intersection Watkins Gate & Hennikins Ranch Rd.

Sampling Method: fish net, (dip net), sien, other: \_\_\_\_\_

Habitat Type: (vernal pool) rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: \_\_\_\_\_

Substrate: Mud, Dirt, Vegetable Matter

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: grassland, oak woodland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: slightly disturbed, tire cuts underwater etc.

Water Conditions: Water depth: 36 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or \_\_\_\_\_ by \_\_\_\_\_ ft. ~5 acre

Turbidity: none, (slight), moderate, extreme, other: \_\_\_\_\_

Water temperature: 24 °F 100 pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 20 °F 100 Wind speed: 0-5

Wind direction (from): W Cloud cover: Slight 20% high clouds

Vegetative Cover: Total: 40% % (of water area)

Algae: 1.2 % (of total vegetative cover)

Submergent vascular plants: 10 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: 10 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 70 % (of total vegetative cover)

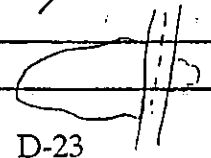
Dominant species: \_\_\_\_\_

Taxa Collected or Observed: CA Tiger Salamander, Tree Frog

Clem shrimp - No Fairy Shrimp, but should be, we may be too late

Very large pool  
Mallards, Red wing blackbird

General Comments: Large Vernal Pool near machinegun & late road cuts over, small pond on west side also with Tiger Salamanders



Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord, Pond #102

Date: 4/20/92 Time: 1245 Observer(s): Baker, Clifton

Sample Number: \_\_\_\_\_ Location: Bigling Road on Map, Octopus Road Intersection

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: Mud puddle in Road

Substrate: Mud

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Oak woodland / Grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: Highly disturbed, driven through often

Water Conditions: Water depth: 12 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 10 by 30 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 16 °F 100 pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 18 °F 100 Wind speed: 0-5

Wind direction (from): West Cloud cover: 20%

Vegetative Cover: Total: 2 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: Daphnae, thick mud bog in middle of road, pretty much dead

shaded by oaks

General Comments: \_\_\_\_\_

# Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fort Ord, Pond 103 ~~also~~ (1/4 N of Pond #35)

Date: 4/20/92 Time: 1330 Observer(s): White, Clifton

Sample Number: \_\_\_\_\_ Location: \_\_\_\_\_

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond, other: excavated ditch

Substrate: mud, soil, chalky soil

When Inubdated: None When Desiccated: \_\_\_\_\_

Adjacent upland: chaparral, scrub

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: heavily disturbed, herbicide, lumber, graded around area

Water Conditions: Water depth: 60 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 50 by 150 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 23 °F (10°C) pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 19 °F (10°C) Wind speed: 0-5

Wind direction (from): W Cloud cover: 10-20% high clouds

Vegetative Cover: Total: 10 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: 5 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 95 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: tree frog, water beetle, dragonae,

various larvae

beetles white, everything very light to white or

clear color, may be chemicals in pond

General Comments: \_\_\_\_\_



Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: East Aid, Grassland, pond #104

Date: 4/21/92 Time: 12:15 Observer(s): Barta, Clifton

Sample Number: \_\_\_\_\_ Location: Grassland, 1.25 KM N of Guidotte Ranch

Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch, stock pond other: \_\_\_\_\_

Substrate:  Mud, Rotten Vegetation

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Annual Grassland

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, other: Sheep have grazed around edges, dead sheep in water

Water Conditions: Water depth: 7 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 100 by 200 ft.

Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_

Water temperature: 63 (°F) / °C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 67 (°F) / °C Wind speed: 10-20 mph

Wind direction (from): SW Cloud cover: 10% high clouds

Vegetative Cover: Total: 5 % (of water area)

Algae: \_\_\_\_\_ % (of total vegetative cover)

Submergent vascular plants: 10 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 90% % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: Stock pond; barren around edges (~5 feet of bare soil from water edge) very little veg. in water

Tree frog, clam shrimp, beetles, etc., nothing interesting

clump of willows on SW shore

General Comments: \_\_\_\_\_

Freshwater Invertebrate Sampling Data Sheet

Jones & Stokes Associates, 2600 V Street, Sacramento, CA 95818-1914

Project or Site Name & Location: Fact Ord Pond #105 El Toro Creek

Date: 4/21/92 Time: 1315 Observer(s): Burke Clifton

Sample Number: \_\_\_\_\_ Location: El Toro Creek, 5 km NW Guilotti Ranch

Sampling Method: fish net, (dip net), sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, (pool in stream), roadside ditch, stock pond, other: \_\_\_\_\_

Substrate: Mud, Soil, Rotting Veg.

When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_

Adjacent upland: Grassland, Oak Savanna?

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, (contains trash), other: slightly disturbed, adjacent to residential area

Water Conditions: Water depth: 30 in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 100 by 50 ft.

Turbidity: none, slight, (moderate), extreme, other: \_\_\_\_\_

Water temperature: 27 °F/10°C pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_

Weather Conditions: Air temperature: 18 °F/10°C Wind speed: 5-10

Wind direction (from): SW Cloud cover: 20%

Vegetative Cover: Total: 30 % (of water area)

Algae: 5 % (of total vegetative cover)

Submergent vascular plants: 5 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Floating vascular plants: \_\_\_\_\_ % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Emergent vascular plants: 90 % (of total vegetative cover)

Dominant species: \_\_\_\_\_

Taxa Collected or Observed: 1 # Tiger Salamander Larvae

~ 1.5 inches long, gold flecks around eye

Tree frog, clam shrimp, misc. insect larvae

General Comments: area used by kids, tree frog in ed, direct oak

Project or Site Name & Location: Fort Ord, Grassland  
Pond # 106 (Pond with concrete spillway)  
Date: 4/2/92 Time: 1400 Observer(s): Burke, Clifton  
Sample Number: \_\_\_\_\_ Location: 1 Km SSW of Jacks Ranger Station  
Sampling Method: fish net, dip net, sien, other: \_\_\_\_\_

Habitat Type: vernal pool, rock outcrop pool, swale, pool in stream, roadside ditch,  
stock pond, other: \_\_\_\_\_  
Substrate: mud, rotten veg.  
When Inubdated: \_\_\_\_\_ When Desiccated: \_\_\_\_\_  
Adjacent upland: Grassland, willow thicket

Habitat Condition: undisturbed, slightly/moderately/heavily trampled, contains trash, barb wire  
other: slightly disturbed by sheep and army trash

Water Conditions: Water depth: ? in. Surface area: \_\_\_\_\_ ft<sup>2</sup> or 150 by 200 ft.  
Turbidity: none, slight, moderate, extreme, other: \_\_\_\_\_  
Water temperature: 22 °F 100 pH: \_\_\_\_\_ Conductivity: \_\_\_\_\_ D.O.: \_\_\_\_\_  
Weather Conditions: Air temperature: 20 °F 100 Wind speed: 10-20 mph  
Wind direction (from): SW Cloud cover: 30%

Vegetative Cover: Total: 70 % (of water area)  
Algae: 5 % (of total vegetative cover)  
Submergent vascular plants: 5 % (of total vegetative cover)  
Dominant species: \_\_\_\_\_  
Floating vascular plants: 5 % (of total vegetative cover)  
Dominant species: \_\_\_\_\_  
Emergent vascular plants: 85 % (of total vegetative cover)  
Dominant species: willows, grasses

Taxa Collected or Observed: free frog, boat man, etc.  
really good willow thicket around western  
half of creek  
concrete spillway on eastern portion

General Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Appendix E. Wetland Delineation Field Data Forms



Photo 3-27  
Poly 2  
Site A

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: USCOF Application Number: \_\_\_\_\_ Project Name: Fort Ord  
State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
Date: 5/6/92 Plot No.: \_\_\_\_\_ Section: \_\_\_\_\_

Grassland about pool edge, Watkins Gate Road

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>		<u>Indicator Status</u>	<u>Species</u>		<u>Indicator Status</u>
<u>Trees</u>			<u>Herbs</u>		
1.			7.	<u>Bromus racemosus</u>	UPL 50
2.			8.	<u>Bromus diandrus</u>	UPL 30
3.			9.	<u>Bromus ciliaris</u>	UPL 5
<u>Saplings/shrubs</u>			<u>Woody vines</u>		
4.			10.	<u>Juncus balticus</u>	OBL 5
5.			11.	<u>Lotus perhianus</u>	UPL 10
6.			12.		

# of species that are OBL, FACW, and/or FAC: 20. Other indicators: \_\_\_\_\_  
Hydrophytic vegetation: Yes \_\_\_ No . Basis: < 50 of dominant spp hydrophytic

0' \_\_\_\_\_  
10 YR 3/2  
Sandy  
18' \_\_\_\_\_

Soil sandy loam  
Series and phase: Antioch very fine On hydric soils list? Yes \_\_\_; No   
Mottled: Yes \_\_\_; No . Mottle color: ; Matrix color: 10YR 5/2  
Gleyed: Yes \_\_\_ No  Other indicators: \_\_\_\_\_  
Hydric soils: Yes \_\_\_ No ; Basis: No hydric indicators - color or moisture

Hydrology  
Inundated: Yes \_\_\_; No . Depth of standing water: \_\_\_\_\_  
Saturated soils: Yes \_\_\_; No . Depth to saturated soil: > 18  
Other indicators: \_\_\_\_\_  
Wetland hydrology: Yes \_\_\_; No . Basis: No water table encountered to 18" depth.  
Atypical situation: Yes \_\_\_; No .  
Normal Circumstances? Yes  No \_\_\_

Wetland Determination: Wetland \_\_\_\_\_; Nonwetland No strong indicators of wetland veg., soils, or hydrology  
Comments: \_\_\_\_\_

Determined by: C. Kersey

Photo 3-27  
 Polygo- 2  
 site B

DATA FORM 1  
 WETLAND DETERMINATION

Applicant Name: USCOE Application Number: \_\_\_\_\_ Project Name: Fort Ord  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 5/6/92 Plot No.: \_\_\_\_\_ Section: \_\_\_\_\_

Vegetation Pool at Watkins Gate & Hemekis Ranch Roads

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status	Cover
<u>Trees</u>				
1.		7. <u>Eleocharis macrorhiza</u>	OBL	90%
2.		8. <u>Stachys ajacisoides</u>	OBL	3
3.		9. <u>Rumex crispus</u>	FACW-	2
<u>Saplings/shrubs</u>				
4.		10. <u>Atropiscurus howellii</u>	FACW+	3
5.		11. <u>Lilaea scilloides</u>	OBL	2
6.		12.		

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes  No . Basis: All species are hydrophytes.

Soil  
 Series and phase: Andisol very fine sandy loam On hydric soils list? Yes ; No   
 Mottled: Yes ; No . Mottle color: 10YR3/2; Matrix color: 10YR3/1  
 Gleyed: Yes  No  Other indicators: Dense clay layer  
 Hydric soils: Yes  No ; Basis: low chroma matrix, saturated sites

Hydrology  
 Inundated: Yes ; No . Depth of standing water: \_\_\_\_\_  
 Saturated soils: Yes ; No . Depth to saturated soil: \_\_\_\_\_  
 Other indicators: Ponded portions, saturated portions, portions w/ water table @ 8"  
 Wetland hydrology: Yes ; No . Basis: Ponded + Saturated  
 Atypical situation: Yes ; No .  
 Normal Circumstances? Yes  No .

Wetland Determination: Wetland Strongly Positive; Nonwetland \_\_\_\_\_

Comments: indicators of veg, soils, and hydrology

Determined by: Cylinde. Keiser-T...

10YR3/2  
 Sandy  
 clay  
 10YR3/2  
 10YR3/1  
 clay film  
 on ped  
 face

Photo 3-67  
 Polygon 2  
 size C

DATA FORM 1  
 WETLAND DETERMINATION

Applicant Name: USOE Application Number: \_\_\_\_\_ Project Name: Fair Oaks  
 State: CA County: Merced Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 5/6/92 Plot No.: \_\_\_\_\_ Section: \_\_\_\_\_

Vernal Pool at Watkins Gate and Hennekin's Ranch Roads

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status	Cover
<u>Trees</u>		<u>Herbs</u>		
1.		7. <i>Elymus hirsutus</i>	OBL	95
2.		8. <i>Poa annua</i>	FACW	
3.		9. <i>Ranunculus aquatilis</i>	OBL	1
<u>Saplings/shrubs</u>		<u>Woody vines</u>		
4.		10. <i>Callitriche heterophylla</i>	OBL	1
5.		11. <i>Alysicarpus</i>	FACW+	2
6.		12.		

Z of species that are OBL, FACW, and/or FAC: 100. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes  No . Basis: All hydrophytic plants.

545/1  
 ↓ 8" clay

Soil  
 Series and phase: Antioch On hydric soils list? Yes ; No   
 Mottled: Yes ; No . Mottle color: 10YR3/1; Matrix color: 5Y5/1  
 Gleyed: Yes  No  Other indicators: \_\_\_\_\_  
 Hydric soils: Yes  No ; Basis: Saturated to surface, gleyed.

Hydrology  
 Inundated: Yes ; No . Depth of standing water: < 1"  
 Saturated soils: Yes ; No . Depth to saturated soil: To surface.  
 Other indicators: \_\_\_\_\_  
 Wetland hydrology: Yes ; No . Basis: Saturated & inundated mosaic  
 Atypical situation: Yes ; No   
 Normal Circumstances? Yes  No

Wetland Determination: Wetland Strong indicators; Nonwetland \_\_\_\_\_  
 Comments: of wetland veg, soils, and hydrology

Determined by: C. L. ...



DATA FORM 1  
WETLAND DETERMINATION

Photo 4-40  
Polygon 15  
Site A

Applicant Name: USCOE Application Number: \_\_\_\_\_ Project Name: Fort Ord  
State: CA County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
Date: 5/6/92 Plot No.: \_\_\_\_\_ Section: \_\_\_\_\_

Machine Gun Flats Vernal Pool

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species		Indicator Status	Species		Indicator Status	Cover
<u>Trees</u>			<u>Herbs</u>			
1.			7. <u>Eleocharis acicularis</u>	OBL	90%	
2.			8. <u>Distichlis spicata</u>	FACW	1	
3.			9. <u>Juncus sp.</u>	FAC/OBL	7	
<u>Saplings/shrubs</u>			<u>Woody vines</u>			
4.			10. <u>Plagiocollyns sp.</u>		1	
5.			11. <u>Callitriche heterophylla</u>	OBL	1	
6.			12.			

7 of species that are OBL, FACW, and/or FAC: 280% Other indicators: \_\_\_\_\_

Hydrophytic vegetation: Yes  No  Basis: > 50% of dominant plants are wetland indicators

Soil

Series and phase: Antioch very fine sandy loam On hydric soils list? Yes ; No

Mottled: Yes ; No  Mottle color: 10YR 3/1; Matrix color: \_\_\_\_\_

Gleyed: Yes  No  Other indicators: Redded ~ 3" deep, long duration

Hydric soils: Yes  No  Basis: Panded over @ least 3 weeks - has not rained for > 3 weeks

Hydrology

Inundated: Yes ; No  Depth of standing water: 3"

Saturated soils: Yes ; No  Depth to saturated soil: \_\_\_\_\_

Other indicators: Reddened 3/25/86 - some standing water

Wetland hydrology: Yes ; No  Basis: \_\_\_\_\_

Atypical situation: Yes ; No

Normal Circumstances? Yes  No

Wetland Determination: Wetland Positive indicators Nonwetland \_\_\_\_\_

Comments: for Veg., soils & hydro.

Determined by: Charles K. ...

Photo 4-40  
 Polygon 15  
 Site B

DATA FORM 1  
 WETLAND DETERMINATION

Applicant Name: USACE Application Number: \_\_\_\_\_ Project Name: Fort Ord  
 State: CA County: Mont. Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 5/10/92 Plot No.: \_\_\_\_\_ Section: \_\_\_\_\_

Machine Gun Flats Vernal Pool

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>	<u>% cover</u>
<u>Trees</u>				
1.		7. <i>Eriochloa racemosa</i>	OBL	90%
2.		8. <i>Distichlis spicata</i>	FACW	5
3.		9. <i>Eriogonum vaseyi</i>	FACW	2
<u>Saplings/shrubs</u>				
4.		<u>Woody vines</u>		
		10. <i>Juncus phaeocephalus</i>	FACW	2
5.		11. <i>Setaria coronopifolia</i>	FACW+	1
6.		12.		

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes  No . Basis: All hydrophytes

Soil  
 Series and phase: Anthrac very fine Sandy loam On hydric soils list? Yes ; No   
 Mottled: Yes ; No . Mottle color: \_\_\_\_\_; Matrix color: \_\_\_\_\_  
 Gleyed: Yes  No  Other indicators: Standing water & saturated soils  
 Hydric soils: Yes  No ; Basis: Ponded since last rains > 30 days

Hydrology  
 Inundated: Yes ; No . Depth of standing water: > 12"  
 Saturated soils: Yes ; No . Depth to saturated soil: -  
 Other indicators: Ponded > 30 days  
 Wetland hydrology: Yes ; No . Basis: Long duration ponding  
 Atypical situation: Yes ; No

Normal Circumstances? Yes  No   
 Wetland Determination: Wetland Positive; Nonwetland \_\_\_\_\_

Comments: indicators of wetland veg, soils, and hydrology  
 Determined by: Cylinder, Keresztes

DATA FORM 1  
WETLAND DETERMINATION

Photo 4-40  
Polygon 15  
Site C

Applicant Name: USCOE Application Number: \_\_\_\_\_ Project Name: Fort Ord  
State: CA County: Mont. Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
Date: 5/6/92 Plot No.: \_\_\_\_\_ Section: \_\_\_\_\_

Machine Gun Flats grassland next to vernal pool  
Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status	% Cover
<u>Trees</u>		<u>Herbs</u>		
1.		7. Bromus laeviflorus	UPL	50%
2.		8. Elymus glaucus	FAC U	20
3.		9. Avena barbata	UPL	20
<u>Saplings/shrubs</u>		<u>Woody vines</u>		
4.		10. Erodium cicutarium	UPL	5
5.		11. Vulpia setiflora	UPL	1
6.		12. All other spp		4

% of species that are OBL, FACW, and/or FAC: 0. Other indicators: \_\_\_\_\_  
Hydrophytic vegetation: Yes  No  Basis: No hydromorphs

Soil  
Series and phase: Antioch - Very fine Sandy loam On hydric soils list? Yes ; No   
Mottled: Yes ; No . Mottle color: -; Matrix color: 10YR 3/2  
Gleyed: Yes  No  Other indicators: Hard dry sandy loamy soil  
Hydric soils: Yes  No ; Basis: No color indicators, very dry

Hydrology  
Inundated: Yes ; No . Depth of standing water: \_\_\_\_\_  
Saturated soils: Yes ; No . Depth to saturated soil: \_\_\_\_\_  
Other indicators: on bank above vernal pool: hard dry soil  
Wetland hydrology: Yes ; No . Basis: Hard dry soil  
Atypical situation: Yes ; No .  
Normal Circumstances? Yes  No .

Wetland Determination: Wetland  Nonwetland  No positive indicators  
Comments: \_\_\_\_\_

Determined by: Calinda Keresztes

3-27-01

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: USCOE Application Number: \_\_\_\_\_ Project Name: Fort Ord  
 State: CA County: Monterey Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 8/13/1992 Plot No.: 3-27-6 A Section: \_\_\_\_\_  
Henneken Ranch Road near Machinegun Flat

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status	Cover
<u>Trees</u>		<u>Herbs</u>		
1.		7. <i>Eleocharis macrostachya</i>	OBL	95%
2.		8. <i>Sida hederacea</i>	FAC	5
3.		9.		
<u>Saplings/shrubs</u>		<u>Woody vines</u>		
4.		10.		
5.		11.		
6.		12.		

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: \_\_\_\_\_

Hydrophytic vegetation: Yes  No  Basis: \_\_\_\_\_

some surface cracking - thin layer of organic matter

Soil Mapped as Centioch very fine sandy loam (Monterey Co. soil survey)  
 Series and phase: 2-9% slope On hydric soils list? Yes ; No  in survey.

Mottled: Yes ; No . Mottle color: 2.5 Y 6/2; Matrix color: 10 YR 3/1, 10 YR 4/1

Gleyed: Yes  No  Other indicators: \_\_\_\_\_

Hydric soils: Yes  No ; Basis: low chroma matrix with high chroma mottles

Tentative identification: Cumelic Haplaquoll (possibly Vertic)

Hydrology Inundated: Yes ; No . Depth of standing water: \_\_\_\_\_

Saturated soils: Yes ; No . Depth to saturated soil: moist 10-28" very moist 228"

Other indicators: was ponded and saturated in May, topographic depression.

Wetland hydrology: Yes ; No . Basis: basin without surface drainage (in center of basin)

Atypical situation: Yes ; No .

Normal Circumstances? Yes  No .

Wetland Determination: Wetland YES; Nonwetland \_\_\_\_\_

Comments: \_\_\_\_\_

Determined by: Verrill/Platenkamp

0  
sandy clay loam  
10 YR 3/1  
very few high chroma mottles  
dry, many roots  
clay  
10 YR 3/1  
blocky structure  
no mottles  
many roots  
moist  
clay  
10 YR 4/1  
many mottles:  
2.5 Y 6/2 +  
10 YR 5/6

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: USCOE Application Number: \_\_\_\_\_ Project Name: Ft. Ord  
State: CA County: Monterey Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
Date: 8/13/1992 Plot No.: 3-27-6B Section: \_\_\_\_\_  
same as 3-27-6B

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status	Cover
<u>Trees</u>		<u>Herbs</u>		
1.		7. <i>Eleocharis macrostachya</i>	OBL	70%
2.		8. <i>Distichlis spicata</i>	FACW	20
3.		9. <i>Polygonum monspeliensis</i>	FACW*	9
<u>Saplings/shrubs</u>		<u>Woody vines</u>		
4.		10. <i>Juncus phaeocephalus</i>	FACW	1
5.		11.		
6.		12.		

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: \_\_\_\_\_  
Hydrophytic vegetation: Yes  No  Basis: \_\_\_\_\_

Soil

Series and phase: \_\_\_\_\_ On hydric soils list? Yes \_\_\_\_\_; No \_\_\_\_\_  
Mottled: Yes \_\_\_\_\_; No \_\_\_\_\_. Mottle color: \_\_\_\_\_; Matrix color: \_\_\_\_\_  
Gleyed: Yes \_\_\_\_\_ No \_\_\_\_\_ Other indicators: \_\_\_\_\_  
Hydric soils: Yes \_\_\_\_\_ No \_\_\_\_\_; Basis: \_\_\_\_\_

Hydrology

Inundated: Yes \_\_\_\_\_; No . Depth of standing water: \_\_\_\_\_  
Saturated soils: Yes \_\_\_\_\_; No \_\_\_\_\_. Depth to saturated soil: \_\_\_\_\_  
Other indicators: \_\_\_\_\_  
Wetland hydrology: Yes ; No \_\_\_\_\_. Basis: near edge of basin without surface drainage  
Atypical situation: Yes \_\_\_\_\_; No .  
Normal Circumstances? Yes  No \_\_\_\_\_.  
Wetland Determination: Wetland \_\_\_\_\_; Nonwetland \_\_\_\_\_

Comments: \_\_\_\_\_

Determined by: \_\_\_\_\_

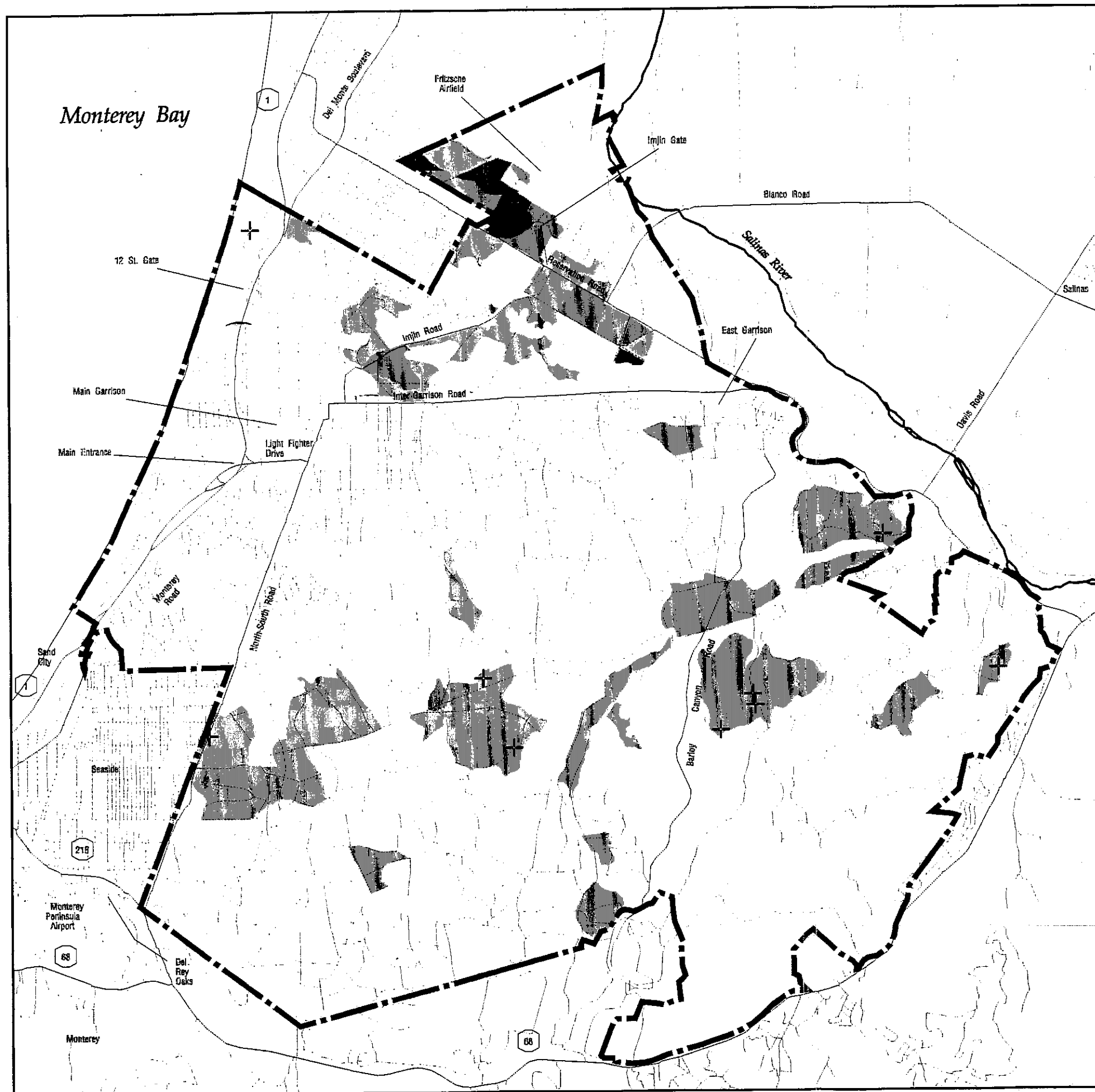
## **Appendix F. Distribution Maps of Special-Status Plant Species at Fort Ord**

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

Figure F-1

Known Distribution of Sand Gilia  
*(Gilia tenuiflora ssp. arenaria)*  
 at Fort Ord



**Listing Status**  
 Federal - Endangered  
 State - Threatened  
 CNPS - 1B

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density
-  Specific Population Location



Scale 1:60,000

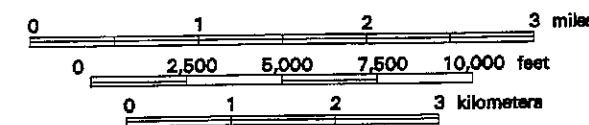




Figure F-2  
 Known Distribution of Sand Gilia (*Gilia tenuiflora* ssp. *arenaria*)

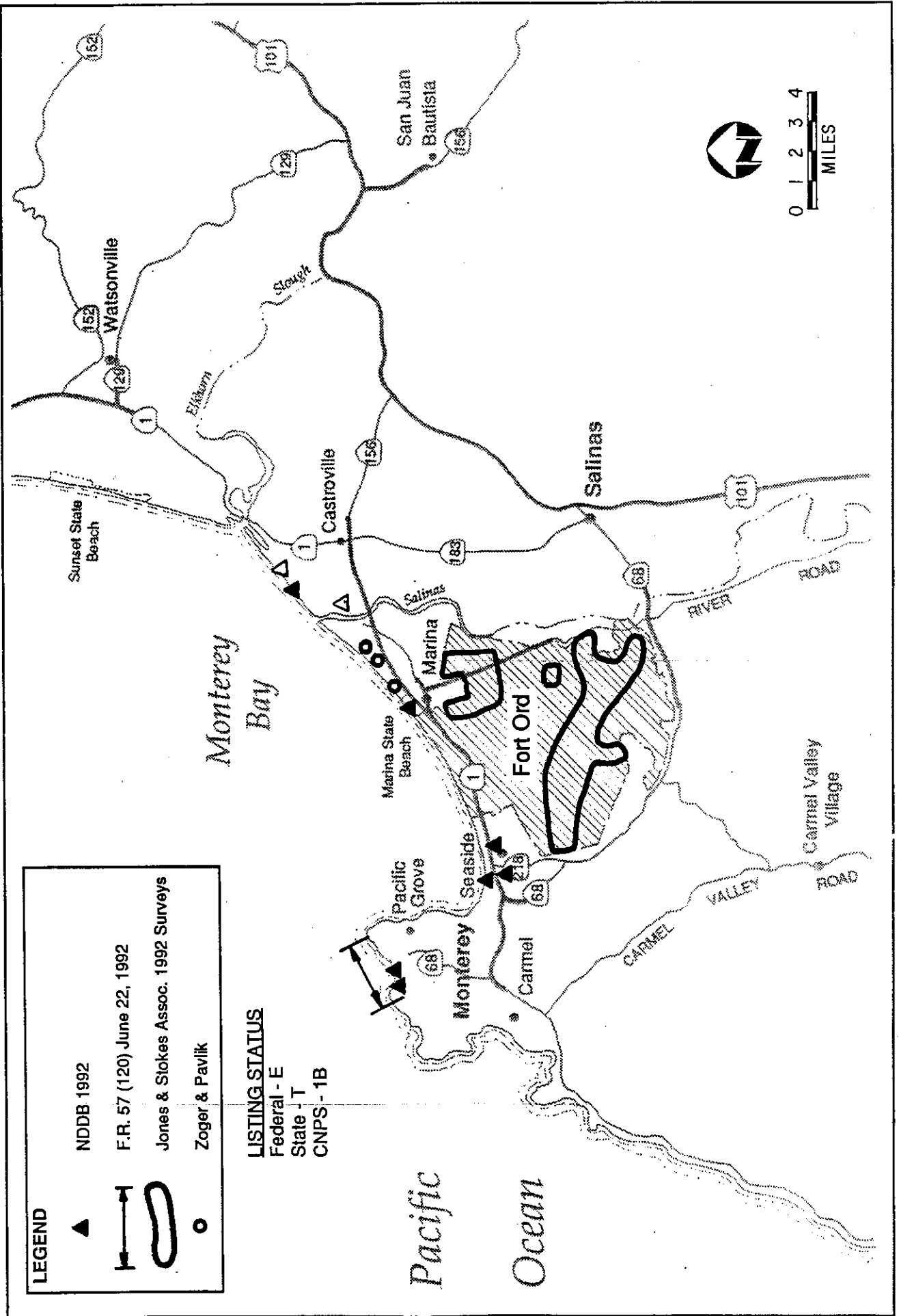





Figure F-3

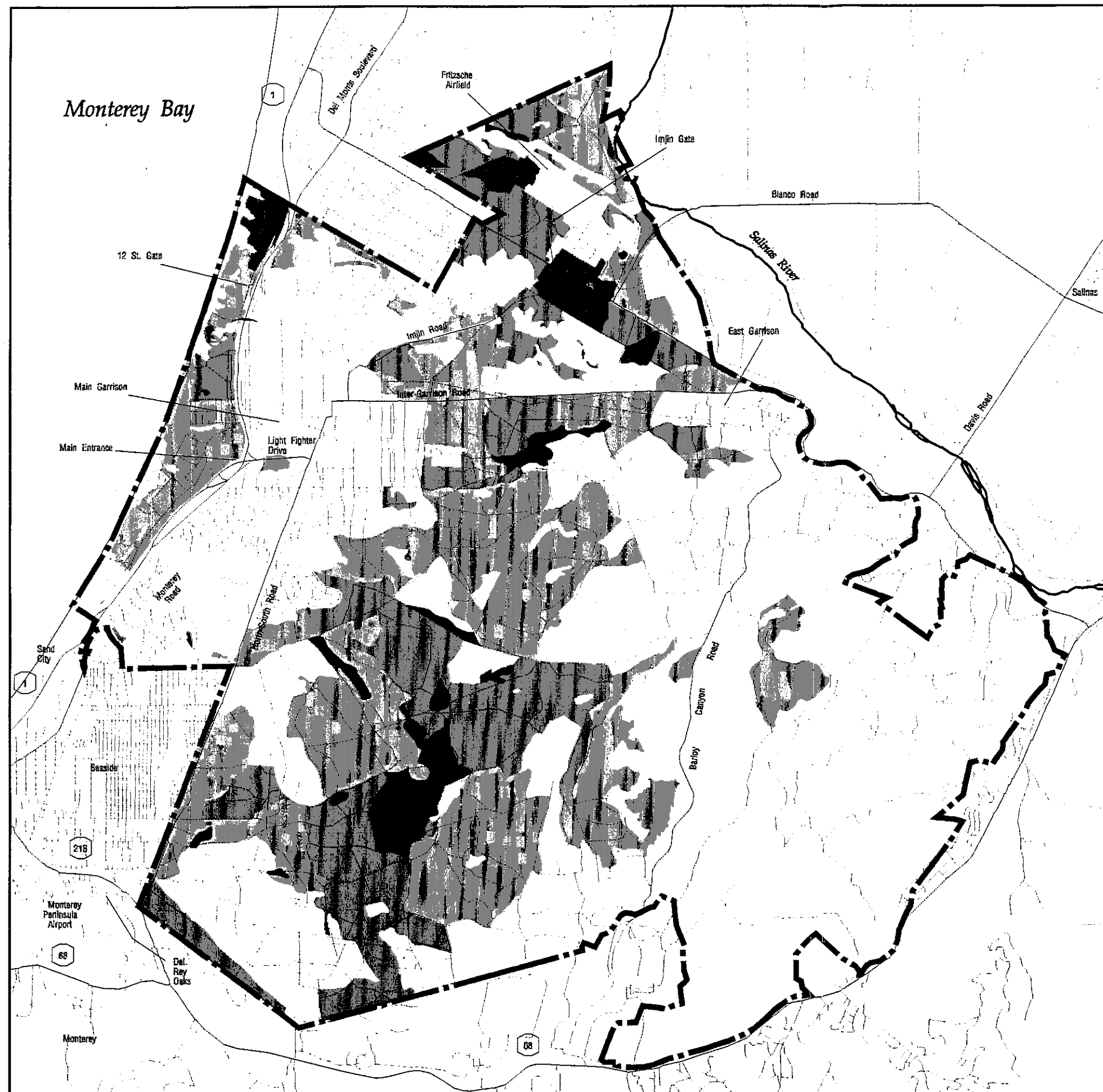
Known Distribution of Monterey Spineflower (*Chorizanthe pungens* var. *pungens*) at Fort Ord

**Listing Status**

Federal - Proposed Endangered  
State - none  
CNPS - 1B

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000

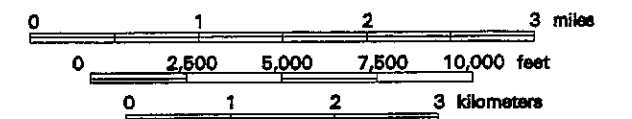
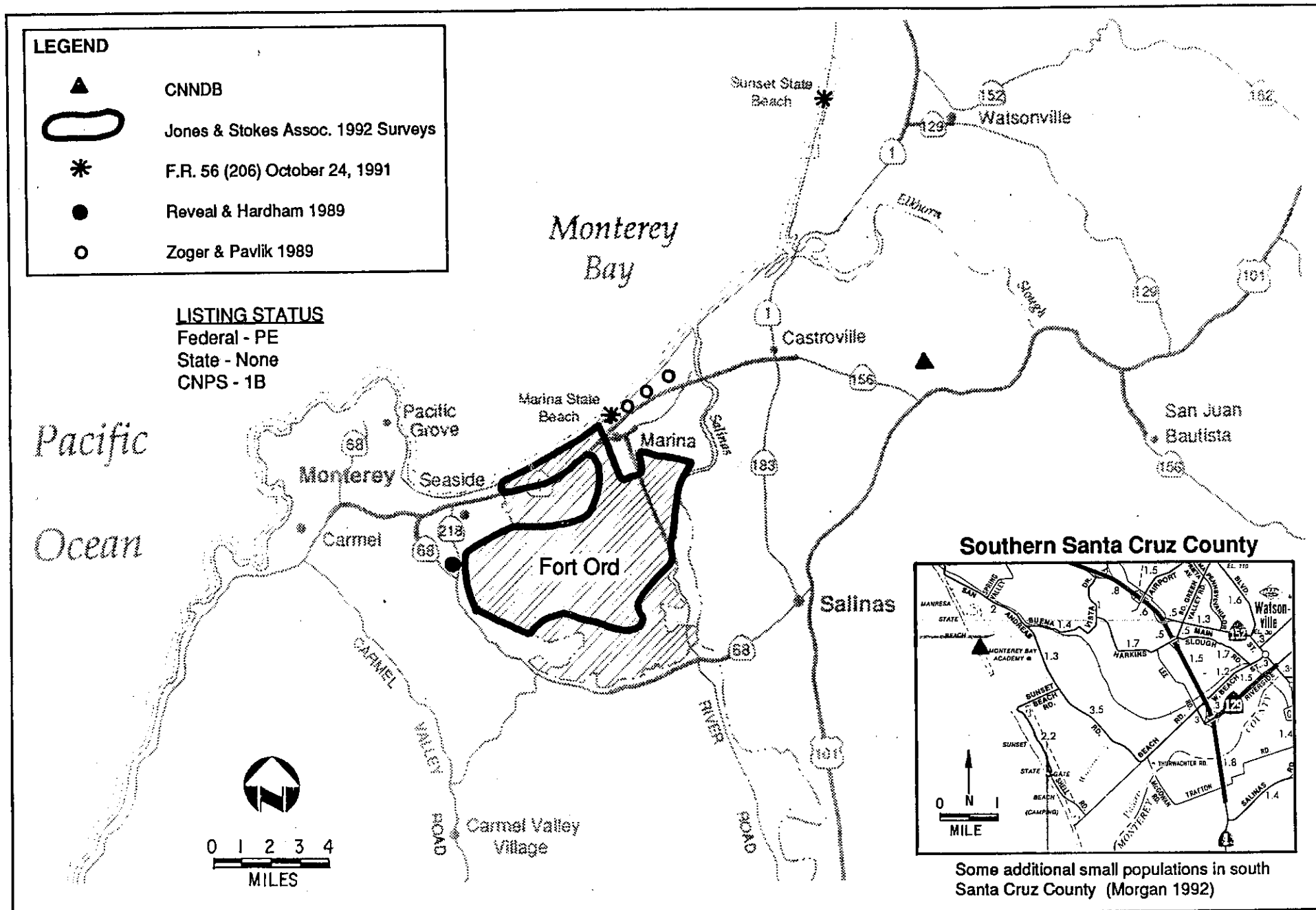


Figure F-4

Known Distribution of Monterey Spineflower (*Chorizanthe pungens* var. *pungens*)



F-4

Figure F-5

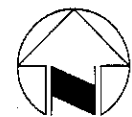
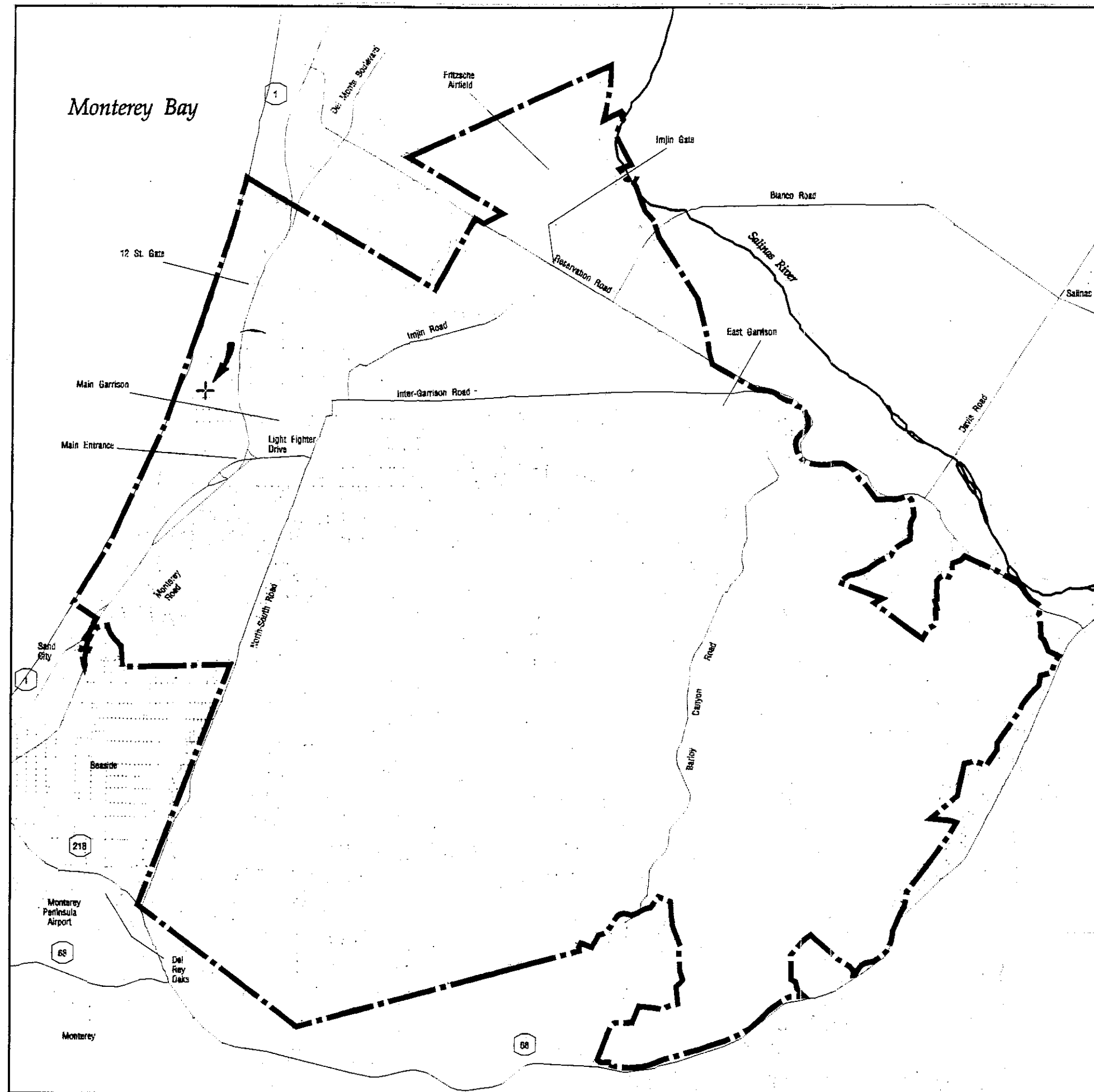
Known Distribution of Robust Spineflower  
(*Chorizanthe robusta* var. *robusta*)  
at Fort Ord

**Listing Status**

Federal - Proposed Endangered  
State - none  
CNPS - 4

**Legend**

⊕ Specific Population Location



Scale 1:60,000

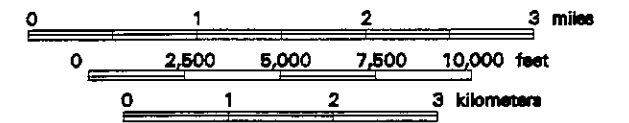
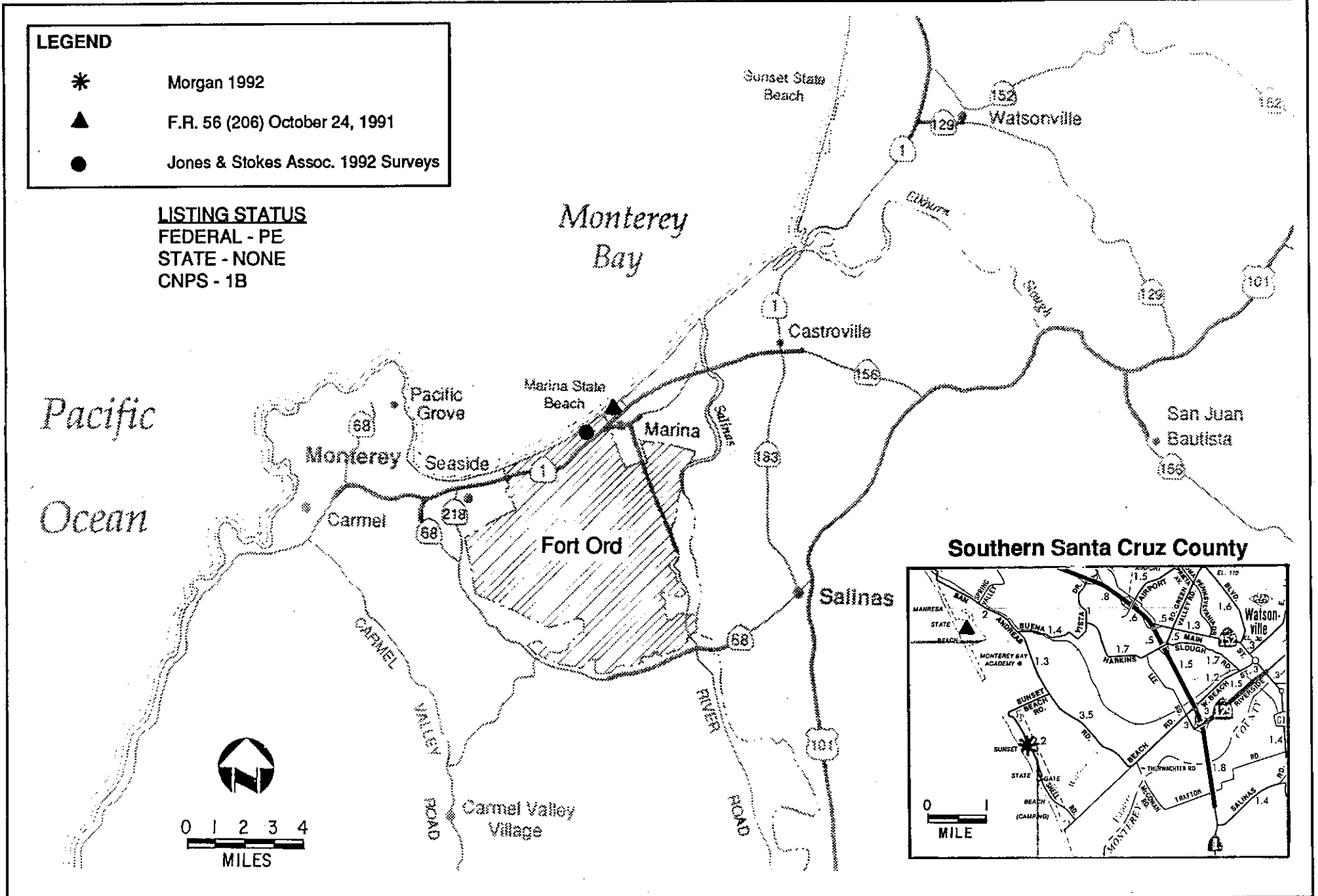


Figure F-6

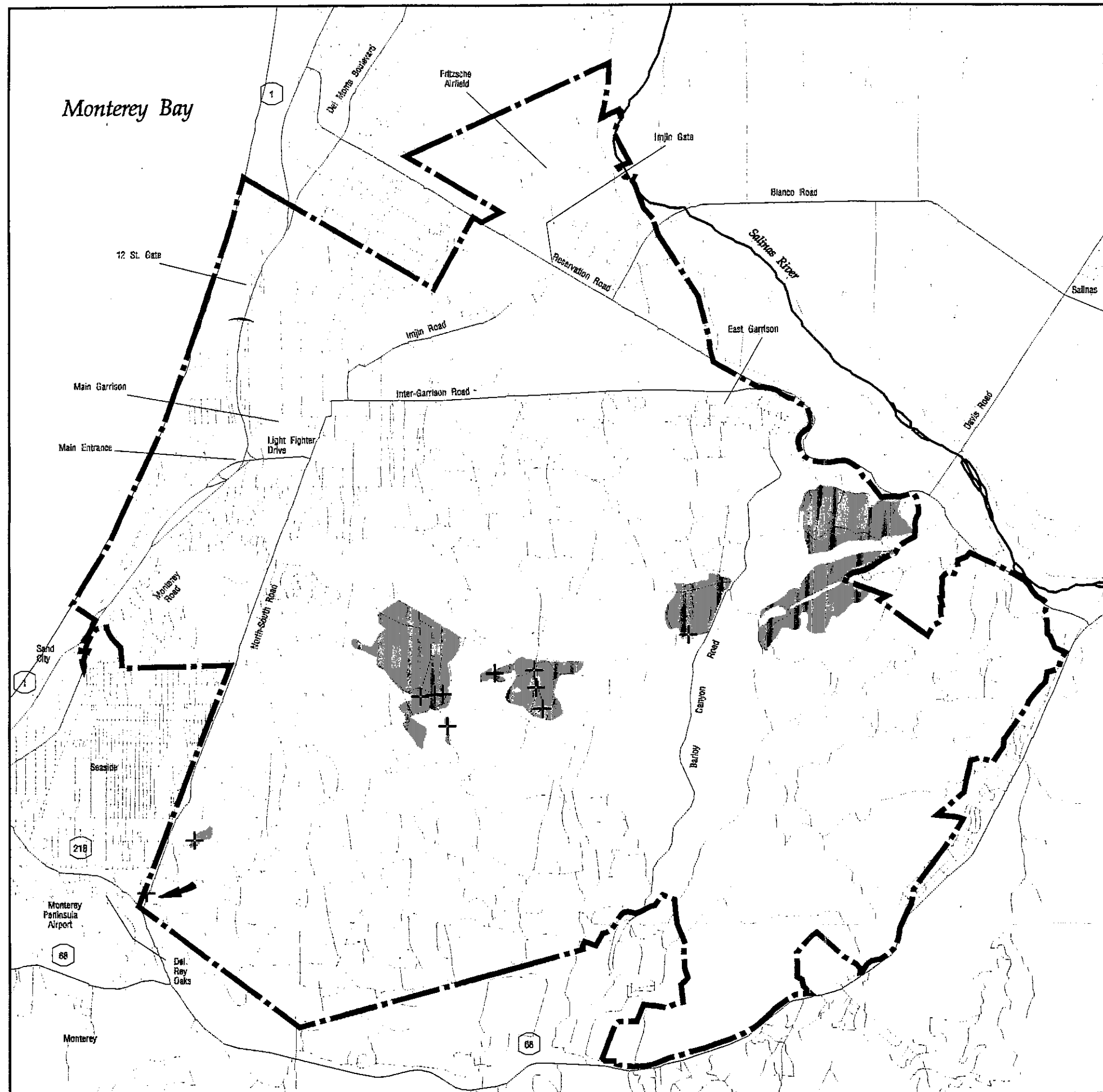
Known Distribution of Robust Spineflower (*Chorizanthe robusta* var. *robusta*)



F-5

Figure F-7





Known Distribution of Seaside Bird's-beak  
(*Cordylanthus rigidus* var. *littoralis*)  
at Fort Ord

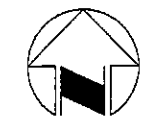


**Listing Status**

Federal - C1  
State - none  
CNPS - 1B

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density
-  Specific Population Location



Scale 1:60,000

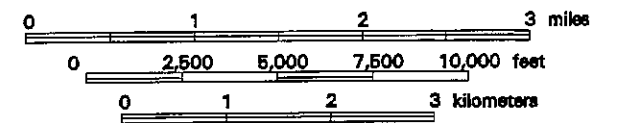
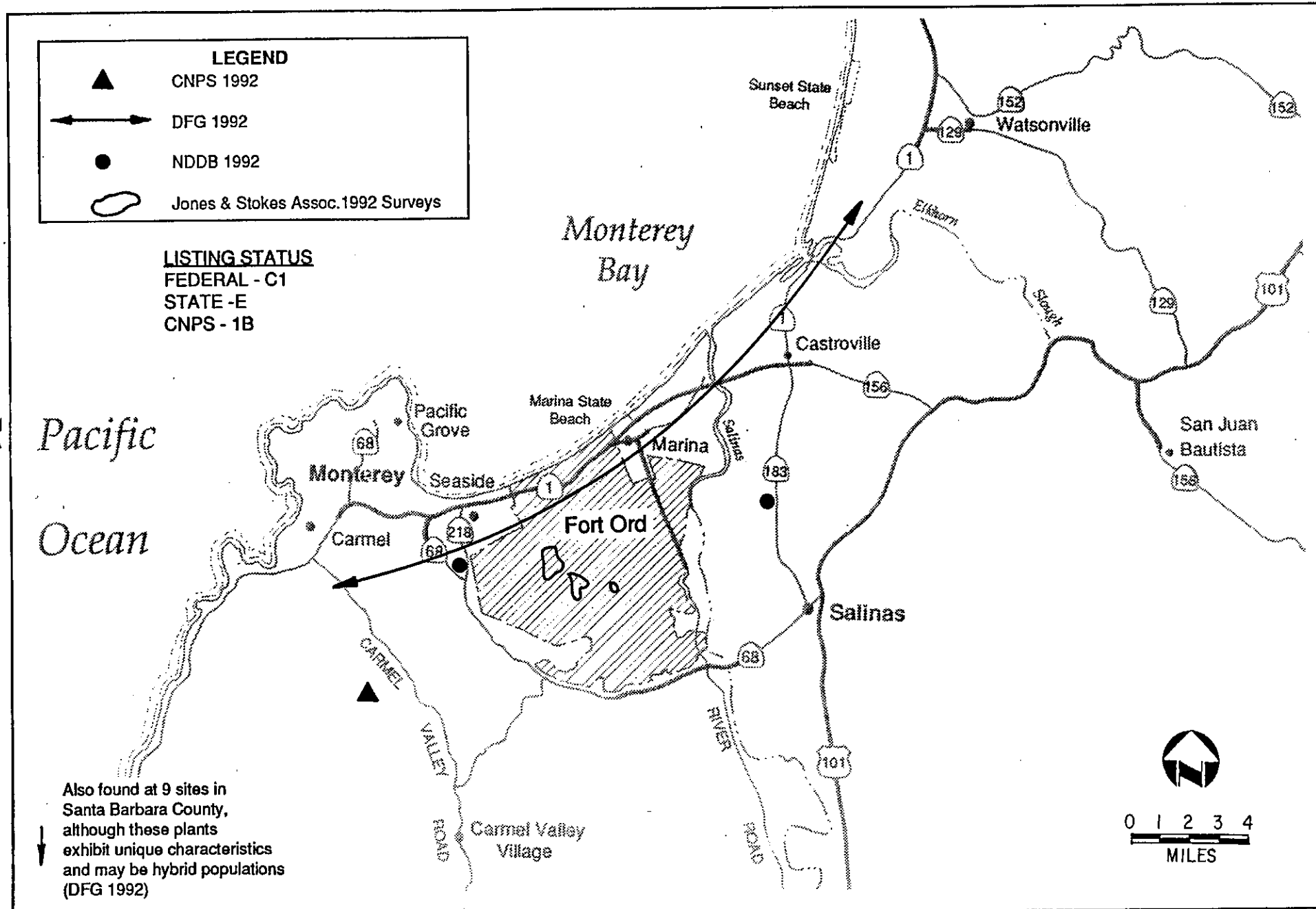


Figure F-8

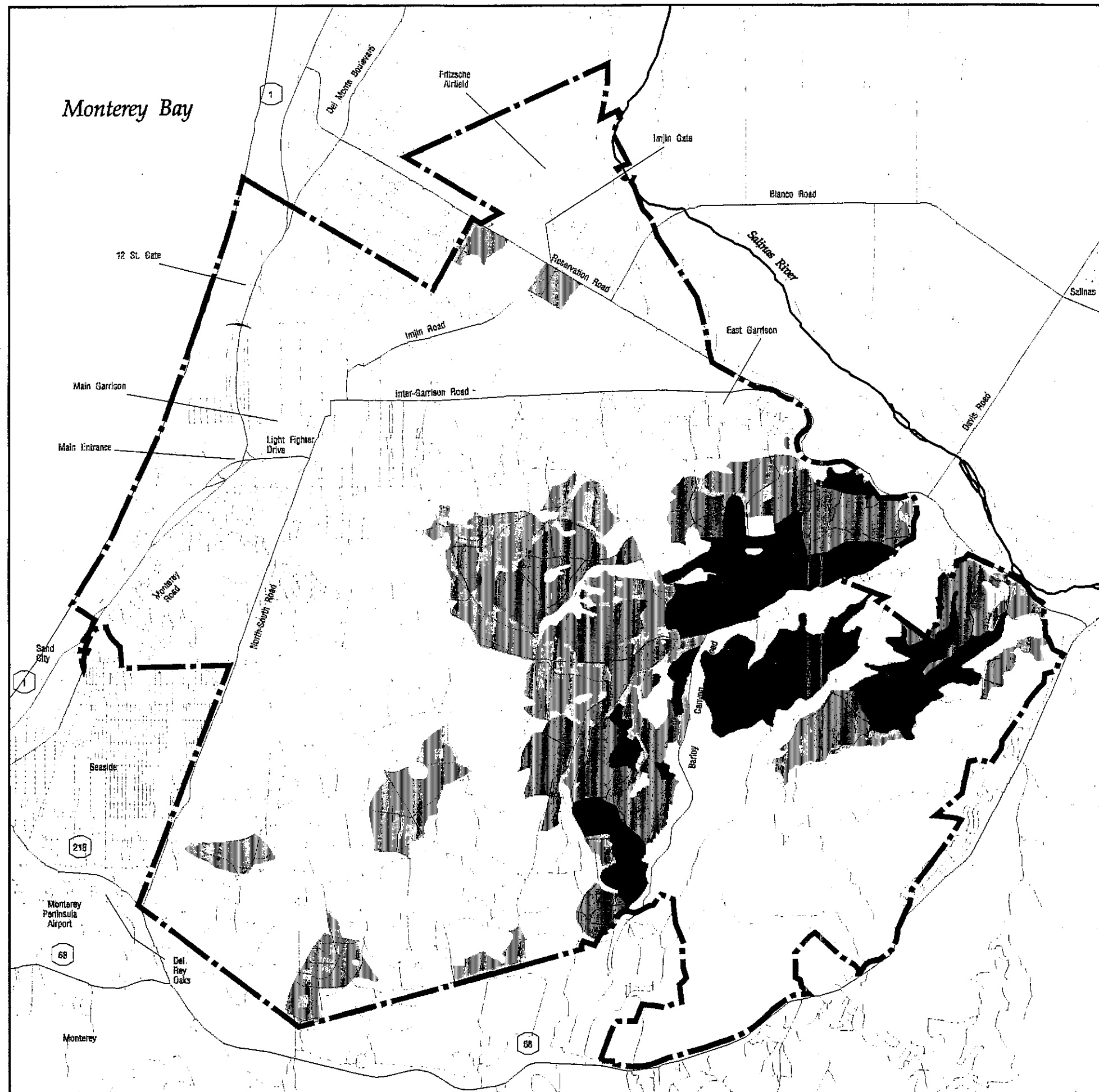
Known Distribution of Seaside Bird's-Beak (*Cordylanthus rigidus* var. *littoralis*)



F-6

Figure F-9

Known Distribution of Toro Manzanita  
(*Arctostaphylos montereyensis*)  
at Fort Ord



**Listing Status**

Federal - C2

State - none

CNPS - 1B

**Density of Occurrence**

 Low Density

 Medium Density

 High Density



Scale 1:60,000

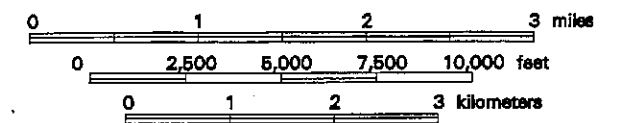
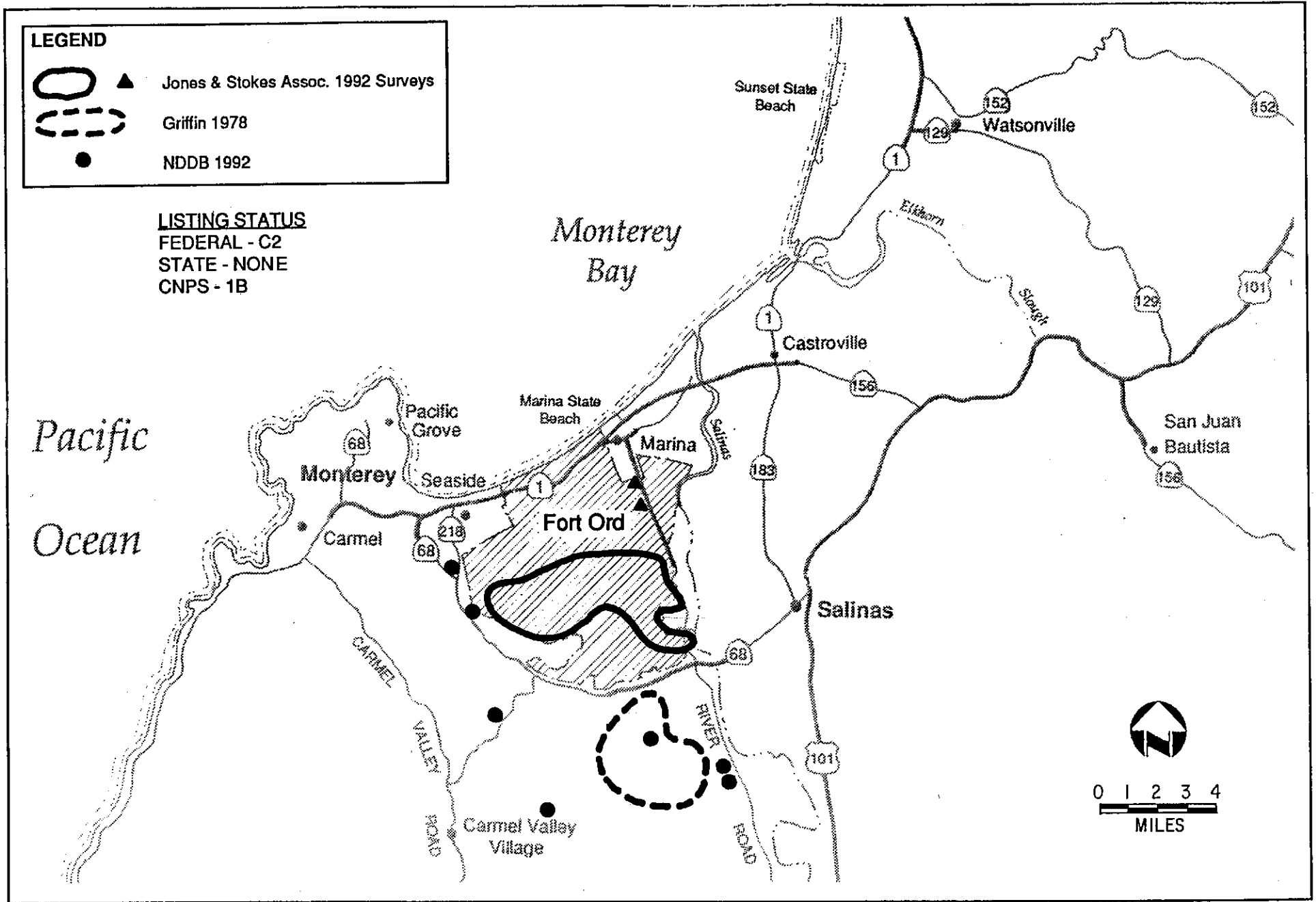




Figure F-10

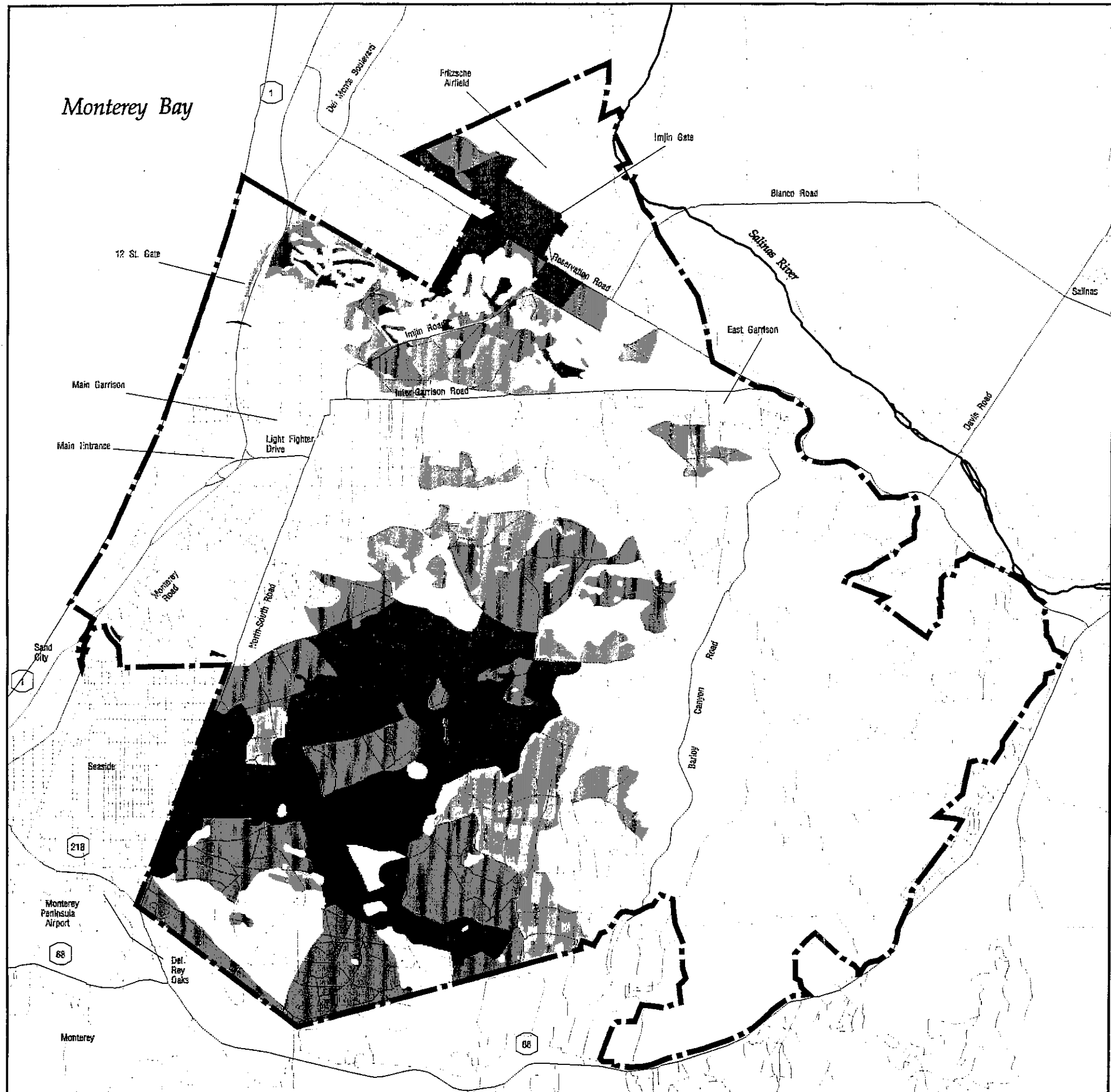
Known Distribution of Toro Manzanita (*Arctostaphylos montereyensis*)



F-7




Figure F-11

Known Distribution of Sandmat Manzanita  
(*Arctostaphylos pumila*) at Fort Ord



**Listing Status**  
Federal - C2  
State - none  
CNPS - 1B

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density

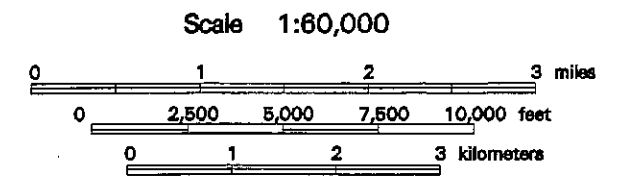
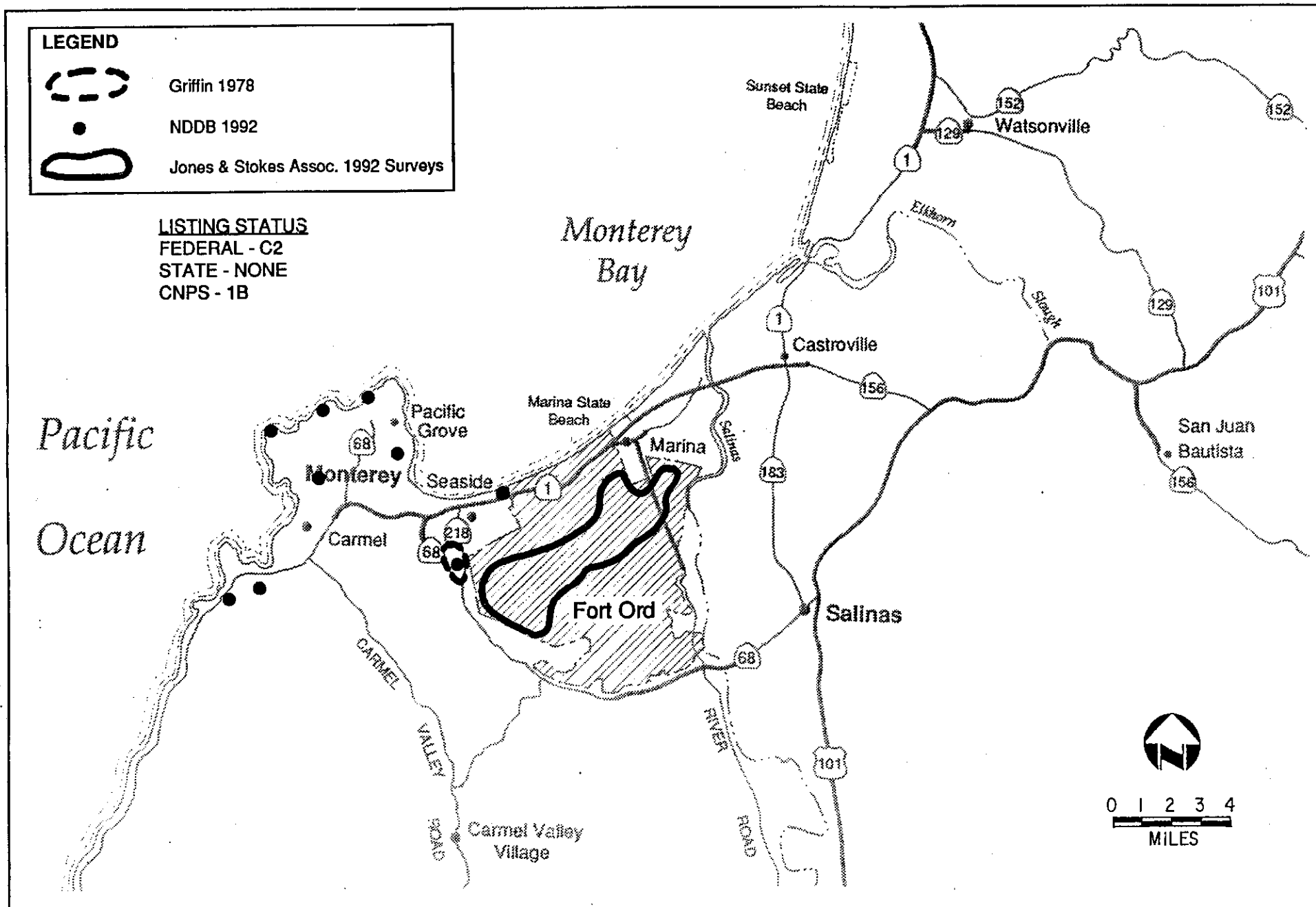


Figure F-12

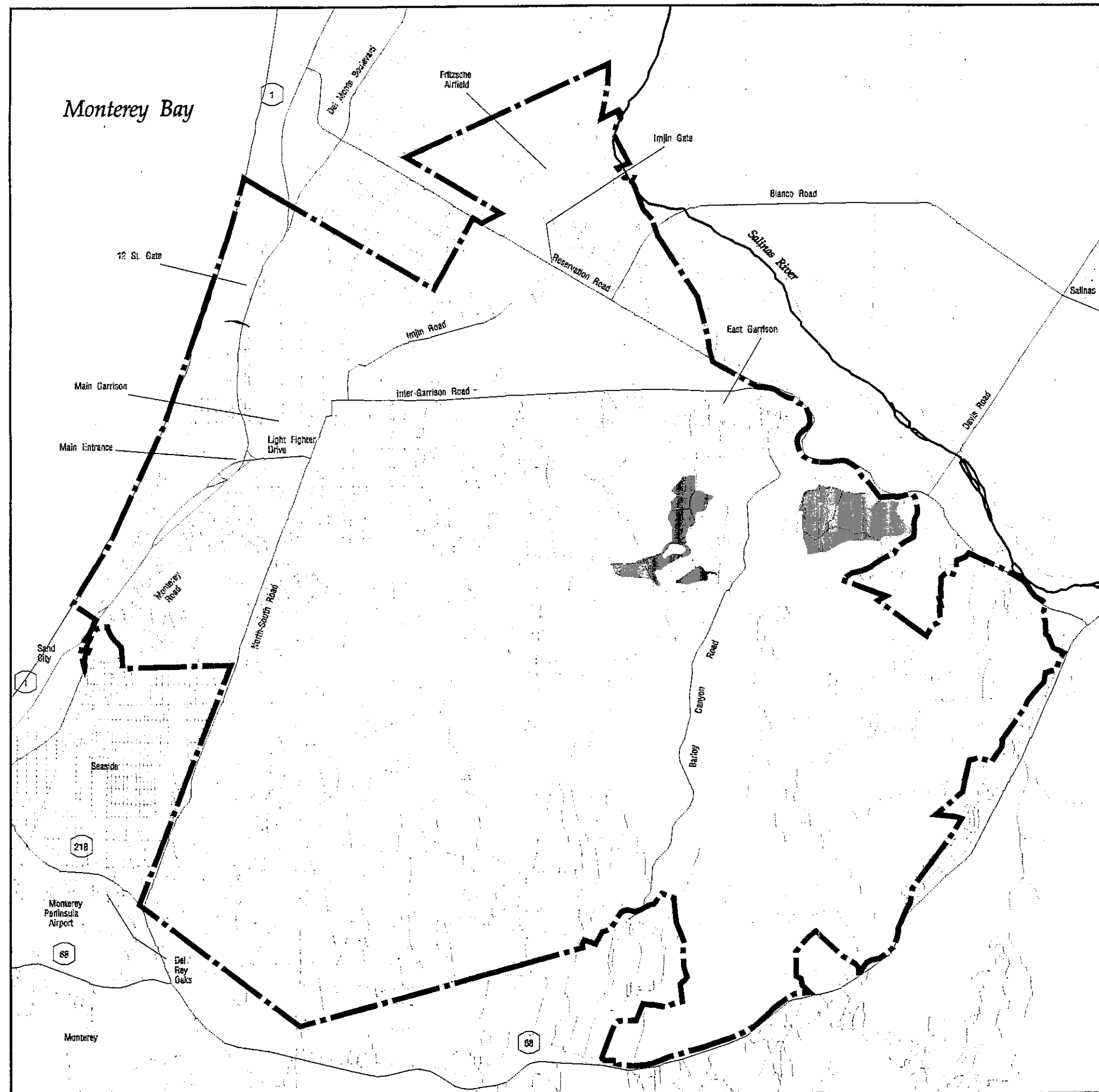
Known Distribution of Sandmat Manzanita (*Arctostaphylos pumila*)



F-8

Figure F-13




Known Distribution of Hickman's onion  
(*Allium hickmanii*) at Fort Ord

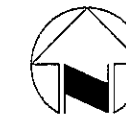


**Listing Status**

Federal - C1  
State - none  
CNPS - 1B

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000

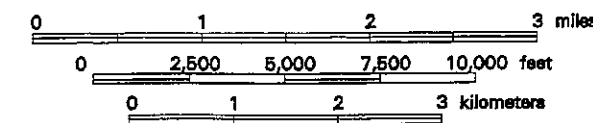
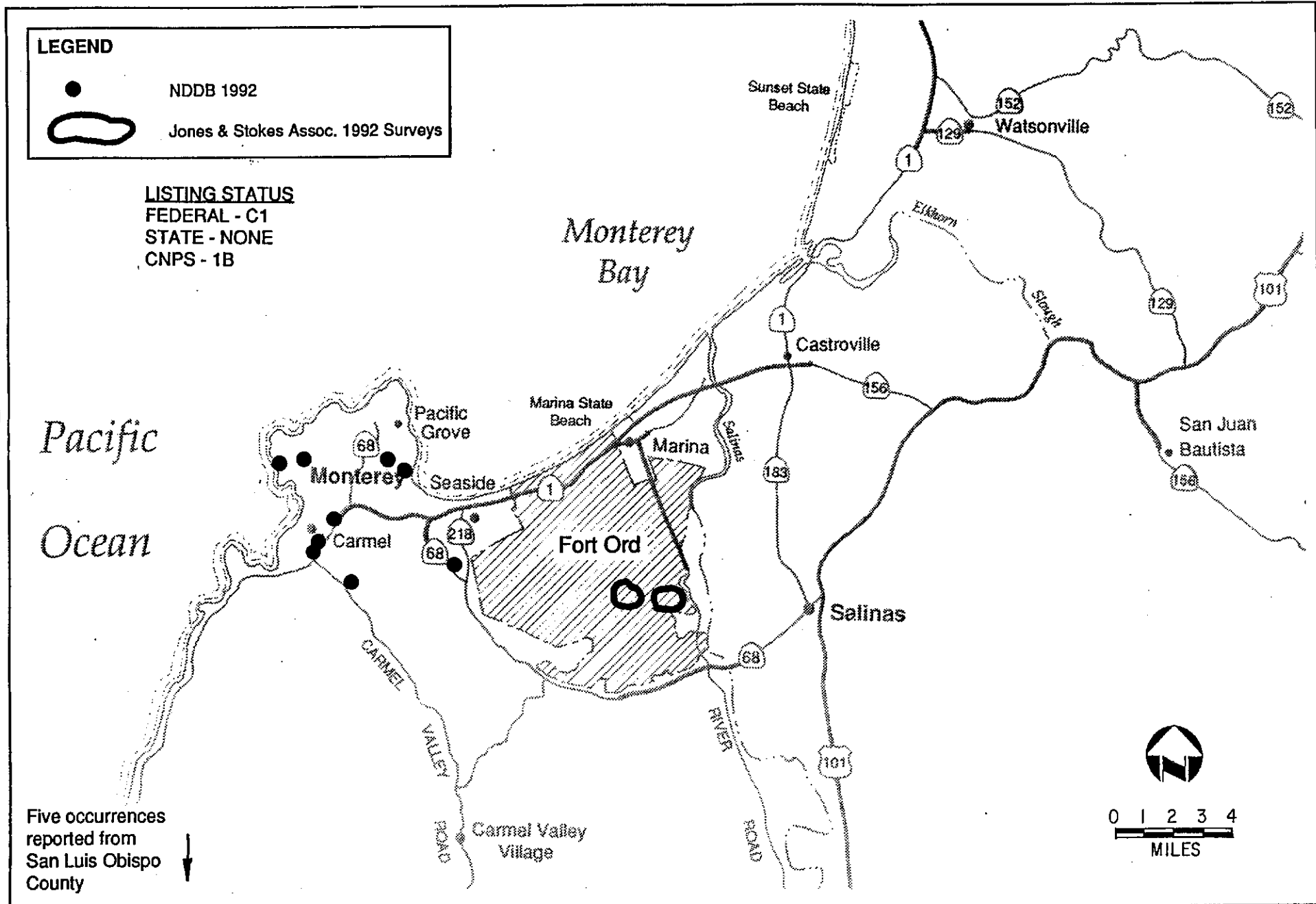


Figure F-14

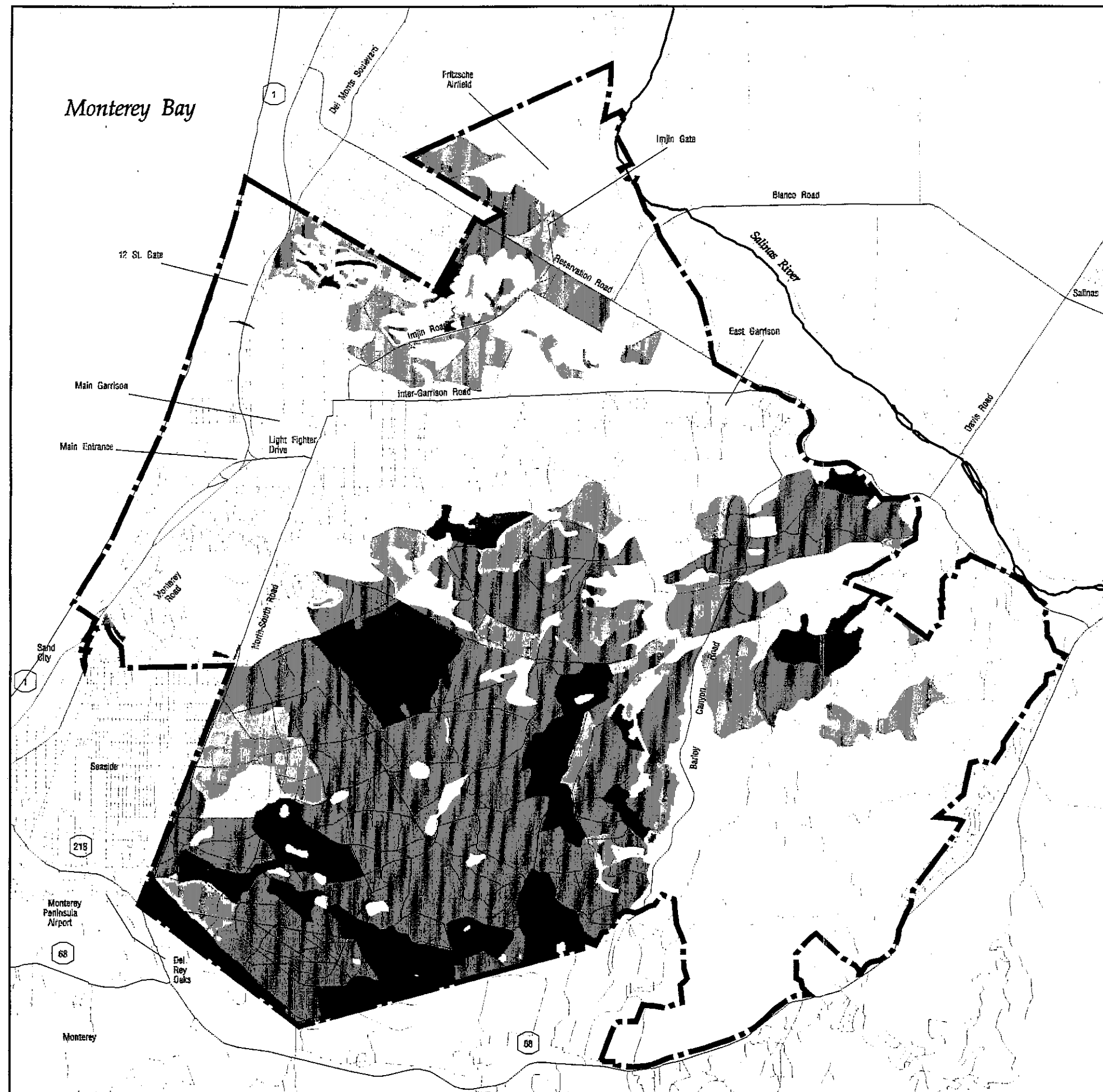
Known Distribution of Hickman's Onion (*Allium hickmanii*)



F-9

Figure F-15

Known Distribution of Monterey Ceanothus  
(*Ceanothus rigidus*) at Fort Ord



**Listing Status**

Federal - C2

State - none

CNPS - 4

**Density of Occurrence**

 Low Density

 Medium Density

 High Density



Scale 1:60,000

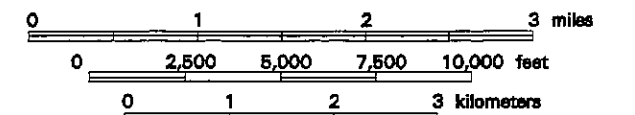
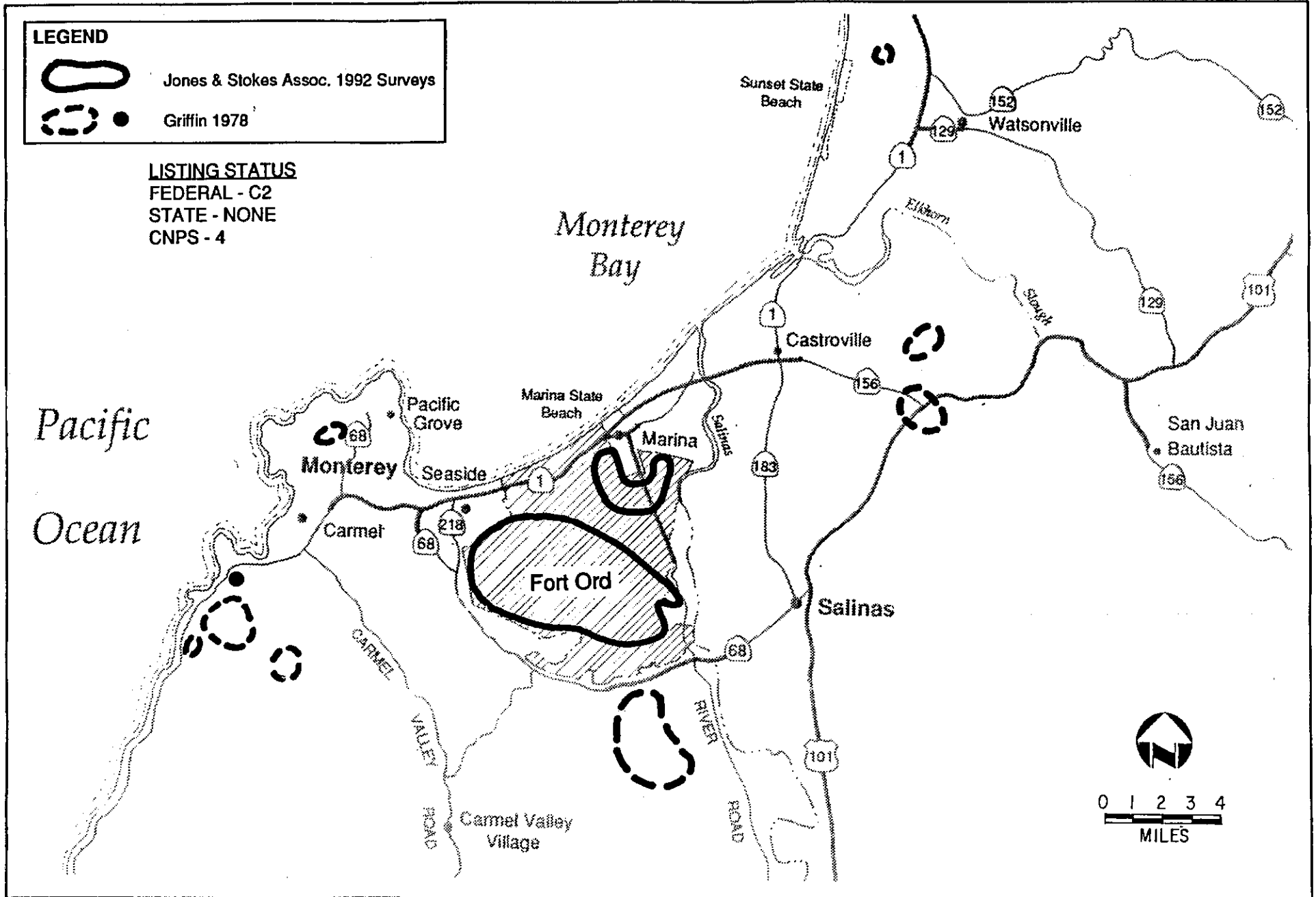


Figure F-16

Known Distribution of Monterey Ceanothus (*Ceanothus rigidus*)



F-10

Figure F-17

Known Distribution of Eastwood's  
*Ericameria (Ericameria fasciculata)*  
at Fort Ord

**Listing Status**

Federal - C2

State - none

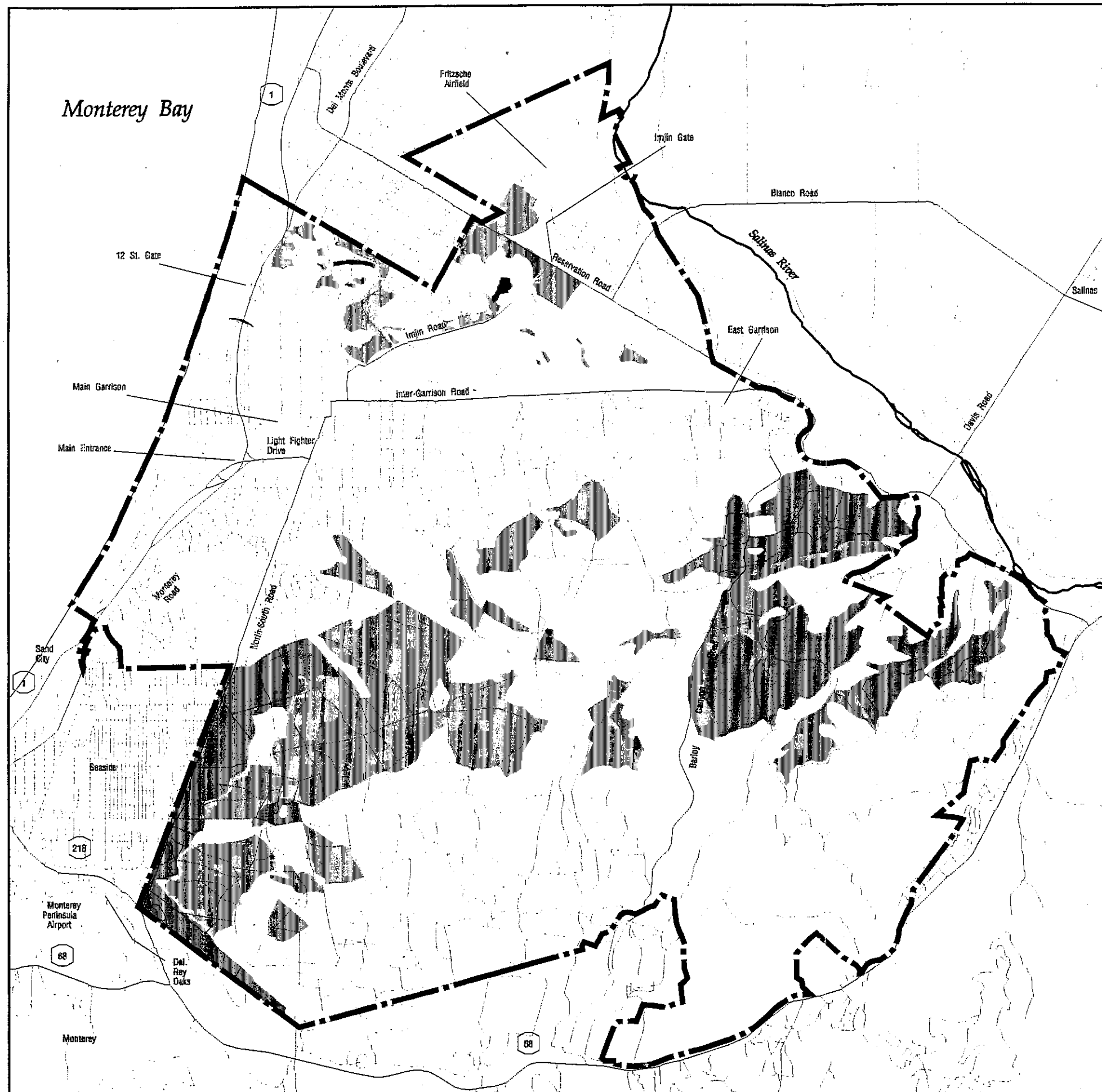
CNPS - 1B

**Density of Occurrence**

 Low Density

 Medium Density

 High Density



Scale 1:60,000

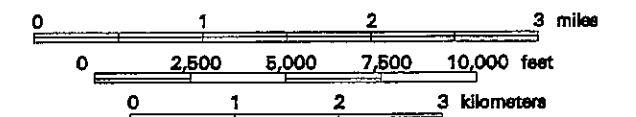
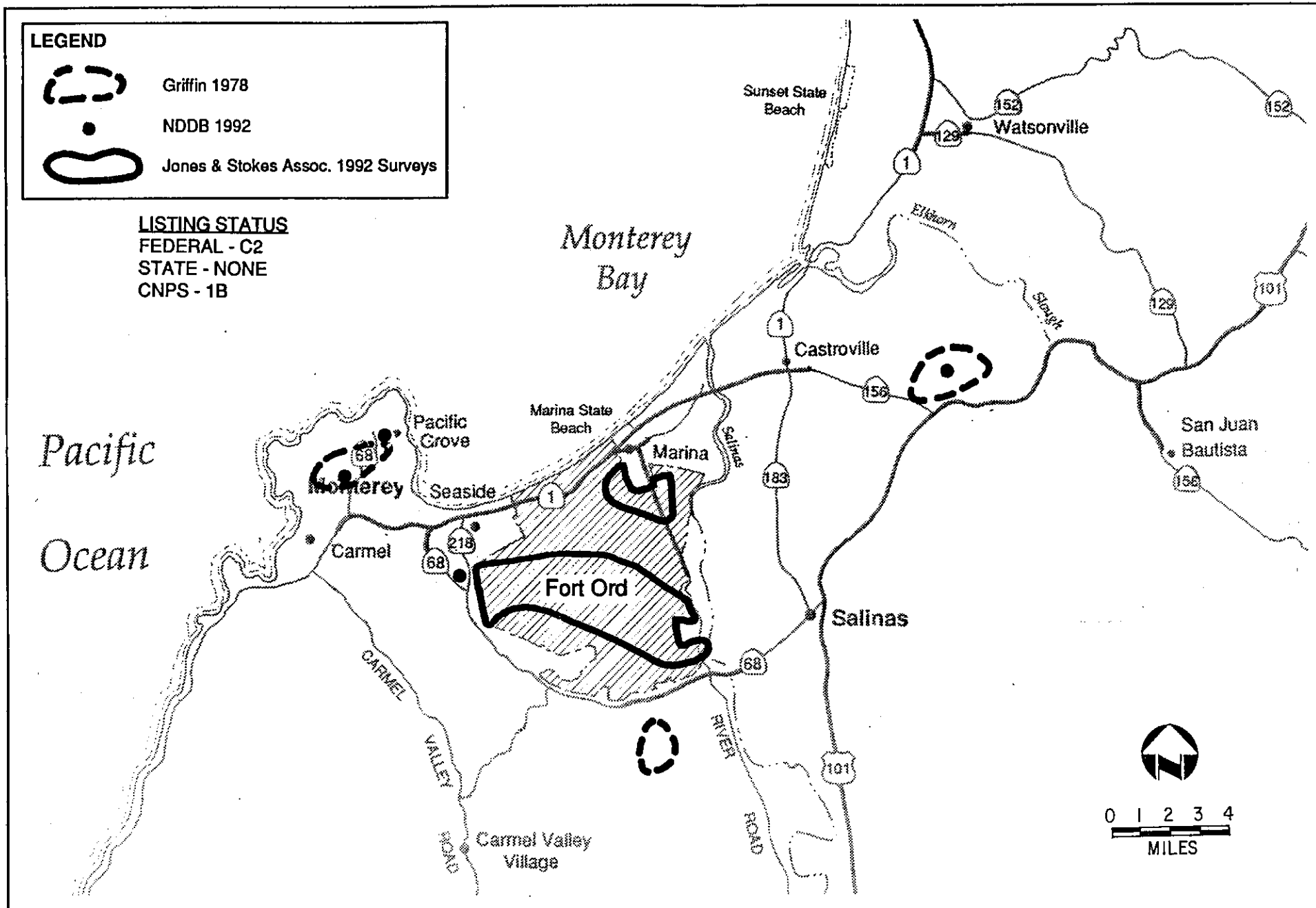




Figure F-18

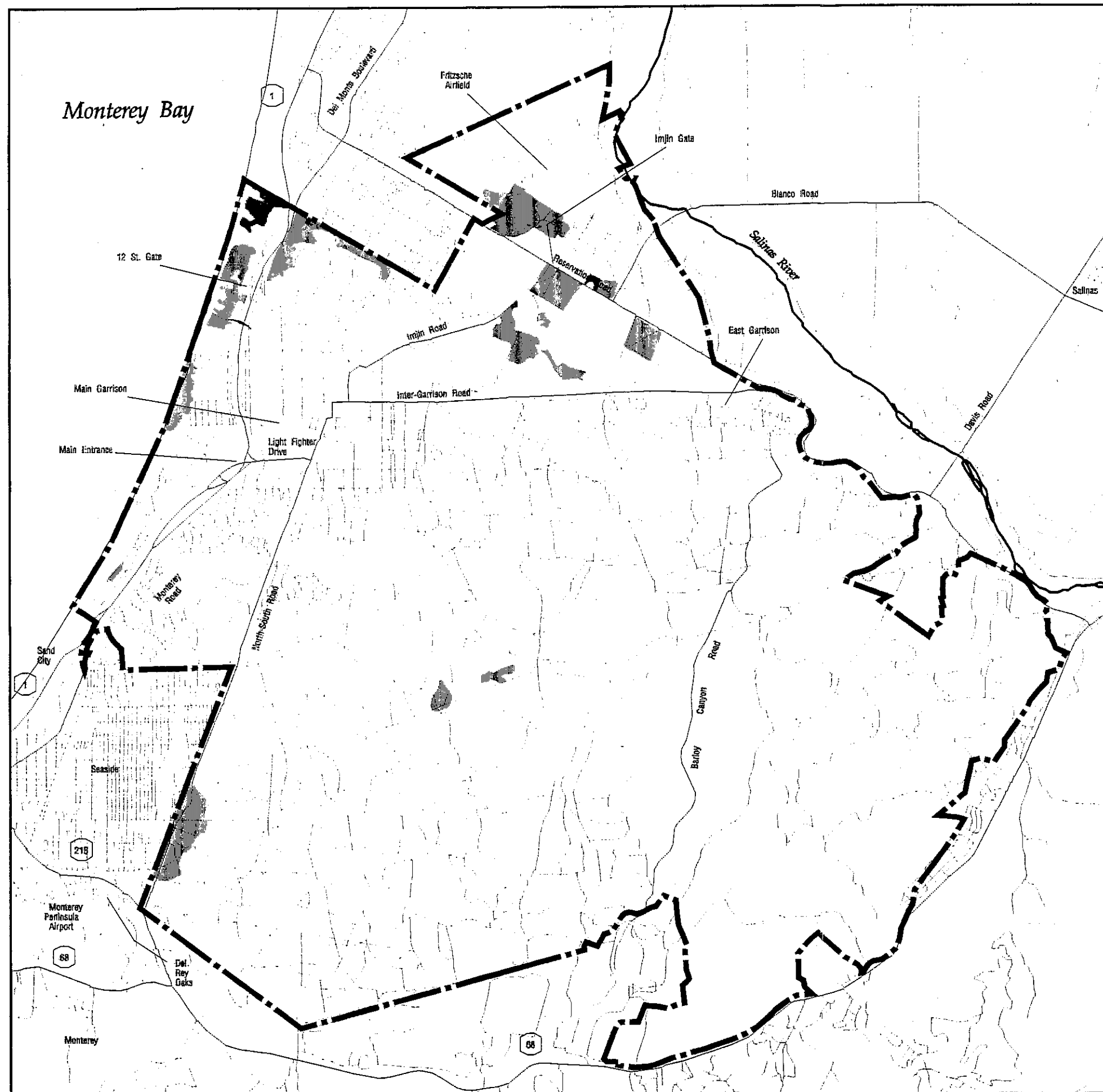
Known Distribution of Eastwood's *Ericameria* (*Ericameria fasciculata*)



F-11

Figure F-19




Known Distribution of Coast Wallflower  
(*Erysimum ammophilum*) at Fort Ord



**Listing Status**

Federal - C2  
State - none  
CNPS - 1B

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000

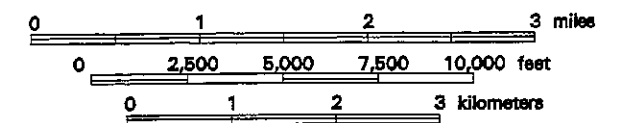





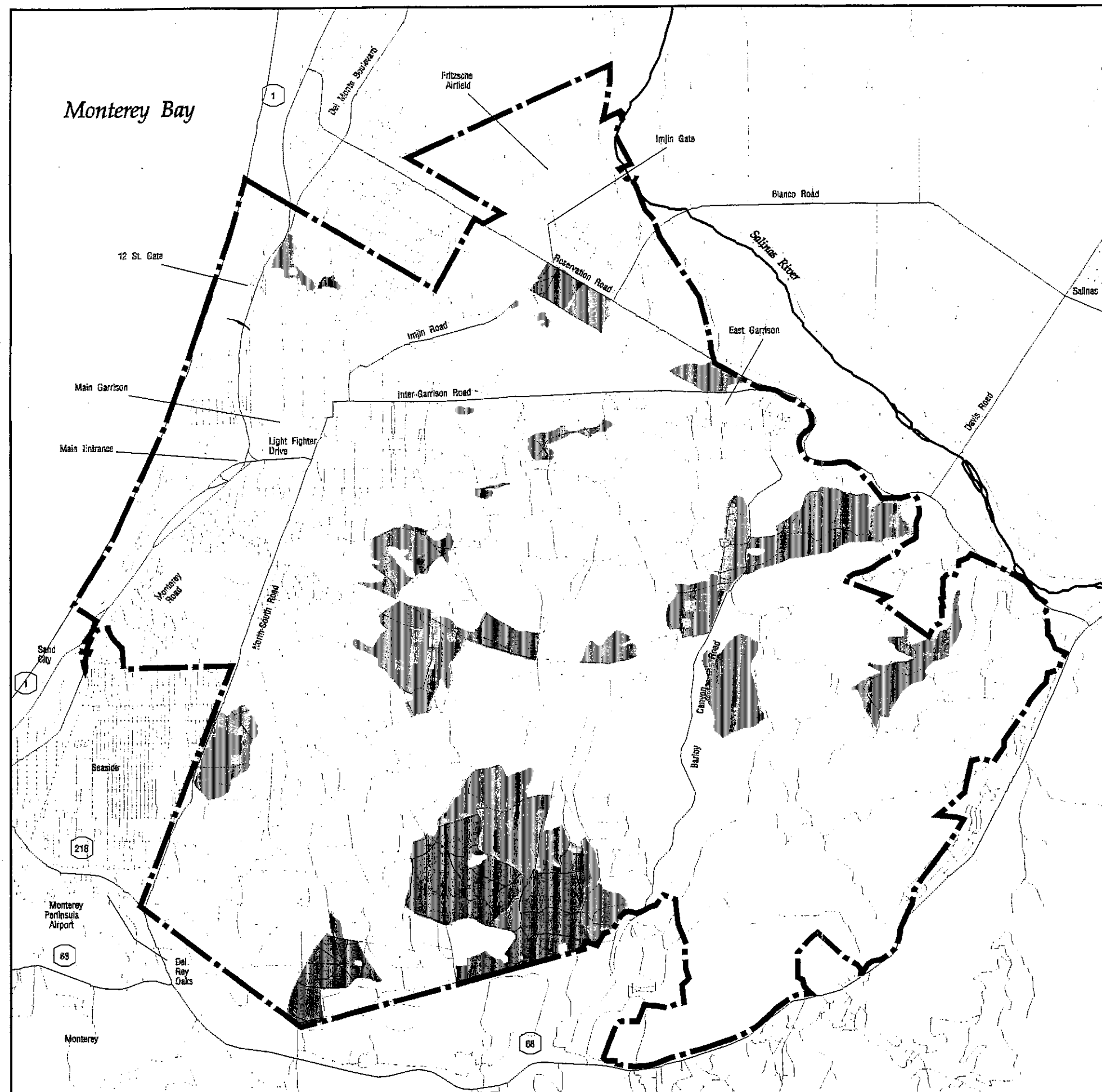
Figure 20

Known Distribution of Wedge-leaved  
Horkelia (*Horkelia cuneata* ssp. *sericea*)  
at Fort Ord

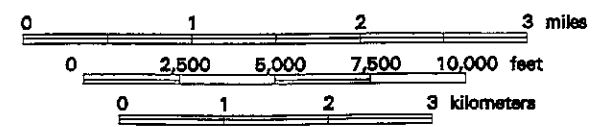
**Listing Status**  
Federal - C2  
State - none  
CNPS - 1B

**Density of Occurrence**

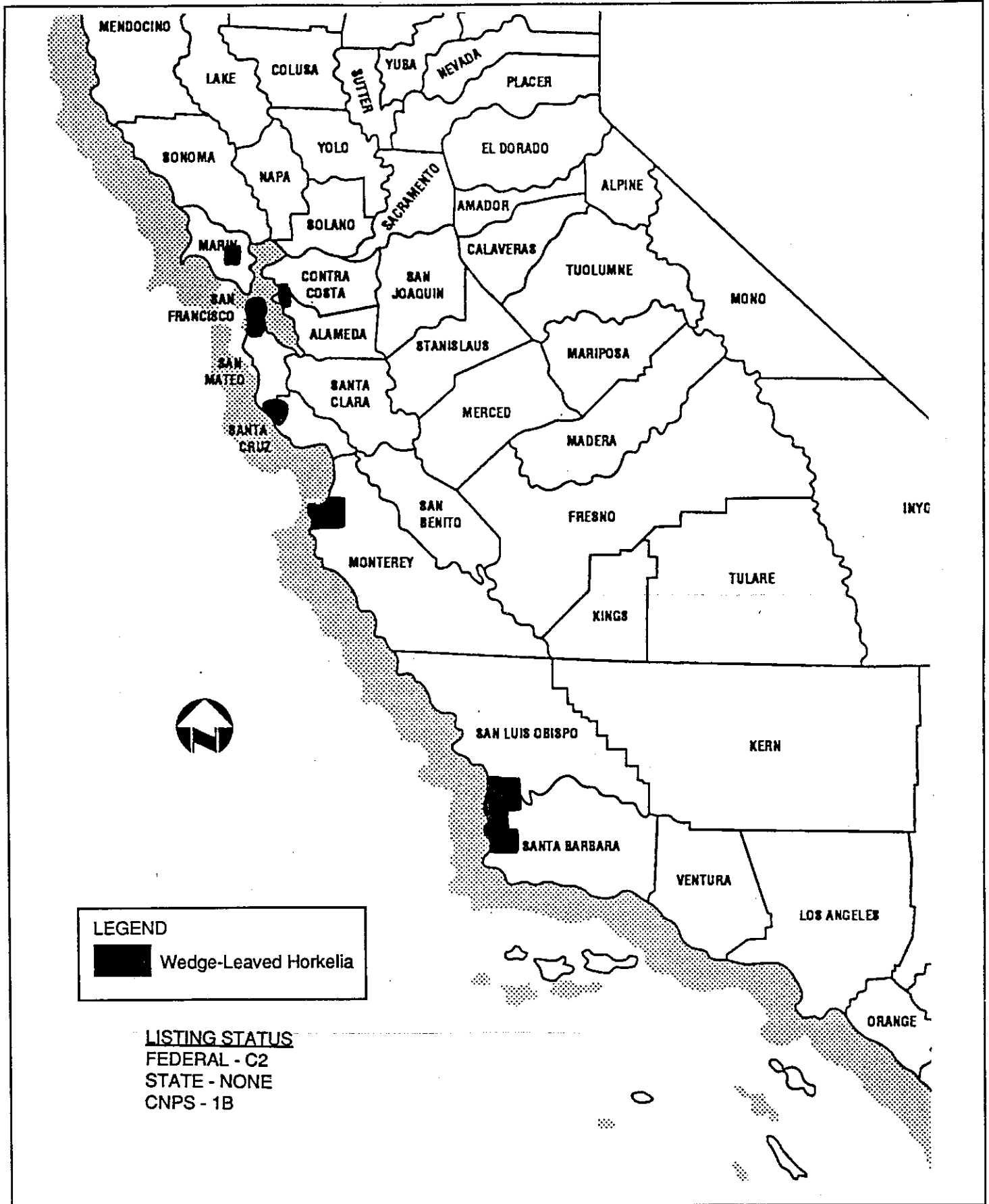
-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000



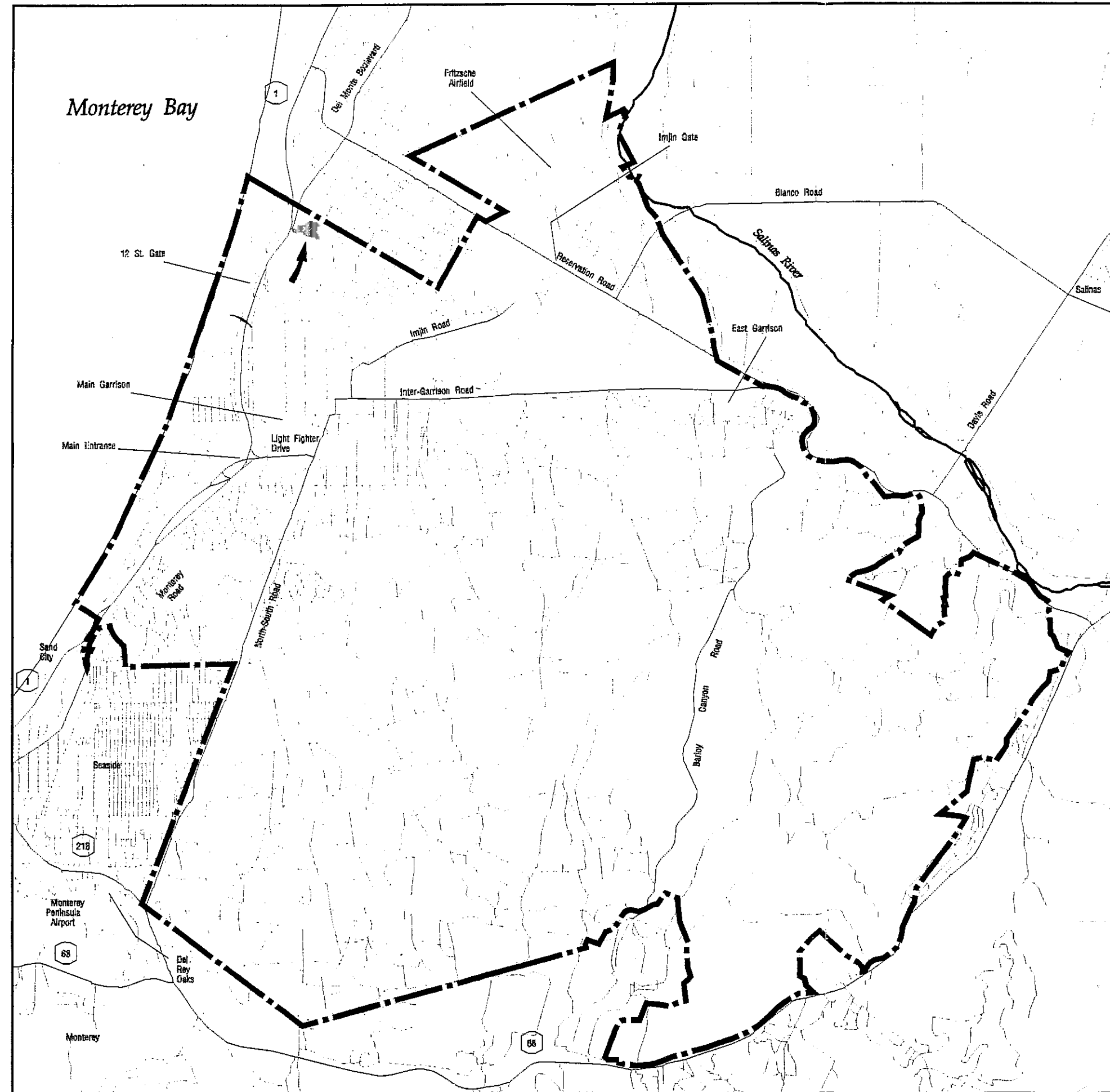
Known Distribution of Wedge-Leaved Horkelia (*Horkelia cuneata sericea*)



Source: CNPS 1988

Figure F-22




Known Distribution of Yadon's Piperia  
(*Piperia yadoni*) at Fort Ord



**Listing Status**  
Federal - none\*  
State - none  
CNPS - 1B

\*Listing package is in preparation by USFWS

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density

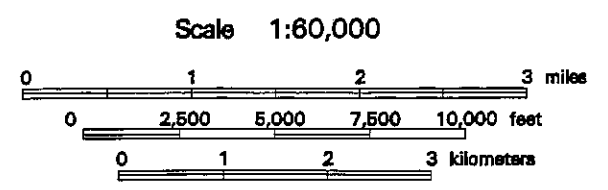
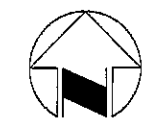





Figure F-23

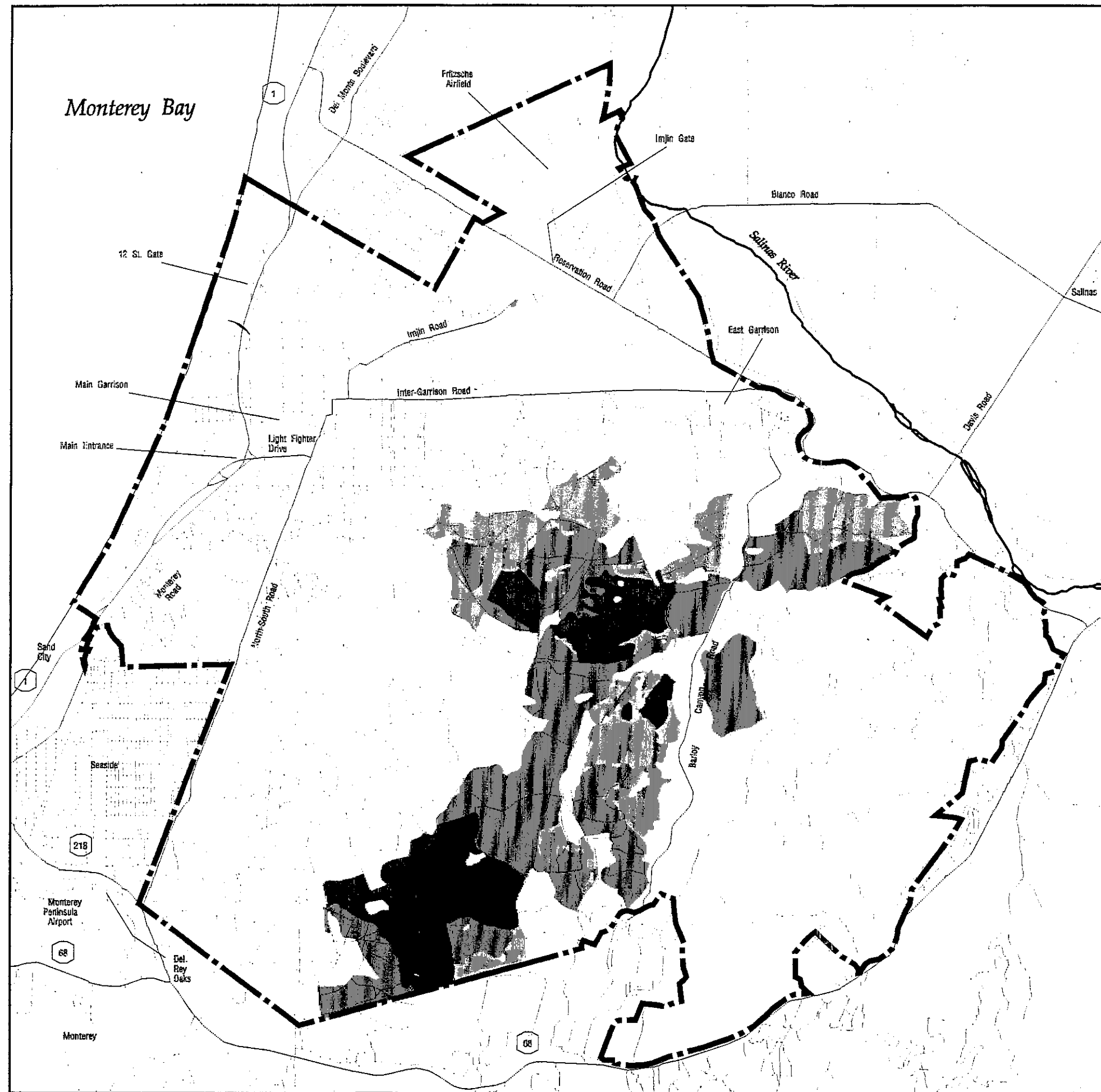
Known Distribution of Hooker's Manzanita  
(*Arctostaphylos hookeri* ssp. *hookeri*)  
at Fort Ord

**Listing Status**

Federal - none  
State - none  
CNPS - 1B

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000

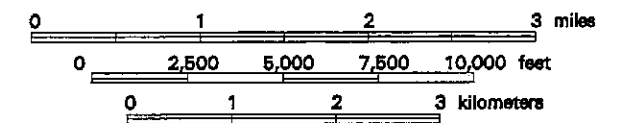
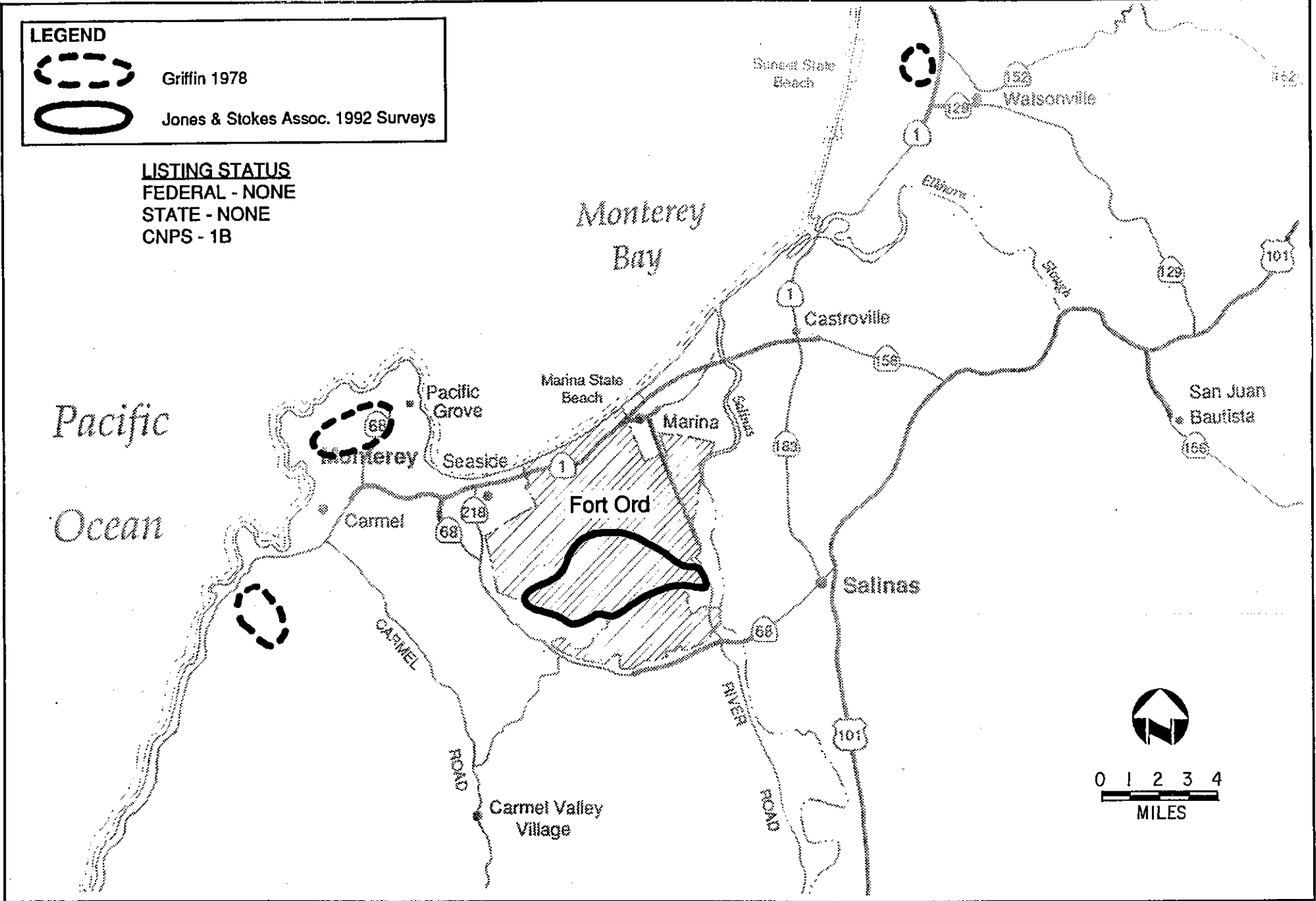


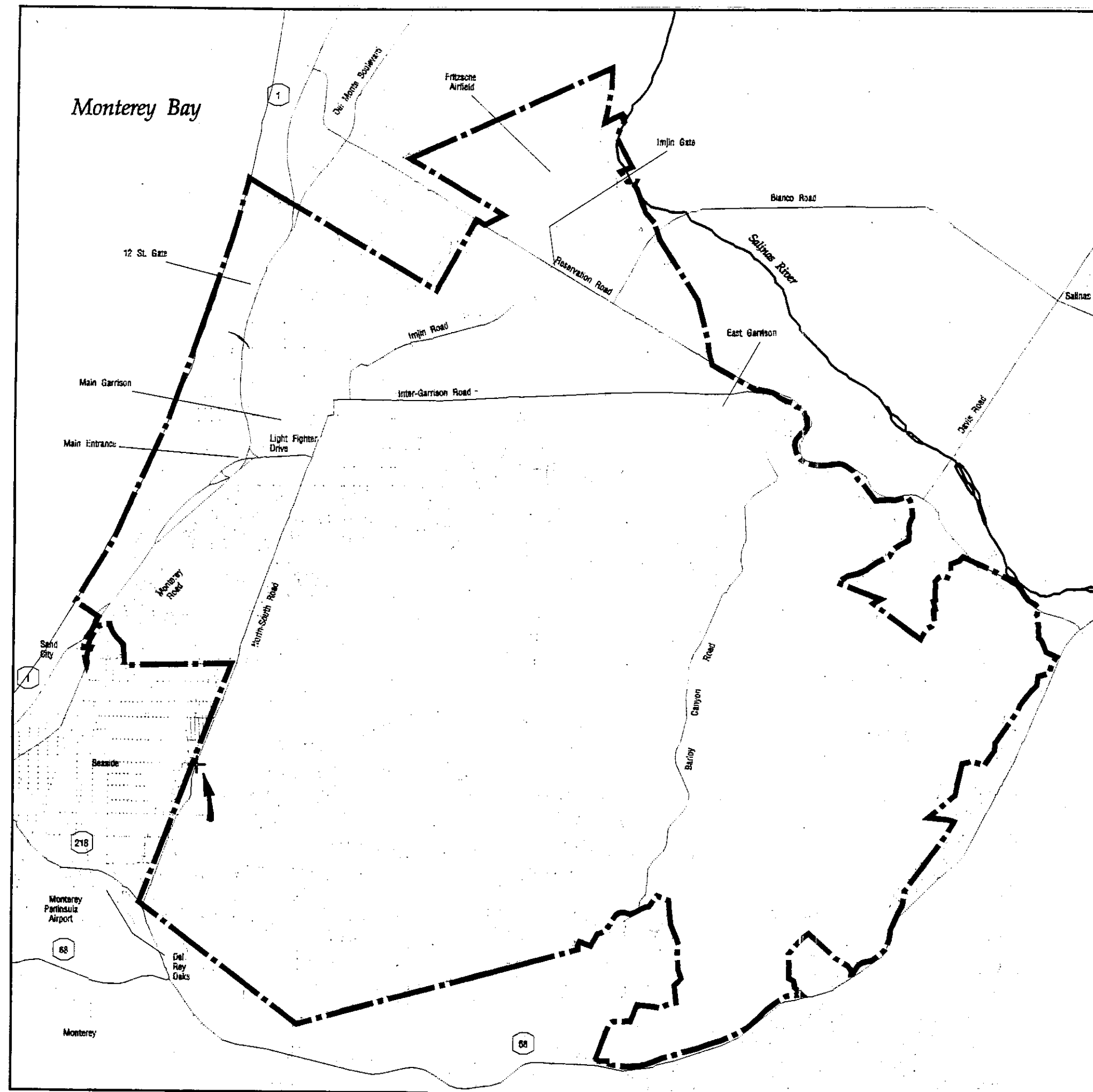
Figure F-24

Known Distribution of Hooker's Manzanita (*Arctostaphylos hookeri*)



F-13

Known Distribution of Pajaro Manzanita (*Arctostaphylos pajaroensis*) at Fort Ord



**Listing Status**

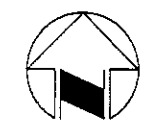
Federal - none

State - none

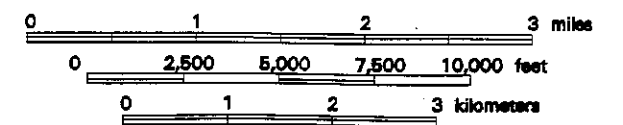
CNPS - 4



Specific Population Location

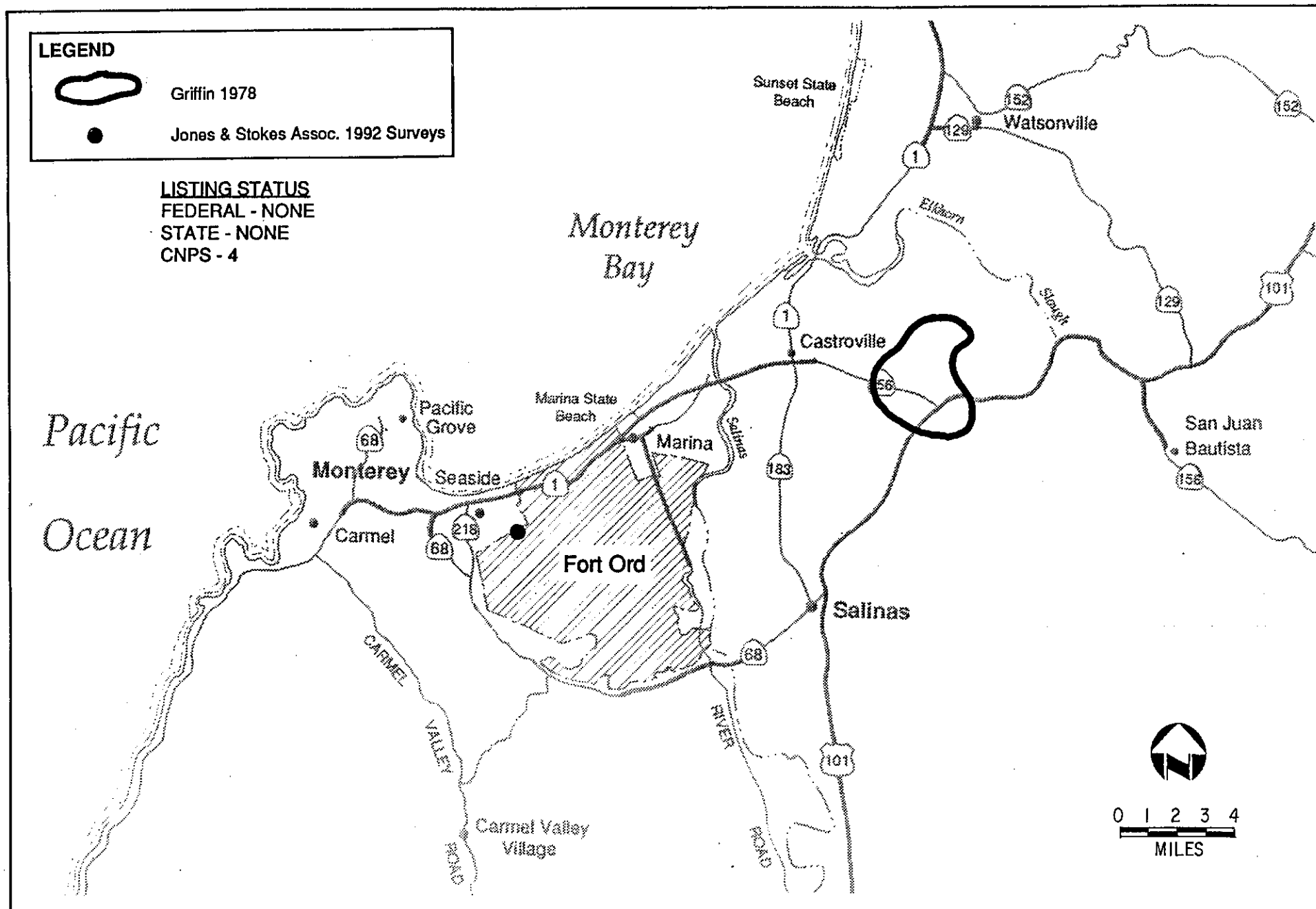


Scale 1:60,000





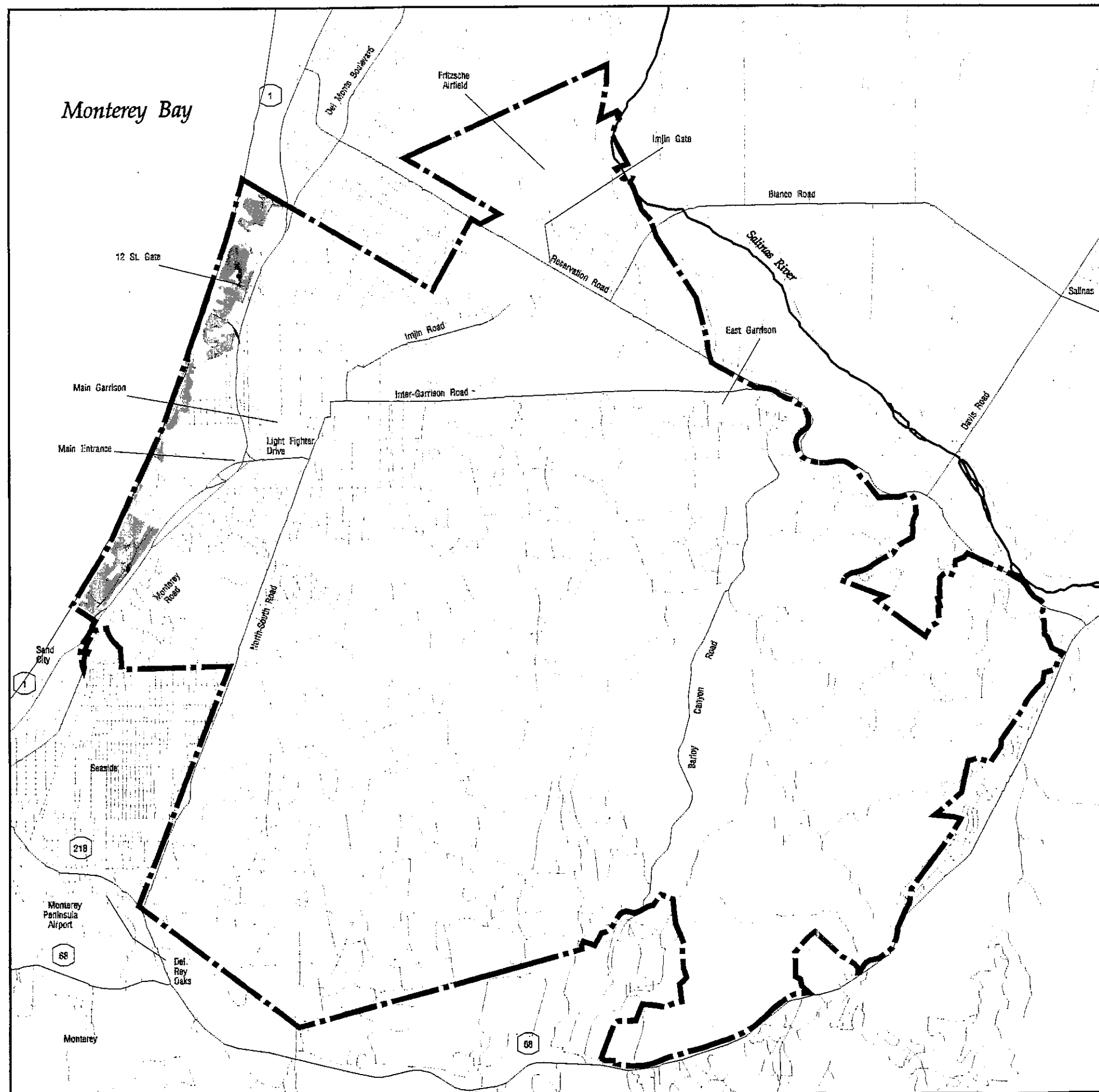
Known Distribution of Pajaro Manzanita (*Arctostaphylos pajaroensis*)



F-14

Figure F-27

Known Distribiton of Monterey Indian  
Paintbrush (*Castilleja latifolia*)  
at Fort Ord



**Listing Status**

Federal - none

State - none

CNPS - 4

**Density of Occurrence**

 Low Density

 Medium Density

 High Density



Scale 1:60,000

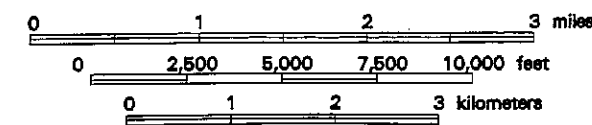
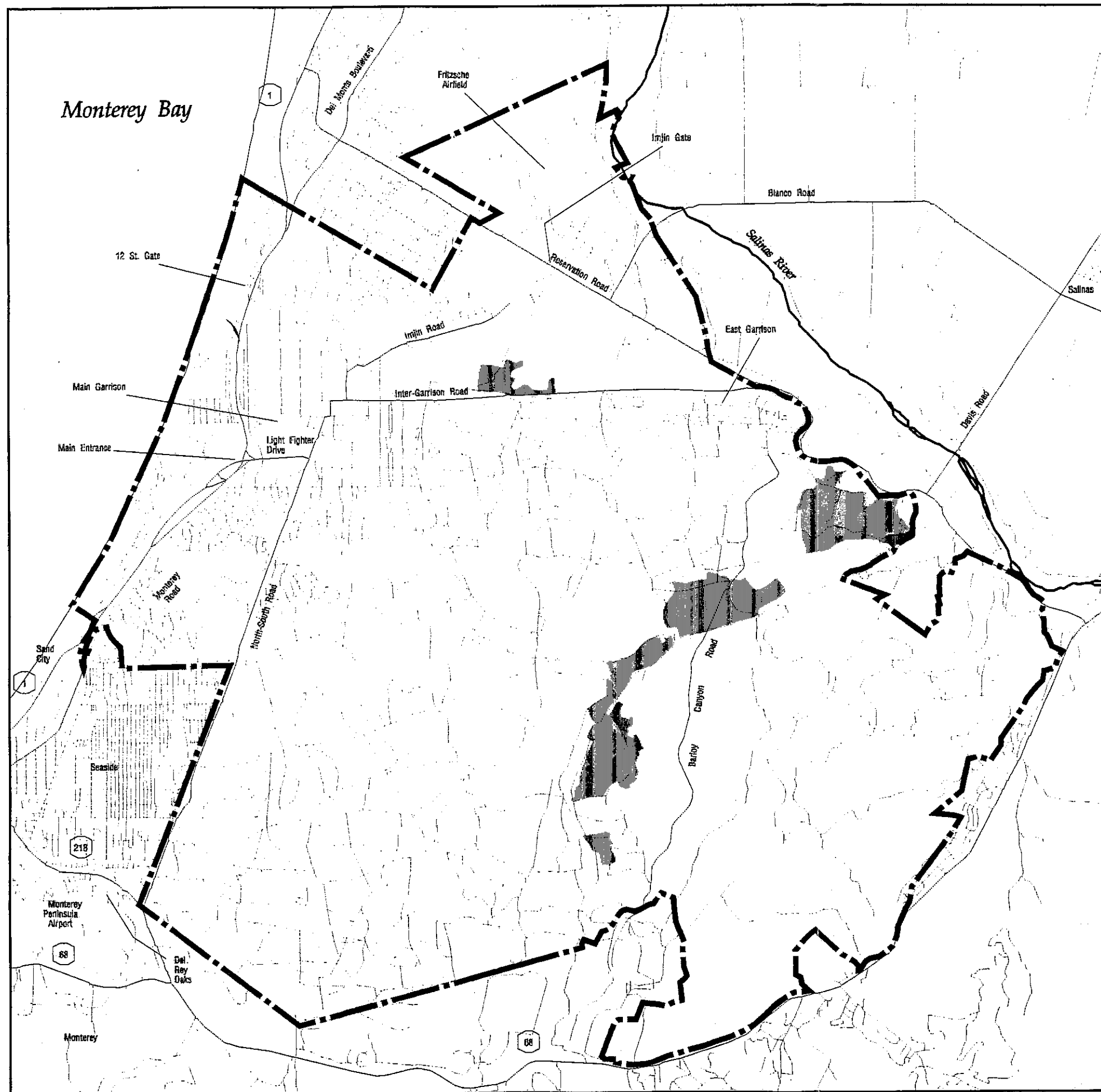


Figure F-28




Known Distribution of Douglas' Spineflower (*Chorizanthe douglasii*) at Fort Ord



**Listing Status**

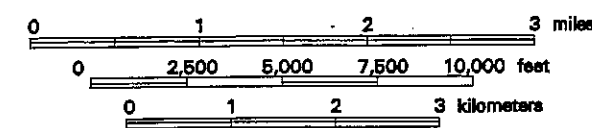
Federal - none  
State - none  
CNPS - 4

**Density of Occurrence**

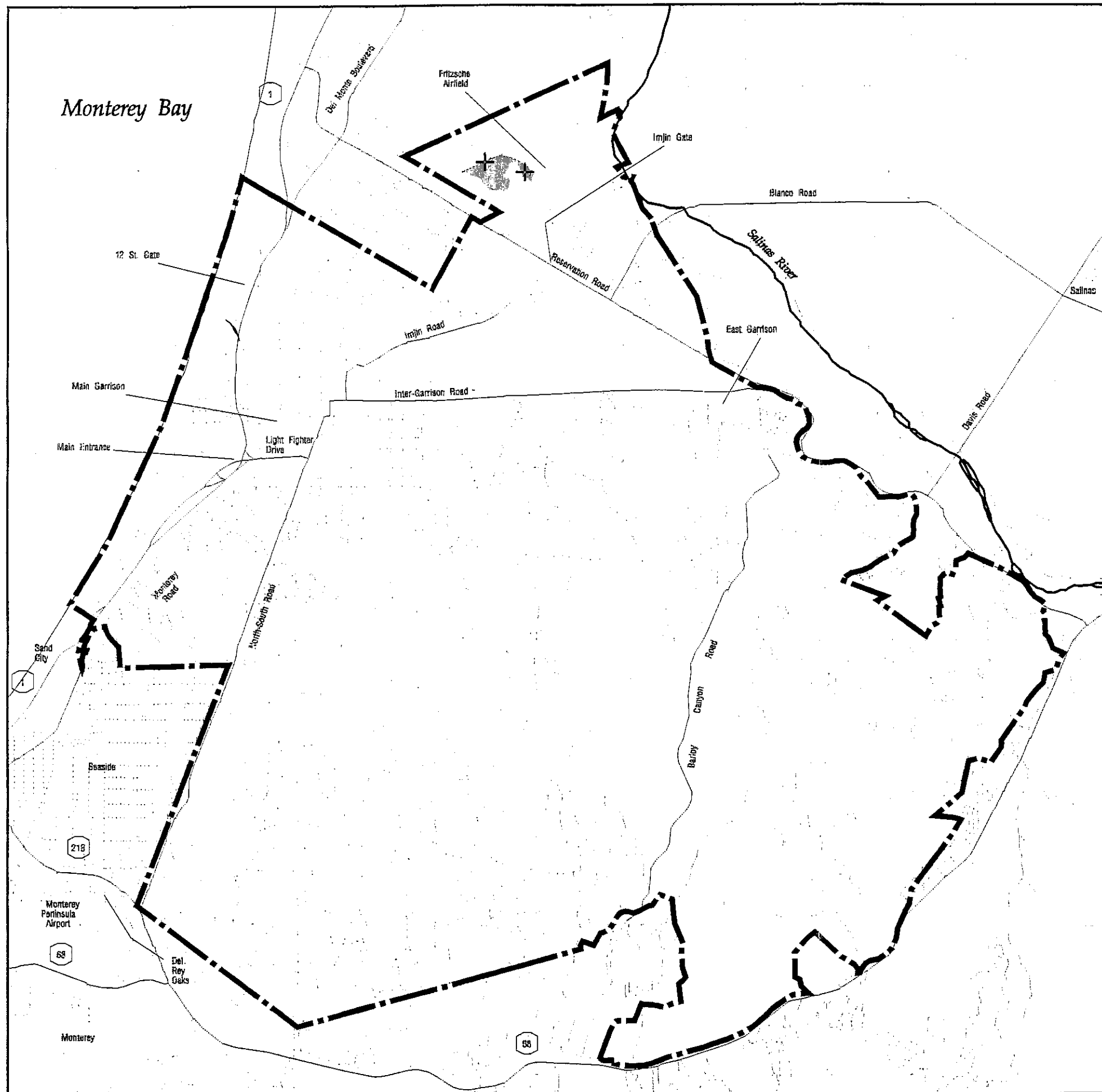
-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000







Known Distribution of Lewis' Clarkia  
(Clarkia lewisii) at Fort Ord

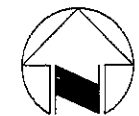


**Listing Status**

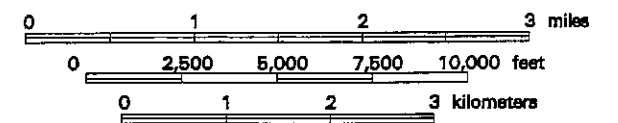
Federal - none  
State - none  
CNPS - 4

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density
-  Specific Population Location



Scale 1:60,000



Known Distribution of Virgate Eriastrum  
(*Eriastrum virgatum*) at Fort Ord

**Listing Status**

Federal - none

State - none

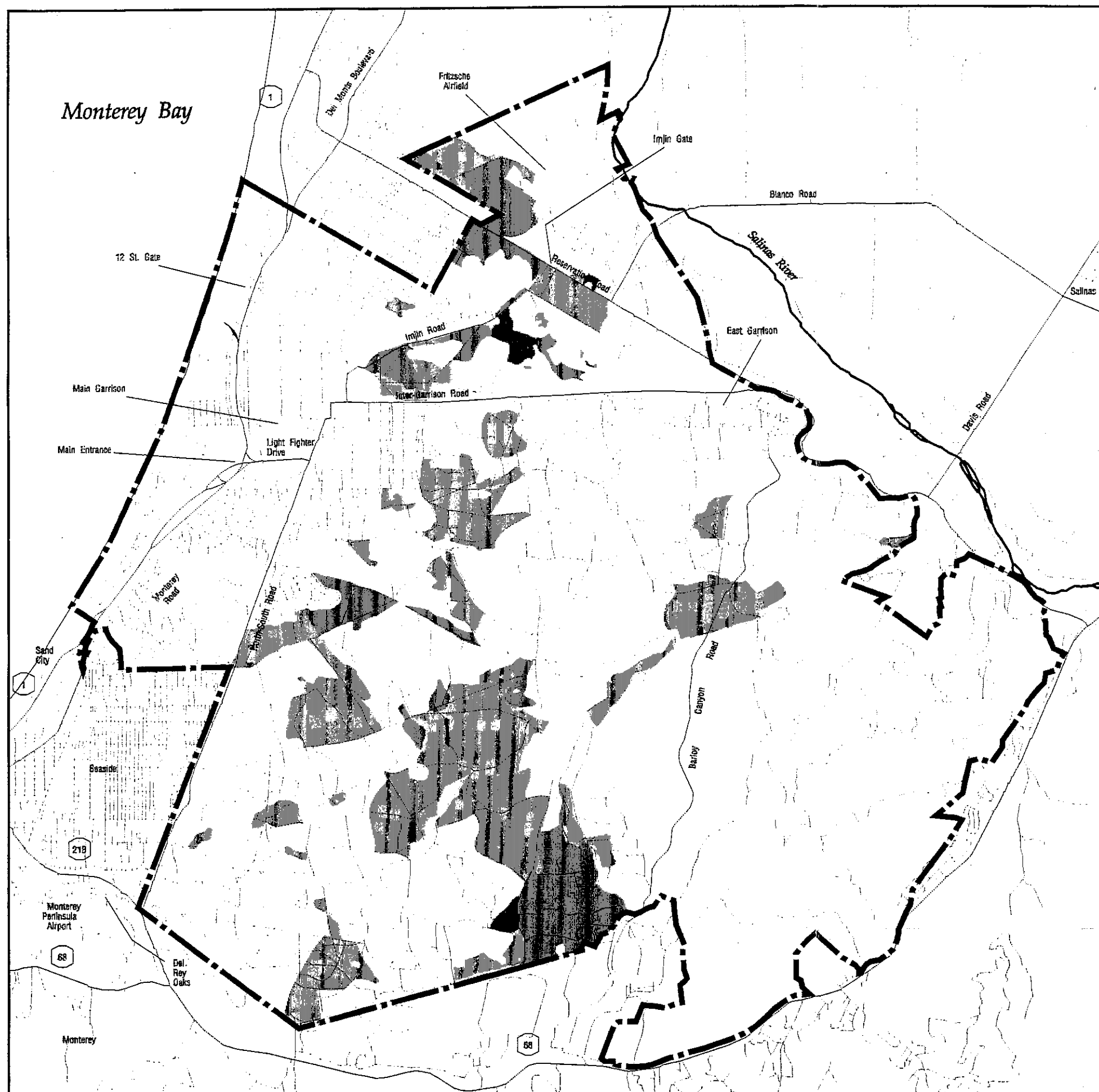
CNPS - 4

**Density of Occurrence**

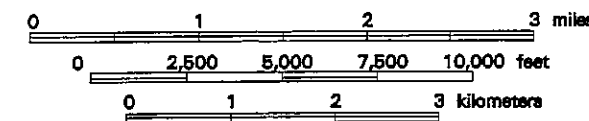
 Low Density

 Medium Density

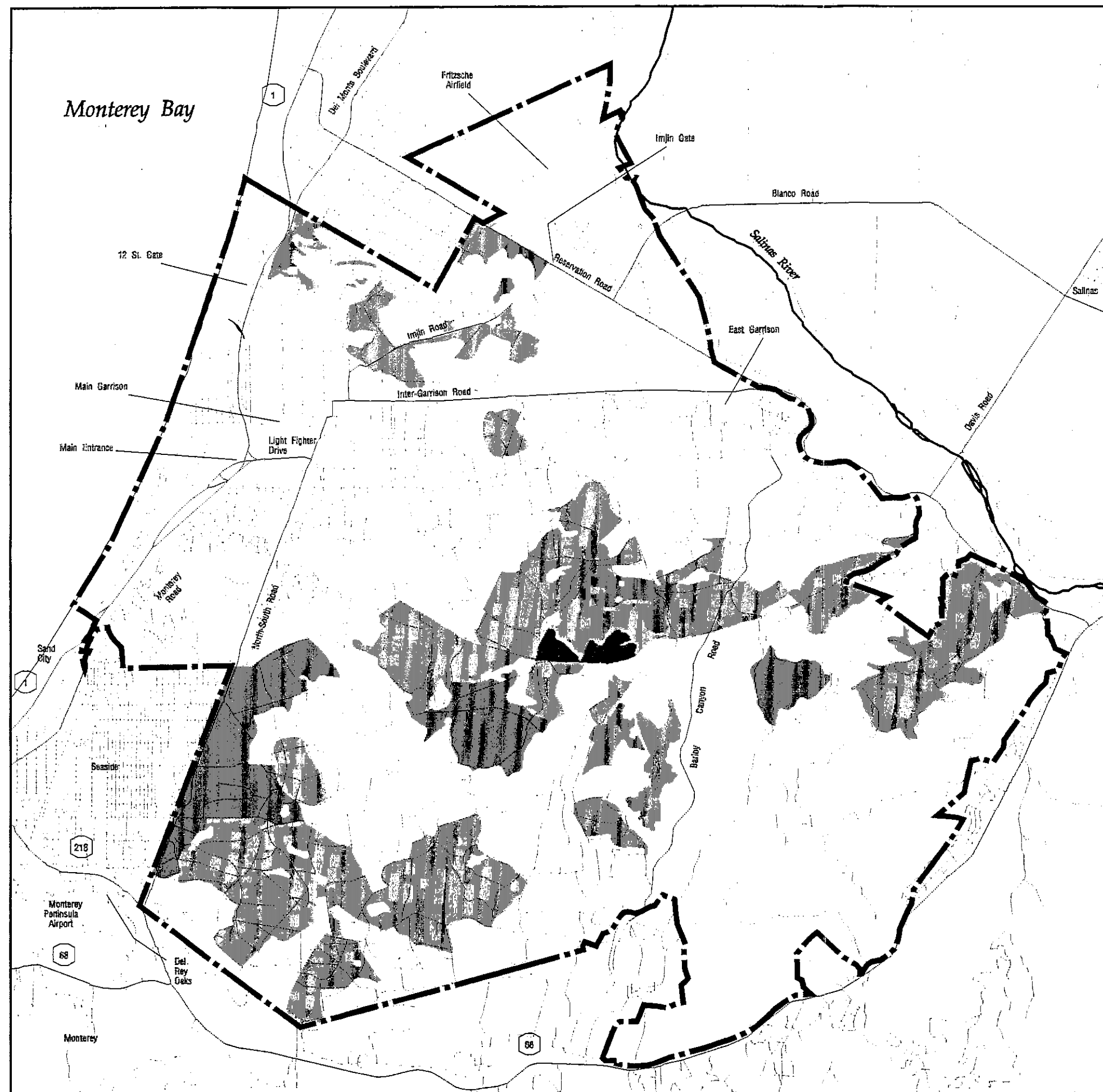
 High Density



Scale 1:60,000






Known Distribution of Small-leaved  
Lomatium (*Lomatium parvifolium*)  
at Fort Ord



**Listing Status**

Federal - none  
State - none  
CNPS - 4

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000

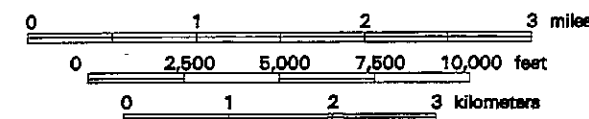
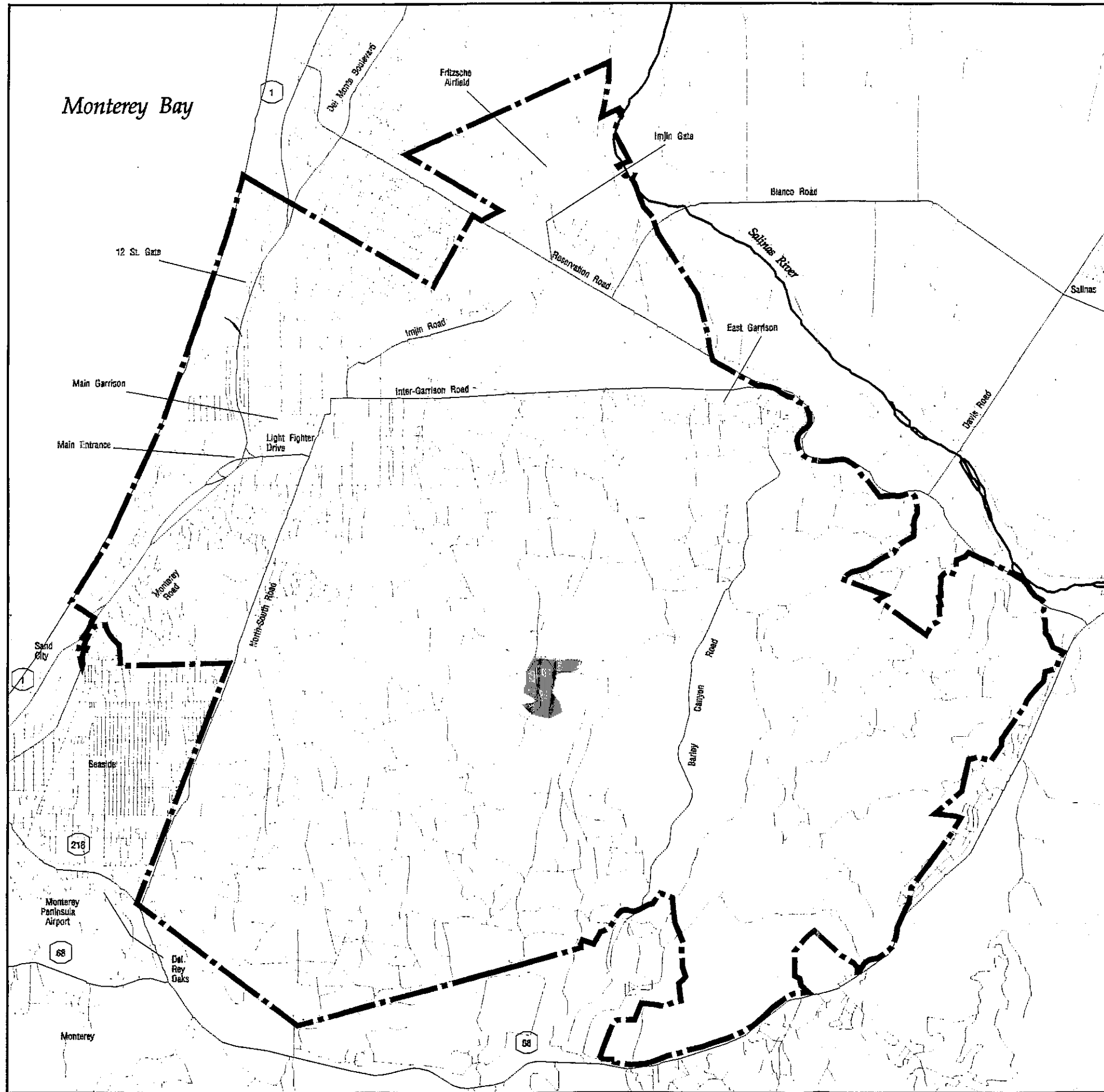


Figure F-32




Known Distribution of Santa Cruz  
Monkeyflower (*Mimulus rattanii* var.  
*decurtatus*) at Fort Ord



**Listing Status**

Federal - none  
State - none  
CNPS - 4

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000

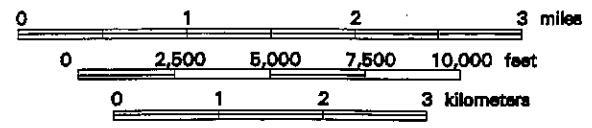


Figure F-33

Known Distribution of Curly-leaved  
Monardella (*Monardella undulata* var.  
*undulata*) at Fort Ord

**Listing Status**

Federal - none

State - none

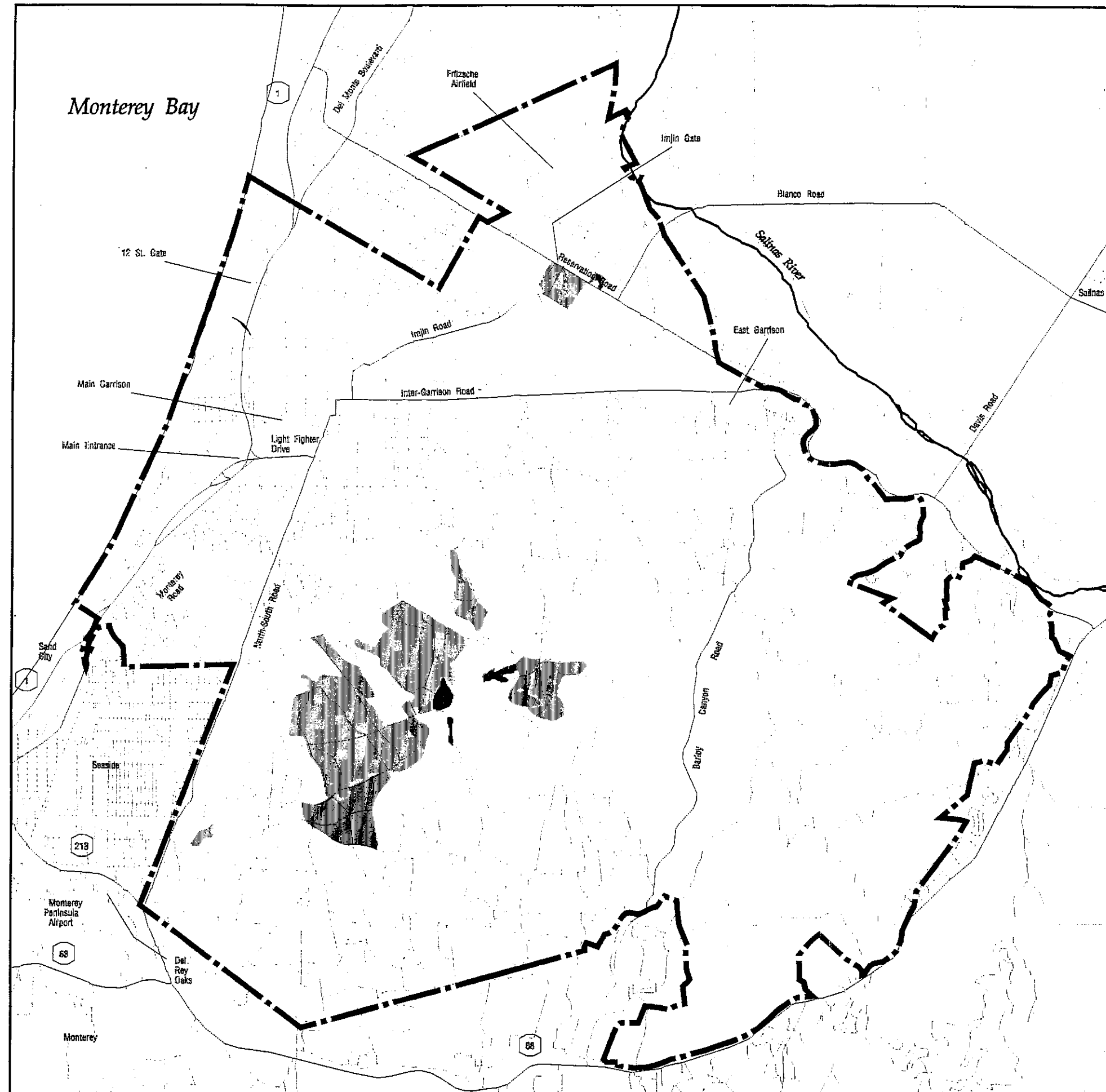
CNPS - 4

**Density of Occurrence**

 Low Density

 Medium Density

 High Density



Scale 1:60,000

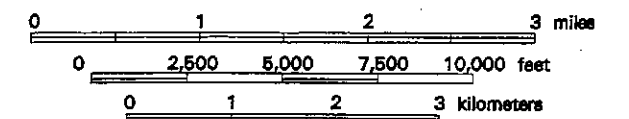
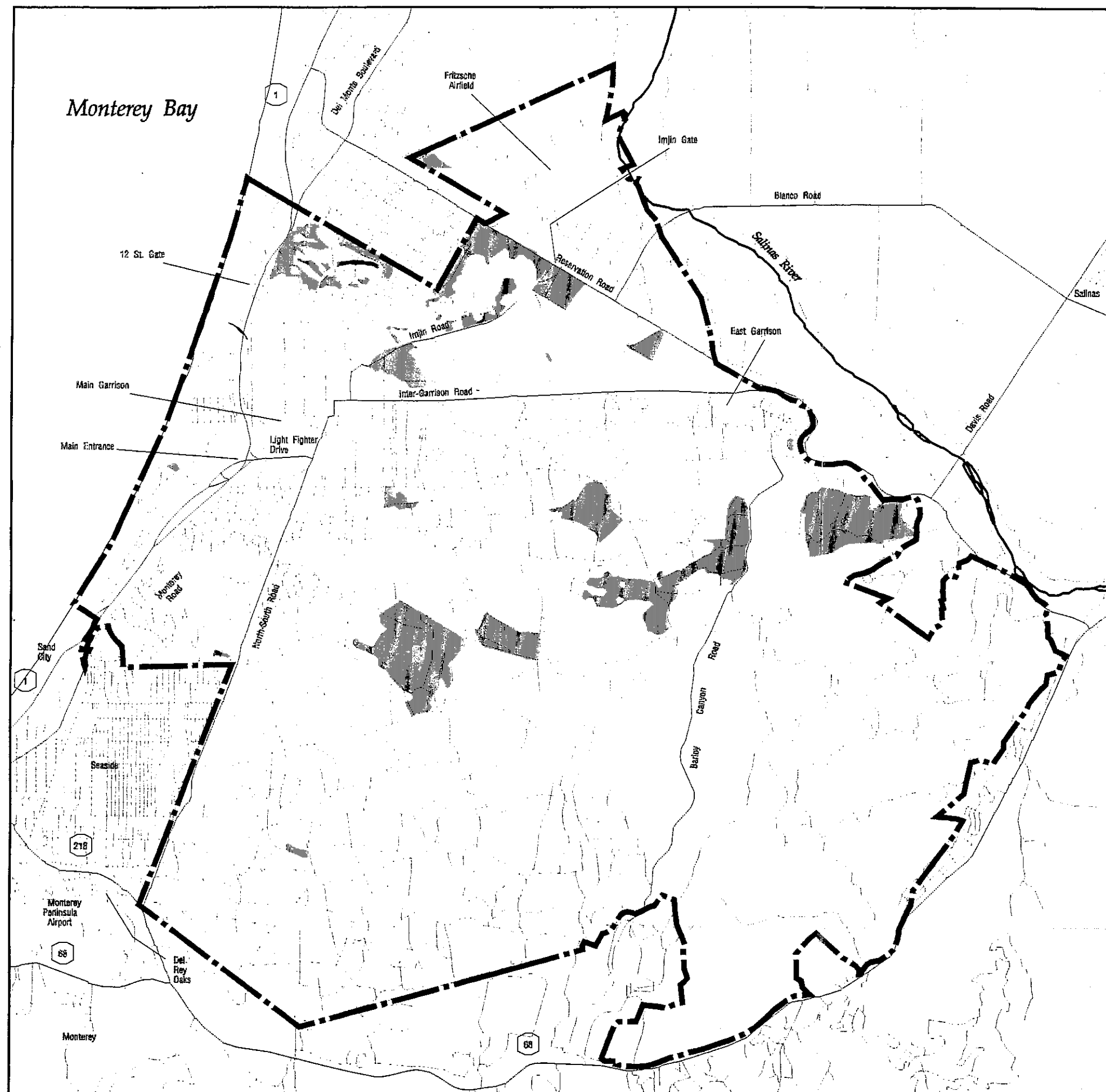




Figure F-34






Known Distribution of Purple-flowered  
*Piperia (Piperia elongata ssp. michaelii)*  
at Fort Ord

**Listing Status**

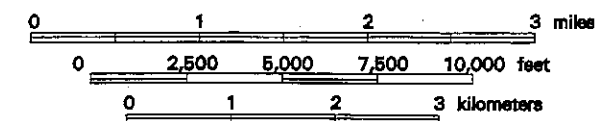
Federal - none  
State - none  
CNPS - 4

**Density of Occurrence**

-  Low Density
-  Medium Density
-  High Density



Scale 1:60,000



# Appendix G. Photographs of Special-Status Plant Species

Figure G-1  
Sand gilia  
(*Gilia tenuiflora* ssp. *arenaria*)  
E/T/1b

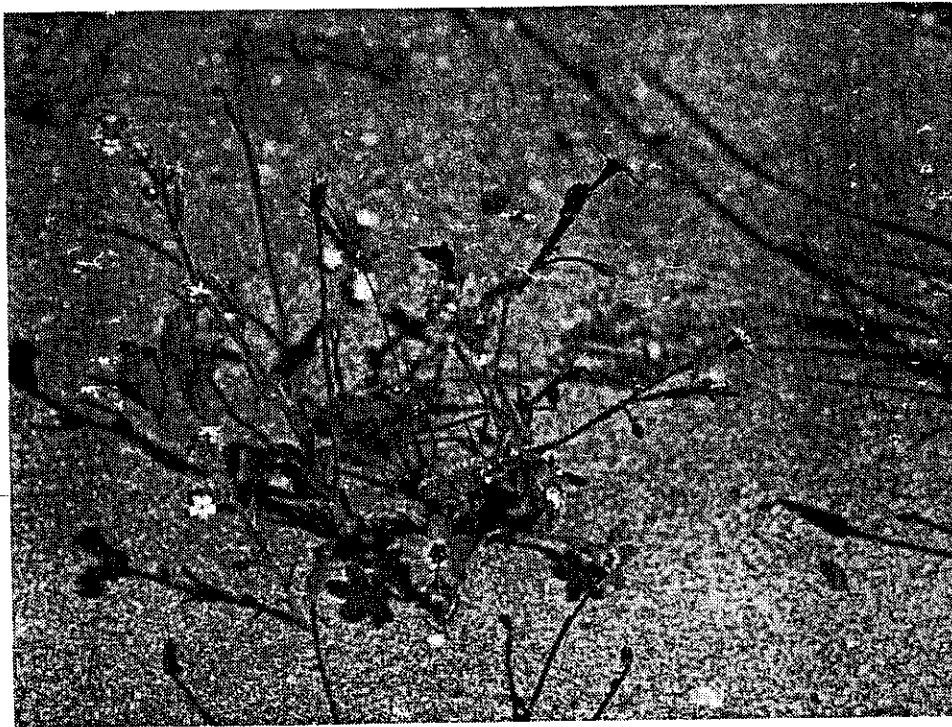
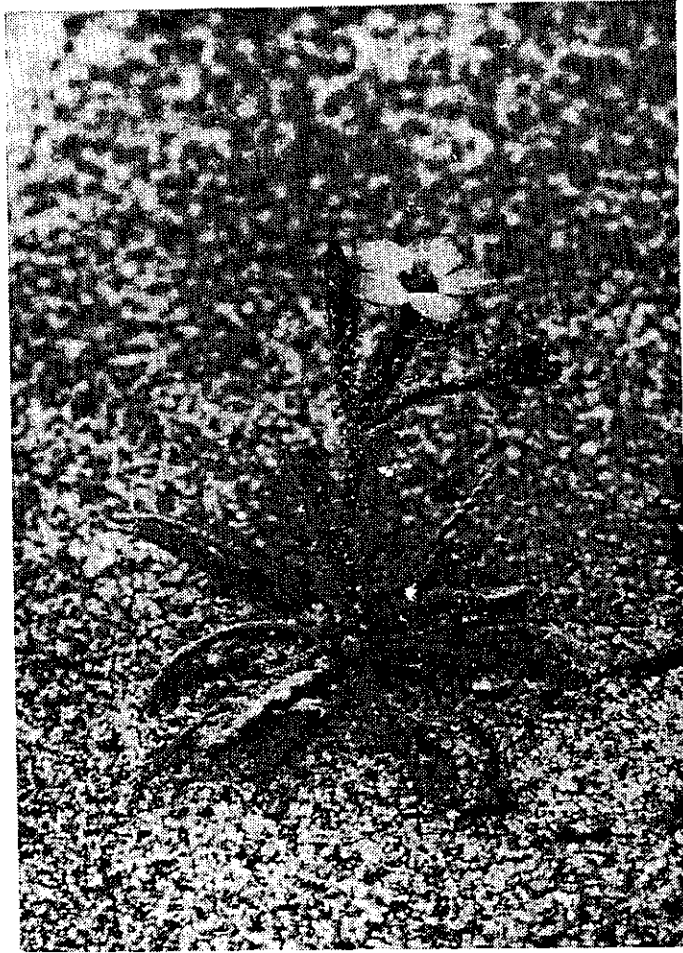


Figure G-2  
Monterey spineflower  
(*Chorizanthe pungens* var. *pungens*)  
PE/--/1b

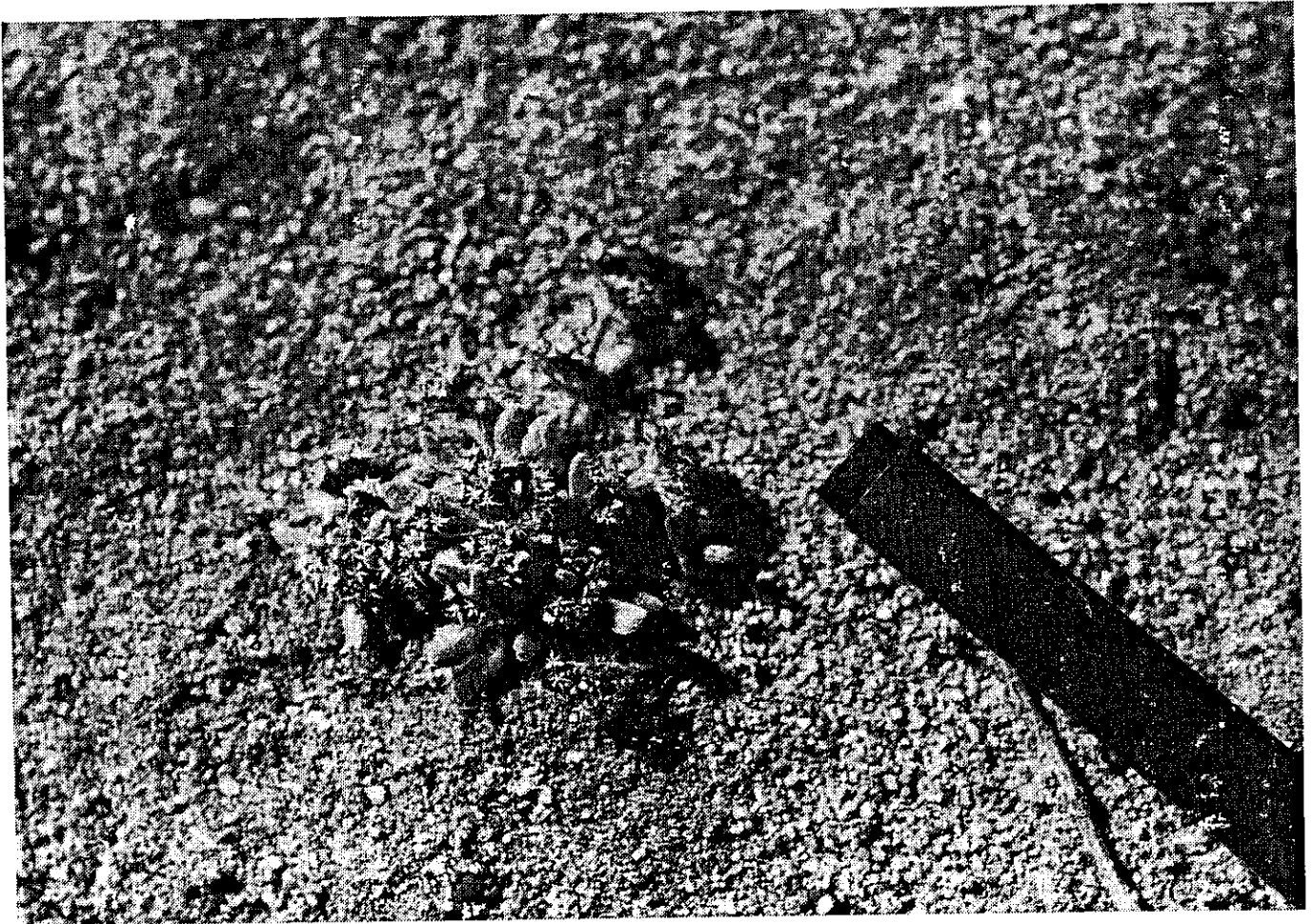


Figure G-3  
Seaside bird's-beak  
(*Cordylanthus rigidus* var. *littoralis*)  
C1/E/1b

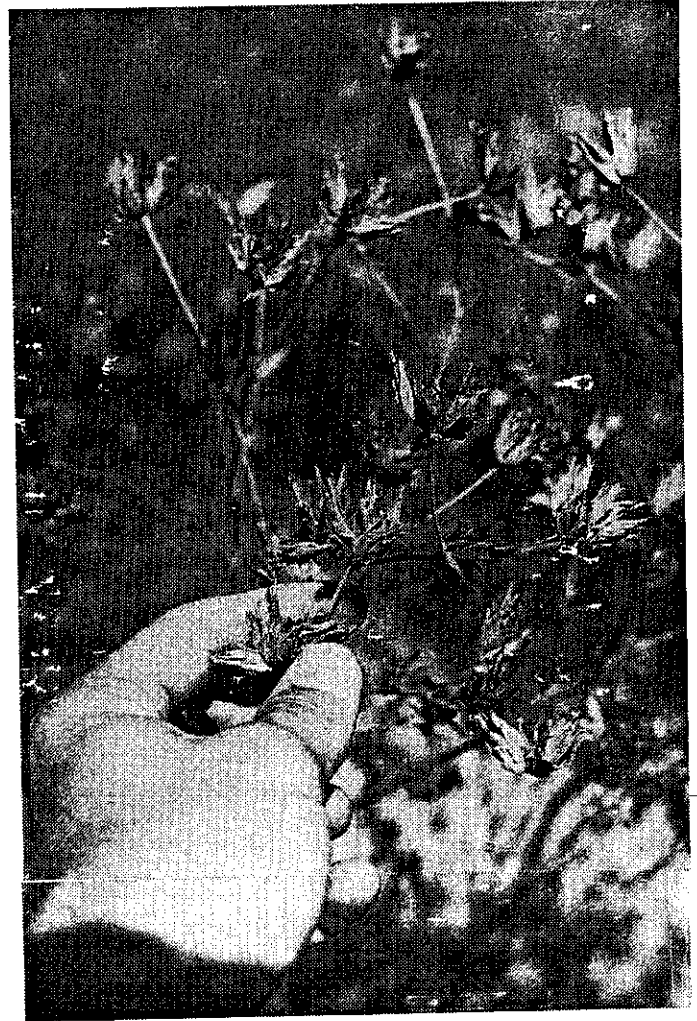
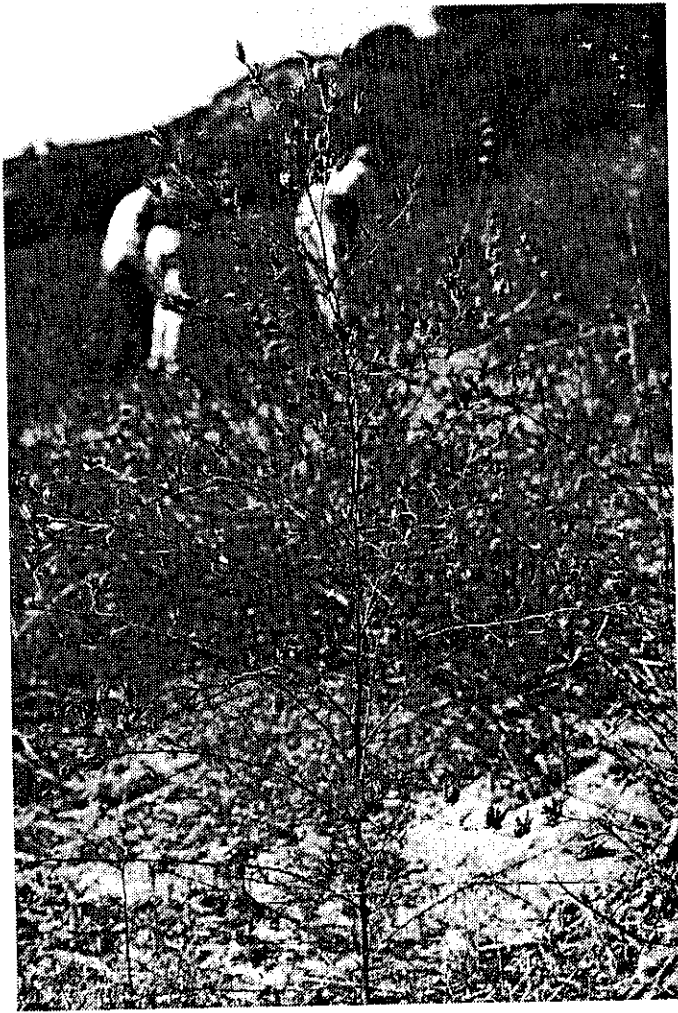


Figure G-4  
Sandmat manzanita  
(*Arctostaphylos pumila* [*A. uva-ursi* var. *pumila*])  
C2/--/1b

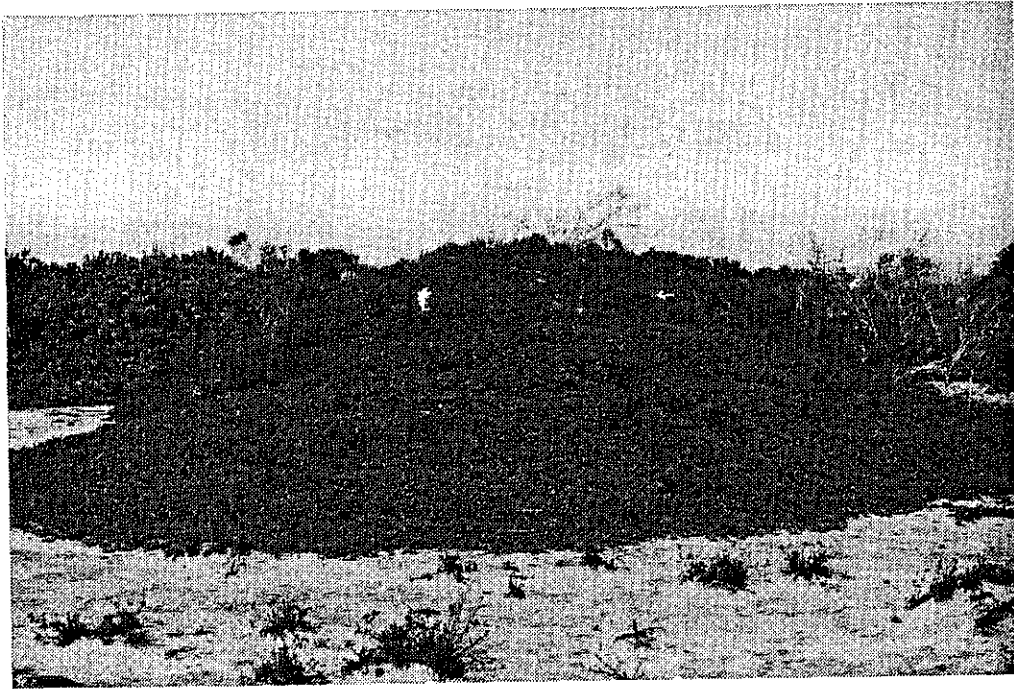




Figure G-5  
Toro manzanita  
(*Arctostaphylos montereyensis*)  
C2/--/1b

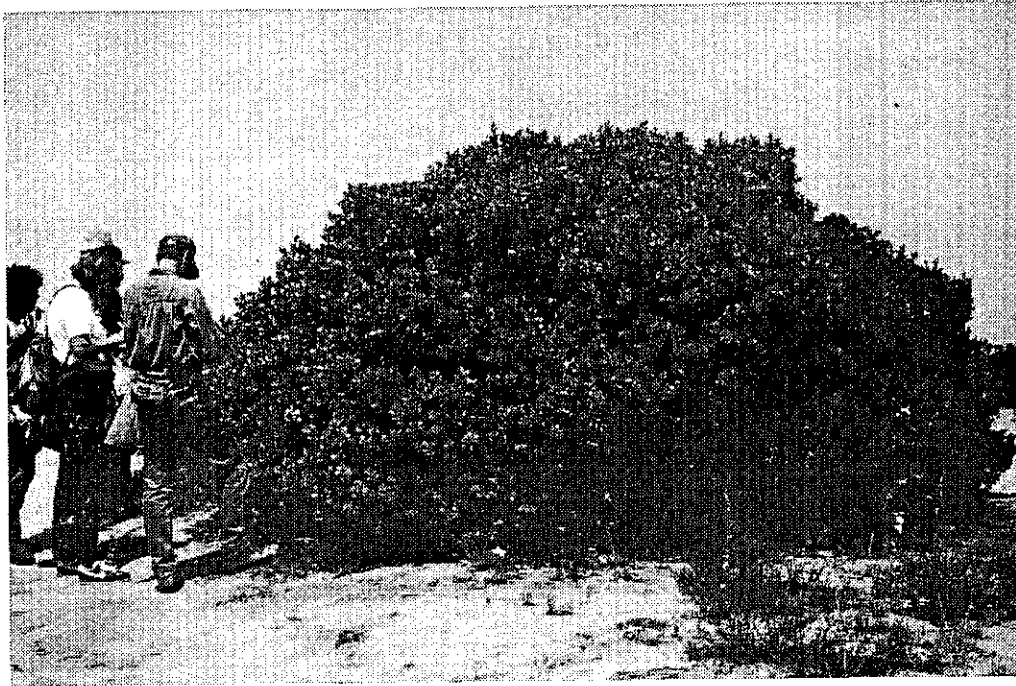
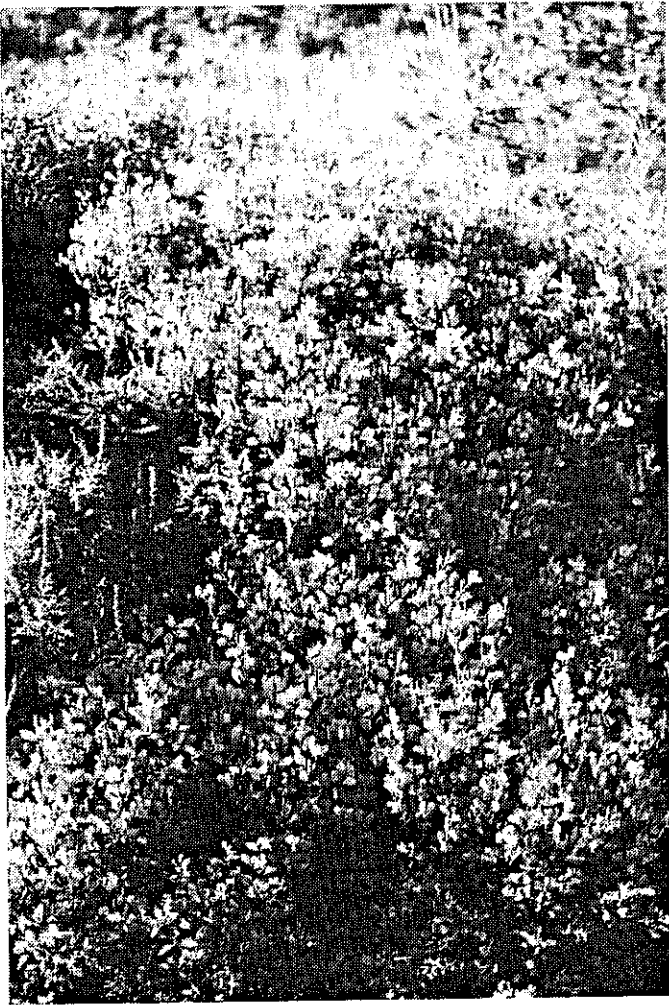


Figure G-6  
Hooker's manzanita  
(*Arctostaphylos hookeri* ssp. *hookeri*)  
--/--/3





*Figure G-7*  
Monterey ceanothus  
(*Ceanothus rigidus*)  
C21--14

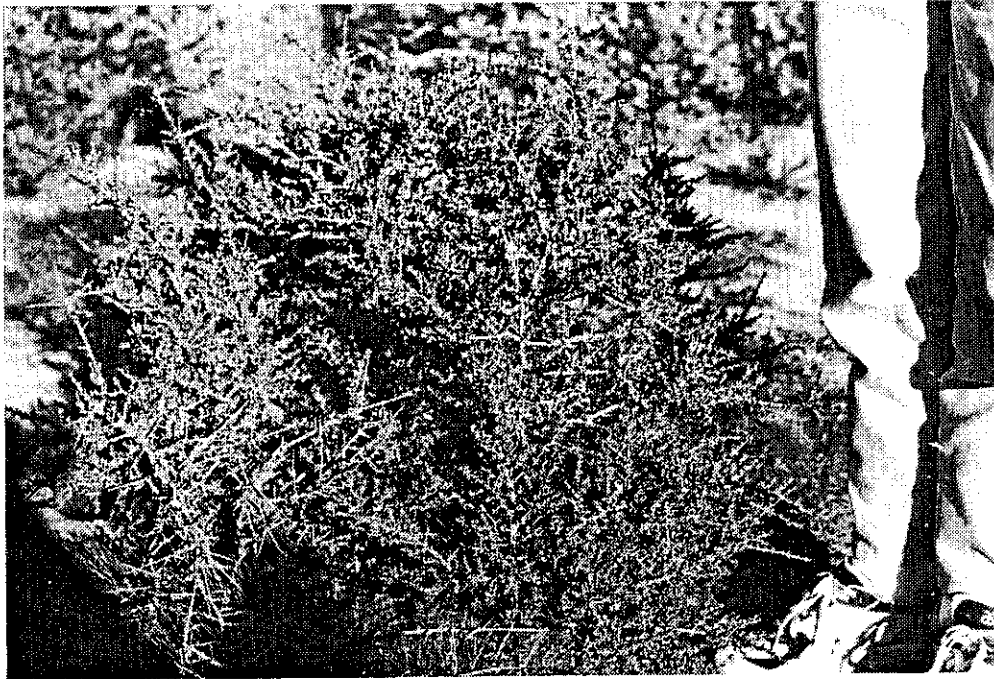


Figure G-8  
Eastwood's ericameria  
(*Ericameria fasciculata*)  
C2/--/1b

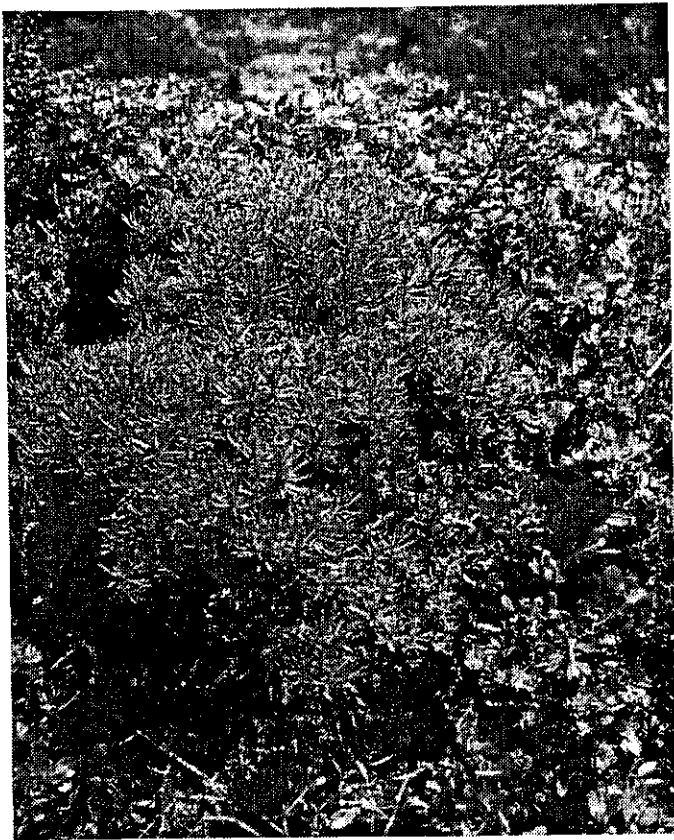


Figure G-9  
Hickman's onion  
(*Allium hickmanii*)  
C1/--/1b



Figure G-10  
Coast wallflower  
(*Erysimum ammophilum*)  
C2/--/4

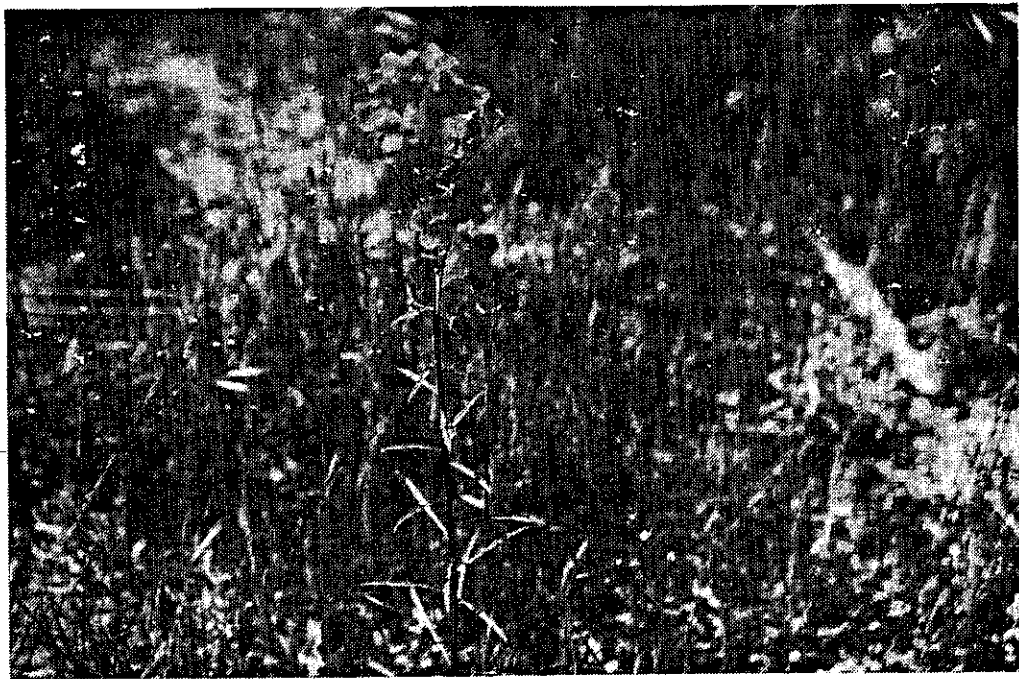
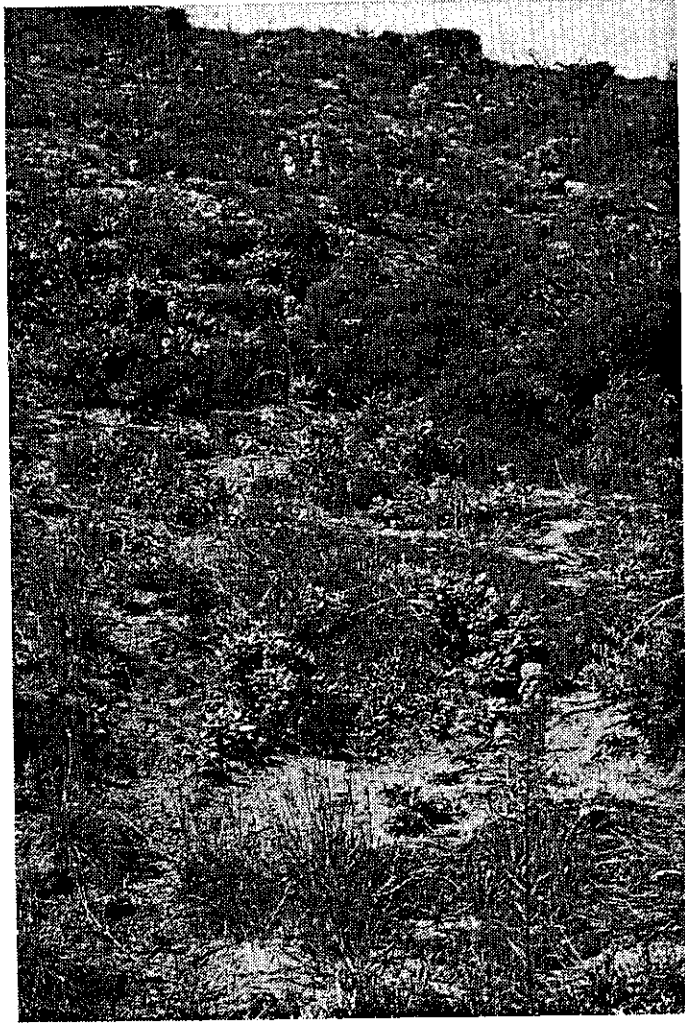
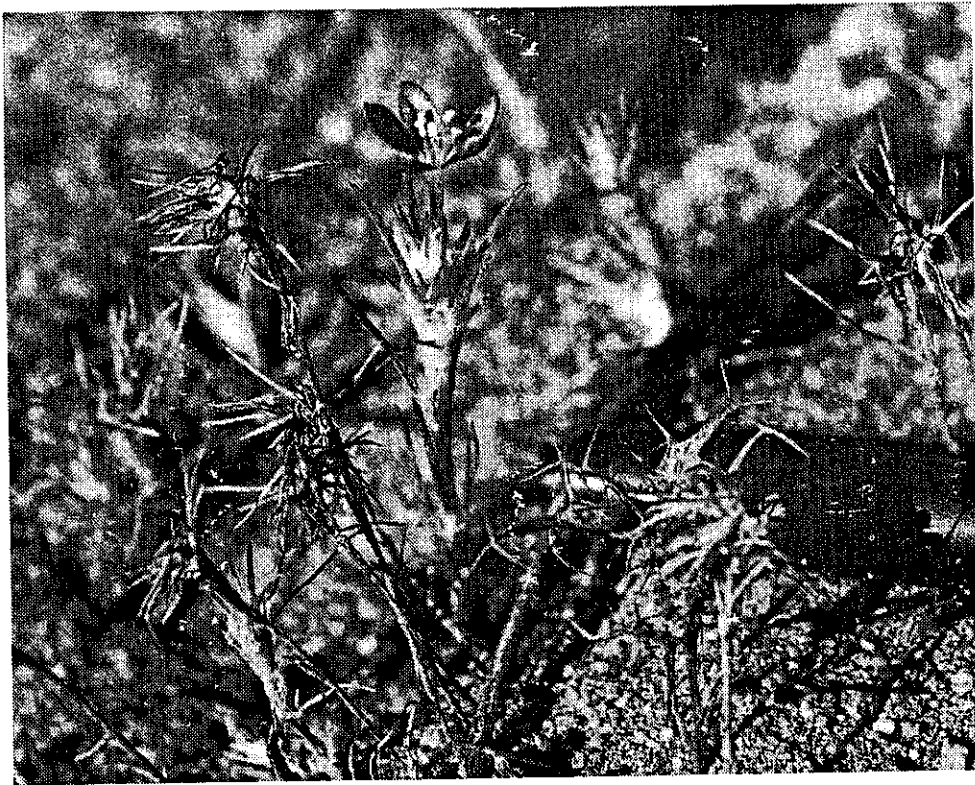




Figure G-11  
Virgate eriastrum  
(*Eriastrum virgatum*)  
--/--/4



# Appendix H. Potential and Occupied Habitat for Special- Status Wildlife Species

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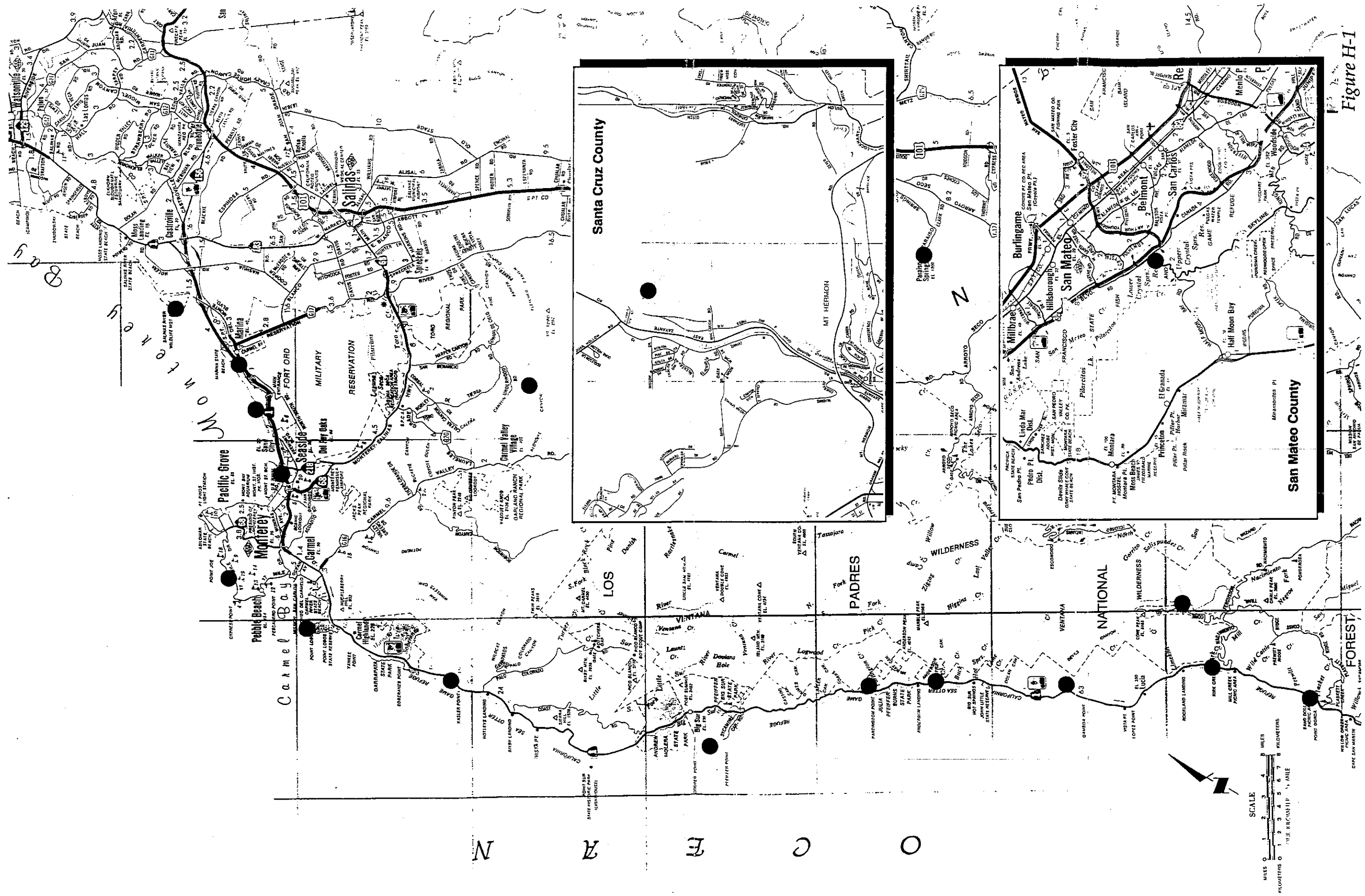


Figure H-1

Source: U. S. Fish and Wildlife Service (1984)

Known Populations of the Smith's Blue Butterfly (*Euphilotes enoptes smithi*)

Potential and Occupied Habitat for Smith's Blue Butterfly

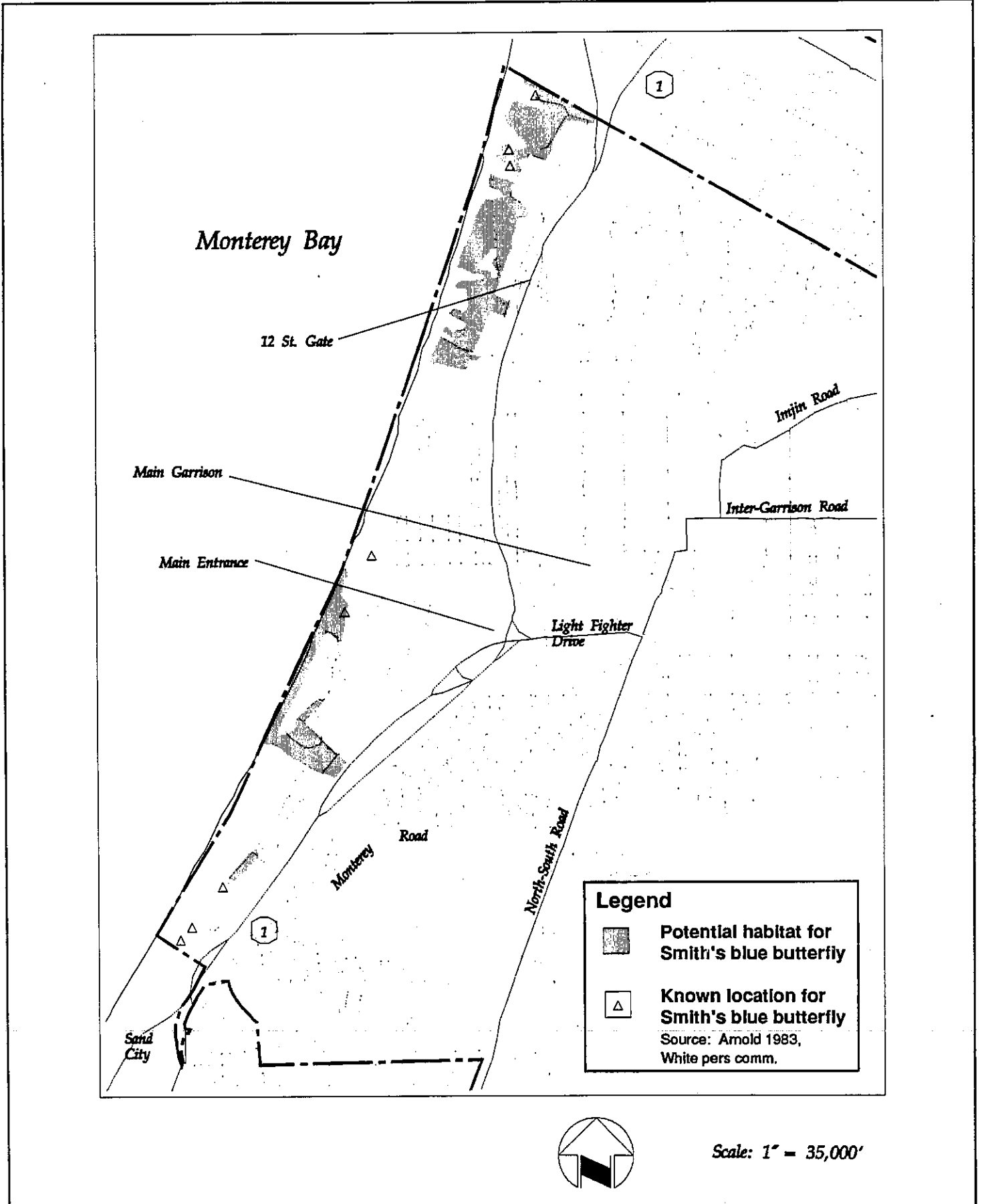
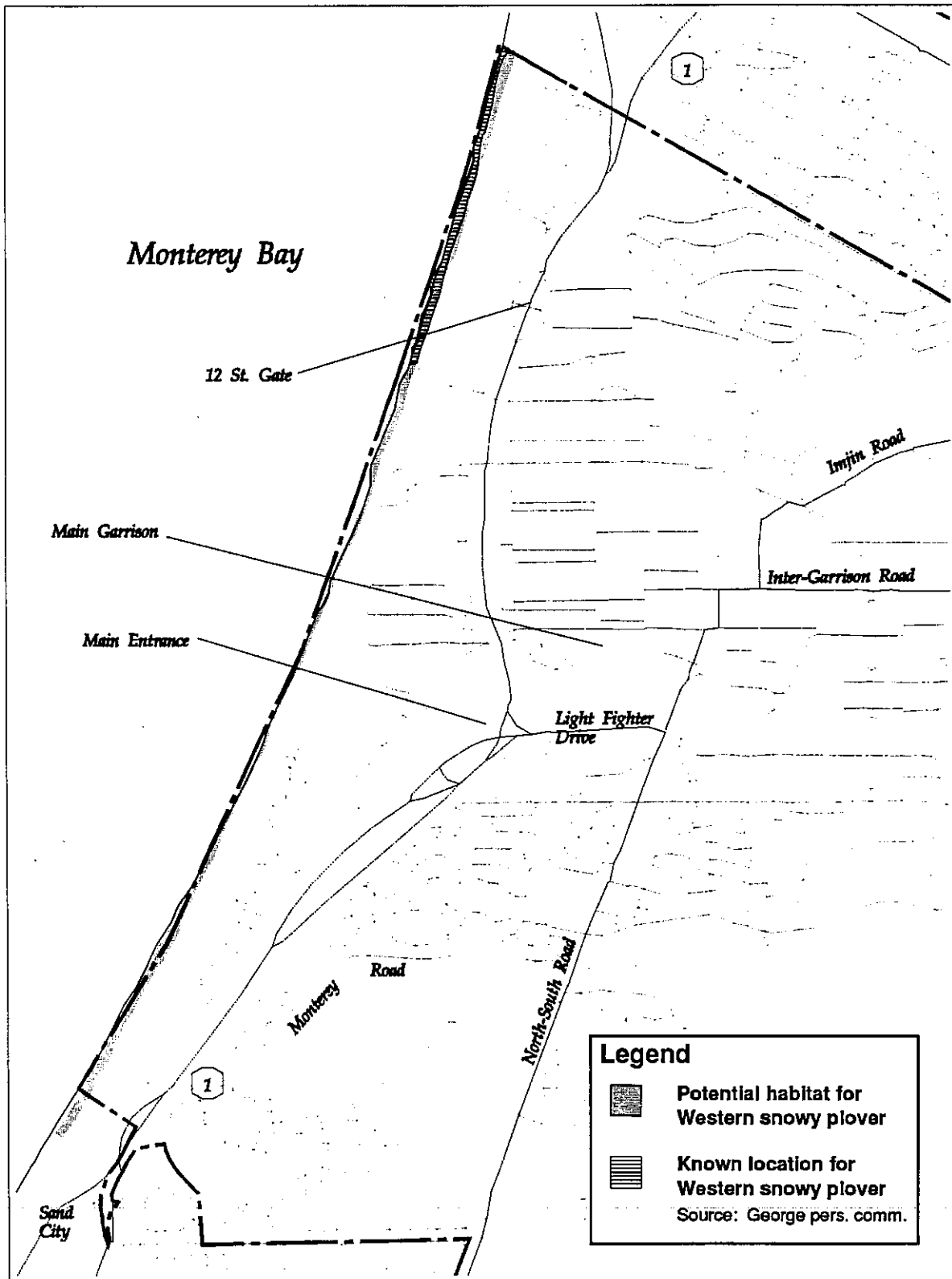




Figure H-4  
 Potential and Occupied Habitat for Western Snowy Plover



Scale: 1" = 35,000'

Figure H-3  
 Potential and Occupied Habitat for California Linderiella and  
 California Tiger Salamander

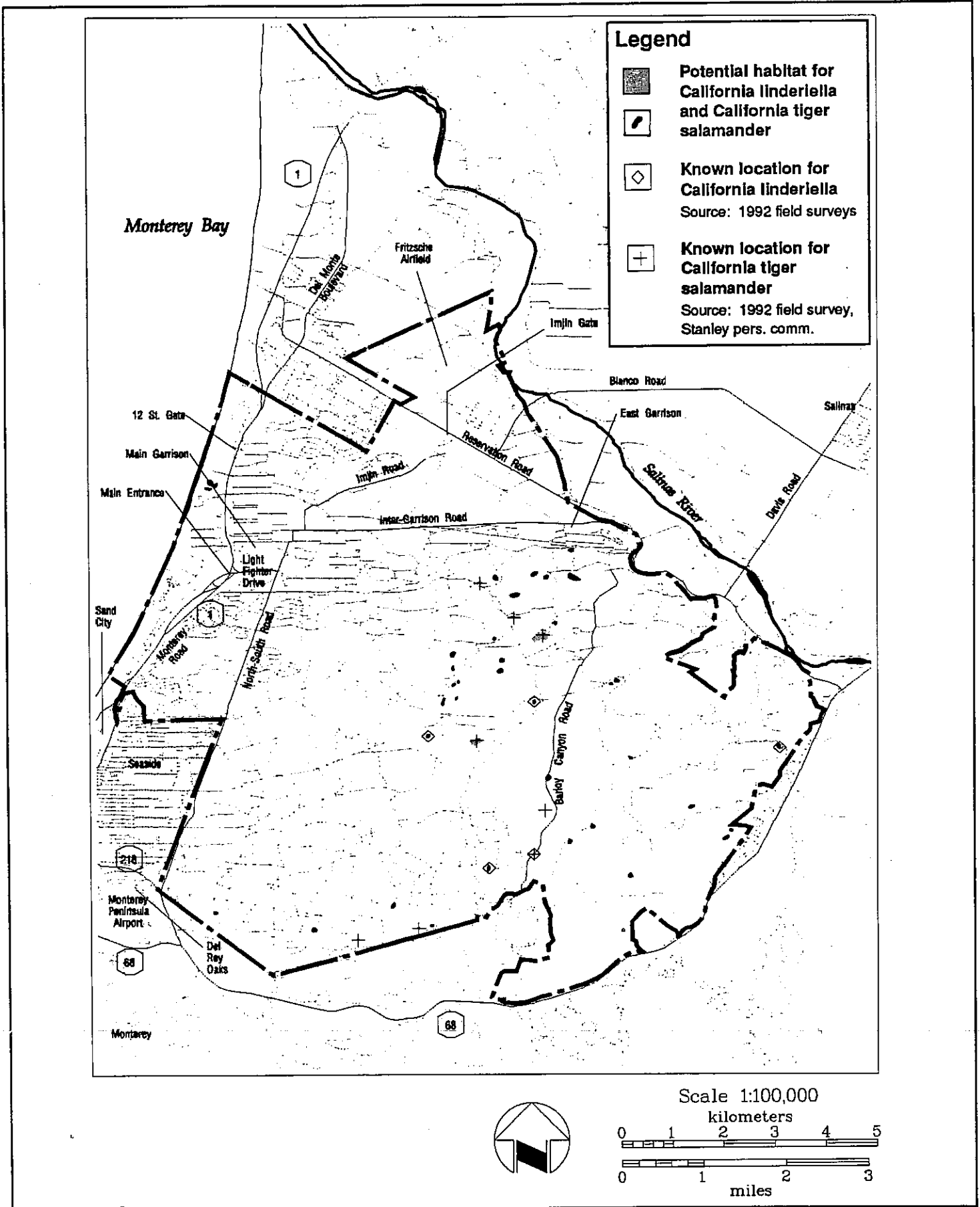


Figure H-5

Recorded Populations of Black Legless Lizards (*Anniella pulchra nigra*) in the Monterey Bay Region

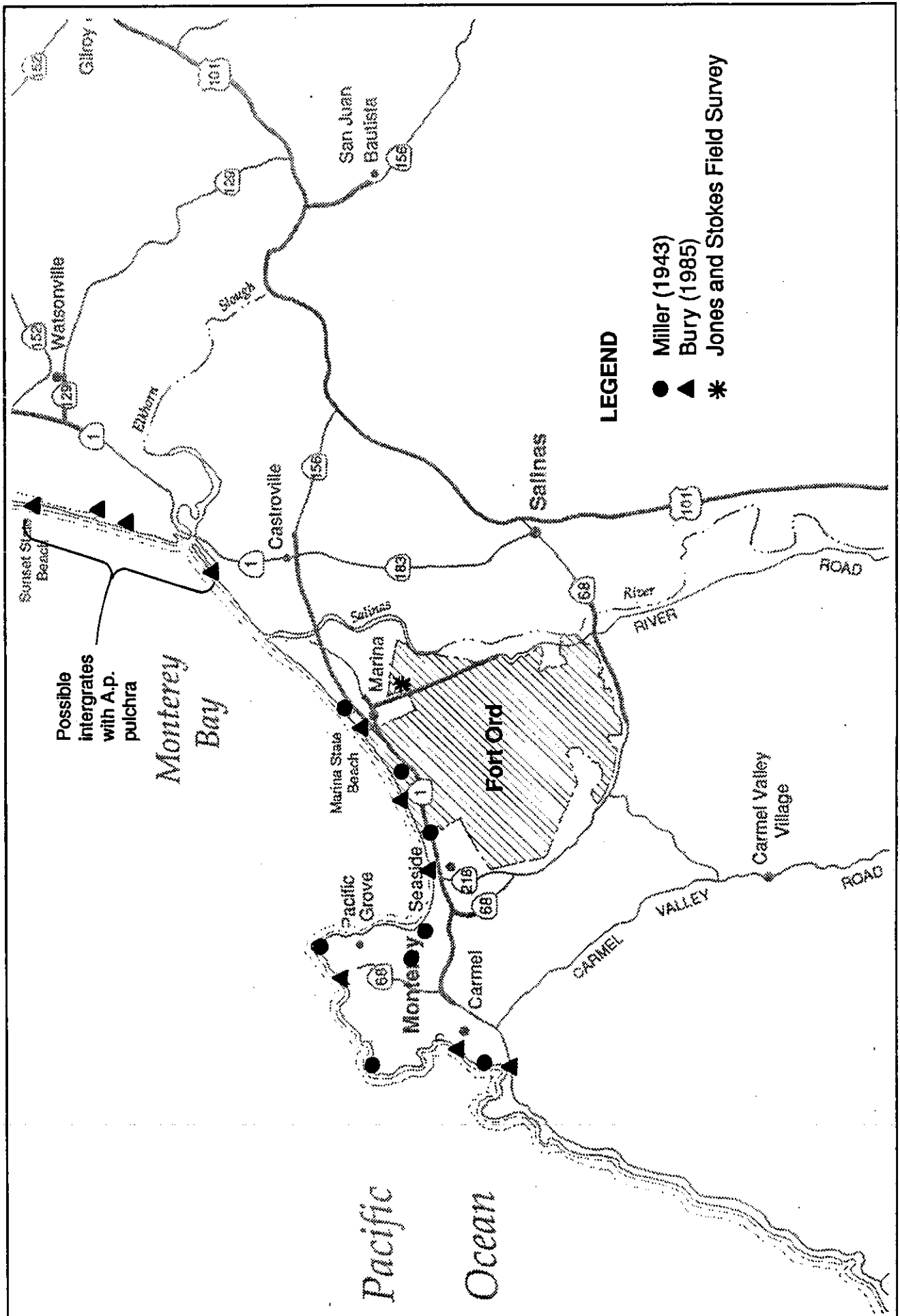
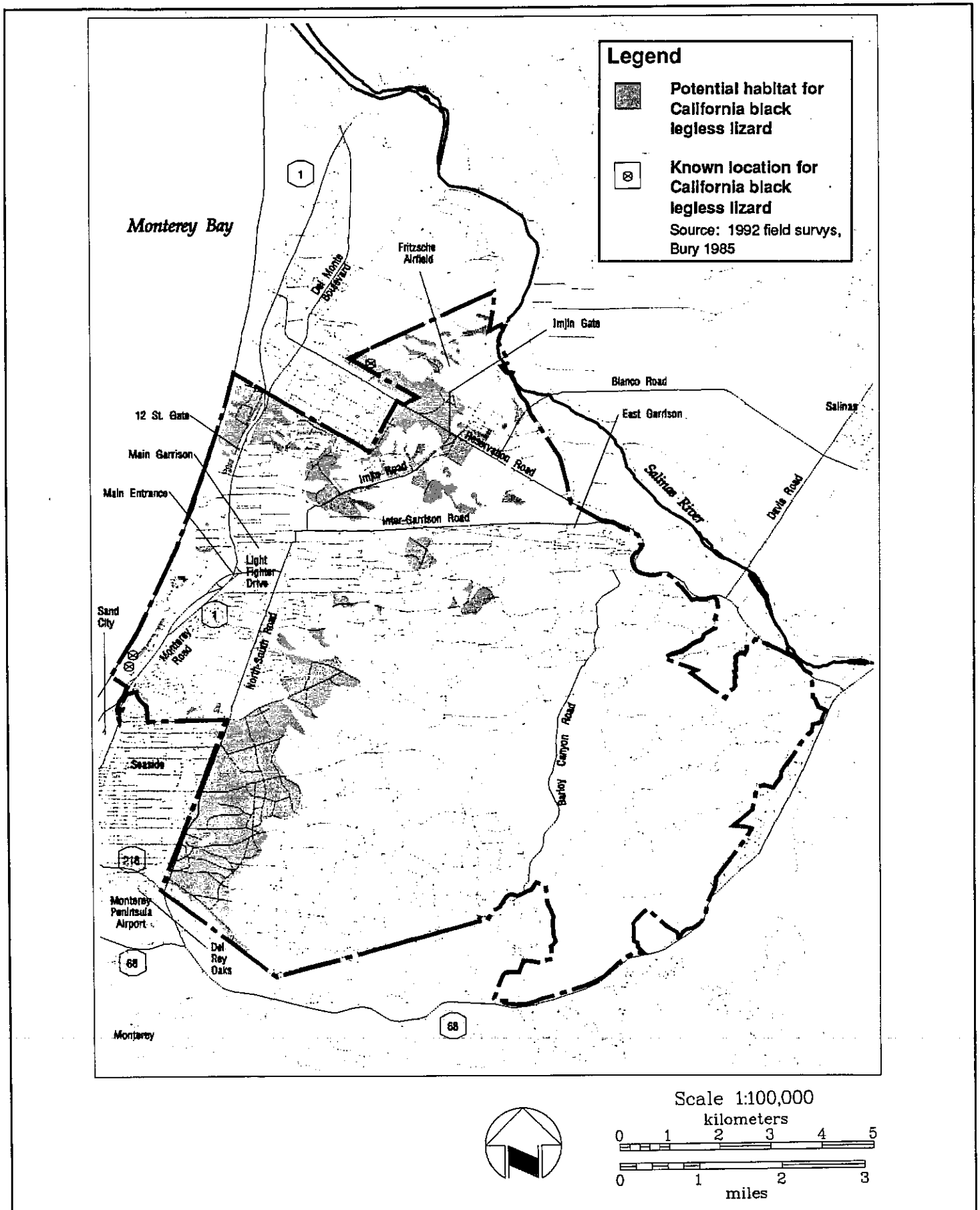
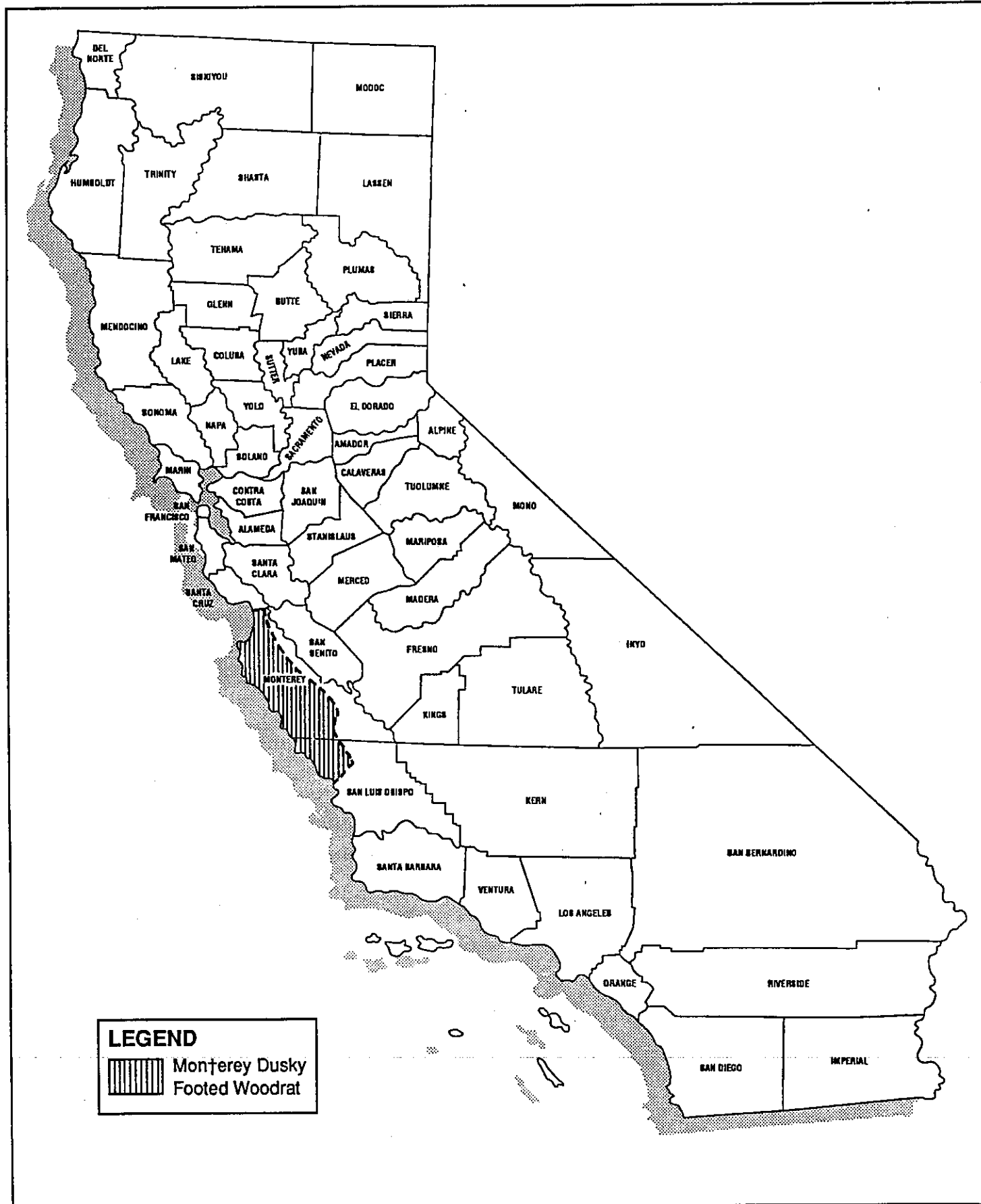


Figure H-6  
 Potential and Occupied Habitat for California Black Legless Lizard



Range of Monterey Dusky Footed Woodrat



Source: Hall 1981

Potential and Occupied Habitat for Monterey Dusky Footed Woodrat

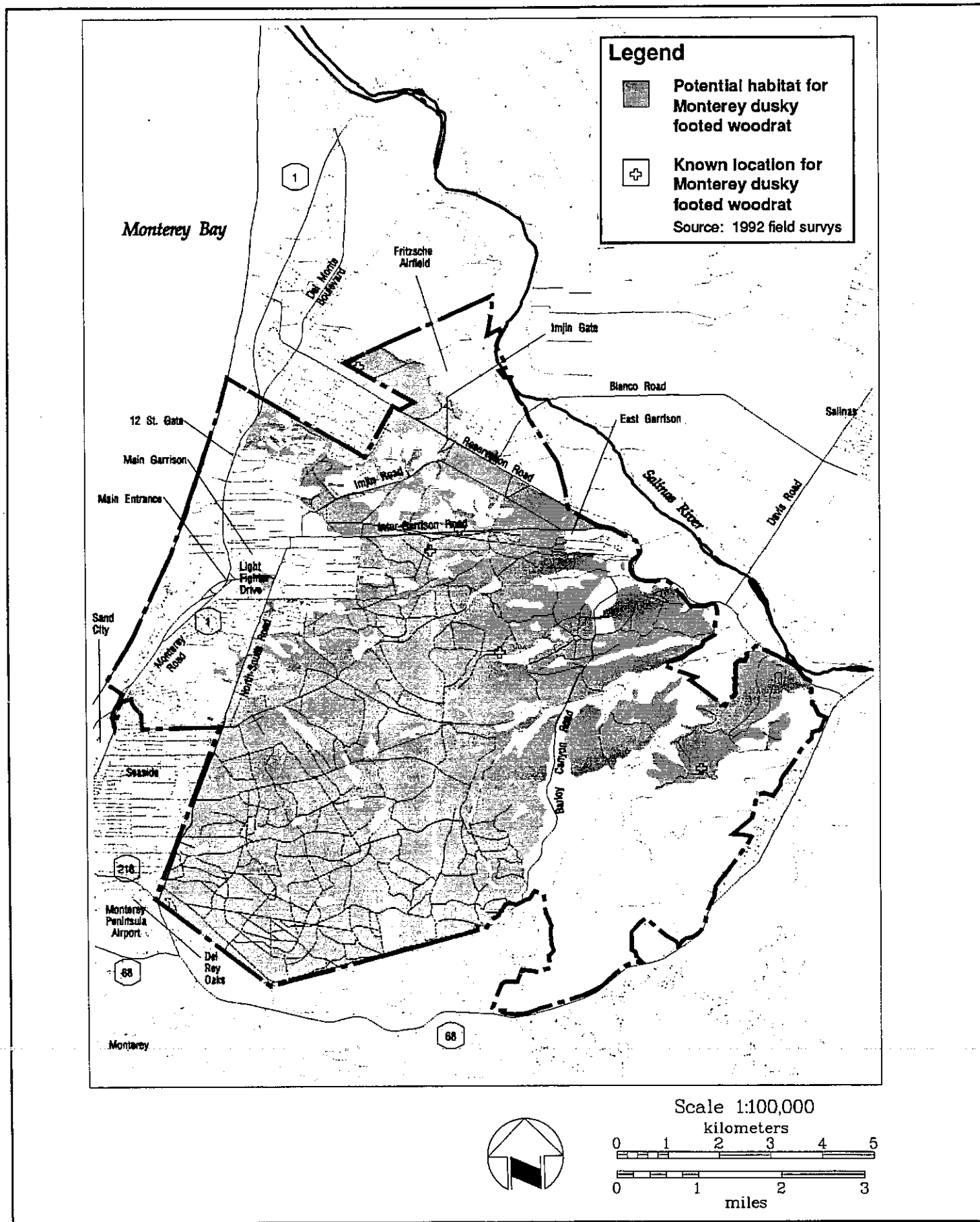


Figure H-9

Range of the Monterey Ornate Shrew (*Sorex ornatus salarius*)

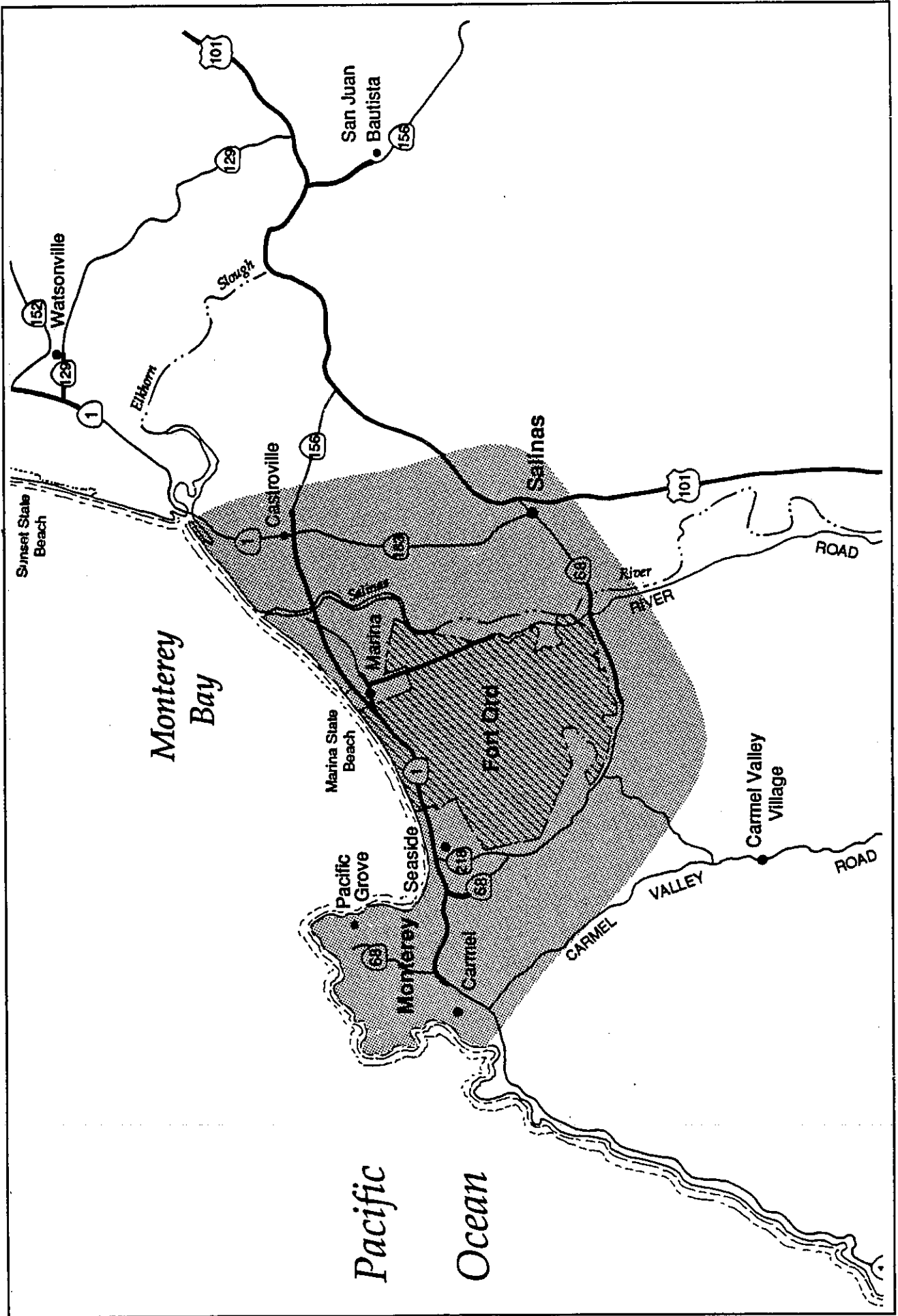


Figure H-10  
 Potential Habitat for Monterey Ornate Shrew

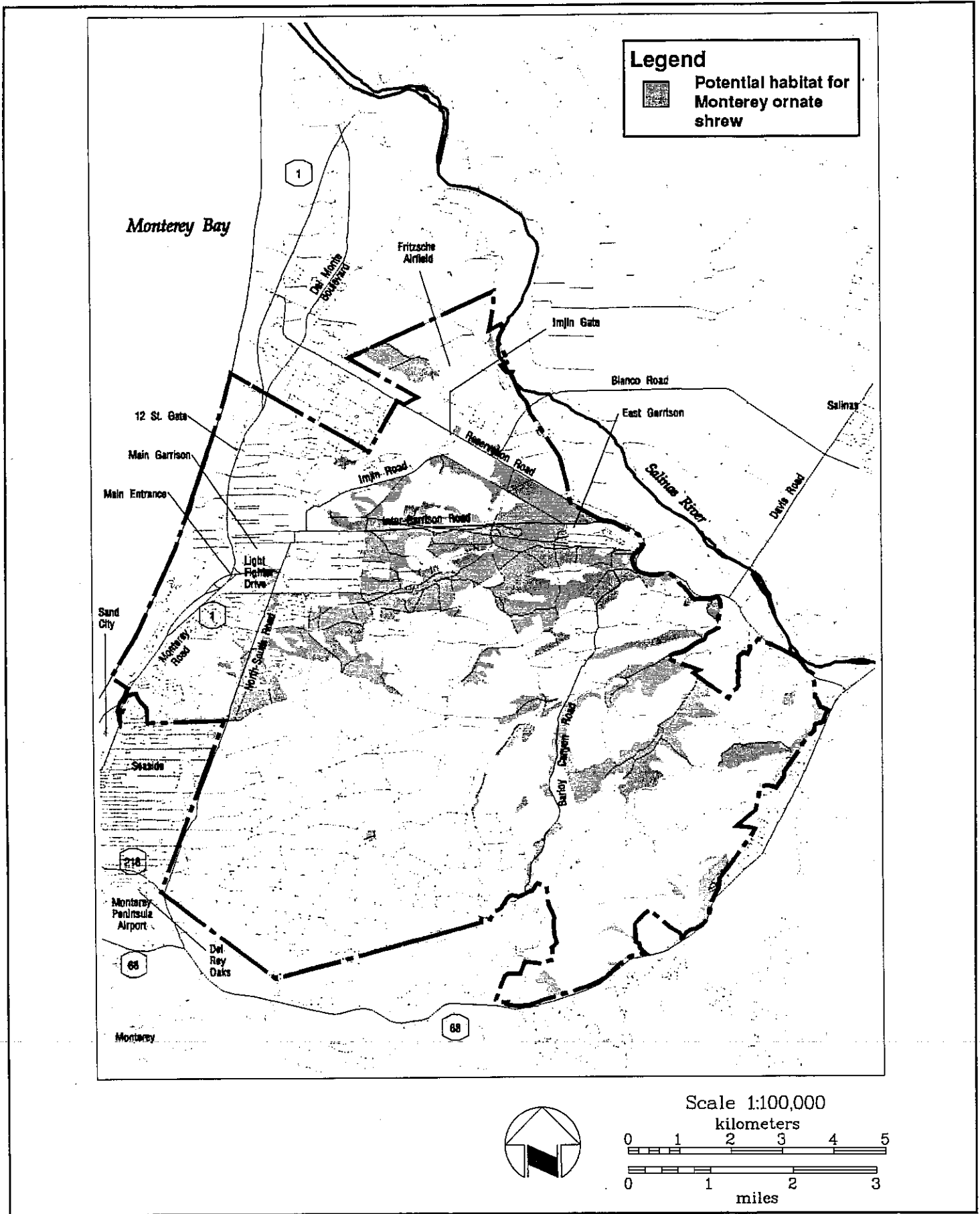




Figure H-11  
 Potential and Occupied Habitat for Loggerhead Shrike

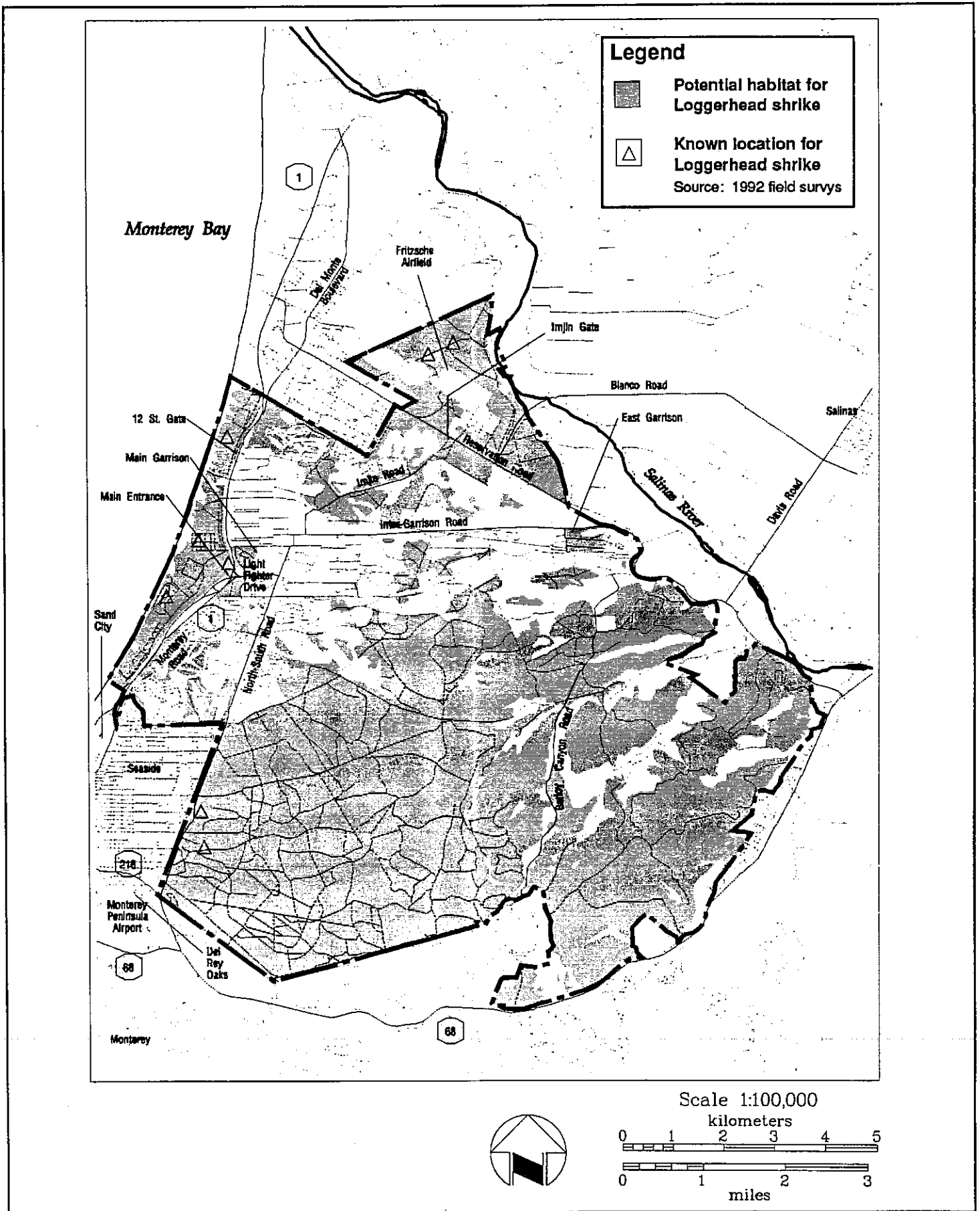


Figure H-12  
 Potential and Occupied Habitat for Tricolored Blackbird

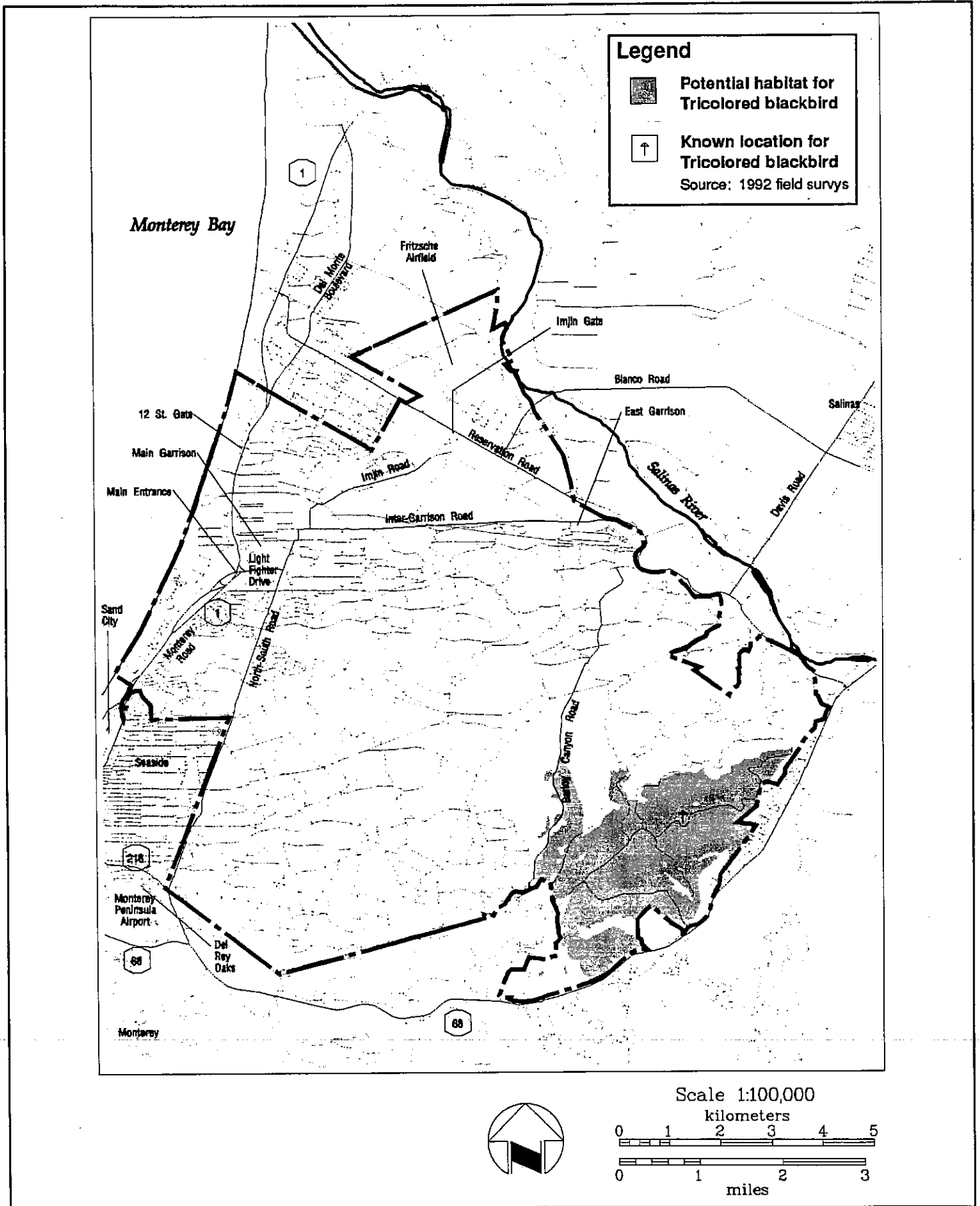
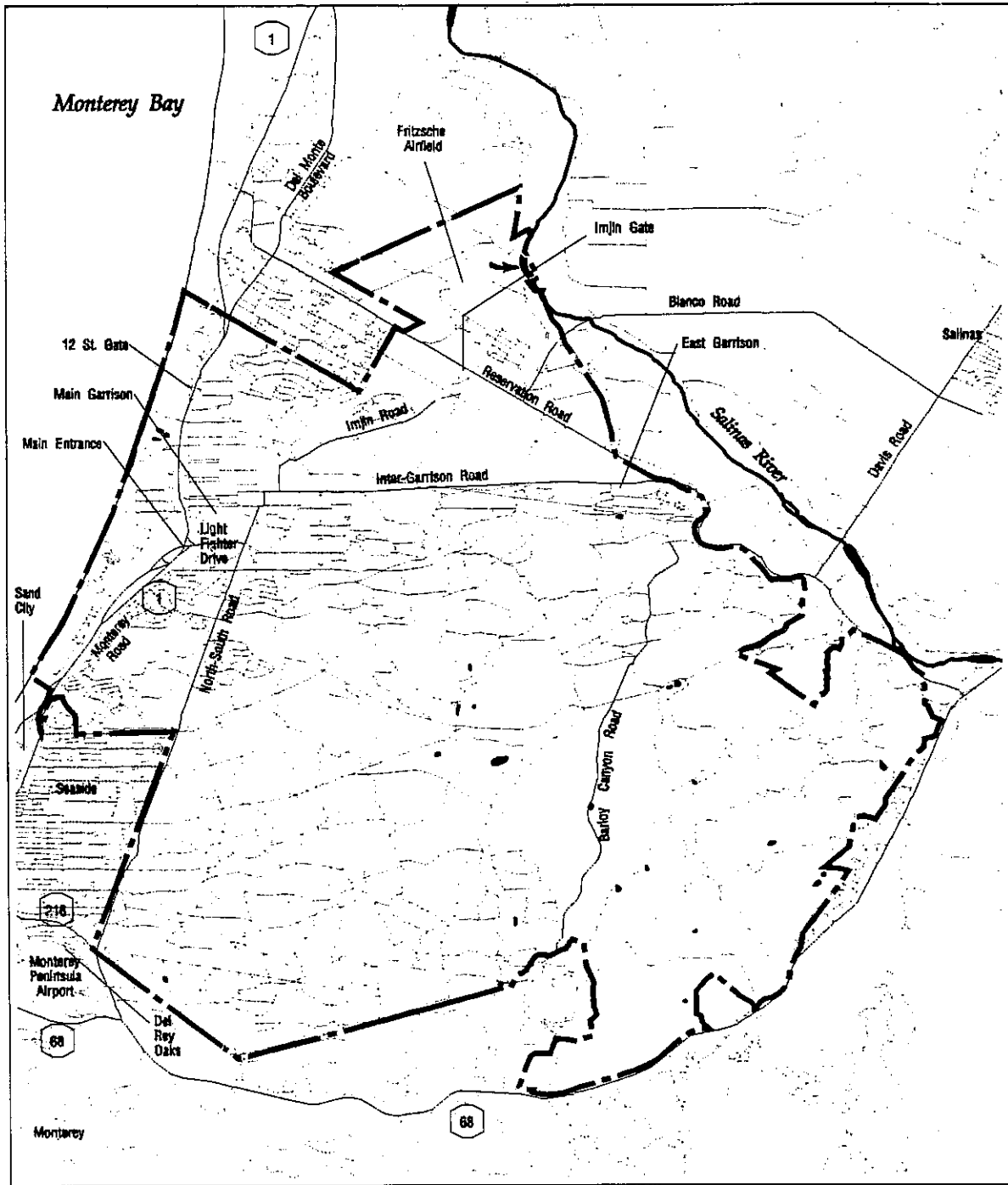





Figure H-14  
 Potential Habitat for California Red-Legged Frog and  
 South-Western Pond Turtle



**Legend**

 Potential habitat for California red-legged frog and South-western pond turtle

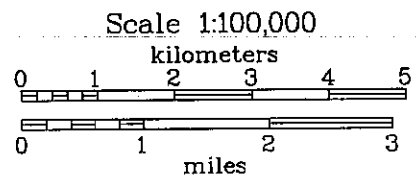
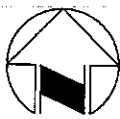


Figure H-15  
 Potential and Occupied Habitat for Cooper's Hawk and Yellow Warbler

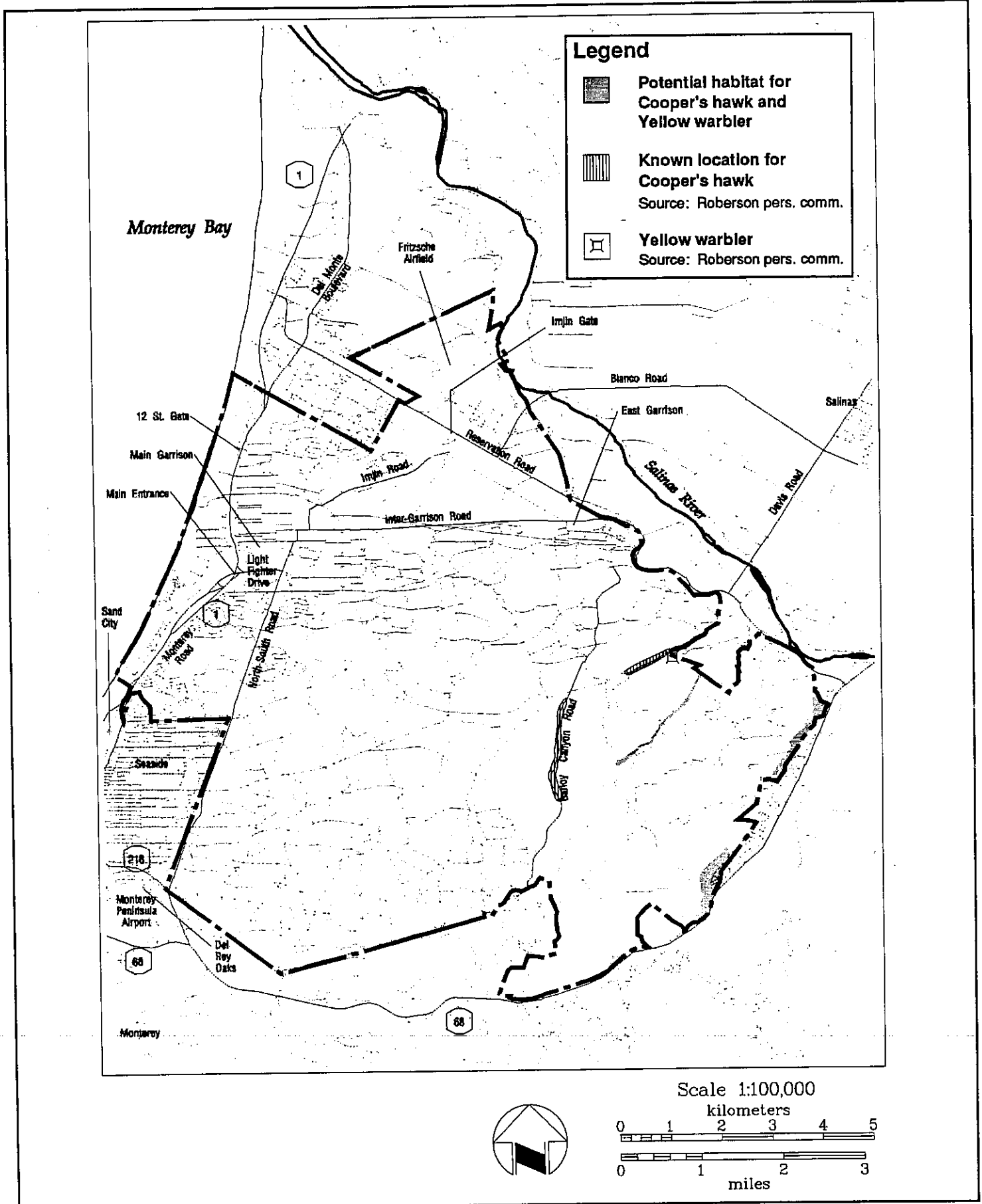


Figure H-16  
 Potential Habitat for Wintering Sharp-Shinned Hawk

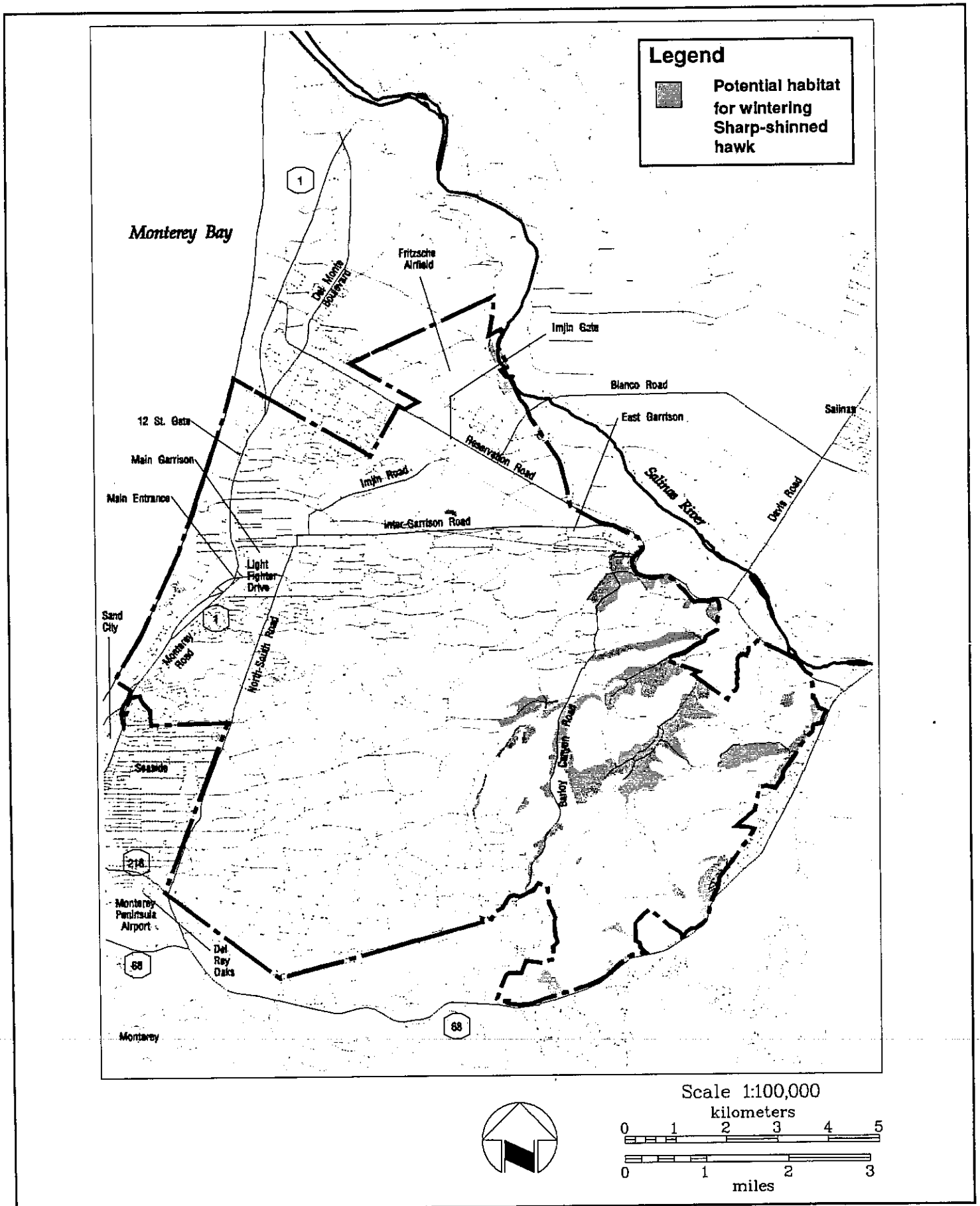




Figure H-18  
Potential Foraging Habitat for Prairie Falcon

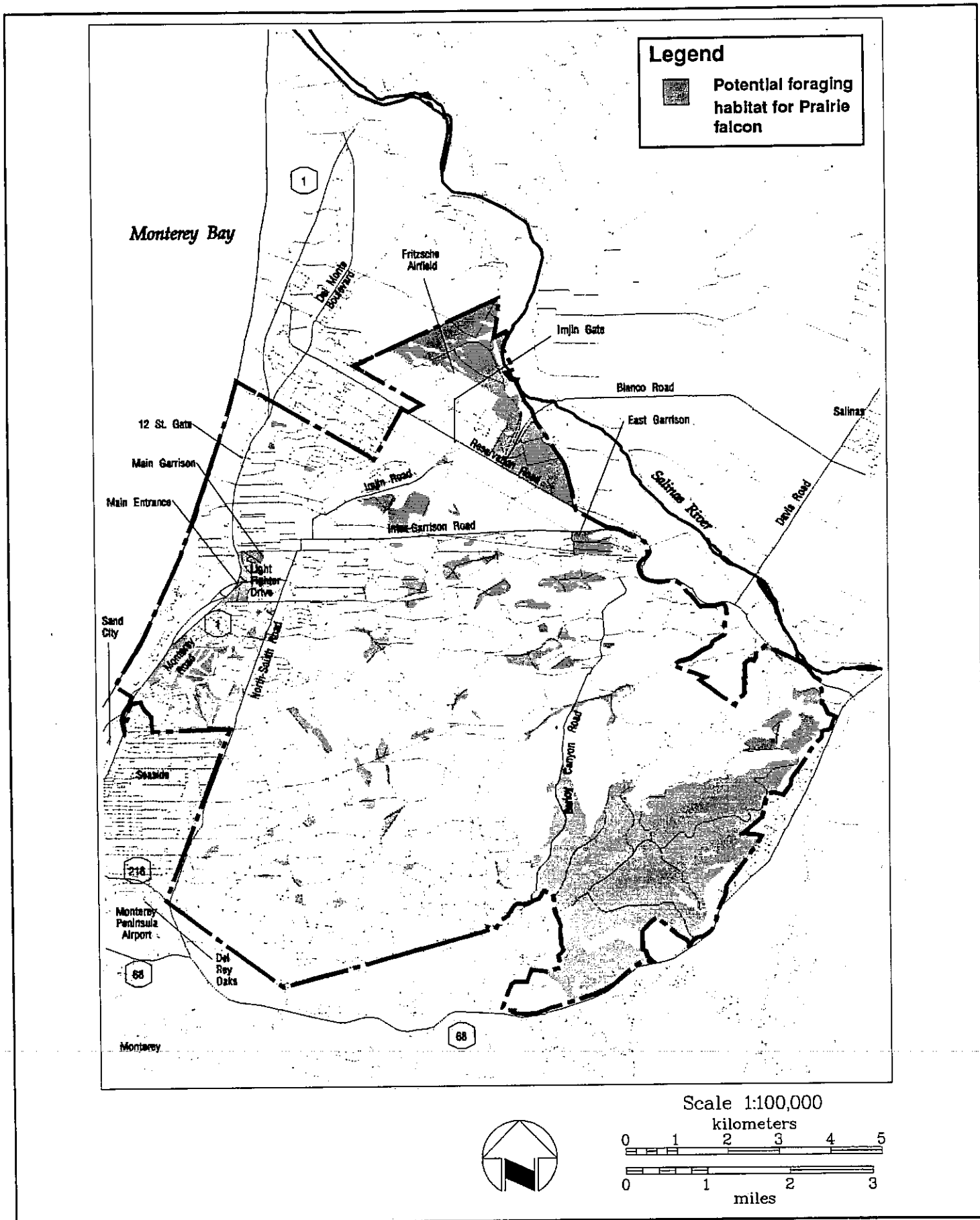




Figure H-19  
 Potential and Occupied Habitat for American Badger

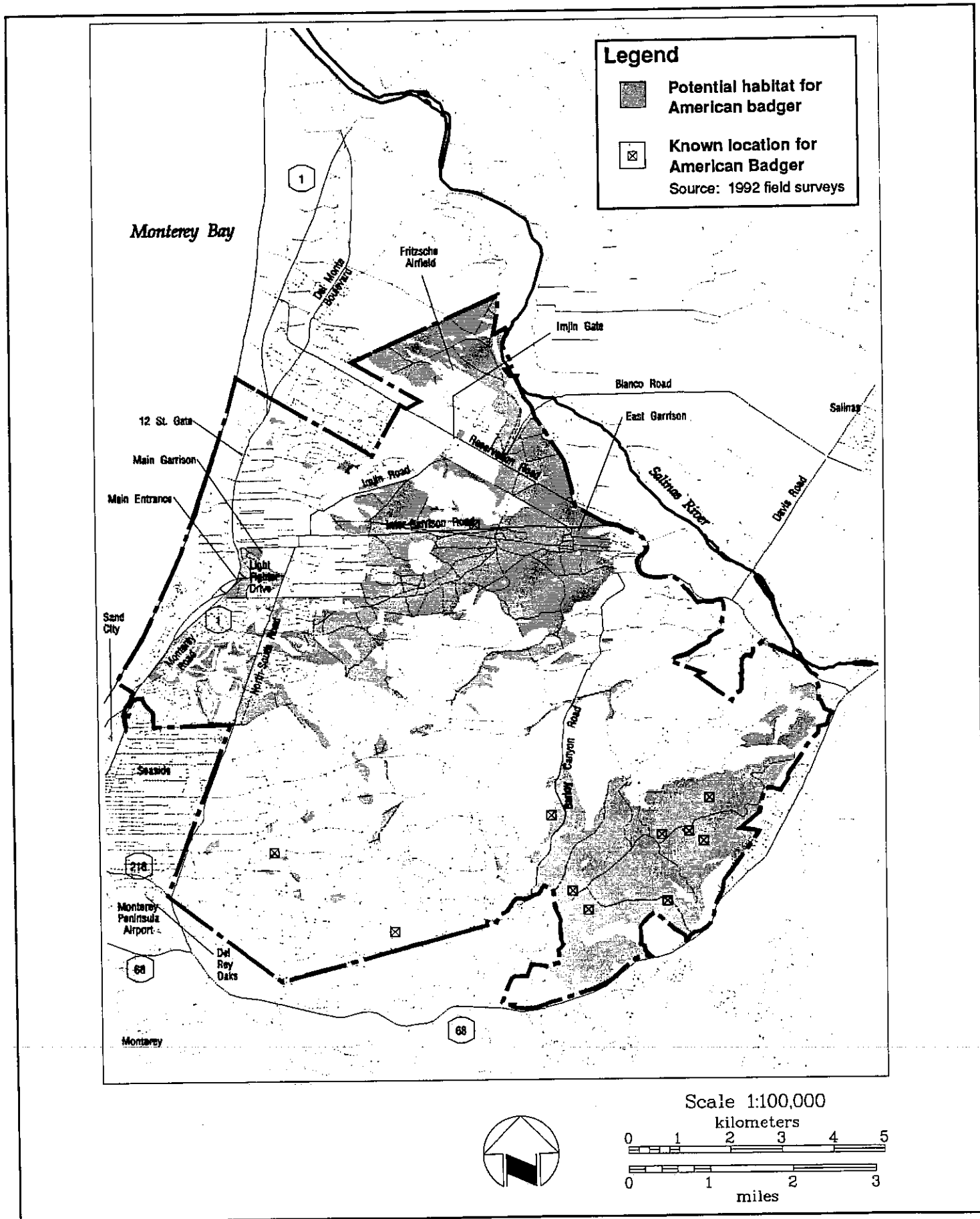
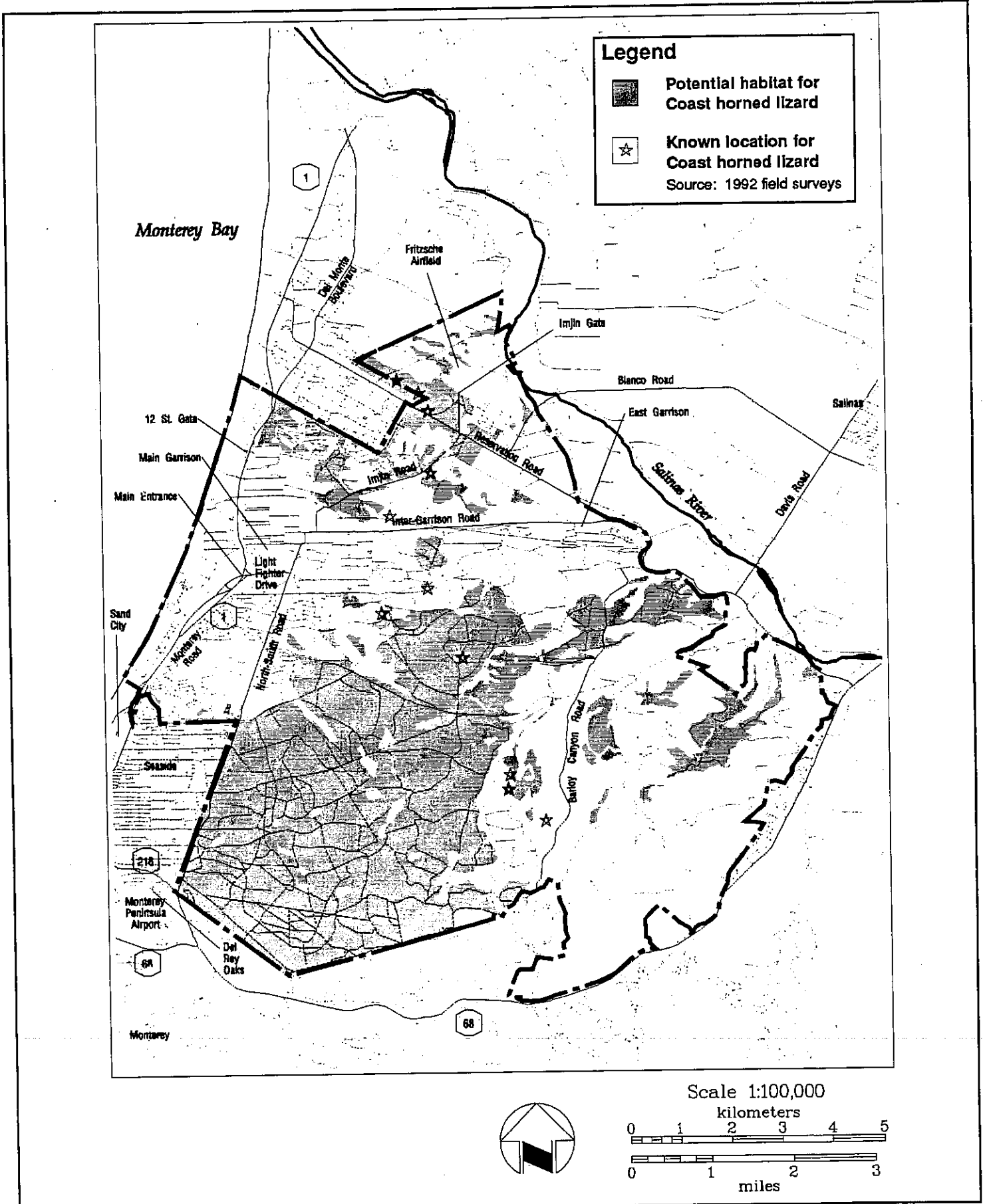


Figure H-20  
 Potential and Occupied Habitat for Coast Horned Lizard



Potential and Occupied Habitat for Salinas Harvest Mouse

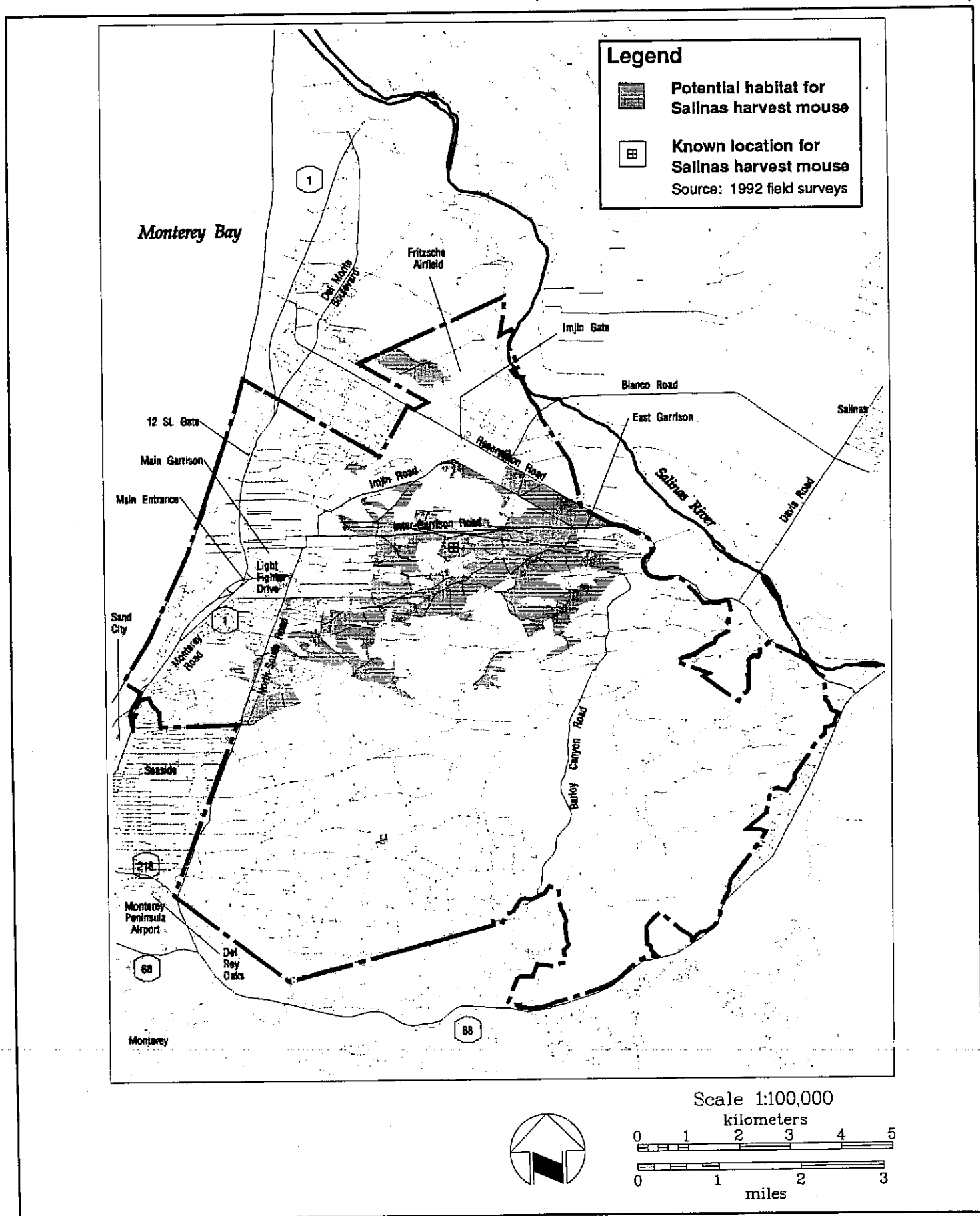
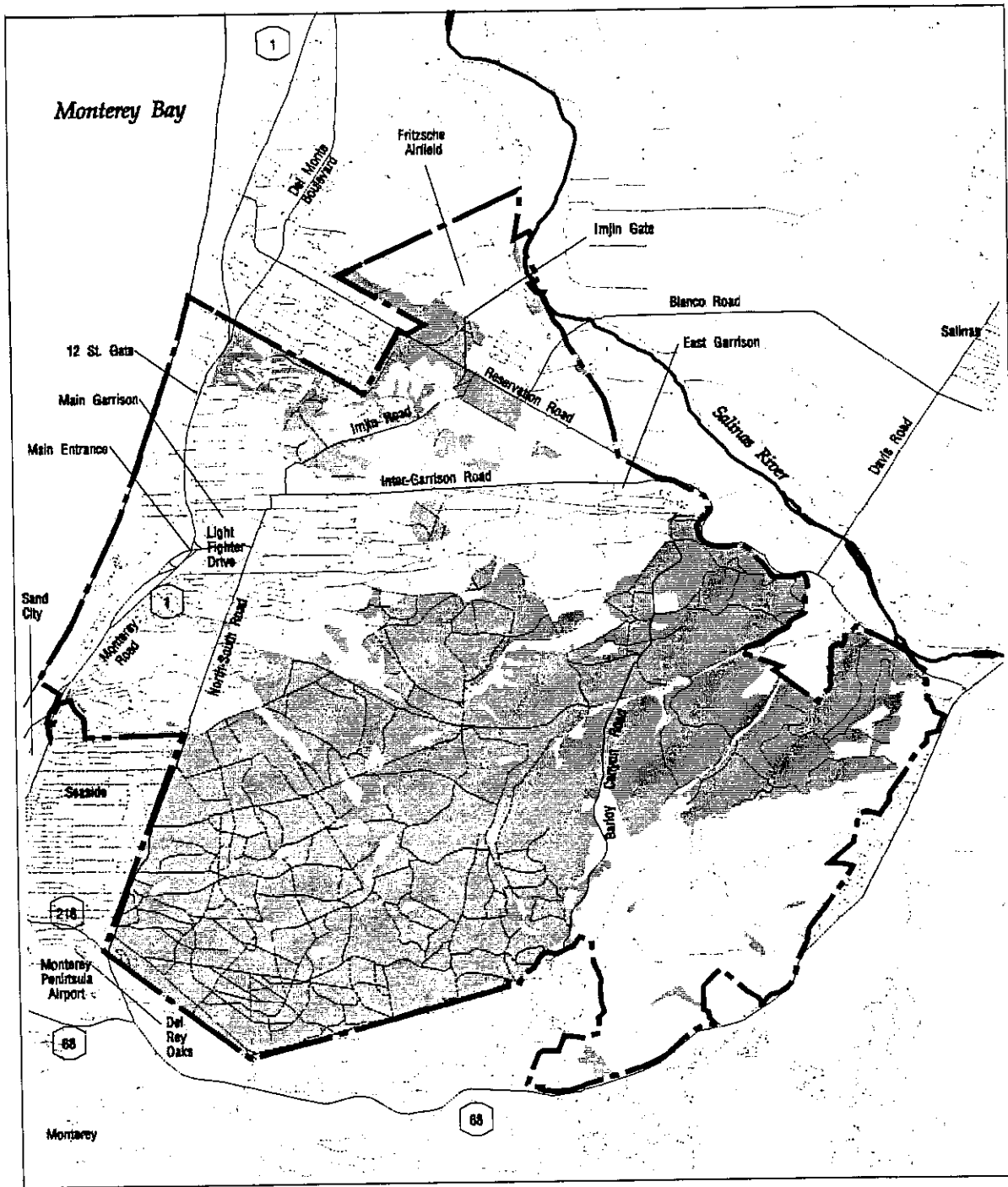

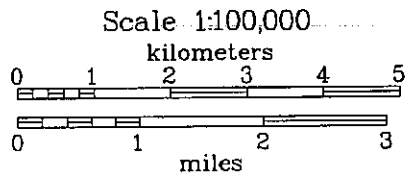


Figure H-22  
 Potential Habitat for Greater Roadrunner

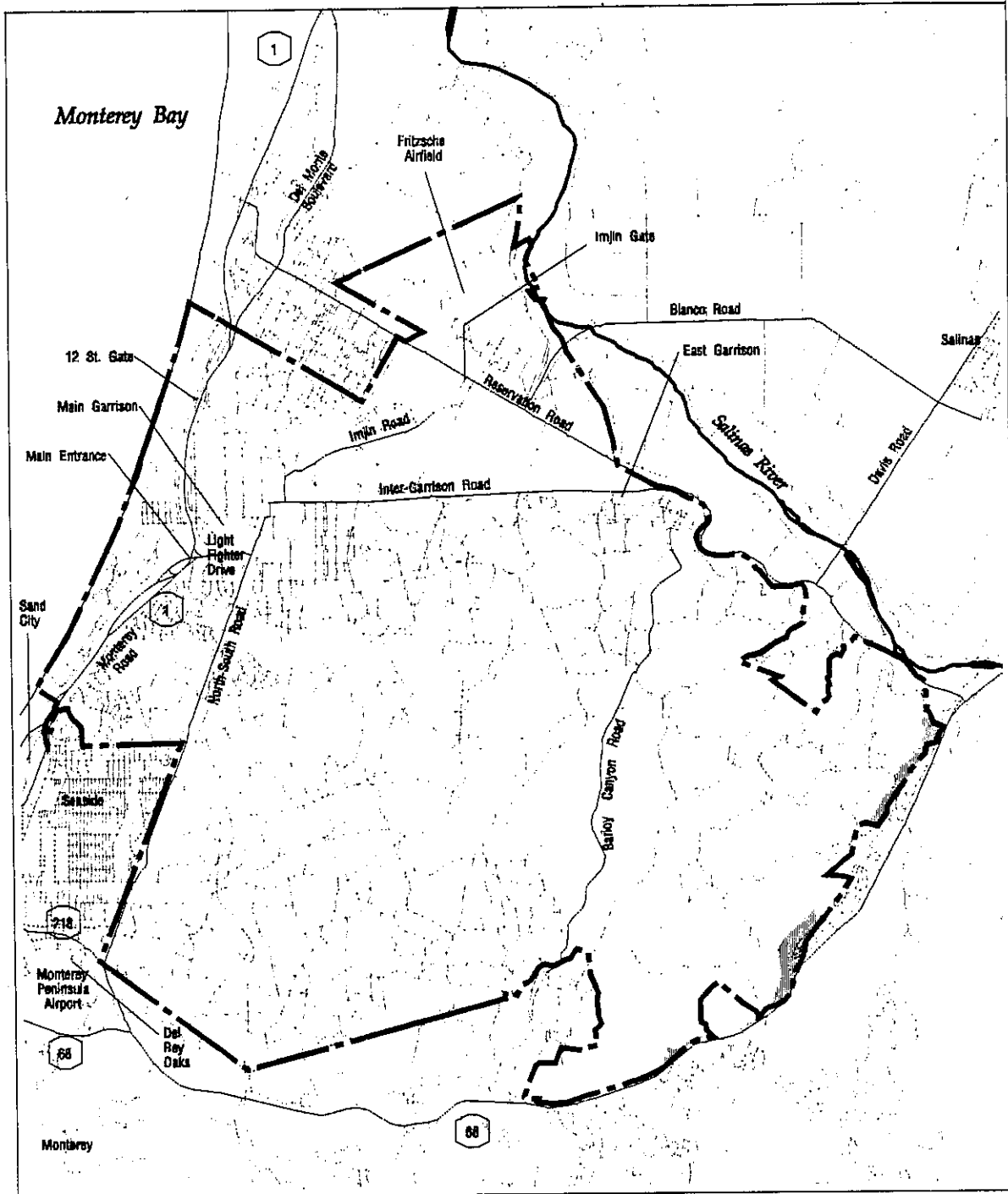


**Legend**


 Potential habitat for Greater roadrunner

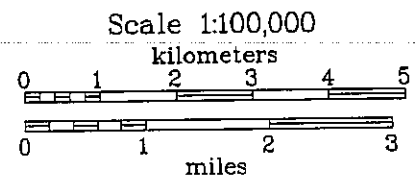
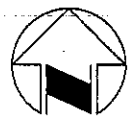


Potential Habitat for Swainson's Thrush and Common Yellow Throat



**Legend**

 Potential habitat for Swainson's thrush and Common yellow throat



## **Appendix I. Baseline Descriptions of Native Plant Reserves**

Baseline ecological information collected on the 12 native plant reserves at Fort Ord is presented in this appendix. Ecological information is based on field surveys conducted October 2 and November 10, 1992. During these surveys, the following information was gathered on each plant reserve: community types present, plant species identifiable during November, overall condition of the reserve and maintenance needs, and unique ecological conditions on the reserves. Plant species identified in each reserve are listed in Table I-1.

### **Native Plant Reserve 1**

Native plant reserve 1 covers 8 acres and is located at the corner of North-South Road and South Boundary Road in the extreme southwest portion of the base. The reserve is composed primarily of coastal coast live oak woodland and sand hill maritime chaparral with interspersed coastal scrub species. Chaparral occurs along the edges of the reserve, intergrading with oak woodland toward the ravine. The maritime chaparral in reserve 1 is characterized by shaggy-barked manzanita, sandmat manzanita, California sagebrush, black sage, coyote brush, heather goldenbush, Eastwood's ericameria, Monterey ceanothus, and chamise. The coastal coast live oak woodland is characterized by low, wind-pruned coast live oaks with an understory of California coffeeberry and annual grasses.

Monterey ceanothus, sandmat manzanita, Eastwood's ericameria, and seaside bird's beak occur along the perimeter of the plant reserve. Monterey spineflower was identified in this reserve during spring 1991 field surveys. Special-status plant populations appear healthy and viable at this time. However, because the populations are adjacent to major roads, the plants could be adversely affected in the future by off-road vehicle activity.

### **Native Plant Reserve 2**

Native plant reserve 2 is located north of Indian Head Beach on the dunes. Coastal strand and ice plant mats form the dominant vegetation cover on the 26-acre reserve. One patch of coastal strand vegetation occurs on a north-facing bluff in the western portion of the reserve. In this area, heather goldenbush dominates with interspersed wild buckwheat, seacliff buckwheat, California croton, sea lettuce, bush lupine, and African ice plant. Coastal strand vegetation in this area is composed of approximately 20% African ice plant. In contrast, the remaining portion of reserve 2 is dominated by an approximate 90% cover of African ice plant. Coastal strand vegetation such as wild buckwheat, heather goldenbush,

Table I-1. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>	Occurrences in Native Plant Reserves
<i>Ericameria ericoides</i>	Heather goldenbush/mock heather	SD, CS, MC, G	1, 2, 3, 6, 8, 9, 10
<i>Ericameria fasciculata</i>	Eastwood's ericameria	MC, CS, SD	1, 3
<i>Erigeron foliosus</i>	Slender fleabane	CS, MC, OW	2, 9, 10
<i>Eriodictyon californicum</i>	California yerba santa	MC	5
<i>Eriogonum latifolium</i>	Wild buckwheat	AD, SD	2, 10
<i>Eriogonum nudum</i>	Naked buckwheat	AD, CS, MC	9
<i>Eriogonum parvifolium</i>	Seacliff buckwheat	AD, SD	2, 10
<i>Eriophyllum confertiflorum</i>	Golden yarrow	CS, MC	1, 3, 4
<i>Eryngium vaseyi</i>	Vasey's coyote-thistle	VP	12
<i>Erysimum ammophilum</i>	Coast wallflower	MC, SD	2
<i>Eschscholzia californica</i> var. <i>maritima</i>	Beach poppy	AD, SD	2, 10
<i>Garya elliptica</i>	Wavy/coast silktassel	MC	3, 4, 6
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	Sand gilia	MC	1, 3, 4, 5, 6
<i>Helianthemum scoparium</i>	Rush rose	MC, OW, CS	3, 4, 5, 6
<i>Heteromeles arbutifolia</i>	Toyon	MC, OW	6
<i>Heterotheca grandiflora</i>	Telegraph weed	OW, G, CS, MC, D	6
<i>Hordeum hystrix</i>	Mediterranean barley	G, VP	11
<i>Horkelia cuneata</i> var. <i>cuneata</i>	Common wedge-leaf horkelia	MC, G, CS	1, 3, 4, 5
<i>Juncus bufonius</i>	Common toad rush	VP	11
<i>Juncus phaeocephalus</i>	Brown-headed rush	VP	12
<i>Lepechinia calycina</i>	Pitcher sage	MC	4
<i>Lolium multiflorum</i>	Italian ryegrass	G	7, 11
<i>Lomatium parvifolium</i>	Small-leaved lomatium	MC	5
<i>Lotus scoparius</i>	Deerweed	MC, CS	1, 3, 6, 8, 9
<i>Lupinus arboreus</i>	Bush lupine	SD, CS	1, 9
<i>Lupinus nanus</i>	Sky lupine	G, SD	2, 10
<i>Melica californica</i>	California melic grass	G, MC, CS	11
<i>Mimulus aurantiacus</i>	Sticky monkeyflower	CS, MC, OW	1, 3, 4, 6, 8, 11
<i>Plagiobothrys trachycarpus</i>	Rough-fruited popcornflower	FM, VP	12
<i>Plantago major</i>	Broadleaf plantain	D, G	1, 3

Table I-1. Continued

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>	Occurrences in Native Plant Reserves
<i>Poa</i> sp.	Bluegrass	G	1, 11
<i>Quercus agrifolia</i>	Coast live oak	OW	1, 3, 4, 6, 7, 8, 9, 11
<i>Rhamnus californica</i>	California coffeeberry	MC, OW, CS	1, 3, 10
<i>Ribes malvaceum</i>	Chaparral currant	OW, MC	5
<i>Rubus ursinus</i>	Pacific blackberry	OW, R	1, 4
<i>Rumex crispus</i>	Curly dock	G, VP	11
<i>Salix lasiolepis</i>	Arroyo willow	R	4, 6
<i>Salvia mellifera</i>	Black sage	MC, CS	1, 3, 4, 5, 6, 8, 9
<i>Stipa pulchra</i>	Purple needlegrass	G, CS, MC	7, 11
<i>Toxicodendron diversilobum</i>	Poison-oak	OW, CS, MC	1, 4, 10

<sup>a</sup>Habitat types:

- AD = active dune.
- SD = stabilized dune.
- CS = coastal scrub.
- MC = maritime chaparral.
- OW = oak woodland.
- G = grassland.
- VP = vernal pool.
- R = riparian forest.
- FM = freshwater marsh.
- D = disturbed sites.



beach poppy, and sea lettuce are scattered through portions of ice plant mat areas, while other sites are dominated exclusively by African ice plant.

Populations of Monterey spineflower and coast wallflower were identified in the reserve during spring 1991 field surveys.

### **Native Plant Reserve 3**

Native plant reserve 3 is composed of 16 acres of sand hill maritime chaparral with interspersed coast live oak woodland and coastal scrub vegetation. The reserve is located along Eucalyptus Road, across from the Inland Range Area. Dominant vegetation in reserve 3 includes shaggy-barked manzanita, sandmat manzanita, Monterey ceanothus, chamise, sticky monkeyflower, black sage, California coffeeberry, toyon, coyote brush, heather goldenbush, and Eastwood's ericameria. Coast live oaks are scattered in denser areas of maritime chaparral. Vegetation on the reserve varies from 50% cover in open sandy areas to 100% cover in the western portion of the reserve.

Toward the center of the reserve, open sandy areas support Monterey ceanothus, Eastwood's ericameria, and sandmat manzanita. Other special-status plant species that may also occur in this sandy area include sand gilia, Monterey spineflower, Virgate's eriastrum, and wedge-leaf horkelia. Special-status plant populations identified during November surveys appear to be reproducing and healthy.

### **Native Plant Reserve 4**

Native plant reserve 4 occurs along Eucalyptus Road and encompasses 31 acres of maritime chaparral, chamise chaparral, and coastal scrub vegetation. Aromas Formation gives way to sand hills in this reserve, providing substrate for a diverse mix of chaparral species. Maritime chaparral is the dominant community type on the reserve and is dominated by shaggy-barked manzanita, Hooker's manzanita, Toro manzanita, sandmat manzanita, Monterey ceanothus, coast whitethorn, toyon, chamise, coast live oak, and rush rose. A large portion of this maritime chaparral was recently burned. Fire, an essential component in the chaparral community, increases species diversity by opening up a closed canopy area to colonizing species and benefits stump sprouters that require fire for regeneration. Coast live oak, shaggy-barked manzanita, Monterey ceanothus, and chamise are resprouting and a variety of postfire annuals have established.

Maritime chaparral grades into chamise chaparral along a rock cliff in the north-east corner of the reserve. Chamise chaparral is dominated by chamise and Hooker's manzanita. Coastal scrub vegetation occurs scattered throughout the chamise and maritime chaparral

communities. Typical species include black sage, coyote brush, sticky monkeyflower, Pacific blackberry, and poison-oak.

Special-status plant species that occur in the native plant reserve include sandmat manzanita, Monterey ceanothus, Hooker's manzanita, and Toro manzanita. All plants appear to be reproducing and healthy.

### **Native Plant Reserve 5**

Native plant reserve 5 occurs along Eucalyptus Road, adjacent to reserve 4. This reserve encompasses 8 acres of maritime chaparral and chamise chaparral. The species association is similar to plant reserve 4, except chamise chaparral is the dominant community type. Native plant reserve 5 also burned during the May fire and supports resprouting chamise, shaggy-barked manzanita, and coast live oak species. Dense stands of Hooker's manzanita, shaggy-barked manzanita, and chamise occur in unburned areas of the reserve.

Hooker's manzanita, Monterey ceanothus, and Toro manzanita occur in reserve 5. These species appear to be healthy and viable. Small-leaved lomatium was identified in the reserve during spring field surveys.

### **Native Plant Reserve 6**

Native plant reserve 6 is the largest of the reserves, covering 42 acres of maritime chaparral, chamise chaparral, and coast live oak woodland. The reserve occurs along Barloy Canyon Road, extending across both sides of the road. Aromas formation maritime chaparral covers most of the reserve and is characterized by a mix of coastal scrub and chaparral species. Dominant plant species include shaggy-barked manzanita, Toro manzanita, Hooker's manzanita, chamise, black sage, Monterey ceanothus, heather golden-bush, sticky monkeyflower, coast live oak, toyon, and rush rose. This association grades into dense chamise chaparral in the western portion of the reserve.

Maritime chaparral forms a sparse understory in the coast live oak woodland. This woodland develops in an east-west drainage in the center of the reserve.

An extensive stand of Toro manzanita and Monterey ceanothus occurs on the west side of Barloy Canyon Road.

### **Native Plant Reserve 7**

Mima mound topography, valley needlegrass grassland, and inland coast live oak woodland characterize the 5 acres in native plant reserve 7. The reserve is located in the eastern portion of the base, along Crescent Bluffs Road. Purple needlegrass and blue ryegrass form a 20-30% cover on the reserve with intermixed annual grassland species. Inland coast live oak woodland encroaches into the grassland, forming an oak woodland-grassland ecotone in some areas.

### **Native Plant Reserve 8**

Native plant reserve 8 occurs along Crescent Bluffs Road, west of reserve 7. Inland coast live oak woodland dominates the 4-acre reserve with some components of maritime chaparral and coastal scrub in the oak woodland understory and around the reserve perimeter. Large coast live oaks form a canopy layer above a mix of annual grasses and Toro manzanita, Hooker's manzanita, heather goldenbush, coyote brush, California sagebrush, sticky monkeyflower, and black sage. The southern perimeter of the reserve supports stands of tall, old Toro manzanita. A small grassland area in the center of the reserve contains scattered Monterey ceanothus.

Special-status plant species located in reserve 8 appear to be healthy, except for the Toro manzanita, which does not appear to be regenerating. Control burns around the reserve perimeter would benefit the Toro manzanita, which requires fire to regenerate.

### **Native Plant Reserve 9**

Native plant reserve 9 occurs along a south-facing slope on Crescent Bluffs Road, south of reserves 7 and 8. The reserve encompasses 11 acres of coastal scrub, inland coast live oak woodland, and chamise chaparral. Coastal scrub is the dominant plant community in the reserve and is composed of black sage, heather goldenbush, California sagebrush, and deerweed. Less common species found scattered throughout the scrub community include coyote brush, California croton, bush lupine, and Seaside bird's-beak. Individual and clumps of coast live oak trees occur throughout the reserve. Dense stands of chamise chaparral occur along the ridge toward the eastern portion of the reserve.

Seaside bird's beak occurs along the roadside at the western edge of the reserve. A population of approximately 150 plants appears to be thriving in sandy openings within reserve 9.

### **Native Plant Reserve 10**

Native plant reserve 10 is located in the coastal dunes at the southwest corner of Fort Ord and has been designated as a Smith's blue butterfly reserve. Reserve 10 covers 17 acres of coastal strand and ice plant mat vegetation. The largest extent of coastal strand vegetation in the reserve occurs along a north-facing slope at the southern end of the reserve. Dominant species in this area include heather goldenbush, seacliff buckwheat, wild buckwheat, poison-oak, California sagebrush, sky lupine, and sea lettuce. Ice plant mats dominate the northern side of the reserve. This community of invasive weeds is dominated by seafig and African ice plant. One large patch of poison-oak occurs in the center of the reserve, forming a border between the coastal strand and ice plant mat vegetation.

### **Native Plant Reserve 11**

Mima mound topography, purple needlegrass grassland, and wet meadow characterize the 10 acres on native plant reserve 11. Purple needlegrass grassland is concentrated along the upslope portion of the reserve. Purple needlegrass and California melic form a 15-20% cover in a predominantly annual grassland. Scattered coyote brush and sticky monkeyflower shrubs are establishing localized areas of the grassland. Wet meadow occurs in a few areas between mima mounds and is dominated by common toad rush, short-ligule sedge, curly dock, and Italian ryegrass. Inland coast live oak woodland occurs around the perimeter of the reserve.

### **Native Plant Reserve 12**

Native plant reserve 12 covers 32 acres and encompasses Machine Gun Flats, a site supporting the largest vernal pool at Fort Ord. The vernal pool is surrounded by an area characterized by mima mound topography and purple needlegrass grassland. Spike-rush, saltgrass, coyote thistle, common toad rush, brown-headed rush, and popcornflower were the dominant plant species identified in the pool during spring field surveys.

Table I-1. Initial List of Plant Species Identified in  
Native Plant Reserves at Fort Ord

Scientific Name	Common Name	Typical Habitat(s) at Fort Ord <sup>a</sup>	Occurrences in Native Plant Reserves
<i>Achillea millefolium</i> var. <i>californica</i>	California white yarrow	G, OW, MC, SD	7
<i>Adenostoma fasciculatum</i>	Chamise	MC	1, 3, 4, 5, 6, 8
<i>Arctostaphylos hookeri</i>	Hooker's manzanita	MC	4, 5, 6, 8
<i>Arctostaphylos montereyensis</i>	Toro manzanita	MC	4, 5, 6, 8
<i>Arctostaphylos pumila</i>	Sandmat manzanita	MC	1, 2, 3, 4
<i>Arctostaphylos tomentosa</i> ssp. <i>crinita</i>	Woollyleaf manzanita	MC	4
<i>Arctostaphylos tomentosa</i> ssp. <i>tomentosa</i>	Shaggy-barked manzanita	MC	1, 3, 4, 5, 6, 8
<i>Artemisia californica</i>	California sagebrush	CS	1, 3, 8, 9, 10
<i>Avena fatua</i>	Wild oat	G, OW	1, 7, 11
<i>Baccharis pilularis</i> var. <i>consanguinea</i>	Coyote brush/chaparral broom	CS, SD, OW, MC	1, 3, 4, 6, 8, 9, 11
<i>Brassica geniculata</i>	Summer mustard	G, SD	8
<i>Bromus diandrus</i>	Ripgut brome	G, SD	1, 11
<i>Bromus rubens</i>	Red brome	G, MC	4, 7
<i>Carex brevicaulis</i>	Short-ligule sedge	G	11
<i>Carpobrotus aequilaterus</i>	Sea fig	SD, AD	10
<i>Carpobrotus edulis</i>	African ice plant/Hottentot fig	SD, AD	1, 2, 3, 4, 6, 10
<i>Ceanothus rigidus</i>	Monterey ceanothus	MC	1, 3, 4, 5, 6, 8
<i>Ceanothus thyrsiflorus</i>	Blue-blossom ceanothus	MC	4, 6
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spine-flower	MC, CS, SD, G	1, 2
<i>Conyza canadensis</i>	Western horseweed	R, G	4
<i>Cordylanthus rigidus</i> var. <i>littoralis</i>	Seaside bird's beak	MC, G	1, 9
<i>Cortaderia atacamensis</i>	Pampas grass	D	3, 4, 6
<i>Croton californicus</i>	California croton	MC, CS, AD, G, SD	2, 9, 10
<i>Cytisus monspessulanus</i>	French broom	D, CS, G, MC	1, 4
<i>Distichlis spicata</i>	Saltgrass	VP	12
<i>Dudleya caespitosa</i>	Sea lettuce	AD	2, 10
<i>Eleocharis macrostachya</i>	Common spike-rush	VP	12
<i>Elocharis</i> sp.	Spike-rush	VP	12
<i>Elymus glaucus</i>	Woodland/blue rye-grass	G, OW, CS	7

