Figure L - 77. Gazos Creek (CA-55), San Mateo County, California.

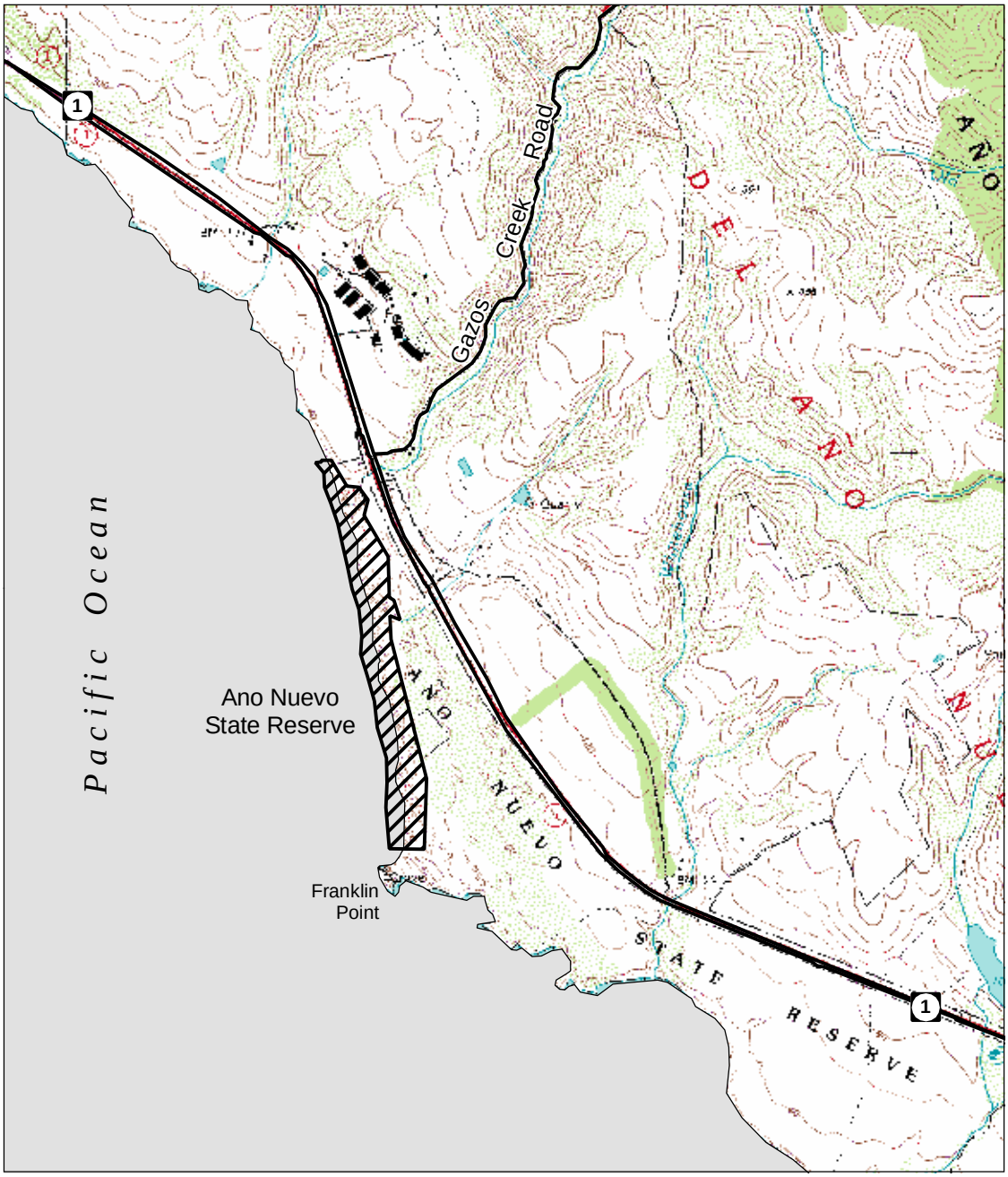
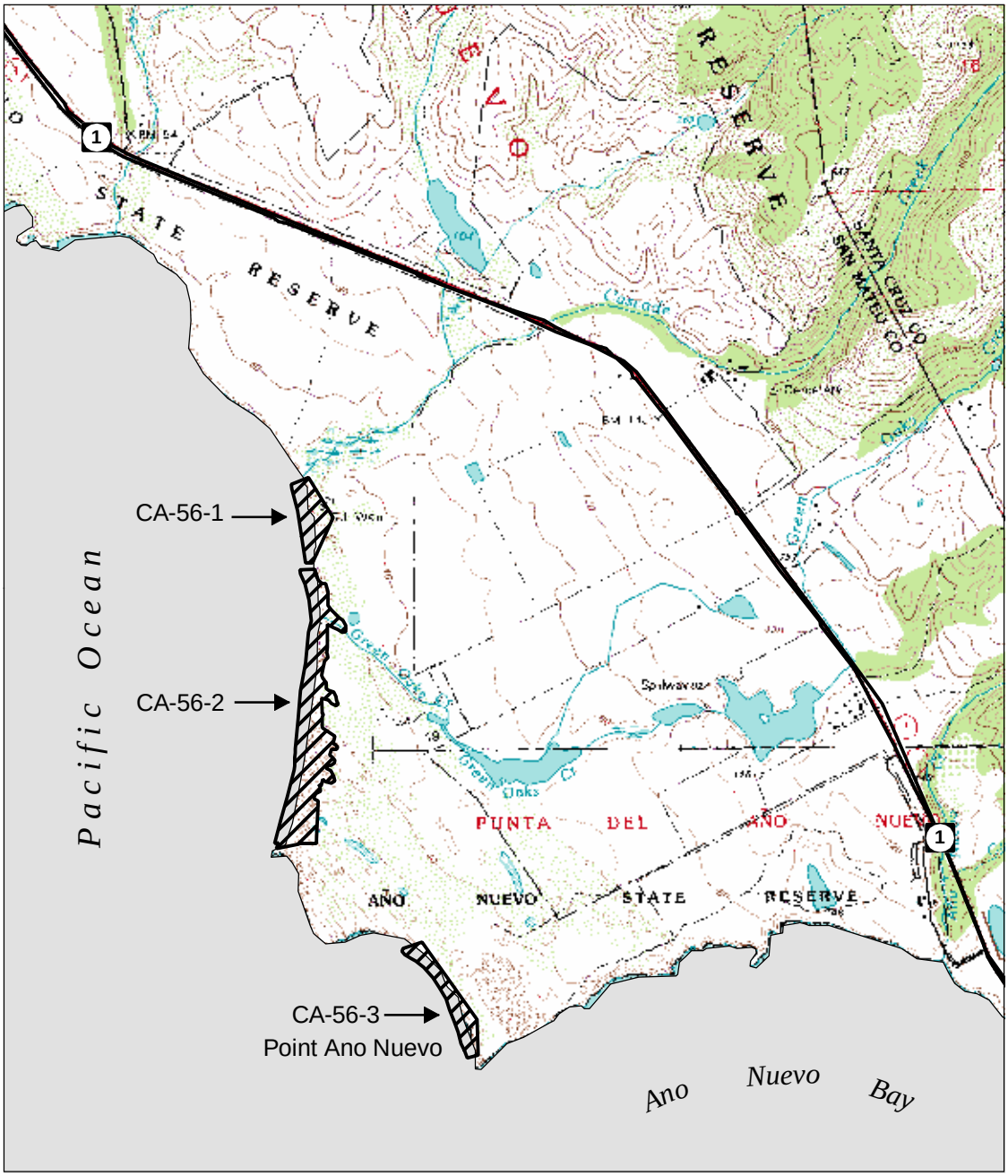


Figure L - 78. Ano Nuevo (CA-56), San Mateo County, California.



Legend

WSPL Breeding & Wintering Locations

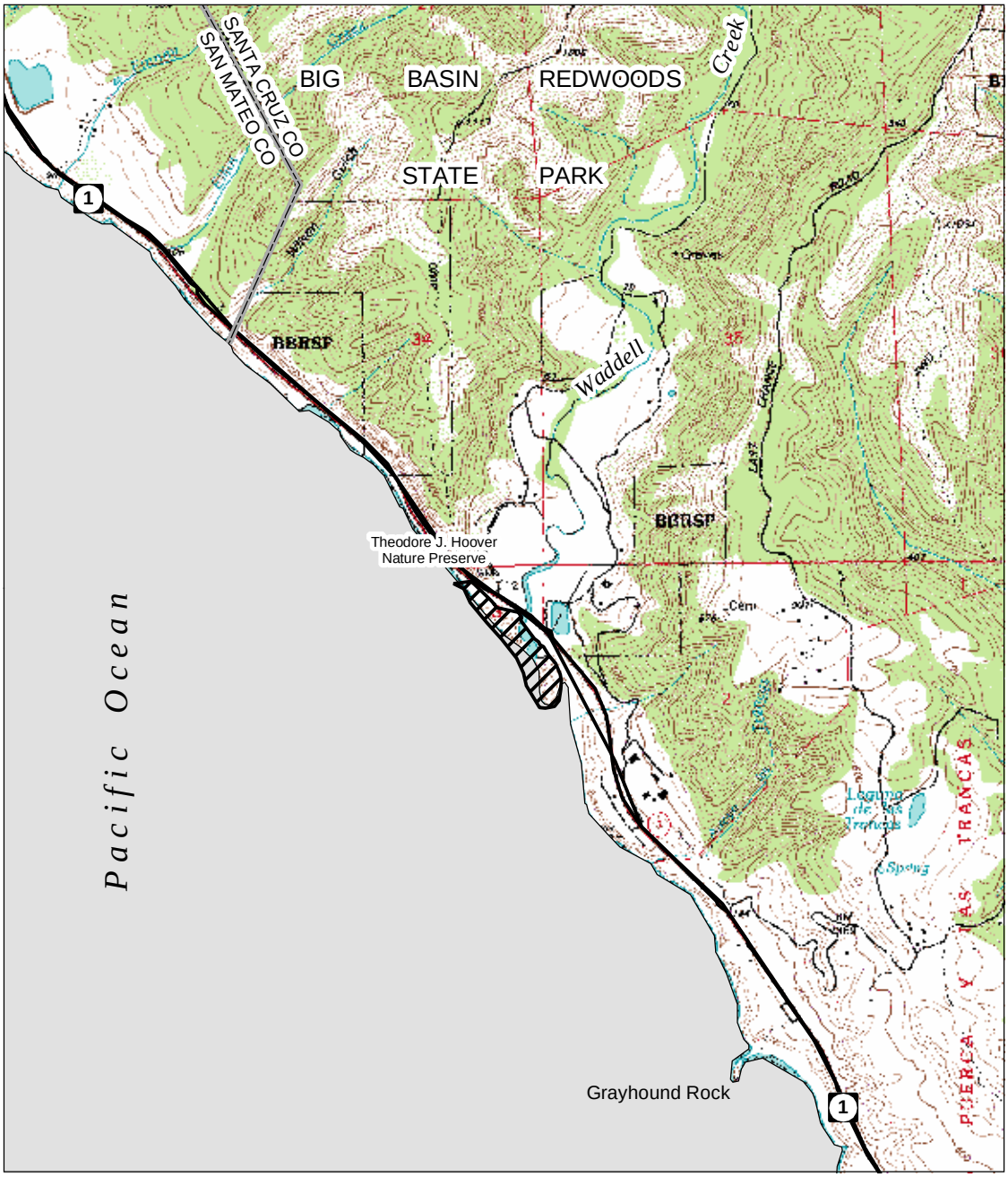
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 79. Waddell Creek (CA-57), Santa Cruz County, California.



Legend

WSPL Breeding & Wintering Locations

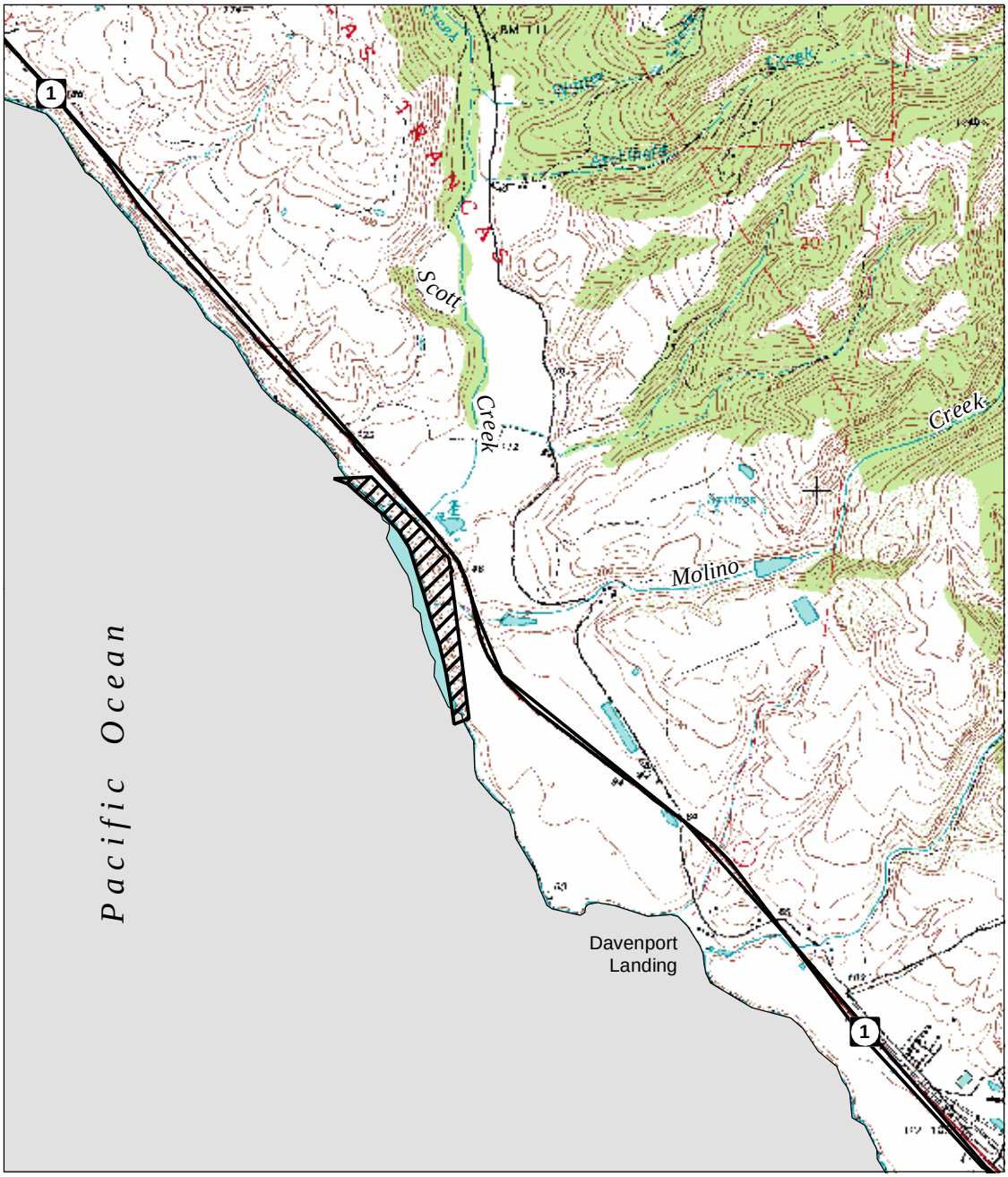
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 80. Scott Creek Beach (CA-58), Santa Cruz County, California.



Legend

WSPL Breeding & Wintering Locations

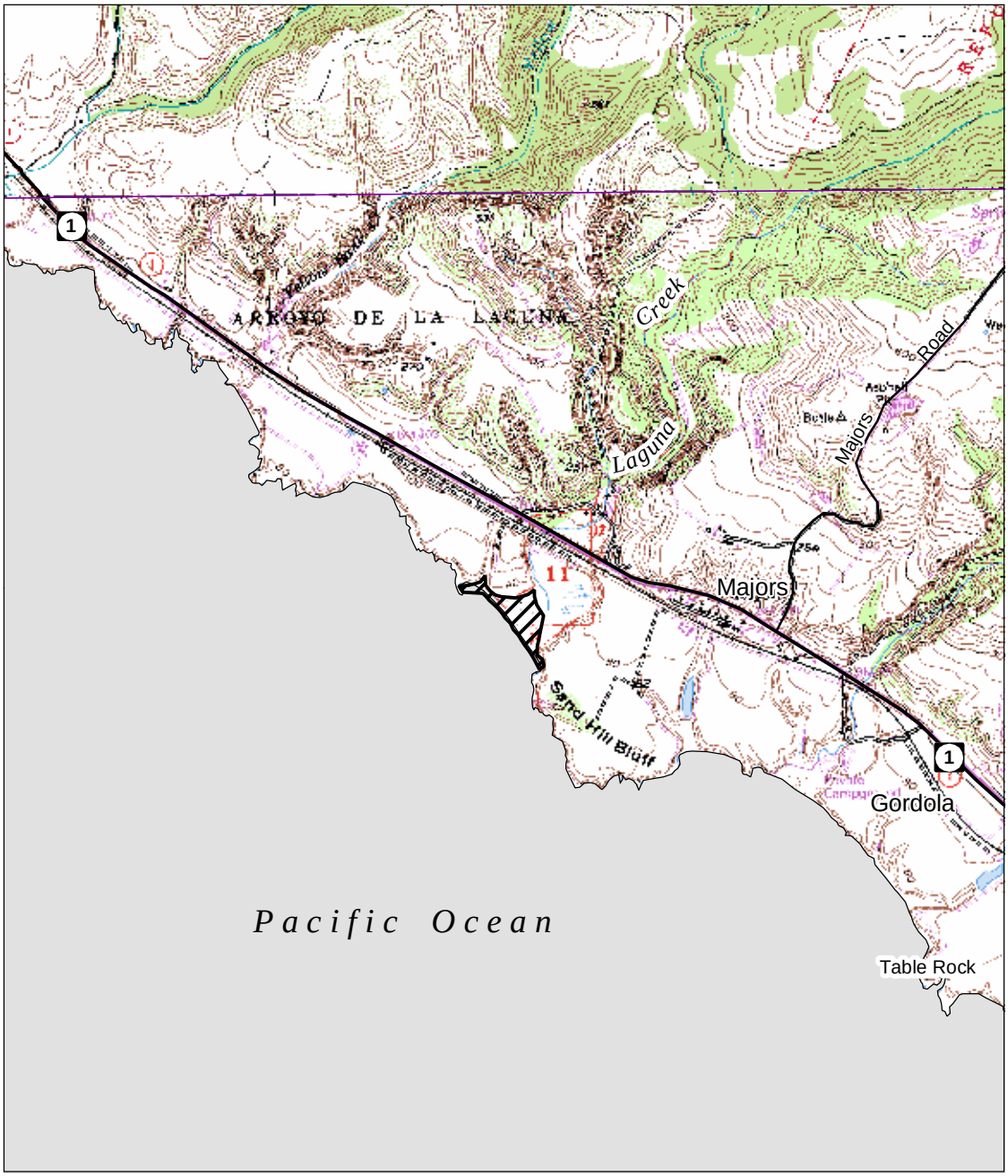
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 81. Laguna Creek Beach (CA-59), Santa Cruz County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 82. Baldwin Creek Beach (CA-60), Santa Cruz County, California.

Legend

WSPL Breeding & Wintering Locations

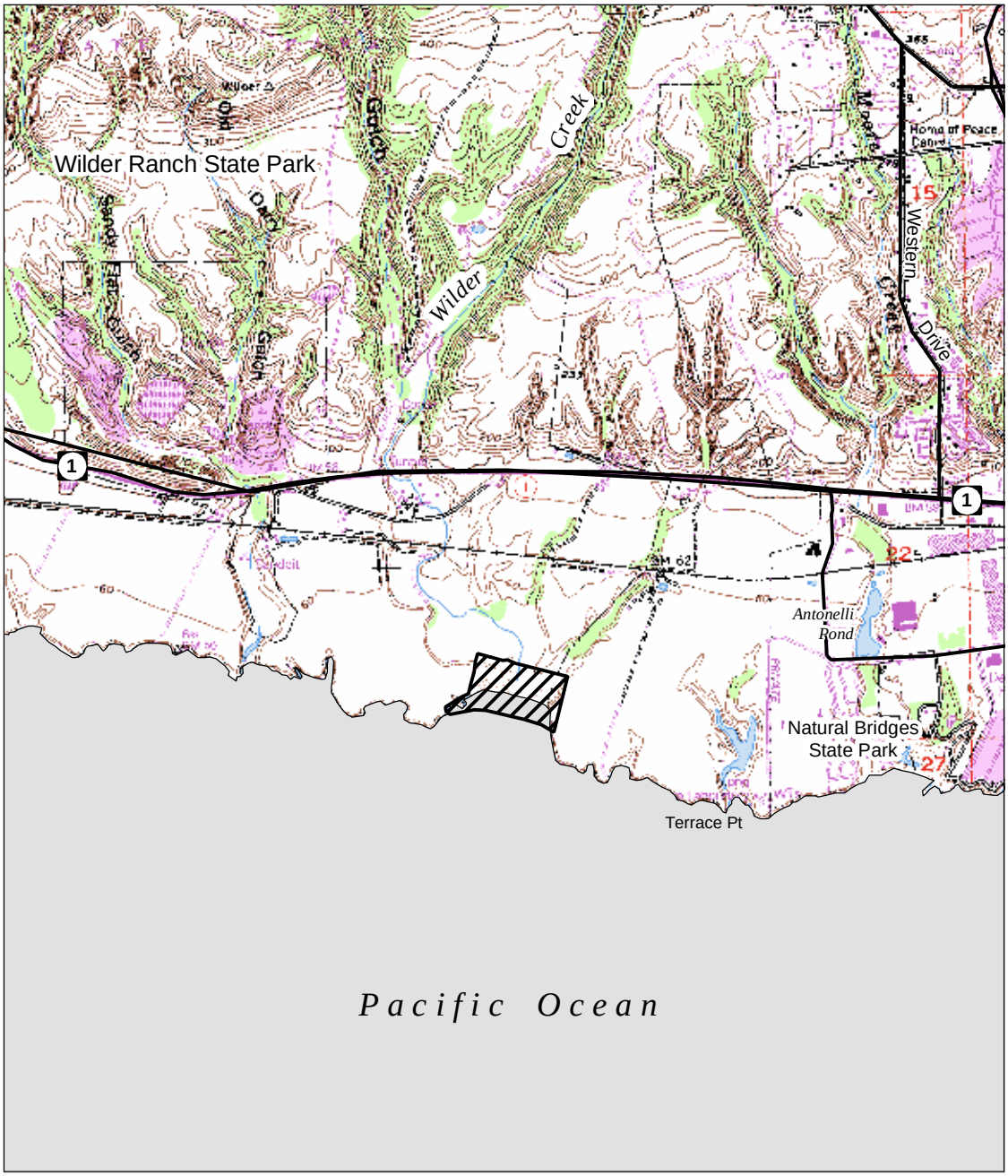
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 83. Wilder Ranch Beach (CA-61), Santa Cruz County, California.



Legend

WSPL Breeding & Wintering Locations

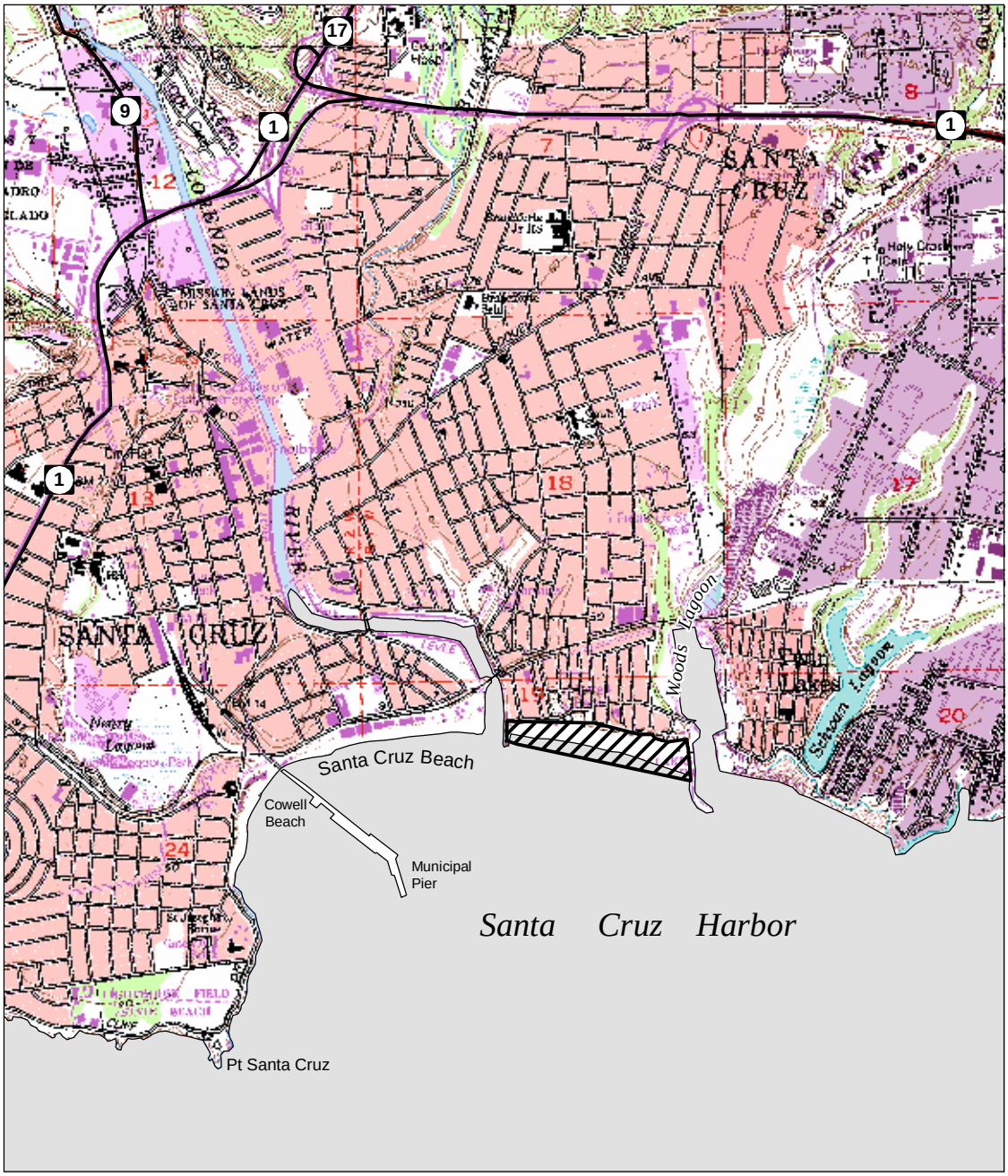
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 84. Seabright Beach (CA-62), Santa Cruz County, California.



Legend

WSPL Breeding & Wintering Locations

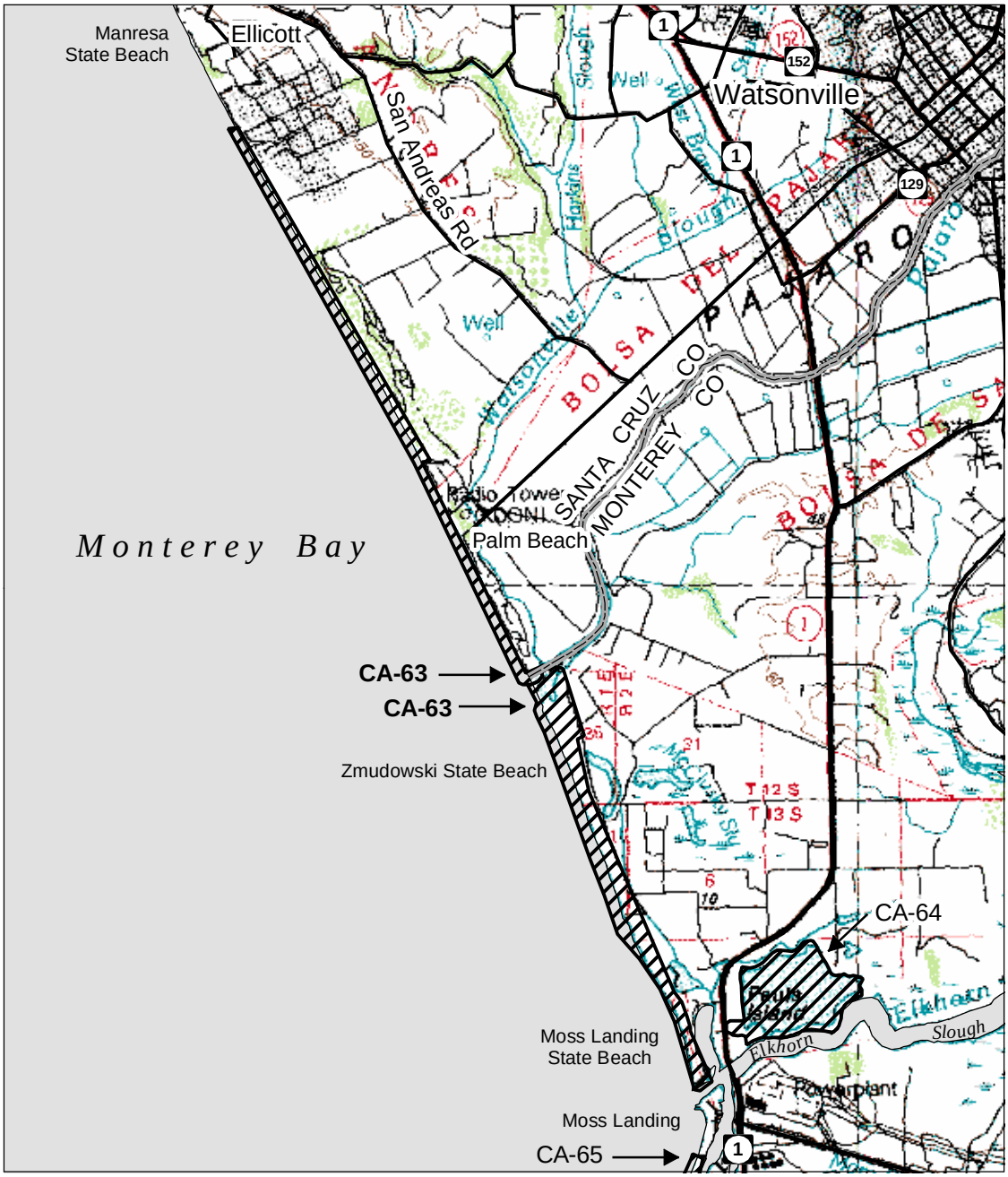
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 85. Jetty Road to Aptos (CA-63), Santa Cruz and Monterey County, California.



Legend

WSPL Breeding & Wintering Locations

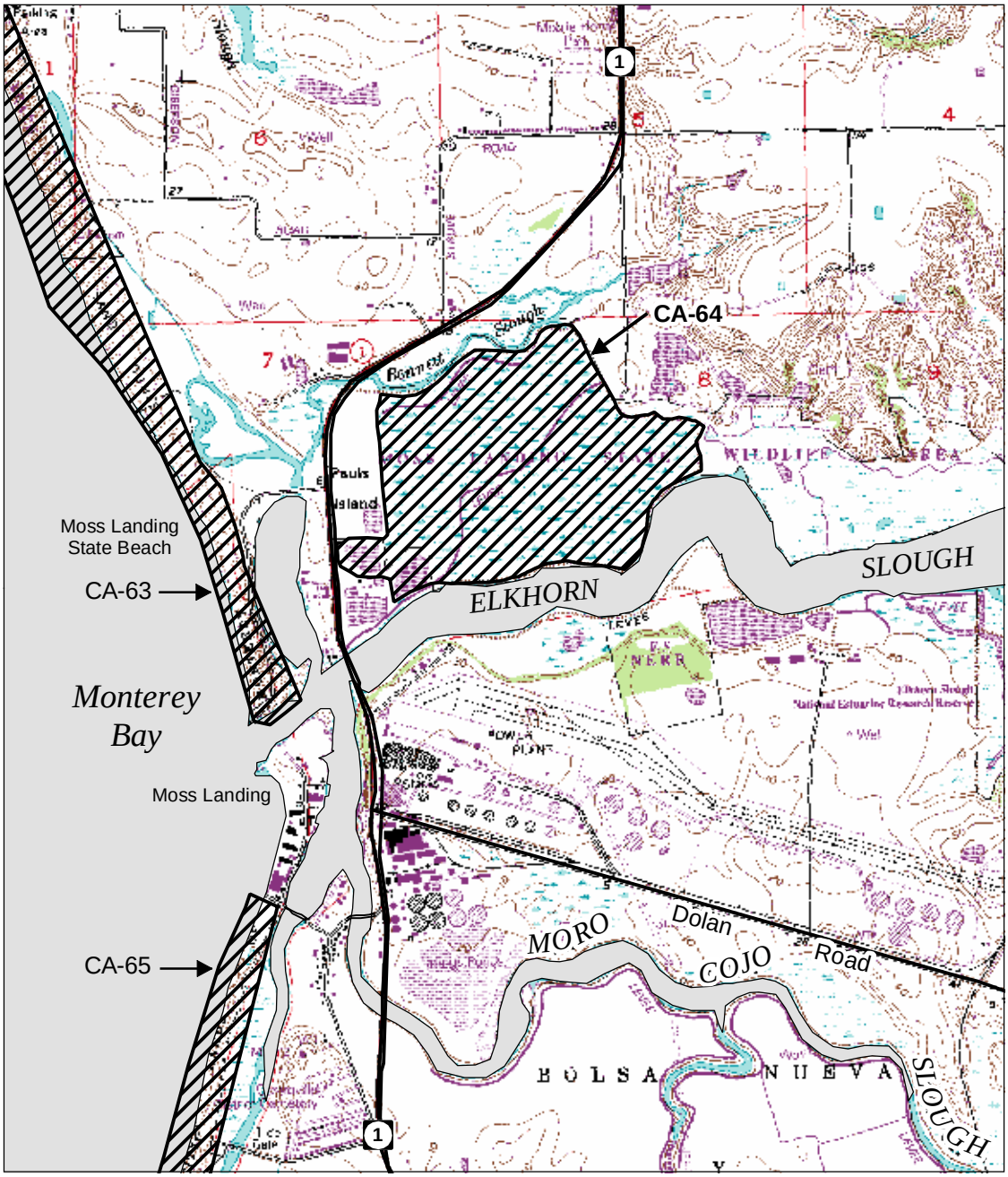
1 0 1 Miles

2 0 2 Kilometers

N

Scale 1: 80,000

Figure L - 86. Elkhorn Slough Mudflat/Salt Pond (CA-64), Monterey County, California.



Legend

WSPL Breeding & Wintering Locations

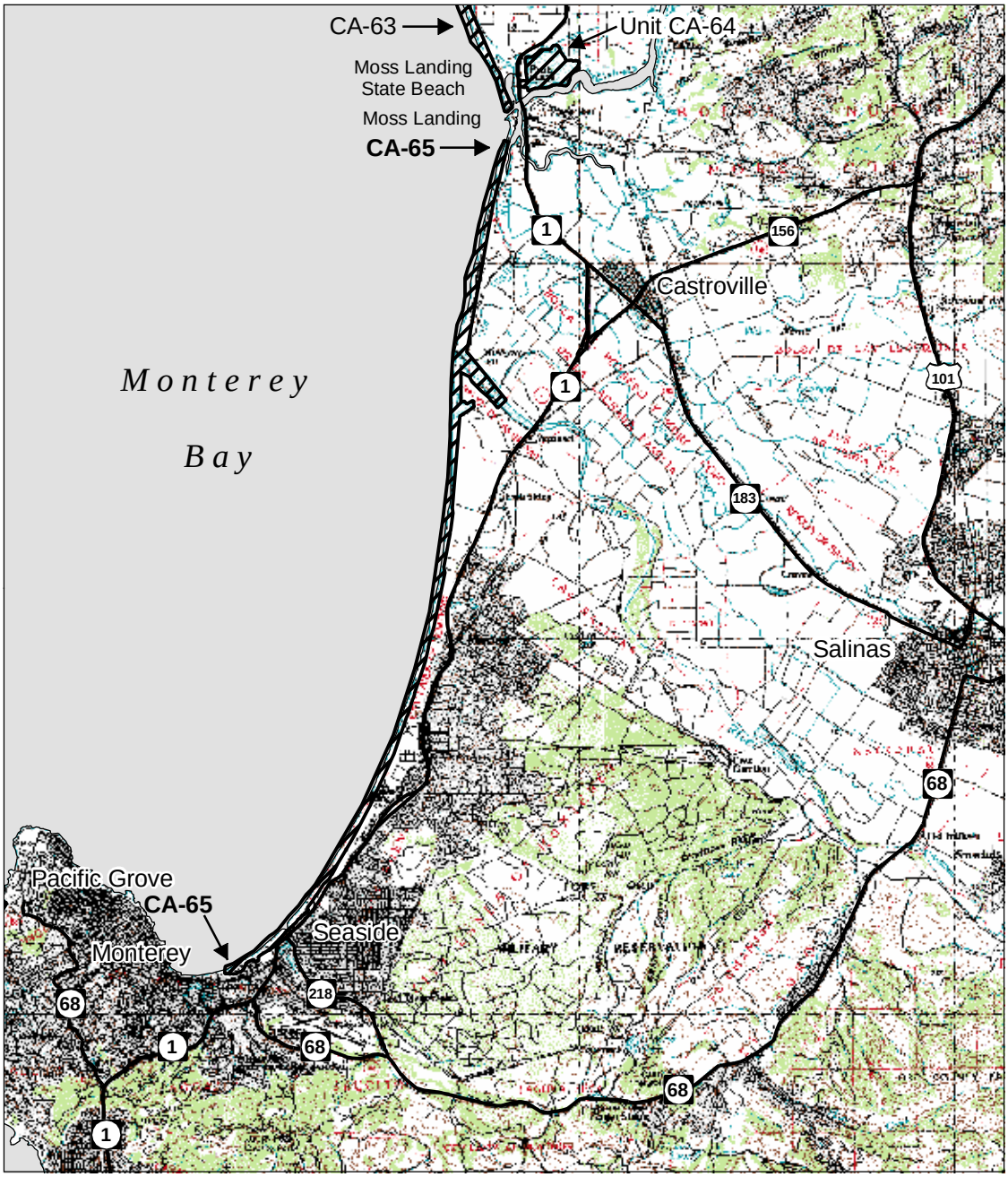
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 87. Moss Landing to Monterey (CA-65), Monterey County, California.



Legend

WSPL Breeding & Wintering Locations

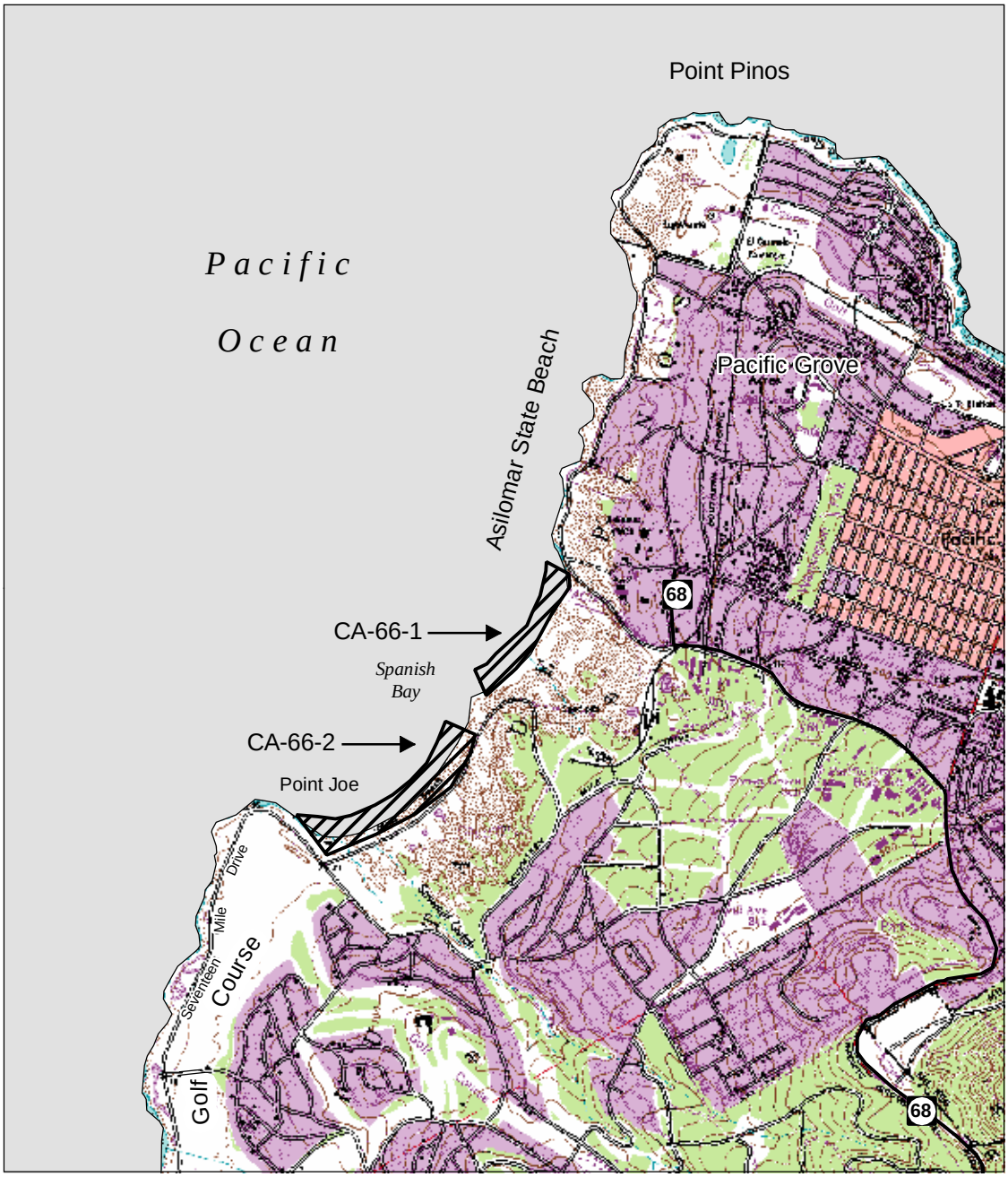
2 0 2 Miles

3 0 3 Kilometers

N

Scale 1: 180,000

Figure L - 88. Asilomar Beach (CA-66), Monterey County, California.



Legend

WSPL Breeding & Wintering Locations

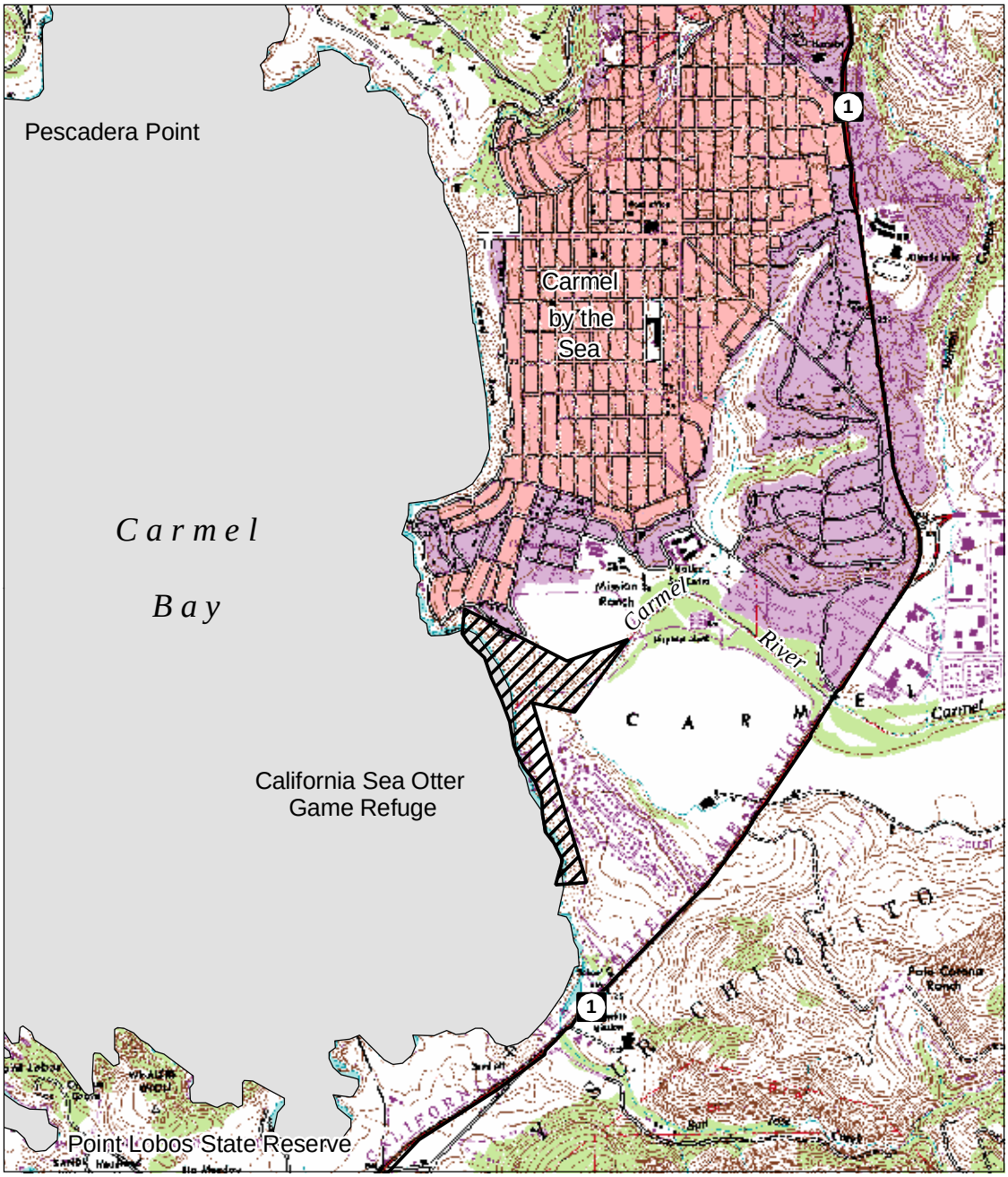
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 89. Carmel River Mouth (CA-67), Monterey County, California.



Legend

WSPL Breeding & Wintering Locations

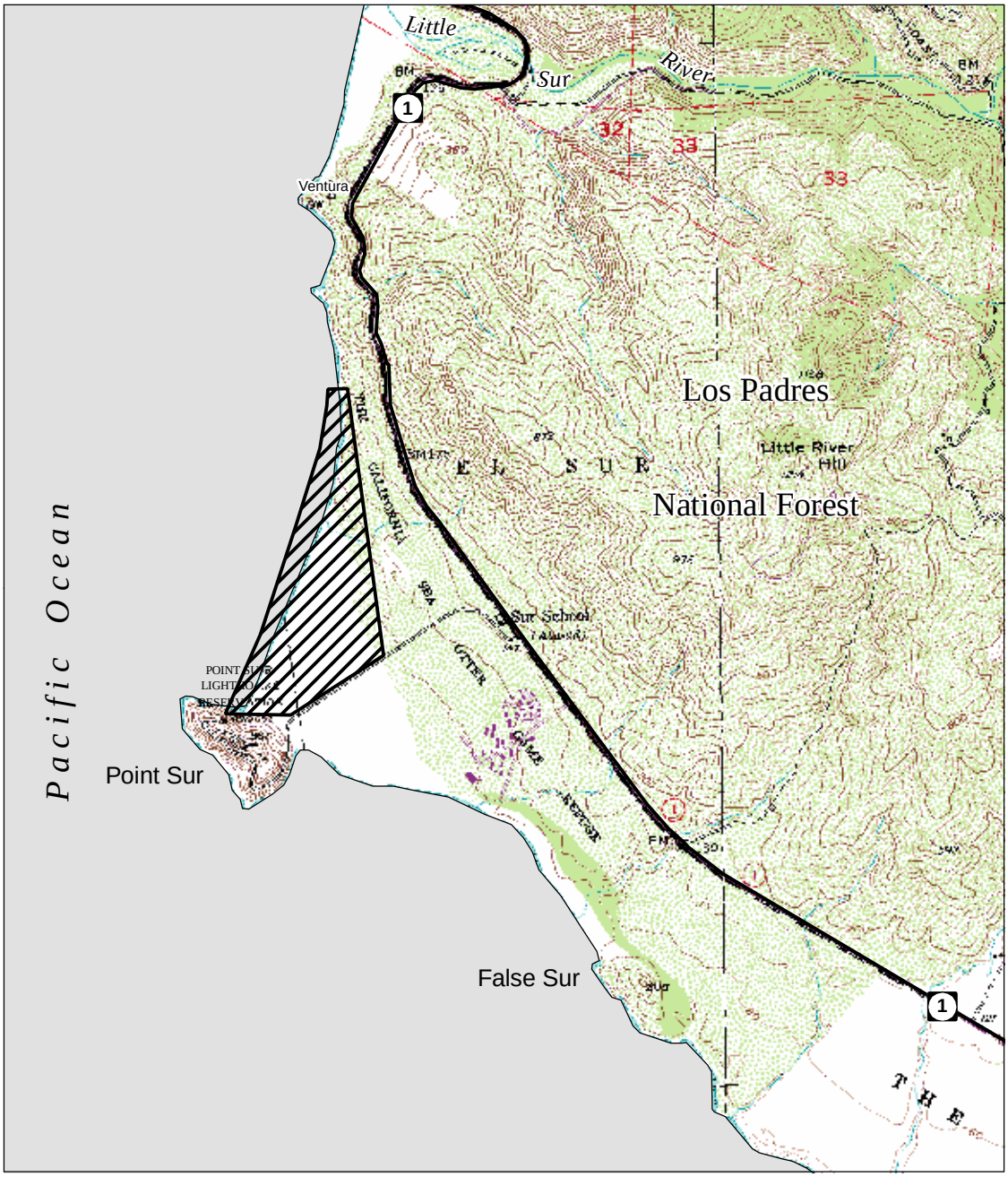
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 90. Point Sur (CA-68), Monterey County, California.



Legend

WSPL Breeding & Wintering Locations

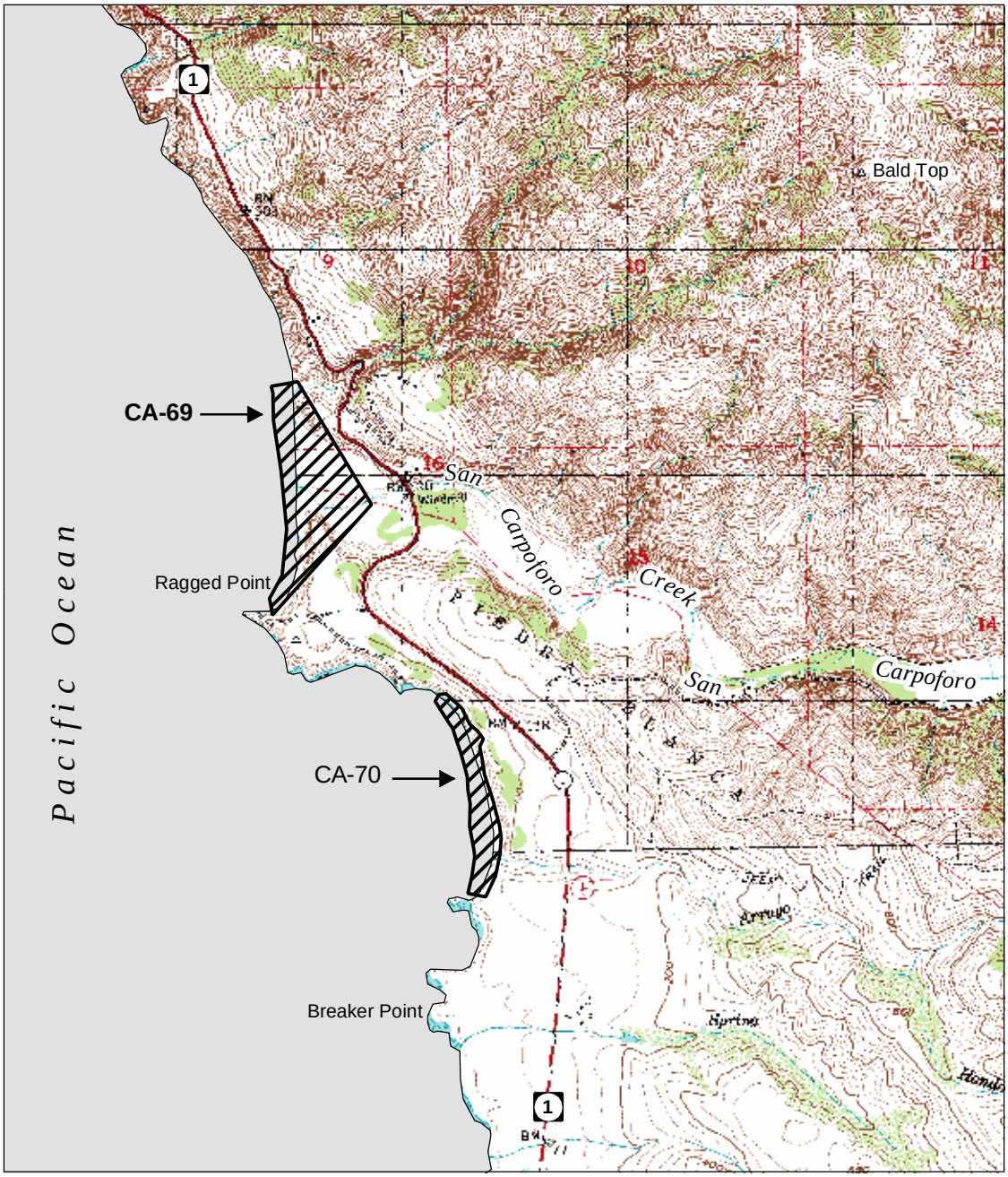
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 91. San Carpoforo Creek (CA-69) and Arroyo Hondo Creek (CA-70), San Luis Obispo County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 92. Point Sierra Nevada (CA-71) and Arroyo de la Cruz (CA-72), San Luis Obispo County, California.

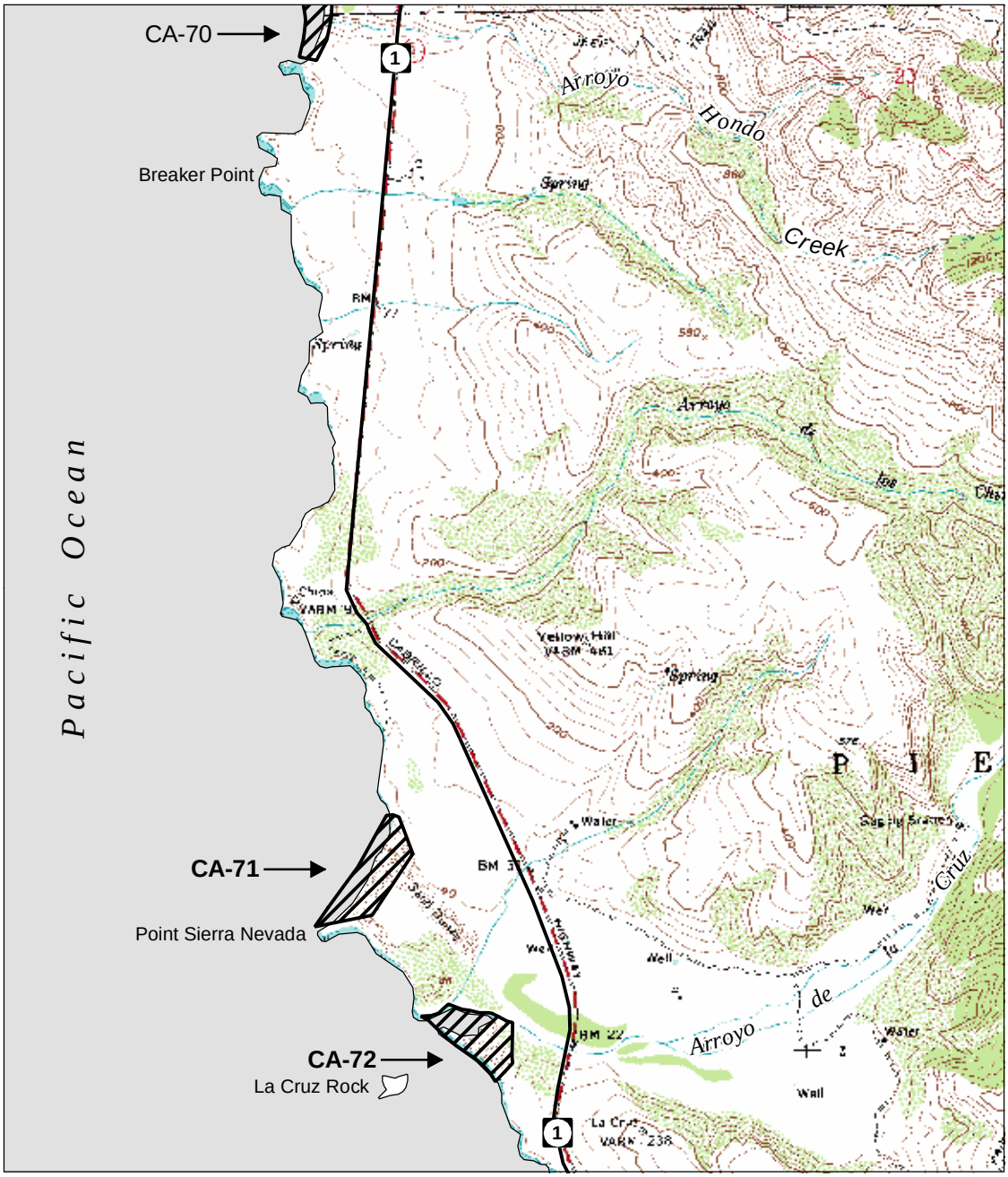


Figure L - 93. Sidney's Lagoon (CA-73) and Piedras Blancas (CA-74), San Luis Obispo County, California.

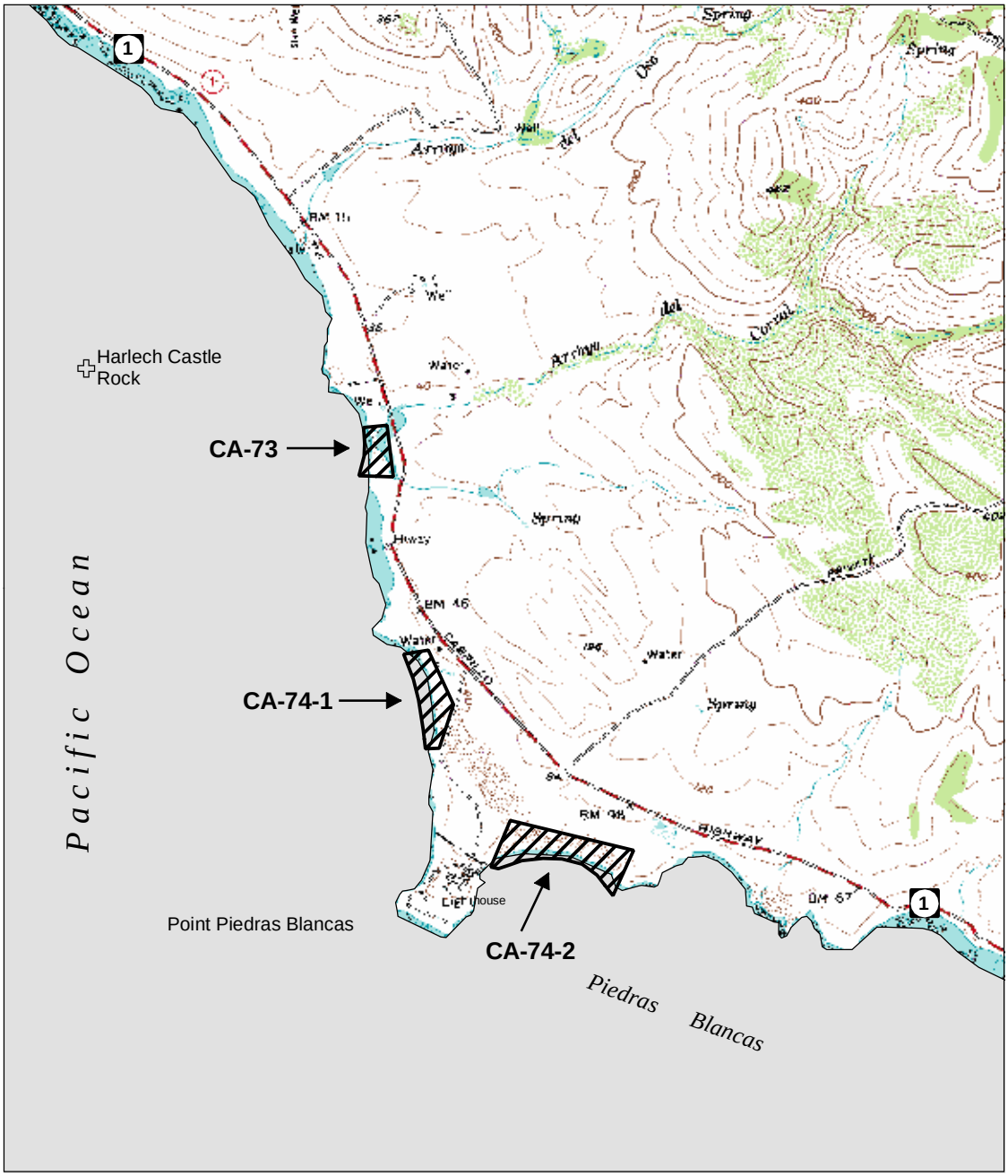
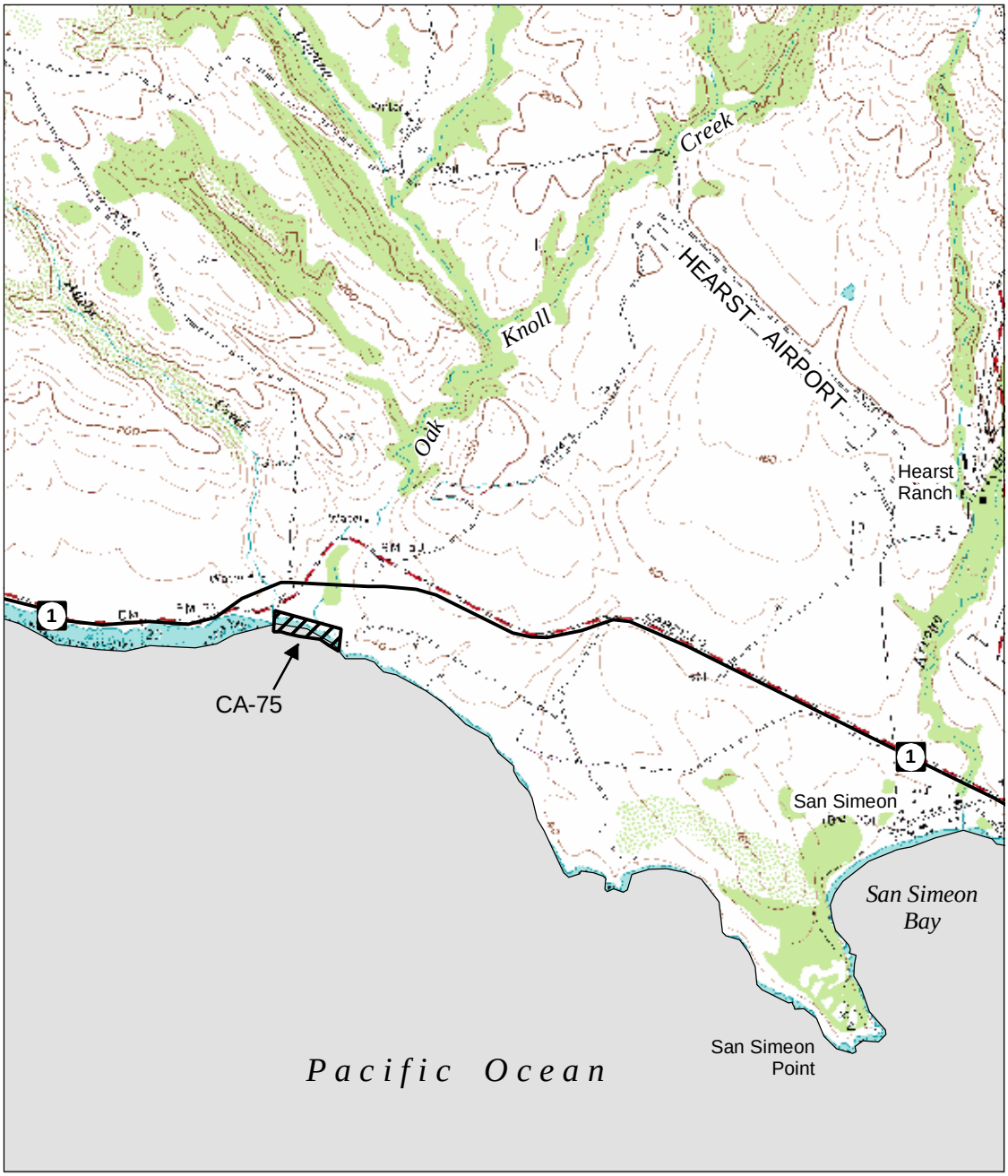


Figure L - 94. Arroyo Laguna Creek (CA-75), San Luis Obispo County, California.



Legend

WSPL Breeding & Wintering Locations

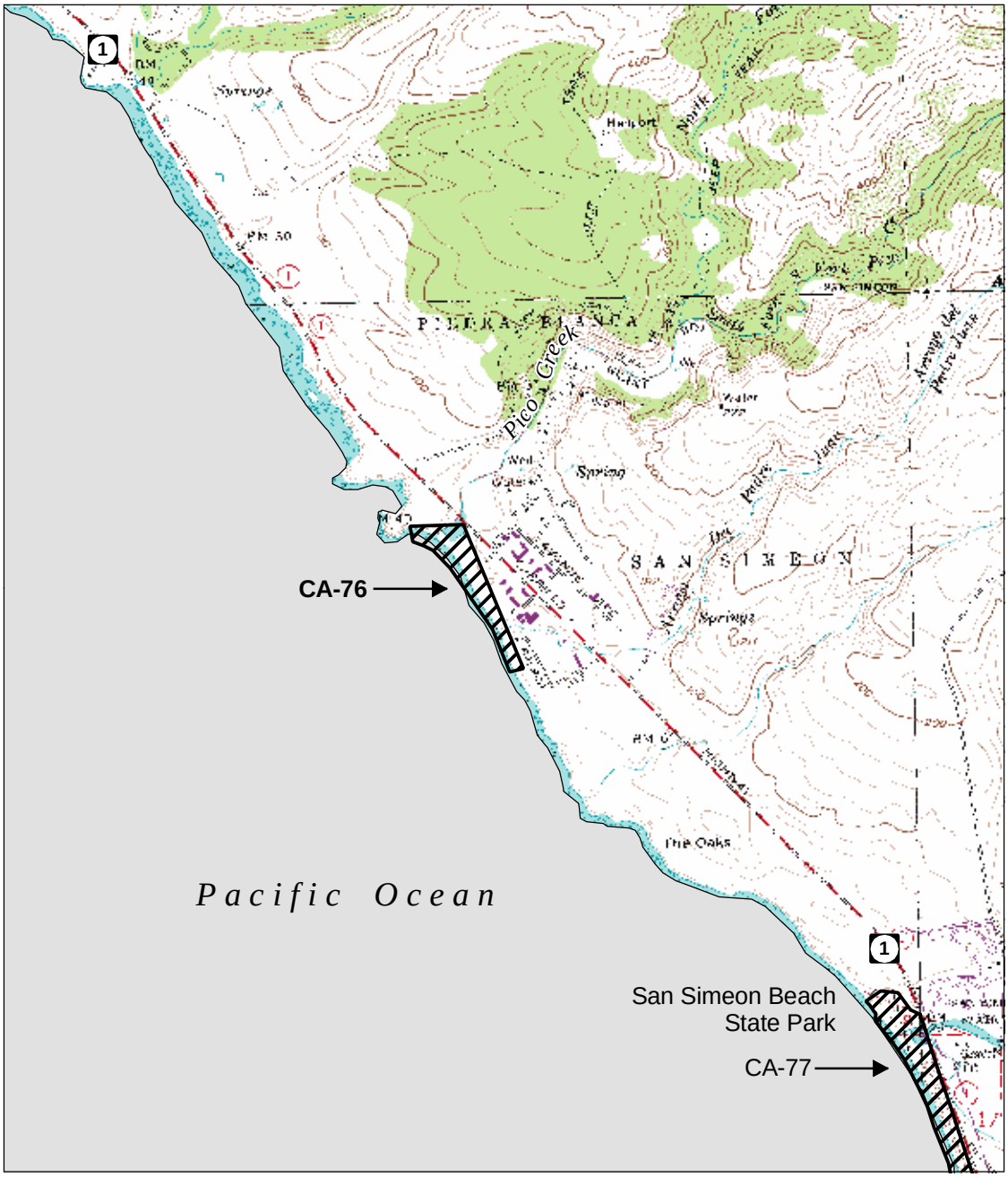
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 95. Pico Creek (CA-76), San Luis Obispo County, California.



Legend

WSPL Breeding & Wintering Locations

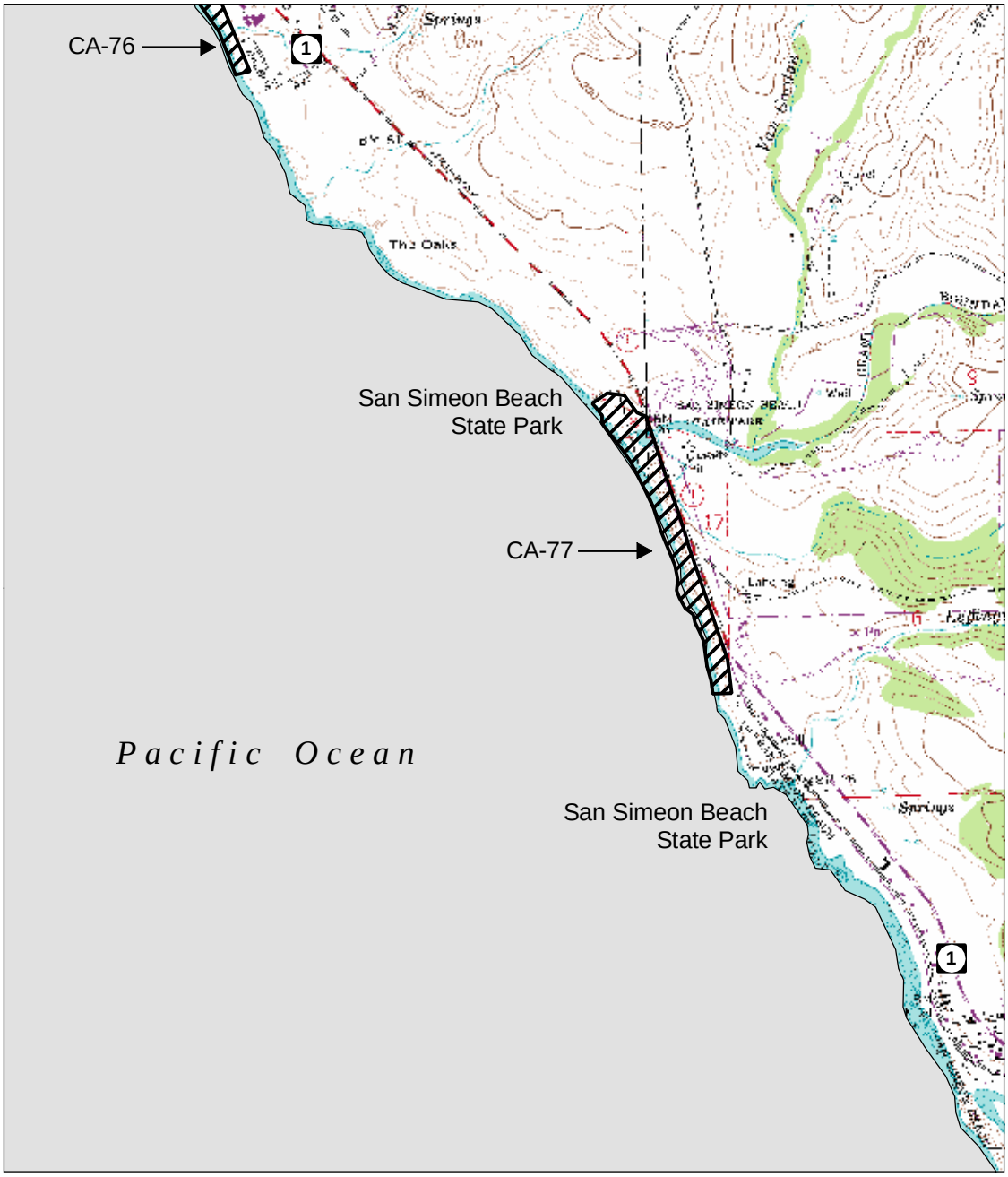
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 96. San Simeon Beach (CA-77), San Luis Obispo County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 97. Villa Creek (CA-78), San Luis Obispo County, California.

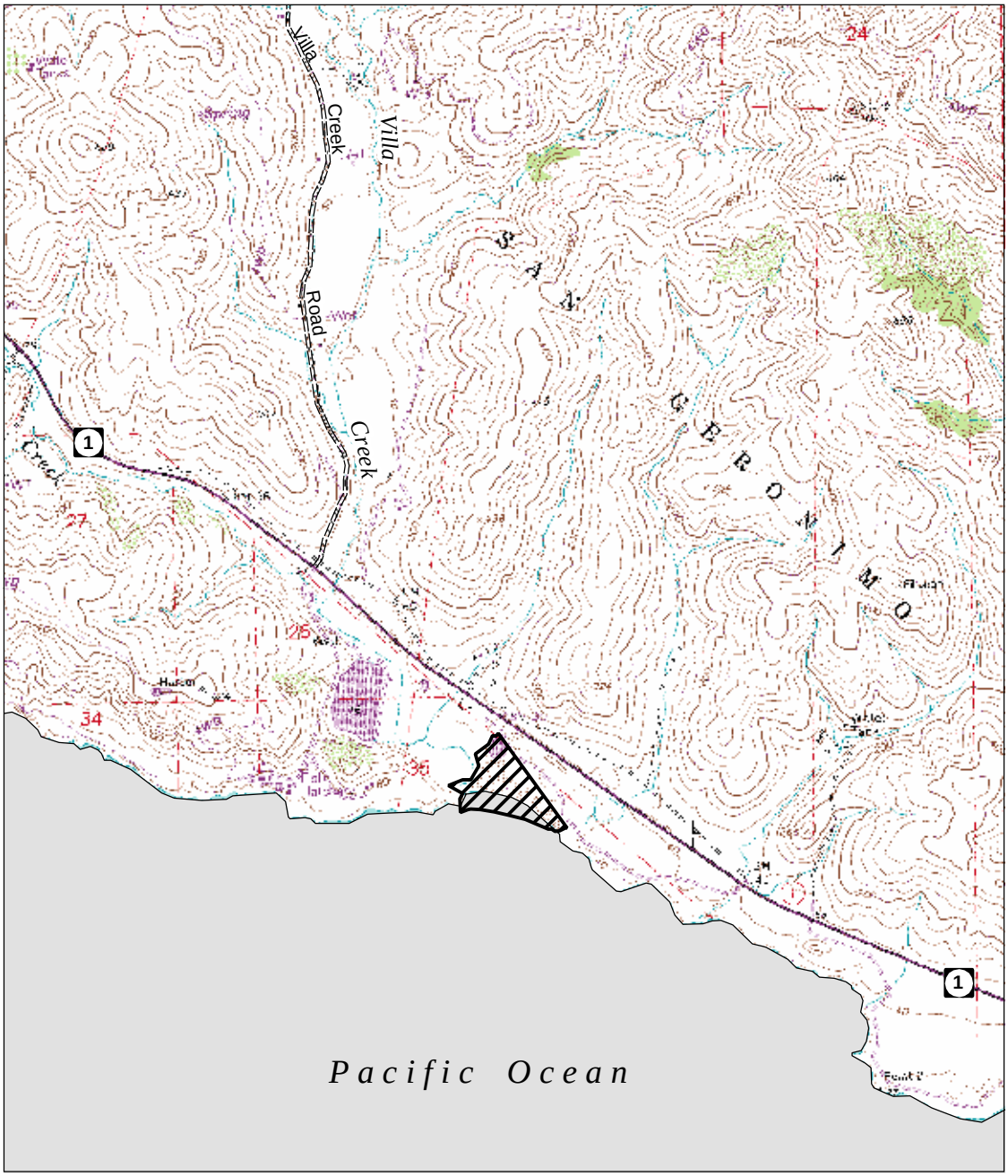
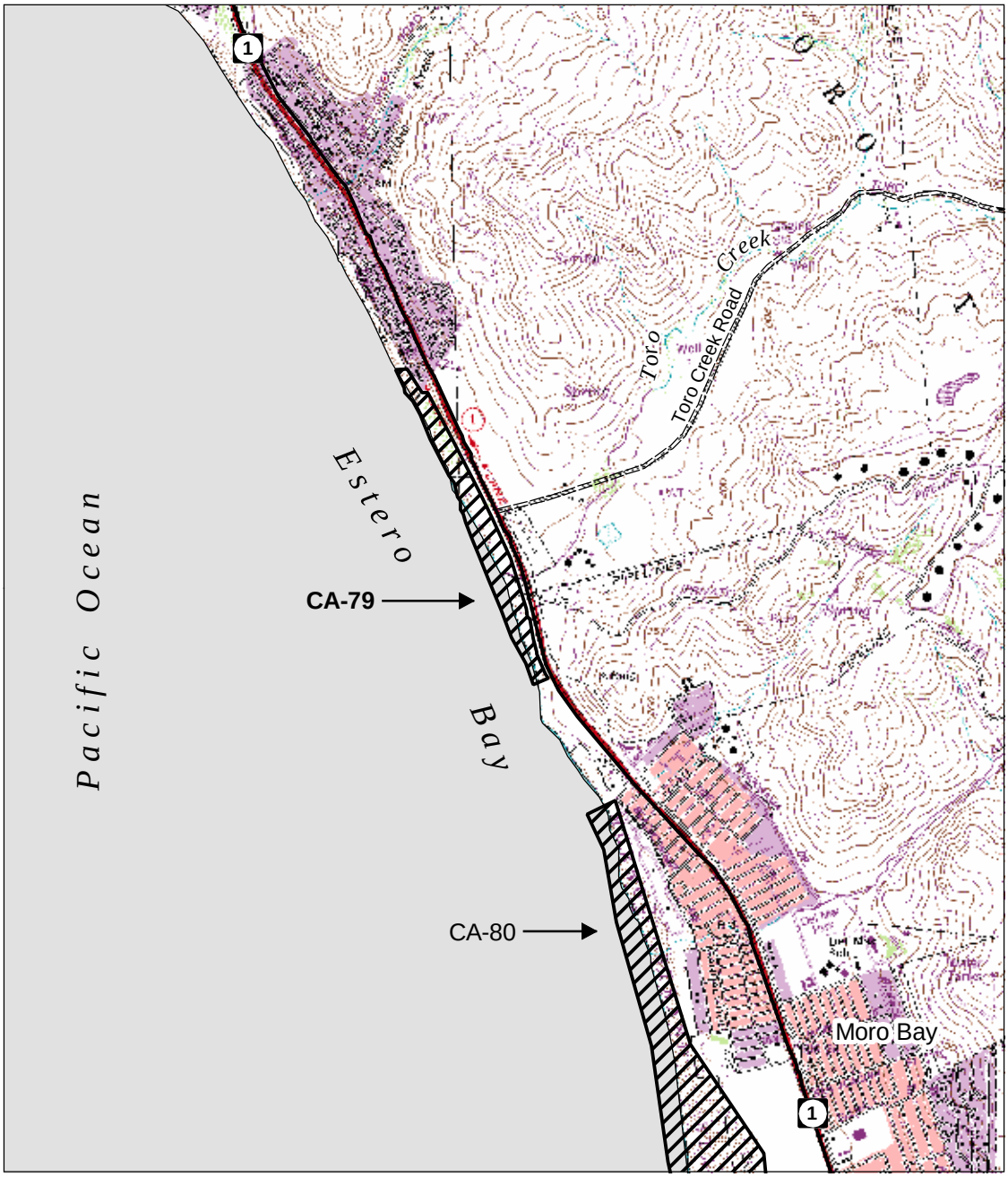


Figure L - 98. Toro Creek (CA-79), San Luis Obispo County, California.



Legend

WSPL Breeding & Wintering Locations

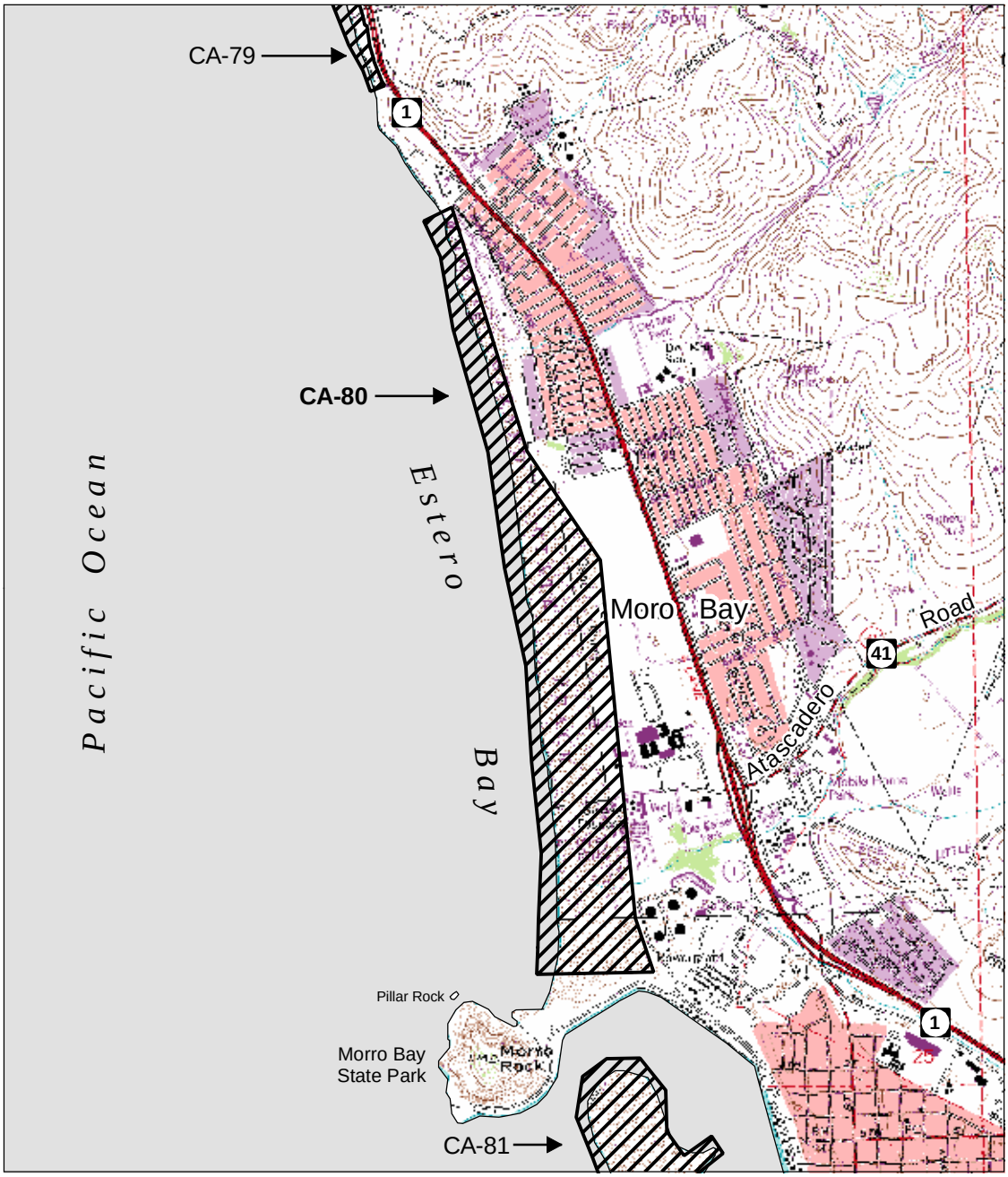
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 99. Atascadero Beach (CA-80), San Luis Obispo County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 100. Morro Bay (CA-81), San Luis Obispo County, California.

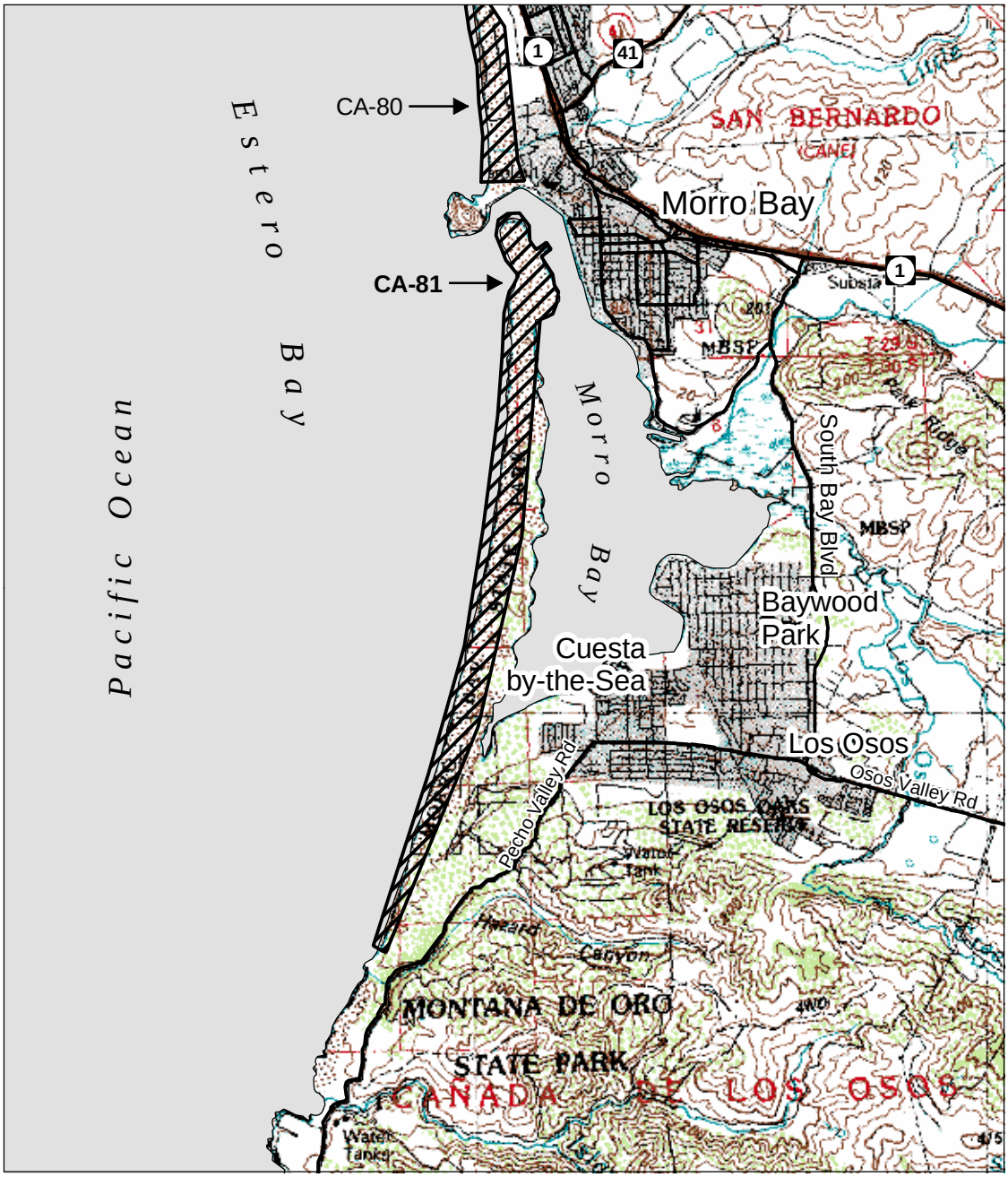


Figure L - 101. Avila Beach (CA-82), San Luis Obispo County, California.

Legend

WSPL Breeding & Wintering Locations

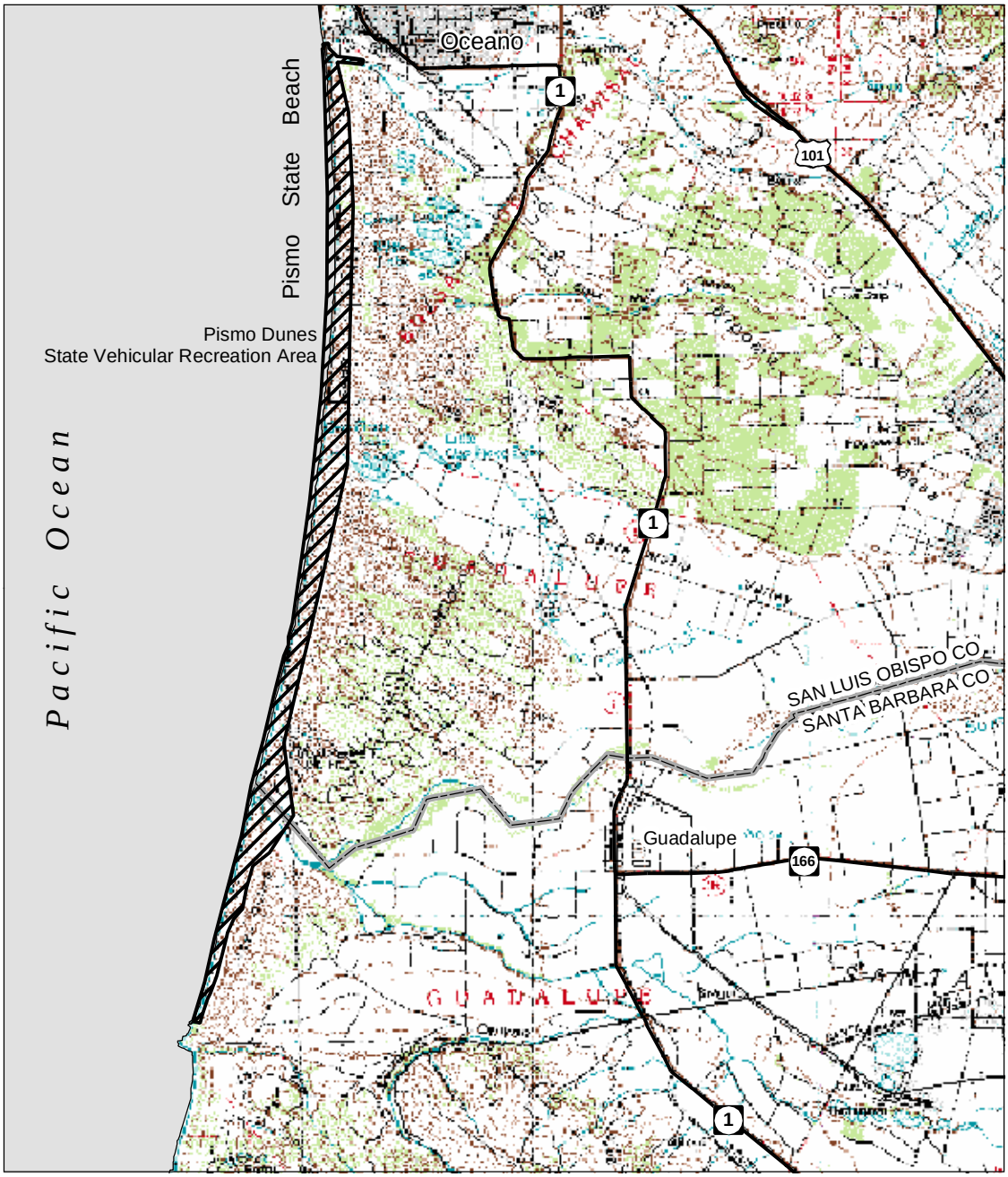
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 102. Pismo Beach/Nipomo Dunes (CA-83), San Luis Obispo and Santa Barbara County, California.



Legend

WSPL Breeding & Wintering Locations

2 0 2 Miles

3 0 3 Kilometers

N

Scale 1: 130,000

Figure L - 103. Vandenberg Air Force Base (CA-84), Santa Barbara County, California.

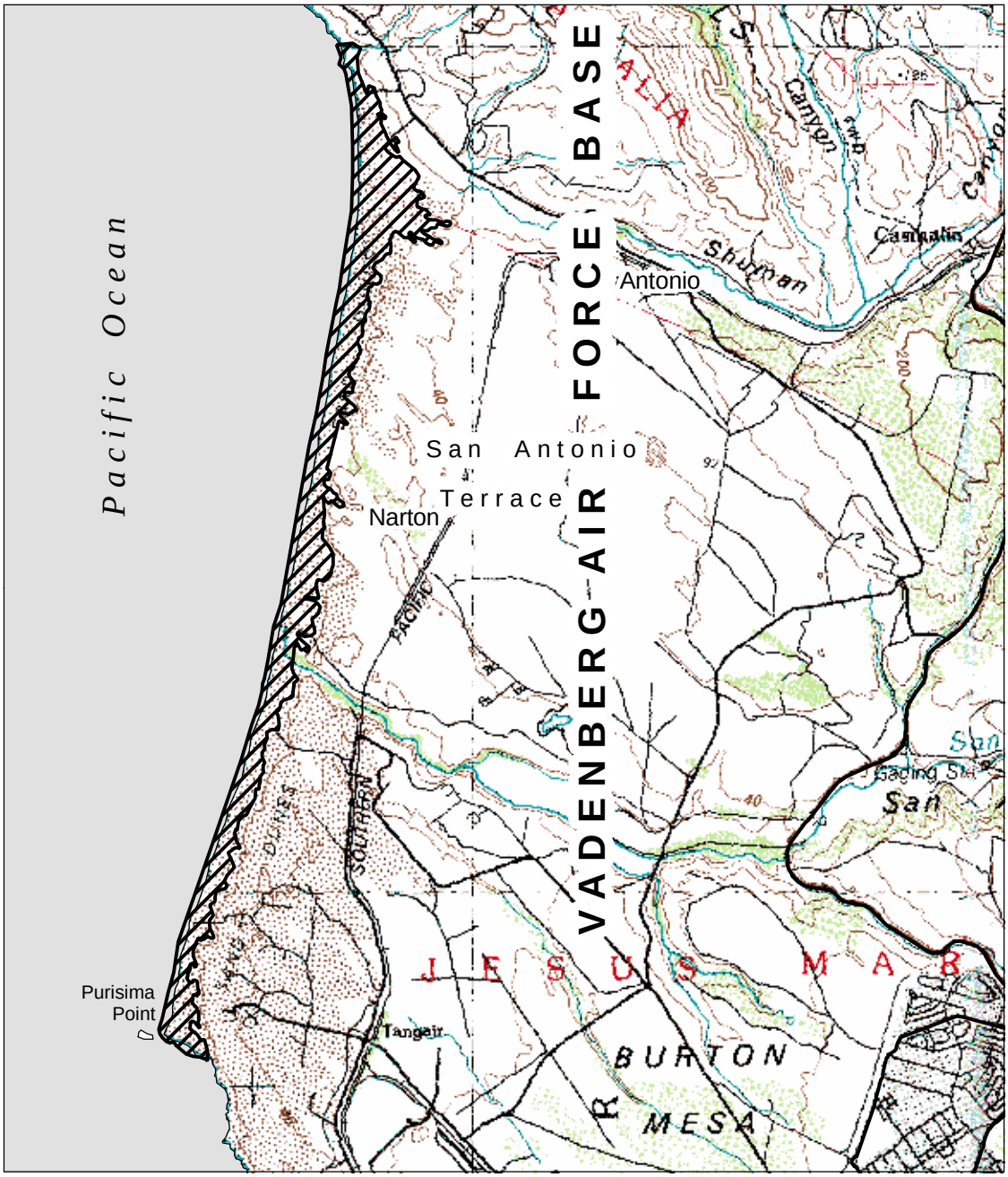
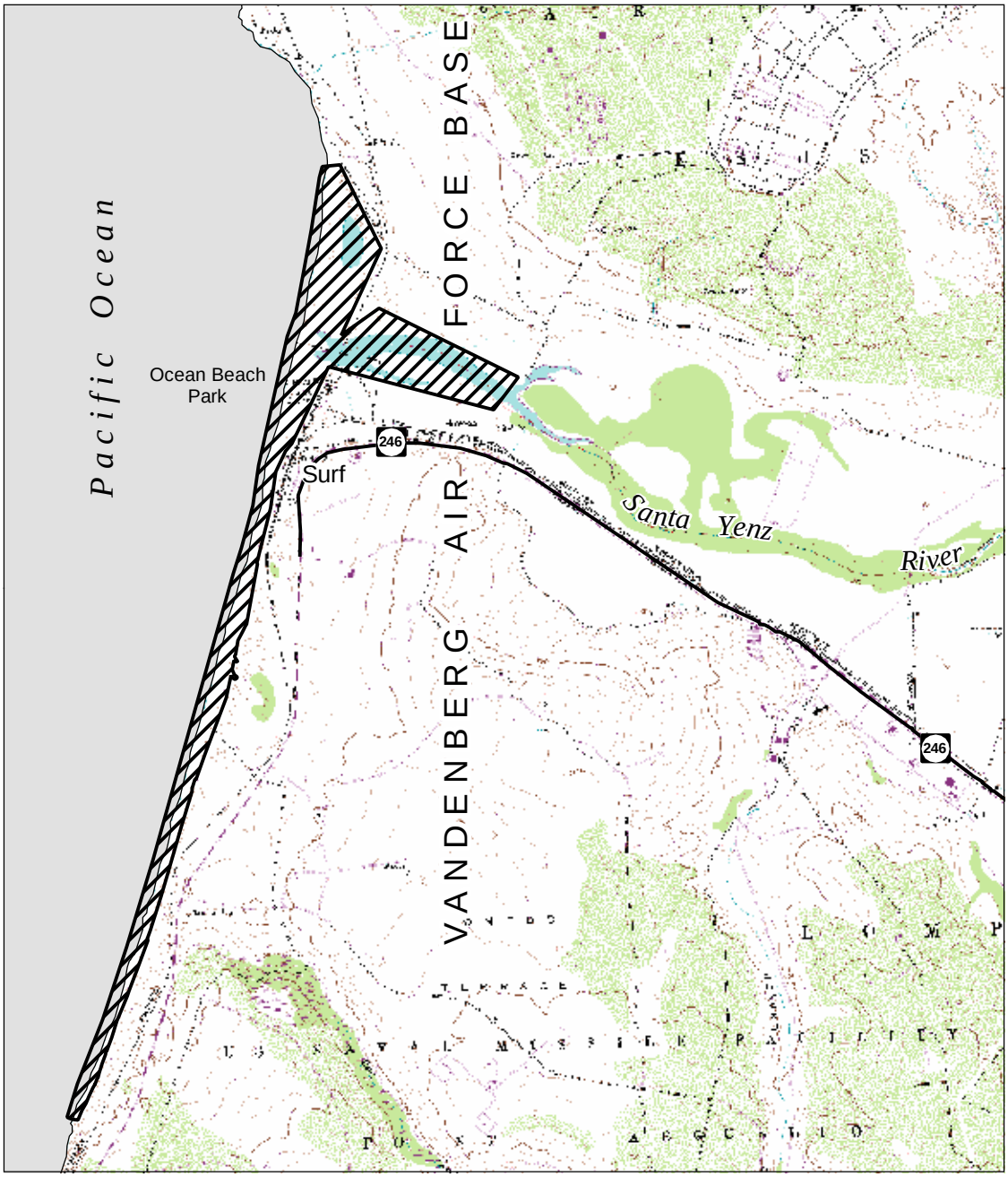


Figure L - 104. Santa Ynez River Mouth/Ocean Beach (CA-85), Santa Barbara County, California.



Legend

WSPL Breeding & Wintering Locations

0.6 0 0.6 Miles

1 0 1 Kilometers

N

Scale 1: 50,000

Figure L - 105. Jalama Beach (CA-86), Santa Barbara County, California.

Legend

WSPL Breeding & Wintering Locations

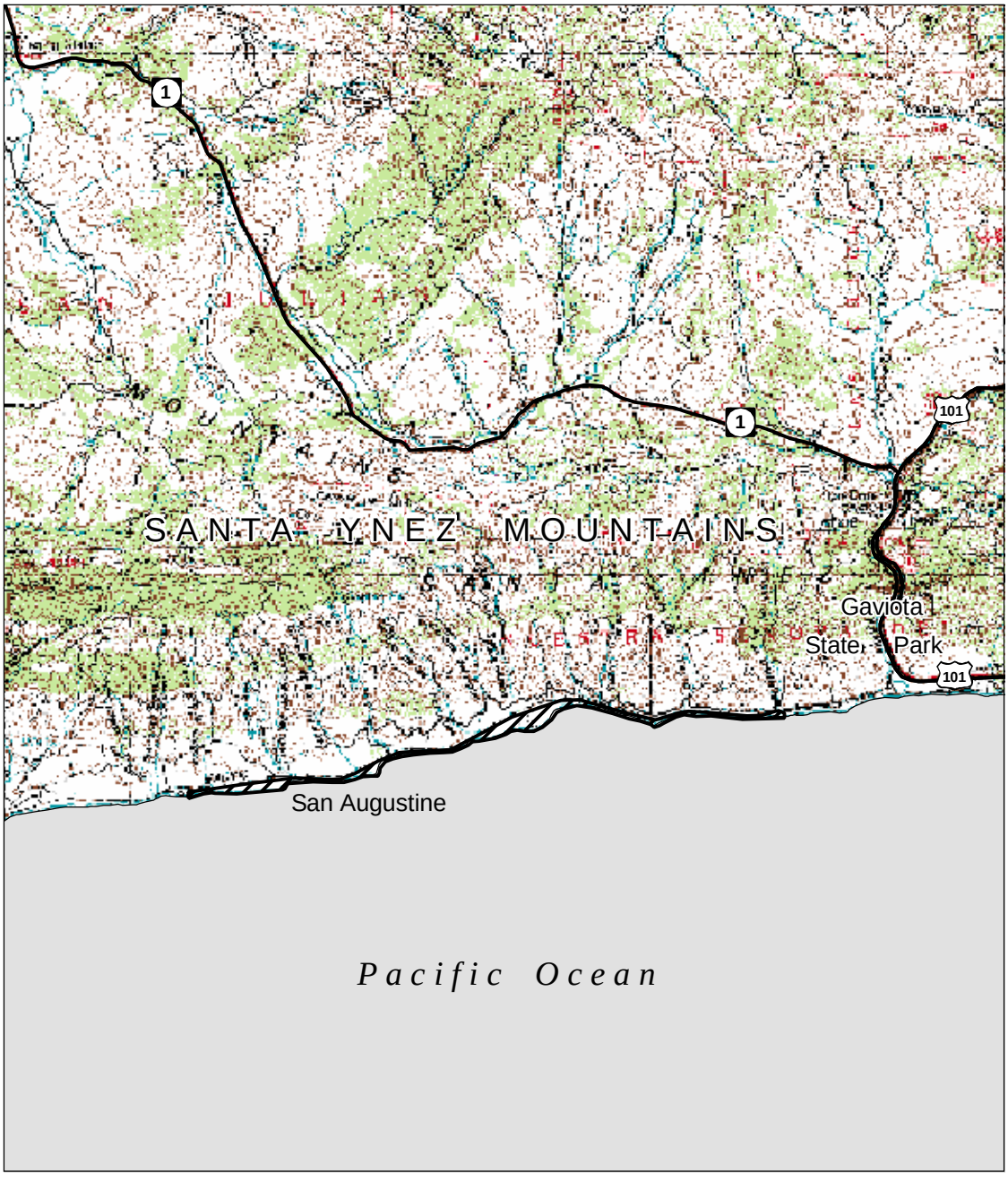
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 106. Hollister Ranch (CA-87), Santa Barbara County, California.



Legend

WSPL Breeding & Wintering Locations

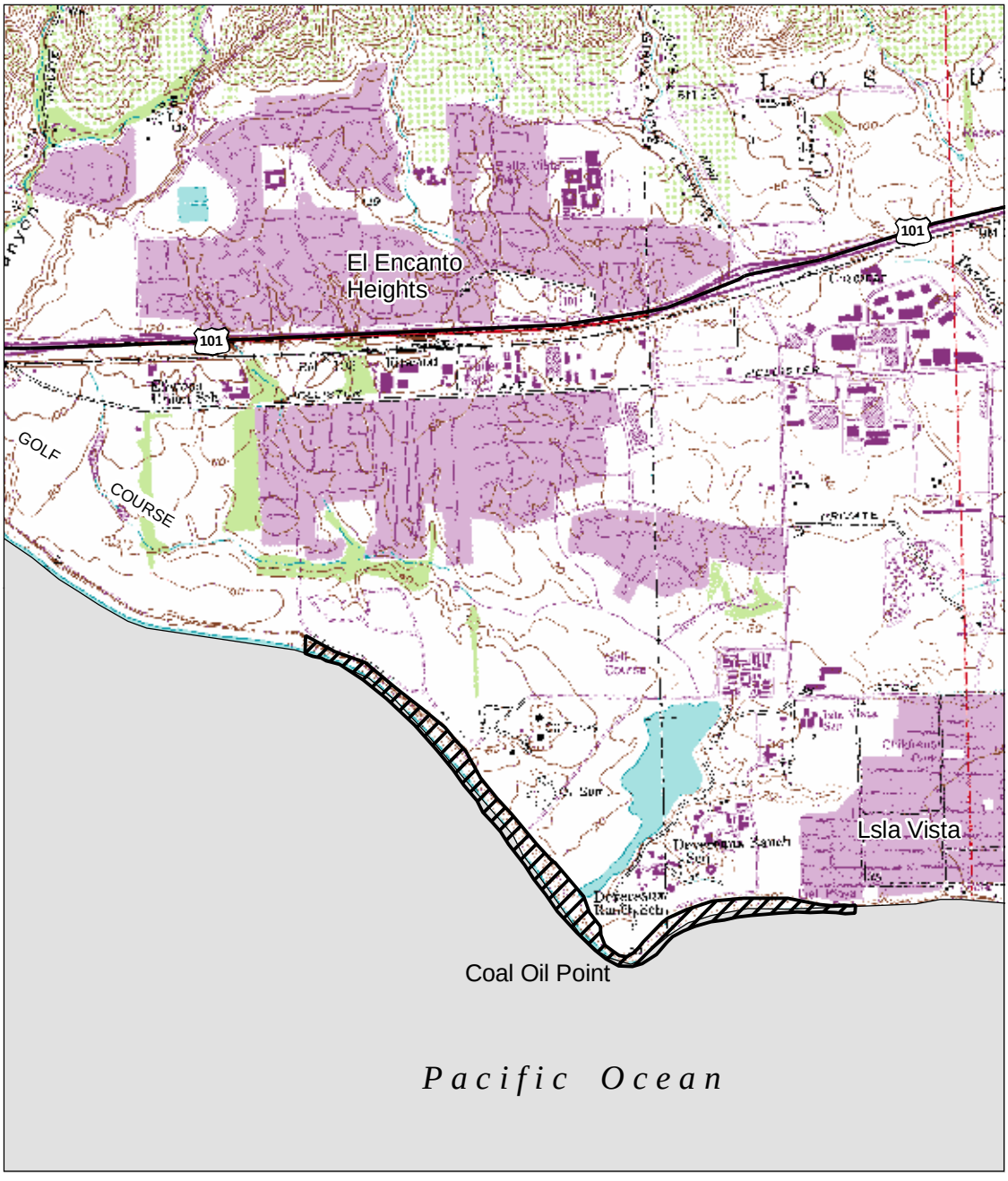
2 0 2 Miles

3 0 3 Kilometers

N

Scale 1: 130,000

Figure L - 107. Devereaux/Sands/Ellwood (CA-88), Santa Barbara County, California.



Legend

WSPL Breeding & Wintering Locations

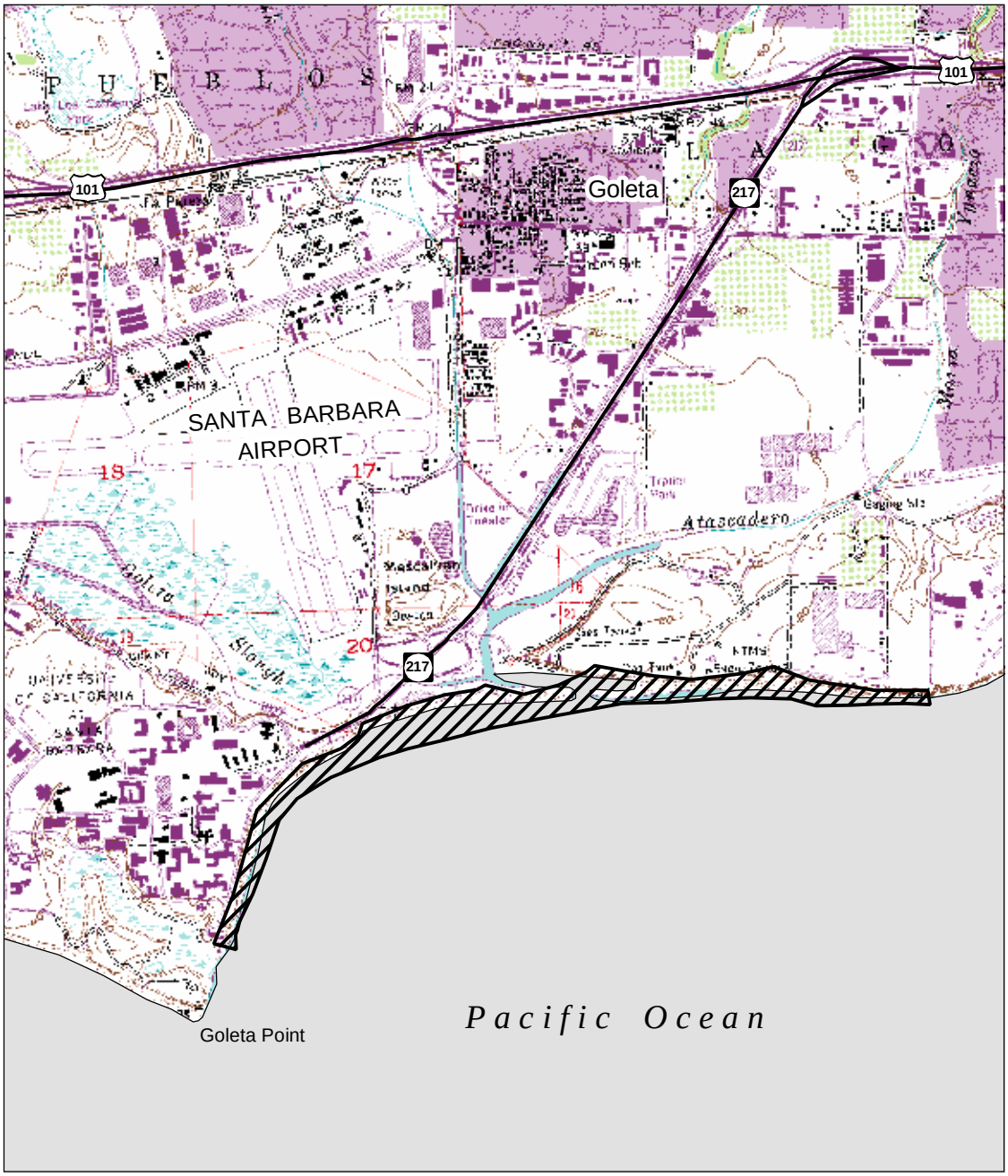
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 108. Goleta Beach (CA-89), Santa Barbara County, California.



Legend

WSPL Breeding & Wintering Locations

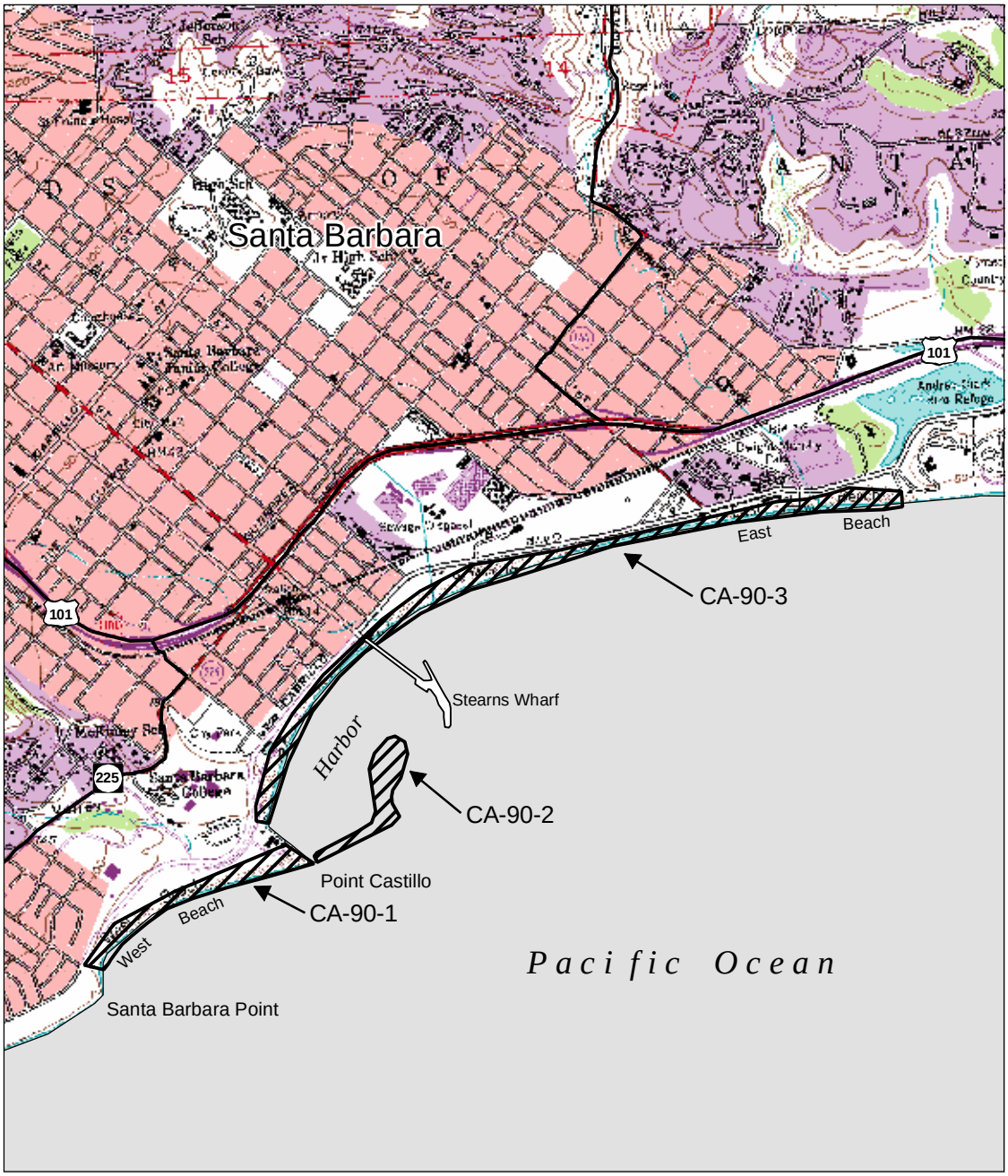
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 109. Point Castillo/Santa Barbara Harbor (CA-90), Santa Barbara County, California.



Legend

WSPL Breeding & Wintering Locations

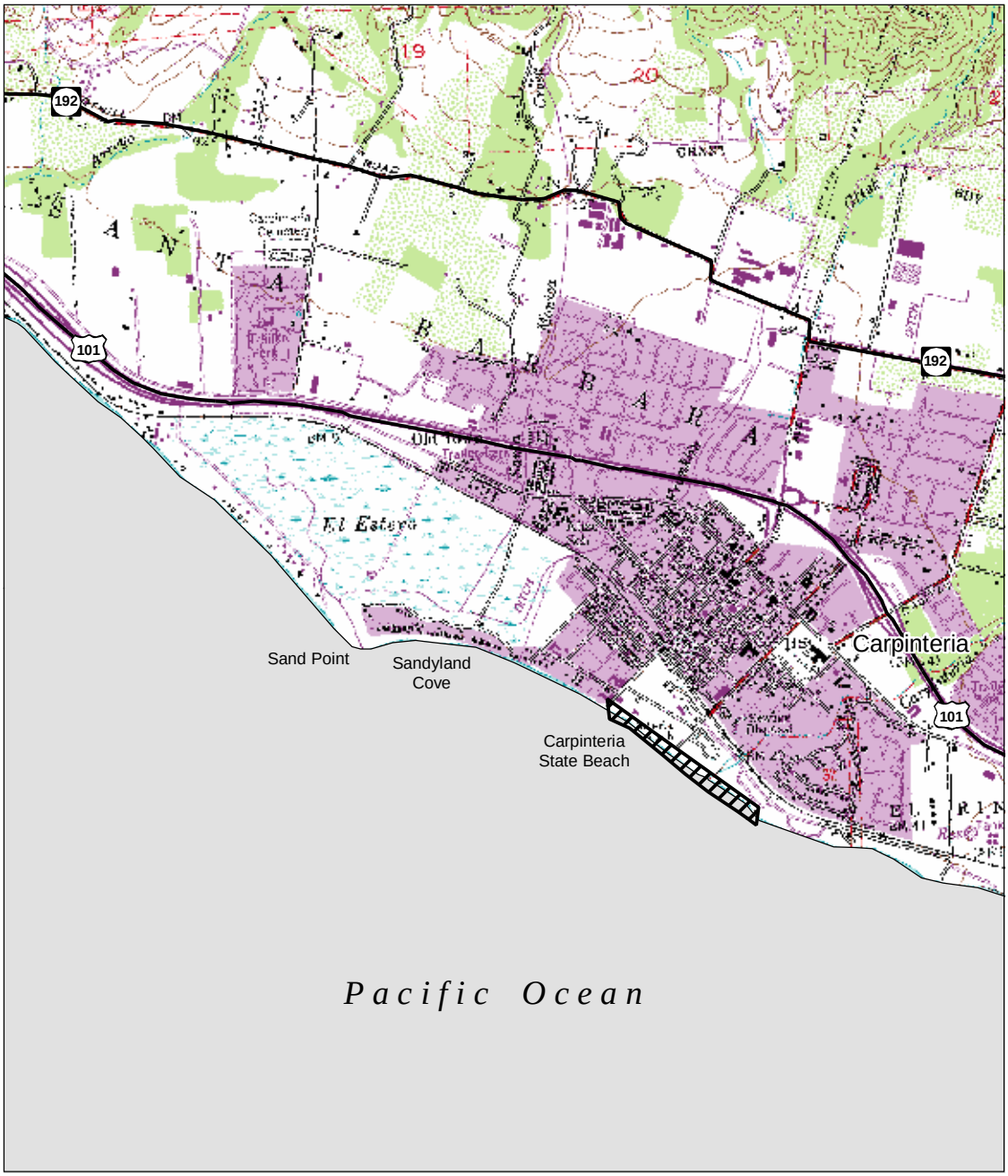
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 110. Carpinteria Beach (CA-91), Santa Barbara County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 111. San Miguel Island (CA-92), Santa Barbara County, California.

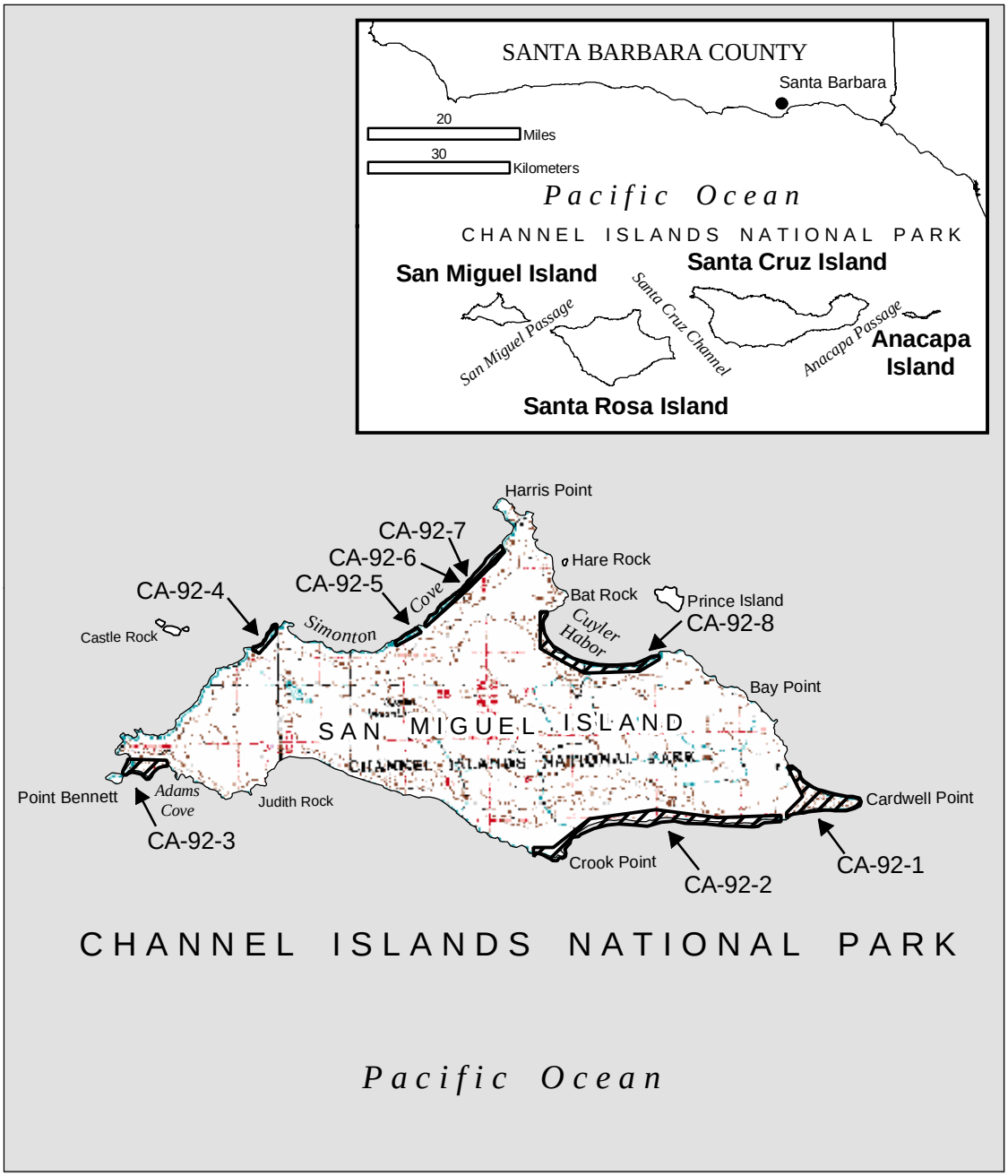


Figure L - 112. Santa Rosa Island (CA-93), Santa Barbara County, California.

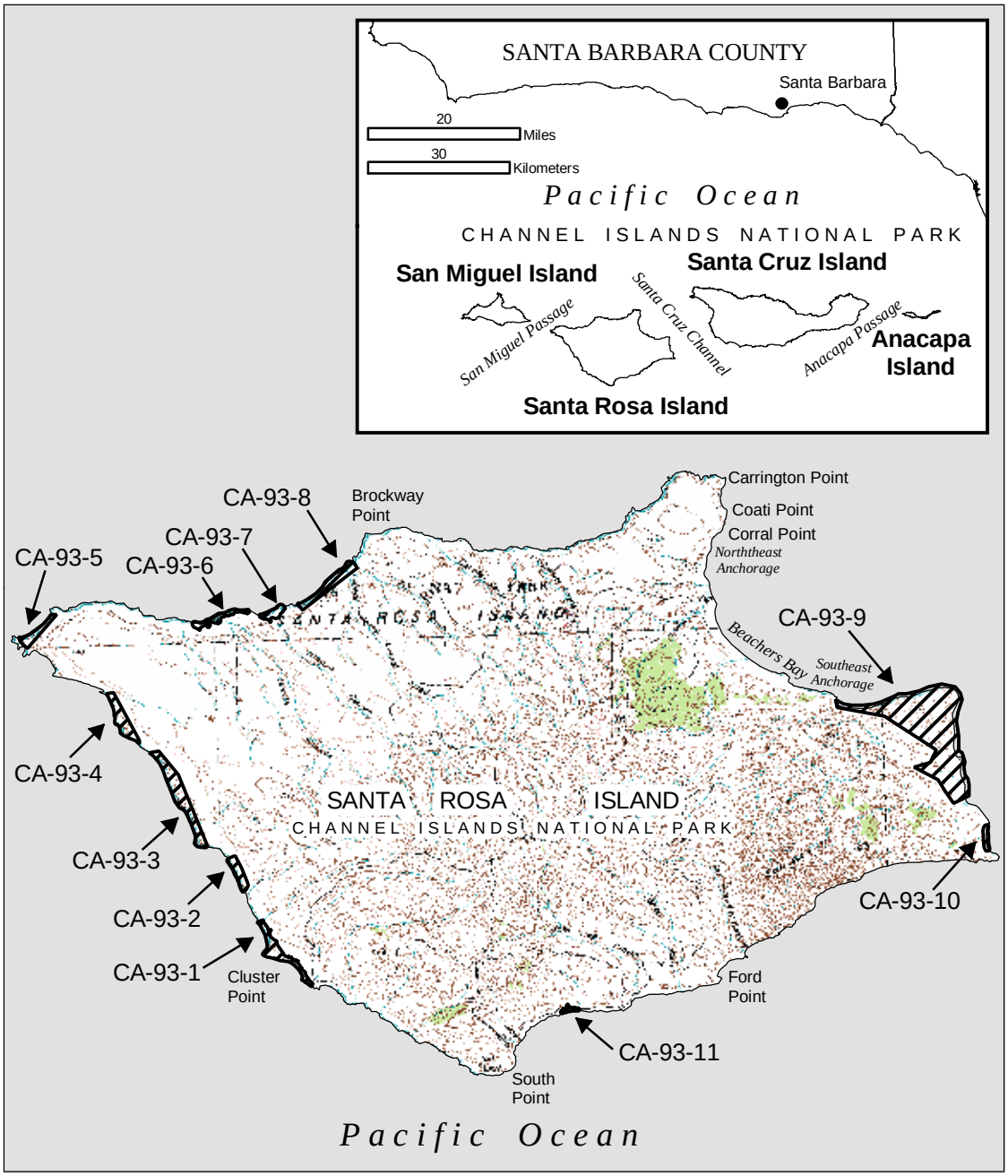
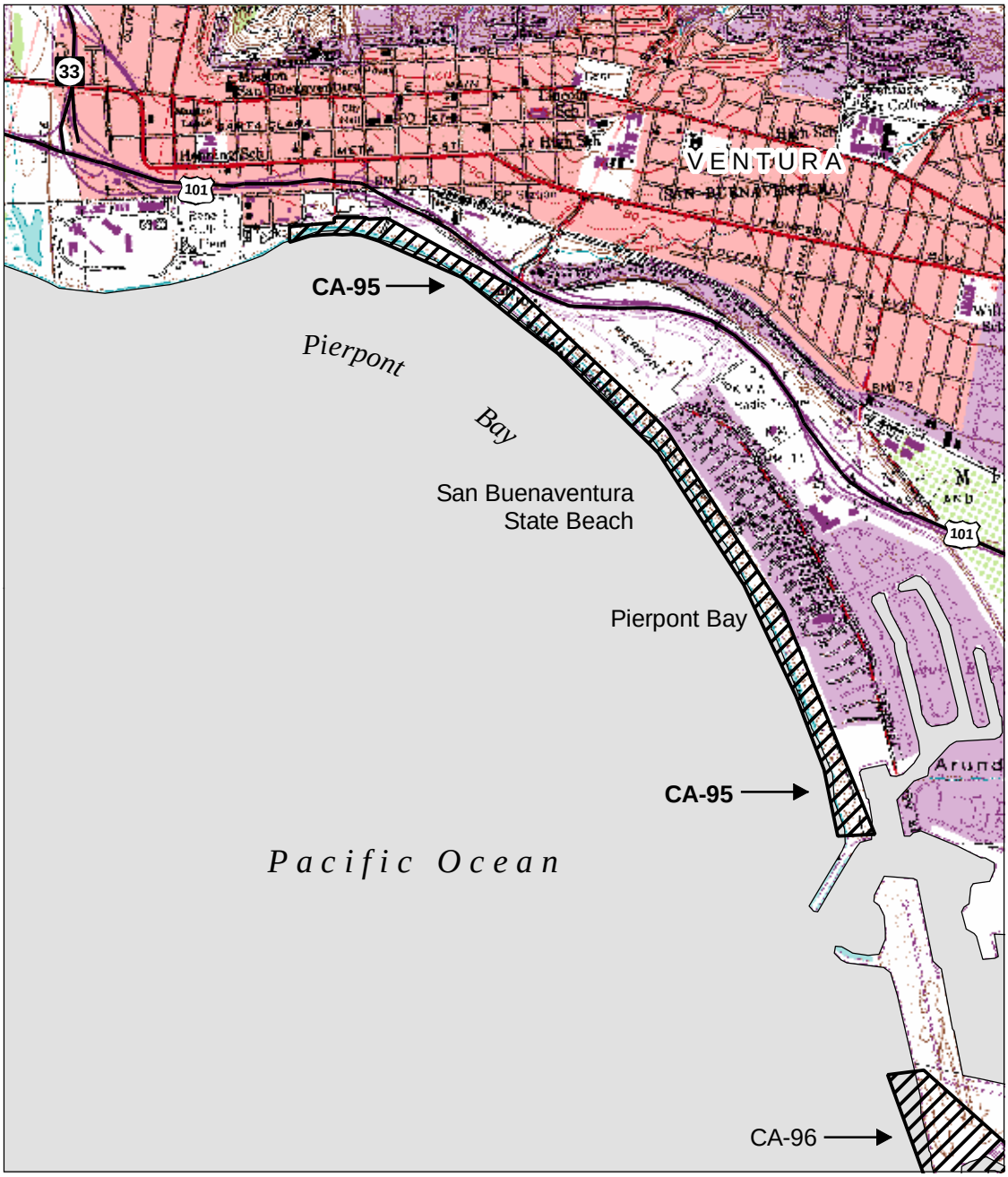


Figure L - 113. Santa Cruz Island (CA-94), Santa Barbara County, California.

Figure L - 114. San Buenaventura Beach (CA-95), Ventura County, California.



Legend

WSPL Breeding & Wintering Locations

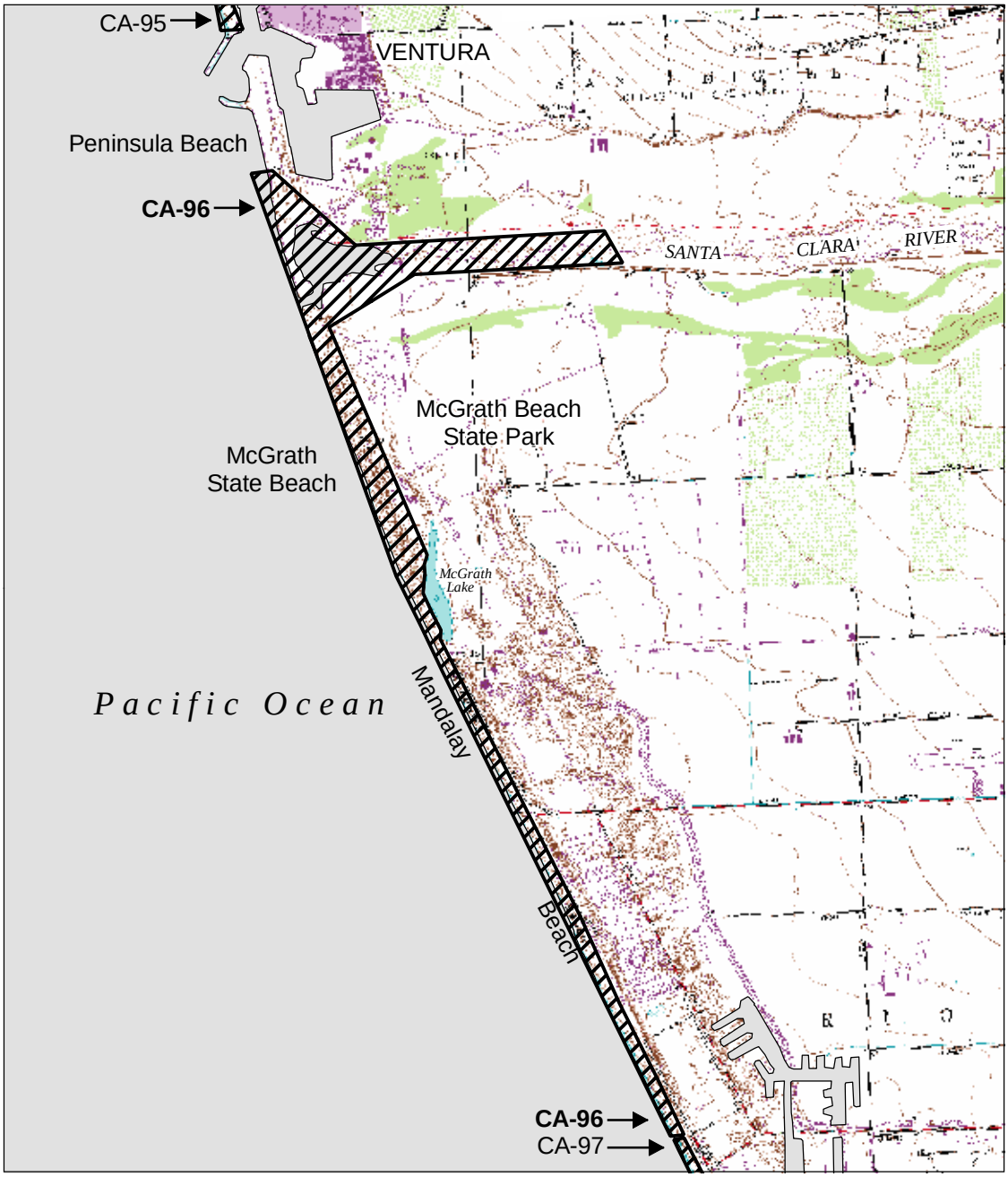
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 115. Santa Clara River Mouth/Mandalay State Beach (CA-96), Ventura County, California.



Legend

WSPL Breeding & Wintering Locations

0.6 0 0.6 Miles

1 0 1 Kilometers

N

Scale 1: 50,000

Figure L - 116. Hollywood Beach (CA-97), Ventura County, California.

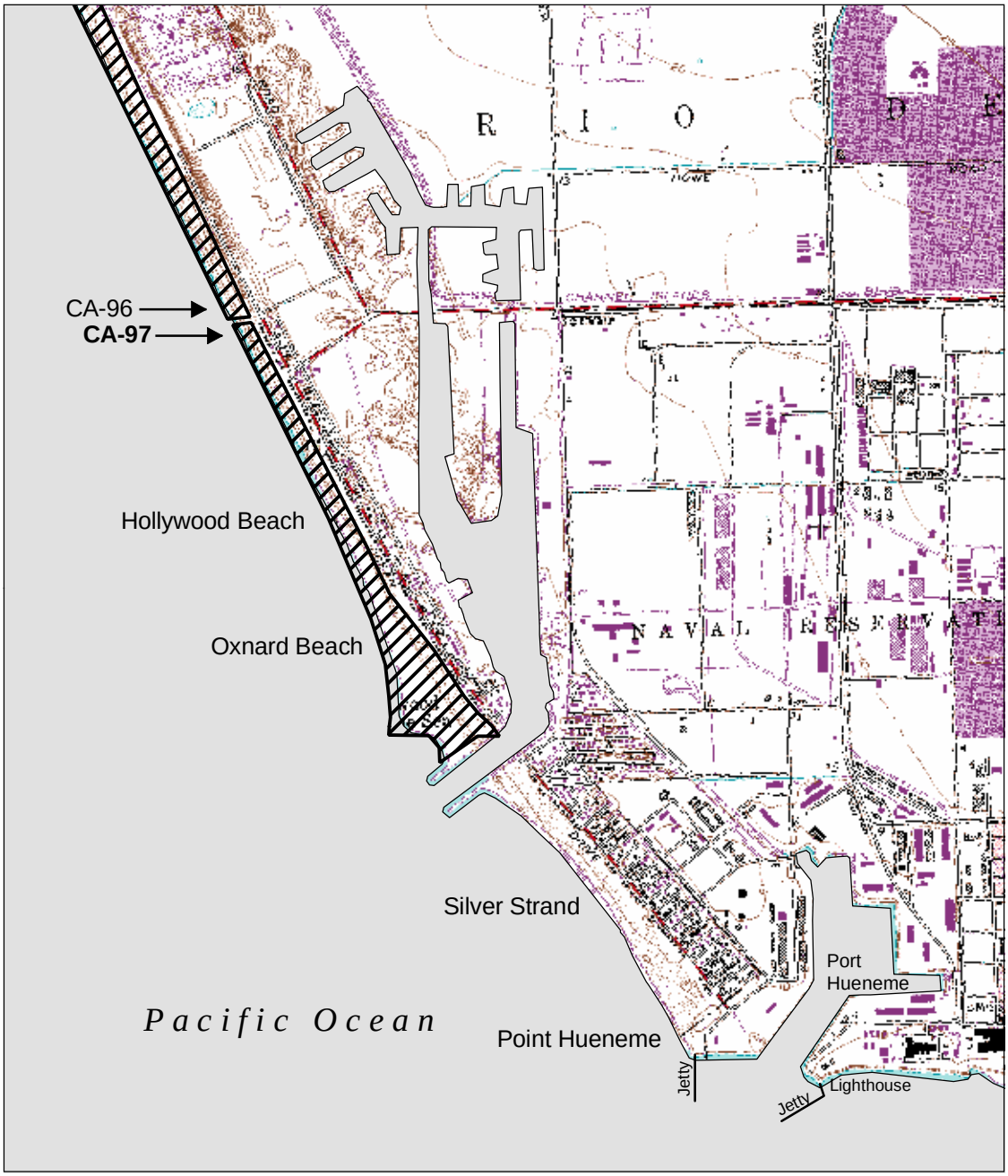
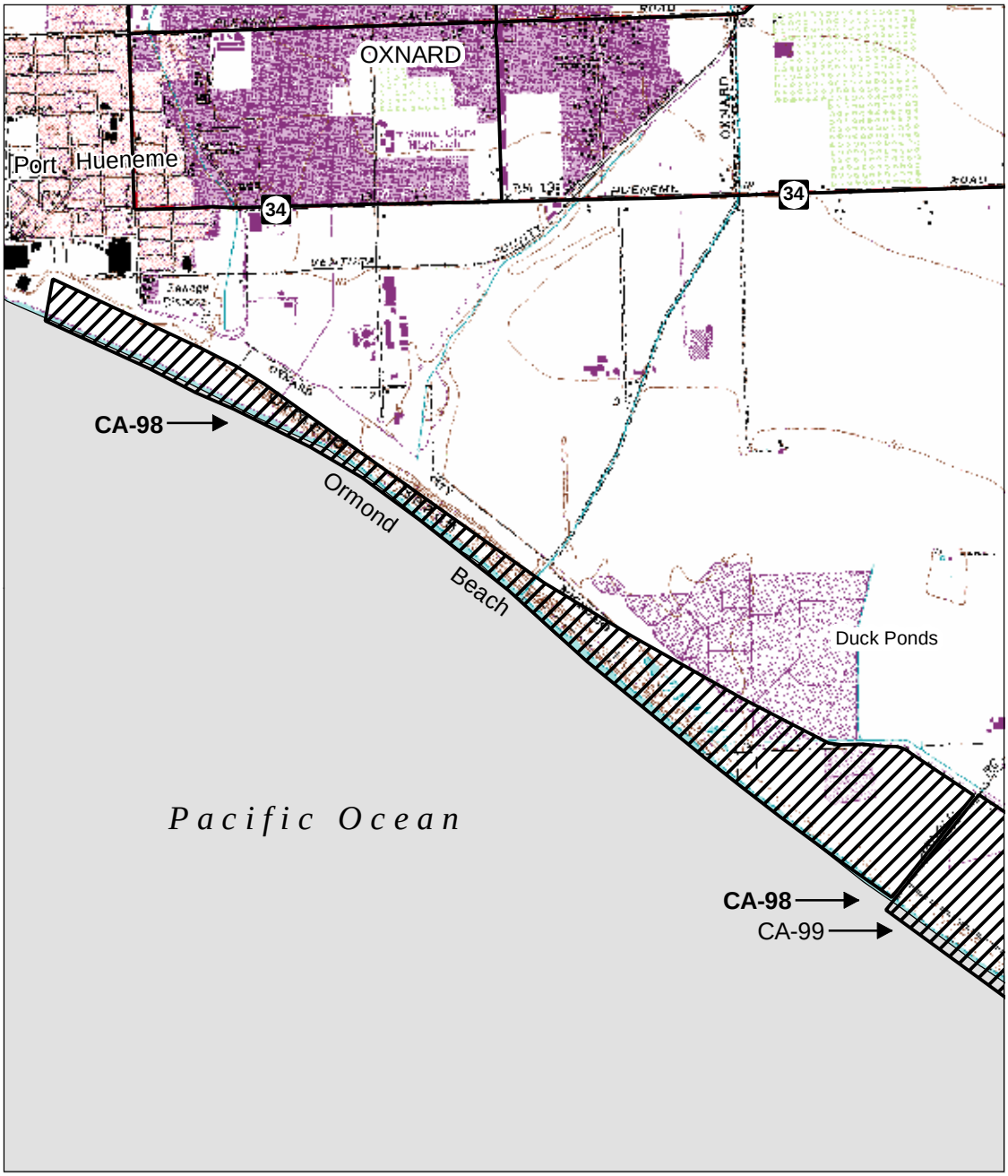


Figure L - 117. Ormond Beach (CA-98), Ventura County, California.



Legend

WSPL Breeding & Wintering Locations

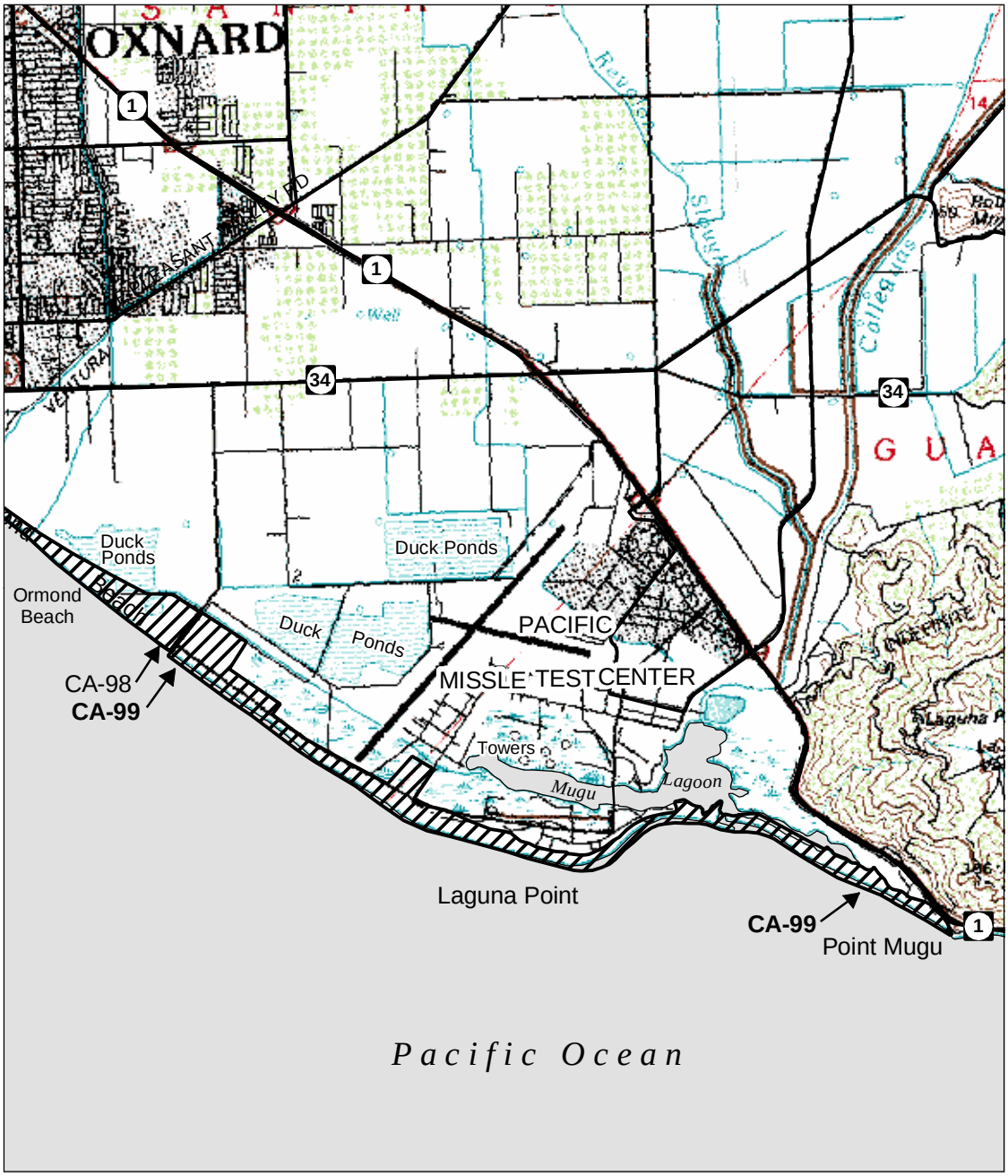
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 118. Mugu Lagoon Beach (CA-99), Ventura County, California.



Legend

WSPL Breeding & Wintering Locations

1 0 1 Miles

2 0 2 Kilometers

N

Scale 1: 80,000

Figure L - 119. San Nicolas Island (CA-100), Ventura County, California.

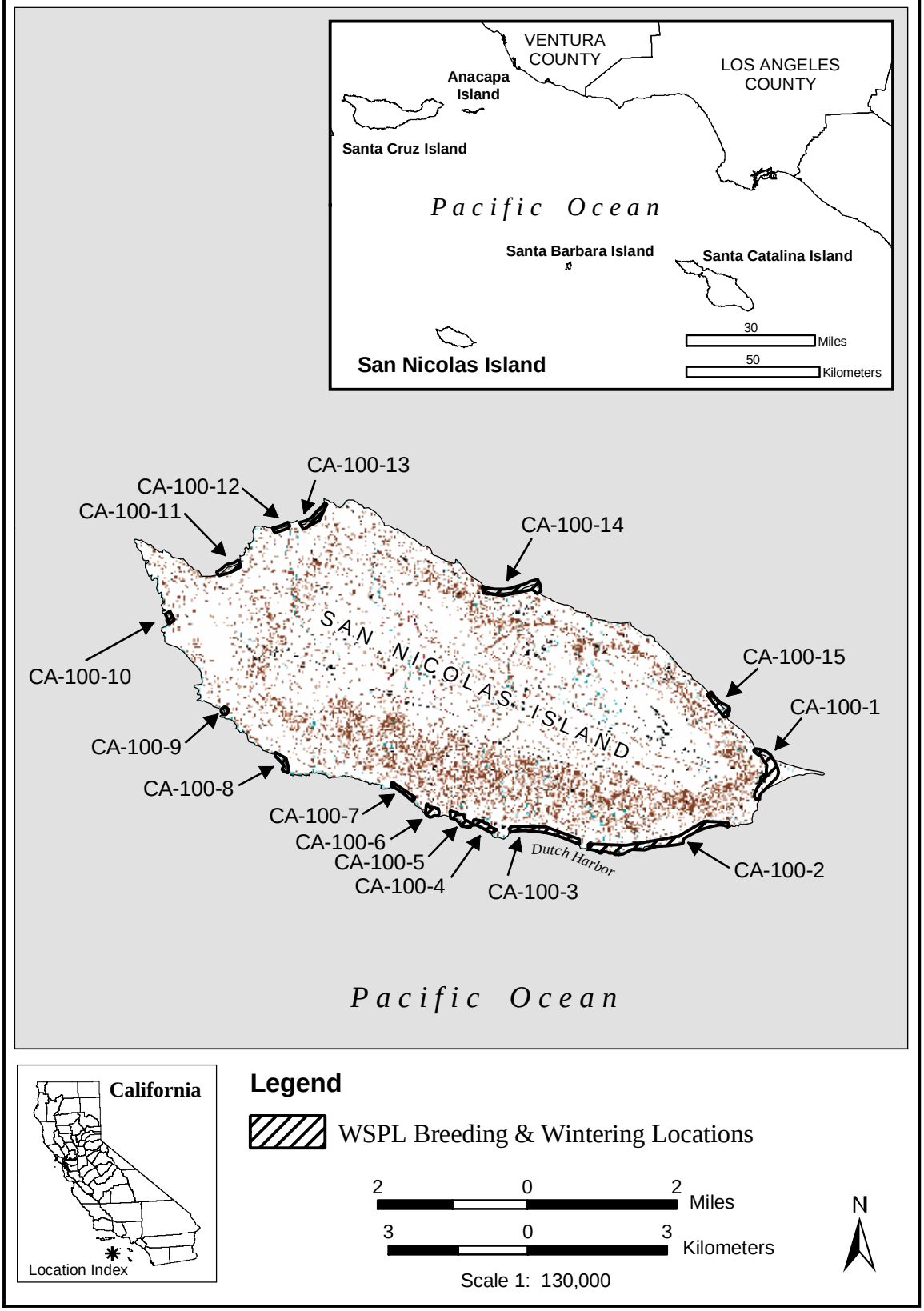


Figure L - 120. Zuma Beach (CA-101), Los Angeles County, California.

Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 121. Corral Beach (CA-102), Los Angeles County, California.

Legend

WSPL Breeding & Wintering Locations

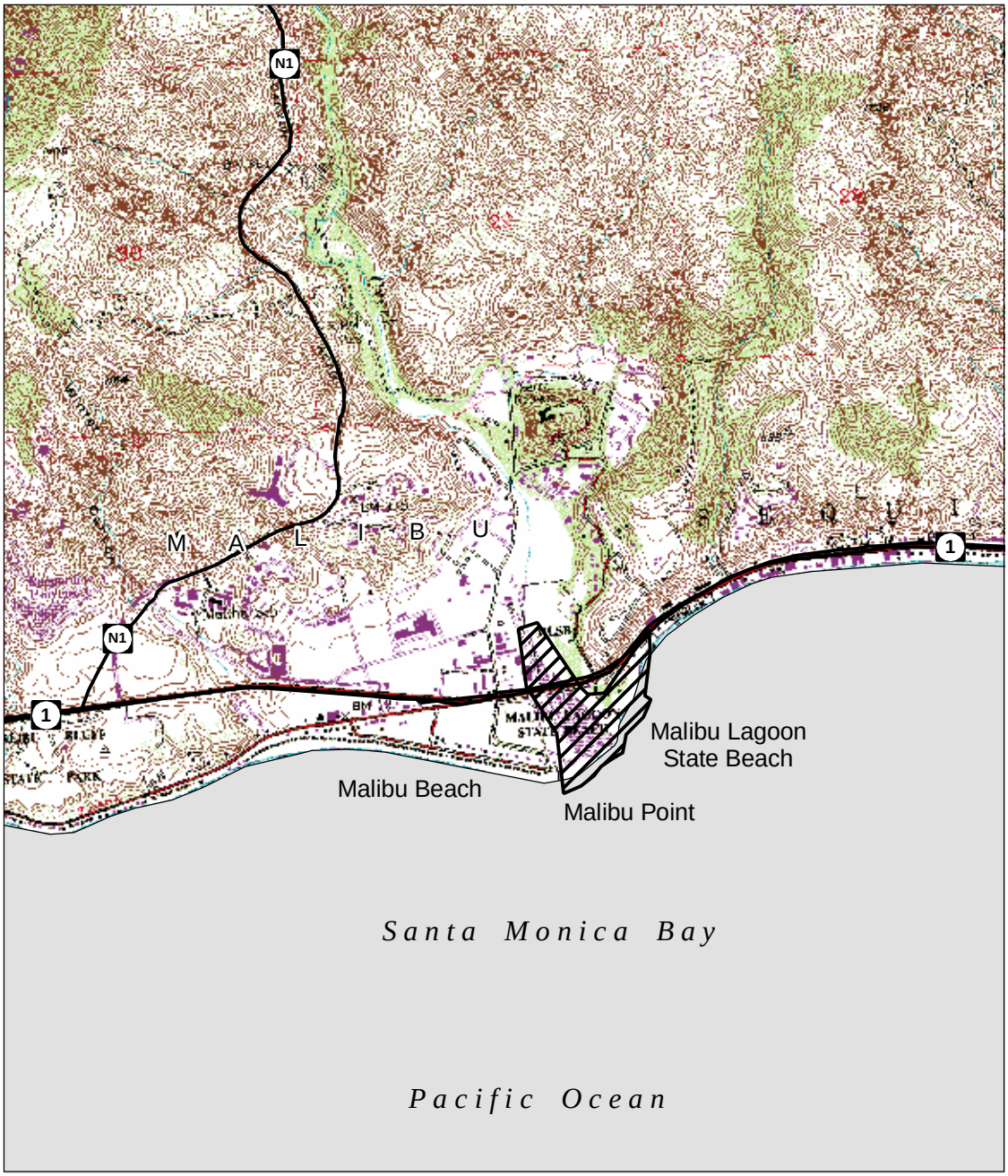
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 122. Malibu Lagoon/Beach (CA-103), Los Angeles County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 123. Santa Monica Beach (CA-104), Los Angeles County, California.

Legend

WSPL Breeding & Wintering Locations

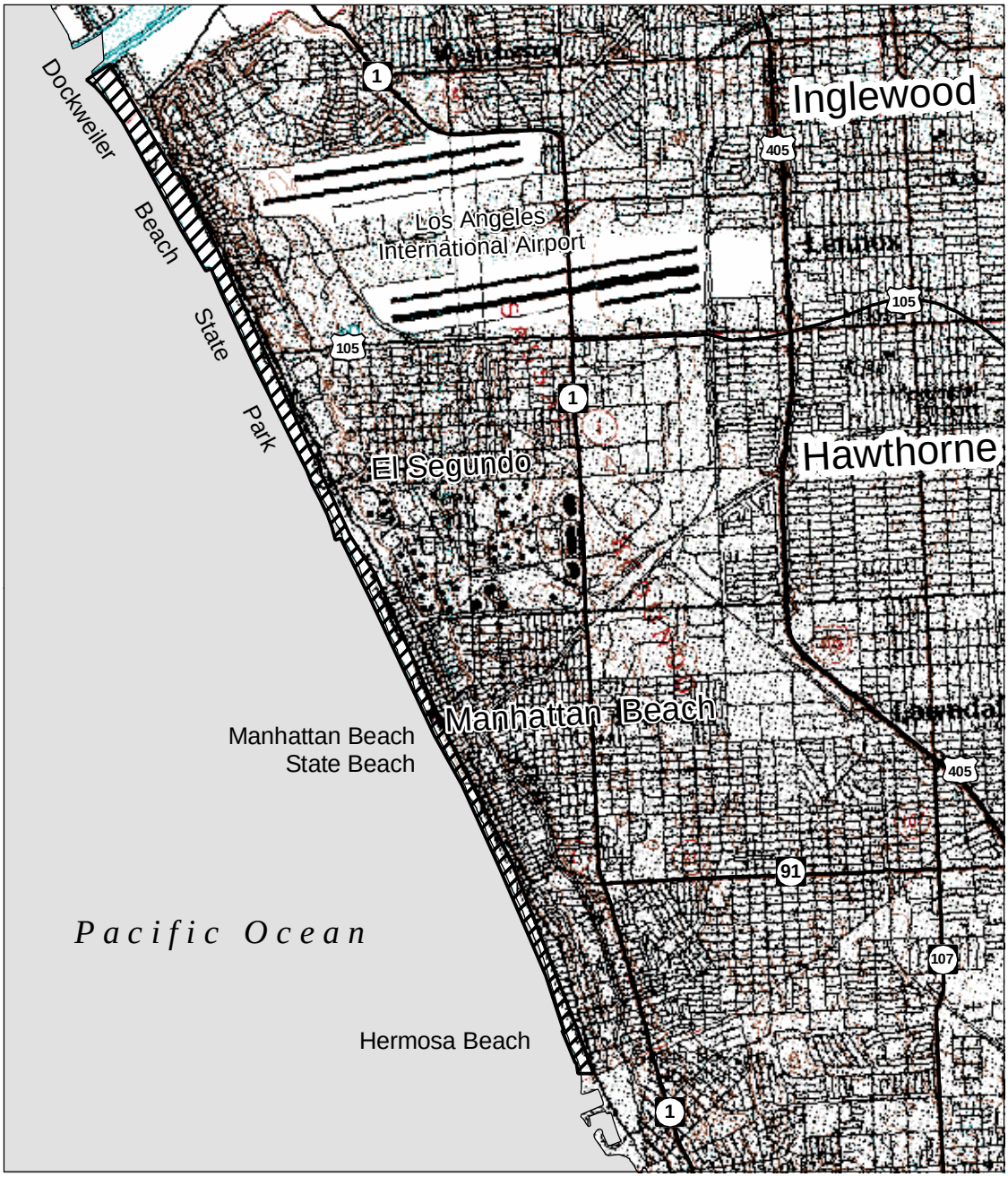
1 0 1 Miles

2 0 2 Kilometers

N

Scale 1: 80,000

Figure L - 124. Dockweiler to Hermosa Beach (CA-105), Los Angeles County, California.



Legend

WSPL Breeding & Wintering Locations

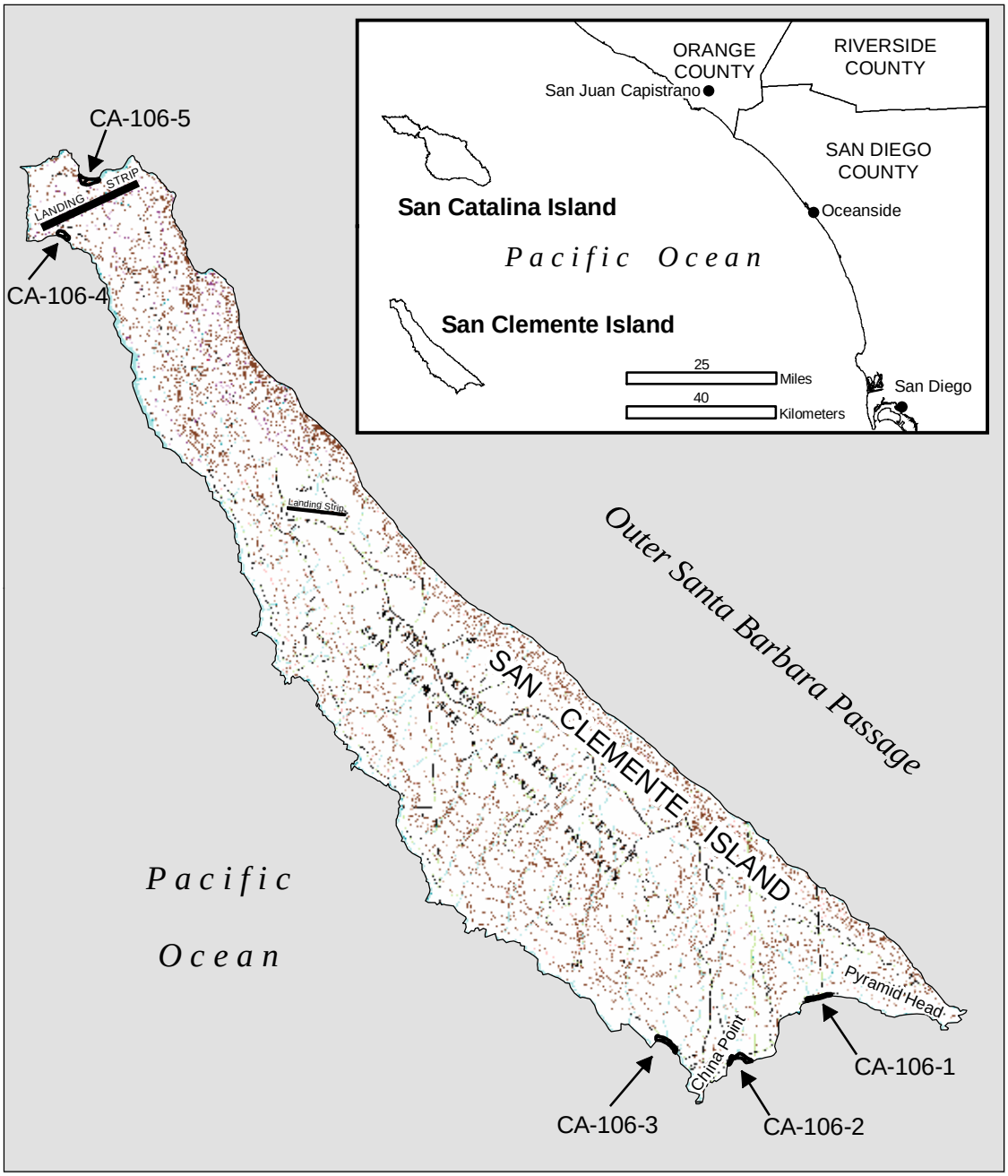
1 0 1 Miles

2 0 2 Kilometers

N

Scale 1: 80,000

Figure L - 125. San Clemente Island (CA-106), Los Angles County, California.



Legend

WSPL Breeding & Wintering Locations

2 0 2 Miles

3 0 3 Kilometers

N

Scale 1: 180,000

Figure L - 126. Huntington Beach (CA-107), Orange County, California.

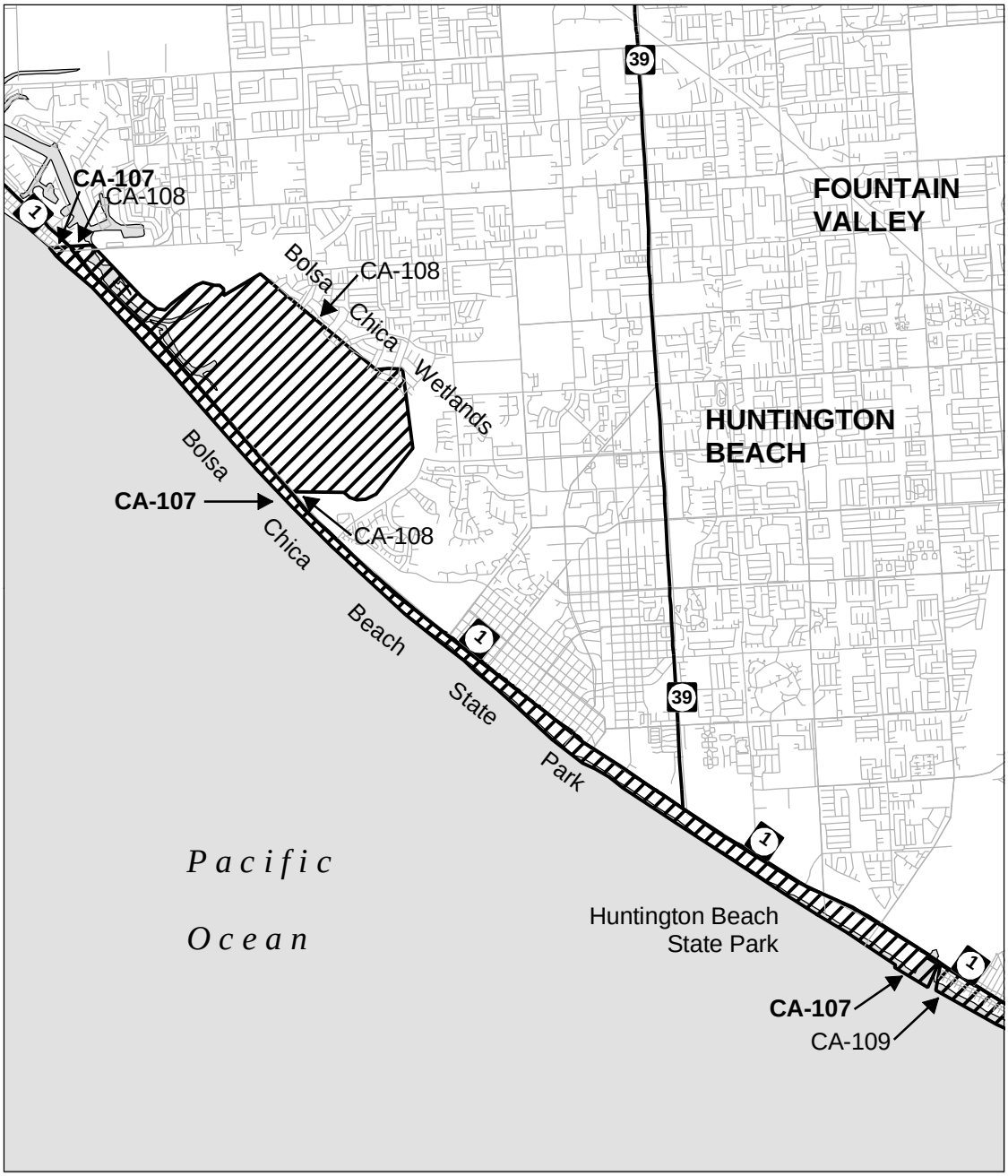
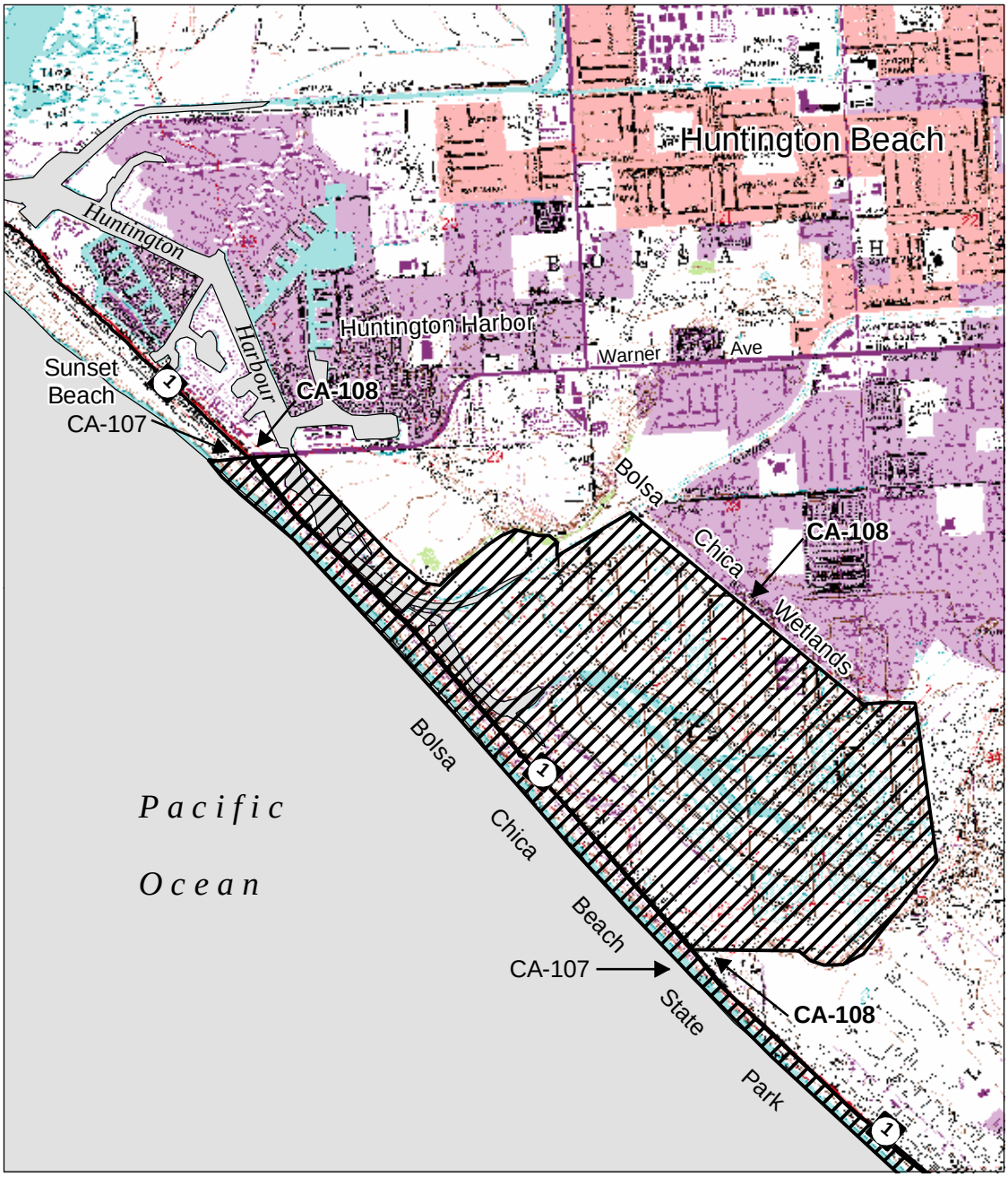


Figure L - 127. Bolsa Chica Wetlands (CA-108), Orange County, California.



Legend

WSPL Breeding & Wintering Locations

0.6 0 0.6 Miles

1 0 1 Kilometers

N

Scale 1: 40,000

Figure L - 128. Newport Beach (CA-109), Orange County, California.

Legend

WSPL Breeding & Wintering Locations

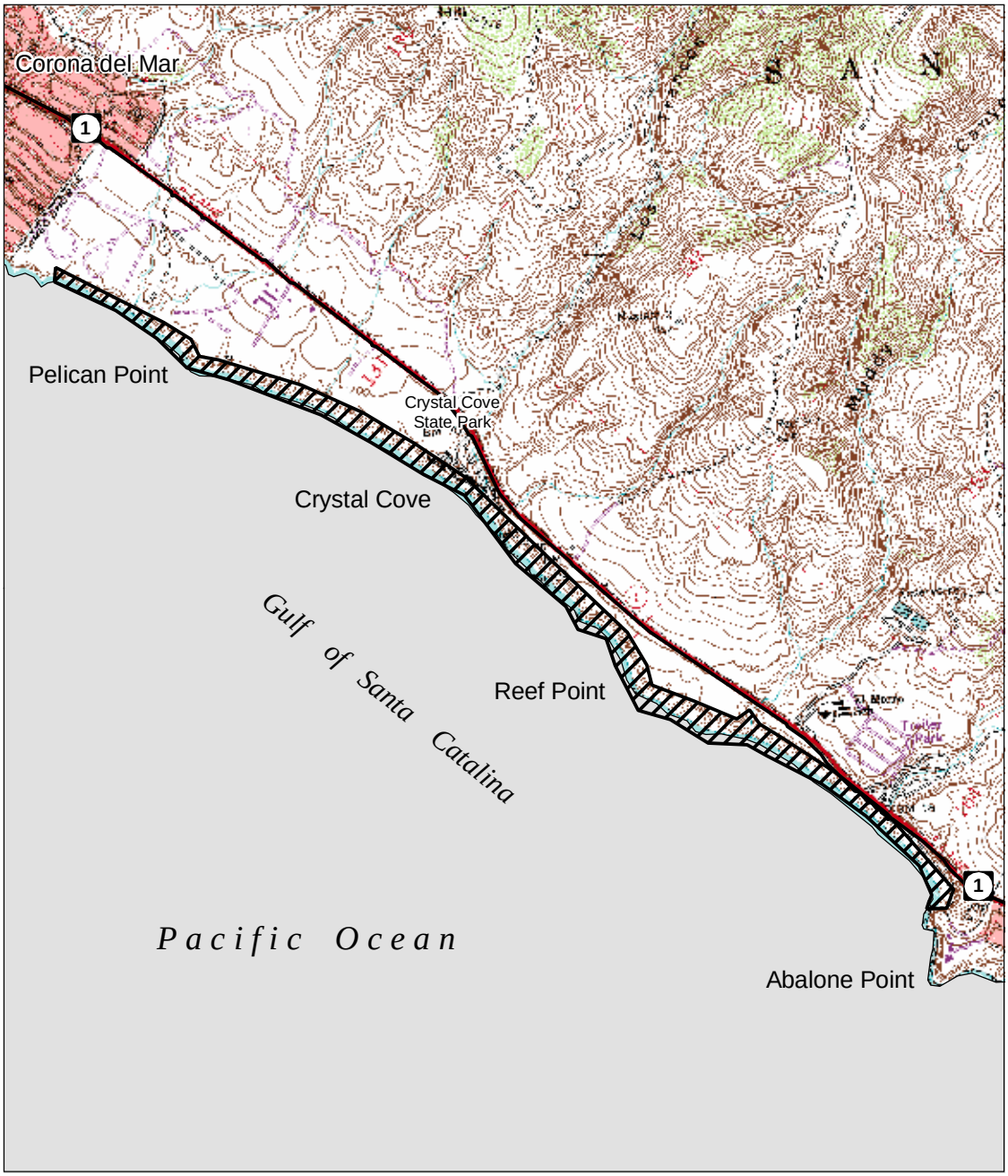
1 0 1 Miles

2 0 2 Kilometers

N

Scale 1: 80,000

Figure L - 129. Crystal Cove (CA-110), Orange County, California.



Legend

WSPL Breeding & Wintering Locations

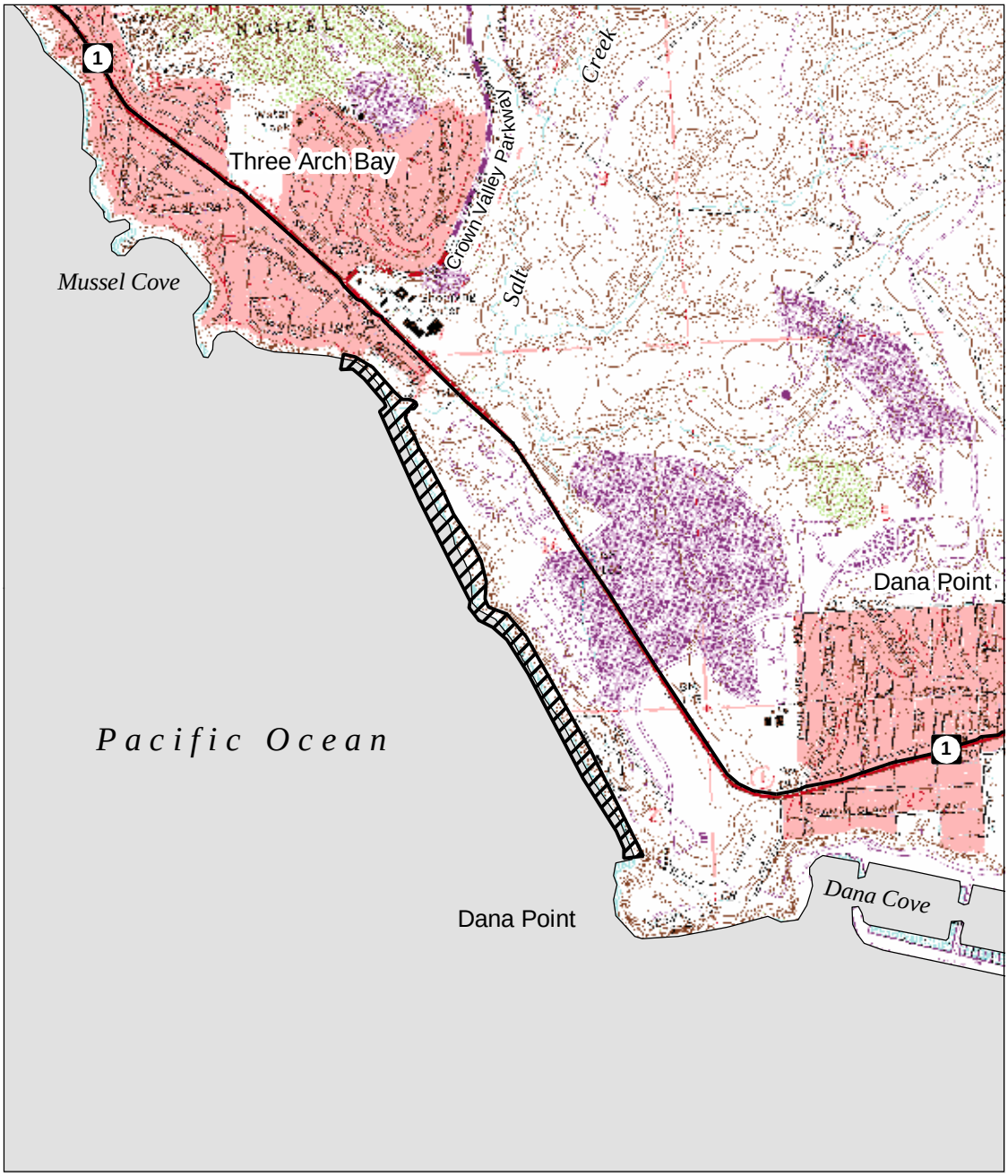
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 130. Salt Creek Beach (CA-111), Orange County, California.



Legend

WSPL Breeding & Wintering Locations

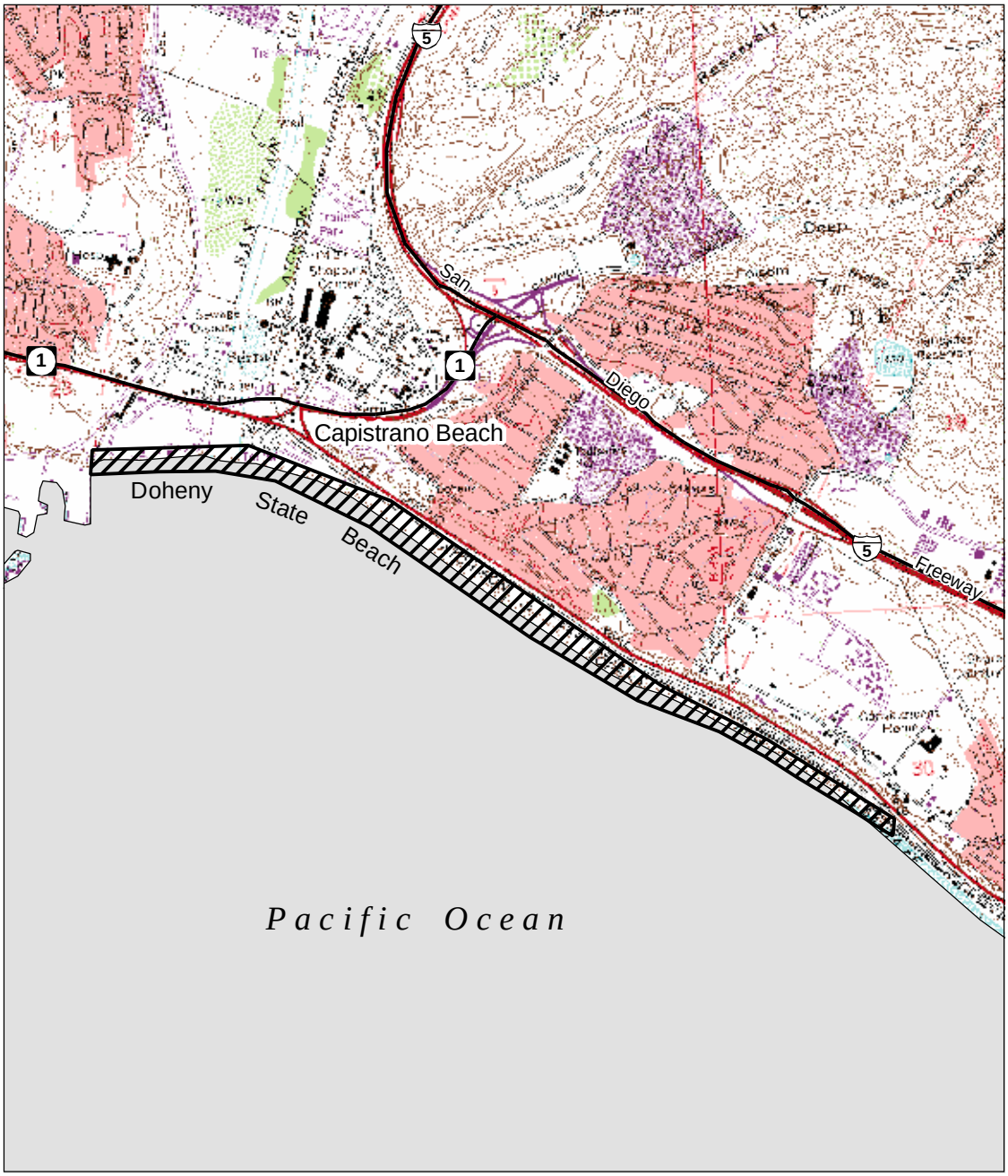
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 131. Doheny Beach (CA-112), Orange County, California.



Legend

WSPL Breeding & Wintering Locations

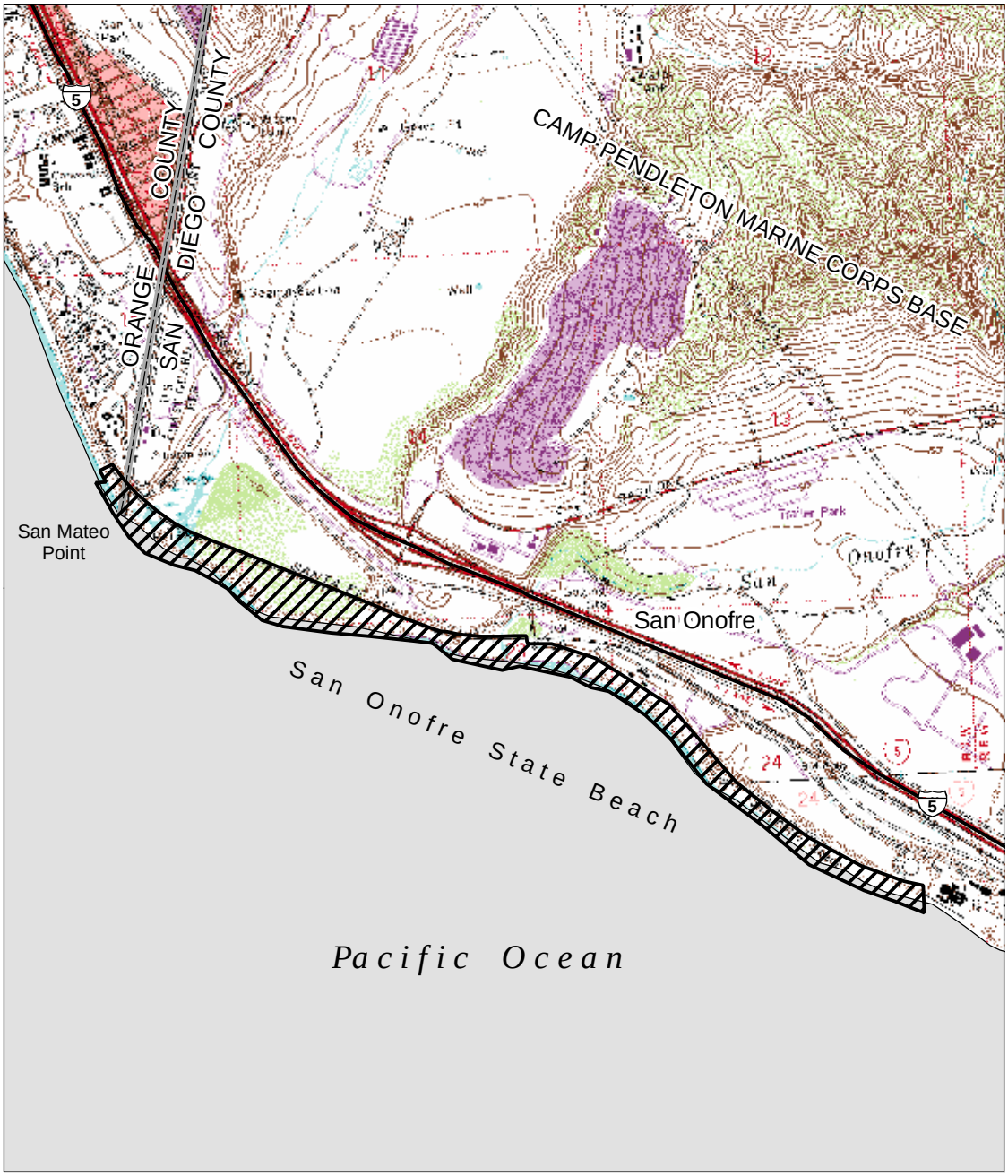
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 132. San Onofre Beach (CA-113), Orange and San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

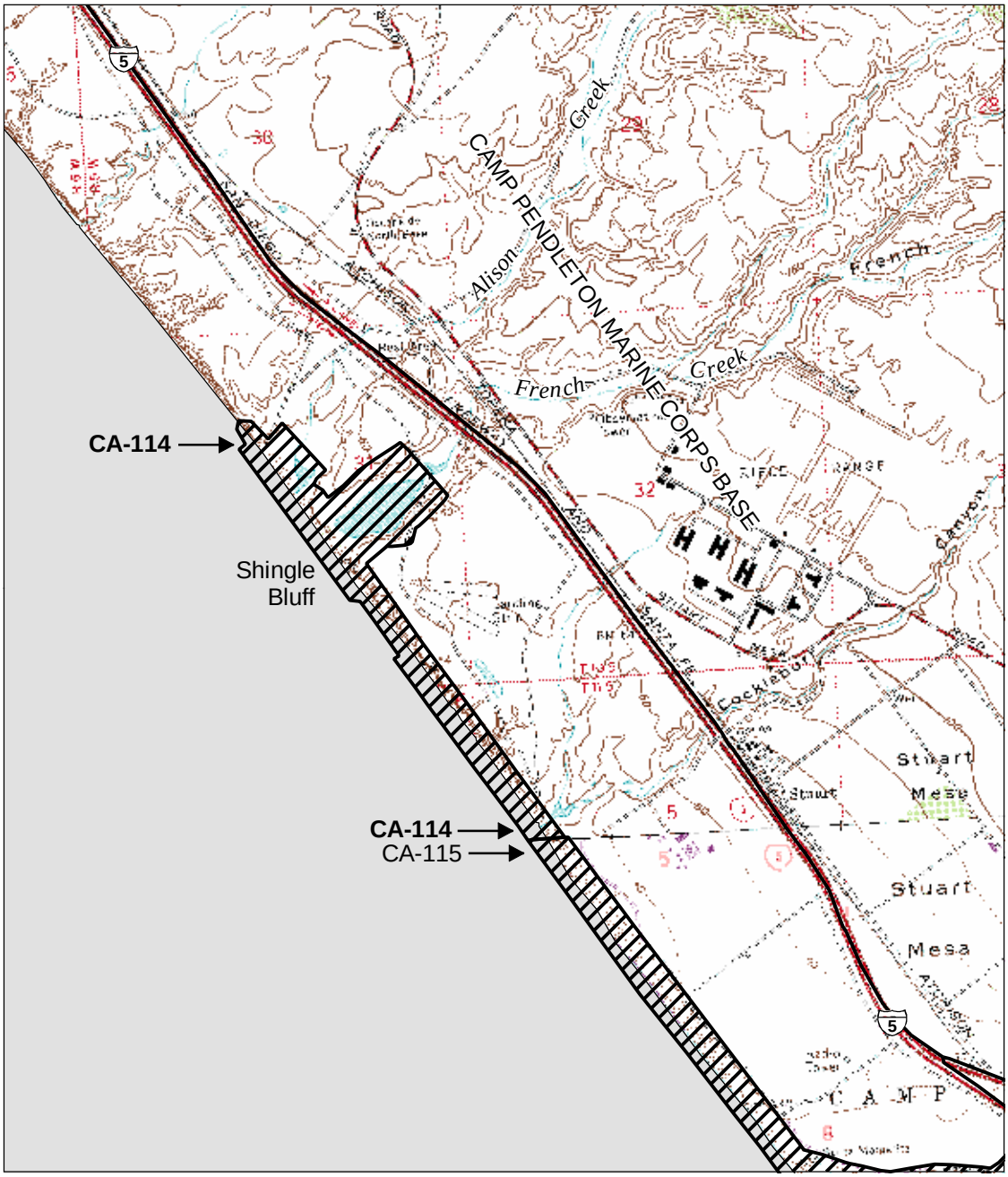
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 133. Aliso/French Creek Mouth (CA-114), San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 134. Santa Margarita River (CA-115), San Diego County, California.

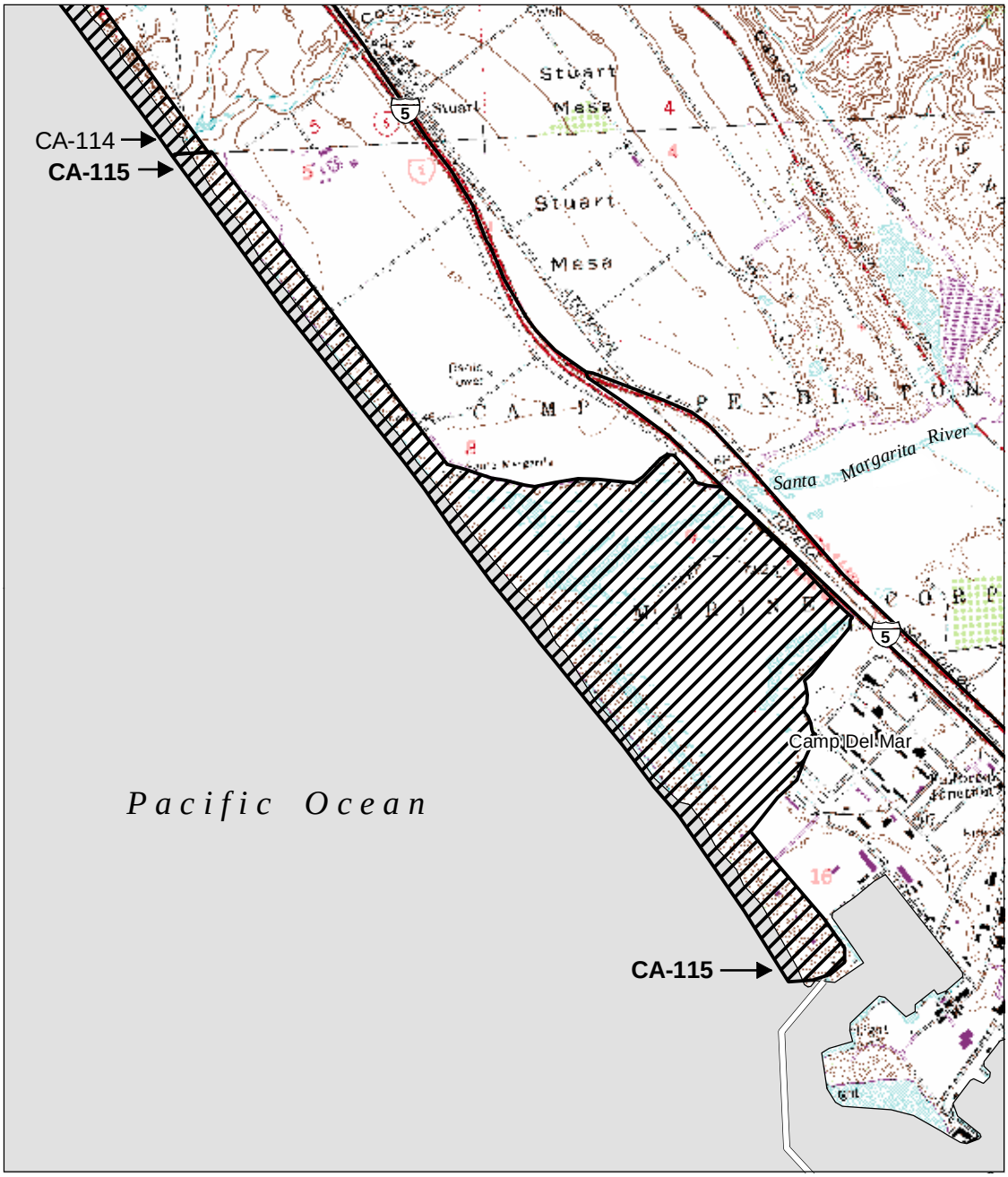


Figure L - 135. San Luis Rey River Mouth (CA-116), San Diego County, California.

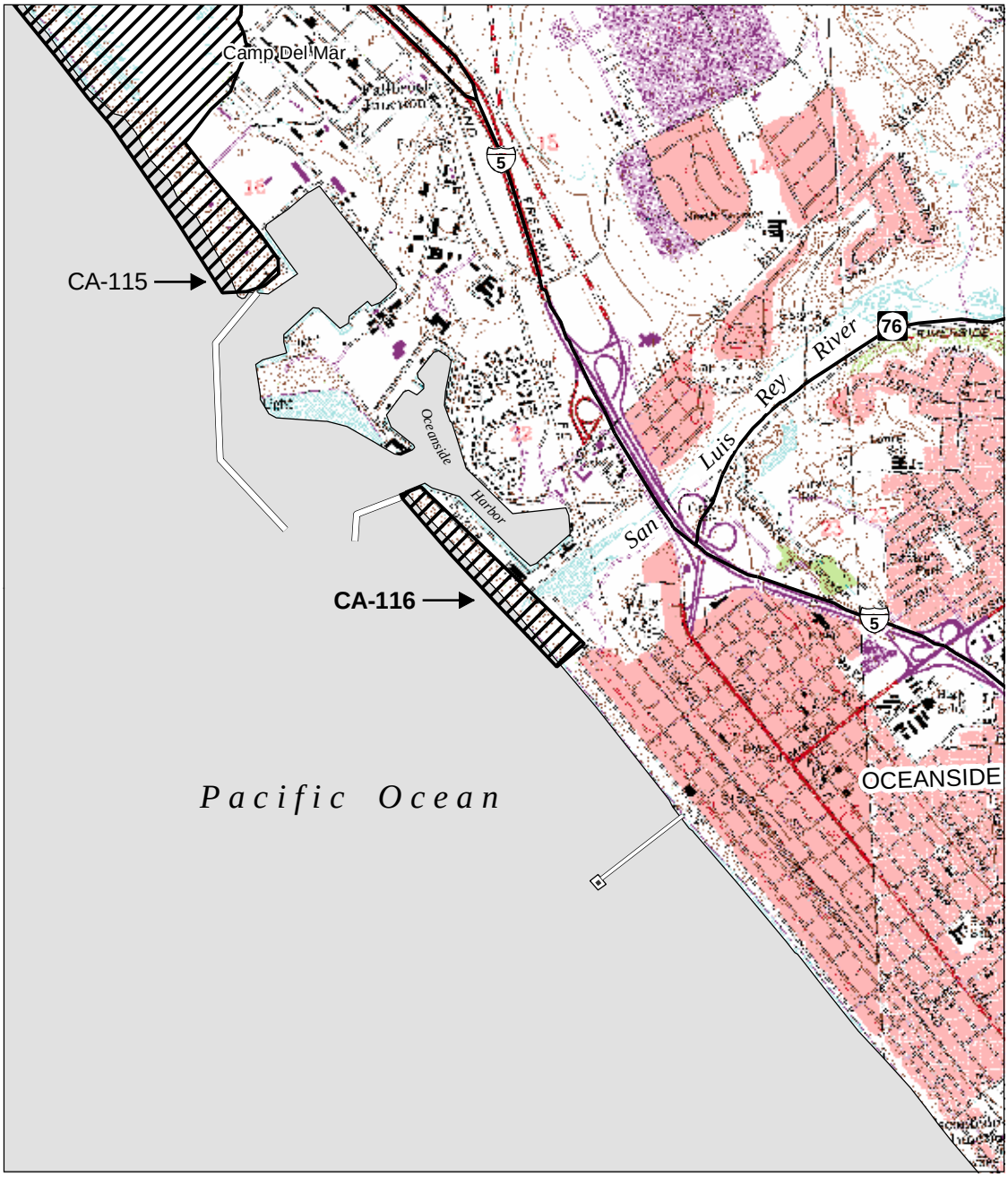


Figure L - 136. Agua Hedionda Lagoon/Beach (CA-117), San Diego County, California.

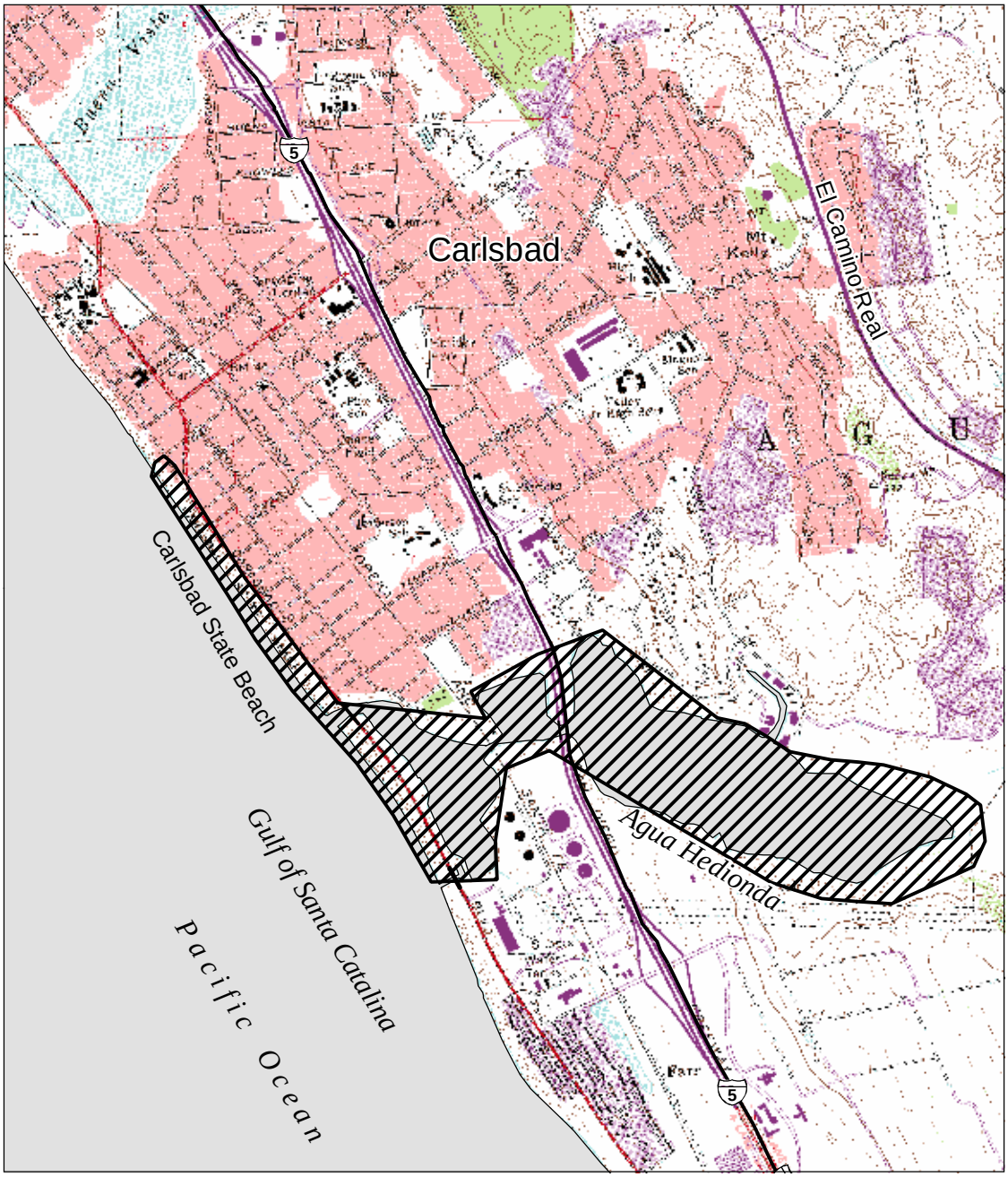
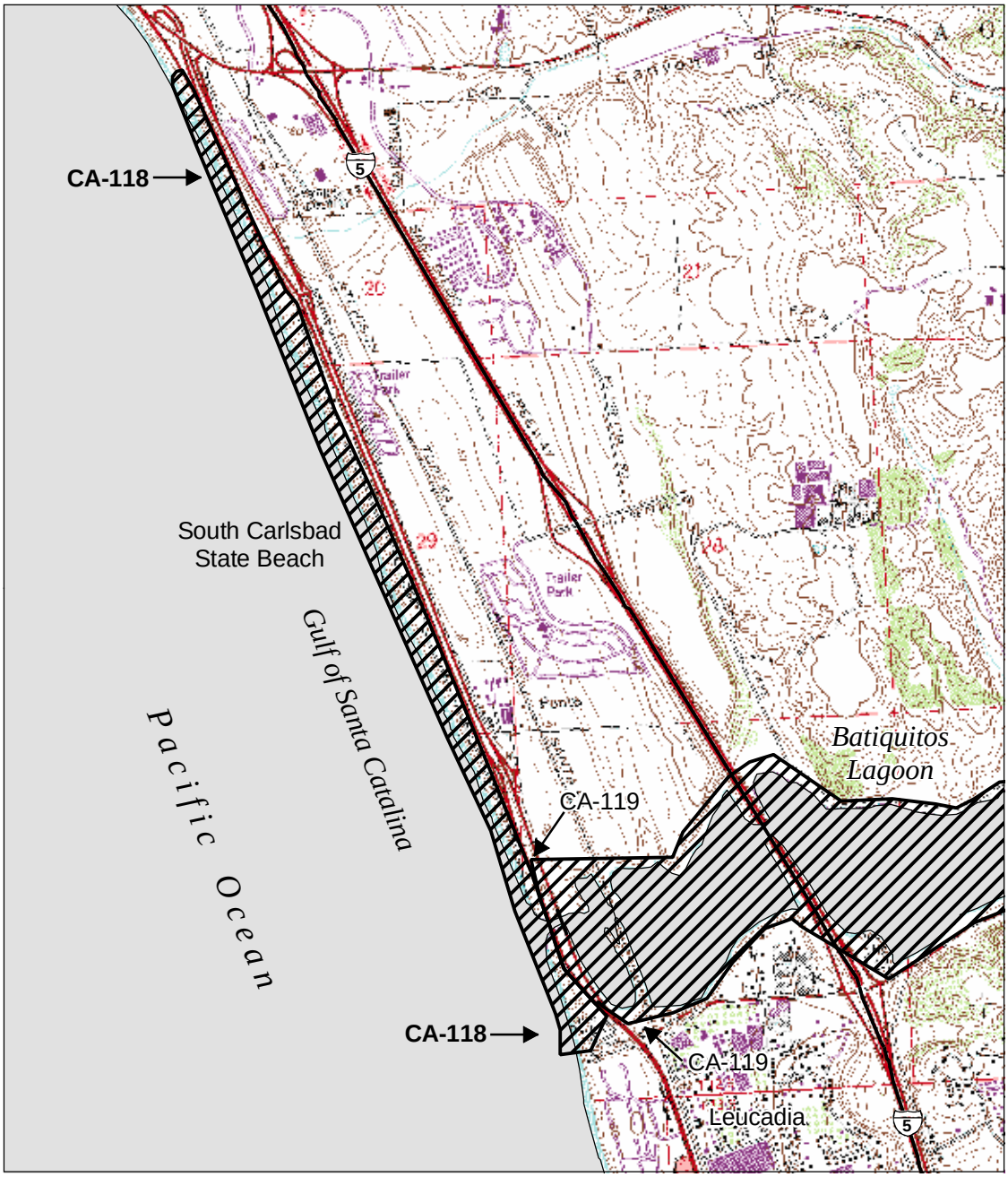


Figure L - 137. South Carlsbad Beach (CA-118), San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 138. Batiquitos Lagoon (CA-119), San Diego County, California.

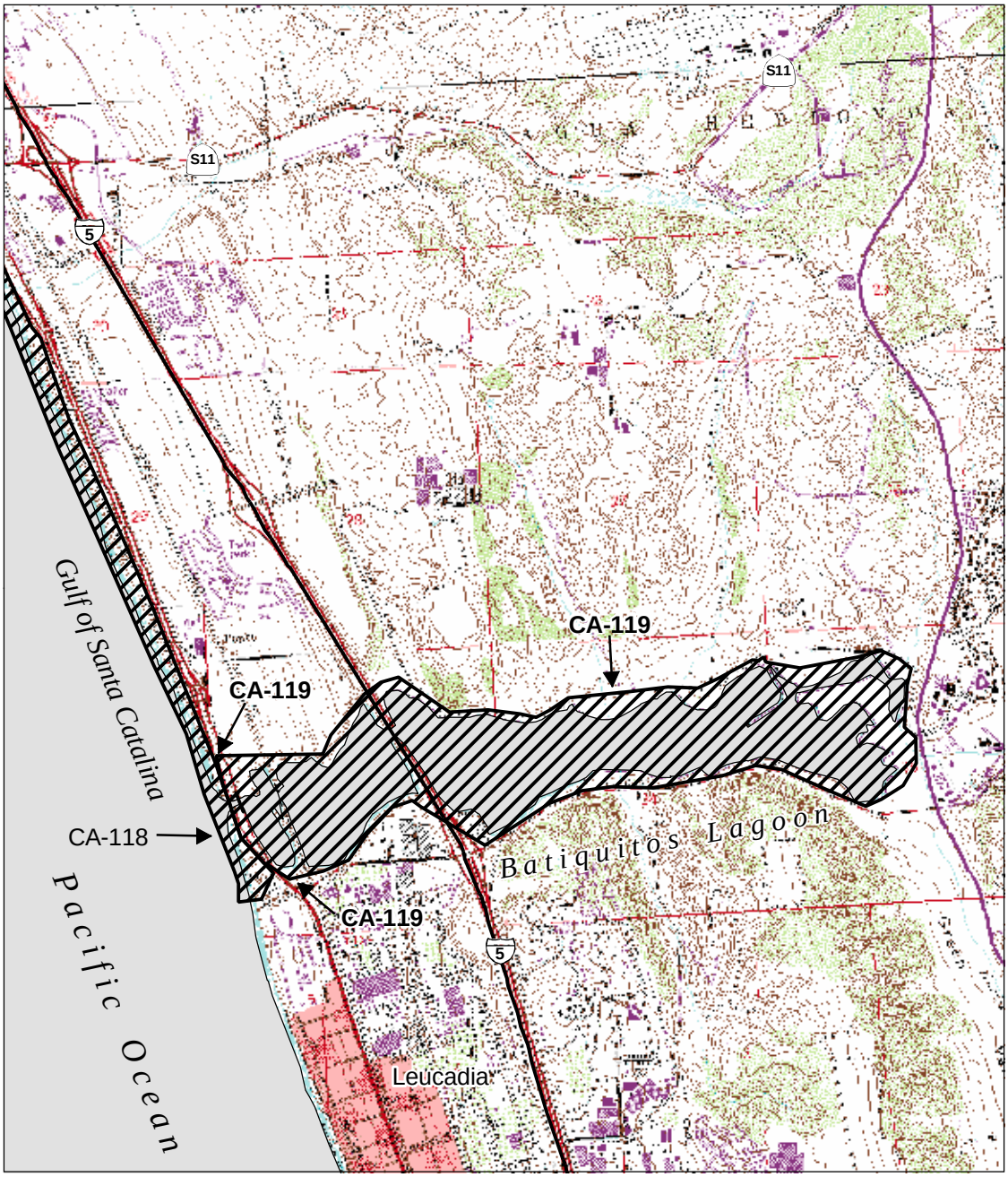


Figure L - 139. San Elijo Lagoon/Beach (CA-120), San Diego County, California.

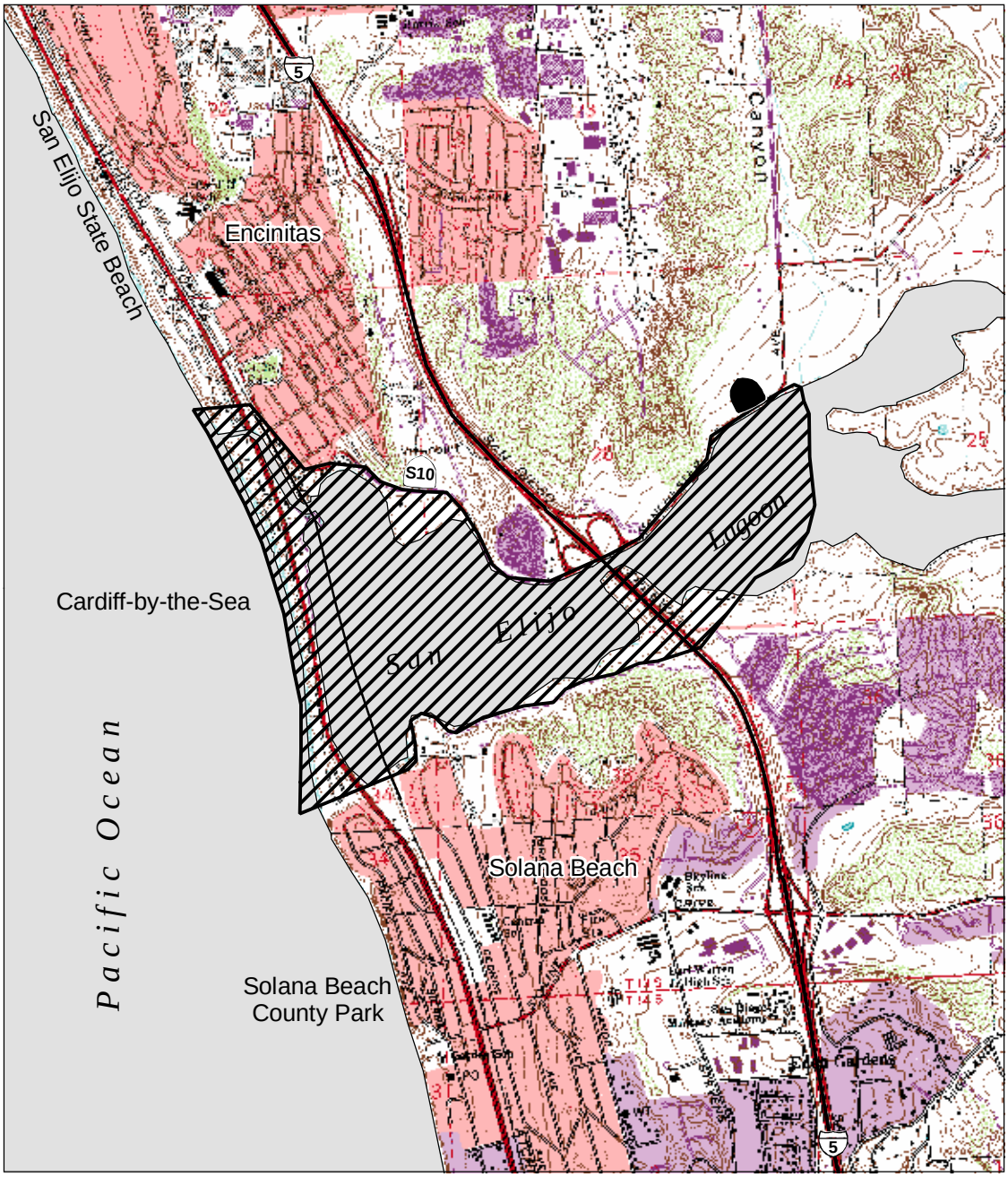
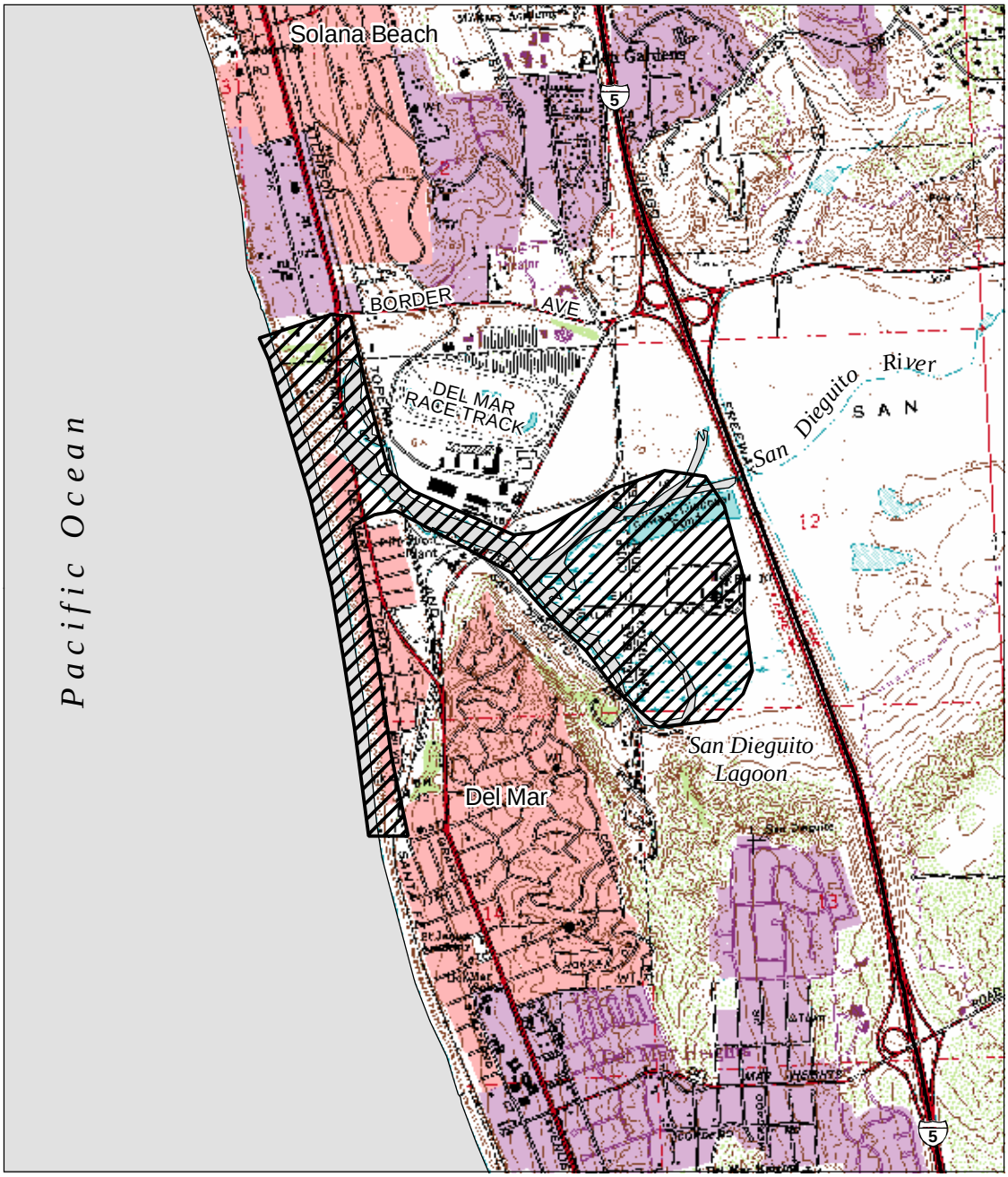


Figure L - 140. San Dieguito Lagoon/Beach (CA-121), San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

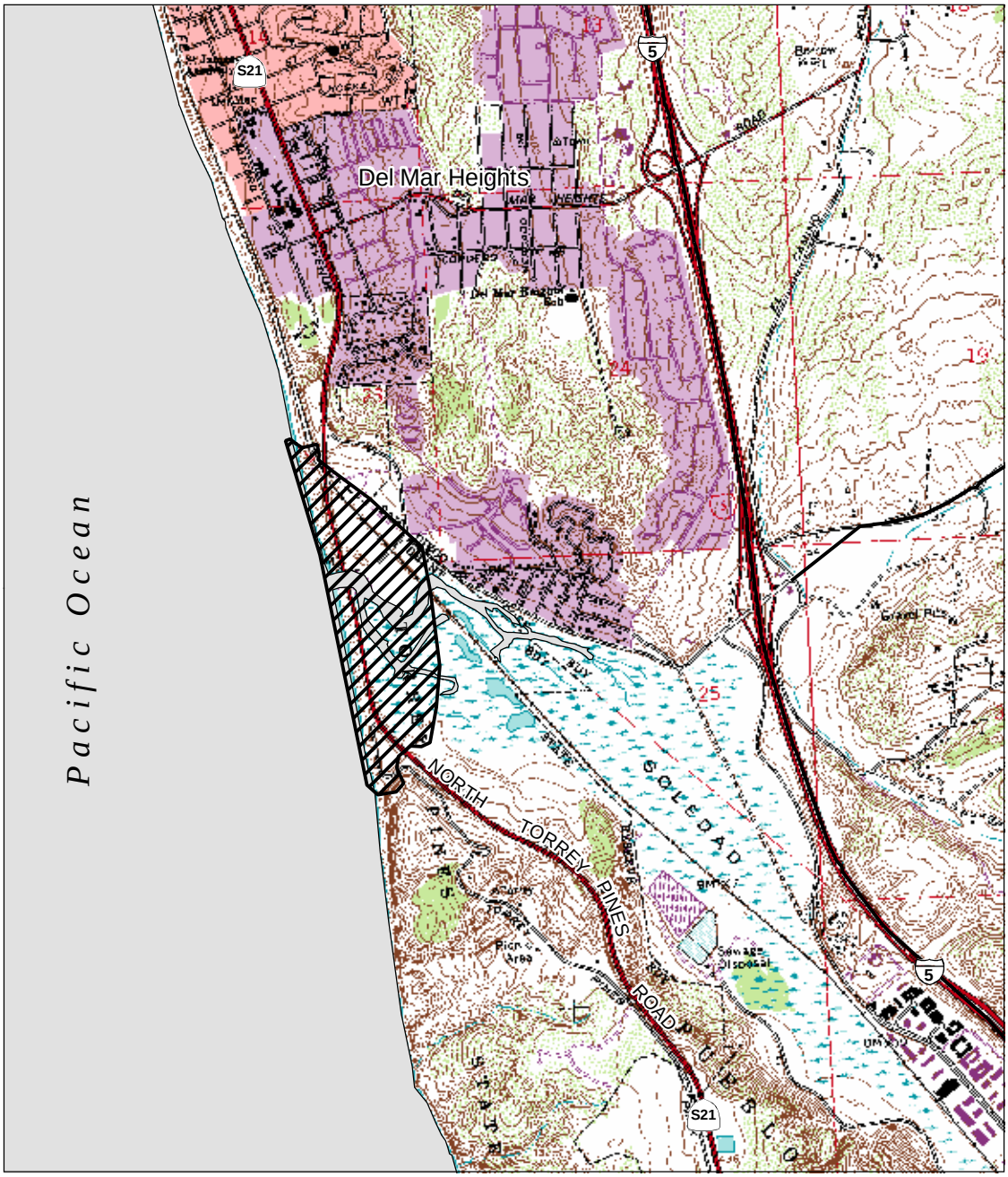
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 141. Los Penasquitos Lagoon/Beach (CA-122), San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 142. Mission Bay: Bonita Cove (CA-123); Mission Bay: Fiesta Island (CA-124); South Mission Beach (CA-125); Ocean Beach (CA-126), San Diego County, California.

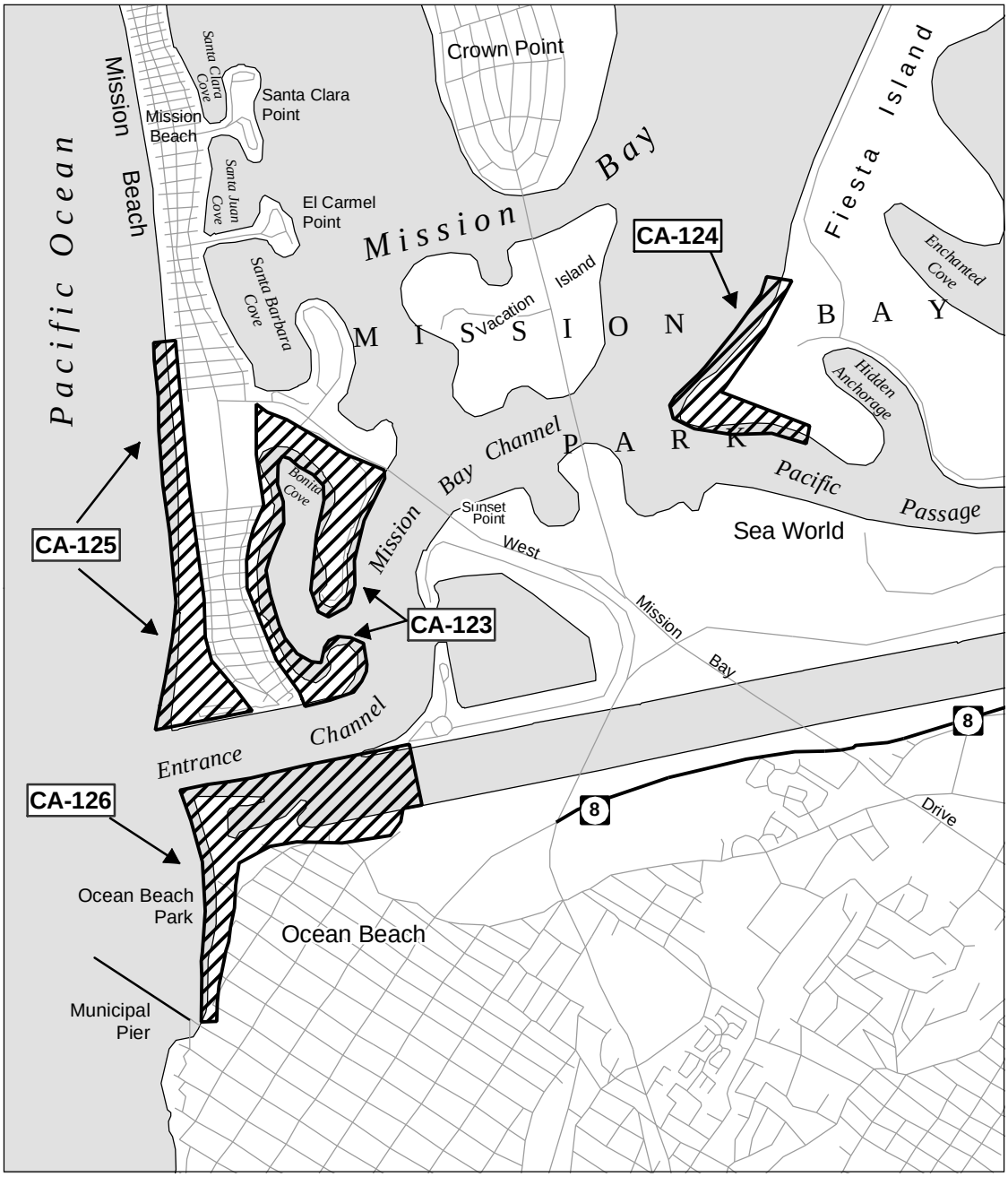
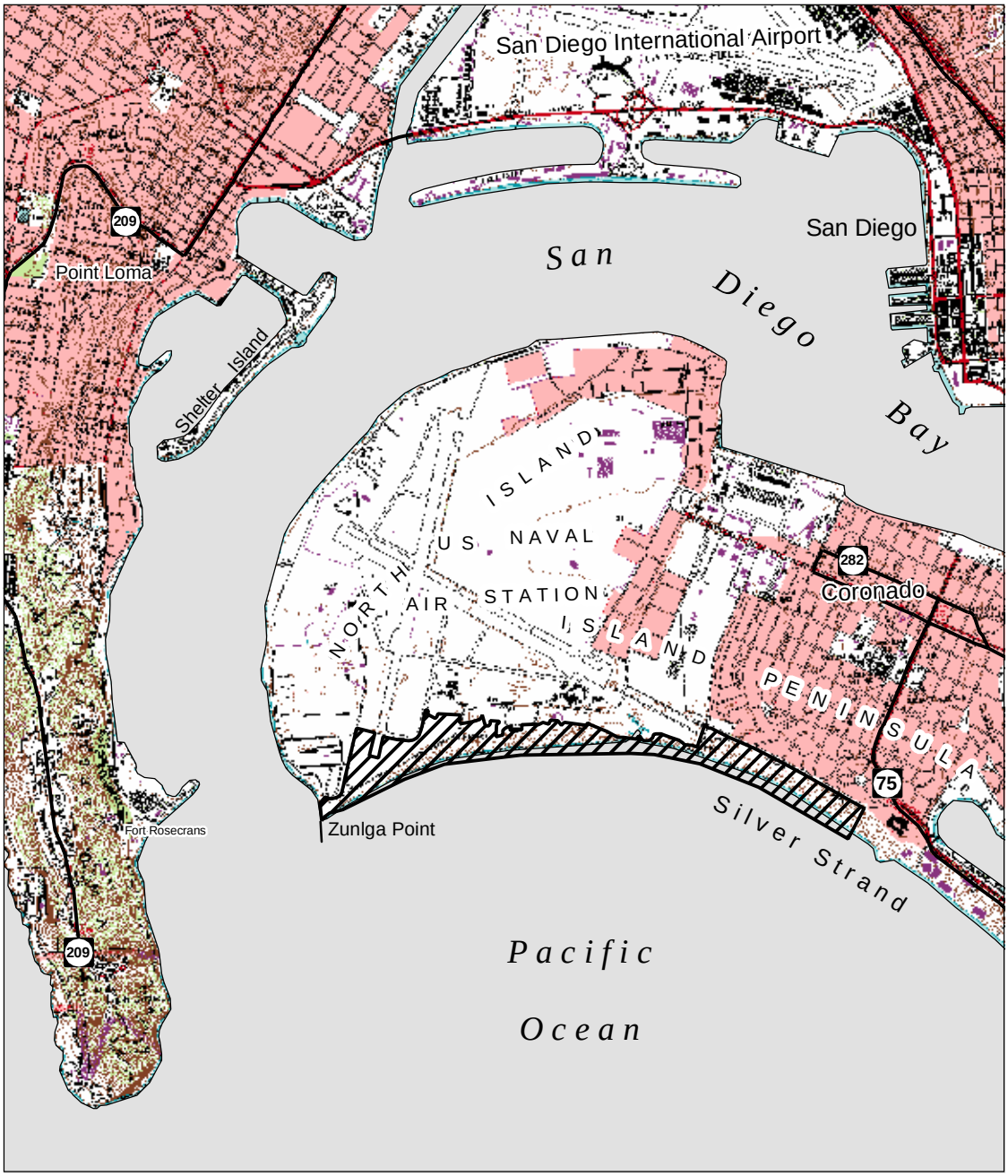


Figure L - 143. Naval Air Station & North Island Peninsula (CA-127), San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

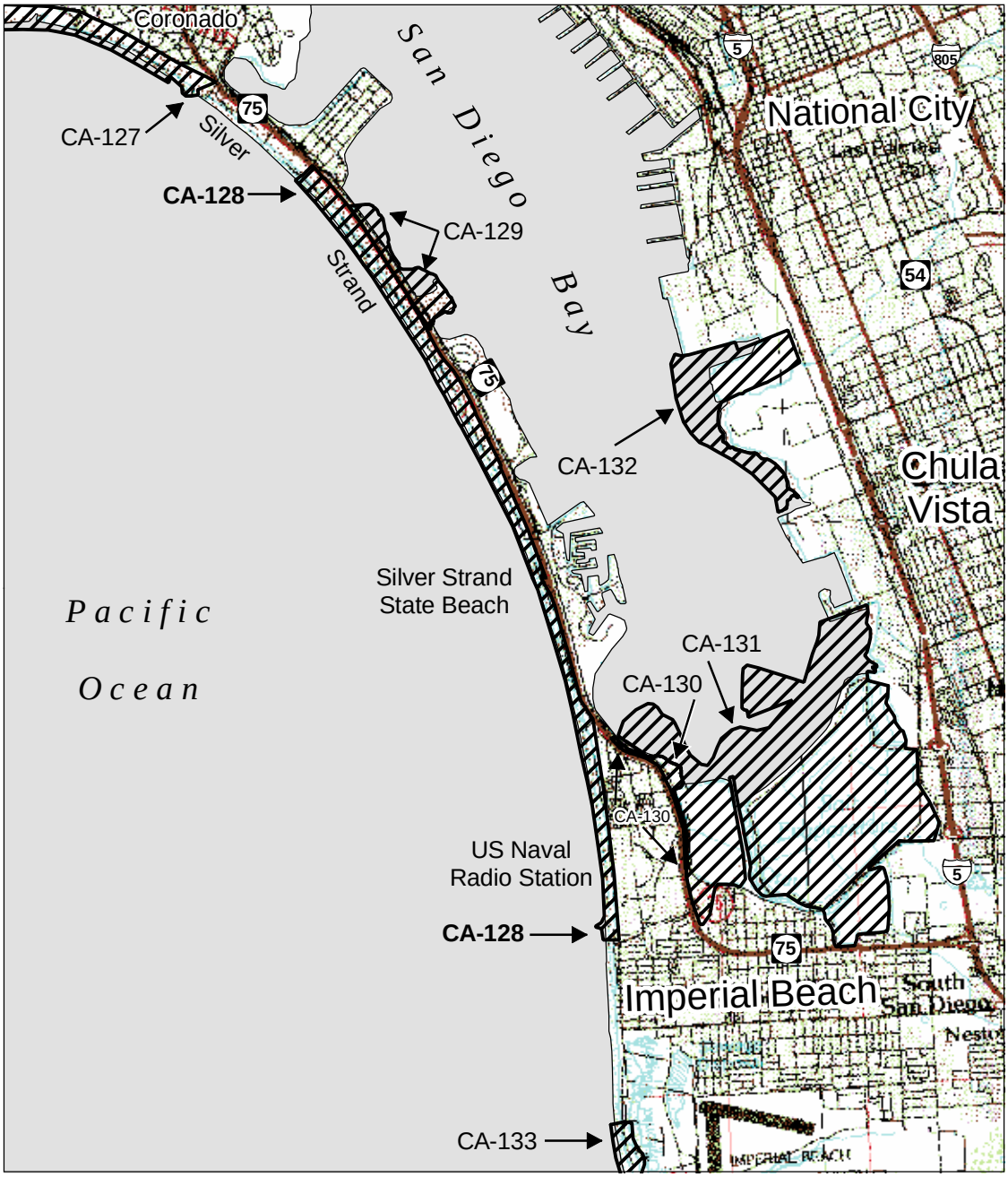
0.6 0 0.6 Miles

1 0 1 Kilometers

N

Scale 1: 50,000

Figure L - 144. NAB Coronado / Silver Strand State Beach (CA-128), San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

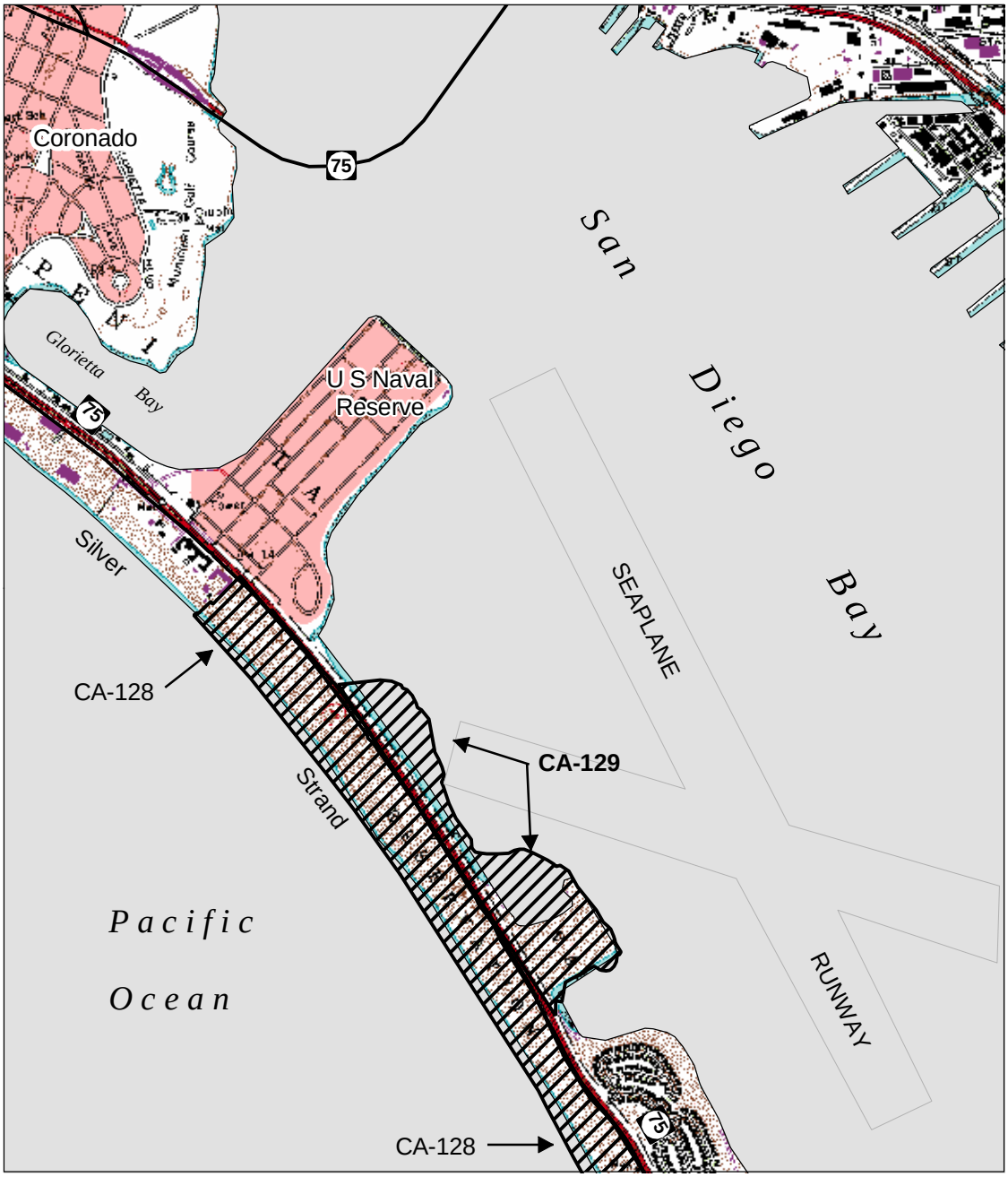
1 0 1 Miles

2 0 2 Kilometers

N

Scale 1: 80,000

Figure L - 145. Naval Air Base / Delta Beach Bay (CA-129), San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

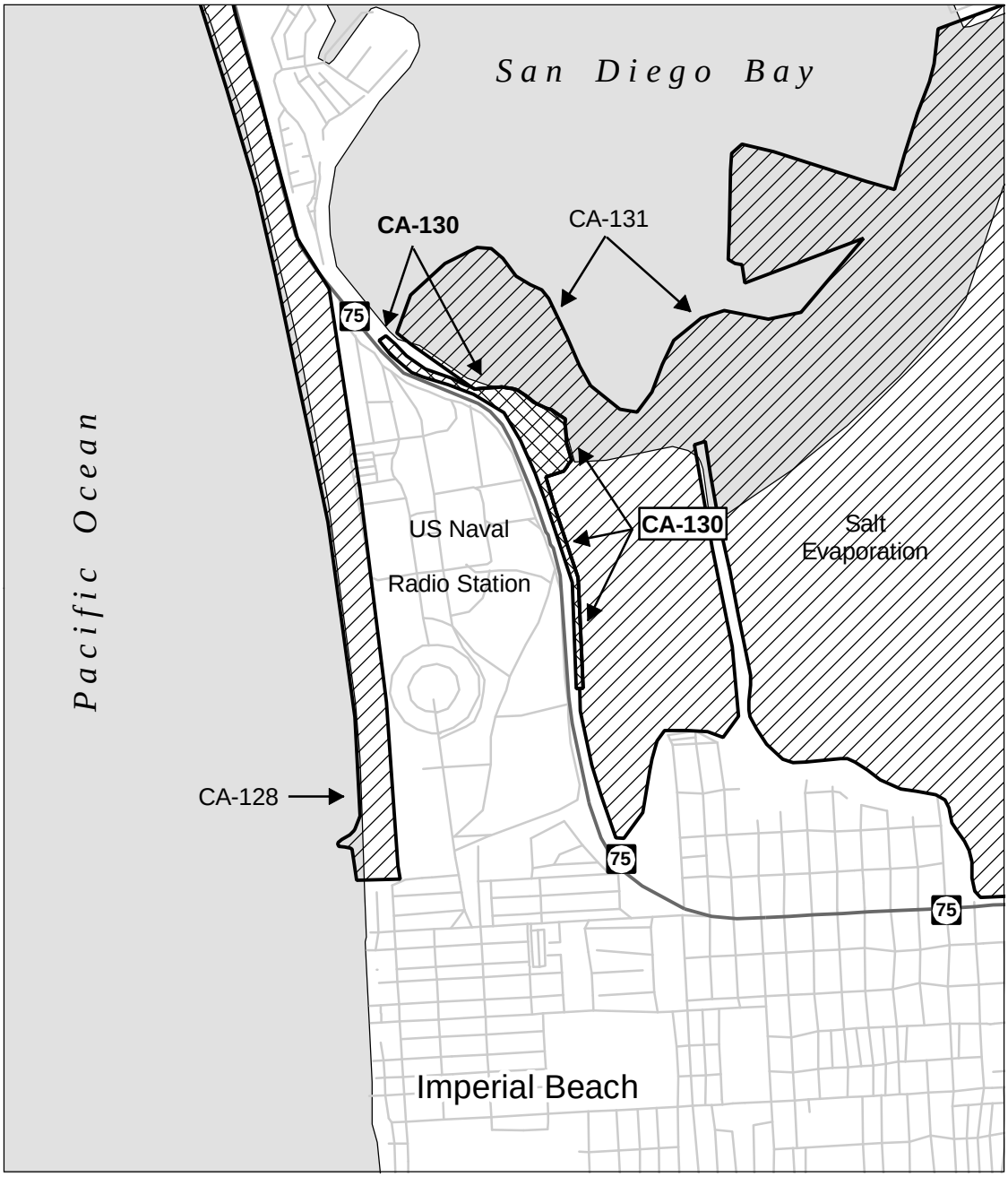
0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 146. South San Diego Bay Marine Biological Study Area (CA-130), San Diego County, California.



Legend

WSPL Breeding & Wintering Locations

WSPL Breeding & Wintering Locations CA-130

0.5 0 0.5 Miles

0.8 0 0.8 Kilometers

N

Scale 1: 30,000

Figure L - 147. Western Salt Company (CA-131), San Diego County, California.

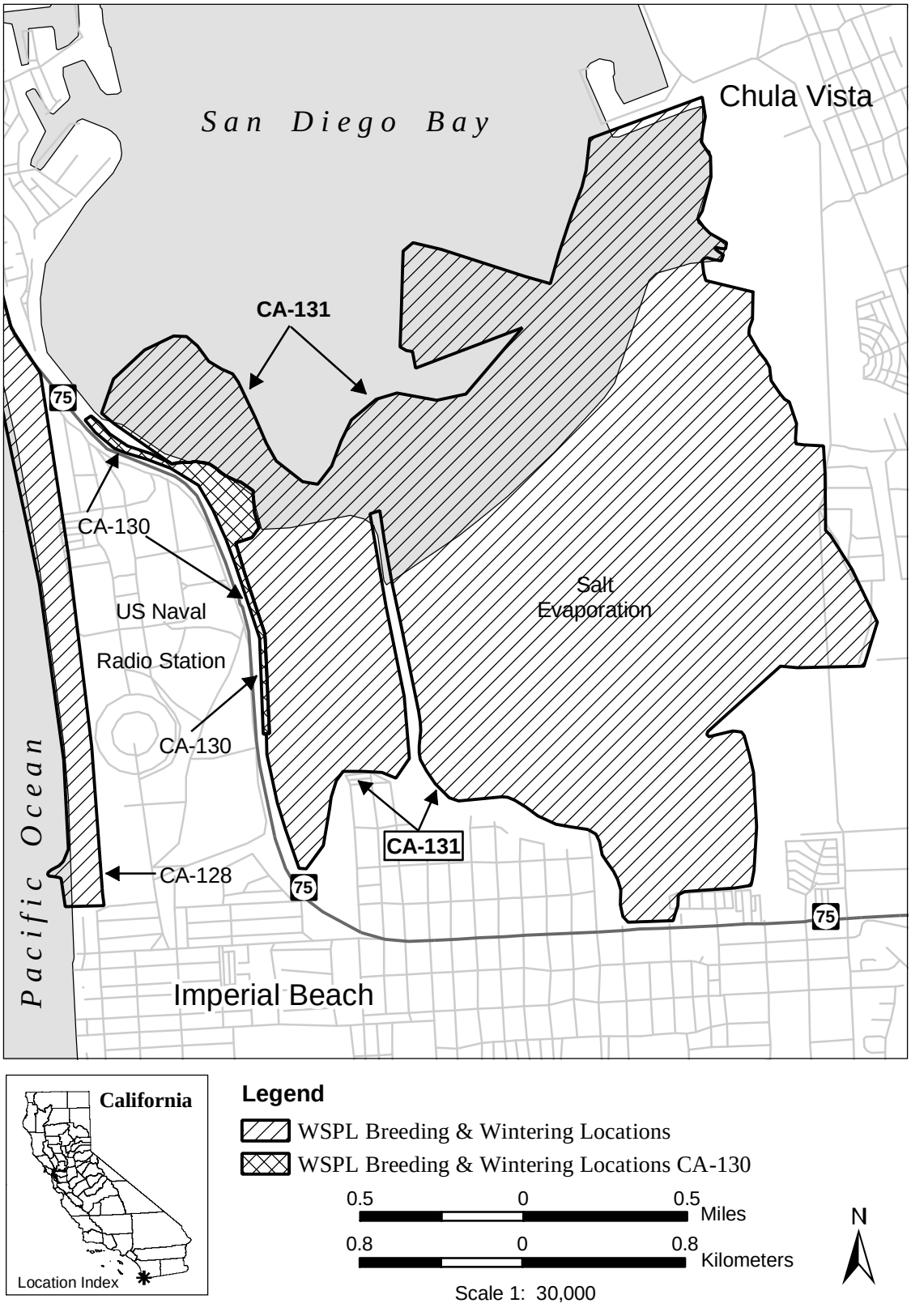


Figure L - 148. Sweetwater National Wildlife Refuge (CA-132), San Diego County, California.

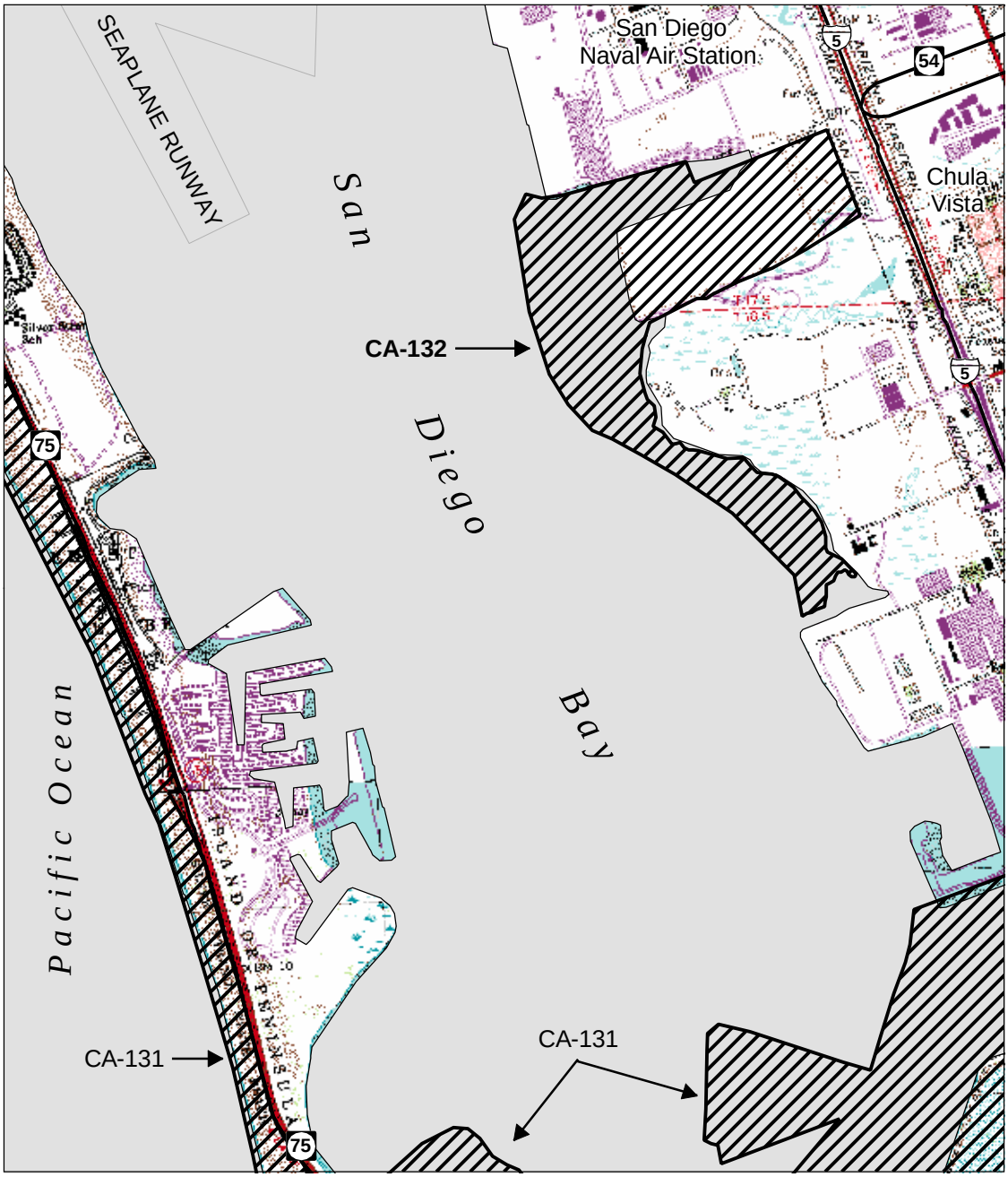
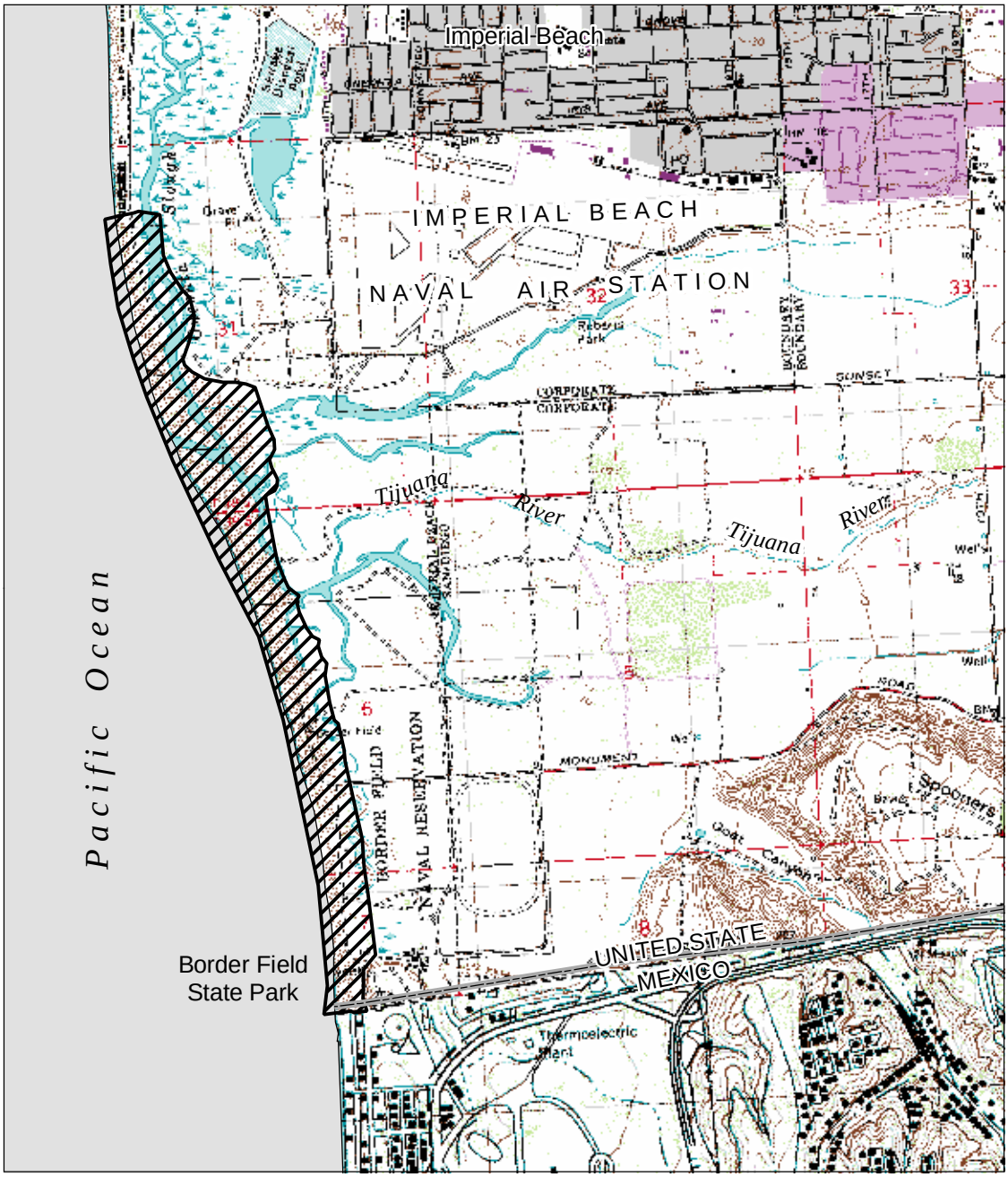


Figure L - 149. Tijuana River Beach (CA-133), San Diego County, California.



Appendix M. Agency and Public Comment on the Western Snowy Plover (*Charadrius alexandrinus nivosus*) Pacific Coast Population Draft Recovery Plan

I. Summary of Agency and Public Comment

On August 14, 2001, we released the *Western Snowy Plover Pacific Coast Population Draft Recovery Plan* (U.S. Fish and Wildlife Service 2001a) for a 120-day comment period for Federal agencies, State and local governments, and members of the public (U.S. Fish and Wildlife Service 2001b). The comment period ended on December 12, 2001. Opportunity to resubmit comments was provided due to the possibility that some comments submitted were not received due to shutdown in the U.S. Department of Interior's internet access, including receipt of outside electronic mail (U.S. Fish and Wildlife Service 2002). Comment resubmittals were accepted through February 15, 2002. Dr. Joe Buchanan, Dr. Mark Colwell, Dr. Doug George, Dr. Susan Haig, Dr. Christen Fritz, and Dr. Phillip E. Person were asked to provide peer review of the draft plan. Comments were received from three peer reviewers (Colwell, George, Haig).

This section provides a summary of general information about the comments we received, including the number of letters from various sources. A complete index of commenters, by affiliation, is available from the U.S. Fish and Wildlife Service, Ecological Services, Sacramento Fish and Wildlife Office, 2800 Cottage Way, Suite W-2605, Sacramento, California 95825. All comment letters are kept on file in the Sacramento Fish and Wildlife Office.

The following is a breakdown of the 112 total comment letters received from various sources:

Federal agencies - 10
State agencies– 8
military bases - 4

local governments – 11
academia - 4
professional – 6
business/industry – 3
recreational/ORV interests - 4
property rights/wise use groups - 3
environmental/conservation organizations – 15
individual citizens– 45

Peer review comments on the draft recovery plan were generally supportive. Comments emphasized the need to coordinate with other monitoring and recovery efforts throughout the country, consider social and carrying capacity issues in management and restoration, and better address effectiveness (or lack of effectiveness) of management activities. Although there were many detailed comments, suggestions for clarification, and editorial suggestions, the shortcomings identified by the individual peer reviewers were: 1) lack of discussion of importance of gravel bars as nesting habitat and their need for appropriate management; 2) lack of consideration of social factors in influencing selection of nesting sites and in potential for restoring western snowy plovers to former breeding sites; 3) need to more fully discuss carrying capacity and related issues; 4) need to coordinate western snowy plover assessments with other assessment efforts for western snowy plovers throughout the west and throughout North America; 5) need to understand the distribution of the western snowy plover distribution and status in Mexico; and 6) inadequate discussion of several management activities and needs (lack of enforcement as an impediment to recovery, supposed on-going management activities are minimal or non-existent, protection of wintering birds and wintering habitats needs to be high profile and implemented, exclosures have problems and may not always be appropriate). These comments are addressed below.

This section summarizes the content of significant comments on the draft recovery plan. A total of 112 letters were received. Some individuals submitted more than one letter, and some letters were prepared jointly by

more than one organization. Most contained one or more comments. Some letters raised similar issues. Many letters provided new information or suggestions for clarity. In these cases, the information was incorporated into the final version of the recovery plan. Some letters requested explanation of various points made in the draft recovery plan or their scientific basis. In these cases, the final recovery plan was revised to include an expansion or clarification of the particular section. Many comments were incorporated into the final version of the recovery plan. Many commenters simply provided their voice of support or opposition to the recovery plan. Some commenters suggested local or agency programs that could assist in achieving certain recovery actions and offered assistance in implementing recovery actions. Information and comments not incorporated into the final recovery plan were considered and noted, and may be useful in the future. Several comments were submitted that raise concerns, such as constitutional issues related to enforcement by the State of California and challenges to our basis for listing the Pacific coast population of the western snowy plover, which are beyond the focus of this recovery plan and therefore are not addressed herein. Major comments that were not incorporated or that require clarification in addition to their incorporation are addressed below. We thank all those who commented.

II. Summary of Comments and U.S. Fish and Wildlife Service Responses

Life history and ecology

Comment: Several comments were made in regard to the value of driftwood to the western snowy plover, or regarding the consistency of the following statements in the draft recovery plan: nests typically occur in flat, open areas with sparse or absent vegetation and driftwood; western snowy plovers often nest beside driftwood and it is an important component of breeding and wintering habitat; and too much driftwood can be detrimental if there is not sufficient open habitat to induce the birds to nest. One commenter wanted to know if a ban on driftwood collection was intended for the entire coastline.

Response: Tolerance and use of driftwood by western snowy plovers depends on individual site characteristics. High driftwood densities can decrease habitat suitability with a resultant decrease in western snowy plover nesting (*e.g.* Eel River Wildlife Area, Humboldt County, California, 2003). Alternatively, western snowy plovers have been observed using driftwood as nest platforms and as cover from predators and weather. Small pieces of driftwood are often present in association with nests, as are kelp, vegetation, algae, rocks, or man-made objects. Generally speaking, flat, open, and sparsely vegetated habitat with little driftwood or debris present is preferred. However, the coastal population of western snowy plovers also nests on gravel bars within varying sizes of cobble, and at dried salt ponds. The micro-habitat selected by an individual nesting pair depends on site-specific conditions and the nesting pair's experience. As a result, recommendations to ban driftwood collection at a particular site will be made on a site specific basis based on the best available scientific information.

Comment: One reviewer felt historical regional preference of the western snowy plover, including preferred climate, and historical climates of the regions along the west coast should be added to the recovery plan.

Response: Western snowy plover populations have always varied in response to the natural changes in weather and habitat condition. However, available data from survey records are not sufficient to assess the effects of long-term historical trends in climate upon populations. Severe storms, such as those occurring during El Niño years, can adversely affect western snowy plover populations by destroying nests. Nonetheless, western snowy plovers have been able to recover from these random natural events. Human influences over the past century, however, such as habitat destruction, invasion of introduced beach grass, and elevated predation levels have reduced the western snowy plover's ability to respond to these natural storm events.

Comment: Several commenters wanted to see a more detailed description of the western snowy plover's habitat attributes, including breeding habitat. One commenter felt the description was too vague and would include areas that do not support the western snowy plover.

Response: The Pacific coast population of western snowy plover inhabits wide, flat, sparsely-vegetated beach strands that are, for the most part, dynamic. Conditions change at breeding sites from year to year depending on winter and spring storm events, shifting sand dunes, river flows, salt pond flooding, and the vegetation that subsequently becomes established. Consequently, a definitive description of suitable habitat is not possible and could in fact be misleading. Sites that are suitable one year may not be suitable the next year. The habitat description in the draft recovery plan was written to include breeding habitat along the entire Pacific coast where the western snowy plover is found. Thus, there may be some areas that meet the broad habitat description but do not currently or historically support western snowy plover. Habitat requirements for the Pacific coast population of the western snowy plover in both the breeding and wintering seasons are described in section I.B.1. and I.B.4., respectively.

One of the commenters referenced Redwood National and State Parks beaches as meeting the habitat description. Recent survey results at these sites do not indicate they support western snowy plovers. Neither of these beaches is included in the recovery plan and as such, there are no plans to establish populations of western snowy plover in these locations.

Population status and trends

Comment: Many people commented that the population numbers and data were not up to date.

Response: The final recovery plan includes the most up to date data that has been made available to us.

Comment: Several reviewers felt the recovery plan should use data from the same years when comparing wintering population numbers at different sites.

Response: We agree that data from the same year should be used to compare population numbers at different locations, when possible. However, survey effort, methods, and timing have varied widely among years and among sites. Additionally, some locations have only been surveyed in a limited number of

years. The values in section I.B.4.a. are maximum numbers counted at the various locations; the values come from a variety of sources. Appendix B describes the various sources and the time spans during which wintering population data were collected for each state. The text in the final recovery plan has been modified to better describe the methods for deriving these numbers. We also have recommended as recovery actions development of standardized data collection methods to facilitate future comparisons among years and locations.

Comment: One commenter felt that since there are no historic population numbers for western snowy plovers, their historic range cannot be determined. They also feel that human alteration may have expanded the range of the western snowy plover and they can now be found in areas where they never lived before.

Response: While we cannot determine the pre-European settlement population numbers or range of western snowy plovers along the Pacific coast, we have data demonstrating that 33 of 53 (62 percent) coastal localities in California where western snowy plovers formerly bred were no longer occupied by the late 1970s, indicating a strong probability that rangewide populations had decreased from historical levels (Page and Stenzel 1981). Moreover, survey results indicate that population declines continued further from 1980 to 2000. Since 2000, intensive management has contributed to population increases.

In addition, we have strong indications that human alteration has, in most cases, reduced habitat for western snowy plovers rather than expanding it. For example, it is known that the introduction and spread of beachgrass during the 20th century has progressively reduced or eliminated western snowy plover habitat in extensive tracts of coastal beaches and dunes throughout large sections of its range. One exception may be the San Francisco Bay. Although we have no data on pre-settlement use of San Francisco Bay by western snowy plovers, it is possible that construction of salt ponds may have improved plover habitat quality in this area, which currently supports 5 to 10 percent of the U.S. Pacific coast breeding population.

Comment: Current data on the number of western snowy plovers that occur on Commander Navy Region Southwest lands is underrepresented.

Response: Because data collection at different nesting sites throughout the State of California is not standardized, for broad-scale comparability of overall population levels and trends the Recovery Plan emphasizes the general information obtained with consistent methodology from the window surveys. We acknowledge that more detailed breeding data collected by the Navy is useful and relevant to site-specific management.

Carrying capacity

Comment: Several commenters felt that carrying capacity for the western snowy plover needs to be determined prior to setting recovery goals. They also wanted to know how we planned on calculating carrying capacity.

Response: While we agree that it would be desirable to know the carrying capacity of a particular beach for western snowy plover, it would be very time intensive to estimate. Such calculations would require detailed site-specific demographic data, including parameters that could change dynamically and unpredictably from year to year with weather conditions, predator populations, and land management methods. We do not believe that such an estimate would contribute substantially to the recovery of the species, and therefore we do not intend to estimate one. In the absence of such estimates, a population viability analysis was done to aid in developing recovery criteria.

While we do not intend to estimate carrying capacity, we do provide guidance on management goals for various locations (see Appendix B). Individual location management goals are numbers that we believe are achievable with intensive management. Collectively, these numbers are about 20 percent higher than the recovery criteria subpopulation sizes. These numbers are meant to be flexible, taking into consideration variations in habitat conditions, management opportunities from year to year, location differences, and new scientific data. Routine reviews for applicability, value, and success of the final recovery plan will occur and the final recovery plan will be revised as needed.

Habitat Degradation

Comment: One commenter wanted the U.S. Fish and Wildlife Service to review and comment on all development proposals to alert land use authorities to the possible effects of the development.

Response: We review development proposals subject to sections 7 and 10 of the Endangered Species Act. However, it is not within our authority to review all development proposals. Recovery action 5.2 recommends periodic meetings and/or workshops to inform Federal, State, and local resource management and regulatory agencies, and City and County planning departments about threats, research, and management needs for western snowy plovers. Additional actions (*i.e.* 1.3, 2.1, 3) recommend monitoring and evaluation of threats to western snowy plovers and their habitats, and development of mechanisms to eliminate or ameliorate those threats.

Comment: One commenter felt we should consider mitigation measures for unavoidable development activities that affect western snowy plover habitat.

Response: Recovery plans are guidance documents, and set forth what we believe are the actions and management direction necessary to downlist and delist species. The purpose of recovery plans is not to provide details regarding mitigation for project impacts. The discussion of mitigation requirements for project impacts is best conducted during consultation pursuant to section 7 or 10 of the Endangered Species Act.

Comment: Several commenters wanted to see a discussion of the benefits of beach nourishment and were concerned that the recovery plan might unduly restrict beach nourishment efforts.

Response: A discussion of the benefits and concerns with beach nourishment can be found in section I.D.1.b.i. The final recovery plan also includes recovery actions (2.2.3, 4.1.2) to evaluate the potential benefits of beach nourishment to western snowy plover habitat. Issues associated with beach nourishment including timing, duration, equipment used, and sand grain size and color, need to

be considered and coordinated with us to determine if they adversely affect western snowy plovers or their habitat. Sand replenishment projects can be permitted through section 7 or section 10 of the Endangered Species Act with the appropriate avoidance and minimization measures to prevent adverse effects on the western snowy plovers. However, the recovery plan is not a regulatory document and does not place any additional regulatory restrictions on beach sand replenishment activities.

Comment: One commenter recommended discussing pampas grass (*Cortaderia jubata* and *C. selloana*), in addition to European beach grass. Another commenter pointed out that Oregon used scotch broom and native shore pine for dune stabilization and these have had some negative consequences for the western snowy plover.

Response: We agree that pampas grass, scotch broom, and other invasive plants can be a localized issue at some western snowy plover areas, both breeding and wintering. However, most habitat related issues associated with nonnative vegetation infestations are a result of the European beachgrass invasions. We agree that in some areas scotch broom and shore pine have negatively affected western snowy plovers. Habitat restoration at the site level should consider all invasive nonnative plants. These species are discussed in the recovery plan towards the end of the section entitled “Encroachment of Introduced Beachgrass and Other Nonnative Vegetation”.

Comment: Several commenters felt that European beachgrass is the greatest threat to the western snowy plover and that there needed to be a permanent solution to beachgrass removal. Some commenters also felt that there was not enough effort set forth in the draft recovery plan to reduce European beachgrass. One commenter suggested that the U.S. Fish and Wildlife Service should coordinate with the U.S. Forest Service on European beachgrass control.

Response: We agree that European beachgrass is a threat to the western snowy plover. The recovery plan discusses threats to the western snowy plover according to the five listing criteria defined in the Endangered Species Act. The recovery plan indicates that reasons for decline and degree of threat vary by

geographic location. Some areas of the western snowy plover's range have a higher degree of threat from European beachgrass than other areas.

We also agree that there needs to be a permanent solution to control European beachgrass and that coordination with all entities involved is necessary. Experiments to find effective and cost-efficient methods of removing or eradicating European beachgrass are ongoing. Recovery action 2.2.1.1 deals with the removal of nonnative and other intrusive vegetation, including European beachgrass, from existing and potential breeding sites. Prioritized removal and control strategies for introduced beachgrass are needed for each recovery unit and may be decided by each recovery unit working group. Recovery action 4.1.1 specifically addresses the need to further investigate effective and cost-efficient methods for habitat restoration by removal of introduced beachgrass.

Comment: One commenter stated that herbicides are harmful to wildlife, including western snowy plovers, and suggested the use of rock salt to control beachgrass. Several other commenters had suggestions for controlling European beach grass. These included: salt water treatment; hydraulic mining; solarization, which involves covering the beach grass in black plastic; and biocontrol.

Response: Land managers and working groups in each recovery unit will decide on the most effective method to control beachgrass in their areas. The method chosen should be the least harmful to western snowy plovers in that recovery unit area. The use of rock salt, salt water, solarization, biocontrol, and hydraulic mining to eradicate beachgrass may be investigated under Recovery action 4.1.1.

Comment: The discussion regarding marine mammal displacement of plovers on the Channel Islands is not adequately supported.

Response: The information provided in this section is consistent with a Navy comment letter received from management at San Nicolas Island on December 17, 2001.

Predation and Predator Control

Comment: A commenter noted that there is no predator management plan for Oregon, even though Mark Stern's study showed 68 percent nest failure from predation (Table C-1, pages C-8 through C-10).

Response: During the 2002 and 2003 nesting seasons, Federal and State agencies approved and implemented an integrated predator management program for the Pacific coast population of the western snowy plover in Oregon. The decision followed public review and comment on an analysis of the effects of the proposed predator control methods, and alternatives, to protect the western snowy plover in Oregon. Agencies involved were the U.S. Fish and Wildlife Service, Coos Bay District of the Bureau of Land Management, Siuslaw National Forest, Oregon Parks and Recreation Department, Oregon Department of Fish and Wildlife, and APHIS-Wildlife Services. These agencies implemented the program to assist in western snowy plover recovery by improving western snowy plover nesting and fledging success while recreation and habitat management efforts continue. Predator control occurred at selected western snowy plover breeding sites along the Oregon coast. In 2002, these included Coos Bay North Spit, Bandon Beach, New River and Floras Lake. These sites are located on lands managed by the Bureau of Land Management and Oregon Parks and Recreation Department in Coos and Curry Counties. In 2002, predator damage management was directed toward problem red foxes, ravens, crows, skunks and raccoons. Feral cats, coyotes, mink, opossum, weasels, gray fox, rates, mice, or gulls that were found to pose a threat to western snowy plovers were also targeted with lethal and/or nonlethal methods. Individual problem raptors (birds of prey) will be managed primarily with nonlethal methods. In 2003, predator control efforts were on-going on BLM and OPRD land, and began on lands managed by the U.S. Forest Service in Lane and Douglas Counties in 2004. These efforts have continued in subsequent years.

Comment: One commenter recommended against capturing or killing of predatory birds protected under the Migratory Bird Treaty Act.

Response: In some instances it may be necessary to enable western snowy plover nesting success by removing native bird species. The recovery plan recommends

this option only when warranted and feasible and also notes that the management agency is required to obtain the appropriate Federal and State permits.

Comment: Several commenters were concerned about relying solely on predator management programs. Commenters felt the recovery plan should focus on the removal of problem individuals, nonnative predators, and balancing unintentional human encouragement of larger native predator populations or the recovery plan should include a recovery action which studies the effects predators have on western snowy plover populations. One commenter felt that the draft recovery plan tried to avoid the removal of predators.

Response: The draft recovery plan lists many actions which managers should consider to prevent excessive predation on western snowy plovers, including the removal of predators. Multiple actions must be considered because of the number of sites and the different management actions which would be necessary at each individual location. This allows flexibility for land managers in their management plans. Recovery action 2.4.4 recommends removing predators only where warranted and feasible, focusing on the elimination of nonnative predators, controlling native predators by removal or nonlethal means when possible, and focusing on problem individuals. The preferred method of predator control will depend on the site conditions and should be decided with input from the recovery unit working group.

Recovery action 4.2 calls for the development and testing of new predator management techniques to protect western snowy plover nests and chicks. Specifically it calls for investigating techniques to identify predators and investigate predator management at a landscape level. Information on any additional effects predators may have on western snowy plover populations may be gathered during these investigations.

Comment: One commenter felt the draft recovery plan was contradictory by recommending both the placement of dead corvids and gulls and also the removal of bird and mammal carcasses. Another commenter felt the use of carcasses to discourage gulls and ravens from predating on western snowy plover is promoted without qualified documentation and carcasses may attract scavengers.

Response: Not every recovery action listed in the draft recovery plan will be appropriate for every western snowy plover location. In some locations gulls may be discouraged from depredating western snowy plovers when carcasses are present. However, if carcasses are numerous or present close to western snowy plover nests, they may act as attractants to corvids or mammalian scavengers, thereby causing an increase in the risk of nest predation. Implementation of the recovery actions will differ by location based on site-specific conditions, and before this strategy is implemented at a locality the appropriate Fish and Wildlife Office should be consulted to assess whether the benefits to western snowy plovers outweigh the risks. We agree that more research is needed on the use of carcasses for predator aversion. Recovery action 4.2.3 addresses this issue. Recovery action 4 is dedicated to the need for further scientific investigations that would facilitate the recovery of the western snowy plover. Recovery actions 2.4.4 and 2.4.5 address the issue of removal of both predators and animal carcasses.

Comment: Several commenters felt that captive rearing of western snowy plover eggs should be included in the recovery plan.

Response: Captive propagation is a last resort after all attempts to recover the species in the wild have failed (U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration 2000). Collecting and rearing of eggs in captivity is not feasible with every species. Western snowy plover chicks are precocial (capable of moving around on their own immediately after hatching). Upon hatching chicks immediately imprint on the adults and follow them around, learning essential behavioral skills that help to ensure their long-term survival. This behavior makes it difficult to rear western snowy plovers in captivity for release to the wild. Another problem with captive rearing is that although it might increase the population of western snowy plovers in the short term, if other threats to western snowy plovers were not addressed the population would begin to decrease once captive rearing was stopped.

Comment: One commenter felt that using taste aversion techniques on coyotes and American kestrels is inappropriate, scientifically unproven, untested, and untried.

Response: The draft recovery plan does not discuss the use of taste aversion techniques specifically on coyotes and/or American kestrels. The draft recovery plan recommends the investigation of many forms of aversion techniques, including taste aversion. We recognize that there are both obstacles and advantages to development of effective aversion techniques that can be efficiently applied in the field. These obstacles and advantages need to be carefully evaluated before taste aversion is implemented in the field. The research called for in the recovery plan should help us decide the best course of action with regard to aversive techniques.

Comment: Several commenters felt that hawks should not be encouraged to nest near beaches. One commenter felt that the draft recovery plan should forbid nest boxes in or near western snowy plover areas. Another felt that lethal predator control should be applied to corvids and other species protected by the Migratory Bird Treaty Act. Commenters were in support of predator removal and felt not enough effort was going into the removal of avian predators, while other commenters expressed their concern with avian predator removal, stating that the recovery plan action to remove predators where warranted and feasible should not include the capture and killing of birds protected under the Migratory Bird Treaty Act.

Response: We agree that hawk nest boxes should not be placed in areas that western snowy plovers use; the recovery plan focuses on advising appropriate management in areas designated as western snowy plover habitat. If land managers are responsible for areas outside of western snowy plover habitat per se (i.e., near beaches), they may, at their discretion, implement additional measures to benefit western snowy plover in these other areas.

Removal of native species, such as hawks, should only be done in cases where their range extensions have been human-abetted or where high rates of western snowy plover adult, chick, or egg predation (which cannot be countered with predator exclosures) are occurring. Lethal control of native predator species should be avoided whenever possible.

Recovery action 2.4 presents alternatives regarding predator management. Nonlethal methods should be implemented before resorting to lethal methods.

Migratory birds, such as raptors, are sensitive species that should be managed nonlethally to the extent practicable. However, the generalist group of birds known as corvids (crows and ravens primarily) has capitalized on human activities to expand historic ranges and population densities to the point where they have become significant predators on western snowy plovers at some sites. Reducing corvid populations, and which methodologies are to be used, is dependant on predation pressure, site conditions, and governing regulations, including the Migratory Bird Treaty Act.

Comment: One commenter wanted to see additions to the recovery plan regarding litter and garbage removal at beaches. Specifically, the commenter recommended placing predator-proof trashcans outside of beach areas, emptying them frequently, and providing beach cleanup days.

Response: The draft recovery plan specifies placing predator-proof trashcans only on beaches because this is the habitat that western snowy plovers use. While it generally may be beneficial to place these trashcans in areas outside of western snowy plover habitat, this recovery plan is focused on recovering the western snowy plover, with the intent to decrease predator attractants within western snowy plover habitat. The recovery plan also recommends frequent trash removal in general, but stresses emptying uncovered trashcans more frequently since they are a larger lure to predators. Finally, actions that may aid in the recovery of the western snowy plover, but are not included in the draft recovery plan, may be applied by local groups as long as they are coordinated with the recovery unit working group.

Comment: One commenter was concerned that predator control was not planned for the Oregon Coast because it is not included in Table C-1 as a management activity.

Response: Table C-1 in Appendix C presents information on existing and needed management activities throughout the range of the western snowy plover, based on a 1998 survey of public land managers and private conservation organizations and subsequent updates to this information. For locations where information on current land management activities is not available, the table is left blank. This table is intended to provide preliminary, interim guidance for public land

managers, private conservation organizations and private landowners regarding management measures which should receive emphasis at their locations. In the future additional management measures for all locations identified in Table C-1 will be identified and prioritized on a site-specific basis through coordination and discussions between members of each of the six recovery unit working groups. Table C-1 in the final recovery plan identifies multiple locations in Oregon and elsewhere where exclosures and predator control are either current management activities or require additional management. Predator control in Oregon is being implemented cooperatively by State and Federal agencies under an integrated predator management program.

Comment: Several commenters felt that recovery should focus on the threats of predation and nonnative beachgrass. Others felt that the threats should be listed in order of greatest threat to lesser threats.

Response: We agree that predation and nonnative beachgrass invasions are serious threats to the western snowy plover and its recovery. Given this, the recovery plan places removal of nonnative vegetation (2.2.1), erection of predator exclosures where appropriate (2.4.3), removal of predators where warranted and feasible (2.4.4), as priority 1 actions in the implementation schedule. Threats when mentioned in the recovery plan are listed in order of the listing factors to maintain consistency throughout the recovery plan and with other documents dealing with this species (the listing package, critical habitat designation, *etc.*).

Comment: Several commenters had concerns and questions about nest exclosures. One commenter wanted to know what the procedures were for placing signs near western snowy plover nests and habitat areas. Other commenters wanted to know what types of nest exclosures were the best, what areas they should be used in, and should exclosures be covered or not.

Response: Placement of signs along with other management tools and strategies used to aid in the recovery of the western snowy plover will be determined by the recovery unit working groups based on site-specific information. Appendix F contains information on types of exclosures.

Comment: One commenter wanted a discussion of the effects to visual esthetics from installing warning signs that are large enough to read from a distance of 300 feet. Another commenter felt that kiosks located at the beach may detract from the natural beauty of the landscape; information should be available at visitor centers.

Response: We are not recommending installing signs that can be read from a distance of 300 feet. Rather, we believe signs posted to inform the public of sensitive areas and management prescriptions, or to educate the public regarding coastal resources, should be posted in areas where they will be encountered by users approaching the targeted management area. In this way the public is made aware of the management issue, why the prescription is in place, and what is expected of the public before reaching areas where western snowy plovers occur.

As identified in Appendix K, kiosks are one of several methods mentioned to provide public outreach and education. Generally, we are not promoting the construction of new infrastructure in wildlife habitat. The intent is to provide a means to disseminate basic information where facilities currently exist in a manner that does not disturb the habitat of the western snowy plover. Furthermore, we recognize that structures like kiosks may provide roosting or perching habitat for avian predators.

Comment: A commenter stated that some predators are getting around fences on Coos Bay North Spit. Another commenter noted that cats and gray foxes had been able to climb over fences in southern California. Another commenter felt that more fencing should be done to protect western snowy plovers and allow more access by humans. There is a need for further studies to determine the effectiveness of nest exclosures to ensure their use is statistically valid.

Response: Although not completely predator proof, the large fence encompassing the 1994 Habitat Recovery Area and South Spoil does inhibit predators as indicated by fewer tracks inside the fence than outside the fence. The fence is inspected regularly throughout the nesting season and repairs are made when necessary. In addition to the fence, the predator control effort currently underway targets western snowy plover predators both inside and outside the fenced area.

With respect to fencing in general, the timing and extent of its use should be determined on a site-by-site basis. Active predator management may complement the use of fencing if appropriate for individual sites based on the level of predation risk and other management considerations, and has potential to significantly increase nesting and fledging success (*e.g.*, programs on Navy and Marine Corps lands in southern California, integrated predator management on the Oregon coast).

Based upon the pre- and post-exclosure use population numbers, there is an overwhelming trend of increased nest success when use of exclosures has been implemented as needed. Investigation of methods to determine effective predator management techniques is one of the research needs identified in Recovery action 4.2. Thus, we recommend that studies of the effectiveness of the existing nest exclosure designs be conducted to identify how to improve nest success and predator avoidance.

Nest exclosures are just one of many conservation tools used to protect the western snowy plover and aid in the recovery of the western snowy plover. Nest exclosures, alone, likely will not protect the western snowy plover from increased disturbance by human recreation. Increasing access to areas that are not already disturbed by humans may cause an increase in western snowy plover mortality. In addition, added fencing for nest exclosures may add additional perching areas for western snowy plover predators.

Comment: Appendix F should also include a description of square exclosures, "net tops", and other design alternatives as an acceptable form of nest protection from site specific predator conditions.

Response: Some discussion of mesh/netted tops and square exclosures is included in section I.F.2.a of the recovery plan. The protocol currently states that "permittees who want to make modifications to these protocols should confer with us and obtain permission prior to making changes to the exclosure designs described in these protocols." We discuss these issues as options for nest exclosures, but state that these would need to be considered on a case-by-case basis.

Comment: Nest exclosures may give western snowy plovers a false sense of security and may be advantageous to predators that may key in on exclosures as means of identifying nests for predation. In addition, exclosures may draw negative public attention towards nests.

Response: Based on the available literature, there is no indication that western snowy plovers are less vigilant when utilizing a nest exclosure. However, the decision whether to use nest exclosures at a given locality should use local information about predator populations and public use in order to balance the costs and benefits of potentially increased vandalism and predation risk to fledglings and adults vs. reduction of nest predation. Based on information provided in annual reports submitted in association with valid section 10(a)(1)(A) recovery permits, we will periodically review the use of exclosures. In cases where findings suggest that nest exclosures decrease vigilance or are otherwise advantageous to western snowy plover predators, then alternatives may be implemented. Appropriate outreach and education programs focusing on beach users should assist in minimizing the effects of human visitation to nest exclosures.

Comment: The recovery plan should address the potential effects of exclosure maintenance, and recommend managers monitor the construction, use, and maintenance of exclosures to determine if such activities cause adverse effects on nesting success.

Response: Erecting nest exclosures may only be conducted by individuals trained to conduct such activities. Such activities may only be authorized via a permit issued pursuant to section 7, 10(a)(1)(A), or 10(a)(1)(B) of the Endangered Species Act. Monitoring and reporting requirements of such permits stipulate that incidents of excessive harm or harassment associated with such permits be reported to us and corrective measures should be incorporated as appropriate.

Natural events

Comment: Some commenters felt that the goal of 250 western snowy plovers for Oregon and Washington is very difficult, if not impossible, to achieve because the

recovery plan failed to adequately assess the effects of naturally occurring events on western snowy plover populations.

Response: We and our cooperating agencies agree that meeting the goal of 250 breeding individuals in Oregon and Washington is challenging. However, recommended subpopulation sizes represent the best professional judgement of the western snowy plover recovery team's technical subteam and are based on a site-by-site evaluation of historical records, recent surveys, and future potential with dedicated, proactive management. Overall, the recovery criteria for population size and distribution for the Pacific Coast population of western snowy plover represent only a portion of its historical abundance and distribution, but the reflect what the technical subteam identified as achievable.

Reproductive success is one of the more sensitive demographic parameters, and will be critical to the western snowy plover's success. To mitigate for large-scale catastrophic events, a variety of management techniques are being employed to ensure long-term reproductive success. Examples include increasing the number of existing western snowy plover breeding, wintering and dispersal sites through habitat restoration and protection measures, and dispersing these sites throughout the western snowy plover's range (Appendix C). In addition, increasing the number of nests and fledgling success though habitat restoration, nest exclosures, predator control, and seasonal beach restrictions will help to keep western snowy plover numbers elevated and contribute to recovery of the species. Substantial population increases in Oregon and Washington since 2000 indicate that recently implemented management actions have benefitted the species, and show the potential for achieving the goal of 250 breeding birds in this recovery unit.

Disturbance by Humans and Domestic Animals

Comment: One commenter stated eliminating humans from beaches allows predators (*e.g.* crows, coyotes, *etc*.) to decimate western snowy plover populations.

Response: Human disturbances may draw predators to beaches. This is discussed in subsection I.D.3. of the recovery plan, entitled Disease and Predation. Predators, such as corvids, attracted by the presence of human activities (*e.g.*

improper disposal of trash), frequent beaches in increasing numbers. Gulls have greatly expanded their range and numbers, especially along the United States portion of the Pacific coast, as a result of human-supplied food sources. Beach litter and garbage also attract predators such as skunks and coyotes. Buick and Paton (1989) found that losses of hooded plover (*Charadrius rubricollis*) nests with human footprints around them were higher than at those without footprints, suggesting "that scavenging predators may use human footprints as a visual cue in locating food." Additionally, it has been speculated that predators of western snowy plovers may benefit from a decline in wariness by western snowy plovers nesting on beaches that are subject to high levels of human disturbance (Persons and Applegate 1997). The continued settlement and use of coastal areas by humans generally has been associated with increased populations of predators.

Comment: One commenter wanted to know how we arrived at the conclusion that pedestrian traffic is responsible for a decline in western snowy plover populations. They asked for an explanation of how a pedestrian taking one minute to walk past a nest, or a vehicle taking 10 seconds to drive past a nest is a greater form of disturbance than a field biologist's work associated with the nest site.

Response: We acknowledge that we could better understand declines in snowy plover populations. However, the literature available at this time suggests that pedestrian traffic has a negative effect on western snowy plover populations. Several studies are cited in the recovery plan (see section I.D.5.b.i) establishing that western snowy plover reproductive success is lower in areas with high recreational activity compared to beaches with low recreational activity. Pedestrian traffic also has been shown to have an effect on nesting, foraging, and the fledging success of western snowy plover chicks.

Regarding the level of impact to the species from field biologists compared to pedestrians, biologists monitoring western snowy plover are limited to a few days a year, whereas recreationists may frequent western snowy plover nesting sites daily, throughout the breeding season. While monitoring may result in disturbance, surveys and monitoring are necessary to determine if we are achieving our measurable and objective recovery criteria. In addition, while

construction of exclosures causes short-term disturbance to nesting birds, evidence indicates that appropriate use of exclosures can provide increased nesting success through protection from nest predation.

Comment: One commenter suggested that human use of beaches should be encouraged to encourage western snowy plover use of habitat behind the foredunes.

Response: Western snowy plover nest in sites that are near water. Page and Stenzel (1981) found that nests were usually within 100 meters of water, but could be several hundred meters away when there was no vegetative barrier between the nest and water. We are not aware of documentation indicating that western snowy plovers nest behind foredunes. Encouraging western snowy plovers to use marginal nesting habitat behind the foredunes would very likely reduce their chances of reproductive success. Additionally, encouraging human use of beaches may increase nest abandonment rather than nest relocation. Western snowy plover that breed on the coast and inland are very site faithful in the winter (Point Reyes Bird Observatory unpublished data) and may continue to return to the same site and continually abandon these sites due to human disturbance. The encouragement of human use on beaches could also increase predators attracted by improper disposal of trash. Furthermore, dunes are absent from many beaches along the Pacific coast.

Comment: Several commenters wrote that the amount of discussion on human disturbance was a lot greater than that given to other discussions on causes for declines.

Response: Human disturbance has been identified as one of the primary causes of decline in the Pacific coast population of the western snowy plover. This disturbance is both direct and indirect (*e.g.* beach and water-related recreation, dogs, motorized vehicles, beach cleaning, beach fires, predation, equestrian traffic, oil spills, livestock grazing, and contaminants). We have included detailed discussion of human disturbance because of its importance as a threat to the plover and because many aspects of this threat can be ameliorated with

appropriate management. Such management will advance the recovery of the Pacific Coast population of western snowy plover.

Comment: One commenter noted that the section "Litter, Garbage, and Debris" should mention efforts to promote clean camping through implementation of an integrated predator management strategy.

Response: We believe that the recovery plan appropriately emphasizes trash management, and we agree that this should include promoting clean camping. Some efforts to implement trash management have been undertaken in Oregon as part of their integrated predator management strategy. In 2002 and 2003, the Oregon Working Team approved Action Plans for Integrated Predator Management, which lists trash management as one of the nonlethal tools to be used at all nesting western snowy plover sites to control the predator population. Trash management is also listed in the January 2002 Environmental Assessment entitled, "Predator Damage Management to Protect the Threatened Pacific Coast Population of the Western Snowy Plover".

Comment: There were a few comments supporting banning dogs on the beach and a few for allowing dogs free access of beaches with owner supervision. One commenter felt since studies indicate that western snowy plovers flush from the nest when people and dogs are present between 1 and 820 feet from the nest, people and dogs may pose a significant disturbance to western snowy plovers and additional beach closures should be considered.

Response: We recognize that management of pets on beaches can be controversial. The draft recovery plan states that it is preferable to prohibit pets on beaches and other habitats where western snowy plover are present because noncompliance with leash laws can cause serious adverse effects to western snowy plovers. The recovery plan also recommends that if not prohibited, pets should be leashed and under manual control of their owners. While some members of the public may be able to control their dogs with their voice, the majority of dogs are not able to withstand the temptation of chasing another animal.

We are aware of the studies indicating disturbance and flushing as a result of human or dog encroachment in the vicinity of nests. Closure of beaches is generally conducted at the discretion of the land manager based on evaluation of nesting status at a given beach. The draft recovery plan recommends beach closure (seasonal or permanent) as another possible management tool.

Motorized Vehicles

Comment: Discuss potential effects due to patrol vehicles repeatedly flushing western snowy plovers from their nests.

Response: Patrol vehicles have the same potential effects as other authorized vehicle use. The potential effects from patrol vehicles should be considered cumulatively with overall site management. The use of patrol vehicles for public safety and enforcement of management prescriptions needs to be considered when determining the necessity, frequency, and timing of the patrols. As is the case with other authorized vehicle use, patrols should minimize impacts to plovers by avoiding nesting areas and driving slowly (5-10 mph) in the wet sand while traversing stretches of beach.

Comment: Many commenters felt that off-road vehicle use was beneficial because it causes sand disturbance and this could minimize the spread of European beachgrass.

Response: The effectiveness of sand disturbance from off-road vehicles at minimizing the spread of European beachgrass has not been demonstrated scientifically. In contrast, the adverse effects of motor vehicle use on western snowy plovers have been documented. Because vehicles disturb breeding and wintering western snowy plovers, and because it has not been shown that vehicles minimize the spread of nonnative plants, we do not agree that off-road vehicle use is beneficial.

Comment: Some commenters felt that if ORV use areas are closed for the western snowy plover, than others should be opened as mitigation.

Response: Making such recommendations is beyond the scope of this recovery plan, which is oriented to removing the Pacific coast western snowy plover population from the List of Endangered and Threatened Wildlife and Plants.

Comment: One commenter felt that motor vehicle restrictions on Coos Bay North Spit were unjustified.

Response: The Coos Bay North Spit supports one of the largest and most productive western snowy plover populations in Oregon, and is crucial to achieving recovery goals for the Oregon/Washington Recovery Unit. As discussed in this recovery plan, motor vehicle use on beaches has been documented to result in harassment of plovers, nest abandonment, destruction of eggs, and death of chicks and adults. We believe that vehicle closures at this location are an appropriate measure to maintain breeding productivity and increase western snowy plover populations in Oregon.

Comment: Many commenters felt that they were not allowed input into the recovery plan process.

Response: Public involvement in this recovery planning process included the opportunity to submit comments on the draft recovery plan. These comments have been reviewed. Many are incorporated in the final recovery plan, and some are addressed here in Appendix M. In addition, there were public meetings when the draft recovery plan was released. Furthermore, local organizations and agencies are encouraged to participate in recovery unit regional working groups to help develop regionally specific recovery actions and actions.

Comment: One commenter asked for more guidance in determining when off-road vehicles should be banned.

Response: We do not believe that additional general guidance would be appropriate because management actions for each location are determined based on site-specific information. Some management actions have already been established and can be found in the summary and table of Current and Additional Needed Management Activities in Appendix C of the recovery plan. Banning or

limiting the use of off-road vehicles may be necessary for the recovery of the western snowy plover in some locations where the use of off-road vehicles is causing disturbance, mortality, or habitat degradation.

Comment: One commenter felt that habitat degradation by off-road vehicles is several magnitudes less destructive than beach-raking machines.

Response: We agree that beach-raking is destructive and degrades western snowy plover habitat. The final recovery plan advises restrictions on beach-raking as well as off-road vehicle use. Recovery actions 2.3.5 and 2.4.1.3 address beach-raking issues.

Comment: Several commenters were concerned with the effects of beach grooming on the prey base of the western snowy plover and wanted to see changes in beach cleaning/grooming practices.

Response: The recovery plan identified beach cleaning as a threat to the western snowy plover, both directly and to their prey base. In addition, action 2.3.5 of the recovery outline recommends using alternatives to mechanized beach cleaning, and action 2.4.1.3 emphasizes the need to remove litter and garbage from beaches manually.

Coastal access

Comment: Several commenters were concerned about reductions in beach access and beach closures and want to see an "improved management plan" implemented that balances human recreation with the needs of the western snowy plover. In addition, some commenters felt there was unfairness in the management of beaches in different locations along the Pacific coast.

Response: We agree there should be a balance between human recreation and western snowy plover needs, and we feel the recovery plan reflects this. Management measures to protect western snowy plover should be determined on a site-by-site basis; factors to consider include the configuration of habitat as well as types and amounts of on-going pedestrian activity.

Types and degree of each threat varies by beach, causing beach management practices to be site-specific and depend upon the involvement of these Federal, State, and local government agencies. Under section 7(a)1 of the Endangered Species Act, Federal agencies are required to actively promote the conservation of listed species on lands under Federal agency jurisdiction. State and local government agencies, including State planning agencies and city and county planning and community resource departments, have the primary responsibility for overseeing land uses within their jurisdictions. The Recovery section of the recovery plan (II.A.2) includes further discussion of the roles of the Federal, State, local, and private sector.

Comment: One commenter felt user education and regular patrols would do more to improve western snowy plover habitat than shutting the public out of traditional coastal access. Another commenter requested that prior to implementing new restrictions such as no vehicles, leashed dogs, or no wood gathering, we should consider other management options such as enclosures, habitat restoration, and enforcement that minimize the loss of recreational opportunities.

Response: Public education and regular patrols are important components to managing lands that are western snowy plover breeding and wintering habitat. However, education and enforcement are only part of the solution. Temporary, seasonal closures direct use away from the most important western snowy plover areas while providing for public use.

We believe habitat restoration, predator management, and managing human activities are all required to achieve recovery. Different sites will have different primary management needs. Some sites may require more direction to humans than others, and some sites may instead require habitat restoration. However, all three components to management need to be considered on a local site specific basis. Consequently, management recommendations and planning identified in Appendix C will vary across the western snowy plover's range.

Comment: There were many comments both for and against beach closures. Some commenters felt beach closures should be a last resort and could be hurtful

to local economies, while others felt the best way to protect the western snowy plover was through full beach closures.

Response: We are required by law to write a recovery plan that identifies necessary management actions and criteria for the recovery and delisting of the western snowy plover. We believe that beach closures are likely to be a necessary component of western snowy plover management in some areas, and therefore, they are identified as a management option in the plan. We also believe it is neither feasible nor desirable to completely eliminate beach recreation in most western snowy plover habitat. Many factors are considered when deciding on beach closures. The recovery plan identifies management options and recognizes that local land managers must determine how to balance the various interests of the public while advancing the recovery of the western snowy plover population.

Comment: One person commented that the description of known wintering locations is very broad and wondered if managers must apply guidelines to the entire areas. In addition, the commenter wanted further clarification of types of activities that adversely affect wintering western snowy plovers.

Response: The list of wintering areas in Appendix B was compiled from many years of data. Wintering plovers have not been observed at many of the locations in Table B-1. We recommend monitoring known and potential wintering locations to gain further information on wintering locations for the plover. We hope that this information will help maximize survival and recruitment of western snowy plovers into the breeding population. We recommend that land managers confer with local plover working groups to determine whether monitoring of wintering locations in their area is appropriate.

Potential adverse effects to wintering populations of the western snowy plover are discussed in the threats section of the recovery plan and include natural coastal formation processes, dredging, channel maintenance projects, and recreational use by humans and their pets.

Comment: Two commenters note that the draft plan fails to address the Public Trust doctrine and Oregon State law allowing beach access.

Response: The Public Trust Doctrine of law provides that the State of Oregon holds submerged and submersible land in trust for the benefit of all the people. Under this doctrine, the general public has a right to fully enjoy these resources for a wide variety of public uses including navigation, commerce, recreation, and fishing. According to the courts, and with few exceptions, the people of Oregon own the bed and banks of all navigable streams, rivers, and lakes up to the ordinary high water line. This land is commonly referred to as "submerged and submersible land." In addition, the people of Oregon also own all land subject to tidal influence (with the exception of those parcels the State may have sold since statehood). This land is commonly referred to as "tidelands." However, access to these navigable waters is not guaranteed (*e.g.*, private property, areas closed for wildlife). Oregon Parks and Recreation Department is allowed through State rule, which is authorized by State statute, to determine what kinds of access are to be allowed on their lands or those lands they regulate under the “Beach Bill”.

With passage of Oregon’s "Beach Bill" in 1967, the State's policy was to "preserve and maintain its jurisdiction over ocean beaches for the public's use” (ORS 390.610(1)). The "Beach Bill" also declared the public interest in such land requires the State to do whatever is necessary to preserve and protect scenic and recreational uses of Oregon's seashore and ocean beaches (ORS 390.610(4)). The statutory authority to restrict recreational use on the ocean shore is found under ORS 390.660 and implemented under OAR 736-021-0040(3). Oregon Parks and Recreation Department is allowed through State rule, which is authorized by State statute, to determine what kinds of access are to be allowed. In other words, Oregon Parks and Recreation Department has responsibility for Oregon beaches and would be a primary agency with authority to close areas of beaches and enforce such closures.

Contaminants and Oil spills

Comment: One reviewer suggested that, in addition to identifying locations of western snowy plover habitat, Area Contingency Plans should identify safe access

corridors that would avoid effects to western snowy plovers during responses to oil or chemical spills. This reviewer also said that Area Contingency Plans should note all regular and emergency U.S. Fish and Wildlife Service contact information (*e.g.*, resource managers, biologists or contract personnel) that could provide consultative assistance to spill response agencies during an actual spill response.

Response: Area Contingency Plans currently contain information on routes of beach entry and exit that provide the least risk to natural resources and public safety. This information is updated as necessary with our input during periodic reviews of Area Contingency Plans. In addition, U.S. Fish and Wildlife Service personnel and personnel from other land management agencies (*e.g.*, the National Park Service and the U.S. Bureau of Land Management) are part of the multi-agency spill response process and provide input to the Incident Command on the importance of using these safe access corridors during spill response and clean-up operations.

To increase protection of threatened and endangered species during oil spill responses, we have recently entered into a Memorandum of Understanding with the Coast Guard and the Environmental Protection Agency. This Memorandum of Understanding defines a process for multiple levels of consultation under section 7 of the Endangered Species Act before, during, and after oil spills, including consultation on Area Contingency Plans. This consultation process is intended to ensure that issues such as safe access corridors through western snowy plover habitat are incorporated into Area Contingency Plan revisions and are implemented during spill responses. Per the Memorandum of Understanding, regular and emergency contact information for U.S. Fish and Wildlife Service personnel who will handle section 7 consultations during pre-spill planning activities and actual spills will be provided to the multi-agency Area Committees that are responsible for updating Area Contingency Plans.

Comment: One reviewer questioned whether 70,000 gallons was the appropriate figure for the volume of oil spilled in the M/V New Carissa incident. This reviewer suggested using a range of 70,000 to 140,000 gallons based on information from the National Oceanic and Atmospheric Administration. This

reviewer also recommended incorporating major findings of a report by Mark Stern of The Nature Conservancy on effects of the New Carissa oil on western snowy plovers into the recovery plan.

Response: In accordance with the regulations for Natural Resource Damage Assessments at 15 CFR Part 11, the agencies that are trustees for natural resources (Trustees) affected by the New Carissa spill prepared a Notice of Intent to Conduct Restoration Planning (Bureau of Land Management 2001). The Notice of Intent described the Trustees' determinations regarding the incident, including the determination that 25,000 to 70,000 or more gallons of oil were released into the waters off the coast of Oregon. This determination was based on a synthesis of spill response information from the Coast Guard and National Oceanic and Atmospheric Administration. In an effort to eliminate text irrelevant to recovery of the western snowy plover, details of each of the oil spills mentioned in the recovery plan, including individual volumes of spills, have been summarized and/or incorporated by reference.

Comment: One reviewer suggested that the effects, if any, to western snowy plovers from the August 2001 M/V Tristan oil spill should be considered in the recovery plan.

Response: The M/V Tristan oil spill did not affect western snowy plovers or their habitat. A Natural Resource Damage Assessment is in progress for effects to other natural resources.

Comment: One reviewer said that opportunistic sampling of eggs to assess effects of contaminants will bias study outcomes and may not produce much useful information.

Response: Because the western snowy plover is a threatened species, random samples of eggs from western snowy plover nests cannot be collected to assess potential effects of contaminants on the species. Instead, opportunistic sampling of eggs that fail to hatch is proposed, as has been done for a variety of other threatened and endangered avian species (*e.g.*, Schwarzbach *et al.* 2001, Allen *et al.* 2000). Contaminant concentrations in eggs that fail to hatch are not an unbiased sample of contaminant concentrations in the western snowy plover population. However, this type of sampling is very useful for

evaluating causes of egg failure and determining whether maximum contaminant concentrations in populations are in the toxic range (Wilber 1980). By comparing concentrations of contaminants in failed-to-hatch western snowy plover eggs to screening criteria that have been developed for other species (*e.g.*, ducks, stilts, and avocets; Skorupa 1998, Siler *et al.* 2003) contaminants specialists can evaluate whether contaminants are potentially implicated in the failure of the western snowy plover eggs to hatch.

Comment: One reviewer suggested that the recovery plan should note that in 1999, western snowy plover nesting and brooding success rates at the North Spit of Coos Bay, where the New Carissa grounded, were the highest rates ever recorded at that site.

Response: Western snowy plover nesting and fledging success rates at the North Spit of Coos Bay were not the highest ever recorded during 1999, the year of the New Carissa spill (Stern *et al*. 2000). In 1994, western snowy plover nesting success was slightly higher at this site than in 1999. In 1991, fledging success (assumed to be the term the commenter refers to as brooding success) was higher on the North Spit than in 1999.

The key issue regarding the New Carissa spill and western snowy plovers was the effects on the South Beach of Coos Bay's North Spit. The South Beach, located in the stretch of coast closest to the New Carissa grounding, was one of the most heavily oiled areas, was subject to continuous cleanup and beach monitoring, and was proximal to salvage activities (Stern *et al*. 2000). During the 1999 nesting season, there was no nesting by western snowy plovers and only extremely limited use by western snowy plover broods on the South Beach. Western snowy plovers had nested on the South Beach every year from 1990 until 1999 (Stern *et al*. 2000). In 1999, many of the birds that nested on the South Beach in 1998 nested at other locations on Coos Bay's North Spit that were further inland from the vessel grounding site and were minimally impacted by cleanup operations (Stern *et al*. 2000). Based on monitoring data through 2005, 1999 is the only year since 1990 in which no western snowy plovers nested on the South Beach of Coos Bay's North Spit (Larry Mangan, Bureau of Land Management, personal communication 2003; Lauten *et al.* 2006). The New Carissa Trustees feel that it is likely that the oiling and response activities associated with the New Carissa spill were the major reason for western snowy plovers not nesting on the South Beach in 1999 (Larry Mangan, Bureau of Land Management, pers. comm. 2003).

Comment: One reviewer said the presentation of the facts relating to the 1995 finding of three dead adult male western snowy plovers in the vicinity of outfalls near Monterey, California, is weak and insufficiently effective to link the outfall with the mortalities. This reviewer also suggested that there are other possible explanations (*e.g.*, dispersal to another location, death from causes unrelated to the outfall) besides the outfall for the disappearance of a fourth adult male western snowy plover from this vicinity between 1995 and the subsequent breeding season.

Response: We believe that the description of the three male western snowy plover deaths in the Monterey area in 1995 is accurate. As indicated, three dead western snowy plovers were found in an area containing local outfalls, including an outfall connected to a sewage treatment plant at Monterey Bay. A necropsy was performed on one of the dead birds. The necropsy indicated that the dead bird had an enlarged liver, but it could not be determined whether there was a relationship between the mortality and the outfall. The discussion of the disappearance of the fourth male western snowy plover has been expanded to indicate that factors unrelated to the outfall have not been ruled out in the bird's disappearance.

Conservation Efforts

Comment: The Draft Bolsa Chica Restoration Plan should retain cell 4 for nesting purposes.

Response: The Western Snowy Plover Recovery Plan establishes recovery goals for each recovery unit as well as management goals at specific breeding sites needed to achieve the recovery goal. The management goal for Bolsa Chica is 70 breeding adults. Where specific management efforts should be focused within each site is outside the scope of the recovery plan. Specific management actions should be determined by the onsite managers within the overall strategy of achieving the management goal for that site. The importance of retaining cell 4 to achieve the management goal for Bolsa Chica will need to be addressed in the Bolsa Chica restoration plan and supporting documents.

Law enforcement

Comment: Several commenters wanted enforcement of existing laws and regulations strengthened such as the no-dogs-on-the-beach law and the no-pets-off-the-leash law at

CA-18. One commenter wanted laws and regulations enforced to minimize loss of recreational activities.

Response: We acknowledge the need to balance human recreational activities with the recovery needs of the western snowy plover. The recovery plan mentions the need to implement and enforce pet restrictions in Recovery action 2.3.2. On Federal lands, Federal agencies are required under section 7(a) (1) of the Endangered Species Act to actively promote the conservation of listed species and enforce laws and regulations accordingly. Enforcement of laws and regulations on non-Federal lands falls under the jurisdiction of State and local governments. Management and enforcement of laws and regulations on beaches are based on site-specific information. Land managers should evaluate whether the current recreational activities pose a threat to western snowy plovers and implement appropriate enforcement measures. Public education and outreach will also contribute to a successful balance of recreational activities and the recovery needs of the western snowy plover.

Comment: One commenter was not convinced that new State and local ordinances, rules and regulations were needed to enforce beach closures, and added that enforcement may be limited by lack of staff or financial resources.

Response: A recovery plan is advisory in nature and does not mandate agreement to or implementation of any of the recovery actions proposed. A recovery plan is a reference document that identifies actions that, if implemented, are expected to recover a species. The recovery plan suggests that appropriate regulations, ordinances, or rules be developed where appropriate and necessary, and suggests that such regulations, ordinances, or rules may better enable law enforcement officers to conduct necessary enforcement actions, appropriate regulations, ordinances, or rules should be developed where appropriate and necessary. The need for added enforcement is also addressed under recovery action 2.3.8.1.

Habitat acquisition

Comment: One commenter believed that the recovery plan should recommend that the U.S. Fish and Wildlife Service initiate an aggressive program of land acquisition to

provide refuges that increase the habitat available for western snowy plover breeding and allow a more natural predator-prey relationship.

Response: We recognize the need for land acquisition to aid in the recovery of the western snowy plover. Land acquisition is further discussed within the recovery plan under Recovery action 3.8.

Comment: Habitat management actions should be carefully reviewed for their effects to other species.

Response: We agree that management actions should be carefully reviewed for their effect on other birds, mammals, and plants on the coastline. Many management measures, such as the removal of nonnative vegetation, will benefit a broad array of species within the coastal dune ecosystem. However, some single species management actions are also necessary to facilitate the recovery of this species. Federal agencies are required under section 7 of the Endangered Species Act to ensure that their actions will not jeopardize federally listed species. State agencies also follow similar guidance. Many mechanisms exist (National Environmental Protection Act, section 7, State and local review) for review of site-specific actions and their effects to all special status species, including the western snowy plover.

Use of volunteers

Comment: One commenter thought it would be important to calculate volunteer man hours needed and the value per hour, to get a more accurate cost of recovery.

Response: The recovery plan does not specifically depend on the use of volunteers. However, Federal and State agencies may find the use of volunteers helpful in implementing the recovery plan and reducing recovery costs. Because the use of volunteers for implementing conservation measures for the western snowy plover has been successful to date, Appendix K of the recovery plan includes guidelines for a volunteer program. Costs calculated in the Implementation Schedule do not assume the use of volunteers. However, creating volunteer programs has a cost and is considered part of the costs under Recovery action 5.

Public outreach and education

*Comment**:*** Several commenters emphasized the need to establish and maintain an active public and school education campaign that concentrates on the status and biology of the western snowy plover.

*Response**:*** We recognize the importance of public education, especially in instances of beach closures or restrictions. Given this, the recovery plan stresses the importance of public support and public education. Recovery action 5 discusses public information and education programs and Appendix K provides detailed information on the western snowy plover and strategies for reaching various audiences. We felt that public education and outreach was such an important issue that we dedicated Appendix K solely to act as guidance in an effort to increase public awareness.

Comment: Several commenters felt there had been inadequate public and local government involvement.

Response: We believe that there has been adequate public and local involvement in preparation of this plan. We researched land records and sent out a letter to all landowners and stakeholders regarding the development of the recovery plan. The recovery team represented many stakeholder groups including: California Department of Parks and Recreations, California Department of Fish and Game, Oregon Department of Fish and Game, Point Reyes Bird Observatory, Washington Department of Fish and Game, Oregon Natural Heritage Program, National Park Service, U.S. Department of the Navy, C & M Stables, San Francisco Bay National Wildlife Refuge, U.S. Marine Corps Bureau of Land Management, Fishphone, Monterey Peninsula Regional Park District, County of Santa Barbara, California Association of 4 Wheel Drive Clubs, Inc., Washington State Parks and Recreation, and the U.S. Department of the Air Force. A stakeholder team was formed as an official part of the recovery team.

In addition, the notice of availability of the draft recovery plan was sent to at least 800 affected or interested parties. Copies of the draft recovery plan were also distributed to local libraries. A public comment period was open for 120 days and then extended 60 additional days to allow for submittal of additional comments. We also gave two presentations in eight cities in critical geographic locations in California, Oregon, and Washington in October 2001.

Consultations, HCPs, and other regulatory actions

Comment: One commenter requested that a list of Habitat Conservation Plans that are being prepared be included in the recovery plan. Other commenters also requested that the status of various HCPs be updated.

Response: We have included a discussion of HCPs in Section I.F.6 of this plan. This section discusses the status of all completed HCPs as well as those HCPs we know are being developed.

Regulatory protection and policies of local governments

Comment: One commenter asked how the recovery plan can legally ask for changes to State and local laws.

Response: A recovery plan is a guidance document; not a regulatory document. The recovery plan outlines those actions that, if implemented, would result in the delisting of the western snowy plover. All participation in implementing the recovery strategy or specific recommended actions in the recovery plan is voluntary. The primary goal of this recovery plan is the delisting of the western snowy plover. Although the Fish and Wildlife Service and the National Oceanic and Atmospheric Administration - Fisheries are responsible under the Endangered Species Act for developing and implementing recovery plans, individuals and entities outside of these agencies often have pertinent information, skills, and authorities that can facilitate the design and implementation of an effective recovery program. While the recovery plan itself cannot change State or local laws, participating State and local governments and agencies may make changes under their respective jurisdictions where necessary or appropriate.

Comment: The U.S. Fish and Wildlife Service should provide insight on how it will aid the Coastal Commission in encouraging local jurisdictions to update Local Coastal Plans.

Response: Recovery action 3.6 suggests that we should encourage and assist the California Coastal Commission and Oregon Department of Land Conservation and Development to ensure that Local Coastal Plans, Local Comprehensive Plans, and Implementing Measures for coastal planning jurisdictions incorporate recovery measures for the western snowy plover when they are updated. We intend to aid the California

Coastal Commission through interactions in the western snowy plover regional working groups which should include participants from Federal, State, and local governments.

Comment: One commenter asked that we clarify what coastal program revisions the Fish and Wildlife Service is recommending.

Response: We recommend that when coastal programs are updated, they should be reviewed for consistency with this recovery plan.

Recovery Criteria

Comment: One commenter felt it would be difficult to assess the recovery objective of 1.0 chick fledged per male.

Response: We believe that estimating the number of chicks fledged per male is feasible. Males were selected because the population viability analysis in Appendix D modeled males. Males were chosen in the analysis because their demographic parameters can be estimated with greater certainty, and because they are responsible for post-hatching parental care and are likely to limit reproductive success. To aid in assessing this recovery objective, banding would occur, as necessary, in order to determine the number of chicks fledged per male. Action 4.3.2 recommends developing a sampling method to assess the number of chicks fledged per male in each recovery unit.

Comment: The U.S. Fish and Wildlife Service has not provided justification for selecting 3,000 as the minimum number of breeding adults required for 10 years to consider delisting. The year to year variation in population size makes this criterion unrealistic.

Response: Recovery Criterion 1 provides the desired distribution of western snowy plovers by recovery unit. The numbers are based on a site-by-site evaluation of historical records, recent surveys, and future potential, but are below the "Management Goal Breeding Numbers" identified in Appendices B and C. The Management Goal Breeding Numbers were estimated by the recovery teams based on individual knowledge and available beach habitat. Recovery Criterion 1, developed through population viability analysis in Appendix D, is approximately 83 percent of these numbers. Those scenarios in Appendix D where the population does not reach 3,000 are associated with population declines, and in several cases, substantial probabilities of extinction. Under growth

scenarios where the species appears to maintain long-term viability the population is expected to reach or exceed 3,000 birds. Three thousand western snowy plovers is approximately a 70 percent increase from the time of listing. We believe this increase, sustained over a 10 year period, is needed to ensure long-term viability of the U.S. population. Assessing population size as an average over an extended time period of 10 years reduces the fluctuation due to inter-annual variability and allows increased confidence that population levels reflect conditions sustained over time as needed for recovery, rather than short-term fluctuations. Maintaining a coastal population of 3,000 western snowy plovers over a 10 year period through targeted management would indicate that the threats which resulted in the western snowy plover's listing have been removed or mitigated.

Management Goals

Comment: Appendix C sets low expectations for Recovery Unit 6 (Los Angeles to San Diego Counties) apparently because it anticipates too much political pressure and the burden of providing breeding areas by restrictive beach management is passed to other recovery units. Recovery Unit 2 (Del Norte, Humboldt, and Mendocino Counties) has a greater number of additional management needs identified in Appendix C and also a greater percentage increase in the number of breeding adults than Recovery Unit 6.

Response: There is a greater potential to restore degraded habitats in Del Norte, Humboldt, and Mendocino Counties than there is in southern California. More habitat has been converted or lost in southern California than in the north. The recommendations in the recovery plan reflect this difference.

Comment: One commenter believed it was unfair that northern Oregon and Ocean Beach in San Francisco County, California have fewer restrictions under the recovery plan than do sites in southern Oregon.

Response: Several locations in southern Oregon support active breeding populations of western snowy plovers. We believe that management of these sites to support improved reproductive success and population growth is an appropriate measure to achieve recovery goals for the Oregon/Washington Recovery Unit. Locations in northern Oregon historically supported breeding populations but are not currently occupied. The recovery plan identifies habitat restoration and management at these locations as important to

restoring breeding populations in northern Oregon, and these actions are currently being planned by the Oregon Parks and Recreation Department in conjunction with their habitat conservation plan. Wintering populations of western snowy plovers are known to occur at Ocean Beach in San Francisco County, but this site is not known to support a breeding population.

Comment: The recovery plan assigns virtually all of the burden for population recovery in Recovery Unit 6 to beaches located in San Diego County, while ignoring coastline in Los Angeles and Orange Counties that might be viewed as potential habitat. Comparable management effort for snowy plovers by all landowners should be a goal of the recovery plan.

Response: As described in Recovery Criterion 1, the goal for Recovery Unit 6 is 500 breeding adults. The total of 615 from site-specific management goals in Appendix B allows for some variation among sites. Funding and other management priorities may affect the level of management and choice of on the ground management actions. We are looking for opportunities within Los Angeles and Orange Counties where management actions will contribute to overall breeding population totals for the recovery unit, and in the final recovery plan we have increased the management goal for the Bolsa Chica wetlands (CA-108) in Orange County to reflect recent habitat restoration at that site. However, the recovery plan looks to Federal lands, where available, to provide leadership in western snowy plover management. Federal lands in Recovery Unit 6 are disproportionately located within San Diego County; as such, the recommended site-specific population goals reflect that land ownership distribution.

Comment: The best quality habitat on Redwood National and State Parks, Gold Bluffs Beach (CA-3), has a management goal of 0 breeding birds and is identified as supporting primarily wintering and/or migrating western snowy plovers. One commenter questioned why all Redwood National and State Park beaches are currently viewed by the U.S. Fish and Wildlife Service as potentially suitable nesting habitat.

Response: Gold Bluffs Beach is considered historical nesting habitat. Yocom and Harris (1975) stated that western snowy plovers could be expected regularly on Gold Bluff Beach near Orick.

Comment: One commenter suggested that the management goal of 4 breeding adults for Hollywood Beach (CA-97) is too low, and that a greater number of birds currently attempt to nest there.

Response: The management goal reflects our understanding that the area is heavily used by local residents and daily visitors and that the proximity of residences directly on the beach may preclude some recovery actions, such as beach closures, necessary to obtain higher breeding adult numbers. However, we will continue to review additional information from monitoring efforts and modify the management goal and the recovery plan accordingly, per Recovery action 6.

Comment: The recovery plan calls for Ormond Beach (CA-98) to yield only 50 breeding adult birds, whereas, NBVCPM (CA-99) is tasked with 110 breeding adult birds. Yet Ormond Beach is about 3 times larger than the small, narrow, convex beach of NBVCPM.

Response: Survey data indicates that location CA-99 has historically had larger breeding populations than CA-98 (Appendix B). The delineated area within CA-99 is also greater than CA-98 (259 vs. 106 hectares) due to its greater linear extent, although Ormond Beach is comparatively broader. However, we will continue to review additional data on breeding population, habitat quality, and management actions, and management goals may be modified accordingly, per Recovery action 6.

Management activities

Comment: Commenters expressed concerns about the future management of the Haul Road in MacKerricher State Park. Some commenters wanted the road to be removed through a low-impact road removal and beach restoration plan and other commenters wanted reconstruction and relocation of the road.

Response: California State Parks is currently developing a management plan for the Preserve portion of MacKerricher State Park. Access, recreation and other activities, coastal and archeological resources, and listed species are all being considered in the recovery plan. The Haul Road will be considered in the context of State Parks' guidelines for managing State Preserves and the western snowy plover.

Comment: One commenter said that the management notations in Appendix C failed to include needed management changes for Hollywood Beach (CA-97).

Response: We understand that the area is heavily used by local residents and daily visitors and that the proximity of residences directly on the beach may preclude some recovery actions, such as beach closures. The Ventura Fish and Wildlife Office is currently working with the County of Ventura to alter its beach grooming actions on Hollywood Beach. This effort has arisen as a result of complaints by local residents concerned about the western snowy plover and access to the beach by nonresidents.

Coordination, participation and working groups

Comment: Several commenters noted the need for dedicated Fish and Wildlife Service staff or a western snowy plover coordinator for Oregon and Washington.

Response: In Oregon, the Bureau of Land Management, Forest Service, Oregon State Parks and Recreation Department, the Oregon Department of Fish and Wildlife and the Oregon Natural Heritage Program are in favor of establishing a coordinator position. At this time, the Fish and Wildlife Service is unable to fill such a coordinator position, due to lack of funding.

Comment: The U.S. Fish and Wildlife Service should establish a central location and point of contact to track the status of the western snowy plover across the species' range.

Response: Our Arcata Fish and Wildlife Office holds lead responsibility for coordinating implementation of western snowy plover recovery. The Recovery Plan recommends maintaining a staff position in the Arcata Field and Wildlife Office with the primary responsibility of implementing the western snowy plover recovery plan, including coordination and tracking of range-wide status.

Comment: A comprehensive annual status report including information on nesting locations, nesting attempts, population estimates, productivity and mortality should be provided to all land managers.

Response: We propose in the Recovery Plan to provide adequate staff to produce such a report. Until data collection is more standardized across the species' range, the annual status report may not have comprehensive information for each site.

Comment: One commenter believes there is a need to coordinate with other western snowy plover assessments throughout the west and throughout North America as a tool in assessing distribution, abundance, modeling, and status information. The commenter also believes that efforts to understand the western snowy plover's distribution in Mexico should be coordinated with similar efforts for the piping plover.

Response: We agree. Coordination with other western snowy plover assessments may provide valuable information on the distribution and status of the species and the Pacific Coast population. Coordination may also provide additional information on management activities that could benefit the Pacific Coast population of the western snowy plover. Recovery action 9 has been added to address this coordination need. We also agree that, to the extent possible, recovery efforts for the western snowy plover should be coordinated with other species, particularly species with similar habitat needs and distribution.

Recovery actions

Comment: One commenter suggested adding development of a model to describe suitable and potentially suitable breeding habitat to Recovery action 4 (Undertake scientific investigations that facilitate recovery efforts).

Response: Habitat modeling, if completed, should be done on a local site or regional basis that incorporates events specific to the area being studied. We believe habitat modeling on a range-wide basis probably is not realistic due to regional variation and dynamic conditions.

Comment: One commenter said that increasing numbers of pinnipeds may be the primary factor affecting western snowy plover reproductive success on San Nicolas Island. Because of the increasing number of pinnipeds using the Island for breeding and hauling out, the commenter believes that achieving the recovery goal of increasing western snowy plovers from the current 78-116 breeding adults to 150 breeding adults is unlikely. The recovery goals for San Nicolas Island should be similar to that of San

Miguel Island, which is also a main breeding area for pinnipeds. The commenter also questioned the feasibility of recovery action 1.8 "discourage pinnipeds from usurping western snowy plover nesting areas," based on their largely unsuccessful attempts to exclude pinnipeds.

Response: The commenter accurately represented the pinniped problem on San Nicolas Island. Many beaches where western snowy plovers have historically nested have been overrun by pinnipeds. We currently have no mechanism to discourage the behavior. However, the proposed recovery goal of 150 breeding adults (not pairs) seems reasonable given that the area has recently accommodated up to 116 individuals. Part of the recovery effort includes working with NOAA Fisheries on pinniped controls to reach the recovery goal. This could include testing various methods of excluding pinnipeds from beaches where western snowy plovers nest. However, we will review additional information from monitoring efforts and modify the management goal and the recovery actions accordingly per recovery action 6, if necessary.

Banding

Comment: The U.S. Fish and Wildlife Service mentions that since 1977 several thousand western snowy plovers have been banded on the Pacific Coast and that banding may harass and possibly accidentally injure or kill western snowy plovers. Two commenters requested further discussion of mortality due to banding.

Response: Banding has resulted in direct or indirect injury and mortality. Injuries are known to have occurred during banding. We suspect that injuries, and possibly death have resulted from grains of sand being lodged between metal bands and the western snowy plover's leg. Additionally, some evidence indicates that western snowy plover entanglement in discarded fishing line may be complicated by leg bands; increasing the potential for injury.

Measures to reduce the potential adverse effects of banding have been implemented, involving the capture and handling of birds, and modifications to the bands themselves. Banding is authorized only for those projects that provide information towards western snowy plover recovery and conservation. Recovery action 4.6.2 includes continued efforts to improve banding techniques to minimize banding injuries.

Comment: The commenter recommended the practice of banding western snowy plovers on Vandenberg Air Force Base be ceased immediately because he believes that fledging success and return rates for nonbanded western snowy plovers are higher than for banded western snowy plovers and that banding causes abnormally high levels of chick predation.

Response: Banding is a valuable tool that enables researchers to identify individuals and calculate fledging success, return rates, migration patterns, and population size. Without banding, it is difficult, if not impossible, to identify individual western snowy plovers. Therefore, demographic and dispersal data are difficult to obtain without banding western snowy plovers. Although injuries from banding have been observed in a small fraction of the western snowy plovers banded along the Pacific coast, we are unaware of any studies that correlate banding to abnormally high levels of predation.

In fact, several studies have documented high levels of reproductive success and return rates for banded western snowy plovers. In Monterey Bay, where nearly all western snowy plover chicks are banded, fledging rates as high as 56.8 percent have been documented (Page *et al.* 2002). In addition, return rates of 72.1 percent have been recorded for female western snowy plovers and 79.2 percent for males in Monterey Bay (Page *et al.* 2002). Annual survival rates for color banded, juvenile western snowy plovers (from fledging to 12 months of age) at Vandenberg Air Force Base are similar to survival rates of juvenile western snowy plovers banded elsewhere along the Pacific coast. Annual juvenile survival rates for fledged young averaged 51 percent from the Oregon Coast, 45 percent from Monterey Bay, and 45 percent from the San Diego coast (U.S. Fish and Wildlife Service 2001a). On Vandenberg Air Force Base, 50 percent of western snowy plovers banded in 2001 were re-sighted in 2002 (SRS Technologies 2002).

Critical habitat

Comment: Several commenters asked questions regarding: (a) the critical habitat designation for western snowy plover, (b) 5-year review delisting petition (c) the outreach plan.

Response: Many of these issues are beyond the scope of this recovery plan. To the extent these issues are relevant to the recovery plan they are addressed in responses to comments below.

Comment: Several commenters suggested that it is inappropriate to develop a recovery plan for the Western Snowy Plover Pacific Coast Population at this time. One commenter stated that the draft recovery plan should be revoked until a full review of the economic analysis for critical habitat had been conducted. Another commenter felt that the western snowy plover listing 5-year review needs to be conducted before we finalize the recovery plan.

Response: We think the development of a recovery plan is appropriate. The development of a recovery plan is mandated by the Endangered Species Act, under section 4(f)(1), which calls for the development and implementation of recovery plans for the conservation and survival of federally listed endangered and threatened species and unless such a recovery plan will not promote the conservation of the species. We believe that the development of a recovery plan for the western snowy plover will help promote the conservation of this species.

The process of designating critical habitat is distinct from the process of preparing a recovery plan, and is not a necessary precondition for completion of a final recovery plan. At present critical habitat has been designated for the western snowy plover. Public comment was taken on the proposed critical habitat and the draft economic analysis for the critical habitat (U.S. Fish and Wildlife Service 2005), and the 5-year review of the western snowy plover has also been completed (U.S. Fish and Wildlife Service 2006).

Comment: One commenter felt the Draft Recovery Plan for Tidal Marsh Ecosystems in Northern and Central California needs to be published for public comment and coordinated with the draft plan prior to finalizing the recovery plan.

Response: We recognize it is important to coordinate the two recovery plans, especially the implementation of the two recovery plans. We believe that any conflict between the habitat requirements of the federally listed western snowy plovers and salt marsh species must be avoided by a systematic long-term regional conservation strategy, consistent

with the general recovery goals of the recovery plan and the specific recovery goals and actions that may be recommended in the Draft Recovery Plan for Tidal Marsh Ecosystems in Northern and Central California. The western snowy plover recovery plan identifies recovery areas within the San Francisco Bay, but currently does not have recommended site-specific management goals in recognition of the potential conflicts with recovery goals of salt marsh species. Management goals will be established in coordination with the development of the Draft Recovery Plan for Tidal Marsh Ecosystems in Northern and Central California and incorporated as described under Recovery action 2.6 in the narrative outline of recovery actions. We do not believe the Draft Recovery Plan for Tidal Marsh Ecosystems in Northern and Central California needs to be published prior to finalizing the Western Snowy Plover Recovery Plan to achieve this coordination. Additionally, we do not want to further delay the publication of the Western Snowy Plover Recovery Plan until the Draft Recovery Plan for Tidal Marsh Ecosystems in Northern and Central California is published, because the publication of a finalized recovery plan assists Federal, State, local, and private sector partners in managing their properties and influences funding available from a variety of sources. We do not think waiting for publication of the Draft Recovery Plan for Tidal Marsh Ecosystems in Northern and Central California is warranted.

Comment: Several commenters thought the recovery plan should be consistent with the critical habitat designation and should not include any additional areas for protection.

Response: As discussed in section in the Federal Regulatory Program section of the Introduction (section I. F. 4.A), critical habitat designations are not necessarily intended to encompass a species' entire current range. Recovery plans, however, address all areas determined to be necessary for recovery of listed species and identify the needed measures to achieve recovery. These areas are inclusive of the areas designated as critical habitat, but also encompass other areas that are considered necessary to achieve recovery of this species.

Comment: In the final critical habitat rule for the western snowy plover, the U.S. Fish and Wildlife Service alluded to a relationship between recovery planning and critical habitat designation. The recovery plan, however, does not explain such a relationship. This should be addressed fully in the final recovery plan.

Response: Critical habitat and its role in the recovery plan is discussed in the Introduction, in the Federal regulatory section of the Conservation Efforts section (I.F.4.a).

Comment: The recovery plan should have considered the Denver Court Decision of performing an economic impact study on the draft recovery plan's fiscal impacts to off highway vehicle recreational access, associated motorcycle/all terrain vehicle dealers, recreational vehicle parks, trailer manufacturers, and other local businesses and tourism interests

Response: While the case name is not specified, we think the comment references the Tenth Circuit Court's decision in *New Mexico Cattle Growers Association v. FWS*, 248 F.3d 1277 (10th Cir. 2001), in which the Court held that, in designating critical habitat, the Fish and Wildlife Service must analyze all of the economic impacts of the critical habitat designation. As discussed above, designation of critical habitat is a regulatory action that is distinct from the Service's development of this recovery plan. In contrast, the recovery plan is not a regulatory document; rather, it delineates actions that we believe are necessary to recover and/or protect listed species. The Tenth Circuit's holding with respect to the analysis required for a critical habitat designation does not apply to the development of the recovery plan.

Comment: The recovery plan needs to address minimization of social and economic impacts of implementing recovery actions.

Response: Our July 1994 policy (U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration 1994) states that implementation of recovery plans will be accomplished through the means that will provide for timely recovery of the species while minimizing social and economic impacts. It further states that we will involve all affected interests in implementation of the recovery plan through the development of a participation plan. Participation plans developed through recovery unit working groups will address social and economic impacts of implementing recovery actions.

Comment: One commenter questioned why salt ponds in the San Francisco Bay were included as recovery areas while they were not included in the 1999 designation of critical habitat for the Pacific Coast population of the western snowy plover.

Response: The 1999 critical habitat designation is no longer in force; it has been replaced by a September 2005 critical habitat designation (U.S. Fish and Wildlife Service 2005). As discussed in section I.F.4.a above, the areas identified in recovery plans as important for recovery of the species may not be identical to designated critical habitat Critical habitat designations may exclude areas for a variety of reasons and are not necessarily intended to encompass a species' entire current range. Recovery plans, however, address all areas determined to be important for recovery of listed species and identify needed management measures to achieve recovery. Areas within the San Francisco Bay recovery unit were excluded from critical habitat due to the multi-agency management plan that is currently in preparation for the restoration of San Francisco Bay tidal marsh habitat (U.S. Fish and Wildlife Service 2005). We believe that western snowy plover habitat in San Francisco Bay is important for recovery of the species.

Funding

Comment: Several commenters were concerned about the effects of the recovery plan on local economies and local businesses, reductions in the value of coastal real estate, and increases in work for enforcement agencies due to massive civic disobedience. In addition, one commenter wanted to see social and economic impacts of implementing the recovery plan minimized.

Response: A recovery plan is not a regulatory document and does not mandate agreement to, or implementation of, any of the recovery actions proposed. A recovery plan is a reference document that identifies actions that, if implemented, are expected to recover the species. Any actions that are implemented must follow appropriate State, local, or Federal laws and regulations. Specific arrangements for accomplishing recovery actions would be worked out at the time of planning and implementing the action and should include all appropriate stakeholders, including local governments, businesses, and enforcement agencies.

Comment: One commenter asked whether the cost of providing wardens, agents, or officers to enforce protective measures in breeding habitat is included within the estimated cost of recovery of $33,450,000 stated on page vii of the draft recovery plan, and if not, the commenter asked who will be assuming the costs of enforcement

Response: No, the cost of the action providing wardens, agents, or officers to enforce protective measures in breeding habitat is not incorporated into the total estimated cost of recovery. This is because the cost depends on the intensity of use of the specific areas and is difficult to predict. As mentioned in the implementation schedule, the responsible parties for this action are: the U.S. Fish and Wildlife Service, Division of Law Enforcement; Land Management Agencies and Organizations and other Cooperators; Cities; and Counties. (The total estimated cost of recovery has been revised to $149,946,000)

Comment: Calculations are not included in the plan for loss of tourism revenue due to the recovery plan.

Response: Section 4(f)(1)(B)(iii) of the Endangered Species Act calls for the estimates of the time required and the cost to carry out those measures needed to achieve the recovery plan's goal and to achieve intermediate steps toward that goal. Neither the loss of tourism revenue, nor any benefits from being near open space areas have been calculated into our estimate for cost for recovery. We do not believe that including such estimates is appropriate in a recovery plan. In addition, we do not have the data necessary to calculate such estimates.

Comment: Some commenters were concerned that costs were not estimated for many recovery actions listed in the implementation schedule and that cost estimates were not accurate.

Response: Many costs cannot be accurately estimated at this time because they depend on the outcomes of other actions or on evaluation of site-specific needs. However, costs for many more recovery actions have been estimated in the final recovery plan in an effort to increase the accuracy of the cost estimate.

Recreation

Comment: One commenter felt that recreational activities create no significant habitat modifications or impair essential behavior patterns of western snowy plover. In addition, the commenter stated that recreation, legal or illegal, isn't measurable and that trespasses onto western snowy plover closures pose no actual threat to the western snowy plover because the closures are larger than the western snowy plovers need or use. They also

state that there have been no studies conducted in Oregon or Washington examining western snowy plover tolerances to human activities. Another commenter felt more studies should be done on the effects of recreational activities on the western snowy plover and should be included as a recovery plan objective.

Response: The current data support the idea that human recreational activities cause significant habitat and behavior modifications in western snowy plovers (*e.g*., Lafferty *et al.* 2006). The effects of recreational activity on western snowy plovers is measurable through variables such as nesting success, behavior modification, or direct mortality.

We recognize the need for additional studies of the effects of recreational activities on the western snowy plover. We have used the best available information on this subject. Recovery action 4.10 has been updated to include the need for these additional studies.

Comment: To avoid prejudice against humans, one commenter wanted to see information on killdeers' (*Charadrius vociferus*) behaviors and responses to pedestrians and other human disturbances cited in the recovery plan in addition to other western snowy plover species.

Response: Although western snowy plover and killdeer are in the same family and genus they have very different nesting requirements. Killdeer nesting requirements are less restrictive than those of the western snowy plover. Unlike snowy plovers, killdeer are adaptable generalists that occur in a wide range of open habitats and will nest on gravel roads, in busy equipment yards, and beside aircraft runways, indicating some tolerance for human disturbance. Their selection of nesting habitat and behavior is not a good indication of western snowy plover requirements. Therefore, killdeer are not cited in the recovery plan.

Appendices

Comment: Several commenters felt that Appendix C was biased. One commenter wanted Appendix C deleted.

Response: Table C-1 provides preliminary, interim guidance for public land managers, private conservation organizations, and private landowners regarding management measures which should receive emphasis at their locations. In the future, additional

management measures for all locations identified in Table C-1 are to be determined and prioritized on a site-specific basis through coordination and discussions between members of each of the six recovery unit working groups because they have on-the-ground, day-to-day, experience with what is currently being done in those areas. They also may be determined through the development of management plans for State and Federal lands under recovery actions 3.3 and 3.4. In addition, action 6.2 recommends that management measures recommended in Appendix C be reviewed periodically and revised as necessary.

Management Goal Breeding Numbers in Table C-1 represent population targets of breeding adults that we believe can be achieved under intensive management. These numbers are meant to be flexible, considering variations in habitat conditions and management opportunities from year to year and from location to location.

Comment: Several commenters felt that the management goals for number of breeding adults in various areas are too low or too high.

Response: As stated in Appendix B of the draft plan, management goals represent population targets that we believe can be achieved under a very intensive management scheme. On a rangewide basis, these targets are approximately 20 percent higher than the recovery criteria subpopulation sizes. These management goals were originally drafted by the technical subteam of the western snowy plover recovery team, and have been modified for certain locations to reflect updated information about habitat quality, population status, and management strategies. The numbers are meant to be flexible, considering variations in habitat conditions and management opportunities from year to year. In addition, Recovery Action 6.2 recommends that management goals be reviewed periodically and revised as necessary. As the recovery plan is a long-term document, it is prudent to base recovery goals on needs for long-term viability of the species, rather than current land use constraints that may change through time. There is no specific time limit associated with the recovery actions in the recovery plan. This recovery plan is a blueprint for the recovery of the species, and it is understood that recovery may take many years.

Comment: One commenter questions why no restrictions on fireworks are included in Appendix C.

Response: We believe that fireworks restrictions should be part of the management plans identified in Appendix C. Recovery action 2.3.3 is: "Prevent disturbance from disruptive recreational activities where breeding western snowy plovers are present." Since the Fourth of July occurs during the breeding season, we believe management of fireworks and the spectators that come to watch them, should be addressed in beach management plans that conform to this Recovery Action.

Comment: Appendix C proposes to prohibit kites from Clam Beach, an area with a breeding management goal of 6 adult birds; however, only eight of the listed sites prohibit kites and only one other site recommends prohibiting kites. All of the sites currently prohibiting kites or recommending prohibition have higher management goals than Clam Beach. The commenter recommends that the kite prohibition be deleted at Clam Beach.

Response: The recommendation regarding kite flying would be seasonal. Depending on local western snowy plover use and distribution, it may be possible to identify areas where kite flying could be compatible with western snowy plover management. The number of breeders on Clam Beach (Moonstone County Park to the Mad River) currently exceeds 6 western snowy plovers, however, their reproductive success if very low. Of the 19 breeding western snowy plovers on Clam Beach in 2002, only 0.25 chicks per adult male fledged. This is far below the 1.0 chick per adult male estimate provided in the Population Viability Analysis (Appendix D) needed to maintain a stable population. Consequently, any management prescription that reduces disturbance to nesting western snowy plovers and bolsters reproductive success is encouraged.

Comment: One commenter suggested that the Mandalay Bay/Santa Clara River Mouth (CA-96) area in Appendices A, B, and L should be split into two areas because it is under management of two different agencies. The area is made up of Mandalay State Beach and McGrath State Beach. The commenter also noted that the name of the area was incorrect.

Response: Although Ventura County Parks and Recreation operates Mandalay State Beach, both it and McGrath State Beach are under the supervision of the California Department of Parks and Recreation. We believe that the California Department of Parks and Recreation is ultimately the party that would implement recovery actions on its

beaches. Therefore, we believe this area should not be split into two separate areas. The name has been changed to Santa Clara River Mouth/Mandalay State Beach.

Comment: The PVA is heavily dependent on the Monterey population data, and does not include datasets from Naval Base Ventura County Point Mugu. Data should be compared with other landowners throughout the range of the plover.

Response: The PVA uses data from Monterey, Oregon, and San Diego. At the time of development, the most comprehensive dataset was from Monterey. Future revision of the PVA is identified in Recovery action 4.11, and we recommend that future demographic analyses should include all available datasets as appropriate.

Errors/Comments in Breeding and Wintering Locations

Comment: One commenter thought the management goals found in Appendix B of the recovery plan seemed low for some sites in San Mateo, Monterey, and Santa Cruz Counties.

Response: The management goals in Appendix B are not requirements, they are targets that are meant to be flexible and based on site-specific conditions, and can be modified with reference to new scientific data as it is made available.

Comment: Some commentors questioned whether Bastendorff Beach should be designated as critical habitat when it is not occupied by western snowy plovers. Commenters also questioned its inclusion in Recovery Area OR-13.

Response: Bastendorff Beach was not included in the final designation of critical habitat on September 29, 2005 (U.S. Fish and Wildlife Service 2005). Bastendorff Beach was historically used by western snowy plovers, and its inclusion in Recovery Area OR-13 reflects this historical usage. However, within recovery areas beach restrictions to help reduce disturbance to western snowy plovers are targeted at sites where western snowy plovers are known to be nesting. Biologists do not currently know of any western snowy plovers using Bastendorff Beach, and the habitat there is currently not suitable for western snowy plover breeding. There are no plans to close or restrict beach access on any portions of Bastendorff Beach for western snowy plovers.

Surveys

Comment: A few reviewers felt that regular surveys of suitable habitat and/or documented nesting, roosting, and foraging areas should be done as well as window surveys.

Response: We agree that regular surveys of suitable habitat should occur in addition to the window surveys. However, the monitoring guidelines in Appendix J were written to provide guidance for monitoring the entire Pacific coast population using the most cost- and time-effective methods. Surveyors in the different regions would be required to obtain a section 10(a)(1)(A) permit, at which time additional guidance on different monitoring methods may be given. In addition, each region may create regional monitoring guidelines for the western snowy plover.

Oregon Issues

Comment: One commenter has the understanding that the western snowy plovers are not really native to the Reedsport, Oregon area, based on a comment made by a biologist at a meeting in Coos Bay several years ago. They question why the Fish and Wildlife Service is trying to establish western snowy plovers in Oregon if there are lots of western snowy plovers in California.

Response: Western Snowy Plovers are native to Oregon. The biologist may have meant to say that western snowy plovers in Oregon are in the northernmost portion of their range, which extends from southern Washington south to southern Baja California. Western snowy plovers have been documented as breeding in Oregon as early as the late 1890's and were considered a resident species by Gabrielson and Jewett (1940). Historically the coastal population of the western snowy plover was found along the entire Oregon coast with documentation of over 20 areas of use from the Columbia River to the Pistol River outlet on the southern coast. The western snowy plover is rarely seen in its former north coast range; it can be found essentially year-round at nine sites between Baker Beach and Floras Lake (as of 2006). Only recently a few birds have been observed north of Alsea Bay at Bayocean Spit, Necanicum Spit, and Sand Lake (Marshall *et al*. 2003).

Comment: One commenter stated that the Oregon Department of Fish and Wildlife's 1978-1993 breeding population surveys conducted between 1978 and 1993 and winter count surveys conducted between 1985 and 1994 do not list Sixes River mouth (OR-18) or Elk River Mouth (OR-19) as included in the surveys, and that western snowy plover were not observed during breeding and winter surveys conducted at Pistol River (OR-17) during this period. The areas do not appear to have been used historically by the western snowy plover.

Response: "Breeding" and "wintering" surveys conducted prior to 1990 were usually window surveys (one-two days per season) with the exception of studies specific to the New River and Coos Bay area. In many years, surveys were not conducted at all in some of the more remote and smaller sites (*i.e.*, Elk, Sixes and Pistol Rivers) due to time limitations, weather, or lack of personnel. Thus, the seasonal "surveys" should not be considered definitive for determining presence, absence, or abundance. What was seen on a given day was a matter of chance, at least in these small beach areas. Birds could have easily attempted to nest at any of those areas earlier or later in the season, and still go undetected, especially if nesting attempts failed.

Western snowy plovers were listed as "permanent resident" for the Pistol River by Gabrielson and Jewett (1940). Marshall *et al*. (2003) cite an incidental report of a western snowy plover(s) at the Sixes River mouth. The fact that there are either no "historical", or in some cases current, records for Elk, Sixes, or Pistol Rivers does not imply that birds did not use those areas. These areas were included in the recovery plan because with some habitat restoration work and predator and recreation management, they have potential as nesting areas. They could also serve as useful connections (*i.e.*, resting and foraging areas) up and down the coast for the improving the survival of the overall meta-population.

Comment: A commenter noted that additional nesting locations at Tahkenitch Creek and Oregon National Recreation Area Dunes Overlook need to be included.

Response: The Tahkenitch Creek and Dunes Overlook areas are included within location OR-10 . With respect to discussion in the text of the draft recovery plan, in the first paragraph on page 22 "site" refers to beaches where western snowy plovers were observed during the Oregon Department of Fish and Wildlife annual window survey. It does not refer to nesting areas. Not all western snowy plover locations were surveyed

each year, for whatever reason (*i.e.*, lack of staff time, or sites were dropped from the survey due to poor habitat).

Comment: Two commenters wanted an explanation of an account at Siltcoos Beach in 1999, when field biologists allegedly stood by and watched as one crow destroyed seven plover nests.

Response: This account is incorrect. No biologist "stood by" and watched a crow depredate plover nests. In the vast majority of nest predations, the fate of a nest is determined by after-the-fact observation of the nest remains. Predators leave different clues as to who the culprit was. Sometimes scavenging of abandoned nests may also occur, though this is difficult to determine. In 1999, several plover nests were depredated by corvids within a three day period at Siltcoos in Lane County. This occurred early in the nesting season and when the predator problem was noted, the culprit had already depredated multiple nests. Adjustments to the nest exclosures were made immediately and refined until the corvid predation problem ceased.

Comment: One commenter suggested that more nesting areas similar to the Coos Bay North Spit (behind the foredune) should be established to meet recovery targets, instead of beach restrictions on beaches that are more valuable to the public and less valuable to plovers.

Response: We disagree that beaches in Oregon are not valuable to plovers. Historically, there have been over 20 areas of plover use on the Oregon Coast, all of these on open, sandy beaches. The beach can provide key nesting and brooding habitat for plovers. The habitat restoration area at Coos Bay North Spit was first established in the 1970s and 1980s when plovers nested at two dredge spoils. Today, the site is 67 hectares (166 acres) in size and both the inland habitat restoration areas (behind the foredune) and adjacent beach provide the most productive nesting areas on the Oregon Coast. The challenge in creating more sites similar to Coos Bay North Spit is the high cost of creating and maintaining such large habitat restoration areas.

Military Issues

Comment: The recovery plan appears to assert that military land uses on Camp Pendleton should be subordinate to conservation land uses, and indeed to recreational land uses. It suggests unacceptable limitations on military training both on Camp Pendleton's beaches and in military special-use airspace above its beaches.

Response: We acknowledge the military mission includes land uses beyond recreation. We also acknowledge that accommodation of the western snowy plover and other listed species has required the Marine Corps to adjust its actions to achieve its military mission. Through development and implementation of the Programmatic Activities and Conservation Plans in Riparian and Estuarine/Beach Ecosystems on Marine Corps Base Camp Pendleton and the resulting biological opinion (the "Riparian BO"), we worked together to find mutually acceptable solutions to address the western snowy plover and other riparian/beach listed species on Camp Pendleton. We commend the management actions that the Marine Corps has implemented to benefit western snowy plovers at Camp Pendleton, including habitat manipulation, population monitoring, predator management, access control, and educational outreach. We believe that the recent growth in the populations on Camp Pendleton is attributable to that management, showing that the Marine Corps is a good land steward while at the same time achieving its military training mission. We look forward to continuing to work together to address military training and conservation concerns at the Base, because, as described in this recovery plan, we believe Federal lands will be important to the recovery of western snowy plovers.

Comment: The most recent surveys on Camp Pendleton show that the Base currently supports a breeding population of approximately 75 western snowy plovers. The draft recovery plan suggests a management goal for Camp Pendleton of 215 breeding western snowy plovers. This would represent 39 percent of the total management plan for the entire Recovery Unit and a 300 percent increase in the Base's population of western snowy plovers. These recovery objectives cannot be reached without severe effects to military training.

Response: The Management Goal Breeding Numbers described in Appendices B and C are intended to be informal targets for management and are flexible. The management goals for Camp Pendleton include 15 breeding adults at San Onofre State Beach, 40 at

Aliso/French Creek Mouth (White Beach), and 160 at the Santa Margarita River Estuary. In 2006, the breeding window survey for western snowy plovers detected 126 plovers on Camp Pendleton. The window survey is an index survey, a "snapshot" of the plover population, and represents a minimum population. Even at a minimum, this represents considerable growth since the population estimate cited. We commend the Marine Corps for the management that has achieved this growth and anticipate that ongoing management in existing snowy plover management areas will continue to contribute to recovery.

Comment: The recovery plan suggests that "aircraft operations within snowy plover habitat should require a minimum altitude of 152 meters (500 feet) for aircraft and a higher altitude for helicopters. Aircraft operations that have already established guidelines allowing aircraft to fly under the 152 meter (500 foot) threshold should raise the limits to this minimum threshold or higher as needed." (p. 146.) This "recovery task" would have a direct impact on military operations, and would be unacceptable to the Marine Corps.

Response: Recovery plans are guidance documents. We have already addressed the Marine Corps training and operational activities, including aircraft activities, on the Camp Pendleton in the Riparian BO. In the Riparian BO, we concluded that as part of the Marine Corps overall activities, including the stewardship activities described in the Beach Ecosystem Plan, the Marine Corps may conduct the addressed activities in the manner described in the opinion. The Marine Corps has implemented avoidance and minimization measures on Camp Pendleton, such as those incorporated into the Range and Training Regulations and other programmatic instructions. Further, the Marine Corps has funded monitoring and management activities, such as predator control and habitat improvement, that has benefitted western snowy plovers. This recovery plan will not change the Riparian BO. Training may continue as described in the Riparian BO. For example, aircraft, as described in the Riparian BO, may continue to fly as low as 91 meters (300 feet) over nesting areas on the beach, as opposed to the recovery plan's recommended 152 meters (500 feet). This difference is due, in large part, to the benefits western snowy plovers receive because of the Marine Corps' ecosystem-based management that benefits western snowy plovers and other species.

Comment: Military training and western snowy plover nesting can successfully co-exist, which should be stated in the Plan.

Response: We recognize the potential for western snowy plovers to successfully nest on training beaches where appropriate species management is implemented, as demonstrated at Naval Base Coronado and Marine Corps Base Camp Pendleton.

Comment: Sikes Act requirements need to be taken into consideration in the development of the Recovery Plan.

Response: The contributions of the INRMPs have been acknowledged in the Plan.

General Comments

Comment: Several commenters felt that the amount of money and time expended to keep the western snowy plover from going extinct was not worth the effort.

Response: The recovery of listed species is mandated by law. Congress found in 1973 that various species of fish, wildlife, and plants in the United States have been rendered extinct. Other species have been so depleted in numbers that they are in danger of extinction. For some species there is an imminent threat that they will become extinct very soon. Congress also found that these species are of value to the Nation and its people. For this reason they enacted the Endangered Species Act. The Endangered Species Act reflects the value Congress and the American people place upon the natural resources of the United States and their diversity. The Endangered Species Act directs us to conserve endangered and threatened species and the ecosystems upon which they depend.

Comment: The recovery plan inappropriately elevates single-use management for western snowy plovers over multiple use of public lands.

Response: The purpose of the recovery plan is to identify actions that, if implemented, are expected to lead to recovery of the western snowy plover. It is advisory in nature and does not mandate agreement to or implementation of any of the recovery actions proposed. Public land management agencies that implement actions identified in the recovery plan should consider and seek to appropriately balance multiple uses across the lands they manage, assessing alternatives under processes such as the National Environmental Policy Act (NEPA).

Comment: One commenter wanted to know how implementation of the recovery plan will affect private businesses in and around western snowy plover habitat areas.

Response: A recovery plan is advisory in nature and does not mandate agreement to or implementation of any of the recovery actions proposed. A recovery plan is a reference document that identifies actions that, if implemented, are expected to recover a species. Economic effects of implementing recovery actions will depend on particular local circumstances; specific proposals to implement actions may be evaluated through processes such as NEPA or the California Environmental Quality Act (CEQA).

Comment: The recovery plan fails to acknowledge that recovery will require severe damage and alteration of ecosystems to provide western snowy plover an unnatural advantage and allow it to reproduce at inflated levels.

Response: The objective of this recovery plan is to ensure the long-term viability of the U.S. Pacific coast western snowy plover population so that this population can be removed from the Federal list of endangered and threatened species. The recovery plan does not call for severe damage of ecosystems to create habitat for the western snowy plover. Long-term management and protection actions can be found in section 3 of the recovery outline. All the recovery unit areas in the recovery plan are historical western snowy plover breeding or wintering sites. In addition, the recovery plan has taken into account and given careful consideration to other species that share habitat with the western snowy plover.

Comment: Several commenters felt that the recovery plan should include more site-specific management actions and that the Pacific coast population of western snowy plover should be broken down into smaller unit areas.

Response: Six recovery units have been established. The recovery units cover the following areas: (1) Oregon and Washington; (2) Northern California (Del Norte, Humboldt, Mendocino Counties); (3) San Francisco Bay (locations within Napa, Alameda, Santa Clara, and San Mateo); (4) Monterey Bay (including coastal areas along Counties of Monterey, Santa Cruz, San Mateo, San Francisco, Marin, and Sonoma); (5) San Luis Obispo, Santa Barbara, and Ventura Counties; (6) Los Angeles, Orange, and San Diego Counties. The rationale for this approach is discussed in detail in section II.B of the recovery plan.

Each recovery unit includes many breeding and wintering locations. Specific management goals and actions for each location can be found in Appendixes B and C. Each recovery unit will have a working group that would include members who are specialists in that recovery unit area. Representation from the full contingency of Federal, State, local, and private land owners and other parties who have a stake in western snowy plover conservation within each of the six recovery units will be needed to implement the recovery actions recommended in the recovery plan. In addition, a summary and table of current and additional needed management activities for western snowy plover, categorized by breeding and wintering locations, can be found in Appendix C of the recovery plan. The management activities identified in Appendix C are based on the best available information as we finalize this plan. We understand that as more information becomes available adjustments may be appropriate; review of Appendix C is identified as part of recovery action 6.2.

Comment: One commenter wanted demographic responses to management actions documented and provided for peer review of the methods.

Response: The Fish and Wildlife Service agrees that demographic responses to management actions should be shared with others. Communication, evaluation, and coordination play a major role in western snowy plover recovery efforts

Comment: Recovery Criterion 3 should be removed and only Federal actions should be included in the recovery plan. The U.S. Fish and Wildlife Service has no authority to create this requirement.

Response: Section 4(f)(2) of the Endangered Species Act of 1973, as amended (Act) states that: the Secretary, in developing and implementing recovery plans, may procure the services of appropriate public and private agencies and institutions, and other qualified persons. In addition, our Recovery Plan Participation and Implementation Policy (U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration 1994) provides a Participation Plan process, which involves all appropriate agencies and affected interests in a mutually-developed strategy to implement one or more recovery actions. This cooperative policy is intended to minimize social and economic impacts consistent with timely recovery of species listed as threatened or endangered under the Act. Recovery plans are guidance documents; not regulatory

documents. No agency or other entity is required by the Act to implement the recovery strategy or specific recommended actions in a recovery plan.

Comment: Several commenters felt the recovery plan should outline a standard research protocol for the western snowy plover.

Response: We agree that there is a need for standard research guidelines for more effective comparisons of data. Monitoring Guidelines for the Western Snowy Plover can be found in Appendix J of the recovery plan. More discussion about monitoring and scientific investigation needs can be found under Recovery actions 1.5 and 4.3.

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