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The Resources Agency
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Osborne &
Reynolds

CALIFORNIA SEABIRD BREEDING GROUND SURVEY
1969-70

by

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ABSTRACT

A seabird breeding ground survey was made of California's offshore rocks from Oregon to Mexico in 1969 and 1970. One hundred and thirty-three thousand pairs of seabirds of 13 species were found to be nesting on 37 major rookeries located on offshore rocks. Eighty-two other rocks were classified as minor rookeries and nonbreeding roosting sites. Excluded from the study were offshore islands and coastal headlands. Recommended is an annual surveillance program to measure population trends and withdrawal from future exploitation, private and publicly owned offshore rocks of importance to California's nesting seabirds.

Wildlife Management Branch Administrative Report No. 71-3 (January 1971).
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RECOMMENDATIONS

Based on the results of the seabird breeding ground survey conducted in 1969 and 1970, herein reported, and the survey of the seabird use of coastal rocks of northern California reported in Wildlife Management Branch Administrative Report No. 70-4, the following recommendations are made:

1. A selected number of the major offshore seabird rookeries be monitored annually during the breeding season, March through July. These rocks be selected on the basis of the number of breeding species, sizes of colonies, accessibility for study, location relative to species range, and proximity to man-made developments and disturbances. Recommended major census rocks are Castle Island, Green Rock, Flat-iron Rock, Cape Vizcaino, S. E. Farallon Island, Goat Island, Bodega Rock, Castle Rock, Piedras Blancas, and Lion Rock-Diablo Canyon.
2. A resurvey be made of the entire coast every three years with refinement in survey efforts and effort directed towards measurement of population trends and possible changes in breeding sites.
3. Studies be initiated to determine the breeding success of seabirds with particular attention directed to monitoring pesticide and other contaminants in the tissues of birds and eggs and their food chain.
4. Immediate effort be directed towards identifying ownership of California's offshore rocks and withdrawal of those federal lands contributing materially to the continual survival of California's seabirds. Such rocks be given protection from human encroachment and disturbance and be designated as ecological reserves, wildlife sanctuaries, or refuges. Major seabird rookeries in private ownership, such as Castle Island, be immediately acquired and placed in public stewardship.

INTRODUCTION

The purpose of this study is to provide an inventory of the coastal breeding sites of California seabirds, including information about types of sites favored, species breeding and approximate numbers of each species. Several recent events make such a study highly desirable. These include: (1) Die-off of common murre in 1968 and decline of the murre population on the Farallon Islands; (2) Reproductive failure of the brown pelican and reported reproductive distress of double-crested and pelagic cormorants; (3) Development of numerous nuclear power plants along the coast with subsequent calcification of coastal waters; and, (4) Increasing urbanization and industrialization of coastal areas placing greater strain on coastal waters as dumping grounds for industrial and domestic wastes.

CONDUCT OF STUDY

The area included in this study is the entire coastline of California from Oregon to the Mexican border. The coast from Pt. Bonita, San Francisco

County north was surveyed in 1969 by Timothy Osborne. The coast from Pt. Bonita south was surveyed in 1970 by Jack G. Reynolds.

All offshore rocks except those in bays and estuaries were surveyed. Data on the Farallon Islands were gathered from the Point Reyes Bird Observatory. The Channel Islands in Santa Barbara County and other offshore islands were excluded from the study because of time limitation and difficulty of access. Sites surveyed were classified as to accessibility, vegetation, and habitat of principal breeding species. Some preferred habitat types include: (1) Flat bare rock--Brandt's cormorant, common murre, and western gull; (2) Bare cliff with ledges--common murre and pelagic cormorants; (3) Sediment deposits easily burrowed--auklets and puffins; and, (4) Deep soil for burrowing--auklets and petrels. In general, seabirds prefer offshore rocks or mainland cliffs which are not readily accessible to mammalian predators, including man.

Survey methods included the use of aerial photographs and 7½ minute U. S. Geological Survey topographical maps. Aerial flights were made to pick out principal breeding sites and obtain photographs. Ground surveys were made from shore by means of binoculars and 20x telescope. Some sites were visited on foot at low tide, by swimming, and by boat. For each site surveyed, an inventory sheet was compiled which included information on location, height, topography, vegetation, accessibility, breeding species and nonbreeding species, including mammals. Each site was given a code number consisting of three numbers; the first is the Fish and Game administrative region, second is a county number, and third is the site number within the county. Since the bulk of the survey was done in the months from July-September, estimates of breeding birds are undoubtedly low. Most of the nesting is accomplished by July.

Figure 1 is a map showing the location of the major rookeries from Oregon to Mexico. Table 1 lists major breeding rocks from north to south and Tables 2 and 3 list the minor rookeries and nonbreeding roosting sites for the entire coast.

There are a few offshore rocks which undoubtedly escaped survey for one reason or another; however, it is certain that with the exception of the larger islands no major nest rock or minor roost rock was overlooked. Some rocks listed as minor or roost rocks could on further investigation prove to be major nesting sites. The fact that the survey was conducted in July instead of March or April and limited time was spent surveying the entire coastline contributes to a certain degree of inaccuracies in the data herein presented.

RESULTS

In the 1,071 miles of coast surveyed, there are 37 major nest rocks. These are rocks with more than 100 nests or harbor rare species. Table 4 summarizes all major rocks with regard to species breeding. Since no attempt was made to survey coastal headlands or Santa Barbara Channel Islands or other offshore islands, these were not included. These rocks contained approximately 133,000 pairs of breeding birds involving 13 species. Species composition shows

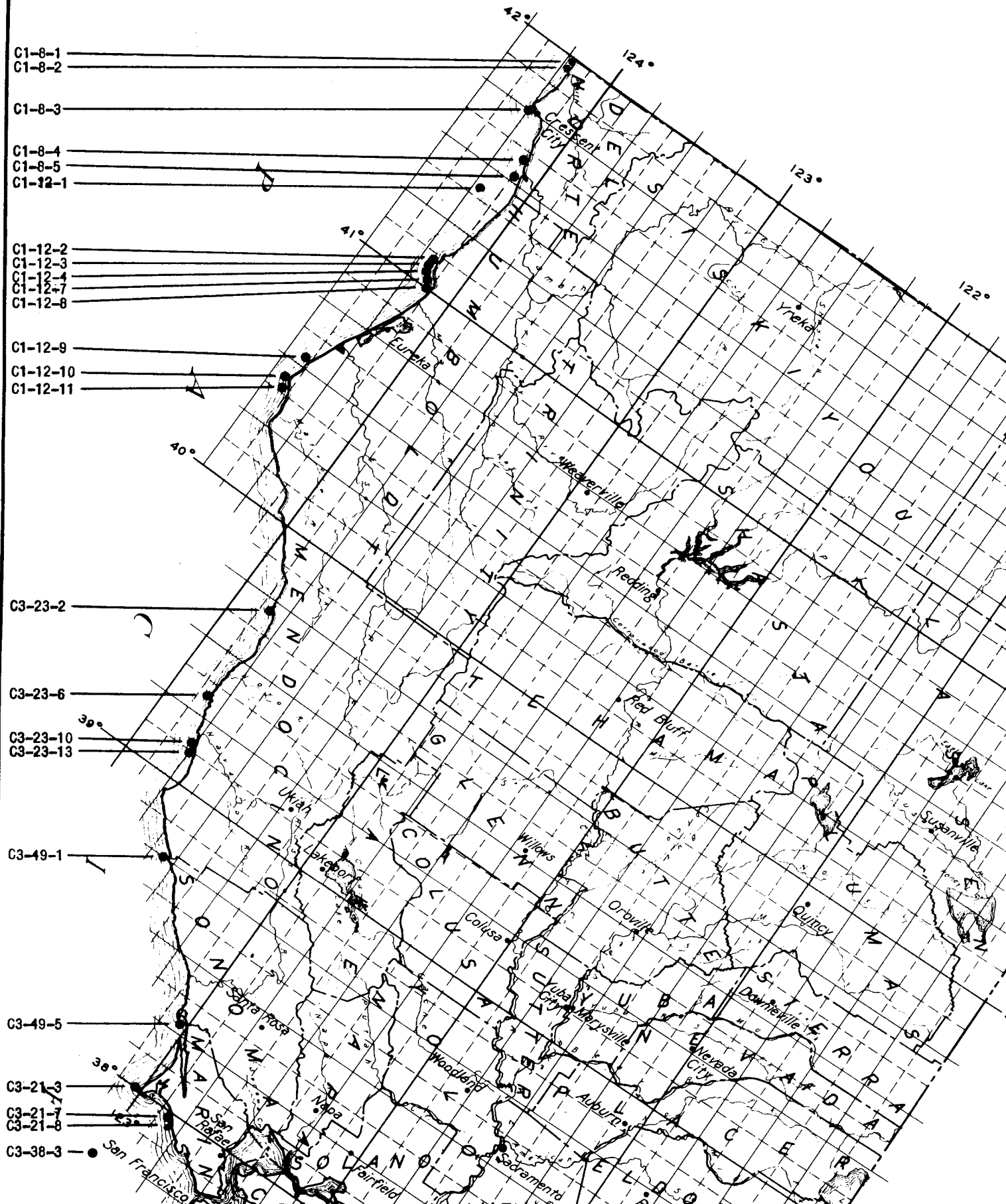
decreasing diversity from north to south. No major breeding rocks are found south of Point San Luis in San Luis Obispo County.

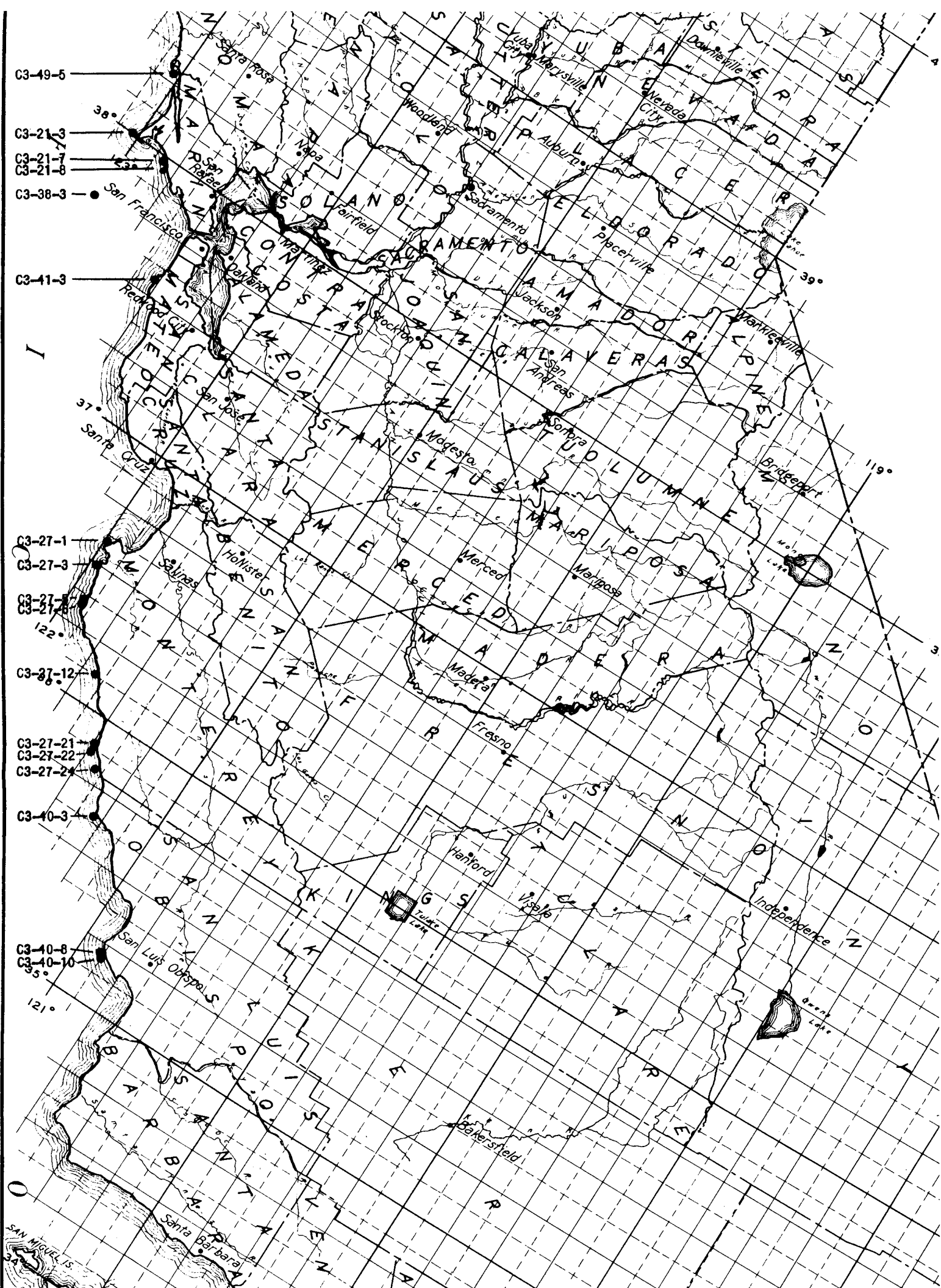
Four factors probably contribute to the decline in diversity as one moves south: (1) Smaller rock size as one moves south with a subsequent loss of habitat diversity--small rocks generally have no soil or vegetation to support burrowing petrels, auklets, and puffins; (2) Decreasing rainfall curtails vegetation and soil retention; (3) Warmer climate is unfavorable to breeding birds; and, (4) Majority of the coast from Point San Luis south is sandy beach or developed industrial-recreation land with few offshore rocks.

The most numerous species was the Cassin auklet which was found nesting on S. E. Farallon Island and numbered 52,750 breeding pairs. Next in abundance was the common murre represented by 46,000 nesting pairs. Castle Island in Del Norte County supported 20,000 pairs of nesting common murre followed by the S. E. Farallon Island and Green Rock each with 10,000 pairs. Nesting colonies of these birds were identified on 15 rocks as far south as Hurricane Point. Of the cormorants, the Brandt's cormorant was most numerous with 8,214 pairs on 32 offshore rocks. The heaviest concentration of nesting Brandt's cormorants was on S. E. Farallon Island where 2,500 pairs were counted. They breed on virtually every major and minor breeding site on the coast. Pelagic cormorants were less numerous with only 2,070 pairs enumerated and double-crested cormorants were found on only six rocks and numbered but 145 pairs.

Western gulls were found on 16 of the rocks and were represented by 11,082 pairs. They were most numerous on S. E. Farallon Island. Petrels actively nesting along the California coast were the fork-tailed, Leach, and ashy petrels. The Leach petrel nested in considerable numbers on Castle Island and Little River Rock in Del Norte and Humboldt Counties. Fork-tailed petrels were found nesting on only four offshore rocks; the largest number was 100 pairs on Little River Rock. Ashy petrels were found only on S. E. Farallon Island where some 2,500 pairs nested in 1970.

Pigeon guillemots occurred on 14 rocks. The highest nesting concentration was 750 pairs on S. E. Farallon Island. Other nesting seabirds included black oystercatcher, tufted puffin, and rhinoceros auklet. One hundred and fifty pairs of rhinoceros auklets were found by Osborne to be breeding on Castle Island, Del Norte County. This is the only breeding record for California reported in the last 100 years. Nesting tufted puffins occurred on 8 rocks and black oystercatchers were found nesting on 11 rocks. These two species were nowhere abundant.





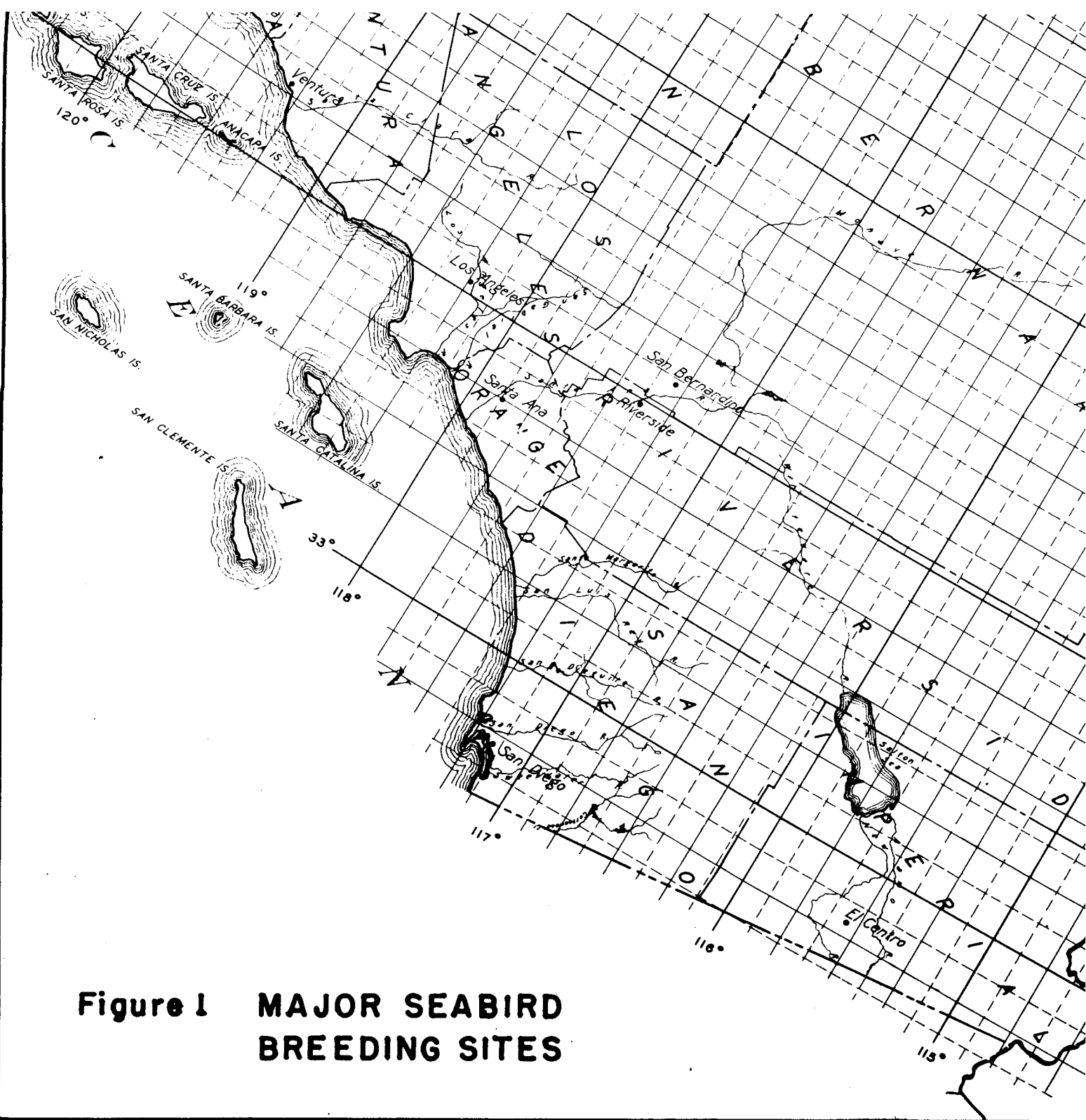


TABLE 1

MAJOR ROOKERIES
(Excluding Offshore Islands Except S. E. Farallon Island)

OREGON to MEXICO

<u>Site</u>	<u>Code</u>	<u>County</u>
Hunter Rocks	C1-8-1	Del Norte
Prince Island	C1-8-2	"
Castle Island	C1-8-3	"
False Klamath Rock	C1-8-4	"
Redding Rock	C1-12-1	Humboldt
White Rock	C1-12-2	"
Green Rock	C1-12-3	"
Flat-iron Rock	C1-12-4	"
Pilot Rock	C1-12-7	"
Little River Rock	C1-12-8	"
False Cape Rocks	C1-12-9	"
Sugarloaf Rock	C1-12-10	"
Steamboat Rock	C1-12-11	"
Cape Vizcaino	C3-23-2	Mendocino
Goat Island	C3-23-6	"
Devil's Basin Rocks	C3-23-10	"
White Rock	C3-23-13	"
Fish Rocks	C3-23-16	"
Gualala Point Island	C3-49-1	Sonoma
Bodega Rock	C3-49-5	"
Rocks north Point Reyes Light	C3-21-3	Marin
Rock south Bear Valley	C3-21-7	"
Rock north Double Point	C3-21-8	"
S. E. Farallon Island	C3-38-3	San Francisco
Devil's Slide	C3-41-3	San Mateo
Bird Rock	C3-27-1	Monterey
Bird Island-Pt. Lobos	C3-27-3	"
Castle Rock	C3-27-5	"
Hurricane Pt., $\frac{1}{4}$ mi. No.	C3-27-6	"
Anderson Canyon, $\frac{1}{4}$ mi. So.	C3-27-12	"
Plaskett Rock	C3-27-21	"
Cape San Martin	C3-27-22	"
Salmon Creek, 2 mi. No.	C3-27-24	"
Piedras Blancas	C3-40-3	San Luis Obispo
Lion Rock-Diablo Canyon	C3-40-8	"
Lion Rock-Diablo Canyon, 2 mi. So.	C3-40-10	"

TABLE 2
MINOR ROOKERIES
OREGON to MEXICO

<u>Site</u>	<u>Code</u>	<u>County</u>
White Rock	C1-8-5	Del Norte
Wedding Rock	C1-12-1a	Humboldt
Colonial Sea Lion Rock	C1-12-1b	"
Blank Rock	C1-12-5	"
Prisoner Rock	C1-12-6	"
Sea Lion Rock	C1-12-14	"
Old Wharf Rocks at Rockport	C3-23-1	Mendocino
Chris Rock	C3-23-4	"
Rock $\frac{1}{4}$ mi. No. Newport	C3-23-5	"
Casket Rock	C3-23-11	"
Wharf Rocks	C3-23-12	"
Sea Lion Rocks	C3-23-14	"
Iverson Landing Rocks	C3-23-15	"
Rocks from Jenner to 1 mi. No.	C3-49-2	Sonoma
Arched Rock	C3-49-3	"
Gull Rock	C3-49-4	"
Rocks $1\frac{1}{4}$ mi. to $3\frac{1}{2}$ mi. No. Dillon Beach	C3-21-1	Marin
Bird Rock	C3-21-2	"
Headlands between Chimney Rock and Point Reyes Light	C3-21-4	"
Chimney Rock	C3-21-5	"
Rock north Bear Valley	C3-21-6	"
Bird Island	C3-21-9	"
Point Bonita headlands	C3-21-10	"
Seal Rocks	C3-38-2	San Francisco
San Pedro Rock	C3-41-2	San Mateo
Point Lobos (3 rocks)	C3-27-2	Monterey
Torre Canyon	C3-27-9	"
Partington Point, 1 mi. So.	C3-27-10	"
McWay Rocks	C3-27-11	"
Anderson Canyon, 1 mi. So.	C3-27-13	"
Dolan Rock	C3-27-14	"
Square Black Rock	C3-27-15	"
Lopez Rock	C3-27-16	"
Cliff $1/3$ mi. No. Harlon Rock	C3-27-18	"
Wild Cattle Creek, $\frac{1}{2}$ mi. So.	C3-27-19	"
Plaskett Rock, $\frac{1}{4}$ mi. No.	C3-27-20	"
Cape San Martin, $\frac{1}{4}$ mi. So.	C3-27-23	"
La Cruz Rock	C3-40-2	San Luis Obispo

TABLE 3

ROOSTING SITES WITH NO BREEDING BIRDS

OREGON to MEXICO

<u>Site</u>	<u>County</u>
Cone Rock	Del Norte
Whaler Island	"
Mussle Point Rock	Humboldt
Turtle Rocks	"
Cone Rock	"
Pewetole Island	"
Arch of Narvarro	Mendocino
Saddle Point Rock	"
Gunderson Rock	"
Steward's Point Island	Sonoma
Rock $\frac{1}{2}$ mi. No. Fort Ross	"
Rock So. Double Point	Marin
Rock $2\frac{1}{2}$ mi. So. Stinson Beach	"
Mile Rock	San Francisco
Mussell Rock	San Mateo
Pillar Point and Sail Rock	"
Miramontes Point, $3\frac{1}{2}$ mi. So.	"
Franklin Point	"
Ano Nuevo, 2 mi. So. SE	"
Pelican Rock	Santa Cruz
Natural Bridges, 3 mi. No.	"
State Beach	"
Point Santa Cruz	"
Lobos Rocks	Monterey
Point Sur	"
Cooper Point	"
Harlan Rock	"
Ragged Point	San Luis Obispo
Piedras Blancas, $1\frac{1}{2}$ mi. So.	"
White Rock	"
Constantine Rock	"
Morro Rock	"
Lion Rock (Diablo Canyon), 100 yd. NE	"
Pecho Rock	"
Bird Rock (Shell Beach)	"
Lion Rock (Pt. Sal)	Santa Barbara
Point Arguello	"
Point Mugu	Ventura
Bass Rock	"
Flat Rock Point	Los Angeles
Portuguese Point	"
Reef Point	Orange
Goff Island	"
San Juan Rocks	"
Bird Rock	San Diego
Point Loma Lighthouse	"

SUMMARY OF MAJOR SEABIRD BREEDING SITES (Number of Breeding Pairs)

Species														
Fork-tailed Petrel	Leach Petrel	Ashy Petrel	Pelagic Cormorant	Brandt Cormorant	Double-crested Cormorant	Black Oyster-catcher	Western Gull	Common Murre	Pigeon Guillemot	Tufted Puffin	Cassin Auklet	Rhinoceros Auklet	Total	
-	-	-	17 (40)	100	-	1	9	-	1	-	-	-	128	
(50)	(2,500)	-	(50) (200)	17 (250)	(90)	1	(50)	-	28	-	-	-	226	
-	-	-	(6)	(200)	4	1	600	20,000	150	20	1,000	(150)	24,771	
-	-	-	(5)	200	-	-	(25)	(5,000)	-	-	-	-	5,235	
-	-	-	(31)	40	12	-	(10)	(200)	-	-	-	-	200	
(25)	-	-	2	30	-	1	44	(600)	5	1	-	-	245	
-	-	-	(12)	(150) (80)	-	1	(40)	10,000	3	(5)	(25)	-	659	
5	150	-	-	-	-	-	(10)	(2,500)	4	1	-	-	10,135	
(100)	(5,000)	-	-	-	-	1	(25)	-	17	-	-	-	2,696	
-	-	-	2	400	-	1	(25)	-	-	-	-	-	102	
-	-	-	200	80	14	-	100	600	100	2	-	-	155	
-	-	-	25	150	-	-	20	300	-	-	-	-	1,145	
-	-	-	15	250	-	1	-	-	-	-	-	-	1,000	
-	-	-	35	175	-	-	-	-	-	-	-	-	496	
-	-	-	-	100	-	-	-	-	-	-	-	-	450	
-	-	-	-	250	-	-	-	-	-	-	-	-	545	
-	-	-	-	400	-	1	-	-	-	-	-	-	266	
-	-	-	100	15	-	1	25	250	-	-	-	-	210	
-	-	-	10	170	-	1	50	700	-	-	-	-	100	
-	500	2,500	1,500	2,500	25	1	10,000	5,000	750	25	52,750	-	921	
-	-	-	-	-	-	9	-	350	1	-	-	-	75,555	
-	-	-	-	300	-	-	-	-	-	-	-	-	351	
-	-	-	-	400	-	-	-	100	-	-	-	-	300	
-	-	-	-	150	-	1	-	200	1	-	-	-	400	
-	-	-	-	-	-	-	-	-	-	-	-	-	252	
-	-	-	-	-	-	-	-	-	-	-	-	-	200	
-	-	-	-	142	-	-	-	-	-	-	-	-	142	
-	-	-	-	100	-	-	-	-	1	-	-	-	101	
-	-	-	-	200	-	-	70	-	1	-	-	-	271	
-	-	-	-	-	-	-	-	-	1	-	-	-	300	