Fort Ord Disposal and Reuse
Biological Assessment

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Table of Contents

List of Tables

List of Figures and Attachments

Attachments

Executive Summary

INTRODUCTION

The Department of the Army (Army) has been directed to close the installation at Fort Ord, California, pursuant to the Defense Base Closure and Realignment Act of 1990. The Army is proposing to retain the existing reserve center and establish a Presidio of Monterey annex. The Army will be placing other property in a caretaker status and will continue to conduct the Superfund environmental cleanup at Fort Ord. The Army will be evaluating potential interim uses of available facilities and will dispose of excess property. The Army's proposed action is considered a major federal action (40 CFR 1508.18) that may affect federally proposed and listed threatened or endangered species at Fort Ord. Therefore, under Section 7(a)(2) of the Endangered Species Act (16 USC 1536[c]), the Army is required to prepare a biological assessment.

This draft Fort Ord Disposal and Reuse Biological Assessment addresses the potential effects of the Army's action on listed and proposed threatened and endangered species and the potential effects on federal candidates (Categories 1 and 2) for listing as threatened and endangered at Fort Ord. Cumulative effects are addressed for all species considered.

Summaries of impacts and mitigation for caretaker, disposal, and reuse actions are presented in the following sections.

CARETAKER

Approximately 75% of the occupied habitat of sand gilia and Monterey spineflower could be adversely affected by clearance of unexploded ordnance. Populations of and habitat for California linderiella, seven federal candidate plant species, and two federal candidate wildlife species, could also be adversely affected. To minimize adverse impacts on sand gilia, Monterey spineflower, and federal candidate species, a habitat management plan (HMP) incorporating a rotational vegetation management plan would be developed and implemented. A habitat restoration plan for vernal pools and ponds affected by unexploded ordnance removal would be developed and implemented to minimize impacts on California linderiella. Black legless lizards would be captured before cleanup and relocated.

Potential loss of sand gilia, Monterey spineflower, and four federal candidate plant species could occur during the treatment of contaminated soils at Fritzche Army Airfield and during landfill remediation. Impacts would be minimized by avoiding federally listed and candidate species populations and storing dormant seed and topsoil for later restoration.

Loss of Monterey spineflower, Smith's blue butterfly, and western snowy plover populations and habitat could occur if lead and other heavy metals are removed from the beach firing range. This impact could be reduced by developing and implementing a HMP for Monterey spineflower and Smith's blue butterfly involving both avoidance of populations and habitat restoration. Lead removal would be scheduled between October and February to avoid disturbing nesting western snowy plovers.

No impacts on robust spineflower, southern sea otter, and American peregrine falcon are expected to occur during caretaker status. No mitigation is required.

DISPOSAL

The Army's disposal of Fort Ord could lead to a reduction in federal protection for both sand gilia and Monterey spineflower, and loss of populations and habitat for sand gilia, Monterey spineflower, Smith's blue butterfly, California linderiella, western snowy plover, and federal candidate species. The Army could reduce impacts on all these species by developing a multispecies HMP for disposal of Fort Ord involving all federally listed, proposed, and candidate plant and wildlife species at Fort Ord. The HMP would protect populations and habitat of these species while allowing for incidental take and responsible development. New landowners would follow the HMP developed by the Army.

No impacts on robust spineflower, American peregrine falcon, and southern sea otter are expected to occur from disposal activities. No mitigation is required.

One federal candidate species, the black legless lizard, could suffer losses from the removal of lead and other heavy metals from the beach firing ranges. Dune areas would be created, restored, or enhanced to improve habitat quality for the black legless lizard and measures to minimize their mortality would be taken.

REUSE

Reuse impacts on federally listed, proposed, and candidate plants and wildlife species are summarized in Table S-1.

Alternative 1: High-Intensity Mixed Use

Alternative 1 would result in the loss of over 90% of the occupied habitat of sand gilia and Monterey spineflower at Fort Ord. Roughly 22% of Smith's blue butterfly habitat and 92% of California linderiella habitat would also be lost under Alternative 1. Under Alternative 1, Subalternative C, southern sea otter would be adversely affected by coastal development, and Smith's blue butterfly habitat losses would increase to 67%. All eight federal candidate plant species would suffer an average loss in occupied habitat of approximately 93%. All nine federal candidate wildlife species would suffer an average habitat loss of approximately 81%. Impacts on all species could be reduced by preserving populations and habitat through developing and implementing a multispecies HMP and preserving maritime chaparral habitat by preparing and implementing a natural community conservation plan (NCCP). The HMP and NCCP would require substantial reorganization and reduction in densities of proposed development under Alternative 1.

Alternative 2: Medium-Intensity Mixed Use

Alternative 2 would result in the loss of over 50% of the occupied habitat of sand gilia and Monterey spineflower at Fort Ord. Roughly 14% of Smith's blue butterfly habitat and 23% of California linderiella habitat would be lost under Alternative 2. The eight federal candidate plant species would suffer an average loss in occupied habitat of approximately 55%. All nine federal candidate wildlife species would suffer an average habitat loss of 50%. Impacts on these species could be reduced by implementing the mitigation described for Alternative 1. The HMP and NCCP would require substantial reorganization and density reduction of development under Alternative 2.

Alternative 3: Low-Intensity Mixed Use

Alternative 3 would result in the loss of approximately 30% of the occupied habitat of sand gilia and Monterey spineflower. Roughly 1% of Smith's blue butterfly habitat and 6% of California linderiella habitat would be lost under Alternative 3. An average loss of approximately 20% of the occupied habitat of the eight federal candidate plant species would occur. All nine federal candidate wildlife species would suffer an average habitat loss of roughly 21%. Impacts on these species could be reduced by implementing the mitigation described for Alternative 1. The HMP and NCCP would require some reorganization of development under Alternative 3.

Alternative 4: Institutional Use

Alternative 4 would result in the loss of approximately 20% of the occupied habitat of sand gilia and Monterey spineflower. Roughly 8% of Smith's blue butterfly habitat and 14% of California linderiella habitat would be lost under Alternative 4. Seven of the federal candidate plant species would suffer an average loss in occupied habitat of about 15%. No losses of Seaside bird's-beak would occur under Alternative 4. All nine federal candidate wildlife species would suffer an average habitat loss of roughly 16%. Impacts on affected species could be reduced by following the mitigation described for Alternative 1. The HMP and NCCP would require some modification of development under Alternative 4.

Alternative 5: Open Space

Alternative 5 would result in the loss of less than 1% of the occupied habitat of sand gilia, Monterey spineflower, and six of the federal candidate plant species at Fort Ord. Alternative 5 would not affect populations of Seaside bird's-beak or Hickman's onion. Roughly 1% of Smith's blue butterfly habitat would be lost under Alternative 5; California linderiella would not be affected. All nine federal candidate wildlife species would suffer an average habitat loss of roughly 4%. Impacts could be minimized by avoiding development in areas occupied by populations of federally listed, proposed, or candidate plant and wildlife species or populations with high habitat value, and by establishing and protecting new populations of affected species.

Alternative 6: Anticipated Reuse

Alternative 6 would result in the loss of approximately 25% of the occupied habitat of sand gilia and 30% of the occupied habitat of Monterey spineflower. Seven of the federal candidate plant species would suffer an average loss in occupied habitat of 15%. No populations of Seaside bird's-beak would be affected. Approximately 1% of Smith's blue butterfly habitat and 15% of California linderiella habitat would be lost under Alternative 6. All nine federal candidate species would suffer an average habitat loss of roughly 23%. Impacts on all affected species could be reduced by preserving populations and habitat through developing and implementing a multispecies HMP and preserving maritime chaparral habitat by preparing and implementing an NCCP. The HMP and NCCP would require some reorganization of development under Alternative 6. The loss of federal candidate wildlife and plant species could also be reduced by redesigning projects to avoid known populations and establishing new populations where feasible.

Table S-1. Estimated Percent Loss of Known Range of Federally Listed Threatened, Endangered, and Candidate Plant and Wildlife Species at Fort Ord by Alternative

Species	Listing Status[a] Federal/State/CNPS	Alternative[a] 1	1C	2	3	4	5	6
Plants								
Sand gilia *Gilia tenuiflora ssp. arenaria*	E/T/1b	40-70	40-70	30-50	10-30	5-20	<1	10-25
Monterey spineflower *Chorizanthe pungens* var. *pungens*	PE/--/1b	65-90	65-95	35-60	15-40	10-30	<1	15-40
Robust spineflower *Chorizanthe robusta* var. *robusta*	PE/--/4	0	0	0	0	0	0	0
Seaside bird's-beak *Cordylanthus rigidus* var. *littoralis*	C1/E/1b	25-50	25-50	10-25	<10	0	0	0
Hickman's onion *Allium hickmanii*	C1/--/1b	<5	<5	<3	<3	<2	0	<1
Toro manzanita *Arctostaphylos montereyensis*	C2/--/1b	55-90	55-90	20-45	5-15	5-10	<1	5-15
Sandmat manzanita *Arctostaphylos pumila*	C2/--/1b	55-90	55-90	30-60	10-30	5-20	<1	5-20
Monterey ceanothus *Ceanothus rigidus*	C2/--/4	40-70	40-70	20-40	5-20	5-15	<1	5-10
Eastwood's ericameria *Ericameria fasciculata*	C2/--/1b	55-90	55-90	30-60	5-15	5-10	<1	5-15
Coast wallflower *Erysimum ammophilum*	C2/--/1b	10-30	10-30	5-25	5-15	2-10	<1	2-10
Wedge-leaved horkelia *Horkelia cuneata ssp. sericea*	C2/--/1b	10	10	<3	<3	<2	<1	<2
Yadon's piperia *Piperia yadoni*	--[b]/--/1b	<1	<1	<1	<1	0	0	<1

Table S-1. Continued

Species	Listing Status[a] Federal/State/CNPS	Alternative[a] 1	1C	2	3	4	5	6
Wildlife								
Smith's blue butterfly *Euphilotes enoptes smithi*	FE/–	<3	3-7	<2	<1	<1	<1	<1
American peregrine falcon *Falco peregrinus anatum*	FE/E	0	0	0	0	0	0	0
Southern sea otter *Enhydra lutris nereis*	FE/–	<1	<5					
California linderiella *Linderiella occidentalis*	PE/–	<1	<1	<1	<1	<1	0	<1
Western snowy plover *Charadrius alexandrinus nivosus*	PT/SSC	<1	<1	<1	<1	<1	<1	<1
California red-legged frog *Rana aurora draytoni*	C1 (LP)/SSC	<1	<1	<1	<1	<1	0	<1
Southwestern pond turtle *Clemmys marmorata pallida*	C1 (LP)/SSC	<1	<1	<1	<1	<1	0	<1
Monterey ornate shrew *Sorex ornatus salarius*	C2/–	10-25	10-25	10-20	5-15	5-10	<5	10-20
Monterey dusky-footed woodrat *Neotoma fuscipes luciana*	C2/–	<5	<5	<5	<2	<2	<1	<2
Loggerhead shrike *Lanius ludovicianus*	C2/–	<1	<1	<1	<1	<1	<1	<1
California horned lark *Eremophila alpestris actia*	C2/–	<1	<1	<1	<1	<1	<1	<1
Tricolored blackbird *Agelaius tricolor*	C2/SSC	<1	<1	<1	<1	<1	<1	<1
California tiger salamander *Ambystoma tigrinum californiense*	C2(LP)/SSC	<1	<1	<1	<1	<1	0	<1
California black legless lizard *Anniella pulchra nigra*	C2(LP)/SSC	10-20	10-20	10-20	5-10	<5	<1	<10

Table 6-3. Continued

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* Impacts resulting from all subalternatives except 1C are not substantially different from the alternatives.

[a] Status definitions:

Federal

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

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

PE = federally proposed for listing as endangered.

LP = listing package being reviewed by USFWS.

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.

State

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

SSC = considered a State Species of Special Concern by California Department of Fish and Game.

– = no status.

California Native Plant Society

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

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

[b] Listing package is in preparation by USFWS (U.S. Fish and Wildlife Service pers. comm.).

Chapter 1. Purpose, Need, and Scope

PURPOSE AND NEED OF THE BIOLOGICAL ASSESSMENT

The Department of the Army (Army) has been directed to close and dispose of excess federal property at Fort Ord, California (Defense Base Closure and Realignment Act of 1990). An environmental impact statement (EIS), as required by the National Environmental Policy Act (NEPA), is being prepared to evaluate the Army's proposed action and alternatives (U.S. Army Corps of Engineers, Sacramento District 1992). The EIS focuses on the disposal of excess property, retention of the reserve center, and establishment of a Presidio of Monterey (POM) annex. Reuse of the property, which is an action to be taken by local agencies and private parties, is analyzed as an indirect or secondary effect of executing the proposed action.

The Army's proposed action is considered a major federal action (40 CFR 1508.18) that may affect federally proposed and listed threatened or endangered plant and wildlife species occurring at Fort Ord. Therefore, under Section 7(a)(2) of the federal Endangered Species Act (16 USC 1536[c]), the Army is required to prepare a Biological Assessment (BA). The objectives of the BA are to evaluate the potential effects of the Army's action on proposed and listed species, to determine whether such species are likely to be adversely affected by the action, to evaluate cumulative effects on candidate species, and to determine whether formal consultation is required.

LOCATION

Fort Ord is an Army installation located along the Pacific Ocean in northern Monterey County, approximately 100 miles south of San Francisco (Figure 1-1). Fort Ord occupies approximately 28,000 acres, or 43 square miles, adjacent to Monterey Bay (a national marine sanctuary) and the Cities of Marina, Seaside, Sand City, Del Rey Oaks, and Monterey. The Southern Pacific Railroad and State Highway 1 cross the western section of Fort Ord, separating the coastline from the majority of the installation. Fort Ord is bound on the east by agricultural and undeveloped land.

Of the total Fort Ord acreage, 73% (approximately 20,000 acres) is in unincorporated Monterey County, 15% (approximately 4,100 acres) is within the Seaside city limits, and 12% (approximately 3,400 acres) is within the Marina city limits (Figure 1-2).

SCOPE OF THE BIOLOGICAL ASSESSMENT

The Army's proposed action is to dispose of excess property made available by the closure of Fort Ord, retain the reserve center, and establish a POM annex. Direct, indirect, and cumulative impacts from disposal and reuse were evaluated for all proposed and listed threatened or endangered species. Impacts on candidate species were evaluated if disposal or reuse could lead to federal listing of the species.

SPECIES CONSIDERED

The Army developed a list of all federally listed and proposed threatened and endangered and candidate Category 1 and 2 plant and wildlife species potentially occurring at Fort Ord (Tables 1-1 and 1-2). A list of federally listed and proposed threatened and endangered and candidate Category 1 and 2 marine wildlife species that may occur in the Monterey Bay is presented in Table 1-3. The list was refined based on a comprehensive literature review, discussions with knowledgeable individuals, extensive field surveys, and a review of the California Department of Fish and Game's (DFG's) California Natural Diversity Data Base (NDDB) reports and maps (U.S. Army Corps of Engineers, Sacramento District 1992).

The refined species list was sent to the U.S. Fish and Wildlife Service (USFWS) (Whitney pers. comm.) and subsequently approved (Chambers pers. comm.). Additional aspects of the project and impact analysis were discussed at meetings attended by the Army, USFWS, and DFG on August 7 and October 22, 1992, and January 5, 1993.

Figure 1-1
Location of Fort Ord

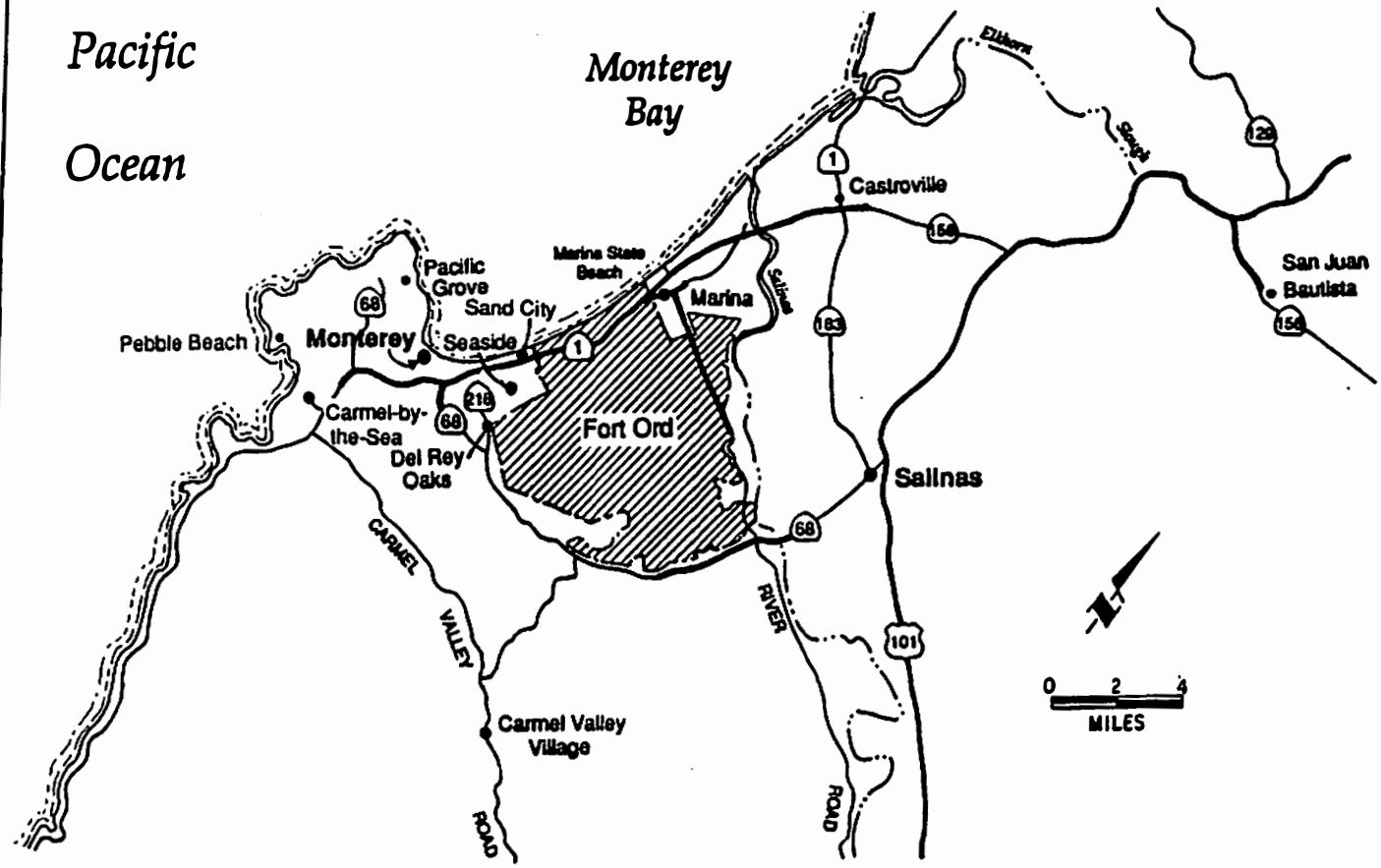


Figure 1-2

Local Jurisdictional Boundaries Surrounding Fort Ord

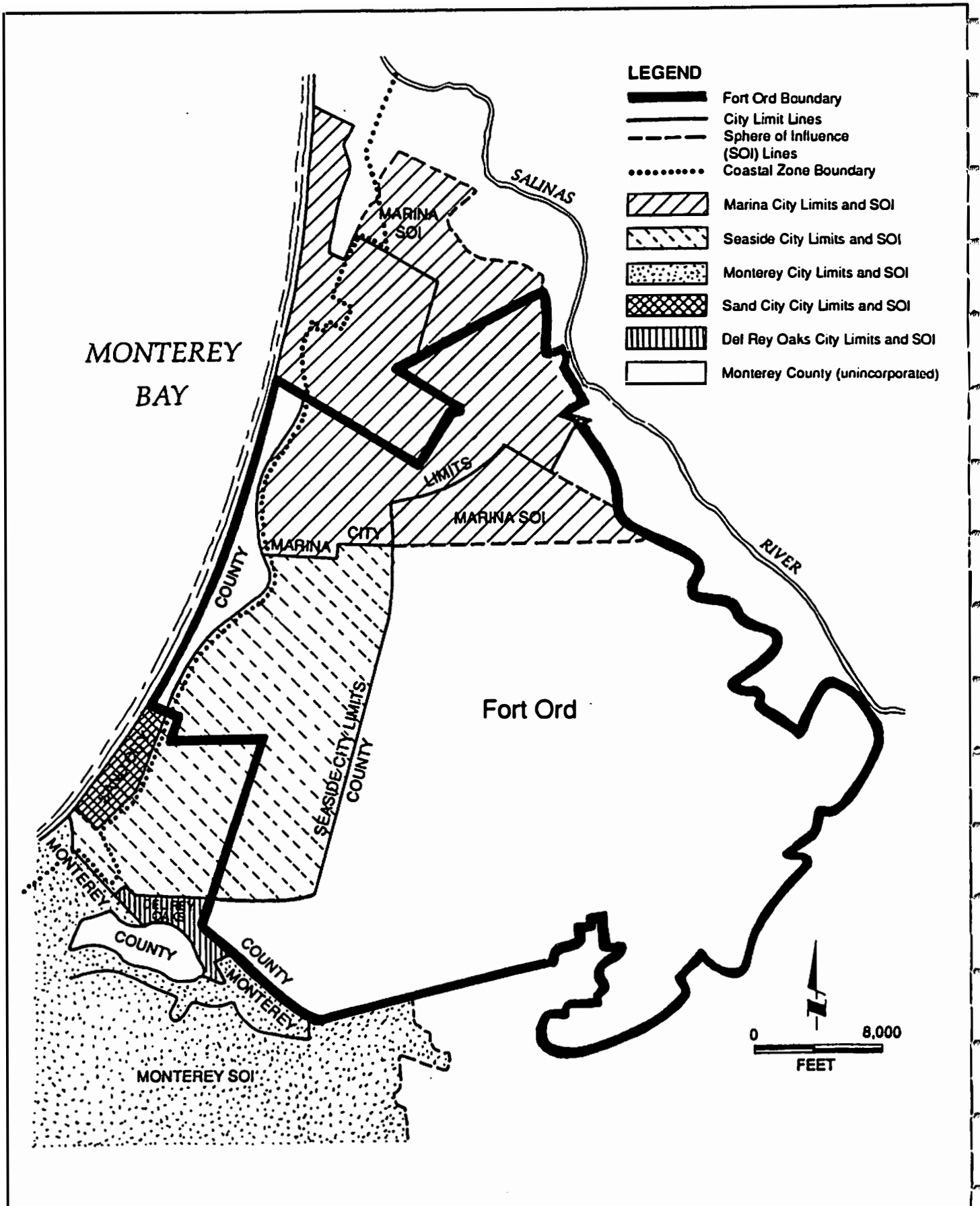


Table 1-1. Federally Listed, Proposed, and Candidate Plant Species Identified at Fort Ord during 1992 Surveys and the Relationship of Fort Ord to Known Distributions

Plant Species	Listing Status[a] Federal/ State/CNPS	RED Code[b]	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Importance of Fort Ord Population
Federally Listed or Proposed Species						
Sand gilia *Gilia tenuiflora* ssp. *arenaria*	E/T/1b	3-3-3	50-70	Sandy openings in coastal dunes and scrub and maritime chaparral	Occurs around Monterey Bay, Salinas River Beach, Asilomar State Beach, from Point Pinos to Point Joe, and Fort Ord (1, 2, 9)	Fort Ord provides suitable habitat for sand gilia and constitutes a substantial portion of its range (at least half)
Monterey spineflower *Chorizanthe pungens* var. *pungens*	PE/--/1b	3-3-3	75-95	Colonizes recently disturbed sandy sites in coastal dune, coastal scrub, grassland, and maritime chaparral habitats	Along the coast of southern Santa Cruz and northern Monterey Counties and inland to the coastal plain of the Salinas Valley (1, 4, 8)	Fort Ord supports the largest populations of Monterey spineflower known (7, 8)
Robust spineflower *Chorizanthe robusta* var. *robusta*	PE/--/4	1-1-3	<1	Found on sandy soils in coastal dune and coastal scrub habitats	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 (4, 5, 8)	Only several plants of robust spineflower were found at one site on Fort Ord; Fort Ord does not provide important habitat for this species (7)

Plant Species	Listing Status[a] Federal/ State/CNPS	RED Code[b]	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Importance of Fort Ord Population
State-Listed Species						
Seaside bird's-beak *Cordylanthus rigidus* var. *littoralis*	C1/E/1b	2-3-3	30-50[d]	Inhabits sandy soils of stabilized dunes, maritime chaparral, coastal scrub, and closed-cone coniferous forests	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 (1, 2)	A substantial portion of the range of Seaside bird's-beak is found at Fort Ord
Federal Candidate Species						
Toro manzanita *Arctostaphylos montereyensis*	C2/--/1b	3-2-3	70-90	Occurs on stabilized sandy soils and badlands in maritime chaparral	Restricted to several sites in Monterey County, including Fort Ord, Toro Regional Park, and Monterey Airport (1, 3)	Fort Ord supports the largest expanse of Toro manzanita in existence
Sandmat manzanita *Arctostaphylos pumila*	C2/--/1b	3-2-3	70-90	Sandhills of maritime chaparral and coast live oak woodland	Scattered locations around Monterey Peninsula and an extensive area on Fort Ord (1, 3)	A large and important part of the range of sandmat manzanita is found on Fort Ord
Hickman's onion *Allium hickmanii*	C1/--/1b	2-2-3	<5	Grassy openings in closed-cone pine forests, maritime chaparral, and valley and foothill grasslands	Monterey Peninsula, Fort Ord, Monterey Airport, and San Luis Obispo County (1)	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

Table 1-1. Continued

Plant Species	Listing Status[a] Federal/ State/CNPS	RED Code[b]	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Importance of Fort Ord Population
Monterey ceanothus *Ceanothus rigidus*	C2/--/4	1-2-3	50-70	Sandy hills and flats of maritime chaparral, closed-cone coniferous forests, and coastal scrub	Monterey County along the coast and Fort Ord, Toro Regional Park, Monterey Airport, and near Prunedale (1, 6)	The most abundant and probably most vigorous population of Monterey ceanothus is found on Fort Ord (3)
Eastwood's ericameria *Ericameria fasciculata*	C2/--/1b	3-3-3	70-90	Inhabits coastal dune and scrub, maritime chaparral, and closed- cone coniferous forest communities	Found in Monterey County, including Del Monte Forest, Monterey Airport, Toro Regional Park, near Prunedale, and Fort Ord (1)	Fort Ord supports most of the remaining individuals of Eastwood's ericameria (3)
Coast wallflower *Erysimum ammophilum*	C2/--/1b	2-2-3	10-30	Occurs scattered on stabilized coastal dunes	Coastal dunes of Monterey Bay and Santa Rosa Island, and coastal scrub on Fort Ord (10, 11)	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
Wedge-leaved horkelia *Horkelia cuneata* ssp. *sericea*	C2/--/1b	3-3-3	<10	Sandy and gravelly places in coastal scrub, maritime chaparral, and closed-cone coniferous forest communities	Along coast from Sonoma County to Santa Barbara County (10)	Wedge-leaved horkelia is widely distributed; Fort Ord likely comprises only a small part of its range

Plant Species	Listing Status[a] Federal/ State/CNPS	RED Code[b]	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Importance of Fort Ord Population
Yadon's piperia *Piperia yadoni*	--[c]/--/1b	N/A	<1	Occurs on sandy soils in maritime chaparral, coastal scrub, and closed-cone coniferous forest	Occurs in Monterey County from the Pajaro Hills to the Monterey Peninsula	Less than 1% of the individuals of Yadon's piperia are found on Fort Ord; it is noteworthy that its habitat on Ford Ord is intermediate between that of its occurrence in chaparral and pine forest habitats (7)

[a] 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

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

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.

[b] 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.

[c] 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.

[d] 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%.

[e] Listing package is in preparation by USFWS (Rutherford pers. comm.).

Table 1-2. Federally Listed, Proposed, and Candidate Terrestrial and Freshwater Wildlife Species Known to Occur or Potentially Occurring at Fort Ord

Plant Species	Listing Status[a] Federal/State	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Occurrence at Fort Ord	Importance of Fort Ord Population
Smith's blue butterfly *Euphilotes enoptes smithi*	E/--	5-10	Uses coastal dunes and hillsides that support seacliff buckwheat (*Eriogonum parvifolium*) or coast buckwheat (*Eriogonum latifolium*); 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[8]	Fort Ord has been identified as important to the recovery of Smith's blue butterfly
Peregrine falcon *Falco peregrinus anatum*	FE/E	<1	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[3]	Peregrine falcons occasionally occur at Fort Ord to forage or during migration; Fort Ord is not important to the species
California linderiella *Linderiella occidentalis*	PE/--	<1	Ephemeral freshwater habitats such as vernal pools, rock outcrop pools, swales, and ponds	Found in the Central Valley from Tehema to Madera Counties, and the central and south Coast Ranges from Lake to Riverside County	Known from five vernal pools at Fort Ord[2]	Fort Ord composes little of the total range of California linderiella; however, vernal pool habitat is relatively rare in the Monterey Bay region

Plant Species	Listing Status[a] Federal/State	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Occurrence at Fort Ord	Importance of Fort Ord Population
Western snowy plover *Charadrius alexandrinus nivosus*	PT/SSC	5-10	Found along beach 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[4]	Fort Ord supports one of 20 coastal breeding populations of western snowy plovers in California; Monterey Bay as a whole is considered one of eight primary coastal nesting areas
California black legless lizard *Anniella pulchra nigra*	C2 (LP)/SSC	10-20	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[2,7]	Fort Ord supports one of less than 20 confirmed black legless lizard populations
Monterey dusky-footed woodrat *Neotoma fuscipes luciana*	C2/--	1-5	Uses habitats with moderate to dense cover and abundant dead wood for nest construction; maritime chaparral and costal 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[2]	Fort Ord provides high-quality habitat for Monterey dusky-footed woodrat in the extreme northern portion of the species range
Monterey ornate shrew *Sorex ornatus salarius*	C2/--	15-25	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[b]	Fort Ord provides abundant potential habitat for Monterey ornate shrew within the species' limited range

Plant Species	Listing Status[a] Federal/State	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Occurrence at Fort Ord	Importance of Fort Ord Population
California tiger salamander *Ambystoma tigrinum californiense*	C2 (LP)/SSC	<1	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[2,5]	Fort Ord comprises little of the total range of California tiger salamander; however, vernal pool habitat is relatively rare in the Monterey Bay region
California red-legged frog *Rana aurora draytoni*	C1 (LP)/SSC	<1	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[1]	Fort Ord composes little of the species total range; however, Fort Ord provides potential habitat for California red-legged frog, which is relatively rare within the Monterey Bay region
Southwestern pond turtle *Clemmys marmorata pallida*	C1 (LP)/SSC	<1	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 northwestern Baja California	Occurs at Merrill Ranch just off base, known previously at Mudhen Lake; two turtles were transplanted to East Garrison Lake[6]; may occur at the Salinas River	Fort Ord composes little of the species total range; however, Fort Ord provides potential habitat for western pond turtles, which is relatively rare in the Monterey Bay region

Plant Species	Listing Status[a] Federal/State	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Occurrence at Fort Ord	Importance of Fort Ord Population
Tricolored blackbird *Agelaius tricolor*	C2/SSC	<1	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[2]	Fort Ord composes little of the species total range; however, one of few breeding colonies in the region occurs at Fort Ord
California horned lark *Eremophila alpestris actia*	C2/--	<1	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 Fritszche Army Airfield at Fort Ord[2]	Fort Ord composes little of the species' total range; Fort Ord does not provide important habitat for this species

Plant Species	Listing Status[a] Federal/State	Approximate Percent of Range at Fort Ord	Habitat	Distribution	Occurrence at Fort Ord	Importance of Fort Ord Population
Loggerhead shrike *Lanius ludovicianus*	C2/--	<1	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 Fritszche Army Airfield and in maritime chaparral, coastal, and scrub habitat[2]	Fort Ord composes a very small amount of the total range of loggerhead shrike; Fort Ord does not provide important habitat for this species

[a] Status definitions:

Federal

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

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

PE = federally proposed for listing as endangered.

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.

State

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

SSC = considered a State Species of Special Concern by California Department of Fish and Game.

-- = no status.

[1] Not found during field surveys.
[2] Encountered during field surveys.
[3] Source: Jurek, Walton pers. comms.
[4] Source: George pers. comm.
[5] Source: Stanley pers. comm.
[6] Source: Littlefield pers. comm.
[7] Source: Bury 1985.
[8] Source: Arnold 1983.

Table 1-3. Federally Listed and Proposed and Candidate Wildlife Species Known to Occur in the Marine Environment in Monterey Bay

Common and Scientific Name	Listing Status[a]	Occurrence
Northern sea lion *Eumentopis jubatus*	FT	Nonbreeding resident/visitor
Guadalupe fur seal *Arctocephalus townsendi*	FT	Rare seasonal transient
Southern sea otter *Enhydra lutris nereis*	FT	Breeding year-round resident
Gray whale *Eschrictius robustus*	FE	Seasonal migrant
Blue whale *Balaenoptera musculus*	FE	Seasonal migrant
Fin whale *Balaenoptera physalus*	FE	Seasonal migrant
Hump-backed whale *Megaptera novaeangliae*	FE	Seasonal migrant
Pacific right whale *Balaena glacialis japponica*	FE	Rare seasonal migrant
Sperm whale *Physeter macrocephalus*	FE	Rare seasonal migrant
Marbled murrelet *Brachyramphus marmoratus*	FPT	Breeding
California brown pelican *Pelecanus occidentalis californicus*	FE	Nonbreeding resident/visitor
Elegant tern *Stema elegans*	C2	Nonbreeding resident/visitor
California least tern *Stema antillarum browni*	FE	Seasonal migrant
Short-tailed albatross *Diomedea albatrus*	FE	Rare visitor
Green turtle *Chelonia mydas*	FE	Rare visitor
Leatherback turtle *Dermochelys coriacea*	FE	Rare visitor
Pacific ridley turtle *Lepidochelys olivacea*	FE	Rare visitor

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

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

Table 1-3. Continued

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.
FPT	=	proposed as threatened by the federal government.

Chapter 2. Description of the Proposed Action and Alternatives

INTRODUCTION

The Defense Base Closure and Realignment Act of 1990 directs the closure of Fort Ord and the relocation of the 7th Infantry Division (Light) (7th IDL) to Fort Lewis, Washington, by October 1, 1997. Subsequently, the Conference Report for House Resolution 2100 (HR 2100), for the National Defense Act for Fiscal Years 1992 and 1993, directed the Army to proceed immediately with an EIS for the disposal and reuse of Fort Ord that would specifically address socioeconomic effects of the Army's relocation from the Monterey Bay area.

The proposed action analyzed in this BA is disposal of excess property made available by the closure of Fort Ord, with retention of the reserve center and establishment of the POM annex. The socioeconomic impacts of relocating the active Army installation from the Fort Ord community are analyzed in the draft EIS, following the requirements of the Conference Report for HR 2100. Reasonable alternative uses of the property after disposal are identified and evaluated.

Closure and reuse of Fort Ord will be a long-term process spanning over several years because of the time required to relocate personnel and efforts to clean contaminated sites and unexploded ordnance. The description of this process is divided into five major categories:

- pre-disposal actions,
- establishment of a POM annex,
- retention of the reserve center,
- disposal process, and
- reuse alternatives.

Pre-disposal actions include placing the installation in a caretaker status, remediating contaminated sites, and issuing interim leases. The actions are independent of the disposal process. Pre-disposal and disposal of Fort Ord are described in detail in the draft EIS (U.S. Army Corps of Engineers, Sacramento District 1992).

PRE-DISPOSAL ACTIONS

Caretaker

Caretaker actions will include building modifications, changes in infrastructure, and alterations in land management and installation operations. These actions are necessary to account for the reduced force and availability of operation and maintenance funding at Fort Ord following movement of the 7th IDL. The lengths of time parcels will be in caretaker status vary, depending on the time needed to complete remediation or certify that parcels are clean and available for disposal. Some areas of Fort Ord may be in a caretaker condition for up to 10-15 years.

Funding available for Fort Ord operation and maintenance has decreased in recent years because of the general trend in force reductions and decreased budgets throughout the Army. Decreases in funding are expected to continue through the closure and caretaker periods, reducing the Army's ability to adequately maintain all utility systems at Fort Ord. The Army is committed to a minimum level of funding and staffing that maintains safety, security, and health standards, but some system deterioration is likely.

Cleanup of Contaminated Sites

Cleanup of contaminated sites is an ongoing process at Fort Ord, independent of the decision to close and dispose of the property. Evaluation of the extent of contamination has been underway since before the U.S. Environmental Protection Agency (EPA) placed Fort Ord on the National Priorities List on February 21, 1990. Areas determined to be free of hazardous materials or potentially free of hazardous materials after the most recent evaluations are shown in Figure 2-1 at the end of this chapter. Efforts are now proceeding to identify the appropriate remedial actions necessary to clean up land for future use. The cleanup process is dictated by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA); the process includes its own public involvement program and environmental review. The following discussion indicates the range of remedial measures likely to be used at Fort Ord and generally describes the environmental implications of the cleanup process. A more specific analysis of impacts will be possible after the full extent of contamination has been documented and remedial measures are selected.

The selection of remedial measures will consider cost and anticipated future use of the land. The Army is already undertaking cleanup where sites are fully characterized and remedial measures have been determined. Specific cleanup measures for other sites will be selected after the remedial investigation/feasibility study is complete and more is known about future uses. In some cases, remediation may proceed to the level needed to fully protect human health and the environment before a future use or disposal action has been determined. Additional measures may be needed after a particular reuse is established. As

proposed in the Fort Ord Environmental Restoration Acceleration Action Plan, a remedial technology-screening document will be prepared to evaluate potential remedial measures that may be applicable for contaminated soil or groundwater. The following measures are typical of what is expected to remediate sites at Fort Ord.

Potential remedial measures to treat contaminated soils include four general alternatives: no action, excavation and onsite treatment, *in situ* treatment, and encapsulation with impermeable high-density polyethylene liners (primarily used in landfill areas). Specific proven remedial options will be selected to sufficiently remediate the different types and combinations of contaminants present at Fort Ord.

Under no action, a screening-level risk evaluation would be required to ensure that concentrations of contaminants remaining in the soil do not pose unacceptable risks to human health or the environment.

Excavation and onsite treatment may involve bioremediation to enhance microbial degradation of organic matter and soil aeration or low-temperature thermal treatment to volatilize organic compounds. Bioremediation involves placing microorganisms in the groundwater treatment system effluent and applying the effluent to contaminated soil stockpiles to enhance biodegradation. Stockpiles are then tilled periodically to ensure thorough microorganism distribution. To enhance volatilization through aeration, stockpiled soil is distributed into uniform lifts and left uncovered; low-temperature thermal treatment enhances volatilization by thermal oxidation.

In situ treatment may occur by extracting and treating soil vapors, *in situ* bioremediation (injecting nutrients into the unsaturated soil), or injecting steam to thermally oxidize volatile organic compounds or petroleum hydrocarbons.

The proposed treatment location for petroleum hydrocarbon-contaminated soils excavated during remediation activities is the existing treatment facility in the Fritzsche Army Airfield fire drill area. The Army will upgrade the existing facility to meet regional water quality control board requirements for a Class II waste treatment facility (U.S. Army Corps of Engineers 1992). The amount of soil excavated from each location and treated in this area could be up to several thousand cubic yards; the size of excavations will be determined by the extent of contamination and the level of remediation, which will be commensurate with possible land reuse.

Soils contaminated with pesticides or dissolved metals generally cannot be treated using bioremediation, aeration, or other volatilization techniques. Soils containing these types of contaminants would likely be excavated and disposed of offsite, excavated and incinerated onsite or offsite, or encapsulated to prevent leaching or future contact with other soils.

Soils in training ranges and other sites containing spent ammunition would likely be excavated, screened to remove spent projectiles, and treated for dissolved compounds associated with ordnance explosive waste.

Potential remedial actions for contaminated groundwater at Fort Ord include three alternatives: no action, pump-and-treat, and containment. A screening-level risk evaluation to ensure the protection of human health and the environment would be required under no action; continued groundwater monitoring also may be required. Pump and treat remediation involves pumping groundwater into onsite treatment systems that may include carbon filtration, ultraviolet oxidation, use of bioreactors, or use of air strippers. Containment methods include installing a slurry wall or collection trenches to prevent migration of contaminated groundwater.

Implementation of pump-and-treat groundwater systems involves installing one or more groundwater extraction wells to pump contaminated groundwater into an onsite treatment system. Carbon filtration treats water through a series of granular-activated carbon filters in aboveground holding tanks; ultraviolet oxidation uses mercury vapor lamps to inactivate organic compounds; and air strippers force streams of clean air through streams of contaminated groundwater in a series of cooling towers and basins. As the air and water come in contact, volatile compounds are removed from the groundwater.

Groundwater remediation will occur in several areas at Fort Ord, requiring several onsite treatment systems. The locations and design specifications of groundwater treatment systems will be determined after the type of remedial action has been selected for each contaminated area. The Army will continue to use the existing groundwater treatment system in the Fritzsche Army Airfield fire drill area (U.S. Army Corps of Engineers 1992).

U.S. Department of Defense (DOD) Standard 6055.9-STD addresses land disposal of former impact areas to non-DOD agencies. Chapter 12 of this standard contains policies to reduce human health and safety risks caused by the presence of unexploded ordnance.

Surface clearance of unexploded ordnance involves conducting selective vegetation removal, possibly including burning vegetation to clear the ground surface (dense vegetation in some areas of the inland range area may render burning infeasible); locating unexploded ordnance by visual and electromagnetic means (metal detectors); identifying unexploded ordnance; and disposing of any unexploded ordnance located. During the location process, inert ordnance and ordnance scrap will be collected and properly disposed of. Identification and disposal may require excavating soil from around the unexploded ordnance. Excavations could range in size from 1 square foot to several square feet, depending on the type of unexploded ordnance, its location, and its position. The preferred method of disposal of unexploded ordnance is *in situ* detonation, which would increase the amount of soil disturbed.

Subsurface investigation and clearance activities would be conducted in areas that may contain buried ammunition, based on historical record reviews and interviews, or in impact areas where the velocity, trajectory, and momentum of munitions are likely to cause them to penetrate the ground's surface. Subsurface unexploded ordnance is located by using metal detectors, ground-penetrating radars, or other appropriate methods, and then excavating to determine the source of the magnetic anomaly. Depending on the type and means of ordnance delivery, excavations could reach depths in excess of 10 feet and have

surface areas ranging in size from several square feet to tens of square feet. The preferred method of disposal of unexploded ordnance is *in situ* detonation, which would increase the amount of soil disturbed.

During caretaker status, the Army would take appropriate action to protect public safety and property. Considering the urban vicinity of the installation, a surface clearance would likely be done to remove unexploded ordnance. The unexploded ordnance clearing process involves reviewing historical records and interviewing installation officials; conducting representative site investigations to confirm the existence of and types and densities of unexploded ordnance; performing computer modeling to estimate the quantities, densities, and distribution of unexploded ordnance in various areas; conducting surface clearances of unexploded ordnance; and possibly conducting subsurface clearances. The unexploded ordnance clearance process would be conducted throughout the installation to ensure that no unexploded ordnance remains outside designated areas.

Interim Use

Interim use is the use of real property through real estate documentation, such as leases, licenses, and permits (outgrants), before disposal is accomplished. Interim uses could include new leasing of office space, storage space, housing, other developed facilities and training facilities and continued leasing of schools, infrastructure facilities, and grazing land by non-Army entities. Use permits are also possible for scientific and cultural uses. After the Army signs the record of decision for the EIS, interim leasing could occur until the land is disposed.

ESTABLISHMENT OF PRESIDIO OF MONTEREY ANNEX

Establishing a POM annex would require approximately 1,500 acres of Fort Ord land. This annex would provide support services for the POM and the Defense Language Institute (DLI), as well as for other military facilities and other active-duty and retired military personnel in the region.

Army's Presidio of Monterey Annex

The Army's proposed POM annex (Figure 2-2 at the end of this chapter) would employ approximately 1,000 civilian employees. This staff would include a caretaker force of approximately 100 persons, with functions similar to the present Directorate of Engineering and Housing. Approximately 400 persons in administrative support positions would occupy offices in the POM annex. Approximately 500 other people would be employed at the POM annex, including a few military personnel. Most of these would be

Army Air Forces Exchange Service and Non-Appropriated Fund employees operating the commissary, post exchange, childcare center, and other facilities at the POM annex.

City of Seaside's Recommended Presidio of Monterey Annex

The City of Seaside has proposed an alternative to the Army's proposed POM annex (Figure 2-3 at the end of this chapter). Seaside's proposal would relocate the military enclave to a contiguous area east of North-South Road. This area would include some lands proposed by the Army for the military enclave and other lands that the Army intends to declare excess. Seaside would assume ownership of the lands west of North-South Road, remove most of the existing structures, and redevelop the area. Funds for redevelopment would be used to construct replacement facilities for the Army, including military family housing, the commissary, post exchange, and other facilities. Seaside would retain a master developer to design and develop the area. The development of new facilities for the Army would occur over approximately 15 years in a phased transition. Approximately 700 acres of undeveloped land would be modified in the process.

No Presidio of Monterey Annex

If no POM annex is established, the approximately 1,500-acre area would remain in caretaker status. Eventually, the land would be disposed. Adequate support services would no longer exist for the POM and DLI, other military facilities, and other active-duty and retired military personnel in the region.

RETENTION OF RESERVE CENTER

The DOD's proposed plans are to retain, under military control, a 12-acre parcel of land with a 21,000-square-foot reserve center, located at Imjin Gate near Reservation Road (Figure 2-2). The reserve center provides support functions to reservists (Army, Navy, Air Force, or Marines) for training. The reserve center operates during standard hours during the week and operates only on those weekends when training occurs. Access to the reserve center is through Imjin Gate. Many camouflage trucks are parked in the reserve center parking lot.

DISPOSAL

After closure of Fort Ord, the Army plans to dispose of approximately 26,000 acres, or 95% of the installation. The remainder of the installation will be established as a POM annex and retained as a reserve center.

The process for disposal of Army properties is governed by the Defense Base Closure and Realignment Act of 1990; the Federal Property and Administrative Services Act of 1949, as amended; and federal property management regulations. In disposing of property, the Army also must comply with the Stewart B. McKinney Homeless Assistance Act (McKinney Act) and other laws and regulations (including Title 10 of the U.S. Government Code and Army regulations) affecting the disposition of federal real property.

In general, the first step in the process is to screen real property no longer required by the Army with other departments and instrumentalities within DOD. The U.S. Coast Guard is considered in this step by special legislative authority. If no military requirements exist for the property, the second step is to offer the property to other federal agencies. If no federal need exists, the property is determined surplus. The third step is to screen the property for use by the homeless under provisions of the McKinney Act. The property is reported to the U.S. Department of Housing and Urban Development (HUD) for a determination of suitability for homeless assistance purposes. Upon a finding of suitability, availability of the property is determined by the Army. The Army must submit annual and quarterly reports to HUD on the status of the property. HUD publishes suitability and availability determinations in the *Federal Register* on a quarterly basis. Each time suitable and available property is published in the *Federal Register*, a 60-day "holding period" is triggered for homeless providers to express interest in the property. During this holding period, the property is not available for any purpose other than to assist the homeless. If no homeless requirement exists for the property, the next step is to screen the property with state and local governments. If no state or local government requirements exist for the property, the Army can then make the property available for sale to the general public. Sale is usually accomplished competitively by auction or sealed bids.

REUSE ALTERNATIVES

The Army has been working cooperatively with federal, state, and local agencies and the Fort Ord Task Force to determine a broad range of reasonably foreseeable reuse alternatives for inclusion in the draft EIS. The following six reuse alternatives are not considered final land use plans but rather are potential uses that are consistent with a range of development and open space themes:

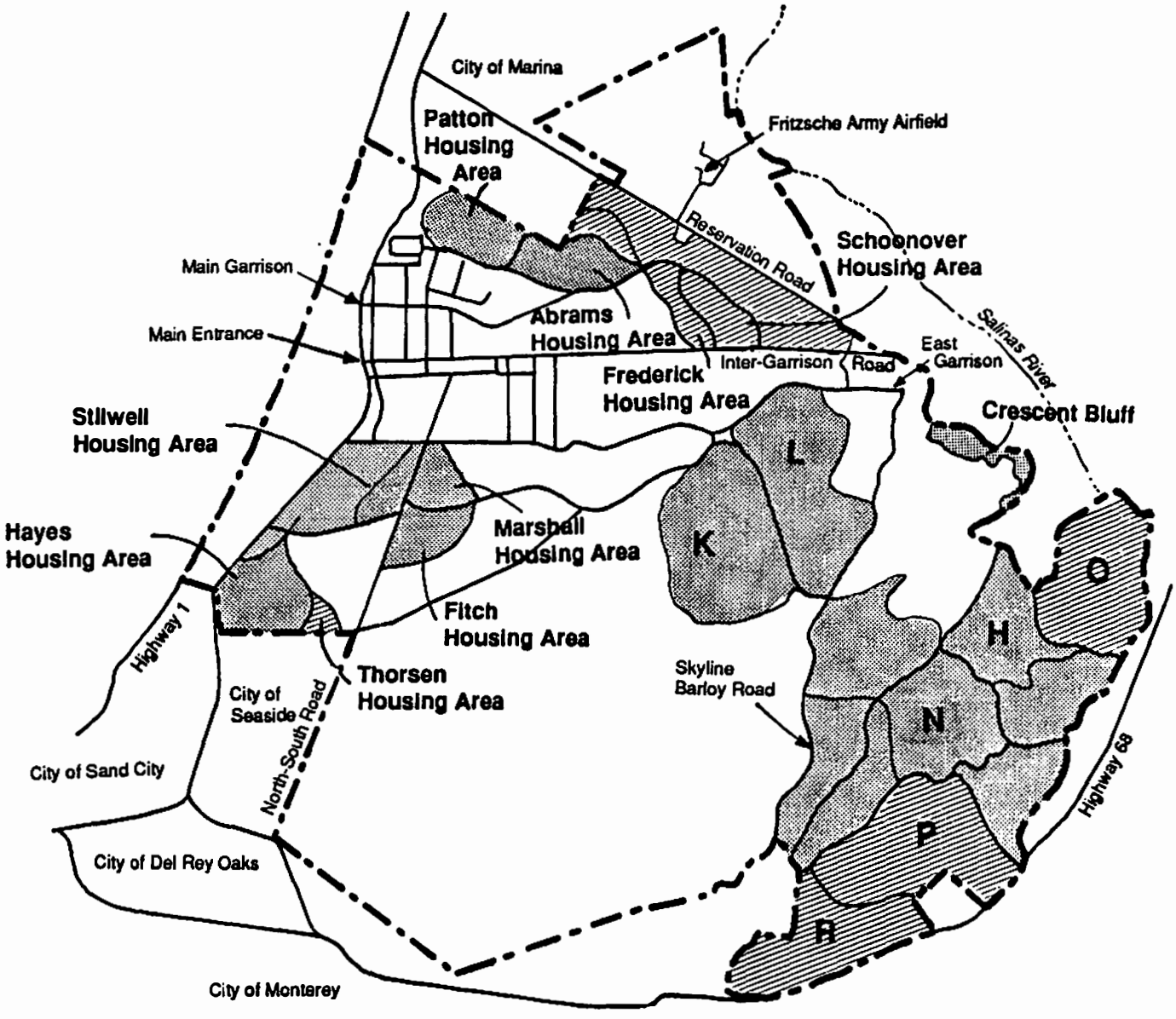
- Alternative 1: High-Intensity Mixed Use,
- Alternative 2: Medium-Intensity Mixed Use,
- Alternative 3: Low-Intensity Mixed Use,

- Alternative 4: Institutional Use,
- Alternative 5: Open Space, and
- Alternative 6: Anticipated Reuse.

A full description of the reuse alternatives is provided in the draft EIS (U.S. Army Corps of Engineers, Sacramento District 1992).

Figure 2-1

Areas Defined as Potentially Clean at Fort Ord



Potential clean parcels

Areas having installation approval for clean parcel assessment

Note: This does not consider unexploded ordnance potential

Source: Harding Lawson Associates 1992

Chapter 3. Biological Communities at Fort Ord

INTRODUCTION

Fort Ord is located on California's central coast, a biologically diverse and unique region. The wide range and unusual combinations of climatic, topographic, and soil conditions at Fort Ord support unique biological communities and locally endemic species (Stebbins and Major 1965).

Botanical surveys have identified over 450 plant taxa at Fort Ord. Ten species of plants known from Fort Ord are endemic to northern coastal Monterey County and adjacent coastal Santa Cruz County. A total of 146 plant species reach their most southern distributional limits and a total of 156 plant species reach their most northern distributional limits in Monterey County (Howitt and Howell 1964).

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, 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 on the central coast. Three terrestrial mammals and one reptile found at Fort Ord occur primarily on California's central coast and one federally listed endangered butterfly found at Fort Ord occurs almost exclusively in Monterey County.

BIOLOGICAL COMMUNITIES

Biological communities at Fort Ord and common plant and wildlife species associated with these communities are described below. The distribution of general biological communities is identified in Figure 3-1, and acreages for specific habitat types are presented in Table 3-1.

Table 3-1. 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 warsh	30
Total area of natural habitats	24,000
Area of developed nonhabitat	3,726
Total	27,726

Coastal Strand and Dune

Coastal strand and dune communities occur adjacent to Monterey Bay and west of State Highway 1. Five communities are recognized at Fort Ord: beaches, bluffs, and blowouts; disturbed dunes; coastal strand; dune scrub; and ice plant mats. The beaches, bluffs, and blowouts adjacent to Monterey Bay and disturbed dunes are communities generally devoid of vegetation. The coastal strand and dune scrub communities support native vegetation and wildlife but occur only as small, isolated patches. Extensive mats of African ice plant, the most widespread community, have been planted to stabilize the shifting dunes.

Common wading birds, such as sanderlings, western sandpiper, and marbled godwits, occur along the beaches; California ground squirrels, deer mice, and red foxes occur in the disturbed dune, coastal strand, and dune scrub communities. The extensive mats of African ice plant provide marginal wildlife habitat because although they provide cover for some species, they provide little forage for wildlife.

Chaparral and Coastal Scrub

Chaparral and coastal scrub communities cover approximately 50% of Fort Ord and are characterized by moderate to low-growing evergreen and drought-deciduous shrubs adapted to shallow soils and periodic fires. Three types of chaparral and scrub communities occur at Fort Ord: sand hill maritime chaparral, Aromas formation maritime chaparral, and coastal scrub.

The two varieties of maritime chaparral occur on different soil types and consist of different characteristic plants. Toro manzanita and Hooker's manzanita are rare on sand hill maritime chaparral but are common on Aromas formation chaparral; sandmat manzanita is common on sand hill chaparral but uncommon on Aromas chaparral. Shaggy-barked manzanita and chamise are dominant shrubs in both maritime chaparral types. Coastal scrub occurs near the coast on sandy soils and on inland hills on shallow soils. Common plant species include coyote brush, California sagebrush, and black sage.

Common species of wildlife in chaparral and coastal scrub communities include western fence lizard, orange-crowned warbler, California thrasher, California quail, brush rabbit, Heerman's kangaroo rat, black-tailed deer, gray fox, and coyote.

Coast Live Oak and Savanna

The coast live oak is the dominant tree of woodlands and savannas at Fort Ord. The live oak woodland is an open-canopied to nearly closed canopied community with a grass

or sparsely scattered shrub understory. Coastal forms of this community are characterized by short, wind-pruned trees exposed to persistent salt spray, which grow on sandy soils. Inland coast live oaks grow tall because they are protected by topographic position from the coastal weather influences.

Common wildlife species in coast live oak woodlands include black-tailed deer, California mouse, raccoon, California quail, scrub jay, and Nuttall's woodpecker. Red-tailed hawks and great horned owls nest and roost in the inland coast live oaks but probably make little use of the coastal oaks because the tightly spaced branches discourage them from entering the tree canopies.

Coast live oak savanna occurs in drier areas than woodlands and supports widely spaced trees and an understory of annual grasses. Common species of wildlife include western bluebird, mourning dove, and olive-sided flycatcher.

Declines in oak woodland and savanna in California have resulted from firewood harvesting, land clearing for agriculture and range, and urban development. The conservation of these resources has been identified as an important issue by state agencies and conservation groups (California Senate Resolution Chapter 100).

Grassland

Grasslands occur in the southeastern portion of Fort Ord and around Fritzsche Army Airfield. Annual grasslands dominated by introduced species, such as slender wild oats, soft chess, and ripgut brome, are the most common grassland community at Fort Ord. Perennial grasslands are of two types at Fort Ord: valley needlegrass grassland and blue wildrye. Valley needlegrass grassland, dominated by native purple needlegrass, is scattered throughout the southeastern portion of the installation. Small patches of blue wildrye grassland occur sporadically in the southeastern portion of the installation.

Common wildlife species occurring in grasslands at Fort Ord include California ground squirrel, Heerman's kangaroo rat, narrow-faced kangaroo rat, western meadowlark, and American kestrel.

Riparian

Riparian communities occur on the banks of seasonal or permanent creeks and drainages. Approximately 37,170 total linear feet of creeks and drainages exist at Fort Ord, with approximately 7,660 linear feet supporting riparian habitat. Riparian habitats at Fort Ord are limited to the Salinas River, Toro Creek, Pilarcitos Canyon, and Merrill Ranch Canyon. The riparian communities along the Salinas River and Toro Creek are mixed riparian forests supporting a variety of tree species. The communities in Pilarcitos and

Merrill Ranch Canyons are oak riparian forests dominated by coast live oaks with a dense understory of annual grasses.

Riparian corridors are important wildlife habitat because they support a high diversity of wildlife species and provide movement corridors between different communities. Common wildlife species that occur in riparian communities include Pacific tree frog, California slender salamander, Wilson's warbler, dark-eyed junco, striped skunk, coyote, and black-tailed deer.

Wetland and Open Water

Four major types of wetland and open water communities are scattered throughout Fort Ord: vernal pools, freshwater marshes, stream channels, and ponds.

Vernal pools are small, seasonally flooded basins in grasslands. Plant and wildlife species in these pools are specially adapted to live through winter and spring flooding and summer and fall drought. Common plant species include common spike-rush, hyssop loosestrife, and Vasey's coyote thistle. Common wildlife species include western spadefoot toad, common garter snake, and northern rough-winged swallow.

Freshwater marshes are characterized by perennial, emergent plants that thrive in areas permanently flooded or saturated by fresh water. This community is usually found around freshwater ponds and perennial stream channels at Fort Ord. Common plants include water smartweed and broad-leaved cattail. Common wildlife species include mallard, red-winged blackbird, and marsh wren.

Fort Ord supports several intermittent and perennial streams. The amount of channel vegetation varies depending on the size of the channel and the amount of time that water is present in the stream. Wildlife species found in stream channels are similar to those occurring in vernal pools and freshwater marshes.

Artificial ponds have been constructed throughout Fort Ord to provide water for livestock and wildlife. Most of the ponds, however, occur in the southeastern portion of the installation and are associated with the livestock grazing lease. Wildlife species found in ponds are similar to those found in vernal pools and freshwater marshes.

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).

REGIONAL IMPORTANCE OF FORT ORD'S BIOLOGICAL COMMUNITIES

The relative importance of Fort Ord's biological communities to their regional extent in surrounding northern Monterey and southern Santa Cruz Counties is described below. The regional distribution of biological communities was estimated based on the Monterey County soil survey (U.S. Soil Conservation Service 1978), the Santa Cruz County soil survey (U.S. Soil Conservation Service 1979), Natural Diversity Data Base (1992), Griffin (1978), the Salinas Valley Seawater Intrusion EIR/EIS (1992), 1981 and 1982 aerial photographs, and the Flora and Fauna Baseline Study (U.S. Army Corps of Engineers, Sacramento District 1992) and is presented in Attachments 1, 2, and 3.

The location of the study region was chosen to include the entire range of as many locally endemic listed, proposed, and candidate plant and wildlife species known from Fort Ord as possible. The limits for mapping the regional distribution of natural communities was established based on the known occurrences of maritime chaparral, DFG's Natural Diversity Data Base (NDDB) occurrences of plant species characteristic of maritime chaparral, and Natural Diversity Data Base (1992) locations reported for the Monterey ornate shrew and the Monterey dusky-footed woodrat.

Coastal Strand and Dune Communities

The regional distribution of coastal strand and dune communities is shown in Attachment 1. Coastal strand and dune communities extend north and south along the coast from Fort Ord. Because many of the coastal strand and dune communities outside Fort Ord receive state protection, they appear to be in better condition and represent higher quality habitat for native species than the coastal strand and dune communities on Fort Ord. Marina, Manresa, Salinas River, Asilomar, Monterey, Carmel River, Zmudowski, and Sunset State Beaches; Point Lobos State Reserve; the California Sea Otter Game Refuge; and Salinas River Wildlife Management Area are some of the state-owned lands occurring along the coast. Approximately 15% of the coastal strand and dune communities in the region occur on Fort Ord.

CHAPARRAL COMMUNITIES

The regional distribution of chaparral communities is shown in Attachment 3. The central maritime chaparral, found in northern Monterey County and southern Santa Cruz County, is composed of a suite of locally endemic shrubs. The largest expanse of the remaining maritime chaparral occurs at Fort Ord and represents approximately 40-50% of the community's overall distribution.

Coast Live Oak Woodland and Savanna Communities

The regional distribution of coast live oak woodland and savanna communities is shown in Attachment 2. Fort Ord contains approximately 15% of the region's coast live oak woodlands and savannas. Judging from the relative proximity of oak woodlands to the coast, it appears that a large portion of the region's coastal form of coast live oak woodland occurs at Fort Ord and north of the mouth of the Pajaro River. Most of the oak woodland not occurring on Fort Ord is located outside the zone of coastal influence and most likely represents the inland form of coast live oak woodland. Oak woodlands are prevalent in the region in protected locations such as Toro County Park to the southeast of Fort Ord and north of the Carmel Valley and in isolated patches in northern Monterey County and southern Santa Cruz County. Coast live oak woodland is a common habitat outside the study region in and beyond the Santa Cruz Mountains, Gabilan Range, Sierra de Salinas, and Santa Lucia Range.

GRASSLAND COMMUNITIES

The regional distribution of grasslands is depicted in Attachment 2. Grasslands are extensive on Fort Ord, as well as to the south and southeast of Fort Ord and north of the Salinas River in Monterey County. Fort Ord contains approximately 5-10% of the region's grasslands. Grasslands are common beyond the study region limits.

Native perennial grasslands are not common communities. These communities are found at Fort Ord. Their abundance in the study region could not be estimated with the mapping methods used.

RIPARIAN COMMUNITIES

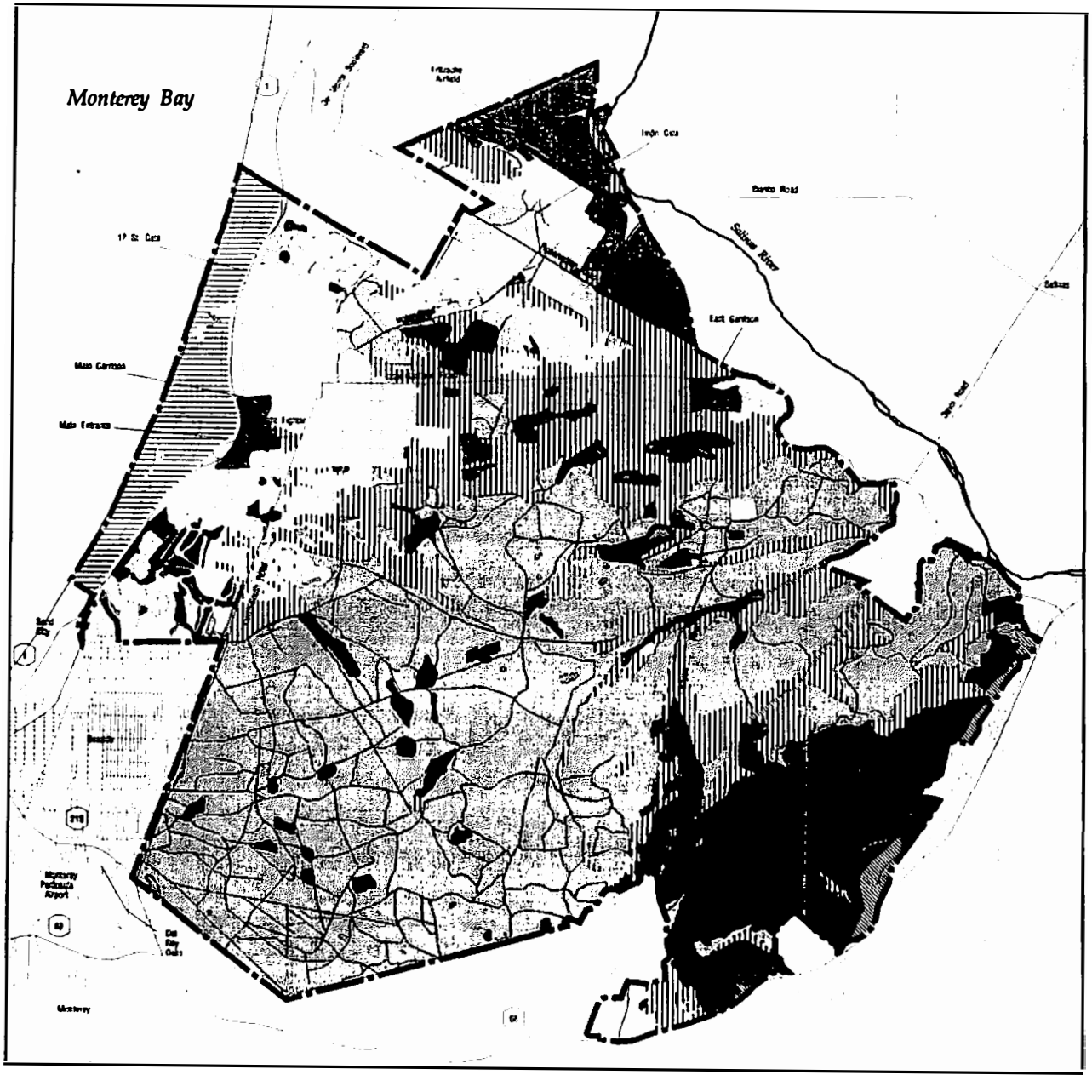
The regional distribution of riparian communities is shown in Attachment 1. Riparian habitat is found south of Fort Ord along the Carmel River and north of Fort Ord along the Salinas and Pajaro Rivers. Little riparian habitat occurs on Fort Ord relative to that in the region. Approximately 5% of the region's riparian habitat is found on Fort Ord.

WETLAND AND OPEN WATER COMMUNITIES

The regional distribution of wetland and open water communities is depicted in Attachment 1. Freshwater marshes occur along the fringes of open water communities on Fort Ord but are more prevalent outside the installation. The primary occurrences of freshwater marsh are in the Salinas River from Highway 68 to Highway 1. Probably less than 1% of the region's freshwater marsh is found on Fort Ord. The vernal pools at Fort Ord appear to be unique to the region. Most of the wetland and open water communities found in the region surrounding Fort Ord are brackish or saline communities, which do not occur on Fort Ord (e.g., Elkhorn Slough, Moro Cojo Slough, and the Salinas Lagoon).

Figure 3-1

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

0 1 2 3 miles

0 2,500 5,000 7,500 10,000 feet

0 1 2 3 kilometers

Chapter 4. Federally Listed Threatened and Endangered Species

BACKGROUND AND APPROACH

Introduction

Plant and wildlife species that are federally listed, proposed for listing, and candidates for listing (categories 1 and 2) are treated separately in this chapter. A species account is presented for each species and contains the following information:

- a discussion of the species' status and distribution,
- a description of the species' occurrence at Fort Ord, and
- an explanation for the decline of the species.

In addition, taxonomic history for Smith's blue butterfly and recovery plan objectives for Smith's blue butterfly, American peregrine falcon, and southern sea otter are described as they pertain to Fort Ord.

A summary of the distribution of all federally listed, proposed, and candidate plant species and relative importance of Fort Ord to each species is provided in Table 1-1. The acres of habitat occupied by these special-status plant species at Fort Ord are given in Table 4-1. A summary of habitat, distribution, and occurrence at Fort Ord for all federally listed, proposed, and candidate wildlife species and relative importance of Fort Ord to each species is given in Table 1-2. Descriptions of potential habitat and available acres of potential habitat at Fort Ord for each wildlife species are given in Table 4-2. Geographic information system (GIS) parameters used for determining wildlife habitat distributions and calculating acreages of suitable habitat are also given in Table 4-2. Known occurrences of federal listed, proposed, and candidate wildlife species for the region surrounding Fort Ord are presented in Attachment 4.

Data Collection and Methods

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. Detailed descriptions of survey methods and

Table 4-1. Acres of Habitat Occupied by Federally Listed, Proposed, and Candidate Plant Species at Fort Ord

Species	Listing Status	Density[b]			Total Acreage
	Federal/State/CNPS[a]	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

[a] See Table 1-1 for status definitions.

[b] 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.

* Listing package in preparation by USFWS (U.S. Fish and Wildlife Service pers. comm.).

Table 4-2. Potential Habitat for Federally Listed, Proposed, and Candidate Wildlife Species at Fort Ord

Species	Potential Habitat	Approximate Acres of Potential Habitat	GIS Parameters Used
Smith's blue butterfly	Buckwheat in dune habitats[a]	180	Medium and high densities of *Eriogonum* within dune habitats
California linderiella and California tiger salamander	Vernal pools and ponds[b]	65	All vernal pools and ponds
Western snowy plover	Beaches above the high-tide line[a]	--	Habitat parameters have not been quantified
Black legless lizard	Native dune vegetation and where coastal scrub and maritime chaparral grow on loose sandy soils[b]	2,980[c]	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[b]	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[a]	4,590[c]	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[b]	18,990	All dune habitats, coastal scrub, and maritime chaparral, and grasslands
Tricolored blackbird	Grasslands for foraging and dense vegetation near water for nesting[b]	2,750	Large area of grasslands in the southeast portion of Fort Ord where the known nesting colony occurs
California horned lark	Grassland habitats[b]	4,770	All grasslands
California red-legged frog and southwestern pond turtle	Ponds and the Salinas River[a]	30	All ponds and where the Salinas River crosses installation boundaries

[a] Described in the literature or by local experts.

[b] Observed during fiels surveys and described in the literature or by local experts.

[c] Acres of potential habitat likely to contain appropriate microhabitat conditions.

techniques are provided in the Flora and Fauna Baseline Study of Fort Ord, California (U.S. Army Corps of Engineers, Sacramento District 1992).

Botanical Resources

Field surveys were conducted April 20-24, May 4-8, May 25-26, June 8-9, and August 13, 1992. Because Fort Ord supports an abundance of federally listed, proposed, and candidate plant species with overlapping populations, a survey method was developed using survey areas, or polygons, premapped on aerial photographs with a 1:1,200 scale (Figure 4-1).

Botanists in the field identified the habitat type and scored the abundance of all target plant species for each survey polygon. Abundance categories used for 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 tens of thousands of plants or more per acre for herbaceous species and hundreds to thousands of plants or more 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 GIS. 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 below.

Small Mammal Surveys. Small mammal surveys were conducted 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 dates surveyed are shown in Figure 4-2. Trapping effort within habitat type was distributed in proportion to the occurrence of each habitat at Fort Ord.

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 if the animal escaped while being handled. No mortalities occurred.

Shrew Surveys. Surveys for Monterey ornate shrew were conducted on April 20 and 21, 1992. Fifteen pitfall traps were set in Pilarcitos Canyon, and 10 traps were set in Merrill Ranch Canyon (Figure 4-3). Pitfall traps consisted of 1/2-gallon plastic tubs and were set in areas of microhabitat where shrews would be expected to be found.

Black Legless Lizard Surveys. Surveys for black legless lizards were conducted May 20, 21, and 22, 1992. Areas of appropriate habitat were surveyed on Fritzsche Army Airfield, in the developed portion of the installation and in housing areas, and on the dunes west of State Highway 1 (Figure 4-3). 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 soil, duff, and leaf litter.

Wetland Wildlife Surveys. Wetland wildlife surveys were conducted 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 4-4.

Fairy shrimp were found only during the March surveys. By the April surveys, fairy shrimp had likely 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 species were identified by biologists 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, but the species could not be identified at that time. Soil samples were taken at a later date, and the species present were identified by the eggs.

General and Riparian Bird Surveys. General bird surveys were conducted continuously while other surveys were completed at Fort Ord during 1992. Sightings of special-status bird species were recorded and mapped.

Riparian bird surveys were conducted May 19-21, 1992. Areas surveyed are shown in Figure 4-3. Location and breeding status of all special-status bird species were recorded and mapped.

Grassland Surveys. Specific grassland surveys were conducted 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 4-3) and recorded observations of, or evidence indicating the presence of, horned lark and loggerhead shrike.

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 4-3). Two biologists walked the beach from the water line to the foot of the dunes and scanned for western snowy plovers or evidence of nesting.

SPECIES ACCOUNTS: LISTED PLANT SPECIES

Sand Gilia

Sand gilia is a small, erect annual of the phlox family (Polemoniaceae).

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). The California Native Plant Society (CNPS) considers sand gilia as rare and endangered in California and elsewhere, qualifying it for CNPS' 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 (Natural Diversity Data Base 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 Figure 4-5.

Occurrence at Fort Ord

Sand gilia occurs at scattered locations throughout most of Fort Ord (Figure 4-6). Only one small population was found in dune habitats west of SR 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. Sand gilia appears to require sites that have undergone recent substrate disturbance. 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 (Day and Dorrell pers. comms.). Slender-flowered gilia is an inland subspecies known to occur near Fort Ord in sandy washes of woodlands in the Salinas Valley. Fort Ord may be a zone of intergradation between these two subspecies.

No critical habitat for sand gilia has been identified by USFWS at Fort Ord.

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.

SPECIES ACCOUNTS: LISTED WILDLIFE SPECIES

Smith's Blue Butterfly

Taxonomic History

The Smith's blue butterfly (*Euphilotes enoptes smithi*) is a variety of the widely distributed species *Euphilotes enoptes*, which 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 the Smith's blue butterfly 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 dunes, 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 (Figure 4-7). Populations have been found along coastal sand dunes at Marina, Marina State Beach, Fort Ord, Sand City, and the Naval Post-graduate School in Monterey County (U.S. Fish and Wildlife Service 1984). Recorded occurrences and suitable habitat at Fort Ord are shown in Figure 4-8.

Occurrence at Fort Ord

Smith's blue butterfly occurs at Fort Ord in coastal strand and dune habitats west of SR 1. No critical habitat for Smith's blue butterfly has been identified by USFWS at Fort Ord.

Habitat Requirements

The Smith's blue butterfly is completely dependent 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 buckwheat plants and consume buckwheat floral 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 considered to be areas supporting moderate to high densities of buckwheat. Some point locations from 1983 and 1987 surveys at Fort Ord occur in areas not considered potential habitat because of low buckwheat densities. These butterfly sightings may occur in small areas of high buckwheat density within survey polygons supporting low overall densities of buckwheat. Removal of the host plant makes the habitat unsuitable for the butterfly.

Two 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 buckwheats 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 the 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 buckwheats and introduced species, such as ice plant and European beach 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.

Smith's Blue Butterfly Recovery Plan

Because the 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.

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 to the colony exist;

- 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). Peregrine falcons 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). The breeding range of American peregrine falcons in California is shown in Figure 4-9.

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 installation (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.).

No critical habitat for American peregrine falcon has been identified by USFWS at Fort Ord.

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).

American Peregrine Falcon Recovery Plan

Because the American peregrine falcon 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 (1982) pursuant to Section 4 of the Endangered Species Act. The peregrine falcon recovery plan does not designate critical habitat for the species. No areas are specifically identified as important to the species' recovery.

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. 1990) (Figure 4-10).

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

Monterey Bay has four primary areas of sea otter concentration (U.S. National Oceanic and Atmospheric Administration 1990). The area of concentration nearest Fort Ord occurs south of the Marine Impact Area, offshore from Monterey (Figure 4-11). Southern sea otters may occasionally use the areas offshore from Fort Ord for feeding or

during movements 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.

No critical habitat for southern sea otter has been identified by USFWS at Fort Ord.

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. 1990). 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 refuge for prey species, allowing for a consistent and abundant prey population (Zeiner et al. 1990). 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. 1990). 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).

Southern Sea Otter Recovery Plan

Because the southern sea otter is a federally listed threatened species, management direction is prescribed under the federal Endangered Species Act of 1973, and a recovery plan has been developed by USFWS (1991) pursuant to Section 4 of the Endangered Species Act. The southern sea otter recovery plan does not designate critical habitat for the species. No areas are specifically identified as important to the species' recovery.

SPECIES ACCOUNTS: PROPOSED PLANT SPECIES

Monterey Spineflower

Monterey spineflower is a small, prostrate annual of the buckwheat family (Polygonaceae).

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 CNPS' 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) (Figure 4-12). Monterey spineflower colonizes recently disturbed sandy soils.

Occurrence at Fort Ord

Monterey spineflower is abundant at Fort Ord. Fort Ord likely 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. Monterey spineflower occurs in almost all undeveloped areas of the western half of Fort Ord (Figure 4-13). 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 Monterey spineflower plants and amount of suitable habitat.

Monterey spineflower is similar in appearance to cuspidate spineflower (*Chorizanthe cuspidata*) (Zoger and Pavlic 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.

No critical habitat for Monterey spineflower has been identified by USFWS at Fort Ord.

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. Historical occurrences in the Salinas Valley have been extirpated, primarily because of conversion of natural habitat to agricultural land use (Reveal and Hardham 1989).

Robust Spineflower

Robust spineflower is an erect to spreading small annual of the buckwheat family (Polygonaceae).

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' List 1b.

Robust spineflower occurs in coastal dune and coastal scrub habitats along and adjacent to the coast of southern Santa Cruz County (Figure 4-14). 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 (Figure 4-15). 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.

No critical habitat for robust spineflower has been identified by USFWS at Fort Ord.

Reasons for Decline

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

SPECIES ACCOUNTS: PROPOSED WILDLIFE SPECIES

California Linderiella Fairy Shrimp

Status and Distribution

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

The California linderiella is the only member of the fairy shrimp family Linderiellidae in North America. This species occurs in various types of vernal pool and swale habitats in the Central Valley from Tehama County to Madera County, and in the central and south Coast Ranges from Lake County south to Riverside County (Eng et al. 1990). (Figure 4-16)

Occurrence at Fort Ord

California linderiella is the only fairy shrimp known at Fort Ord. It has been found in five ephemeral water bodies on the installation (Figure 4-17). More extensive surveys will likely result in additional occurrences of California linderiella, and possibly other fairy shrimp species, in suitable habitat at Fort Ord.

No critical habitat for California linderiella has been identified by USFWS 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 produce a single generation per year, emerging in response to their species-specific environmental cues, producing eggs, and then dying. Once the aquatic habitat has dried, the eggs oversummer 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 California linderiella populations.

A secondary reason for decline is the impact of off-road vehicle use on fairy shrimp habitat. Off-road vehicles can cut deep ruts in vernal pools, compact soils, destroy vegetation, and alter pool hydrology. Firefighting, 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

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).

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) (Figure 4-18). 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 installation boundary (Figure 4-19) during nesting surveys conducted in 1988, 1990, and 1991 (George pers. comm.). From five to 16 nests have been recorded at Fort Ord during the breeding season. No western snowy plovers were observed during 1992 surveys between Stilwell Hall and the coast Ammunition Supply Point. No nesting surveys were conducted in 1992 between the Ammunition Supply Point and the southern installation boundary.

No critical habitat for western snowy plover has been identified by USFWS at Fort Ord.

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 an abundance of brine flies and other aquatic invertebrates exist 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 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 has also contributed to reduced nesting success at many colonies.

SPECIES ACCOUNTS: CANDIDATE PLANT SPECIES

Seaside Bird's-Beak

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

Status and Distribution

Seaside bird's beak is a Category 1 candidate for federal 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 CNPS's list 1b.

Seaside bird's-beak occurs in sandy soils of stabilized dunes, maritime chaparral, coastal scrub, and close-cone pine forest communities. Populations are usually small and scattered in recently disturbed openings in these communities. The known range of seaside bird's-beak 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) (Figure B-1). Santa Barbara County populations of Seaside bird's-beak may be introduced and at some sites appear to be hybridizing with the closely related subspecies, rigid bird's-beak (*Cordylanthus rigidus* ssp. *rigidus*) (Hillyard 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 (Figure B-2). Populations occur on open habitat often at the transition between the two vegetation types, such as oak woodland and grassland or maritime chaparral and grassland. Seaside bird's-beak appears to be an early successional species of disturbed sites.

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).

Toro Manzanita

Toro manzanita is a tall, perennial evergreen shrub of the heath family.

Status and Distribution

Toro manzanita is a Category 2 candidate for federal listing as threatened or endangered. CNPS considers toro manzanita as rare and endangered in California and elsewhere, qualifying it for CNPS's list 1b (Smith and Berg 1988).

Toro manzanita is restricted to the central coast maritime chaparral in northern Monterey County. Figure B-3 depicts the known distribution of Toro manzanita. The largest populations occur at Fort Ord and Toro County Park. Toro manzanita appears to prefer the "badlands" of the Aromas Formation red sandstone and is an early colonizer of disturbed sites. It regenerates from seed and does not stump sprout.

Occurrence at Fort Ord

Toro manzanita is abundant at Fort Ord; it is likely that Fort Ord supports roughly 70-90% of the known range of Toro manzanita. Maritime chaparral in the eastern half of Fort Ord supports the highest density of Toro manzanita, and Toro manzanita is the dominant shrub at many sites in this area (Figure B-4). Toro manzanita occurs in medium densities in maritime chaparral in the central portion of Fort Ord.

Reasons for Decline

Toro manzanita has never been a widespread species. Urban development and off-road vehicle use in Monterey have resulted in the loss of Toro manzanita habitat (Griffin 1976). The undeveloped conditions of eastern Fort Ord and Toro County Park have preserved large areas of Toro manzanita habitat.

Sandmat Manzanita

Sandmat manzanita is a mat and mound forming evergreen shrub of the heath family.

Status and Distribution

Sandmat manzanita is a Category 2 candidate for federal listing as threatened or endangered. CNPS considers sandmat manzanita rare and endangered in California and elsewhere, qualifying it for CNPS's list 1b (Smith and Berg 1988).

Sandmat manzanita is known to occur at Fort Ord, the Monterey Airport, in very small populations on the Monterey Peninsula, and two sites south of Point Lobos (Figure B-5). Sandmat manzanita is found in openings in maritime chaparral and coast live oak woodland on sand hills near Monterey Bay (Griffin 1976). Sandmat manzanita is well adapted to shifting sand habitat forming large circular mats and mounds. It appears to be an early to middle successional species in maritime chaparral following burn events or ground disturbance, eventually yielding to taller chamise and shaggy-barked manzanita in older stands. Sandmat manzanita does not form a basal burl and reestablishes by seed after fire.

Occurrence at Fort Ord

Sandmat manzanita is abundant at Fort Ord; Fort Ord supports the largest populations of sandmat manzanita known (Griffin 1976). Sandmat manzanita occurs in undeveloped areas within the southwest and extreme northwest portions of Fort Ord (Figure B-6). It occurs in maritime chaparral and openings within coast live oak woodland. At sites supporting dense chamise and shaggy-barked manzanita, sandmat manzanita is restricted to roadsides and fire breaks.

Reasons for Decline

Urban developments at Fort Ord and in the cities of Seaside, Marina, Del Rey Oaks, Monterey, and Pacific Grove have eliminated much of the historical sandmat manzanita habitat. When provided with suitable habitat, sandmat manzanita colonizes rather freely, indicating that natural regeneration is not a problem (Griffin 1976). Historically recorded occurrences from the 1930s within the communities of Seaside and Marina and on the Monterey Peninsula have been extirpated because of urban development of natural habitat (Natural Diversity Data Base 1992).

Hickman's Onion

Hickman's onion is a perennial herb with white to pink flowers arising from a subterranean bulb in mid-spring. Hickman's onion is a member of the lily family.

Status and Distribution

Hickman's onion is a Category 1 candidate for federal listing as threatened or endangered. CNPS considers Hickman's onion to be rare or endangered in California and elsewhere, qualifying it for CNPS's list 1b.

Hickman's onion occurs in closed-cone coniferous forests, maritime chaparral, and valley and foothill grasslands in Monterey and San Luis Obispo Counties. Currently, Hickman's onion is known from fewer than 20 occurrences, five of which are in San Luis Obispo County (Smith and Berg 1988). The known distribution of Hickman's onion is shown in Figure B-7.

Occurrence at Fort Ord

Only several small populations of Hickman's onion were found at Fort Ord (Figure B-8). These populations were found in grasslands, usually with mima mound microrelief and surrounded by maritime chaparral or oak woodland. The majority of Hickman's onion occurrences are outside Fort Ord.

Reasons for Decline

Urban development and military operations are the greatest threats to Hickman's onion throughout its range (Smith and Berg 1988).

Monterey Ceanothus

Monterey ceanothus is a medium-sized evergreen shrub with pale to bright blue flowers and is a member of the Buckthorn family.

Status and Distribution

Monterey ceanothus is a Category 2 candidate for federal listing as threatened or endangered. CNPS considers Monterey ceanothus as a plant of limited distribution that may be of local importance, qualifying it for CNPS's list 4.

Monterey ceanothus occurs in maritime chaparral and closed-cone coniferous forests in the southern Monterey Bay region. The known distribution of Monterey ceanothus is shown in Figure B-9.

Occurrence at Fort Ord

Monterey ceanothus is abundant at Fort Ord and occurs in nearly all undeveloped areas of maritime chaparral within the installation (Figure B-10). Fort Ord supports about half the known range of this species (Figure B-9).

Reasons for Decline

Urban development outside Fort Ord has probably resulted in the loss of habitat and populations.

Eastwood's Ericameria

Eastwood's ericameria is a low, evergreen shrub of the sunflower family.

Status and Distribution

Eastwood's ericameria is a Category 2 candidate for federal listing as threatened or endangered. CNPS considers Eastwood's ericameria as rare and endangered in California and elsewhere, qualifying it for CNPS's list 1b.

Eastwood's ericameria occurs scattered at low density in maritime chaparral, coastal scrub, and closed-cone coniferous forest. The species is only known from the Monterey Bay area. Griffin (1976, 1978) reported populations near Prunedale, in Toro County Park, near Monterey Airport, in the Morse Botanical Reserve in Del Monte Forest, and on Fort Ord (Figure B-11). The populations in Toro County Park and the Morse Botanical Reserve are protected from development. Although most early collections of the species were made on coastal dunes near Monterey, no populations have survived in coastal dune habitat (Griffin 1976). The known range of Eastwood's ericameria is presented in Appendix B-12.

Occurrence at Fort Ord

Eastwood's ericameria occurs in the maritime chaparral and coastal scrub habitats of Fort Ord (Figure B-12). It generally occurs scattered at low densities but increases in density in the southwestern and eastern part of the installation. The species reaches relatively high locally abundant densities in the northern cantonment area. Eastwood's

ericameria occurs in openings in chaparral and coastal scrub on sandy soil. Eastwood's ericameria is apparently an early to middle successional species, regenerating from seed following burn events in maritime chaparral. Fort Ord supports more than half the known range of Eastwood's ericameria.

Reasons for Decline

Urban development and clearing for strawberry farms in coastal cities and the Prunedale Hills are the major causes for decline of Eastwood's ericameria (California Native Plant Society 1977). The extirpation of Eastwood's ericameria from coastal dunes is attributed to urban development. Successful reproduction of this species appears to be hampered by insect infestation of seeds, low production of viable seeds, and low success in seedling establishment (California Native Plant Society 1977).

Coast Wallflower

Coast wallflower is an erect biennial or short-lived perennial herb in the mustard family.

Status and Distribution

Coast wallflower is a Category 2 candidate for federal listing as threatened or endangered. CNPS considers coast wallflower as rare and endangered in California and elsewhere, qualifying it for CNPS's list 1b.

Coast wallflower occurs in the coastal dunes of Monterey Bay and Santa Rosa Island (San Diego County) and in the sandy openings of coastal scrub and maritime chaparral on Fort Ord.

Occurrence at Fort Ord

Coast wallflower occurs at Fort Ord in the coastal strand and dunes and in a few locations in sandy openings in the coastal scrub and maritime chaparral habitats (Figure B-13). The highest densities are found in the coastal scrub north of Reservation Road and the northern portion of Fort Ord's coastal strand.

Reasons for Decline

The primary reason for decline of the coast wallflower is habitat loss resulting from development along the California coast.

Wedge-leaved Horkelia

Wedge-leaved horkelia is a small, spreading to erect perennial herb in the Rose family.

Status and Distribution

Wedge-leaved horkelia is a Category 2 candidate for federal listing as threatened or endangered. CNPS considers wedge-leaved horkelia as rare and endangered in California and elsewhere, qualifying it for CNPS's list 1b.

Wedge-leaved horkelia occurs in sandy and gravelly openings in coastal scrub, maritime chaparral, and closed-cone coniferous forest. Its historical range extends from Marin to Santa Barbara Counties (Figure B-14). Smith and Berg (1988) note, however, that "historic occurrences need field surveys", which suggests that the available distributional data for this species is outdated.

Occurrence at Fort Ord

Wedge-leaved horkelia occurs at Fort Ord scattered throughout the maritime chaparral and coastal scrub and occasionally in grassland (Figure B-15). It occurs in highest densities in the southern part of the inland range area and south of the Imjin Gate.

The rare wedge-leaved horkelia (*Horkelia cuneata* var. *sericea*) is readily distinguished from its more common relative common wedge-leaved horkelia (*Horkelia cuneata* var. *cuneata*) (which also occurs on Fort Ord) by wedge-leaved horkelia's more dense but less glandular hairiness of the leaves (Munz and Keck 1968).

Reasons for Decline

Wedge-leaved horkelia populations are declining because of development in the coastal zone (Smith and Berg 1988).

Yadon's Piperia

Yadon's piperia is a small erect perennial herb in the orchid family.

Status and Distribution

Yadon's piperia is not federally listed as threatened or endangered nor is it on the federal list of candidates for threatened or endangered listing. However, Yadon's piperia is treated in this biological assessment as if it were a candidate species because it is on a listing package being prepared by the U.S. Fish and Wildlife Service (Rutherford pers. comm.). This species has been recently described (Morgan and Ackerman 1990).

Yadon's piperia occurs on sandy soils in maritime chaparral and closed-cone coniferous forest. Its range extends from the Pajaro Hills to the Monterey Peninsula (Morgan and Ackerman 1990) (Figure B-16). North of Fort Ord, Yadon's piperia occurs in maritime chaparral (four known populations). South of Fort Ord, the species is found in closed-cone coniferous forest (nine populations) (Morgan pers. comm.). CNPS considers Yadon's piperia rare and endangered in California and elsewhere, qualifying it for CNPS's list 1b.

Occurrence at Fort Ord

One small population of Yadon's piperia was found on Fort Ord in maritime chaparral at the northern edge of the base, east of SR 1 (Figure B-17).

Reasons for Decline

Urban development and golf course construction are the primary reasons for decline of Yadon's piperia. At Pajaro Hills, clearing of maritime chaparral for strawberry farming may have caused extirpation of populations in the past (Morgan pers. comm.).

SPECIES ACCOUNTS: CANDIDATE WILDLIFE SPECIES

Black Legless Lizard

Status and Distribution

The black legless lizard is a Category 2 candidate for federal listing as threatened or endangered and is recognized as a California state species of special concern. A petition for federal listing for the species is being prepared (Rutherford pers. comm.).

The range of the black legless lizard is restricted to the Monterey Bay region (Figure B-18). Discrete populations have been identified along the coast from Marina State Beach to just south of Carmel. Intergrades between black and silvery legless lizards have been found elsewhere in the Monterey Bay region and along the California coast from the east

side of the San Francisco Bay to San Luis Obispo County. Questions exist concerning the taxonomic status and distribution of these two varieties of legless lizard (Bury 1985).

Occurrence at Fort Ord

Black legless lizards were discovered in several locations along the southern dunes at Fort Ord during surveys conducted in 1984 (Bury 1985). One black legless lizard was found inland near Fritzsche Army Airfield during 1992 surveys (Figure B-19).

Potential microhabitat for the black legless lizard occurs at Fort Ord within areas of natural vegetation on the dunes or where coastal scrub and maritime chaparral occur on loose sandy soils (Baywood Sands or Oceana soil types) (Figure B-19).

Habitat Requirements

Black legless lizards require specific microhabitat conditions within suitable habitat areas. Because legless lizards typically spend most of the year underground, they require loose sandy soils or thick duff or leaf litter that they can burrow through easily. Other necessary microhabitat conditions include moderate soil moisture, areas of shade and sun for thermoregulation, and abundant prey species such as insects, spiders, or other invertebrates (Miller 1944). Legless lizards seldom occur in areas of bare soil or open sand.

Black legless lizards are most abundant in dune habitats where native vegetation is present (Stebbins 1966). Although legless lizards have also been found along the edges of ice plant mats within dune ecosystems, the ice plant mat community is not considered suitable habitat for legless lizards (Papenfuss and Harris 1990). The dense root structure of African ice plant and lack of leaf litter and duff produced by the species appear to provide poor burrowing conditions for legless lizards.

Reasons for Decline

Habitat destruction and modification are the primary threats to the black legless lizard. Extensive urban and agricultural development in the Monterey Bay region has eliminated many areas of black legless lizard habitat. Degradation or removal of native vegetation by urban or agricultural development, recreational activities, and introduction of non-native species such as African ice plant has made habitat conditions unsuitable for the black legless lizard in many areas (Bury 1985). Activities that compact soils, such as trail construction or off-road vehicle use, also degrade black legless lizard habitat (Bury 1985).

Because black legless lizards travel underground, dispersal capabilities for the species are limited. Movement barriers include rivers, hard or rocky soils, roads or trails, and cultivated fields (Bury 1985). Habitat modifications in the Monterey Bay region have isolated many legless lizard populations. Isolated populations are highly susceptible to extirpation from catastrophic events and genetic erosion resulting from excessive inbreeding (Bury 1985).

Monterey Dusky-Footed Woodrat

Status and Distribution

The Monterey dusky-footed woodrat is a Category 2 candidate for federal listing as threatened or endangered. The Monterey dusky-footed woodrat is one of 10 subspecies of dusky-footed woodrat known to occur in California (Hall 1981). The range of this species is limited to western and central Monterey County and northwestern San Luis Obispo County (Figure B-20).

Little is known specifically about the Monterey dusky-footed woodrat. The limited range of the species was likely an important factor in its designation as a federal candidate species.

Occurrence at Fort Ord

Monterey dusky-footed woodrats were found in several areas at Fort Ord during 1992 field surveys, including Fritzsche Army Airfield, near Inter-Garrison Road, and in the eastern portion of the installation (Figure B-21). Potential habitat occurs throughout Fort Ord except on the coastal dunes, urbanized areas, and in grasslands (Figure B-21).

Habitat Requirements

Dusky-footed woodrats typically occur in forest habitats with moderate canopy and a brushy understory. They may also be abundant in chaparral habitats (Zeiner et al. 1990). Sufficient sticks and ground litter must be available to build the houses used by the woodrats. Woodrat abundance may be limited by the availability of house-building materials, and competition for houses is intense (Linsdale and Tevis 1951). Woodrats are less abundant in recently burned areas because available materials for houses are depleted and existing houses are burned (Simons 1991). Monterey dusky-footed woodrats were found at Fort Ord in coastal coast live woodland and chaparral habitats.

Reason for Decline

Habitat loss resulting from conversion of chaparral and oak woodlands to urban and agricultural land uses is probably the primary cause for the decline in Monterey dusky-footed woodrat populations. Because of the limited range of this species, the woodrat is highly susceptible to habitat losses. The Monterey dusky-footed woodrat has not been thoroughly studied, and other reasons for decline may be identified in the future.

Monterey Ornate Shrew

Status and Distribution

The Monterey ornate shrew is a Category 2 candidate for federal listing as threatened or endangered. The species has also been referred to as the Salinas ornate shrew (Williams 1986). The species' range is limited to the southern Monterey Bay region from Elkhorn Slough to Carmel and inland to Salinas (Hall 1981) (Figure B-22). The limited range of the species probably contributed to its designation as a Category 2 federal candidate. Fort Ord comprises the center of the species' range.

Occurrence at Fort Ord

No known records exist of Monterey ornate shrews occurring at Fort Ord. No shrews were found during 1992 field surveys; however, Fort Ord occurs within the species' range and potential habitat is available at the installation.

Habitat Requirements

Monterey ornate shrews occur in a variety of riparian, wetland, and upland communities (Williams 1986). Ornate shrews require specific microhabitat conditions within these habitat types, such as thick groundcover (i.e., duff, dead and downed logs, or dense grasses) and abundant invertebrate populations. Ornate shrews are most abundant where there are moist soils, such as riparian areas, but may also occur in dry habitats (Zeiner et al. 1990). At Fort Ord, suitable microhabitat conditions are most likely to occur in mixed riparian, oak riparian, and inland and coastal coast live oak woodland habitats. Areas of potential habitat at Fort Ord are shown in Figure B-23.

Reasons for Decline

Intense agricultural and urban development has occurred within the range of the Monterey ornate shrew. Habitat losses are the primary threat to the species. Not enough is known of the species' specific habitat requirements and occurrence of suitable habitat within its range to determine other specific threats or reasons for decline.

California Tiger Salamander

Status and Distribution

The California tiger salamander is a Category 2 candidate species for federal listing as threatened or endangered and is a California state species of species concern. A petition for listing as an endangered species is being reviewed by USFWS. The species occurs primarily in the Central Valley and Sierra Nevada foothills from Yolo to Tulare Counties and in coastal valleys and foothills from Sonoma to Santa Barbara Counties (Figure B-24).

Occurrence at Fort Ord

Eight water bodies at Fort Ord are known breeding sites for California tiger salamanders. Additional potential breeding habitat occurs in vernal pools and ponds throughout the installation (Figure B-25). Areas within 0.5 mile of breeding habitat are considered upland habitat for the California tiger salamander.

Habitat Requirements

Tiger salamanders inhabit valley foothill grasslands and open woodlands, usually within 1 mile of water. They breed in ponds and temporary rain pools (Stebbins 1972, Verner and Boss 1980).

Adult tiger salamanders are terrestrial and spend most of the year in underground refugia, usually rodent burrows or cracks in the soil. Tiger salamanders emerge only for brief periods to breed (Stebbins 1985). Individuals may travel as far as 1 mile to and from aquatic breeding sites during heavy rains between December and mid-August (Stebbins 1985, Brode pers. comm.). Tiger salamander larvae are aquatic and may require up to 2 months to metamorphose (Anderson 1968).

Reasons for Decline

Historically, the California tiger salamander probably occurred in grassland habitats near water throughout much of California. The widespread conversion of valley and foothill

grassland habitats to agriculture and urban development has resulted in a reduction of the species' range and a decline in its breeding population (Stebbins 1985). The 1987-1992 drought also may have reduced salamander breeding success and caused a decline in populations in remaining occupied areas.

California Red-Legged Frog

Status and Distribution

The California red-legged frog is a Category 1 candidate for federal listing as threatened or endangered and is recognized as a California state species of special concern. A petition for listing as an endangered species is being reviewed by USFWS. The red-legged frog was originally found in scattered populations throughout much of California west of the Sierra Nevada, below 4,000 feet elevation (Stebbins 1972). It has since disappeared from much of its former range (Moyle 1973, Hayes and Jennings 1986). The California red-legged frog has been extirpated from the floor of the Central Valley and has probably been eliminated from more than half of the drainage systems in the Central Valley where it historically occurred (Hayes and Jennings 1988) (Figure B-26).

Occurrence at Fort Ord

The California red-legged frog is not known to occur at Fort Ord and none were found during wetland surveys. However, Fort Ord occurs within the species' range and suitable habitat is available at ponds and where the Salinas River passes through the installation (Figure B-27).

Habitat Requirements

California red-legged frogs require cool pond habitats (including stream pools) with emergent and submergent vegetation (Storer 1925, Stebbins 1972). Habitats with the highest densities of red-legged frogs are deep-water ponds (i.e., at least 3 feet deep) with dense stands of overhanging willows and a fringe of cattails (Jennings 1988, Hayes and Jennings 1988).

California red-legged frogs lay their eggs in clusters around aquatic vegetation from December to early April. The larvae require approximately 3-5 months to complete metamorphosis. (Storer 1925.)

Adults are highly aquatic when active but are less dependent on permanent water bodies than other frog species (Brode and Bury 1984). Adults may estivate during dry periods in rodent holes or cracks in the soil. Although California red-legged frogs typically remain near streams or ponds, they can travel overland during rains.

Red-legged frogs occur most frequently in intermittent waters that lack fishes and bullfrogs (Hayes and Jennings 1988).

Reasons for Decline

Although the California red-legged frog's historical disappearance has been linked to overharvesting for food and loss of wetlands, the precise causes of the species' decline are poorly understood (Hayes and Jennings 1988). Several factors have probably contributed to the decline of red-legged frogs, including habitat loss, intense harvesting, and an increase in introduced fish and bullfrog populations. Certain areas, such as the San Joaquin Valley, were particularly affected by wetland reclamation and species harvest (Jennings and Hayes 1984). Continued loss of wetland habitats threatens remaining populations.

The number of permanent ponds relative to temporary ponds located in the Central Valley and foothills below 4,500 feet has increased over the last 50 years, which is a significant change in aquatic habitats in this area (Moyle 1973). Hayes and Jennings (1988) suggest that the current restriction of California red-legged frogs to intermittent waters has apparently resulted from the introduction of alien fishes and bullfrogs to wetland habitats with permanent waters. Introduced fishes and bullfrogs prey on red-legged frog eggs, larvae, and adults and compete with them for food.

Southwestern Pond Turtle

Status and Distribution

The southwestern pond turtle (*Clemmys marmota pallida*) is one of two subspecies of the western pond turtle. The second subspecies is the northwestern pond turtle (*Clemmys marmota marmota*). Fort Ord is within the range of the southwestern pond turtle.

The southwestern pond turtle is a Category 1 candidate for federal listing as threatened or endangered and is recognized as a California state species of special concern. A petition for listing as an endangered species is currently being reviewed by USFWS. The southwestern pond turtle is found throughout the central and southern Coast Ranges from Monterey Bay to Baja California and in the Mojave River drainage in southern California (Stebbins 1972) (Figure B-28).

Occurrence at Fort Ord

No southwestern pond turtles were found at Fort Ord during wetland wildlife surveys. The species has been observed at Merrill Ranch just east of the Fort Ord installation boundary and have occurred sporadically at Mudhen Lake (Littlefield pers. comm.). Two

turtles were transplanted from Mudhen Lake to East Garrison Lake in 1991 when Mudhen Lake dried (Littlefield pers. comm.). The status of these two turtles is unknown. Potential habitat for southwestern pond turtles exists where the Salinas River runs through Fort Ord and in ponds at the installation (Figure B-27).

Habitat Requirements

The southwestern pond turtle occurs in quiet waters of lowland ponds, marshes, reservoirs, and streams with deep pools where rocks, logs, and streamside vegetation that provide escape cover and basking sites are available (Stebbins 1972). The southwestern pond turtle is highly aquatic and leaves the water to bask on rocks or logs or deposit eggs along the streamside or in adjacent uplands up to 1,300 feet from water (Holland and Bury 1992). Hatchling and adult turtles may overwinter in upland sites (Holland and Bury 1992). This behavior may permit turtles to occupy creek sites and stock ponds that dry out several months each year.

Reasons for Decline

Populations of the southwestern pond turtle are declining throughout its range, particularly in the San Joaquin Valley, southern portions of California and northern Oregon, and all of Washington (Holland and Bury 1992). Existing populations are suffering from declines in juvenile recruitment, as evidenced by recent observations of populations consisting mainly of adults (Holland and Bury 1992). Factors that have contributed to the decline in southwestern pond turtle populations include historical commercial exploitation, alteration of aquatic and adjacent upland habitats, introduction of predators, population fragmentation, and drought (Holland and Bury 1992).

Tricolored Blackbird

Status and Distribution

The tricolored blackbird is a Category 2 candidate for federal listing as threatened or endangered and is recognized as a California state species of special concern. Tricolored blackbirds historically occurred in high densities in lowland areas throughout California and sparsely in Oregon and northwestern Baja California (Neff 1937). In California, the species is found year round only in scattered locations in the Central Valley and the Coast, Transverse, and Peninsular Ranges. Tricolored blackbirds also nest in Siskiyou and Lassen Counties, the San Francisco Bay Area, and the San Joaquin Delta (Zeiner et al. 1990) (Figure B-29).

Occurrence at Fort Ord

One tricolored blackbird nesting colony was observed at Fort Ord during 1992 field surveys. The colony was located in a nettle patch growing over a hillside seep approximately 2 miles northeast of Laguna Seca (Figure B-30). The colony consisted of approximately 50 adults, and young were successfully fledged.

The grasslands in the southwest corner of Fort Ord are considered suitable foraging habitat for tricolored blackbirds, and several ponds in the area provide additional potential nesting habitat.

Habitat Requirements

Tricolored blackbirds are considered the most intensely colonial of all North American passerine birds (Orians and Collier 1963). Up to 20,000 nests have been recorded in a cattail marsh of 10 acres or less (Dehaven et al. 1975). Colonies most often occur in freshwater marshes dominated by tules and cattails; however, other dense vegetative substrates such as willows, blackberries, and nettles are frequently used (Beedy et al. 1991). Nesting colonies are almost always situated near a water source.

Tricolored blackbirds are highly nomadic, and flocks may breed at sites where they have been absent for long periods (Orians 1961). However, breeding colonies exhibit some site fidelity and traditionally return to areas that provide critical resources, including secure nesting substrates, water, and suitable foraging habitat (Beedy et al. 1991). Important factors for successful breeding include super abundant insect populations for foraging, colony sizes of greater than 50 birds, and limited disturbance by humans and predators (Beedy et al. 1991). Tricolored blackbird nesting colonies are sensitive to disturbance; colonies have been abandoned after one human intrusion (Beedy et al. 1991).

Reasons for Decline

The overall distribution of tricolored blackbirds in California has remained relatively constant. However, overall population size, number of breeding colonies, and colony sizes have declined dramatically over this century (Beedy et al. 1991). The loss of wetland habitat is the principal factor attributed to the tricolored blackbird decline (Beedy et al. 1991). Loss of habitat has not only directly eliminated nesting colonies but has led to smaller colony sizes overall and the increased use of marginal habitat, resulting in decreased fledging success.

Other factors contributing to the tricolored blackbird decline include increased disturbance of nesting colonies by humans and predators, decreased insect food sources resulting from pesticide use, and incidental poisoning of nesting colonies (Beedy et al. 1991).

California Horned Lark

Status and Distribution

The California horned lark is a Category 2 candidate for federal listing as threatened or endangered. The California horned lark is one of 16 subspecies of horned lark, and one of eight that breed in California. The California horned lark is a resident along the California Coast Range and the San Joaquin Valley, occurring primarily from Capetown, Humboldt County, south to Baja California (Behle 1942) (Figure B-31).

Occurrence at Fort Ord

California horned larks were observed at Fort Ord near Fritzsche Army Airfield during 1992 surveys (Figure B-32). However, grassland communities at Fort Ord are considered suitable habitat for the horned lark (Figure B-32)

Habitat Requirements

The California horned lark occurs in open habitats, including fallow grain fields, short-grass prairie, grazed grasslands, alkali flats, open coastal plains, mountain meadows, and valley floors (Behle 1942, Grinnell and Miller 1944). California horned larks are abundant on low, level or rolling, open pastureland. During the breeding season, the subspecies ranges in altitude from sea level to 8,500 feet (Behle 1942).

Horned larks nest in dry grasslands and rangelands that have low, sparse cover (Bent 1942). They prefer closely cropped, barren areas for nesting, although they often place their nests adjacent to dense clumps of grasses or forbs (Bent 1942). Horned larks forage in open, herbaceous habitats, where they feed on the seeds of grains, forbs, and grasses and on small insects (Bent 1942).

Reasons for Decline

Habitat loss to urban and agricultural development is the primary reason for population declines of the California horned lark. Declines in coastal breeding populations of this subspecies are of particular concern (Rorabaugh pers. comm.)

Loggerhead Shrike

Status and Distribution

The loggerhead shrike is a Category 2 candidate for federal listing as threatened or endangered. The shrike is a widespread breeding species in North America, occurring from the southern Canadian provinces south across most of the United States and into Mexico (American Ornithologist Union 1957). The shrike is a resident species throughout the lowlands and foothills of California (Grinnell and Miller 1944).

Shrike populations have declined over much of the United States, especially the central and eastern regions (Arbib 1977, Geissler and Noon 1981). Shrike populations in the western United States declined slightly between 1955 and 1979, but these populations currently appear to be stable (Morrison 1981, Fraser and Luukkonen 1986).

Occurrence at Fort Ord

Loggerhead shrikes were observed at Fort Ord during 1992 field surveys at the Fritzsche Army Airfield, the dunes west of SR 1, and near the western boundary of the Inland Range Area (Figure B-34). Suitable habitat exists throughout most of Fort Ord in dune, coastal scrub, maritime chaparral, and grassland communities (Figure B-34).

Habitat Requirements

The loggerhead shrike is found in grasslands, agricultural lands, open shrublands, and open woodlands (Bent 1950). At Fort Ord, loggerhead shrikes were also observed in dune habitats and dense maritime chaparral. Shrikes nest in low trees, dense shrubs, and vines, and feed on insects, small reptiles, and small mammals (e.g., mice) taken in open areas.

Reasons for Decline

The population decline of the loggerhead shrike is not well understood. Two possible reasons have been suggested for the decrease in the species' numbers. The conversion of grasslands and open brushlands to agricultural croplands has reduced the amount of habitat available for the shrike, and contamination by pesticides may reduce the species' reproductive success by reducing eggshell thickness (Fraser and Luukkonen 1986, U.S. Fish and Wildlife Service 1987). Also, the recent trend toward larger agricultural fields and "clean farming" has resulted in a reduction of the fencerow vegetation used by shrikes and their prey (Fraser and Luukkonen 1986).

OTHER LISTED, PROPOSED, AND CANDIDATE MARINE SPECIES

Approximately 27 species of marine mammals and 94 species of seabirds are known to occur in the Monterey Bay region. Nine marine mammal species, five bird species, and three sea turtle species that occur in the Monterey Bay are federally listed as threatened or endangered, proposed for federal listing, or candidate species (Table 1-3).

Species accounts were not included for these species because they are unlikely to be affected by project actions. No important marine mammal haul-out or breeding areas, marine turtle egg-laying areas, or seabird nesting colonies exist at or near Fort Ord, and most species occur as nonbreeding residents or spring and fall migrants (Figure 4-15).

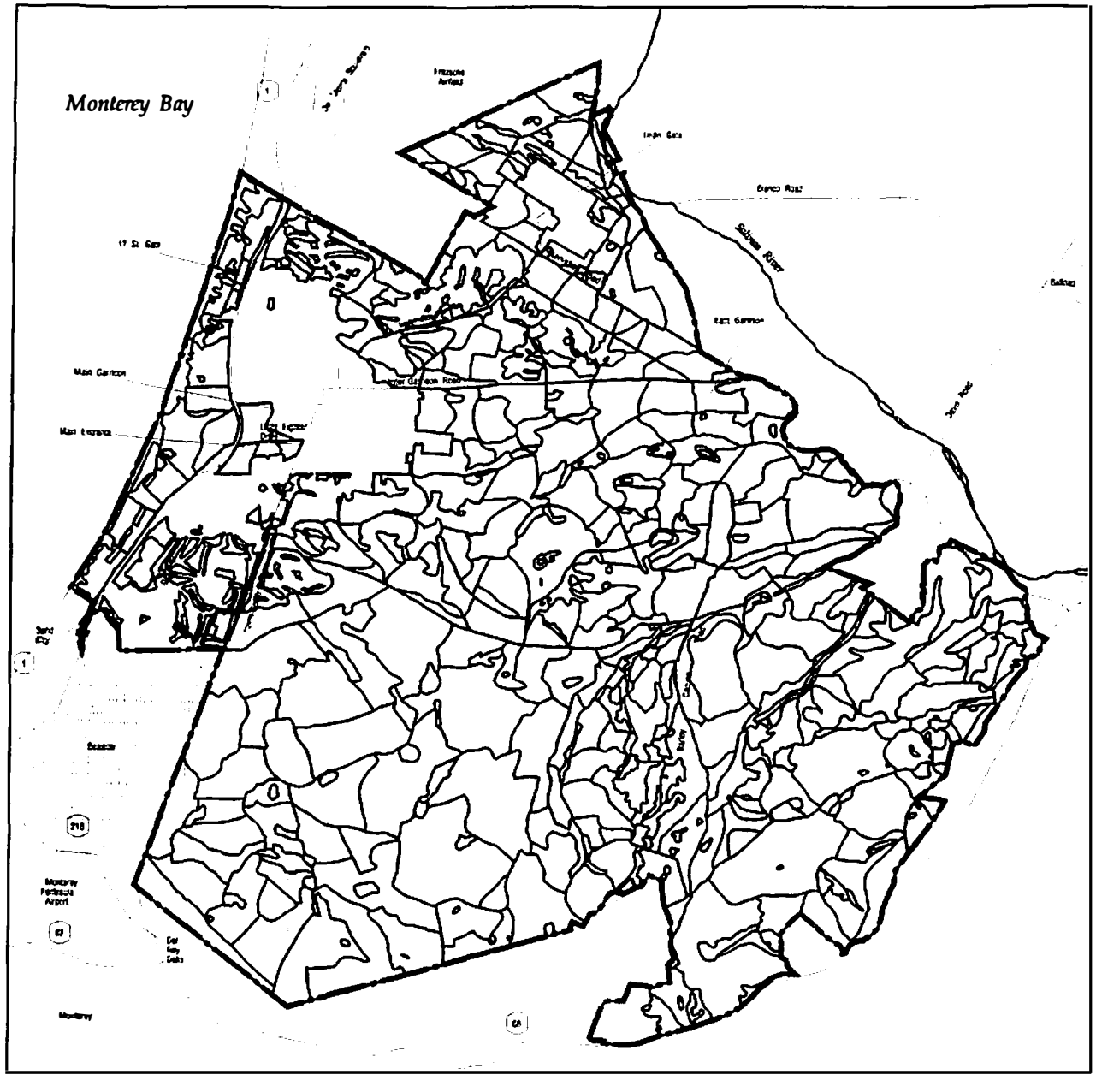
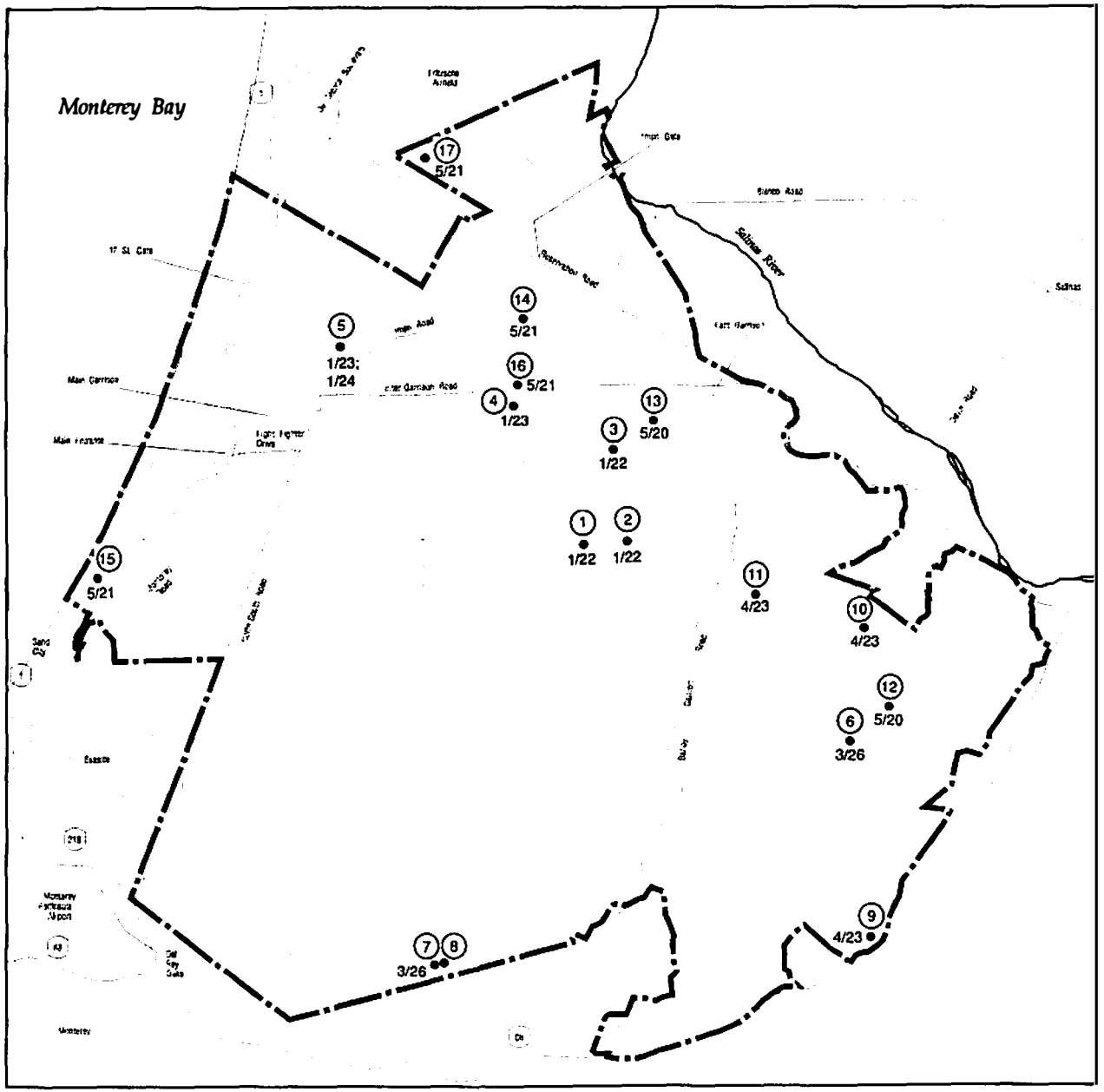


Figure 4-1

Survey Polygons used for Field Studies at Fort Ord

Figure 4-2

Small Mammal Survey Locations at
Fort Ord and Date Surveyed



Scale 1:60,000

0 1 2 3 miles

0 2,500 5,000 7,500 10,000 feet

0 1 2 3 kilometers

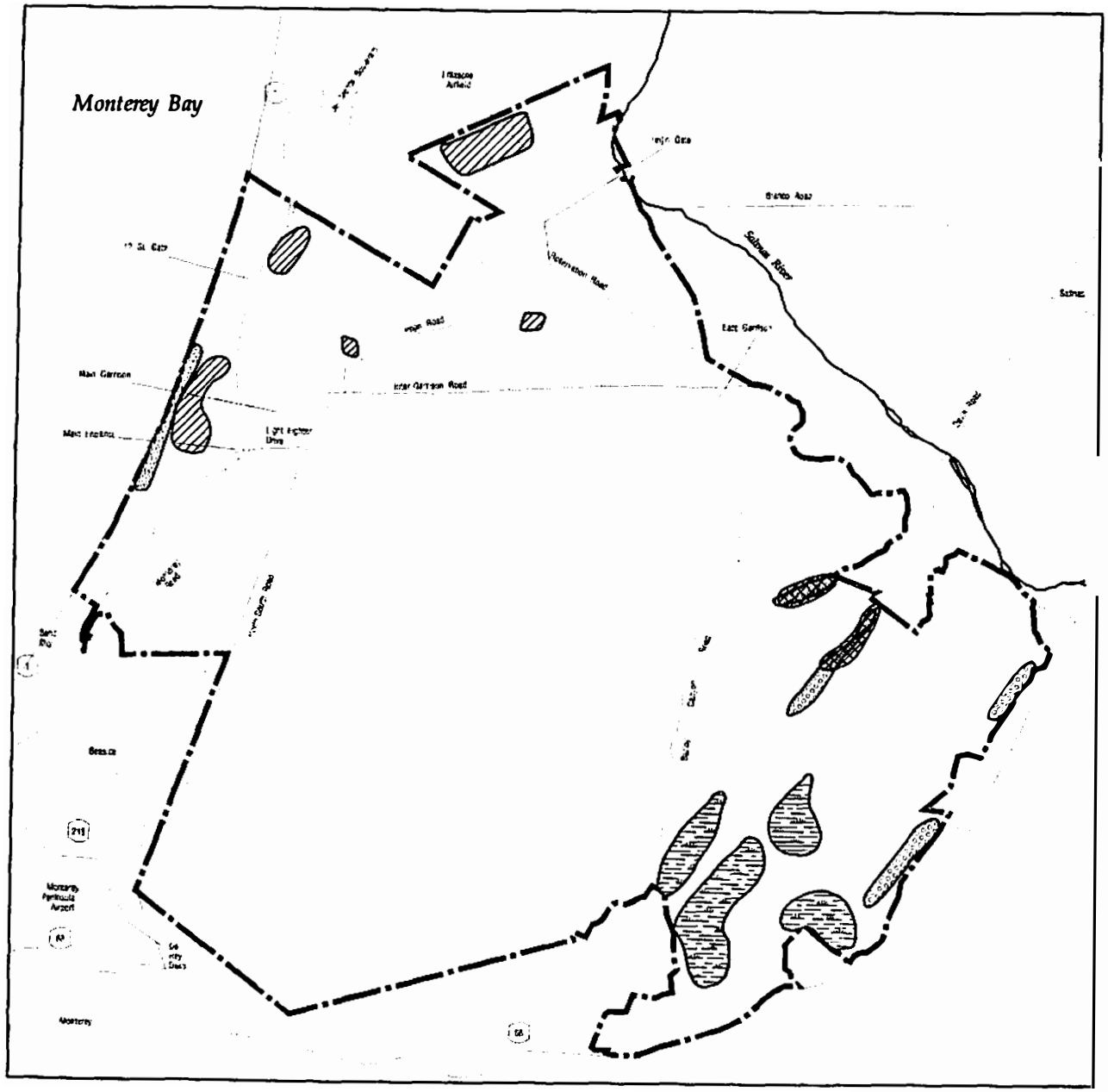


Figure 4-3

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

0 1 2 3 miles

0 2,500 5,000 7,500 10,000 feet

0 1 2 3 kilometers

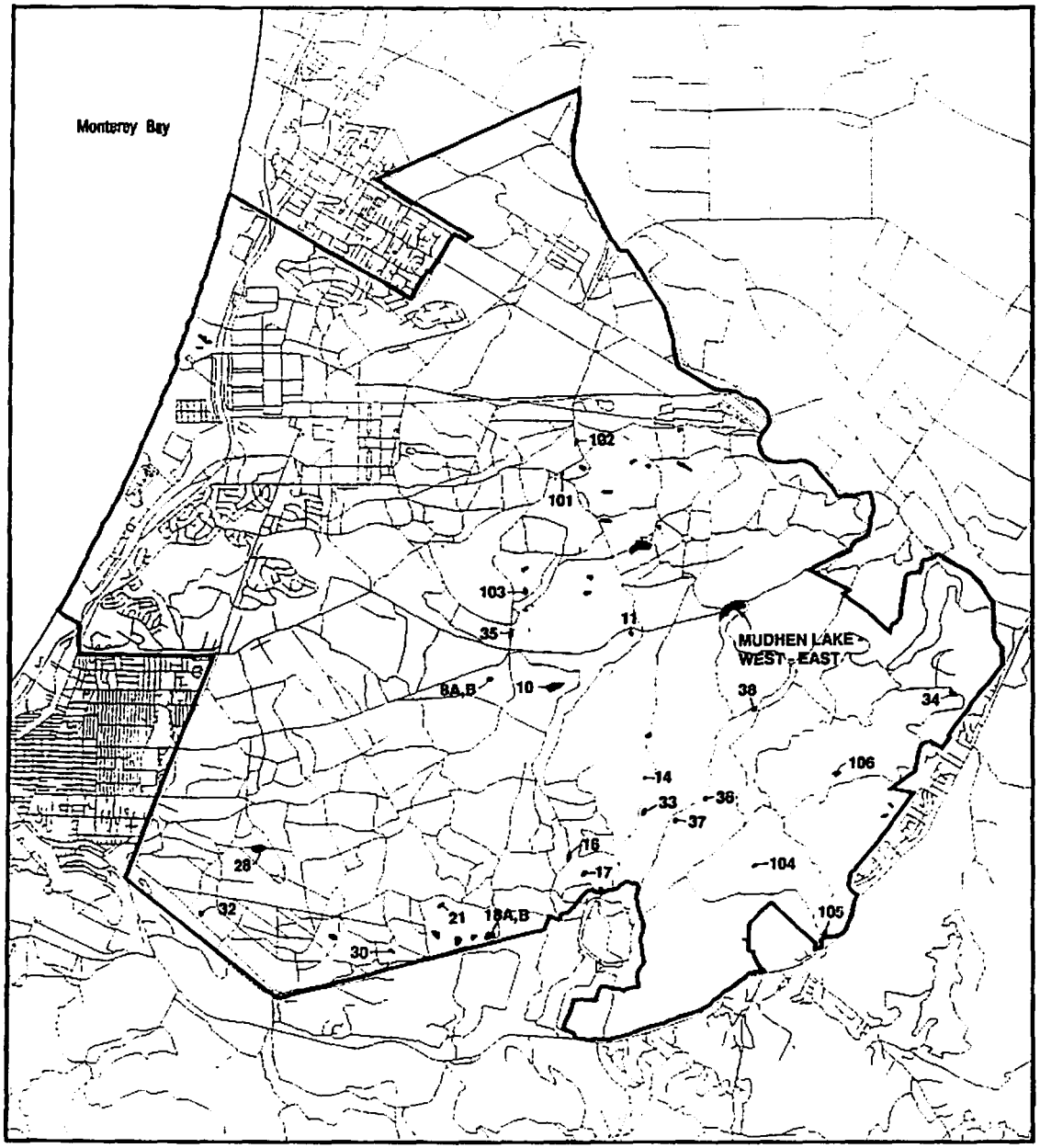


Figure 4-4

Vernal Pools and Ponds Surveyed for Freshwater Aquatic Wildlife

Scale 1:60,000

0 1 2 3 miles

0 2,500 5,000 7,500 10,000 feet

0 1 2 3 kilometers

Figure 4-5

Known Distribution of Sand Gilia *(Gilia tenuiflora* ssp. *arenaria)*

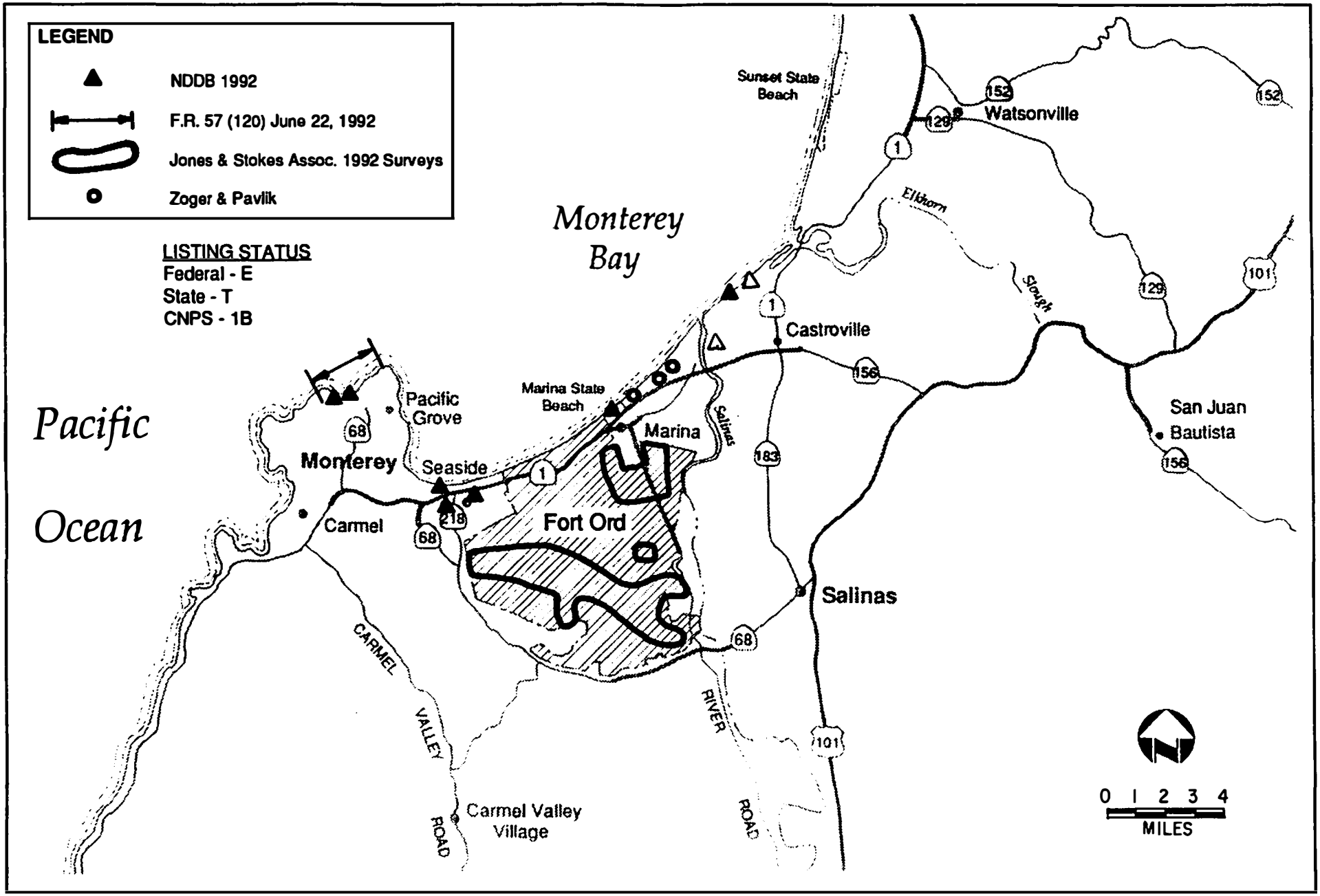
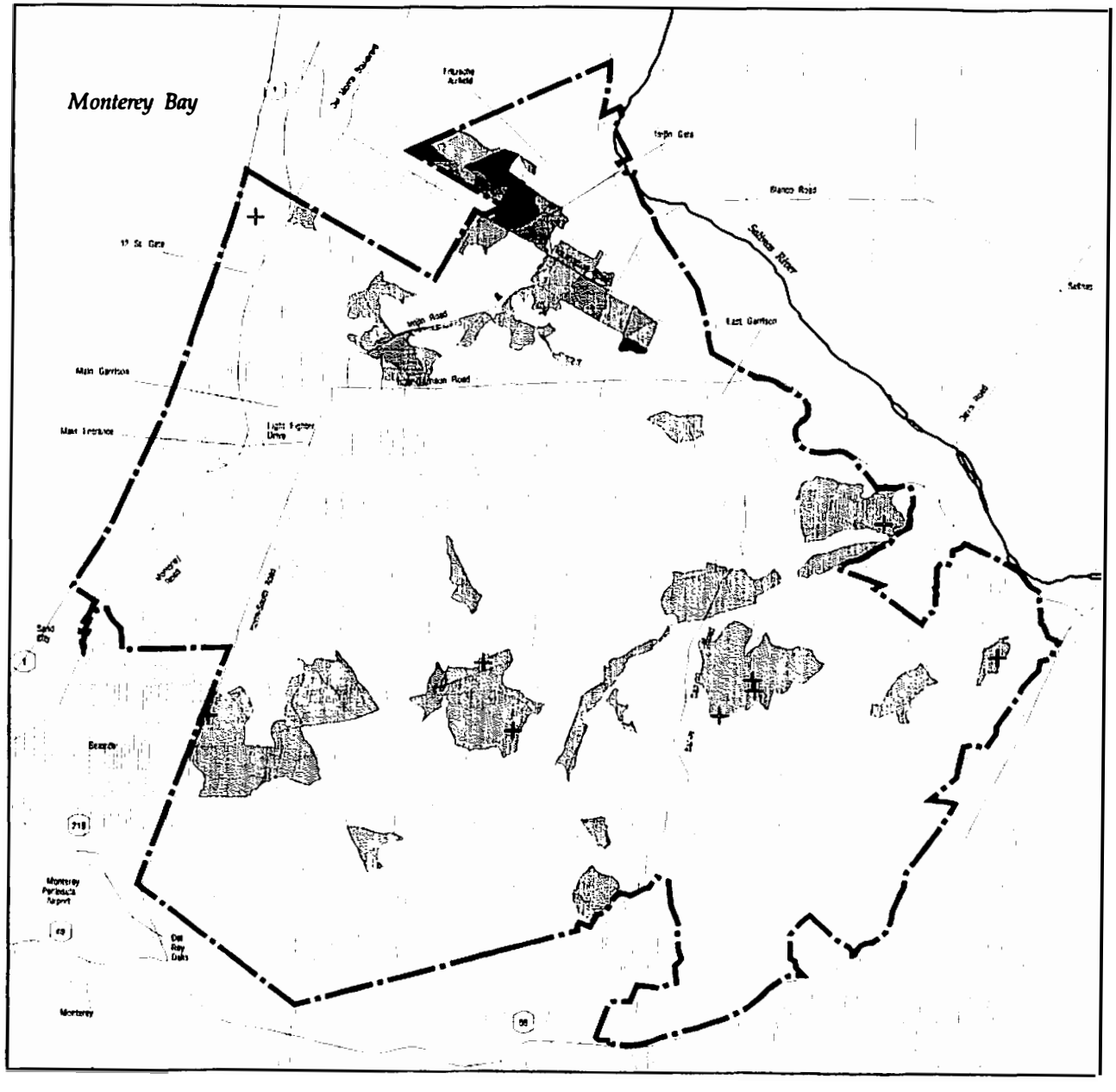


Figure 4-6

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

0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure 4-8

Potential and Occupied Habitat for Smith's Blue Butterfly

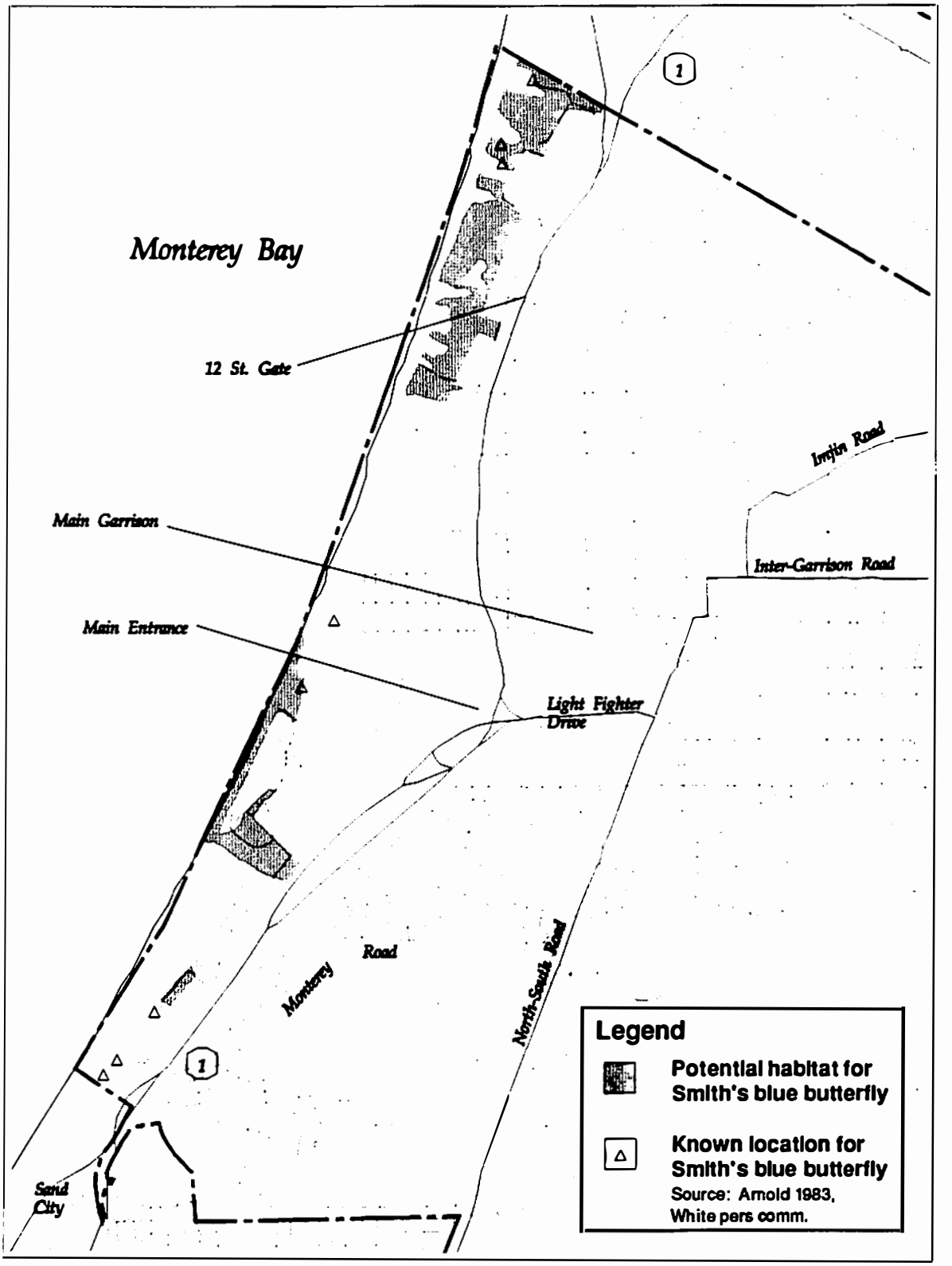
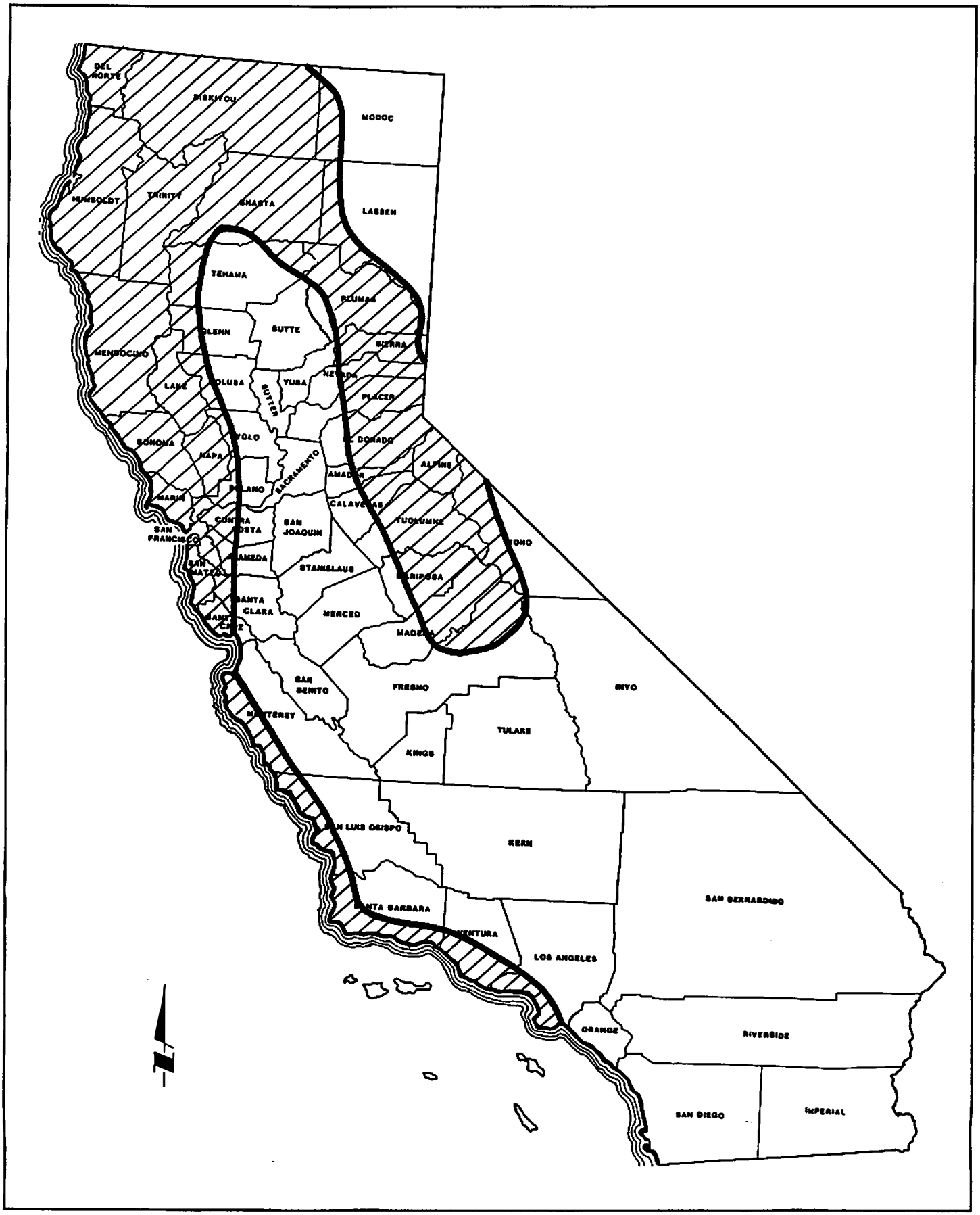


Figure 4-9

Breeding Range of the American Peregrine Falcon in California



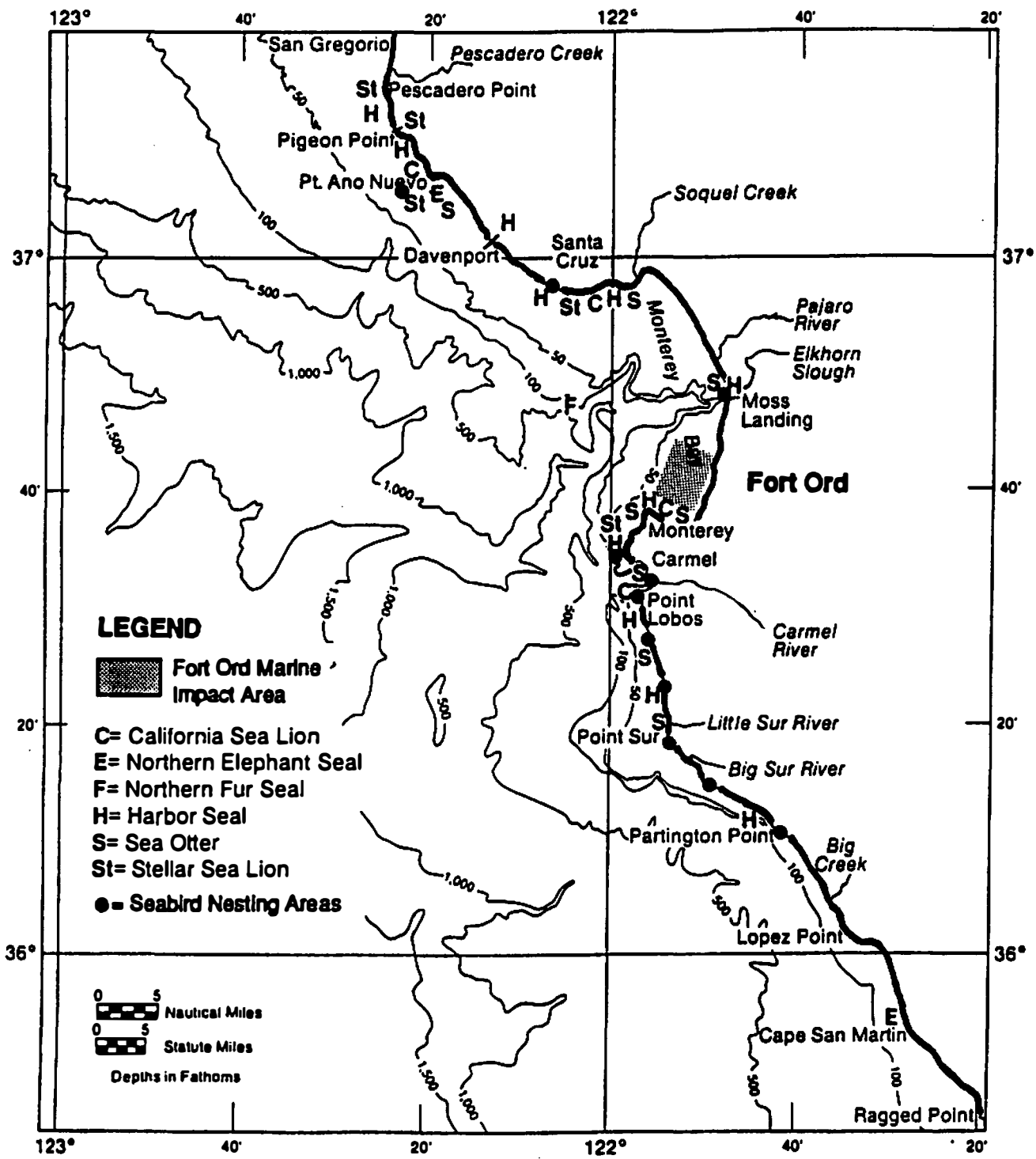
Source: Zeiner et al. 1990a

Figure 4-10
Range of Southern Sea Otter

Source: Zeiner et al. 1990b

Figure 4-11

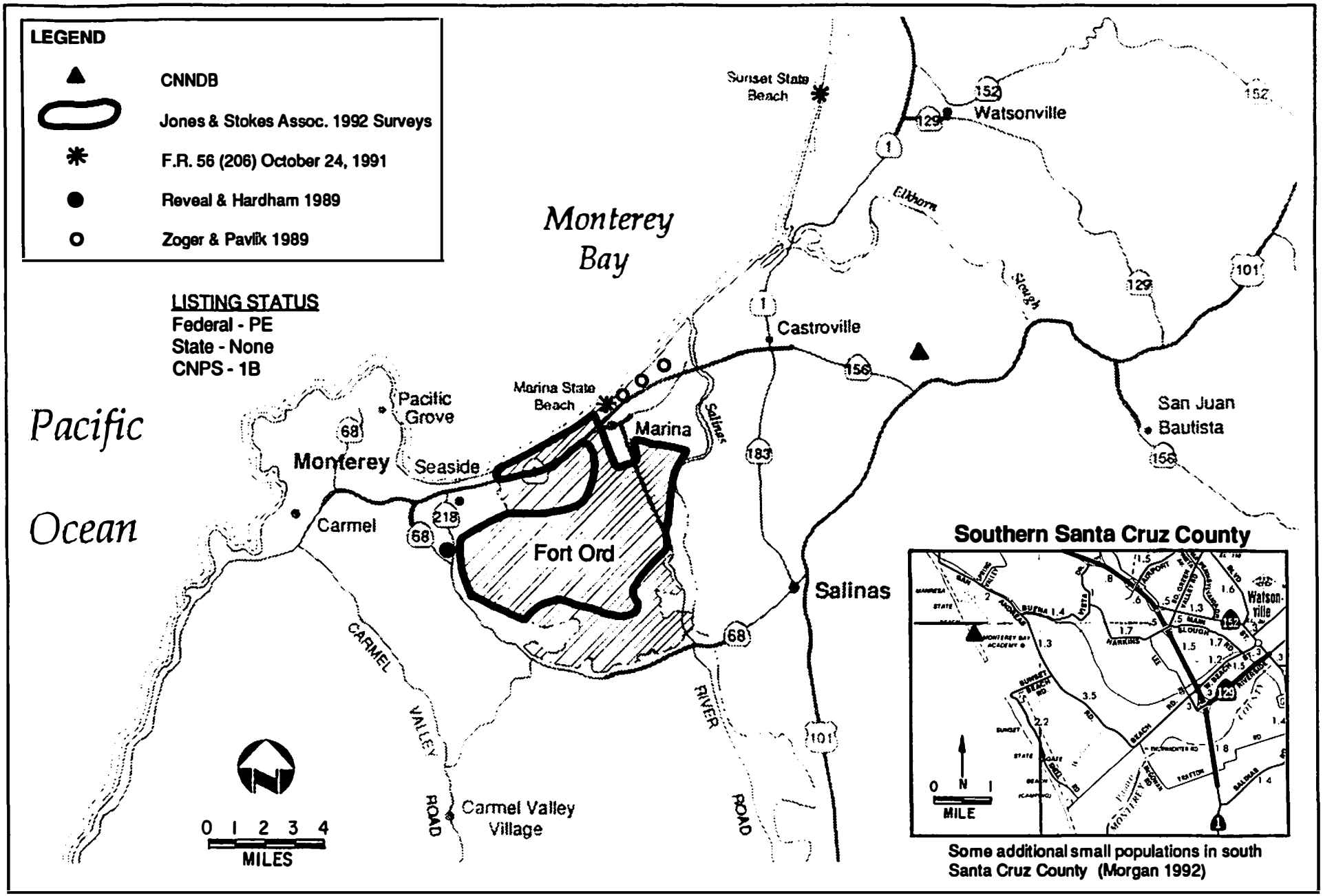
Principal Sea Otter, Seal, and Sea Lion Areas of Concentration and Seabird Nesting Areas in Monterey Bay Area



Source: U.S. Department of Commerce 1990.

Figure 4-12

Known Distribution of Monterey Spineflower *(Chorizanthe pungens* var. *pungens)*



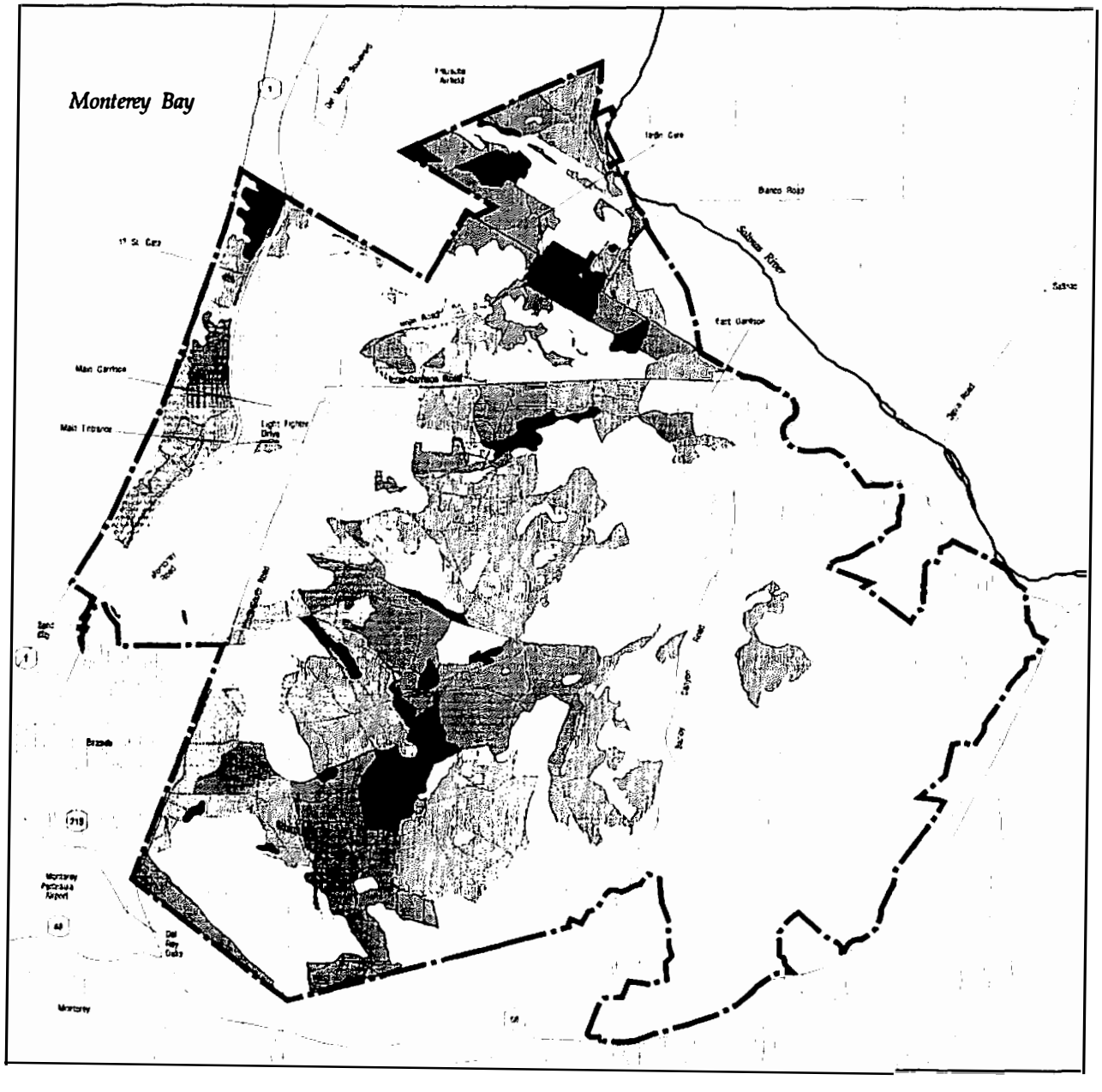


Figure 4-13

Known Distribution of Monterey Spineflower *(Chorizanthe pungens* var. *pungens)* at Fort Ord

Listing Status
Federal - Proposed Endangered
State - none
CNPS - 1B

Density of Occurrence

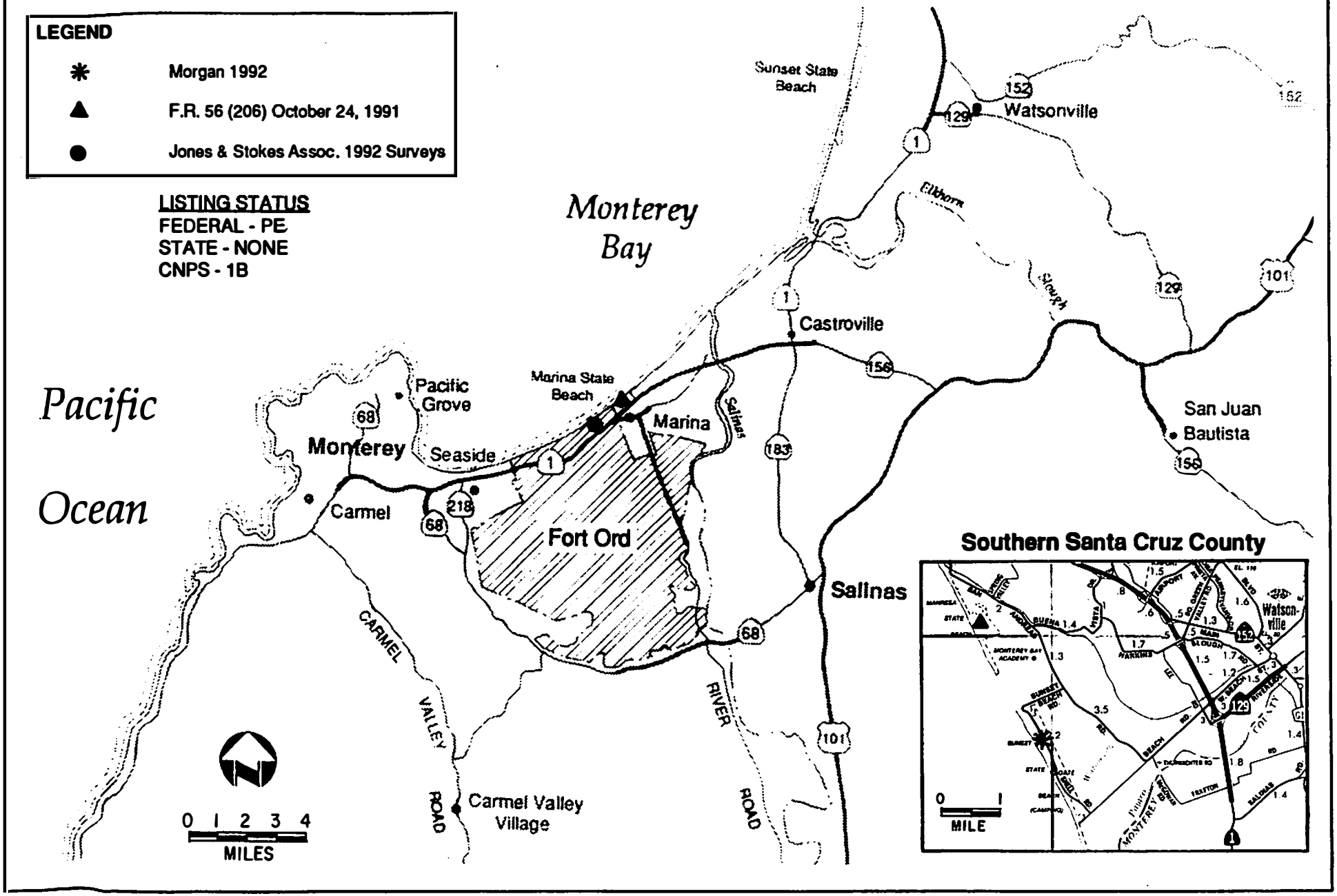
- *Low Density*
- *Medium Density*
- *High Density*

Scale 1:60,000

0 1 2 3 miles
0 2,000 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure 4-14

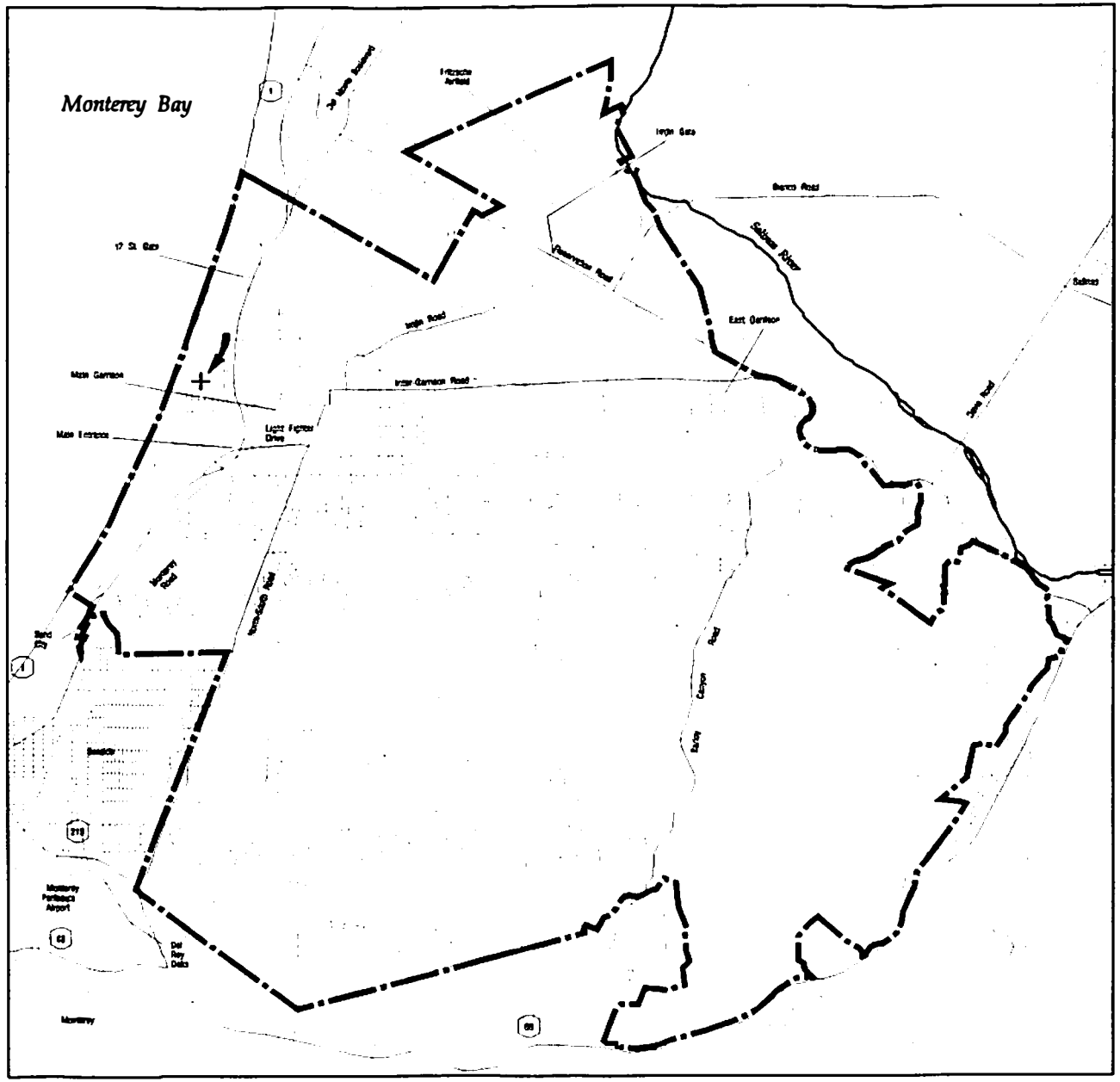
Known Distribution of Robust Spineflower *(Chorizanthe robusta* var. *robusta)*



F-5

Figure 4-15

Known Distribution of Robust Spineflower
(Chorizanthe robusta var. *robusta)*
at Fort Ord



Listing Status
Federal - Proposed Endangered
State - none
CNPS - 4

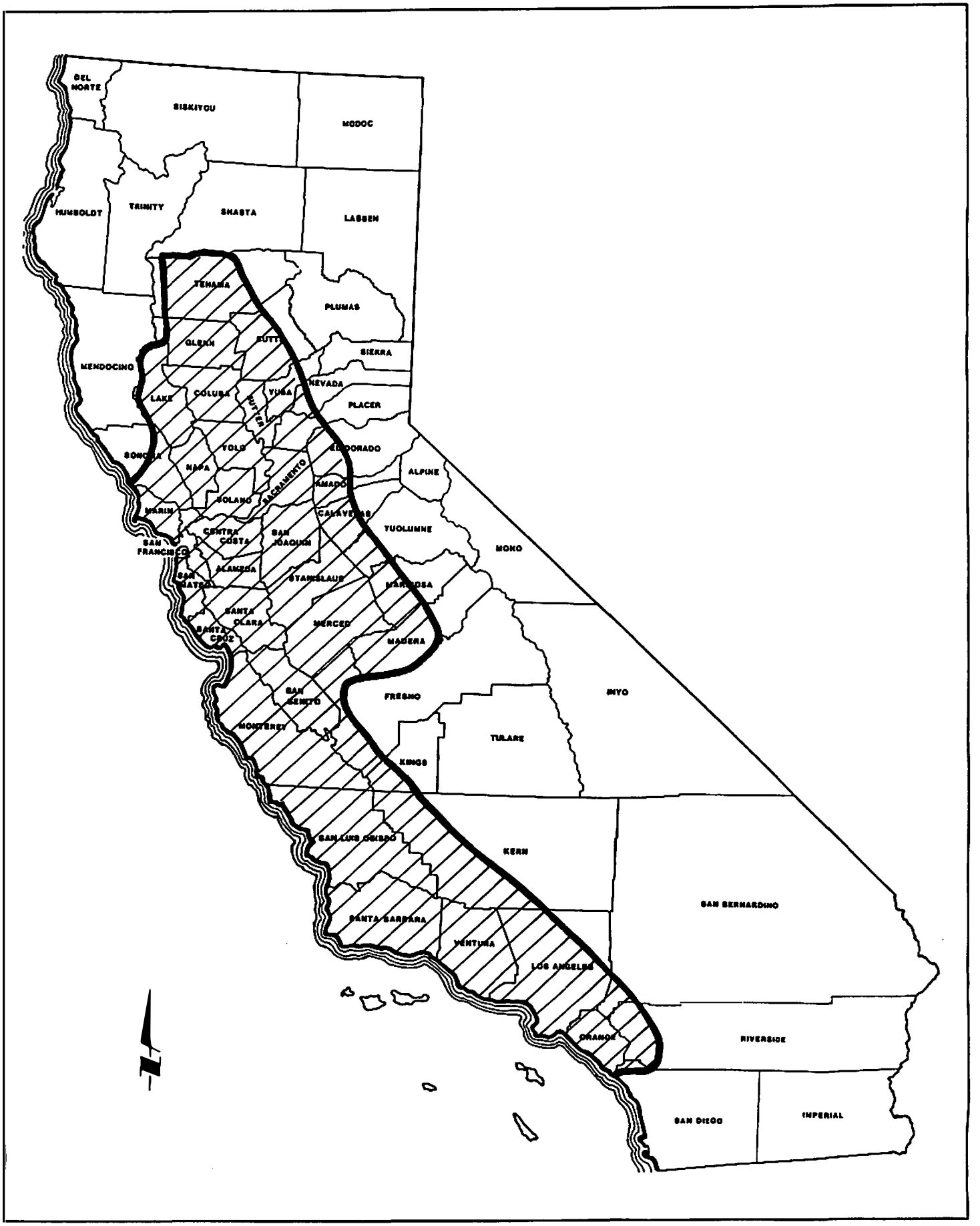
Legend

Specific Population Location

Scale 1:60,000

0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure 4-16
Range of California Linderiella



Source: 547 FR 19856, May 8, 1992

Figure 4-17

Potential and Occupied Habitat for California Linderiella

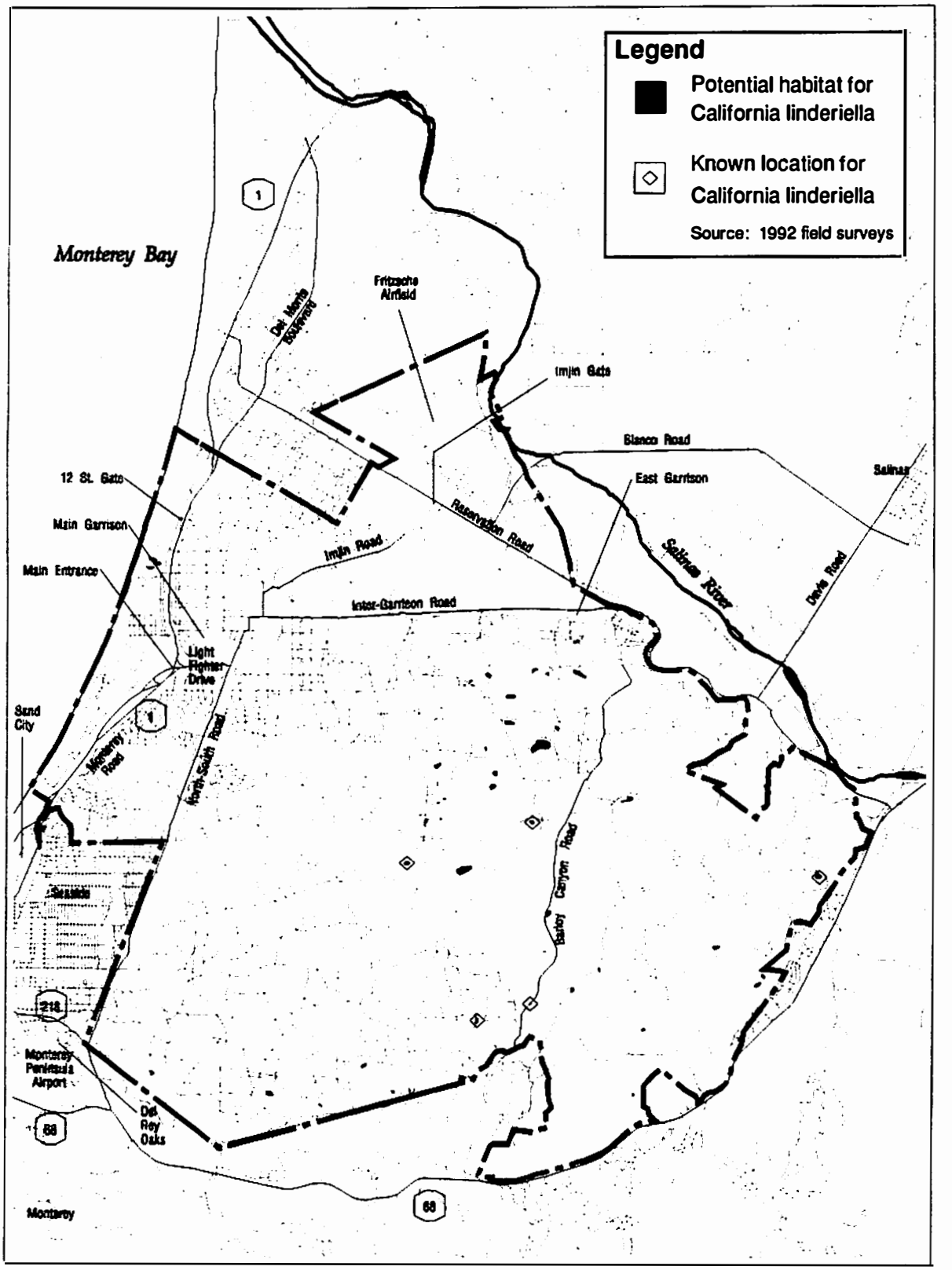
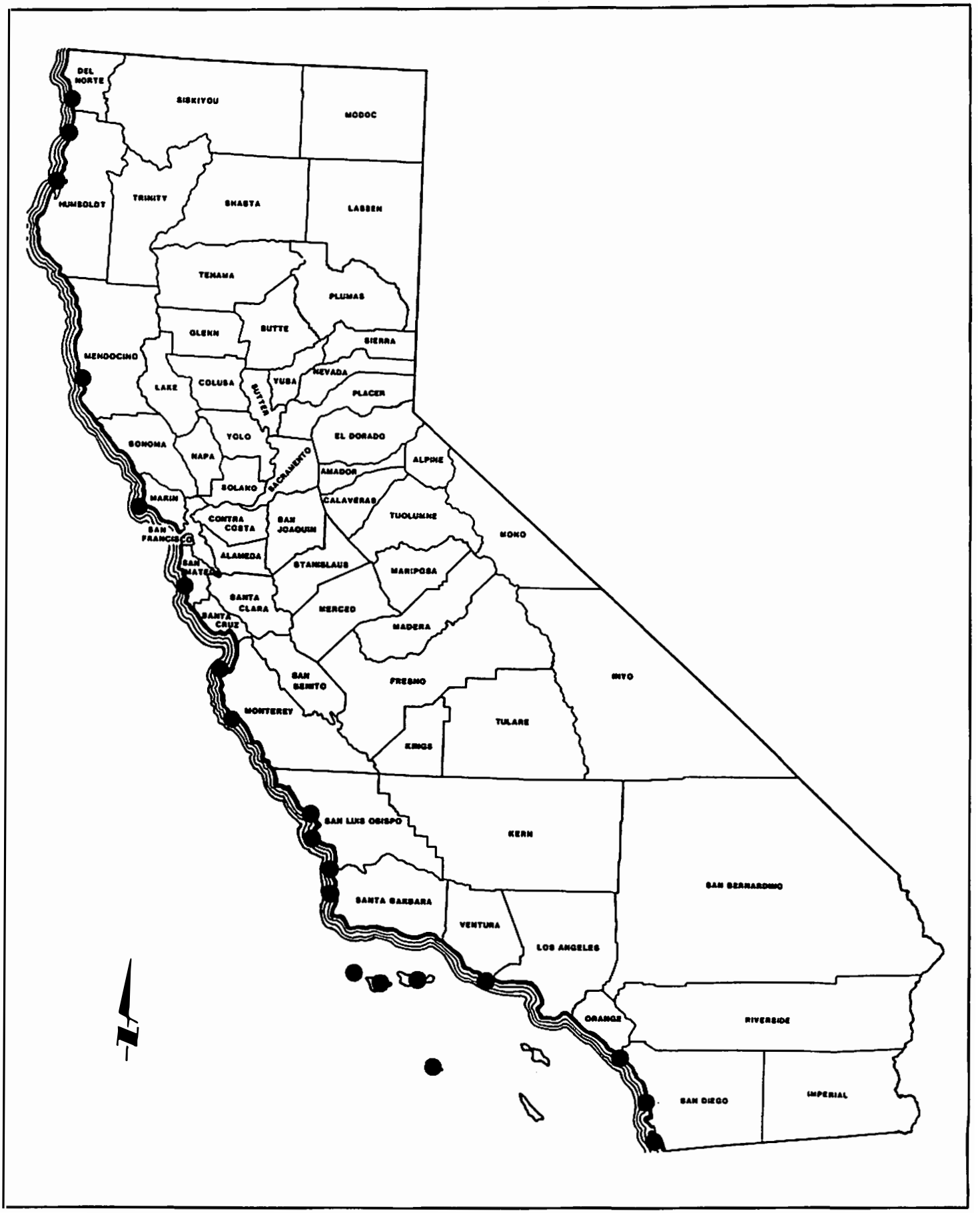


Figure 4-18

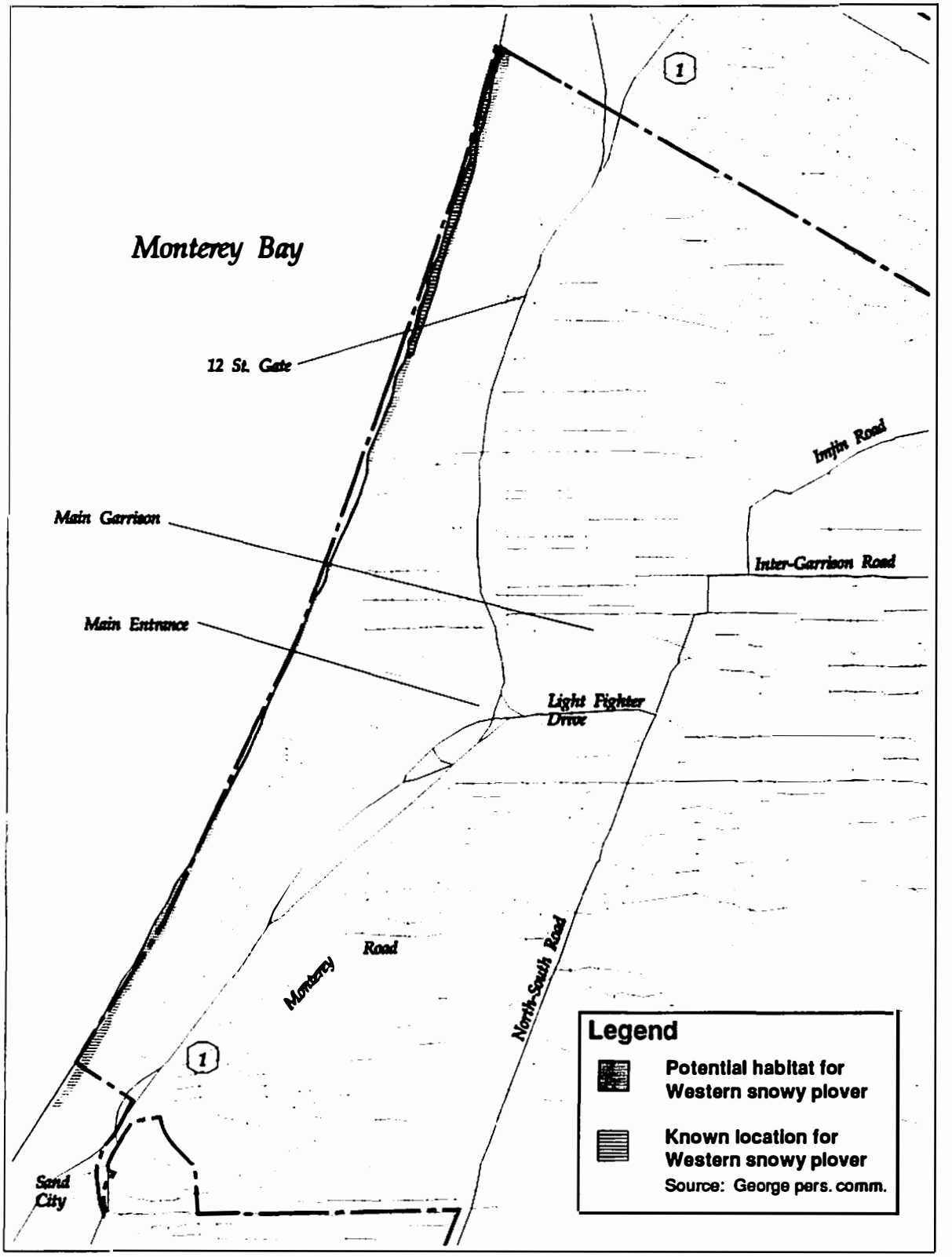
Coastal Nesting Populations of Western Snowy Plover in California



Source: Page & Stenzel 1981

Figure 4-19

Potential and Occupied Habitat for Western Snowy Plover



Chapter 5. Predisposal and Disposal Activities Impacts and Mitigation

INTRODUCTION

This section describes the impacts of placing Fort Ord into caretaker status and disposing of the installation on federally listed threatened and endangered plant and wildlife species, species proposed for federal listing as threatened or endangered, and candidates (Categories 1 and 2) for listing. Impacts resulting from reuse activities are described in Chapter 6.

Impacts were evaluated for caretaker and disposal activities based on the locations and anticipated types of actions required and on the locations of biological resources. The approach and methods of analysis are described below.

APPROACH AND METHODOLOGY

Changes in extent and distribution of special-status plant species were determined by identifying the habitat areas known to support plant populations that would be diminished in number and distribution by predisposal and disposal activities. Impacts resulting from non-site-specific actions, such as clearing ordnance, were analyzed qualitatively or with reference to general quantitative effects.

Impacts on special-status wildlife species were determined by identifying habitat suitability changes within potentially occupied habitat resulting from preparing Fort Ord for caretaker status, maintaining caretaker status, or disposing of Fort Ord land. Potential habitat was identified based on known locations of each species, published accounts of each species' habitat requirements, and habitat suitability models developed from the vegetation and soil maps produced from GIS. Impacts on occupied habitat were also identified when data were available.

Mitigation is presented for each impact. In Chapters 5 and 6, parties responsible for implementing mitigation measures are presented in parentheses at the end of each measure.

IMPACT MECHANISMS

The potential impacts on special-status plant and wildlife species resulting from caretaker status and disposal of Fort Ord were evaluated based on changes in installation activities and management necessary to complete required remediation for caretaker status, maintaining caretaker status before disposal, and additional remediation or other activities necessary to allow disposal. Activities associated with preparing for and maintaining caretaker status and disposing of lands that could affect biological resources include removing hazardous and toxic wastes transferring lands to nonfederal agencies, and transferring lands to entities proposing future development.

In general, removing hazardous and toxic wastes (other than unexploded ordnance) would not affect special-status biological resources. Most of the known hazardous or toxic waste sites are in the developed portion of the installation where few special-status resources occur. However, where lead and other heavy metal residues occur at small-arms firing ranges, at the Fritzsche Army Airfield soil remediation site, and at the Fort Ord landfill, special-status biological resources may be affected by remediation activities. Removing lead and other heavy metal residues from the beach firing ranges would require soil excavation and vegetation removal. Lead and other heavy metals at the beach firing ranges will be removed if future studies indicate a threat to human health or the environment.

Transferring lands to nonfederal agencies could result in a loss of federal protection for federally listed threatened and endangered plant species. Disposal of land to entities proposing intensive development could result in losses of populations and habitat of special-status plant and wildlife species.

IMPACTS AND MITIGATION FOR CARETAKER ACTIONS

Sand Gilia

- ***Impact: Loss of Sand Gilia Populations and Habitat from Removal of Unexploded Ordnance to Reach Caretaker Status***

Surface clearance of unexploded ordnance from the inland range area and other live-fire areas could result in the loss of portions of sand gilia populations and habitat. Sand gilia plants would be removed by burning and cutting vegetation, excavating whole plants, crushing or trampling plants from movement of excavation equipment and removal-team foot traffic, and detonating onsite ordnance. The maritime chaparral habitat that supports this species would be removed by burning and cutting.

Surface clearance of unexploded ordnance could occur in areas supporting approximately 75% of the occupied habitat of sand gilia at Fort Ord. The specific number

of individuals and amount of habitat affected cannot be determined because the locations and amount of unexploded ordnance is unknown. Fort Ord covers approximately 50-70% of the entire range of sand gilia, and therefore ordnance clearing would affect about 35-50% of the known range of sand gilia.

Removing individuals or populations of sand gilia is prohibited by the federal Endangered Species Act.

- ***Mitigation: Develop a Habitat Management Plan for Sand Gilia Populations Affected by Caretaker Activities***

An HMP would be developed and implemented to preserve and restore populations and habitat of sand gilia affected by removal of unexploded ordnance. The goal of the HMP would be the preservation of viable populations and habitat of sand gilia with only incidental amounts of take.

As part of the HMP, a rotational vegetation management plan would also be developed. The rotational vegetation management plan would be implemented in conjunction with ordnance clearing.

Controlled burning of maritime chaparral vegetation could be conducted in a random pattern of patches ranging from 25 to 75 acres. The amount of maritime chaparral burned in remediation sites each year could be large enough to support an average rotation (the period between fires at a given site) of 20 years. Ordnance would be cleared at controlled burn sites following the burn. (Army)

The HMP would also incorporate other federally listed and proposed vegetation and wildlife species at Fort Ord and could also include federal candidate species. The HMP would be directed towards all Army activities associated with reaching and maintaining caretaker status. (Army)

- ***Impact: Potential Loss of Sand Gilia Populations and Habitat from Contaminated Soils Treatment***

Most contaminated soils occur in the developed Main Garrison area where natural vegetation has been mostly removed. However, at the Fritzsche Army Airfield soil remediation site, where contaminated soils are spread and aerated to remove organics, significant populations of sand gilia exist.

The sand gilia is federally listed as endangered and protected under the federal Endangered Species Act.

- ***Mitigation: Avoid Impacts on Sand Gilia during Contaminated Soils Treatment***

If the area used for soil remediation requires further expansion, a plant survey can be conducted to determine the presence of protected plant species. Treatment sites can be located to avoid populations of sand gilia. (Army)

- ***Impact: Potential Loss of Sand Gilia Populations and Habitat during Landfill Remediation***

Remediation for Fort Ord's main landfill site in the northern portion of the Main Garrison has the potential to affect sensitive plants. Capping the landfill at the west end of Inter-Garrison Road would result in the loss of populations of sand gilia. Placing fill material would bury sites supporting medium- and low-densities of sand gilia. Vehicle traffic bringing fill to the site could also remove individuals of sand gilia at sites adjacent to the landfill. Loss of the sand gilia would be a violation of the federal Endangered Species Act.

- ***Mitigation: Minimize Impacts on Sand Gilia during Landfill Remediation***

To reduce the effects of remediating the landfill, capping could begin in midsummer following seed production of sand gilia. Seeds could be collected from mature plants and stored. Topsoil could be salvaged at sites supporting dense populations of plants to recover part of the soil seed bank. After landfill capping, a sandy top layer could be added and the seeds and soil containing seeds could be redistributed over the landfill site. (Army)

Smith's Blue Butterfly

- ***Impact: Habitat Loss and Direct Mortality to Smith's Blue Butterfly from Removal of Lead and Other Heavy Metals***

Lead and other heavy metals may need to be removed at the beach firing ranges before disposal of these areas. In locations where these remediation measures are conducted, Smith's blue butterfly may be adversely affected through direct mortality and long-term loss of habitat.

Smith's blue butterfly requires seacliff or coast buckwheat as a host plant. If remediation of the beach firing ranges is required, remediation activities could involve excavating soil and removing host plants used by the Smith's blue butterfly. Removing host plants would eliminate habitat and could also result in direct mortality to adults, larvae, or pupae depending on the time of year remediation takes place. Direct mortality and the loss of host plants would be prohibited by the federal Endangered Species Act.

- ***Mitigation: Develop a Habitat Management Plan for Smith's Blue Butterfly Populations Affected by Removal of Lead and Other Heavy Metals***

If removal of lead and other heavy metals is required at the beach firing ranges, an HMP would be developed and implemented to preserve and restore populations and habitat of Smith's blue butterfly affected by lead removal activities. The goal of the HMP would be the preservation of viable populations and habitat of Smith's blue butterfly with only incidental amounts of take.

A habitat restoration plan would be incorporated into the HMP. Such a plan could involve enhancing habitat and creating new habitat by planting host plants in suitable areas not affected by remediation. New host plants could be monitored to ensure that sufficient densities of individual plants and flowering heads develop to support Smith's blue butterfly. Once habitat enhancement sites are developed, host plants could be removed from remediation sites and transferred to enhanced sites to salvage as many butterfly larvae or pupae as soon as possible. The timing of excavation dunes from heavy metal remediation could be coordinated with USFWS to result in the least disturbance to the butterfly. (Army)

American Peregrine Falcon

American peregrine falcons do not nest at or near Fort Ord, and no suitable nesting habitat occurs on the installation. Also, Fort Ord is not an important foraging area for peregrine falcons. American peregrine falcons will not be adversely affected by caretaker actions.

Southern Sea Otter

The southern sea otter would not be affected by caretaker actions.

Monterey Spineflower

- ***Impact: Loss of Monterey Spineflower Populations and Habitat from Removal of Unexploded Ordnance to Reach Caretaker Status***

Surface clearance of unexploded ordnance from the inland range area and other live-fire areas could result in the loss of portions of Monterey spineflower populations and habitat. Monterey spineflower plants would be removed by burning and cutting vegetation, excavating whole plants, crushing or trampling plants from movement of excavation equipment and removal-team foot traffic, and detonating onsite ordnance. The maritime chaparral habitat that supports this species would be removed by burning and cutting.

Surface clearance of unexploded ordnance could occur in areas supporting approximately 75% of the occupied habitat of Monterey spineflower at Fort Ord. The specific number of individuals and amount of habitat affected cannot be determined because the locations and amount of unexploded ordnance is unknown. Fort Ord covers approximately 75-95% of the entire range of Monterey spineflower, and therefore, ordnance clearing would affect about 55-70% of the known range of Monterey spineflower.

If the Monterey spineflower becomes federally listed as threatened or endangered, its removal would violate the federal Endangered Species Act.

- ***Mitigation: Develop a Habitat Management Plan for Monterey Spineflower Populations Affected by Caretaker Activities***

Monterey spineflower would be incorporated into the HMP and accompanying rotational vegetation management developed for sand gilia populations affected by Army activities associated with reaching and maintaining caretaker status. (Army)

- ***Impact: Loss of Monterey Spineflower Populations and Habitat from Removal of Lead and Other Heavy Metals***

Removing heavy metals from dune firing ranges (if necessary) could result in the loss of portions of Monterey spineflower populations.

Removing heavy-metal-contaminated sands could occur in areas supporting approximately 5% of the occupied habitat of Monterey spineflower at Fort Ord. The precise number of individuals and amount of habitat affected cannot be determined because the extent of lead removal is unknown. Fort Ord represents approximately 75-95% of the entire range of Monterey spineflower.

Should Monterey spineflower become federally listed, its removal would be prohibited by the federal Endangered Species Act.

- ***Mitigation: Avoid and Restore Populations for Monterey Spineflower***

Populations of Monterey spineflower in the coastal dunes would be fenced and avoided where possible during excavation for removal of lead and other heavy metals. Seed would be collected from populations in areas of excavation and redistributed into suitable habitat following remediation actions. (Army)

- ***Impact: Potential Loss of Monterey Spineflower Populations and Habitat from Contaminated Soils Treatment***

Most contaminated soils occur in the developed Main Garrison area where natural vegetation has been mostly removed. However, at the Fritzsche Army Airfield soil remediation site where contaminated soils are spread and aerated to remove organics,

significant populations of Monterey spineflower exist. The Monterey spineflower is proposed for federal listing as endangered. If the Monterey spineflower becomes federally listed, its loss would violate the federal ESA.

- ***Mitigation: Avoid Impacts on Monterey Spineflower during Contaminated Soils Treatment***

If the area used for soil remediation requires further expansion, a plant survey can be conducted to determine the presence of protected plant species. Treatment sites can be located to avoid populations of Monterey spineflower. (Army)

- ***Impact: Potential Loss of Monterey Spineflower Populations and Habitat during Landfill Remediation***

Remediation for Fort Ord's main landfill site in the northern portion of the Main Garrison has the potential to affect sensitive plants. Capping the landfill at the west end of Inter-Garrison Road would result in the loss of populations of Monterey spineflower. Placing fill material would bury sites supporting medium- and low-densities of Monterey spineflower. Vehicle traffic bringing fill to the site could also remove individuals of Monterey spineflower at sites adjacent to the landfill. If the Monterey spineflower becomes federally listed, its loss would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Impacts on Monterey Spineflower during Landfill Remediation***

To reduce the effects of remediating the landfill, capping could begin in midsummer following seed production of Monterey spineflower. Seeds could be collected from mature plants and stored. Topsoil could be salvaged at sites supporting dense populations of Monterey spineflower to recover part of the soil seed bank. After landfill capping, a sandy top layer could be added and the seeds and soil containing seeds could be redistributed over the landfill site. (Army)

Robust Spineflower

No impacts are expected to occur on the robust spineflower. No mitigation is required.

California Linderiella

- ***Impact: Potential Loss of California Linderiella Populations and Habitat***

California linderiella occur in ephemeral, freshwater aquatic habitats, such as vernal pools, swales, and ponds. Eggs laid by adults when water bodies are full remain in the soil,

after vernal pools and ponds have dried, until the following rainy season. The excavation necessary to remove subsurface unexploded ordnance could fill or severely disrupt six ponds and 10 vernal pools considered California linderiella habitat. If unexploded ordnance is found inside a vernal pool or pond, *in situ* detonation of the ordnance may disrupt a significant portion of the soil in the area and could destroy habitat and eggs in the soil. Soil disruption during excavation or *in situ* detonation could also cover California linderiella eggs with sufficient soil to prevent them from hatching, resulting in direct mortality.

California linderiella have been proposed for federal listing as endangered. If this species becomes listed before reuse, direct mortality or loss of habitat would be prohibited by the federal Endangered Species Act.

- ***Mitigation: Minimize Impacts on California Linderiella by Developing Habitat Restoration Plans for Vernal Pools and Ponds Affected by Unexploded Ordnance Removal***

Habitat restoration plans could be developed and implemented for California linderiella to compensate for losses of habitat. A habitat restoration plan for California linderiella could involve restoring ponds and vernal pools onsite after subsurface unexploded ordnance is removed. Restored ponds and vernal pools could comprise the same acreage and provide the same functions as they did before clearing of ordnance. Topsoil at affected sites in the vernal pools could be set aside during excavation and replaced during restoration to salvage California linderiella eggs. (Army)

Western Snowy Plover

- ***Impact: Habitat Loss and Direct Mortality of Western Snowy Plover from Removal of Lead and Other Heavy Metals***

Lead and other heavy metals may need to be removed at the beach firing ranges before lands are disposed of in these areas. In locations where these remediation measures are conducted, western snowy plovers may be adversely affected through direct mortality and long-term loss of habitat.

Coastal populations of western snowy plovers nest on Pacific coast beaches above the high tide line. If lead removal is required on the beaches at Fort Ord, disturbance from remediation activities could cause nest failures for western snowy plovers, resulting in direct mortality. Coastal populations of western snowy plovers have been proposed for federal listing as threatened. If this species becomes listed before possible remediation activities take place, actions leading to direct mortality would be prohibited by the federal Endangered Species Act.

- ***Mitigation: Avoid Lead Removal during the Western Snowy Plover Breeding Season***

If lead removal is required on the beaches at Fort Ord, removal activities should be conducted between October and February, when snowy plovers are not nesting. (Army)

Federal Candidate Plant Species

- ***Impact: Loss of Federal Candidate Plant Species Populations and Habitat from Removal of Unexploded Ordnance to Reach Caretaker Status***

Surface clearance of unexploded ordnance from the inland range area and other live fire areas could result in the loss of portions of federal candidate plant species populations and habitat. Affected federal candidate plants, including Seaside bird's-beak, Toro manzanita, sandmat manzanita, Monterey ceanothus, Eastwood's ericameria, coast wallflower, and wedge-leaved horkelia, would be removed by burning and cutting vegetation, excavating whole plants, crushing or trampling plants from movement of excavation equipment and removal-team foot traffic, and detonating onsite ordnance.

Surface clearance of unexploded ordnance could occur in areas supporting approximately 50% of the occupied habitat of Seaside bird's-beak, 30% of the occupied habitat of Toro manzanita, 70% of the occupied habitat of sandmat manzanita, 70% of the occupied habitat of Monterey ceanothus, 50% of the occupied habitat of Eastwood's ericameria, 20% of the occupied habitat of coast wallflower, and 50% of the occupied habitat of wedge-leaved horkelia at Fort Ord. The specific number of individuals and amount of habitat for each species affected cannot be determined because the locations and amount of unexploded ordnance is unknown. Surface clearance of unexploded ordnance would probably not affect populations of Hickman's onion and Yadon's piperia.

Fort Ord covers approximately 70-90% of the entire range of Toro manzanita, sandmat manzanita, and Eastwood's ericameria; 10-30% of the range of coast wallflower; less than 10% of the known range of wedge-leaved horkelia; less than 5% of the known range of Hickman's onion; and less than 1% of the known range of Yadon's piperia.

Substantial losses of federal candidate plant populations for which Fort Ord represents a relatively large portion of the species' range could result in the species meeting the requirements for federal listing as threatened or endangered. Losses of Toro manzanita, sandmat manzanita, and Eastwood's ericameria from surface clearance of unexploded ordnance could result in the federal listing of these species as threatened or endangered.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed Threatened, Endangered, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Before surface clearance of unexploded ordnance, the Army would prepare a multispecies HMP for Fort Ord. The HMP would include all candidate plants and wildlife as well as federally listed and proposed species. The HMP would be prepared in coordination with USFWS under Section 7 of the Endangered Species Act. The goals of the HMP would be to avoid impacts on federally listed and proposed threatened and endangered species and minimize impacts on federal candidates for threatened or endangered status so that none of these species declines to a point where it would become eligible for listing as threatened or endangered. Recipients of Fort Ord lands would be required to follow the guidelines of the HMP.

- ***Impact: Potential Loss of Federal Candidate Plant Species Populations and Habitat from Contaminated Soils Treatment***

Most contaminated soils occur in the developed Main Garrison area where natural vegetation has been mostly removed. However, populations of sandmat manzanita, Eastwood's ericameria, Monterey ceanothus, and coast wallflower occur in the area surrounding the Fritzsche Army Airfield soil remediation site where contaminated soils are spread and aerated to remove organics. Plants of these species would be adversely affected by treatment of contaminated soils.

- ***Mitigation: Avoid Impacts on Federal Candidate Plant Species during Contaminated Soils Treatment***

If the areas used for soil remediation require further expansion, a plant survey would be conducted to determine the presence of protected plant species. Treatment would be located to avoid populations of sandmat manzanita, Eastwood's ericameria, Monterey ceanothus, and coast wallflower. (Army)

- ***Impact: Potential Loss of Federal Candidate Plant Species Populations and Habitat during Landfill Remediation***

Remediation for Fort Ord's main landfill site in the northern portion of the Main Garrison has the potential to affect sensitive plants. Capping the landfill at the west end of Inter-Garrison Road would result in the loss of populations of two federal candidate plant species: sandmat manzanita and Monterey ceanothus. Vehicle traffic bringing fill to the site could also remove individuals of these federal candidate plant species at sites adjacent to the landfill.

- ***Mitigation: Minimize Losses and Reestablish Populations of Sandmat Manzanita and Monterey Ceanothus***

Whole plants and cuttings of sandmat manzanita and Monterey ceanothus would be salvaged before landfill capping activities. Whole plants and cuttings would be propagated and stored at a nursery and replanted in salvaged topsoil on the capped landfill. (Army)

Federal Candidate Wildlife Species

- ***Impact: Potential Loss of Individuals and Reduction in Habitat of the Black Legless Lizard and Monterey Dusky-Footed Woodrat from Cleanup of Unexploded Ordnance***

Surface removal of unexploded ordnance in the inland range area and other live-firing areas could result in adverse effects on the habitat of federal candidate wildlife species at Fort Ord, and direct mortality to terrestrial and burrowing species. The loss of habitat associated with intensive remediation of the inland range area and other areas of Fort Ord suspected of containing unexploded ordnance, and direct mortality during remediation could result in substantial losses of known populations of and habitat for the black legless lizard and Monterey dusky-footed woodrat.

Because of the limited ranges of the black legless lizard and the Monterey dusky-footed woodrat and the scarcity of suitable habitat in northern Monterey County and the Monterey Bay region, loss of habitat and individual animals at Fort Ord would substantially reduce the range of both species and could result in state or federal listing as threatened or endangered.

- ***Mitigation: Minimize Impact by Developing and Implementing a Habitat Management Plan***

This mitigation would be the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat from Removal of Unexploded Ordnance to Reach Caretaker Status". The initial burning or removal of vegetation before ordnance removal in maritime chaparral habitat incorporated into the HMP could cause Monterey dusky-footed woodrats to abandon affected areas and could reduce direct mortality during remediation. (Army)

- ***Mitigation: Capture and Relocate Black Legless Lizards***

In areas of black legless lizard habitat (i.e., dunes, coastal scrub, and maritime chaparral) legless lizards could be trapped and relocated to restored or enhanced habitat areas before remediation occurs to prevent mortality to individual animals. (Army)

IMPACTS AND MITIGATION FOR DISPOSAL ACTIONS

Sand Gilia

- ***Impact: Reduction in Federal Protection for Sand Gilia***

The change in ownership of lands providing habitat for sand gilia could result in a loss of federal protection for this species. Loss of federal protection could occur under any alternative. The Endangered Species Act protects federally listed threatened and endangered plants only where they occur in areas under federal jurisdiction (i.e., where federal permits or monies are involved). If the Army transfers lands to nonfederal entities, sand gilia will lose its federal protection. Future actions by nonfederal agencies or private individuals that do not come under federal jurisdiction could remove sand gilia populations without violating the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal, the Army would prepared a multispecies HMP for reused alternatives. The HMP would include all federally listed, proposed, and candidate plants and wildlife at Fort Ord. The HMP would be prepared in coordination with USFWS under Section 7 of the Endangered Species Act. The goals of the HMP would be to avoid impacts on federally listed and proposed threatened and endangered species and to minimize impacts on federal candidates for threatened or endangered status so that none of these species declines to a point where it would become eligible for listing as threatened or endangered. Recipients of Fort Ord lands would be bound to follow the guidelines of the HMP.

An HCP would be developed and implemented to preserve and restore populations and habitats of sand gilia. (Army)

- ***Impact: Potential Loss of Populations and Habitat of Sand Gilia***

Disposal of land supporting sand gilia to entities that are proposing intensive development could result in the loss of populations of this species and its habitat. Sand gilia is federally listed as endangered. The loss of populations or habitat of federally listed endangered species would be a violation of the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal of Fort Ord, the Army would prepare a multispecies HMP. The disposal HMP is discussed for sand gilia under "Impacts and Mitigation for Disposal Actions". (Army).

Smith's Blue Butterfly

- ***Impact: Potential Loss of Populations and Habitat of Smith's Blue Butterfly due to Disposal of Fort Ord***

Disposal of lands supporting potential and occupied Smith's blue butterfly habitat to entities that are proposing intensive development could result in the loss of species populations and habitat. The Smith's blue butterfly is federally listed as endangered. The loss of populations or habitat of a federally listed endangered species would be a violation of the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal of Fort Ord, the Army would prepare a multispecies HMP. The disposal HMP is discussed for sand gilia under "Impacts and Mitigation for Disposal Actions". (Army).

American Peregrine Falcon

No disposal actions are expected to adversely affect American peregrine falcon individuals or habitat. No mitigation is required.

Southern Sea Otter

No disposal actions are expected to adversely affect southern sea otter individuals or habitat. No mitigation is required.

Monterey Spineflower

- ***Impact: Reduction in Federal Protection for Monterey Spineflower***

The change in ownership of lands providing habitat for Monterey spineflower could result in a loss of federal protection for this species. The Endangered Species Act protects federally listed threatened and endangered plants only where they occur in areas under federal jurisdiction (i.e., where federal permits or monies are involved). If the Army transfers lands to nonfederal entities, Monterey spineflower (if it becomes listed) will lose its federal protection. Future actions by nonfederal agencies or private individuals that do not come under federal jurisdiction could remove Monterey spineflower populations without violating the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal of Fort Ord, the Army would prepare a multispecies HMP. The disposal HMP is discussed for sand gilia under "Impacts and Mitigation for Disposal Actions". (Army).

- ***Impact: Potential Loss of Monterey Spineflower Populations and Habitat***

Disposal of land supporting Monterey spineflower to entities that are proposing intensive development could result in the loss of populations of this species and its habitat. Monterey spineflower is proposed for federal listing as endangered. If the Monterey spineflower becomes listed, the loss of populations or habitat would violate the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal of Fort Ord, the Army would prepare a multispecies HMP. The disposal HMP is discussed for sand gilia under "Impacts and Mitigation for Disposal Actions". (Army).

Robust Spineflower

- ***Impact: Reduction in Federal Protection for Robust Spineflower***

The change in ownership of lands providing habitat for robust spineflower could result in a loss of federal protection for this species. The Endangered Species Act protects federally listed threatened and endangered plants only where they occur in areas under

federal jurisdiction (i.e., where federal permits or monies are involved). If the Army transfers lands to nonfederal entities, robust spineflower (if it becomes listed) will lose its federal protection. Future actions by nonfederal agencies or private individuals that do not come under federal jurisdiction could remove Monterey spineflower populations without violating the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal of Fort Ord, the Army would prepare a multispecies HMP. The disposal HMP is discussed for sand gilia under "Impacts and Mitigation for Disposal Actions". (Army).

- ***Impact: Potential Loss of Robust Spineflower Individuals and Habitat***

Disposal of land supporting robust spineflower to entities that are proposing intensive development could result in the loss of individuals of this species and its habitat. Robust spineflower is proposed for federal listing as endangered. If the robust spineflower becomes listed, the loss of populations or habitat would violate the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal of Fort Ord, the Army would prepare a multispecies HMP. The disposal HMP is discussed for sand gilia under "Impacts and Mitigation for Disposal Actions". (Army).

California Linderiella

- ***Impact: Potential Loss of Populations and Habitat of California Linderiella due to Disposal of Fort Ord***

Disposal of land supporting potential and occupied California linderiella habitat to entities that are proposing intensive development could result in the loss of populations of these species and their habitat. California linderiella are proposed for federal listing as endangered. Should California linderiella become listed before disposal, the loss of populations or habitat of the species would be a violation of the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal of Fort Ord, the Army would prepare a multispecies HMP. The disposal HMP is discussed for sand gilia under "Impacts and Mitigation for Disposal Actions". (Army).

Western Snowy Plover

- ***Impact: Potential Loss of Populations and Habitat of Western Snowy Plover due to Disposal of Fort Ord***

Disposal of land supporting potential and occupied western snowy plover nesting habitat to entities proposing intensive development could result in the loss of populations of these species and their habitat. Coastal populations of western snowy plovers are proposed for federal listing as threatened. Should western snowy plovers become listed before disposal, the loss of populations or habitat of the species would be a violation of the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Prior to disposal of Fort Ord, the Army would prepare a multispecies HMP. The disposal HMP is discussed for sand gilia under "Impacts and Mitigation for Disposal Actions". (Army).

Federal Candidate Plant Species

- ***Impact: Potential Loss of Populations and Habitat of Federal Candidate Plant Species***

Disposal of land supporting federal candidate plant species to entities proposing intensive development could result in the loss of populations and habitat of Seaside birdsbeak, Toro manzanita, sandmat manzanita, Monterey ceanothus, and Eastwood's ericameria. Substantial losses could result for several or all of these species and lead to federal listing as threatened or endangered.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Before disposal, the Army would prepare a multispecies HMP for reuse alternatives. The HMP would include all federally listed, proposed, and candidate plants and wildlife at Fort Ord. The HMP would be prepared in coordination with USFWS under Section 7 of the Endangered Species Act. The goals of the HMP would be to avoid impacts on federally listed and proposed threatened and endangered species and minimize impacts on federal candidates for threatened or endangered status so that none of these species declines to a point where it would become eligible for listing as threatened or endangered. Recipients of Fort Ord lands would be required to follow the guidelines of the HMP.

Federal Candidate Wildlife Species

- ***Impact: Habitat Loss and Direct Mortality for Black Legless Lizard from Removal of Lead and Other Heavy Metals***

Removal of lead and other heavy metals from the beach firing ranges (if required) could result in adverse effects on the habitat of, and direct mortality to, the black legless lizard.

The black legless lizard occurs in areas of loose, sandy soils supporting native dune, coastal scrub, or maritime chaparral vegetation. The range of the black legless lizard is restricted to the Monterey Bay region. Intergrades between black and silvery legless lizards have been found elsewhere along the California coast from the east side of the San Francisco Bay to San Luis Obispo County, but the status and distribution of these varieties are not resolved.

Because of the limited range of the black legless lizard and the scarcity of suitable habitat in the Monterey Bay region, loss of habitat and individual animals at Fort Ord would substantially reduce the range of the species and could result in state or federal listing as threatened or endangered.

- ***Mitigation: Compensate for Habitat Losses and Minimize Mortality for Black Legless Lizards***

Before remediation of dune areas (if required), black legless lizard habitat could be created, restored, or enhanced in areas where removal of lead is not needed. In areas of black legless lizard habitat, legless lizards could be trapped and relocated to these new habitat areas before remediation takes place to prevent mortality to individual animals. (Army)

IMPACTS AND MITIGATION FOR ESTABLISHMENT OF THE ARMY'S PRESIDIO OF MONTEREY ANNEX AND RESERVE CENTER

The Army's proposed POM Annex and reserve center would not require new construction or new development in currently undeveloped areas. No impacts would occur on special-status plant and wildlife species or their habitat. No mitigation is required.

Chapter 6. Reuse Impacts and Mitigation

INTRODUCTION

This section describes the impacts of reuse on listed, proposed, and candidate species at Fort Ord. Impacts were evaluated by determining changes in acres of biological communities or habitat for individual species under each reuse alternative.

Loss of occupied habitat at Fort Ord for plants is provided in Table 6-1. Loss of suitable habitat at Fort Ord for wildlife is presented in Table 6-2. Estimated percent loss of plant and wildlife species over their ranges resulting from each alternative is given in Table 6-3.

The approach and methods of analysis, including the assumptions and evaluation criteria that were used in determining impacts, are described below.

APPROACH AND METHODS

Changes in the amount and distribution of plant species were determined by identifying the habitat area known to support plant populations that would be affected by land uses incompatible with plant survival. The amount of occupied habitat affected was calculated using the GIS to overlay land use footprints for each alternative and subalternative on the special-status plant distributions.

Impacts on wildlife species were determined by identifying changes in acres of potentially occupied habitat. Potential habitat was identified from known locations of each species, published accounts of each species' habitat requirements, and habitat suitability models that were developed from the vegetation and soil maps from GIS. Impacts on occupied habitat were also identified when data were available.

IMPACT MECHANISMS

The potential impacts on species resulting from reuse of Fort Ord were evaluated based on changes in land use. Changes in land use would have direct and indirect impacts on vegetation and wildlife. Changes in land use could require extensive soil excavation or grading, placement of fill material, and removal of vegetation. Land development would

Table 6-1. Loss of Occupied Habitat of Plant Species by Reuse Alternative

Plant Species	Acres Removed by Population Density[c]											
	Alternative 1	Subalternative 1A	Subalternative 1B	Subalternative 1C	Alternative 2	Subalternative 2A	Subalternative 2B	Alternative 3	Alternative 4	Alternative 5	Subalternative 5A	Alternative 6
Sand gilia, E/T/1B[a]												
Low	3,150	3,150	3,150	3,150	2,070	2,070	2,070	790	470	15	0	690
Medium	310	310	310	310	290	290	290	210	190	0	0	190
High	160	160	160	160	160	160	160	160	85	0	0	20
Total	3,620	3,620	3,620	3,620	2,520	2,520	2,520	1,160	745	15	0	890
Seaside bird's-beak, C1/E/1B												
Low	1,100	1,100	1,100	1,100	540	540	540	75	0	0	0	0
Medium	15	15	15	15	0	0	0	0	0	0	0	0
High	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,120	1,120	1,120	1,120	540	540	540	75	0	0	0	0
Sandmat manzanita, C2/–/1B												
Low	2,130	2,110	2,130	2,110	1,260	1,240	1,260	890	610	20	0	920
Medium	3,160	3,150	3,160	3,210	1,980	1,980	1,980	600	620	5	0	510
High	3,450	3,450	3,450	3,450	1,650	1,650	1,650	610	240	15	0	310
Total	8,740	8,710	8,740	8,770	4,890	4,870	4,890	2,100	1,470	40	0	1,740
Monterey ceanothus, C2/–/4												
Low	2,310	2,310	2,310	2,310	1,650	1,650	1,650	750	530	15	0	700
Medium	6,840	6,830	6,840	6,840	3,000	3,000	3,000	880	520	5	0	420
High	2,440	2,440	2,440	2,480	1,220	1,220	1,220	360	280	0	0	1,650
Total	11,590	11,580	11,590	11,630	5,870	5,870	5,870	1,990	1,330	20	0	1,280
Coast wallflower, C2/–/1b												
Low	420	420	420	410	390	390	390	160	70	10	0	230
Medium	190	190	190	200	190	190	190	190	160	0	0	90
High	10	10	10	50	10	10	10	10	20	0	0	10
Total	620	620	620	660	590	590	590	360	250	10	0	330
Yadon's piperia[b], /–/1B												
Low	15	15	15	15	15	15	15	15	0	0	0	15
Medium	0	0	0	0	0	0	0	0	0	0	0	0
High	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	15	15	15	15	15	15	15	0	0	0	15
Monterey spineflower, PE/–/1B												
Low	5,690	5,680	5,690	5,730	3,330	3,320	3,330	1,600	1,030	45	20	1,720
Medium	3,400	3,380	3,420	3,390	1,930	1,910	1,950	1,290	970	50	25	1,040
High	890	890	890	970	500	500	500	310	140	15	0	320
Total	9,980	9,950	10,000	10,090	5,760	5,730	5,780	3,200	2,140	110	45	3,080

Table 6-1. Continued

Special-Status Plant Species	Acres Removed by Population Density[c]											
	Alternative 1	Subalternative 1A	Subalternative 1B	Subalternative 1C	Alternative 2	Subalternative 2A	Subalternative 2B	Alternative 3	Alternative 4	Alternative 5	Subalternative 5A	Alternative 6
Toro manzanita, C2/–/1B												
Low	2,210	2,210	2,210	2,210	1,100	1,100	1,100	240	210	10	0	380
Medium	2,000	2,000	2,000	2,000	770	770	770	240	80	0	0	45
High	1,670	1,670	1,670	1,670	770	770	770	95	0	0	0	5
Total	5,880	5,880	5,880	5,880	2,640	2,640	2,640	575	290	10	0	430
Hickman's allium, C1/–/1B												
Low	270	270	270	270	250	250	250	75	0	0	0	0
Medium	120	120	120	120	0	0	0	0	75	0	0	20
High	0	0	0	0	0	0	0	0	0	0	0	0
Total	390	390	390	390	250	250	250	75	75	0	0	20
Eastwood's ericameria, C2/–/1B												
Low	3,430	3,430	3,430	3,430	1,780	1,780	1,780	460	250	15	0	430
Medium	2,020	2,020	2,020	2,070	1,450	1,450	1,450	230	80	0	0	50
High	25	25	25	25	25	25	25	25	5	0	0	25
Total	5,475	5,475	5,475	5,525	3,255	3,255	3,255	715	335	15	0	505
Wedge-leaved horkelia, C2/–/1B												
Low	2,290	2,290	2,290	2,290	1,270	1,270	1,270	480	80	0	0	350
Medium	1,200	1,200	1,200	1,200	650	650	650	280	190	10	0	120
High	0	0	0	0	0	0	0	0	0	0	0	0
Total	3,490	3,490	3,490	3,490	1,920	1,920	1,920	750	270	10	0	470

[a] All other designations given in Table 1-1.

[b] Listing package in preparation by USFWS (U.S. Fish and Wildlife Service pers. comm.).

[c] Species with only one specific location and no acreage impact analysis; robust spineflower (PE/–/1b).

Table 6-2. Approximate Habitat Losses for Wildlife Species by Reuse Alternative

Species	Legal Status[a]	Potential Habitat	Approximate Acres of Potential Habitat Available	Approximate Acres of Potential Habitat Lost											
				Alternative 1	Subalternative 1A	Subalternative 1B	Subalternative 1C	Alternative 2	Subalternative 2A	Subalternative 2B	Alternative 3	Alternative 4	Alternative 5	Subalternative 5A	Alternative 6
Smith's blue butterfly	FE	Buckwheat in dune habitats	180	40	40	40	120	25	25	25	180	2	15	1	1
California linderiella	FPE	Vernal pools and ponds	65	60	60	60	60	15	15	15	65	4	9	0	0
Black legless lizard	C2	General habitat; native dune vegetation and where coastal scrub and maritime chaparral overlap with Baywood sands and Oceana soils	2,980	2,790	2,780	2,790	2,920	2,710	2,700	2,710	2,960	1,090	650	20	1
Monterey dusky-footed woodrat	C2	Maritime chaparral and coastal coast live oak woodland	15,590	14,970	14,860	15,000	14,950	8,760	8,650	8,790	15,590	3,910	2,630	260	90
Monterey ornate shrew	C2	General habitat; mixed riparian and oak riparian forest, coastal and inland coast live oak woodland	4,590	4,000	4,140	4,020	3,210	3,120	3,120	3,240	4,590	2,280	1,450	260	120
Loggerhead shrike	C2	Dunes, grasslands, coastal scrub, maritime chaparral	18,990	16,080	16,050	16,100	16,410	9,750	9,720	9,770	18,990	3,720	2,900	460	230
Tricolored blackbird	C2	Grasslands in the southeastern portion of Fort Ord	2,750	1,130	1,130	1,130	1,130	1,040	1,040	1,040	2,750	180	9	9	9
California horned lark	C2	Grasslands	4,770	3,060	3,060	3,090	3,060	2,660	2,660	2,660	4,770	1,420	1,260	240	40
California tiger salamander	C2	Vernal pools and ponds	65	60	60	60	60	15	15	15	65	4	9	0	0
California red-legged frog and southwestern pond turtle	C1	Ponds	30	25	25	25	25	10	10	10	30	2	2	0	0

[a] Status explanations

Federal

– = no designation.

FE = endangered under the federal Endangered Species Act.

FPE = proposed for listing as endangered.

C1 = Category for listing. Category 1 includes species for which USFWS has on file enough information on biological vulnerability 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.

Table 6-3. Estimated Percent Loss of Known Range of Federally Listed Threatened, Endangered, and Candidate Plant and Wildlife Species at Fort Ord by Alternative

Species	Listing Status[a]	Alternative[c]						
	Federal/State/CNPS	1	1C	2	3	4	5	6
Plants								
Sand gilia *Gilia tenuiflora ssp. arenaria*	E/T/1b	40-70	40-70	30-50	10-30	5-20	<1	10-25
Monterey spineflower *Chorizanthe pungens* var. *pungens*	PE/–/1b	65-90	65-95	35-60	15-40	10-30	<1	15-40
Robust spineflower *Chorizanthe robusta* var. *robusta*	PE/–/4	0	0	0	0	0	0	0
Seaside bird's-beak *Cordylanthus rigidus* var. *littoralis*	C1/E/1b	25-50	25-50	10-25	<10	0	0	0
Hickman's onion *Allium hickmanii*	C1/–/1b	<5	<5	<3	<3	<2	0	<1
Toro manzanita *Arctostaphylos montereyensis*	C2/–/1b	55-90	55-90	20-45	5-15	5-10	<1	5-15
Sandmat manzanita *Arctostaphylos pumila*	C2/–/1b	55-90	55-90	30-60	10-30	5-20	<1	5-20
Monterey ceanothus *Ceanothus rigidus*	C2/–/4	40-70	40-70	20-40	5-20	5-15	<1	5-10
Eastwood's ericameria *Ericameria fasciculata*	C2/–/1b	55-90	55-90	30-60	5-15	5-10	<1	5-15
Coast wallflower *Erysimum ammophilum*	C2/–/1b	10-30	10-30	5-25	5-15	2-10	<1	2-10
Wedge-leaved horkelia *Horkelia cuneata ssp. sericea*	C2/–/1b	10	10	<3	<3	<2	<1	<2
Yadon's piperia *Piperia yadonii*	–[b]/–/1b	<1	<1	<1	<1	0	0	<1

Table 6-3. Continued

Species	Listing Status[a] Federal/State/CNPS	Alternative[a] 1	1C	2	3	4	5	6
Wildlife								
Smith's blue butterfly *Euphilotes enoptes smithi*	FE/–	<3	3-7	<2	<1	<1	<1	<1
American peregrine falcon *Falco peregrinus anatum*	FE/E	0	0	0	0	0	0	0
Southern sea otter *Enhydra lutris nereis*	FE/–	<1	<5					
California linderiella *Linderiella occidentalis*	PE/–	<1	<1	<1	<1	<1	0	<1
Western snowy plover *Charadrius alexandrinus nivosus*	PT/SSC	<1	<1	<1	<1	<1	<1	<1
California red-legged frog *Rana aurora draytoni*	C1 (LP)/SSC	<1	<1	<1	<1	<1	0	<1
Southwestern pond turtle *Clemmys marmorata pallida*	C1 (LP)/SSC	<1	<1	<1	<1	<1	0	<1
Monterey ornate shrew *Sorex ornatus salarius*	C2/–	10-25	10-25	10-20	5-15	5-10	<5	10-20
Monterey dusky-footed woodrat *Neotoma fuscipes luciana*	C2/–	<5	<5	<5	<2	<2	<1	<2
Loggerhead shrike *Lanius ludovicianus*	C2/–	<1	<1	<1	<1	<1	<1	<1
California horned lark *Eremophila alpestris actia*	C2/–	<1	<1	<1	<1	<1	<1	<1
Tricolored blackbird *Agelaius tricolor*	C2/SSC	<1	<1	<1	<1	<1	<1	<1
California tiger salamander *Ambystoma tigrinum californiense*	C2(LP)/SSC	<1	<1	<1	<1	<1	0	<1
California black legless lizard *Anniella pulchra nigra*	C2(LP)/SSC	10-20	10-20	10-20	5-10	<5	<1	<10

Table 6-3. Continued

• Impacts resulting from all subalternatives except 1C are not substantially different from the alternatives.

[a] Status definitions:

Federal

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

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

PE = federally proposed for listing as endangered.

LP = listing package being reviewed by USFWS.

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.

State

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

SSC = considered a State Species of Special Concern by California Department of Fish and Game.

– = no status.

California Native Plant Society

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

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

[b] Listing package is in preparation by USFWS (U.S. Fish and Wildlife Service pers. comm.).

result in direct impacts on biological resources, such as conversion of biological communities to structures, roads, and landscaping; mortality of plants or wildlife from construction equipment; displacement of species because of temporary or permanent habitat loss; and abandonment of a site by wildlife because of disturbance during critical periods of the year.

In the reuse analysis, direct impacts on biological resources were assumed to not result at sites with the following land use designations: coastal dune zone, habitat preserve, natural area expansion, natural resource management area, fire training, disturbed habitat zone, university research area, police academy, post academy, or no proposed use. However, lands designated as no proposed use could be subject to reuse in the future and would require further separate environmental documentation.

Some of the land uses listed would result in the loss of small amounts of biological resources from construction of a limited number of structures and roads. For the purpose of this analysis, the category of no proposed use was considered an open space land use that would be maintained by the Department of the Army in caretaker status, with public access restricted and vegetation management continued after surface clearing of ordnance.

In the reuse analysis, direct impacts from land uses not listed above were assumed to eliminate all biological resources within the land use footprint. Some of these proposed land uses could result in the retention of small patches of natural habitats and special-status species populations. However, the biological value of these remnant habitats would be low because of their small size, their isolation, and the surrounding development.

Changes in land use also could result in indirect impacts, such as mortality of native wildlife because of predation by domestic pets; disturbance to wildlife by recreationists; or erosion of soil from one parcel to an adjacent parcel, resulting in loss of plant habitat or degradation of wetlands. The location and severity of these indirect impacts are unknown at this time; therefore, indirect impacts on biological resources were not evaluated in this analysis and will have to be determined on a separate, site-specific basis.

ALTERNATIVE 1

Sand Gilia

- ***Impact: Loss of Sand Gilia Populations and Habitat***

Under Alternative 1, approximately 3,620 acres of occupied sand gilia habitat would be lost (Table 6-1). This habitat area supports sand gilia at high densities on approximately 160 acres, medium densities on approximately 310 acres, and low densities on approximately 3,150 acres. Maritime chaparral and coastal scrub habitat on sandy soils is potentially suitable habitat for sand gilia, and approximately 12,600 acres would be lost under Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5. The HMP would require avoidance, restoration, or acquisition of habitat and may result in large-scale reductions and rearrangement of the developments proposed under Alternative 1 (Army, state and local agencies and private entities responsible for development).

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of a Natural Community Conservation Plan (NCCP)***

An NCCP could be prepared and implemented after disposal for maritime chaparral and the special-status plant and wildlife species it supports, under the California Natural Community Conservation Planning Act (California Fish and Game Code Section 2800). NCCPs provide for the regional or areawide protection and perpetuation of natural wildlife communities, while allowing compatible and appropriate development and growth. The NCCP would include all areas of maritime chaparral indicated in Attachment 3.

The goal of an NCCP is to protect sufficient numbers of individuals and a sufficient amount of suitable habitat for species dependent on maritime chaparral to allow species populations to remain viable and not decline to threatened or endangered status. The NCCP would focus on special-status plant and wildlife species that occur mostly or wholly in maritime chaparral: sand gilia, Monterey spineflower, Seaside bird's-beak, Toro manzanita, Hooker's manzanita, pajaro manzanita, sandmat manzanita, Monterey ceanothus, Eastwood's ericameria, Yadon's piperia, Monterey dusky-footed woodrat, and coast horned lizard. The black legless lizard also occurs in maritime chaparral; however, population densities are lower compared to dune habitats.

An appropriately developed and implemented NCCP could reduce the level of impacts on maritime chaparral habitat, special-status plant and wildlife species that use maritime chaparral, California Native Plant Society plant native plant preserves, and Significant Natural Areas. To meet the goals of habitat preservation, the NCCP may result in large-scale reductions and rearrangement of the developments proposed under Alternative 1. (State and local agencies and private entities responsible for development)

Smith's Blue Butterfly

- ***Impact: Loss of Smith's Blue Butterfly Habitat***

Under Alternative 1, roughly 23% (approximately 40 acres) of the Smith's blue butterfly habitat at Fort Ord would be eliminated by development. Acres affected by development for all special-status and special-interest wildlife species for each alternative and subalternative are shown in Table 6-2.

Under Alternative 1, Subalternative C, roughly 65% (approximately 120 acres) of the potential and occupied Smith's blue butterfly habitat at Fort Ord would be eliminated. Development would remove both the northern and southern preserves that were established for Smith's blue butterfly at Fort Ord, as well as other reported colonies near the center of the dune area.

The habitat at Fort Ord has been identified in the Smith's blue butterfly recovery plan (U.S. Fish and Wildlife Service 1984) as important for the recovery of the species. The Smith's blue butterfly is listed as a federally endangered species. Loss of habitat or populations would violate the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed and Proposed and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5. New landowners could also become participants in the proposed Marina Dunes HCP. (State and local agencies and private entities responsible for development).

- ***Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use***

The increase in recreational, tourist, and residential land uses associated with Alternatives 1 and 1C would substantially increase public use of the beaches and dunes at Fort Ord. Foot traffic and other human impacts associated with increased use could damage host plants and degrade Smith's blue butterfly habitat in the coastal dune zone. Degradation of Smith's blue butterfly habitat would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Degradation of Smith's Blue Butterfly Habitat in the Coastal Dune Zone***

Habitat degradation from human disturbance could be minimized by constructing wooden boardwalks to direct beach access; installing interpretive signs that designate the area as sensitive habitat; and providing adequate, full-time law enforcement for the habitat preserves and coastal dune zones. (Local agencies)

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5. Development and implementation of an HMP for Smith's blue butterfly would preserve Smith's blue butterfly habitat and address methods to minimize degradation of habitat.

American Peregrine Falcon

American peregrine falcons do not nest at or near Fort Ord, and no suitable nesting habitat occurs on the installation. Also, Fort Ord is not an important foraging area for the species. American peregrine falcons would not be affected by Alternative 1.

Southern Sea Otter

- *Impact: Disturbance to Southern Sea Otter*

Construction of the marina and cruise ship pier associated with Alternative 1, Subalternative C, would increase boat and ship traffic in the central Monterey Bay area, which could disturb the southern sea otter population near the Fort Ord Marine Impact Area. This would violate the federal Endangered Species Act.

- *Mitigation: Avoid Impacts on Southern Sea Otter*

Formal consultation with USFWS under Section 10 of the Endangered Species Act will be required to develop mitigation measures to minimize disturbance to southern sea otters from the proposed marine and cruise ship pier. If Alternative 1, Subalternative C, is implemented, local agencies and private entities involved with development would be responsible for formal consultation. (Local agencies and private entities responsible for development)

Monterey Spineflower

- ***Impact: Loss of Monterey Spineflower Populations and Habitat***

Under Alternative 1, approximately 9,980 acres of habitat occupied by Monterey spineflower would be lost (Table 6-1). This habitat area supports Monterey spineflower at high densities on approximately 890 acres, medium densities on approximately 3,400 acres, and low densities on approximately 5,690 acres. All maritime chaparral, coastal strand and dune habitats, and grassland and coastal scrub habitats on sandy soils are potentially suitable habitat for Monterey spineflower. The species occurs in natural and artificial disturbance patches in these habitats.

Monterey spineflower is proposed for listing as endangered under the federal Endangered Species Act and could become listed during the time of disposal and reuse. If the Monterey spineflower becomes listed, the removal of individuals or populations would be a violation of the Endangered Species Act. The loss of Monterey spineflower populations would be unavoidable under Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat".

Robust Spineflower

- ***Impact: Loss of One to Several Robust Spineflower Plants***

One to several plants of robust spineflower may be removed by construction or recreational activities under Alternative 1.

- *Mitigation: Avoid Individuals of Robust Spineflower*

Development on the coastal dunes would avoid robust spineflower plants and surrounding habitat. (State and local agencies and private entities responsible for development).

California linderiella

- *Impact: Loss of California Linderiella Habitat*

Under Alternative 1, roughly 92% (approximately 60 acres) of the known and potential California linderiella habitat at Fort Ord could be eliminated by development (Table 6-2). All five pools and ponds where California linderiella are known to occur would be eliminated.

California linderiella are currently proposed for federal endangered status. If California linderiella becomes listed as endangered, loss of California linderiella habitat would be a violation of the federal Endangered Species Act.

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- *Mitigation: Avoid or Limit Losses, and Restore Vernal Pools, Freshwater Marsh, Streams, and Ponds*

All future landowners would have to comply with Section 404 of the Clean Water Act if the placement of dredge or fill material is proposed in wetlands or other waters of the United States. Federal agencies must coordinate with USFWS under the Fish and Wildlife Coordination Act if actions or permits would result in the modification of wetland or open water habitats. Development entities would have to reach agreement with DFG before they could undertake alterations of streambeds, ponds, or vernal pools from which wildlife receive benefit.

Freshwater marsh, ponds, and streams could be avoided where feasible, and wetland or open water habitat of equal or greater wildlife value could be created to replace lost wetland and open water habitats. Artificial ponds and freshwater marsh could be created to replace the artificial ponds and associated freshwater marsh that would be removed. Vernal pools should be avoided because suitable soils for vernal pools are limited in the

Fort Ord area and artificial vernal pool creation has a low probability of success. Alteration of the watersheds of the vernal pools should be avoided.

These wetland and open water habitats are small landscape features, and projects can be designed to incorporate the water body and its watershed in developed areas. Implementing this mitigation would avoid or limit the adverse impacts on California linderiella; California red-legged frog; California tiger salamander; southwestern pond turtle; vernal pools; freshwater marsh, streams, and ponds; and California Native Plant Society plant preserves with vernal pools. (Army Local agencies and private entities responsible for development).

Western Snowy Plover

- ***Impact: Disturbance to Nesting Western Snowy Plovers***

Western snowy plovers nest on the beaches at Fort Ord from the northern installation boundary to Stilwell Hall. They may also nest south of Stilwell Hall. The increase in recreational, tourist, and residential land uses associated with Alternative 1 would substantially increase public use of the beaches at Fort Ord. Nest failures and nest abandonment by western snowy plovers have been caused by human disturbance under a variety of circumstances (57 FR 1443 January 14, 1992), resulting in direct mortality to eggs and chicks.

Under Alternative 1, Subalternative C, beach areas potentially used by nesting western snowy plovers would be developed for the proposed marina, the cruise ship pier, and possibly the golf course. Occupied nesting habitat could be affected by the proposed weather station. Because the area between the high tide line and the dune bluffs has not been measured, it is unknown specifically how many acres of habitat would be lost.

Coastal populations of the western snowy plover are currently proposed for federal listing as threatened. If the western snowy plover becomes listed as threatened, direct mortality and loss of habitat would violate the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5. Minimizing disturbance to nesting western snowy plovers by restricting human access to beaches north of Stilwell Hall during the western snowy plover breeding and nesting season (March-September). If western snowy plovers are found nesting in other areas, beach access could also be restricted in these locations.

Beach development could be designed to avoid potential or occupied western snowy nesting habitat. If nesting habitat cannot be avoided, areas of equal size and habitat value could be preserved nearby, and public access could be prohibited in these areas during the western snowy plover breeding season (March-September). The HMP could result in large-scale reductions and rearrangement of the developments proposed under Alternative 1, subalternative C (state and local agencies and private entities responsible for development)

Category 1 and 2 Candidate Species

Federal candidate species could become federally listed as threatened or endangered before reuse, and take would become a violation of the federal Endangered Species Act where projects are subject to federal jurisdiction.

- ***Impact: Loss of Federal Candidate Plant Species Populations and Habitat***

Implementation of Alternative 1 would result in the loss of occupied habitat of plant species that are candidates (Category 1 or 2) for federal listing as threatened or endangered or species for which listing packages are in preparation: Seaside bird's-beak, Toro manzanita, sandmat manzanita, Hickman's onion, Monterey ceanothus, Eastwood's ericameria, coast wallflower, wedge-leaf horkelia, and Yadon's piperia (Table 1-1). About 30-50% of the known range of Seaside bird's-beak occurs at Fort Ord. Alternative 1 would result in the loss of over 80% of the Seaside bird's-beak at Fort Ord, or roughly 25-40% of its known range.

More than 50% of the known ranges of Toro manzanita, sandmat manzanita, Monterey ceanothus, and Eastwood's ericameria are at Fort Ord. Alternative 1 would result in the loss of more than 90% of the populations of each of these species at Fort Ord (Table 6-1). Approximately 55-90% of the entire known range of Toro manzanita, sandmat manzanita, and Eastwood's ericameria, and 40-70% of the known range of Monterey ceanothus would be lost under Alternative 1.

More than 80% of the occupied habitat of Hickman's onion, coast wallflower, and wedge-leafed horkelia at Fort Ord would be removed under Alternative 1 (Table 6-1). Less than 5% of the known range of Hickman's onion, approximately 10-30% of the known range of coast wallflower, and about 10% of the known range of wedge-leaved horkelia would be lost under Alternative 1.

One population of Yadon's piperia has been identified at Fort Ord and would be completely removed under Alternative 1. Less than 1% of the known habitat of Yadon's piperia would be lost under Alternative 1.

Fort Ord does not represent as large a portion of the species range for Hickman's onion, coast wallflower, wedge-leaf horkelia, and Yadon's piperia as for the other candidate species (Table 1-1).

The loss of federal candidate plant species would be unavoidable under Alternative 1.

- ***Mitigation: Minimize Losses and Establish and Protect New Populations of Federal Candidate Plants***

Federal candidate plant species could meet the definition of rare or endangered species under CEQA. Actions requiring CEQA compliance by state or local agencies would require mitigation for losses of these plants. Army actions may be appropriate under the Federal Endangered Species Act to provide mitigation for important species.

The loss of populations of federal candidate plant species would be minimized by avoiding populations and establishing new populations where feasible. (State and local agencies and private entities responsible for development)

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat". Preservation of maritime chaparral habitat would also preserve habitat for many federal candidate plant species.

- ***Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat***

Nine federal candidate (Category 1 or 2) wildlife species are known to occur or have potential to occur at Fort Ord (Table 1-2). Listing petitions are currently being reviewed by USFWS for the black legless lizard, California tiger salamander, southwestern pond turtle, and California red-legged frog.

The Monterey dusky-footed woodrat, Monterey ornate shrew, and the black legless lizard have very limited ranges (Figures B-17, B-19, and B-21 in Appendix B). Under Alternative 1, approximately 94% of the available black legless lizard habitat, 96% of the Monterey dusky-footed woodrat habitat, and 87% of the Monterey ornate shrew habitat at Fort Ord would be eliminated by development (Table 6-2). These substantial losses of habitat would likely result in federal listing of these species as threatened or endangered.

Under Alternative 1, public access to beaches and dunes could reduce densities of native vegetation through foot traffic and other human impacts. A reduction in densities of native dune vegetation would degrade coastal habitat for the black legless lizard.

For the six other federal candidate species known to occur or with potential to occur at Fort Ord, implementation of Alternative 1 would result in the loss of between 83% and 92% of the available habitat at the installation for loggerhead shrike, California tiger salamander, California red-legged frog, and southwestern pond turtle (Table 6-2). All eight known tiger salamander breeding sites and portions of salamander and pond turtle upland habitat would be lost (Appendix B, Figure B-23). Approximately 65% of the available California horned lark habitat and roughly 41% of the tricolored blackbird habitat at Fort Ord also would be eliminated. The one known tricolored blackbird nesting colony at Fort Ord would be disturbed by activities associated with proposed residential land uses (Appendix B, Figure B-26).

Loss of potential habitat for federal candidate wildlife species would be unavoidable under Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Minimize Degradation of Black Legless Lizard Habitat in the Coastal Dune Zone***

Mitigation is the same as that described above under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use". Preserving Smith's blue butterfly habitat also would preserve coastal habitat for the black legless lizard.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat". Preservation of maritime chaparral habitat would preserve habitat for Monterey dusky-footed woodrat, loggerhead shrike, and where the species occurs on sandy soil, black legless lizard inland habitat.

- ***Mitigation: Provide Habitat for Monterey Dusky-Footed Woodrat and Monterey Ornate Shrew by Limiting Losses and Compensating for Losses of Coast Live Oak Woodland and Savanna through State Policies, Local Agency General Land Use Plan Policies, and Regional Programs***

State agencies are directed by California Senate Concurrent Resolution Number 17 (California Resolution Chapter 100) to preserve and protect native oak woodlands (sites with more than five trees per acre) to the maximum extent feasible or to provide replacement plantings for oaks that are removed. Where state agencies have future

jurisdiction, oak woodlands could be avoided or, if removed, could be compensated for by replacement plantings. The number of replacement oak plantings could be based on the trunk diameters of the oaks removed, with one seedling or sapling planted for each inch of the total trunk diameter (measured at 4.5 feet above the ground) of oaks removed.

The loss of coast live oak woodland and savanna could be limited by developing and implementing general land use plan policies and regional programs to encourage the preservation and restoration of coast live oak woodlands. General plan policies could be developed and implemented in support of projects that retain coast live oak woodlands and compensate for oaks removed. A regional program could be developed that identifies the location of oak woodlands, ranks the sites according to value, and institutes mechanisms to protect high-value sites and to secure woodland restoration sites. (State and local agencies and private entities responsible for development)

Limiting the loss of coast live oak woodlands and savannas would preserve habitat for the Monterey dusky-footed woodrat and the Monterey ornate shrew.

- ***Mitigation: Provide Habitat for Tricolored Blackbird, California Horned Lark, and Loggerhead Shrike by Limiting Losses of Grasslands through Local Agency General Land Use Plan Policies and Regional Programs***

The loss of grassland wildlife habitats in Monterey County could be limited by local agencies developing and implementing general land use plan policies and regional programs to encourage the preservation of grasslands. General plan policies in support of projects that retain grassland habitat could be developed and implemented. A regional program could be developed that identifies the location of grassland habitats, ranks the sites according to value, and institutes mechanisms to protect high-value sites. (State and local agencies)

Limiting the loss of grasslands would preserve potential habitat for tricolored blackbird, California horned lark, and loggerhead shrike.

- ***Mitigation: Provide Habitat for the Monterey Ornate Shrew by Avoiding and Compensating for Losses of Riparian Forest***

Future landowners of sites that support riparian forest and other riparian habitats would have to reach agreement with DFG before they alter streambeds and associated riparian vegetation. Future actions requiring CEQA compliance would have to avoid, enhance, or restore all affected riparian habitat because impacts on riparian forest are considered significant by DFG. Sites within the riparian forest habitat that meet federal jurisdictional standards as wetlands would be protected under Section 404 of the Clean Water Act, and all landowners would require a permit from the Army to place dredged or fill material in wetland sites.

Proposed projects would be redesigned to avoid riparian forest. In rural residential land use areas, riparian forest could be retained through deed restrictions on the placement

of structures and driveways. Where riparian forest removal is unavoidable, compensation could be at a 2:1 acreage ratio of newly created habitat to lost habitat or a 4:1 acreage ratio of enhanced habitat to lost habitat. (State and local agencies and private entities responsible for development)

Preventing losses of riparian forest would preserve habitat for the Monterey ornate shrew.

- ***Mitigation: Provide Habitat for California Linderiella, California Tiger Salamander, California Red-Legged Frog, and Southwestern Pond Turtle by Avoiding or Limiting Losses and Restoring Vernal Pools, Freshwater Marsh, Streams, and Ponds***

Mitigation would be the same as that described above under "Impact: Loss of California Linderiella Habitat".

Minimizing impacts on vernal pools and ponds would preserve habitat for California tiger salamander, California red-legged frog, and southwestern pond turtle.

- ***Mitigation: Avoid or Minimize Impacts on Upland Habitat***

Development could be designed to avoid upland habitat within 0.5 mile of vernal pools and ponds to prevent potential adverse impacts on California tiger salamanders and nesting southwestern pond turtles. If upland habitat cannot be fully avoided, as large a portion as feasible should be preserved. (Local agencies and private entities responsible for development)

- ***Mitigation: Avoid Development Near the Known Tricolored Blackbird Nesting Colony***

Development should not be allowed within 1,000 feet of the tricolored blackbird nesting colony at Fort Ord. Also, development should not surround the colony; birds should be allowed open access to the grasslands for foraging.

If avoidance is infeasible, the developer either could enhance nearby nesting habitat by increasing marsh vegetation at ponds in the natural resource management area or could replace nesting habitat by creating new ponds nearby with dense marsh vegetation. These mitigation sites should be protected from disturbance and future development. (Local agencies and private entities responsible for development)

Substantial Impacts on Species Without Federal Status

- ***Impact: Loss of Populations and Habitat of Hooker's Manzanita***

Fort Ord provides important habitat for Hooker's manzanita, a species considered rare, threatened, or endangered in California and elsewhere by CNPS (list 1b). Alternative 1 would result in the loss of all of the occupied habitat of Hooker's manzanita at Fort Ord. This represents roughly 25% of the total range of Hooker's manzanita.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat".

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies Habitat Management Plan (HMP)***

Hooker's manzanita populations at Fort Ord would be conserved by including this species in the multispecies HMP described above under "Impact: Loss of Sand Gilia Populations and Habitat".

ALTERNATIVE 2

Sand Gilia

- ***Impact: Loss of Sand Gilia Populations and Habitat***

Under Alternative 2, approximately 2,520 acres of occupied sand gilia habitat would be lost (Table 6-1). This habitat area supports sand gilia at high densities on approximately 160 acres, medium densities on approximately 290 acres, and low densities on approximately 2,070 acres. Maritime chaparral and coastal scrub habitat on sandy soils is potential suitable habitat for sand gilia. Over 6,760 acres of potential habitat would be lost under Alternative 2.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed and Proposed Threatened and Endangered Plants and Wildlife Through a Multispecies Habitat Conservation Plan***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

Smith's Blue Butterfly

- ***Impact: Loss of Smith's Blue Butterfly Habitat***

Under Alternative 2, roughly 14% (approximately 25 acres) of the Smith's blue butterfly habitat at Fort Ord would be eliminated by development.

The habitat at Fort Ord has been identified in the Smith's blue butterfly recovery plan (U.S. Fish and Wildlife Service 1984) as important for the recovery of the species. The Smith's blue butterfly is listed as a federally endangered species. Loss of habitat or populations would violate the federal Endangered Species Act.

- ***Mitigation: Avoid Development in Smith's Blue Butterfly Habitat***

Mitigation is the same as that described above under "Impact: Loss of Smith's Blue Butterfly Habitat" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use***

The increase in recreational, tourist, and residential land uses associated with Alternative 2 would substantially increase public use of the beaches and dunes at Fort Ord. Foot traffic and other human impacts associated with increased use could damage host plants and degrade Smith's blue butterfly habitat in the coastal dune zone. Degradation of Smith's blue butterfly habitat would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Degradation of Smith's Blue Butterfly Habitat in the Coastal Dune Zone***

Mitigation is the same as that described above under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use for Alternative 1."

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

American Peregrine Falcon

American peregrine falcons do not nest at or near Fort Ord, and no suitable nesting habitat occurs on the installation. Also, Fort Ord is not an important foraging area for the species. American peregrine falcons would not be affected by Alternative 2.

Southern Sea Otter

Southern sea otter would not be affected under Alternative 2.

Monterey Spineflower

- *Impact: Loss of Monterey Spineflower Populations and Habitat*

Under Alternative 2, approximately 5,760 acres of habitat occupied by Monterey spineflower would be lost (Table 6-1). These habitat areas support Monterey spineflower at high densities on approximately 500 acres, medium densities on about 1,930 acres, and low densities on roughly 3,330 acres.

Monterey spineflower is proposed for listing as endangered under the federal Endangered Species Act and could become listed during the time of disposal and reuse. If the Monterey spineflower becomes listed, the removal of individuals or populations would be a violation of the Endangered Species Act. The loss of Monterey spineflower populations would be unavoidable under Alternative 2.

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

Robust Spineflower

Robust spineflower would not be affected under Alternative 2.

California linderiella

- ***Impact: Loss of California Linderiella Habitat***

Under Alternative 2, roughly 23% (approximately 15 acres) of the known and potential California linderiella habitat at Fort Ord would be eliminated by development (Table 6-2). Three of the five vernal pools and ponds where California linderiella are known to occur would be eliminated.

California linderiella are currently proposed for federal endangered status. If California linderiella becomes listed as endangered, loss of California linderiella habitat would be a violation of the federal Endangered Species Act.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Avoid or Limit Losses and Restore Vernal Pools, Freshwater Marsh, Streams, and Ponds***

Mitigation is the same as that described above under "Impact: Loss of California Linderiella Habitat" for Alternative 1.

Western Snowy Plover

- *Impact: Disturbance to Nesting Western Snowy Plovers*

Western snowy plovers nest on the beaches at Fort Ord from the northern installation boundary to Stilwell Hall. They may also nest south of Stilwell Hall. The increase in recreational, tourist, and residential land uses associated with Alternative 2 would substantially increase public use of the beaches at Fort Ord. Nest failures and nest abandonment by western snowy plovers have been caused by human disturbance under a variety of circumstances (57 FR 1443 January 14, 1992), resulting in direct mortality to eggs and chicks.

Coastal populations of the western snowy plover are currently proposed for federal listing as threatened. If the western snowy plover becomes listed as threatened, direct mortality and loss of habitat would violate the federal Endangered Species Act.

- *Mitigation: Minimize Disturbance to Nesting Snowy Plovers*

Mitigation is the same as that described under "Impact: Disturbance to Nesting Western Snowy Plovers" for Alternative 1.

Category 1 and 2 Candidate Species

Federal candidate species could become federally listed as threatened or endangered before reuse, and take would become a violation of the federal Endangered Species Act where projects are subject to federal jurisdiction.

- *Impact: Loss of Federal Candidate Plant Species Populations and Habitat*

Alternative 2 would result in the loss of approximately 40%, 55%, 50%, and 55% of the populations of Seaside bird's beak, Toro manzanita, sandmat manzanita, Monterey ceanothus, and Eastwood's ericameria, respectively, at Fort Ord. Approximately 10-20% of the known range of Seaside bird's-beak, 20-45% of the known range of Toro manzanita, 20-40% of the known range of Monterey ceanothus, and 30-60% of the known range of both sandmat manzanita and Eastwood's ericameria would be lost under Alternative 2.

Approximately 60% of the occupied habitat of Hickman's onion, 75% of the occupied habitat of coast wallflower, and 20% of the occupied habitat of wedge-leafed horkelia at Fort Ord would be removed under Alternative 2. About 5-25% of the known range of coast wallflower and less than 3% of the known range of Hickman's onion and wedge-leaved horkelia would be lost under Alternative 2.

One population of Yadon's piperia has been identified at Fort Ord and would be completely removed under Alternative 2. Less than 1% of the known habitat of Yadon's piperia would be lost under Alternative 2.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

- ***Mitigation: Minimize Losses and Establish and Protect New Populations of Federal Candidate Plants***

Mitigation is the same as that described above under "Impact: Loss of Federal Candidate Plant Species Populations and Habitat" for Alternative 1.

Fort Ord does not represent as large a portion of the species range for Hickman's onion, coast wallflower, wedge-leaf horkelia, and Yadon's piperia as for the other candidate species (Table 1-1).

The loss of federal candidate plant species would be unavoidable under Alternative 2.

- ***Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat***

Nine federal candidate (Category 1 or 2) wildlife species are known to occur or have potential to occur at Fort Ord (Table 1-2). Listing petitions are currently being reviewed by USFWS for the black legless lizard, California tiger salamander, southwestern pond turtle, and California red-legged frog.

The Monterey dusky-footed woodrat, Monterey ornate shrew, and the black legless lizard have very limited ranges (Figures B-17, B-19, B-21 in Appendix B). Substantial losses of habitat for these species at Fort Ord could result in federal listing as threatened or

endangered. Under Alternative 2, approximately 91%, 56%, and 70% for these three species would be lost, respectively. Habitat losses under Alternative 2 would likely elevate the status of all three species to threatened or endangered status. Additionally, public access to beaches and dunes under Alternative 2 could reduce densities of native vegetation through foot traffic and other human impacts. A reduction in densities of native dune vegetation would degrade coastal habitat for the black legless lizard.

Under Alternative 2, between 51% and 56% of the available habitat at Fort Ord for loggerhead shrike and California horned lark would be eliminated by development. From 23% to 38% of the available habitat for tricolored blackbird, California tiger salamander, California red-legged frog, and southwestern pond turtle also would be lost under Alternative 2. Four of the eight known tiger salamander breeding ponds at Fort Ord and portions of salamander and pond turtle upland habitat would be eliminated, and the one known tricolored blackbird nesting colony at Fort Ord would be disturbed by activities associated with the proposed residential land uses.

Some level of loss of potential habitat for federal candidate wildlife species would be unavoidable under Alternative 2.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Minimize Degradation of Black Legless Lizard Habitat in the Coastal Dune Zone***

Mitigation is the same as that described above under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use" for Alternative 1. Preserving Smith's blue butterfly habitat also would preserve coastal habitat for the black legless lizard.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1. Preservation of maritime chaparral habitat would preserve habitat for Monterey dusky-footed woodrat, loggerhead shrike, and where the species occurs on sandy soil, black legless lizard inland habitat.

- ***Mitigation: Provide Habitat for Monterey Dusky-Footed Woodrat and Monterey Ornate Shrew by Limiting Losses and Compensating for Losses of Coast Live Oak Woodland and Savanna through State Policies, Local Agency General Land Use Plan Policies, and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Provide Habitat for Tricolored Blackbird, California Horned Lark, and Loggerhead Shrike by Limiting Losses of Grasslands through Local Agency General Land Use Plan Policies and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Provide Habitat for the Monterey Ornate Shrew by Avoiding and Compensating for Losses of Riparian Forest***

Mitigation is the same as that described above for Alternative 1, under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat".

- ***Mitigation: Provide Habitat for California Linderiella, California Tiger Salamander, California Red-Legged Frog, and Southwestern Pond Turtle by Avoiding or Limiting Losses and Restoring Vernal Pools, Freshwater Marsh, Streams, and Ponds***

Mitigation is the same as that described above under "Impact: Loss of California Linderiella Habitat" for Alternative 1.

Minimizing impacts on vernal pools and ponds would preserve habitat for California tiger salamander, California red-legged frog, and southwestern pond turtle.

- ***Mitigation: Avoid or Minimize Impacts on Upland Habitat***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Avoid Development Near the Known Tricolored Blackbird Nesting Colony***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

ALTERNATIVE 3

Sand Gilia

- *Impact: Loss of Sand Gilia Populations and Habitat*

Under Alternative 3, approximately 1,160 acres of occupied sand gilia habitat would be lost. This habitat area supports sand gilia at high densities on approximately 160 acres, medium densities on approximately 210 acres, and low densities on approximately 790 acres. Maritime chaparral and coastal scrub habitat on sandy soils is potential suitable habitat for sand gilia, and over 2,210 acres would be lost under Alternative 3.

Sand gilia is federally listed as endangered. Removal of individuals or populations of sand gilia is a violation of the Endangered Species Act. The loss of sand gilia populations would be unavoidable under Alternative 3.

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- *Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP*

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

Smith's Blue Butterfly

- *Impact: Loss of Smith's Blue Butterfly Habitat*

Under Alternative 3, roughly 1% (approximately 2 acres) of the Smith's blue butterfly habitat at Fort Ord would be eliminated by development (Table 6-2).

The habitat at Fort Ord has been identified in the Smith's blue butterfly recovery plan (U.S. Fish and Wildlife Service 1984) as important for the recovery of the species. The

Smith's blue butterfly is listed as a federally endangered species. Loss of habitat or populations would violate the federal Endangered Species Act.

- ***Mitigation: Avoid Development in Smith's Blue Butterfly Habitat***

Mitigation is the same as that described under "Impact: Loss of Smith's Blue Butterfly Habitat" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use***

Public beach access permitted under Alternative 3 would allow increased human disturbance to beach and dune habitats. Foot traffic and other human impacts associated with increased use could damage host plants and degrade Smith's blue butterfly habitat in the coastal dune zone. Degradation of Smith's blue butterfly habitat would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Degradation of Smith's Blue Butterfly Habitat in the Coastal Dune Zone***

Mitigation would be the same as that described above under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

American Peregrine Falcon

American peregrine falcons do not nest at or near Fort Ord, and no suitable nesting habitat occurs on the installation. Also, Fort Ord is not an important foraging area for the species. American peregrine falcons would not be affected by Alternative 3.

Southern Sea Otter

Southern sea otter would not be affected under Alternative 3.

Monterey Spineflower

- ***Impact: Loss of Monterey Spineflower Populations and Habitat***

Under Alternative 3, approximately 3,190 acres of habitat occupied by Monterey spineflower would be lost. These habitat areas support Monterey spineflower at high densities on approximately 310 acres, medium densities on about 1,290 acres, and low densities on roughly 1,600 acres. All maritime chaparral, strand and dune habitats, and grassland and coastal scrub on sandy soils are potentially suitable habitat for Monterey spineflower.

Monterey spineflower is proposed for listing as endangered under the federal Endangered Species Act and could become listed during the time of disposal and reuse. If the Monterey spineflower becomes listed, the removal of individuals or populations would be a violation of the Endangered Species Act. The loss of Monterey spineflower populations would be unavoidable under Alternative 3.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

Robust Spineflower

Robust spineflower would not be affected under Alternative 3.

California Linderiella

- *Impact: Loss of California Linderiella Habitat*

Under Alternative 3, roughly 6% (approximately 4 acres) of the known and potential California linderiella habitat at Fort Ord would be eliminated by development (Table 6-2). Two of the five ponds where California linderiella are known to occur would be eliminated by the recreation area expansion.

California linderiella are currently proposed for federal endangered status. If California linderiella becomes listed as endangered, loss of California linderiella habitat would be a violation of the federal Endangered Species Act.

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- *Mitigation: Avoid or Limit Losses and Restore Vernal Pools, Freshwater Marshes, Streams, and Ponds*

Mitigation is the same as that described above under "Impact: Loss of California Linderiella Habitat" for Alternative 1.

Western Snowy Plover

- *Impact: Disturbance to Nesting Western Snowy Plovers*

Western snowy plovers nest on the beaches at Fort Ord from the northern installation boundary to Stilwell Hall. They may also nest south of Stilwell Hall. Public beach access permitted under Alternative 3 would allow for increased human disturbance to beach and dune habitats. Nest failures and nest abandonment by western snowy plovers have been caused by human disturbance under a variety of circumstances (57 FR 1443 January 14, 1992), resulting in direct mortality to eggs and chicks.

Coastal populations of the western snowy plover are currently proposed for federal listing as threatened. If the western snowy plover becomes listed as threatened, direct mortality and loss of habitat would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Disturbance to Nesting Snowy Plovers***

Mitigation is the same as that described above under "Impact: Disturbance to Nesting Western Snowy Plovers" for Alternative 1.

Category 1 and 2 Candidate Species

Federal candidate species could become federally listed as threatened or endangered before reuse, and take would become a violation of the federal Endangered Species Act where projects are subject to federal jurisdiction.

- ***Impact: Loss of Federal Candidate Plant Species Populations and Habitat***

Alternative 3 would result in the loss of about 5%, 10%, 25%, 15%, and 10% of the populations of Seaside bird's-beak, Toro manzanita, sandmat manzanita, Monterey ceanothus, and Eastwood's ericameria, respectively, at Fort Ord. Approximately 2-3% of the known range of Seaside bird's-beak, 5-15% of the known range of both Toro manzanita and Eastwood's ericameria, 10-30% of the known range of sandmat manzanita, and 5-20% of the known range of Monterey ceanothus would be lost under Alternative 3.

Approximately 20% of the occupied habitat of Hickman's onion, 45% of the occupied habitat of coast wallflower, and 20% of the occupied habitat of wedge-leafed horkelia at Fort Ord would be removed under Alternative 3. Alternative 3 would result in the loss of approximately 5-15% of the known range of coast wallflower and less than 3% of the known range of Hickman's onion and wedge-leaved horkelia.

One population of Yadon's piperia has been identified at Fort Ord and would be completely removed under Alternative 3. Less than 1% of the known habitat of Yadon's piperia would be lost under Alternative 3.

The loss of federal candidate plant species would be unavoidable under Alternative 3.

- ***Mitigation: Minimize Losses and Establish and Protect New Populations of Federal Candidate Plants***

Mitigation is the same as that described above under "Impact: Loss of Federal Candidate Plant Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The

disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

- ***Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat***

Nine federal candidate (Category 1 or 2) wildlife species are known to occur or have potential to occur at Fort Ord (Table 1-2). Listing petitions are currently being reviewed by USFWS for the black legless lizard, California tiger salamander, southwestern pond turtle, and California red-legged frog.

The Monterey dusky-footed woodrat, Monterey ornate shrew, and the black legless lizard have very limited ranges (Figures B-17, B-19, and B-21 in Appendix B). Under Alternative 3, approximately 37% of the available black legless lizard habitat, 25% of the Monterey dusky-footed woodrat habitat, and 50% of the Monterey ornate shrew habitat at Fort Ord would be eliminated by development. Substantial losses of habitat for these species at Fort Ord could result in federal listing as threatened or endangered.

Under Alternative 3, between 20% and 30% of the available habitat for California horned lark and loggerhead shrike would be eliminated by development. From 6% to 7% of the available habitat for tricolored blackbird, California tiger salamander, California red-legged frog, and southwestern pond turtle also would be lost under Alternative 3. Three of the eight known tiger salamander breeding ponds at Fort Ord and portions of salamander and pond turtle upland habitat would be eliminated.

Under Alternative 3, public access to beaches and dunes could reduce densities of native vegetation through foot traffic and other human impacts. A reduction in densities of native dune vegetation would degrade coastal habitat for the black legless lizard.

Some level of loss of potential habitat for federal candidate wildlife species would be unavoidable under Alternative 3.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Minimize Degradation of Black Legless Lizard Habitat in the Coastal Dune Zone***

Mitigation would be the same as that described above for Alternative 1 under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use". Preserving Smith's blue butterfly habitat also would preserve coastal habitat for the black legless lizard.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1. Preservation of maritime chaparral habitat would preserve habitat for Monterey dusky-footed woodrat, loggerhead shrike, and where the species occurs on sandy soil, black legless lizard inland habitat.

- ***Mitigation: Provide Habitat for Monterey Dusky-Footed Woodrat and Monterey Ornate Shrew by Limiting Losses and Compensating for Losses of Coast Live Oak Woodland and Savanna through State Policies, Local Agency General Land Use Plan Policies, and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction in Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Provide Habitat for Tricolored Blackbird, California Horned Lark, and Loggerhead Shrike by Limiting Losses of Grasslands through Local Agency General Land Use Plan Policies and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Provide Habitat for California Linderiella, California Tiger Salamander, California Red-Legged Frog, and Southwestern Pond Turtle by Avoiding or Limiting Losses and Restoring Vernal Pools, Freshwater Marsh, Streams, and Ponds***

Mitigation would be the same as that described above under "Impact: Loss of California Linderiella Habitat" for Alternative 1.

Minimizing impacts on vernal pools and ponds would preserve habitat for California tiger salamander, California red-legged frog, and southwestern pond turtle.

- ***Mitigation: Avoid or Minimize Impacts on Upland Habitat***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

ALTERNATIVE 4

Sand Gilia

- *Impact: Loss of Sand Gilia Populations and Habitat*

Under Alternative 4, approximately 740 acres of occupied sand gilia habitat would be lost. This habitat area supports sand gilia at high densities on approximately 85 acres, medium densities on approximately 190 acres, and low densities on approximately 470 acres. Maritime chaparral and coastal scrub habitat on sandy soils is potentially suitable habitat for sand gilia, and over 1,570 acres would be lost under Alternative 4.

Sand gilia is federally listed as endangered. Removal of individuals or populations of sand gilia is a violation of the Endangered Species Act. The loss of sand gilia populations would be unavoidable under Alternative 4.

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- *Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP*

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

Smith's Blue Butterfly

- *Impact: Loss of Smith's Blue Butterfly Habitat*

Under Alternative 4, roughly 8% (approximately 15 acres) of the Smith's blue butterfly habitat at Fort Ord would be eliminated by development, including portions of the northern habitat preserve.

The habitat at Fort Ord has been identified in the Smith's blue butterfly recovery plan (U.S. Fish and Wildlife Service 1984) as important for the recovery of the species. The Smith's blue butterfly is listed as a federally endangered species. Loss of habitat or populations would violate the federal Endangered Species Act.

- ***Mitigation: Avoid Development in Smith's Blue Butterfly Habitat***

Mitigation is the same as that described above under "Impact: Loss of Smith's Blue Butterfly Habitat" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use***

Public beach access permitted under Alternative 4 would allow increased human disturbance to beach and dune habitats. Foot traffic and other human impacts associated with increased use could damage host plants and degrade Smith's blue butterfly habitat in the coastal dune zone. Degradation of Smith's blue butterfly habitat would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Degradation of Smith's Blue Butterfly Habitat in the Coastal Dune Zone***

Mitigation is the same as that described above under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

American Peregrine Falcon

American peregrine falcons do not nest at or near Fort Ord, and no suitable nesting habitat occurs on the installation. Also, Fort Ord is not an important foraging area for the species. American peregrine falcons would not be affected by Alternative 4.

Southern Sea Otter

Southern sea otter would not be affected under Alternative 4.

Monterey Spineflower

- ***Impact: Loss of Monterey Spineflower Populations and Habitat***

Under Alternative 4, approximately 2,140 acres of habitat occupied by Monterey spineflower would be lost. This habitat area supports Monterey spineflower at high densities over approximately 140 acres, medium densities over approximately 960 acres, and low densities over approximately 1,030 acres.

Monterey spineflower is proposed for listing as endangered under the federal Endangered Species Act and could become listed during the time of disposal and reuse. If the Monterey spineflower becomes listed, the removal of individuals or populations would be a violation of the Endangered Species Act. The loss of Monterey spineflower populations would be unavoidable under Alternative 4.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" Alternative 1.

Robust Spineflower

Robust spineflower would not be affected under Alternative 4.

California Linderiella

- *Impact: Loss of California Linderiella Habitat*

Under Alternative 4, roughly 14% (9 acres) of potential California linderiella habitat at Fort Ord would be eliminated by development. None of the five ponds where California linderiella are known to occur would be affected.

California linderiella are currently proposed for federal endangered status. If California linderiella becomes listed as endangered, loss of California linderiella habitat would be a violation of the federal Endangered Species Act.

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- *Mitigation: Avoid or Limit Losses and Restore Vernal Pools, Freshwater Marshes, Streams, and Ponds*

Mitigation is the same as that described above under "Impact: Loss of California Linderiella Habitat" for Alternative 1.

Western Snowy Plover

- *Impact: Disturbance to Nesting Western Snowy Plovers*

Western snowy plovers nest on the beaches at Fort Ord from the northern installation boundary to Stilwell Hall. They may also nest south of Stilwell Hall. Public beach access permitted under Alternative 4 would allow for increased human disturbance to beach and dune habitats. Nest failures and nest abandonment by western snowy plovers have been caused by human disturbance under a variety of circumstances (57 FR 1443 January 14, 1992), resulting in direct mortality to eggs and chicks.

Coastal populations of the western snowy plover are currently proposed for federal listing as threatened. If the western snowy plover becomes listed as threatened, direct mortality and loss of habitat would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Disturbance to Nesting Western Snowy Plovers***

Mitigation is the same as that described under "Impact: Disturbance to Nesting Western Snowy Plovers" for Alternative 1.

Category 1 and 2 Candidate Species

Federal candidate species could become federally listed as threatened or endangered before reuse, and take would become a violation of the federal Endangered Species Act where projects are subject to federal jurisdiction.

- ***Impact: Loss of Federal Candidate Plant Species Populations and Habitat***

Alternative 4 would result in the loss of about 5%, 15%, 10%, and 5% of the populations of Toro manzanita, sandmat manzanita, Monterey ceanothus, and Eastwood's ericameria, respectively, at Fort Ord. Approximately 5-10% of the known range of both Toro manzanita and Eastwood's ericameria, 5-20% of the known range of sandmat manzanita, and 5-15% of the known range of Monterey ceanothus would be lost under Alternative 4.

Approximately 20% of the occupied habitat of Hickman's onion, 30% of the occupied habitat of coast wallflower, and 10% of the occupied habitat of wedge-leafed horkelia at Fort Ord would be removed under Alternative 4. Less than 2% of the known range of Hickman's onion and wedge-leaved horkelia and approximately 2-10% of the known range of coast wallflower would be lost under Alternative 4.

The loss of federal candidate plant species would be unavoidable under Alternative 4. No Seaside bird's-beak habitat is expected to be lost under Alternative 4.

- ***Mitigation: Minimize Losses of and Establish and Protect New Populations of Federal Candidate Plants***

Mitigation is the same as that described above under "Impact: Loss of Federal Candidate Plant Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

- ***Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat***

Nine federal candidate (Category 1 or 2) wildlife species are known to occur or have potential to occur at Fort Ord (Table 1-2). Listing petitions are currently being reviewed by USFWS for the black legless lizard, California tiger salamander, southwestern pond turtle, and California red-legged frog.

The Monterey dusky-footed woodrat, Monterey ornate shrew, and the black legless lizard have very limited ranges (Figures B-17, B-19, and B-21 in Appendix B). Under Alternative 4, approximately 22%, 17%, and 32% for these three species would be lost, respectively. Substantial losses of habitat for these species at Fort Ord could result in federal listing as threatened or endangered. Under Alternative 4, public access to beaches and dunes could reduce densities of native vegetation through foot traffic and other human impacts. A reduction in densities of native dune vegetation would degrade coastal habitat for the black legless lizard.

Under Alternative 4, approximately 26% of the available California horned lark habitat at Fort Ord would be eliminated by development. From 7% to 15% of the available habitat for loggerhead shrike, California tiger salamander, California red-legged frog, and southwestern pond turtle also would be lost under Alternative 4. One known tiger salamander breeding pond and portions of salamander and pond turtle upland habitat would be lost. Less than 1% of the available tricolored blackbird habitat at Fort Ord would be affected.

Some level of loss of potential habitat for federal candidate wildlife species would be unavoidable under Alternative 4.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Minimize Degradation of Black Legless Lizard Habitat in the Coastal Dune Zone***

Mitigation is the same as that described above under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use" for Alternative 1. Preserving Smith's blue butterfly habitat also would preserve coastal habitat for the black legless lizard.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1. Preservation of maritime chaparral habitat would preserve habitat for Monterey dusky-footed woodrat, loggerhead shrike, and where the species occurs on sandy soil, black legless lizard inland habitat.

- ***Mitigation: Provide Habitat for Monterey Dusky-Footed Woodrat and Monterey Ornate Shrew by Limiting Losses and Compensating for Losses of Coast Live Oak Woodland and Savanna through State Policies, Local Agency General Land Use Plan Policies, and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction in Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

Limiting the loss of coast live oak woodlands and savannas would preserve habitat for the Monterey dusky-footed woodrat and the Monterey ornate shrew.

- ***Mitigation: Provide Habitat for Tricolored Blackbird, California Horned Lark, and Loggerhead Shrike by Limiting Losses of Grasslands through Local Agency General Land Use Plan Policies and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction in Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Provide Habitat for California Linderiella, California Tiger Salamander, California Red-Legged Frog, and Southwestern Pond Turtle by Avoiding or Limiting Losses and Restoring Vernal Pools, Freshwater Marsh, Streams, and Ponds***

Mitigation would be the same as that described above under "Impact: Loss of California Linderiella Habitat" for Alternative 1.

Minimizing impacts on vernal pools and ponds would preserve habitat for California tiger salamander, California red-legged frog, and southwestern pond turtle.

- ***Mitigation: Avoid or Minimize Impacts on Upland Habitat***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Species Populations and Habitat" for Alternative 1.

ALTERNATIVE 5

Sand Gilia

- ***Impact: Loss of Sand Gilia Populations and Habitat***

Under Alternative 5, approximately 15 acres of occupied sand gilia habitat would be lost. This habitat supports sand gilia at low density.

Sand gilia is federally listed as endangered. Removal of individuals or populations of sand gilia is a violation of the Endangered Species Act. The loss of sand gilia populations would be unavoidable under Alternatives 1, 2, 3, 4, 5, and 6.

- ***Mitigation: Avoid Development in Sand Gilia Populations and Habitat***

The proposed development could be modified to avoid populations of sand gilia. Surveys for sand gilia would be conducted in late spring before construction to identify specific locations of populations. State and local lead agencies under CEQA would be responsible for mitigation design and implementation in coordination with DFG and USFWS. (State and local agencies and private entities responsible for development)

Smith's Blue Butterfly

- ***Impact: Loss of Smith's Blue Butterfly Habitat***

Under Alternative 5, approximately 1 acre of Smith's blue butterfly habitat at Fort Ord would be eliminated by development.

The habitat at Fort Ord has been identified in the Smith's blue butterfly recovery plan (U.S. Fish and Wildlife Service 1984) as important for the recovery of the species. The Smith's blue butterfly is listed as a federally endangered species. Loss of habitat or populations would violate the federal Endangered Species Act.

- ***Mitigation: Avoid Smith's Blue Butterfly Habitat***

The proposed coastal development would be modified to avoid Smith's blue butterfly habitat. State and local lead agencies under CEQA would be responsible for mitigation design and implementation in coordination with DFG and USFWS. (State and local agencies and private entities responsible for development)

- ***Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use***

Public beach access permitted under Alternative 5 would allow increased human disturbance to beach and dune habitats. Foot traffic and other human impacts associated with increased use could damage host plants and degrade Smith's blue butterfly habitat in the coastal dune zone. Degradation of Smith's blue butterfly habitat would violate the federal Endangered Species Act.

- ***Mitigation: Avoid Development in Smith's Blue Butterfly Habitat Mitigation***

Mitigation is the same as that described above under "Impact: Loss of Smith's Blue Butterfly Habitat" for Alternative 1.

American Peregrine Falcon

American peregrine falcons do not nest at or near Fort Ord, and no suitable nesting habitat occurs on the installation. Also, Fort Ord is not an important foraging area for the species. American peregrine falcons would not be affected by Alternative 5.

Southern Sea Otter

Southern sea otter would not be affected under Alternative 5.

Monterey Spineflower

Under Alternative 5, approximately 110 acres of habitat occupied by Monterey spineflower would be lost. This habitat area supports Monterey spineflower at high densities on approximately 15 acres, medium densities on approximately 50 acres, and low densities on approximately 45 acres.

Monterey spineflower is proposed for listing as endangered under the federal Endangered Species Act and could become listed during the time of disposal and reuse. If the Monterey spineflower becomes listed, the removal of individuals or populations would

be a violation of the Endangered Species Act. The loss of Monterey spineflower populations would be unavoidable under Alternative 5.

- ***Mitigation for Alternative 5: Avoid Development in Monterey Spineflower Populations and Habitat***

The proposed development could be modified to avoid populations of Monterey spineflower. Surveys for Monterey spineflower could be conducted in late spring before construction to identify specific locations of populations. State and local lead agencies under CEQA would be responsible for mitigation design and implementation in coordination with DFG and USFWS. (State and local agencies and private entities responsible for development)

Robust Spineflower

Robust spineflower would not be affected under Alternative 5.

California Linderiella

No wetlands, and therefore no California linderiella habitat, would be affected under Alternative 5.

California linderiella are currently proposed for federal endangered status. If California linderiella becomes listed as endangered, loss of California linderiella habitat would be a violation of the federal Endangered Species Act.

Western Snowy Plover

- ***Impact: Disturbance to Nesting Western Snowy Plovers***

Western snowy plovers nest on the beaches at Fort Ord from the northern installation boundary to Stilwell Hall. They may also nest south of Stilwell Hall. Public beach access permitted under Alternative 5 would allow for increased human disturbance to beach and dune habitats. Nest failures and nest abandonment by western snowy plovers have been caused by human disturbance under a variety of circumstances (57 FR 1443 January 14, 1992), resulting in direct mortality to eggs and chicks.

Coastal populations of the western snowy plover are currently proposed for federal listing as threatened. If the western snowy plover becomes listed as threatened, direct mortality and loss of habitat would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Disturbance to Nesting Western Snowy Plovers***

Mitigation is the same as that described above under "Impact: Disturbance to Nesting Western Snowy Plovers" for Alternative 1.

Category 1 and 2 Candidate Species

Federal candidate species could become federally listed as threatened or endangered before reuse, and take would become a violation of the federal Endangered Species Act where projects are subject to federal jurisdiction.

- ***Impact: Loss of Federal Candidate Plant Species Populations and Habitat***

Alternative 5 would result in the loss of occupied habitat of the following plant species that are candidates for federal listing as threatened or endangered: Toro manzanita, sandmat manzanita, Monterey ceanothus, Eastwood's ericameria, coast wallflower, and wedge-leaf horkelia. Alternative 5 would result in the loss of less than 1% of the populations of each of these species at Fort Ord. Less than 1% of the known range of each of these species would be lost under Alternative 5.

The loss of federal candidate plant species would be unavoidable under Alternative 5. No Seaside bird's-beak habitat is expected to be lost under Alternative 5.

- ***Mitigation: Minimize Losses of and Establish and Protect New Populations of Federal Candidate Plant Species***

Mitigation is the same as that described above under "Impact: Loss of Federal Candidate Plant Species Populations and Habitat" for Alternative 1.

- ***Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat***

Nine federal candidate (Category 1 or 2) wildlife species are known to occur or have potential to occur at Fort Ord (Table 1-2). Listing petitions are currently being reviewed by USFWS for the black legless lizard, California tiger salamander, southwestern pond turtle, and California red-legged frog.

The Monterey dusky-footed woodrat, Monterey ornate shrew, and the black legless lizard have very limited ranges (Figures B-17, B-19, and B-21 in Appendix B). Under Alternative 5, approximately 1%, 2%, and 6% would be lost for these three species, respectively. The status of none of these species would be affected under this alternative.

Under Alternative 5, between 1% and 5% of the available habitat at Fort Ord for loggerhead shrike, tricolored blackbird, and California horned lark would be eliminated by development. California tiger salamander, California red-legged frog, and southwestern pond turtle would not be affected under Alternative 5.

Under Alternative 5, public access to beaches and dunes could reduce densities of native vegetation through foot traffic and other human impacts. A reduction in densities of native dune vegetation would degrade coastal habitat for the black legless lizard.

Some level of loss of potential habitat for federal candidate wildlife species would result under Alternative 5.

- ***Mitigation for Alternative 5: Minimize Impacts on Black Legless Lizard***

Before development in black legless lizard habitat, habitat could be enhanced in a preserve area to provide suitable unoccupied habitat for relocated animals. Black legless lizards from the area to be affected could be moved to the enhanced habitat area. (State and local agencies and private entities responsible for development)

- ***Mitigation for Alternative 5: Provide Habitat for Monterey Dusky-Footed Woodrat, Loggerhead Shrike, and Black Legless Lizard by Avoiding, Enhancing, and Protecting Maritime Chaparral***

Proposed developments could be designed to avoid maritime chaparral to the greatest extent possible. Fences could be erected during construction to prevent additional unnecessary loss of maritime chaparral from construction spillover activities. Degraded areas of maritime chaparral could be enhanced by removing unnecessary roads and structures and regrading the surface to enhance regeneration of natural vegetation. (State and local agencies and private entities responsible for development)

Limiting the loss of maritime chaparral would preserve habitat for the Monterey dusky-footed woodrat and loggerhead shrike and possibly inland habitat for the black legless lizard.

- ***Mitigation: Minimize Degradation of Black Legless Lizard Habitat in the Coastal Dune Zone***

Mitigation is the same as that described above under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use" for Alternative 1. Preserving Smith's blue butterfly habitat also would preserve coastal habitat for the black legless lizard.

- ***Mitigation: Provide Habitat for Monterey Dusky-Footed Woodrat and Monterey Ornate Shrew by Limiting Losses and Compensating for Losses of Coast Live Oak Woodland and Savanna through State Policies, Local Agency General Land Use Plan Policies, and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Provide Habitat for Tricolored Blackbird, California Horned Lark, and Loggerhead Shrike by Limiting Losses of Grasslands through Local Agency General land Use Plan Policies and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

ALTERNATIVE 6

Sand Gilia

- ***Impact: Loss of Sand Gilia Populations and Habitat***

Under Alternative 6, approximately 890 acres of occupied sand gilia habitat would be lost. This habitat supports sand gilia at high densities on approximately 20 acres, medium densities on approximately 190 acres, and low densities on approximately 690 acres. Maritime chaparral and coastal scrub habitat on sandy soils is potential suitable habitat for sand gilia. Approximately 1,570 acres of potential habitat would be lost under Alternative 6. Sites where future natural and artificial short-term disturbances occur in maritime chaparral and coastal scrub would result in suitable habitat for sand gilia.

Sand gilia is federally listed as endangered. Removal of individuals or populations of sand gilia is a violation of the Endangered Species Act. The loss of sand gilia populations would be unavoidable under Alternative 6.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

Smith's Blue Butterfly

- ***Impact: Loss of Smith's Blue Butterfly Habitat***

Under Alternative 6, roughly 1% (approximately 2 acres) of the Smith's blue butterfly habitat at Fort Ord would be eliminated by development.

The habitat at Fort Ord has been identified in the Smith's blue butterfly recovery plan (U.S. Fish and Wildlife Service 1984) as important for the recovery of the species. The Smith's blue butterfly is listed as a federally endangered species. Loss of habitat or populations would violate the federal Endangered Species Act.

- ***Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use***

Public beach access permitted under Alternative 6 would allow increased human disturbance to beach and dune habitats. Foot traffic and other human impacts associated with increased use could damage host plants and degrade Smith's blue butterfly habitat in the coastal dune zone. Degradation of Smith's blue butterfly habitat would violate the federal Endangered Species Act.

- ***Mitigation: Avoid Development in Smith's Blue Butterfly Habitat***

Mitigation is the same as that described above under "Impact: Loss of Smith's Blue Butterfly Habitat" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

American Peregrine Falcon

American peregrine falcons do not nest at or near Fort Ord, and no suitable nesting habitat occurs on the installation. Also, Fort Ord is not an important foraging area for the species. American peregrine falcons would not be affected under Alternative 6.

Southern Sea Otter

Southern sea otter would not be affected under Alternative 6.

Monterey Spineflower

- ***Impact: Loss of Monterey Spineflower Populations and Habitat***

Under Alternative 6, approximately 3,070 acres of habitat occupied by Monterey spineflower would be lost. This habitat area supports Monterey spineflower at high densities on approximately 320 acres, medium densities on approximately 1,040 acres, and low densities on approximately 1,720 acres.

Monterey spineflower is proposed for listing as endangered under the federal Endangered Species Act and could become listed during the time of disposal and reuse. If the Monterey spineflower becomes listed, the removal of individuals or populations would be a violation of the Endangered Species Act. The loss of Monterey spineflower populations would be unavoidable under Alternative 6.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

Robust Spineflower

Robust spineflower would not be affected under Alternative 6.

California Linderiella

- *Impact: Loss of California Linderiella Habitat*

Under Alternative 6, roughly 15% (approximately 10 acres) of the potential California linderiella habitat at Fort Ord would be eliminated by development. None of the five vernal pools and ponds where California linderiella are known to occur would be eliminated.

California linderiella are currently proposed for federal endangered status. If California linderiella becomes listed as endangered, loss of California linderiella habitat would be a violation of the federal Endangered Species Act.

- *Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP*

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- *Mitigation: Avoid or Limit Losses and Restore Vernal Pools, Freshwater Marshes, Streams, and Ponds*

Mitigation is the same as that described above under "Impact: Loss of California Linderiella Habitat" for Alternative 1.

Western Snowy Plover

- *Impact: Disturbance to Nesting Western Snowy Plovers*

Western snowy plovers nest on the beaches at Fort Ord from the northern installation boundary to Stilwell Hall. They may also nest south of Stilwell Hall. Public beach access permitted under Alternative 6 would allow for increased human disturbance to beach and dune habitats. Nest failures and nest abandonment by western snowy plovers have been caused by human disturbance under a variety of circumstances (57 FR 1443 January 14, 1992), resulting in direct mortality to eggs and chicks.

Coastal populations of the western snowy plover are currently proposed for federal listing as threatened. If the western snowy plover becomes listed as threatened, direct mortality and loss of habitat would violate the federal Endangered Species Act.

- ***Mitigation: Minimize Disturbance to Nesting Western Snowy Plovers***

Mitigation is the same as that described above under "Impact: Disturbance to Nesting Western Snowy Plovers" for Alternative 1.

Category 1 and 2 Candidate Species

Federal candidate species could become federally listed as threatened or endangered before reuse, and take would become a violation of the federal Endangered Species Act where projects are subject to federal jurisdiction.

- ***Impact: Loss of Federal Candidate Plant Species Populations and Habitat***

Alternative 6 would result in the loss of approximately 10%, 15%, 10%, and 10% of the populations of Toro manzanita, sandmat manzanita, Monterey ceanothus, and Eastwood's ericameria, respectively, at Fort Ord. Approximately 5-15% of the known range of both Toro manzanita and Eastwood's ericameria, 5-20% of the known range of sandmat manzanita, and 5-10% of the known range of Monterey ceanothus would be lost under Alternative 6.

Approximately 5% of the occupied habitat of Hickman's onion, 40% of the occupied habitat of coast wallflower, and 15% of the occupied habitat of wedge-leafed horkelia at Fort Ord would be removed under Alternative 6. Alternative 6 would result in the loss of less than 1% of the known range of Hickman's onion, less than 2% of the known range of wedge-leaved horkelia, and approximately 2-10% of the known range of coast wallflower.

One population of Yadon's piperia has been identified at Fort Ord and would be completely removed under Alternative 6. Less than 1% of the known habitat of Yadon's piperia would be lost under Alternative 6.

Fort Ord does not represent as large a portion of the species range for Hickman's onion, coast wallflower, wedge-leaf horkelia, and Yadon's piperia as for the other candidate species (Table 1-1).

The loss of federal candidate plant species would be unavoidable under Alternative 6. No Seaside bird's-beak habitat is expected to be lost under Alternative 4, 5, or 6.

- ***Mitigation: Minimize Losses of and Establish and Protect New Populations of Federal Candidate Plant Species***

Mitigation is the same as that described above under "Impact: Loss of Federal Candidate Plant Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1.

- ***Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat***

Nine federal candidate (Category 1 or 2) wildlife species are known to occur or have potential to occur at Fort Ord (Table 1-2). Listing petitions are currently being reviewed by USFWS for the black legless lizard, California tiger salamander, southwestern pond turtle, and California red-legged frog.

The Monterey dusky-footed woodrat, Monterey ornate shrew, and the black legless lizard have very limited ranges (Figures B-17, B-19, and B-21 in Appendix B). Under Alternative 6, approximately 33%, 23%, and 59% of suitable habitat at Fort Ord would be lost for these three species, respectively. Because the extent of habitat loss under Alternative 6 represents a substantial portion of the known ranges, the status of the black legless lizard and Monterey ornate shrew could be elevated to threatened or endangered. Additionally, public access to beaches and dunes under Alternative 6 could reduce densities of native vegetation through foot traffic and other human impacts. A reduction in densities of native dune vegetation would degrade coastal habitat for the black legless lizard.

Under Alternative 6, between 15% and 30% of the available habitat at Fort Ord for loggerhead shrike, California horned lark, and California tiger salamander would be eliminated by development. One known tiger salamander breeding pond and portions of salamander and pond turtle upland habitat would be lost. From 9% to 10% of the available tricolored blackbird, California red-legged frog, and southwestern pond turtle habitat would also be lost under Alternative 6.

Some level of loss of potential habitat for federal candidate wildlife species would be unavoidable under Alternative 6.

- ***Mitigation: Preserve Populations and Habitat of Federally Listed, Proposed, and Candidate Plants and Wildlife through a Multispecies HMP***

Recipients of disposed Fort Ord lands would be required to follow the management and land use guidelines in the multispecies disposal HMP developed by the Army. The

disposal HMP is discussed under "Impacts and Mitigation for Disposal Actions" in Chapter 5.

- ***Mitigation: Minimize Degradation of Black Legless Lizard Habitat in the Coastal Dune Zone***

Mitigation is the same as that described above under "Impact: Degradation of Smith's Blue Butterfly Habitat from Recreational Use" for Alternative 1. Preserving Smith's blue butterfly habitat also would preserve coastal habitat for the black legless lizard.

- ***Mitigation: Preserve Maritime Chaparral Habitat through Development and Implementation of an NCCP***

Mitigation is the same as that described above under "Impact: Loss of Sand Gilia Populations and Habitat" for Alternative 1. Preservation of maritime chaparral habitat would preserve habitat for Monterey dusky-footed woodrat, loggerhead shrike, and where the species occurs on sandy soil, black legless lizard inland habitat.

- ***Mitigation: Provide Habitat for Monterey Dusky-Footed Woodrat and Monterey Ornate Shrew by Limiting Losses and Compensating for Losses of Coast Live Oak Woodland and Savanna through State Policies, Local Agency General Land Use Plan Policies, and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Provide Habitat for Tricolored Blackbird, California Horned Lark, and Loggerhead Shrike by Limiting Losses of Grasslands through Local Agency General Land Use Plan Policies and Regional Programs***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

- ***Mitigation: Provide Habitat for the Monterey Ornate Shrew by Avoiding and Compensating for Losses of Riparian Forest***

Mitigation is the same as that described above under "Impact: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

Preventing losses of riparian forest would preserve habitat for the Monterey ornate shrew.

- ***Mitigation: Provide Habitat for California Linderiella, California Tiger Salamander, California Red-Legged Frog, and Southwestern Pond Turtle by Avoiding or Limiting Losses and Restoring Vernal Pools, Freshwater Marsh, Streams, and Ponds***

Mitigation would be the same as that described above under "Impact: Loss of California Linderiella Habitat" for Alternative 1.

Minimizing impacts on vernal pools and ponds would preserve habitat for California tiger salamander, California red-legged frog, and southwestern pond turtle.

- ***Mitigation: Avoid or Minimize Impacts on Upland Habitat***

Mitigation is the same as that described above under "Impacts: Reduction of Federal Candidate Wildlife Species Populations and Habitat" for Alternative 1.

IMPACTS AND MITIGATION FOR LISTED, PROPOSED, AND CANDIDATE SPECIES FROM SUBALTERNATIVES INVOLVING THE PRESIDIO OF MONTEREY ANNEX AND RESERVE CENTER

This section discusses the impacts and recommended mitigation measures associated with the various subalternatives involving the POM annex and reserve center.

- ***Impact: Additional Habitat Losses from No Presidio of Monterey Annex/No Reserve Center Alternatives***

Under Subalternative A (for Alternatives 1, 2, and 5), reuse concepts are proposed with no POM annex and reserve center.

Under Alternative 1, Subalternative A, impacts and mitigation would be similar to those under Alternative 1. However, without development of the POM annex and reserve center, some areas within the proposed POM annex footprint would be converted to new land uses (university and hotel). Small areas of native vegetation may be removed to allow for construction of new facilities associated with these land uses. Small populations or individuals of the following plant and wildlife species could be affected: Monterey spineflower, sandmat manzanita, Monterey ceanothus, Monterey ornate shrew, Monterey dusky-footed woodrat, and black legless lizard. Monterey spineflower is proposed for federal listing as endangered. If it becomes listed, the loss of individuals or populations of the species would be a violation of the Endangered Species Act. Under Alternative 2, Subalternative A, the impacts on vegetation, wildlife, and wetland resources resulting from reuse would be essentially the same as those under Alternative 2.

Under Alternative 5, Subalternative A, reuse impacts and mitigation would be the same as those under Alternative 5, except that the following reduction in impacts would occur:

- reduced impacts on oak woodlands and grassland;

- no loss of maritime chaparral;
- no impacts on sand gilia;
- reduced impacts on Monterey spineflower;
- reduced impacts on federal candidate plant species;
- reduced impacts on wildlife species that occur in maritime chaparral, oak woodlands, and grassland; and
- reduced impacts on black legless lizard.

Mitigation would be the same as that described under Alternative 5 except where impacts are avoided and mitigation is no longer needed.

- ***Mitigation for Alternative 1, Subalternative A***

No additional mitigation is required for Alternative 1, Subalternative A.

- ***Impact: Additional Habitat Losses from Seaside's Recommended Presidio of Monterey Annex and Reserve Center***

Under Subalternative B (for Alternatives 1 and 2), reuse concepts are proposed incorporating the City of Seaside's recommended POM annex and reserve center.

Under Subalternative B, the impacts and mitigation for reuse would be similar to those under Alternatives 1 and 2. Under this subalternative, buildout of Seaside's recommended POM annex would slightly increase the amount of habitat eliminated by development compared to Alternative 1 because Seaside's recommended POM annex would adversely affect areas currently designated as open space. Approximately 3% of additional coastal scrub would be eliminated under this subalternative. No additional federally endangered or proposed endangered wildlife species would be affected.

- ***Mitigation for Alternatives 1 and 2, Subalternative B: No additional mitigation is required for Alternatives 1 and 2, Subalternative B.***

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Rutherford, Connie. Biologist. U.S. Fish and Wildlife Service, Ventura, CA. February 18, 1993 - telephone conversation.

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Appendix A. Scientific and Common Names of Plant and Wildlife Species Mentioned in the Text

Scientific and Common Names of Plant Species Mentioned in the Text

Scientific Name	Common Name
Allium hickmanii	Hickman's onion
Arctostaphylos hookeri	Hooker's manzanita
Arctostaphylos montereyensis	Toro manzanita
Arctostaphylos pumila	Sandmat manzanita
Arctostaphylos tomentosa ssp. *tomentosa*	Shaggy-barked manzanita
Artemisia californica	California sagebrush
Baccharis pilularis var. *consanguinea*	Coyote brush/chaparral broom
Carpobrotus edulis	African ice plant/Hottentot fig
Ceanothus rigidus	Monterey ceanothus
Chorizanthe pungens var. *pungens*	Monterey spine-flower
Eleocharis macrostachya	Common spike-rush
Elymus glaucus	Woodland/blue rye-grass
Ericameria fasciculata	Eastwood's ericameria
Eriogonum parvifolium	Seacliff buckwheat
Eryngium vaseyi	Vasey's coyote-thistle
Erysimum ammophilum	Coast wallflower
Gilia tenuiflora ssp. *arenaria*	Sand gilia
Horkelia cuneata var. *sericea*	Wedge-leaf harkelia
Lythrum hyssopifolia	Hyssop loosestrife
Piperia yadonii	Yadon's piperia
Polygonum amphibium	Water smartweed
Quercus agrifolia	Coast live oak
Salvia mellifera	Black sage
Stipa pulchra	Purple needlegrass
Typha latifola	Broad-leaved cattail

Scientific and Common Names of Wildlife Species Mentioned in the Text

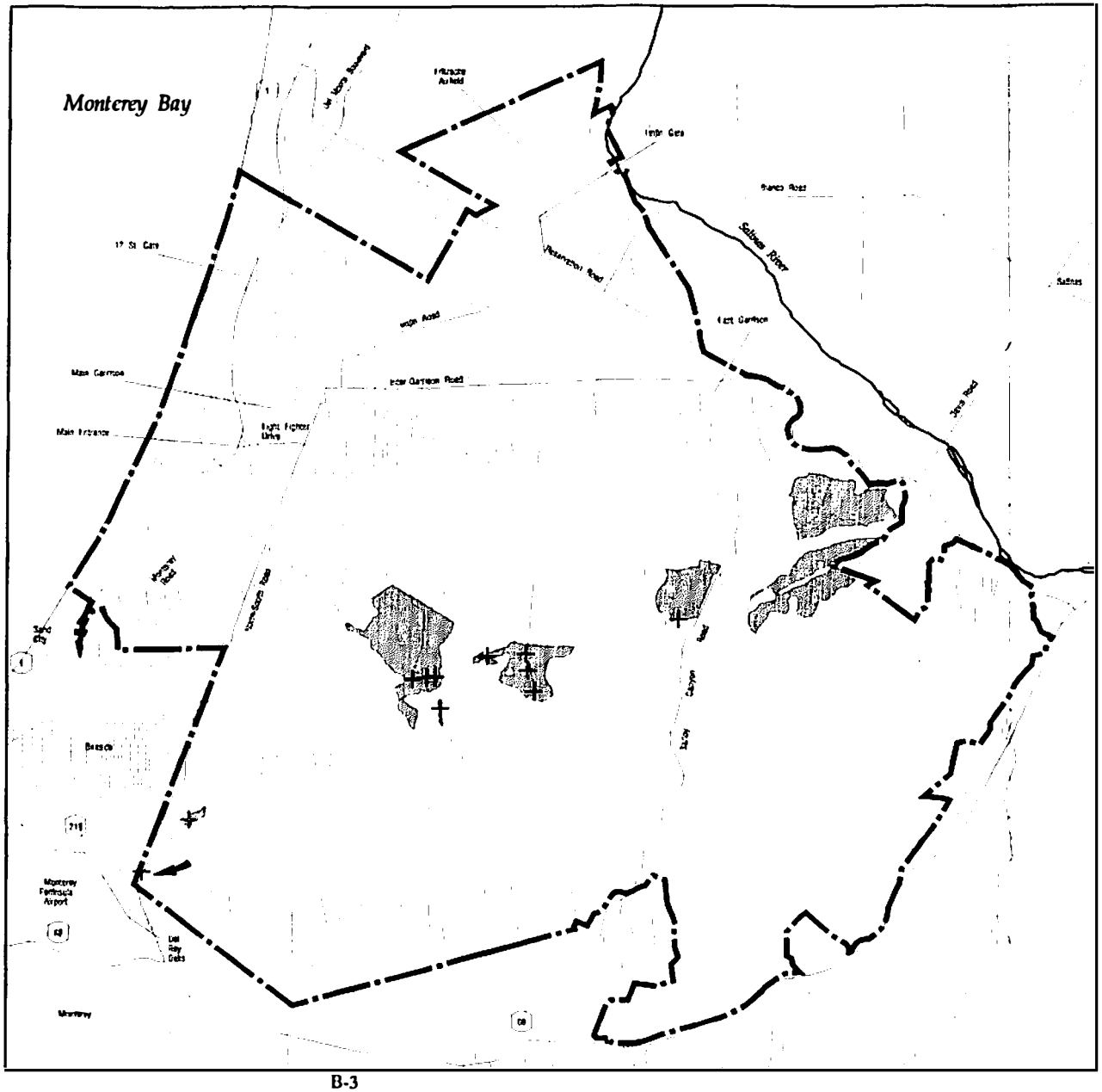
Common Name	Scientific Name
TURTLES, LIZARDS, AND SNAKES (REPTILIA)	
Turtles (Testudines)	
Southwestern pond turtle	*Clemmys marmorata pallida*
Lizards and Snakes (Squamata)	
Western fence lizard	*Sceloporus occidentalis*
Black legless lizard	*Anniella pulchra nigra*
Common garter snake	*Thamnophis sirtalis*
SALAMANDERS, TOADS, AND FROGS (AMPHIBIA)	
Salamanders (Caudata)	
California tiger salamander	*Ambystoma tigrinum californiense*
California slender salamander	*Batrachoseps attenuatus*
Toads and Frogs (Salientia)	
Western spadefoot	*Scaphiopus hammondi*
Pacific treefrog	*Hyla regilla*
BIRDS (AVES)	
Albatrosses, Shearwaters, Petrels, and Relatives (Procellariiformes)	
Short-tailed albatross	*Diomedea albatrus*
Tropicbirds, Pelicans, and Relatives (Pelecaniformes)	
California brown pelican	*Pelecanus occidentalis californicus*
Screamers, Ducks, and Relatives (Anseriformes)	
Mallard	*Anas platyrhynchos*

Common Name	Scientific Name
Vultures, Hawks, and Falcons (Falconiformes)	
Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
American peregrine falcon	*Falco peregrinus anatum*
Megapodes, Curassows, Pheasants, and Relatives (Galliformes)	
California quail	*Callipepla californica*
Shorebirds, Gulls, and Relatives (Charadriiformes)	
Wesern snowy plover	*Charadrius alexandrinus nivosus*
Marbled godwit	*Limosa fedoa*
Sanderling	*Calidris alba*
Western sandpiper	*Calidris mauri*
California least tern	*Sterna antillarum browni*
Elegant tern	*Sterna elegans*
Marbled murrelet	*Brachyramphus marmoratus*
Pigeons and Doves (Columbiformes)	
Mourning dove	*Zenaida macroura*
Owls (Strigiformes)	
Great horned owl	*Bubo virginianus*
Kingfishers and Relatives (Coraciiformes)	
Nuttall's woodpecker	*Picoides nuttallii*
Perching Birds (Passeriformes)	
Olive-sided flycatcher	*Contopus borealis*
Horned lark	*Eremophila alpestris*
Scrub jay	*Aphelocoma coerulescens*
Marsh wren	*Cistothorus palustris*
Western bluebird	*Sialia mexicana*
California thrasher	*Toxostoma redivivum*
Loggerhead shrike	*Lanius ludovicianus*
Orange-crowned warbler	*Vermivora celata*

Common Name	Scientific Name
Wilson's warbler	*Wilsonia pusilla*
Dark-eyed junco	*Junco hyemalis*
Red-winged blackbird	*Agelaius phoeniceus*
Tricolored blackbird	*Agelaius tricolor*
Western meadowlark	*Sturnella neglecta*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
MAMMALS (MAMMALIA)	
Shrews and Moles (Insectivora)	
Monterey ornate shrew	*Sorex ornatus salarius*
Rabbits, Hares, and Pikas (Lagomorpha)	
Brush rabbit	*Sylvilagus bachmani*
Squirrels, Rats, Mice, and Relatives (Rodentia)	
California ground squirrel	*Spermophilus beecheyi*
Narrow-faced kangaroo rat	*Dipodomys venustus*
California mouse	*Peromyscus californicus*
Monterey dusky-footed woodrat	*Neotoma fuscipes luciana*
Heermann's kangaroo rat	*Dipodomys heermanni*
Deer mouse	*Peromyscus maniculatus*
Carnivores (Carnivora)	
Coyote	*Canis latrans*
Gray fox	*Urocyon cinereoargenteus*
Red fox	*Vulpes vulpes*
Raccoon	*Procyon lotor*
Striped skunk	*Mephitis mephitis*
Southern sea otter	*Enhydra lutris nereis*
Pigs, Deer, and Relatives (Artiodactyla)	
Black tailed deer	*Odocoileus hemionus columbianus*

Common Name	Scientific Name
INVERTEBRATES	
Crustaceans (Crustacea)	
California linderiella	*Linderiella occidentalis*
Insects (Insecta)	
Smith's blue butterfly	*Euphilotes enoptes smithi*

Appendix B. Distributional Maps of Federal Candidate Species



B-3

Figure B-1

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

0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure B-2

Known Distribution of Seaside Bird's-Beak *(Cordylanthus rigidus* var. *littoralis)*

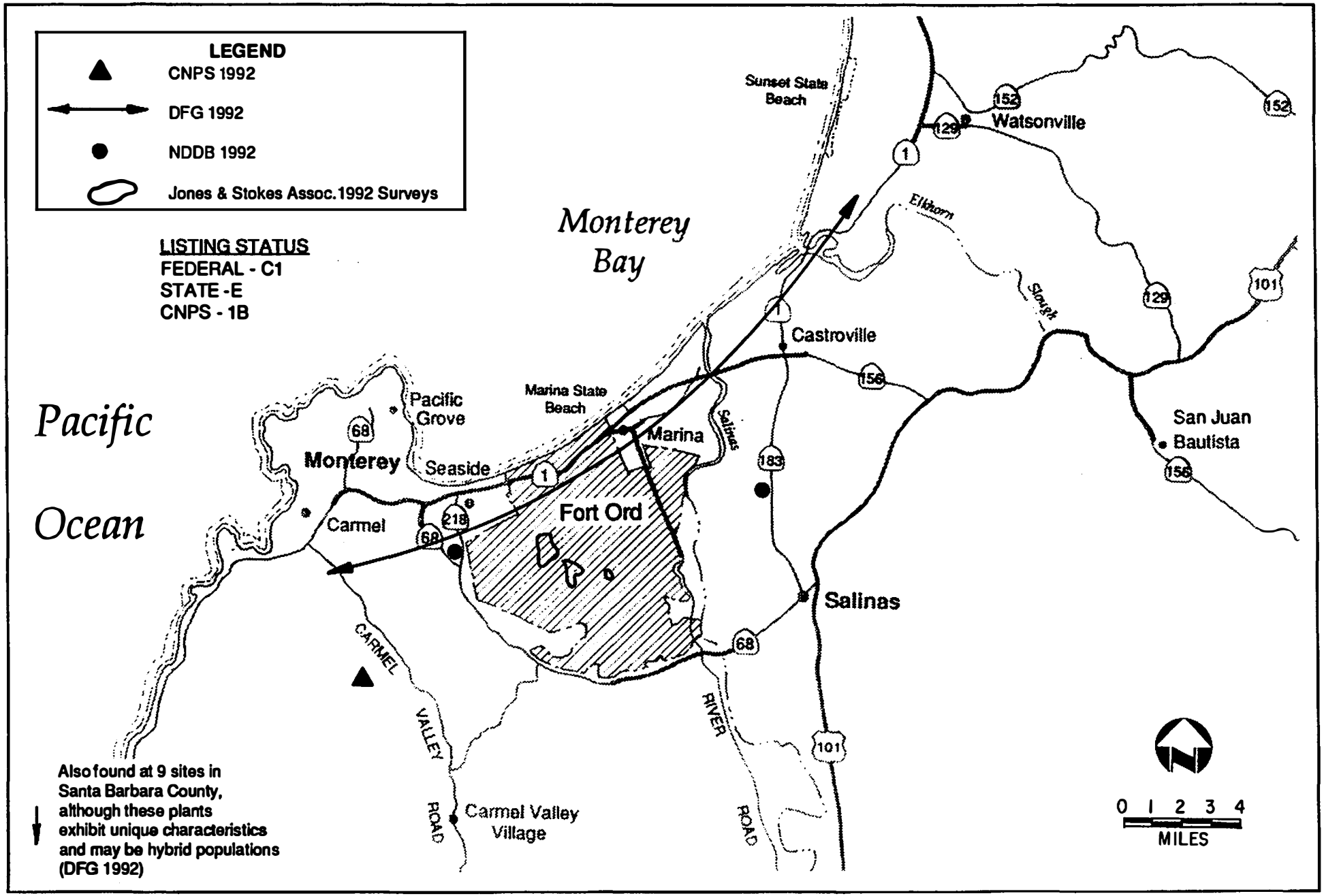
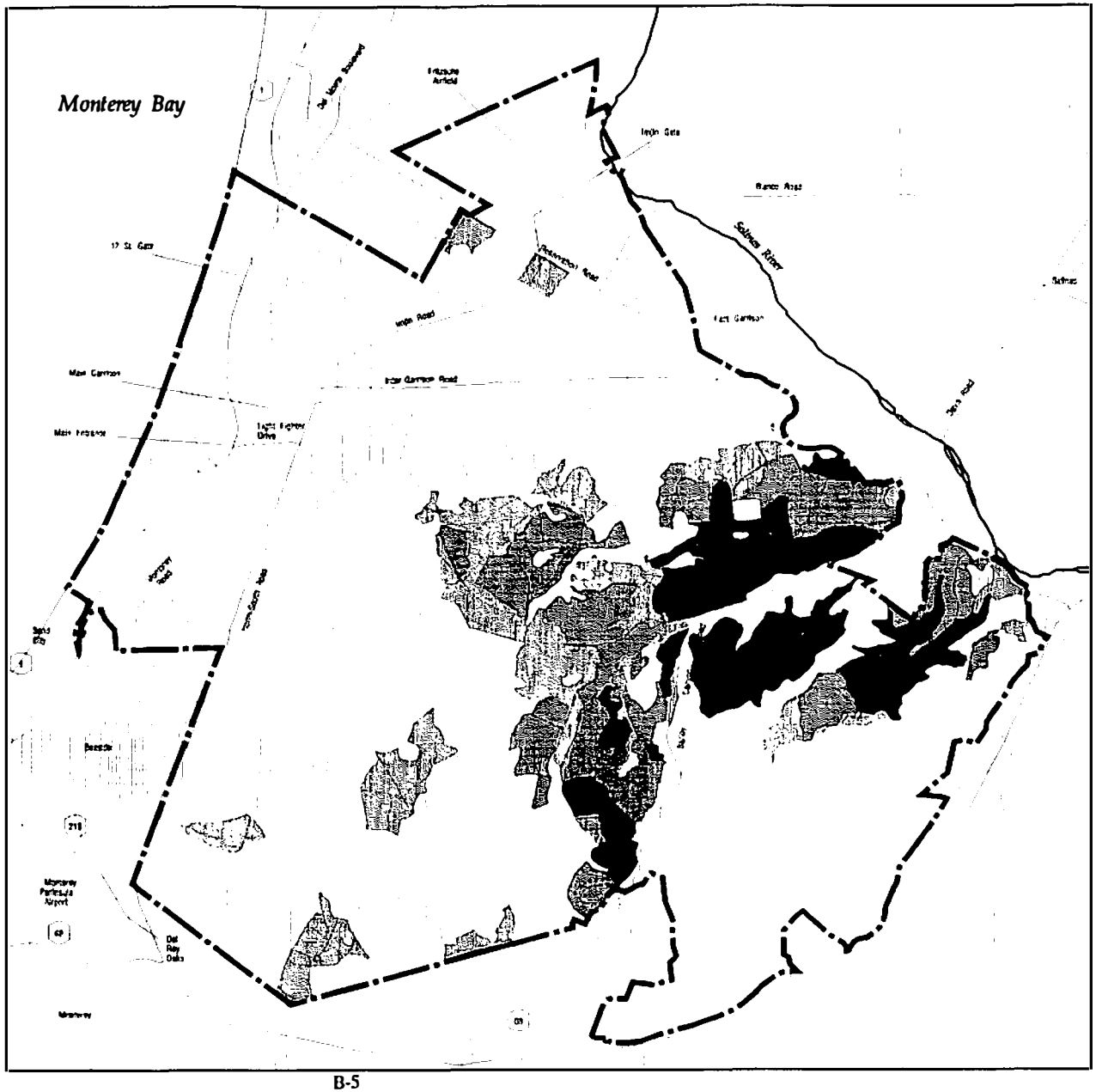


Figure B-3

Known Distribution of Toro Manzanita
(Arctostaphylos montereyensis)
at Fort Ord



Listing Status
Federal - C2
State - none
CNPS - 1B

Density of Occurrence

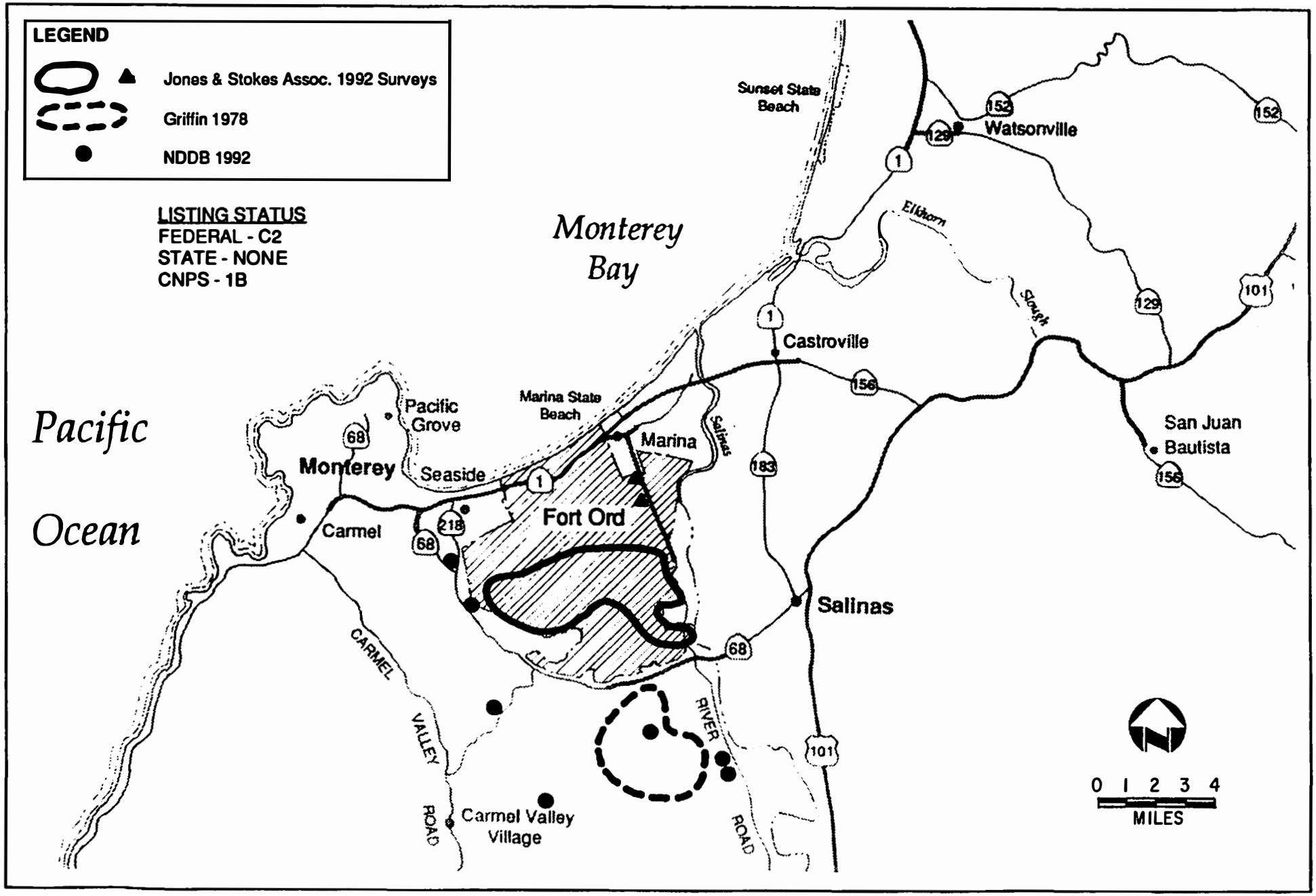
- *Low Density*
- *Medium Density*
- *High Density*

Scale 1:60,000

0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure B-4

Known Distribution of Toro Manzanita *(Arctostaphylos montereyensis)*



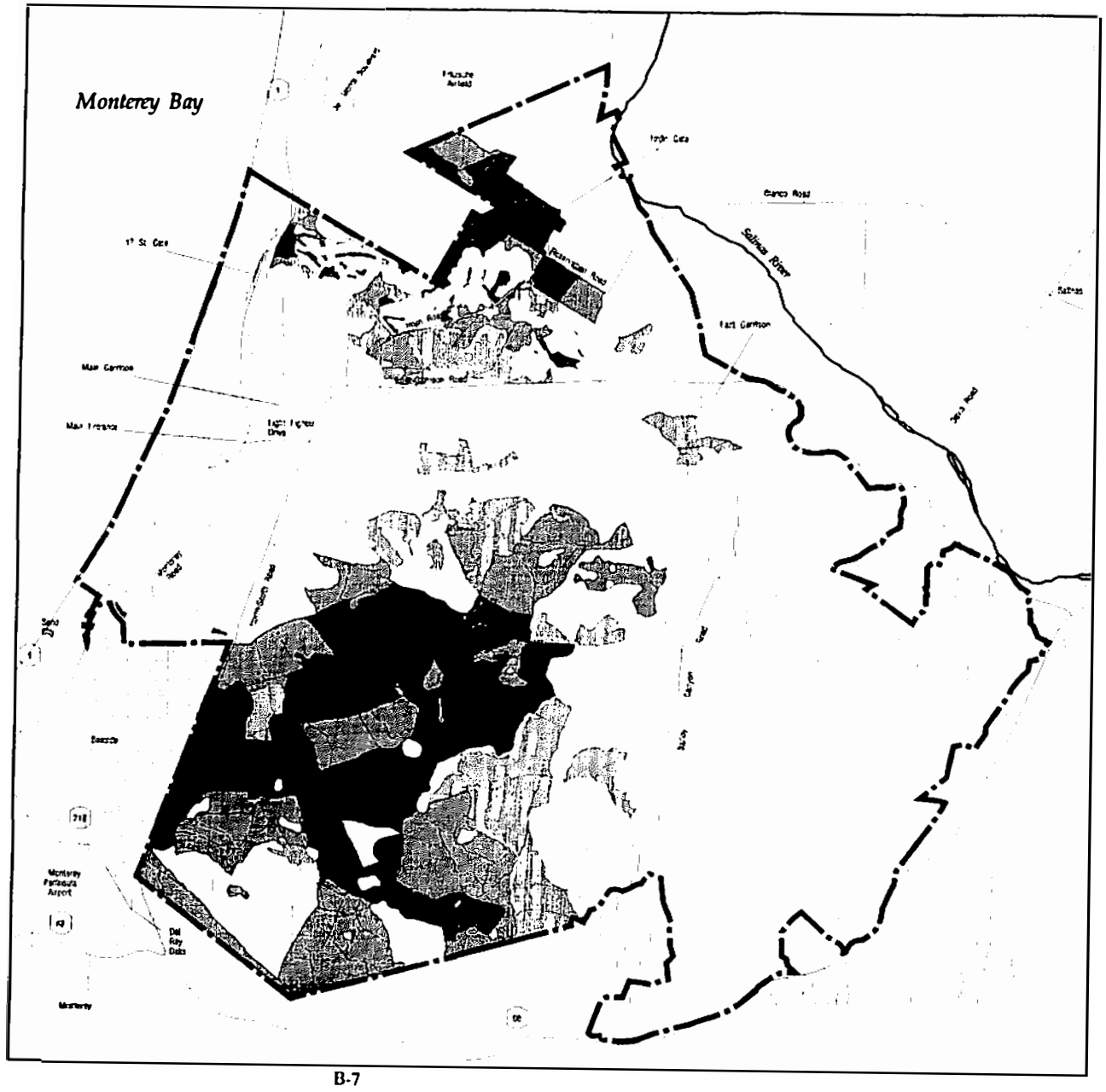


Figure B-5

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 B-6

Known Distribution of Sandmat Manzanita *(Arctostaphylos pumila)*

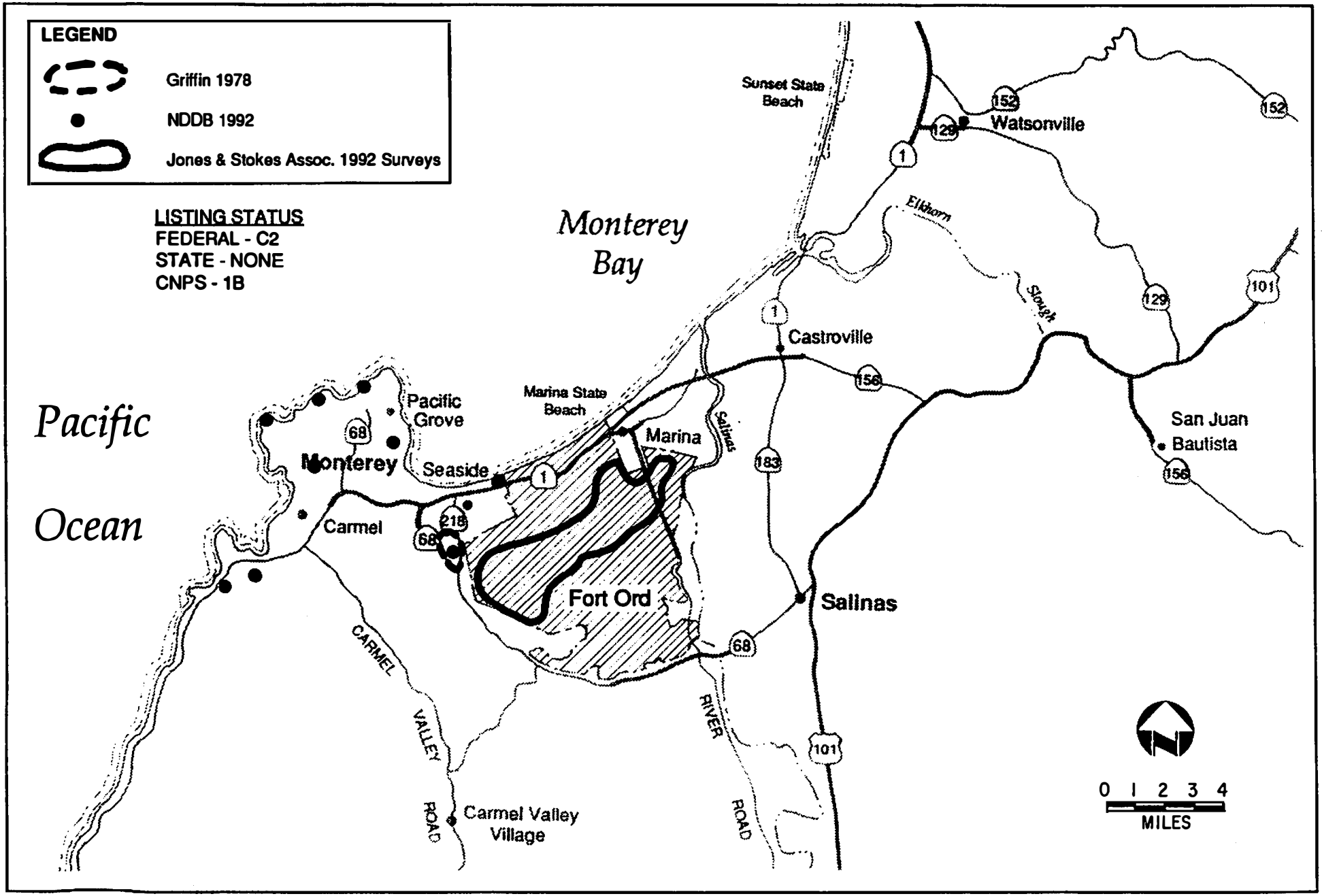
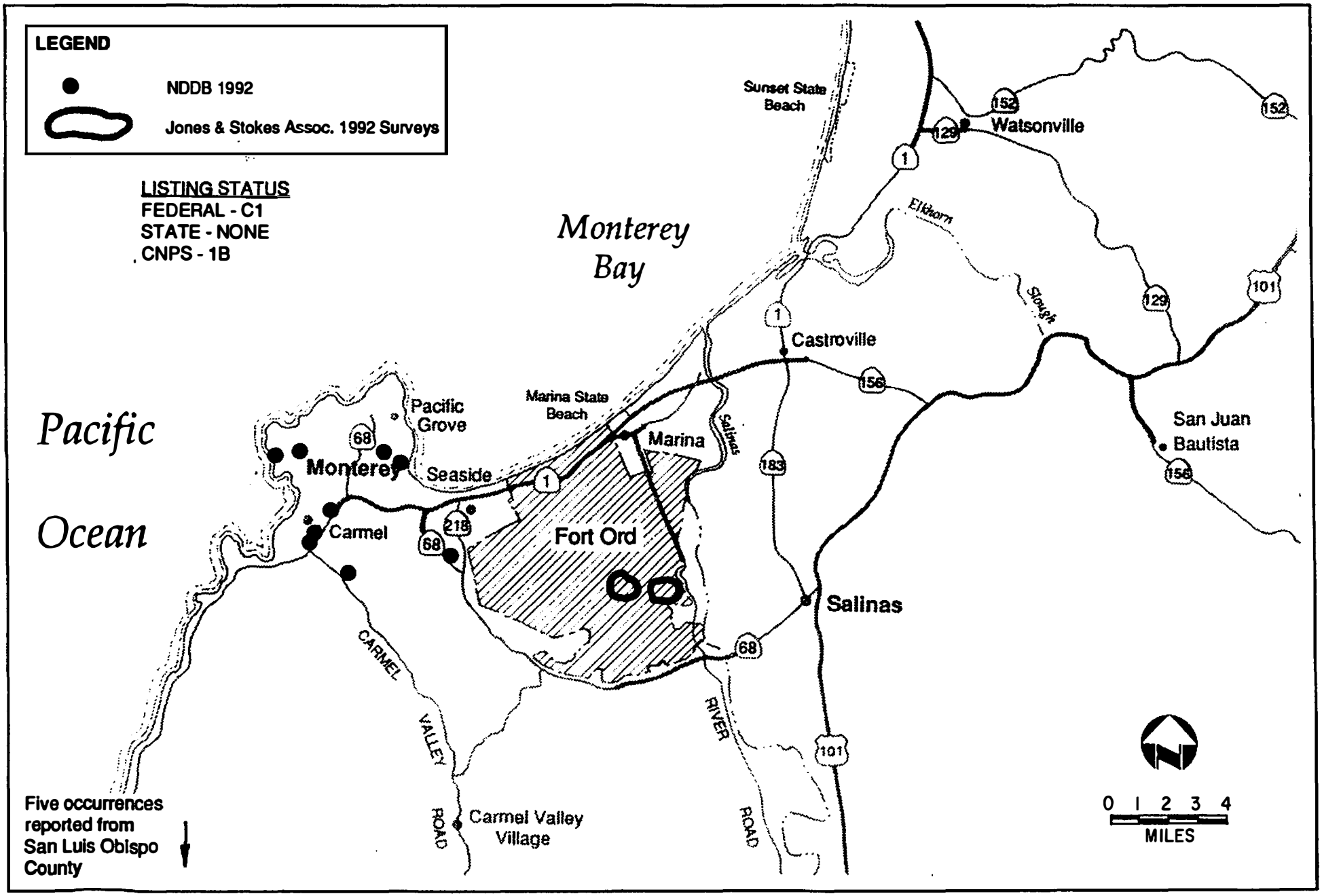
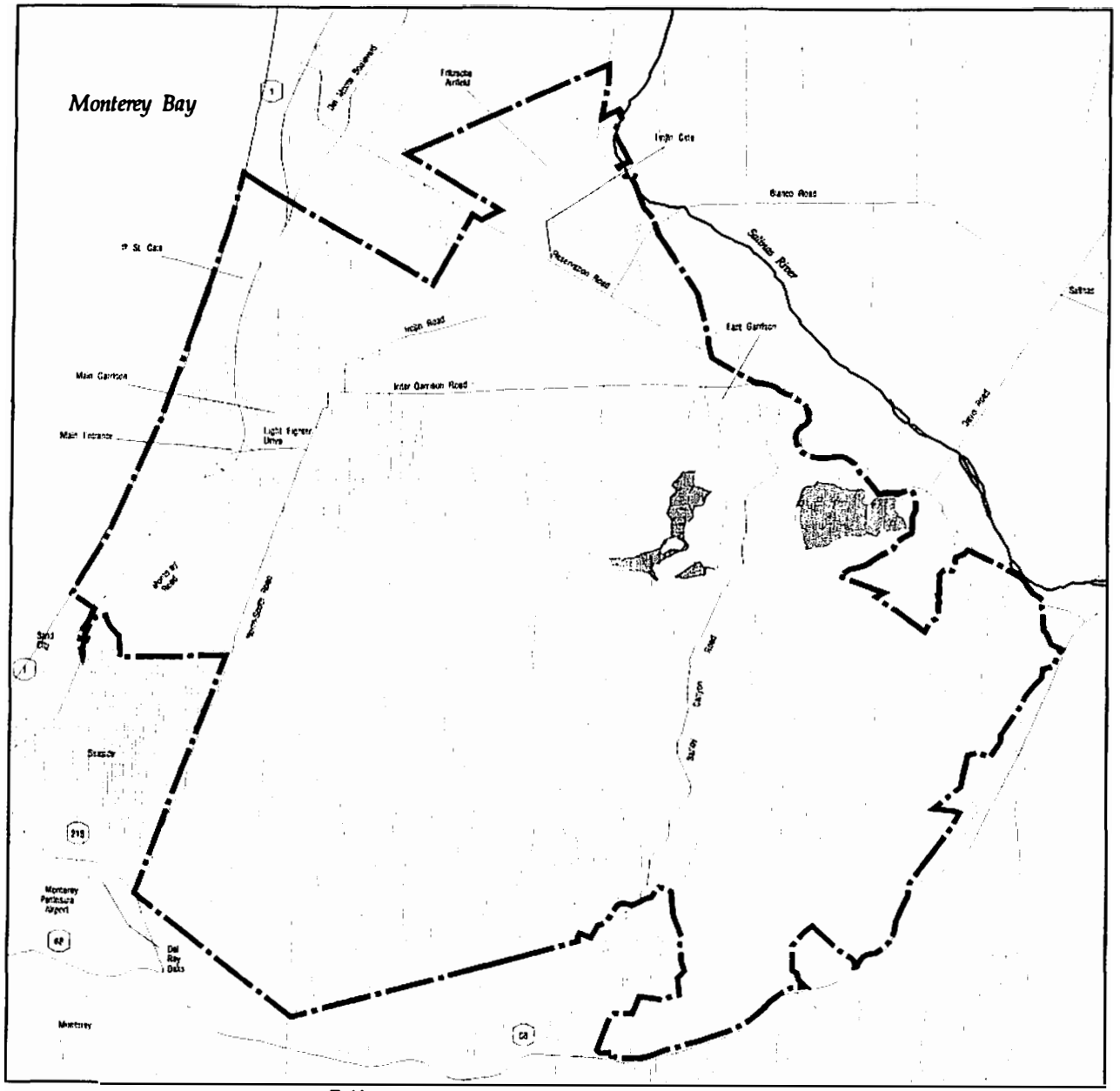


Figure B-7

Known Distribution of Hickman's Onion *(Allium hickmanii)*





B-10

Figure B-8

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***

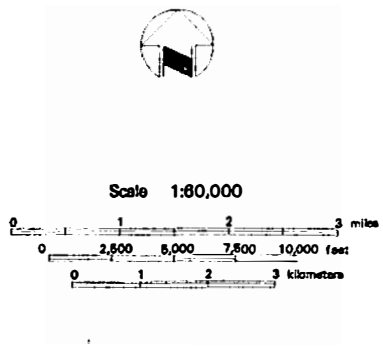
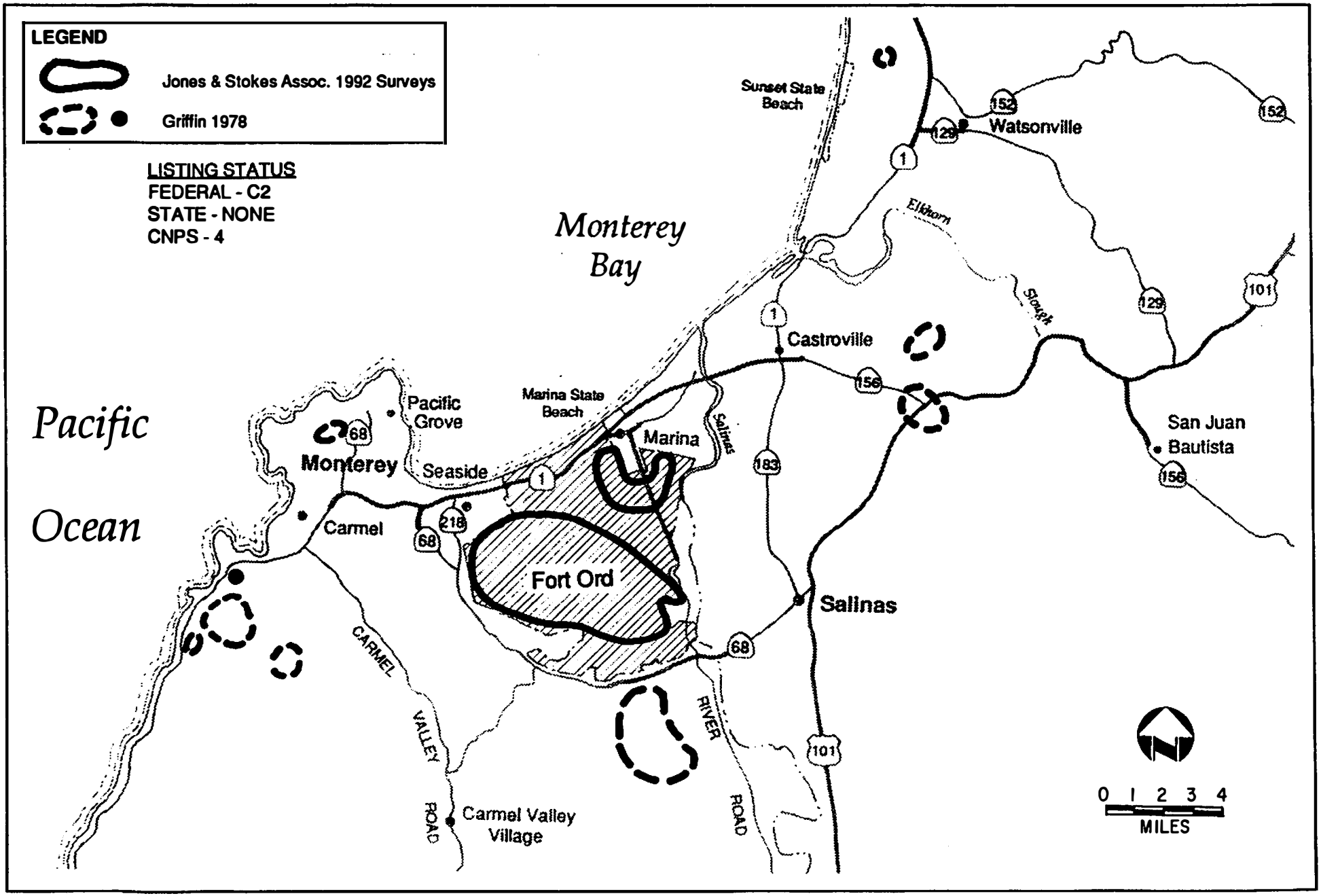


Figure B-9

Known Distribution of Monterey Ceanothus *(Ceanothus rigidus)*



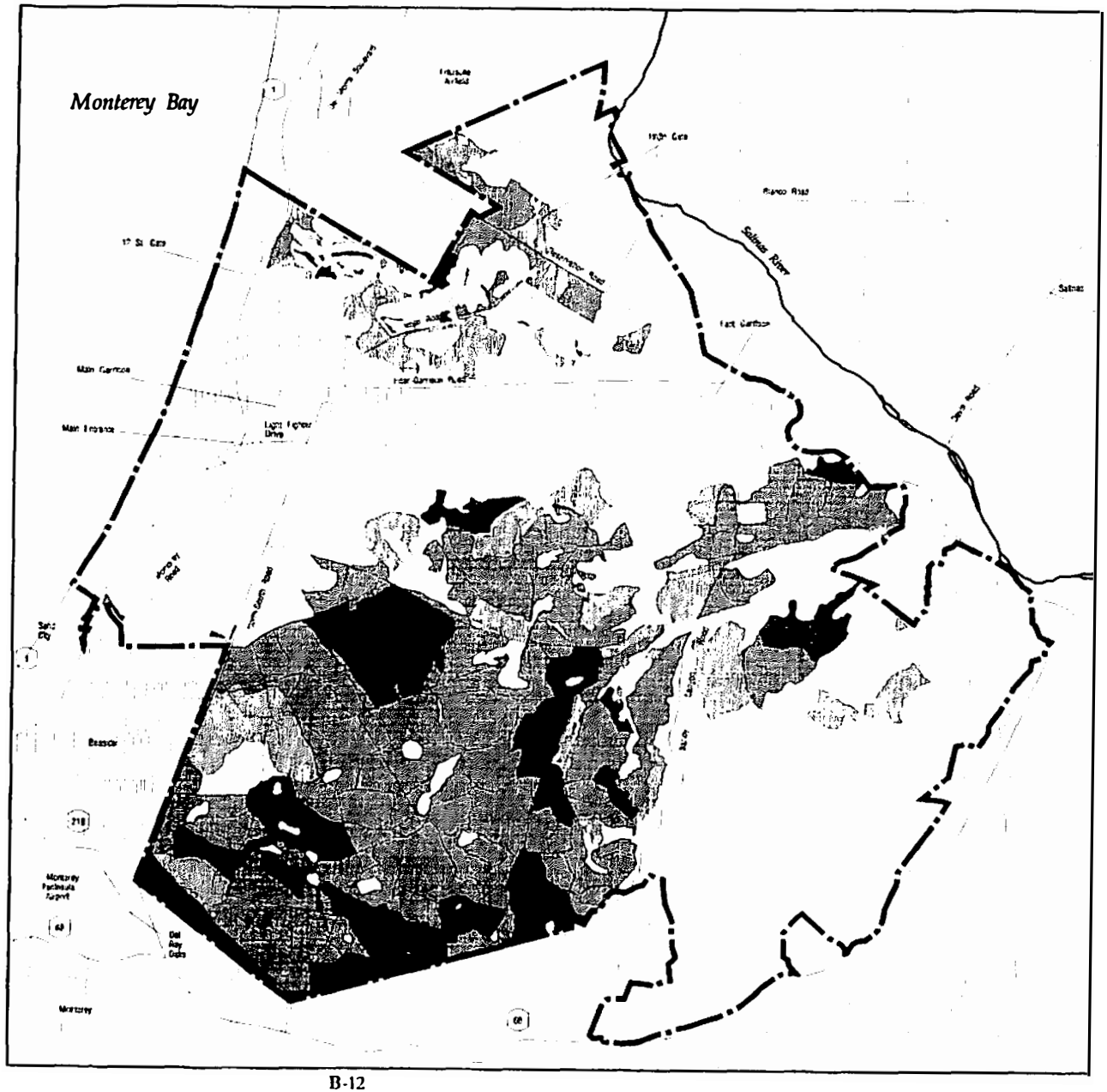


Figure B-10

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

0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure B-11

Known Distribution of Eastwood's Ericameria *(Ericameria fasciculata)*

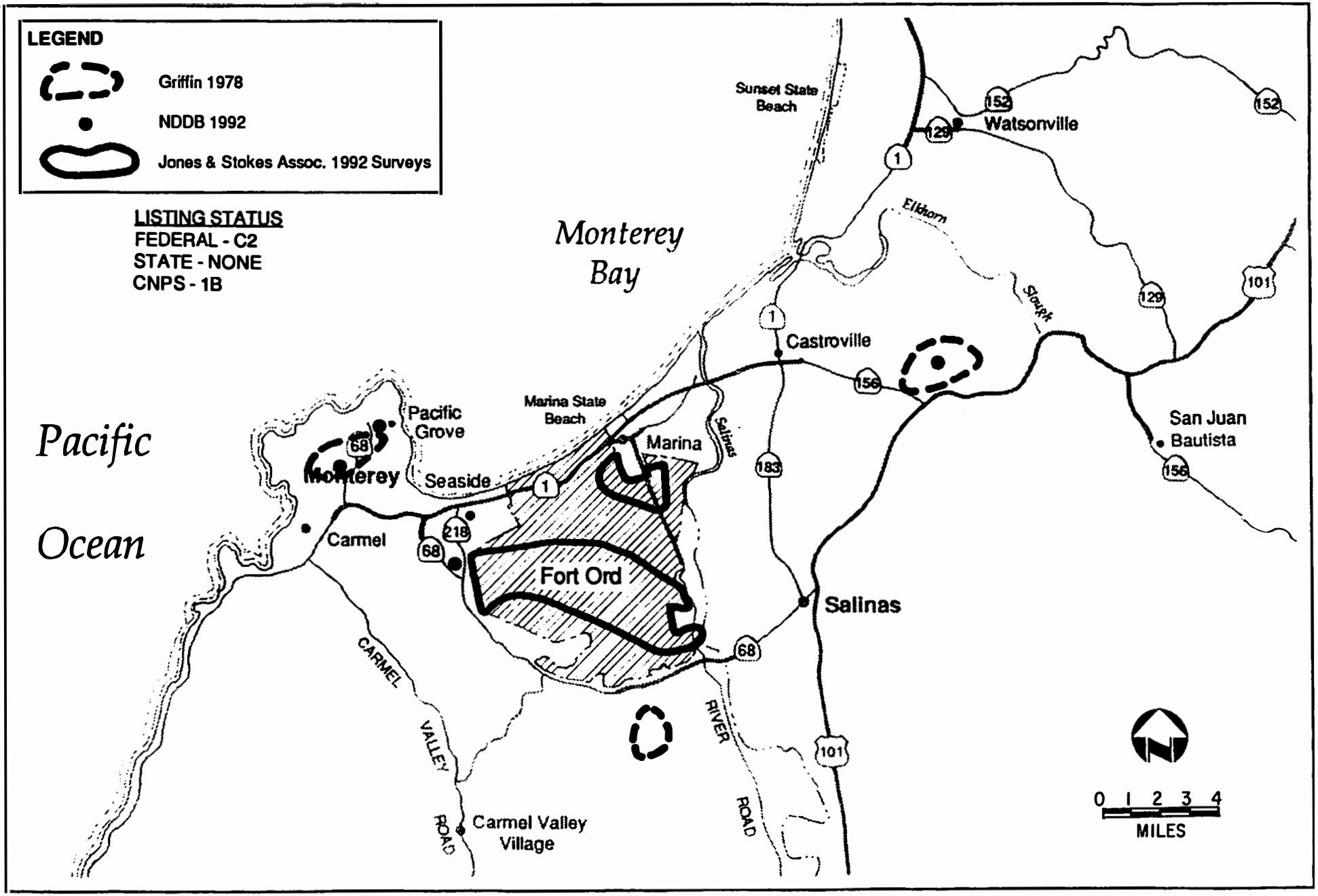
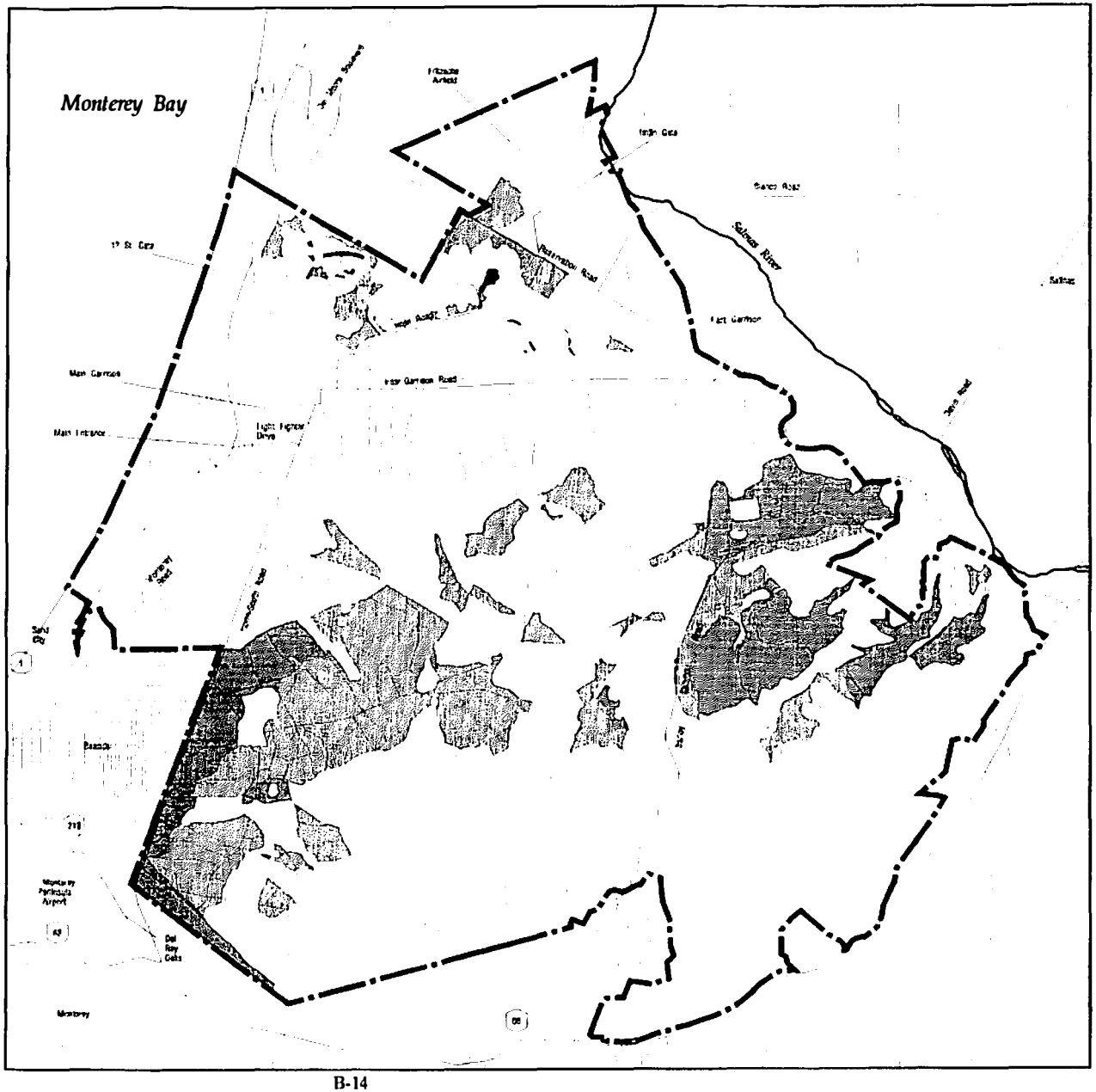


Figure B-12

Known Distribution of Eastwood's Ericameria *(Ericameria fasciculata)* at Fort Ord



Listing Status

Federal - C2
State - none
CNPS - 1B

Density of Occurrence

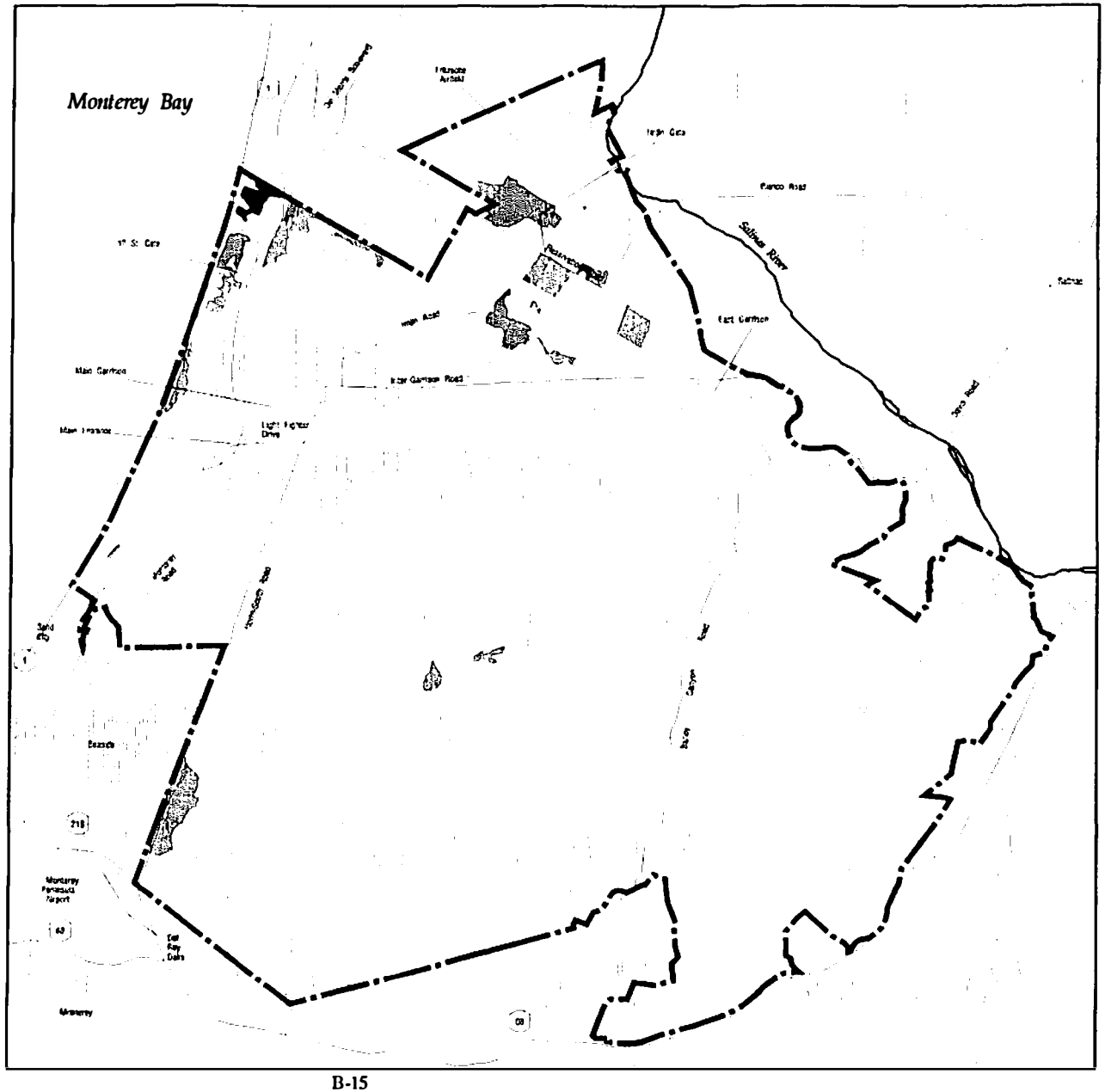
- ***Low Density***
- ***Medium Density***
- ***High Density***

Scale 1:60,000

0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure B-13

Known Distribution of Coast Wallflower
(Erysimum ammophilum) at Fort Ord



Listing Status
Federal - C2
State - none
CNPS - 1B

Density of Occurrence

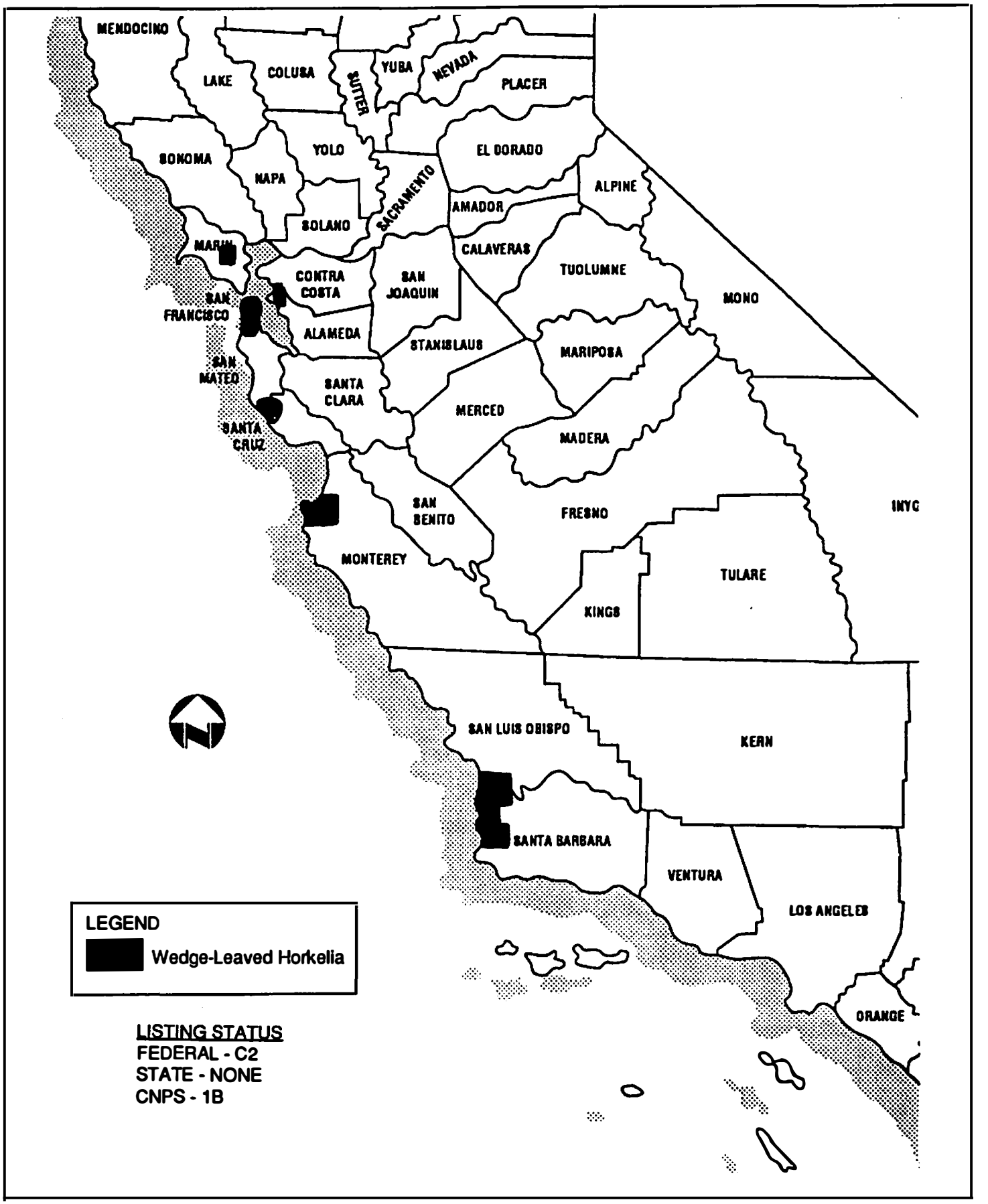
- ***Low Density***
- ***Medium Density***
- ***High Density***

Scale 1:60,000

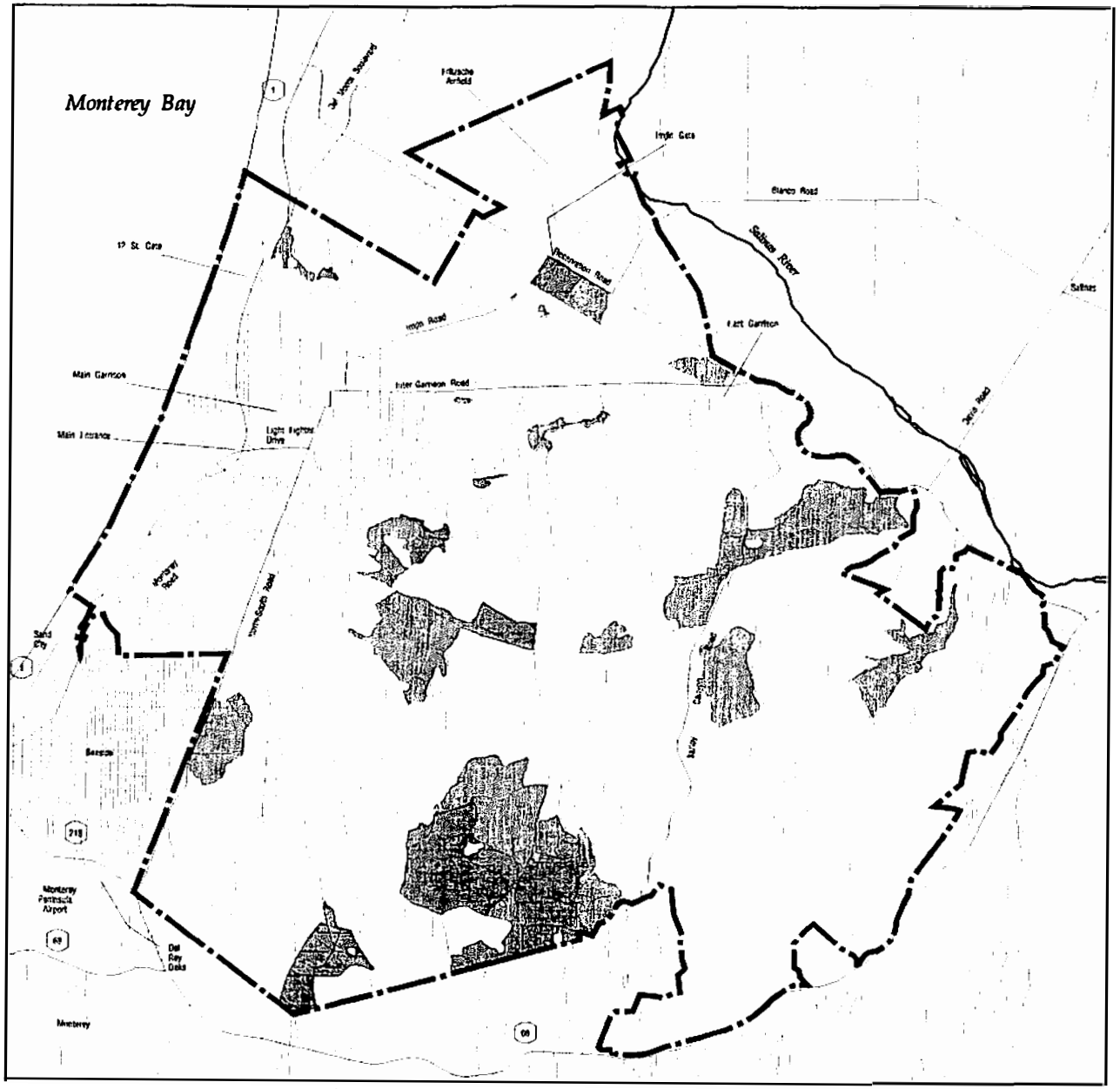
0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure B-14

Known Distribution of Wedge-Leaved Horkelia *(Horkelia cuneata sericea)*



Source: CNPS 1988



B-17

Figure B-15

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

0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure B-16

Known Distribution of Yadon's Piperia *(Piperia yadoni)*

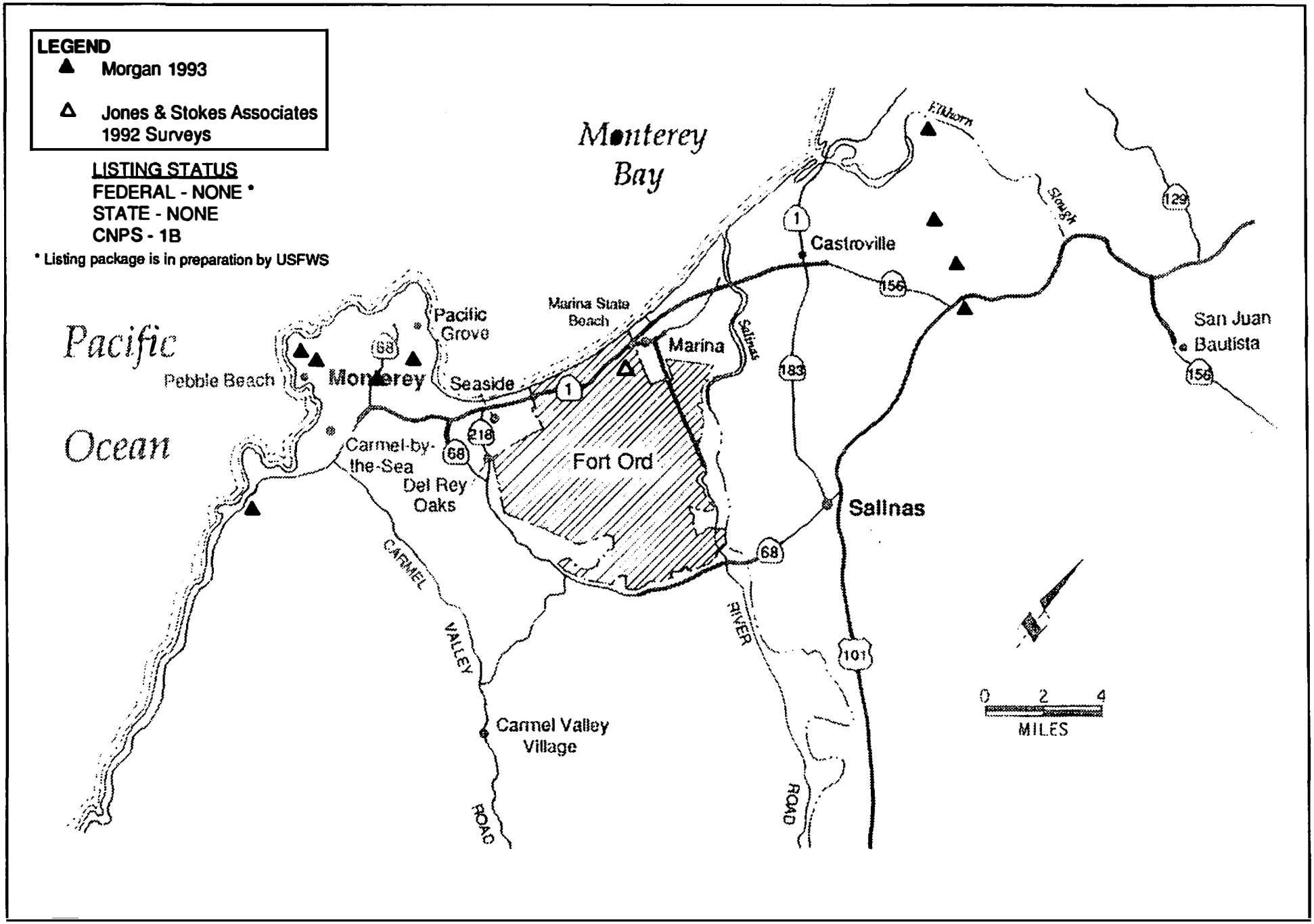
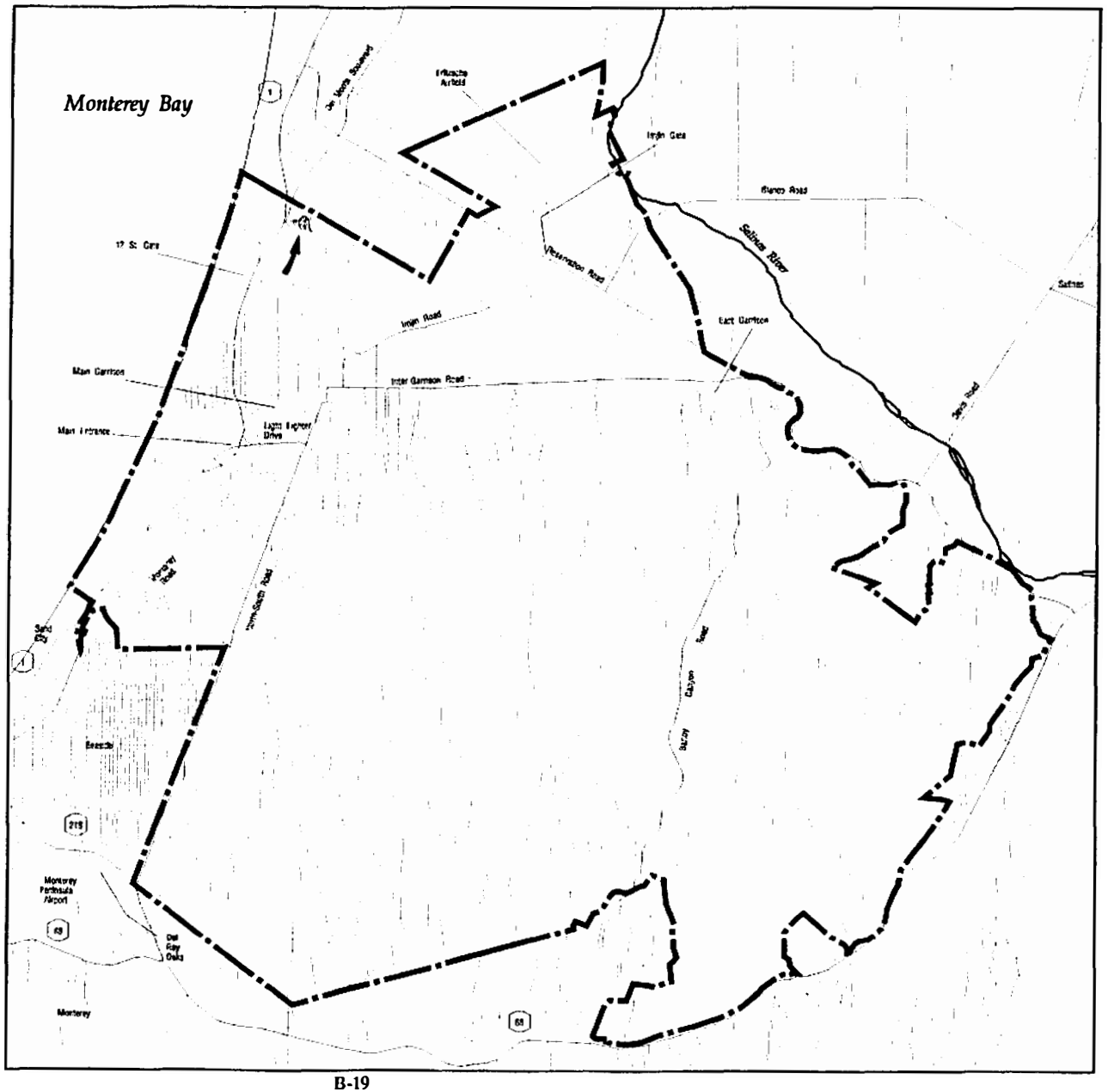


Figure B-17

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

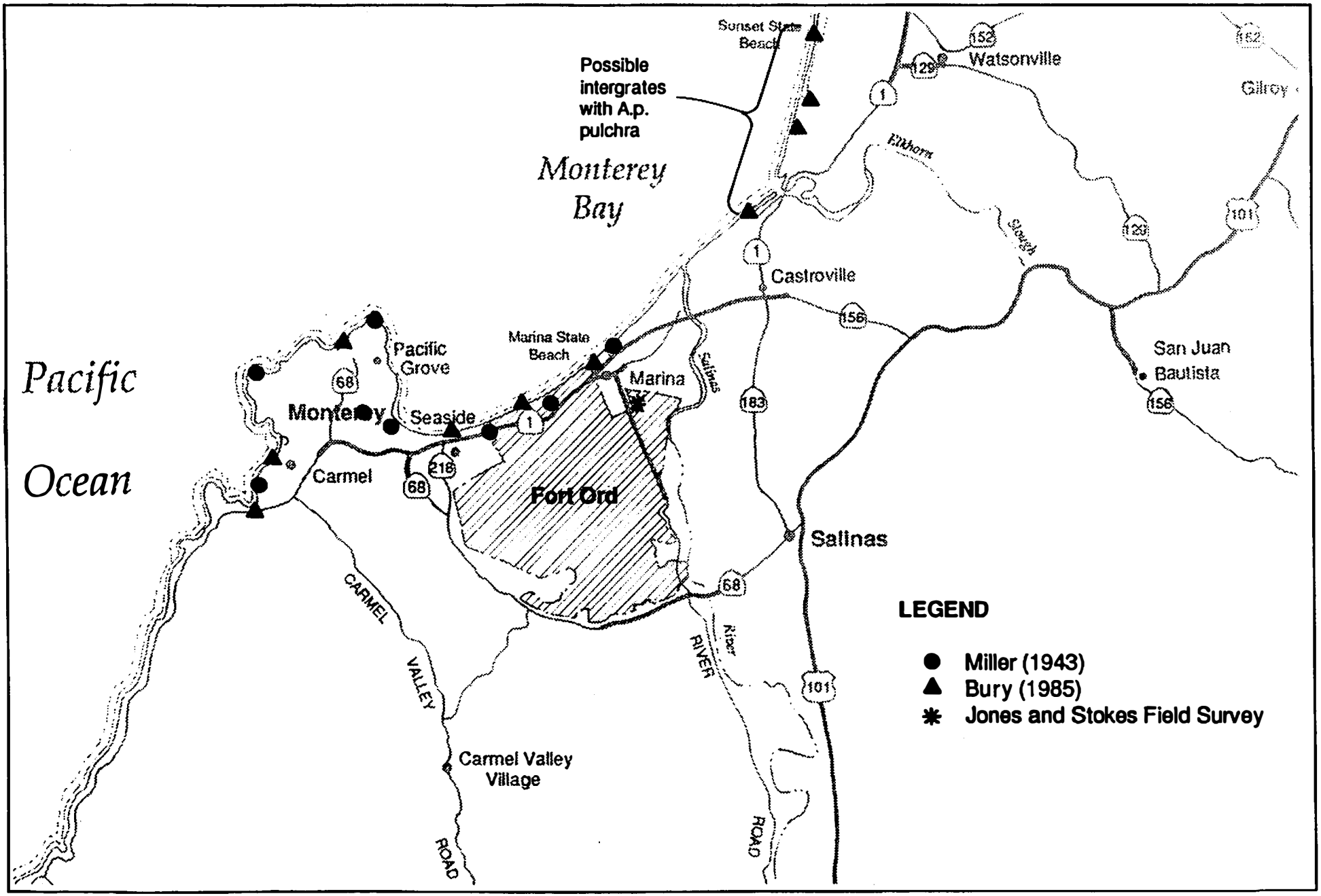
- *Low Density*
- *Medium Density*
- *High Density*

Scale 1:60,000

0 1 2 3 miles
0 2,500 5,000 7,500 10,000 feet
0 1 2 3 kilometers

Figure B-18

Recorded Populations of Black Legless Lizards (*Anniella pulchra nigra*) in the Monterey Bay Region



Source: Miller 1943, Burpy 1985

Figure B-19

Potential and Occupied Habitat for California Black Legless Lizard

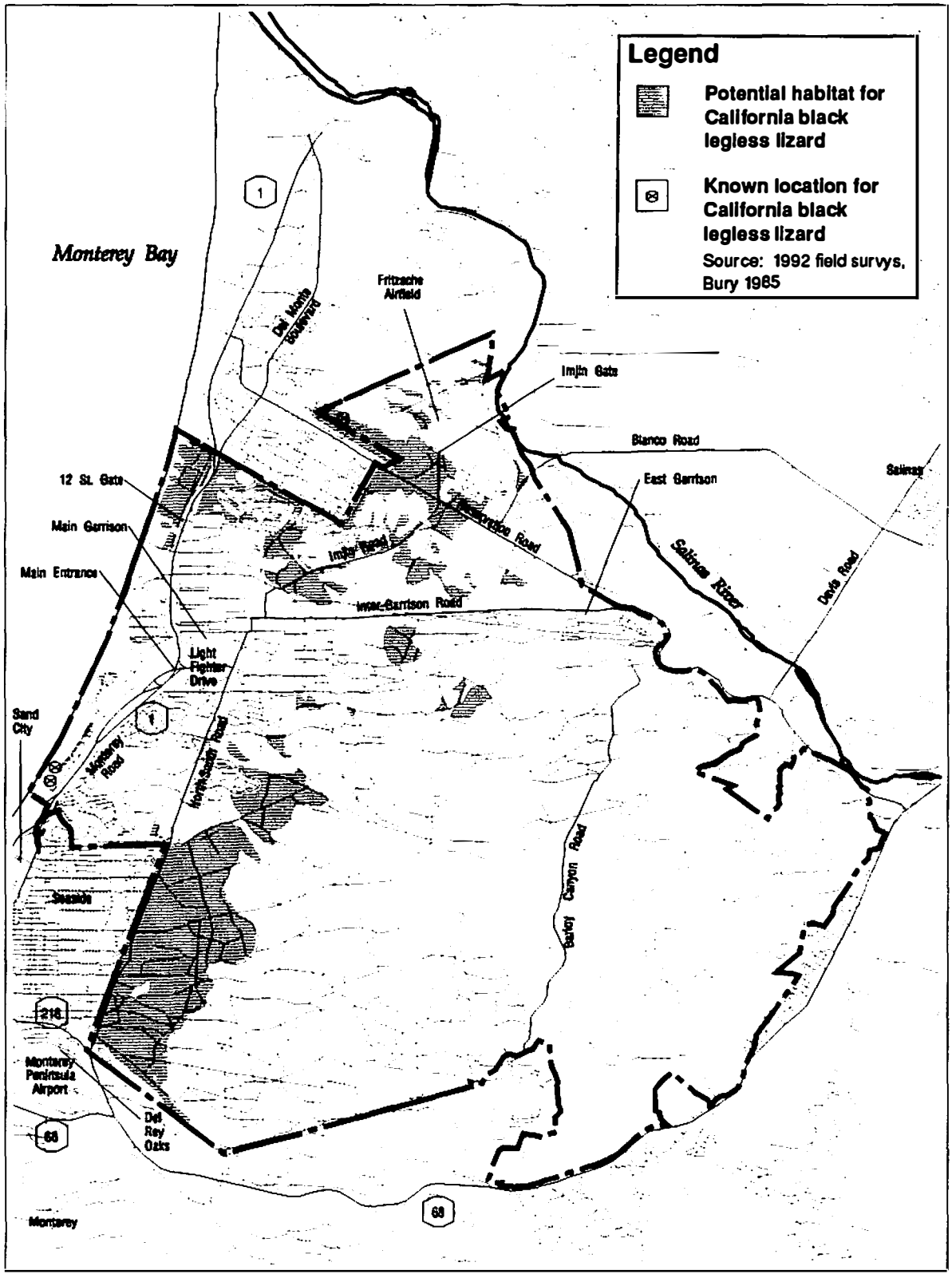
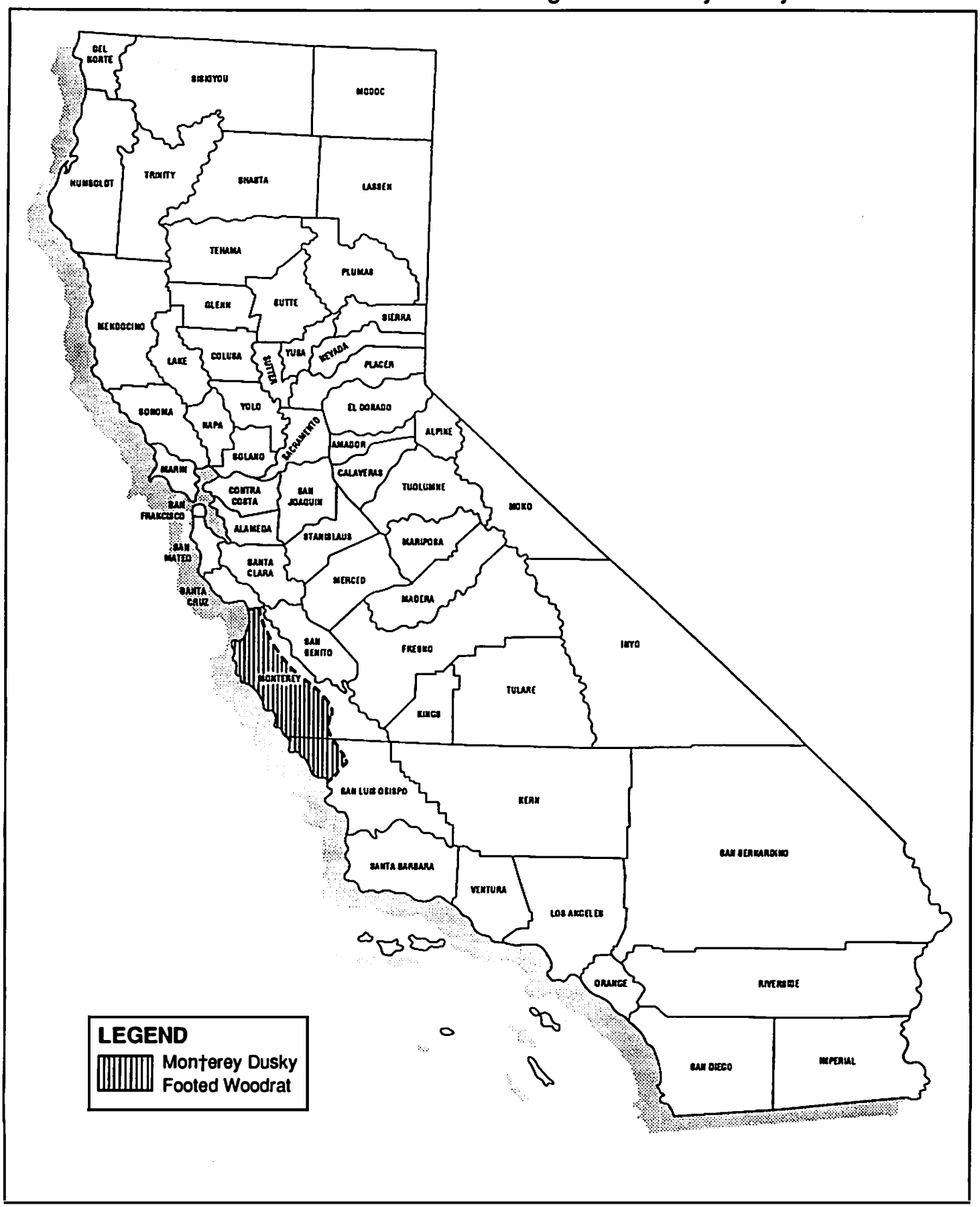


Figure B-20

Range of Monterey Dusky Footed Woodrat



Source: Hall 1981

Figure B-21

Potential and Occupied Habitat for Monterey Dusky Footed Woodrat

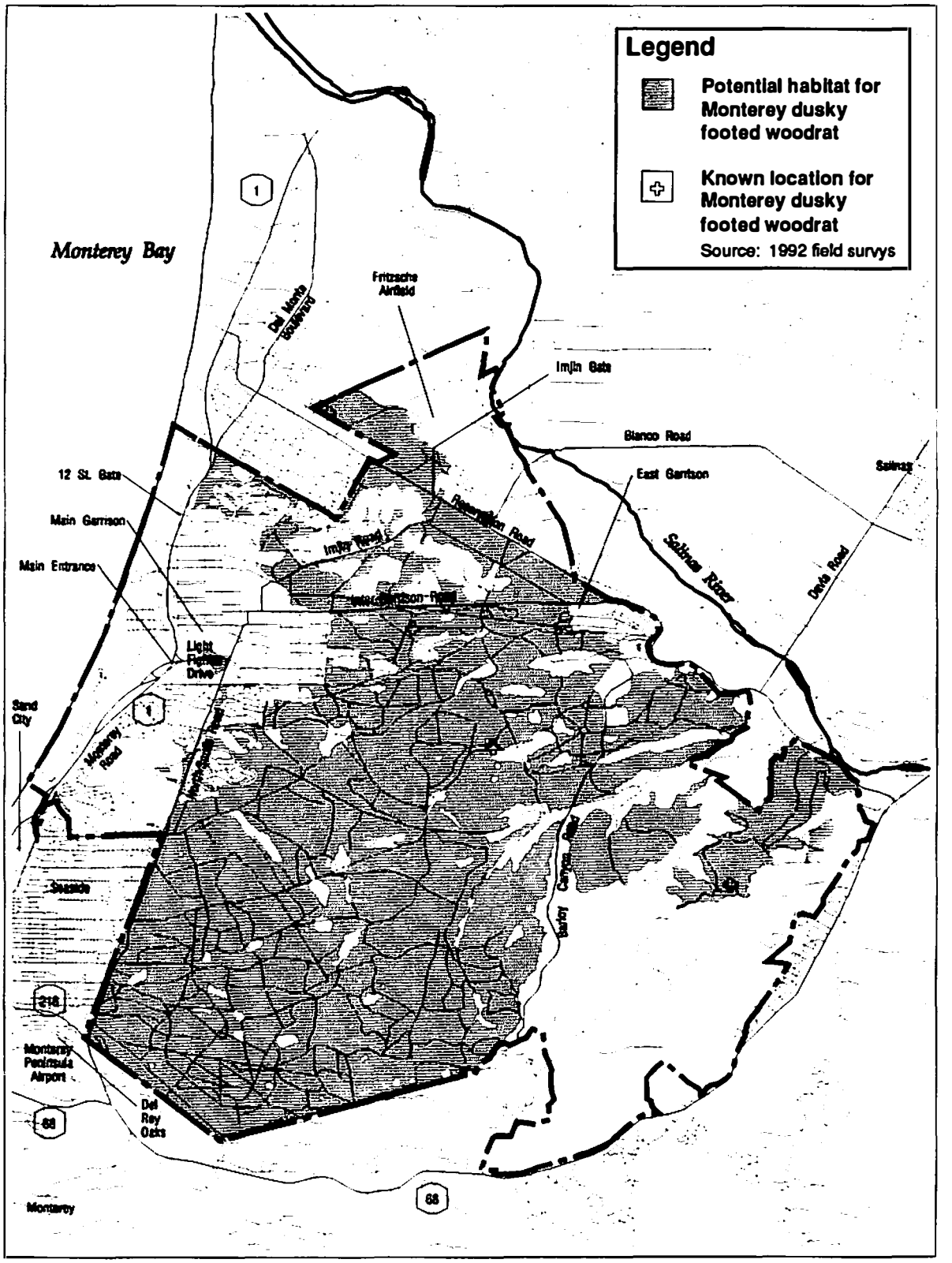
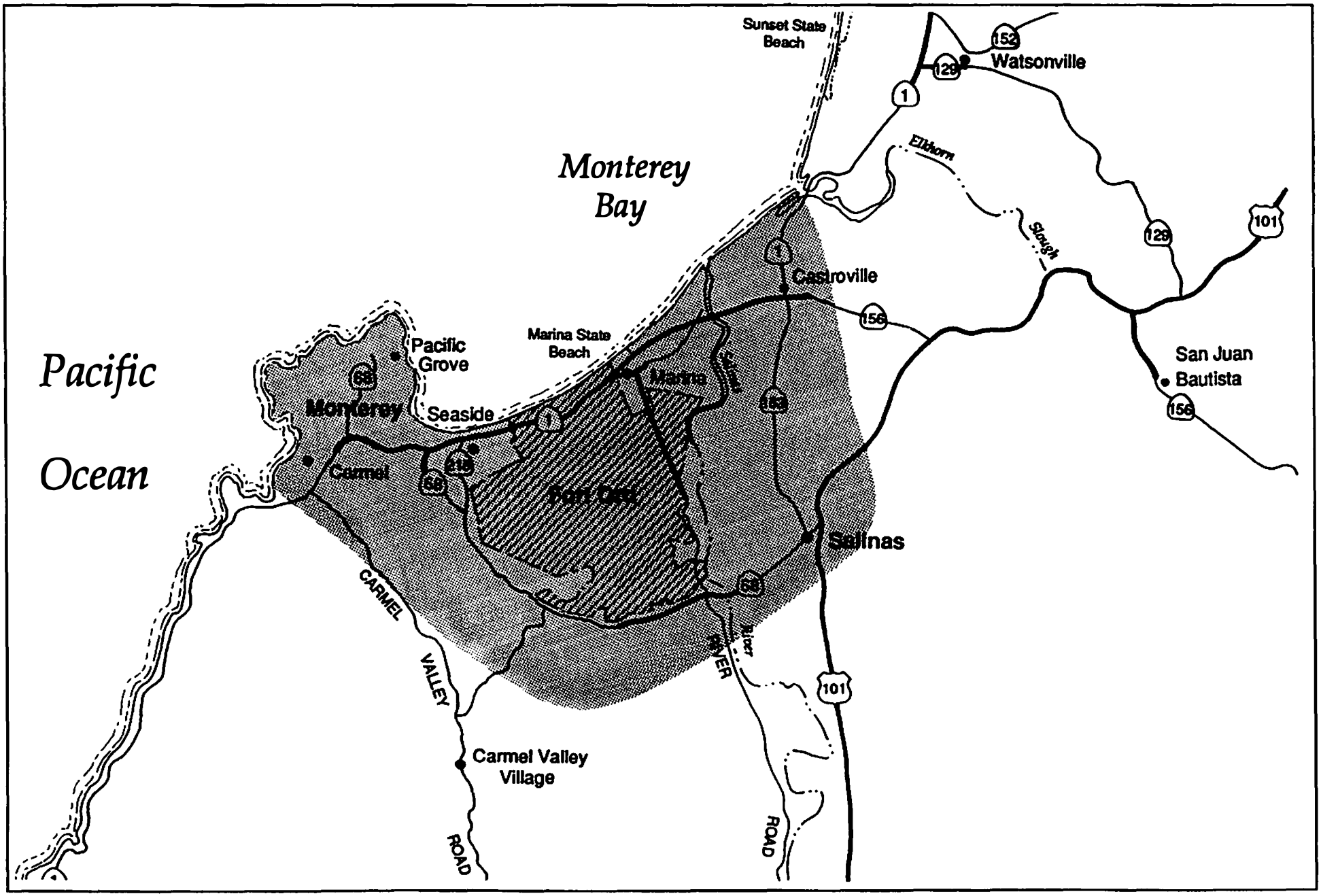


Figure B-22

Range of the Monterey Ornate Shrew (*Sorex ornatus salarius*)



Source: Hall 1981

Figure B-23
Potential Habitat for Monterey Ornate Shrew

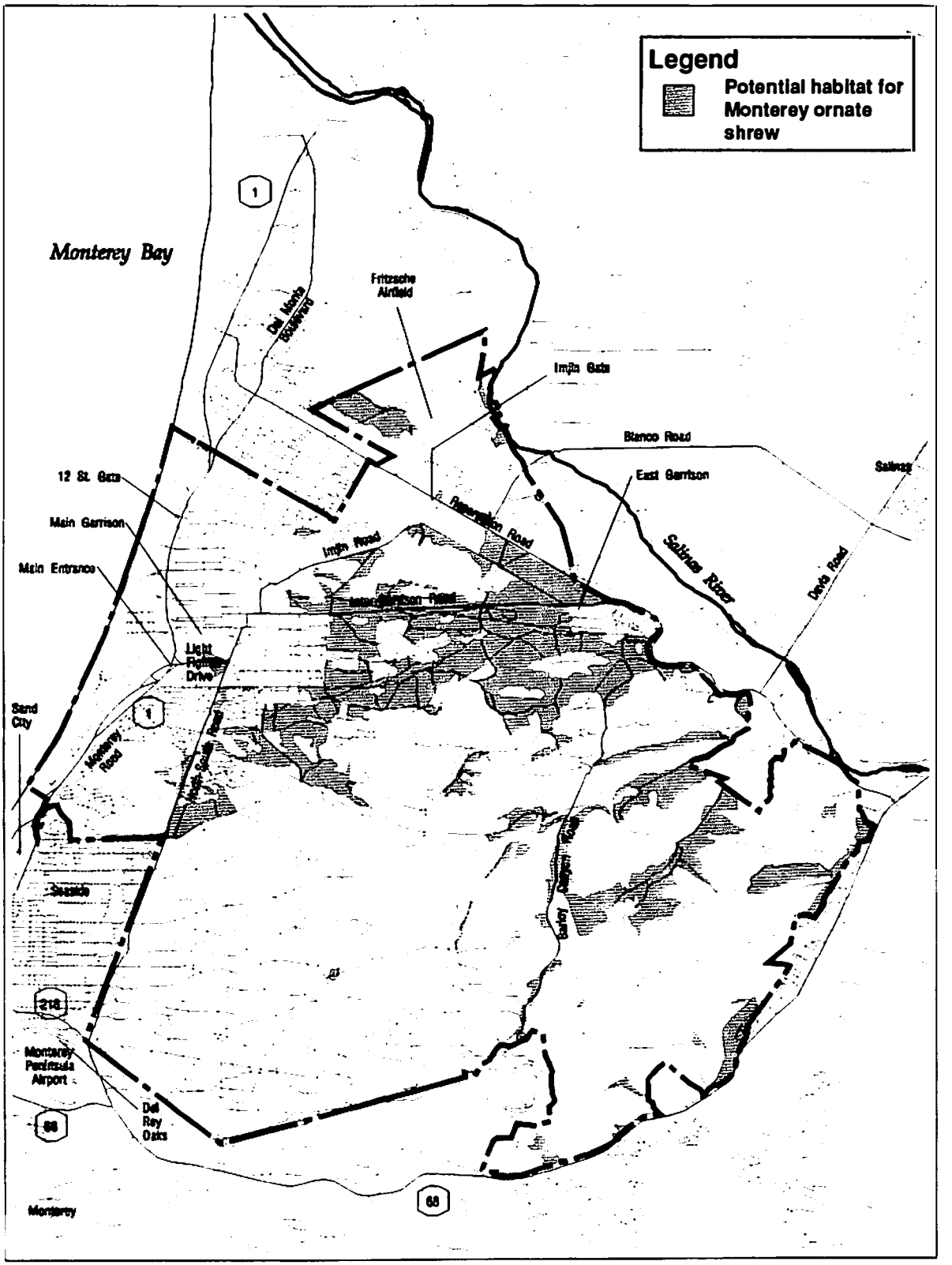
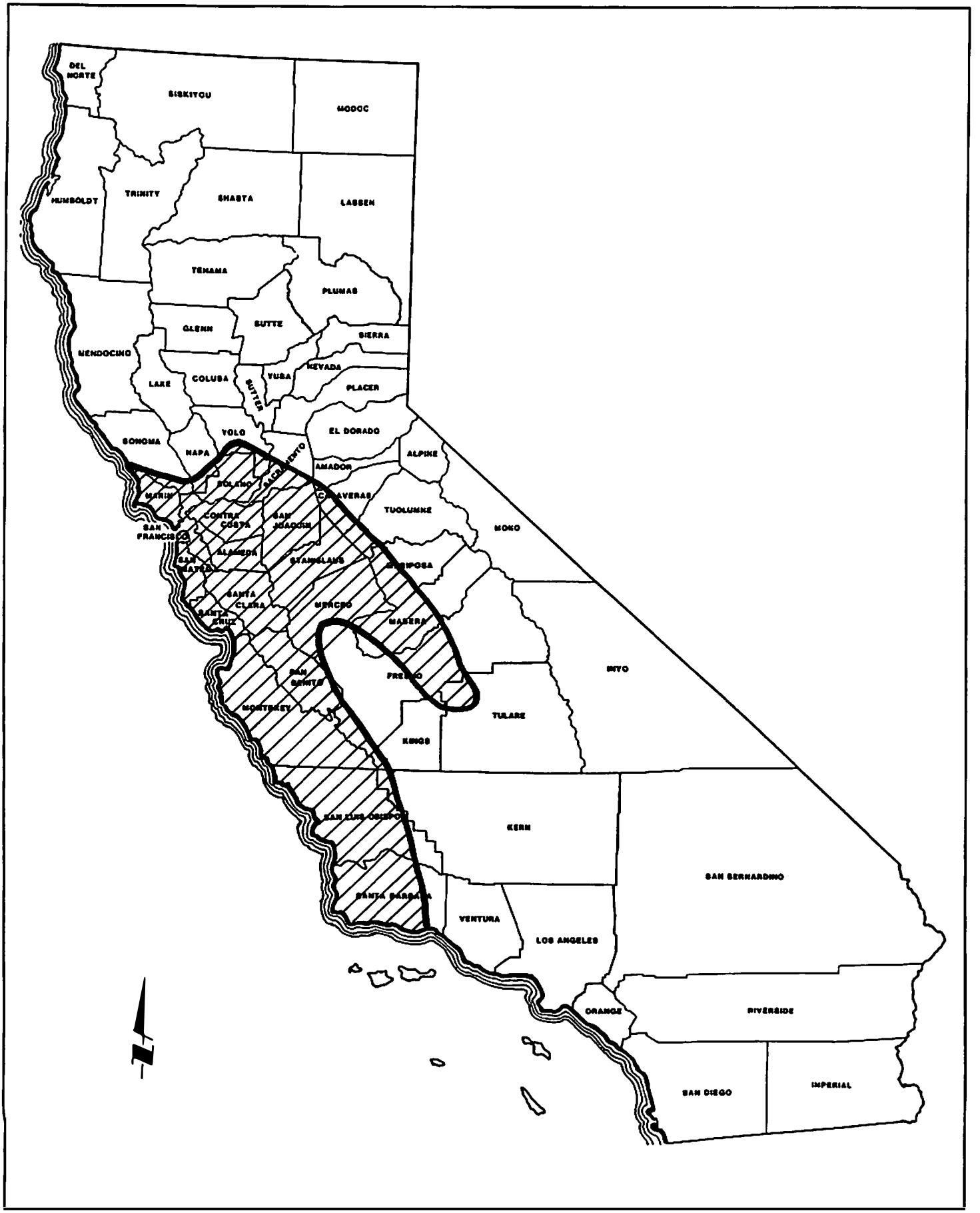


Figure B-24
Range of California Tiger Salamander



Source: Zeiner et al. 1988

Figure B-25

Potential and Occupied Habitat for California Tiger Salamander

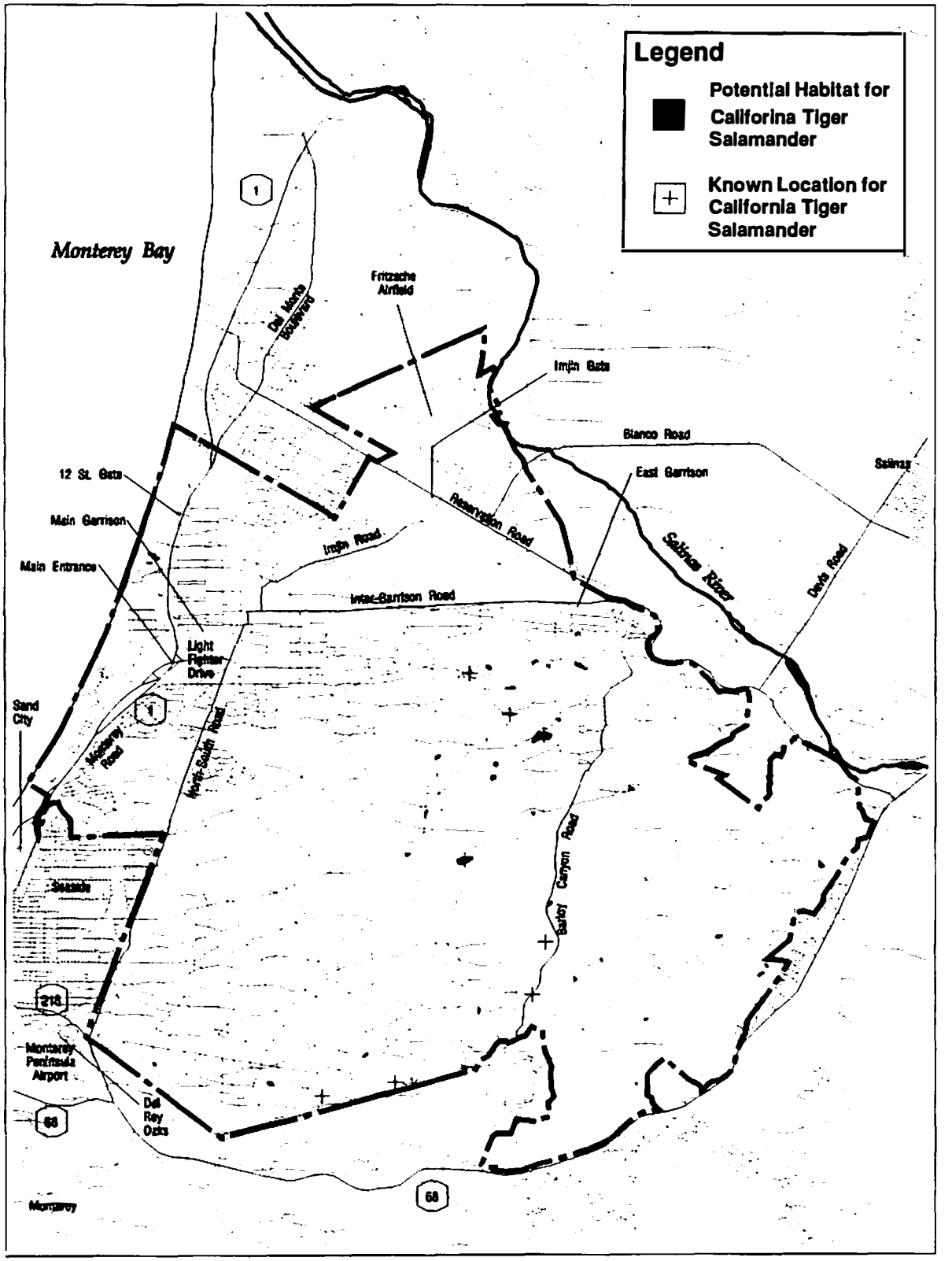
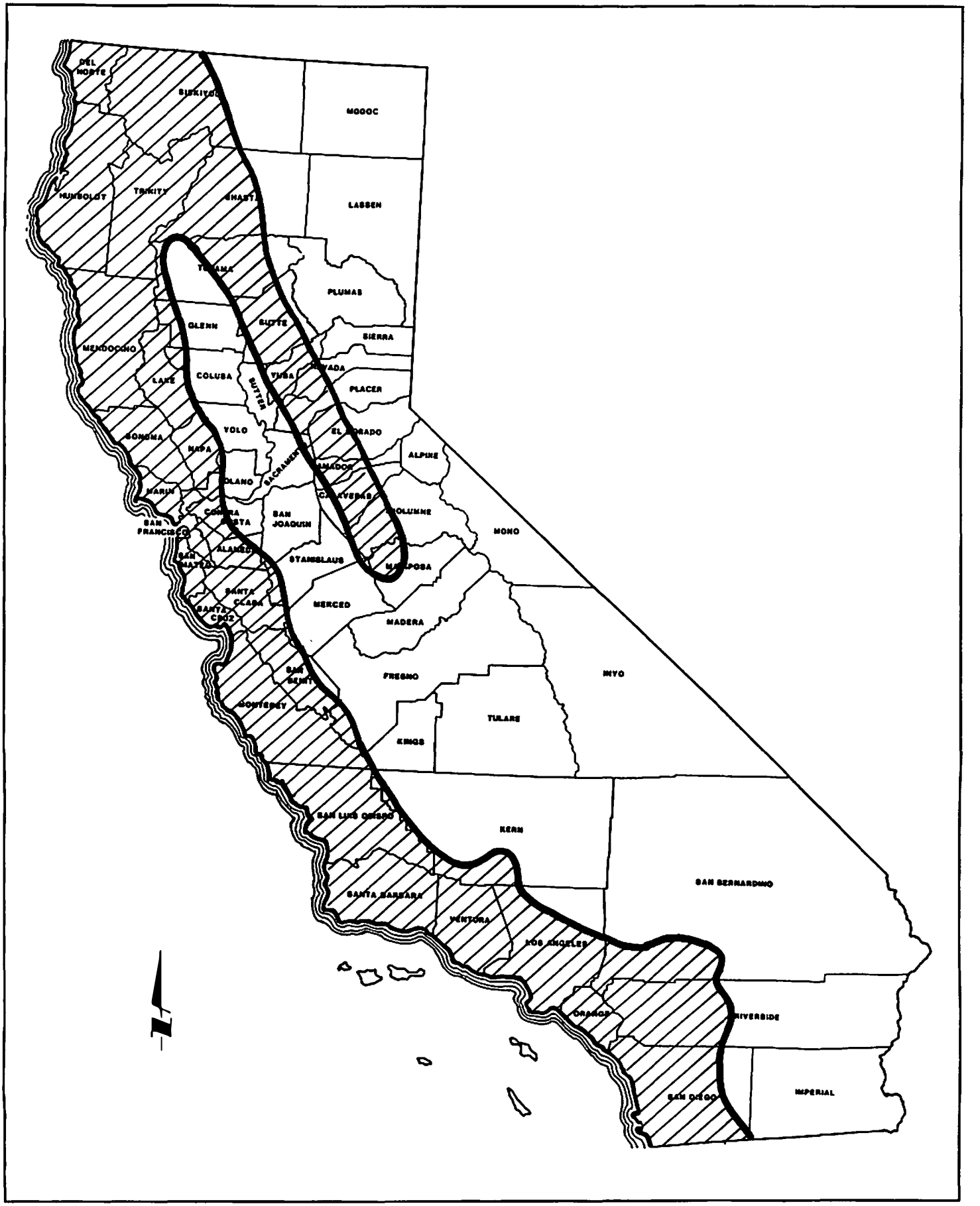


Figure B-26

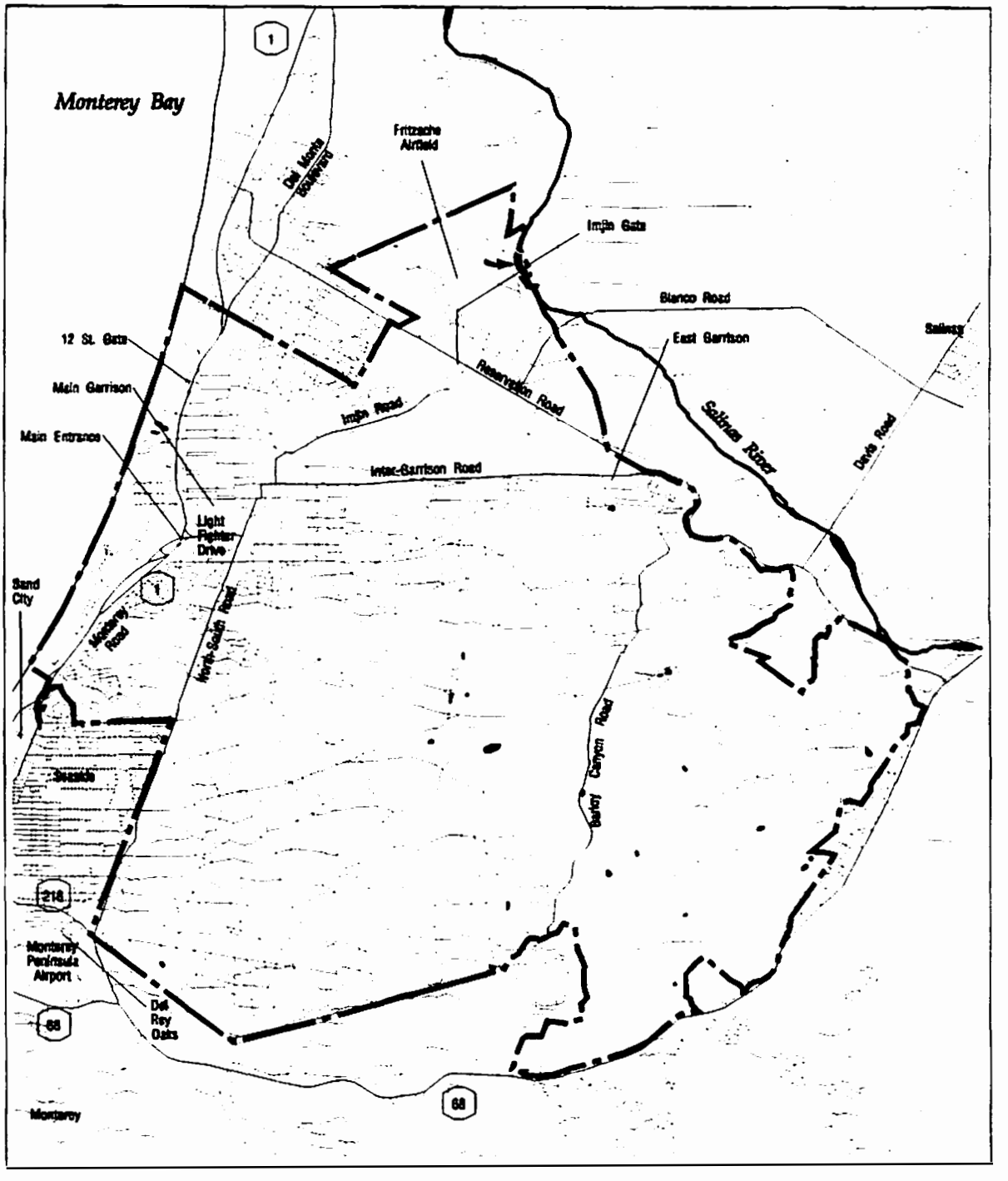
Range of California Red-Legged Frog



Source: Zeiner et al. 1988

Figure B-27

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

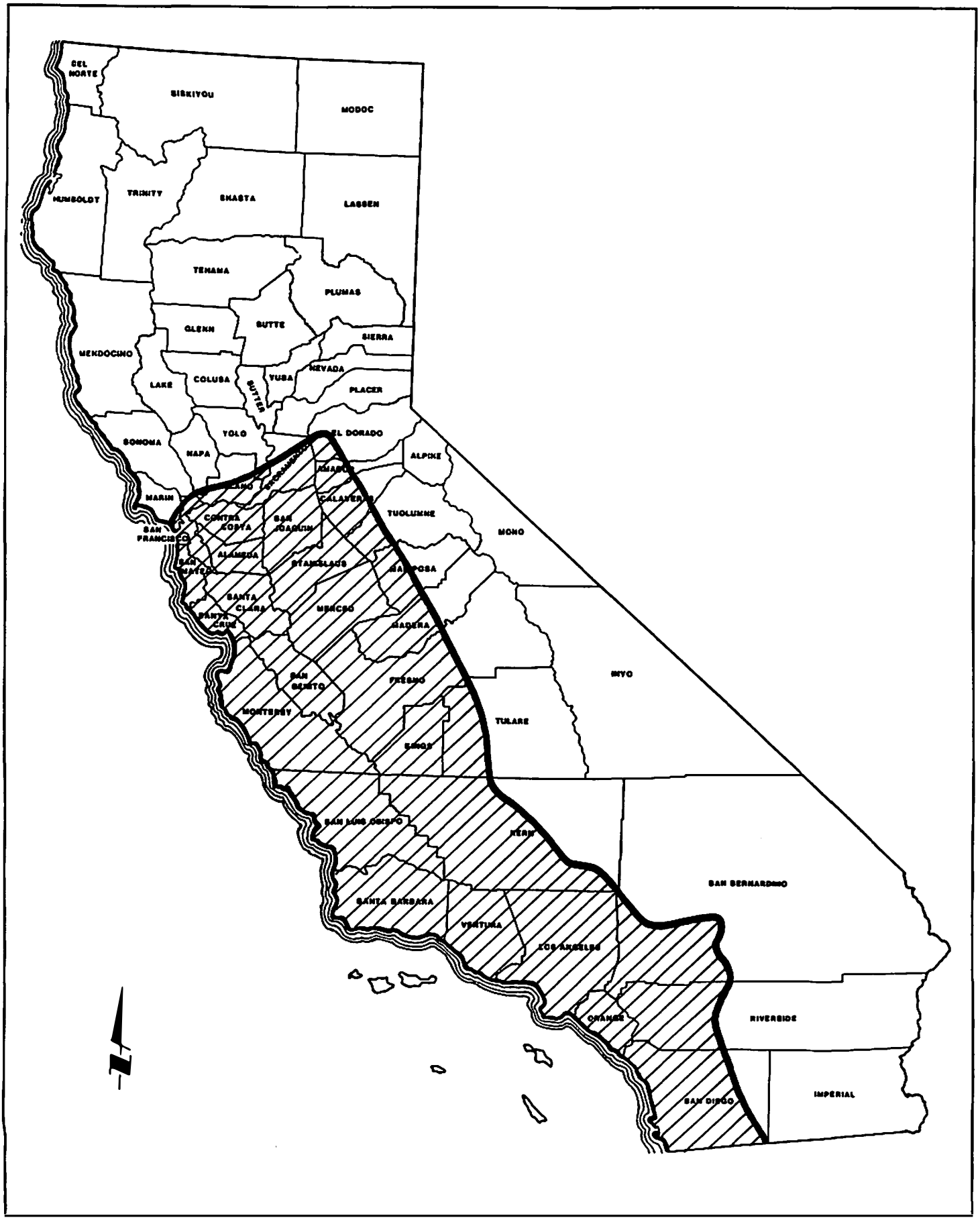
Scale 1:100,000

kilometers 0 1 2 3 4 5

miles 0 1 2 3

Figure B-28

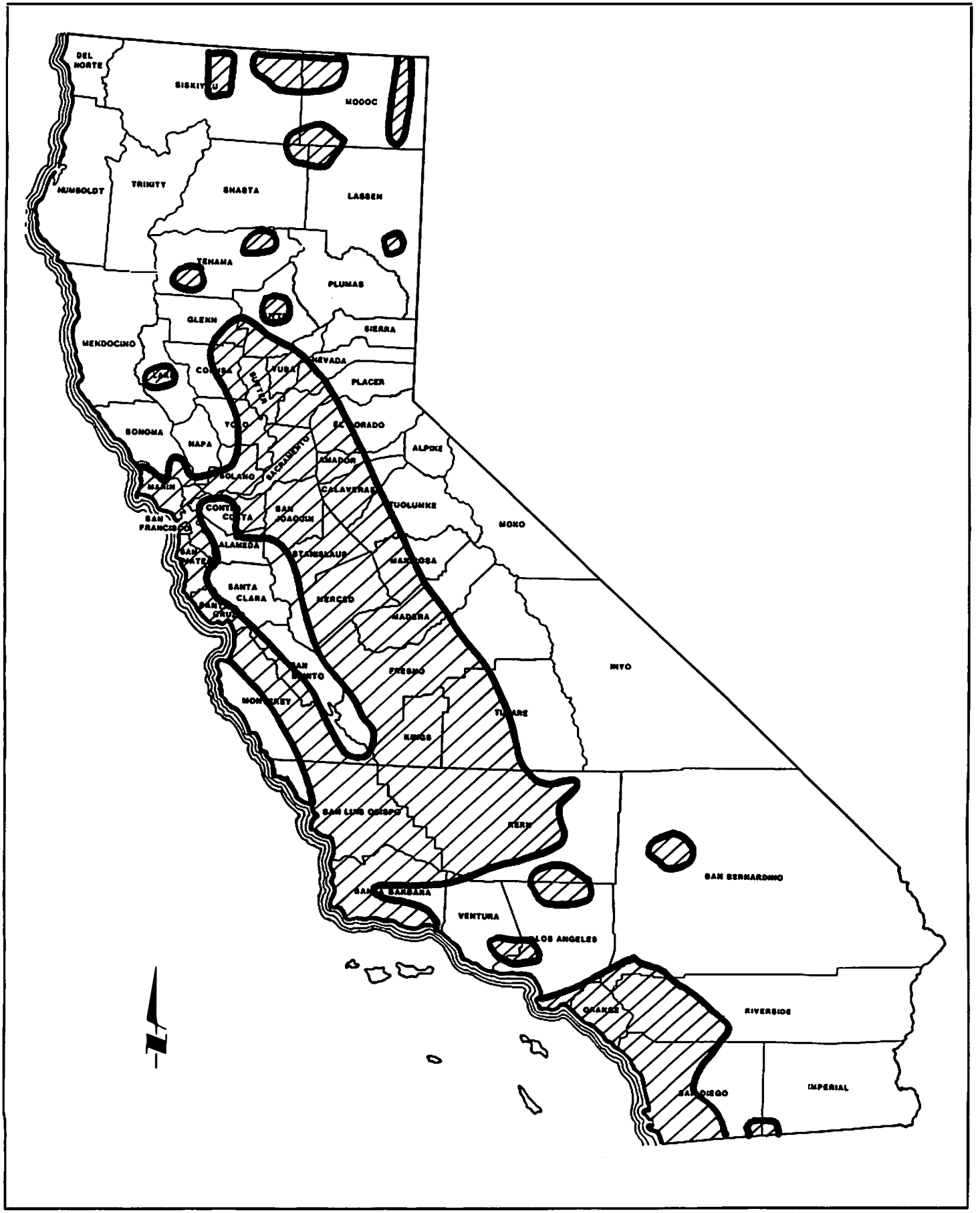
Range of Southwestern Pond Turtle



Source: Zeiner et al. 1988

Figure B-29

Range of Tricolored Blackbird



Source: Zeiner et al. 1990a

Figure B-30

Potential and Occupied Habitat for Tricolored Blackbird

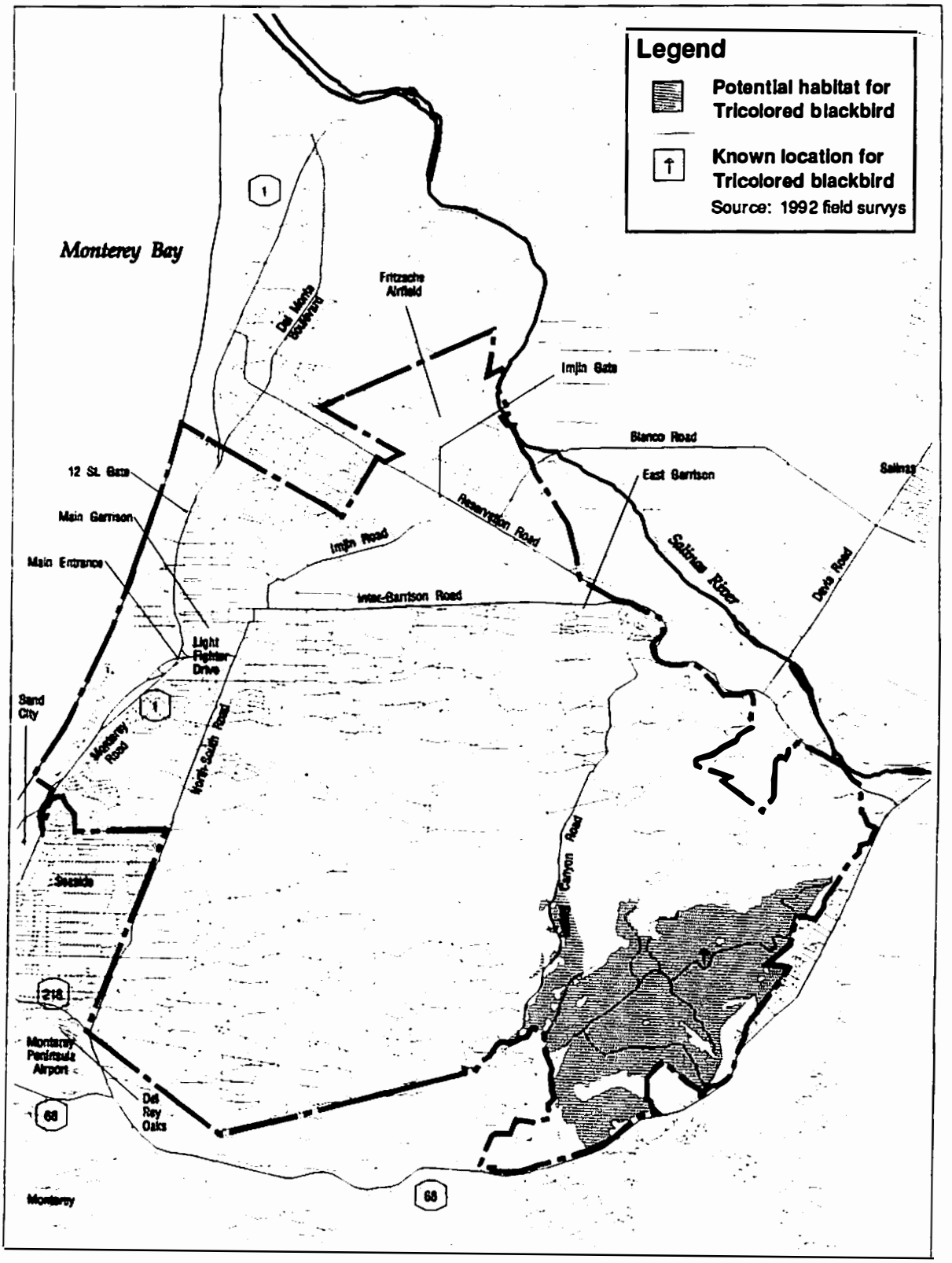
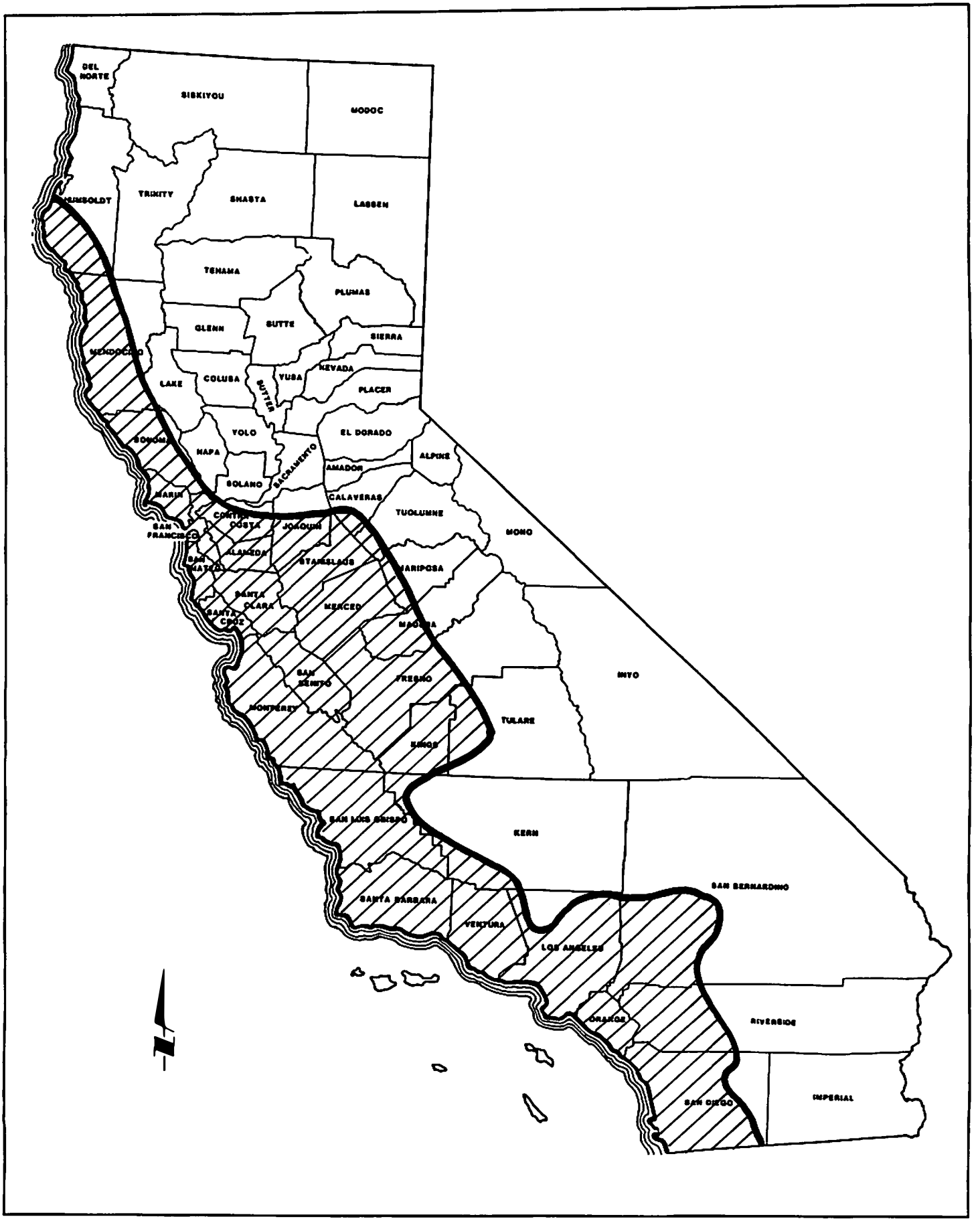


Figure B-31

Range of California Horned Lark



Source: Grinnell and Miller 1944

Figure B-32
Potential and Occupied Habitat for Horned Lark

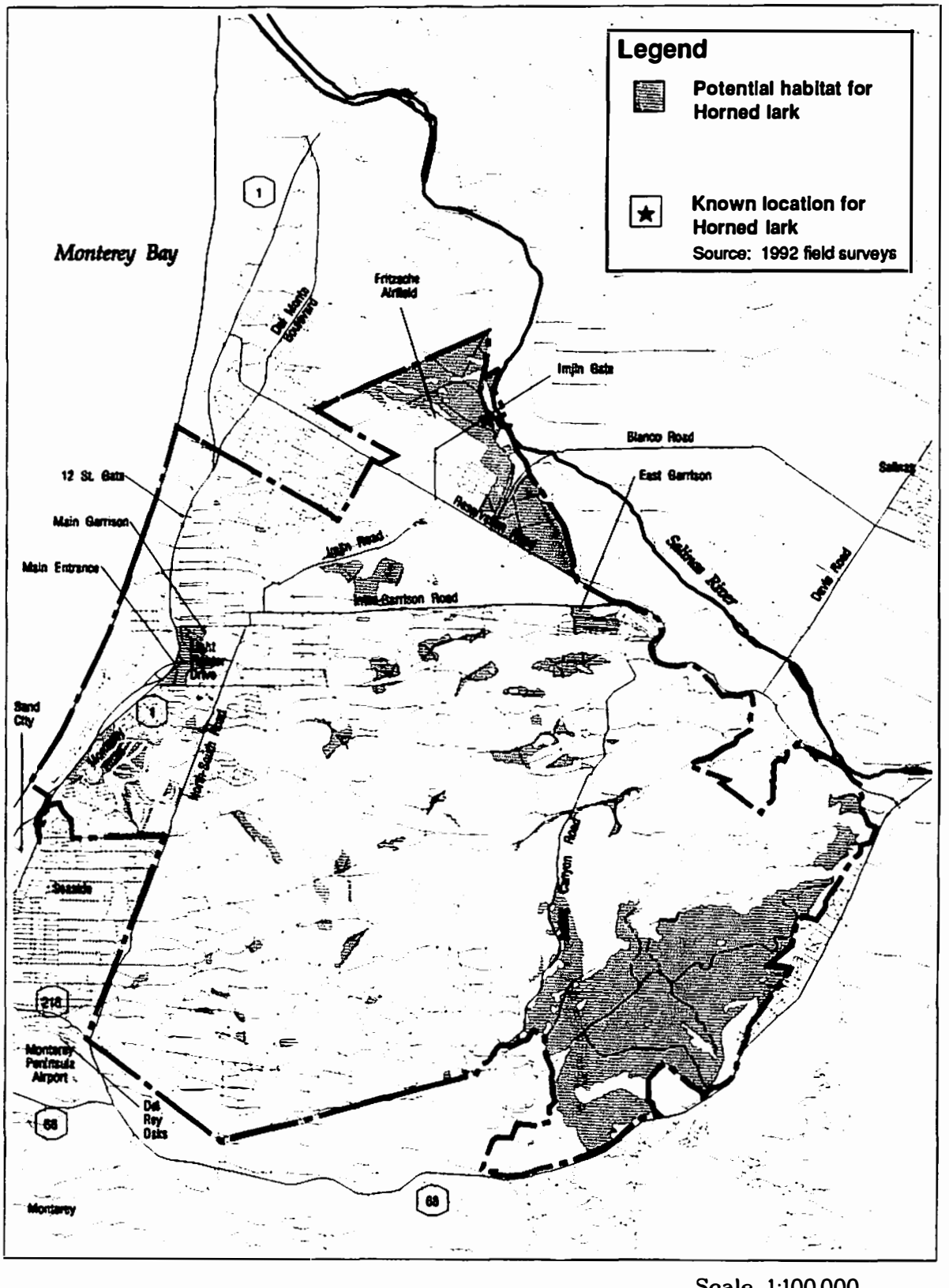
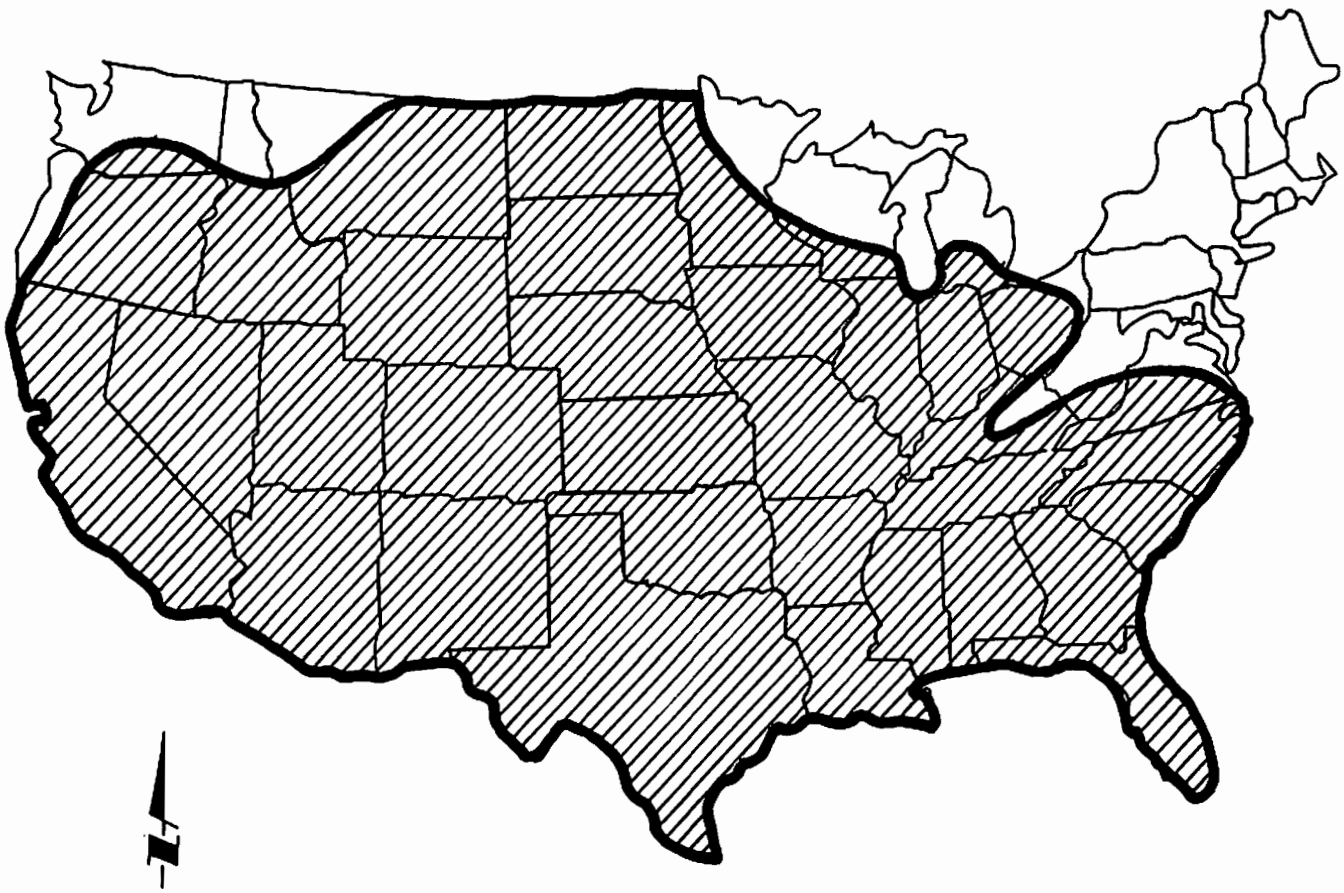


Figure B-33
Range of Loggerhead Shrike



Source: National Geographic Society 1987

Figure B-34

Potential and Occupied Habitat for Loggerhead Shrike