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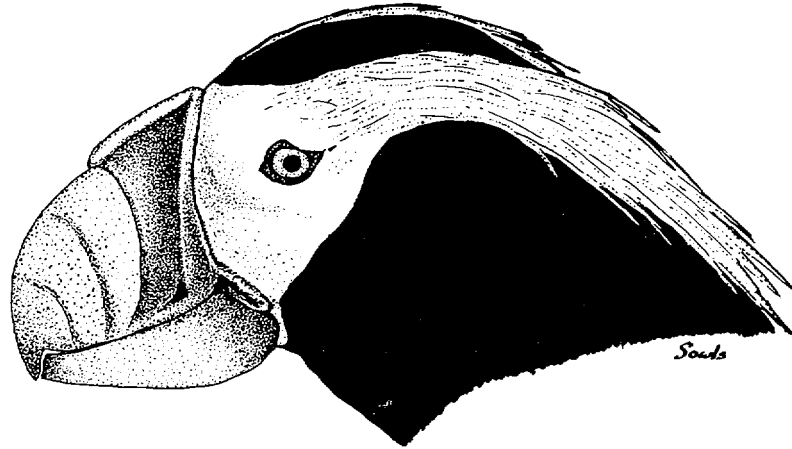
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December 1980

# *Catalog of California*

## *Seabird Colonies*



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Bureau of Land Management  
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The Biological Services Program was established within the U.S. Fish and Wildlife Service to supply scientific information and methodologies on key environmental issues that impact fish and wildlife resources and their supporting ecosystems. The mission of the program is as follows:

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- To gather, analyze, and present information that will aid decisionmakers in the identification and resolution of problems associated with major changes in land and water use.
- To provide better ecological information and evaluation for Department of the Interior development programs, such as those relating to energy development.

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*Catalog of California Seabird Colonies*

by

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## TABLE OF CONTENTS

INTRODUCTION . . . . .	1
THE NATURE OF SEABIRDS . . . . .	1
THREATS TO SEABIRDS . . . . .	2
METHODS . . . . .	7
DISCUSSION . . . . .	11
SPECIES ACCOUNTS :	
Fork-tailed Storm-Petrel . . . . .	20
Leach's Storm-Petrel . . . . .	22
Ashy Storm-Petrel . . . . .	24
Black Storm-Petrel, . . . . .	26
Brown Pelican . . . . .	28
Double-crested Cormorant . . . . .	30
Brandt's Cormorant. . . . .	32
Pelagic Cormorant.. . . . .	34
Black Oystercatcher . . . . .	36
Western-Gull . . . . .	38
Common Murre . . . . .	40
Pigeon Guillemot.. . . . .	42
Marbled Murrelet. . . . .	44
Xantus' Murrelet . . . . .	46
Cassin's Auklet . . . . .	48
Rhinoceros Auklet . . . . .	50
Tufted Puffin . . . . .	52
MAPS AND TABLES :	
How to Use <b>Maps and Tables</b> . . . . .	56
<b>Map Index</b> . . . . .	57
Section 325, <b>Eureka</b> . . . . .	58
Section 379, <b>Ukiah</b> . . . . .	106
Section 404, <b>Santa Rosa</b> . . . . .	142
Section 429, <b>San Francisco</b> . . . . .	180
Section 454, <b>Monterey</b> . . . . .	212
Section 477, <b>San Luis Obispo</b> . . . . .	236
Section 501, <b>Santa Maria</b> . . . . .	260
Section 502, <b>Los Angeles</b> . . . . .	282
Section 524, <b>Long Beach</b> . . . . .	298
Section 525, <b>Santa Ana</b> . . . . .	318
Section 545, <b>San Diego</b> . . . . .	326
REFERENCES . . . . .	341
APPENDIX A: Data Archives . . . . .	351
APPENDIX B: Observation Points for Seabird Colonies . . . . .	355
APPENDIX C: Index of California Seabird Colonies . . . . .	366



## INTRODUCTION

This catalog is a summary of the location, size, and species composition of seabird colonies along the California coast. It documents more than 260 nesting areas with a total estimated population of nearly 700,000 birds.

Our study was sponsored by the Bureau of Land Management, Pacific Outer Continental Shelf Office, to fulfill requirements of the National Environmental Policy Act of 1970. The information will help resource planners evaluate possible effects on seabirds of proposed oil and gas leasing. Detailed information on seabird distribution and abundance will be useful to coastal planners, scientists, and amateur bird-watchers. For this reason, we have included a section on threats to seabirds and appendices on the archiving of our field data (Appendix A) and viewpoints from which several colonies can be observed without causing disturbance (Appendix B).

Seventeen species of seabirds from six families are discussed in this report. These include four species of storm-petrels (Fork-tailed, Leach's, Ashy, and Black), one species of pelican (Brown Pelican), three species of cormorants (Brandt's, Double-crested, and Pelagic), one species of shorebird (Black Oystercatcher), one species of gull (Western Gull), and seven species of alcids (Common Murre, Pigeon Guillemot, Marbled Murrelet, Xantus' Murrelet, Cassin's Auklet, Rhinoceros Auklet, and Tufted Puffin). In addition to population information in the maps and tables, species accounts discuss aspects of the natural history of each of the above species, emphasizing the California populations.

Population information for six additional species which could also be affected by coastal development and pollution has been included in the maps and tables. All the known locations of Least Tern (*Sterna albifrons*) colonies are identified in this catalog, although yearly surveys by the California Department of Fish and Game will soon render this data obsolete. The catalog also identifies coastal breeding sites of the Caspian Tern, (*Sterna caspia*), Forster's Tern (*Sterna forsteri*), and Black Skimmer (*Rynchops niger*), species which also breed inland. The single known California nesting location of the Elegant Tern (*Sterna elegans*) in San Diego Bay is also identified. Finally, locations of known Heermann's Gull (*Larus heermanni*) nest sites are

indicated, although this species was never recorded breeding in California until 1980, and cannot be considered part of the normal breeding avifauna. All six species, except Heermann's Gulls and some Least Terns, nest and feed primarily in enclosed bays and estuaries. Our inclusion of this information is intended only to supplement other sources of information on these species.

It must be recognized that this report only documents nesting sites. Large numbers of non-nesting birds migrate through coastal California in spring and fall and many additional birds winter along the coast. These include shearwaters from as far away as New Zealand and Tasmania, many kinds of shorebirds and waterfowl from arctic Alaska and Canada, pelicans and gulls from Mexico, and inland nesting birds such as grebes and small gulls. Oil spills and other disturbances could severely affect these populations. Seabirds are truly an international resource and must be managed as such.

## THE NATURE OF SEABIRDS

Seabirds evolved in an environment free of most of the competition and predators faced by terrestrial birds. They have evolved into birds with long lifespans, low adult mortality rates, relatively late sexual maturity, and small clutch sizes. Lifespans of seabirds are not exactly known, but they are certainly long in comparison to most terrestrial birds. Records exist of individuals of several species of seabirds reaching more than 20 and even 30 years of age (Bergstrom 1952, Clapp and Sibley 1966, Clapp and Hackman 1968, Graham 1980). Long lifespans in a species imply a low annual rate of adult mortality, and annual mortality rates below 20 percent are common in seabirds (Ashmole 1971, Richdale and Warham 1973). Some albatrosses may have annual mortality rates as low as three percent (Lack 1954). Many passerine, at the other extreme, have annual mortality rates from 40 to 70 percent (Lack 1954). If mortality rate remains constant with increasing age, large seabirds with very low annual mortality rates may attain a breeding life of 50 years or more (Ashmole 1971). In addition, recruitment of birds into the breeding population is often slow and delayed. Before attaining maturity, many seabirds spend at least 2 years, and more commonly 3, 4, 5, and up to 9 years as non-breeders (Ashmole 1971). Long

breeding lives, low" recruitment rates,' and delayed maturity could delay the effects of successive breeding failures on breeding populations for several years.

The clutch size of seabirds is usually low. Storm-petrels and other Procellariiformes lay one egg, alcid lay one or two eggs, and pelicans and gulls lay one to three eggs. Cormorants may lay up to seven eggs, though clutches of four or five are more common. By contrast, many land birds lay from 7 to 15 eggs and many produce two broods each year.

Because seabirds reproduce at a slow rate but over a long lifetime, the effects of an oil spill or other disaster and the potentially more dangerous effects of long-term chronic pollution, habitat loss, and other disturbances demand careful and frequent monitoring of seabird populations.

Seabirds tend to be of two types: those which spend most of their time near shore (including cormorants, pelicans, and most gulls), and those which come to land only during the breeding season or sometimes intermittently during other times of the year (including storm-petrels and alcid). Of the truly pelagic seabirds, several are nocturnal on the breeding grounds; they will enter or leave their colonies only at night. In California, the four storm-petrels, Marbled and Xantus' Murrelets, Cassin's Auklets, and, to a lesser degree, Rhinoceros Auklets are nocturnal on their breeding grounds.

The seabird colony is the most critical habitat for seabirds because reproduction and thus continuation of species depend on these sites. Here the population will reach its annual low, just before young are hatched, and its annual high, just after hatching. At other times of the year, seabirds may be able to avoid problems such as disruption of food supplies, and perhaps even large oil spills, simply by flying somewhere else, but for successful nesting they are limited to the area around the colony.

In the following section, we discuss some of the problems which face seabirds. We hope an awareness of these will alert coastal planners to the kinds of problems that may be encountered.

## THREATS TO SEABIRDS

### OIL

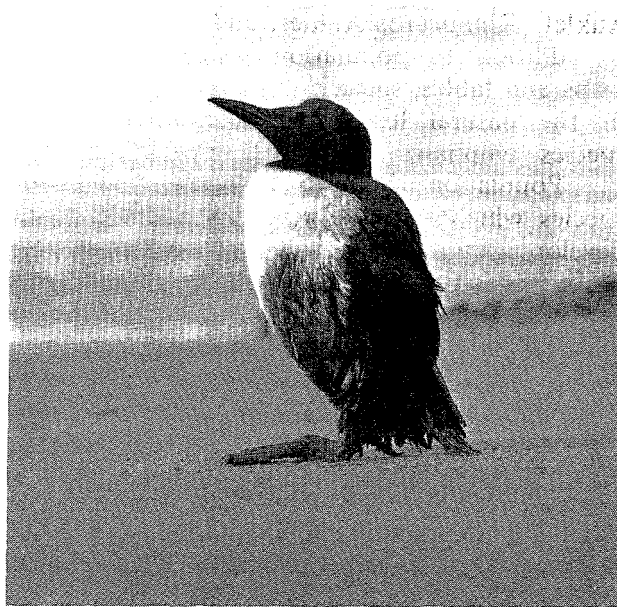
Oil exploration, production, and transport are important industries along the coast of California. A federal outer continental shelf

leasing program by the Bureau of Land Management offshore of California was initiated in 1963. Areas in the Santa Barbara Channel were leased in 1966 and 1968, and other sections of the Southern California Bight were leased in 1975. Five new oil lease zones were identified offshore of central and northern California in 1977. The southernmost of these tracts is scheduled for sale in 1981.

Resource planners must be aware of potential hazards to seabirds that may be caused by oil development. There is ample literature documenting the lethal effects of oil on marine birds, including papers by Bourne (1968, 1970), Clark (1969), Clark and Kennedy (1968), Croxall (1975), Manuwal (1978), and many others. Vermeer and Vermeer (1974) reviewed the literature appearing between 1922 and 1973 on the effects of oil on birds.

One effect of oil on seabirds is destruction of the insulating properties of feathers. An oiled bird compensates for the loss of insulation and subsequent loss of heat by increasing its metabolic rate, using stored energy (Hartung 1967). If the bird's energy balance is not restored, energy reserves are soon depleted and death from hypothermia results. Oiled birds are unable to maintain their energy reserves because they cannot or will not feed.

Marine birds may also ingest oil while drinking, feeding, and especially when oiled individuals attempt to preen their soiled plumage. Ingestion of oil may hinder the absorption of



*A Common Murre fouled with oil on a Pacific Coast beach. Photo by Duncan McDonald*

water across the intestinal wall (Crocker et al. 1974). Ingested oil may also affect reproductive success. Grau et al. (1977) showed that ingested oil altered the yolk structure of recently laid Japanese Quail eggs (*Coturnix coturnix*) and greatly reduced their hatchability. These authors are continuing their studies on the Farallon Islands with Western Gulls and Cassin's Auklets (Ainley et al. 1979). Hartung (1965) demonstrated that ingested lubricating oil reduces the egg laying rate of captive Mallards (*Anas platyrhynchos*). Oil applied to the exterior of eggs also reduces hatching success. This has been observed in experiments performed on the eggs of Mallards (Hartung 1965), Common Eiders (*Somateria mollissima*, Albers and Szaro 1978), Laughing Gulls (*Larus atricilla*, King and Lefever 1979), Glaucous-winged Gulls (*Larus glaucescens*, Patten and Patten 1977), and Great Black-backed Gulls (*Larus marinus*, Coon et al. 1979, McGill and Richmond 1979).

The species vulnerable to oil spills are those which are most restricted to an aquatic environment, particularly loons, grebes, seaducks, and alcids, although some variation will occur depending on the season. We have discussed these aspects of each species' life history in the species accounts.

In California, three well-documented oil spills which killed large numbers of birds have occurred: the Santa Barbara oil spill of 1969 (Straughan 1971) and the San Francisco oil spills of 1937 and 1971 (Aldrich 1938, Moffitt and Orr 1938, Smail et al. 1972). All three spills occurred in the winter which greatly influenced the species of birds killed. Wintering Western Grebes (*Aechmophorus occidentalis*) and loons suffered the greatest mortality in the Santa Barbara oil spill. Western Grebes were similarly affected in the 1971 San Francisco oil spill and to a lesser extent in the 1937 spill. Common Murres and wintering scoters (*Melanitta* spp.) also experienced heavy mortality from oil in the San Francisco oil spills. Common Murres breed in California and appear in the near-shore zone periodically in the winter.

#### CHRONIC POLLUTION AND TOXIC CHEMICALS

Large oil spills are well publicized, but low-level chronic oil pollution, small oil spills, and the build-up of other pollutants probably pose a more serious long-term threat to seabirds. Pollutants of particular concern, other than oil, include

pesticides and their residues, heavy metals, polychlorinated biphenyls and other by-products of industry, and plastic particles.

Most seabirds are long-lived and feed at or near the tops of their food chains. Certain pollutants such as DDT and its principal metabolite DDE are stored in the body and concentrate in increasing amounts at each higher level in the food chain. When concentrations of these chemicals reach sufficiently high levels, reproduction may be impaired or death may occur. Seabirds constitute one of the most conspicuous and easily studied components of the marine ecosystem, so their reproductive failure or death may be our first indication that the environment contains dangerous quantities of toxic chemicals. In Minamata, Japan, high levels of mercury in effluent from a vinyl chloride plant were first manifested in the deaths of fish-eating birds. This was followed by the tragic deaths of many humans (Kurland et al. 1960). The effects of pollutants on seabirds can be monitored by close study and may serve as a valuable indicator of the health of marine ecosystems. For this reason alone, continued study of certain seabird populations will be useful.

The effects of chlorinated hydrocarbon pesticides and their residues and polychlorinated biphenyls on birds are well documented (Peakall 1970, 1975). These contaminants reduce breeding success by decreasing fertility, reducing the viability of eggs and chicks, and interfering with calcium deposition, resulting in the production of thin eggshells which may later break. Physical abnormalities have also been associated with organochlorine residues (Hays and Riseborough 1972).

In California the Brown Pelican has become a symbol in the fight against pollution of the world's oceans. The reproductive success of Brown Pelicans was seriously reduced by the presence of DDT, DDE, and related chemicals in the ocean off southern California. Because of eggshell thinning, most eggs were broken before the young hatched and only 12 chicks fledged out of 2,368 nesting attempts in 1969, 1970, and 1971 (Gress et al. 1973). Double-crested Cormorants suffered a similar decrease in reproductive success in southern California and Mexico (Gress et al. 1973). These reproductive failures were traced to DDT dumped into the Los Angeles sewer system by a chemical manufacturing plant. Since April, 1970, these wastes have been deposited in a landfill and DDT input into the ocean has declined significantly (Anderson et al. 1975). Reproductive

success of both Brown Pelicans and Double-crested Cormorants has improved dramatically and the population of Brown Pelicans may be on its way to recovery (Anderson et al. 1975).

Chlorinated hydrocarbons and polychlorinated biphenyls have also been linked with shell thinning of Ashy Storm-Petrel and Common Murre eggs on the Farallon Islands (Coulter and Riseborough 1973, Gress et al. 1973). Many other populations of seabirds in North America have been similarly affected by these contaminants.



*This Brown Pelican egg was broken under the weight of incubating adults as a result of thin eggshells from pesticide contamination. Photo by Frank Gress.*

Plastic particles are commonly found in the stomachs and gizzards of seabirds collected for scientific study (Baltz and Morejohn 1976, Rothstein 1973). It is likely that seabirds mistake these for larval fish, eggs, or other foods floating on the ocean surface. These particles enter the environment by physical breakdown of the huge quantities of plastics which are dumped into the world's oceans each year.

The physical presence of plastic particles may affect the health of birds. Particles which accumulate in the gizzard probably are not as effective as the pebbles normally used to grind up food. Fortunately, plastics are nearly chemically inert and are unlikely to affect birds the way toxic chemicals do. More research on this topic and concern about the "garbage can" attitude we have toward our oceans are needed.

## FISHERIES

Commercial fisheries can affect seabirds in three primary ways: 1) birds drown in gillnets, 2) offal from fishing boats provides an additional

food supply for certain seabird species, and 3) extensive fisheries deplete some seabird prey species. Depletion of prey fishes presently seems to be the major fisheries-related threat to seabirds in California. Gillnet drowning and offal discharge have dramatically affected seabirds in other parts of the world.

Seabirds drown in gillnets when they are caught while diving or plunging into the water for food. The alcids, which dive to feed, and shearwaters (*Puffinus* spp.), which plunge into the ocean to feed, are among the most vulnerable of seabirds. The salmon driftnet fisheries of the North Atlantic and North Pacific Oceans have caused high mortality of seabirds. The Danish salmon fishery off West Greenland killed an estimated 500,000 to 750,000 Thick-billed Murres (*Uris lomvia*) annually between 1968 and 1975 (Tull et al, 1972). In the North Pacific, the Japanese salmon mothership fishery kills over 200,000 seabirds in gillnets each summer (Ainley et al. in prep.), and large numbers of seabirds die in the Japanese land-based fishery as well (Sano 1978). Restriction of gillnet fishing near colonies and in regions of known high seabird concentrations at sea could reduce this kill. The large incidental kill of Thick-billed Murres in the Danish fishery was curtailed after an international agreement took effect in 1976, restricting the Danish fishery to only coastal waters (Salomonsen 1979). The Japanese fishery, although reduced in size in recent years, is still very active in the North Pacific.

The only salmon gillnet fishery in California is located in the Klamath River of northern California. Some birds drown in the nets of this fishery each summer (Chatto pers. comm.) but the total number of birds killed is small.

An unknown number of seabirds are killed annually in a small coastal gillnet fishery for bottomfish that operates from Tomales Bay south to Santa Barbara (Miller pers. comm.). Common Murres, cormorants, and Sooty Shearwaters (*Puffinus griseus*) are apparently the species most frequently caught. Although this fishery has existed for at least 50 years, it has only recently become large enough to cause concern. The California Department of Fish and Game and the U.S. Fish and Wildlife Service are currently investigating the mortality of marine birds and mammals in this fishery.

Offal from boats, particularly processing ships associated with large whaling and fishing fleets, provides large amounts of food for some seabird species, especially Northern Fulmars

(*Fulmarus glacialis*) and gulls. This new food supply may be in part responsible for increases in fulmar and gull numbers in some parts of the world (Brown 1970, Bourne 1972). Commercial fishing in California is primarily from small, privately-owned boats and offal discharge is probably insignificant at present. Coastal garbage dumps are likely a more important food source for gulls.

Commercial fisheries are increasingly harvesting species of fish used by seabirds for food. This is due largely to an increasing demand for fish products, depletion of more desirable species, and improved fishing technology. Fish stocks can become so depleted through overfishing that decreases in populations of seabirds can result. This is best illustrated by the crash of Peruvian seabird populations following overfishing of the anchoveta (*Engraulis ringens*). In the years between 1953 and 1965, Peruvian seabird populations declined from 28 million birds to 4 million birds (Schaefer 1970).

A similar conflict seems likely to occur between the Northern Anchovy (*Engraulis mordax*) and seabird populations along the west coast of Mexico and southern California. The diet of breeding Brown Pelicans in southern California has been found to contain 92 percent anchovies (Gress pers. comm.). Brown Pelicans reproduce best during periods when anchovies are abundant near breeding colonies (Anderson et al. 1980). Although pre-1979 harvest levels of anchovies probably did not affect Brown Pelican reproduction, potential increases in the harvest proposed under some options of the Anchovy Management Plan, Pacific Fisheries Management Council, could be serious (Anderson et al. 1980). Hunt and Butler (1980) have shown the importance of anchovies to the reproductive success of Xantus' Murrelets and Western Gulls on Santa Barbara Island (524 008, See page 56).

Protecting seabird feeding areas, particularly those near breeding colonies, may be necessary. Caution should be used before any decision to increase anchovy harvests is made (MacCall 1974, Radovich 1979, Anderson et al. 1980). Little information is available on the effects of fisheries-caused depletion of prey species on other California seabirds and continued research is needed (Anderson et al. 1980).

## HUMAN DISTURBANCE

A serious danger to nesting seabirds is disturbance by people, including scientists, bird-

watchers, recreationalists, and others. Disturbance is usually unintentional and, more often than not, the culprits are unaware of the harm that they have caused. When people go into or near a seabird colony they can cause disturbance in many ways. An awareness of potential problems can do much to reduce disturbance.

Flushing birds from nests must be avoided since it can cause adults to abandon nests, exposes eggs and chicks to predators, and interferes with incubation and the feeding of chicks. During panic departures adults may even break eggs or kick eggs and chicks from nests. Larger chicks may run off and, unable to get back to the nest, may die or be killed. Airplanes, boats, and helicopters, as well as individuals on foot, can cause birds to flush by approaching a colony too closely. Helicopters are especially disruptive.

In California, predation on uncovered eggs and chicks is primarily by Western Gulls and Common Ravens (*Corvus corax*). Both gulls and ravens patrol colonies in search of unattended eggs and chicks or for a chance to steal food brought in by parent birds. Under natural circumstances their success rate is low, but a colony from which adults have been flushed is "easy pickings." Plundering gulls may walk ahead of human intruders, pecking holes into eggs, or they may fly off with eggs to eat elsewhere (Anderson and Keith 1980). Gulls calling overhead attract more gulls and add to the panic of the colony (Anderson and Keith 1980). Western Gulls are formidable predators. They will consume young chicks whole, including chicks of their own species, and will even attack large 3 to 4 week old pelican chicks to obtain regurgitations or will remove the eyes, uropygial glands, and entrails, causing death (Anderson and Keith 1980).

Incubation of eggs and chicks is a means of maintaining an optimum temperature for rapid development. Parents sit on and turn eggs to warm them and will shade eggs and chicks from the sun to keep them from overheating. If parent birds are kept off their nests for a long enough period of time, death of the young from hyperthermia (overheating) or hypothermia (overcooling) can occur. Shorter periods of neglect can extend the incubating time required for hatching.

The most damaging type of human disturbance is physical alteration of habitat, since its effects are longterm, and in most cases irreversible. Whaler Island (325 045) near the Oregon border is now part of the Crescent City breakwater and is no longer used by nesting seabirds. Osborne

(1972) estimates from historical records that 20,000 storm-petrels (Leach's and Fork-tailed Storm-Petrels), along with Western Gulls, Pigeon Guillemots, and Black Oystercatchers, nested on Whaler Island. Loss of this nesting island may have substantially reduced the number of nesting Leach's and Fork-tailed Storm-Petrels in California.

Several seabird species nest in burrows dug into the ground. No one should walk on these burrow areas since they can easily collapse under the weight of a person. Birds may then abandon the burrow. Burrow destruction can also accelerate the serious problem of soil erosion from offshore rocks. Most islands along the California coast were once part of the mainland and soil is primarily or entirely a remnant from before the islands broke away.

In California, burrow nesting species are: Black, Leach's, Fork-tailed, and Ashy Storm-Petrels, Xantus' Murrelets, Cassin's and Rhinoceros Auklets, Tufted Puffins, and, in some instances, Pigeon Guillemots. Of these, Rhinoceros Auklets, Tufted Puffins, and Black and Fork-tailed Storm-Petrels are present only in very low numbers. None of these species' California populations exceed 400 birds, and none of these species is present at more than 14 sites in the state. While Cassin's Auklets and Leach's and Ashy Storm-Petrels are present in greater numbers in California, they are also limited to very few nesting locations. Any disturbance to burrow-nesting species would be particularly unfortunate.



Whaler Island (325 045) was an important seabird colony until the island was quarried and a breakwater was constructed. Few seabirds nest there now. Photo by Art Sowls

## SPACE SHUTTLE

The following account is drawn largely from Potential impact of space shuttle sonic booms on the biota of the California Channel Islands: literature review and problem analysis (Evans et al. 1979).

Channel Island seabird populations may be subjected to a new disturbance during the 1980's. The U.S. Government has selected Vandenberg Air Force Base (VAFB), just north of Point Conception, as launch site for the Space Shuttle. Most of these launches will be directed west over the open Pacific, but approximately six launches planned for polar orbit will pass directly over the Channel Islands. These launches will produce sonic boom pressure waves of up to 30 pounds per square foot (psf), considerably greater than the 2.0 to 2.5 psf produced by aircraft sonic booms. Depending on weather and other factors, sonic booms produced by the Space Shuttle will be at maximum intensity over San Miguel Island (Figure 1). Areas south and east of San Miguel Island will be subjected to intense, though less potentially devastating sound pressures. In addition, all of the estimated 129 Space Shuttle re-entries will pass directly over the Channel Islands. Sonic booms from these flights will be similar to those from military aircraft, and 18 per year are

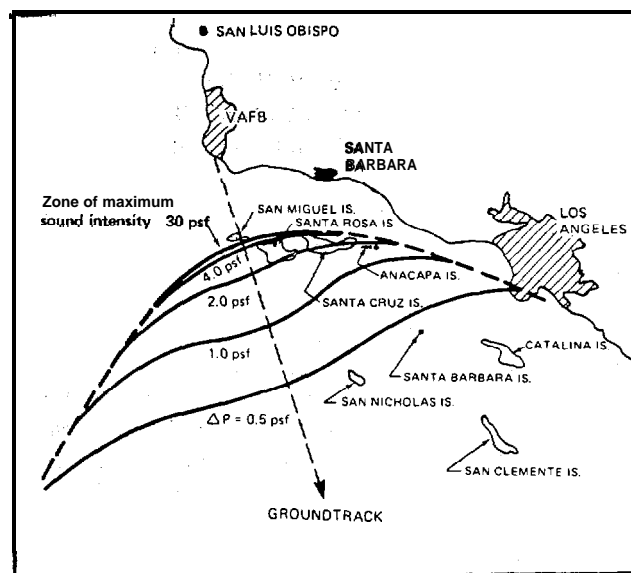


Figure 1. Predicted lines of maximum sonic boom pressures in pounds per square foot (psf) at sea level resulting from Space Shuttle launches into polar orbit from Vandenberg Air Force Base (modified from U.S. Air Force, 1978. Final Environmental Impact Statement, Space Shuttle Program, Vandenberg Air Force Base, California).

scheduled.

These sonic booms may pose several potential dangers to seabirds:

- 1) High sonic boom pressures, particularly those from launches, could physically damage birds regardless of the time of year.
- 2) Both surface nesting and burrow or crevice nesting seabirds may desert eggs and young or fail to initiate nesting because of sonic booms.
- 3) Death of eggs and chicks will probably occur if sonic booms cause panic flights by adults. This result would be similar to that already discussed in the section "Human Disturbance."
- 4) The nests of both burrow-nesting and cliff-nesting seabirds could be damaged or destroyed. An underground nuclear blast in Colorado reduced local raptor reproduction by 20 percent when cliffs crumbled and crushed eggs in two of nine nests (Stahlecker and Alldredge 1976). Sound pressures from the Space Shuttle sonic booms may produce a similar effect, Sonic booms in Arizona reportedly have caused geological damage (Graham 1969). Subterranean - nesting species would be particularly vulnerable to the shifting of rocks and soils.

## METHODS

Information compiled in this catalog comes from four primary sources. The U.S. Fish and Wildlife Service (this study) conducted surveys of seabirds in 1979 and 1980 along the California coast from Point Conception to the Oregon border. An initial survey of this part of the coast was conducted in 1969 and 1970 by Osborne and Reynolds (1971), and their data still provide the best population estimates for some species at some sites. Data for the Channel Islands and the coast south of Point Conception come primarily from another BLM-sponsored oil lease study conducted from 1974 to 1977 by Hunt et al. (1979) and the California Department of Fish and Game. Information for the Farallon Islands has been collected over the past ten years by staff members of the Point Reyes Bird Observatory. Other sources are listed in the references section and in colony tables. All persons known to have

gathered recent data compiled in this catalog are listed on the title page under "Contributors".

Inherent in any collection of data from different sources is variability in methods. No attempt has been made to enumerate all techniques used to collect data presented in this catalog. Instead we refer readers to the appropriate references from which we obtained population estimates listed in this catalog (After each line of data in the Maps and Tables section, we reference the source from which we obtained the information). A detailed account of the techniques we used during our 1979 and 1980 surveys is presented below.

We conducted seabird surveys from Point Conception to the Oregon border from mid-May to mid-August, 1979, and from mid-May to late August, 1980. Adequate coverage of such a long stretch of coastline required two teams of two observers each with a vehicle, an inflatable boat, and two outboard engines. In 1980, a fifth observer was added to the team. Surveys were concentrated during the peak of the nesting season, from late May to late July. Surveys of surface-nesting seabirds completed earlier in May when seabirds began nesting were repeated later in the season to determine the maximum breeding population. We concentrated our 1979 surveys on conspicuous, diurnal, surface-nesting species such as Brandt's Cormorants, Pelagic Cormorants, Western Gulls, Common Murres, and Pigeon Guillemots. In 1980, we divided our time equally between censusing diurnal surface-nesting seabirds and censusing nocturnal burrowing species such as storm-petrels and Rhinoceros Auklets.

All sections of coastline with likely seabird nesting habitat were surveyed by boat one or more times. Least Terns nesting in bays and on beaches were not counted, since their populations are surveyed annually by the California Department of Fish and Game. We did not attempt to census Snowy Plovers (*Charadrius alexandrinus*), Clapper Rails (*Rallus longirostris*), American Avocets (*Recurvirostra Americana*), Black-necked Stilts (*Himantopus mexicanus*), or some of the other species mentioned by Varoujean (1979) in his catalog of seabird colonies of the Pacific States, which was completed from available literature before our surveys were made.

Counts were made from inflatable boats using 7X binoculars or the unaided eye. We found that binoculars with a wide-angle field of view were far superior to normal binoculars when counting from boats. Whenever possible, direct

counts of nests and individual birds were made. Usually, the boat was slowed or stopped and both observers counted birds or nests at the same colony or section of cliff. Counts were often repeated to ensure accuracy.

Except for the Farallon Islands (429 012) and Redding Rock (325 O 13), all islands and offshore rocks north of Point Conception are within one kilometer of the mainland. Counts of seabirds on offshore rocks, islands, and mainland cliffs were often made from shore promontories. Generally, these counts underestimated populations since only the landward sides of colonies were visible. In many instances, our population figures for a particular colony are derived from a combination of different survey techniques, which may have included boat surveys, aerial photography, counts from the mainland, and observations made directly on an island after landing.

Landings were made on islands and rocks whenever possible, except at colonies of Brandt's Cormorants and Common Murres, which are especially sensitive to disturbance. When we landed on an island, we counted cormorant and gull nests and searched for burrows of storm-petrels, auklets, and puffins. Island visits were as brief as possible to minimize disturbance.

Counts made from boats, the mainland, and the islands themselves were the principal methods used to census Double-crested Cormorants, Pelagic Cormorants, Western Gulls, Black Oystercatchers, Pigeon Guillemots, Marbled Murrelets, Rhinoceros Auklets, Tufted Puffins, and, to a lesser extent, Brandt's Cormorants. Most of our surveys were conducted in 1979. In 1980 we attempted to refine estimates made at locations where surveys were hampered by poor weather conditions the previous year. Also, many sites which were accurately surveyed in 1979 were resurveyed in 1980 to determine whether any population changes had occurred.

Cormorants and gulls build conspicuous nests and are therefore the easiest species to census. Since their nests were directly counted, our population estimates for these species are the most reliable. Most surveys for Pelagic Cormorants and Western Gulls were made from a boat, often very close to shore. Our counts of Double-crested and Brandt's Cormorants and Western Gulls were sometimes hampered by our inability to see the tops of islands, the preferred nesting habitat for these species. We circumvented this problem by making counts from the mainland where possible, or by taking aerial photographs.

We counted and noted the locations of all Black Oystercatchers, Marbled Murrelets, Pigeon Guillemots, Rhinoceros Auklets, and Tufted Puffins seen during our surveys. Nests of these species are either difficult to find or, in the case of burrowing species, difficult to identify with certainty. Therefore counts of individual birds and extrapolation from these counts were our best survey method.

Black Oystercatchers were counted during nearshore surveys but in 1979 poor weather hampered our efforts in some locations. Better weather in 1980 allowed us to re-survey selected portions of the coastline and improve our census data. Because nests of this species are difficult to find, the breeding status of many Black Oystercatchers was impossible to determine. Estimates of populations were usually based on the presence and behavior of birds rather than counts of nests. Some non-breeding oystercatchers were probably included in our counts and may have inflated population estimates for some regions. Frequently, however, sections of coastline with poor habitat for other seabirds were by-passed, even if some habitat looked promising for Black Oystercatchers. For this reason, and because oystercatchers were sometimes hard to see among the confusion of reefs, rocks, and breakers, we believe our estimates of Black Oystercatcher populations in California are conservative.

Marbled Murrelets were counted opportunistically in a narrow strip offshore of the coast. The distances of these counts from shore varied, depending on the nature of the coast, but never exceeded one kilometer. The most critical factors influencing our counts of Marbled Murrelets were sea conditions and time of year. Our counts were made from small inflatable boats, so we probably overlooked some birds on the water in all but the flattest seas. The best censuses of Marbled Murrelets can probably be made in spring when both members of a breeding pair are on the water offshore of coastal forests. Our surveys, however, were usually conducted later in the year. In addition, our census strips were of necessity narrow and this probably resulted in many missed birds. Although our surveys of Marbled Murrelets have provided few data with which future comparisons can be made, we feel they reflect the species' breeding distribution in the state.

Rhinoceros Auklets and Tufted Puffins were frequently seen standing near and entering burrows in the early morning. Time of day is an important factor when censusing these birds, since they are seldom seen at their colonies in late

morning and afternoon. We tried to locate eggs and chicks of Rhinoceros Auklets and Tufted Puffins at several sites where we observed these birds, but only at Prince Island (325 003) were we successful. For the other sites in our study area, we based our population estimates on the number of birds in breeding plumage on or near the colonies in 1979 or 1980. For some colonies that had been previously intensively surveyed, we relied on estimates in the Literature.

Pigeon Guillemots are some of the most difficult of California seabirds to census. Finding Pigeon Guillemot nests during brief surveys of the rugged habitat where they usually nest is nearly impossible. Also, numbers of birds around a colony fluctuate greatly depending on the stage of nesting and time of day. Distinguishing breeders from non-breeders is impossible in most cases, so our numbers reflect the total number of guillemots at a colony rather than the number of breeding birds. We found that Pigeon Guillemots are present in large numbers around colonies in the early morning but nearly disappear by mid to late afternoon. Once incubation begins one member of each pair is probably always absent from view. The best time to census this species is therefore in the early morning, before the egg laying season, when both members of a breeding pair are on the water near the colony. Nettleship (1976) concluded that this is the best time to census populations of the similar Black Guillemot (*Cephus grylle*) in arctic and eastern Canada. Surveying Pigeon Guillemots later in the day will result in underestimation of numbers or even failure to detect entire colonies. Most of our surveys could not be conducted at this optimum time, so guillemot estimates which appear in this catalog are based not only on the numbers of birds seen, but have been modified to reflect the influences of time of day, stage of nesting, and quality of habitat. These adjusted numbers, we feel, provide the most realistic estimates of the populations at each site, but they may be higher or lower than actual guillemot numbers. Although our population estimates are almost always many times higher than those made during previous surveys (1,285 percent higher for the entire study area), we still feel they are conservative. Differences in survey techniques and more complete coverage of the coast are likely to account for our higher numbers.

Aerial surveys were our best means of censusing Brandt's Cormorants and Common Murres. In 1979, we conducted nine aerial surveys in order to cover the coast from Point Conception



*Jay Nelson and Bill Rodstrom censusing cliff nesting seabirds from a small boat at False Cape Rocks (325 040). Photo by Art Sowls*

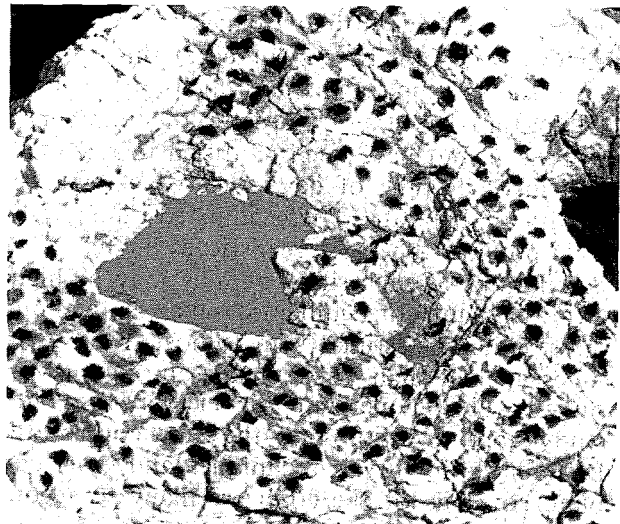
to the Oregon border. Three 1979 surveys were flown from a high-wing Cessna 182 or 210 and the remaining six were flown in U.S. Coast Guard helicopters. In 1980 we conducted five aerial surveys. Four of these were made in a high-wing Cessna 172, and one was flown from a U.S. Coast Guard helicopter. Photographs of seabird colonies were taken either through the open window of a plane or open door of a helicopter. Both color slides (ASA 64, 200, and 400) and black-and-white film (ASA 132 and 400) were exposed in a 35-millimeter camera equipped with either a 70-to 210-millimeter zoom lens or a 300-millimeter lens. Flight altitudes varied, but most photographs were taken from an altitude between 150 and 250 meters. We were careful not to flush nesting seabirds or marine mammals by flying too low, and we are satisfied that we caused no disturbances during our aerial surveys.

Seabirds flush readily from their nests when "buzzed" by low-flying aircraft, therefore it is imperative to fly high enough to avoid disturbing them. For the study area from Point Conception to the Oregon border, we recommend a flight altitude of 200 meters or higher. Common Murres in coastal California nest primarily on the flat tops of islands and, possibly, excluding murres nesting on the Farallon Islands, appear somewhat accustomed to low-flying aircraft. Murres in other regions also frequently nest on cliff faces where more care is needed to avoid flushing birds. Helicopters are more disturbing to birds than fixed-wing aircraft, and should maintain a higher altitude. Telephoto lenses, especially zoom lenses in the 70-to 300-millimeter range, are needed to photograph seabird colonies well enough to make accurate counts later from the photos. Rapid shutter speeds of 1/1,000 second or 1/500 second are important to dampen vibrations. We usually used high speed color slide film because it enabled us to shoot at rapid shutter speeds even on cloudy days.

Most counts of Brandt's Cormorants and Common Murres were made from projected slides. In the case of Brandt's Cormorants, we counted individual nests and determined the number of breeding birds by multiplying the number of nests by two. Brandt's Cormorant nests are conspicuous and easy to count from aerial photographs. Our estimates for this species are probably as accurate as any estimates included in this catalog. Numbers of Common Murres were estimated either by counting individual birds on slides or by blocking off groups of 10's, 50's, or 100's, depending on the sizes of colonies and

the quality of our photographs.

Time of day and of year influence the number of Common Murres at a colony. The greatest numbers of murres are seen in early morning, before the egg-laying season. Both members of each breeding pair, as well as non-breeding birds, are presumably present on the colony at this time. Later in the season, during the incubation and nestling stages of nesting, the number of murres on a colony at any one time decreases because one member of each pair is frequently at sea. Most of our surveys were flown during the incubation and nestling stages, near mid-day. A correction factor must be added to the murre count to account for this variability in colony attendance. Addition of a correction factor to our counts of murres from photographs should result in an adjusted estimate of the breeding population which is more representative than the straight count from the photographs. We used a factor of two-thirds, as proposed by Ainley (1976). A factor of two-thirds implies that fewer than half of the birds are away from the colony at the time of a survey, an assumption which we feel is reasonable. To obtain the adjusted total, we multiplied the count obtained from the photographs by 1.67. Our estimates of murre numbers included in this catalog are only the adjusted totals. The actual numbers of murres counted from slides, which may be the most useful numbers for later historical comparisons, can be obtained by dividing the number listed in this catalog by 1.67.



*Brandt's Cormorants and Common Murres were censused primarily by counts made from aerial photographs. Here, Brandt's Cormorant nests are shown at Piedras Blancas (477 007). Photo by Jay Nelson*

We were unable to distinguish between breeding and non-breeding Common Murres on the photographs. Our Common Murre estimates are actually the numbers of birds at a colony rather than the numbers of breeding birds.

Common Murres are extremely difficult to census and our estimates of their populations are probably the crudest of all estimates in the catalog. These birds pack densely on islands and it is often impossible to distinguish between individuals, even on high-quality photographs. Comparison of our numbers with those obtained in future surveys will be difficult, but direct visual comparisons of photographs could easily show whether the extent and density of a colony has markedly changed. To make comparisons simpler, we have archived data and photographs at several different sites (see Appendix A).

Storm-petrels and Cassin's Auklets are nocturnal and difficult to census. We made no attempts to census colonies of nocturnal seabirds which we knew existed on Castle Rock (325 006), Green Rock (325 020), and Little River Rock (325 035 ), but instead relied on population estimates in the literature. Other colonies of nocturnal birds in our study area which we censused were either small in magnitude or small in area and did not warrant intensive survey efforts such as establishing sample plots and determining the ratio of active to inactive burrows. To obtain more refined data on these sites would have caused more disturbance than we felt was justified.

Besides searching many islands for storm-petrel and Cassin's Auklet colonies during the day, we made overnight surveys one or more times on Prince Island (325 003), Flatiron Rock (325 023), Pewetole Island, Button Rock (325 054), Goat Rock (379 006), an island at Van Damme Cove (379 027), and Fish Rocks (404 003). We conducted searches at night for nesting storm-petrels and auklets, and on all but Pewetole Island, Flatiron Rock, and Goat Rock erected mistnets to catch nocturnal birds. We caught and banded 174 Leach's Storm-Petrels on Prince Island, Button Rock, and Fish Rocks combined. Our population estimates for several storm-petrel colonies were based on one or more of the following: 1) the number and density of burrows, 2) the number of birds seen and heard on the island at night, 3) the number of birds captured and banded, and 4) the number of birds recaptured. We discuss our population estimates for storm-petrels at each site more fully in the species accounts. We offer no new estimates of Cassin's

Auklet numbers in the catalog,

This catalog includes the best information available for all seabird colonies along the coast of California, but the information varies in quality from species to species and from site to site. We have devised a data quality code, described below, as an attempt to rate our data by its quality. A data quality code number follows each of our population estimates in the maps and tables section.

#### Data Quality Code

- I. Total count of all nests (number of nests x 2 = number of breeding birds). Few if any errors were made in these counts. Any changes in number of breeding birds from year to year can probably be detected.
- H. Count of nests. Because of omission or misidentification of nests, counts may be slightly higher or lower than actual bird numbers. Small or moderate changes in number of breeding birds from year to year can probably be detected.
- III. An estimate of the size of a breeding population based on counts of nests and birds and on estimation of the amount of available nesting habitat. Census techniques vary considerably among species. Only large changes in populations from year to year can probably be detected.

#### DISCUSSION

Populations containing nearly 700,000 seabirds, representing 23 species, are discussed in this catalog. All major and most minor seabird colonies along the California coast have probably been identified, and present data seem adequate to evaluate the importance of even small sections of coastline to breeding birds.

Unfortunately, sufficient historical data do not exist to evaluate population changes or trends that may have occurred or are occurring along much of the California coast. Only on the Farallon Islands (429 012), Santa Barbara Island (524 008), Anacapa Island (502 007), and at Least Tern colonies in southern California have long-term studies been initiated.

Although California's breeding marine avi-

fauna is diverse, only a few species make up the majority of this assemblage of seabirds. Common Murres, Brandt's Cormorants, Cassin's Auklets, and Western Gulls compose almost 90 percent of the California population (Figure 2). A disproportionately large percentage of this population breeds at only a few locations in the state. Two regions, the Farallon Islands and the north coast of California from Cape Mendocino to the Oregon border, contain the largest number of breeding seabirds (Figure 3). The Farallon Islands are extremely important. Large portions of the state's breeding populations of Ashy Storm-Petrels, Brandt's Cormorants, Western Gulls, Common Murres, Pigeon Guillemots, Cassin's Auklets, Rhinoceros Auklets, and Tufted Puffins breed

on these islands (Figure 4).

The coastline north of Cape Mendocino contains more breeding seabirds than the Farallon Islands although no single site there approaches the Farallones in number of birds. Large portions of the state's breeding population of Fork-tailed Storm-Petrels, Leach's Storm-Petrels, Double-crested Cormorants, Common Murres, Rhinoceros Auklets, and Tufted Puffins inhabit this coast. Castle Rock (325 006), the second-largest seabird colony in the state, is found in this stretch of coastline.

The Channel Islands are particularly noteworthy since the entire California breeding populations of Black Storm-Petrels, Brown Pelicans, and Xantus' Murrelets nest there. The

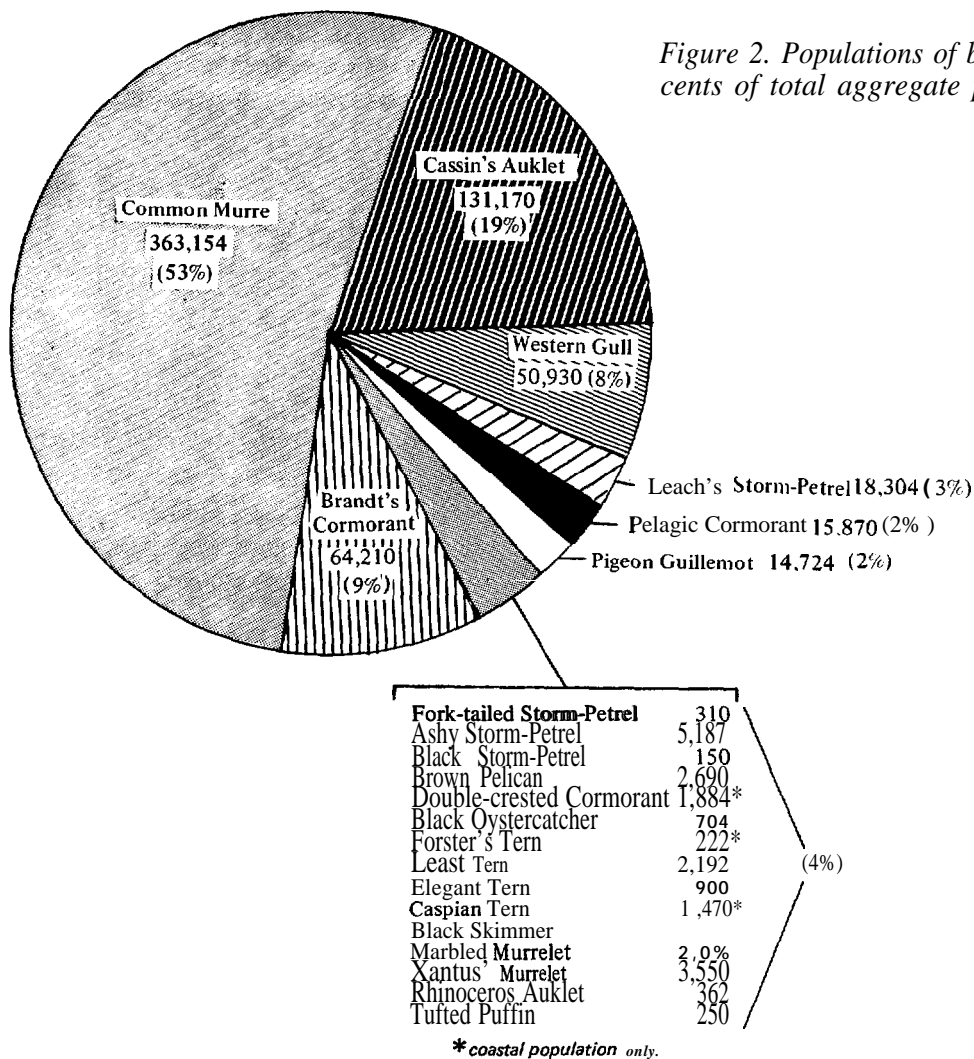


Figure 2. Populations of breeding seabirds and percents of total aggregate population in California.

more sub-tropical seabird community of the Channel Islands, although containing fewer breeding seabirds than the Farallon Islands and northern California, is of no less importance.

Six of the 23 species discussed in this catalog are widespread along much of the California coast. Of the six, the Black Oystercatcher is the most widely distributed, despite an estimated breeding population of only 1,000 birds. This distribution reflects the abundance of this species' preferred nesting habitat in California. The Black Oystercatcher's small population size, however, is perhaps related to its tendency to nest as isolated pairs on offshore rocks and inaccessible stretches of the California coastline.

The distributions of Pelagic Cormorants and

Pigeon Guillemots are also relatively uniform, in part because their nesting habitat is abundant in this state (Figure 4). Pelagic Cormorants are most numerous between Cape Mendocino and San Francisco, an area possessing long stretches of vertical cliffs. Pigeon Guillemots attain their greatest abundance in central California, south of San Francisco, including the Farallon Islands, but large colonies are also found at many locations north of Point Conception. Both Brandt's Cormorants and Western Gulls are widely distributed throughout California but extremely large concentrations of each exist on the Farallon Islands (Figure 4). Common Murres are found throughout much of central and northern California although they are most abundant in

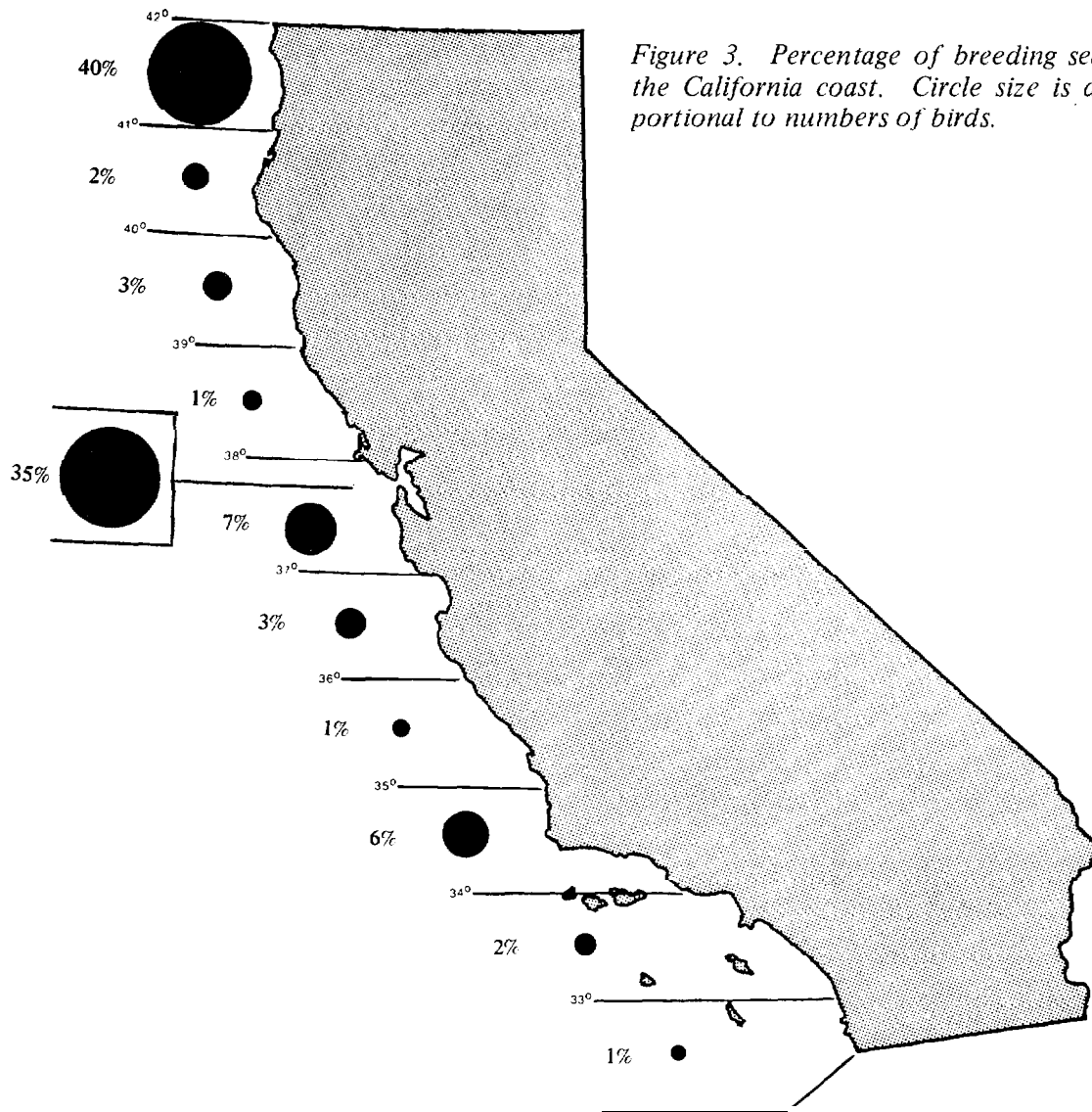


Figure 3. Percentage of breeding seabirds along the California coast. Circle size is directly proportional to numbers of birds.

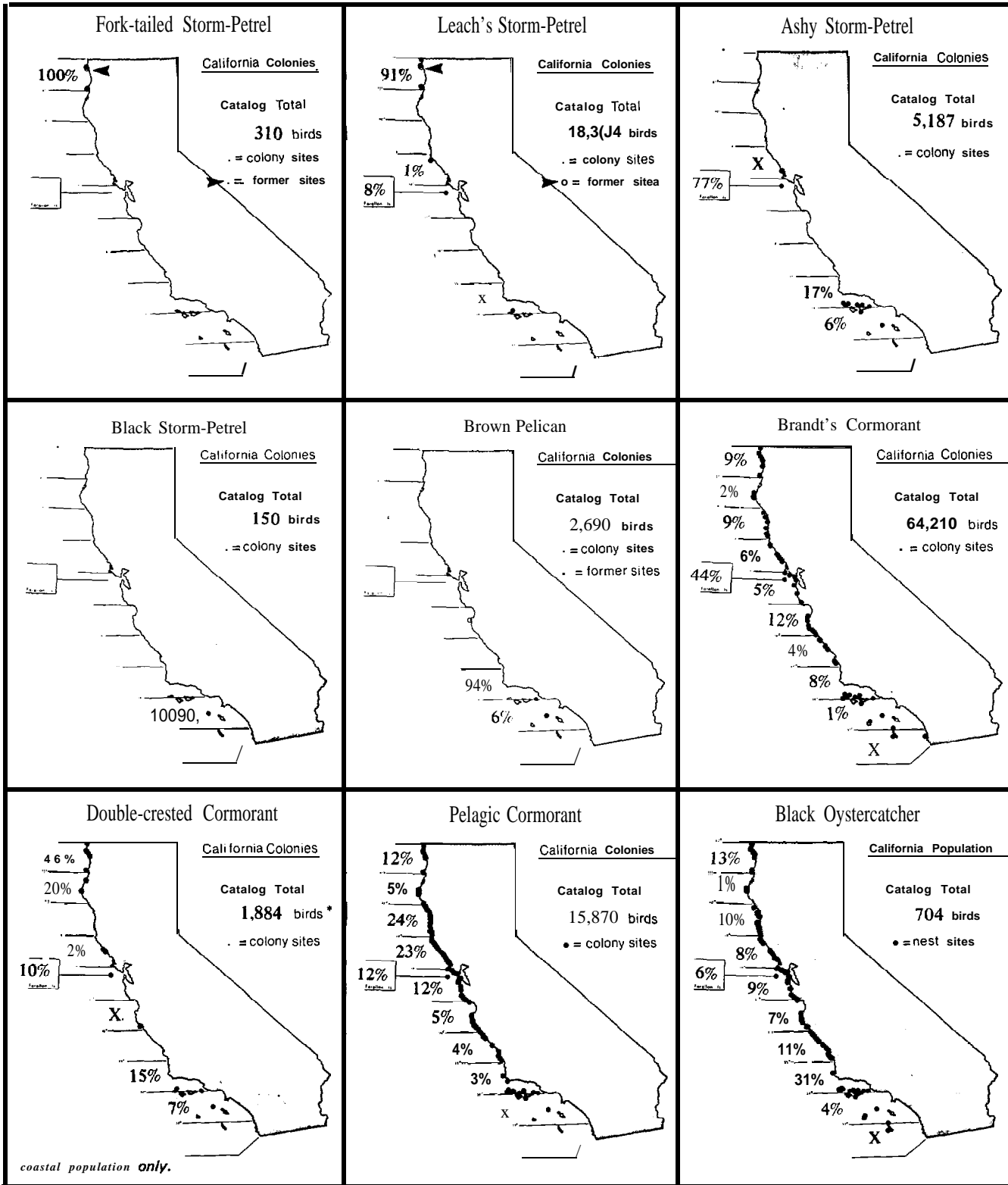
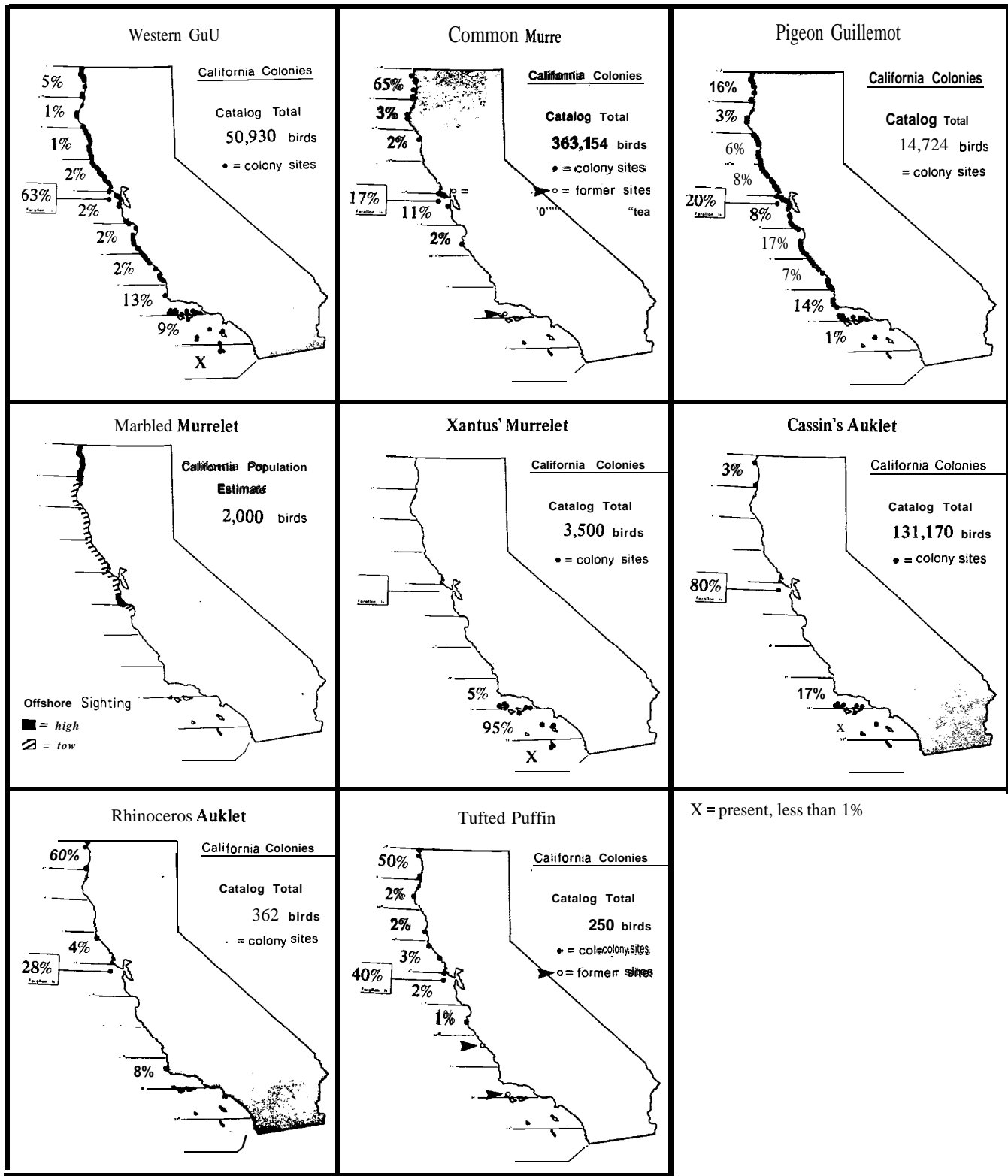


Figure 4. Percentages of the California breeding population of seventeen species of seabirds for



ten sections of the coast and the Farallon Islands.

northern California.

Twelve of the 23 species discussed in this catalog reach either the northern or southern limits of their breeding ranges within California. Elegant Terns breed only as far north as San Diego Bay. Black Storm-Petrels, Brown Pelicans and Xantus' Murrelets breed as far north as the Channel Islands, although they are much more abundant farther south. The breeding range of Ashy Storm-Petrels is restricted to coasts between northern Baja California, Mexico, and Marin County in northern California. Fork-tailed Storm-Petrels, Pelagic Cormorants, Common Murres, Pigeon Guillemots, Marbled Murrelets, Rhinoceros Auklets, and Tufted Puffins are all cool water species and reach the southern limits of their breeding range within California. Pelagic Cormorants and Pigeon Guillemots breed as far south as the northern Channel Islands, as did Common Murres and Tufted Puffins until the early part of this century. Breeding Common Murres and Tufted Puffins can now be found only as far south as Monterey County in central California. Marbled Murrelets probably breed no farther south than the coastal forests in Santa Cruz County, although they have been observed as far south as Point Sal during the breeding season. Probably the southernmost breeding location of the Rhinoceros Auklet is at Point Arguello (501 011 ). The southern range limit of breeding Fork-tailed Storm-Petrels lies in the islands of Trinidad Bay.

Point Conception and the northern Channel Islands are considered the boundary zone between warm and cold waters in California. There is no clean division of water masses in this area, however. The region is, instead, a complex oceanographic zone. The principal oceanographic components are a cold southerly-flowing offshore current (the California Current), a cold northerly-flowing offshoot of the California Current (the Southern California Countercurrent), and a cold southerly-flowing inshore current (the Southern California Coastal Current), all of which are separated in part by bodies of warm water. At this complex junction of water masses, Black Storm-Petrels, Brown Pelicans, Pelagic Cormorants, Pigeon Guillemots, and Xantus' Murrelets reach the limits of their breeding ranges.

Populations of seabirds living at the edges of their breeding ranges are often small. This is best illustrated in California by Fork-tailed Storm-Petrels, Black Storm-Petrels, and Tufted Puffins. These populations may be particularly susceptible to changing environmental conditions and distur-

bance. If local extinction should occur, as it has in the case of the Tufted Puffin in the Channel Islands, re-establishment could take a very long time.

Breeding activity of seabirds in California is related to the hydrographic cycle by its synchrony with a period of upwelling that usually begins in March. During this period, strong northwest winds develop and surface waters along the coast move southerly and offshore. Cold, high-salinity waters upwell along the coast to replace surface waters moving away from the shore. Once these cold, nutrient-rich waters reach the photosynthetic zone, they trigger a phytoplankton bloom which in turn triggers an increase first of zooplankton and later of fish and squid. Bolin and Abbot (1963) have shown that in Monterey Bay, phytoplankton begins increasing in late January and peaks in June. Seabirds of all species in California concentrate their breeding activities from as early as late winter through June and early July, coinciding with the time of peak plankton production.

Productivity of plankton along the coast decreases in late summer and early fall during the oceanic period of the hydrographic cycle (Bolin and Abbot 1963). At this time of year, the strong northwest winds abate. Cold, surface waters sink and are replaced by warm, low-nutrient waters from offshore. Lack of food at this time of year may help explain the cessation of breeding activity and the occurrence of periodic die-offs of young birds, especially Common Murres.

The intensity and duration of the upwelling period may influence the number of birds breeding and their productivity. This may explain the decreases in numbers of Brandt's Cormorants which we observed at many sites in California in 1980 from the numbers we observed in 1979, which was apparently a banner year for seabirds in California.

During the fall and winter, warm, nutrient-depleted waters intrude into the California coastal zone. These coastal waters move slowly northward, pushed by predominantly southerly winds to form a countercurrent (Schwartzlose 1963). If, during the following period of upwelling, northwest winds are not strong and persistent, upwelling will be weak. Water temperatures will be higher, plankton productivity lower, and the numbers of breeding seabirds and their productivity will decline. Fluctuations in these oceanic conditions occur yearly, so variation in the number of breeding seabirds and their productivity is

6/26/80

clouds

Jocino

Pt. Arena

SAN FRANCISCO

*The timing and success of breeding of many California seabirds is related to the upwelling of cold, nutrient-rich water. This enhanced infrared satellite photograph shows cold water masses (lighter in color) upwelling along the coast, particularly near prominent points.*

*Photo compliments of NOAA*

Pt. Buchan

common.

More prolonged changes in climate can also influence breeding populations of seabirds. Cassin's Auklets, now the most abundant seabirds on the Farallon Islands, were rare on those islands in the mid- 1800's (Ainley and Lewis 1974). These auklets are cold water birds found from the Pacific coast of Baja California, Mexico, north to the Gulf of Alaska and the Aleutian Islands. In California, the breeding period of this species coincides with the period of upwelling of cold, nutrient-rich waters when zooplankton is most abundant. According to Hubbs (1948), the ocean climate from 1853 to the 1870's was dominated by a northward intrusion of warm water. Ainley and Lewis (1974) believe this northward intrusion of warm water extended as far north as the San Francisco-Farallones region and may explain the scarcity of Cassin's Auklets on the Farallon Islands during that time. Additional evidence of this was found during two other warm water periods in recent years when Cassin's Auklet productivity on the Farallon Islands was significantly lower than in cold water years (Ainley and Lewis 1974).

Gradual changes in seabird populations may also occur in response to the gradual degradation and formation of nesting habitat. Many islands and rocks along the California coast are eroding away. During this process, the habitat changes and it may become more suitable to some species and less suitable to others. For example, younger islands with deep soil layers are preferred by burrowing species such as storm-petrels, Cassin's Auklets, Rhinoceros Auklets, and Tufted Puffins. As the soil erodes away, islands become less suitable to these species. Cormorants may colonize the barer regions of the island and speed soil and vegetation loss. Once an island is stripped of soil and vegetation it may be suitable only for cormorants, murre, and, to a lesser extent, Western Gulls.

Examples of nesting islands in different stages of their evolution are evident up and down the California coast. Point Sur, at the north end of Big Sur, and Trinidad Head in northern California are obvious ~~islands-in-the-making~~, although they are still attached to the mainland. Pewetole Island, north of Trinidad Head, is a forested island recently cut off from the mainland, still accessible to predators at low tide, and at the present time inhabited only by Black Oystercatchers. This island appears to offer excellent petrel habitat and could become an important colony once the channel between it and the

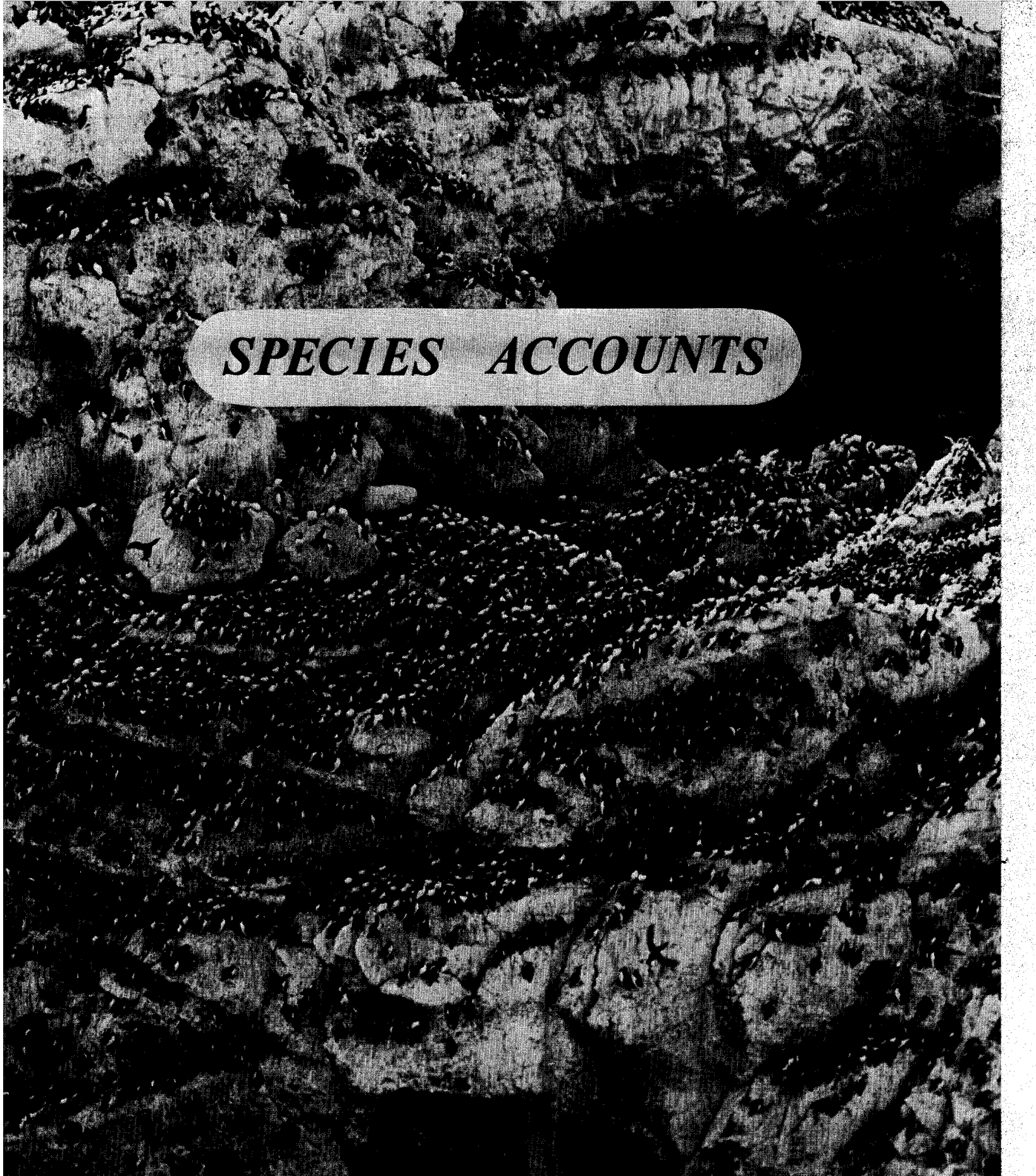
mainland deepens. Little River Rock (325 035 ) is a treeless but heavily vegetated island in northern California, accessible to humans by wading at low tide. Little River Rock is the largest storm-petrel colony in California but it has recently been colonized by Double-crested Cormorants which are degrading the habitat for burrowing species (Harris pers. comm.).

Flatiron Rock (325 023) is an almost bare island in northern California presently inhabited by large numbers of Common Murres, Brandt's Cormorants, Western Gulls, and a very few Pigeon Guillemots and Tufted Puffins. Clay (unpubl. field notes) in 1911 reported Tufted Puffins as numerous there and also found nests of Pigeon Guillemots, Cassin's Auklets, and Leach's Storm-Petrels. We found the burrow nesting habitat to be poor in quality and used by few birds during our visits to the island in 1980.

These examples show a continuum in the evolution of seabird nesting habitat from future islands, to new islands with deep soil, to older islands with less soil, suitable only for surface nesting seabirds, and finally to wave-washed rocks unsuitable for nesting.

Seabirds themselves can be active agents in the evolution of nesting habitat. Pelicans, cormorants and gulls remove plants for nest building and their excrement sometimes kills vegetation. Burrowing species contribute to the destruction of their own nesting habitat by digging burrows and removing soil. Puffin Island, in the Chamisso Island National Wildlife Refuge in Alaska, is a vivid example. There, a burrowing population of Horned Puffins has created long, deep furrows in the sod where burrows have collapsed, accelerating recession of the vegetative cover from the nesting area and hastening the removal of soil through erosion (DeGange and SOWLS unpubl. data).

Seabird numbers and productivity vary naturally from year to year and also over longer periods of time. Man's activities have in the past had largely adverse effects on California's seabirds. Additional conflicts in the future are likely, but still avoidable. We hope that planners will carefully consider the welfare of seabirds when making coastal policy decisions. To this end, the catalog of California seabird colonies will be useful. Seabird populations in this state can flourish indefinitely, as long as they can satisfy their basic needs - food, sufficient habitat, a clean environment, and freedom from disturbance. In this sense, "management" of seabirds should be directed towards meeting these needs.

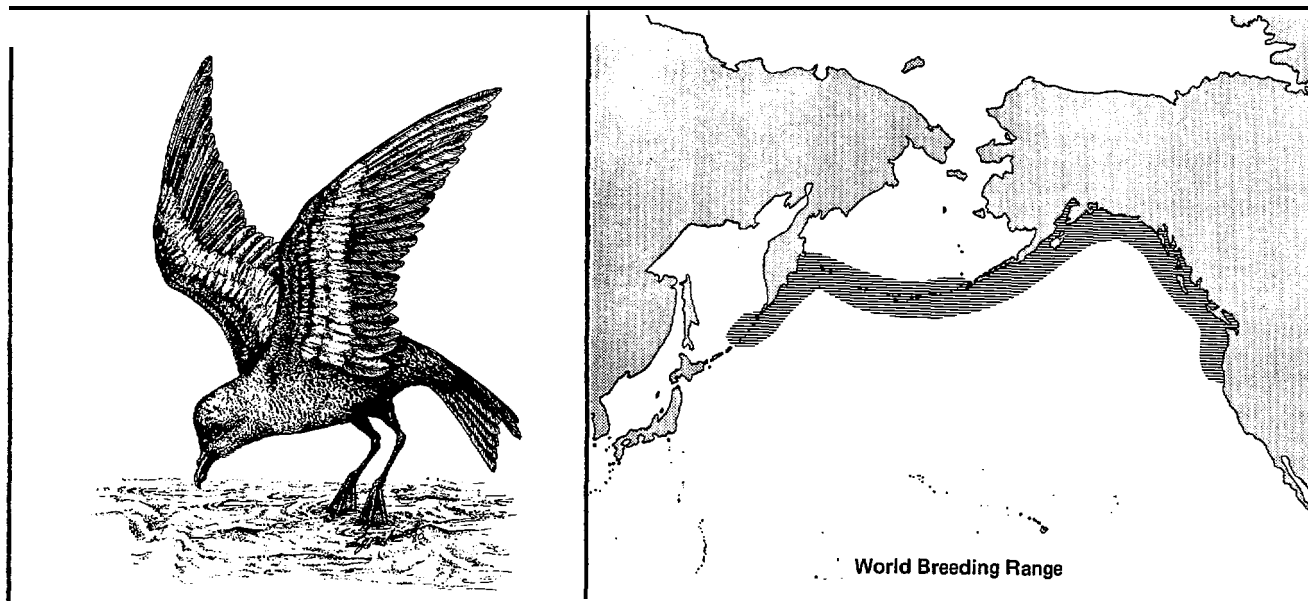


***SPECIES ACCOUNTS***

*Common Murres at Point Reyes (429 001). How many? Our count is at bottom of page 21.*

*Photo by Anthony R. DeGange*

## Fork-tailed Storm-Petrel (*Oceanodroma furcata*)



Fork-tailed Storm-Petrels are small seabirds often found far from land over the open ocean. They usually feed at the ocean's surface on plankton but are known to follow fishing vessels and to feed on scraps and fishing offal. Although the species occurs in California, its center of abundance appears to be the Aleutian Islands and the Gulf of Alaska (Sowls et al. 1978),

Fork-tailed Storm-Petrels breed on offshore rocks and islands safe from mainland predators. Throughout their range they nest in both rocky crevices and, to a lesser extent, burrows in soil,

To avoid diurnal predators, colony activity occurs during the darkest hours of the night. Adults mate, exchange incubation and brooding duties, and feed chicks only during the night, remaining in the burrow or returning to offshore waters by day. For this reason Fork-tailed Storm-Petrels are rarely seen at the breeding colonies during the day. Their nocturnal habits make detection of colonies difficult and estimation of populations imprecise.

### CALIFORNIA COLONIES

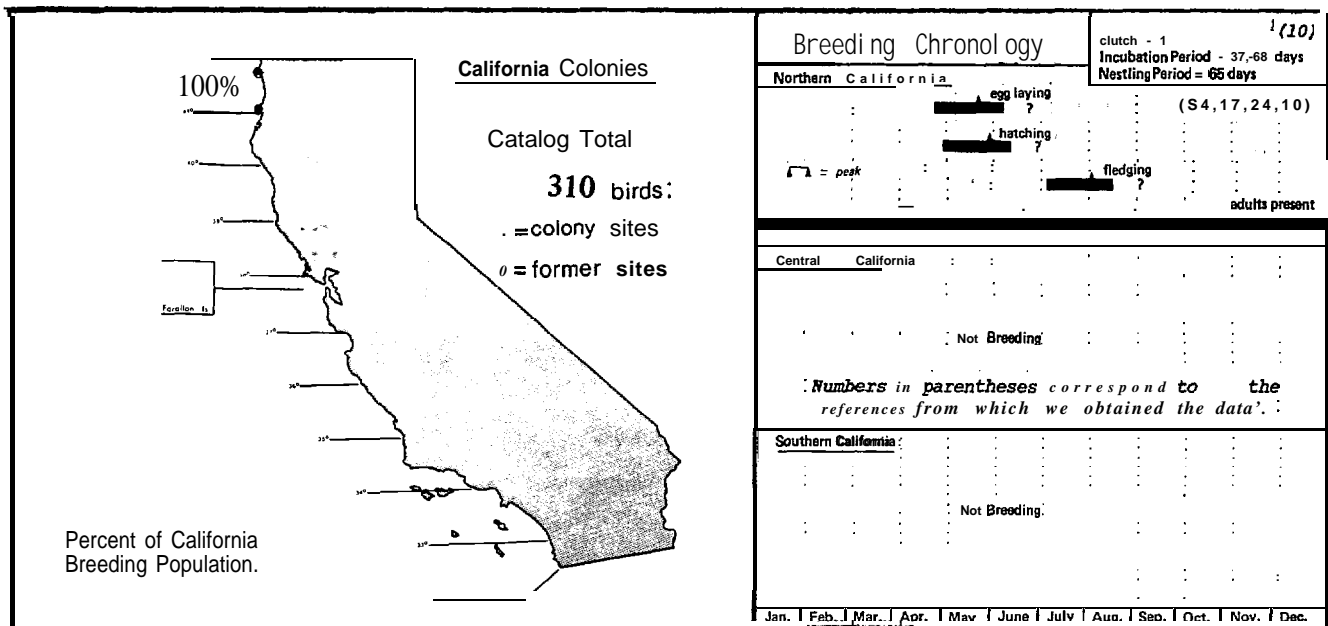
Fork-tailed Storm-Petrels have been identified at six sites in California, all north of Eureka (Harris 1974, this study). The largest of these, Little River Rock (325 035), is inhabited by approximately 200 birds. The population at Castle Rock (325 006) is estimated at 100 birds (Osborne 1972), and the other four colonies

together probably contain fewer than 100 birds (Harris 1974, present study). All major colonies of Fork-tailed Storm-Petrels in California have probably been found, but additional small colonies may still exist.

### HISTORICAL STATUS AND VULNERABILITY

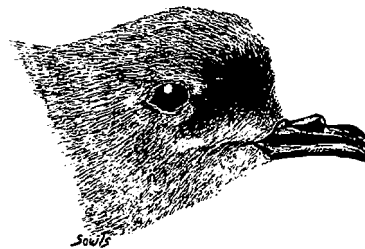
Published data indicate that since the 1930's, Fork-tailed Storm-Petrels have disappeared from three California sites and been found at an additional four sites. A major colony of storm-petrels was extirpated from Whaler Island (325 045), Del Norte County, after construction of a breakwater to the island in the 1930's (Osborne 1972). Clay and Dawson found Fork-tailed Storm-Petrels nesting on Blank Rock (325 023) in 1916 (Dawson 1923) but this species no longer breeds there (Osborne 1972). Soil erosion probably led to their disappearance from these two-islands. Fork-tailed Storm-Petrels have recently been found on Little River Rock (325 035), Prisoner Rock (325 027), and Tolowa Rocks (325 007) (Osborne 1972, Harris 1974, this study). These recent discoveries probably reflect a more thorough search for nests rather than an increase in population and colonization of new sites.

Fork-tailed Storm-Petrels readily desert their nests if disturbed by humans during incubation or while parents are brooding recently hatched chicks. Evidence from studies of an Alaskan



population shows that extremely unfavorable weather conditions or insufficient food supplies will cause parents to temporarily abandon eggs and chicks (Boersma et al. 1980). Such temporary abandonment of nests reduces viability of eggs, causes death among chicks, and lengthens the breeding season (Boersma and Wheelwright 1979, Boersma et al. 1980).

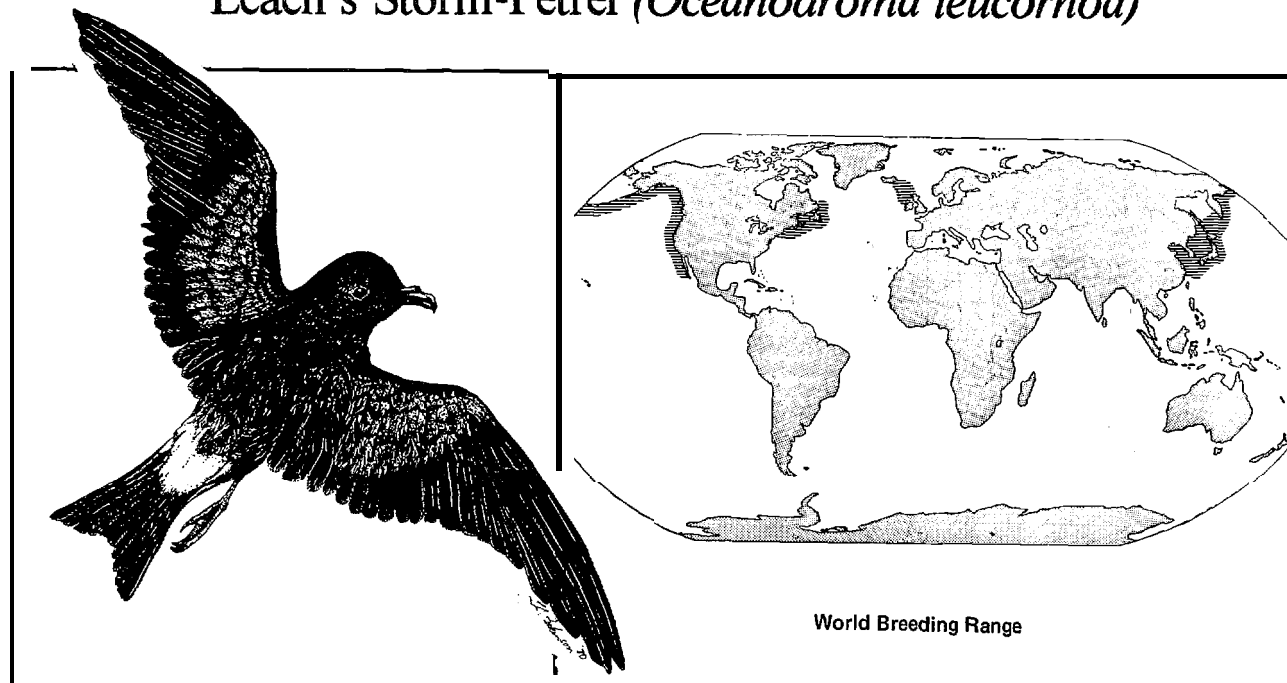
Fork-tailed Storm-Petrels are most vulnerable to oil pollution during the summer months when their movements are restricted to nearshore areas by breeding activities (Lensink et al. 1978, Wiens et al, 1978.) While these petrels generally feed in waters over the continental shelf (Lensink et al. 1978), they are usually uncommon in the coastal zone of California and become more abundant only during years of unreasonably cold water (Ainley 1976). Considering this species' small population size, restricted number of breeding sites, and low reproductive potential, any major disturbances to their breeding colonies could be disastrous to the California populations.



Fork-tailed Storm-Petrels, like all procellariiformes, have a tube-nose.

Our count for photograph, page 19 : Common Murre = 4,000; Brandt's Cormorant = 1

## Leach's Storm-Petrel (*Oceanodroma leucorhoa*)



Leach's Storm-Petrels are the most abundant of the storm-petrels breeding in California and are probably the most pelagic of the four species. Although breeding colonies are confined to the northern hemisphere, wintering birds range south to tropical waters in both the Pacific and Atlantic Oceans (Palmer 1962).

Like all storm-petrels, Leach's Storm-Petrels are nocturnal on the breeding colonies, an adaptation which reduces their susceptibility to diurnal predators such as gulls. Nests are **usually** located in burrows or, less frequently, in rock crevices (Palmer 1962). Leach's Storm-Petrels have a welldeveloped olfactory system (Bang 1966, Stager 1967) and Grubb (1973, 1974) has suggested that these birds, which often nest in crowded colonies in dense spruce forests, may locate their burrows by odor.

Like most seabirds, Leach's Storm-Petrels exhibit relatively long **lifespans** and low mortality rates for their size. Individuals that survive the hazardous first year of life can live up to 24 years and possibly longer (Graham 1980). Additional references on this well-studied species include Ainley et al. (1974, 1976) Ainslie and Atkinson (1937), Gross (1935), Harris (1974), Huntington (1963), Morse and Buchheister (1979), Threlfall (1974), and Wilbur (1969).

### CALIFORNIA COLONIES

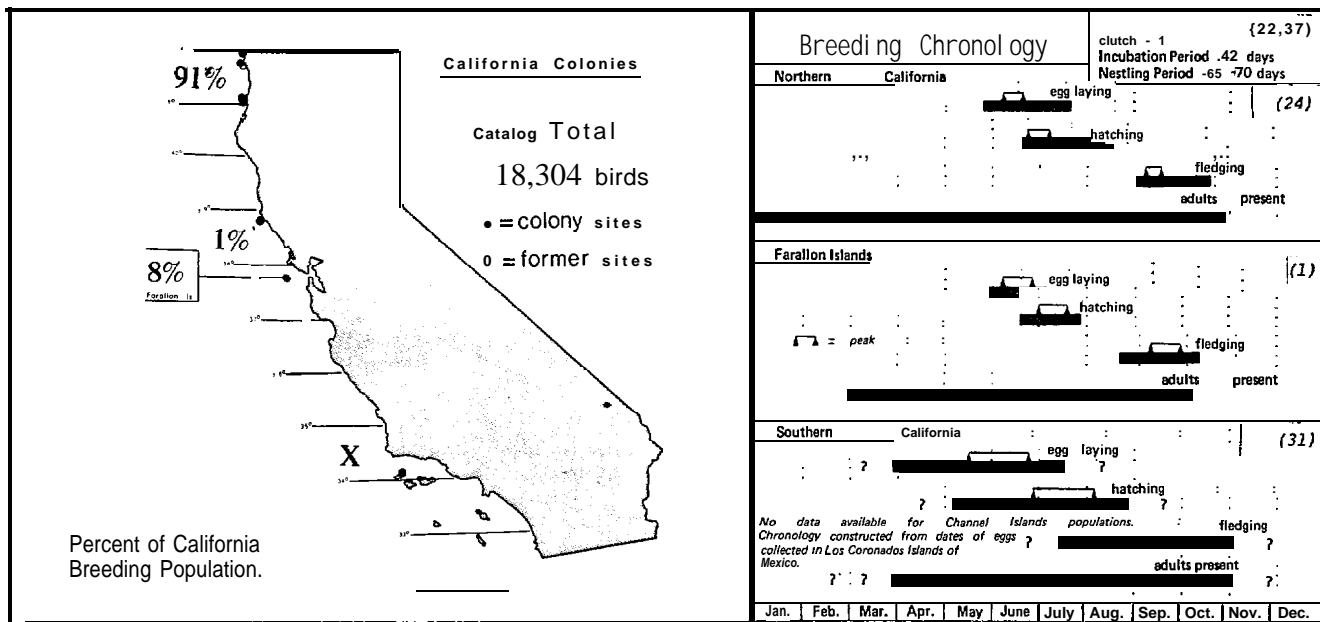
Leach's Storm-Petrels are known or suspected to breed at 13 sites along the California coastline.

While most sites are located in the northern part of the state, recent evidence suggests that small numbers of Leach's Storm-Petrels may also nest in the Channel Islands (Hunt et al. 1979).

The largest colony in California is located at Little River Rock (325 035), which has 10,000 birds (Harris 1974). Other major colonies are Castle Rock (325 006) with 5,000 birds, the Farallon Islands (429 0 12) with 1,400 birds, Trinidad Bay Rocks (325 054) with 1,640 birds, and Prisoner Rock (325 027) with 160 birds,

Colonies are suspected to exist at Fish Rocks (404 003), Prince Island (325 003), and Tolowa Rocks (325 007), although nests of this species have not been found at these locations. On both Fish Rocks and Prince Island suitable nesting habitat is available and Leach's Storm-Petrels with clearly visible incubation patches have been mist-netted and banded. We are confident that Leach's Storm-Petrels breed at Fish Rocks because of our recapture of banded birds there and the island's isolation from other known Leach's Storm-Petrel colonies. At Prince Island no recaptures of banded birds were made and it is possible that the birds we caught were from nearby colonies at Castle Rock (325 006) and Goat Island, Oregon. At Tolowa Rocks, the less common Fork-tailed Storm-Petrels were found nesting in burrows. Many unexamined burrows were present and it seems likely that Leach's Storm-Petrels nest there.

All major colonies of Leach's Storm-Petrels in California have probably been identified, but



additional small colonies may exist on almost any island with suitable habitat.

#### HISTORICAL STATUS AND VULNERABILITY

Limited published data suggest that Leach's Storm-Petrels have declined in number in California since the turn of the century. Breeding colonies were once found on Whaler Island (325 045), Blank Rock (325 024), Flatiron Rock (325 023), and Green Rock (325 020). They have been extirpated from the first three islands and only one dead petrel was found on Green Rock during a survey in 1970 (Osborne, 1972). On Whaler Island, a colony of 20,000 storm-petrels was destroyed after construction of a breakwater to the island in the late 1930's and the breakwater's subsequent strengthening in the early 1950's. The island was quarried for rock and the introduction of rats hastened the colony's demise (Osborne 1972). Storm-petrels on Blank, Flatiron, and Green Rocks may have been reduced in number or eliminated by over-collecting and accelerated soil erosion caused by early egg collectors and by erosion caused by nesting cormorants and murres.

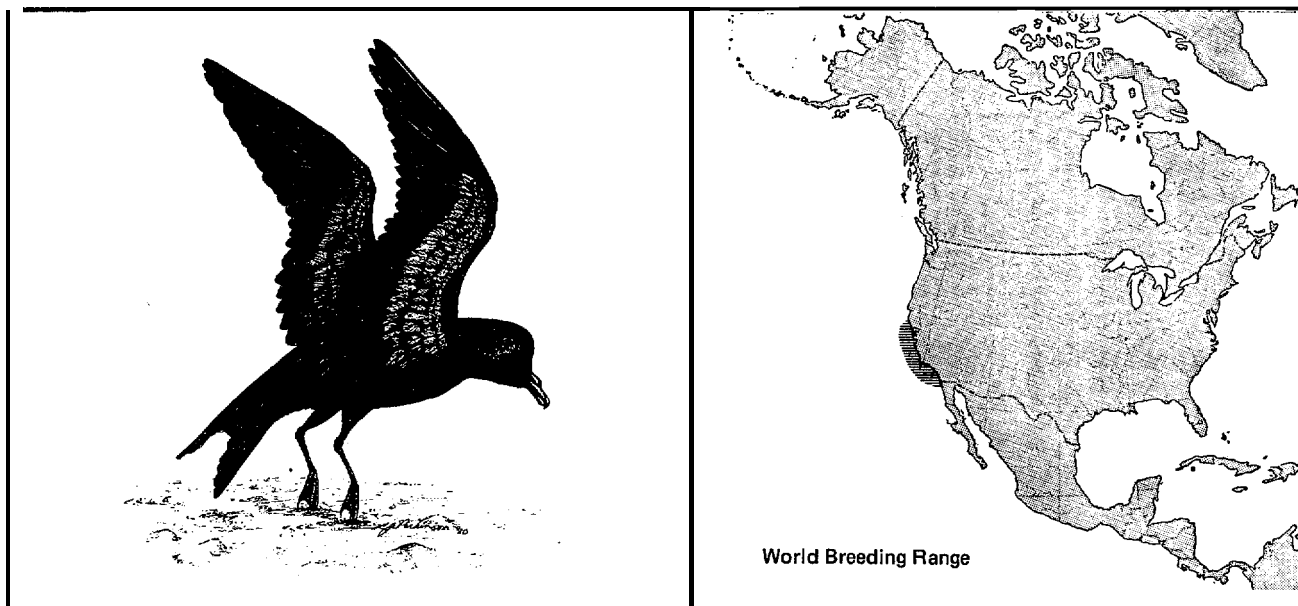
Harris (pers. comm.) believes that the recently established breeding population of Double-crested Cormorants on Little River Rock (325 035) is preempting and destroying storm-petrel nesting habitat. This Double-crested Cormorant colony has increased substantially in recent years, from two pairs in 1974 to about 50 pairs in 1980

(Yocom and Harris 1975, this study). Nearby Trinidad Bay Rocks (325 054) may be receiving the petrels displaced from Little River Rock. For example, Button Rock (325 054) had no nesting storm-petrels in 1970 (Osborne 1972), but in 1980 approximately 1,000 Leach's Storm-Petrels were actively breeding there. Nevertheless, the loss of nesting habitat through soil erosion and the displacement of birds by cormorants may be two of the most significant threats to storm-petrels in California.

Predators such as River Otters (*Lutra canadensis*) and Mink (*Mustela vison*) can also be detrimental to storm-petrel colonies. Osborne (1972) found about 90 dead Leach's Storm Petrels on Prisoner Rock during surveys in 1969, 1970, and 1972 and attributed these losses to mink. In 1980 we observed 45 Leach's Storm-Petrel carcasses on Prisoner Rock and suspect a river otter was the predator. Despite this loss, our estimate of Leach's Storm-Petrels for this colony remains similar to Osborne's. The population of Leach's Storm-Petrels on the Farallon Islands appears relatively stable in size (Ainley and Lewis 1974).

Leach's Storm-Petrels are vulnerable to contamination by oil. The period of greatest susceptibility is from February to October when they are most abundant off coastal California. During the winter they are uncommon within 30 kilometers of shore (Ainley 1976) and are unlikely to be affected by coastal oil spills.

## Ashy Storm-Petrel (*Oceanodroma homochroa*)



Ashy Storm-Petrels, like other storm-petrels, are diminutive birds well suited to oceanic life. Their breeding range overlaps with that of their close relative, the Leach's Storm-Petrel, but they occupy different feeding niches. The Ashy Storm-Petrel forages in the waters of the California Current, just off the continental shelf, while the Leach's Storm-Petrel feeds over a vast pelagic range (Ainley et al. 1974).

Ashy Storm-Petrels and other members of the family Hydrobatidae feed on small invertebrates and fish caught at the ocean surface. All hydrobatid young are fed a peculiar smelling oil which the adults regurgitate. This oil, or "petroleum," as labelled by Grinnell (1897), provides a concentrated energy source for growth of the young and allows adults to carry more food than if they return with whole prey.

Ashy Storm-Petrels usually nest in natural rock crevices, although the Farallon Island population uses rock walls and building foundations as well (Ainley et al. 1974). Adults are nocturnal at the colonies and may only return with food every few nights. Foraging trips lasting several days probably allow storm-petrels to feed over a larger range to optimize their effort.

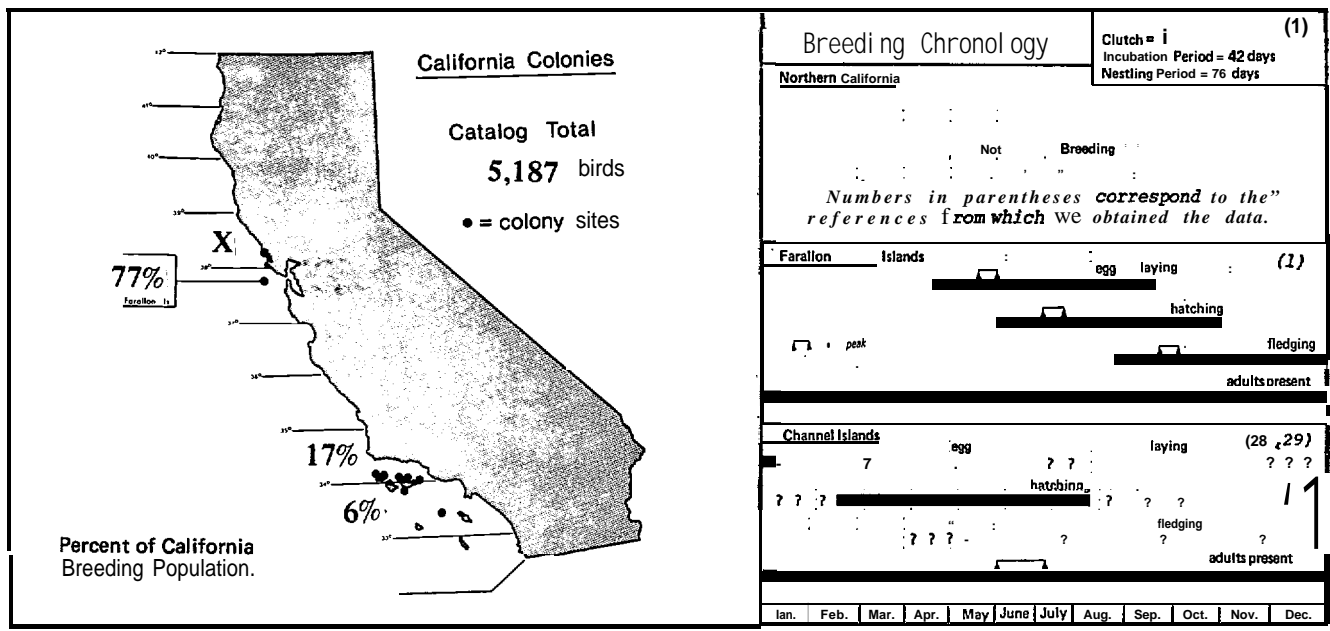
The nocturnal habits of Ashy Storm-Petrels may serve to reduce predation by normally diurnal Western Gulls. On the Farallon Islands, Ainley et al. (1974) found that only one percent of the storm-petrels were taken by Western Gulls each year. In addition, Ashy Storm-Petrel young

fledge late in the year after many of the gulls have left the Farallon Islands and by this strategy may avoid a potentially serious post-fledging mortality.

### CALIFORNIA COLONIES

With the exception of one small colony in the Los Coronados Islands of Mexico, estimated to contain about six birds (Jehl pers. comm.), the entire known world's population of Ashy Storm-Petrels nests on islands off the California coast. More than 75 percent (4,000 birds) of the recorded population nests on the Farallon Islands (429 O 12). The remainder of the population, except for a small colony at Bird Rock (404 O 1 O), nests in the Channel Islands.

Nine colony sites have been found in the Channel Islands. Major colonies are located on Prince Island (50 1 004) with 600 birds, Castle Rock (50 1 005) with 200 birds, and Santa Barbara Island (524 009) with 250 birds. Additional small colonies are located on San Miguel Island (50 1 006), and small islets offshore of Santa Barbara and Santa Cruz Islands. Although additional small colonies of Ashy Storm-Petrels may exist in the Channel Islands and elsewhere along the California coast, the largest colonies have probably been identified. All identified colonies together contain approximately 5,200 birds. It seems unlikely that the population exceeds 10,000 birds, allowing for possible underestimation of known colonies and the existence



of non-breeding birds and some small undiscovered colonies.

Preserve. The remainder of the Channel Islands have recently been designated a National Park.

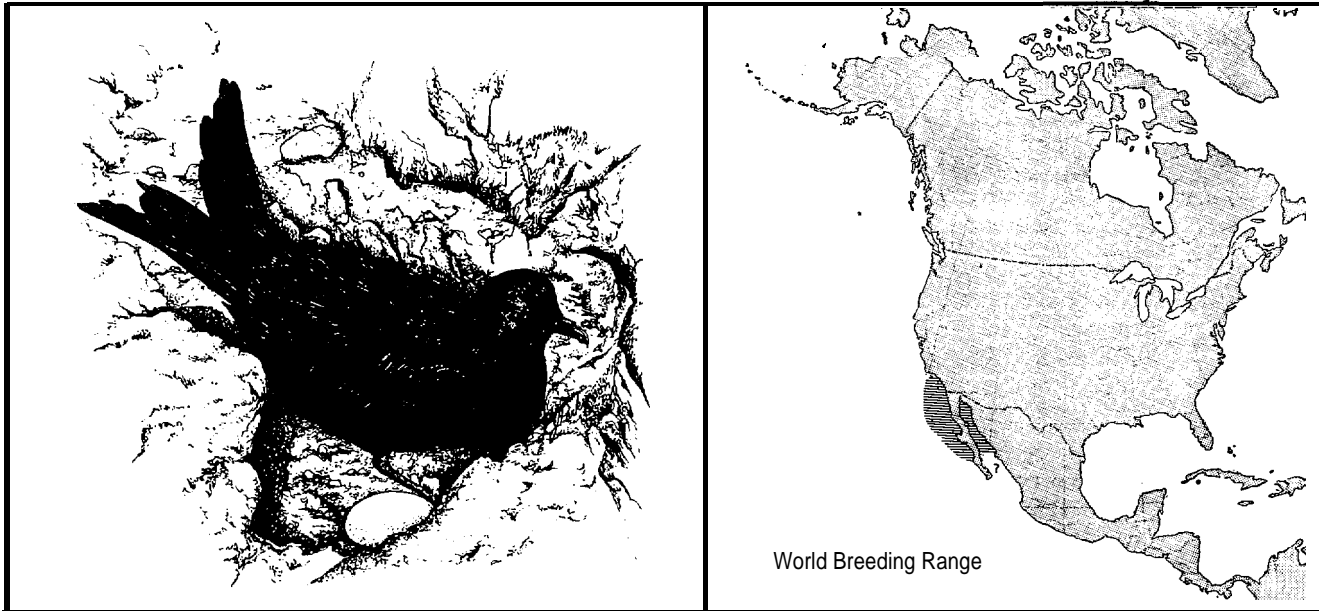
**HISTORICAL STATUS AND VULNERABILITY**

Populations of Ashy Storm-Petrels along the California coast have probably changed little in size over the years, although little information on their historical status exists. **Ainley** and **Lewis** (1974) discuss the history of Ashy Storm-Petrels on the **Farallon** Islands where observations of storm-petrels were made as early as 1862. Relevant historical material for the Channel Islands is summarized by **Hunt et al.** (1979).

Ashy Storm-Petrel colonies can be affected by disturbance by humans and terrestrial predators. Adults are vulnerable to surface oil slicks, but fortunately they disperse widely along the coast, a habit which reduces the chances that a large percentage of the population will contact a particular pollutant. However, during the fall large numbers of Ashy Storm-Petrels are known to concentrate in Monterey Bay (**Ainley** 1976).

The small world population of Ashy Storm-Petrels has restricted breeding and wintering ranges. Each known area of concentration, both during breeding and non-breeding seasons, is valuable to the species. Fortunately, the most important nesting sites in California are protected, the **Farallon** Islands as a National Wildlife Refuge and Santa Cruz Island as a Nature Conservancy

## Black Storm-Petrel (*Oceanodroma melania*)



The Black Storm-Petrel merits the distinction of being the rarest breeding seabird on the **California** coast. They are known to nest in California only at two sites in the Channel Islands which together contain approximately 150 birds (Hunt et al. 1979). Although Black Storm-Petrels were not discovered nesting in California until 1976 (Pitman and Speich 1976), they have been known to breed in the nearby Los Coronados Islands since 1898 (Anthony 1898).

Fall dispersal from the breeding colonies is generally southward but wintering birds have been observed in offshore waters from San Francisco south to Ecuador. They seem to prefer relatively warm ocean waters. Black Storm-Petrels feed primarily on small fish and invertebrates taken near the ocean surface and on garbage discarded by passing ships (Anthony 1898, Willet 1933, Murphy 1936).

### CALIFORNIA COLONIES

Black Storm-Petrels nest in California only on Santa Barbara Island (524 008) and nearby **Sutil** Island (524 009) in the Channel Islands (Hunt et al. 1979). The population estimate of 150 breeding birds was deduced primarily by mist net banding and recapture during several nights in 1977 (Hunt et al. 1979). Since Black Storm-Petrels nest in low densities in scattered natural crevices and burrows of other species, **censusing** is extremely difficult (Bent 1922, Palmer 1962) and little is known of this bird's breeding biology.

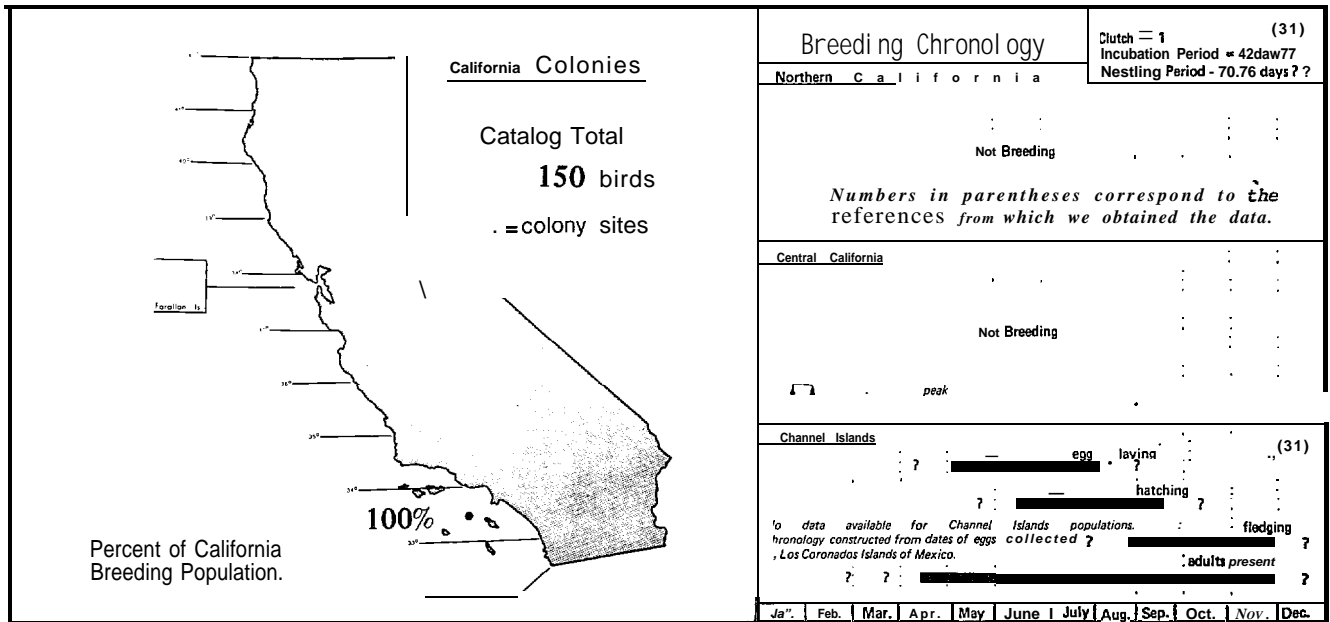
Additional nesting locations may exist in southern California.

Breeding Black Storm-Petrels are present 8 kilometers south of the U.S.-Mexico border in Los Coronados Islands. This population is estimated at approximately 200 birds and appears stable (Jehl pers. comm.).

### HISTORICAL STATUS AND VULNERABILITY

The size of historical breeding populations of Black Storm-Petrels in California is unknown, but it seems unlikely that this species has ever been common. Small numbers of breeding petrels nesting on Santa Barbara Island could easily have been overlooked by previous investigators (Hunt et al. 1979),

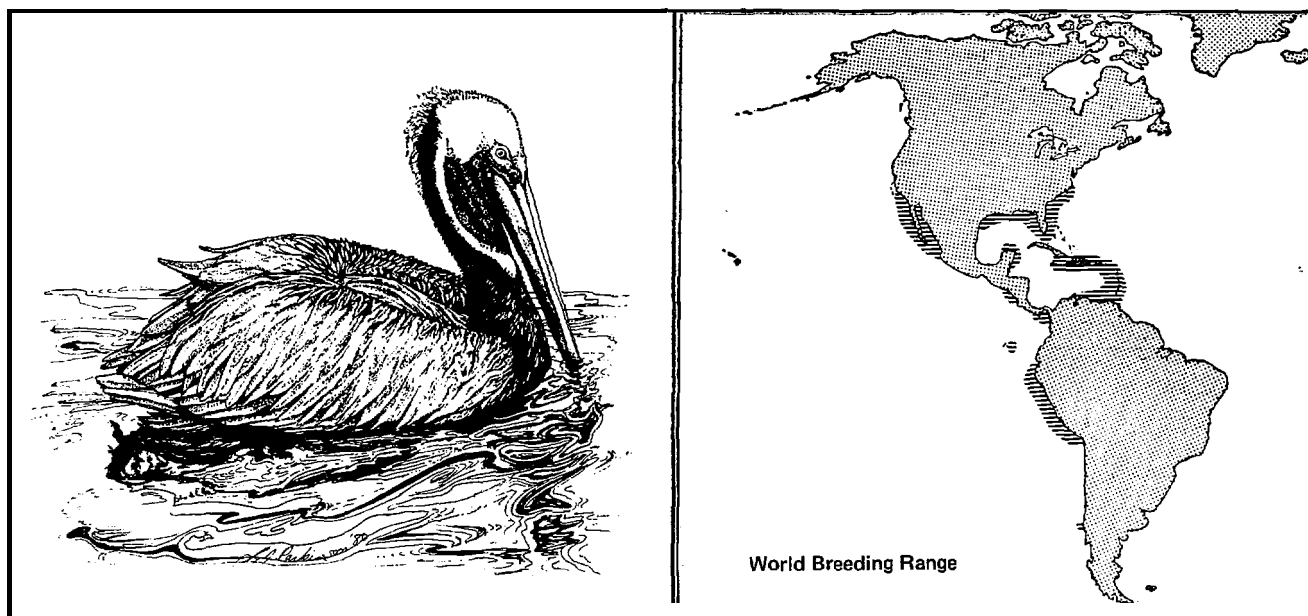
Small peripheral breeding populations such as the Channel Island colonies are extremely vulnerable to extirpation (MacArthur and Wilson 1967). The Santa Barbara and **Sutil** Island colonies could be destroyed by disturbance either of the breeding grounds or of offshore wintering areas, and care should be taken to protect these sites. Population declines at the more populous colonies in Mexico may have a negative effect on the California colonies by reducing potential breeding recruitment. Fortunately Santa Barbara and **Sutil** Islands and the nearest Mexican breeding "islands are protected as sanctuaries by their respective governments.



Black Storm-Petrels are considerably larger than Ashy Storm-Petrels.

Photo by Robert L. Pitman

## Brown Pelican (*Pelecanus occidentalis*)



The **Brown Pelican** is one of the most conspicuous and easily identified members of the marine avifauna of California. It is included on the endangered species list of the U.S. Fish and Wildlife Service. In California, Brown Pelicans are slowly increasing in number, but their continued recovery is uncertain.

The large number of Brown Pelicans in California during summer, fall, and early winter belies the actually small breeding population. Many birds migrate northward from Mexico after breeding in spring. These birds feed and molt in California and southern Oregon before returning to Mexico in early winter.

Brown Pelicans in California and Baja California, Mexico, build large stick nests on the ground (Gress 1970). The lusterless, white eggs are incubated by adult pelicans using their webbed feet; a habit characteristic of many birds in the order Pelecaniformes (pelicans, boobies, cormorants, frigatebirds, and tropicbirds). Brown Pelicans feed by making spectacular plunges into the water. Throughout their range, fish are the chief food (Palmer 1962). The Northern Anchovy (Anderson et al. 1975, 1980) makes up nearly the entire diet of breeding birds in California.

Reproductive success of Brown Pelicans can vary markedly from year to year. Changes in oceanographic conditions and in the distribution and abundance of forage fish are two interrelated factors that may account for this fluctuation.

### CALIFORNIA COLONIES

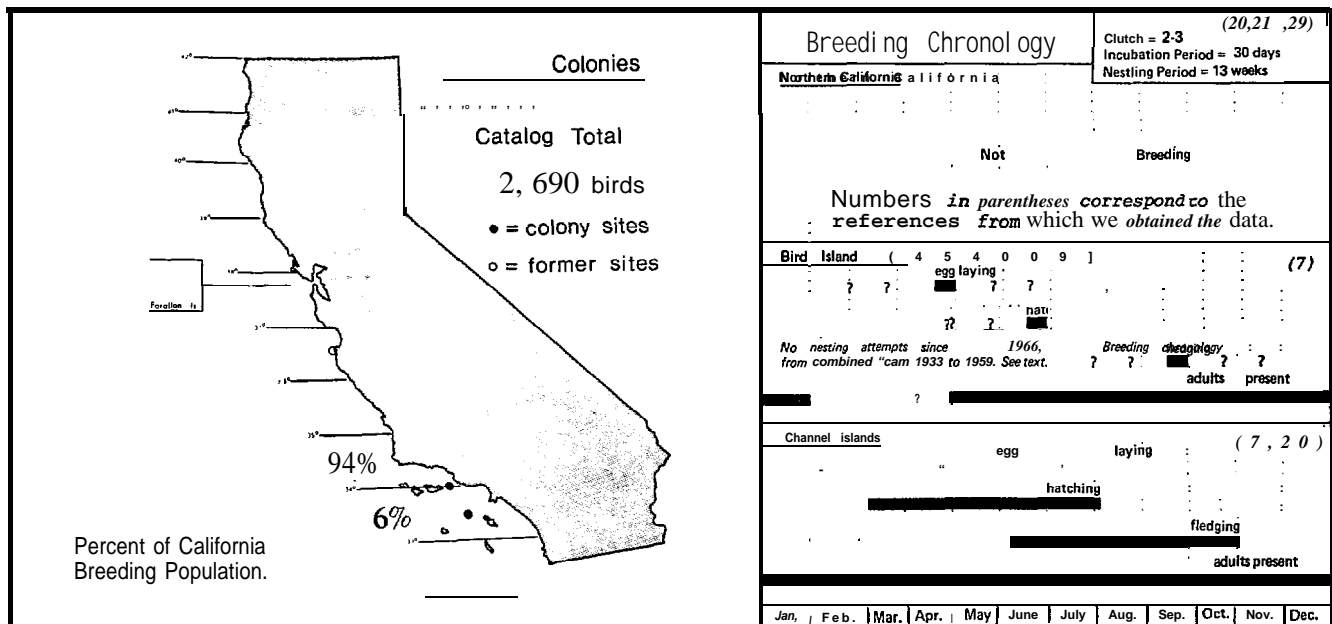
Brown Pelicans breed regularly in California only on West **Anacapa** Island (502 007). In

recent years they have also nested intermittently on **Santa Barbara Island** (524 008) and **Scorpion Rock** (502 010).

### HISTORICAL STATUS AND VULNERABILITY

The California breeding range of the Brown Pelican formerly extended as far north as **Bird Island** (454 009) near Monterey. Pelicans have bred only sporadically on this island since the colony was discovered in 1927, and the last successful nesting attempt was in 1959 (Williams 1927, Baldrige 1973).

Historically, West **Anacapa** Island has been the island most consistently used for nesting by Brown Pelicans in California. Before 1929, birds nested primarily on East **Anacapa** Island but establishment of a lighthouse there likely caused the breeding population to shift to West **Anacapa** Island. Population estimates for Brown Pelicans on **Anacapa** Island have fluctuated considerably over the years and are summarized by Anderson and Anderson (1976) and Hunt et al. (1979). Historical records also exist of Brown Pelicans nesting on **Prince Island** (501 004), **Santa Cruz Island**, and **Santa Barbara Island** (524 008). Brown Pelicans were last recorded nesting on **Prince Island** in 1939 (Sumner 1939). The only record of pelicans nesting on **Santa Cruz Island** was made by Wright in 1909 (Willett 1912), although up to 160 birds have nested on nearby **Scorpion Rock** (502 010) in 1972, 1974, and 1975 (Anderson and Anderson 1976). Brown Pelicans were first observed breeding on **Santa Barbara Island** in 1911 (Willett 1912) and have nested intermittently there until 1980 (Gress



pers. comm.).

In the late 1960's and early 1970's, the reproductive success of Brown Pelicans declined considerably in California and northern Mexico. From 1969 to 1971 only 12 chicks fledged out of 2,368 nesting attempts (Gress et al. 1973, Anderson and Anderson 1976). The breeding failures of Brown Pelicans during this period were related to the high levels of DDE, the principal metabolite of DDT, in the marine environment (Schreiber and Delong 1969, Schreiber and Riseborough 1972, Riseborough et al. 1971, Jehl 1973, Anderson and Anderson 1976).

Brown Pelicans in California feed at the top of a food chain that also includes plankton and anchovies. At each higher level of this food chain, concentrations of pesticides were magnified until, in Brown Pelicans, metabolism and deposition of calcium in eggs were impaired and egg shell thicknesses were reduced as much as 50 percent from normal (Anderson et al. 1975). Breaking of thin-shelled eggs under the weight of incubating adults reduced hatching success to almost zero (Gress et al. 1973). Dumping of DDT into the sewage system of the Los Angeles area ceased in 1970 and since 1972 the reproductive success of the Brown Pelican in southern California and northern Mexico has improved. Ten years after the DDT dumping ban, DDE levels have stabilized at lower levels than in the past, but the effects of this chemical on the Brown Pelican continue.

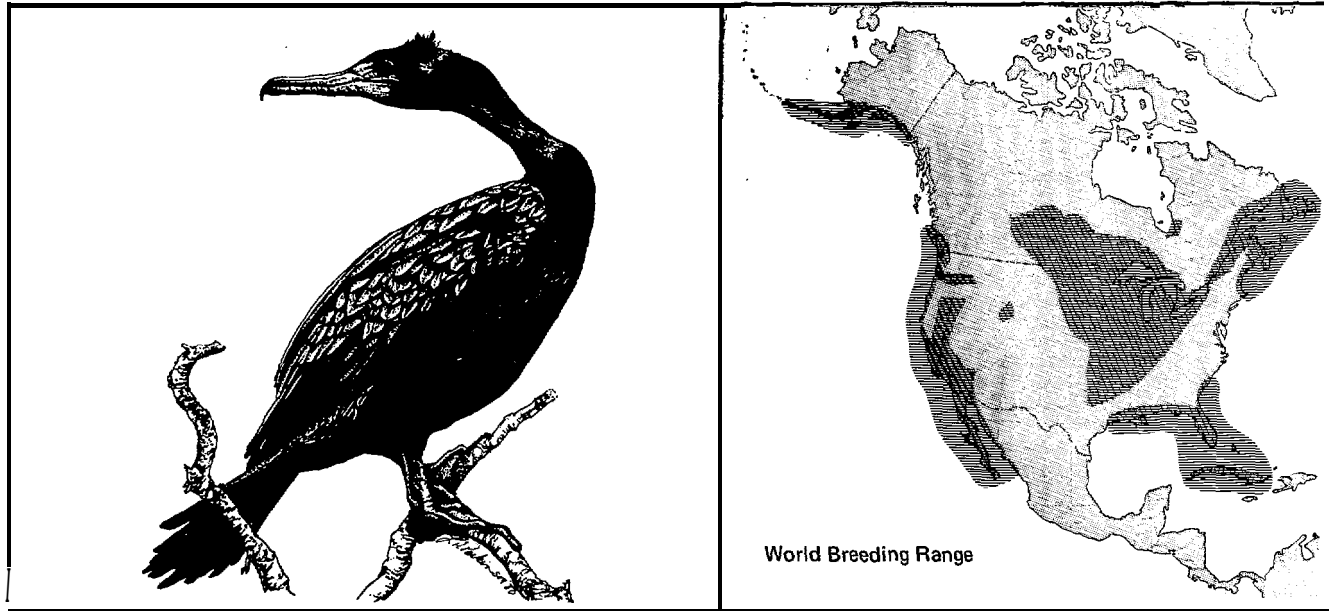
Brown Pelicans reach the northern limit of their breeding range in southern California. Historically, breeding populations of Brown

Pelicans in southern California have fluctuated in response to environmental conditions. Current thought suggests that these populations increase during periods of ocean warming (Baldrige 1973, Anderson and Anderson 1976). The recent history of this natural population flux has been complicated since the 1950's by a consistent decline in the numbers of Brown Pelicans because of environmental contamination by chlorinated hydrocarbons (Anderson and Anderson 1976).

Although the threat of environmental contamination by pesticides has diminished, the future of the Brown Pelican in California is not necessarily secure. Brown Pelicans can be seriously affected by oil spills since they plunge dive to feed and often sit on the water. They are limited to nearshore areas where oil spills are likely to be most common and severe. Brown Pelicans in southern California feed almost exclusively on Northern Anchovies, a fish also in great demand by man. A sustained high commercial catch could deplete the fish stocks necessary for successful pelican nesting. Any changes in anchovy management must take into account the requirements of a potentially expanding population of Brown Pelicans.

Breeding Brown Pelicans are highly susceptible to disturbance. Reproductive success is lower in colonies that have been disturbed by man than in those undisturbed (Anderson and Keith 1980). Increases in the number of tourists at several colonies in Mexico could cause a serious decrease in the reproductive success of this species and might have important effects on southern California populations.

## Double-crested Cormorant (*Phalacrocorax auritus*)



Double-crested Cormorants are the most widespread of **all** cormorants in North America. They are also the only cormorant in the United States and Canada regularly found in freshwater habitats. In California, Double-crested Cormorants are found breeding along the coast and inland near large rivers and lakes. Despite their widespread breeding distribution, they are probably the least abundant of the cormorants in California.

Double-crested Cormorants nest in a variety of habitats. Along the coast they nest on offshore rocks and islands, on abandoned wharf timbers, and on power poles in coastal bays. Cormorants living inland nest in trees or snags, around lakes, or on islands within the lakes. They construct nests of sticks or matted vegetation gathered near the colony.

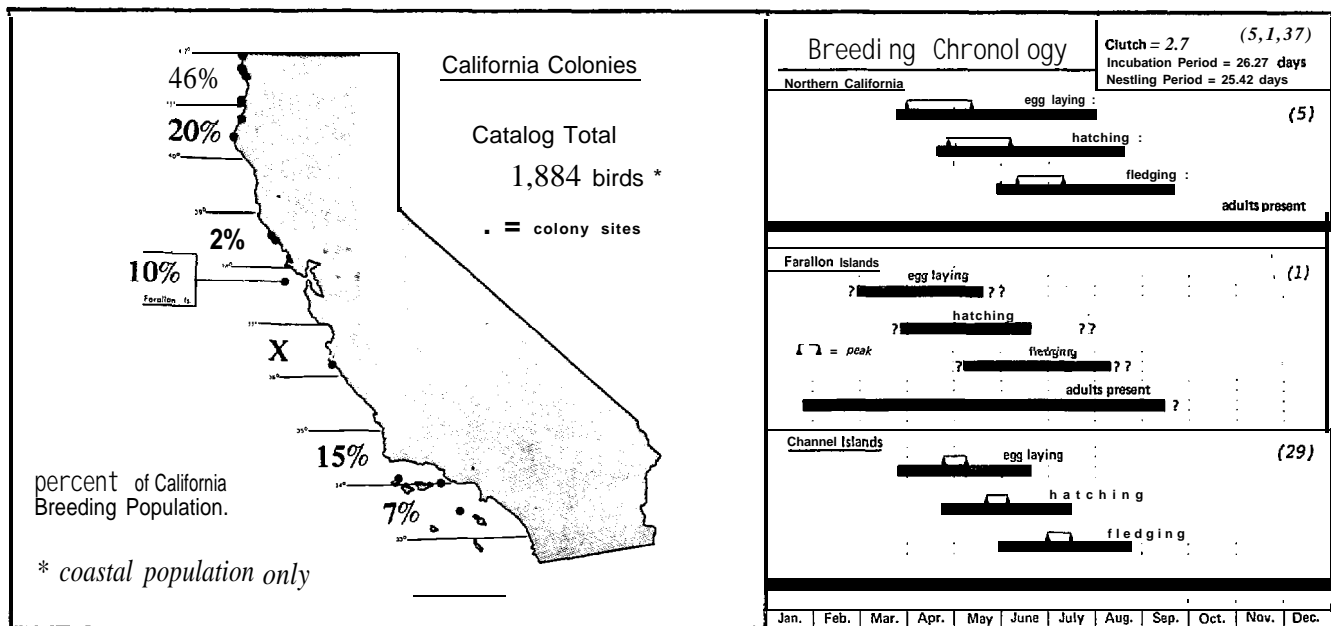
Double-crested Cormorants are sleek and strong swimmers that prey on shallow-water fish (Robertson 1974). After their fishing sessions, they are frequently seen extending their wings to dry. Cormorant feathers become completely saturated during underwater swimming and require periodic drying (Rijke 1968). Many Double-crested Cormorants which nest on coastal rocks and islands feed in nearby bays and rivers of the mainland. Even birds nesting as far offshore as the **Farallon** Islands (429 O 12) may come to the coast to feed if local food supplies are poor (Ainley pers. comm.).

### CALIFORNIA COLONIES

Double-crested Cormorant colonies are located in the Channel Islands and **Farallon** Islands and on nearshore rocks and islands north of San Francisco. There are 17 coastal sites listed in this catalog. The largest of these sites is Prince Island (325 003) with 450 birds. Other large colonies are Old Arcata Wharf (325 038) with 340 birds and the **Farallon** Islands (429 O 12) with 180 birds. The remaining 14 coastal sites have 150 or fewer birds. The total breeding population on the coast of California now contains about 1,900 birds. The largest inland population in California breeds near Tule Lake, **Siskiyou** County (Kelly pers.comm.).

### HISTORICAL STATUS AND VULNERABILITY

Populations of **Double-crested** Cormorants on the Channel Islands may have declined in size significantly since the turn of the century, but numbers may now be increasing (Hunt et al. 1979). The reasons for the prolonged decline are unknown. However, in the late 1960's and early 1970's pesticide contamination caused thinning of eggshells of **Double-crested** Cormorants and **Brown Pelicans** in the Channel Islands, considerably lowering the reproductive success of these two species (Gress et al. 1973). Eggshell thinning in **Double-crested** Cormorants has also



been documented at the Old Arcata Wharf (325 038) colony in northern California (Ayers 1975).

On the **Farallon** Islands, Double-crested Cormorants were once the second most abundant species of cormorant, numbering in the low thousands (Ainley and Lewis, 1974). This population of cormorants declined in size between the 1800's and the early 1900's as a result of disturbance by commercial egg collectors. The population has not yet recovered, although egg collecting stopped long ago. Its failure to do so may be related to the disappearance of the Pacific Sardine (*Sardinops caerulea*) from central and northern California (Ainley and Lewis 1974).

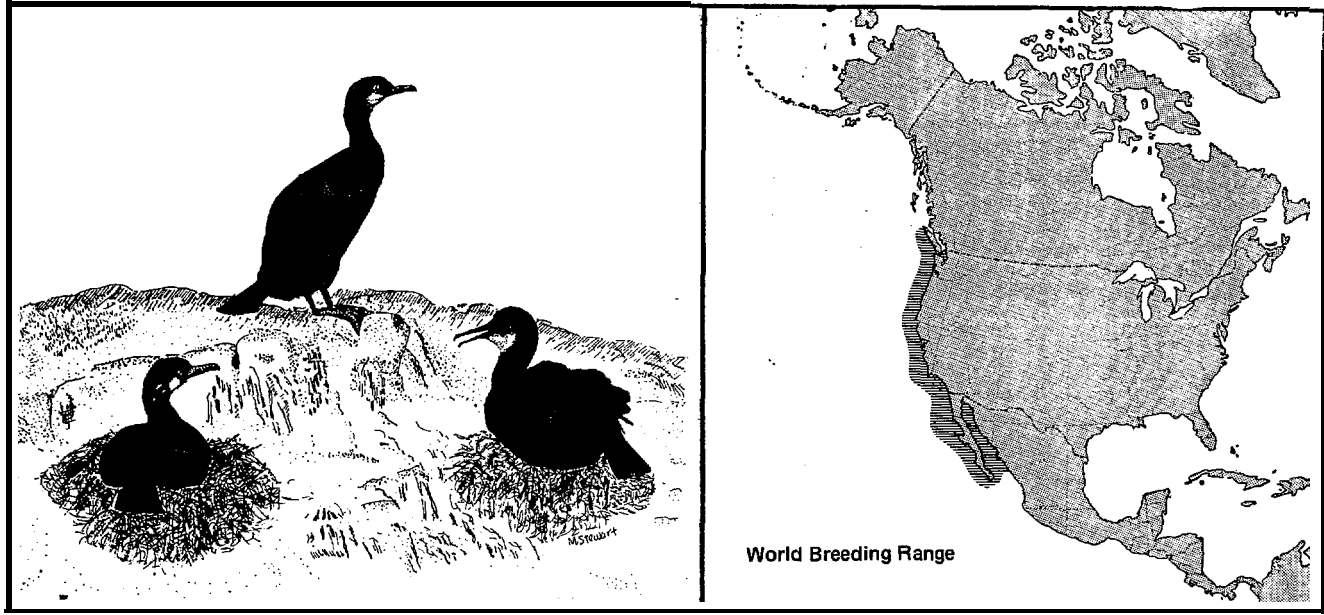
We compared the number of Double-crested Cormorants observed in the region north of Cape Mendocino during our study with Osborne's (1972) results and found that numbers had increased at three sites. Nests were absent from two other sites, but we found six additional colonies unreported by Osborne. The total number of Double-crested Cormorants in this region has apparently increased **from** 530 in 1970 to 1,200 in 1980. These few data suggest that Double-crested Cormorants may be increasing in number on the north coast of California, but since yearly variations in nesting effort occur and cormorants have shown a tendency to switch nesting islands often, caution in such speculation is recommended.

Human disturbance of Double-crested

Cormorant colonies can be very destructive (Ayers 1975). Cormorant eggs and chicks are vulnerable to gull predation when adults are frightened off their nests by human intrusion (Kury and Gochfeld 1975). Inland colonies have probably been disrupted to a greater extent than any other Double-crested Cormorant colonies in the state because of lake development and recreation (Kelly pers. comm.).

Little is known of the vulnerability of cormorants to oil, but few oiled birds have been found after California oil spills (Smail et al. 1972, Berkner pers. comm.). Cormorants are mobile and it is likely they can avoid oil spills to some degree. Unlike other seabirds, cormorants spend large amounts of time out of the water. The greatest numbers of Double-crested Cormorants are found along the coast in winter, since many inland breeding birds move to the coast at this **time** of year.

## Brandt's Cormorant (*Phalacrocorax penicillatus*)



**Brandt's** Cormorants are the most abundant and conspicuous of the cormorants nesting on the California coast. Present the length of the California coast in summer, they leave areas of breeding concentration on the north coast and the **Farallon** Islands in early winter and disperse along the central and southern coast (Osborne 1972, DeSante and Ainley 1980).

Brandt's Cormorants usually nest on the flat tops of offshore islands or, less frequently, on inaccessible mainland bluffs and cliff ledges. During the breeding season, these cormorants present a striking appearance with their bright blue throat pouches and white feather plumes on the sides of their heads. At colonies, Brandt's Cormorants are opportunistic gatherers of nesting material (Hunt et al. 1979). They collect nearby grasses and **herbaceous** plants and pluck seaweeds from close tidal rocks. Once nests are constructed, continual additions are made, often with material stolen from neighboring nests (Palmer 1962).

Nesting adults stand on their clutches of chalky blue eggs, incubating with their webbed feet. The young are born without feathers, but soon are covered with coal black down. Nestlings feed by inserting their heads down the throats of their parents and removing partly **digested** fish remains.

Strong swimmers and divers, **Brandt's Cormorants** prey on various species of fish (Hubbs et al. 1970, Scott 1973, Baltz and Morejohn 1977). Clay (1911) has reported

Brandt's Cormorants caught in fishing nets at depths as great as 70 meters. These cormorants frequently feed in large flocks, often in company with other seabirds (Bent 1922).

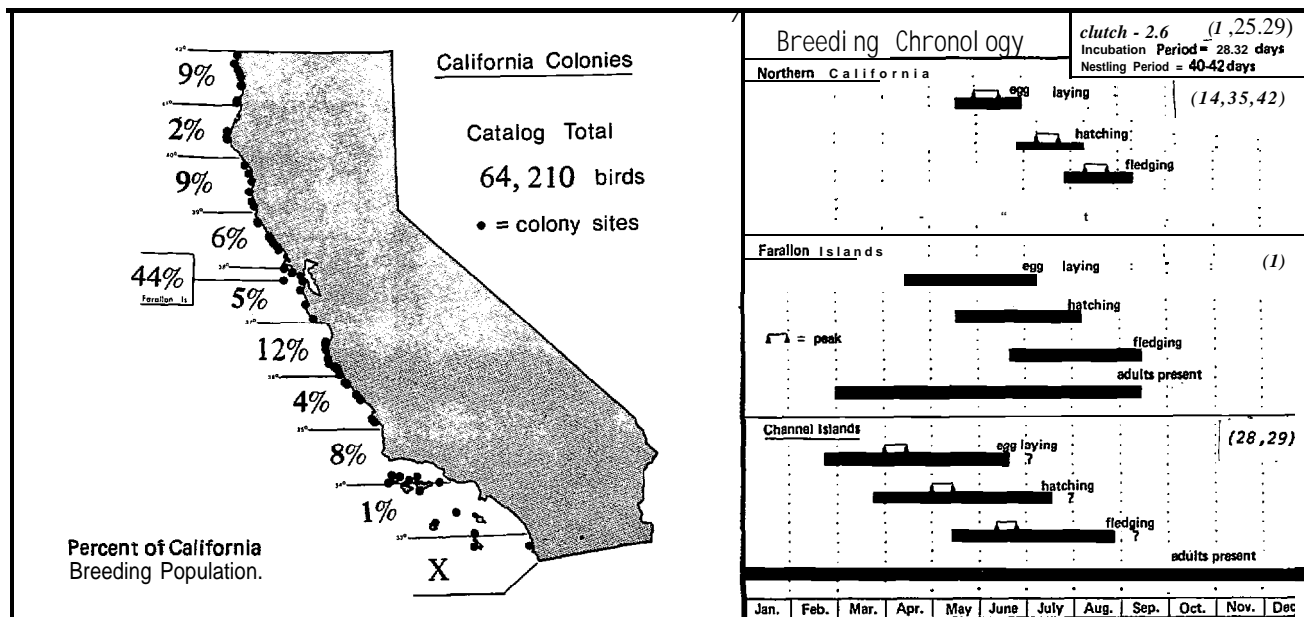
### CALIFORNIA COLONIES

Brandt's Cormorants usually form large colonies compared to most other California nesting seabirds. The largest aggregation of Brandt's Cormorants is on the **Farallon** Islands (429 012), where 28,000 birds nested in 1979 (Ainley pers. comm.). At least 13 colonies contain more than 1,000 birds.

Over the years, Brandt's Cormorant colonies shift from one location to another (Hunt et al. 1979, this study). Two hundred birds were recorded nesting on Casket Rock (379 009) in 1969; no nests were observed in 1979, but 330 birds nested there in 1980. Similar fluctuations occurred at White Rock (379 010), "333 Point" (379 032), and Arched Rock (404 006). Reasons for these movements are not **well** understood, but cormorants may have abandoned Prince Island (501 004) in 1977 because of a heavy flea infestation (Hunt et al. 1979).

### HISTORICAL STATUS AND VULNERABILITY

Brandt's Cormorant populations in the Channel Islands have declined in size since they were **first** recorded there in the late 1800's (Hunt



et al. 1979). Hunt et al. (1979) speculate that they were affected first by human disturbance and later by the accumulation of pesticide residues. Thin eggshells, similar to those caused by DDE concentrations in Brown Pelicans and Double-crested Cormorants on the Channel Islands, were seen in Brandt's Cormorant eggs on San Nicolas Island (524 011) and Lion Rock (477 011) (Hunt et al. 1979, Frame 1972).

Brandt's Cormorants on the Farallon Islands declined in number during a period of high human disturbance in the mid-1800's. Populations began to increase in size after this period of exploitation, and by 1972 there were 22,000 Brandt's Cormorants breeding on the islands (Ainley and Lewis 1974). About 28,000 Brandt's Cormorants now occupy the Farallon Islands (Ainley pers. comm.).

Our population estimates for colonies along the remainder of the California coast are nearly double population figures from 1969 and 1970 (Osborne and Reynolds 1971). The difference may be due, at least in part, to more accurate censusing rather than to real population changes. It may also reflect an unusually high nesting effort in 1979.

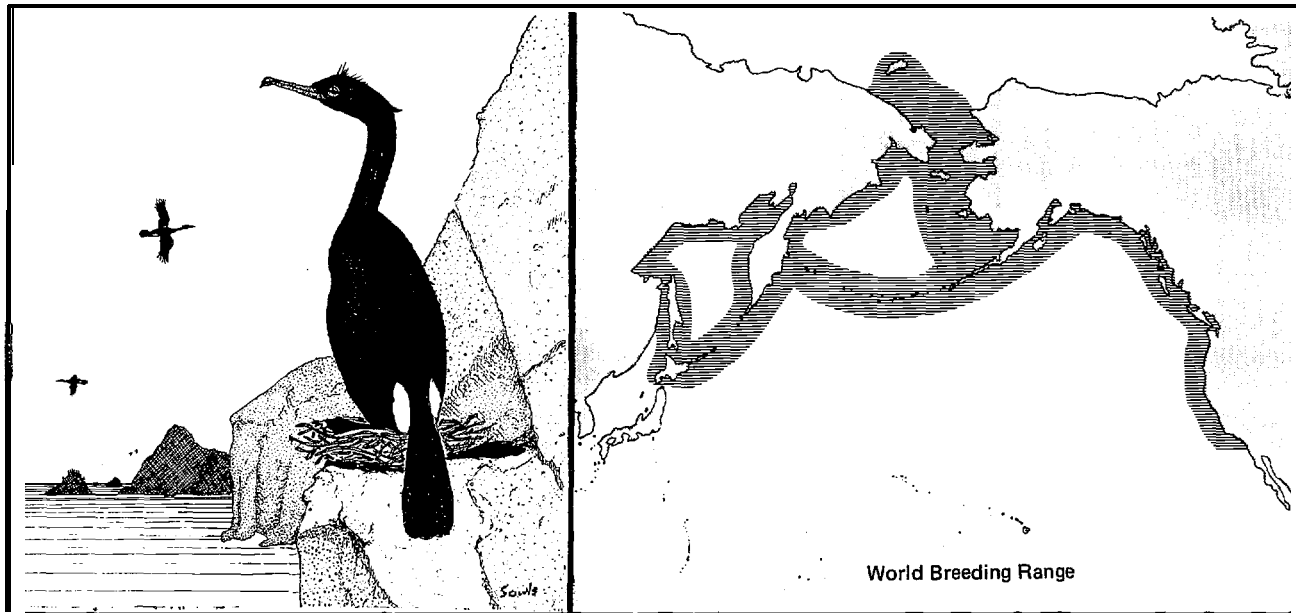
Changes in ocean conditions from year to year apparently influence breeding populations of Brandt's Cormorants. Periods of upwelling, which bring cold, rich waters to the surface and trigger plankton blooms, are of great importance to seabirds. When warmer ocean waters prevail,

the quantity of food drops. Breeding populations of seabirds become smaller and reproductive success declines. Favorable ocean conditions in 1979 caused a boom year for Brandt's Cormorants on the Farallon Islands, where up to 28,000 birds nested. Conditions in 1980 were less favorable, and only about 16,000 birds nested there (Ainley pers. comm.).

Brandt's Cormorants are vulnerable to disturbance during the breeding season. Adults flush from their nests readily when approached by boats, low flying aircraft, or humans on foot. Once parents are away from the nests, Western Gulls are able to prey upon eggs and chicks. Repeated disturbance can cause permanent colony desertion.

Reported cormorant deaths from oil spills are not frequent (Berkner pers. comm.), and Brandt's Cormorants made up only one percent of the recovered birds in the 1971 San Francisco oil spill (Smail et al. 1972). The relative low number of oiled cormorants found on beaches may reflect a greater tendency to sink than in other seabird species (Harris pers. comm.). Brandt's Cormorants are likely the most vulnerable of all cormorants to localized oil spills because of their large breeding concentrations..

## Pelagic Cormorant (*Phalacrocorax pelagicus*)



The Pelagic Cormorant is the most ubiquitous cormorant in California. These smallest "of the California cormorants can be seen during any season in their rocky coastal feeding grounds, where they propel themselves underwater with their strong webbed feet in pursuit of fish and shrimp (Robertson 1974, Hatler et al. 1978). Clay (19 11) reported that Pelagic Cormorants are capable of diving to depths of up to 140 meters.

Pelagic Cormorants nest in scattered groups whose locations sometimes shift from one year to the next (Benz and Garrett 1978, Nysewander and Barbour 1979). Situated anywhere from hundreds of feet above the ocean to just within the spray zone, they raise their young in platform nests of seaweed built on small outcrops and ledges. These cliffside colonies stand out because of the summer whitewash they receive and can be seen for great distances.

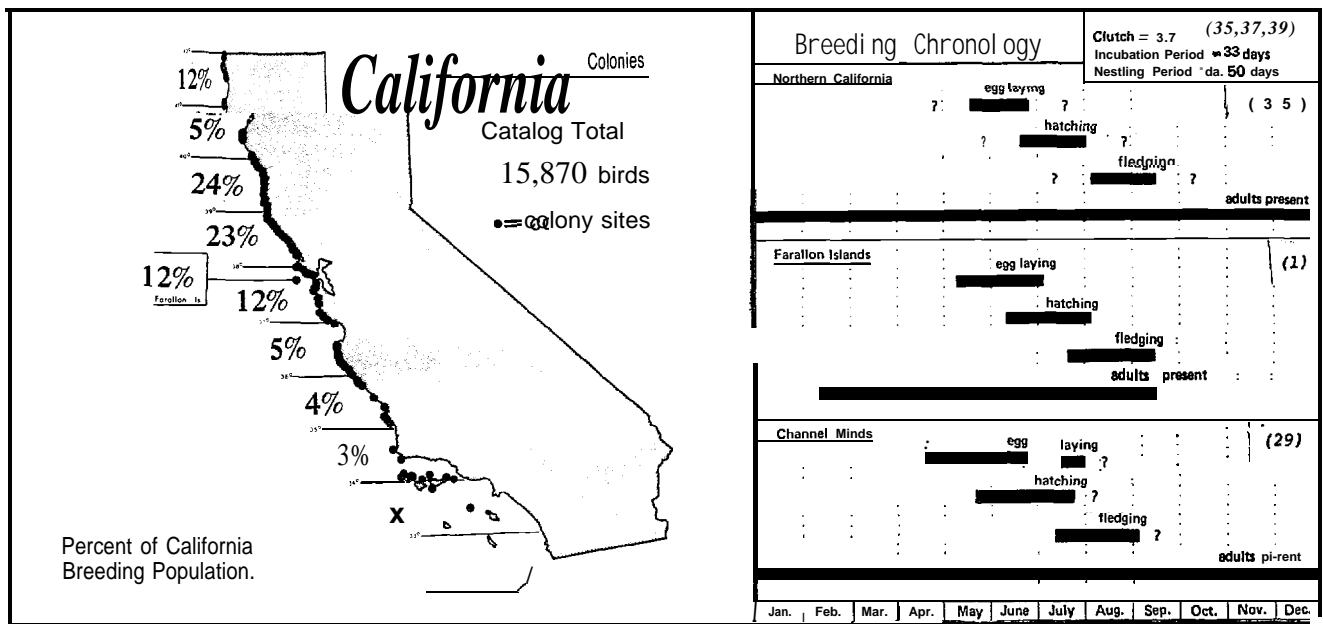
Although Pelagic Cormorants are shy birds, their nesting activities may be observed at a judicious distance. One of the best locations in the state for observing their breeding behavior is Salt Point State Park (see Appendix B).

Pelagic Cormorants are often found nesting close to other cormorants. In these locations, direct competition is apparently reduced by staggered nesting chronologies and by differences in nest site selection, behavior, and in selection of food types, food sizes, and feeding locations (Benz and Garrett 1978, Robertson 1974).

### CALIFORNIA COLONIES

Pelagic Cormorants nest in suitable habitat along the entire coast of California. Forty-four percent of the California population nest on offshore islands, while 56 percent nest on precipitous cliffs of the mainland. In some regions, small groups of nesting Pelagic Cormorants are scattered in a continuous band along the coast. In these areas our designation of colonies has sometimes been arbitrary. That is, the limits of colonies are often assumed for convenience to be geographical landmarks such as coves or points of land, and frequently long stretches of coastline are included under a single colony number. For example, the Triplett Gulch colony (404 021), one of the largest listed in the catalog, encompasses approximately two kilometers of coastline and numerous offshore rocks. Fish Rocks colony (404 003) on the other hand, although of similar magnitude, consists of two discreet islands in this same vicinity.

Although Pelagic Cormorants occur throughout the coastal region, certain areas of concentration stand out. Areas immediately north of San Francisco have a disproportionately large percentage of nesting birds, as do the Farallon Islands (429 O 12). Pelagic Cormorants occur in decreasing numbers farther and farther south of San Francisco to the southern terminus of their nesting range. This California distribution may reflect available nesting habitat or perhaps more subtle oceanographic or biological factors.



### HISTORICAL STATUS AND VULNERABILITY

Detailed information on the historical status of Pelagic Cormorants exists for only limited portions of the California coast. In the Channel Islands there has been little change in either total number or distribution during the last century (Hunt et al. 1979). In contrast, Pelagic Cormorant populations on the Farallon Islands (429 O 12) declined greatly in size during the 1850 to 1900 period of egg collecting (Ainley and Lewis 1974). The population has been recovering throughout this century and is still increasing in 1980 (Ainley pers. comm.).

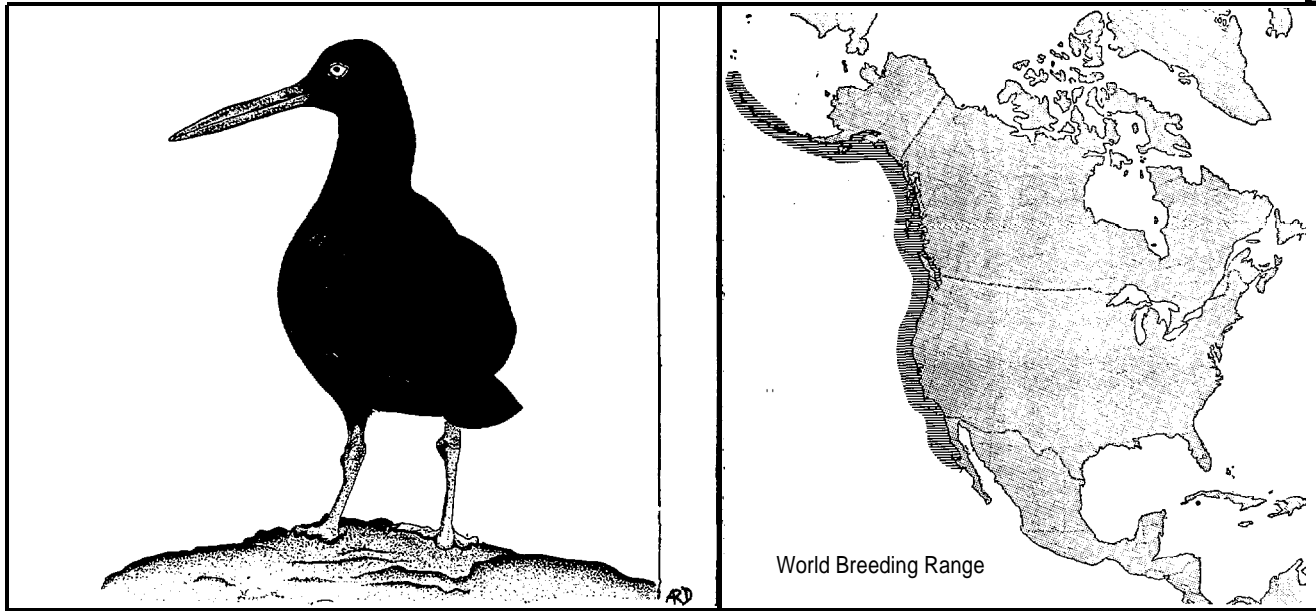
Historical population estimates for northwest California are available from Osborne and Reynolds (1971), although differences in time of survey and survey technique limit comparisons with our 1979-80 data. The tendency of Pelagic Cormorants to move nest sites in succeeding years (Benz and Garrett 1978, Nysewander and Barbour 1979), makes surveys of large areas desirable for this species.

Shoreline use and development pose a great threat to Pelagic Cormorants in California. Cormorants can be disturbed by any human activity near colonies. Approach to nesting birds by boats, planes, and humans on foot may force adults off their nests, leaving eggs and young chicks unprotected. Chicks and eggs may be knocked from nests and predation by Western Gulls and Common Raven may increase following the adults' panicked retreat.

Pelagic Cormorants, like other members of the order Pelecaniformes, may be vulnerable to pesticide pollution. The egg shell thinning, egg breakage, and subsequent population declines experienced by both Brown Pelicans and Double-crested Cormorants in southern California (Gress et al. 1973) are yet undocumented for Pelagic Cormorants (Hunt et al. 1979).

Oil spills in California have resulted in few known cormorant deaths to date (Aldrich 1938, Moffitt and Orr 1938, Smail et al. 1972, and Berkner pers. comm.). Because of their widespread distribution and ability to shift colony sites, Pelagic Cormorant populations are relatively resistant to localized oil slicks. Individual cormorants may avoid surface oil (Berkner pers. comm.), and their habit of spending nights and much of the day roosting on rocks further reduces vulnerability to oil pollution (Smail et al. 1972).

## Black Oystercatcher (*Haematopus bachmani*)



Black Oystercatchers are shorebirds of the outer coast of the northwest Pacific. Adults establish breeding territories on mainland rocky beaches and offshore rocks and islands. An oystercatcher nest, composed of a scrape lined with pebbles and shell fragments, is surprisingly difficult to find. One to three cryptically colored eggs are placed directly on the pebbles.

Black Oystercatcher young are **precocial** and may leave the nest within hours of hatching. Although they remain near the nest at first, within a few days chicks follow adults to intertidal foraging areas. The California mussel (*Mytilus californianus*) is the chief food of oystercatchers in the Channel Islands (Hunt et al. 1979) as well as in northern California (Helbing 1977), and limpets and chitons make up most of the remainder of the diet. Chicks at the nest are frequently fed crabs (Hartwick 1976, Helbing 1977).

Mortality among eggs and chicks is apparently high. Hartwick (1974) lists **gull** predation as an important cause of mortality. In addition, chicks and eggs are frequently washed "overboard" from nests by storm waves.

During the winter, oystercatchers are gregarious (Webster 1941) and can be observed feeding along rocky portions of the California coast. With their bright orange bills, pink feet, and loud distinctive call, these birds are conspicuous.

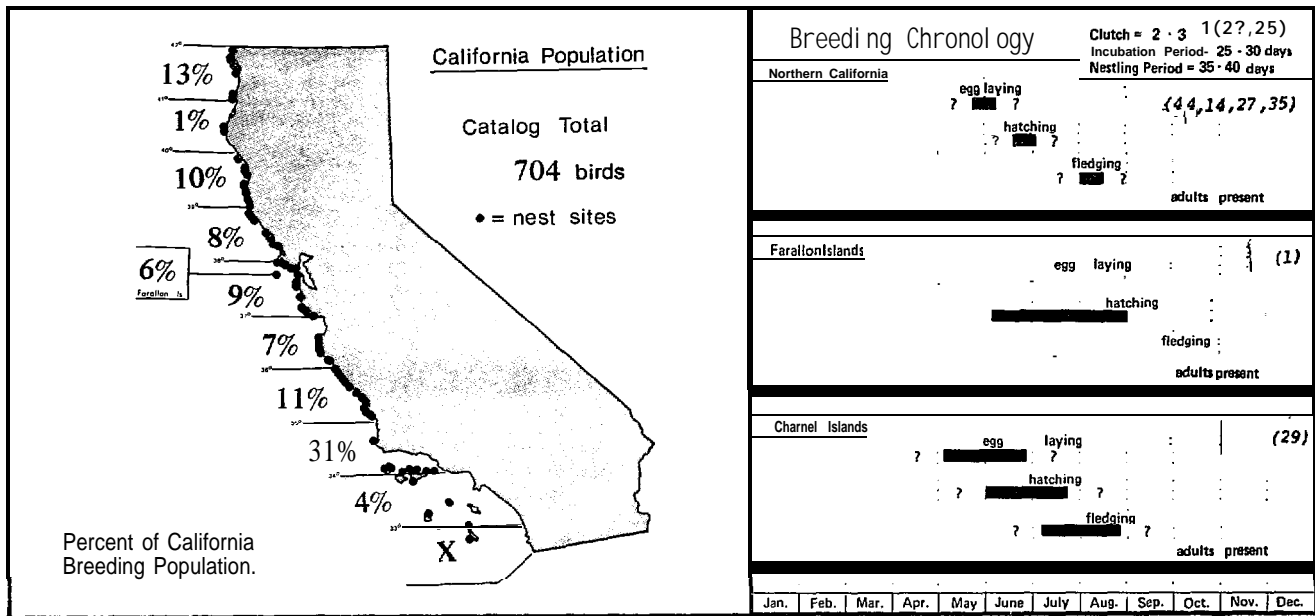
### CALIFORNIA POPULATION

Black Oystercatchers are a non-colonial nesting species, although they are usually found on the same offshore islands and rocks as colonial nesting seabirds. They establish large nesting and feeding territories and thus distribute themselves along the available coastal habitat. Actual nests were pinpointed only for a small percentage of the sites listed in this catalog. Nesting was indicated more often from the territorial defense behavior of adults. This method obviously has limitations since approach to a nest must be close enough to initiate a reaction from the adults. For this reason the catalog total for this species is almost certainly low. The actual breeding population size is probably about 1,000 birds.

Information presented in this catalog gives a good representation of the overall breeding pattern of this species, a population of single nesting pairs widely dispersed along the entire California coastline. Concentrations of 242 Black Oystercatchers in the Channel Islands and 40 breeding birds in the **Farallon** Islands (429 O 12) represent nearly half of the catalog breeding total.

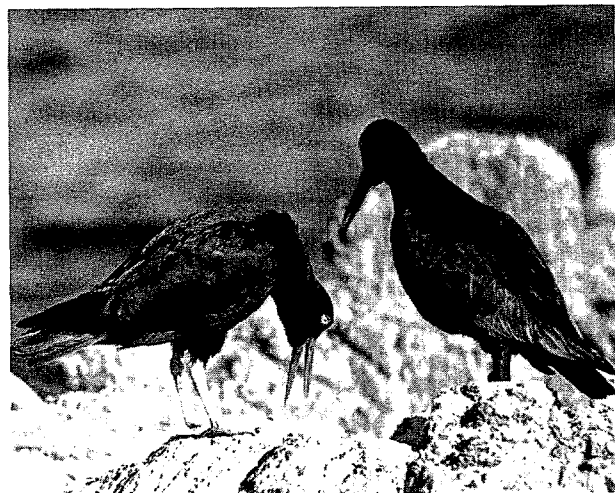
### HISTORICAL STATUS & VULNERABILITY

Black Oystercatchers disappeared from the



**Farallon** Islands in the 1860's, possibly as a result of too much human disturbance. A few birds were seen in 1903, but oystercatchers were not observed there on a regular basis until 1956. The breeding population of Black Oystercatchers on the **Farallon** Islands increased to 16 by 1959 and to 40 in 1972 (Ainley and Lewis 1974). Since that time the population has stabilized and may be at its maximum (Ainley pers. comm.). Historical population information for areas other than the **Farallon** Islands is almost nonexistent.

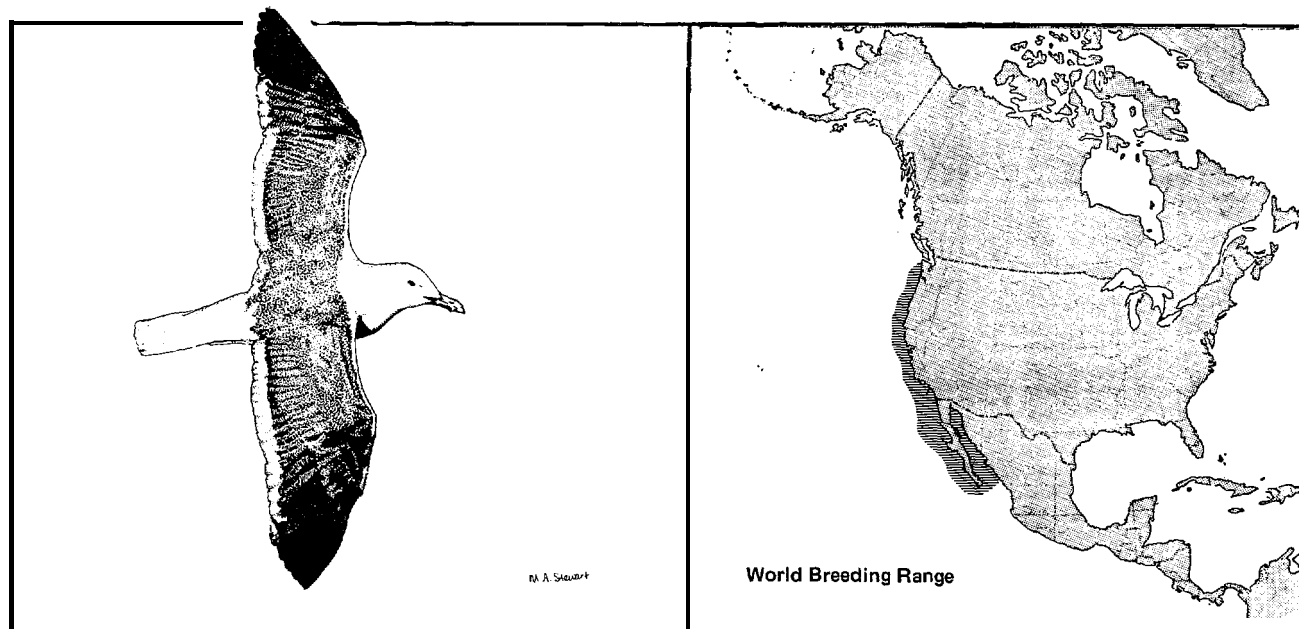
Black Oystercatchers require clean and undisturbed rocky coastlines for nesting and feeding. To the extent that these areas are disturbed by humans, reproductive success will be reduced. Oil spills, which foul rocky coastlines where oystercatchers feed, could seriously affect the food supplies of this species, but losses of birds from direct oiling would probably be low. Long-term degradation of intertidal habitat would **almost** certainly cause population declines.



*Black Oystercatchers*

*Photo by Ian C. Tait*

## Western Gull (*Larus occidentalis*)



Western Gulls are the breeding gull of the California coast. They breed as far south as Baja California, Mexico, and as far north as Washington and southern British Columbia. Western Gulls in Washington and British Columbia are sympatric with Glaucous-winged Gulls (*Larus glaucescens*) with which they hybridize extensively (Hoffman et al. 1978).

Western Gulls nest in a wide variety of habitats, but usually are found in the greatest densities on the flatter portions of islands and offshore rocks. Some nest on the mainland and these nests are always confined to areas inaccessible to mammalian predators such as steep slopes and cliff faces. Western Gulls will even nest on man-made structures. Their nests are substantial and are usually constructed of vegetation gathered near the colonies. Western Gulls usually lay clutches of from one to three eggs, although in the Channel Islands clutches of from four to six eggs result from female-female pairing. The eggs in these supernormal clutches are usually infertile and do not hatch (Hunt and Hunt 1977).

Western Gulls feed on a variety of prey. Important food items from around the Farallon and Channel Islands include anchovies, rockfish (*Sebastes*), Pacific Sauries (*Cololabis saira*), midshipmen (*Porichthys*), cephalopods, euphausiids, barnacles, and offal (Ainley and Sanger 1979, Hunt et al. 1979). Like large gulls elsewhere in the world, Western Gulls often feed on human refuse at dumps scattered along the coast.

### CALIFORNIA COLONIES

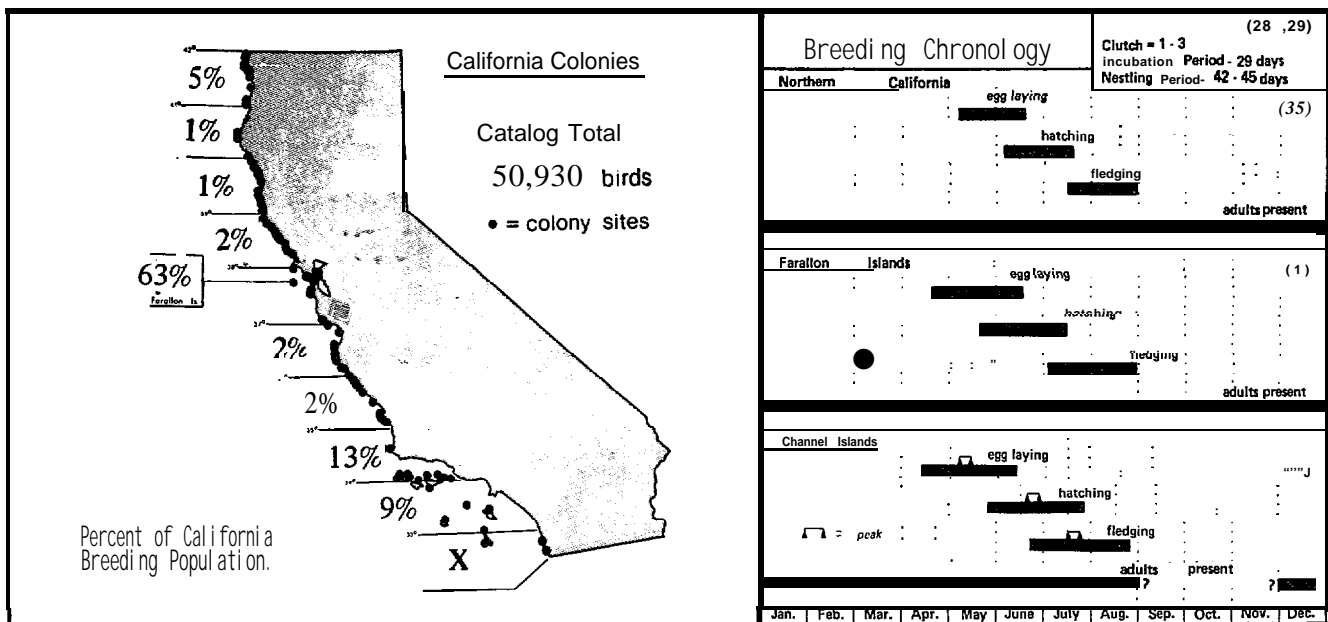
Although Western Gulls breed widely along

the California coast, most of the breeding population is concentrated at a few sites. The 32,000 gulls of the Farallon Islands (429 012) make up more than 60 percent of the entire breeding population in California. Other large colonies in California are at Middle Anacapa Island (502 008) with 5,000 Western Gulls, Santa Barbara Island (524 008) with 2,300 gulls, San Nicolas Island (524 011) with 1,800 gulls, Castle Rock (325 006) with 1,350 gulls, and Prince Island (501 004) with 960 gulls. Most of the Western Gull colonies in California, however, are much smaller. Sixteen of the remaining sites have between 100 and 500 birds, 22 sites have between 50 and 100 birds, and 115 sites have fewer than 50 birds.

### HISTORICAL STATUS AND VULNERABILITY

Western Gulls are probably the least likely of California seabirds to suffer population declines as a result of man's activities. The population may in fact be growing as the result of an abundant food supply at garbage dumps. Increases in numbers of large gulls may not be desirable since these birds can harm other seabirds and interfere with aircraft at airports.

Increases in the size of several populations of large gulls have been attributed to the availability of human food wastes and sewage (Drury 1979, Kadlec and Drury 1968, Vermeer 1963). Both Herring Gulls (*Larus argentatus*) and Great Black-backed Gulls (*Larus marinus*) in eastern North America have increased in number and caused substantial damage to tern and Atlantic Puffin (*Fratercula arctica*) colonies by usurping optimal nesting habitat, stealing food (kleptoparasitism), and eating eggs and chicks (Nettleship 1972, Nisbet 1973).



Populations of Western Gulls in California have probably also increased in size during the last two decades, but documentation is difficult to obtain, since historical data for much of the California coast are lacking. Osborne and Reynolds (1971) censused many of the large Western Gull colonies in central and northern California, but their data may not be comparable with ours. Certainly differing survey techniques account for some of the differences between the two sets of data. We were able to make a comparison of Osborne and Reynolds' data and our data for 26 sites and found more Western Gulls at 20 sites in 1979 and 1980 than in 1970, fewer at four sites, and no change at two sites. The apparent net increase in numbers of breeding Western Gulls at these 26 sites is about 1,600 birds. In addition, we found many previously undiscovered sites. This probably reflects in part, our more complete coverage of the coast. These comparisons suggest that the number of Western Gulls in California may have increased during the last decade.

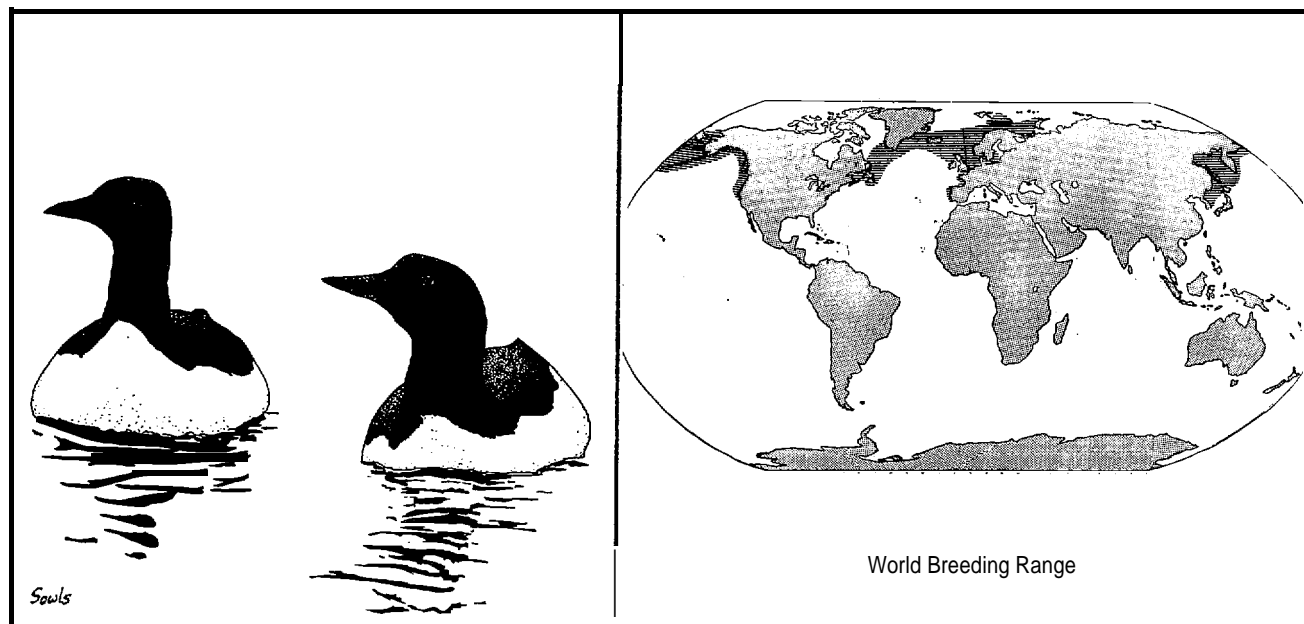
Other evidence suggesting that numbers have increased comes from the Farallon Islands and Prince Island (501004). The number of Western Gulls on the Farallon Islands plummeted in the mid-late 1800's primarily because of egg collecting and disturbance from domestic animals (Ainley and Lewis 1974). The population recovered in size to about 23,000 birds in 1959 and remained stable until 1972 (Ainley and Lewis 1974). Since then the population has increased to 32,000 birds and there appears to be a surplus of adult-plumaged birds. On Prince Island, a population of about 500 birds in 1968 (Huber 1968) increased to about 1,000 birds in 1976 (Hunt et al. 1979). On Santa Barbara Island, however, there has been a

marked decline in numbers of Western Gulls since 1972, which appears to be related to the abundance of anchovies (Hunt and Butler 1980).

The effects of an increasing population of Western Gulls on other seabirds are difficult to assess. Western Gulls are the most important predators of storm-petrels and Cassin's Auklets on the Farallon Islands (Manuwal 1974, Ainley et al. 1974), and further increases in Western Gull numbers may increase the rate of predation. Increases in Western Gull numbers elsewhere in California could have a similar effect on small alcids and storm-petrels, Western Gulls kleptoparasitize cormorants, Rhinoceros Auklets, and probably Tufted Puffins. The present rate of incidence is unknown but may increase if gull populations continue to expand.

This species is probably one of the least vulnerable to oil spills of all seabird species nesting in California, since they are highly mobile and frequently return to land to rest and roost. Western Gulls, like other surface nesting seabirds, are susceptible to disturbances while nesting. Disturbance in a particularly dense colony may result in intraspecific pirating of eggs and cannibalism. Chicks frightened from their territories may be killed by neighboring gulls or become lost and starve. Nevertheless, the future of the Western Gull in California looks secure. With the present pattern of waste disposal in California, Western Gulls will probably continue to increase in number. Because of their relatively high reproductive potential, an excess of non-breeding adults, and their ability to feed on a wide variety of prey, they would likely make a rapid recovery from any decline.

## Common Murre (*Uris aalge*)



Common Murres are some of the most highly colonial of all seabirds. Island and mainland colonies are usually densely packed shoulder to shoulder with these noisy, gregarious birds. Common Murres breed in both the North Pacific and North Atlantic Oceans and are some of the most abundant seabirds in the northern hemisphere.

Common Murres prefer to nest on wide, flat cliff ledges and the tops of islands. A large, single egg is laid on bare rock or soil and is narrowly pointed at one end and broad and rounded at the other. Murre eggs vary greatly in color, ranging from white to buff, brown, reddish, blue, or green. They are almost always marked with dark dots, blotches, or intricate scribbling (Harrison 1978). The unique pattern of each egg probably aids individual recognition by adults (Johnson 1941).

Murre chicks are fed by both parents and jump from the colonies to the waters below when only partly grown. They are accompanied at sea by only one parent, usually the male (Varoujean pers. comm.).

Common Murres are good fliers and are capable of foraging long distances from their colonies. They dive to considerable depths and include fish, crustaceans, and cephalopods in their diet (Ogi and Tsujita 1973, 1977). Common Murres are often seen in coastal California during the fall and winter months (Ainley 1976) and make frequent landfalls at their colonies during these seasons.

### CALIFORNIA COLONIES

In California, Common Murres breed from

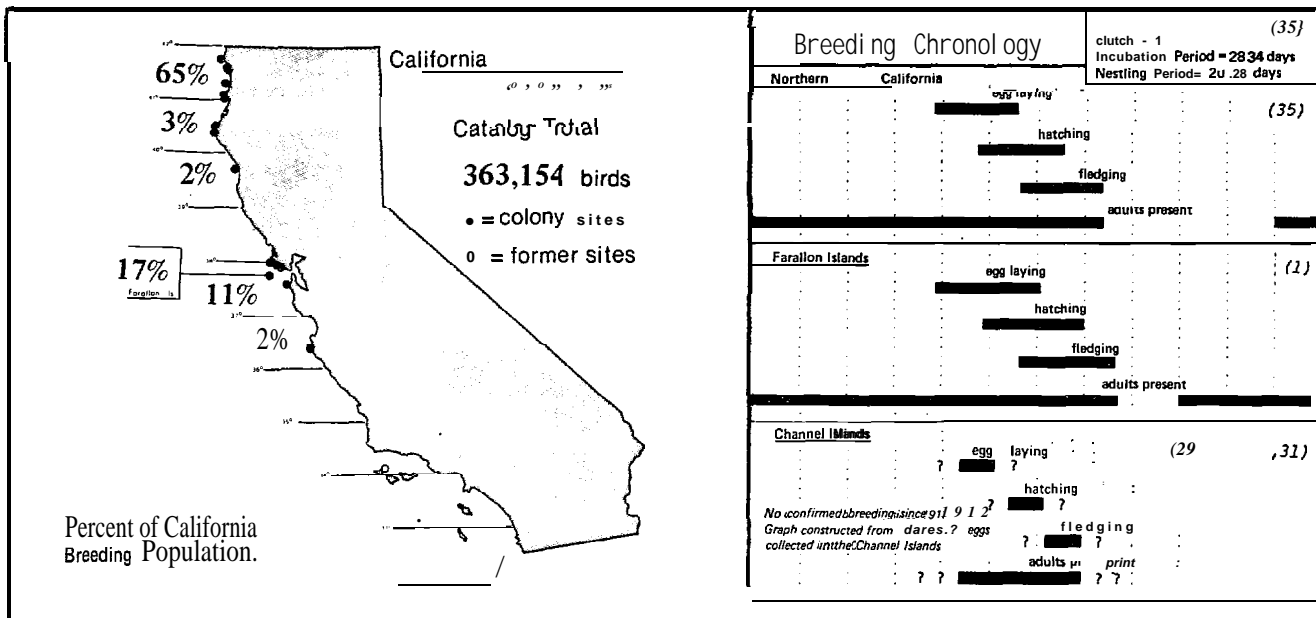
Castle Rock (325 006) in the northern part of the state south to Hurricane Point Rocks (454 011) at the north end of the Big Sur coast. They are known to breed at 19 sites in California and a few non-breeders have been seen on three additional islands. These three islands, Kibesillah Rock (379 004), White Rock (379 01 O), and Gualala Point Island (404 004), all appear to have suitable nesting habitat and should be watched for future nesting.

Colonies of Common Murres, although easy to find, are difficult to census. Variables such as time of year, time of day, and the unknown breeding status of many individuals complicate an already difficult task (see Materials and Methods). The estimates of murre numbers presented here and in the tables include the number we actually counted or estimated, plus two-thirds of that number to account for members of the breeding pair away from the colony (Ainley 1976).

Colonies of Common Murres in California vary greatly in size, from as few as 50 birds on Sisters Rocks (325 008) to 126,000 birds on Castle Rock. Other large colonies of murres exist at the Farallon Islands (429 012) with 60,000 birds, Green Rock (325 020) with 55,000 birds, False Klamath Rock (325 010) with 26,500 birds, and Flatiron Rock (325 023) with 24,000 birds.

### HISTORICAL STATUS AND VULNERABILITY

Two lines of evidence suggest that Common Murres are presently increasing in number in California. First, in 1979 and 1980 Common Murres were found breeding at four sites where murres were not observed by Osborne and Reynolds (1971), although they censused these



same Islands for other species. These islands are: Sisters Rocks, Blank Rock (325 024), Pilot Rock (325 026), and Cape Vizcaino (379 002), Murres may have been present at Cape Vizcaino during the years of Osborne’s work but could have left the colony prior to his survey in August. Second, there are 14 breeding colonies of Common Murres for which both Osborne and Reynolds (197 1) and we have estimates. Our estimates greatly exceed theirs in all cases, usually by a factor of two, three, four, or more. Even if the two-thirds attendance factor is subtracted from our estimates, our totals still exceed Osborne and Reynolds’ in all but two cases. In the two instances where ours are lower, Castle Rock and Green Rock, the two estimates are similar.

Apparently murre numbers have been increasing throughout much of this century. Osborne (1972) found that the population of Common Murres in the region from Cape Mendocino to the Oregon border has increased from a few thousand birds in the 19 10’s to about 143,000 birds in 1970. The history of Common Murre populations at two other sites also suggests that numbers are increasing. Clay (unpubl. field notes) makes no mention of Common Murres at Flatiron Rock between 1910 and 1934, but Osborne estimated that 10,000 birds were present there in 1970. Our estimate for this site in 1979 is 24,000 birds. Clay (unpubl. field notes) estimated 2,000 birds at Green Rock in 1941, compared to Osborne’s estimate of 40,000 in 1970 and our estimate of 55,000 in 1980.

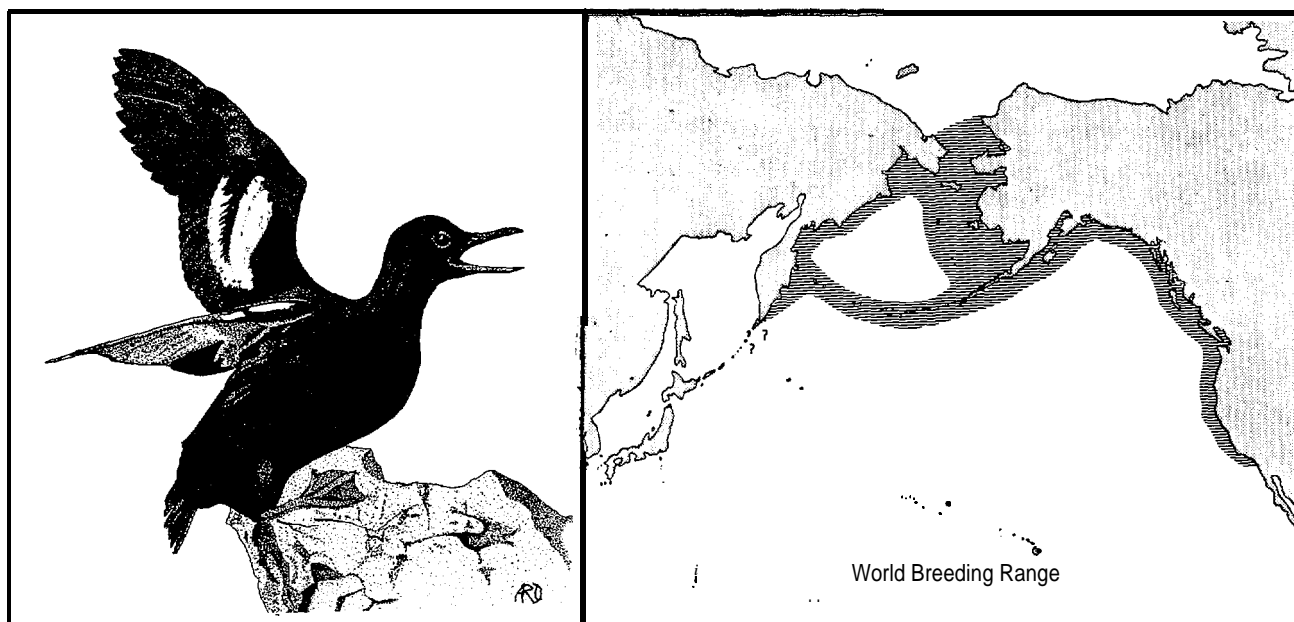
Common Murres on the Farallon Islands are also increasing in number but in this case the

increase follows a documented severe population reduction. Between 1854 and 1959 the population dropped from 400,000 birds to between 6,000 and 7,000 birds. A commercial egg harvest and oil pollution were the primary causes of this reduction (Ainley and Lewis 1974). With strict protection, the population increased to 20,500 birds in 1972 and to 60,000 birds or more at the present time.

Common Murres formerly bred on Prince Island (50 1 004) in the Channel Islands but no longer do so, Hunt et al. (1979) states, “Since the tiny colony at Prince Island was so far south of the nearest murre colony, it seems likely that repeated visits by early egg collectors, coupled with the slim possibility of recruitment from other colonies, could have eliminated murres as a breeding species. . . .”

Nesting Common Murres are very sensitive to disturbance by boats, low-flying aircraft, and humans on foot. When disturbed, adults flush from the colonies and may knock eggs and chicks from nest sites. The remaining chicks and eggs are subject to increased predation from gulls and ravens. Common Murres are highly vulnerable to oil contamination and were some of the most frequently oiled birds in the 1971 San Francisco oil spill (Smail et al. 1972). They are common in the coastal zone of California throughout the year and spend large amounts of time on the water. They appear to be highly social during both the breeding and non-breeding seasons and frequently congregate on waters adjacent to their colonies. Future oil spills along the California coast could kill large numbers of this species.

## Pigeon Guillemot (*Cepphus columba*)



Pigeon Guillemots inhabit the nearshore zone and are usually found along stretches of rock coastline. They are most easily observed in the early morning, before the egg laying season, when both members of each pair frequent waters adjacent to their colonies.

Pigeon Guillemots usually nest in natural rock crevices, talus, and boulder beaches (Thoresen and Booth 1958, Drent 1965). They also use burrows dug into loose conglomerate bluffs and man-made structures, such as wharf timbers, drain pipes, and within truck tires slipped on wharf pilings (Campbell 1977, this study). In some regions of California, Pigeon Guillemots and introduced Rock Doves (*Columba livia*) may be competing for nesting space.

Pigeon Guillemots are some of the few alcids to regularly lay two eggs (Bent 1946, Thoresen and Booth 1958, Drent 1965). Eggs are laid on bare rock, soil, or sometimes on a bed of pebbles and shell fragments. Guillemots usually feed close to shore and the proximity of the feeding grounds to the colonies may help explain their ability to sometimes raise two chicks. Pigeon Guillemots, like all members of the family Alcidae, dive for food using their wings for propulsion. In California, fish are the principal food of guillemots during the breeding season (Follett and Ainley 1976). This appears to be true throughout their breeding range although near Kodiak, Alaska, Pigeon Guillemots are known to eat small crabs and shrimp (Krasnow et al. 1978).

Following breeding, Pigeon Guillemots largely disappear from the California coastline and

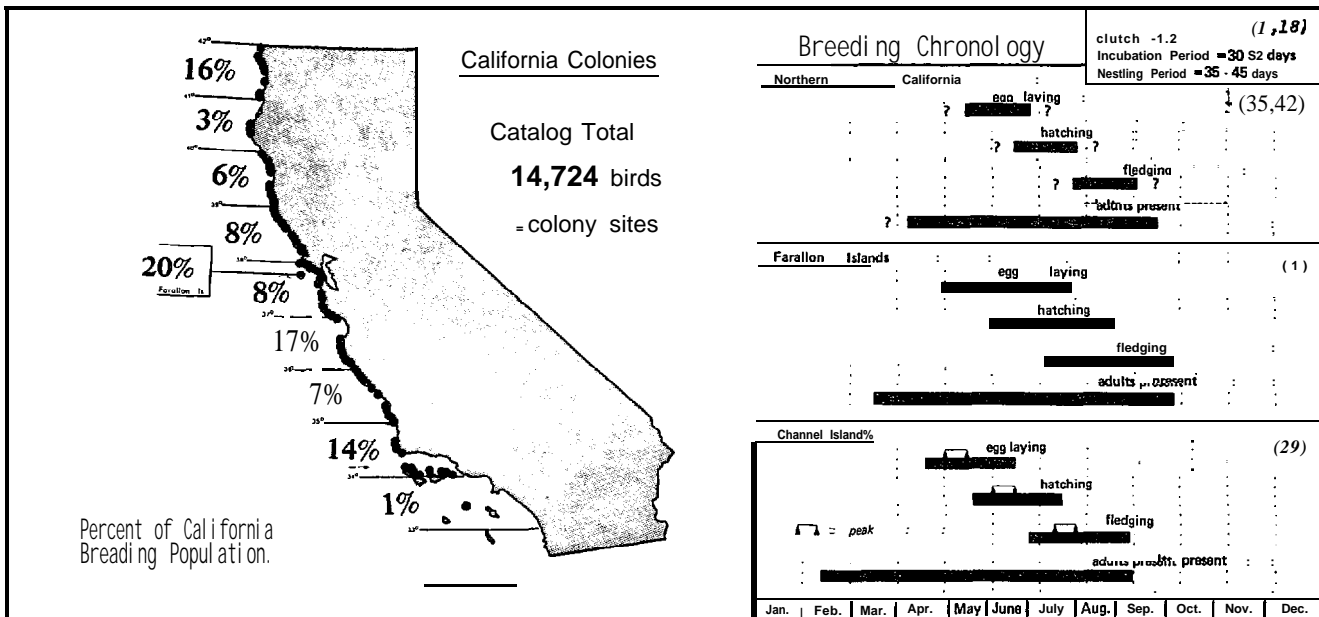
do not reappear until just before the next year's breeding season. Their wintering range is presently unknown but we suspect that a northward movement of birds takes place.

### CALIFORNIA COLONIES

In California, Pigeon Guillemots breed from the Oregon border south to Santa Barbara Island. They are found breeding in large aggregations of up to 3,000 birds, in smaller groups of only a few birds, or as isolated pairs scattered along the coast in suitable habitat. Delimiting colonies is often difficult, especially in those regions where Pigeon Guillemots are spread along the coast. In many cases, colony boundaries have been based on geographical landmarks and cover large sections of coastline.

The catalog total of Pigeon Guillemots in California is about 12,000. We feel that this number is conservative, although for any individual nesting site our estimates may be either high or low. Censusing Pigeon Guillemots is at best an inexact science and is complicated by several factors (see Materials and Methods). Although many Pigeon Guillemot colonies were surveyed in both 1979 and 1980, only the best of the estimates for these two years are included in this catalog.

The Farallon Islands (429 012), with 3,000 birds, have the largest population of Pigeon Guillemots in California. The coastline between Davenport and Point Santa Cruz (454 021) is inhabited by about 1,300 guillemots. Other locations with large numbers are Point Arguello



(501 010), Fish Rocks (404 003), **Castle Rock** (325 006), Sugarloaf Island (325 041), and Prince Island (325 003). Generally, however, Pigeon Guillemot colonies are small, More than half the sites we investigated had fewer than 30 birds.

#### HISTORICAL STATUS AND VULNERABILITY

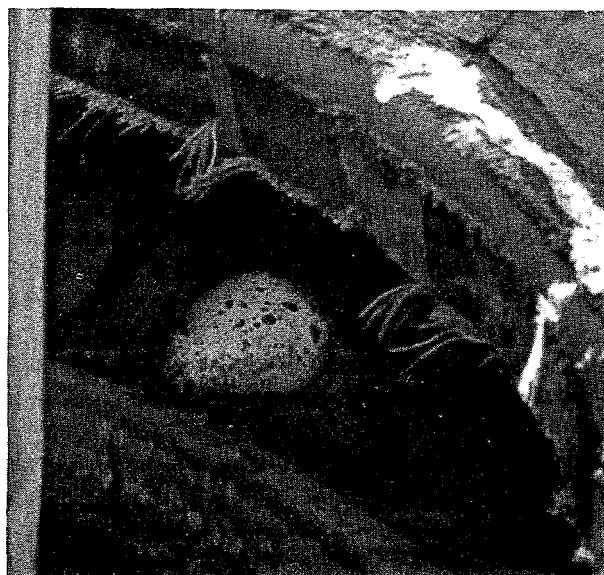
Few data pertaining to the historical status of Pigeon Guillemots are available. On the **Farallon** Islands, Pigeon Guillemots escaped early persecution by commercial egg collectors but later fell victims to **oil** pollution (**Ainley** and Lewis 1974). The guillemot population of the **Farallon** Islands reached an all-time low of 200 in 1911. Since then it has recovered steadily, to 1,000 birds in 1959, 2,000 in 1972, and 3,000 at present (**Ainley pers. comm.**).

Elsewhere along the California coast it may appear from the data that Pigeon Guillemot numbers have increased dramatically. However, we do not feel there is sufficient information to make this judgement. Previous investigators largely overlooked Pigeon Guillemots since they often nest in low densities and usually do not form distinct colonies. **Censusing** Pigeon Guillemots requires much time and manpower and access to many nesting sites is poor. Time of day and of year can greatly influence survey results and some previous surveys were conducted after Pigeon Guillemots had **finished** nesting.

Compared to other seabirds such as Common Murres and Brandt's Cormorants, Pigeon Guillemots are not highly prone to disturbance, primarily

because of their comparatively **low** nesting densities and inaccessible nest sites. Pigeon Guillemots will, however, readily desert their nests if disturbed during incubation or brooding.

Like murres, Pigeon Guillemots are very vulnerable to oil pollution. Guillemots spend large amounts of time on the water, usually close to land where oil exploration and development are concentrated. Fortunately, the population of Pigeon Guillemots in California is widely distributed along the coast and any oil spill would most likely affect only local birds.



*Pigeon Guillemots occasionally nest in man-made structures like this tire on a Crescent City dock. Photo by Anthony R. DeGange*

## Marbled Murrelet (*Brachyramphus marmoratus*)

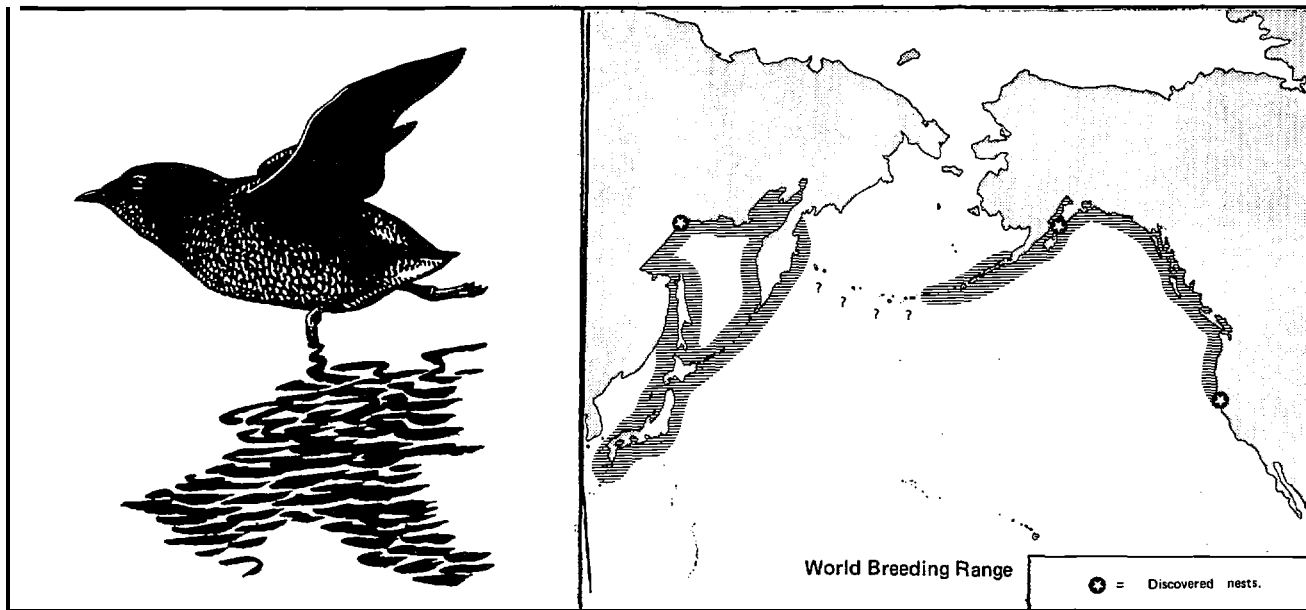


Illustration by Alan Davidson, reprinted from *The Murrelet: A Journal of Northwest Ornithology and Mammalogy*.

The Marbled Murrelet is the only breeding alcid in California that has become adapted to nesting habitats inland from coastal rocks and beaches. The locations of Marbled Murrelet nests are the least known of all the seabirds breeding in California. Only four nests have been found throughout the species' entire range; one in Siberia (Kuzyakin 1963), one in California (Binford et al. 1975, Singer and Verardo 1975), and two on East Amatuli Island in the Barren Islands, Alaska (Simon 1980). Kiff (in press) has recently reviewed the known eggs and nests of this species.

Of the four nests, both the Siberian and California nests were found in trees, but the Alaskan nests were found on the tundra of a treeless island. The Siberian nest was found in the upper branch of a Larch (*Larix dehurica*) 6.8 meters above the ground (Kuzyakin 1963). The California nest was found 45 meters above the ground on a moss-covered limb of a Douglas-fir (*Pseudotsuga menziesii*) in Big Basin Redwoods State Park, Santa Cruz County (Binford et al. 1975). This nest contained a Marbled Murrelet chick sitting in a small depression encircled by droppings.

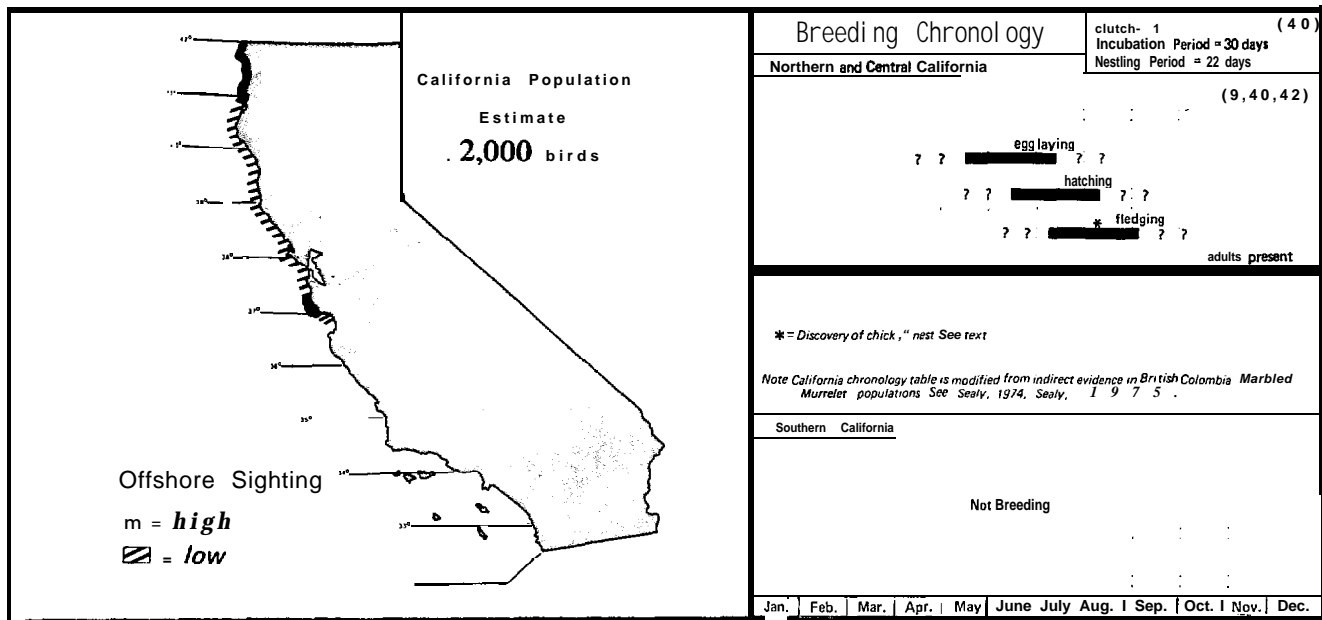
Binford et al. (1975) theorize that the pale green egg, the cinnamon brown breeding plumage of the adult, and the light brown nestling are cryptic adaptations for nesting in trees. The entire breeding population of Marbled Murrelets in California is suspected to nest in trees.

Marbled Murrelets seen at sea during the summer are often in pairs and are usually within 1 to 2 kilometers of the coast. Breeding birds return to their nests in the evening and depart at dawn. We have observed individual birds, pairs, and groups of up to 60 birds in the breeding season flying over the tree tops at the margin of old growth Coast Redwood (*Sequoia sempervirens*) forests. An amazing display of this behavior can be seen at Prairie Creek Redwoods State Park in Humboldt County (Appendix B). Marbled Murrelets may also use coastal forests in winter as evidenced by calling birds flying over the redwood forests during this season (Strachan pers. comm.).

Marbled Murrelets like all other alcids, spend a large percentage of their time on the ocean. They feed on fish and less frequently on crustaceans (Scaly 1975b).

### CALIFORNIA POPULATION

We observed Marbled Murrelets during the breeding season on coastal waters from the California-Oregon border south to Point Sal, Santa Barbara County. However, two areas of concentration stand out: coastal waters from Eureka to the California-Oregon border and from Santa Cruz to Half Moon Bay. These two regions respectively account for 76 and 14 percent of our 185 Marbled Murrelet sightings made during the 1979 breeding season. During this season our



coverage of the central and northern California coasts was virtually complete. These two regions were again censused in 1980, when we made 390 sightings of Marbled **Murrelets**, but our coverage of the coastline in that year was less complete. Both regions of high Marbled **Murrelet** concentration are offshore of mature stands of coniferous trees. This suggests that murrelets may require these trees for nesting. After breeding, Marbled **Murrelets** disperse along the coast of California. They have been recorded as far south as Imperial Beach, San Diego County (McCaskie 1980).

It is difficult to estimate the breeding population of Marbled **Murrelets** in California, but we speculate that it is about 2,000 birds. This estimate may be conservative since this small alcid's breeding habits are poorly known. It is difficult to see them at sea in other than perfect conditions, and it is likely that other unobserved **murrelets** were farther out to sea during our boat surveys. Our observations of Marbled **Murrelets** were made from a boat incidental to surveys of other nesting seabirds. These surveys were not designed to census Marbled **Murrelets** in the most accurate fashion but we hope these results shed some light on the species' nesting distribution in the state. Further work on Marbled **Murrelets** is certainly needed and our individual sight records may be of future use to anyone attempting a more complete survey of this species. All records of our observations are included in the Colony

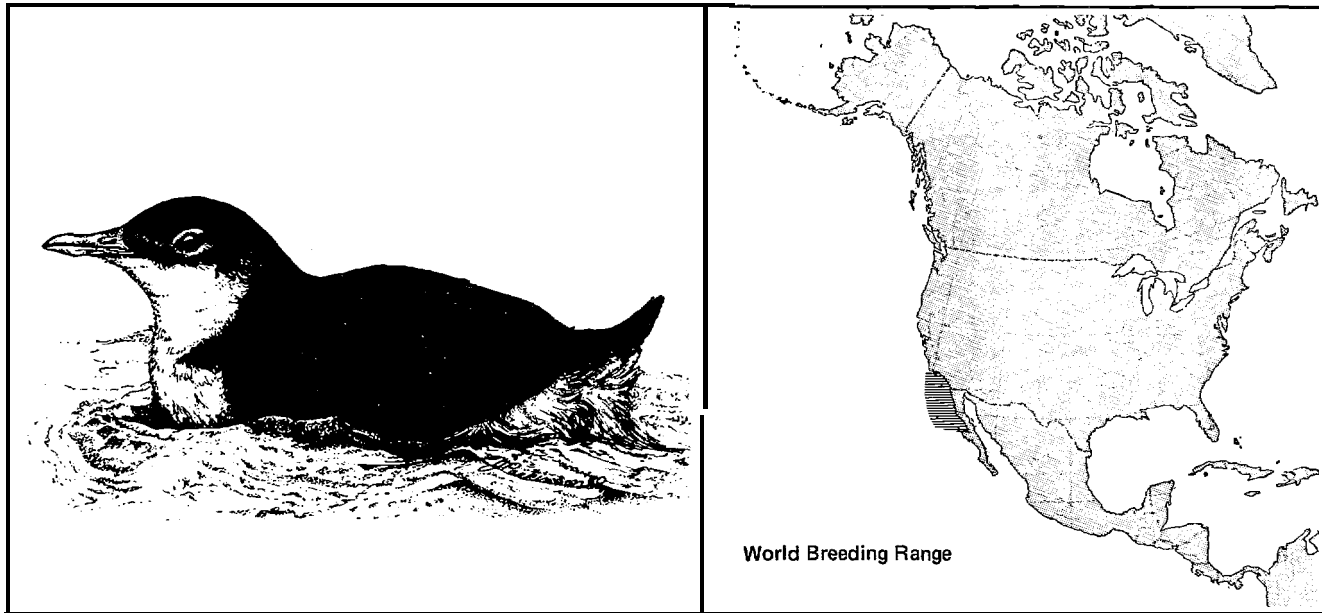
Status Records and in our field notes (Appendix A).

#### HISTORICAL STATUS AND VULNERABILITY

There is little information on the historical status of Marbled **Murrelets** in California. Disturbance to nesting Marbled **Murrelets** probably has been and will continue to be primarily through the destruction of nesting habitat. Populations of Marbled **Murrelets** may have been reduced by the destruction of virgin coastal forests, although no data are available. The old growth stands of the coast redwood alone have been reduced in area from an estimated 809,000 hectares (2,000,000 acres) to 93,000 hectares (230,000 acres) (Veirs pers. comm.). We suspect that Marbled **Murrelets** were formerly more abundant than they are today.

Marbled **Murrelets** are vulnerable to oil contamination since they are often found on waters very close to land. An oil spill along the coastlines of Humboldt - Del Norte Counties or San Mateo - Santa Cruz Counties could endanger a **murrelet** population that is highly concentrated during the summer months along those two stretches of coastline.

## Xantus' Murrelet (*Endomychura hypoleuca*)



The breeding range of the Xantus' Murrelet is **restricted** to the Channel Islands and the west coast of Baja California, Mexico. This species and the closely related Craveri's Murrelet (*Endomychura craveri*) are thought to be reproductively isolated, even though a small zone of sympatry exists in the San Benitos Islands, Mexico (Jehl and Bond 1975). Before intensive research was begun on Xantus' Murrelets in 1975 by Hunt et al. (1979), little was known about their life history. Most of the information **in** this account was taken from that study.

Xantus' Murrelets nest primarily in rock crevices along or near cliff ledges, but also under bushes, in ground vegetation, in abandoned rabbit burrows, under old pelican nests, and in man-made debris (Hunt et al. 1979). These murrelets, unlike most **alcids**, usually lay two eggs annually. Eggs are incubated under the wings, next to lateral brood patches on each side of the body.

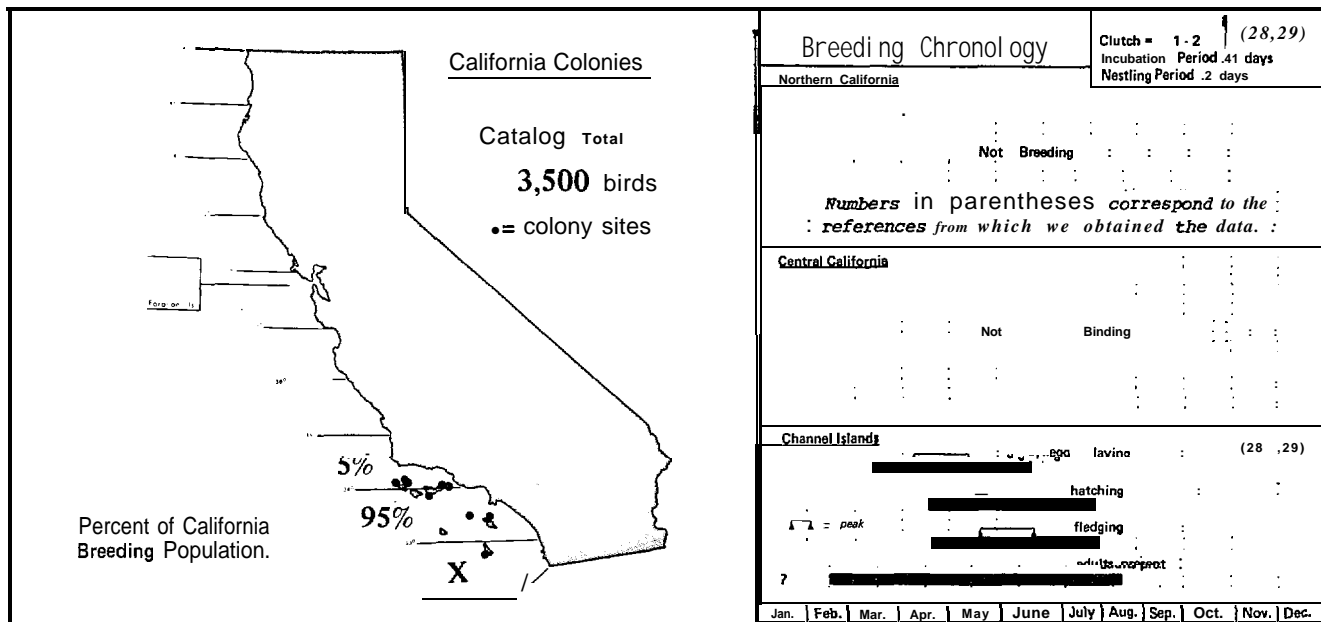
During the breeding season, Xantus' Murrelets spend daylight hours either in the nest or foraging at sea. Other colony activities, such as nest-site selection, incubation shift changes, and fledging, occur at night (Hunt et al. 1979). Xantus' Murrelet chicks are highly **precocial** and fledge at about two days of age. The small, flightless, downy young leave their nests at night and scurry to the shoreline. Upon reaching the ocean, they plunge in and head far out to sea with their parents. Chicks waylaid during the **night** or

attempting to leave the nests during the day are quickly eaten by Western Gulls.

Xantus' Murrelets dive for food and feed extensively on larval fish. Northern Anchovies, Pacific Sauries and rockfish (family Scorpaenidae) are the most important species taken by Xantus' Murrelets in the Channel Islands (Hunt et al. 1979). Of these, Northern Anchovies are the most important and their availability may dramatically influence the breeding success of Xantus' Murrelets (Hunt and Butler 1980). Xantus' Murrelets often forage in the immediate vicinity of their colonies during the breeding season, but disperse widely thereafter.

### CALIFORNIA COLONIES

All California colonies of Xantus' Murrelets are in the Channel Islands. Santa Barbara Island (524 008), where 2,000 to 4,000 birds are estimated to breed, is the most important colony for this species in California. Hunt et al. (1979) have conducted studies of this species' breeding biology and at-sea distribution at this site. **All** remaining colonies of Xantus' Murrelets in California are small. Of these, Prince Island (501 004) and **Sutil** Rock (524 009) are the largest, each with 150 birds, followed by East **Anacapa** Island (502 009) with fewer than 40 birds, Snag Rock (524 007) with 30 birds, and Gull Rock



(524 001 ) with two birds. Xantus' Murrelets probably also breed at Scorpion Rock (502 O 10) and Castle Rock (501 005), and small numbers may occasionally breed at other locations in the Channel Islands (Hunt et al. 1979).

#### HISTORICAL STATUS AND VULNERABILITY

The population of Xantus' Murrelets on Santa Barbara Island is apparently recovering from a drastic decline. Between 1897 and 1908, feral cats (*Felis catus*) were introduced onto Santa Barbara Island. Few data on the size of the murrelet population prior to the cats' introduction exist, but Sumner (1939) states, "At one time large colonies of auklets and murrelets were present on the island, but none have been recorded in recent years and it is supposed that they have been exterminated by these feral cats". By 1975 the population of cats was reduced to perhaps a single animal and Xantus' Murrelets are now some of the most abundant of breeding seabirds on the island (Hunt et al. 1979).

Natural predators of Xantus' Murrelets include the Peregrine Falcon (*Falco peregrinus*), Deer Mouse (*Peromyscus maniculatus*), and the Island Fox (*Urocyon littoralis*). Peregrine Falcons were once common residents of the Channel Islands, but now are only present as migrants. Their decreased presence may have contributed to the Xantus' Murrelet recovery on

Santa Barbara Island (Hunt et al. 1979).

An insular subspecies of Deer Mouse resides on each of the eight large Channel Islands (Nelson and Goldman 1931). They are known to prey on eggs and possibly chicks of the Xantus' Murrelet, but their presence is not a deterrent to successful reproduction (Hunt et al. 1979, Winnet et al. 1979).

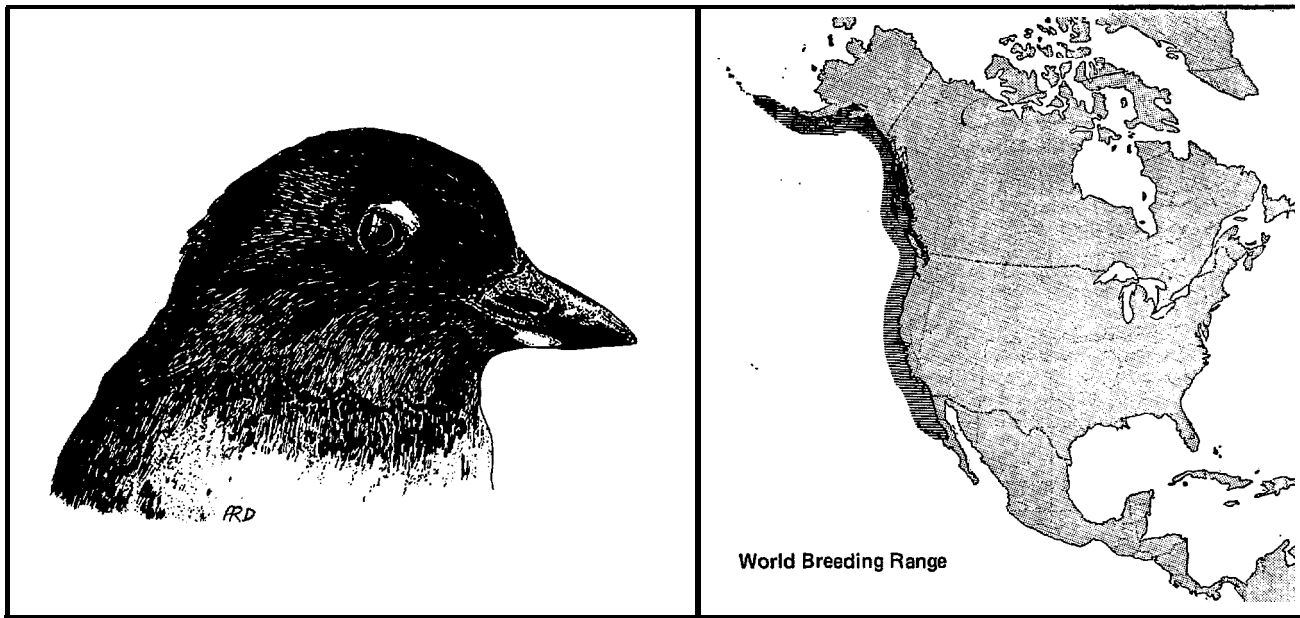
The Island Fox is present on all large Channel Islands, except Anacapa and Santa Barbara Islands, the only two islands with large seabird colonies. The presence of foxes on the other large islands may account for small populations of seabirds there.

Because Xantus' Murrelets, like other alcids, spend a lot of time on the water and dive for food, they are vulnerable to oil spills. Location of spills in the California Bight during the breeding season would be the most critical, since adults and recently hatched flightless chicks would be concentrated near their colonies.



*Xantus' Murrelet Chick*

## Cassin's Auklet (*Ptychoramphus aleuticus*)



The **Cassin's Auklet** is one of the most widespread members of the family **Alcidae** in the North Pacific. **Cassin's Auklets** build their nests in burrows on offshore islands that have a sufficient mantle of soil. These tiny **alcids** are nocturnal at their breeding colonies and are likely the most pelagic of all the California **alcids** (Hunt et al. 1979). A population is present on the **Farallon Islands** (429 012) all year, but wintering **northcoast** birds are found between 10 and 50 miles offshore (**Manuwal** 1974a, **Yocom** and **Harris** 1975).

Throughout their range **Cassin's Auklets** usually nest in burrows, but on the **Farallon Islands** birds also may use rock crevices, debris piles, cracks under buildings, and large caves (**Thoresen** 1964). Each female lays a single creamy white egg, but may lay a second egg if the first egg is destroyed (**Manuwal** 1974a). Adult **Cassin's Auklets** develop two incubation patches on the body, one beneath each wing (**Manuwal** 1974b). These incubation patches are found only among several species of **alcids**, including **Xantus' Murrelets**, **Rhinoceros Auklets**, and **Tufted Puffins**. Breeding **Cassin's Auklets** also develop a **gular** pouch, used to store food for young that are fed by regurgitation at night (**Speich** and **Manuwal** 1974). Small fish and pelagic crustaceans form the mainstay of the diet of **Cassin's Auklets** (**Manuwal** 1974a, **Hunt et al.** 1979).

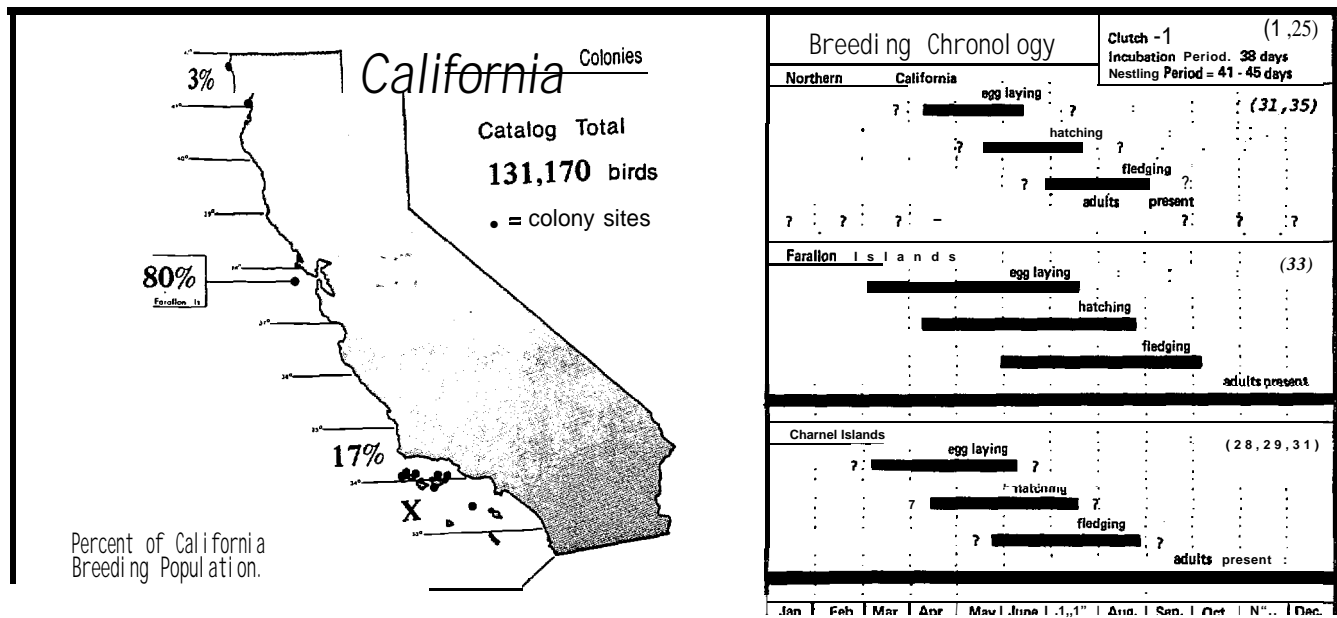
### CALIFORNIA COLONIES

**Cassin's Auklets** breed in California from the Channel Islands to Castle Rock (325 006). Of the know colonies in California the **Farallon Islands** colony is by far the largest, containing 105,000 **auklets**. Of the 23,000 **Cassin's Auklets** nesting in the Channel Islands, 20,000 are found on Prince Island (501 004), Castle Rock, near the Oregon border, has an estimated population of 3,600 birds.

**Cassin's Auklets** are difficult to census because of their nocturnal lifestyle, burrow nesting habits, and highly pelagic nature. We found no new colonies during our surveys and have made no new population estimates for this species.

### HISTORICAL STATUS

Surprisingly, **Cassin's Auklets** were rare on the **Farallon Islands** in the mid-1 800's. **Ainley** and **Lewis** (1974) relate this scarcity to a period of more than two decades when warm, tropical water moved north along the California coast. They hypothesize that populations of **Cassin's Auklets** increased when cold water returned to the region. Now **Cassin's Auklets** are the most abundant birds on the **Farallon Islands**.



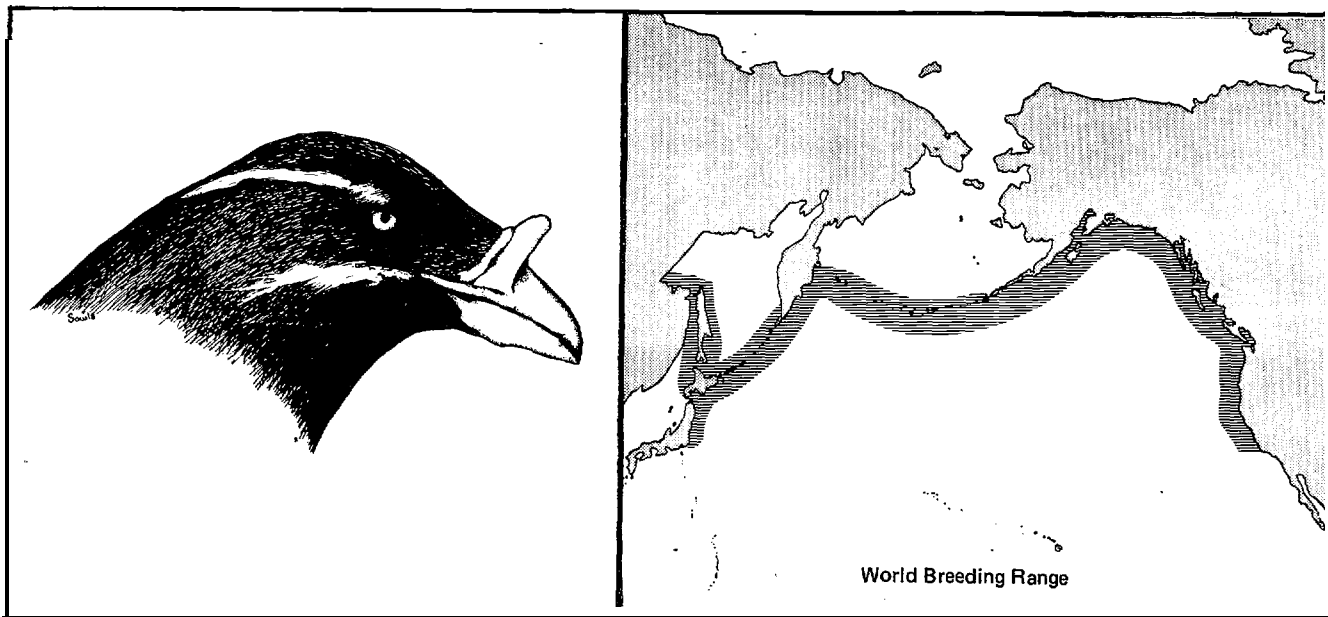
Osborne (1972) estimated that numbers of Cassin's Auklets on Castle Rock increased from 100 seen in 1959 by Thoresen (1964) to 3,600 in 1970. Cassin's Auklets formerly bred on Flatiron Rock (325 023) as late as 1934 (Clay unpubl. field notes), Osborne (1972) believes that soil erosion was the principal reason for their extirpation from this island.

Western Gulls prey heavily on Cassin's Auklets at Castle Rock and the Farallon Islands (Thoresen 1964), Young are pulled by gulls from shallow burrows and adults are killed at night when they unfortunately land at the feet of roosting gulls (Thoresen 1964).

Cassin's Auklets are vulnerable to disturbance from humans and to the depredations of introduced predators such as rats. Cassin's Auklets may desert their nests if disturbed during incubation and their burrows can easily be caved in by unwary visitors to their colonies. Fortunately, all colonies of Cassin's Auklets in California except Green Rock (325 020) are protected.

Cassin's Auklets feed from the ocean surface in large social flocks where they are highly vulnerable to oil contamination (Hunt et al. 1979), An oil spill near the Farallon Islands, where 80 percent of the state's population breeds, would be particularly damaging to this species.

## Rhinoceros Auklet (*Cerorhinca monocerata*)



The Rhinoceros Auklet is an uncommon breeding seabird in California. It derives its name from the **keratinous** "horn" found on its bill during the breeding season. Although this species' common name implies it is an **auklet**, the Rhinoceros Auklet is more closely related to the puffins. Rhinoceros Auklets are excellent divers and feed on small fish and cephalopods (Heath 1915, Richardson 1961, Leschner 1976).

Rhinoceros Auklets nest primarily in burrows dug into the ground on both forested and un-forested islands. Burrows may be up to **6** meters in length and often fork two or three times before ending in a nesting cavity (Heath 1915, Willett 1915). The recent discovery of Rhinoceros Auklets at Sea Lion Caves, Oregon (Scott et al. 1974, Varoujean and Pitman 1980) and at caves in the conglomerate cliffs at Point **Arguello** (501 01 0) indicates that this species may also nest in rocky mainland habitats.

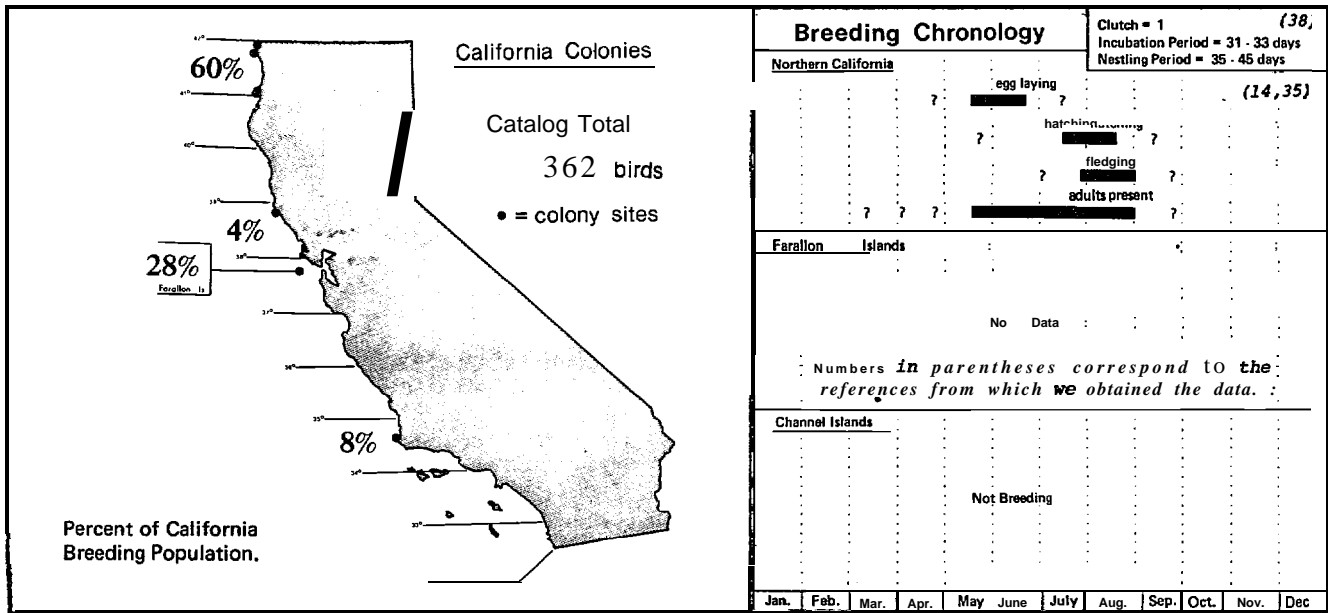
Rhinoceros Auklets almost always enter and leave colonies at night when feeding chicks. This predominantly nocturnal behavior may have **evolved** as a means to reduce kleptoparasitism by gulls. **In** California and Oregon, Rhinoceros Auklets can often be observed on or near colonies during the day, but farther north they appear to be strictly nocturnal. This difference remains unexplained but may be related to the availability of food and its proximity to the colonies. Despite their diurnal tendencies in California, Rhinoceros Auklet colonies are some of the most **difficult** to **find** and census of all colonies of breeding seabirds in the state,

### CALIFORNIA COLONIES

Rhinoceros **Auklets** are known from eight sites in California, but breeding has been **confirmed** at only three: Prince Island (325 003), Castle Rock (325 006), and the **Farallon** Islands (429 012). At the **remaining** five sites we have observed Rhinoceros **Auklets** in breeding plumage on or near the colony and suspect breeding occurs. Small numbers of Rhinoceros **Auklets** likely occur at several more sites, particularly in northern California.

Up to five birds were seen on Green Rock (325 020) at one time and birds were observed entering burrows on several occasions. As many as 38 Rhinoceros Auklets have been seen in the water next to or flying in the vicinity of Green Rock at one time. Rhinoceros Auklets have been suspected to breed at this site for several years (**LeValley pers. comm.**). At **Gualala** Point Island (404 004), Fish Rock (404 003), and Arched Rock (404 006), the presence of birds on the water immediately adjacent to the rock or doing "fly-by's", and the presence of suitable burrows, strongly suggests breeding at these sites. Rhinoceros **Auklets** are also suspected to breed at Little River Rock (325 035); (**Harris pers. comm.**).

Point **Arguello** (501 010) may support a mainland colony of breeding Rhinoceros Auklets in California. We observed a maximum of 24 birds on 11 June 1980. A minimum of 13 birds were discovered entering and leaving small caves in the cliffs on 17 and 18 July 1980. An examination of these caves was inconclusive.



## HISTORICAL STATUS AND VULNERABILITY

Rhinoceros Auklets were first found breeding at Castle Rock (325 006) in 1917 when Clay (pers. comm. in Osborne 1972) claimed to have found one nest. Clay, who periodically visited many of the seabird islands in northern California, makes no further mention of this species. Osborne (1972), after his 1969 and 1970 surveys, estimated a population of between 100 and 150 Rhinoceros Auklets on Castle Rock. He revisited the island in 1977 and felt the population had increased to 200 birds (Osborne pers. comm.). To avoid disturbing the seabirds at Castle Rock we conducted no new groundwork there during this study.

Rhinoceros Auklets were known to breed on the Farallon Islands in the early 1800's but disappeared in the 1860's, possibly as a result of collecting by overzealous scientists. They were not observed there again until 1971, and in 1972, two or three pairs were present (Ainley and Lewis 1974). Presently about 100 Rhinoceros Auklets are suspected to breed on the Farallon Islands and the population is thought to be expanding (Ainley pers. comm.).

Before 1979, Rhinoceros Auklets were known to nest only as far south as the Farallon Islands. Although our observations at Point Arguello do not constitute a breeding record we are confident that they are breeding there or will do so in the near future. This would represent a range extension of some 350 kilometers.

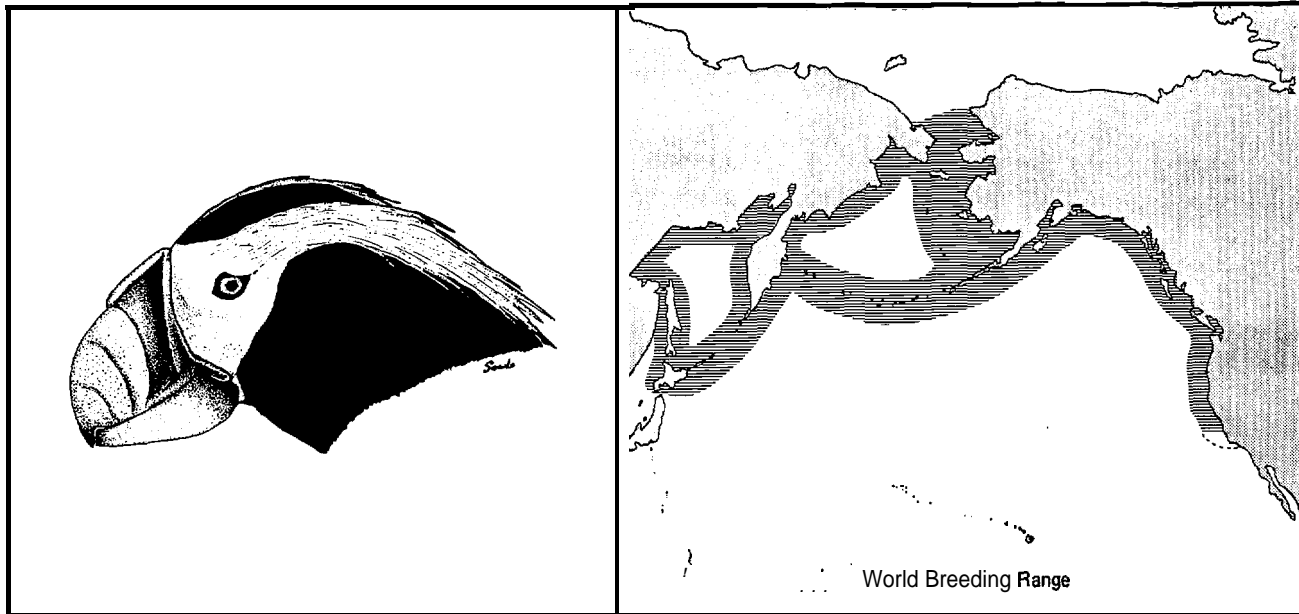
Rhinoceros Auklets are very sensitive to

disturbance during the nesting period. Adults will readily desert their nests if disturbed during incubation or brooding. Their burrows are often near the surface of the ground and are easily collapsed.

Like all alcids, Rhinoceros Auklets are extremely vulnerable to oil spills. During the breeding season, they concentrate at two sites: Castle Rock and the Farallon Islands. Oil slicks or other pollution in the vicinity of these colonies could affect a large portion of California's breeding population. During winter, California waters support large numbers of Rhinoceros Auklets, many from colonies further north (Briggs 1980).

The available data indicate an increasing population of Rhinoceros Auklets in California. Significant increases in numbers have been observed at the two largest colonies in the state, Castle Rock and the Farallon Islands, and Rhinoceros Auklets have been found breeding or are suspected to breed at six additional sites. These recent increases and the discovery of new nesting sites in Oregon (Scott et al. 1974, Varoujean and Pitman, 1979) and British Columbia (Hatler et al. 1978) indicate that this population increase may be widespread along the west coast of North America.

## Tufted Puffin (*Lunda cirrhata*)



Tufted Puffins are among the most abundant and conspicuous of the seabirds in the North Pacific, although they are the least common **alcid** nesting in California. The species' center of abundance appears to be the western Gulf of Alaska and the Aleutian Islands (**Sowls** et al. 1978). These colorful, comical seabirds can often be seen standing in front of their nesting burrows, especially in early morning.

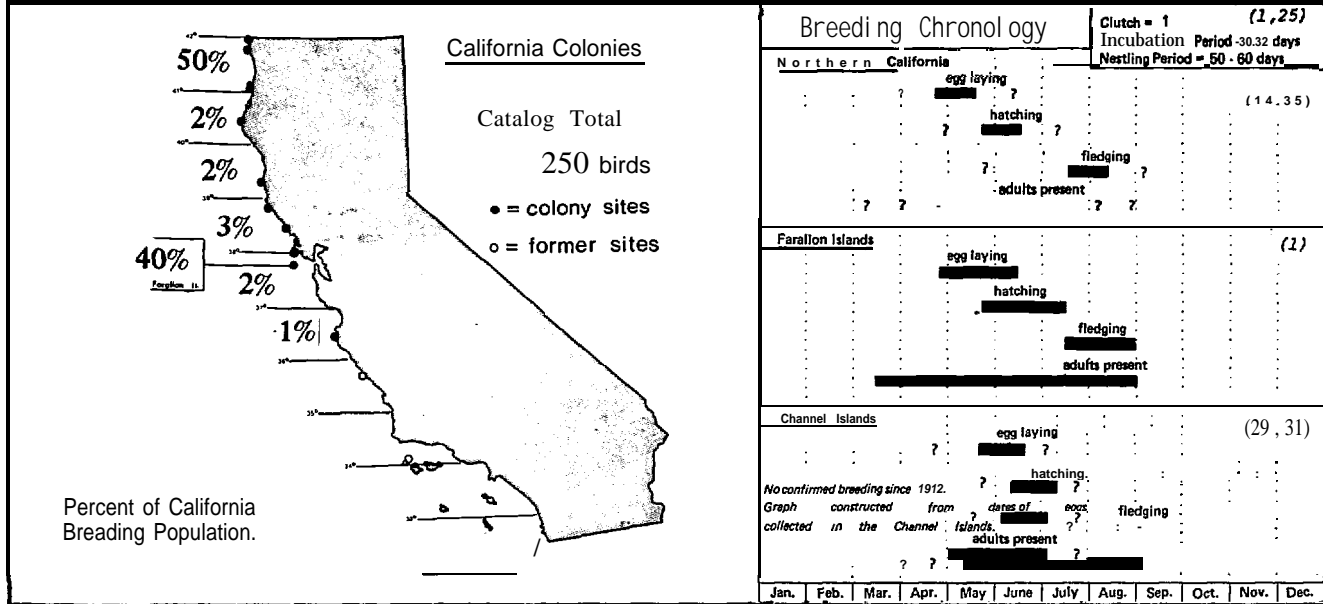
Tufted Puffins usually nest in earth burrows at the edges of cliffs or on the grassy slopes of islands. Tufted Puffins in California also use burrows or small caves found in loose sandstone or unconsolidated conglomerate rock. In California, extensive areas of ideal nesting habitat exist on only a few islands, so many colonies are small and undoubtedly will remain so. Except on the **Farallon** Islands, lack of adequate nesting habitat may ultimately be one of the major factors limiting expansion of the Tufted Puffin population in California.

Tufted Puffins can sometimes be observed carrying fish in their bills to their chicks at colonies. Preferred foods include small fish, cephalopods, and crustaceans (**Hatch** et al. 1979). Although Tufted Puffins are diurnal, fledglings apparently leave their burrows and go to sea only under cover of darkness. **In fall**, **adult** puffins lose their brightly colored bill sheaths. Both fledglings and adults head far to sea and during winters are only occasionally seen near land.

### CALIFORNIA COLONIES

Tufted Puffins are found from Prince Island (325 003) in northern California south to Hurricane Point Rocks (454 011 ) at the northern tip of the Big Sur coast. We list 14 sites at which Tufted Puffins have been recorded but breeding has been recently documented at only five of these: Prince Island, Castle Rock (325 006), Green Rock (325 020), Puffin Rock (325 021 ), and the **Farallon** Islands (429 0 12). With the exception of Little River Rock (325 035), Tufted Puffins have been observed near burrows at the remaining sites. Although Harris (1974) listed Tufted Puffins as possible breeders on Little River Rock, where the habitat appears suitable for this species, we did not observe birds there. Tufted Puffins were regularly observed at **Piedras Blancas** Rock (477 007) in 1979 (**Rauzon** pers. comm.), but not in 1980 (Ron Jameson pers. comm.),

The largest Tufted Puffin colonies in California are on Castle Rock and the **Farallon** Islands. Each contains about 100 birds (**Ainley** pers. comm. this study). **All** remaining locations contain ten or fewer birds. Most Tufted Puffin colonies in **California** have been identified, but a few undocumented pairs may be present at scattered locations, **primarily** in northern California.



**HISTORICAL STATUS AND VULNERABILITY**

Since the early 1900's, the Tufted Puffin's range in California has contracted northward and its population has declined in size. Tufted Puffins were formerly found breeding in the northern Channel Islands (Willett 191 O), but they no longer do so (Hunt et al. 1979). The southernmost suspected breeding location today is Hurricane Point Rocks (454 011 ) in central California.

The Farallon Island population of Tufted Puffins was once much larger than it is today. The several thousand birds present in the early 1900's decreased in number to a low of 26 in 1959 (Ainley and Lewis 1974). Ainley and Lewis (1974) state that oil pollution was the major cause of this decline and suggest that the crash of the Pacific Sardine population has been the major factor keeping this population depressed.

Elsewhere in California, little information on the historical status of this species is available. Tufted Puffins once nested on Blank Rock (325 024) during the earlier part of this century (Clay unpubl. field notes), but they have since disappeared from this island, probably because of soil erosion. Clay also reported Tufted Puffins on Flatiron Rock (325 023) as "numerous" in 1911, but since then their nesting habitat has apparently deteriorated greatly. Osborne (1972) found only

two Tufted Puffins breeding on Flatiron Rock in 1970 and we list only two on this site during the 1979 and 1980 breeding seasons. Tufted Puffins in California are concentrated around two major breeding colonies: Castle Rock and South Farallon Island. Floating oil near either of these islands or repeated human disturbance could be disastrous to the population. Fortunately, both islands are protected, the former as a Nature Conservancy Preserve and the latter as a National Wildlife Refuge. Anyone attempting to land on either island must obtain prior permission. The remaining islands are not officially protected, but because of their rugged topography and inaccessibility they have so far received little attention from man.

1998

2000

2001

2002

2003

2004

*Catalog of California*  
*Seabird Colonies*

MAPS &  
**TABLES :**



## How to Use Maps And Tables

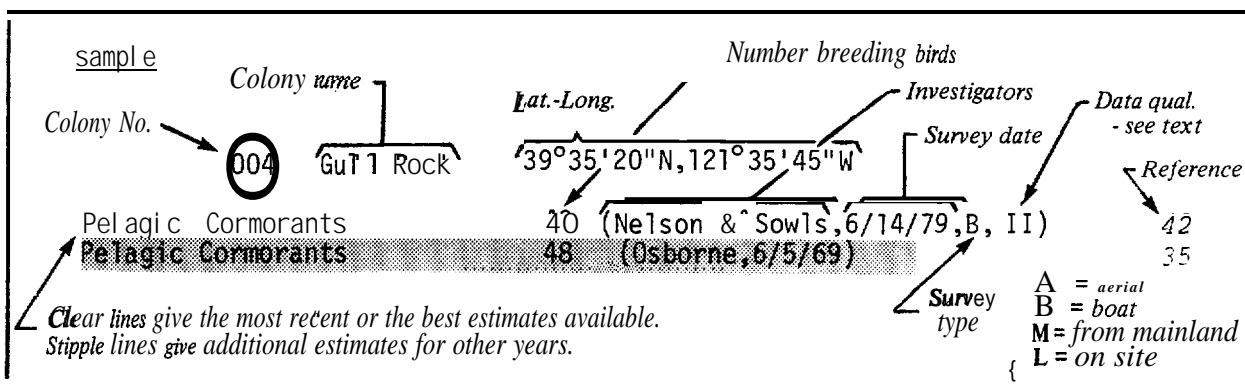
A few minutes taken to carefully read this section should make your use of these maps and tables much easier. Each Colony in this report is included on one of 11 U.S. Geological Survey maps which cover the California coast. An index to these maps appears on the facing page. They are numbered under a U.S. Fish and Wildlife Service system covering the entire United States. The first three digits of the six-digit catalog number for each colony is the map number. All data in the following maps and tables are organized into eleven sections corresponding to these maps.

Once you have determined which of these eleven maps covers your area of interest, turn to that section. Heading each section is a map of that area showing the locations of all colonies within that area. The numbers that appear here (001, 002, 003, and so on) are the colony identifiers, each specific for a colony area within that map. These are the last three digits of the six-digit catalog number. Note that these numbers are not sequential along the coast. Many new

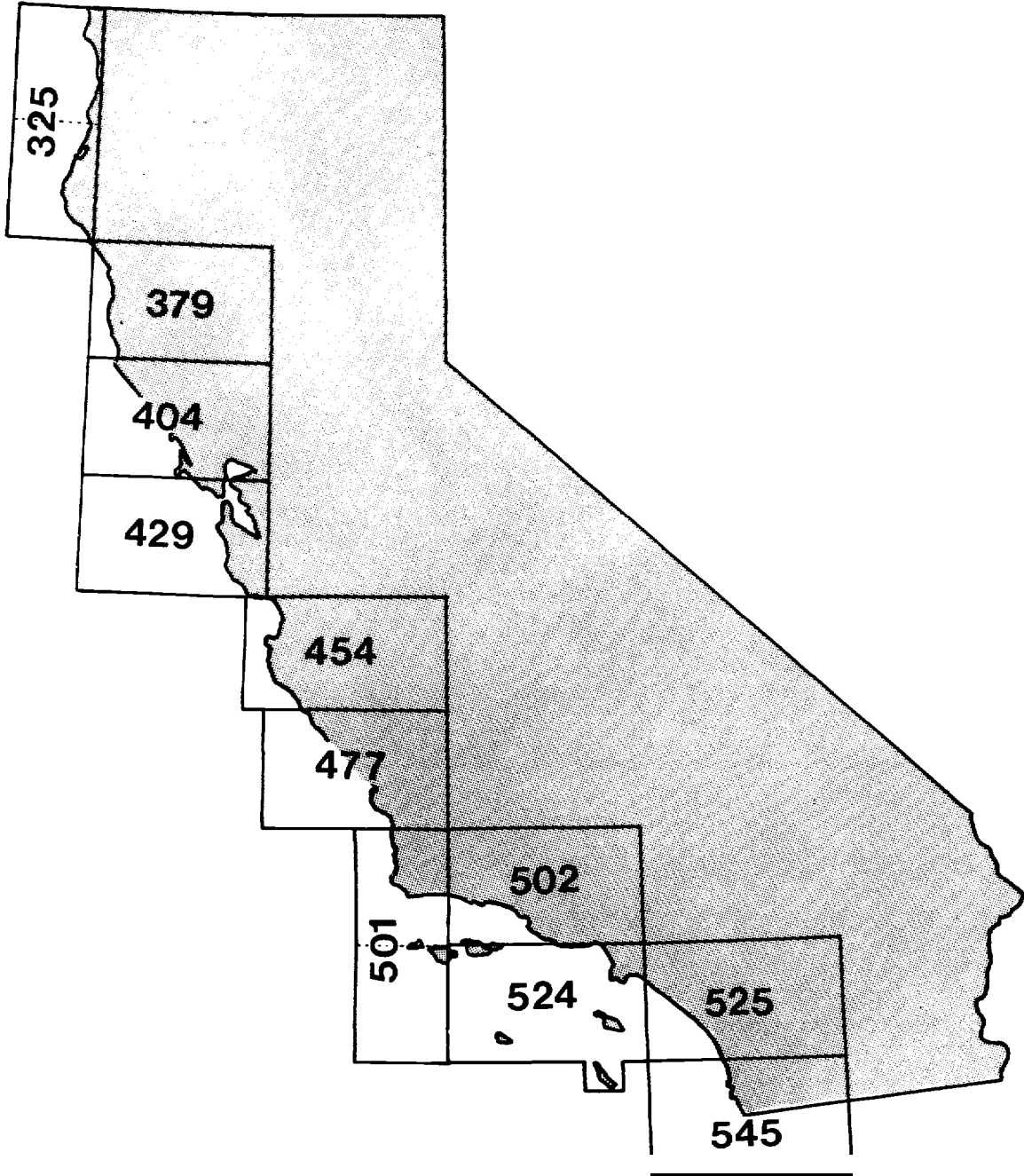
colonies have been identified since catalog numbers were initially assigned by Varoujean, (1979). We have retained these initial numbers and added new colony numbers as necessary.

A sample colony listing is given below. Note that the populations are given in number of breeding birds and not pairs. The reference (1,2, etc.) at the end of each data line corresponds to the proper citation, page 341, from which we obtained the information. If further detail is needed about a site, these sources should be consulted. For information on the archiving of our U.S. Fish and Wildlife Service field notes and photographs see appendix A, page 351.

Since there are many landforms with similar or identical names along the coast, such as "Bird Rocks", "White Rocks", or "Castle Rocks", the catalog number is important in distinguishing sites. Therefore we list it after mentioning a site in the text. If you know the name but not the catalog number of a site you are interested in, check appendix C. It lists all colony areas alphabetically and their catalog numbers.

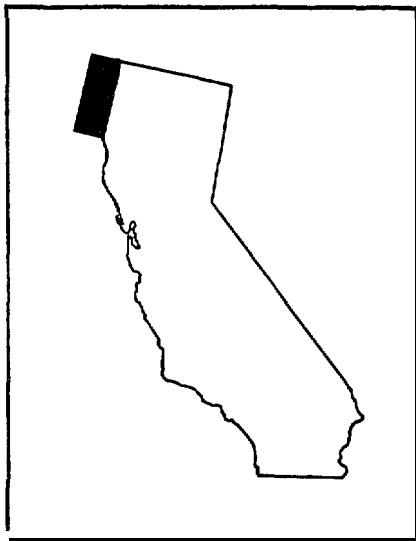


MAP INDEX:



- 325 ●
- 379 ●
- 404 ●
- 429 ●
- 454 ●
- 477 ●
- 501 ●
- 502 ●
- 524 ●
- 525 ●
- 545 ●

*Dots keyed to map sections.*



## 325

### Eureka

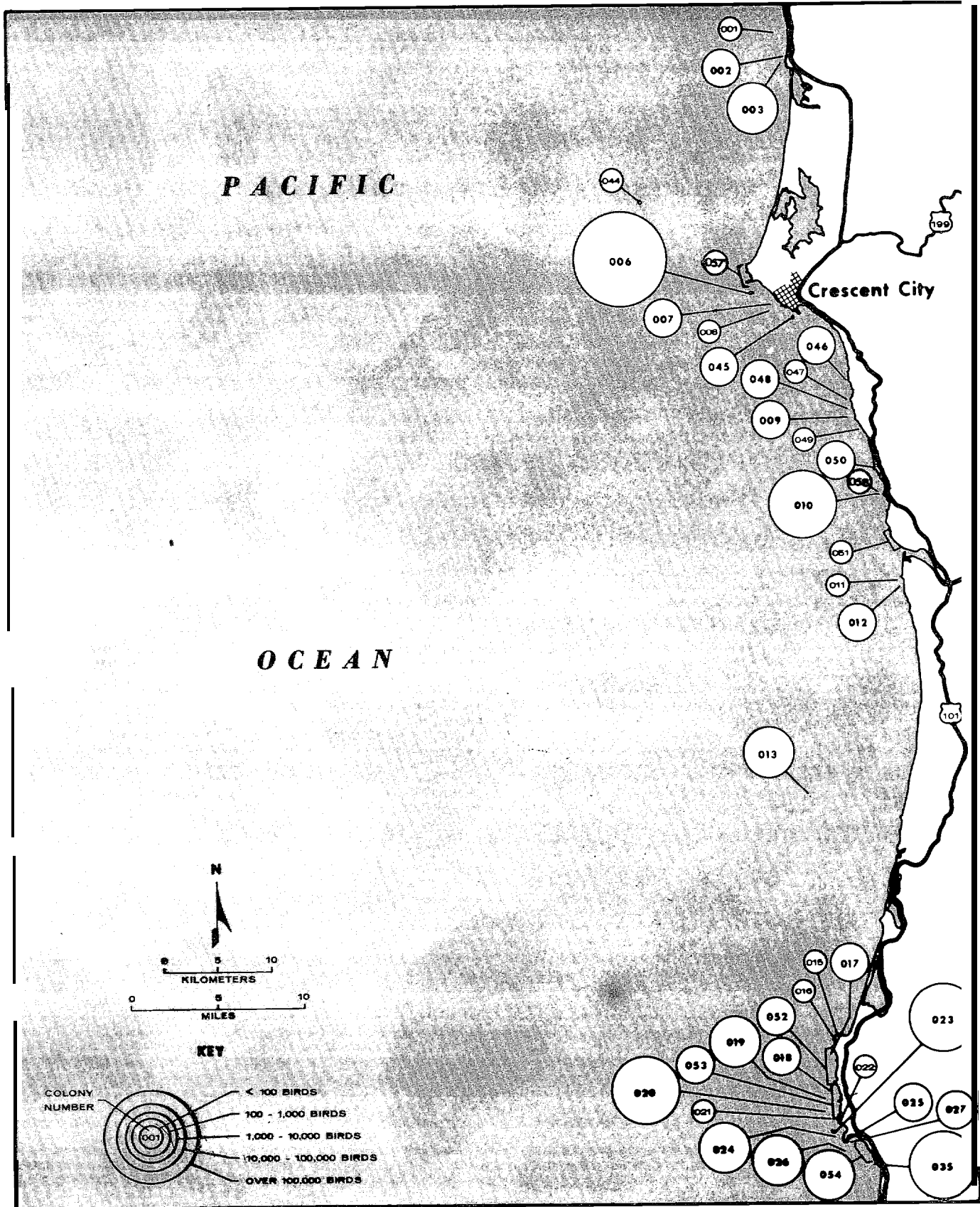
The maps on the facing page and following page are indexes to the locations of colonies within map 325, Eureka. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by **Varoujean** (1979). On the pages following these two maps, all colonies are listed sequentially and a detailed map of each is provided.

Numbers of breeding seabirds will vary from year to year, Below are the approximate numbers of breeding seabirds within this region.

Fork-tailed Storm-Petrel. . . . .	350
Leach's Storm-Petrel. . . . .	17,000
Brandt's Cormorant. . . . .	7,000
Double-crested Cormorant. . . . .	1,000*
Pelagic Cormorant . . . . .	3,000
Black Oystercatcher . . . . .	100
Western Gull . . . . .	3,500
<b>Common Murre</b> . . . . .	250,000
Pigeon Guillemot. . . . .	2,500
Marbled <b>Murrelet</b> . . . . .	no estimate
<b>Cassin's Anklet</b> . . . . .	3,600
Rhinoceros Anklet . . . . .	250
Tufted Puffin . . . . .	150

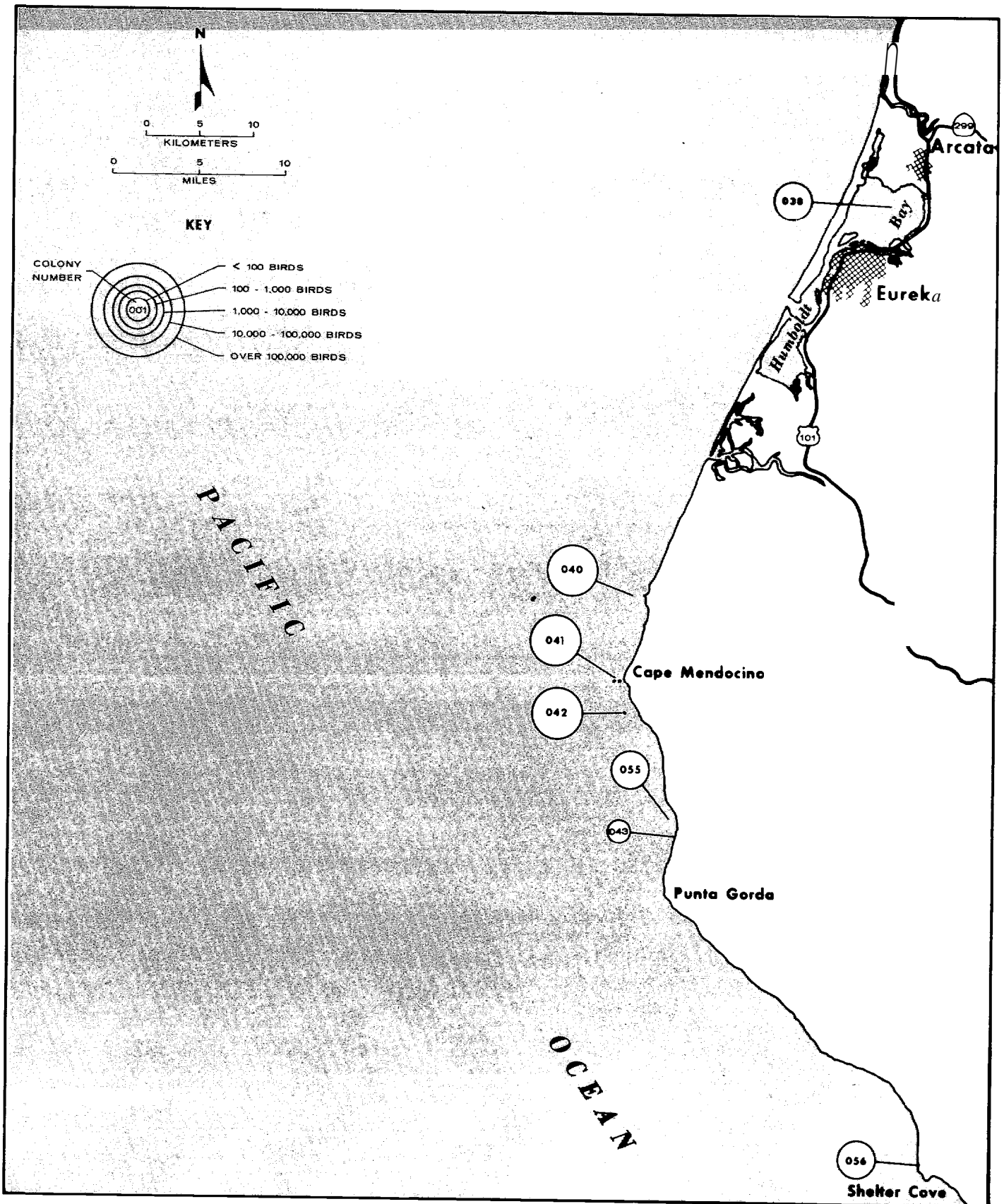
*\*coastal population only.*

# 325 (North) Eureka

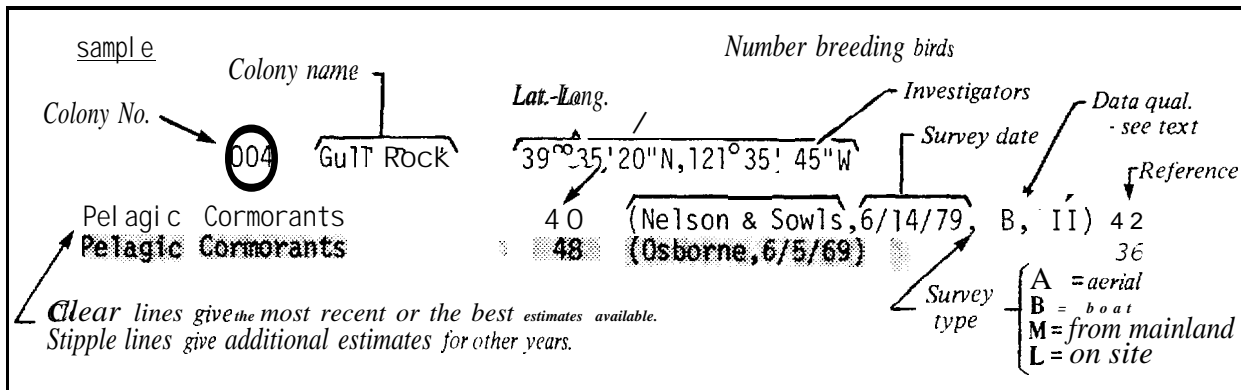




# 325 (South) Eureka



AREA 325, Eureka (cent' d.)

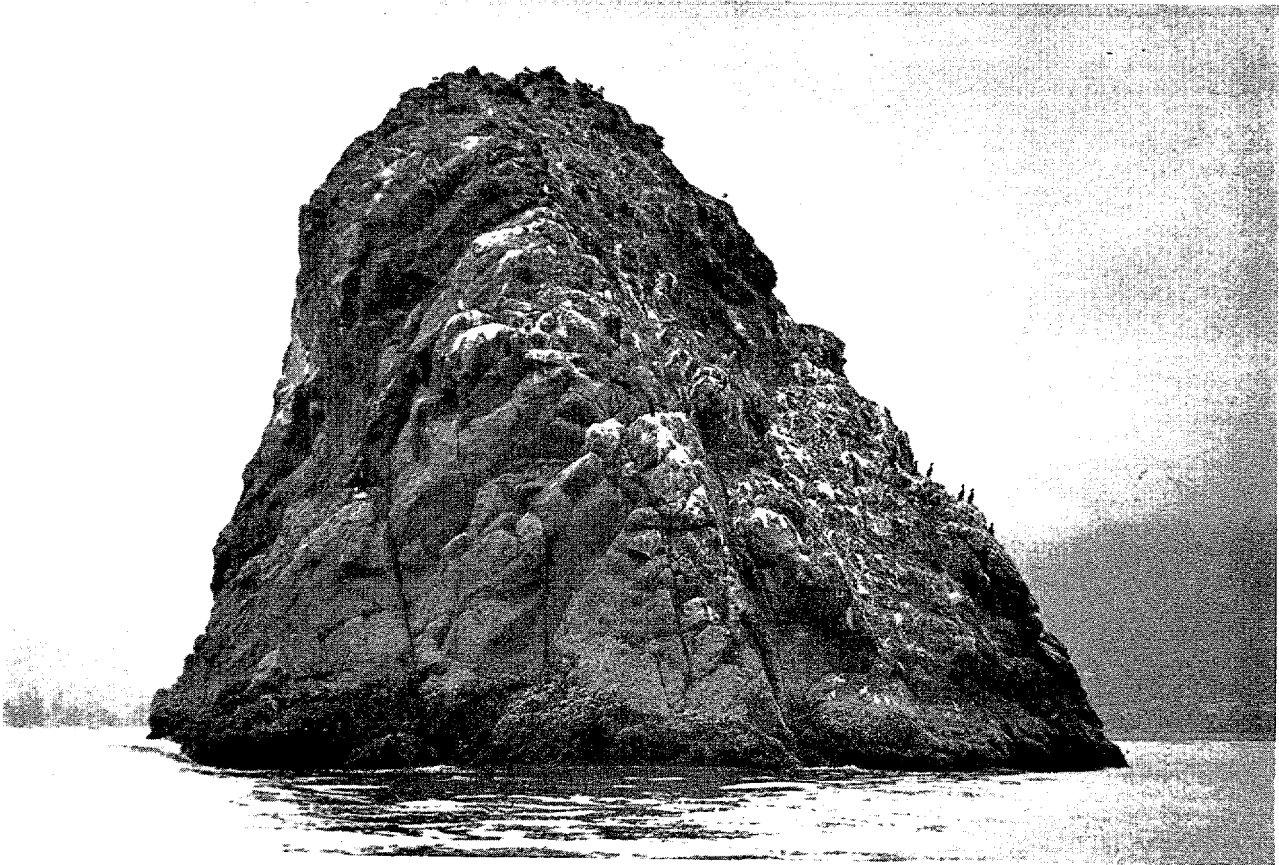
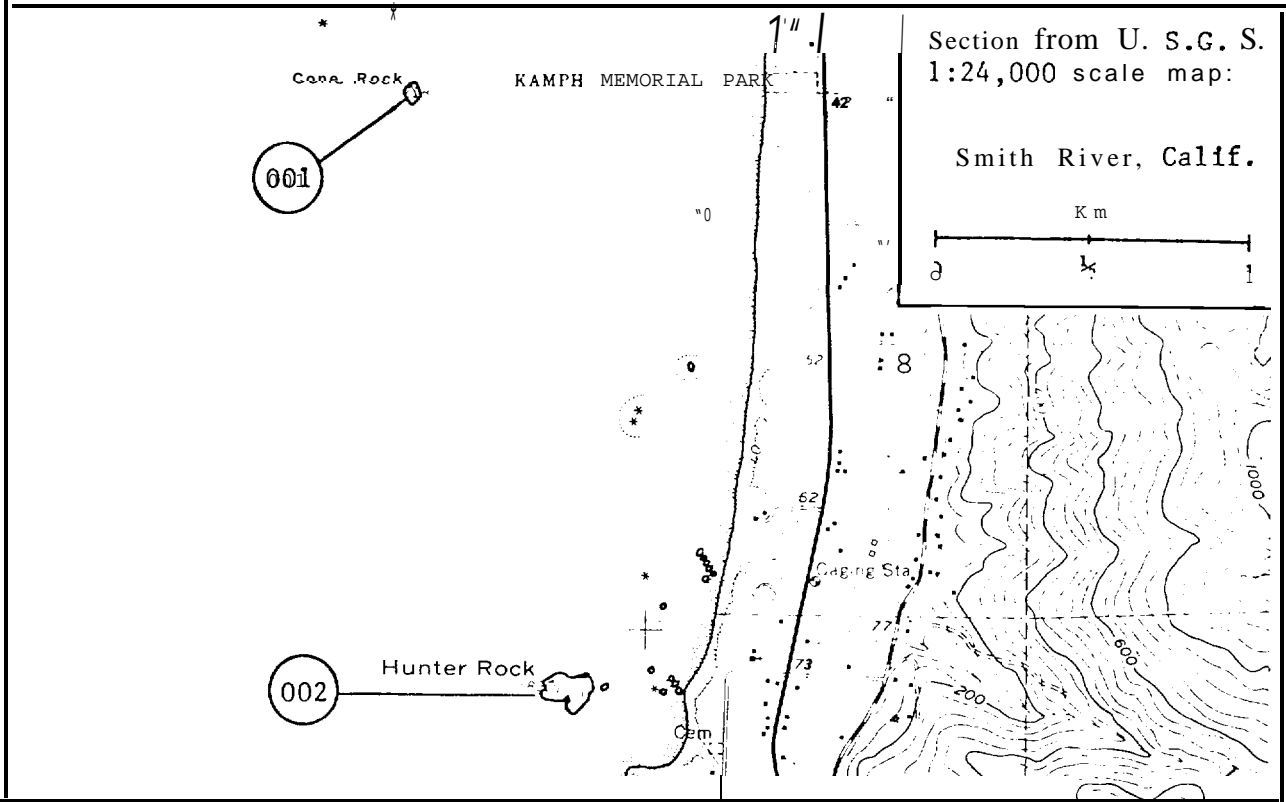


001 Cone Rock 41°58'21"N, 124°13'02"W

Pelagic Cormorant	0	(DeGange, Lester & Sows, 7/2/80, B, I)	42
Western Gull	10	(DeGange, Lester & Sows, 7/2/80, B, III)	42
Pigeon Guillemot	8	(DeGange, Lester & Sows, 7/2/80, B, III)	42
Total	18		
Pelagic Cormorant	12-20	(Osborne, 7/16/69, A)	35
Pelagic Cormorant	14	(Lester & Rodstrom, 6/3/79, B, III)	42
Western Gull	16	(Osborne, 7/16/69, A)	35

002 Hunter Rocks 41°57'22"N, 124°12'41"W

Brandt's Cormorant	680	(DeGange & Nelson, 7/25/80, A, II)	42
Pelagic Cormorant	122	(DeGange, Lester & Sows, 7/2/80, B, II)	42
Black Oystercatcher	2	(DeGange, Lester & Sows, 7/2/80, B, III)	42
Western Gull	38	(DeGange, Lester & Sows, 7/2/80, B, III)	42
Pigeon Guillemot	120	(DeGange, Lester & Sows, 7/2/80, B, III)	42
Total	962		
Brandt's Cormorant	320	(Osborne, 7/24/69, L)	35
Brandt's Cormorant	584	(Lester, 7/12/79, A, II)	42
Pelagic Cormorant	50	(Osborne, 7/24/69, L)	35
Pelagic Cormorant	60	(Osborne, 1970)	35
Pelagic Cormorant	30	(Lester & Rodstrom, 6/4/79, B, II)	42
Black Oystercatcher	2	(Osborne, 6/24/69)	35
Western Gull	30	(Osborne, 7/24/69, L)	35
Western Gull	20	(Lester & Rodstrom, 6/4/79, B, III)	42
Pigeon Guillemot	2	(Osborne, 7/24/69, L)	35



Cone Rock

Photo by ArtSowls

AREA 325, Eureka (cent'd.)

003 Prince Island 41°57'04"N, 124°12'41"W

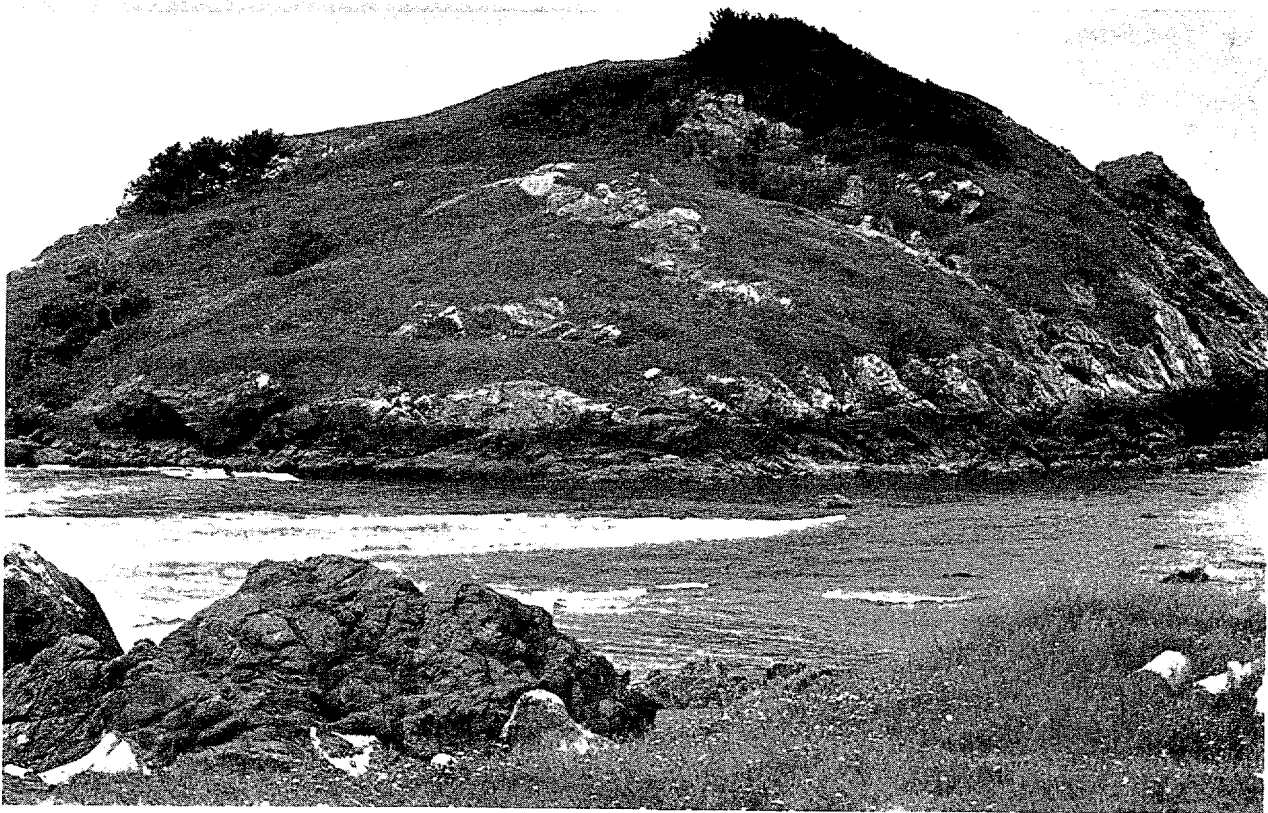
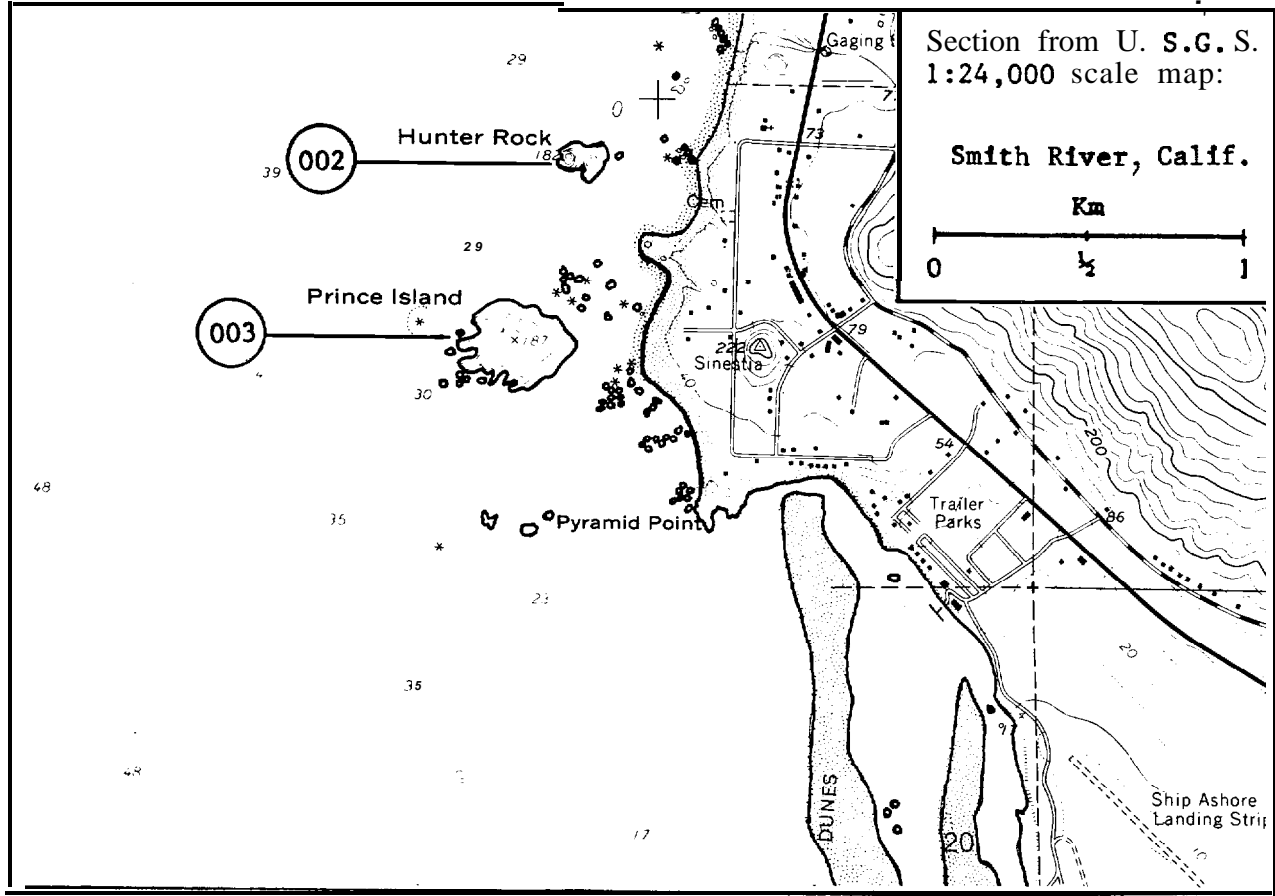
Leach's Storm-Petrel	P	(DeGange, Lester & Sows, 7/3/80, L)	42
Brandt's Cormorant	0	(DeGange, Lester & Sows, 7/2/80, BL, II)	42
Double-crested Cormorant	450	(DeGange, Lester & Sows, 7/2/80, BL, II)	42
Pelagic Cormorant	146	(DeGange, Lester & Sows, 7/2/80, B, II)	42
Black Oystercatcher	6	(DeGange, Lester & Sows, 5/21/80, L, III)	42
Western Gull	420	(DeGange, Lester & Sows, 5/21/80, L, II)	42
Pigeon Guillemot	450	(DeGange, Lester & Sows, 5/21/80, L, III)	42
Rhinoceros Auklet	12	(DeGange, Lester & Sows, 7/3/80, L, III)	42
Tufted Puffin	8	(DeGange, Lester & Sows, 7/3/80, L, III)	42
Total	<u>1,492</u>		

Brandt's Cormorant	0	(Osborne, 1959)	35
Brandt's Cormorant	34	(Osborne, 6/17/70, L)	35
Double-crested Cormorant	180	(Osborne, 6/17/70, L)	35
Double-crested Cormorant	406	(Lester & Rodstrom, 6/3/79, L, I)	42
Pelagic Cormorant	80	(Osborne, 6/17/70, L)	35
Pelagic Cormorant	40	(Lester & Rodstrom, 6/3/79, L, II)	42
Black Oystercatcher	2	(Osborne, 6/17/70, L)	35
Black Oystercatcher	6	(Lester & Rodstrom, 6/3/79, L, III)	42
Western Gull	100	(Osborne, 6/17/70, L)	35
Western Gull	294	(Lester & Rodstrom, 6/3/79, L, II)	42
Pigeon Guillemot	28	(Osborne, 6/17/70, L)	35

P = probably present

004 Smith River was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

005 Lake Talawa Beach was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).



Prince Island

Photo by Art Sowls

AREA 325, Eureka (cent'd.)

006 Castle Rock 41°45'37"N, 124°15'W

Castle Rock is the second most important seabird colony in California. It presently has the largest breeding populations of Common Murres and Rhinoceros Auklets in California as well as important populations of Fork-tailed and Leach's Storm-Petrels, and Tufted Puffins. It is a major hauling area for California sea lions (*Zalophus californianus*) and Stellers sea lions (*Eumetopias jubata*) and is a pupping grounds for Harbor seals (*Phoca vitulina*). Elephant Seals (*Mirounga angustirostris*) are often present in low numbers.

Castle Rock is the primary spring staging grounds for the endangered Aleutian Canada Goose (*Branta canadensis leucopareia*). The island serves as a safe night roost for the geese as most feeding occurs in nearby fields.

Until 1979, Castle Rock was privately owned and in the 1920's sheep grazed its slopes. Speculators have contemplated guano mining, rock quarrying, and construction of a tourist attraction on the island. Fortunately, in 1979, the Nature Conservancy purchased Castle Rock and it will soon be protected as a refuge by the U.S. Fish and Wildlife Service. See Appendix B.

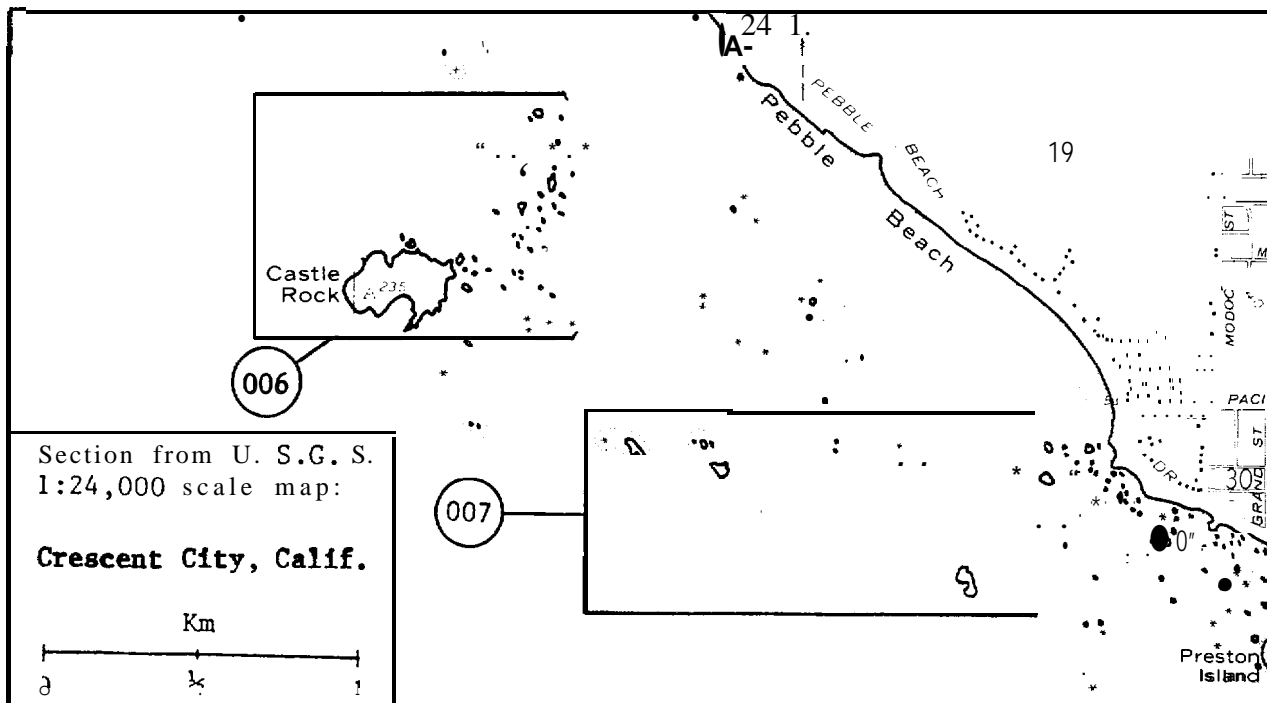
Fork-tailed Storm-Petrel	100	(Osborne, 1970, L)	35
Leach's Storm-Petrel	5,000	(Osborne, 1970, L)	35
Brandt's Cormorant	2,200	(DeGange & Nelson, 7/25/80, A, II)	42
Pelagic Cormorant	340	(Lester, Nakagawa & Vasey, 6/19/80, B, III)	42
Black Oystercatcher	6	(Lester, Nakagawa & Vasey, 6/19/80, B, III)	42
Western Gull	1,250	(Lester & Rodstrom, 7/12/79, A, & 7/19/79, A, III)	42
Common Murre	126,000	(Lester & Rodstrom, 7/12/79, A, & 7/19/79, A, III)	42
Pigeon Guillemot	800	(Lester, Nakagawa & Vasey, 6/19/80, B, III)	42
Cassin's Auklet	3,600	(Osborne, 1970, L)	35
Rhinoceros Auklet	200+	(Osborne, 1977, L)	34
Tufted Puffin	100	(Lester, 1980, BL, III)	42
<b>Total</b>	<b>139,596</b>		

Brandt's Cormorant	1,758	(Osborne, 1970, L)	35
Brandt's Cormorant	2,010	(Lester & Rodstrom, 7/12/79, A & 7/19/79, A, III)	42
Pelagic Cormorant	100	(Osborne, 1970, L)	35
Pelagic Cormorant	96	(Lester & Rodstrom, 5/21/79, B, III)	42
Black Oystercatcher	2	(Osborne, 1970, L)	35
Black Oystercatcher	2	(Lester & Rodstrom, 5/21/79, B, III)	42
Western Gull	1,200	(Osborne, 1970, L)	35
Common Murre	80,000	(Osborne, 1970, L)	35
Cassin's Auklet	100	(Thoresen, 4/16 & 8/25/59, L)	41
Rhinoceros Auklet	X	(Clay, 1917, L)	35
Cassin's Auklet	X	(Clay, 5/20/34, L)	35
Rhinoceros Auklet	100-150	(Osborne, 1970, L)	35
Tufted Puffin	50	(Osborne, 1970, L)	35

△ Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 131,600

007 "Tolowa Rocks" 41°45'15"N, 124°14'W

Fork-tailed Storm-Petrel	60	(Lester, 6/20/80, L, III)	42
Leach's Storm-Petrel	?	(Lester, 6/20/80, L)	42
Pelagic Cormorant	92	(Lester, 6/19 & 6/20/80, B, II)	42
Black Oystercatcher	8	(Lester, 6/19 & 6/20/80, BL, II)	42
Western Gull	116	(Lester, 6/19 & 6/20/80, BL, II)	42
Pigeon Guillemot	40	(Lester, 6/19 & 6/20/80, BL, III)	42
<b>Total</b>	<b>316</b>		
Pelagic Cormorant	24	(Osborne, 9/14/70, M, census of one rock)	35
Pelagic Cormorant	36	(Lester & Rodstrom, 5/21/79, B, I)	42
Western Gull	24	(Lester & Rodstrom, 5/21/79, B, II)	42



Castle Rock

Photo by Gary Lester

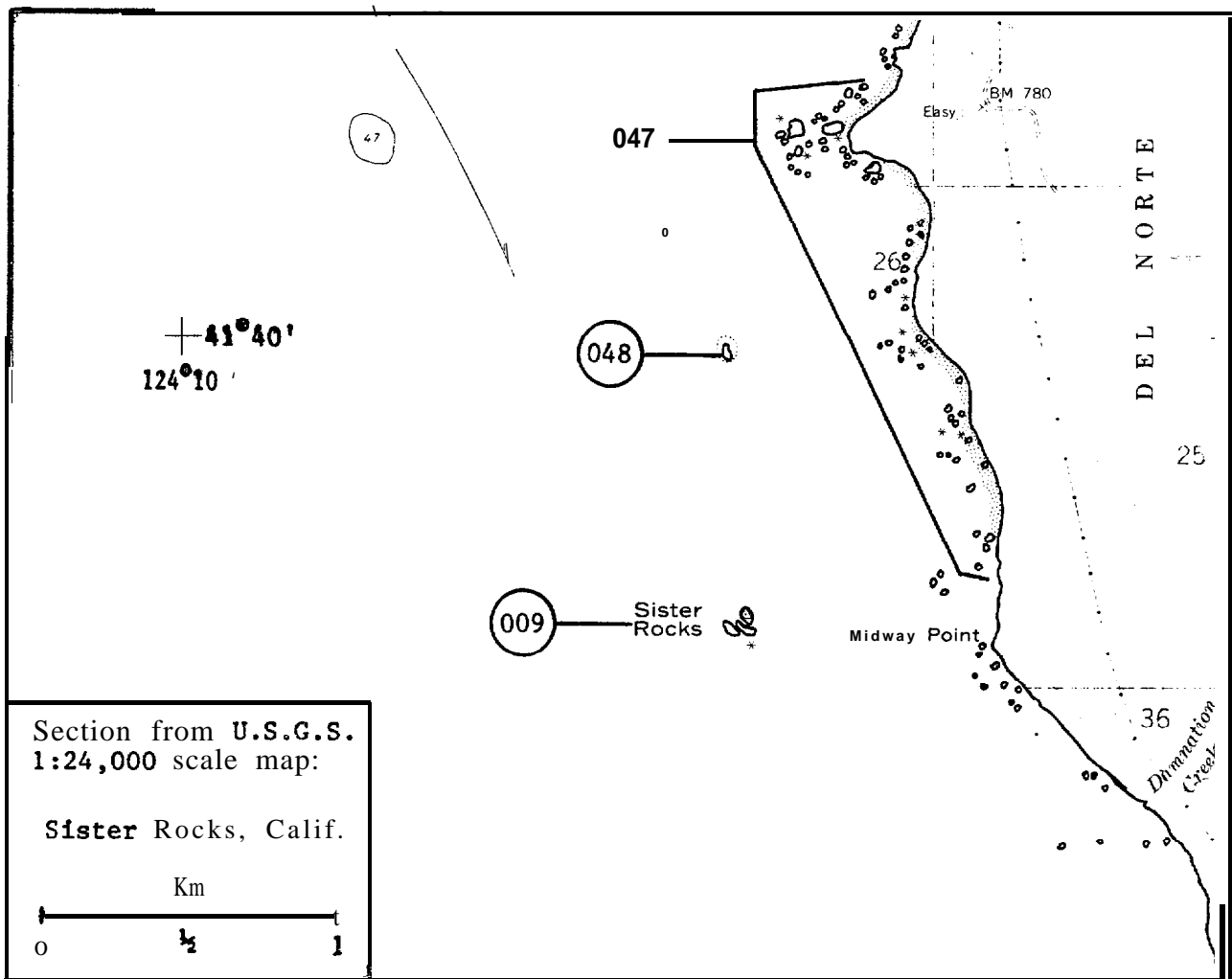
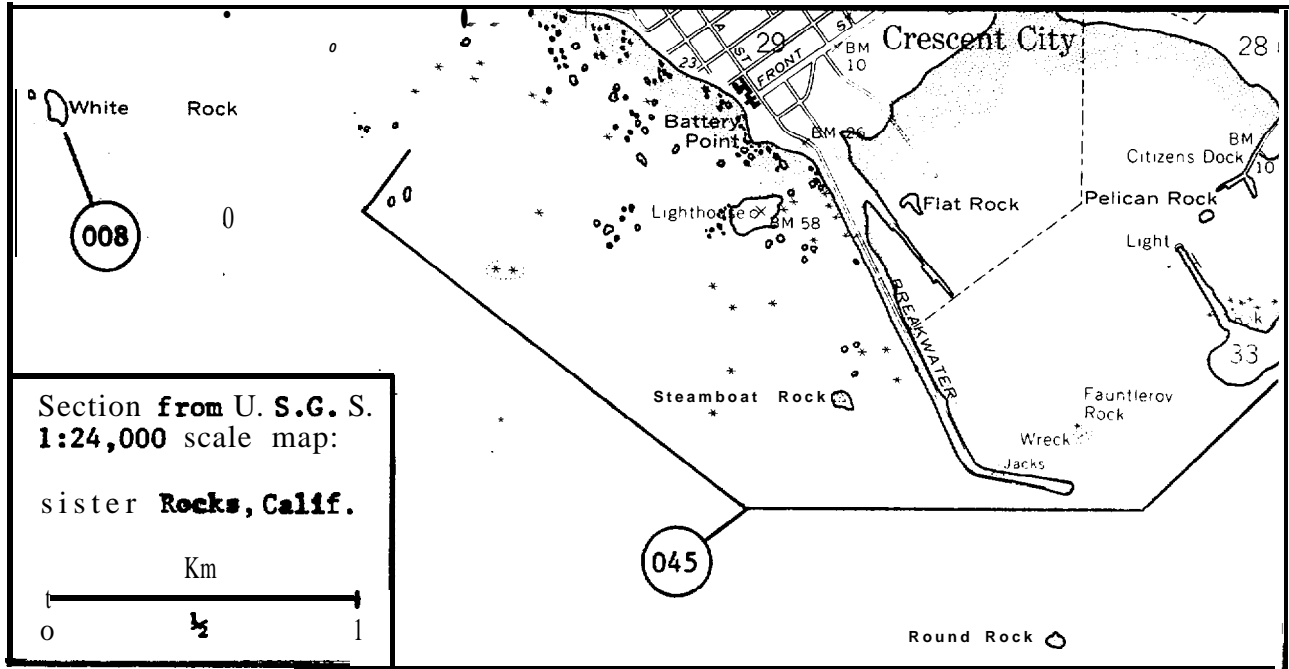
AREA 325, Eureka (cent'd.)

008 White Rock 41°44'46"N, 124°13'44"W

Black Oystercatcher	2	(Lester & Berner, 6/20/80, L, I)	42
Western Gull	74	(Lester & Berner, 6/20/80, L, II)	42
Pigeon Guillemot	10	(Lester & Rodstrom, 5/21/79, B, III)	42
Total	<u>86</u>		
Black Oystercatcher	2	(Osborne, 7/17/69, L)	35
Black Oystercatcher	2	(Lester & Rodstrom, 5/21/79, B, III)	42
Western Gull	40	(Osborne, 7/17/69, L)	35
Western Gull	24	(Lester & Rodstrom, 5/21/79, B, II)	42

009 Sister Rocks 41°39'29"N, 124°08'47"W

Brandt's Cormorant	42	(DeGange & Nelson, 7/25/80, A, II)	42
Pelagic Cormorant	22	(Berner & Lester, 6/20/80, B, II)	42
Black Oystercatcher	2	(Berner & Lester, 6/20/80, B, III)	42
Western Gull	40	(Berner & Lester, 6/20/80, B, III)	42
Common Murre	50	(Berner & Lester, 6/20/80, B, III)	42
Pigeon Guillemot	40	(Berner & Lester, 6/20/80, B, III)	42
Total	<u>196</u>		
Brandt's Cormorant	100	(Osborne, 7/69, M)	35
Brandt's Cormorant	8	(DeGange & Lester, 5/22/79, B, II)	42
Pelagic Cormorant	20	(Osborne, 7/69, M)	35
Pelagic Cormorant	14	(DeGange & Lester, 5/22/79, B, II)	42
Black Oystercatcher	2	(DeGange & Lester, 5/22/79, B, III)	42
Western Gull	4	(DeGange & Lester, 5/22/79, B, II)	42
Pigeon Guillemot	40	(DeGange & Lester, 5/22/79, B, III)	42



AREA 325, Eureka (cent'd.)

010 False Klamath Rock 41°35' 40"N, 124°06' 36"W

Brandt's Cormorant	356	(Berner & Lester, 6/20/80, B, III)	42
Double-crested Cormorant	84	(Berner & Lester, 6/20/80, B, III)	42
Pelagic Cormorant	110	(Berner & Lester, 6/20/80, B, III)	42
Western Gull	80	(Berner & Lester, 6/20/80, B, III)	42
Common Murre	26,500	△ (Lester, 6/19&7/12/79, A, I II)	42
Pigeon Guillemot	160	(Berner & Lester, 6/20/80, B, III)	42
Total	27,290		

Brandt's Cormorant	370	(Osborne, 7/1/70, M)	35
Brandt's Cormorant	486	(Lester & Rodstrom, 6/19&7/12/79, A, III)	42
Double-crested Cormorant	12	(Osborne, 1970, M)	35
Double-crested Cormorant	2	(DeGange & Lester, 5/22/79, B, III)	42
Pelagic Cormorant	18	(Osborne, 1970, M)	35
Pelagic Cormorant	44	(DeGange & Lester, 5/22/79, B, III)	42
Western Gull	50	(Osborne, 1970, M)	35
Western Gull	80	(DeGange & Lester, 5/22/79, B, III)	42
Common Murre	20,000	(Osborne, 1970, M)	35
Pigeon Guillemot	X	(Osborne, 1970, M)	35

△ Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 37,600.

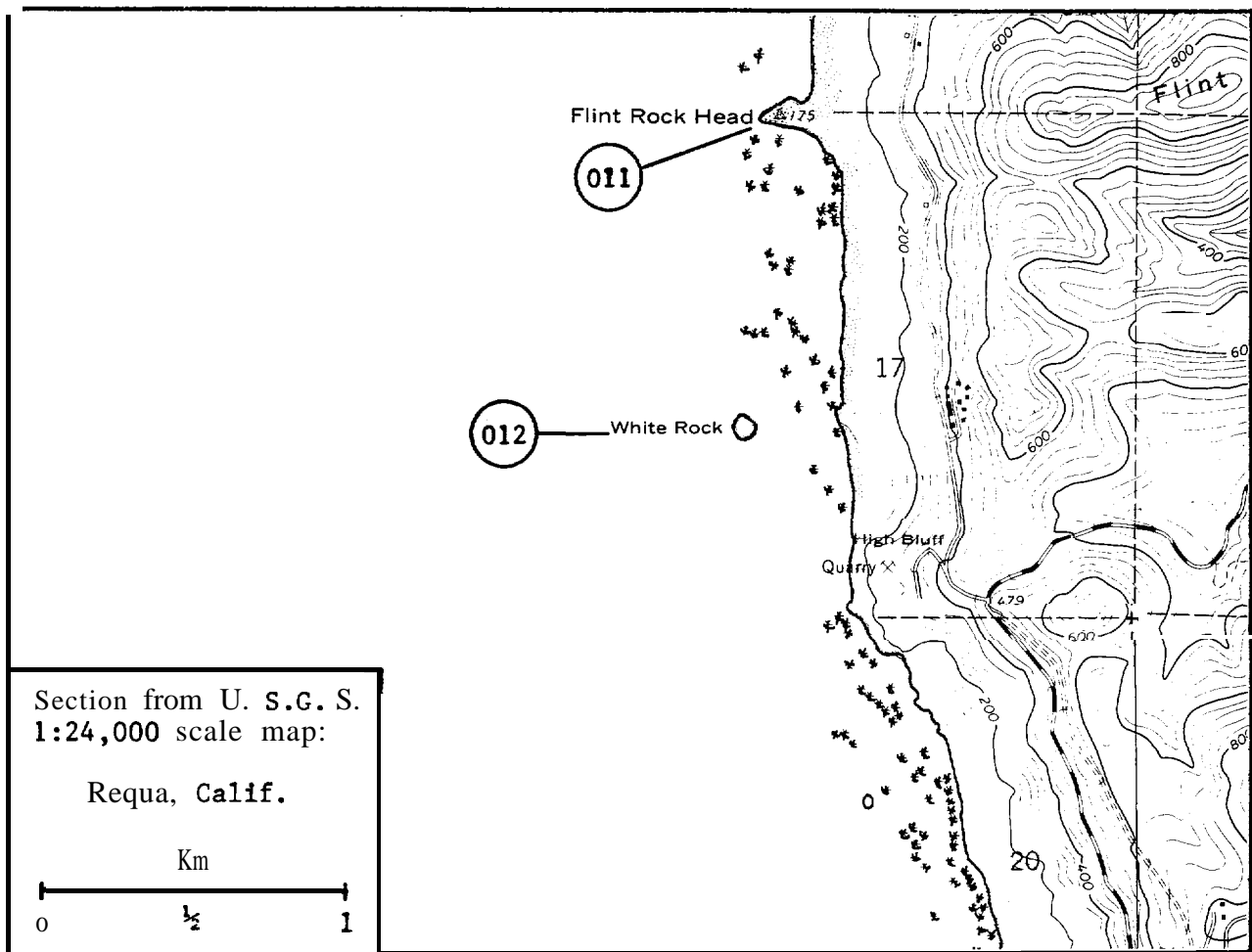
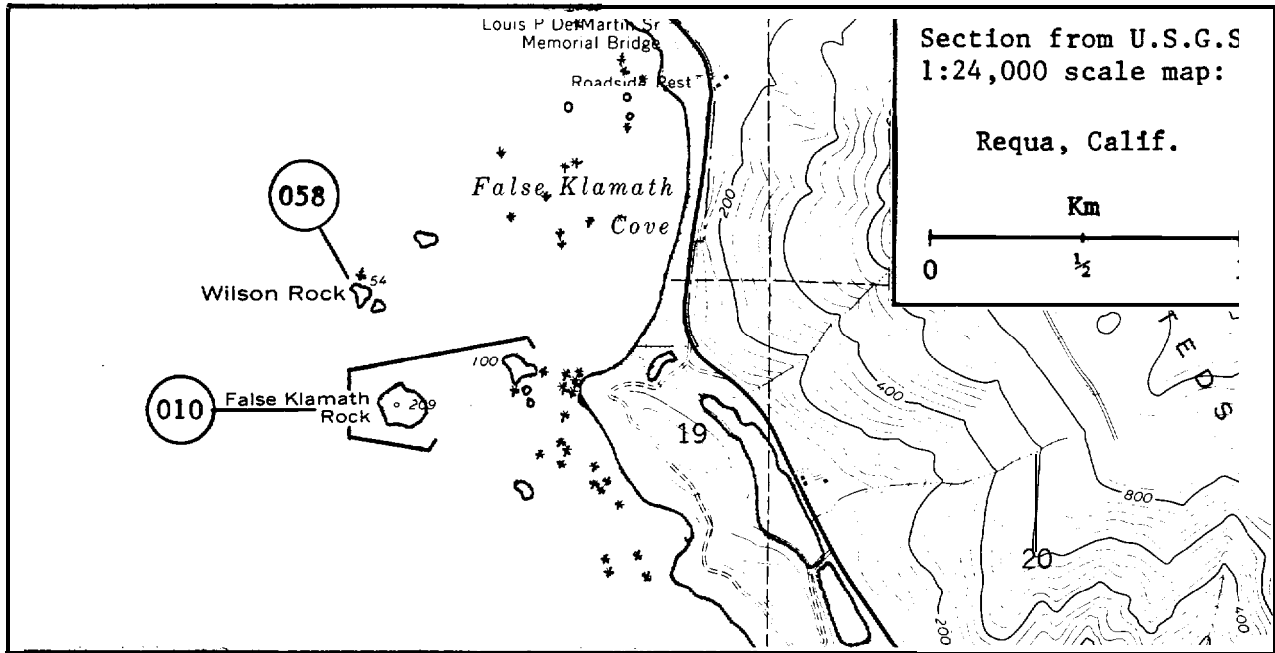
011 Flint Rock Head 41°31'31"N, 124°05'00"W

Pelagic Cormorant	4	(Osborne, 8/6/69, M)	35
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012 White Rock 41°30'56"N, 124°05'06"W

White Rock is one of the most important Brown Pelican roosts in northern California, with up to 1,000 birds present from August through October.

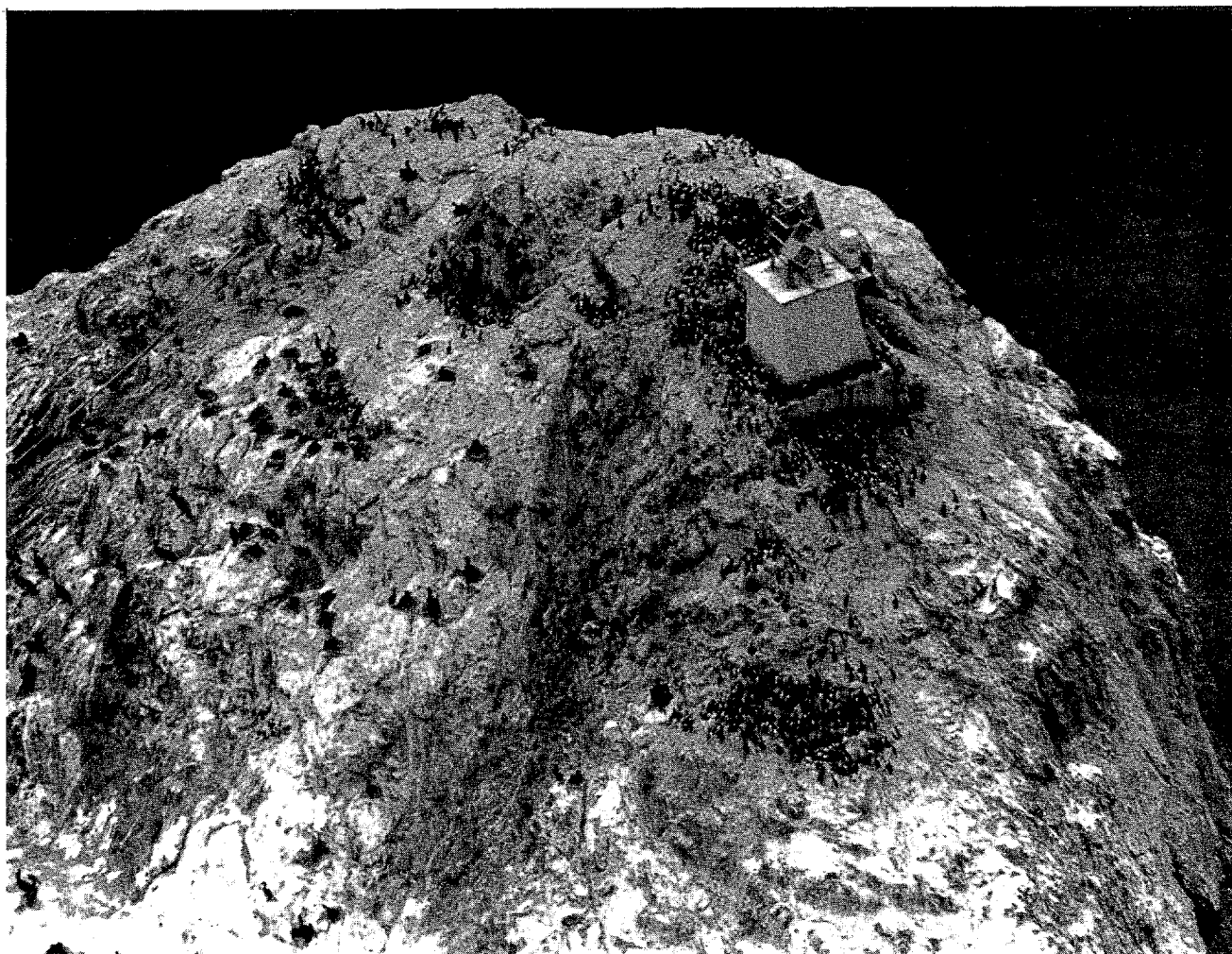
Brandt's Cormorant	240	(DeGange & Nelson, 7/25/80, A, I I I)	42
Double-crested Cormorant	60	(Lester, 6/2/80, M, III)	42
Pelagic Cormorant	12	(Lester & Rodstrom, 6/5/79, B, I)	42
Black Oystercatcher	2	(Lester & Rodstrom, 6/5/79, B, II)	42
Western Gull	24	(Lester & Rodstrom, 6/5/79, B, III)	42
Pigeon Guillemot	6	(Lester & Rodstrom, 6/5/79, B, III)	42
Total	344		
Brandt's Cormorant	200	(Osborne, 1970)	35
Brandt's Cormorant	514	(Lester, 6/19&7/12/79, A, II)	42



AREA 325. Eureka (cent'd.)

013 Redding Rock 41°20'29"N, 124°10'26"W

Brandt's Cormorant	158	(DeGange, 7/9/80, A, II)	42
Western Gull	20	(Berner & Lester, 6/30/80, B, III)	42
Common Murre	2,100	∧ (DeGange, 7/9/80, A, III)	42
Pigeon Guillemot	8	(Berner & Lester, 6/30/80, B, III)	42
Total	2,286		
Brandt's Cormorant	80	(Osborne, 5/12/70, A)	35
Brandt's Cormorant	158	(Lester & Sowls, 5/15&7/12/79, A, III)	42
Pelagic Cormorant	X	(Osborne, 5/12/70, A)	35
Western Gull	X	(Osborne, 5/12/70, A)	35
Western Gull	40	(Lester & Sowls, 5/15&7/12/79, A, III)	42
Common Murre	600	(Osborne, 5/12/70, A)	35



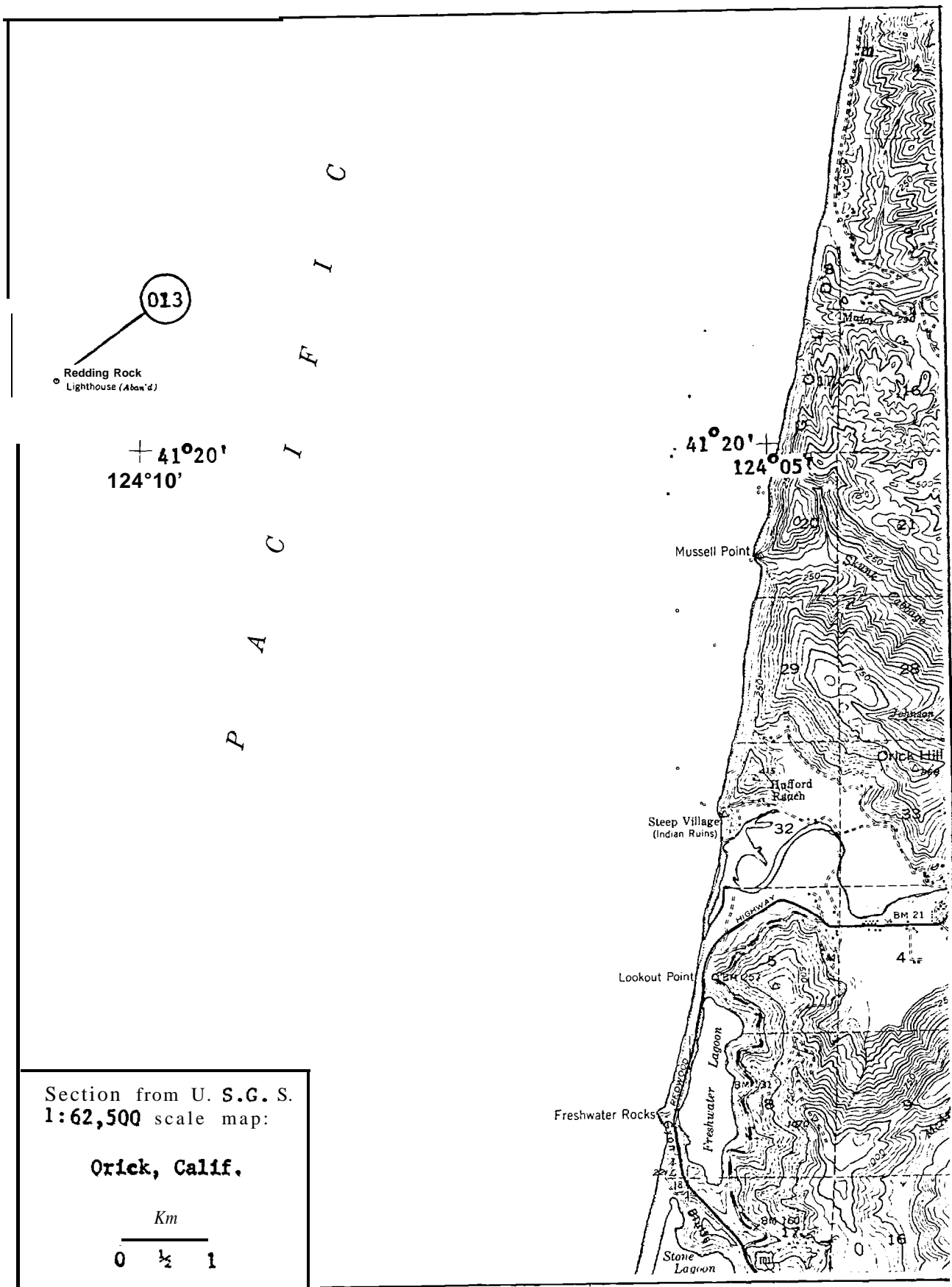
Redding Rock

Photo by Anthony DeGange

∧ Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 1,700

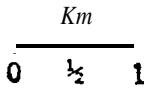
014

Big Lagoon was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).



Section from U. S.G. S.  
1:62,500 scale map:

Orick, Calif.



AREA 325, Eureka (cent'd.)

015 "Cormorant Rock" 41°08'32"N, 124°09'39"W

Pelagic Cormorant	14	(Lester & Stewart, 6/23/80, B, III)	42
Black Oystercatcher	2	(Lester & Stewart, 6/23/80, B, III)	42
Western Gull	2	(Lester & Stewart, 6/23/80, B, III)	42
Total	<u>18</u>		
Pelagic Cormorant	4	(Osborne, 1970, M)	35

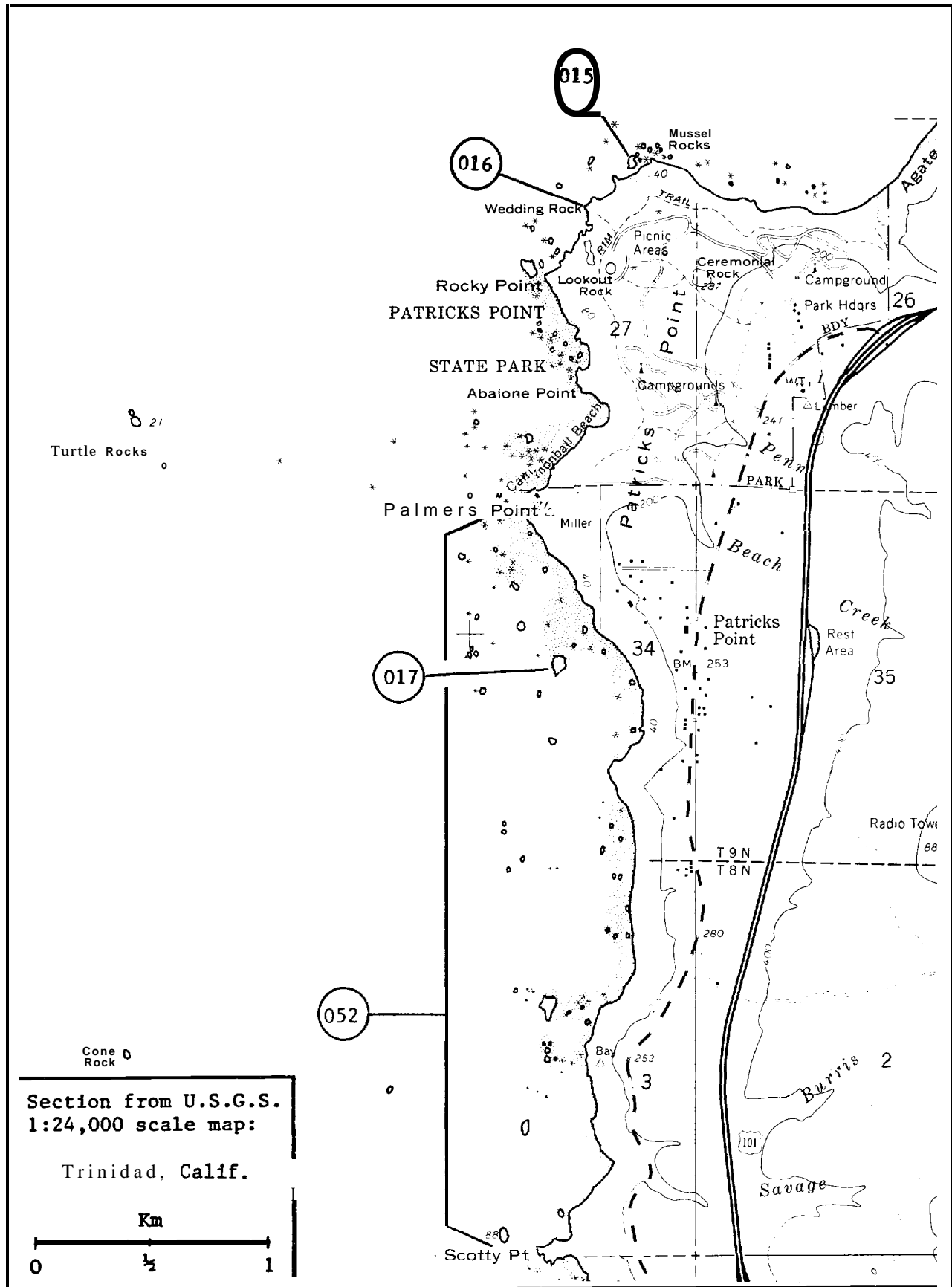
016 Weddi ng Rock 41 °08'28"N, 124°09'32"W

Pigeon Guillemot	60	(DeGange, 5/15/79, M, III)	42
Pigeon Guillemot	44	(Osborne, 1969-70, M)	35

017 "Sea Gull Rock" 41 °05'21"N, 124°09'07"W

Double-crested Cormorant	136	(Lester & Stewart, 6/23/80, B, III)	42
Pelagic Cormorant	106	(Lester & Stewart, 6/23/80, B, II)	42
Black Oystercatcher	2	(Lester & Stewart, 6/23/80, B, III)	42
Western Gull	40	(Lester & Stewart, 6/23/80, B, III)	42
Pigeon Guillemot	12	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Total	<u>306</u>		
Double-crested Cormorant	48	(Benz & Garret, 1978, M)	43
Double-crested Cormorant	96	(Lester & Rodstrom, 5/9/79, M, III)	42
Pelagic Cormorant	40	(Benz & Garret, 1978, M)	43
Pelagic Cormorant	62	(Lester, McKay & Rodstrom, 8/1/79, B, I)	42
Black Oystercatcher	2	(Lester, McKay & Rodstrom, 8/1/79, B, I)	42
Western Gull	20	(Benz & Garret, 1978, M)	43
Western Gull	40	(Lester, McKay & Rodstrom, 8/1/79, B, I)	42
Pigeon Guillemot	4	(Benz & Garret, 1978, M)	43
Western Gull	20	(Osborne, 6/1/69)	35
Pigeon Guillemot	X	(Osborne, 6/1/69)	35

X = present



AREA 325, Eureka (cent'd.)

018 "Sea Lion Rock" 41°05'40"N, 124°09'49"W

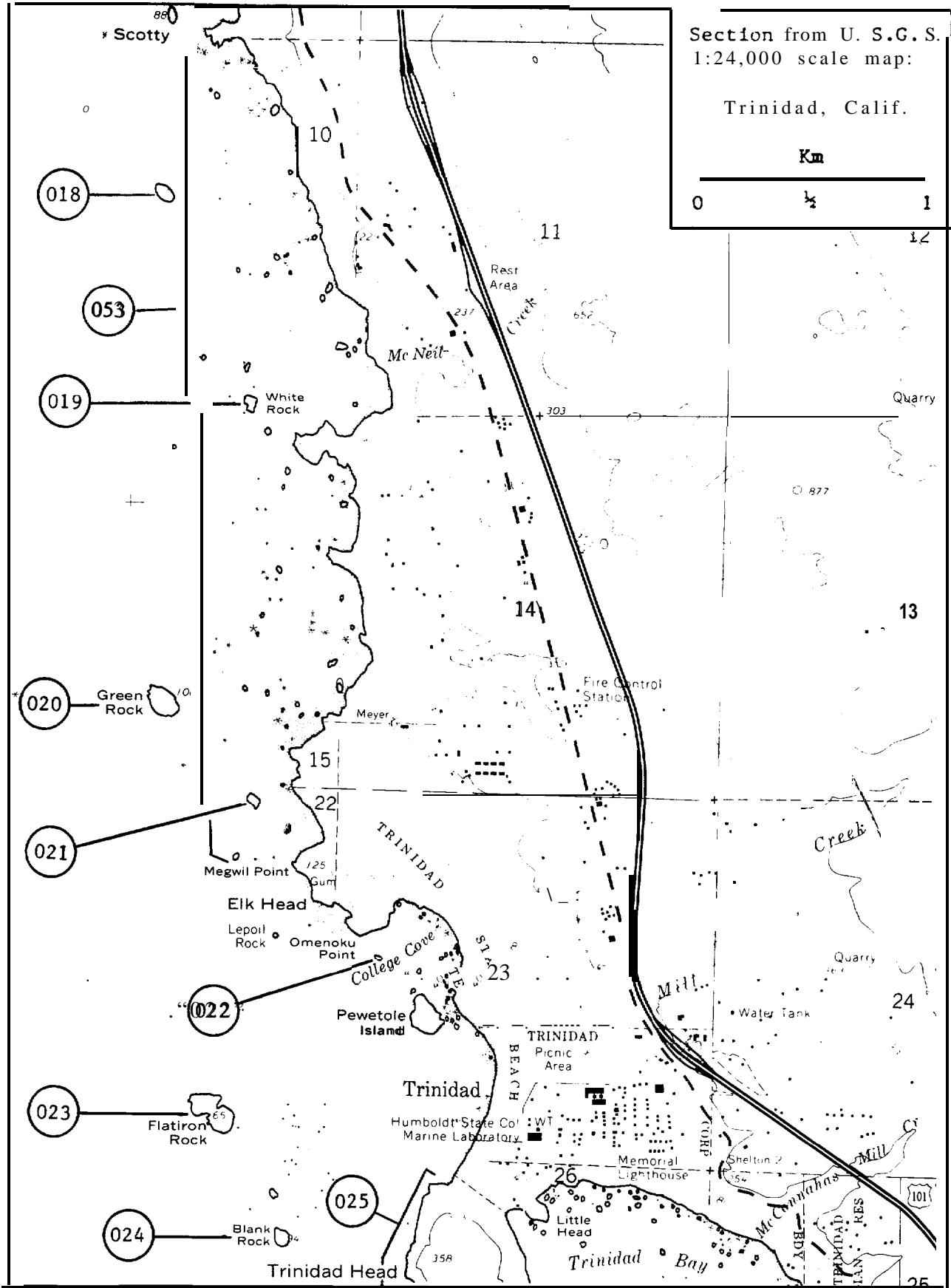
Pelagic Cormorant	36	(Lester & Stewart, 6/23/80, B, II)	42
Black Oystercatcher	2	(Lester & Stewart, 6/23/80, B, III)	42
Western Gull	28	(Lester & Stewart, 6/23/80, B, III)	42
Pigeon Guillemot	20	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Total	106		
Double-crested Cormorant	18	(Osborne, 6/18/70, L)	35
Pelagic Cormorant	34	(Osborne, 6/18/70, L)	35
Pelagic Cormorant	16	(Lester, McKay & Rodstrom, 8/1/79, B, I)	42
Western Gull	24	(Osborne, 6/18/70, L)	35
Western Gull	26	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42

019 White Rock 41°05'13"N, 124°09'33"W

Pelagic Cormorant	70	(Lester, McKay & Rodstrom, 8/1/79, B, II)	42
Western Gull	20	(Lester, McKay & Rodstrom, 8/1/79, B, II)	42
Common Murre	2,600 <sup>Δ</sup>	(Lester, Rodstrom & Sows, 5/15/79, A, & 6/19/79, A, III)	42
Pigeon Guillemot	24	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Tufted Puffin	P	(Osborne, 6/18/70, M)	35
Total	2,714		
Double-crested Cormorant	24	(Osborne, 1970, M)	35
Pelagic Cormorant	62	(Osborne, 1970, M)	35
Western Gull	10-20	(Osborne, 6/18/70, M)	35
Common Murre	1,200	(Osborne, 6/18/70, M)	35

P = probably present

<sup>Δ</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 3,300.



AREA 325, Eureka (cent'd.)

020 Green Rock 41°04'32"N, 124°09'48"W

Fork-tailed Storm-Petrel	50	(Osborne, 6/18/70, L)	35
Leach's Storm-Petrel	X	(Osborne, 6/18/70, L)	35
Brandt's Cormorant	216	(DeGange, 7/9/80, A, II)	42
Pelagic Cormorant	48	(Lester & Stewart, 6/23/80, B, II)	42
Black Oystercatcher	2	(Osborne, 1969-70, L)	35
Western Gull	40	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Common Murre	55,000 <sup>Δ1</sup>	(DeGange, 7/9/80, A, III)	42
Pigeon Guillemot	28	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Cassin's Auklet	50	(Osborne, 6/18/70, L)	35
Rhinoceros Auklets	6	(DeGange, Lester & Sows, 1980, M, III)	42
Tufted Puffin	10	(Osborne, 6/18/70, L)	35
Total	55,420		

Fork-tailed Storm-Petrel	X	(Talmadge, 1930's, L)	35
Leach's Storm-Petrel	X	(Talmadge, 1930's, L)	35
Brandt's Cormorant	X	(Talmadge, 1930's, L)	35
Brandt's Cormorant	202	(Osborne, 6/28/69, L)	35
Brandt's Cormorant	76	(Osborne, 6/70, L)	35
Brandt's Cormorant	440	(Lester, 6/19/79, A, III)	42
Pelagic Cormorant	X	(Talmadge, 1930's, L)	35
Pelagic Cormorant	4	(Osborne, 1969-70, L)	35
Pelagic Cormorant	52	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Western Gull	44	(Osborne, 6/18/70, L)	35
Common Murre	X	(Talmadge, 1930's, L)	35
Common Murre	2,000	(Clay, 5/10/41, L)	35
Common Murre	40-48,000	(Osborne, 6/18/70, L)	35
Pigeon Guillemot	X	(Talmadge, 1930's, L)	35
Pigeon Guillemot	6	(Osborne, 6/18/70, L)	35
Tufted Puffin	X	(Talmadge, 1930's, L)	35

<sup>Δ1</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 28,300.

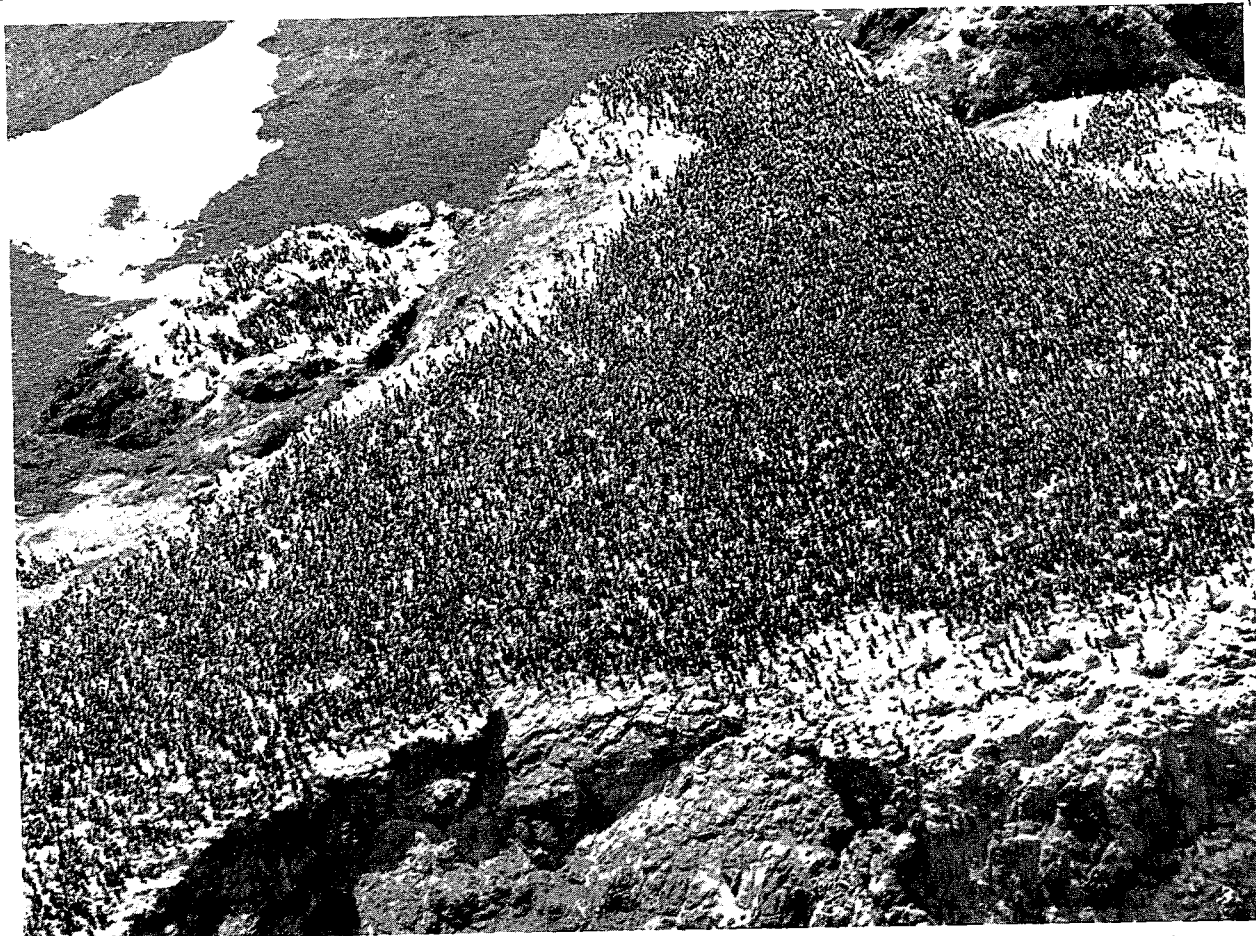
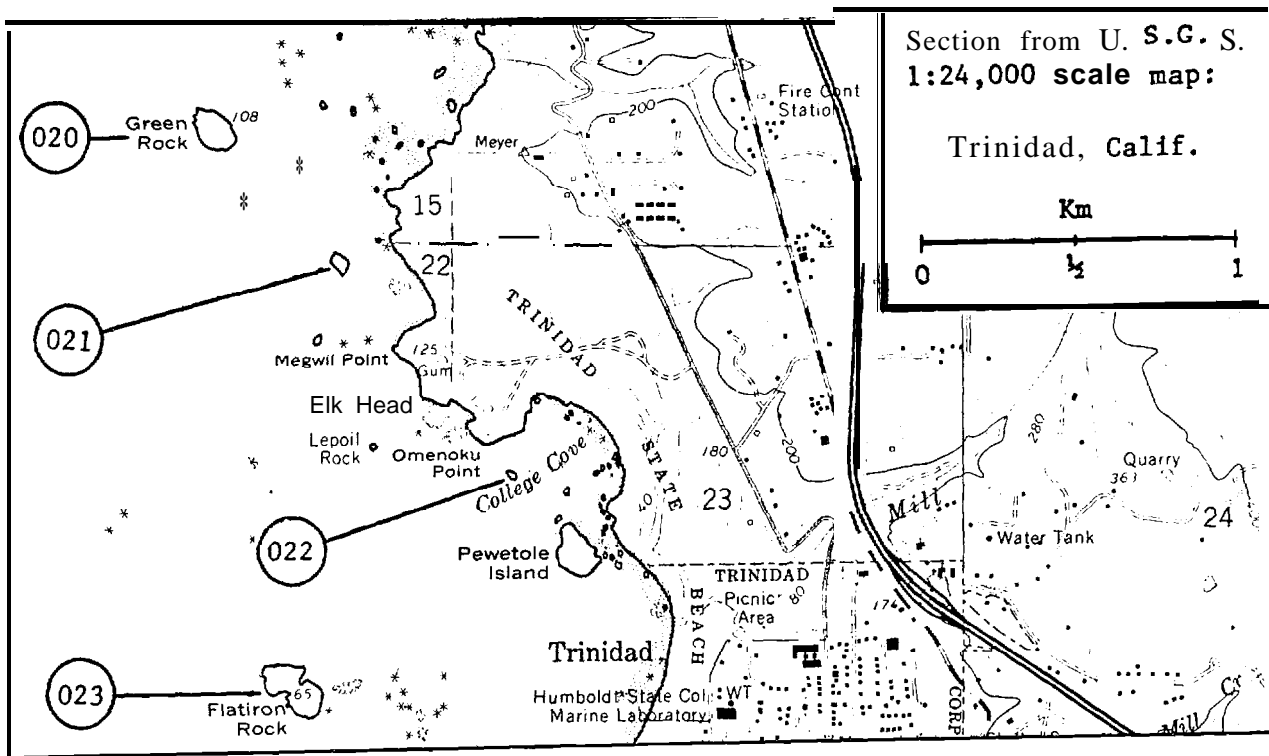
021 "Puffin Rock" 41°04'18"N, 124°09'32"W

Pelagic Cormorant	8	(Lester & Stewart, 6/23/80, B, II)	42
Black Oystercatcher	2	(Lester & Stewart, 6/23/80, BL, III)	42
Western Gull	44	(Lester & Stewart, 6/23/80, BL, II)	42
Pigeon Guillemot	10	(Lester & Stewart, 6/23/80, BL, III)	42
Tufted Puffin	6	(DeGange, Lester & Sows, 1980, M, II)	42
Total	70		

Pelagic Cormorant	8	(Osborne, 1970, M)	35
Pelagic Cormorant	14	(Lester, McKay & Rodstrom, 8/1/79, B, II)	42
Western Gull	40	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Black Oystercatcher	2	(Osborne, 1969-70, M)	35
Pigeon Guillemot	12	(Osborne, 1970, M)	35
Tufted Puffin	6	(Osborne, 1970, M)	35

022 "Little Pewetole Rock" 41°04'N, 124°09'W

Pelagic Cormorant	4	(Osborne, 1970, M)	35
Black Oystercatcher	2	(Lester, Nelson & Reetz, 7/20/79, B, I)	42
Total	6		



Green Rock

Photo by Anthony DeGange

AREA 325, Eureka (cent'd.)

023 Flation Rock 41°03'34"N, 124°09'39"W

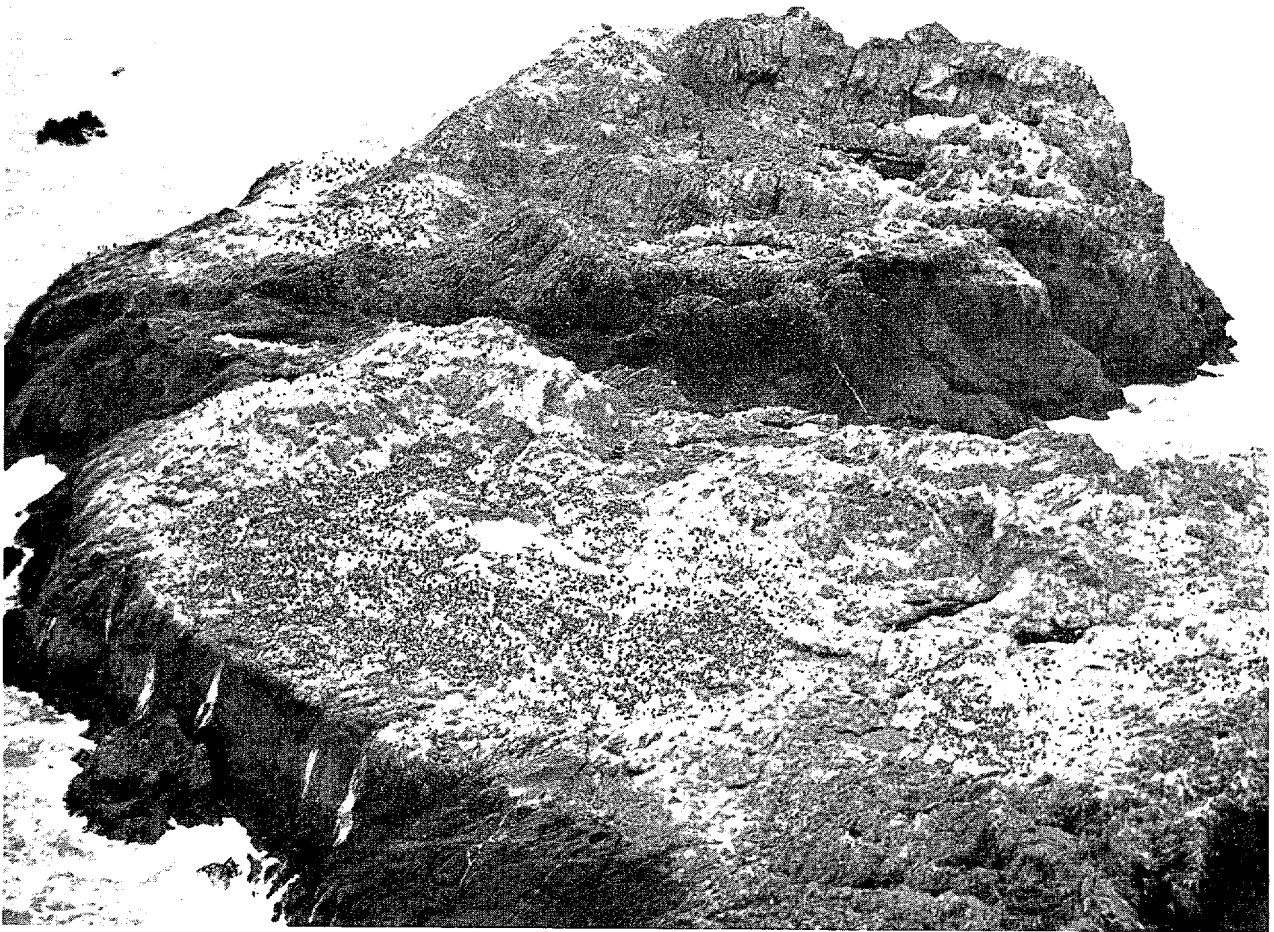
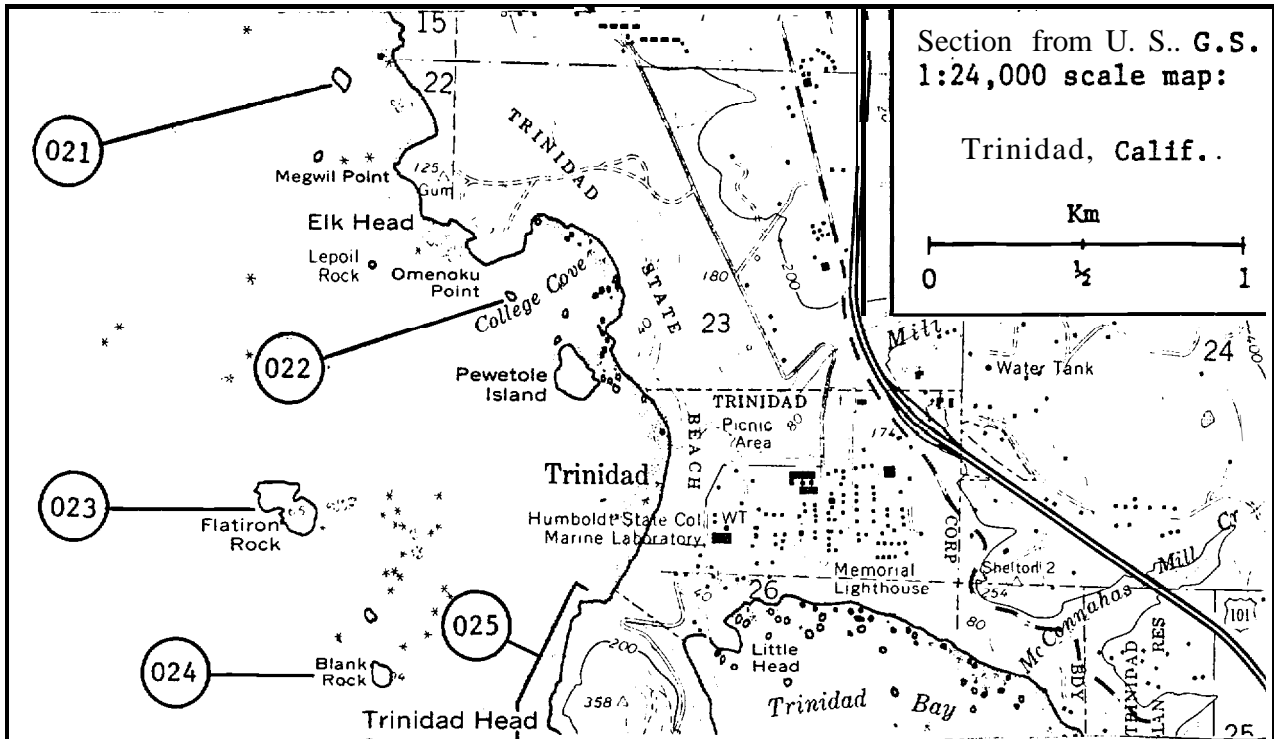
Brandt's Cormorant	1,540	(DeGange, 7/9/80, A, III)	42
Pelagic Cormorant	4	(Lester & Rodstrom, 5/9/79, M)	42
Black Oystercatcher	2	(Osborne, 1969-70, LM)	35
Western Gull	40	(Osborne, 1969-70, LM)	35
Common Murre	24,000 <sup>Δ</sup>	(Lester & Rodstrom, 5/15, 6/19&7/12/79, A, II I)	42
Pigeon Guillemot	2	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Tufted Puffin	2	(Lester & DeGange, 1980, M, II)	42
<b>Total</b>	<b>24,590</b>		
Leach's Storm-Petrel	X	(Clay, 5/22/10, 6/10/34, L)	35
Brandt's Cormorant	2,400	(Clay, 6/10/34)	35
Brandt's Cormorant	260	(Osborne, 1969)	35
Brandt's Cormorant	400	(Osborne, 6/18/70)	35
Brandt's Cormorant	1,206	(Lester, Rodstrom & Sows, 5/15, 6/19&7/12/79, A, III)	42
Common Murre	?	(Clay, 1910-1912&1934)	35
Common Murre	10,000	(Osborne, 1970, LM)	35
Pigeon Guillemot	X	(Clay, 5/22/10)	35
Pigeon Guillemot	2	(Osborne, 6/18/70)	35
Cassin's Auklet	X	(Clay, 1910-11, 1934, L)	35
Tufted Puffin	"numerous"	(Clay, 7/11/11, L)	35
Tufted Puffin	"sparse"	(Clay, 6/10/34, L)	35
Tufted Puffin	4-6	(Hallmark, early 1950's)	35
Tufted Puffin	2	(Osborne, 6/3/70)	35
Tufted Puffin	2	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42

<sup>Δ</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 17,700.

024 Blank Rock 41°03'15"N, 124°09'26"W

Brandt's Cormorant	52	(DeGange, 7/9/80, A, I)	42
Pelagic Cormorant	0	(Lester & Stewart, 6/23/80, B, I)	42
Black Oystercatcher	2	(Lester & Stewart, 6/23/80, B, III)	42
Western Gull	80	(Lester & Stewart, 6/22/80, M, III)	42
Common Murre	1,000 <sup>Δ</sup>	(DeGange, 7/9/80, A, III)	42
Pigeon Guillemot	20	(Lester & Stewart, 6/23/80, B, III)	42
<b>Total</b>	<b>1,154</b>		35
Fork-tailed Storm-Petrel	X	(Dawson & Clay, 6/18/16, L)	35
Fork-tailed Storm-Petrel	0	(Osborne, 1965, 1969, 1970, L)	35
Leach's Storm-Petrel	X	(Dawson & Clay, 6/18/16, L)	35
Leach's Storm-Petrel	0	(Osborne, 1965, 1969, 1970, L)	35
Brandt's Cormorant	0	(Osborne, 1969)	42
Brandt's Cormorant	280	(Lester & Rodstrom, 5/15, 6/19&7/12/79, A, III)	42
Pelagic Cormorant	6	(Lester, Nelson & Reetz, 7/20/79, B, II)	42
Black Oystercatcher	2	(Lester, Nelson & Reetz, 7/20/79, B, III)	35
Western Gull	X	(Dawson & Clay, 6/18/16, L)	35
Western Gull	90	(Osborne, 6/18/70, L)	42
Western Gull	100	(Lester, Nelson & Reetz, 7/20/79, B, III)	42
Pigeon Guillemot	20	(Lester, Nelson & Reetz, 7/20/79, B, III)	35
Tufted Puffin	X	(Dawson & Clay, 6/18/16, L)	

<sup>Δ</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 400



Flatiron Rock

Photo by Art Sowls

025 Trinidad Head 41°03'09"N, 124°08'58"W

Pelagic Cormorant	202	(Lester & Stewart, 6/23/80, B, II)	42
Pigeon Guillemot	60	(Lester, Nelson & Reetz, 7/20/79, B, III)	42
Total	262		
Pelagic Cormorant	198	(Osborne, 1970, L)	35
Pelagic Cormorant	94	(Lester, Nelson & Reetz, 7/20/79, B, III)	42
Pigeon Guillemot	40	(Osborne, 1970, L)	35

026 Pilot Rock 41°03'06"N, 124°09'09"W

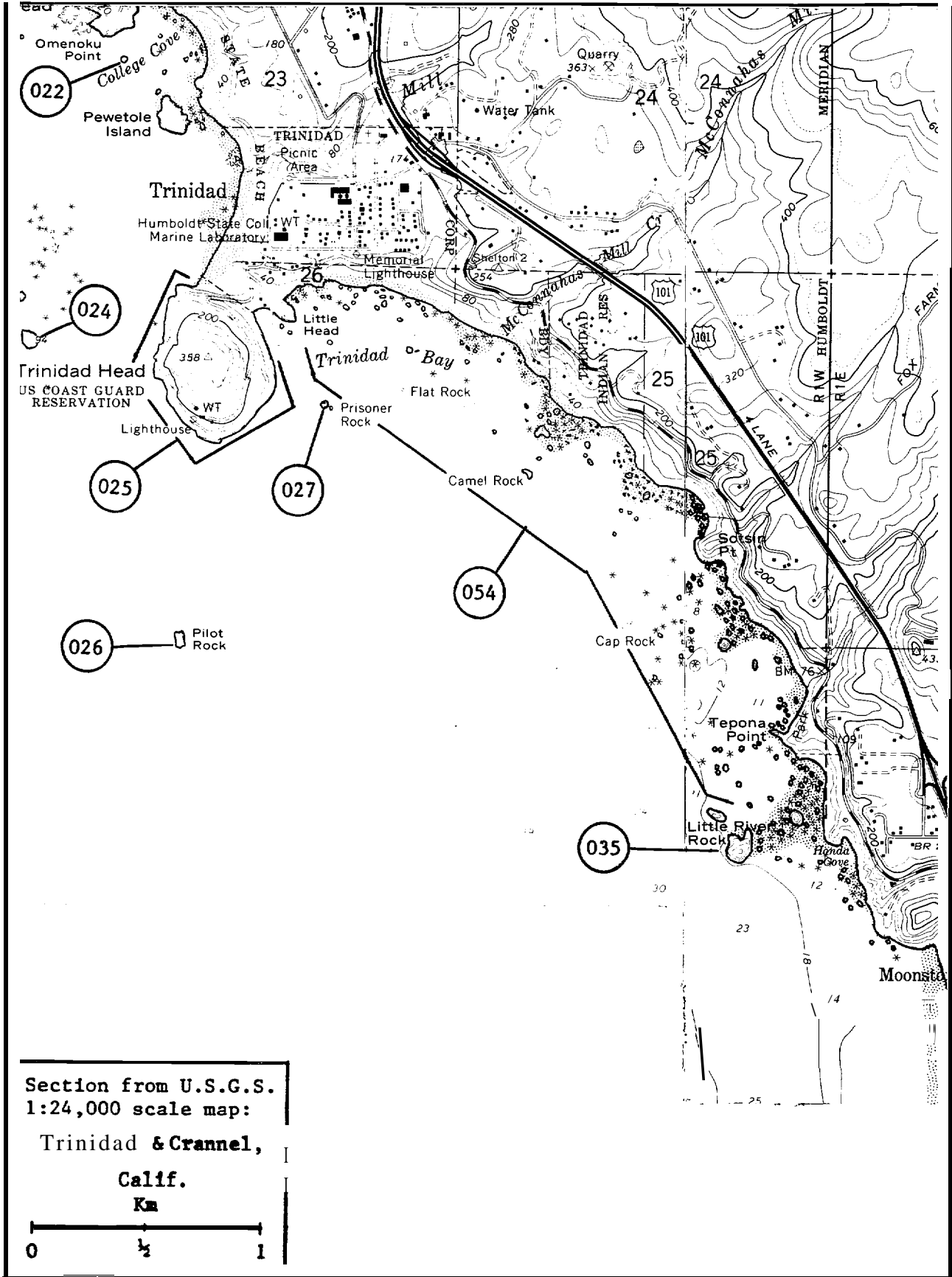
Brandt's Cormorant	0	(DeGange, 7/9/80, A; Lester & Stewart, 6/23/80, B, I)	42
Pelagic Cormorant	8	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Black Oystercatcher	2	(Lester & Stewart, 6/23/80, B, III)	42
Western Gull	40	(Lester & Stewart, 6/23/80, B, III)	42
Common Murre	2,500 <sup>Δ</sup>	(DeGange, 7/9/80, A, III)	42
Pigeon Guillemot	20	(Lester & Stewart, 6/23/80, B, III)	42
Total	2,570		
Brandt's Cormorant	160	(Osborne, 1969, L)	35
Brandt's Cormorant	40	(Lester, 6/19/79, A, III)	42
Pelagic Cormorant	24	(Osborne, 1969, L)	35
Pelagic Cormorant	8	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Western Gull	20	(Osborne, 1969, L)	35
Western Gull	14	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Common Murre	X	(Osborne, 1969)	35
Pigeon Guillemot	2	(Osborne, 1969, L)	35

<sup>Δ</sup> Estimate is number of birds present times 1.67, see page 10, Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 1,500.

027 Prisoner Rock 41°03'07"N, 124°08'34"W

Fork-tailed Storm-Petrel	X	(Osborne, 1970-72, L)	35
Leach's Storm-Petrel	160	(Lester, Nelson & Reetz, 7/20/79, L, III)	42
Western Gull	2	(Lester, Nelson & Reetz, 7/20/79, L, III)	42
Pigeon Guillemot	4	(Lester, Nelson & Reetz, 7/20/79, L, III)	42
Total	166		
Leach's Storm-Petrel	X	(Clay, 6/5/10&6/24/12, L)	35
Leach's Storm-Petrel	150-200	(Osborne, 1970-72, L)	35
Pelagic Cormorant	4	(Osborne, 1970-72, L)	35

X = present,

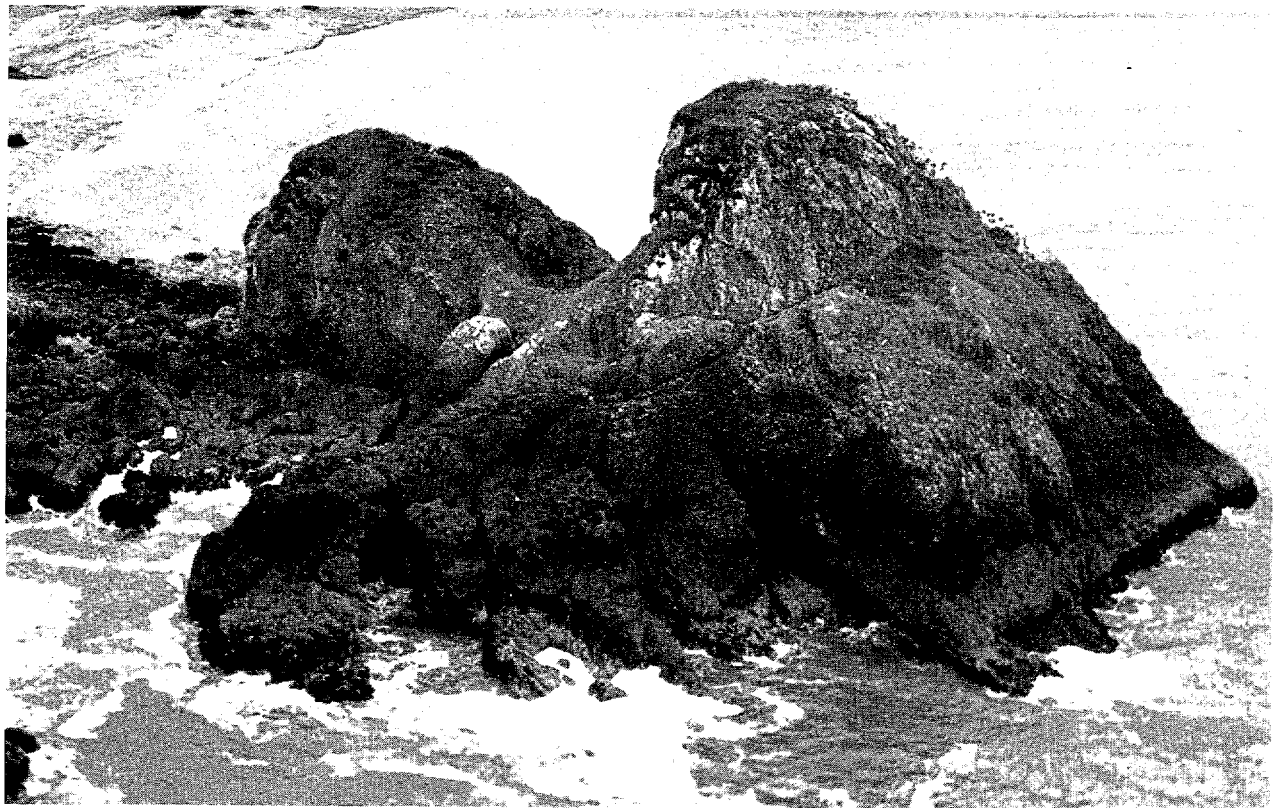
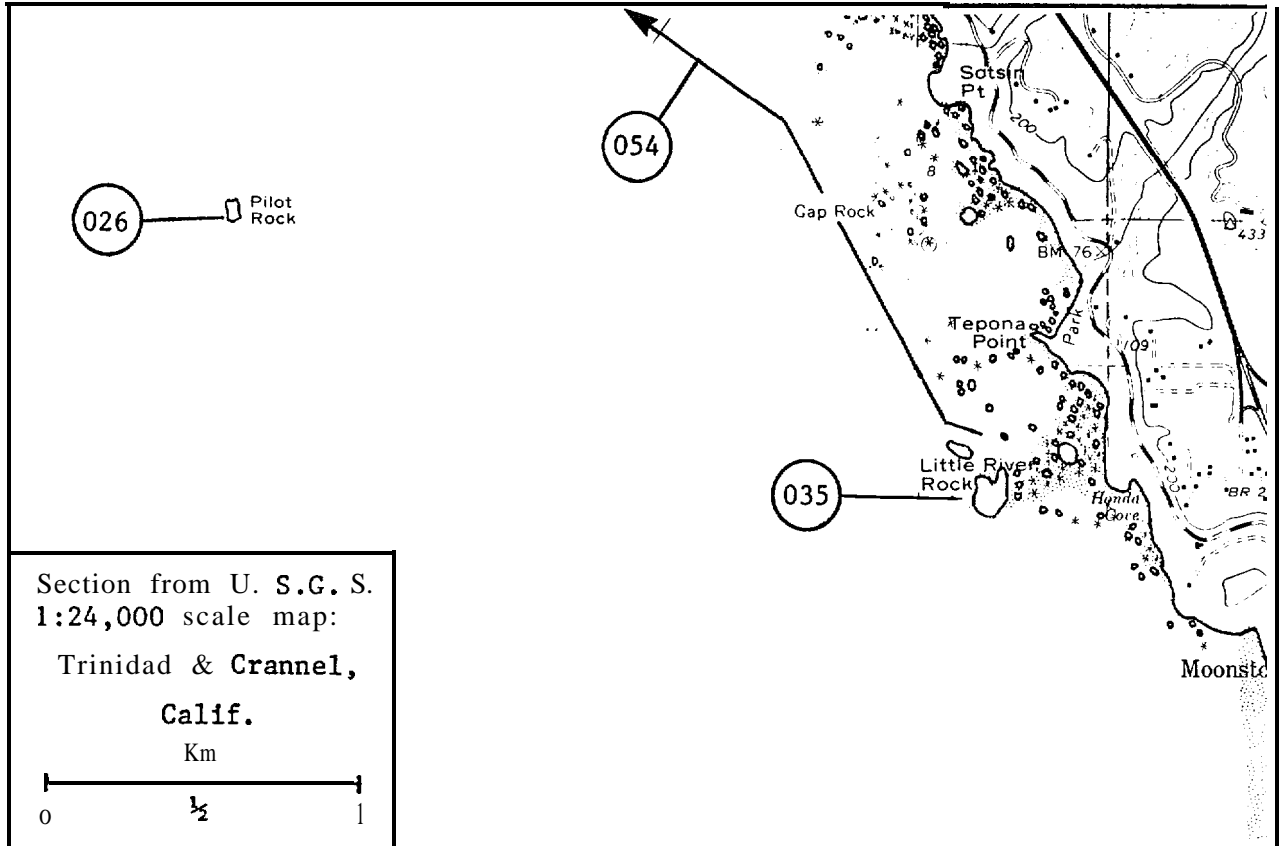


Section from U.S.G.S.  
 1:24,000 scale map:  
 Trinidad & Crannel,  
 Calif.  
 Km  
 0 1/2 1

- 028 "Unnamed Rock" - see 054
- 029 "Mr'rp Rock" - see 054
- 030 Cap Rock - see 054
- 031 "Luffenholtz Rocks" - see 054
- 032 "Tepona Rock" - see 054
- 033 "Halfmoon Rock" - see 054
- 034 "Snag Rock" - see 054
- 035 Little River Rock 41°02'08"N, 124°07'16"W

Fork-tailed Storm-Petrel	200	(Harris, 1965-72, L)	24
Leach's Storm-Petrel	10,000	(Harris, 1965-72, L)	24
Double-crested Cormorant	100	(Lester & Stewart, 6/23/80, B, III)	42
Pelagic Cormorant	12	(Lester & Stewart, 6/23/80, B, II)	42
Black Oystercatcher	2	(Lester & Stewart, 6/23/80, B, III)	42
Western Gull	60	(Lester & Stewart, 6/23/80, B, III)	42
Pigeon Guillemot	60	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Rhinoceros Auklet	P	(Harris, 1965-72, L)	24
Tufted Puffin	P	(Harris, 1965-72, L)	24
<b>Total</b>	<b>10,434</b>		
Double-crested Cormorant	4	(Harris, 6/8/74, L)	23
Double-crested Cormorant	78	(Harris, 6/1/77, L)	23
Double-crested Cormorant	120	(Lester, McKay & Rodstrom, 8/1/79, B, IV)	42
Pelagic Cormorant	10-20	(Harris, 1965-72, L)	24
Pelagic Cormorant	8	(Lester, McKay & Rodstrom, 8/1/79, B, II)	42
Black Oystercatcher	2	(Harris, 1965-72, L)	24
Western Gull	50-60	(Harris, 1965-72, L)	24
Western Gull	62	(Harris, 6/8/74, L)	23
Western Gull	84	(Harris, 6/1/77, L)	23
Western Gull	60	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Pigeon Guillemot	30-40	(Harris, 1965-72, L)	24

P = probably present



Little River Rock

Photo by Art Sowls

AREA 325, Eureka (cent'd.)

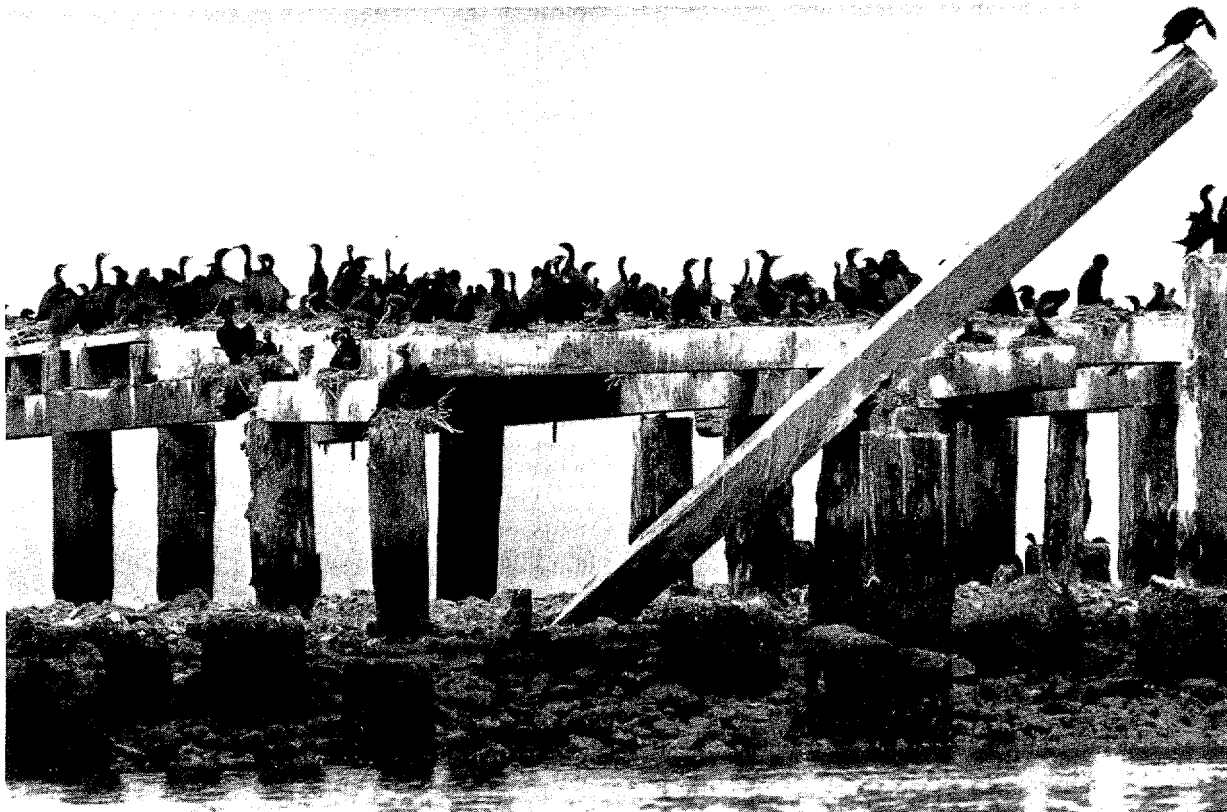
036 Clam Beach was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

037 "Mad River" was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

038 Old Arcata Wharf 40°50'59"N, 124°05'58"W

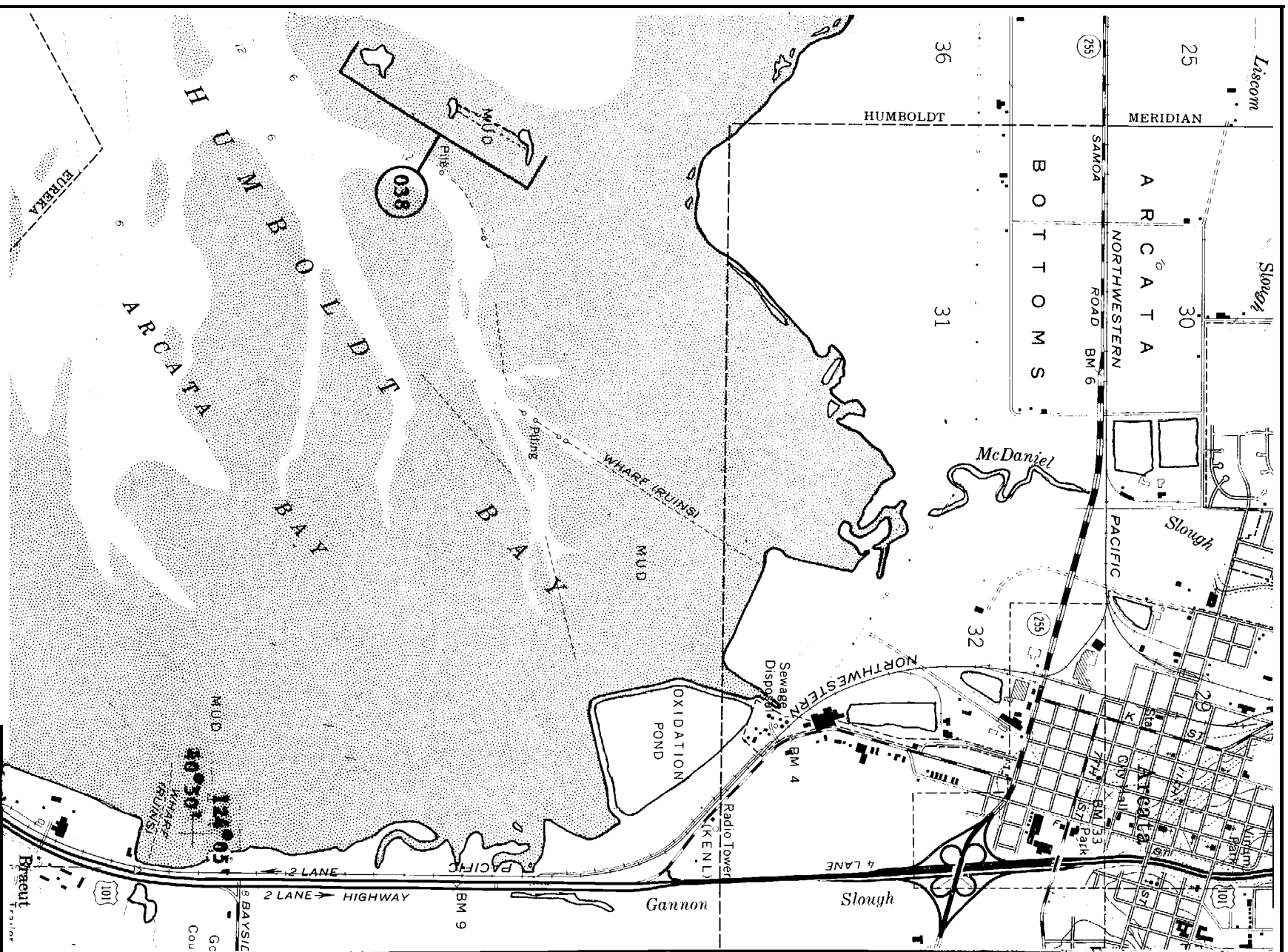
Double-crested Cormorant	340	(Sowls & Stewart, 6/19/80, B, III)	42
Double-crested Cormorant	322	(Ayers, 1971)	5
Double-crested Cormorant	352	(Ayers, 1972)	5
Double-crested Cormorant	424	(Ayers, 5/15/73)	5
Caspian Tern	X	(Harris, 6/16/66)	23

X = present



Double-crested Cormorants, Old Arcata Wharf

Photo by Art Sowls



AREA 325, Eureka (cent'd.)

039

Humboldt Bay was previously assigned a **catalog** number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & **Stenzel** (1979).

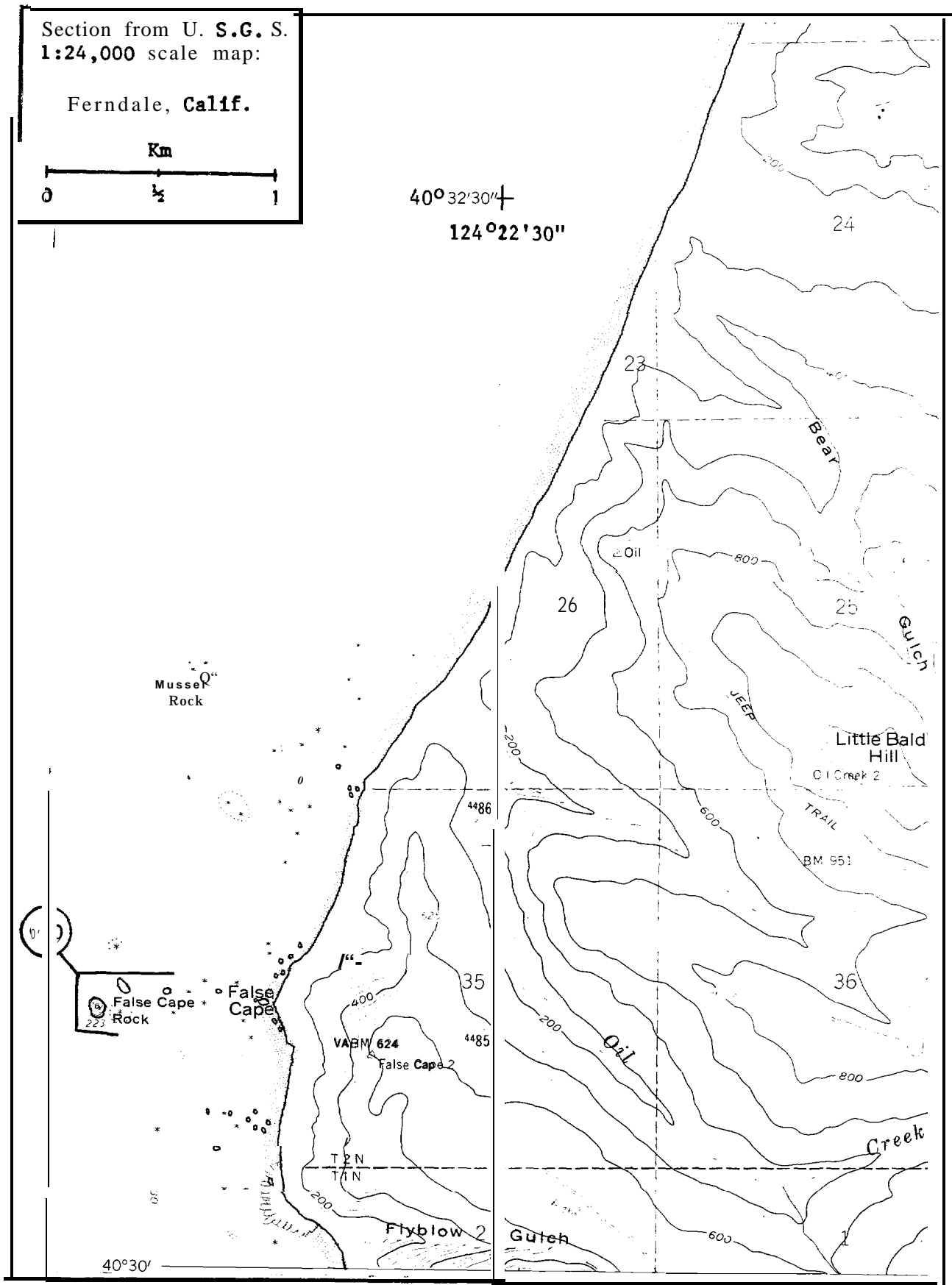
040

False Cape Rocks 40°30'38"N, 124°23'40"W

Brandt's Cormorant	400	(Lester & SOWls, 7/23/80, A, II)	42
Pelagic Cormorant	170	(Lester & Rodstrom, 7/26/79, B, II)	42
Black Oystercatcher	2	(Lester & Rodstrom, 7/26/79, B, III)	42
Western Gull	220	(Lester & Rodstrom, 7/26/79, B, III)	42
Common Murre	8,000	Δ (Lester & Rodstrom, 8/2/79, A, II)	42
Pigeon Guillemot	150	(Lester & Rodstrom, 7/26/79, B, III)	42
Total	8,942		
Brandt's Cormorant	406+	(Osborne, 7/69, A)	35
Brandt's Cormorant	640	(Lester & Rodstrom, 8/2/79, A, II)	42
Pelagic Cormorant	P	(Osborne, 7/69, A)	35
Western Gull	X	(Osborne, 7/69, A)	35
Common Murre	1,600	(Osborne, 7/69, A)	35
Pigeon Guillemot	X	(Osborne, 7/69, A)	35

X = present, P = probably present

Δ Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 11,000.



041 Sugarloaf Island 40°26' 18"N, 124°24' 41"W

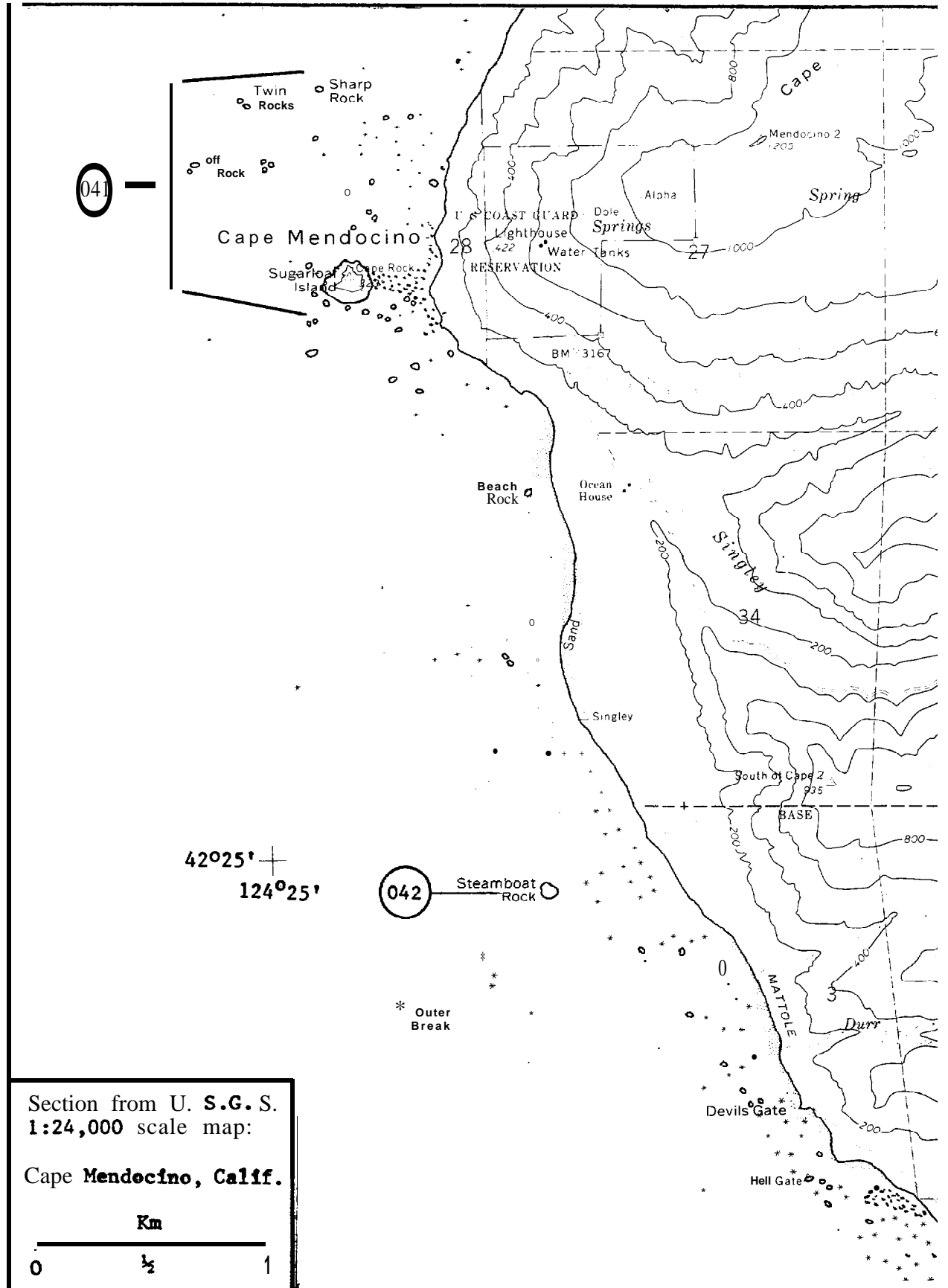
Brandt's Cormorant	200	(Osborne, 1970, LM)	35
Double-crested Cormorant	32	(Osborne, 1970, LM)	35
Pelagic Cormorant	400	(Osborne, 1969-70, LM)	35
Black Oystercatcher	6	(Nelson & Sows, 7/26/79, B, III)	42
Western Gull	320	(Nelson & Sows, 7/26/79, B, III)	42
Pigeon Guillemot	240	(Nelson & Sows, 7/26/79, B, III)	42
Tufted Puffin	4	(Lester & Rodstrom, 5/10/79, M, III)	42
Total	<u>1,202</u>		
Cormorant (unid.)	100	(Nelson & Sows, 7/26/79, B, III)	42
Brandt's Cormorant	182	(Nelson & Sows, 7/26/79, B, III)	42
Double-crested Cormorant	?	(Nelson & Sows, 7/26/79, B)	42
Double-Crested Cormorant	6	(Osborne, 1969, LM)	35
Pelagic Cormorant	210+	(Nelson & Sows, 7/26/79, B, III)	42
Black Oystercatcher	X	(Osborne, 1969-70, LM)	35
Western Gull	300	(Osborne, 1969-70, LM)	35
Pigeon Guillemot	200	(Osborne, 1970, LM)	35
Tufted Puffin	4	(Osborne, 1970, LM)	35

X = present

042 Steamboat Rock 40°24'54"N, 124°24'09"W

Brandt's Cormorant	494	(Lester & Sows, 7/23/80, A, II)	42
Pelagic Cormorant	0	(Lester, Nelson, Rodstrom & Sows, 7/26/79, B, II)	42
Western Gull	60	(Lester, Nelson, Rodstrom & Sows, 7/26/79, B, III)	42
Common Murre	4,500 <sup>Δ</sup>	(Lester & Rodstrom, 7/24/79, A, Lester, Nelson, Rodstrom & Sows, 7/26/79, B, III)	42
Pigeon Guillemot	2	(Lester, Nelson, Rodstrom & Sows, 7/26/79, B, I11)	42
Total	<u>5,056</u>		
Brandt's Cormorant	340	(Osborne, 1969-70, AM)	35
Brandt's Cormorant	640	(Lester & Rodstrom, 7/24/79, A, Lester, Nelson, Rodstrom & Sows, 7/26/79, B, II)	42
Pelagic Cormorant	4	(Osborne, 1969-70, AM)	35
Western Gull	X	(Osborne, 1969-70, AM)	35
Common Murre	600	(Osborne, 1969-70, AM)	35

<sup>Δ</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 5,100.



Section from U. S.G. S.  
1:24,000 scale map:  
Cape Mendocino, Calif.

Km  
0 1/2 1

AREA 325, Eureka (cent'd.)

043 Sea Lion Rock 40°19'35"N, 124°21'38"W

Cormorant (unid.)	0	(Nelson & Rodstrom, 7/18/79, B)	42
Western Gull	2	(Nelson & Rodstrom, 7/18/79, B, III)	42
<b>Total</b>	<b>2</b>		
Cormorant (unid.)	X	(Osborne, 5/3/69, M)	35

044 Point St. George Lighthouse 41°50'N, 124°22'W

Pelagic Cormorant	12	(Lester, 7/12/79, A, III)	42
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No detailed map available see page 59,

045 "Whaler Island", Crescent City breakwater, Steamboat Rock and unnamed rocks. 41°45'N, 124°13'W.

Brandt's Cormorant	40	(Berner & Lester, 6/20/80, B, III)	42
Pelagic Cormorant	2	(Berner & Lester, 6/20/80, B, I)	42
Black Oystercatcher	4	(Berner & Lester, 6/20/80, BL, III)	42
Western Gull	24	(Berner & Lester, 6/20/80, BL, III)	42
Pigeon Guillemot	72	(Berner & Lester, 6/20/80, BLM, III)	42
<b>Total</b>	<b>142</b>		

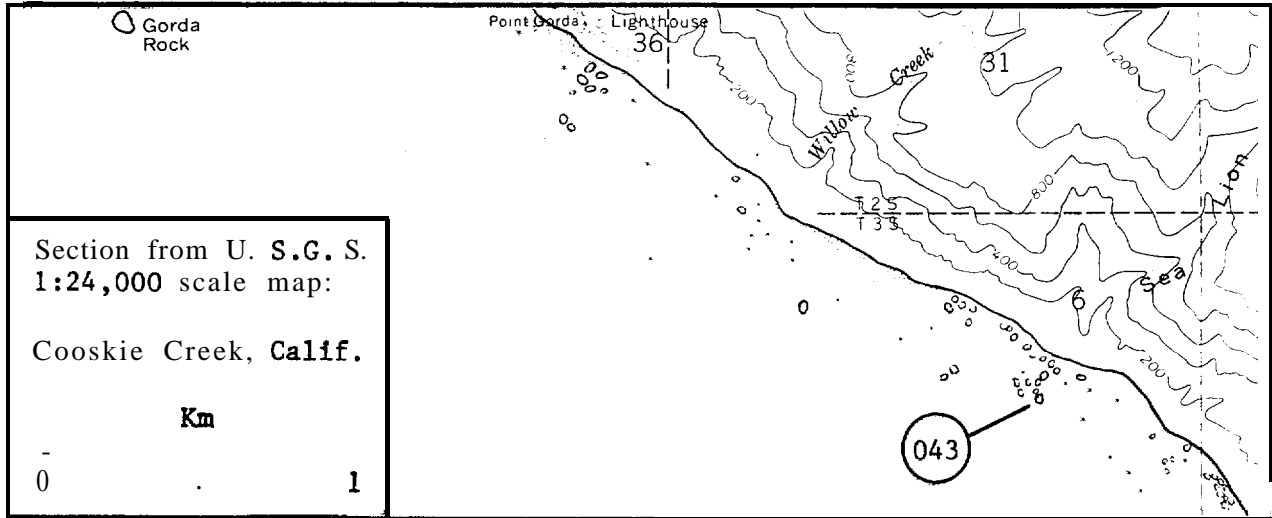
Fork-tailed Storm-Petrel	X	(Clay, 5/14/16&1939, L; Talmadge, early 1930's)	35
Leach's Storm-Petrel	X	(Clay, 5/14/16&1939, L; Talmadge, early 1930's)	35
Fork-tailed Storm-Petrel	} 20,000	(Howell, 7/16/19, L)	35
Leach's Storm-Petrel			
Black Oystercatcher	X	(Talmadge, early 1930's)	35
Western Gull	X	(Talmadge, early 1930's)	35
Pigeon Guillemot	X	(Howell, 7/16/19, L)	35
Cassin's Auklet	?	(Clay, 3/22/25, L)	35

046 Unnamed Small Rocks 41°42'N, 124°08'W

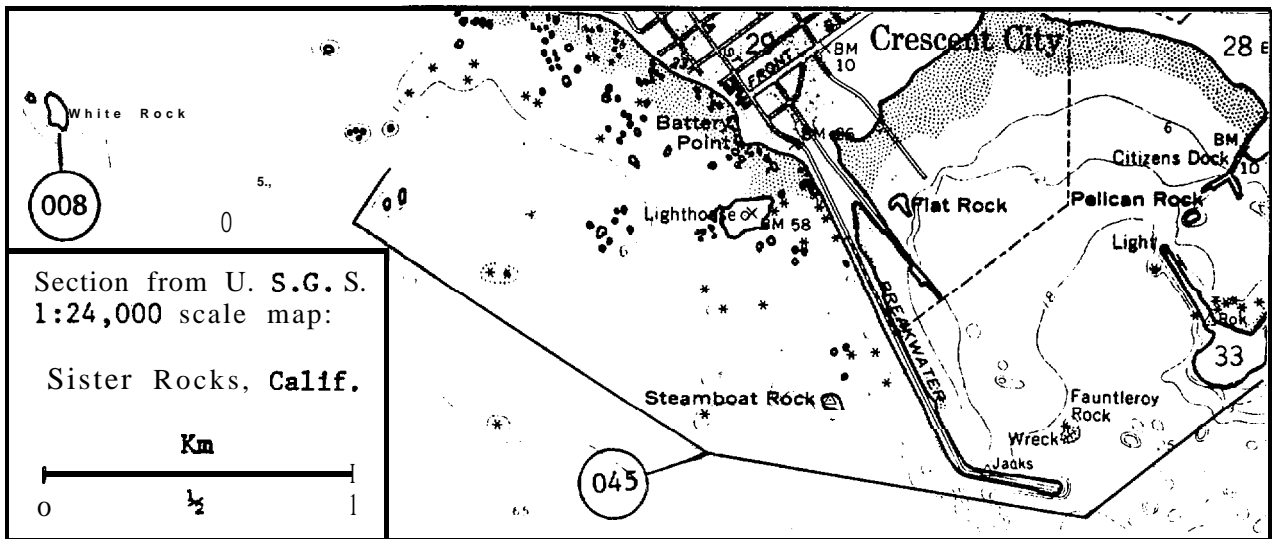
Double-crested Cormorant	22	(Berner & Lester, 6/20/80, B, II)	42
Pelagic Cormorant	66	(Berner & Lester, 6/20/80, B, II)	42
Black Oystercatcher	6	(Berner & Lester, 6/20/80, B, III)	42
Western Gull	28	(Berner & Lester, 6/20/80, B, III)	42
<b>Pigeon Guillemot</b>	<b>100</b>	<b>(Berner &amp; Lester, 6/20/80, B, III)</b>	<b>42</b>
<b>Total</b>	<b>222</b>		

Double-crested Cormorant	2	(DeGange & Lester, 5/22/79, B, II)	42
Pelagic Cormorant	6	(DeGange & Lester, 5/22/79, B, I)	42
Black Oystercatcher	P	(DeGange & Lester, 5/22/79, B)	42
Western Gull	8	(DeGange & Lester, 5/22/79, B, II)	42

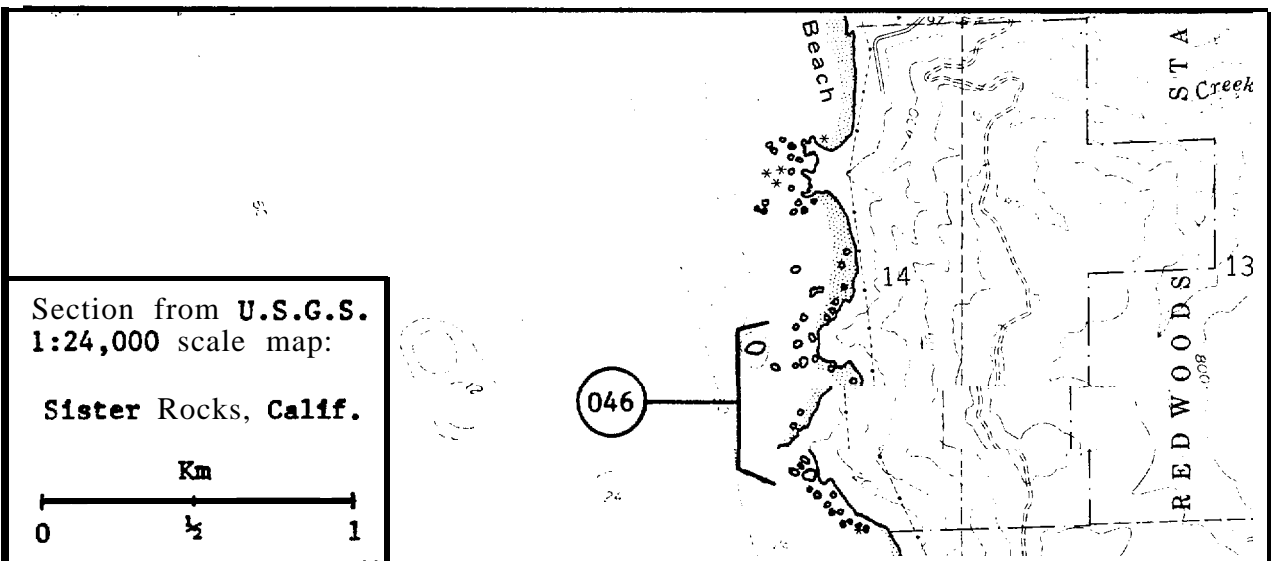
X = present, P = probably present



Section from U. S.G. S.  
1:24,000 scale map:  
Cooskie Creek, Calif.  
Km  
0 1



Section from U. S.G. S.  
1:24,000 scale map:  
Sister Rocks, Calif.  
Km  
0 1/2 1



Section from U.S.G.S.  
1:24,000 scale map:  
Sister Rocks, Calif.  
Km  
0 1/2 1

AREA 325, Eureka (cent'd.)

047 "Easy Triangle Rocks" 41°40'22"N, 124°08'30"W

Pelagic Cormorant	54	(Berner & Lester, 6/20/80, B, II)	42
Black Oystercatcher	2	(Berner & Lester, 6/20/80, B, III)	42
Western Gull	8	(Berner & Lester, 6/20/80, B, III)	42
Pigeon Guillemot	20	(Berner & Lester, 6/20/80, B, III)	42
Total	84		
Pelagic Cormorant	20	(DeGange & Lester, 5/22/79, B, II)	42
Black Oystercatcher	P	(DeGange & Lester, 5/22/79, B, III)	42
Western Gull	12	(DeGange & Lester, 5/22/79, B, II)	42
Pigeon Guillemot	10	(DeGange & Lester, 5/22/79, B, III)	42

P = probably present

048 "Rock R" 41°40'00"N, 124°08'30"W

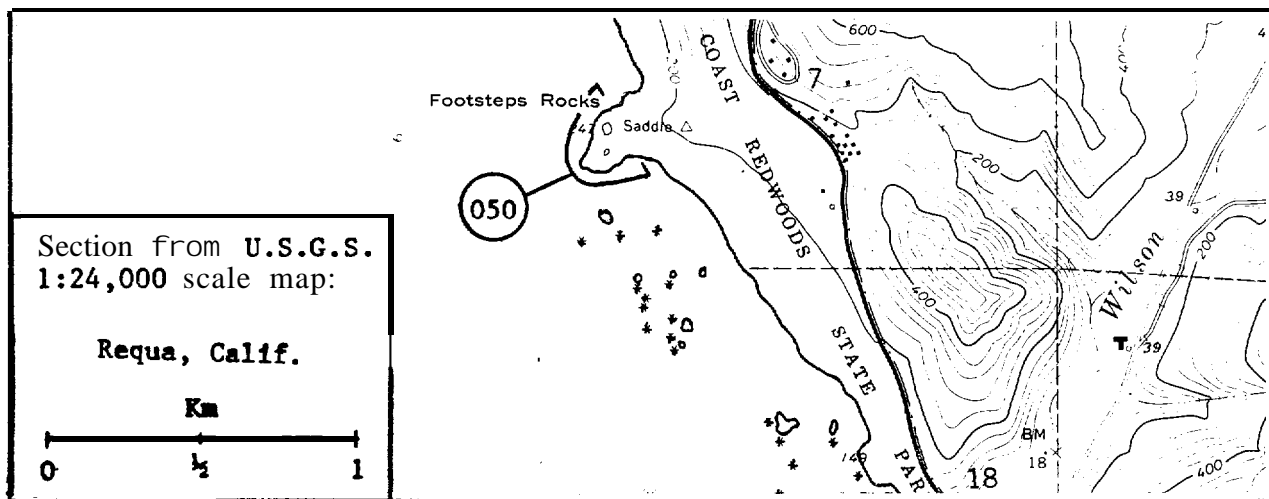
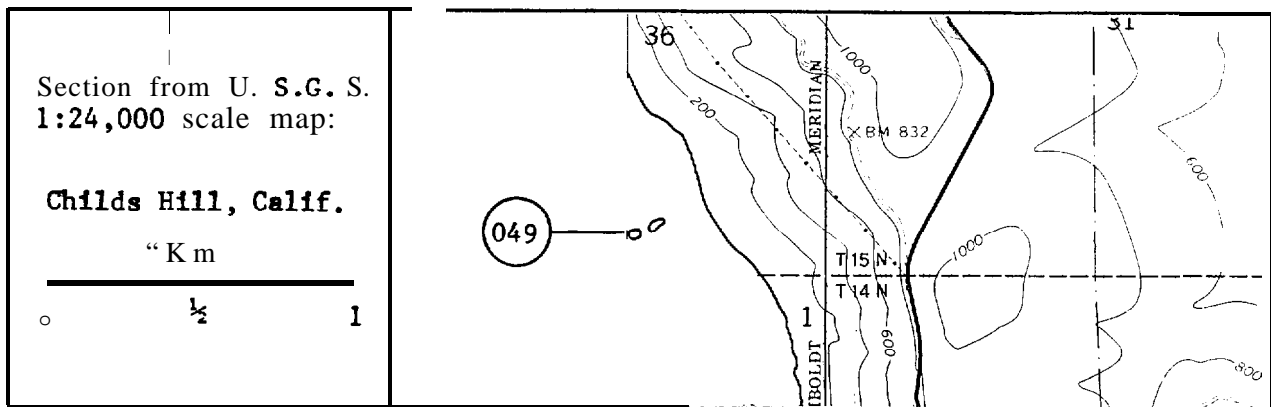
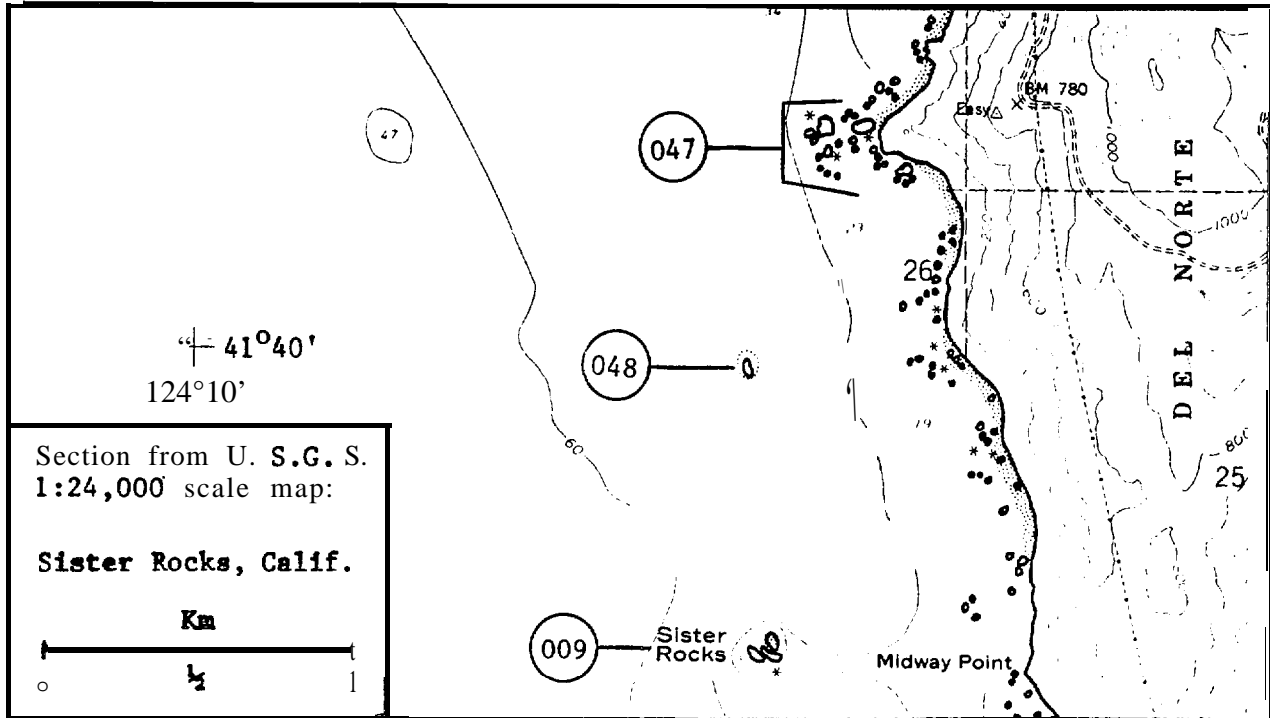
Brandt's Cormorant	140	(DeGange & Nelson, 7/25/80, A, II)	42
Pelagic Cormorant	10	(Berner & Lester, 6/20/80, B, II)	42
Western Gull	4	(Berner & Lester, 6/20/80, B, III)	42
Pigeon Guillemot	2	(Berner & Lester, 6/20/80, B, III)	42
Total	156		
Brandt's Cormorant	188	(Lester, 6/19&7/12/79, A, I)	42
Pelagic Cormorant	4	(DeGange & Lester, 5/22/79, B, I)	42
Black Oystercatcher	2	(DeGange & Lester, 5/22/79, B, III)	42

049 "Last Chance Rock" 41°38'05"N, 124°07'30"W

Double-crested Cormorant	4	(Berner & Lester, 6/20/80, B, II)	42
Pelagic Cormorant	40	(Berner & Lester, 6/20/80, B, II)	42
Western Gull	4	(Berner & Lester, 6/20/80, B, III)	42
Total	48		
Pelagic Cormorant	6	(DeGange & Lester, 5/22/79, B, II)	42
Western Gull	2	(DeGange & Lester, 5/22/79, B, II)	42

050 Footsteps Rock 41°37'00"N, 124°07'10"W

Pelagic Cormorant	36	(Berner & Lester, 6/20/80, B, II)	42
Black Oystercatcher	2	(Berner & Lester, 6/20/80, B, III)	42
Western Gull	4	(Berner & Lester, 6/20/80, B, II)	42
Pigeon Guillemot	60	(Berner & Lester, 6/20/80, B, III)	42
Total	102		
Pelagic Cormorant	20	(DeGange & Lester, 5/22/79, B, I)	42
Black Oystercatcher	2	(DeGange & Lester, 5/22/79, B, III)	42
Pigeon Guillemot	50	(DeGange & Lester, 5/22/79, B, III)	42



AREA 325, Eureka (cent'd.)

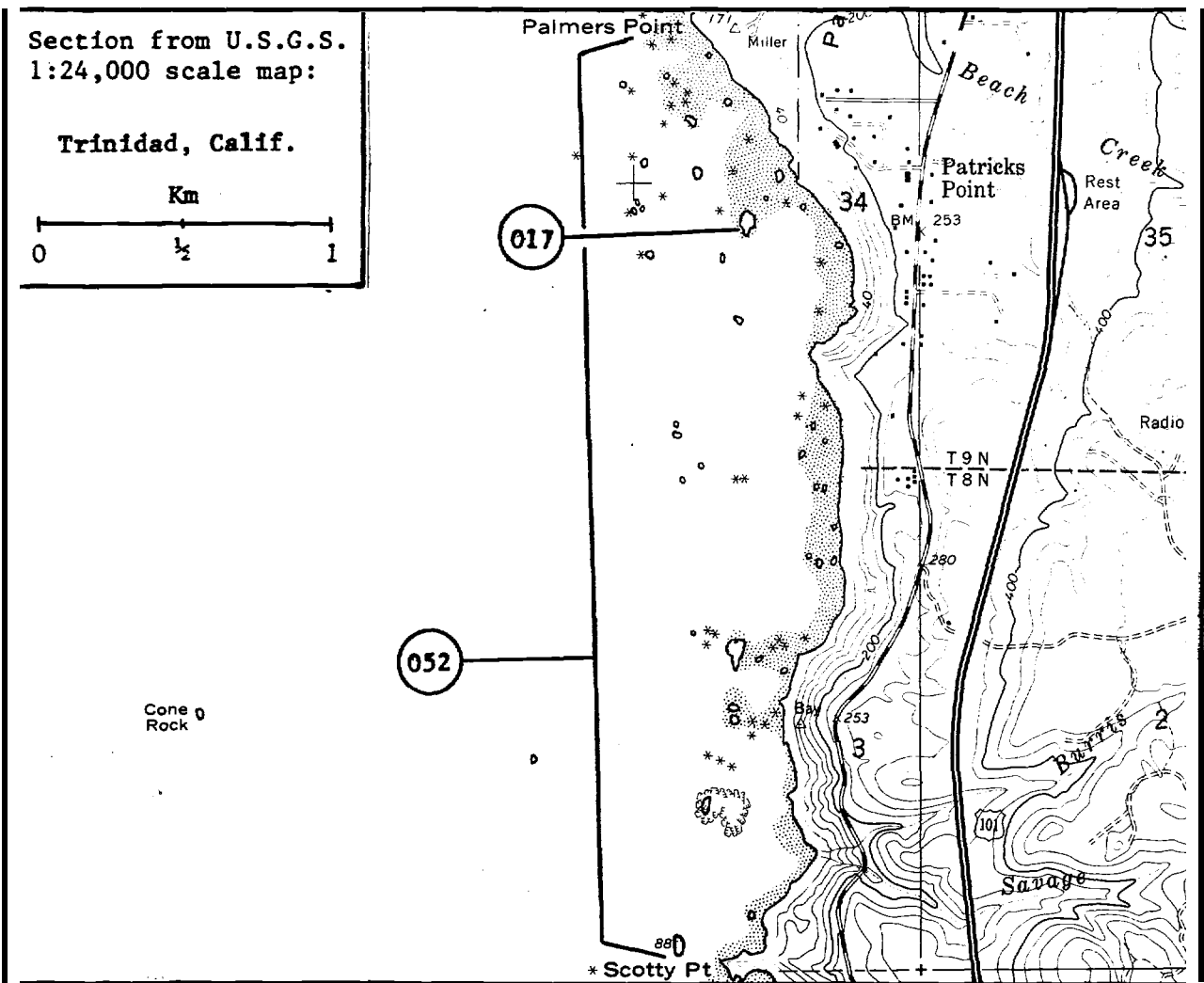
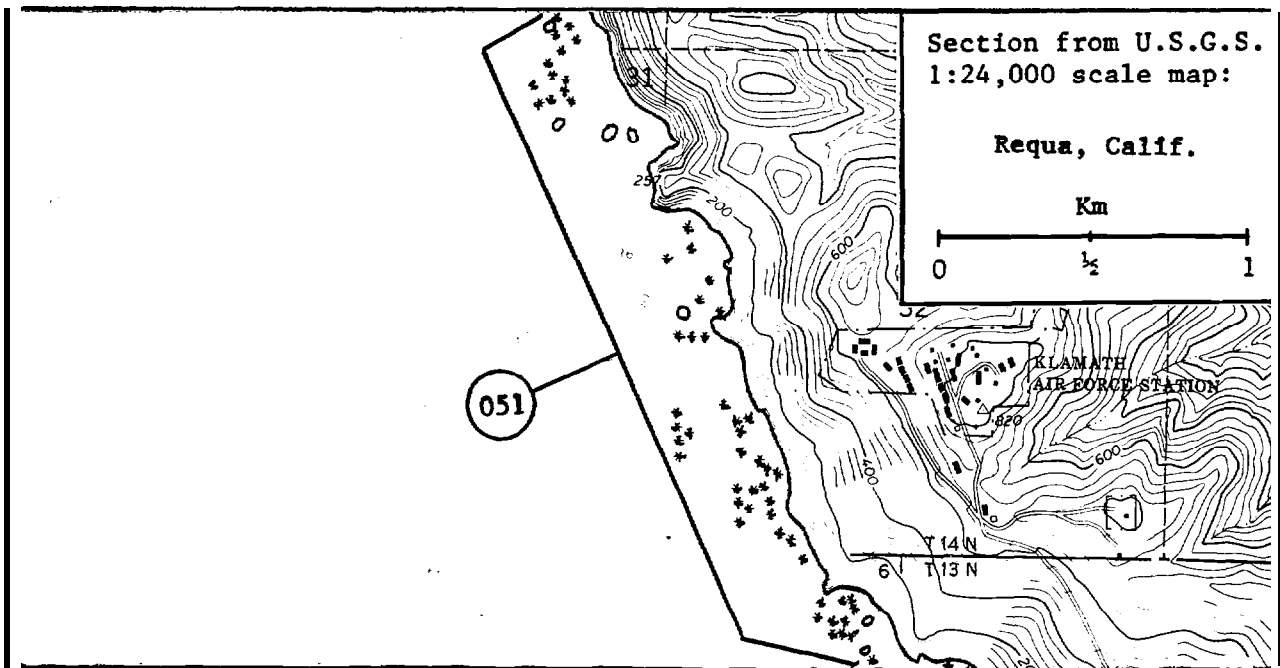
051 "Radar Station Rocks" 41 °33' 30"N, 124°06'00"W

Double-crested Cormorant	20	(Lester & Rodstrom, 6/5/79, B, III)	42
Pelagic Cormorant	34	(Lester & Rodstrom, 6/5/79, B, II)	42
Black Oystercatcher	P	(Lester & Rodstrom, 6/5/79, B)	42
Western Gull	X	(Lester & Rodstrom, 6/5/79, B)	42
Pigeon Guillemot	20	(Lester & Rodstrom, 6/5/79, B, III)	42
<b>Total</b>	<u>74</u>		

X = present, P = probably present

052 Palmer's Point to Scotty Point (except 017) 41°07'N, 124°09'W

Pelagic Cormorant	100	(Lester & Stewart, 6/23/80, B, II)	42
Black Oystercatcher	10	(Lester & Stewart, 6/23/80, B, III)	42
Western Gull	20	(Lester & Stewart, 6/23/80, B, III)	42
Pigeon Guillemot	40	(Lester & Stewart, 6/23/80, B, III)	42
<b>Total</b>	<u>170</u>		
Pelagic Cormorant	146	(Lester, McKay & Rodstrom, 8/1/79, B, II)	42
Black Oystercatcher	6	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Western Gull	20	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Pigeon Guillemot	50	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42

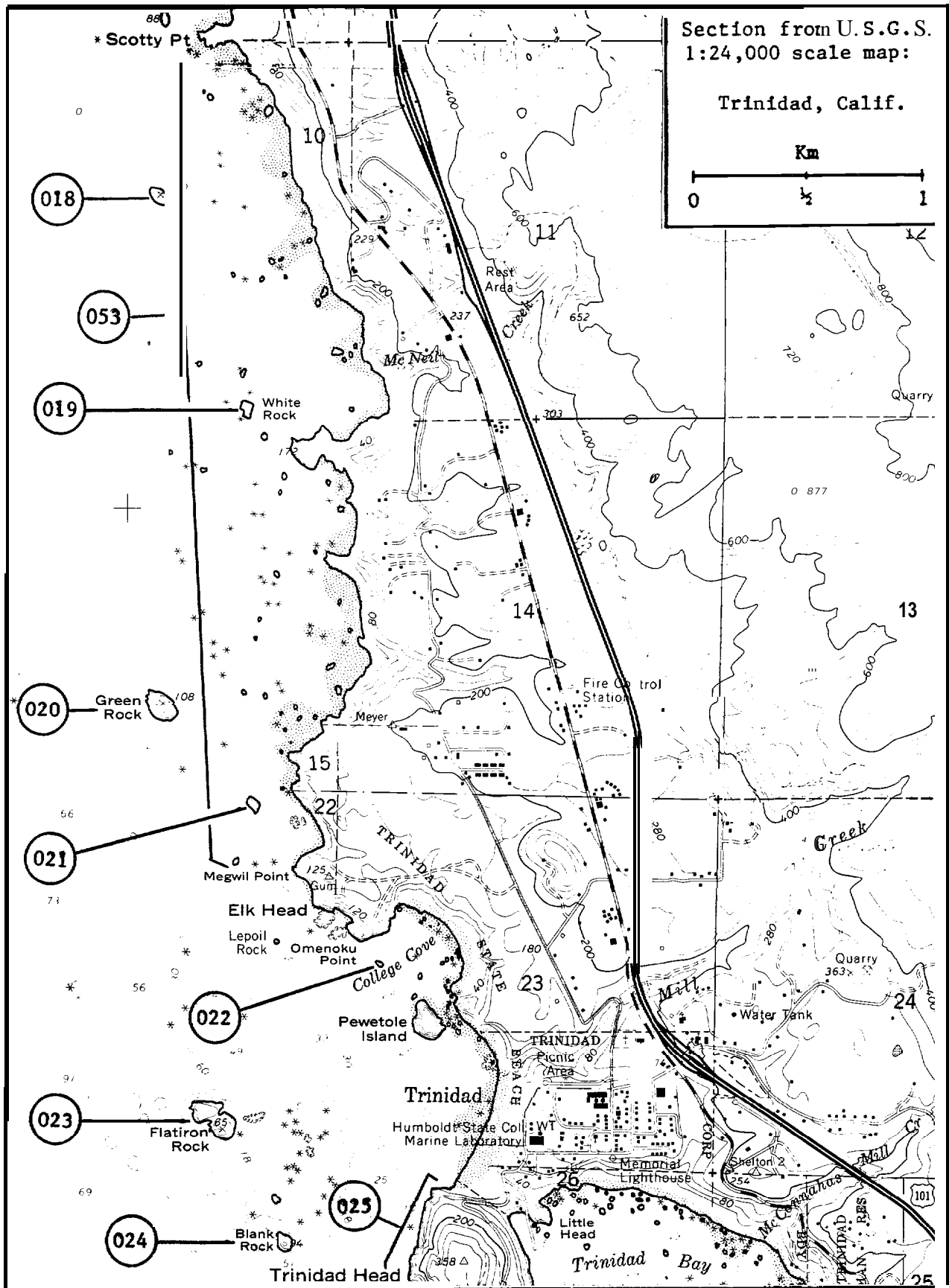


AREA 325, Eureka (cont'd.)

053 Scotty Point to Megwill Point (except 018 - 021)  
41°05'N, 124°09'W

Brandt's Cormorant	2	(Lester & Stewart, 6/23/80, B, II)	42
Pelagic Cormorant	134	(Lester & Stewart, 6/23/80, B, II)	42
Black Oystercatcher	6	(Lester & Stewart, 6/23/80, B, III)	42
Western Gull	16	(Lester & Stewart, 6/23/80, B, III)	42
Pigeon Guillemot	60	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Total	218		
Pelagic Cormorant	96	(Lester, McKay & Rodstrom, 8/1/79, B, II)	42
Black Oystercatcher	X	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Western Gull	14	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42

X = present

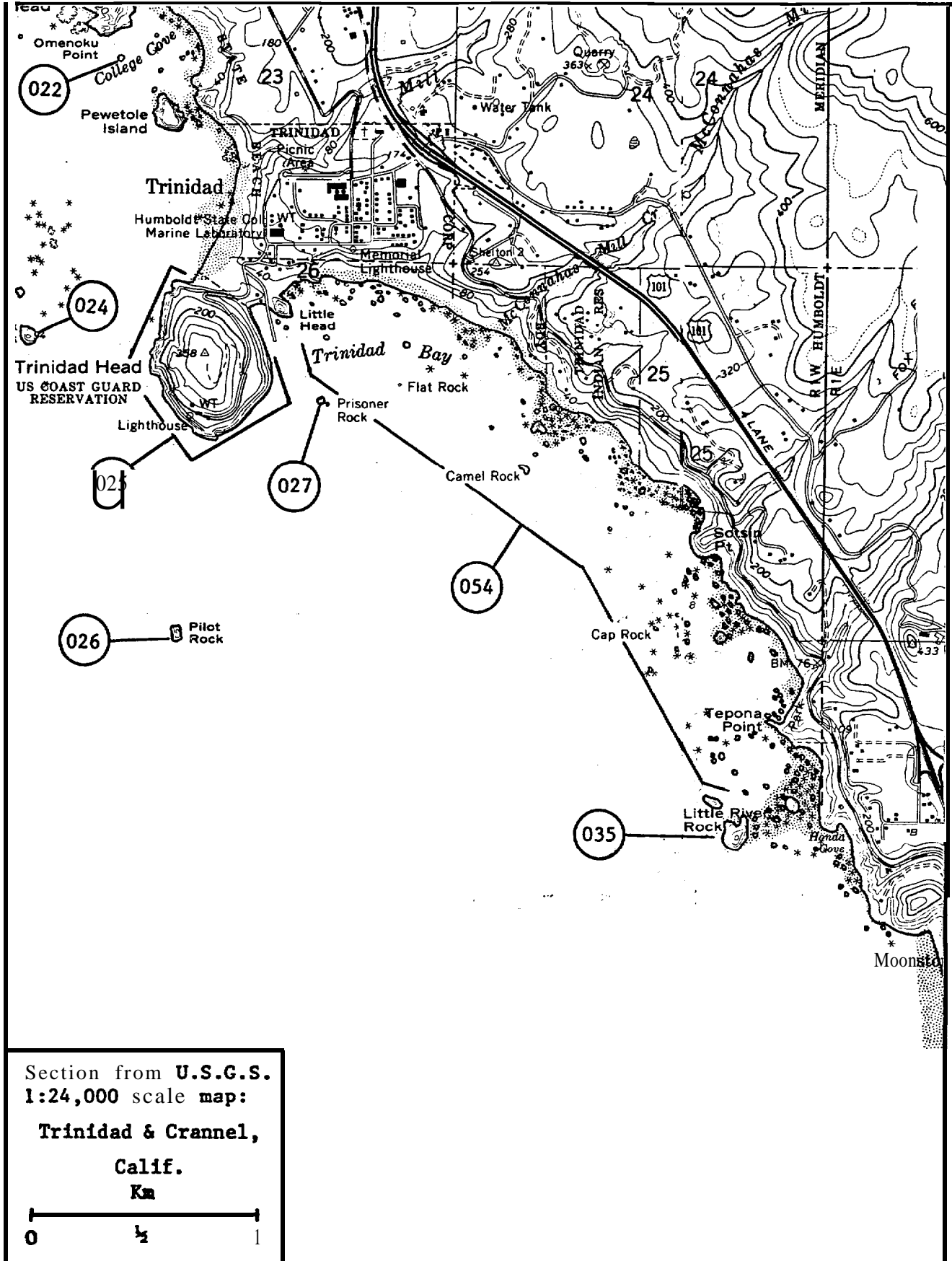


AREA 325, Eureka (cent'd.)

054 Trinidad Bay Rocks: "Double", "Mr'rp", Cap, "Split", "Button" >  
 "Luffenholz", "Tepona", "Halfmoon", "Snag" and unnamed small  
 rocks 41°03'N, 124°08"W

Fork-tailed Storm-Petrel	X	(Osborne, 1969-70, L)	35
Leach's Storm-Petrel	1,640	(Lester, SOWLS & Stewart, 1980, BL, III)	42
Pelagic Cormorant	22	(Lester & Stewart, 6/23/80, B, II)	42
Black Oystercatcher	10	(Lester & Stewart, 6/23/80, BL, III)	42
Western Gull	22	(Lester & Stewart, 6/23/80, BL, III)	42
Pigeon Guillemot	60	(Lester & Stewart, 6/23/80, BL, III)	42
Total	1,754		
Leach's Storm-Petrel	600	(Osborne, 1969-70, L)	35
Pelagic Cormorant	62	(Osborne, 1969-70, L)	35
Pelagic Cormorant	56	(Lester, McKay & Rodstrom, 8/1/79, B, II)	42
Black Oystercatcher	2	(Osborne, 1969-70, L)	35
Black Oystercatcher	2	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Western Gull	X	(Osborne, 1969-70, L)	35
Western Gull	12	(Lester, McKay & Rodstrom, 8/1/79, B, III)	42
Pigeon Guillemot	20	(Osborne, 1969-70, L)	35

X = present



Section from U.S.G.S.  
1:24,000 scale map:  
Trinidad & Crannel,  
Calif.  
Km  
0 1/2 1

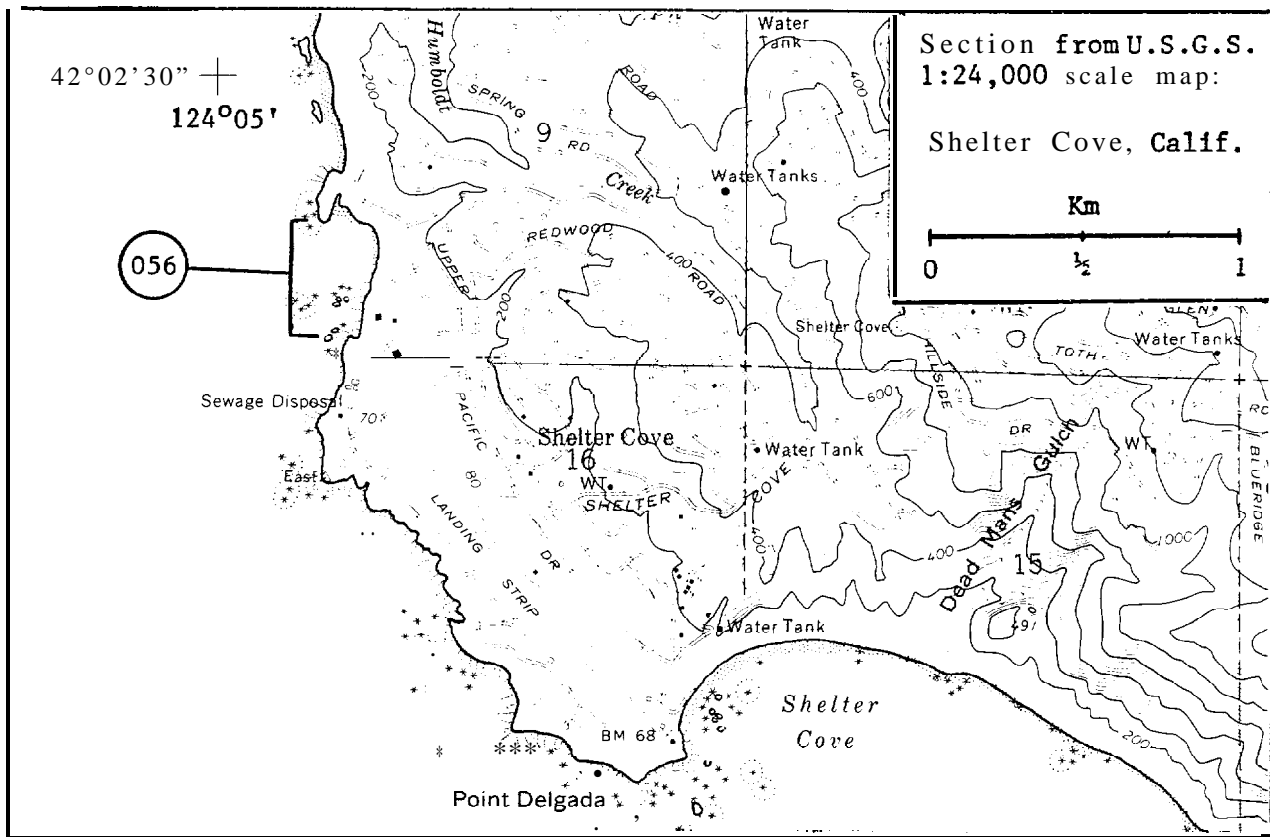
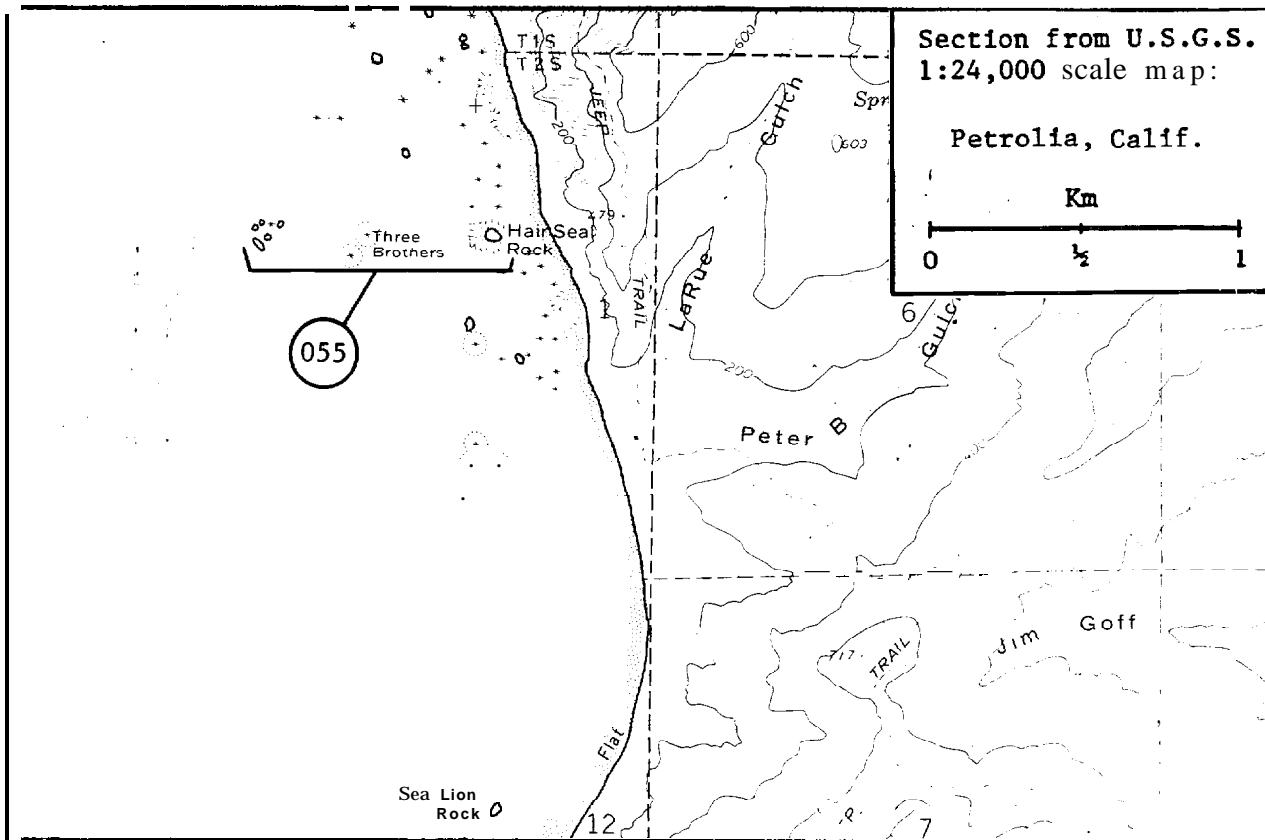
AREA 325, Eureka (cent'd.)

055 Three Brothers & Hair Seal Rocks 40°19'40"N, 124°21' 58"W

Brandt's Cormorant	110 (Nel son & Rodstrom,7/18/79, B, II)	42
Pelagic Cormorant	6 (Nel son & Rodstrom,7/18/79,B,I)	42
Western Gull	4 (Nel son & Rodstrom, 7/18/79, B, III)	42
To tal	120	

056 "Cormorant Hotel " 40°02' 10"N, 124°04'50"W

Pelagic Cormorant	280 (Lester, Nel son, Rodstrom & Sows,7/18/79,MB,II)	42
Western Gull	2 (Lester, Nel son, Rodstrom & Sows,7/18/79,MB,I)	42
To tal	282	



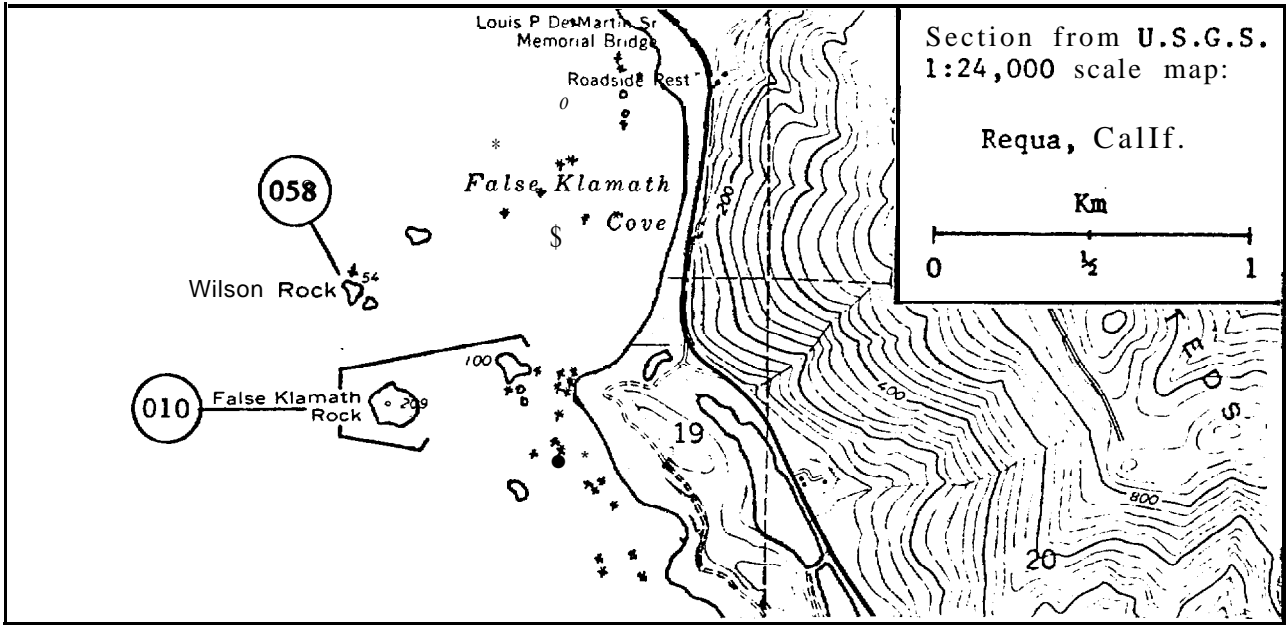
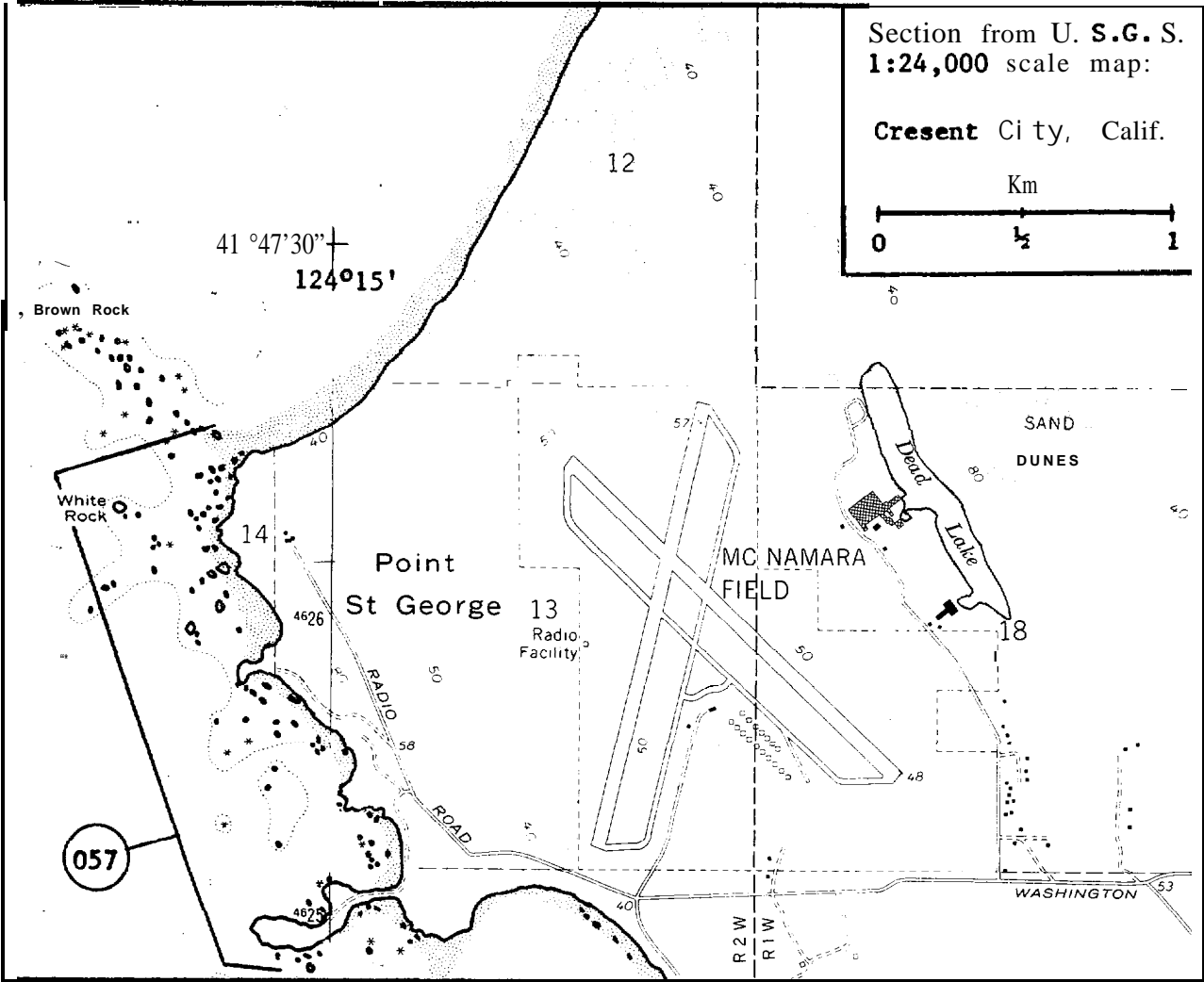
AREA 325, Eureka (cent'd.)

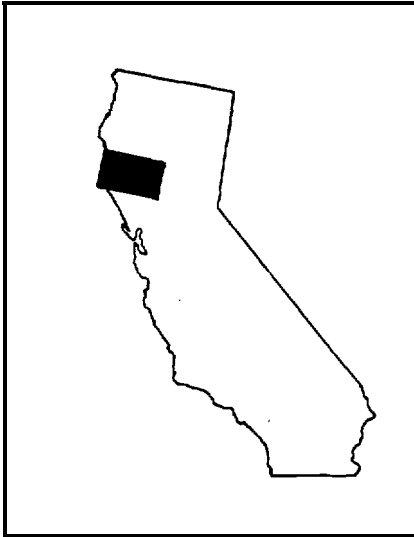
057 Point St. George 41°47'N, 124°15'W

Pelagic Cormorant	14 (Berner & Lester, 6/20/80, B, I)	42
Black Oystercatcher	8 (Berner & Lester, 6/20/80, B, III)	42
Western Gull	20 (Berner & Lester, 6/20/80, B, III)	42
Pigeon Guillemot	40 (Berner & Lester, 6/20/80, B, III)	42
Total	<u>82</u>	

058 Wilson Rock 41°35'45"N, 124°06'37"W

Pelagic Cormorant	2 (Berner & Lester, 6/20/80, B, II)	42
Black Oystercatcher	2 (Berner & Lester, 6/20/80, B, III)	42
Western Gull	8 (Berner & Lester, 6/20/80, B, III)	42
Total	<u>12</u>	





379

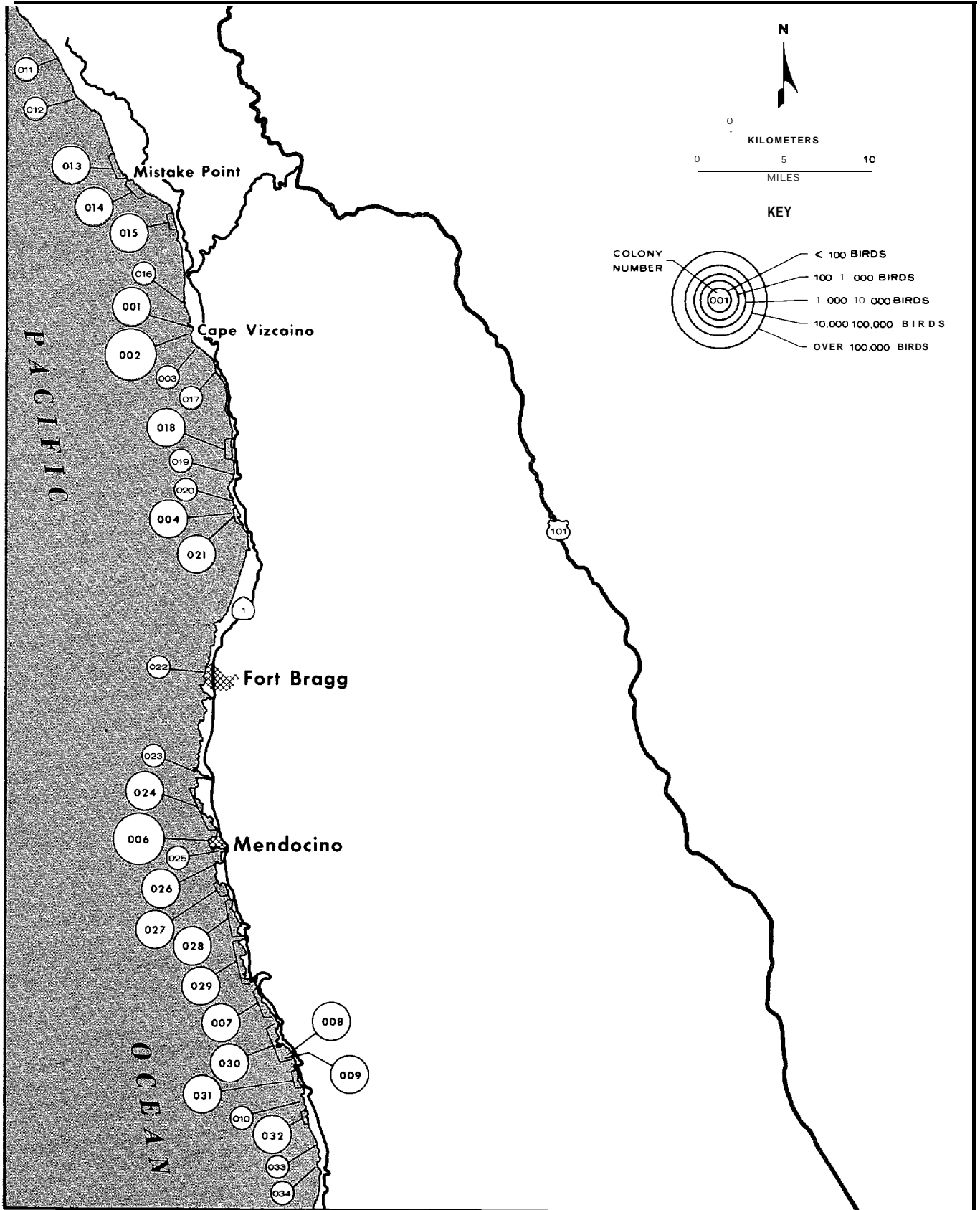
**Ukiah**

The map on the facing page is an index to the locations of colonies within map 379, Ukiah. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

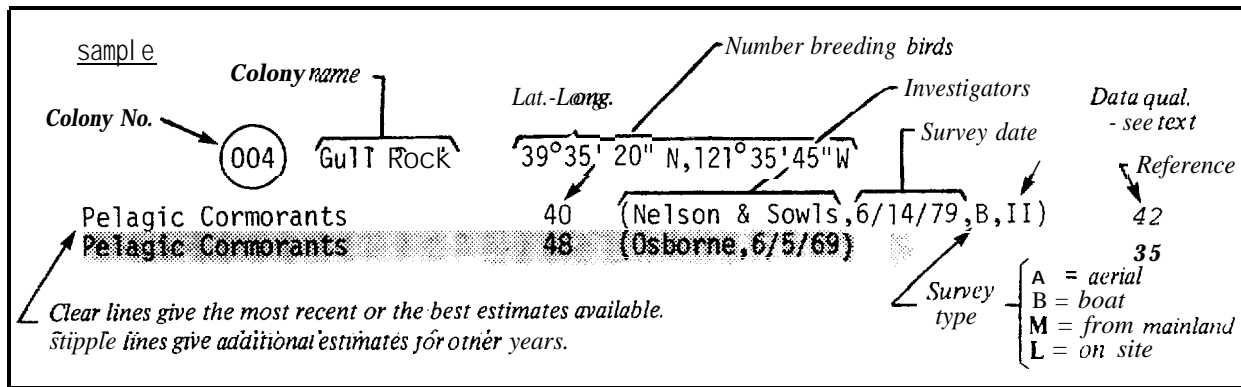
Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

Brandt's Cormorant	6,000
Pelagic Cormorant	4,000
Black Oystercatcher	.70
Western Gull	500
Common Murre	6,000
Pigeon Guillemot	1,000
Marbled Murrelet	no estimate
Rhinoceros Auklet	P
Tufted Puffin	.10

# 379 Ukiah



AREA 379, Ukiah (cent'd.)



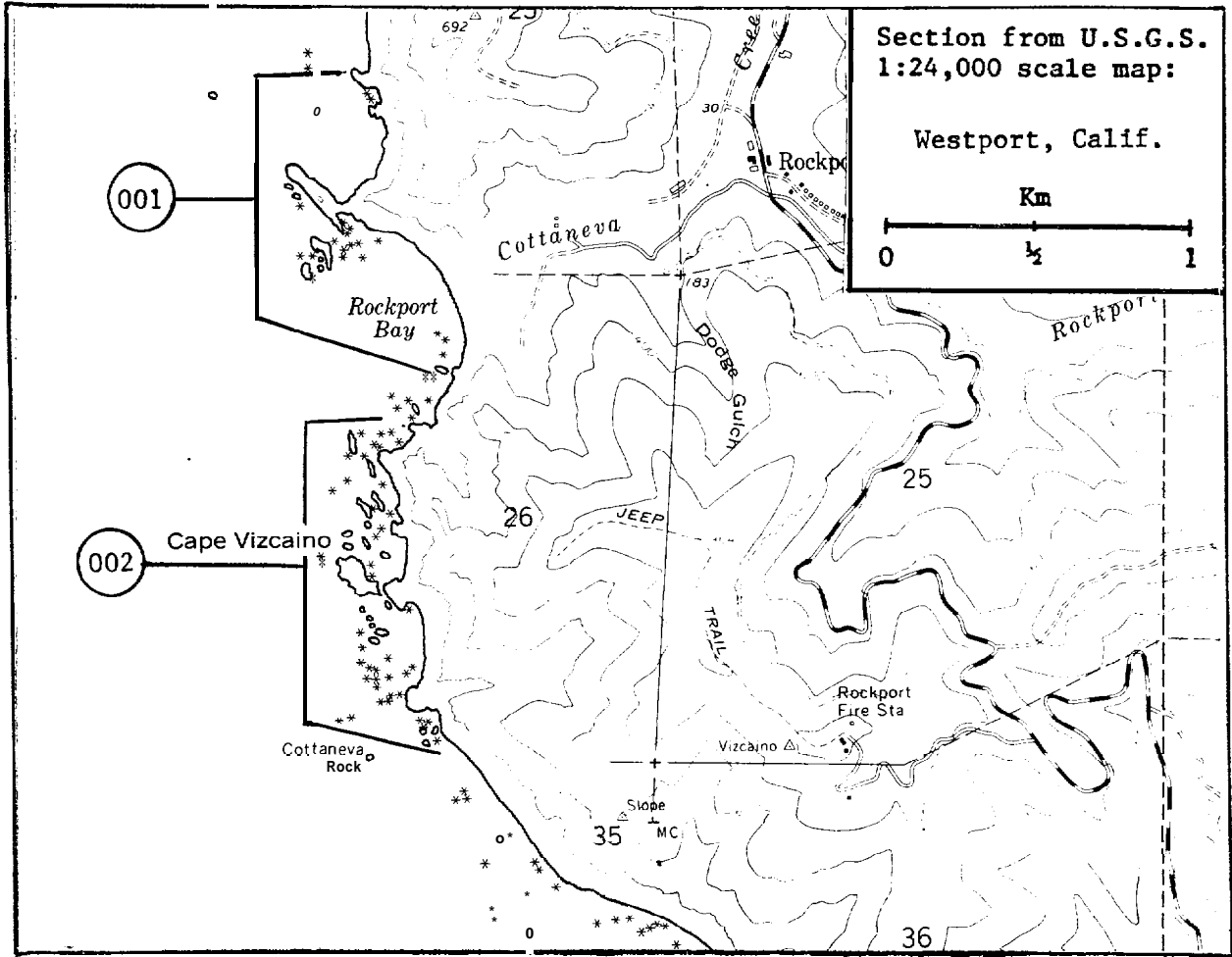
001 "Rockport Rocks" 39°44'10"N, 123°50'00"W

Brandt's Cormorant	0	(Lester & Rodstrom, 6/12/79, B, II)	42
Pelagic Cormorant	250	(Lester & Rodstrom, 6/12/79, B, III)	42
Black Oystercatcher	2	(Lester & SOWls, 7/19/79, B, III)	42
Western Gull	10	(Lester & SOWls, 7/19/79, B, III)	42
Pigeon Guillemot	20	(Lester & Rodstrom, 6/12/79, B, III)	42
Total	282		
Brandt's Cormorant	X	(Osborne, 8/26/69, M)	36

X = present

002 Cape Vizcaino 39°43'34"N, 123°49' 55"W

Brandt's Cormorant	3,080	(Lester & SOWls, 7/23/80, A, II)	42
Pelagic Cormorant	120	(Lester & Rodstrom, 6/12/79, B, III)	42
Western Gull	60	(Lester & Rodstrom, 6/12/79, B, III)	42
Common Murre	5,800	(Briggs & Lewis, 5/7/80, A, III)	42
Pigeon Guillemot	8	(Lester, SOWls & Stewart, 7/12/80, M, III)	42
Total	9,068		
Brandt's Cormorant	1,000	(Osborne, 8/26/69, M)	36
Brandt's Cormorant	3,662	(Lester & Rodstrom, 8/2/79, A, III)	42
Pelagic Cormorant	50	(Osborne, 8/26/69, M)	36
Western Gull	40	(Osborne, 8/26/69, M)	36

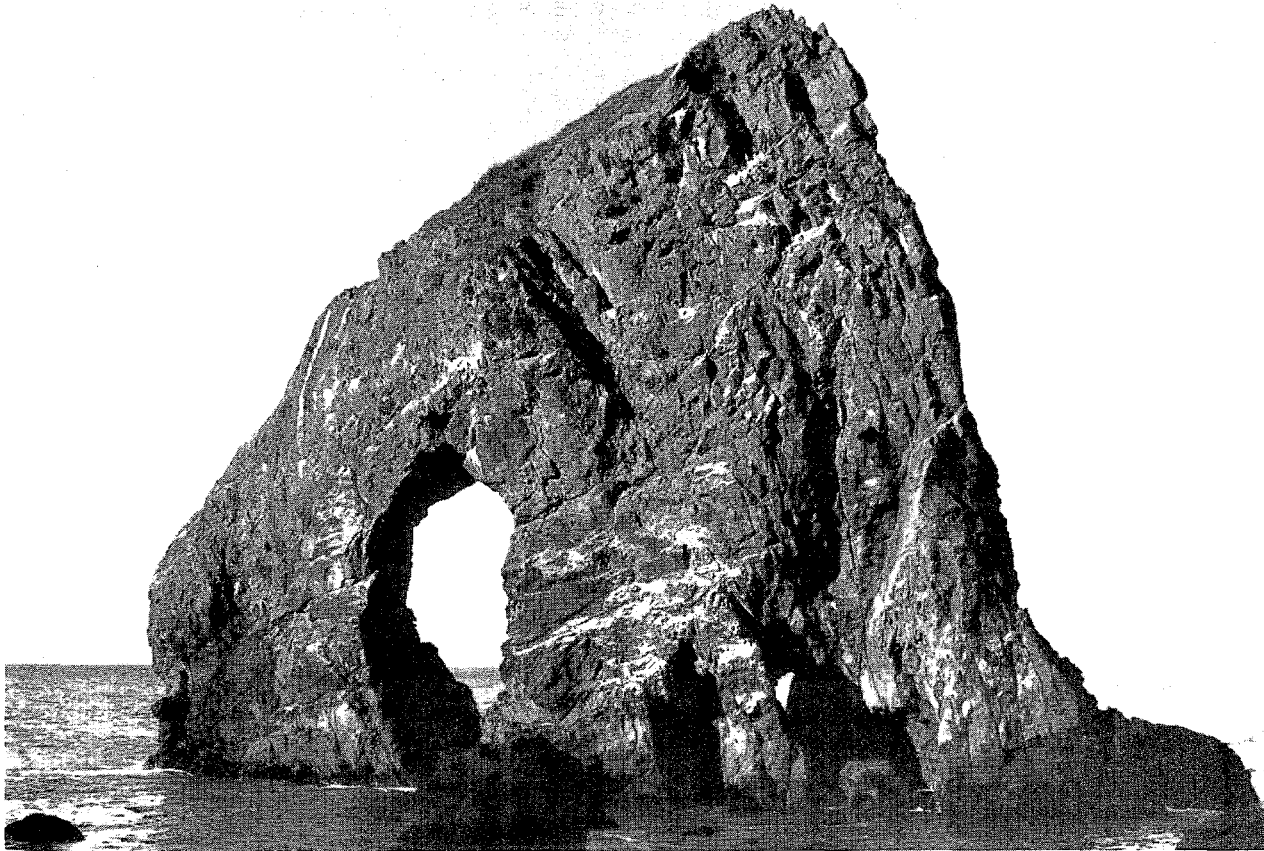


Cape Vizcaino

Photo by Gary Lester

003 Chris Rocks 39°42'51"N, 123°48'07"W

Pelagic Cormorant	54	(Lester & SOWls, 7/19/79, B, II)	42
Western Gull	6	(Lester & SOWls, 7/19/79, B, III)	42
Total	<u>60</u>		
Pelagic Cormorant	40	(Osborne, 8/25/69, M)	36



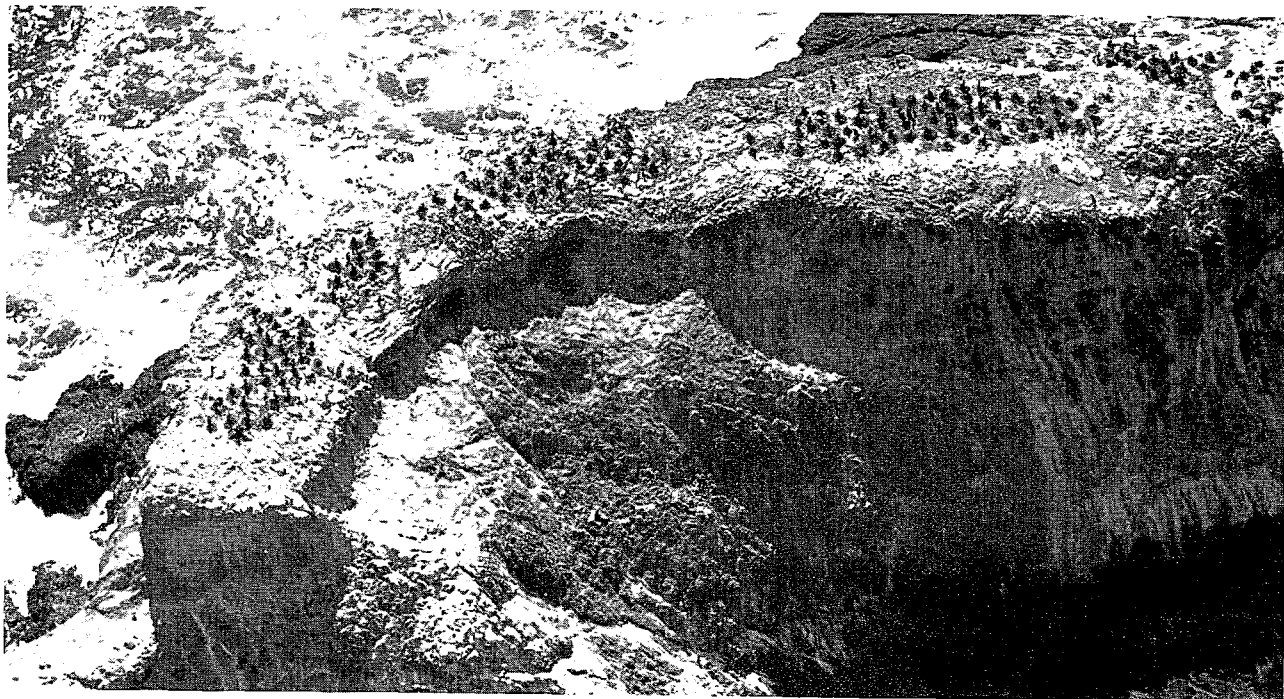
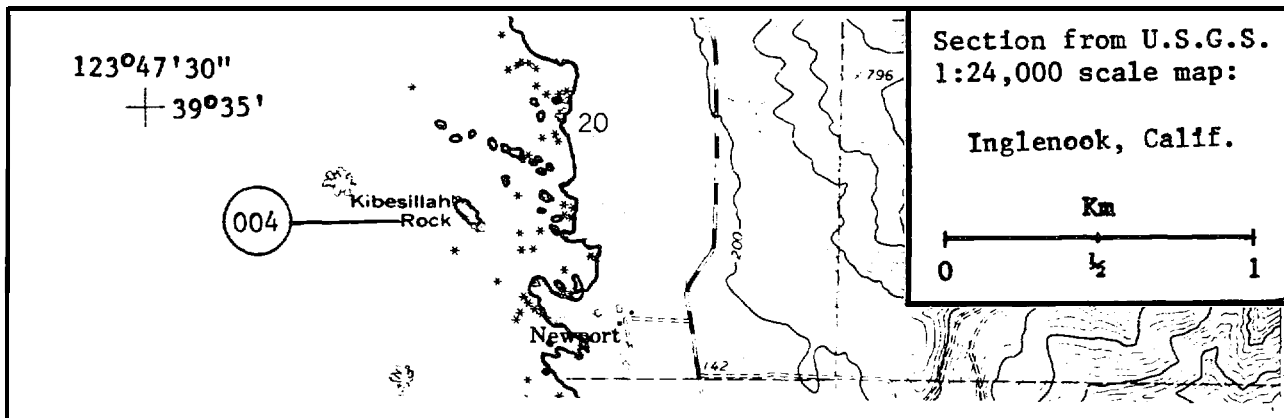
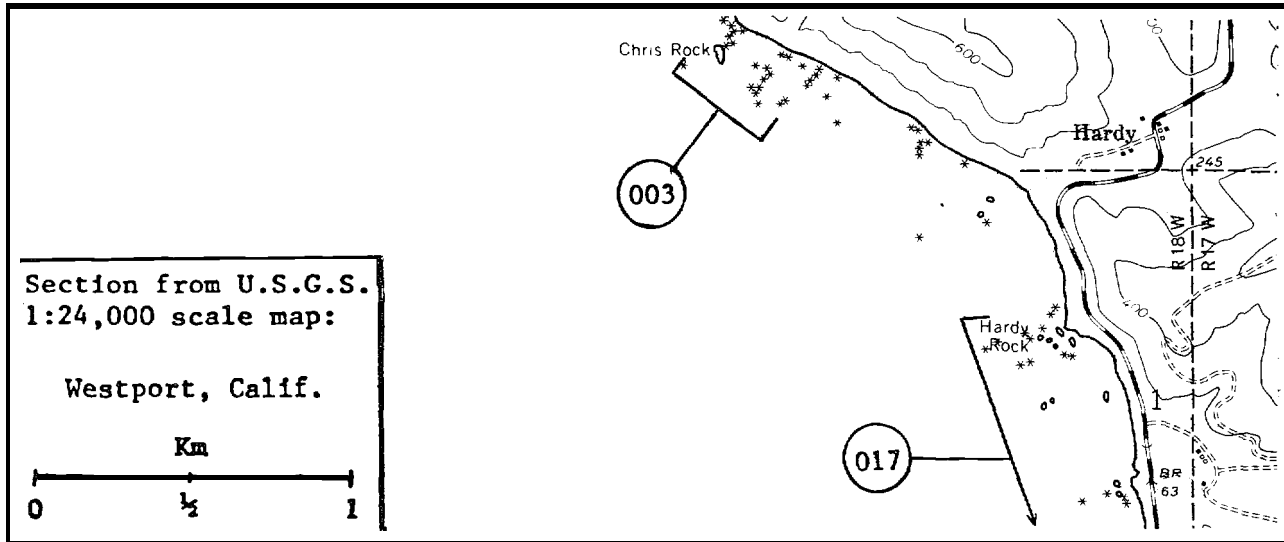
Chris Rock

Photo by Tim Osborne

004 Kibesillah Rock 39 °34' 49"N, 123 °46'51"W

Brandt's Cormorant	350	(Lester & SOWls, 7/23/80, A, II)	42
Pelagic Cormorant	92	(Lester & Rodstrom, 6/12/79, B, III)	42
Western Gull	20	(Lester & Rodstrom, 6/12/79, B)	42
Total	<u>462</u>		
Brandt's Cormorant	150	(Osborne, 8/26/69, M)	36
Brandt's Cormorant	490	(Lester & Rodstrom, 8/2/79, A, III)	42

005 MacKerricher Beach was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).



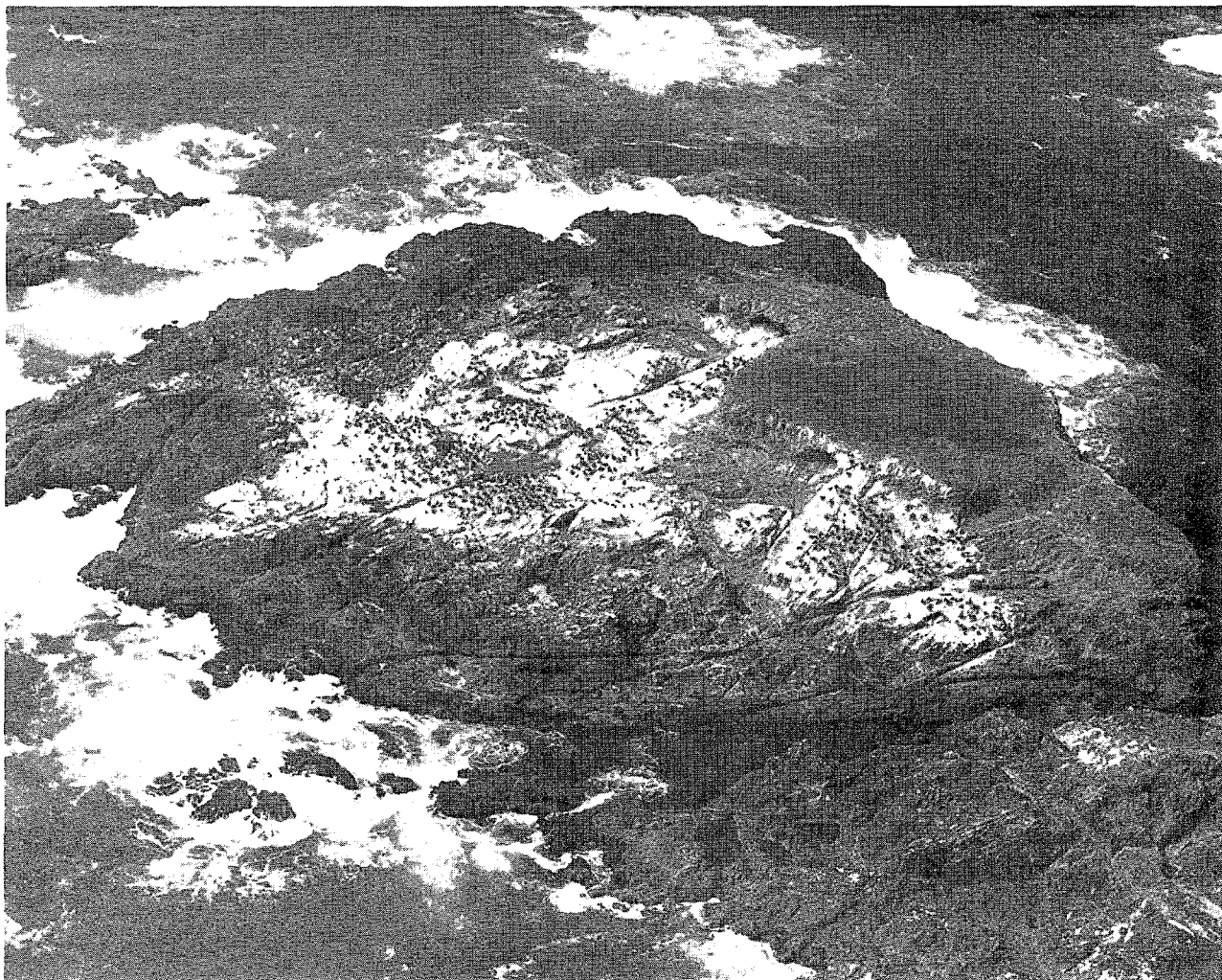
Kibesillah Rock

Photo by Gary Lester

AREA 379, Ukiah (cent'd.)

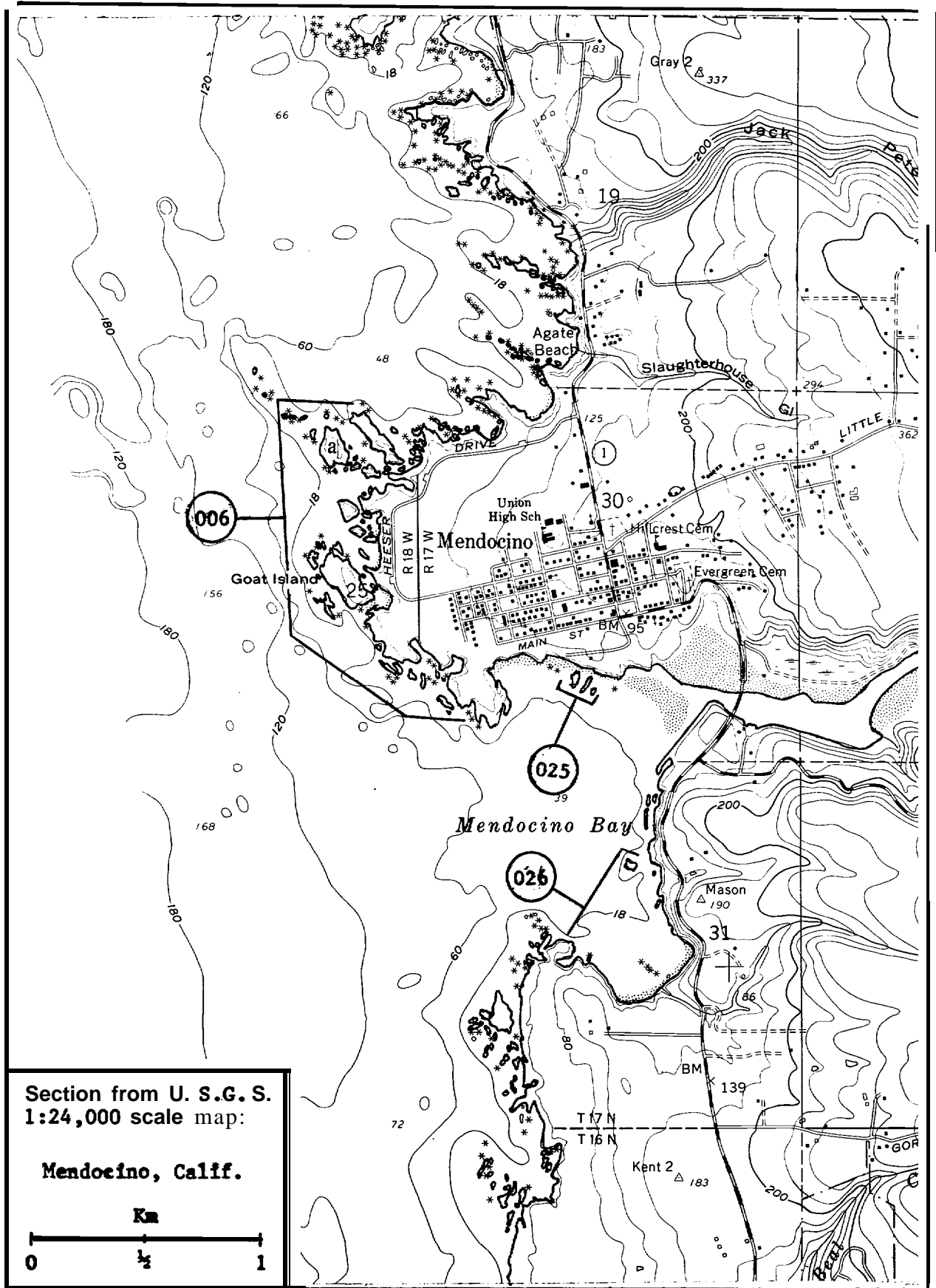
006 Goat Island Area 39 18'28"N, 123 48'49"W

Brandt's Cormorant	1,240	(Lester & Sows, 7/23/80, A, II)	42
Pelagic Cormorant	134	(Lester & Sows, 6/5/80, BM, II)	42
Black Oystercatcher	6	(DeGange & Lester & Nelson, 6/5/80, BL, III)	42
Western Gull	2	(DeGange & Lester & Nelson, 6/5/80, BL, II)	42
Pigeon Guillemot	120	(Sows, 6/5/80, BM, III)	42
Tufted Puffin	4	(DeGange, Nelson & Sows, LM, II)	42
Total	1,506		
Brandt's Cormorant	500	(Osborne, 8/26/69, L)	36
Brandt's Cormorant	1,400	(Lester & Rodstrom, 8/2/79, A, III)	42
Pelagic Cormorant	30	(Osborne, 8/26/69, L)	36
Pelagic Cormorant	38	(Lester & Rodstrom, 6/21/79, B, III)	42
Black Oystercatcher	2	(Osborne, 8/26/69, L)	36
Black Oystercatcher	2	(Rodstrom, 5/17/79, M, III)	42
Western Gull	24	(Lester & Rodstrom, 6/21/79, B, III)	42
Pigeon Guillemot	12	(Lester & Rodstrom, 6/21/79, B, III)	42



Main nesting island ("a" on map).

Photo by Gary Lester



AREA 379, Ukiah (cent'd.)

007 "Devil's Basin" 39°10'14"N, 123°44' 50"W

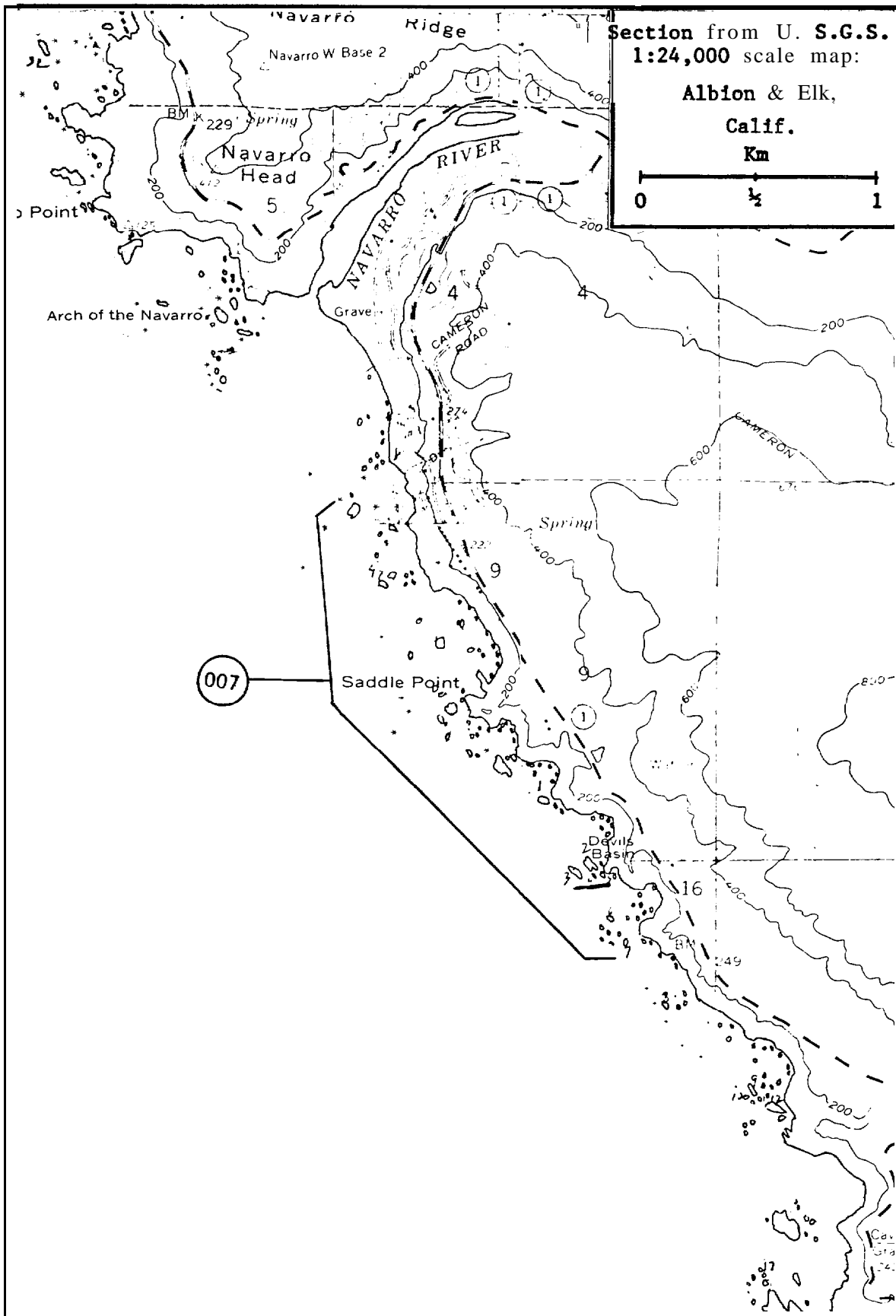
Brandt's Cormorant	300	(Lester & Sows, 7/23/80, A, III)	42
Pelagic Cormorant	132	(Lester, Sows & Stewart, 7/12/80, B, II)	42
Black Oystercatcher	2	(Nelson, Sows & Stewart, 6/6/80, B, II)	42
Western Gull	14	(Lester, Sows & Stewart, 7/12/80, B, II I)	42
Pigeon Guillemot	20	(Lester, Sows & Stewart, 7/12/80, B, II I)	42
To tal	468		
Brandt's Cormorant	350	(Osborne, 8/25/69, M)	36
Brandt's Cormorant	380	(Lester & Rodstrom, 8/2/79, A, III)	42
Pelagic Cormorant	70	(Osborne, 8/25/69, M)	36
Pelagic Cormorant	52	(Lester & Rodstrom, 6/22/79, B, II)	42
Western Gull	X	(Osborne, 8/25/69, M)	36
Western Gull	6	(Lester & Rodstrom, 6/22/79, B, III)	42

X = present



Most Brandt's Cormorants nest on this rock in "Devils Basin."

Photoby Art Sows



008 Wharf Rocks 39°07'49"N, 123°43'24"W

Pelagic Cormorant	90	(Lester, SOWls & Stewart, 7/12/80, B, II)	42
Black Oystercatcher	2	(Lester, SOWls & Stewart, 7/12/80, B, II)	42
Western Gull	10	(Lester, SOWls & Stewart, 7/12/80, B, III)	42
Pigeon Guillemot	34	(Lester, SOWls & Stewart, 7/12/80, B, III)	42
Total	136		
Pelagic Cormorant	20	(Osborne, 8/25/69, L)	36
Pelagic Cormorant	62	(Lester & Rodstrom, 6/22/79, B, II)	42
Black Oystercatcher	2	(Lester & Rodstrom, 6/22/79, B)	42
Western Gull	20	(Lester & Rodstrom, 6/22/79, B, III)	42

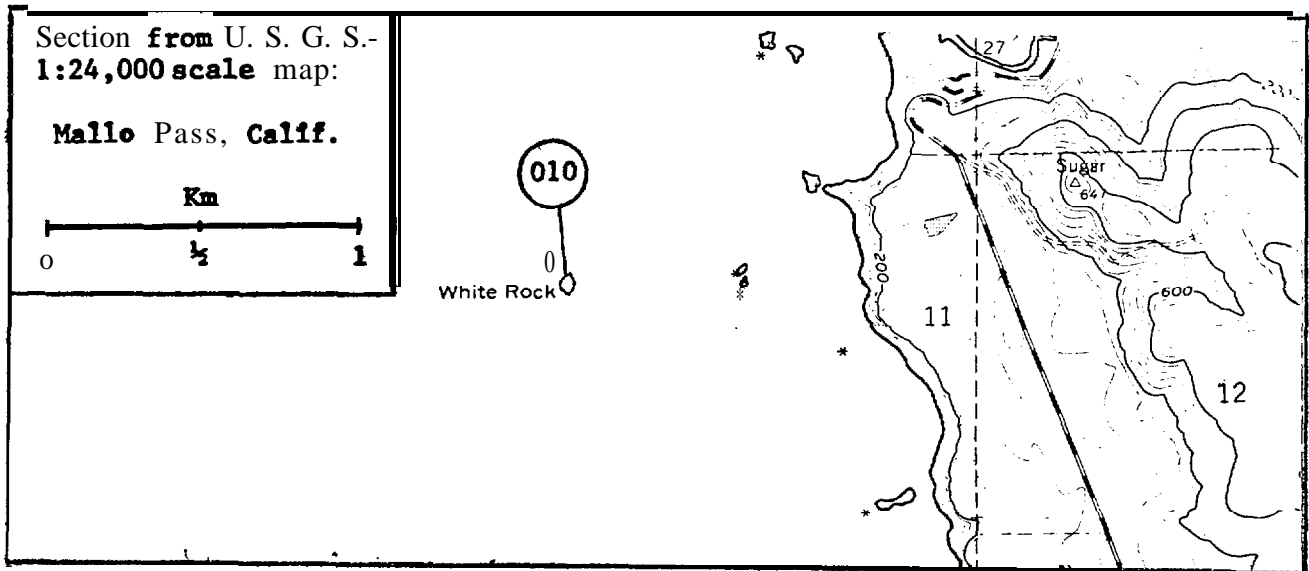
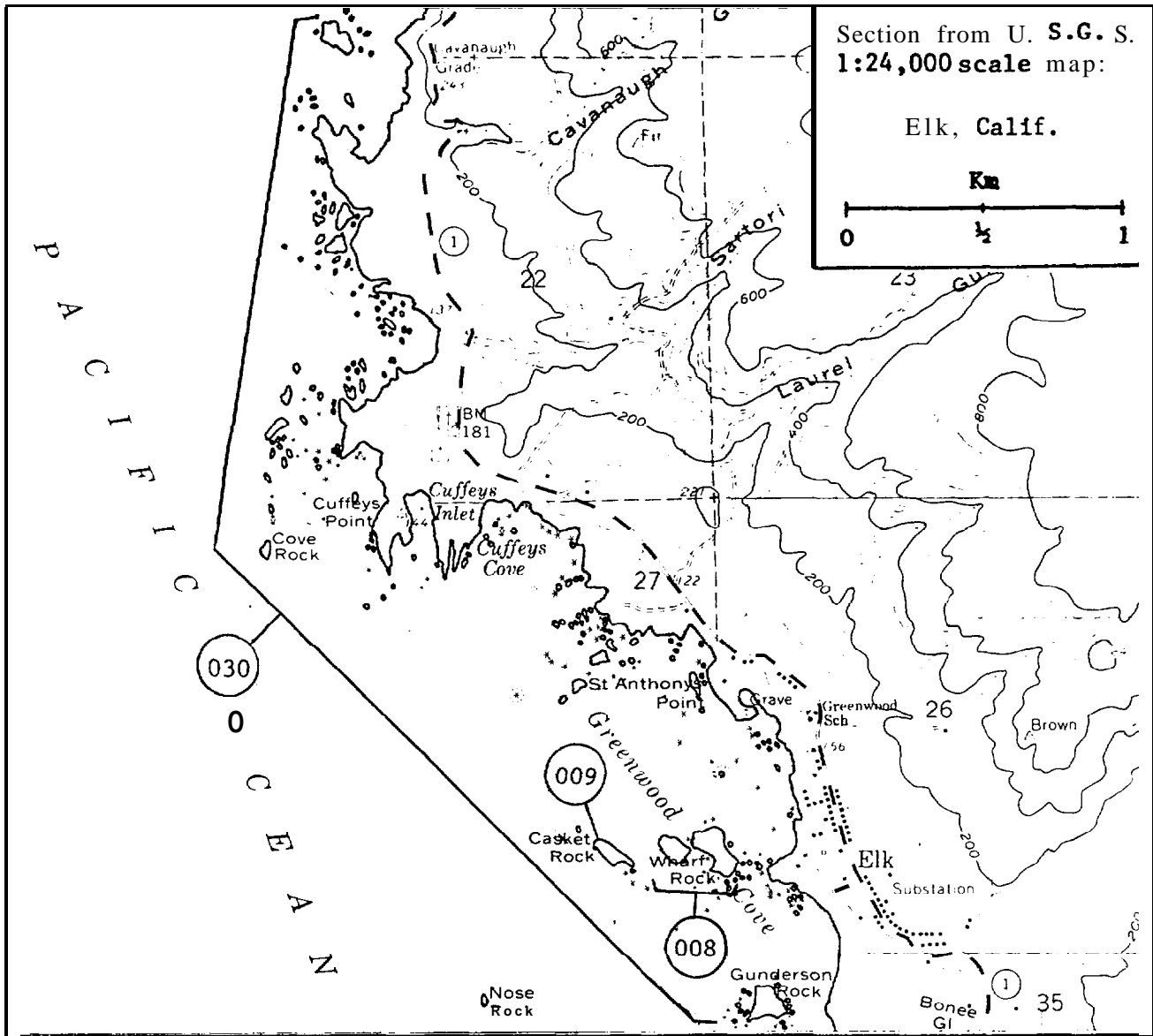
009 Casket Rock 39°07'49"N, 123°43'39"W

Brandt's Cormorant	330	(Lester & SOWls, 7/23/80, A, II)	42
Pelagic Cormorant	0	(Lester, SOWls & Stewart, 7/12/80, B, II)	42
Western Gull	2	(Lester, SOWls & Stewart, 7/12/80, B, II)	42
Pigeon Guillemot	10	(Lester, SOWls & Stewart, 7/12/80, B, III)	42
Total	342		
Brandt's Cormorant	100+	(Osborne, 8/25/69, M)	36
Brandt's Cormorant	0	(Lester & Rodstrom, 6/22/79, B, 8/2/79, A, I)	42
Pelagic Cormorant	X	(Osborne, 8/25/69, M)	36
Pelagic Cormorant	2	(Lester & Rodstrom, 6/22/79, B, II)	42

010 White Rock 39°05'42"N, 123°43'11"W

Brandt's Cormorant	0	(Lester & SOWls, 7/23/80, A, II)	42
Western Gull	40	(Lester & Rodstrom, 6/22/79, B, III)	42
Pigeon Guillemot	10	(Lester & Rodstrom, 6/22/79, B, III)	42
Total	50		
Brandt's Cormorant	200	(Osborne, 8/25/69, M)	36
Brandt's Cormorant	448	(Lester & Rodstrom, 8/2/79, A, III)	42
Pelagic Cormorant	X	(Osborne, 8/25/69, M)	36
Western Gull	X	(Osborne, 8/25/69, M)	36

X = present



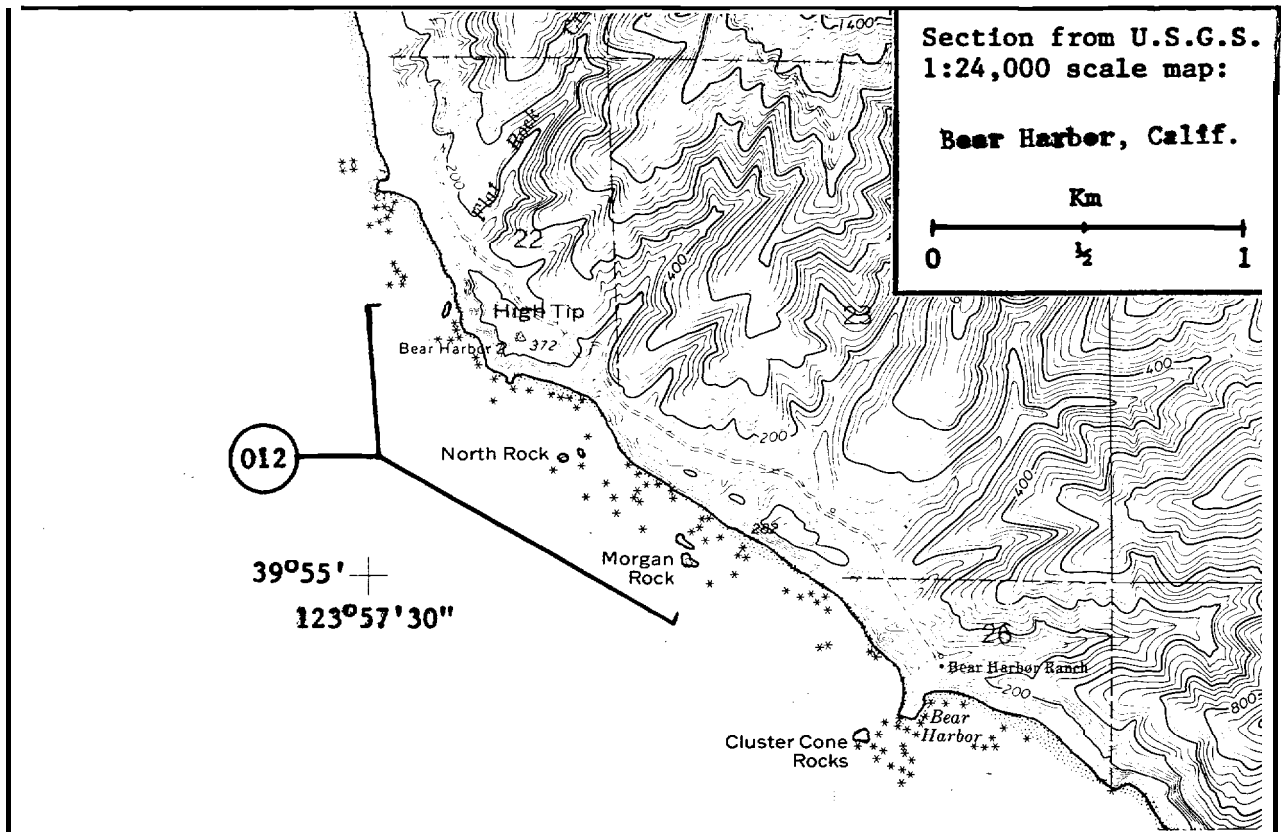
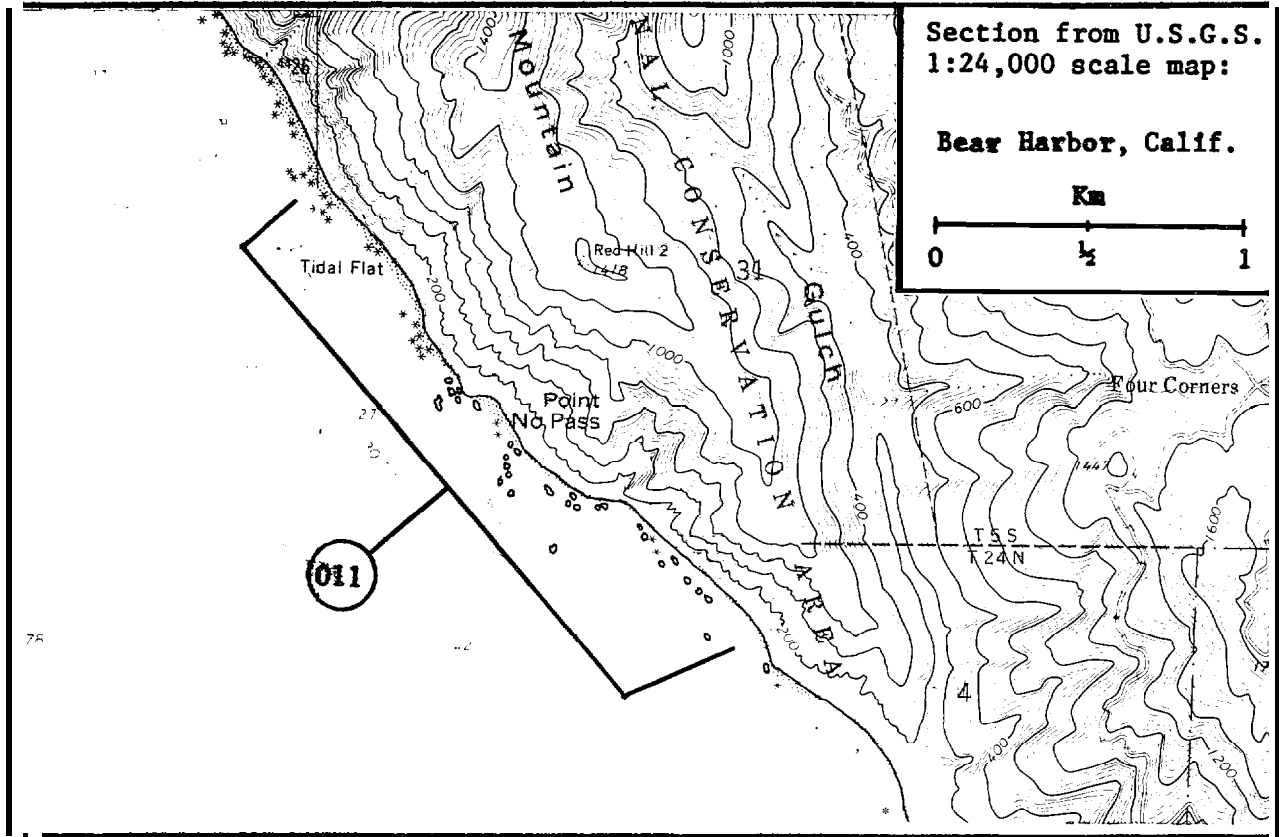
AREA 379, Ukiah (cent'd.)

011 Point No Pass 39°58'40"N, 123°59'40"W

Pelagic Cormorant	68 (Lester & Sows, 7/19/79, B, II)	42
Western Gull	2 (Lester & Sows, 7/19/79, B, II)	42
Pigeon Guillemot	2 (Lester & Sows, 7/19/79, B, III)	42
Total	<u>72</u>	

012 High Tip 39°55'30"N, 123°57'10"W

Pelagic Cormorant	80 (Lester & Sows, 7/19/79, B, II)	42
Black Oystercatcher	2 (Lester & Sows, 7/19/79, B, III)	42
Western Gull	4 (Lester & Sows, 7/19/79, B, II)	42
Pigeon Guillemot	4 (Lester & Sows, 7/19/79, B, III)	42
Total	<u>90</u>	



AREA 379, Ukiah (cent'd.)

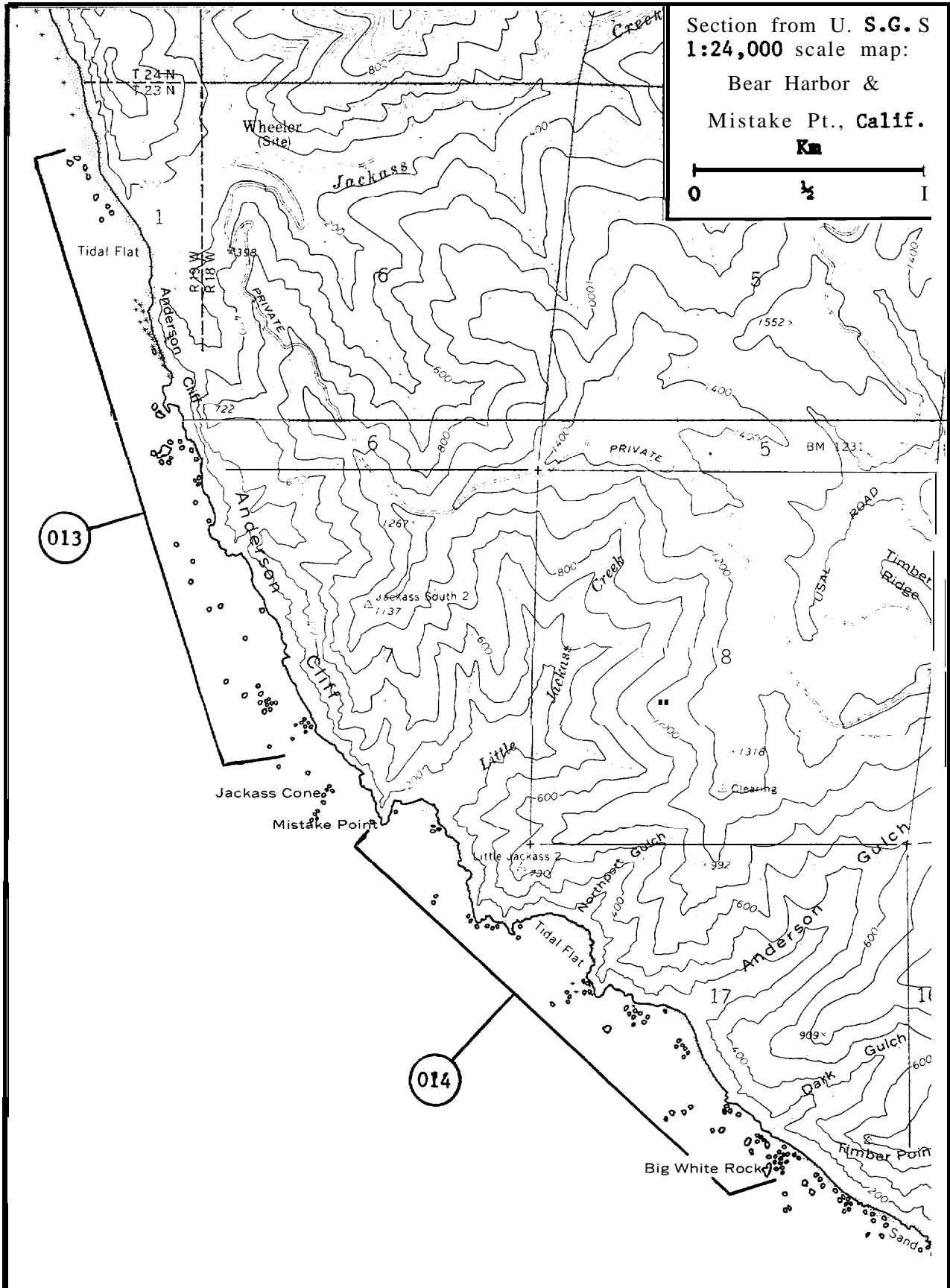
013 Anderson Cliffs 39°52'30"N, 123°54'30"W

Brandt's Cormorant	304 (Lester & Sows,7/19/79,B,III)	42
Pelagic Cormorant	132 (Lester& Sows,7/19/79,B,II)	42
Western Gull	4 (Lester & Sows,7/19/79,B,III)	42
Pigeon Guillemot	40 (Lester & Sows,7/19/79,B,III)	42
Total	480	

014 Mistake Point to Big White Rock 39°51'30"N, 123°53'30"W

Pelagic Cormorant	132 (Lester& Sows,7/19/79,B,II)	42
Western Gull	2 (Lester& Sows,7/19/79,B,III)	42
Pigeon Guillemot	100 (Lester& Sows,7/19/79,B,III)	42
Total	234	

AREA 379, Ukiah (cent'd.)



Section from U. S.G. S  
1:24,000 scale map:  
Bear Harbor &  
Mistake Pt., Calif.  
Km  
0 1/2 1  
I

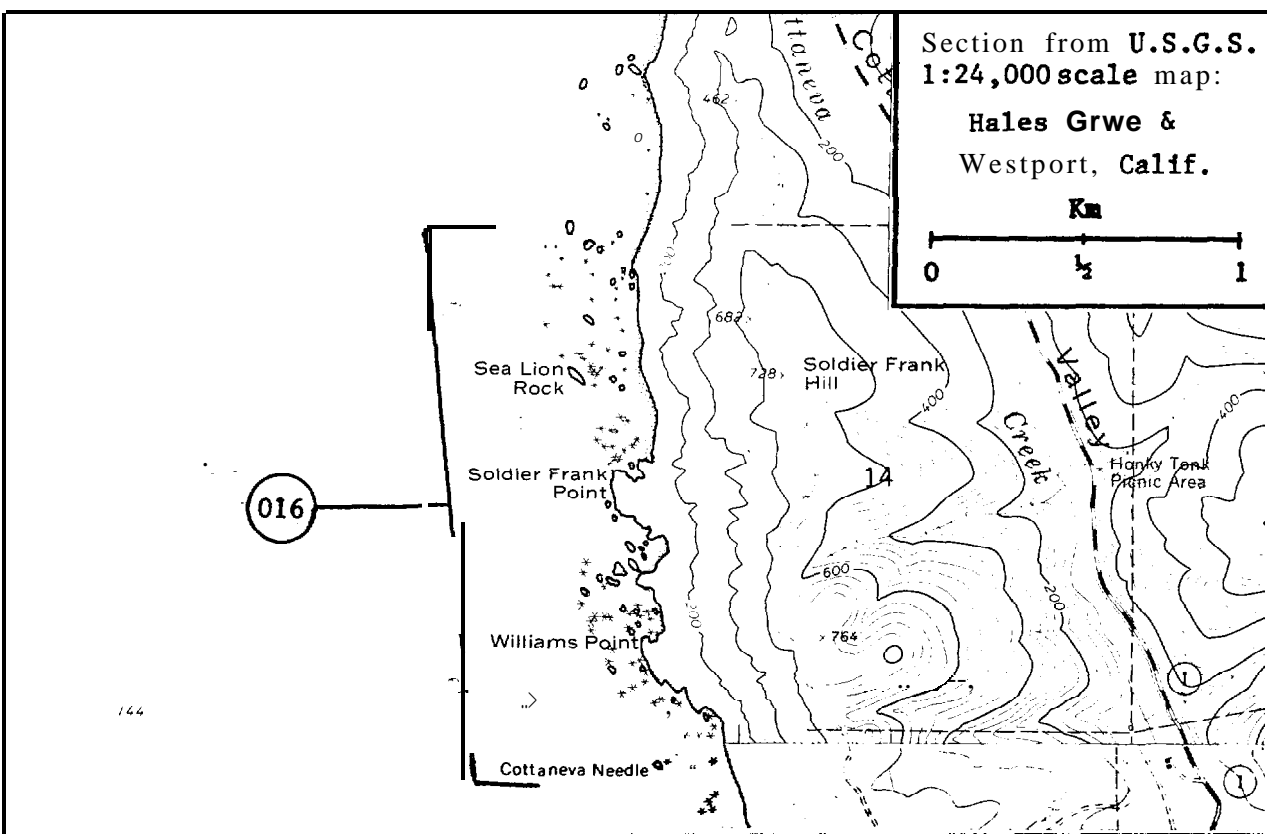
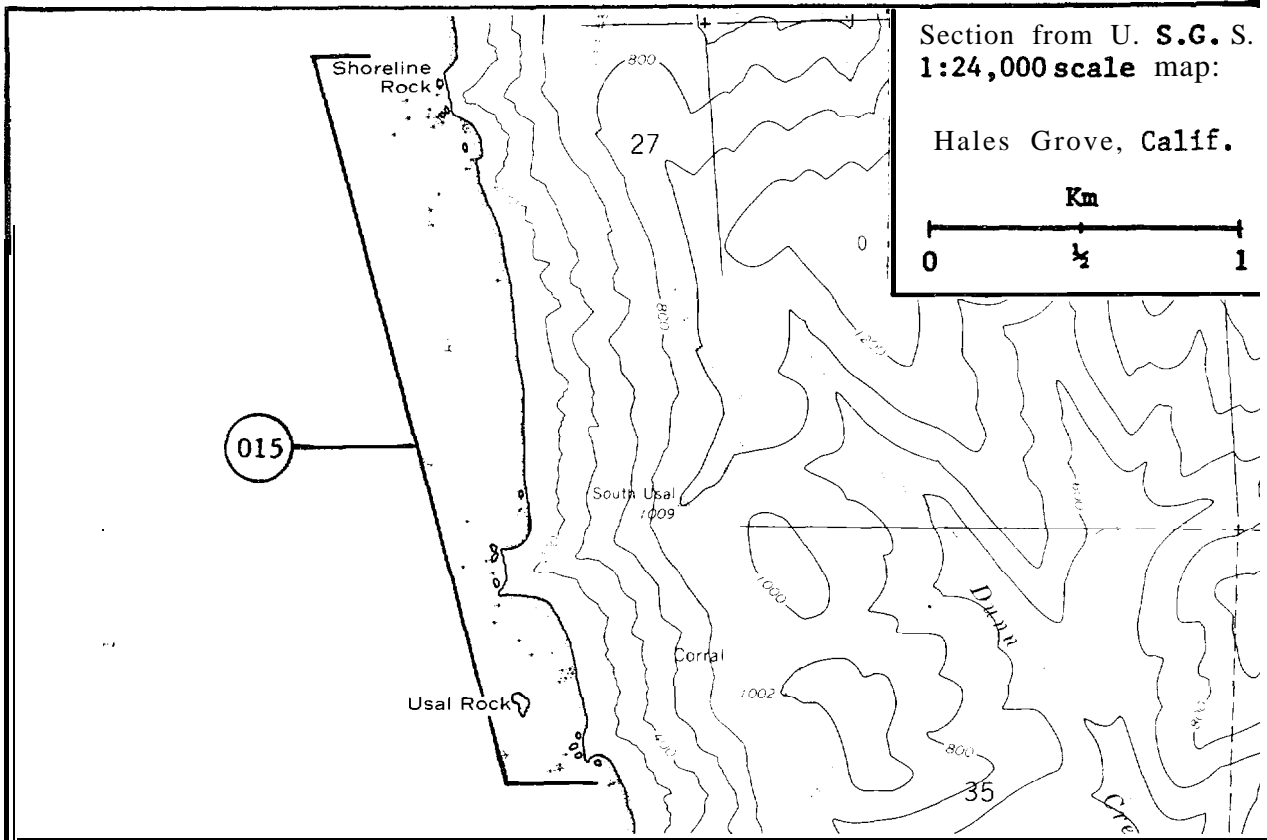
**AREA 379, Ukiah (cent'd.)**

**015** Usal Bay 39 °48' 45"N, 123°50'30"W

Pelagic Cormorant	62 (Lester & Sows, 7/19/79, B, II)	42
Western Gull	2 (Lester & Sows, 7/19/79, B, II)	42
Pigeon Guillemot	40 (Lester & Sows, 7/19/79, B, III)	42
Total	104	

**016** Soldier Frank Point 39°45'18"N, 123°50'15"W

Pelagic Cormorant	18 (Lester & Sows, 7/19/79, B, II)	42
Western Gull	<b>20</b> (Lester & Sows, 7/19/79, B, III)	42
Pigeon Guillemot	<u>20</u> (Lester & Sows, 7/19/79, B, III)	42
Total	<b>58</b>	



AREA 379, Ukiah (cent-d.)

017 Hardy Rock & "Union Landing" 39°42'20"N, 123°38'20"W

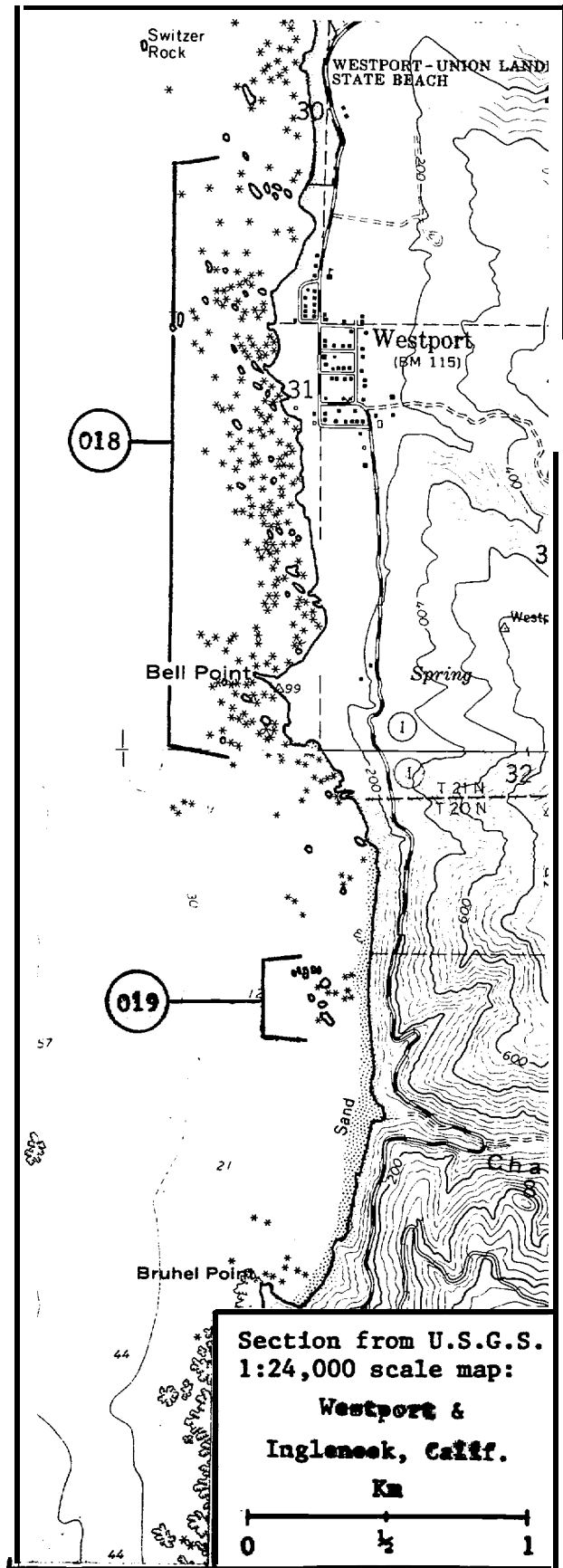
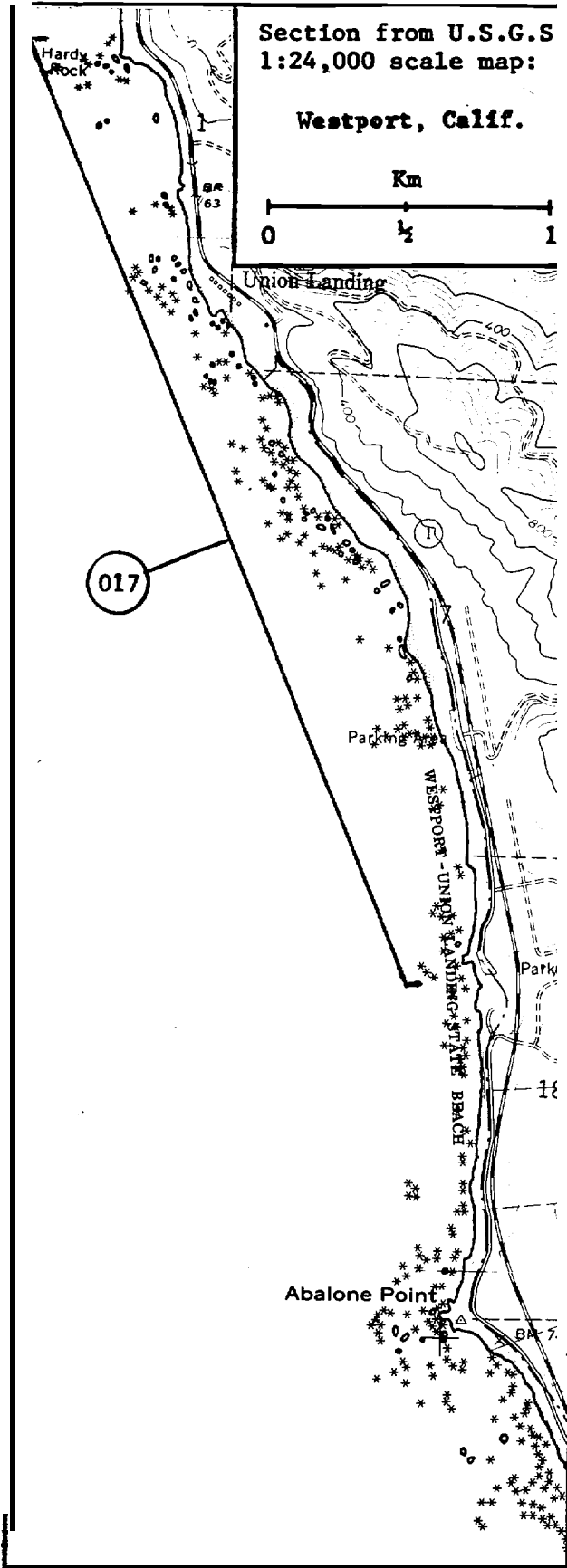
Pelagic Cormorant	46 (Lester, Rodstrom & Sows, 6/10/79, B, 8/8/79, M, III)	42
Western Gull	8 (Lester & Sows, 8/8/79, M, III)	42
Pigeon Guillemot	6 (Lester, Rodstrom & Sows, 6/10/79, B, 8/8/79, M, III)	42
Total	<u>60</u>	

018 Westport 39°38'00"N, 123°47'20"W

Pelagic Cormorant	178 (Lester & Rodstrom, 6/13/79, M, II)	42
Black Oystercatcher	2 (Lester & Rodstrom, 6/13/79, M, III)	42
Western Gull	4 (Lester & Rodstrom, 6/13/79, M, II)	42
Pigeon Guillemot	4 (Lester & Rodstrom, 6/13/79, M, III)	42
Total	<u>188</u>	

019 "Chadbourne Rocks" 39°37'02"N, 123°47'W

Pelagic Cormorant	74 (Lester & Rodstrom, 6/13/79, BM, II)	42
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AREA 379, Ukiah (cent'd.)

020

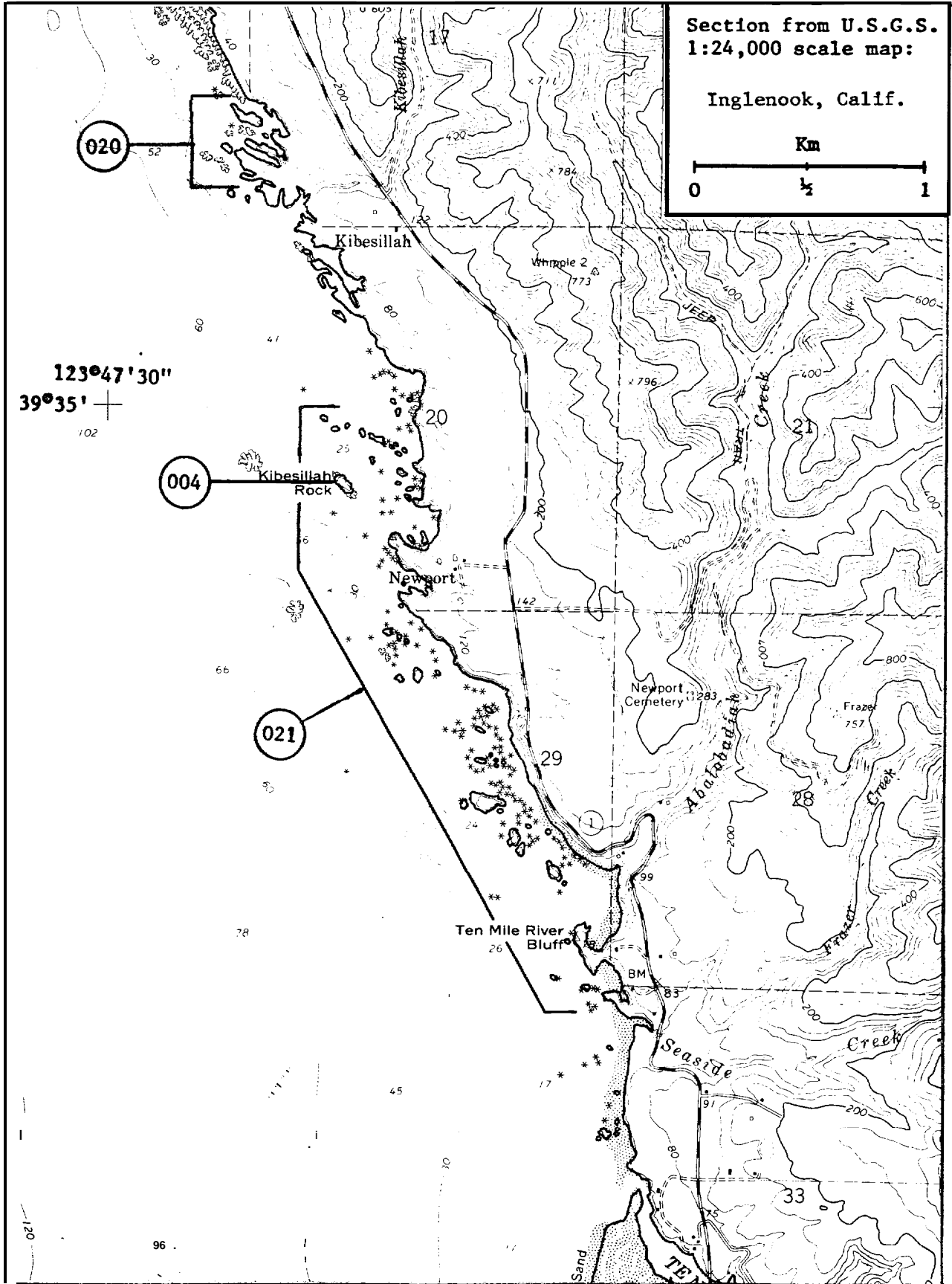
"Strawberry Cove" 39° 35' 37" N, 123° 47' 10" W

Pelagic Cormorant	84 (Lester & Rodstrom, 6/13/79, BM, I)	42
Black Oystercatcher	2 (Lester & Rodstrom, 6/13/79, BM, III)	42
Pigeon Guillemot	10 (Lester & Rodstrom, 6/13/79, BM, III)	42
Total	<u>96</u>	

021

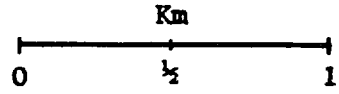
"Newport Rocks" except Kibesillah Rock 39° 34' 49" N, 123° 46' 51" W

Pelagic Cormorant	192 (Lester & Rodstrom, 6/13/79, BM, & 6/20/79, M, III)	42
Black Oystercatcher	4 (Lester & Rodstrom, 6/20/79, M, III)	42
Western Gull	2 (Lester & Rodstrom, 6/20/79, M, II)	42
Pigeon Guillemot	28 (Lester & Rodstrom, 6/13/79, BM, III)	42
Total	<u>226</u>	



Section from U.S.G.S.  
1:24,000 scale map:

Inglenook, Calif.



123°47'30"  
39°35' +  
102

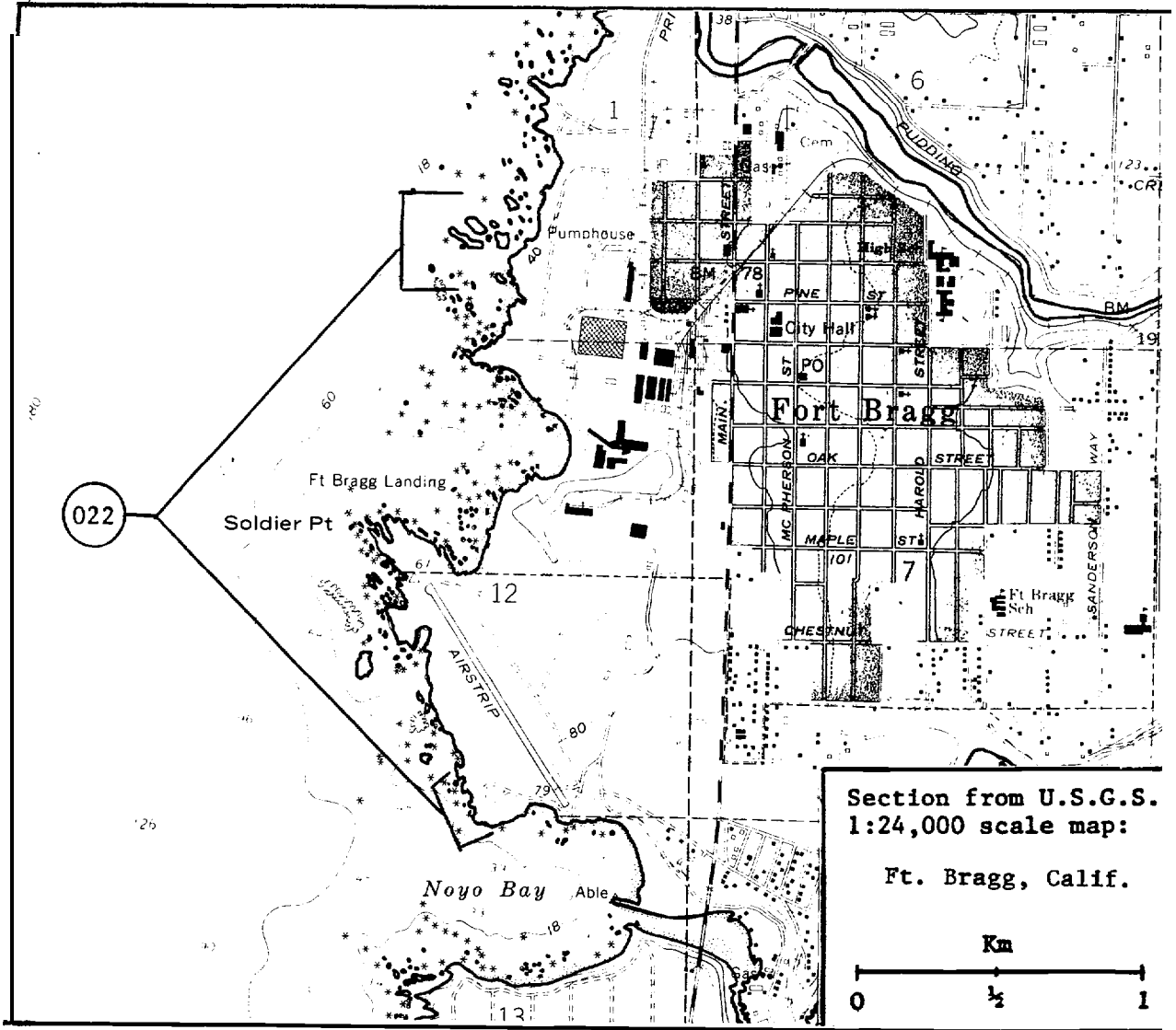
AREA 379, Ukiah (cent'd.)

022 "Georgia Pacific" 39°27'N, 123°48'45"W

Pelagic Cormorant	32 (Lester & Rodstrom, 6/13/79, M, II)	42
Black Oystercatcher	2 (Lester & Rodstrom, 6/13/79, M, III)	42
Western Gull	4 (Lester & Rodstrom, 6/13/79, M, II)	42
Total	<u>38</u>	

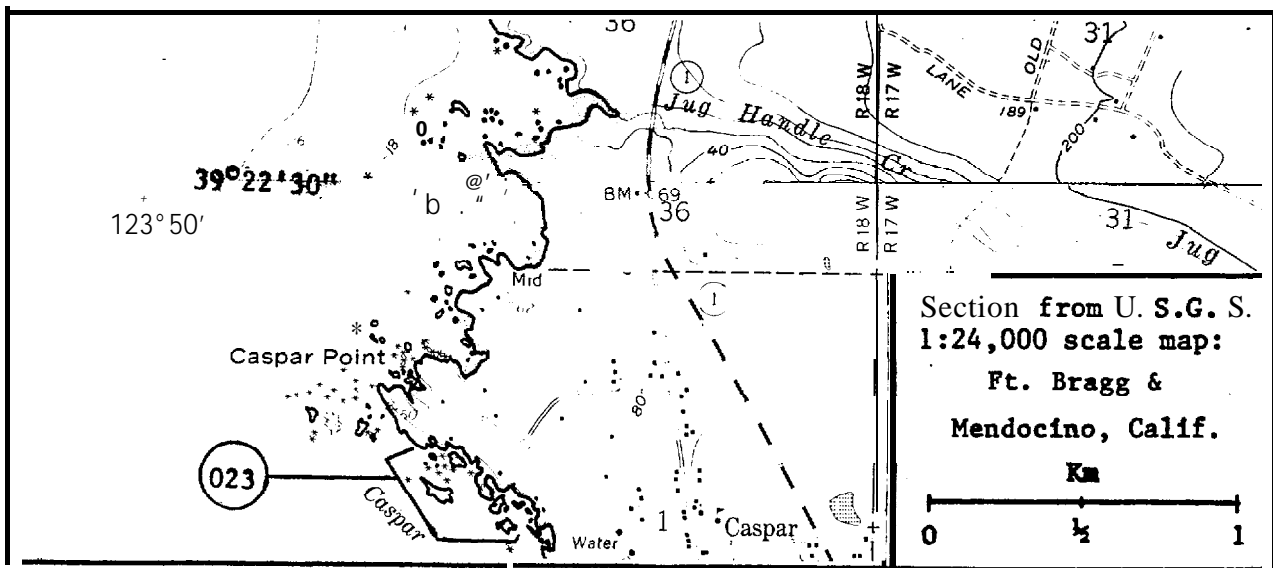
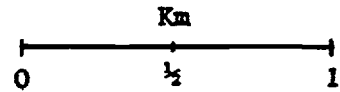
023 Caspar Anchorage 39°22'N, 123°49'10" W

Pelagic Cormorant	58 (Lester&Rodstrom, 6/12/79, B, I)	42
Black Oystercatcher	2 (Lester& Rodstrom, 6/12/79, B, III)	42
Pigeon Guillemot	2 (Lester& Rodstrom, 6/12/79, B, III)	42
Total	<u>62</u>	



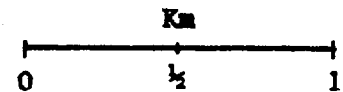
Section from U.S.G.S.  
1:24,000 scale map:

Ft. Bragg, Calif.



Section from U.S.G.S.  
1:24,000 scale map:

Ft. Bragg &  
Mendocino, Calif.

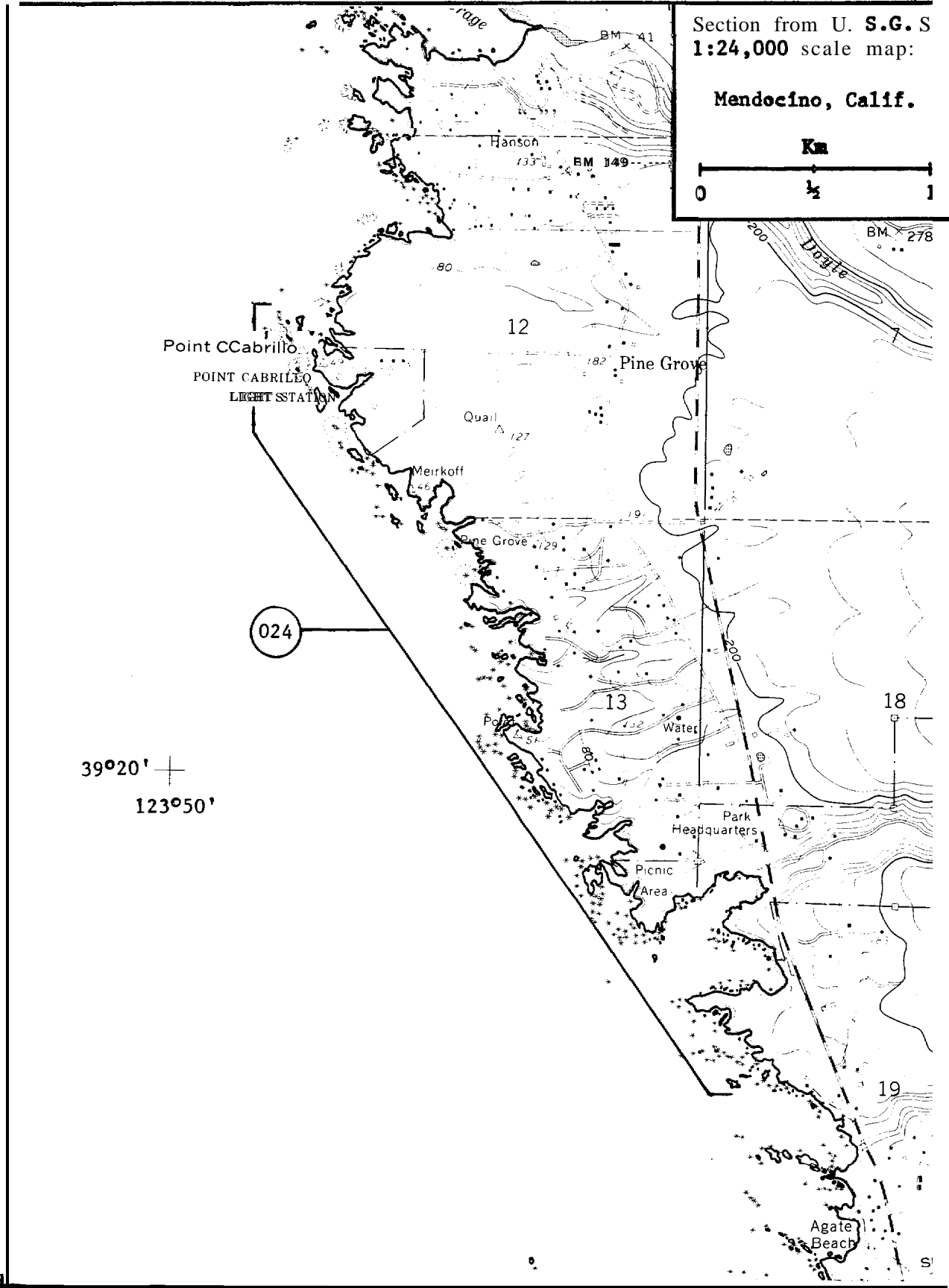


AREA 379, Ukiah (cent'd.)

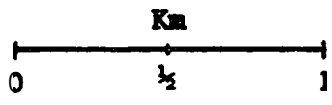
024 Point Cabrillo to Jack Peters Gulch 39°20'N, 123°49'W

Pelagic Cormorant	192 (Lester & Rodstrom, 6/11 & 6/21/79, B, III)	42
Black Oystercatcher	4 (Lester & Rodstrom, 6/14/79, M, III)	42
Pigeon Guillemot	38 (Lester & Rodstrom, 6/11 & 6/21/79, B, III)	42
Total		234

AREA 379, Ukiah (cent'd.)



Section from U. S.G. S  
1:24,000 scale map:  
Mendocino, Calif.



39°20' +  
123°50'

AREA 379, Ukiah (cent'd.)

025 Mendocino 39°18'10"N, 123°47'50"W

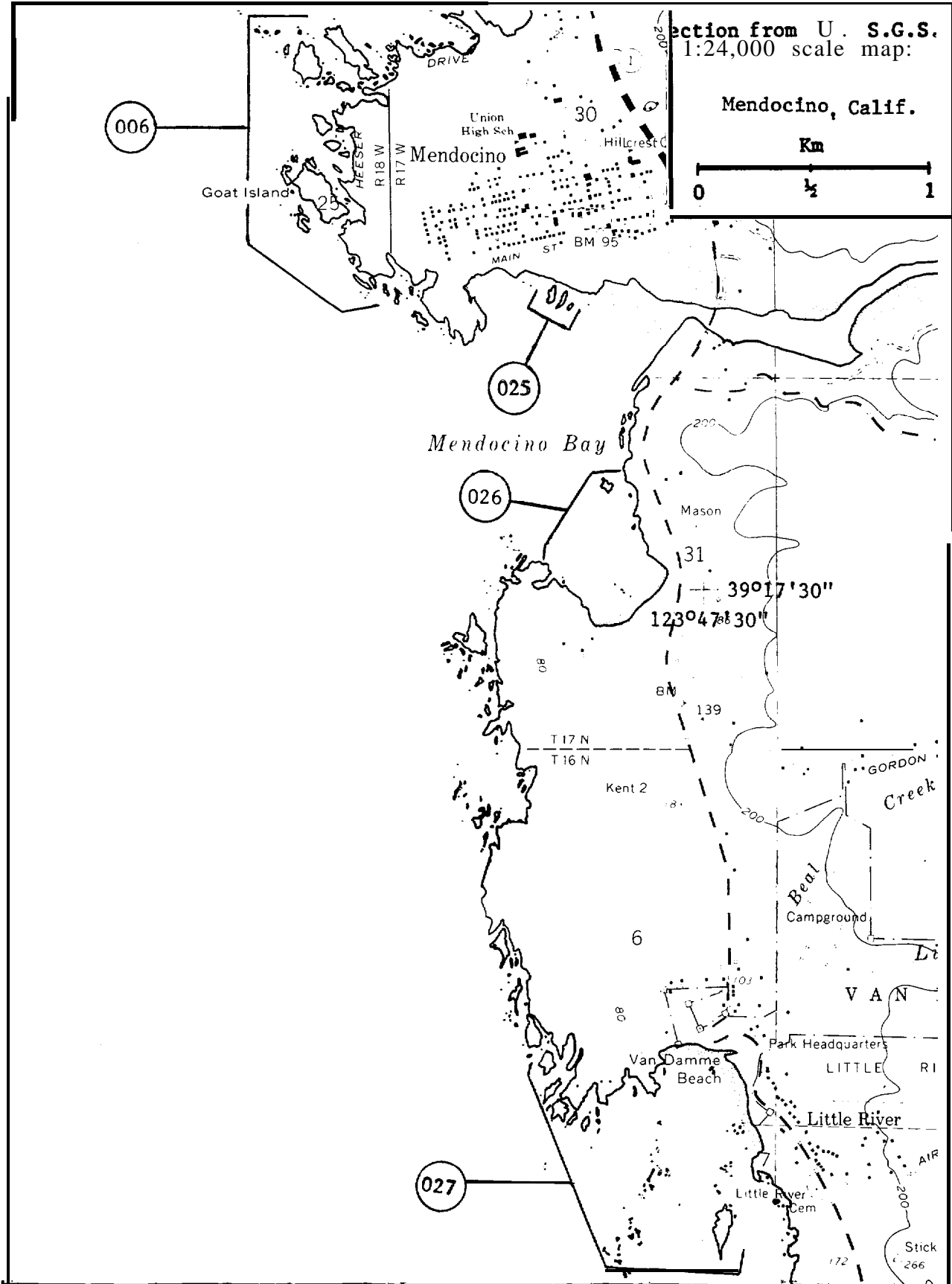
Pelagic Cormorant	52	(Nelson & Sows,6/5/80,B,I)	42
Black Oystercatcher	2	(DeGange, Lester & Nelson,6/5/80,BL,I)	42
Pigeon Guillemot	32	(Lester & Stewart,6/5/80,M,III)	42
Total	<u>86</u>		
Pelagic Cormorant	44	(Sows,5/18/79,M,II)	42
Pigeon Guillemot	50	(Sows,5/18/79,M,III)	42

026 Mendocino Bay 39°17'30"N, 123°47'40"W

Pelagic Cormorant	86	(DeGange, Lester & Sows,6/5/80,B,I)	42
Black Oystercatcher	2	(DeGange, Lester & Nelson,6/5/80,B,III)	42
Pigeon Guillemot	20	(DeGange, Nelson & Sows,6/5/80,B,III)	42
Total	<u>108</u>		
Pelagic Cormorant	50	(Lester & Rodstrom,5/21/79,B,III)	42
Pigeon Guillemot	16	(Lester & Rodstrom,6/21/79,B,III)	42

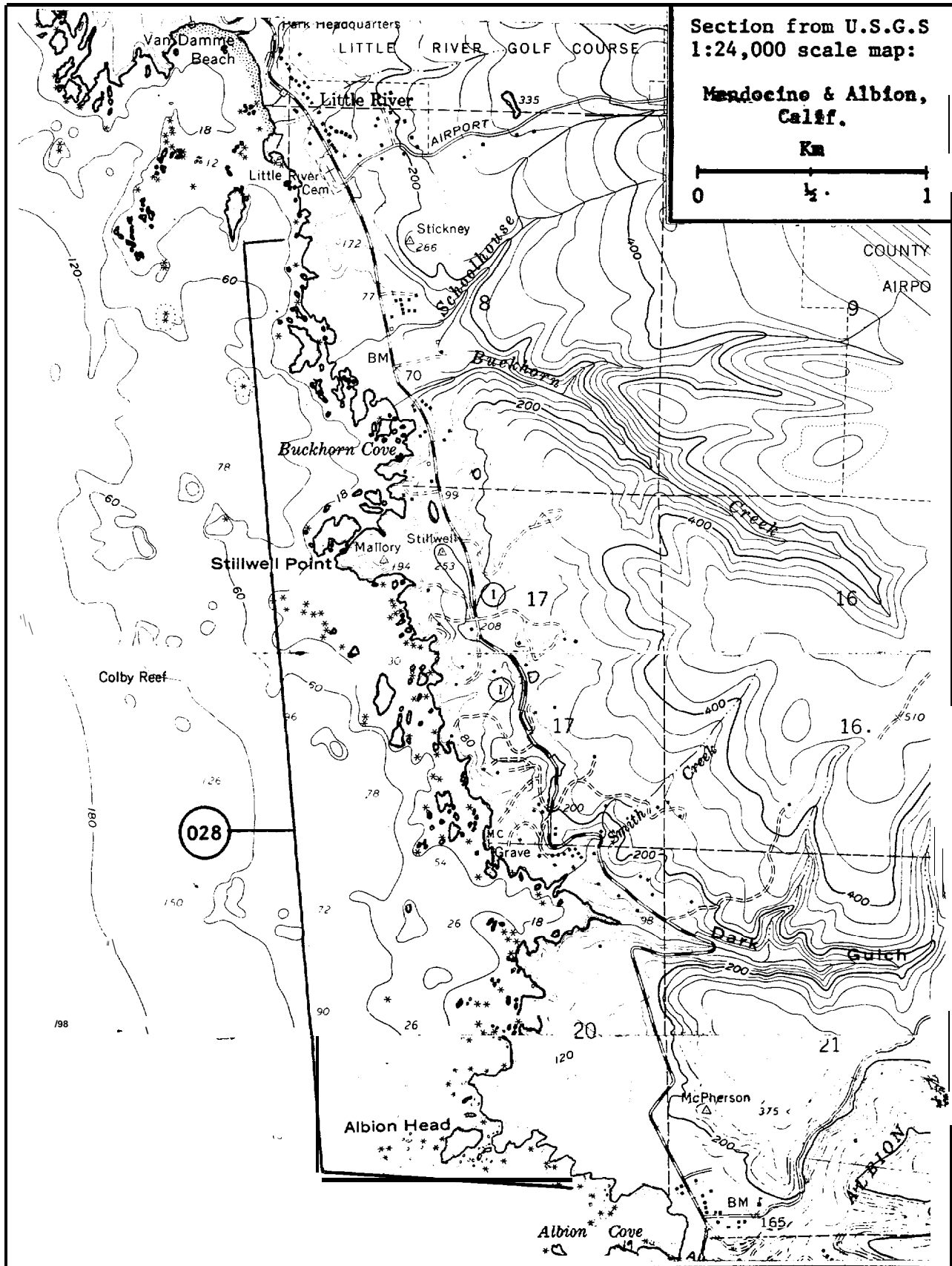
027 "Van Damme Cove" 39°16'10"N, 123°47'28"W

Pelagic Cormorant	26	(DeGange, Nelson & Stewart,6/5/80, B, II)	42
Black Oystercatcher	2	(Lester, Sows & Stewart,6/6/80, BL, III)	42
Western Gull	140	(Lester & Rodstrom,5/18/79, BL, III)	42
Pigeon Guillemot	120	(DeGange, Lester & Nelson,6/5/80, BL, III)	42
Tufted Puffin	2	(Lester, Sows & Stewart,6/6/80, L, II)	42
Total	<u>290</u>		
Pelagic Cormorant	56	(Lester & Rodstrom,5/18/79,BL,II)	42
Black Oystercatcher	2	(Lester & Rodstrom,5/18/79,BL,III)	42
Pigeon Guillemot	30	(Lester & Rodstrom,5/18/79,BL,III)	42
Tufted Puffin	4	(Lester & Rodstrom,5/18/79,BL,II)	42



028 Schoolhouse Creek to Albion River 39°15'N, 123°46'30"W

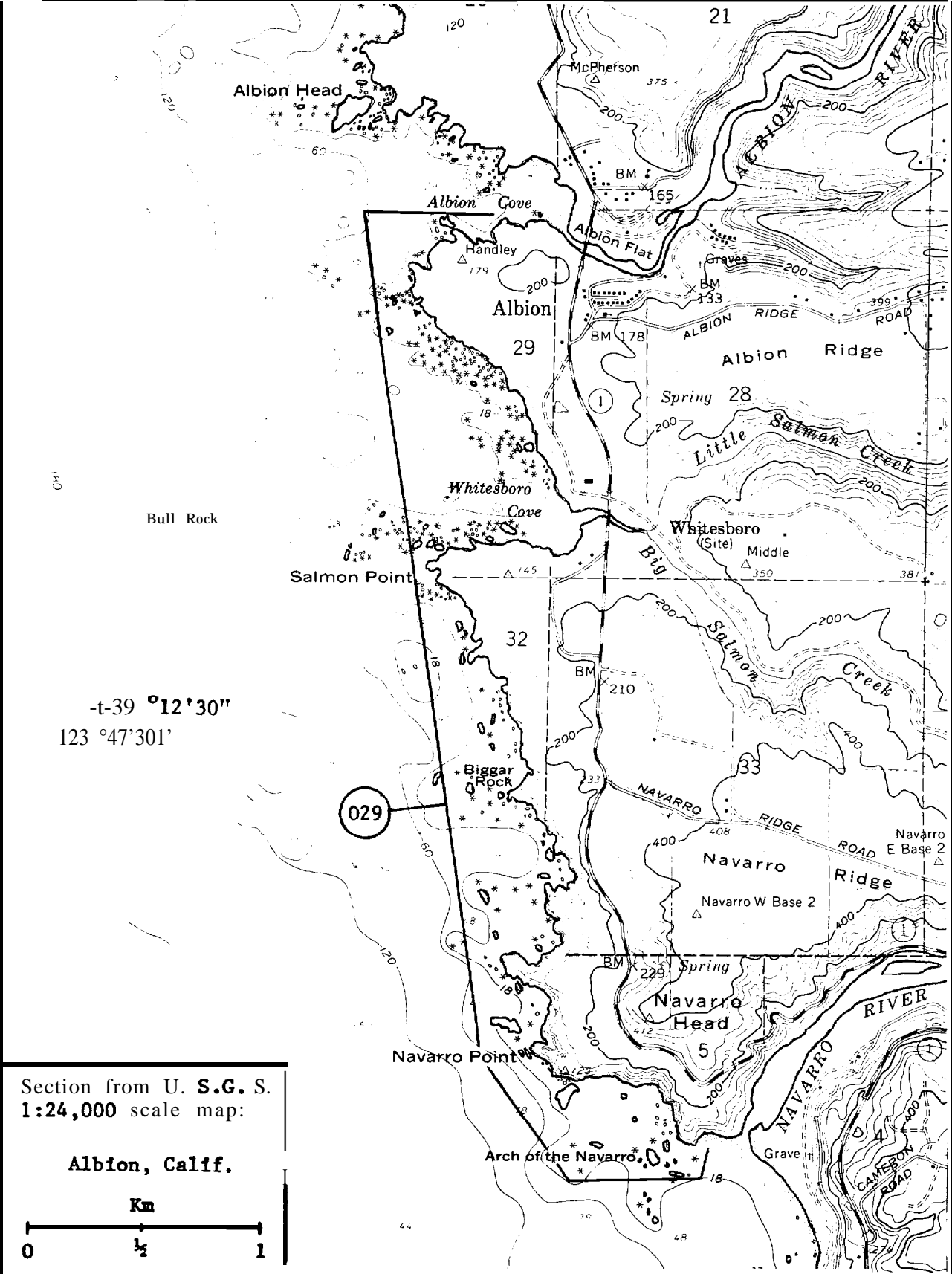
Pelagic Cormorant	436	(DeGange, Nelson & Stewart,6/5/80,B,II)	42
Black Oystercatcher	14	(DeGange, Nelson & Stewart,6/5/80,B,III)	42
Western Gull	34	(DeGange, Nelson & Stewart,6/5/80,B,III)	42
Pigeon Guillemot	68	(Lester & Rodstrom,6/21/79,B,III)	42
Total	<u>552</u>		
Pelagic Cormorant	336	(Lester & Rodstrom,5/18/79,B,6/21/79,B,II)	42
Black Oystercatcher	4	(Lester & Rodstrom,5/18/79,B,6/21/79,B,III)	42
Western Gull	10	(Lester & Rodstrom,5/18/79,B,6/21/79,B,III)	42



AREA 379, Ukiah (cent'd.)

029 Albion Cove to Navarro River 39°12'30"N, 123°46'20"W

Pelagic Cormorant	266	(Nelson, Sows & Stewart, 6/6/80, B, II)	42
Black Oystercatcher	8	(Nelson, Sows & Stewart, 6/6/80, B, II)	42
Western Gull	16	(Nelson, Sows & Stewart, 6/6/80, B, III)	42
Pigeon Guillemot	30	(Nelson, Sows & Stewart, 6/6/80, B, III)	42
Total	430		
Pelagic Cormorant	80	(Lester & Rodstrom, 6/21/79, B, II)	42
Black Oystercatcher	2	(Lester & Rodstrom, 6/21/79, B, III)	42

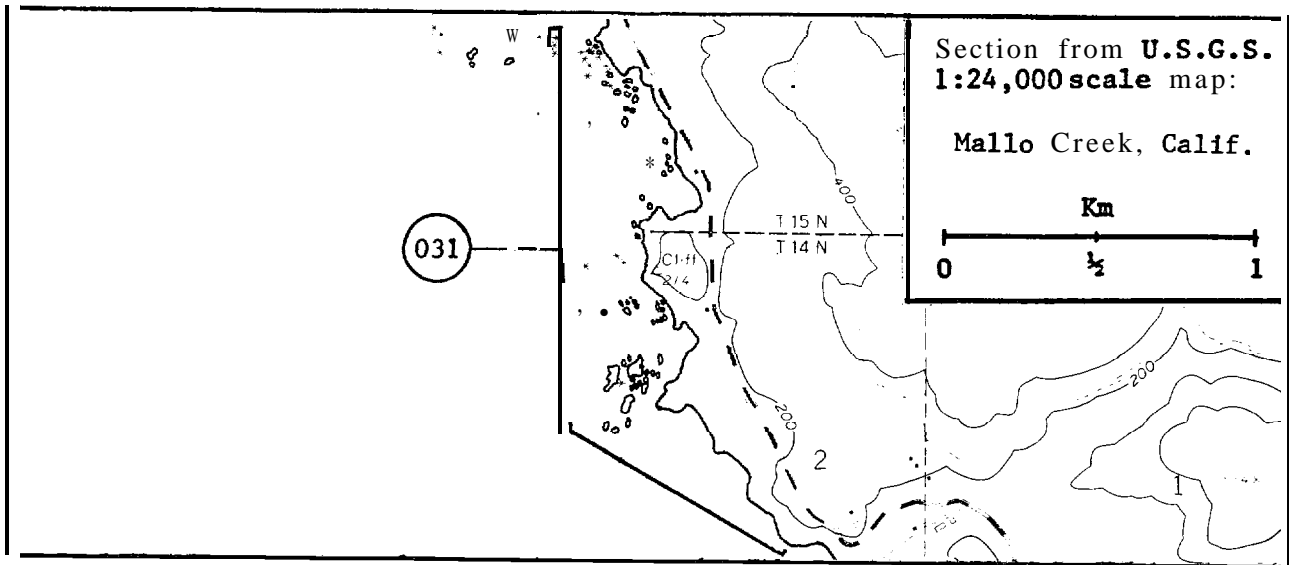
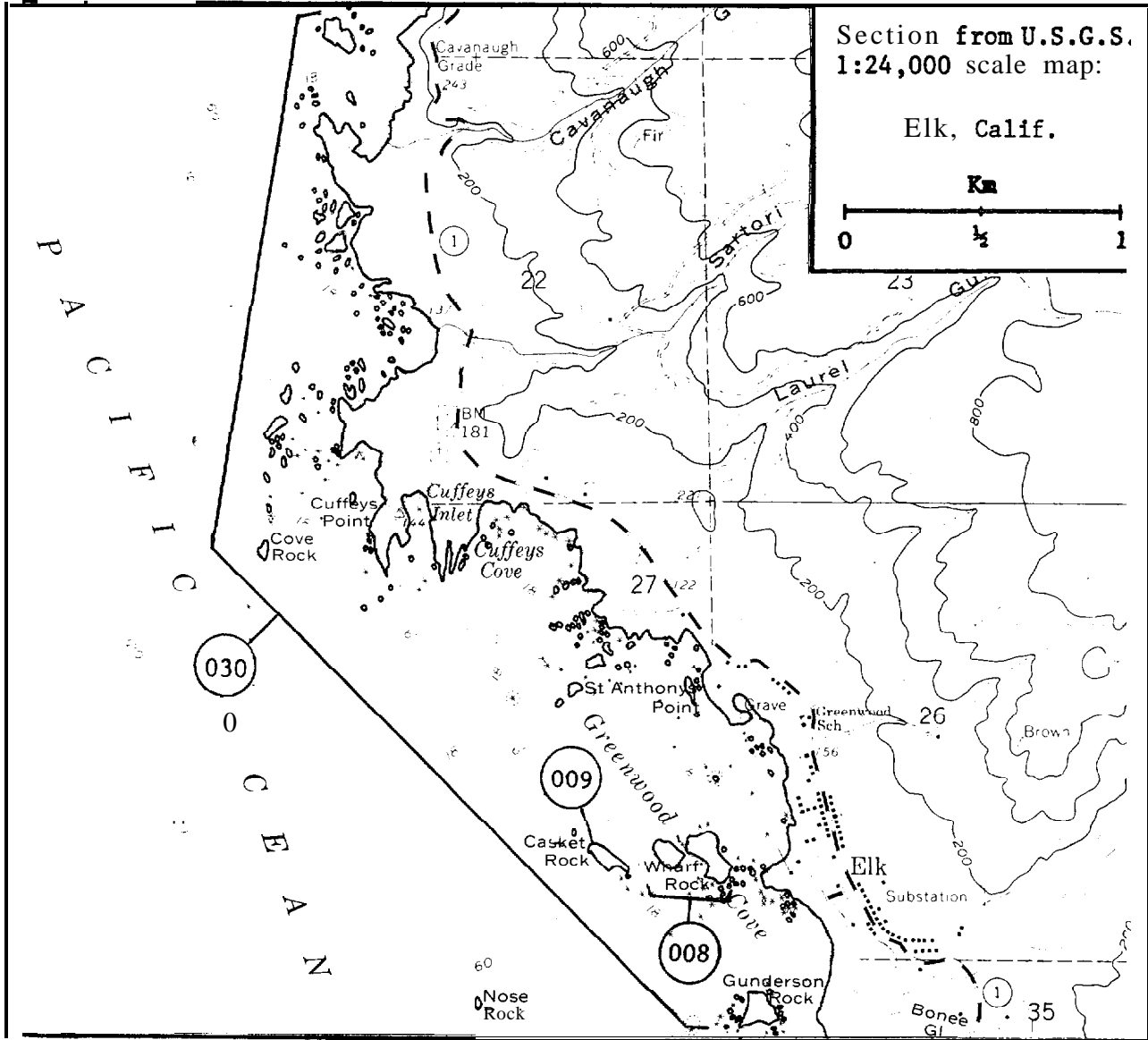


030 Cavanaugh Cove to Gunderson Rock, except Wharf Rock (008) and  
Casket Rock (009) 39°08'N, 123°44'W

Brandt's Cormorant	4	(Lester, Sows & Stewart, 7/12/80, B, III)	42
Pelagic Cormorant	410	(Lester, Sows & Stewart, 7/12/80, B, II)	42
Black Oystercatcher	8	(Lester, Sows & Stewart, 7/12/80, B, III)	42
Western Gull	20	(Lester, Sows & Stewart, 7/12/80, B, III)	42
Pigeon Guillemot	100	(Lester, Sows & Stewart, 7/12/80, B, III)	42
Total	542		
Pelagic Cormorant	398	(Lester & Rodstrom, 6/22/79, B, II)	42
Black Oystercatcher	8	(Lester & Rodstrom, 6/22/79, B, III)	42
Western Gull	4	(Lester & Rodstrom, 6/22/79, B, III)	42

031 "Bonee Cliffs" 39°07' N, 123°42'45"W

Pelagic Cormorant	176	(Lester & Rodstrom, 6/22/79, B, III)	42
Pigeon Guillemot	40	(Lester & Rodstrom, 6/22/79, B, III)	42
Total	216		



AREA 379, Ukiah (cent'd.)

032 "333 Point" 39°05'N, 123°42'30"W

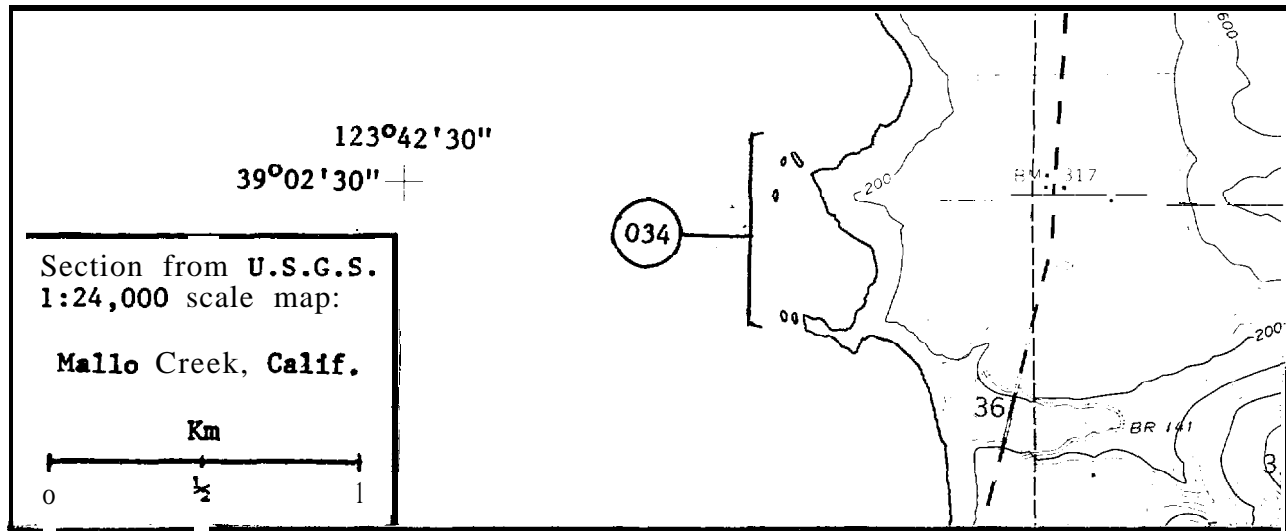
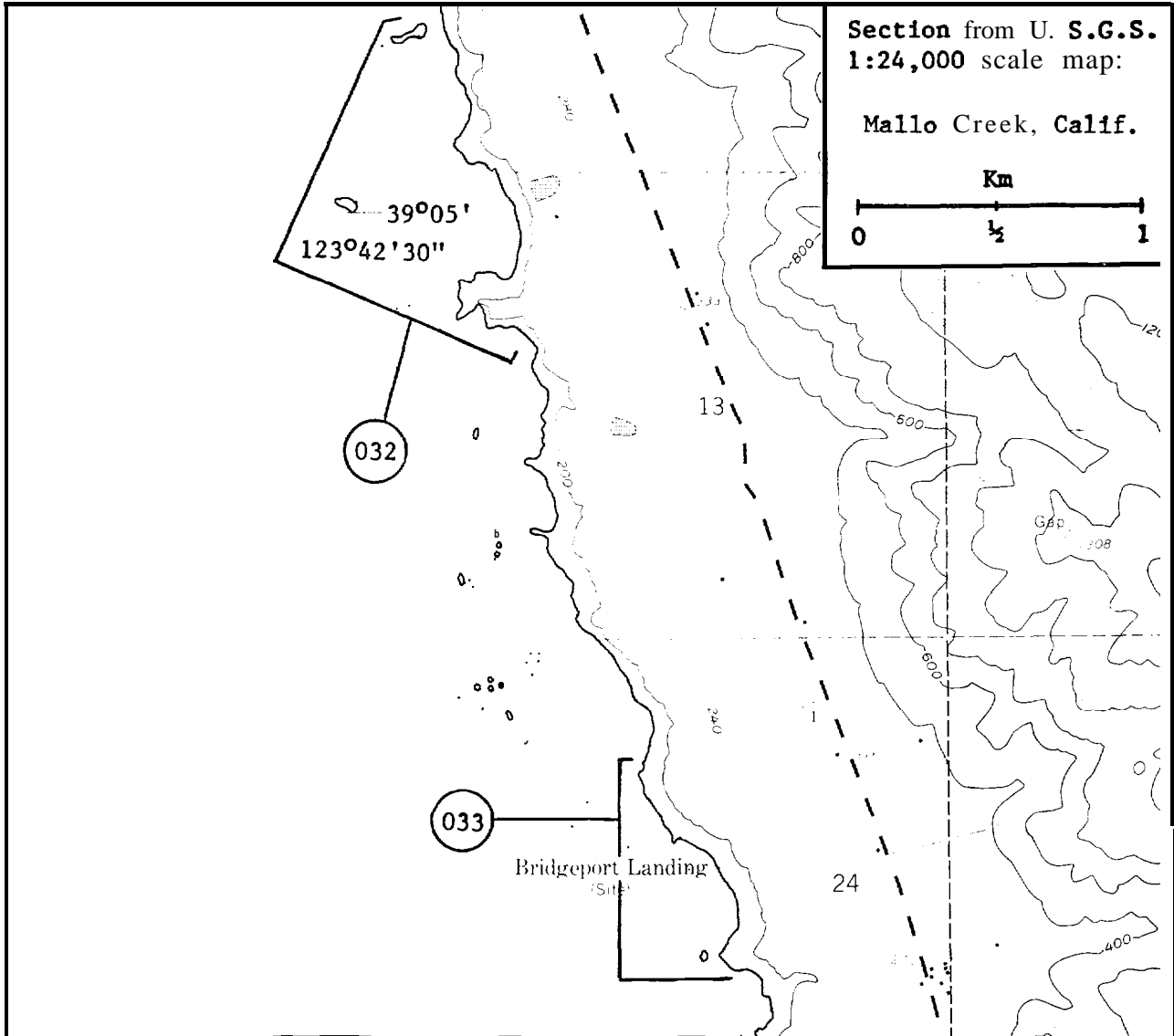
Brandt's Cormorant	360	(Lester & Sows, 7/23/80, A, II)	42
Pelagic Cormorant	100	(Lester & Rodstrom, 6/22/79, B, III)	42
Black Oystercatcher	2	(Lester & Rodstrom, 6/22/79, B, III)	42
Total	<u>462</u>		
Brandt's Cormorant	0	(Lester & Rodstrom, 6/22/79, B, 8/2/79, A, II)	42

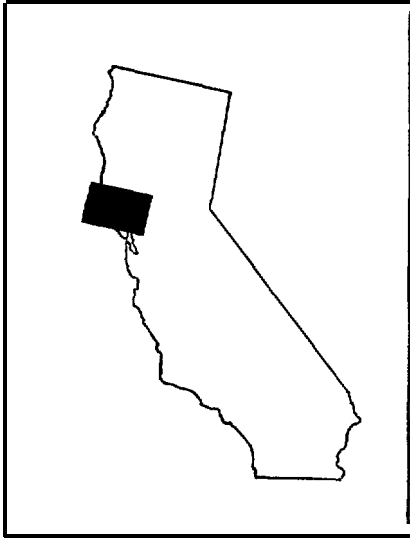
033 Bridgeport Landing 39°03'45"N, 123°41'50"W

Pelagic Cormorant	16	(Lester & Rodstrom, 6/22/79, B, III)	42
Western Gull	2	(Lester & Rodstrom, 6/22/79, B, III)	42
Total	<u>18</u>		

034 Mallo Pass Creek 39°02'20"N, 123°41'50"W

Pelagic Cormorant	20	(Lester & Rodstrom, 6/22/79, B, III)	42
Western Gull	4	(Lester & Rodstrom, 6/22/79, B, II)	42
Pigeon Guillemot	20	(Lester & Rodstrom, 6/22/79, B, III)	42
Total	<u>44</u>		





## 404

### Santa Rosa

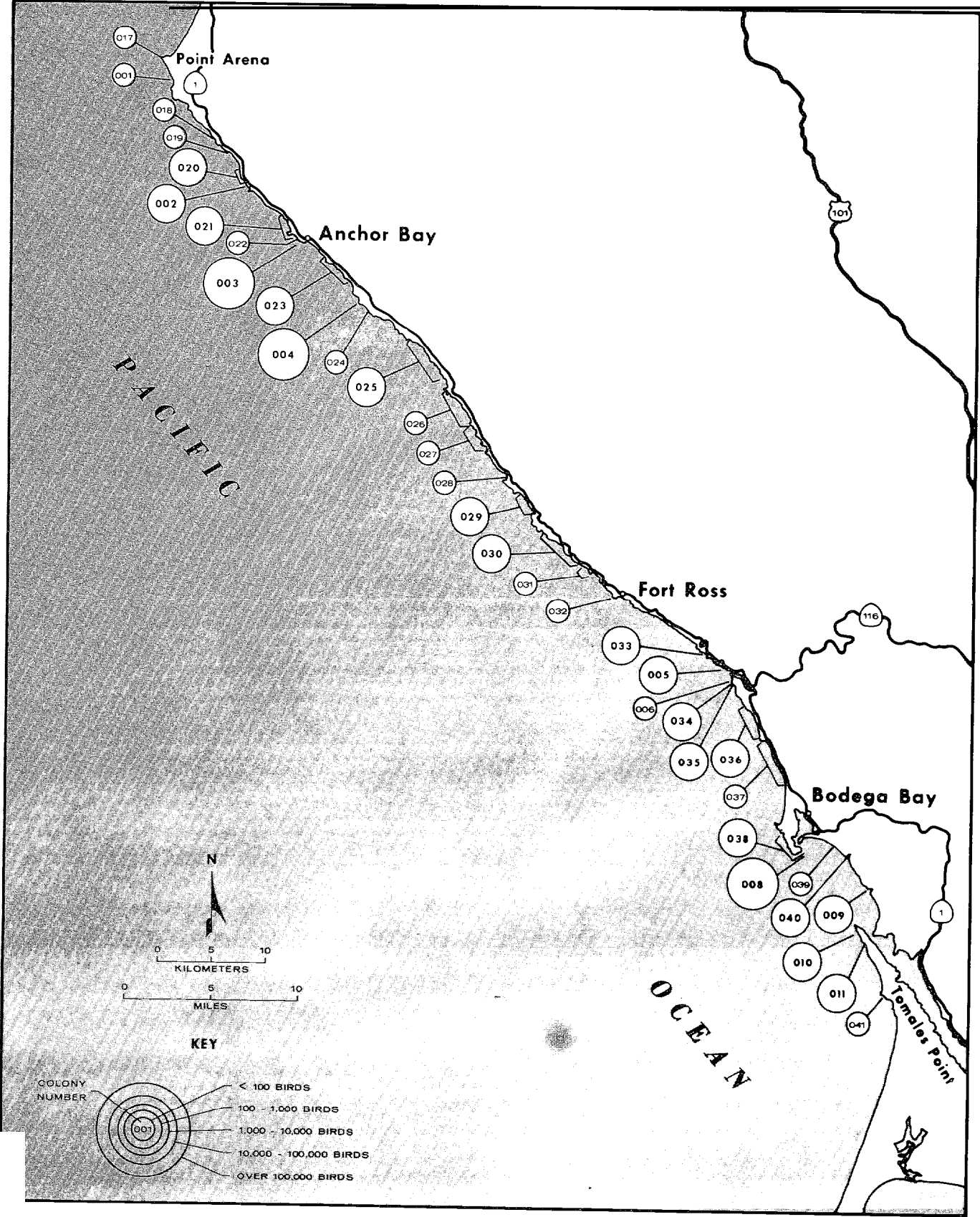
The map on the facing page is an index to the locations of colonies within map 404, Santa Rosa. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

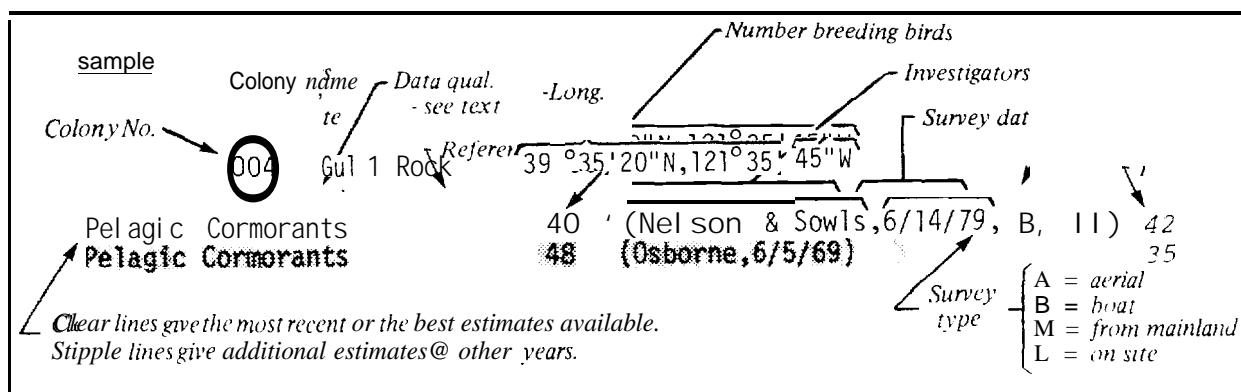
Numbers of breeding seabirds will vary from year to year to year. Below are the approximate numbers of breeding seabirds within this region.

Leach's Storm-Petrel . . . . .	100
Ashy Storm-Petrel . . . . .	.14
Brandt's Cormorant. . . . .	4,000
Double-crested Cormorant. . . . .	100*
Pelagic Cormorant . . . . .	4,000
Black Oystercatcher . . . . .	.60
Western Gull . . . . .	1,100
Pigeon Guillemot. . . . .	1,200
Marbled Murrelet. . . . .	no estimate
Rhinoceros Auklet . . . . .	.20
Tufted Puffin . . . . .	.10

\* *coastal population only.*

# 404 Santa Rosa





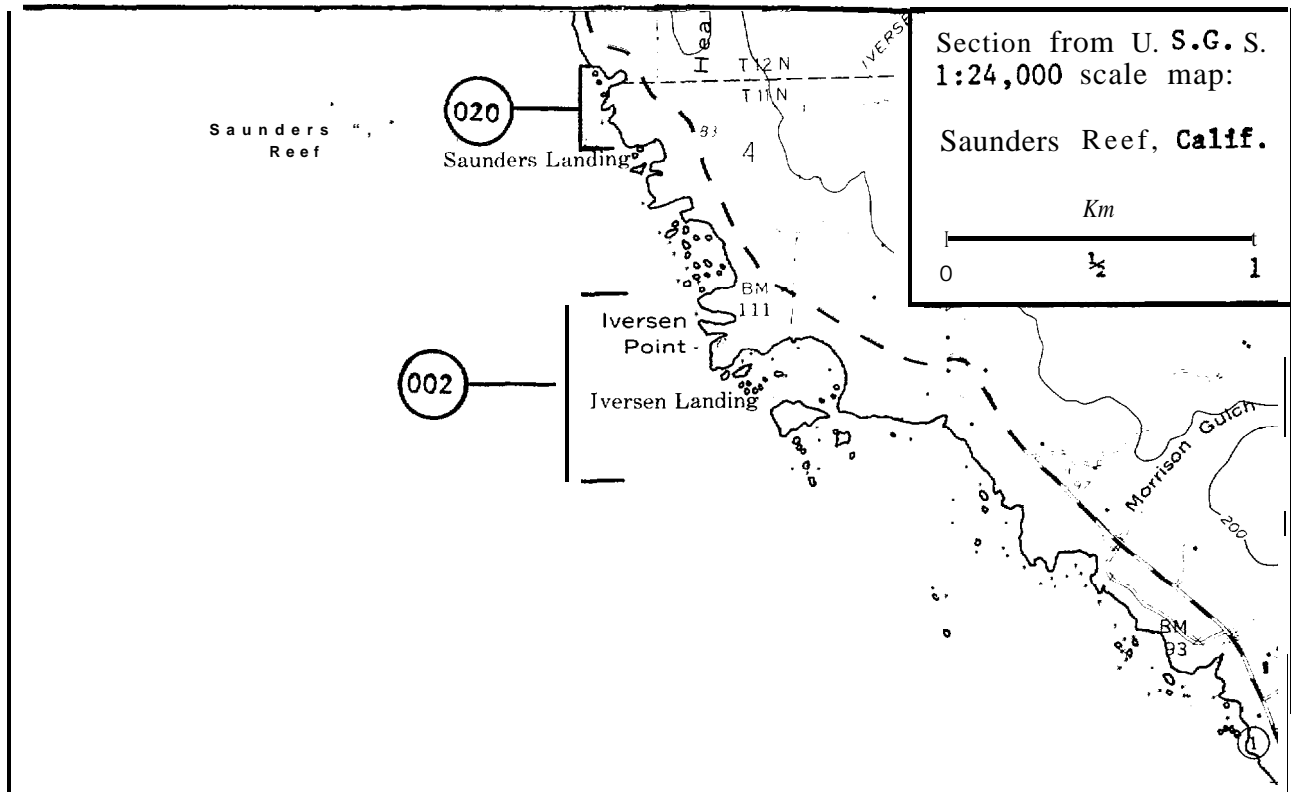
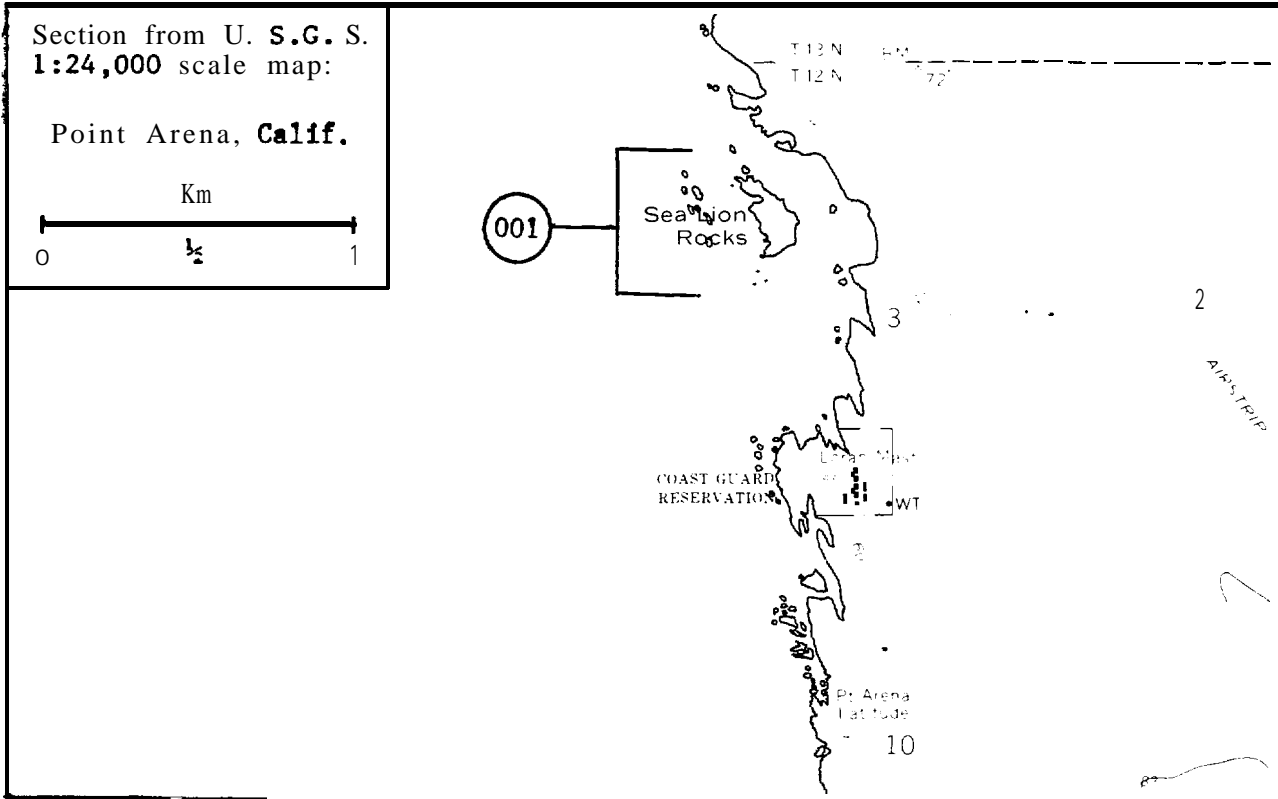
001 Sea Lion Rocks 38°55'07"N, 123°43'45"W

Pelagic Cormorant	6	(Lester & Rodstrom, 5/31/79, B, III)	42
Black Oystercatcher	2	(Lester & Rodstrom, 5/31/79, B, III)	42
Western Gull	2	(Lester & Rodstrom, 5/31/79, B, III)	42
Pigeon Guillemot	60	(Lester & Rodstrom, 5/31/79, B, III)	42
Total	70		
Pelagic Cormorant	40	(Osborne, 8/25/69, M)	36
Western Gull	P	(Osborne, 8/25/69, M)	36
Pigeon Guillemot	2	(Osborne, 8/25/69, M)	26

P = probably present

002 "Iverson Landing" 38°50'39"N, 123°38'37"W

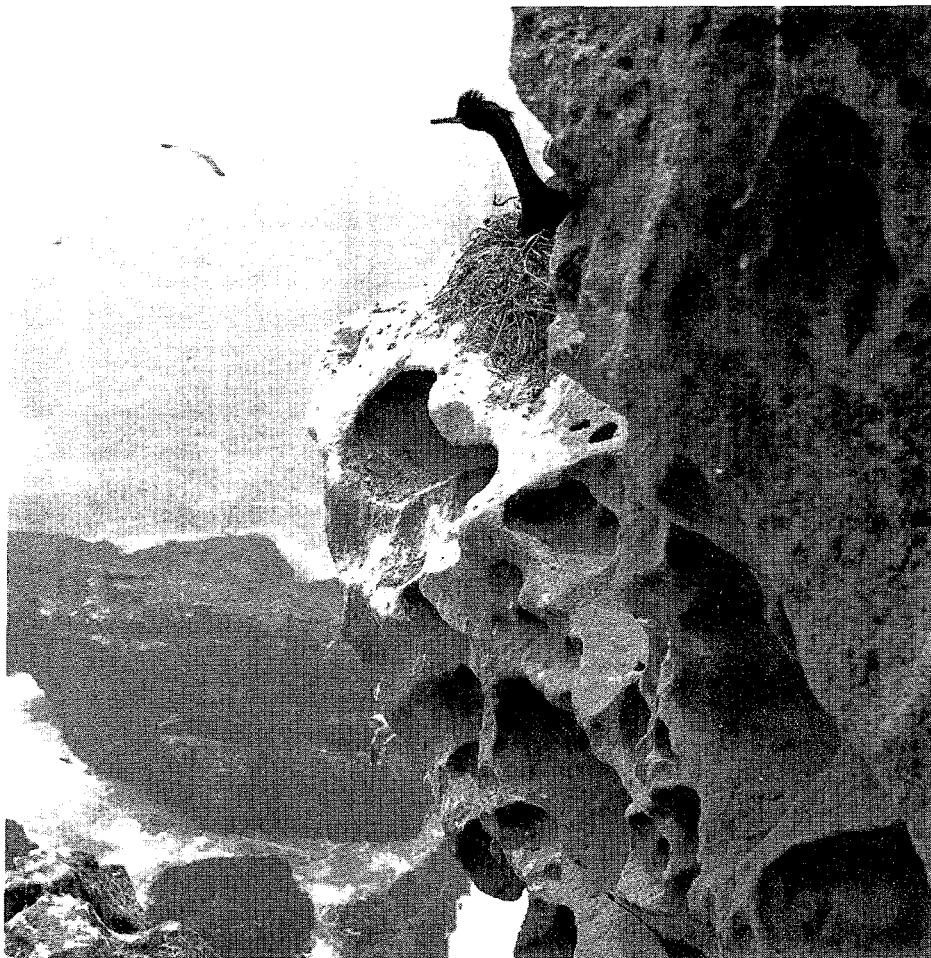
Pelagic Cormorant	96	(Lester, SOWls & Stewart, 7/13/80, B, II)	42
Black Oystercatcher	4	(Lester, SOWls & Stewart, 7/13/80, B, III)	42
Pigeon Guillemot	30	(Lester, SOWls & Stewart, 7/13/80, B, III)	42
Total	130		
Pelagic Cormorant	120	(Osborne, 8/25/69, M)	26
Pelagic Cormorant	108	(Lester & Rodstrom, 5/31/79, B, II)	42



003 Fish Rocks 38 °48' 00"N, 123 °35'31"W

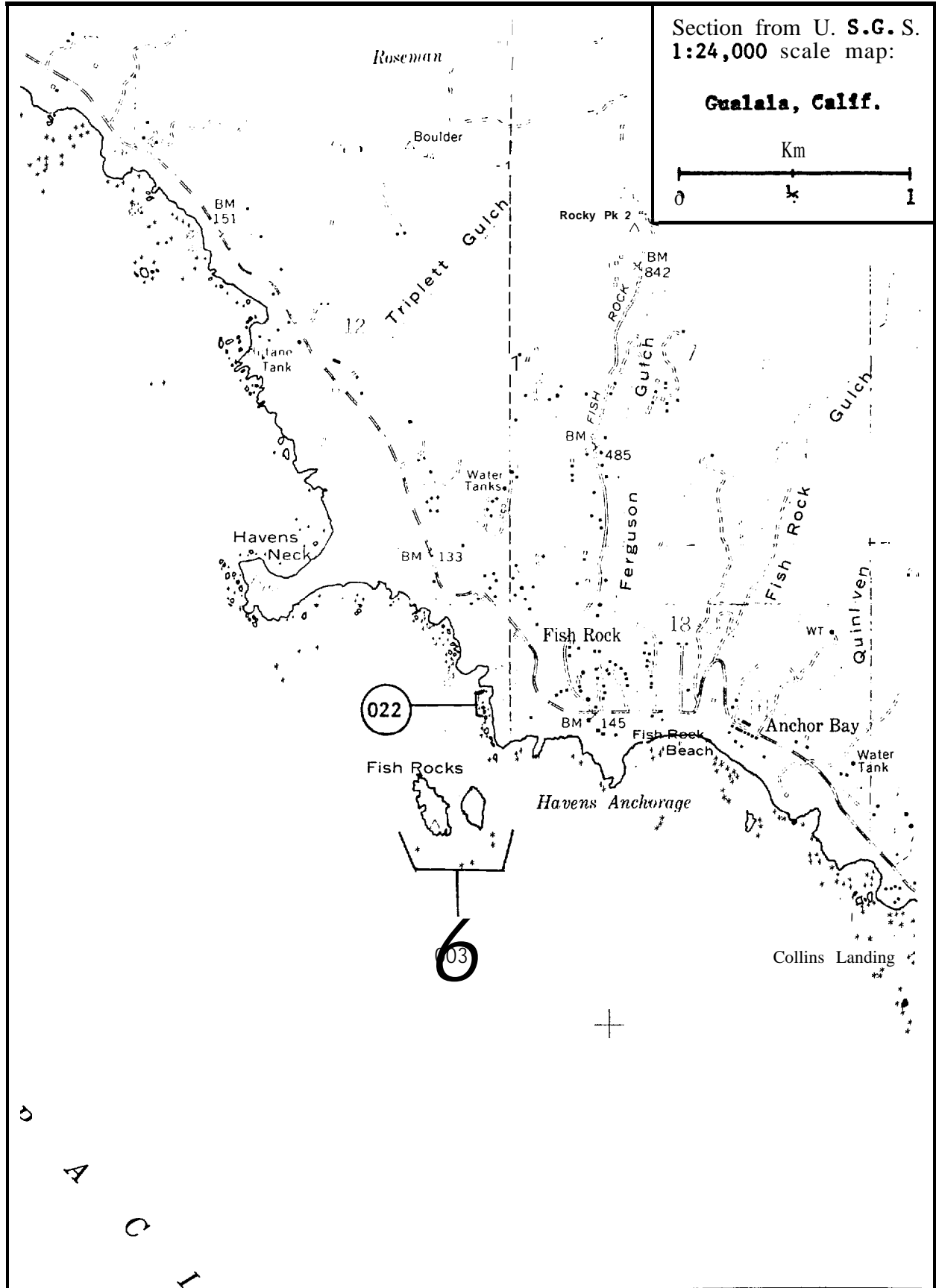
The Fish Rocks colonies are some of the most important seabird colonies along the northern coast of California. They are inhabited by a great diversity of seabirds and are also important hauling areas for California sea lions and Harbor seals.

Leach's Storm-Petrel	100	(DeGange, Lester & Stewart, 1980, L, III)	42
Brandt's Cormorant	18	(Lester, Nelson & Sows, 6/7/80, BL, II)	42
Pelagic Cormorant	400	(Lester, Nelson, Sows & Stewart, 1980, B, II)	42
Black Oystercatcher	4	(Lester & Rodstrom, 5/31/79, BL, III)	42
Western Gull	350	(Lester & Rodstrom, 5/31/79, BL, III)	42
Pigeon Guillemot	250	(Nelson, Sows & Stewart, 6/7/80, B, III)	42
Rhinoceros Auklet	14	(Nelson, Sows & Stewart, 6/7/80, B, III)	42
Tufted Puffin	4	(DeGange, Lester & Nelson, 6/7/80, BL, II)	42
Total	1,130		
Brandt's Cormorant	30	(Lester & Rodstrom, 5/31/79, BL, III)	42
Pelagic Cormorant	200	(Osborne, 8/27/69, B)	36
Pelagic Cormorant	200	(Lester & Rodstrom, 5/31/79, BL, III)	42
Black Oystercatcher	2	(DeGange, Lester & Nelson, 6/7/80, BL, III)	42
Western Gull	100	(Osborne, 8/27/69, B)	36
Pigeon Guillemot	6	(Osborne, 8/27/69, B)	36



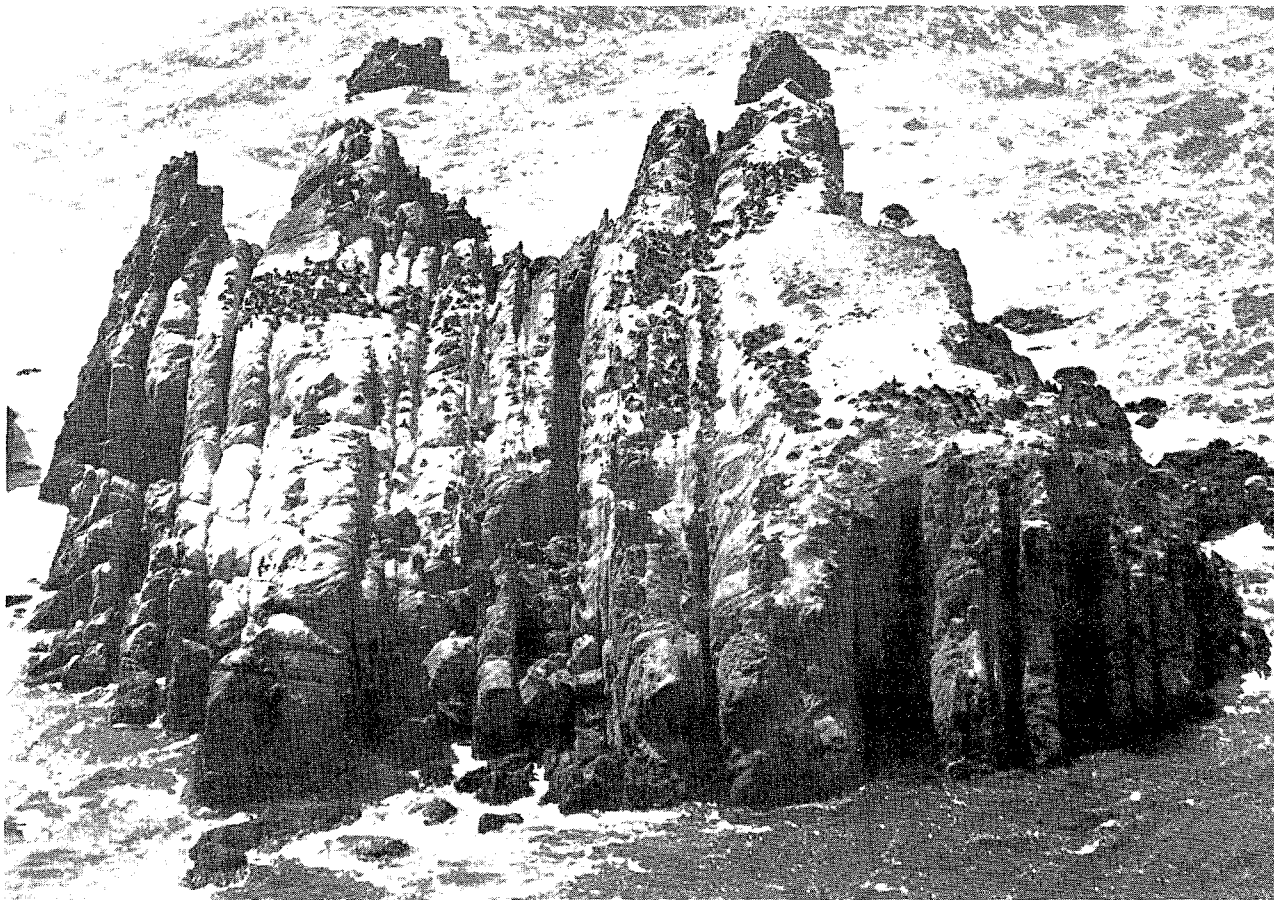
Pelagic Cormorant, Fish Rocks

Photo by Bill Rodstrom



004 Gualala Point Island 38°45'04"N, 123°31'42"W

Brandt's Cormorant	1,240	(Lester & Sows, 7/23/80, A, II)	42
Western Gull	40	(DeGange, 6/11/80, M, III)	42
Pigeon Guillemot	40	(Lester, Sows & Stewart, 7/13/80, B, III)	42
Total	1,320		
Brandt's Cormorant	500	(Osborne, 8/27/69, M)	36
Brandt's Cormorant	1,840	(Lester & Rodstrom, 8/2/79, A, III)	42
Western Gull	40	(Lester & Rodstrom, 6/24/79, B, III)	42

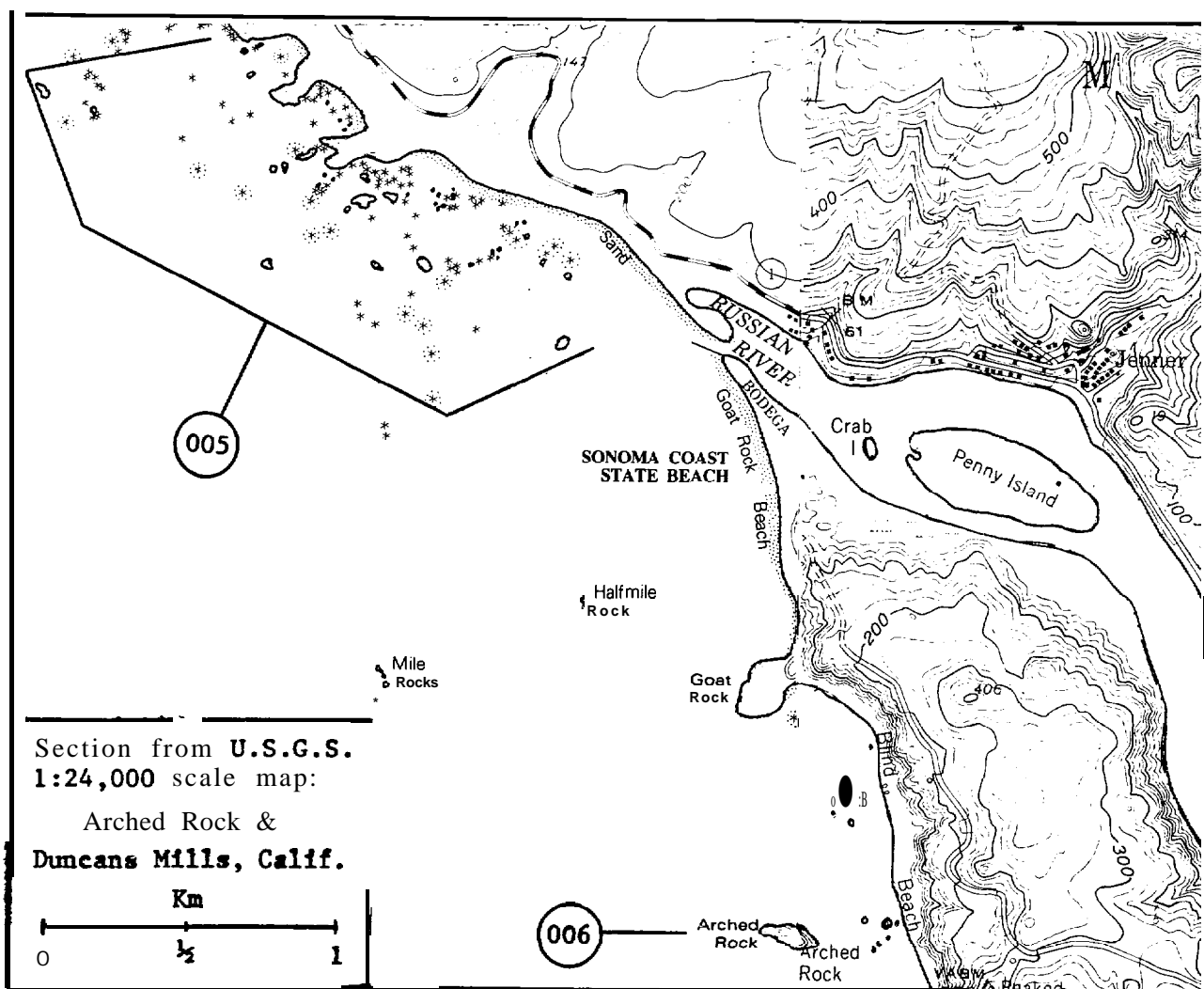
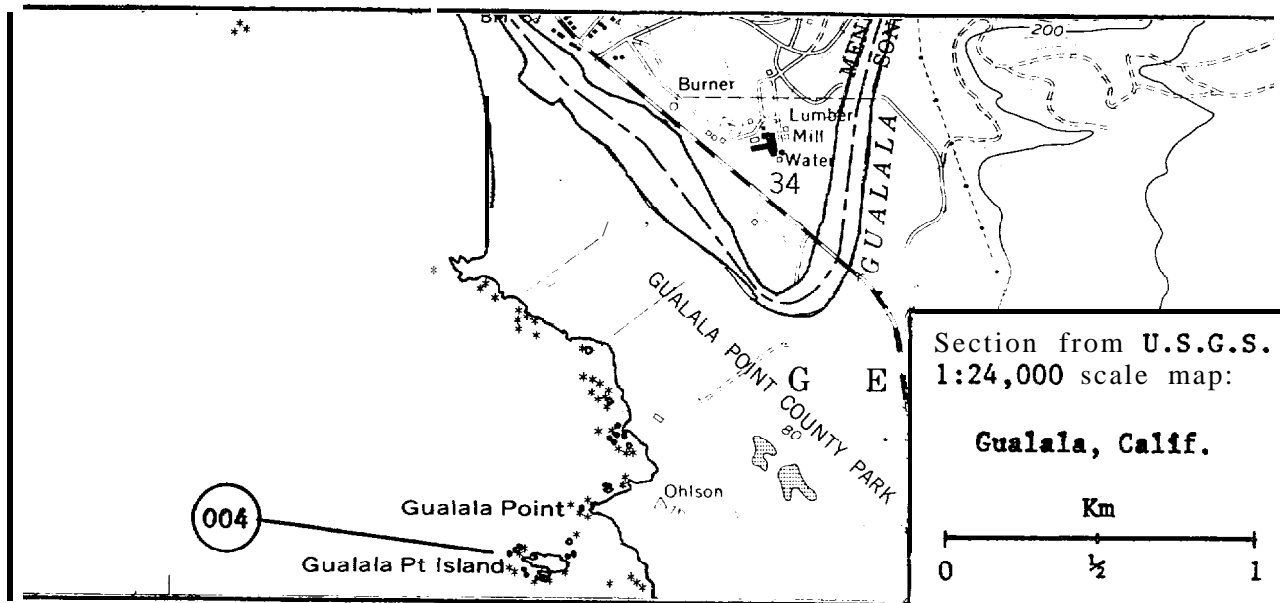


Gualala Point Island

Photo by Gary Lester

005 "Russian River Rocks" 38°27'14"N, 123°08'34"W

Brandt's Cormorant	124	(Lester & Rodstrom, 6/25/79, B, II)	42
Double-crested Cormorant	32	(Lester & Rodstrom, 6/25/79, B, III)	42
Pelagic Cormorant	88	(Lester & Rodstrom, 6/25/79, B, II)	42
Western Gull	64	(Lester & Rodstrom, 6/25/79, B, III)	42
Pigeon Guillemot	40	(Lester & Rodstrom, 6/25/79, B, III)	42
Total	348		
Pelagic Cormorant	200	(Osborne, 8/23/69, M)	36



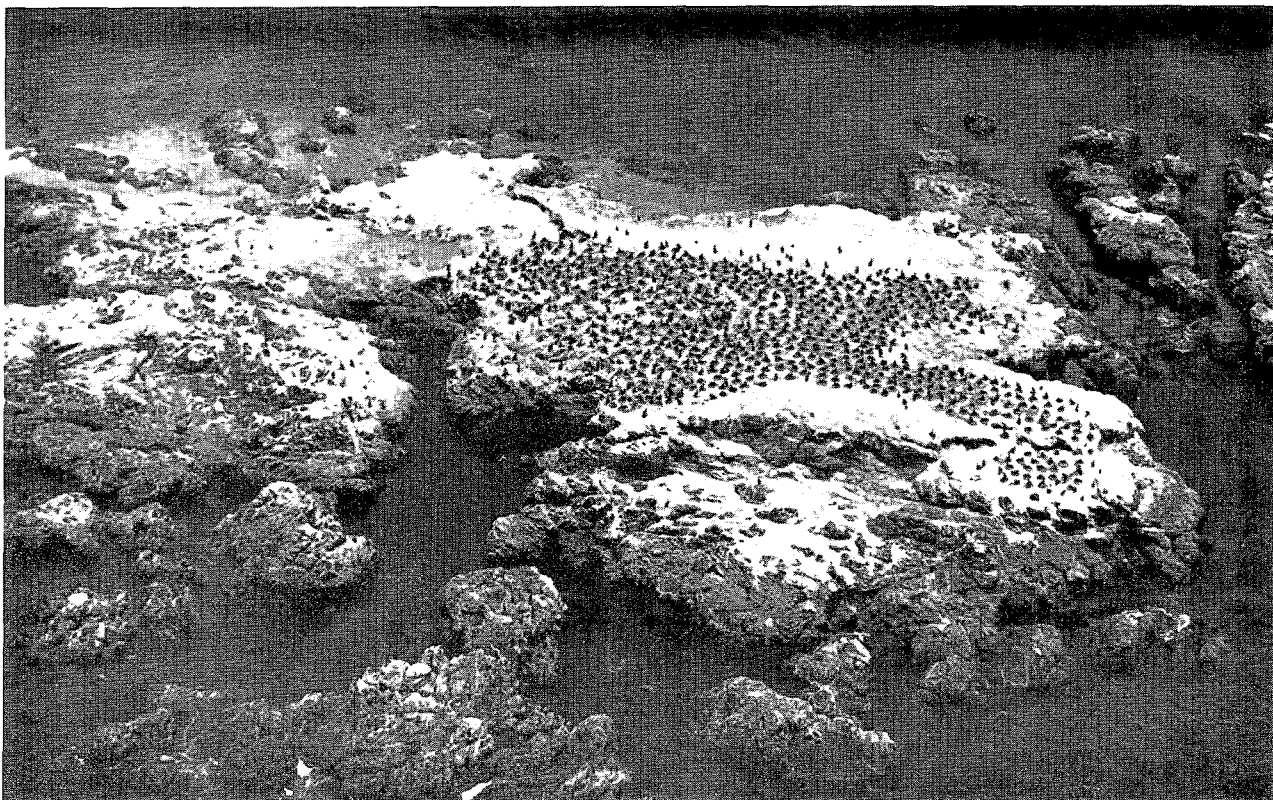
006 Arched Rock 38°25'53"N, 123°07'32"W

Brandt's Cormorant	0	(Lester & Sowl's, 7/23/80, A, I)	42
Black Oystercatcher	2	(Lester & Rodstrom, 6/25/79, B, III)	42
Western Gull	60	(Lester & Rodstrom, 6/25/79, B, III)	42
Pigeon Guillemot	20	(Lester & Rodstrom, 6/25/79, B, III)	42
Tufted Puffin	2	(Lester & Rodstrom, 6/25/79, B, III)	42
Total	84		
Brandt's Cormorant	150	(Osborne, 8/23/69, M)	36
Brandt's Cormorant	400	(Lester & Rodstrom, 6/25/79, B, III)	42
Western Gull	6	(Osborne, 8/23/69, M)	36

007 Salmon Creek was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

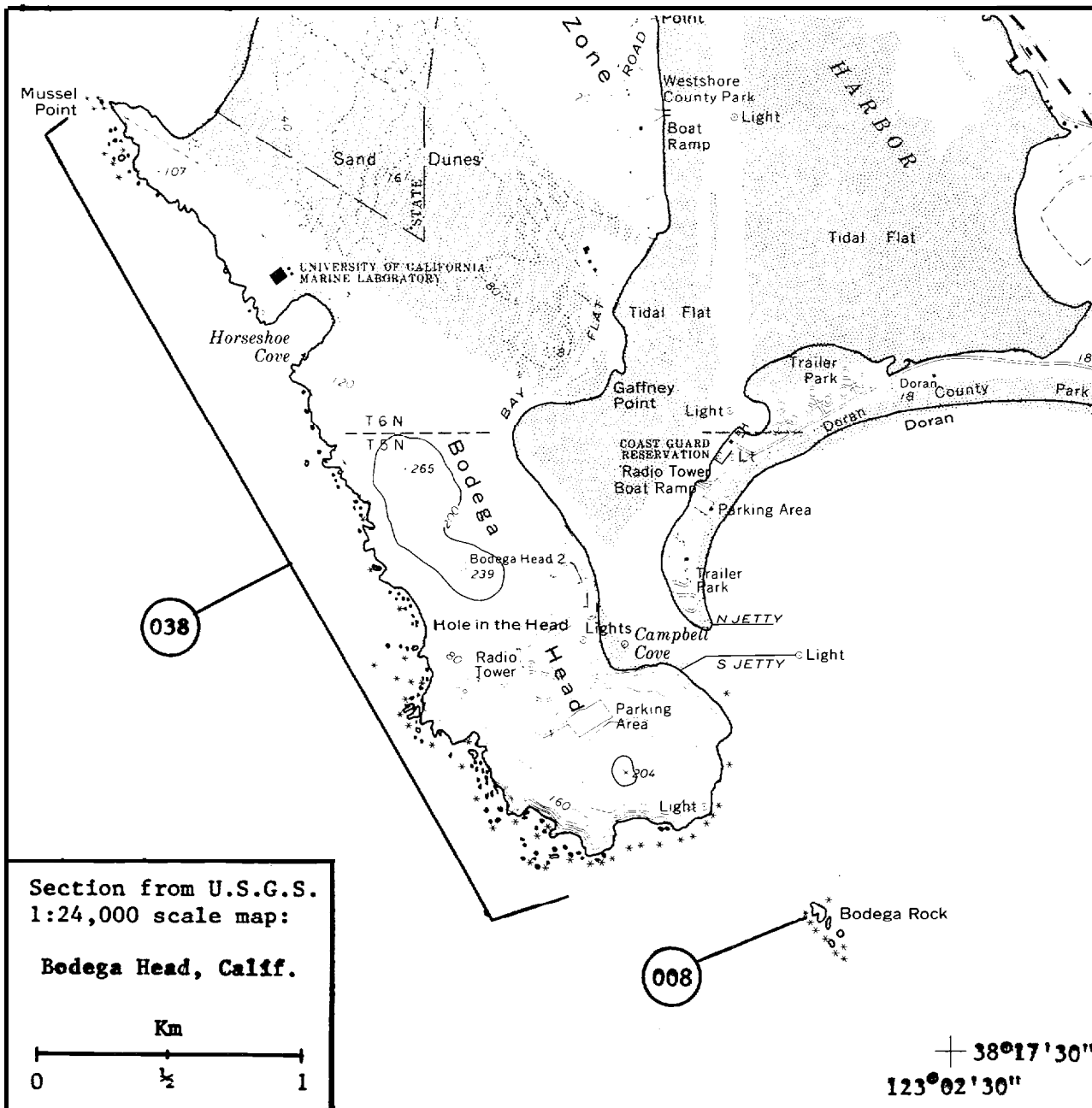
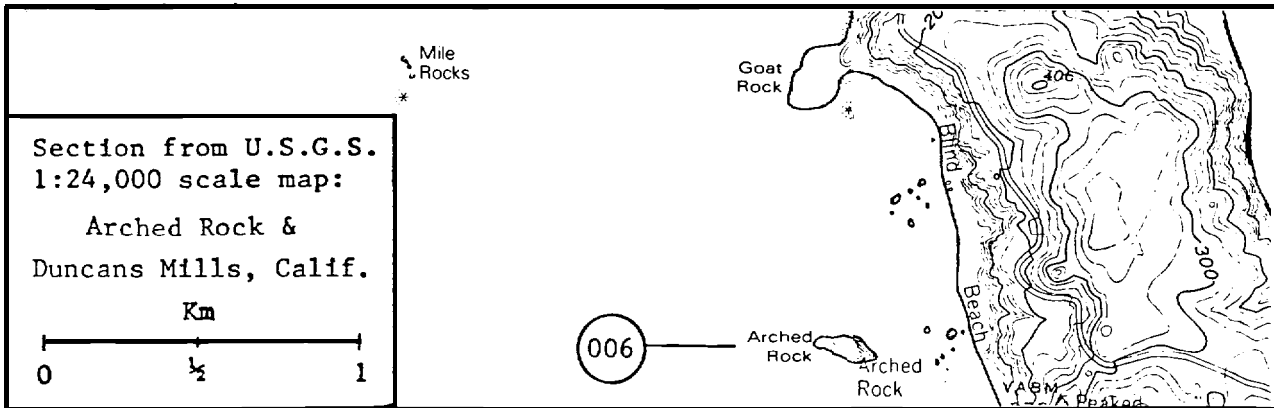
008 Bodega Rock 38°17'48"N, 123°02'50"W

Brandt's Cormorant	1,350	(Nelson & Sowl's, 6/24/80, A, II)	42
Black Oystercatcher	2	(Osborne, 8/23/69, L)	36
Western Gull	50	(Lester & Rodstrom, 6/25/79, B, III)	42
Total	1,402		
Brandt's Cormorant	800	(Osborne, 8/23/69, L)	36
Brandt's Cormorant	1,350	(Jurek, 6/15/72, A, II)	12
Brandt's Cormorant	1,714	(Lester & Rodstrom, 7/11/79, A, II)	42



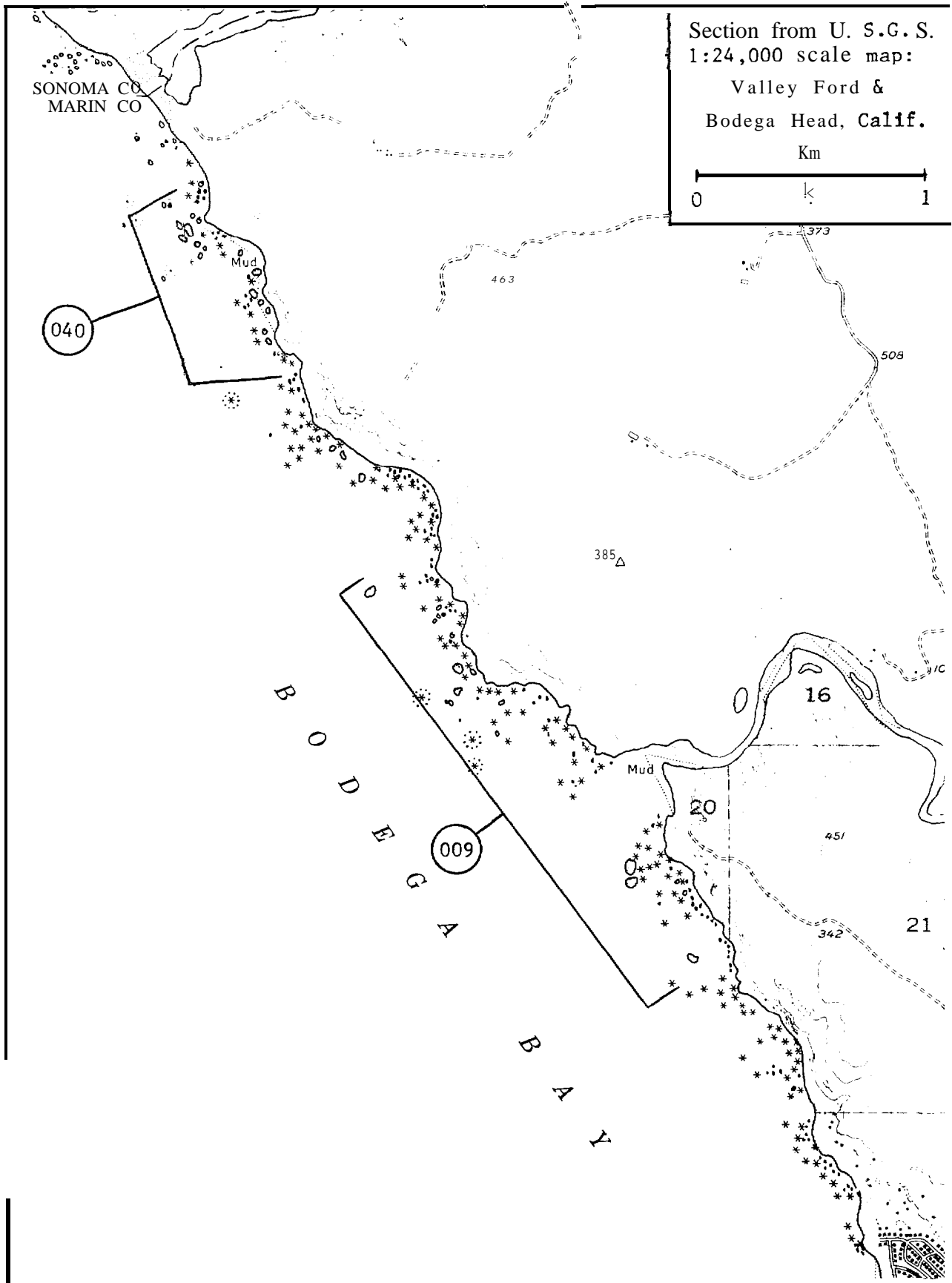
Bodega Rock

Photo by Jay Nelson



009 "Dillon Beach Rocks" 38°16'26"N, 122°59'11"W

Brandt's Cormorant	190	(Lester & Sows, 7/23/80, A, II)	42
Pelagic Cormorant	186	(Lester & Rodstrom, 6/26/79, B, II)	42
Black Oystercatcher	6	(Lester & Rodstrom, 6/26/79, B, III)	42
Western Gull	12	(Lester & Rodstrom, 6/26/79, B, III)	42
Pigeon Guillemot	40	(Lester & Rodstrom, 6/26/79, B, III)	42
Total	<u>434</u>		
Pelagic Cormorant	250	(Osborne, 8/23/69, M)	36
Brandt's Cormorant	168	(Lester & Rodstrom, 6/26/79, B, II)	42



010 Bird Rock 38°13'49"N, 122°59'35"W

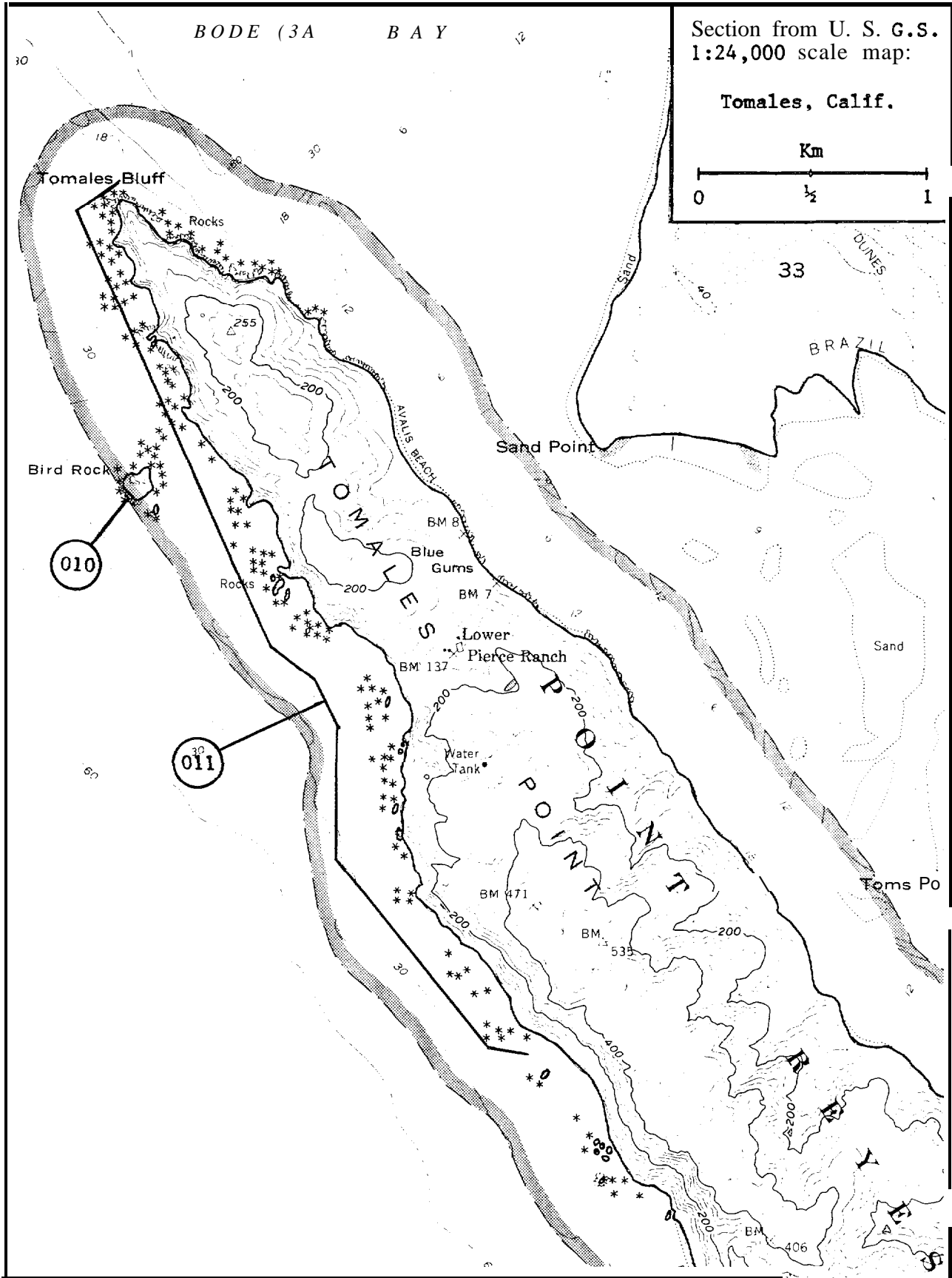
Ashy Storm-Petrel	14	(Lester & Rodstrom, 7/1/79, L, II)	42
Pelagic Cormorant	8	(Lester & Rodstrom, 7/1/79, L, II)	42
Black Oystercatcher	2	(Lester & Rodstrom, 7/1/79, L, III)	42
Western Gull	228	(Lester & Rodstrom, 7/1/79, L, III)	42
Pigeon Guillemot	30	(Lester & Rodstrom, 7/1/79, L, III)	42
Total	282		
Ashy Storm-Petrel	10	(Ainley & Osborne, 7/3/72, L)	3
Pelagic Cormorant	2	(Osborne, 8/23/69, B)	36
Black Oystercatcher	6	(Ainley & Osborne, 7/3/72, L)	3
Western Gull	60	(Ainley & Osborne, 7/3/72, L)	3
Pigeon Guillemot	24	(Ainley & Osborne, 7/3/72, L)	3

011 Tomales Point 38°12'13"N, 122°57'39"W

Pelagic Cormorant	134	(Lester & Rodstrom, 7/1/79, B, III)	42
Western Gull	2	(Lester & Rodstrom, 7/1/79, B, III)	42
Pigeon Guillemot	8	(Ainley & Whitt, 7/3/72, B)	3
Total	144		
Pelagic Cormorant	172	(Ainley & Whitt, 7/3/72, B)	3

012 Point Reyes Beach was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

013 Limantour Estero was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).



014 Napa River was previously assigned a catalog number because of Double-crested Cormorant, California Clapper Rail, and Caspian Tern nesting. We have not included information on this site because it is not coastal. See Varoujean (1979).

015 Petaluma River was previously assigned a catalog number because of California Clapper Rail nesting. We have not included information on this species in this report. See Gould (1973).

016 Gallinas Creek was previously assigned a catalog number because of California Clapper Rail nesting. We have not included information on this species in this report. See Gould (1973).

017 Point Arena 38°57'20"N, 123°44'30"W

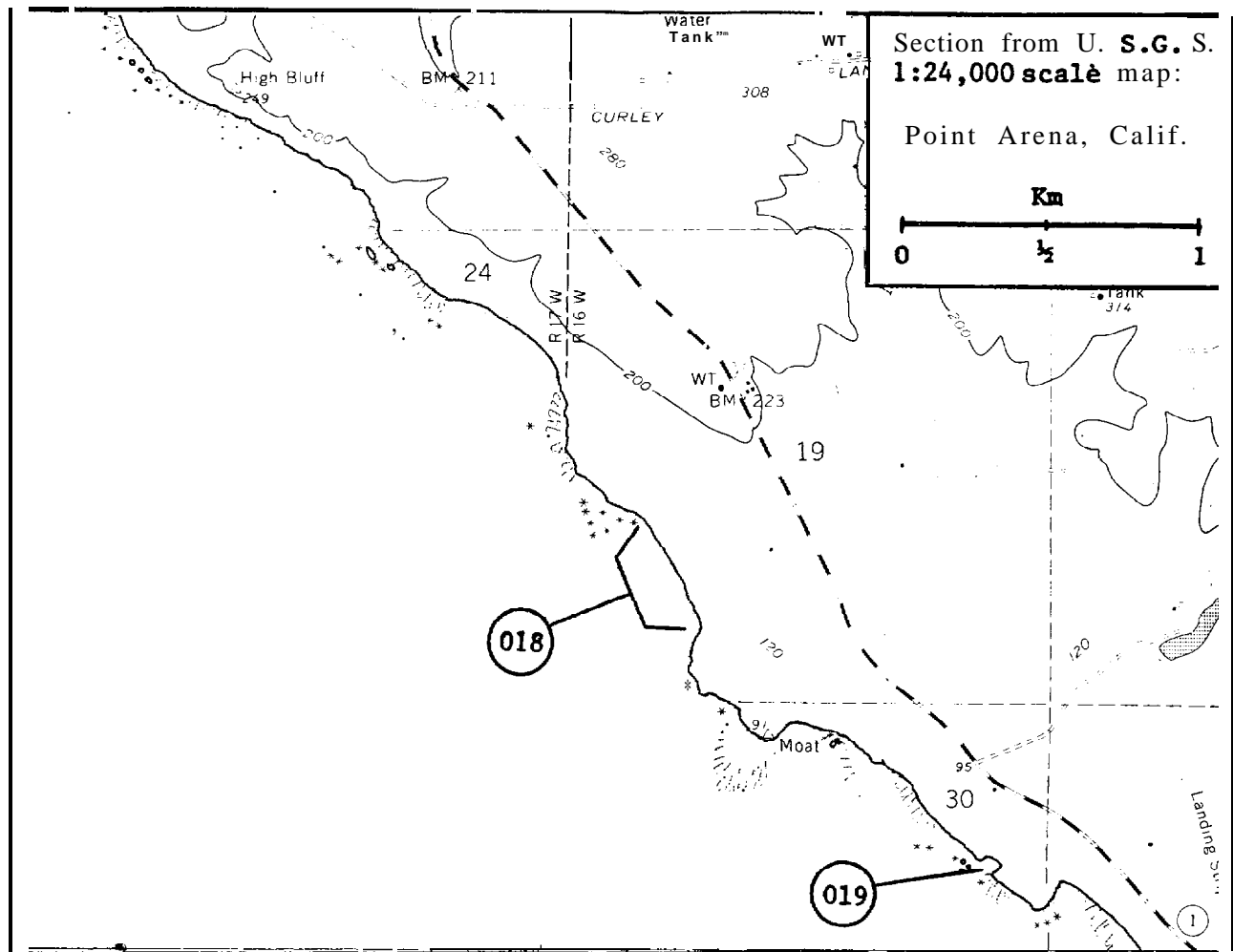
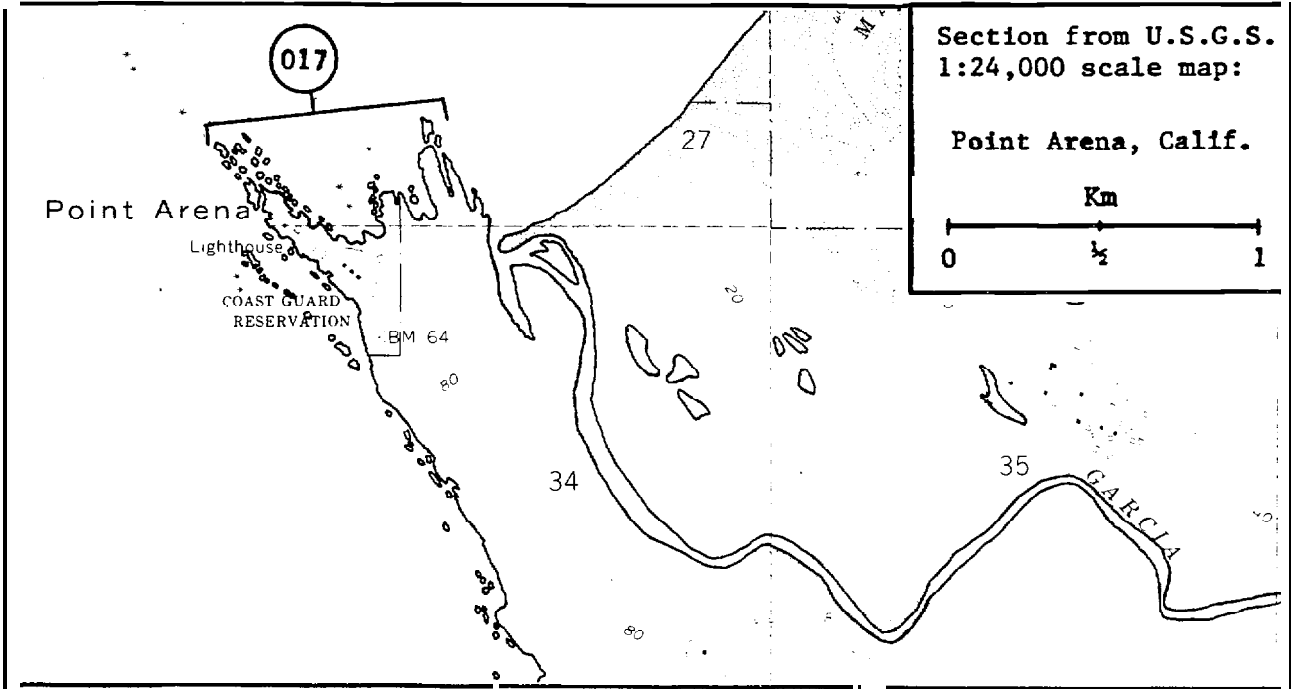
Pelagic Cormorant	28	(Lester, 5/23/79, M, II)	42
Black Oystercatcher	2	(Lester, 5/23/79, M, III)	42
Pigeon Guillemot	60	(Lester, 5/23/79, M, III)	42
Total	<u>90</u>		

018 "Moat Cove" 38°53'10"N, 123°41'W

Pelagic Cormorant	40	(Lester & Rodstrom, 5/31/79, B, III)	42
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019 "Section 30 Cove" 38°52'39"N, 123°40'10"W

Pigeon Guillemot	30	(Lester & Rodstrom, 5/31/79, B, III)	42
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AREA 404. Santa Rosa (cent'd.)

020 Saunders Landing 38°51'13"N, 123°39'05"W

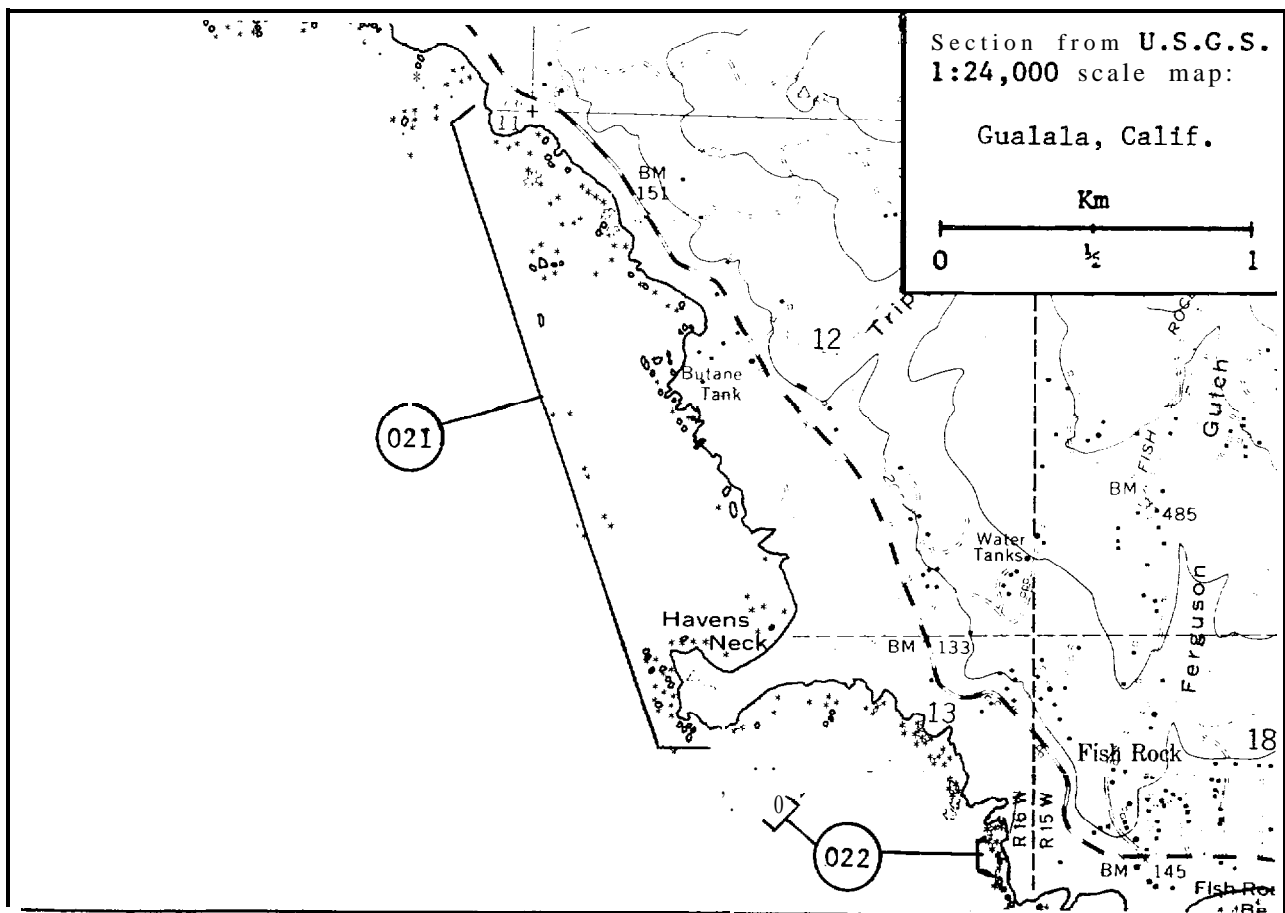
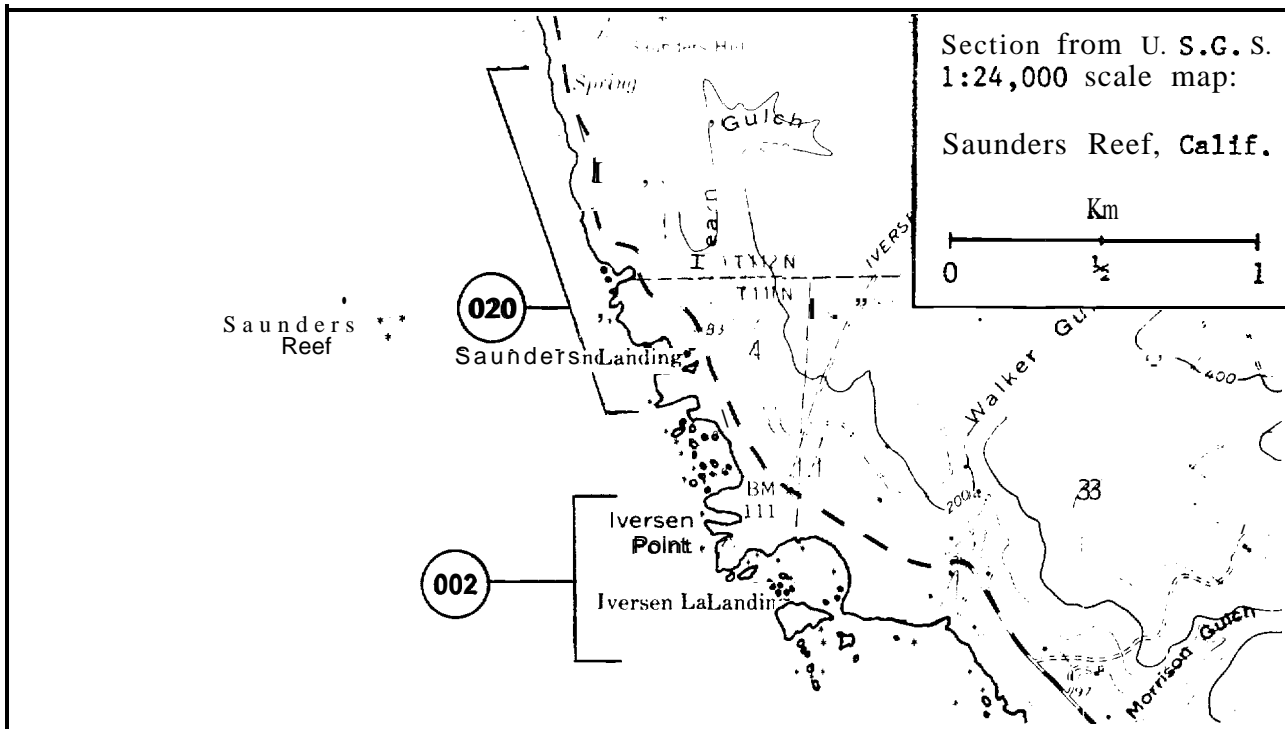
Pelagic Cormorant	174	(Lester, SOWls & Stewart, 7/13/80, II)	42
Pigeon Guillemot	2	(Lester & Rodstrom, 5/31/79, B, III)	42
Total	<u>176</u>		
Pelagic Cormorant	48	(Lester & Rodstrom, 5/31/79, B, III)	42

021 Triplett Gulch 38°49'N, 123°36'15"W

Pelagic Cormorant	390	(Lester, SOWls & Stewart, 6/6/80, B, II)	42
Black Oystercatcher	2	(Lester, SOWls & Stewart, 6/6/80, B, III)	42
Pigeon Guillemot	200	(Lester, SOWls & Stewart, 6/6/80, B, III)	42
Total	<u>592</u>		
Pelagic Cormorant	294	(Lester & Rodstrom, 5/31/79, B, III)	42

022 "Fish Rock Cove" 38°47'45"N, 123°35'20"W

Brandt's Cormorant	18	(Lester, SOWls & Stewart, 7/13/80, B, II)	42
Pelagic Cormorant	54	(Lester, SOWls & Stewart, 7/13/80, B, II)	42
Total	<u>72</u>		
Pelagic Cormorant	36	(Lester & Rodstrom, 5/31/79, B, II)	42



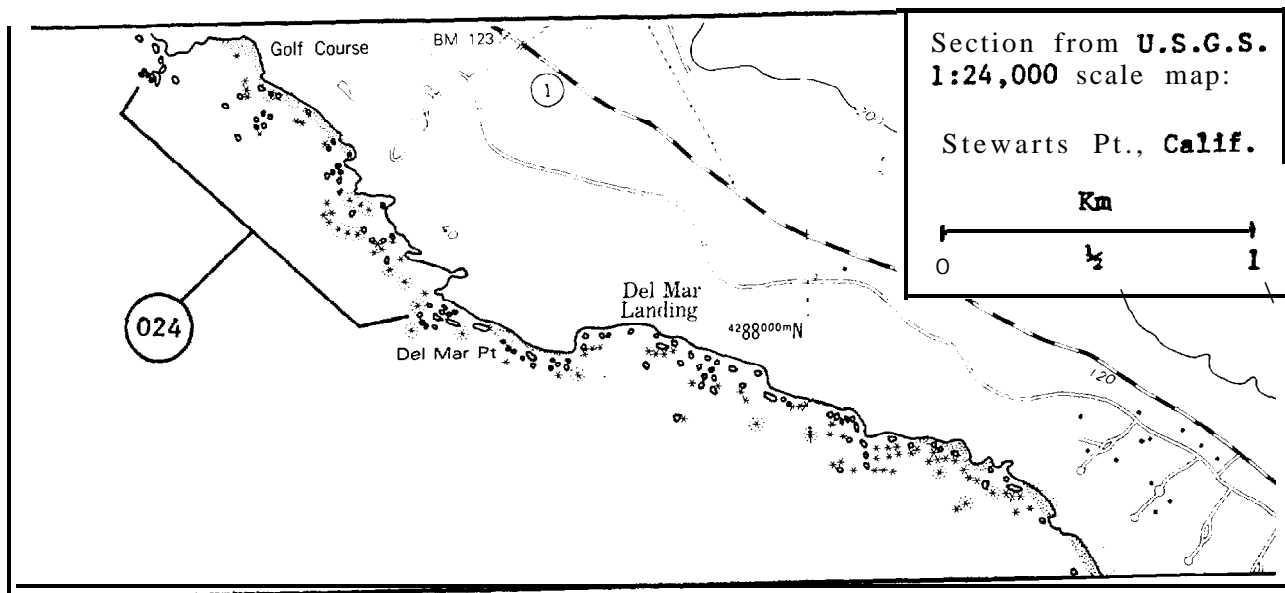
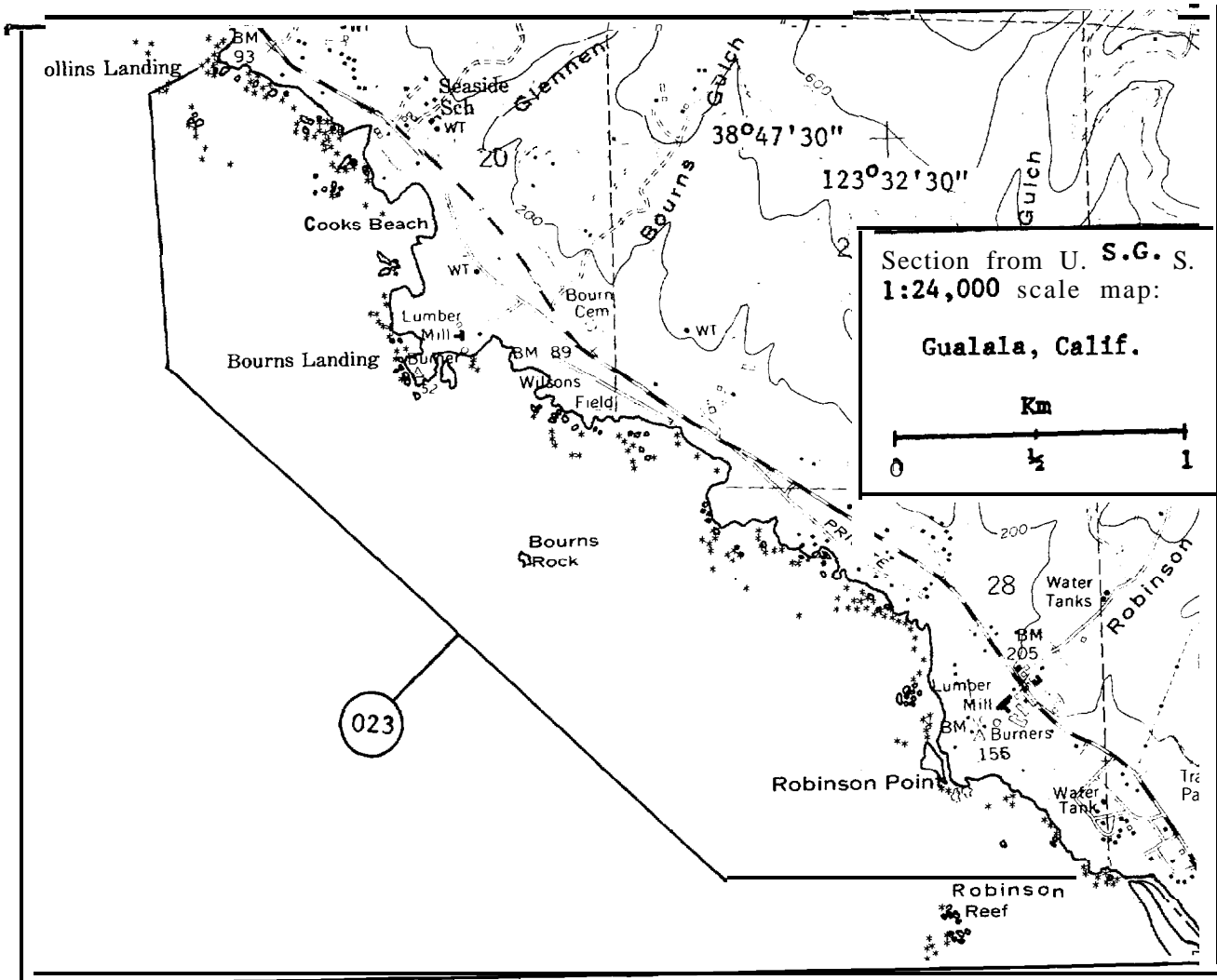
AREA 404, Santa Rosa (cent'd.)

023 Collins Landing to Gualala River 38°46'N, 123°32'40"W

Pelagic Cormorant	368	(Lester, Sows & Stewart, 7/13/80, B, II)	42
Black Oystercatcher	6	(Lester, Sows & Stewart, 7/13/80, B, III)	42
Western Gull	2	(Lester, Sows & Stewart, 7/13/80, B, III)	42
Pigeon Guillemot	30	(Lester, Sows & Stewart, 7/13/80, B, III)	42
Total	406		
Pelagic Cormorant	154	(Lester & Rodstrom, 6/24/79, B, III)	42
Black Oystercatcher	2	(Lester & Rodstrom, 6/24/79, B, III)	42

024 Del Mar Point 38°15'N, 123°31'W

Pelagic Cormorant	12	(Lester & Rodstrom, 6/24/79, B, III)	42
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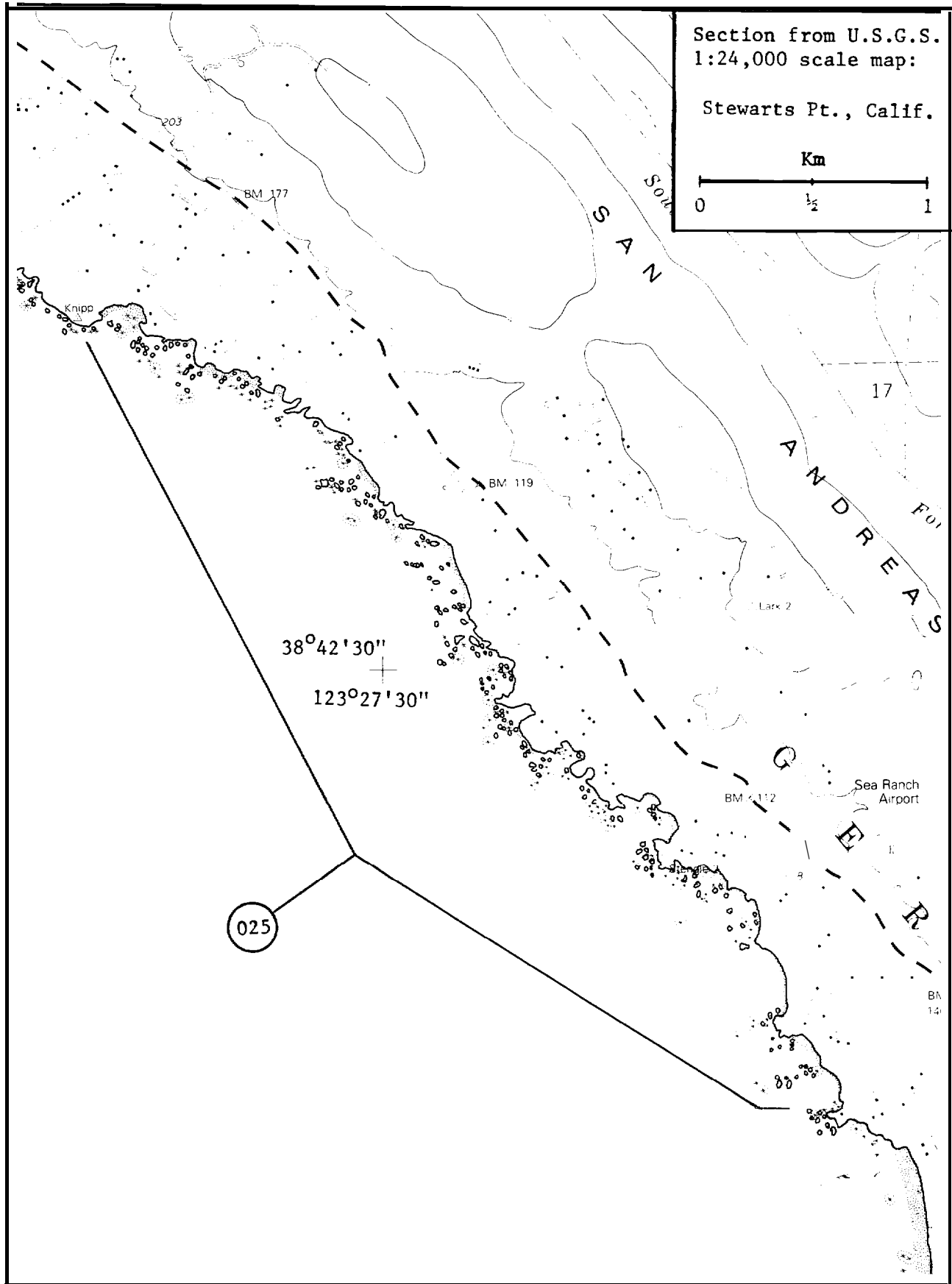


AREA 404, Santa Rosa (cont'd,)

025

Sea Ranch 38°42'N, 123°27'30"W

Pelagic Cormorant	164	(Lester & Rodstrom, 6/1/79, M, & 6/24/79, B, I II)	42
Black Oystercatcher	2	(Lester & Rodstrom, 6/1/79, M, II)	42
Western Gull	20	(Lester & Rodstrom, 6/24/79, B, III)	42
Pigeon Guillemot	8	(Lester & Rodstrom, 6/24/79, B, III)	42
Total	194		



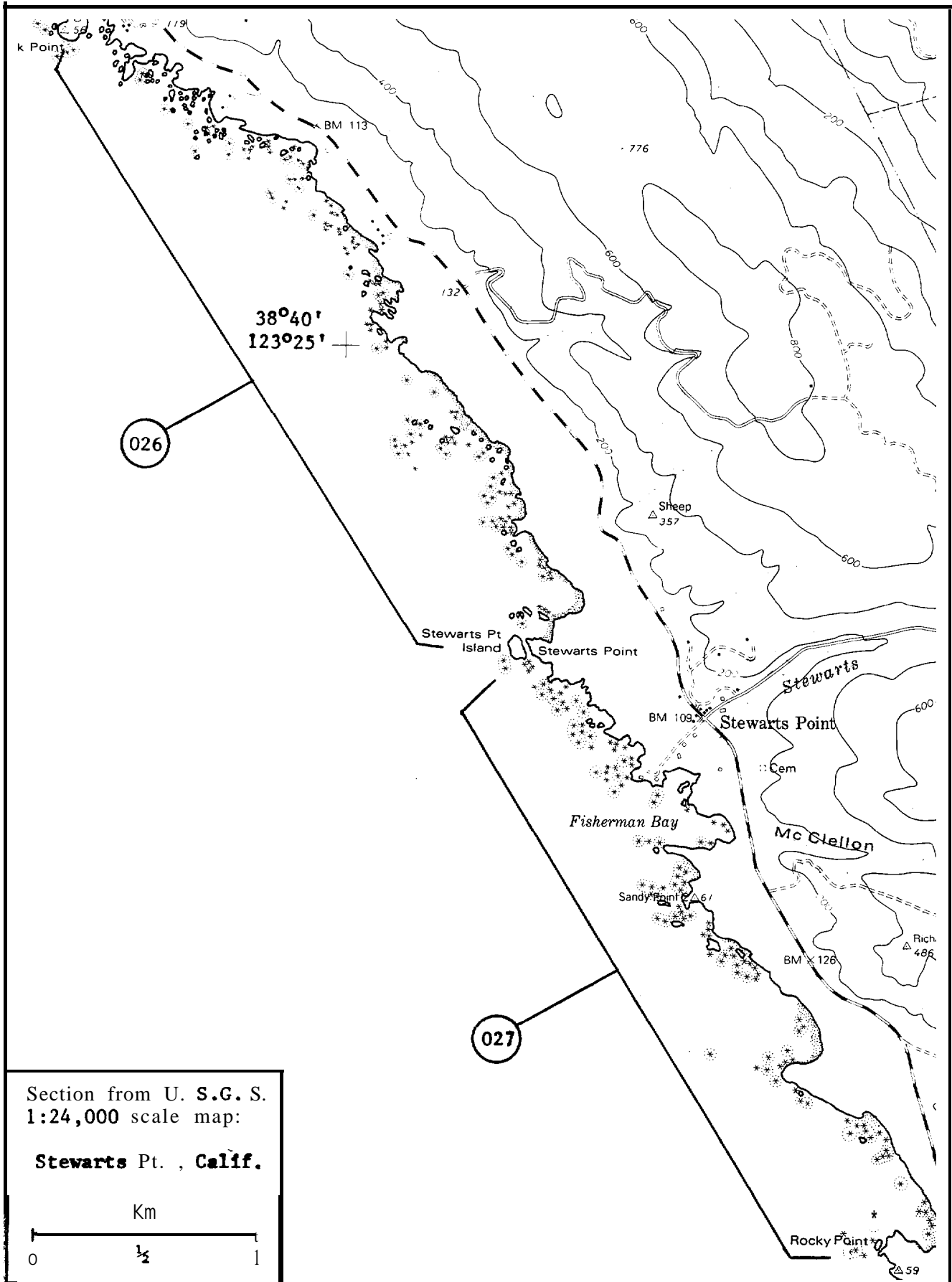
AREA 404, Santa Rosa (cent'd.)

026 Black Point to Stewarts Point 38°40' N, 123°25'15"W

Pelagic Cormorant	54 (Lester & Rodstrom, 6/24/79, B, III)	42
Pigeon Guillemot	<u>2</u> (Lester & Rodstrom, 6/24/79, B, III)	42
Total	<u>56</u>	

027 Stewarts Point to Rocky Point 38°39' N, 123°38'45"W

Pelagic Cormorant	76 (Lester & Rodstrom, 6/24/79, B, II)	42
Western Gull	8 (Lester & Rodstrom, 6/24/79, B, II)	42
Pigeon Guillemot	<u>6</u> (Lester & Rodstrom, 6/24/79, B, III)	42
Total	<u>90</u>	



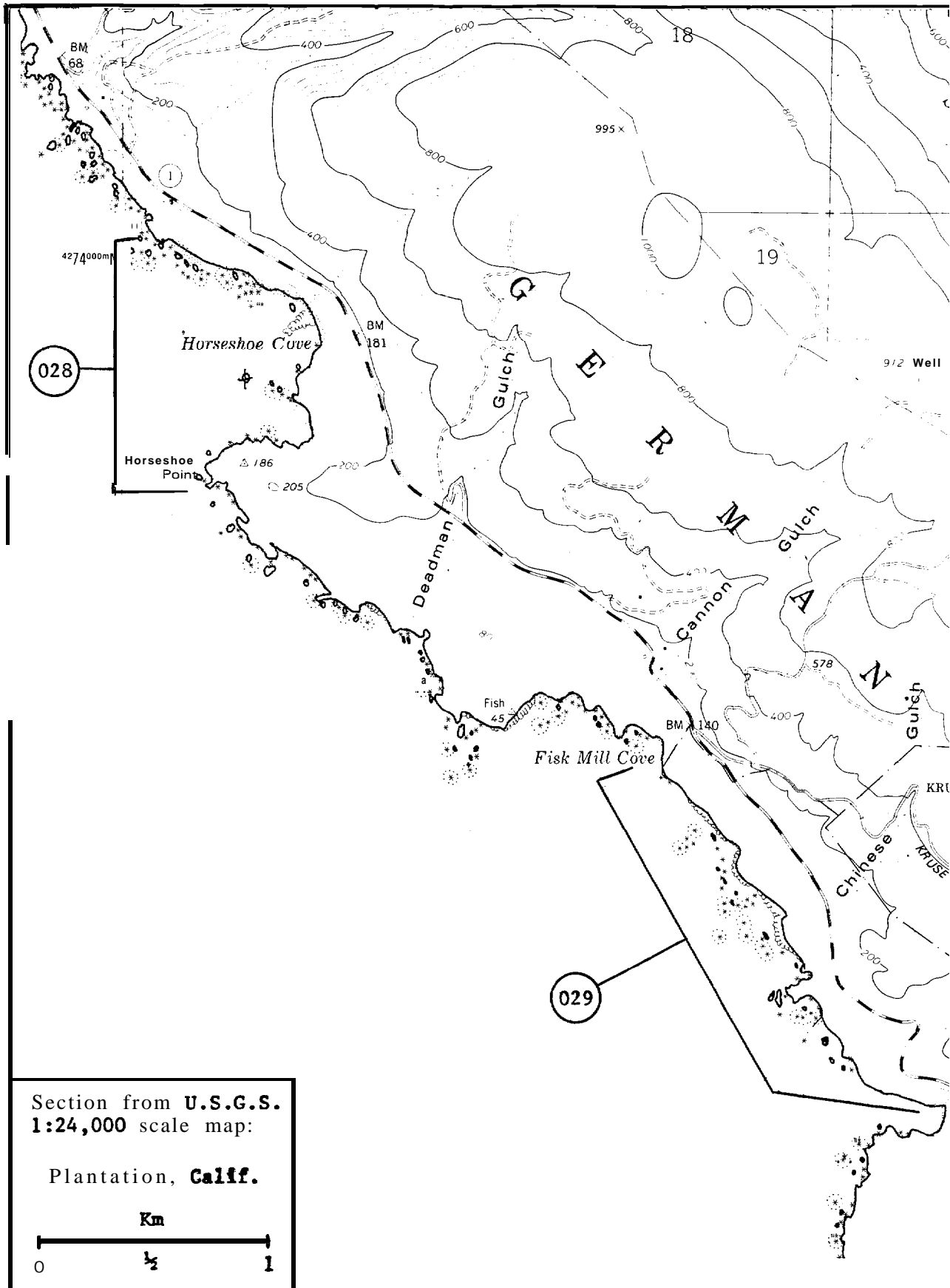
AREA 404, Santa Rosa (cent'd,)

028 Horseshoe Cove 38°36'30"N, 123°22'10"W

Pelagic Cormorant	50 (Lester & Rodstrom, 6/24/79, B, III)	42
Pigeon Guillemot	14 (Lester & Rodstrom, 6/24/79, B, III)	42
Total	<u>64</u>	

029 Cannon Gulch to Stump Beach 38°35'30"N, 123°20'30"W

Pelagic Cormorant	124 (Lester & Rodstrom, 6/24/79, B, II)	42
Pigeon Guillemot	4 (Lester & Rodstrom, 6/24/79, B, III)	42
Total	128	



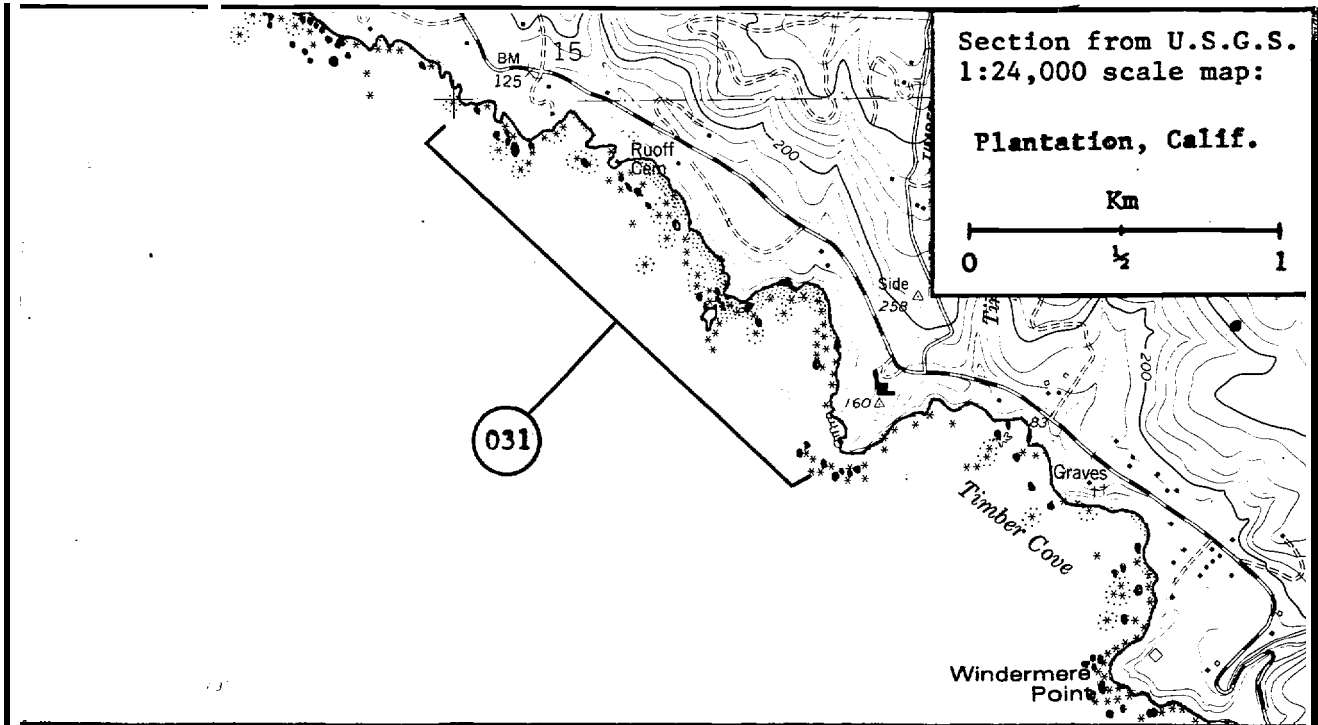
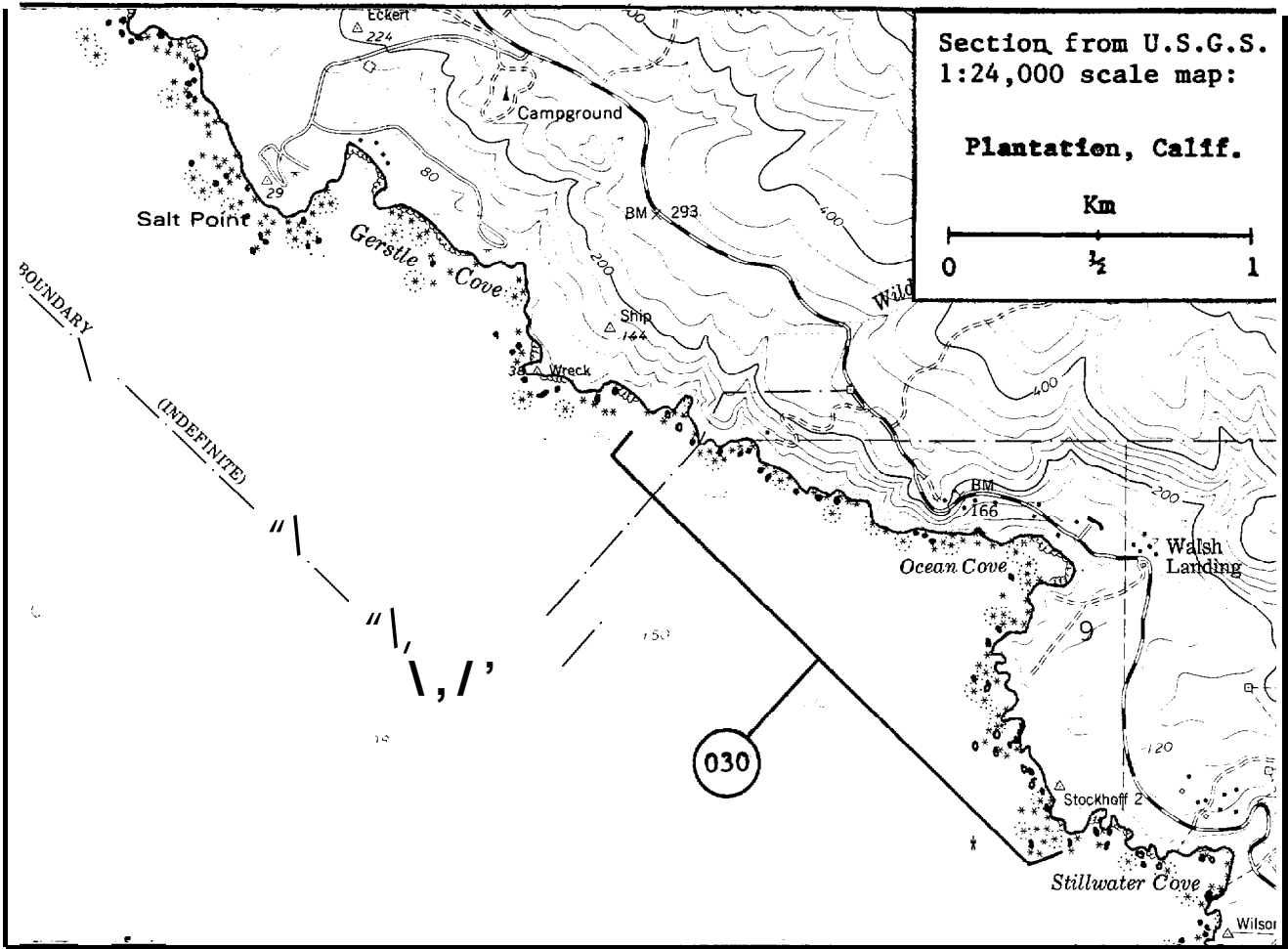
AREA 404, Santa Rosa (cont'd.)

030 Gerstle Cove to Stillwater Cove 38 °33'N, 123°18' 45"W

Pelagic Cormorant	86 (Lester & Rodstrom, 6/25/79, B, I)	42
Western Gull	6 (Lester & Rodstrom, 6/25/79, B, III)	42
Pigeon Guillemot	18 (Lester & Rodstrom, 6/25/79, B, III)	42
Total	<u>110</u>	

031 Bench Mark 125 to Timber Cove 38°32'20"N, 123°17'W

Pelagic Cormorant	74 (Lester & Rodstrom, 6/25/79, B, I)	42
Western Gull	2 (Lester & Rodstrom, 6/25/79, B, I)	42
Total	<u>76</u>	



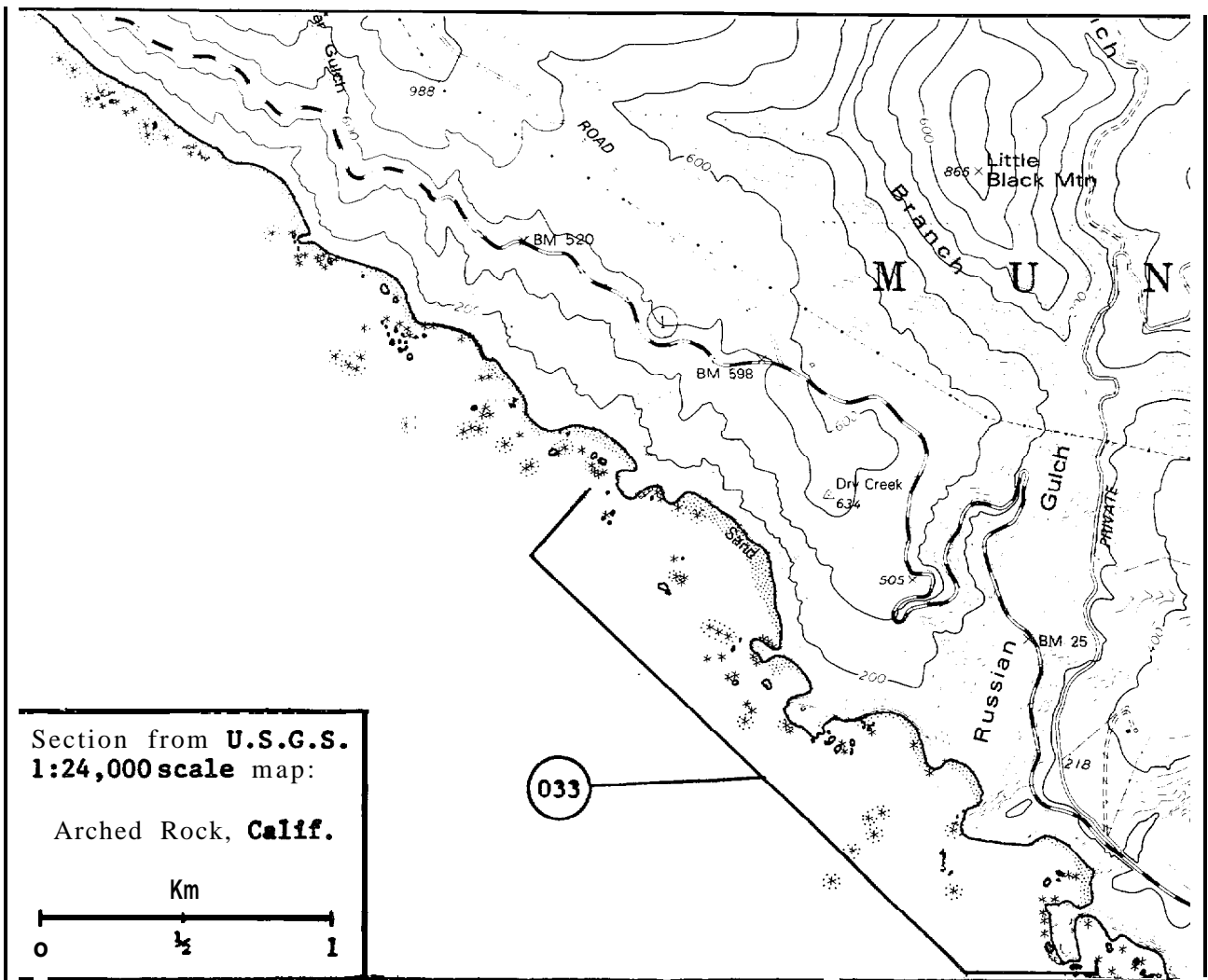
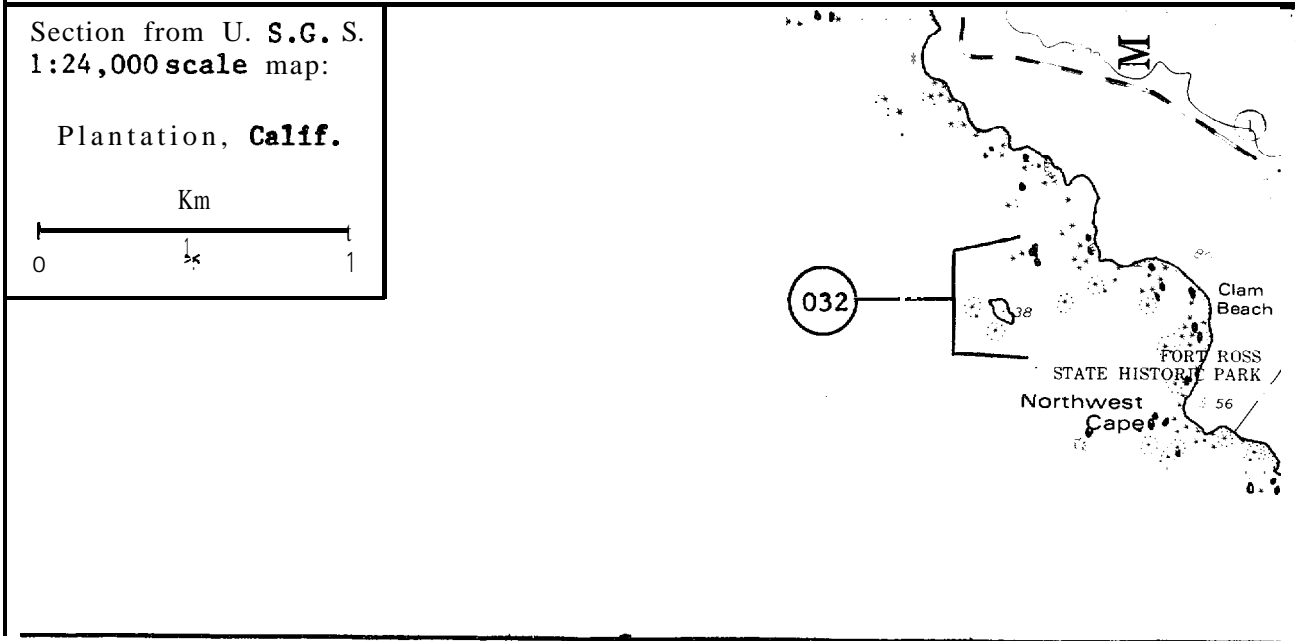
AREA 404, Santa Rosa (cont'd.)

032 "Northwest Cape Rocks" 38°30'40"N, 123°15'17"W

Pelagic Cormorant	20 (Lester & Rodstrom, 6/25/79, B, II)	42
Western Gull	<u>28</u> (Lester & Rodstrom, 6/25/79, B, III)	42
Total	<u>48</u>	

033 "Russian Gulch" 38°28'N, 123°09'36"W

Pelagic Cormorant	336 (Lester & Rodstrom, 6/25/79, B, II)	42
Black Oystercatcher	2 (Lester & Rodstrom, 6/25/79, B, III)	42
Western Gull	10 (Lester & Rodstrom, 6/25/79, B, III)	42
Pigeon Guillemot	<u>60</u> (Lester & Rodstrom, 6/25/79, B, III)	4.2
Total	<u>408</u>	



AREA 404, Santa Rosa (cent'd.)

034 "Peaked Hill" 38°25'45"N, 123°07'10"W

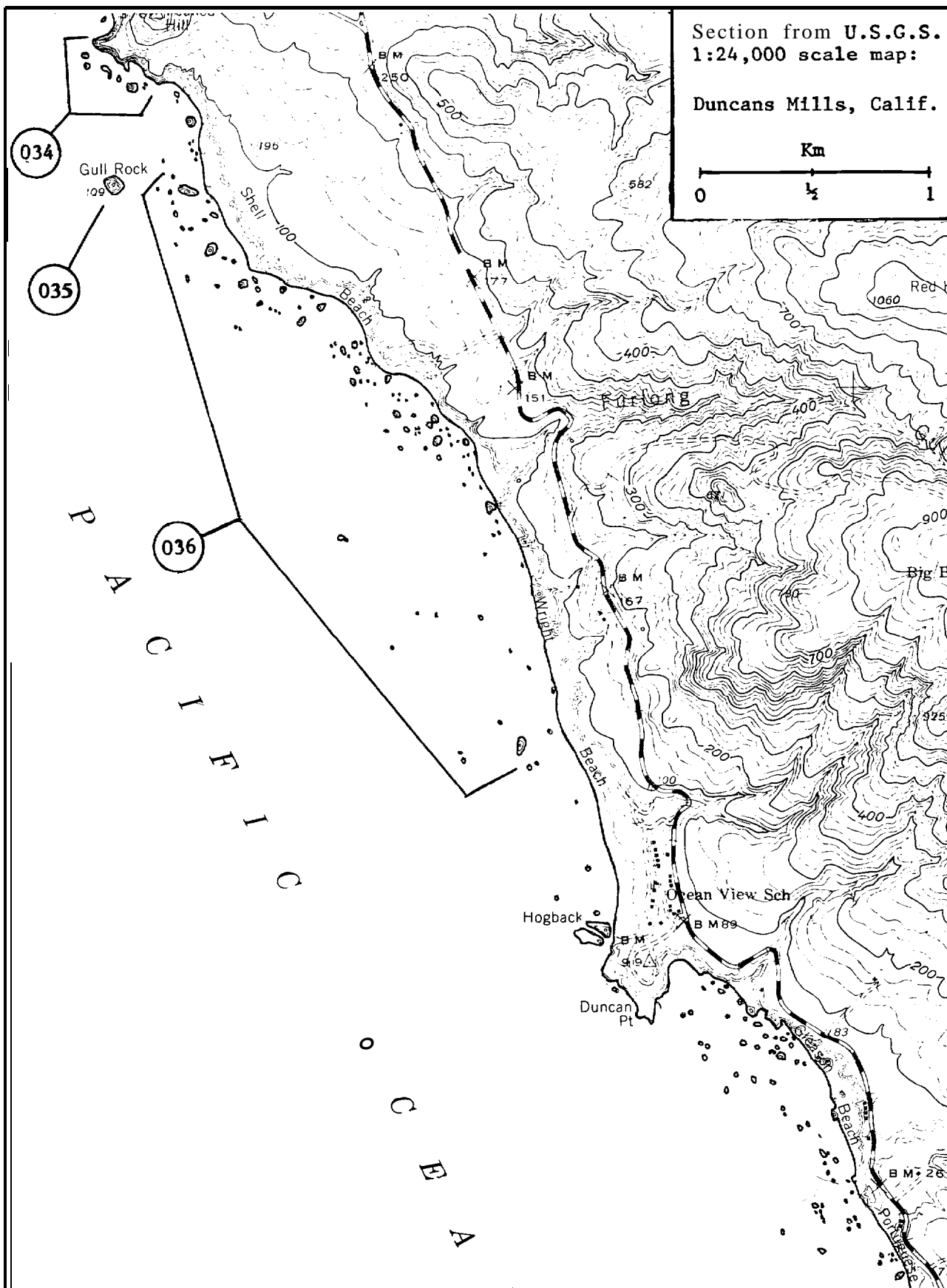
Pelagic Cormorant	156	(Lester & Rodstrom, 6/25/79, B, II)	42
Black Oystercatcher	2	(Lester & Rodstrom, 6/25/79, B, II)	42
Western Gull	20	(Lester & Rodstrom, 6/25/79, B, III)	42
Pigeon Guillemot	80	(Lester & Rodstrom, 6/25/79, B, III)	42
Total	258		

035 Gull Rock 38°25'30"N, 123°07'10"W

Brandt's Cormorant	650	(Lester & Sows, 7/23/80, A, II)	42
Pelagic Cormorant	16	(Lester & Rodstrom, 6/25/79, B, II)	42
Western Gull	28	(DeGange, 6/10/80, M, III)	42
Pigeon Guillemot	40	(DeGange, 6/10/80, M, III)	42
Total	734		
Brandt's Cormorant	300	(Lester & Rodstrom, 6/25/79, B, III)	42
Western Gull	20	(Lester & Rodstrom, 6/25/79, B, III)	42

036 Shell-Wright Beach Rocks 38°25' N, 123°06"W

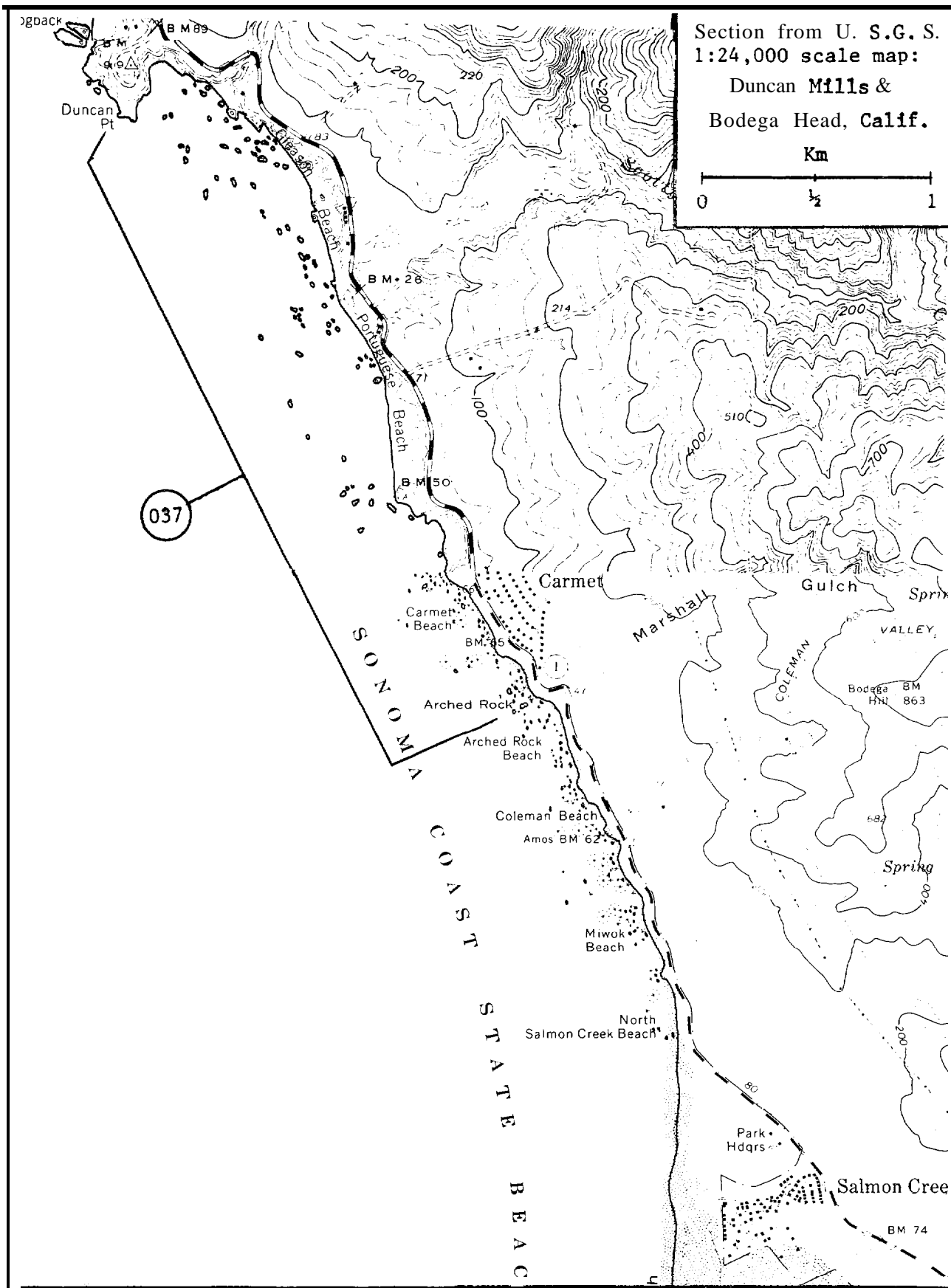
Pelagic Cormorant	112	(Lester & Rodstrom, 6/25/79, B, I)	42
Black Oystercatcher	6	(Lester & Rodstrom, 6/25/79, B, III)	42
Western Gull	80	(Lester & Rodstrom, 6/25/79, B, III)	42
Pigeon Guillemot	8	(Lester & Rodstrom, 6/25/79, B, III)	42
Total	206		



AREA 404, Santa Rosa (cent'd.)

037 Duncan Point to Arched Rock 38 °22'30"N, 123 °05"W

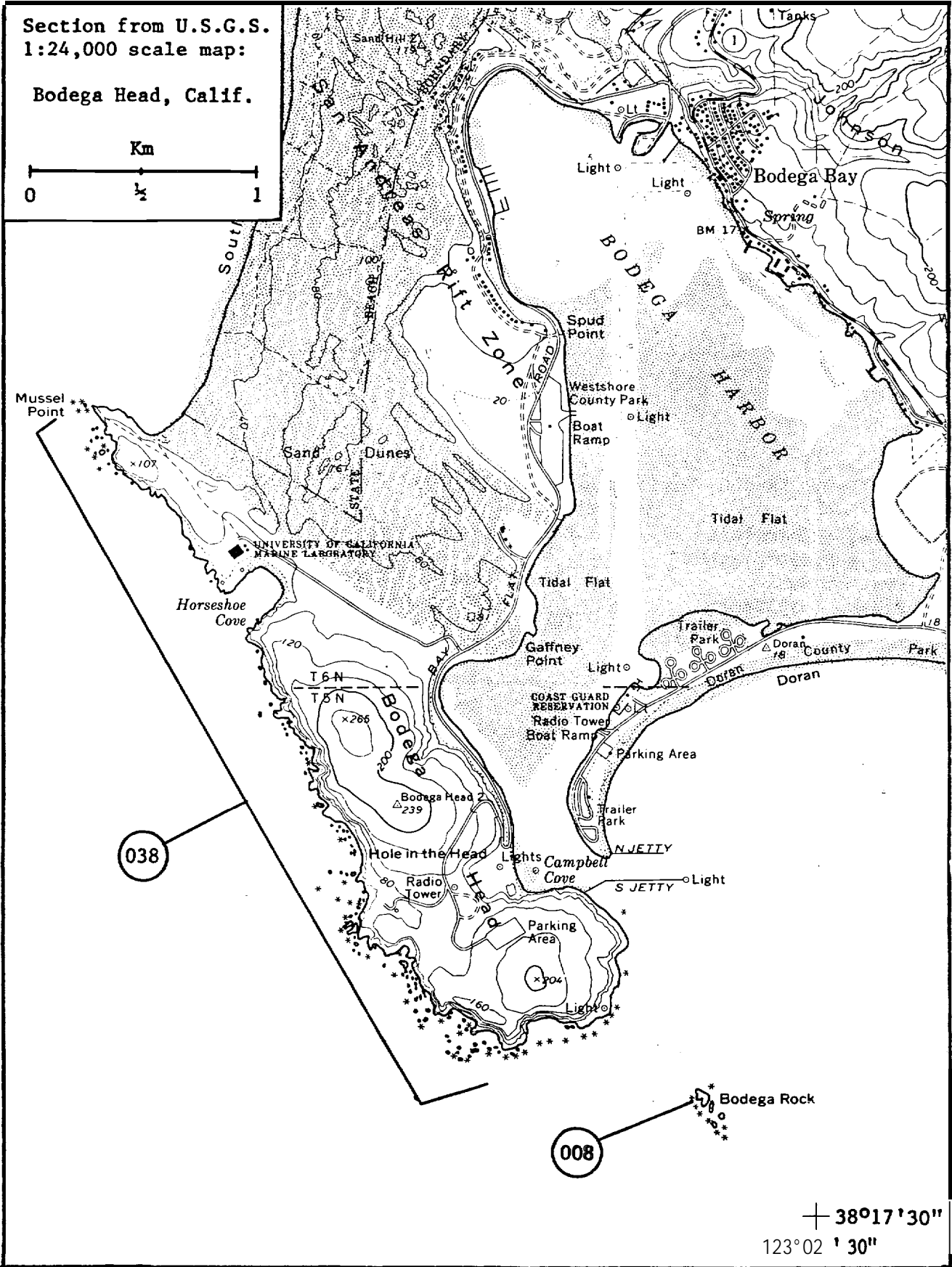
Pelagic Cormorant	70 (Lester & Rodstrom, 6/25/79, B, II)	42
Black Oystercatcher	2 (Lester & Rodstrom, 6/25/79, B, III)	42
Western Gull	16 (Lester & Rodstrom, 6/25/79, B, III)	42
Pigeon Guillemot	4 (Lester & Rodstrom, 6/25/79, B, III)	42
Total	<u>92</u>	



AREA 404, Santa Rosa (cent'd.)

038 Bodega Head 38 °18'N, 123 °03'45"W

Pelagic Cormorant	168 (Lester & Rodstrom, 6/25/79, B, II)	42
Black Oystercatcher	6 (Lester & Rodstrom, 6/25/79, B, III)	42
Pigeon Guillemot	60 (Lester & Rodstrom, 6/25/79, B, III)	42
Total	234	



AREA 404, Santa Rosa (cent'd.)

039 Pinnacle Rock 38°18' 20"N, 123°01 ' 10"W

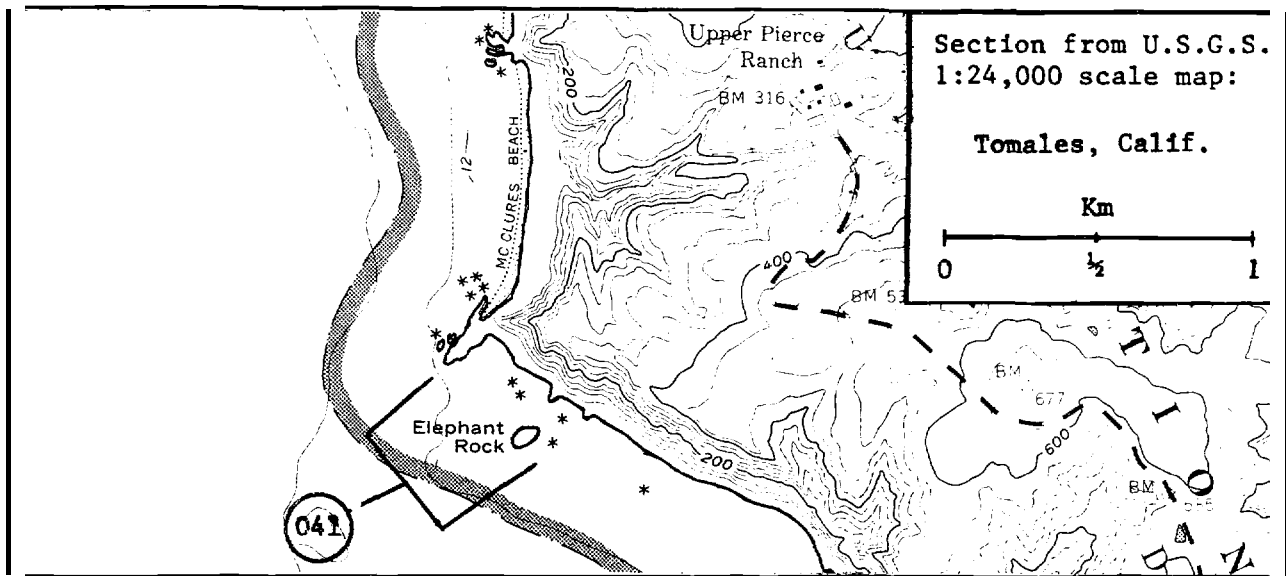
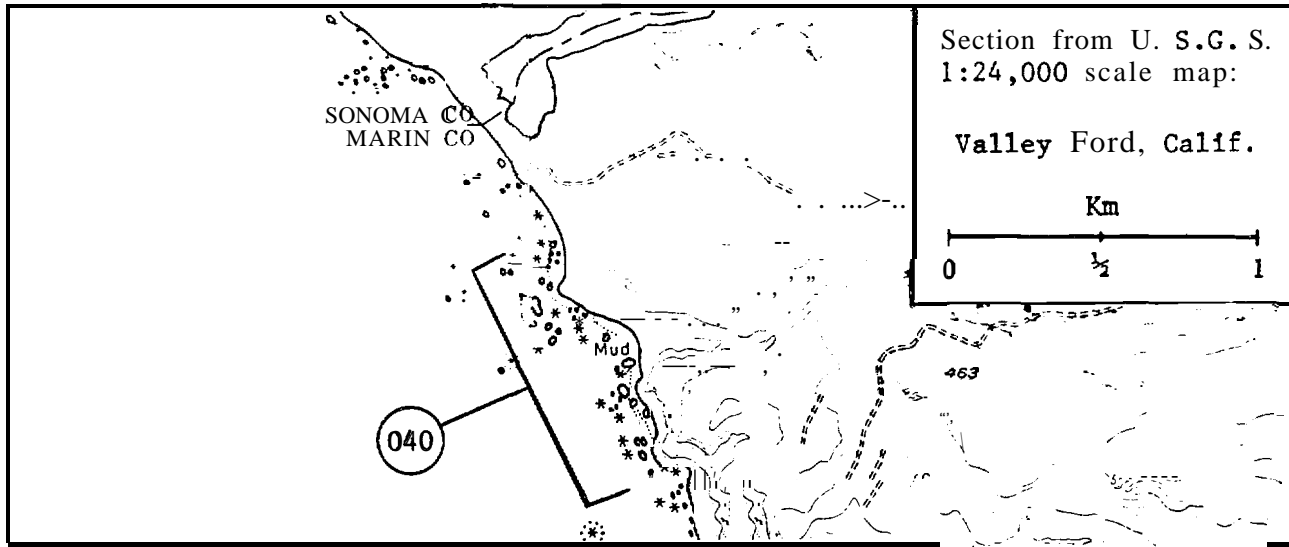
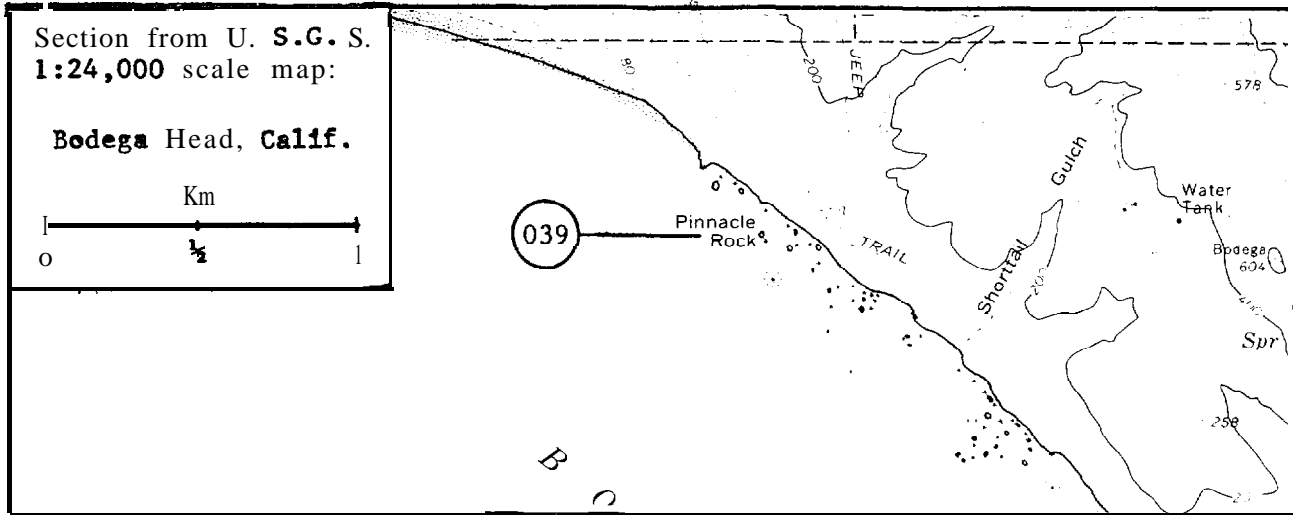
Pelagic Cormorant	4 (Lester & Rodstrom, 6/26/79, B, II)	42
Black Oystercatcher	2 (Lester & Rodstrom, 6/26/79, B, III)	42
Western Gull	2 (Lester & Rodstrom, 6/26/79, B, II)	42
Pigeon Guillemot	30 (Lester & Rodstrom, 6/26/79, B, III)	42
Total	<u>38</u>	

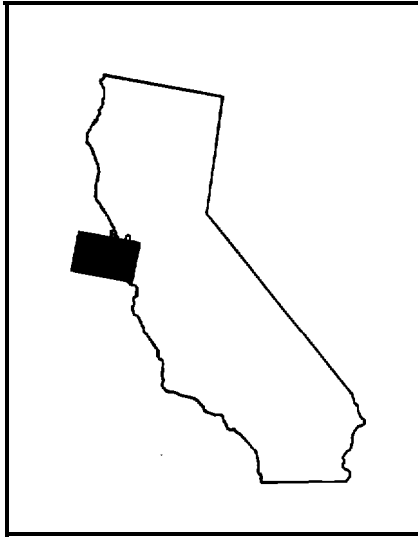
040 "Sonoma-Marin County Line" 38°17'20"N, 123°00'20"W

Brandt's Cormorant	12 (Lester & SOWls, 7/23/80, A, II)	42
Pelagic Cormorant	134 (Lester & Rodstrom, 6/26/79, B, II)	42
Black Oystercatcher	4 (Lester & Rodstrom, 6/26/79, B, III)	42
Western Gull	16 (Lester & Rodstrom, 6/26/79, B, III)	42
Pigeon Guillemot	40 (Lester & Rodstrom, 6/26/79, B, III)	42
Total	206	

041 "Elephant Rock Complex" 38°11'N, 122°58'W

Pelagic Cormorant	16 (Lester & Rodstrom, 7/1/79, B, III)	42
Pigeon Guillemot	12 (Lester & Rodstrom, 7/1/79, B, III)	42
Total	<u>28</u>	





429

## San Francisco

The map on the facing page is an index to the locations of colonies within map 545, San Francisco. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

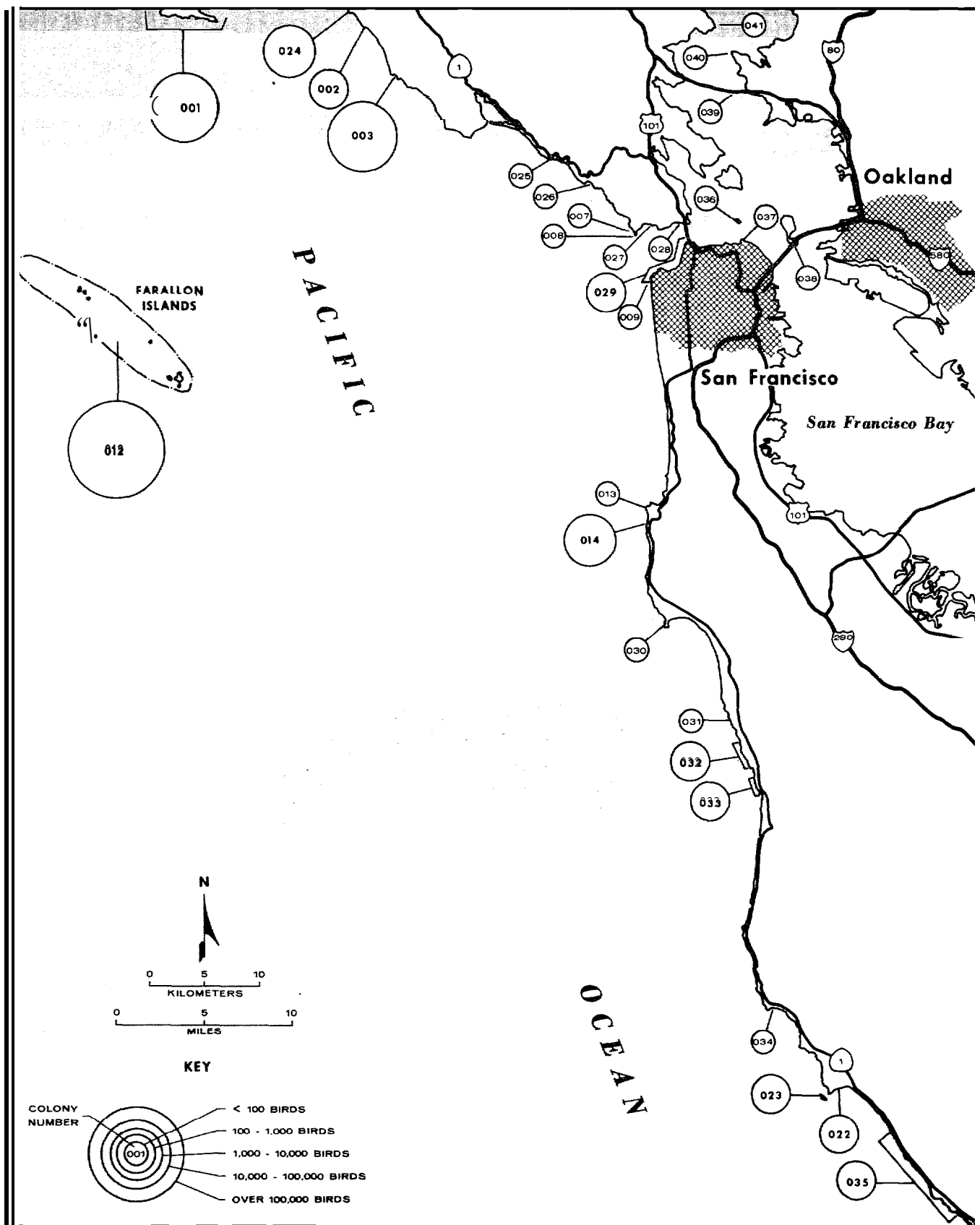
Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region. Most of these birds are at the Farallon Islands (429 012).

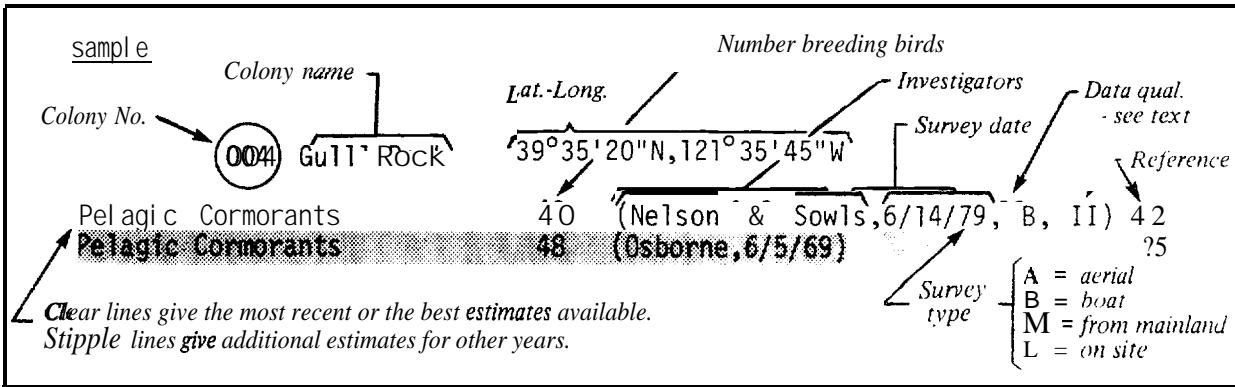
Leach's Storm-Petrel . . . . .	1,400
Ashy Storm-Petrel . . . . .	4,000
Brandt's Cormorant . . . . .	31,000
Double-crested Cormorant . . . . .	2,000*
Pelagic Cormorant . . . . .	4,000
Black Oystercatcher . . . . .	100
Western Gull . . . . .	34,000
Common Murre . . . . .	100,000
Pigeon Guillemot . . . . .	4,500
Marbled Murrelet . . . . .	. . X
Cassin's Auklet . . . . .	105,000
Rhinoceros Auklet . . . . .	100
Tufted Puffin . . . . .	100

*\*coastal population only.*

**X**= present

# 429 San Francisco

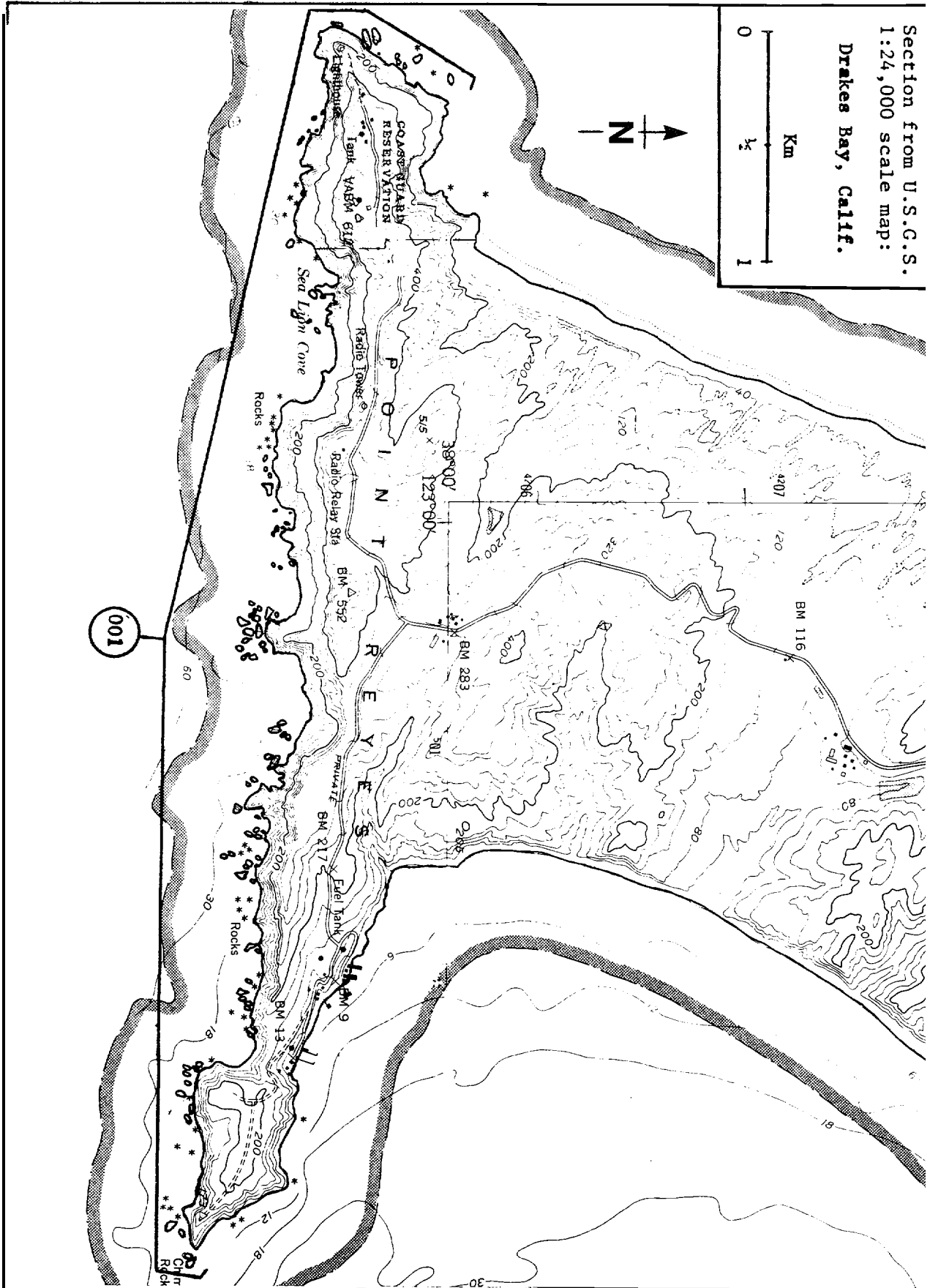




001 Point Reyes 37°59'26"N, 123°59'24"W

Brandt's Cormorant	2,400	(Lester & Rodstrom, 7/1/79, B, 7/11/79, AM, III)	42
Pelagic Cormorant	808	(Lester & Rodstrom, 7/1/79, B, 7/11/79, M, III)	42
Black Oystercatcher	10	(Lester & Rodstrom, 7/1/79, B, 7/11/79, M, III)	42
Western Gull	62	(Lester & Rodstrom, 7/1/79, B, 7/11/79, M, III)	42
Common Murre	16,500 <sup>Δ</sup>	(Lester & Rodstrom, 7/1/79, B, 7/11/79, AM, III)	42
Pigeon Guillemot	120	(Lester & Rodstrom, 7/1/79, B, 7/11/79, M, III)	42
Tufted Puffin	6	(LeValley, 1975-80, L)	32
Total	19,906		
Brandt's Cormorant	960	(Ainley & Whitt, 7/3/72, B)	3
Pelagic Cormorant	528	(Ainley & Whitt, 7/3/72, B)	3
Black Oystercatcher	6	(Ainley & Whitt, 7/3/72, B)	3
Western Gull	26	(Ainley & Whitt, 7/3/72, B)	3
Common Murre	7,640	(Ainley & Whitt, 7/3/72, B)	3
Pigeon Guillemot	48	(Ainley & Whitt, 7/3/72, B)	3

<sup>Δ</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 22,000.



002 Millers Point Rocks 37°58'53"N, 122°48'35"W

Brandt's Cormorant	194	(Nelson & Sows, 6/24/80, A, III)	42
Pelagic Cormorant	60	(Lester & Rodstrom, 7/2/79, B, II)	42
Western Gull	34	(Lester & Rodstrom, 7/2/79, B, III)	42
Pigeon Guillemot	10	(Lester & Rodstrom, 7/2/79, B, III)	42
Total	298		
Brandt's Cormorant	120	(Lester & Rodstrom, 7/2/79, B, 7/11/79, A, III)	42
Brandt's Cormorant	30	(Osborne, 1970, M)	36
Pelagic Cormorant	10	(Osborne, 1970, M)	36

003 Double Point Rocks 37°56'51"N, 122°47'08"W

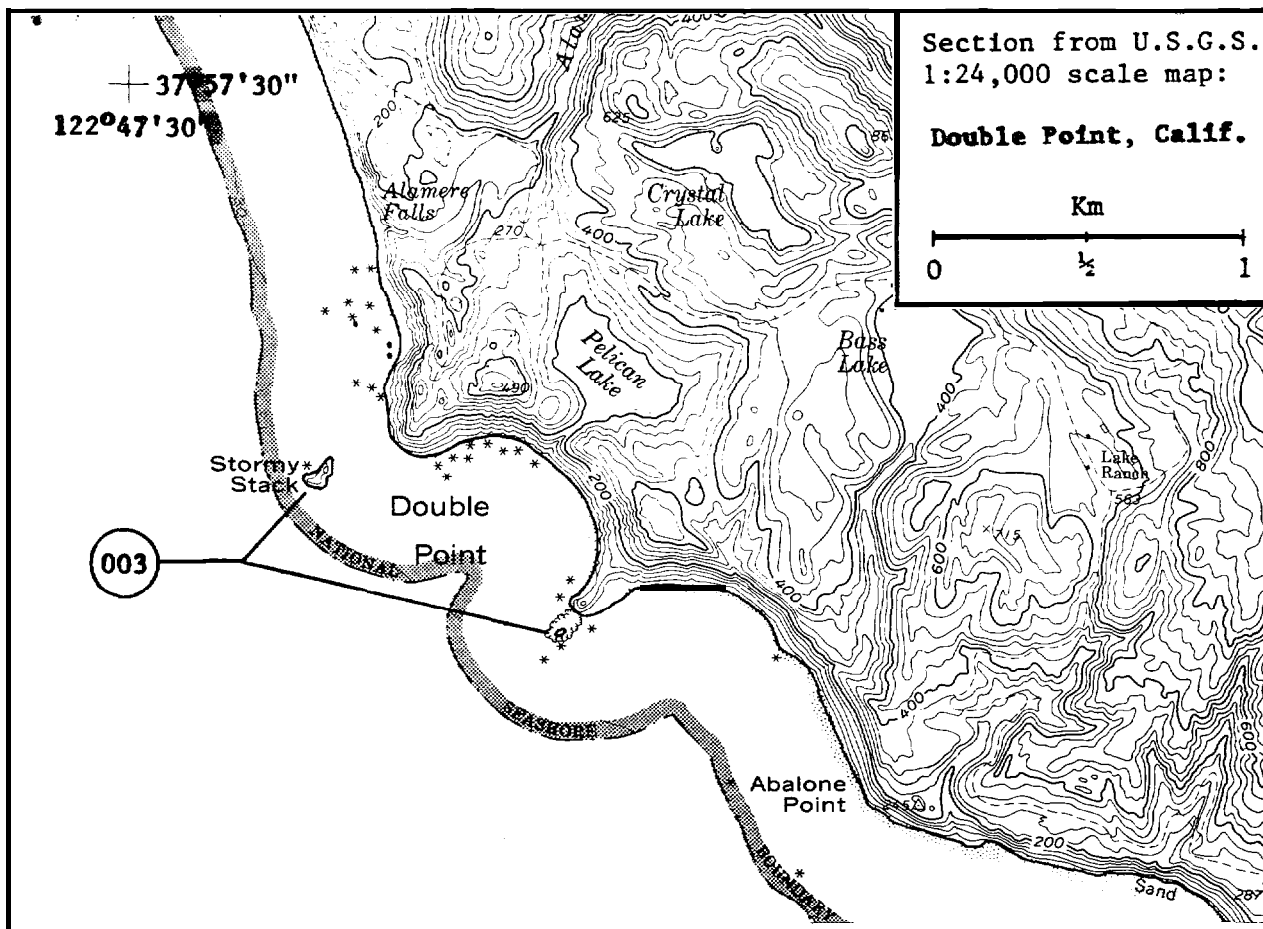
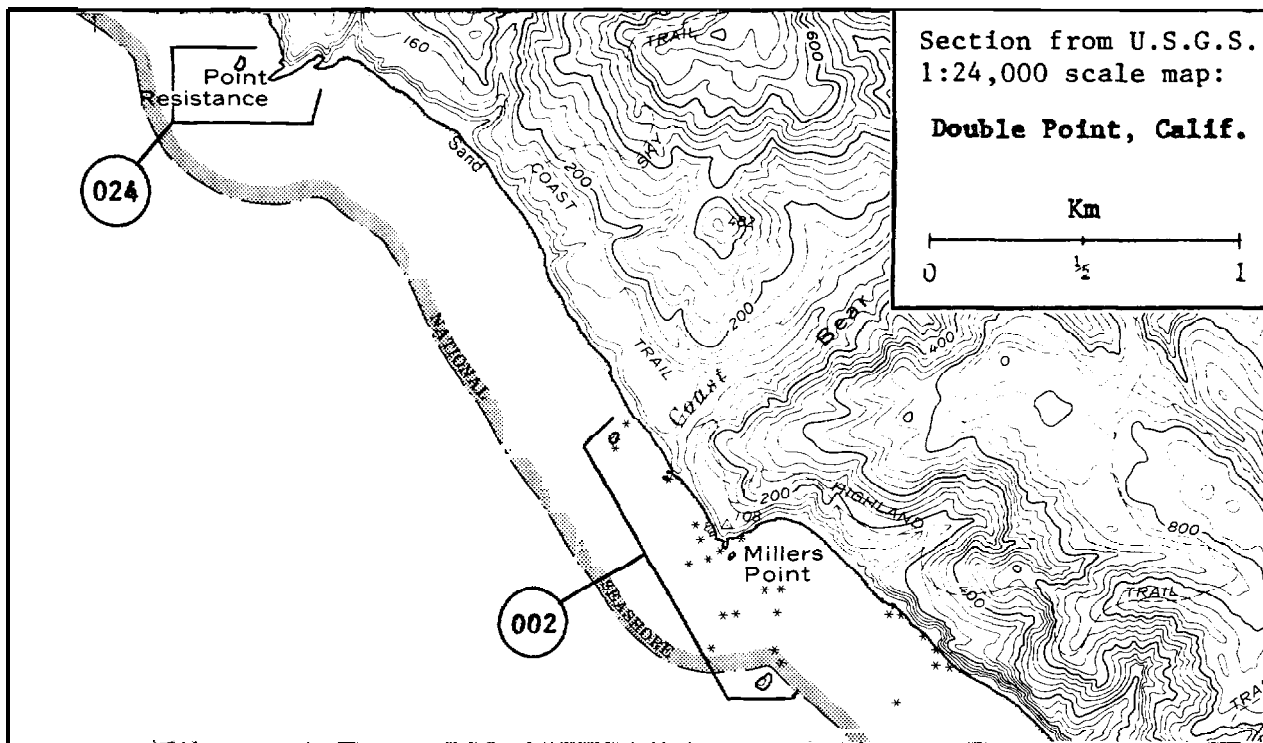
Brandt's Cormorant	258	(Lester & Rodstrom, 7/2/79, B, 7/11/79, A, III)	42
Pelagic Cormorant	16	(Lester & Rodstrom, 7/2/79, B, II)	42
Black Oystercatcher	2	(Osborne, 1970, M)	36
Western Gull	24	(Lester & Rodstrom, 7/2/79, B, III)	42
Common Murre	13,000 <sup>1</sup>	(Nelson & Sows, 6/24/80, A, III)	42
Pigeon Guillemot	40	(Lester & Rodstrom, 7/2/79, B, III)	42
Total	13,340		
Brandt's Cormorant	340	(Osborne, 1970, M)	36
Western Gull	100	(Osborne, 1970, M)	36
Common Murre	1,400	(Osborne, 1970, M)	36

<sup>1</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/1/80 aerial survey (also times 1.67) is 13,900.

004 Bolinas Lagoon was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

005 San Pablo Creek was previously assigned a catalog number because of California Clapper Rail nesting. We have not included information on this species in this report. See Gould (1973).

006 Corte Madera Marsh was previously assigned a catalog number because of California Clapper Rail nesting. We have not included information on this species in this report. See Gould (1973).



007 Bird Island 37°49'27"N, 122°32'09"W

Brandt's Cormorant	0	(Lester & Rodstrom, 7/3/79, B, I)	42
Western Gull	2	(Lester & Rodstrom, 7/3/79, B, II)	42
Pigeon Guillemot	4	(Lester & Rodstrom, 7/3/79, B, III)	42
Total	<u>6</u>		
Brandt's Cormorant	75	(Osborne, 8/19/69, M)	36
Pigeon Guillemot	2	(Osborne, 8/19/69, M)	36

008 Point Bonita 37°48'55"N, 122°31'40"W

Pelagic Cormorant	60	(Lester & Rodstrom, 7/3/79, B, II)	42
Western Gull	4	(Lester & Rodstrom, 7/3/79, B, II)	42
Pigeon Guillemot	X	(Lester & Rodstrom, 7/3/79, B)	42
Total	<u>64</u>		
Pelagic Cormorant	50	(Reynolds, 8/19/69, M)	36

X = present

009 Seal Rocks 37°46'42"N, 122°30'53"W

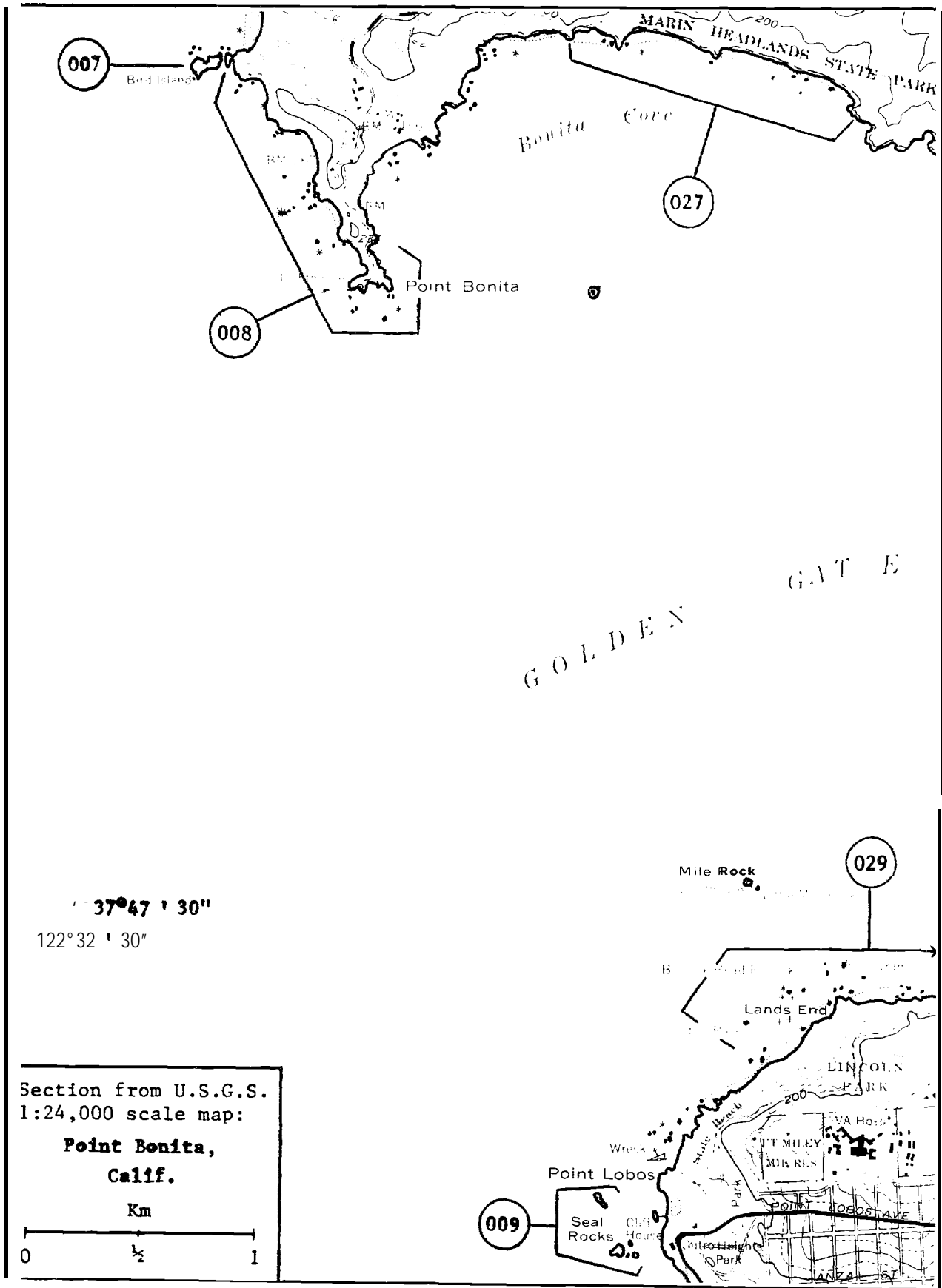
The Seal Rocks colony is an excellent location to see seabirds, particularly Brown Pelicans, even though there are few nesting birds here. California Sea lions can also be observed, See appendix B.

Brandt's Cormorant	0	(Nelson & Sows, 6/24/80, A, I)	42
Black Oystercatcher	2	(Nelson & Nelson, 5/25/79, M, 7/1/79, B, II)	42
Western Gull	44	(Nelson & Nelson, 5/25/79, M, 7/1/79, B, III)	42
Pigeon Guillemot	6	(Nelson & Nelson, 5/25/79, M, 7/1/79, B, III)	42
Total	<u>52</u>		
Brandt's Cormorant	76	(Nelson & Nelson, 5/25/79, M, 7/1/79, B, III)	42
Western Gull	24	(Reynolds, 7/21/70, M)	36

010 Alameda Naval Air Station 37°47'12"N, 122°19'49"W

No map is provided for this site in San Francisco Bay. For the most current information contact the California Department of Fish and Game. Least Terns are an endangered species. Populations of Least Terns are surveyed annually.

Least Tern	80	( , 1979, L)	12
Least Tern	160	(Erickson, 1978, L)	12
Least Tern	90	(Atwood et al., 5/6/77, L)	12



011 Oakland International Airport 37°43'21"N, 122°13'46"

No map is provided for this site in San Francisco Bay. For the most current information contact the California Department of Fish and Game. Least Terns are an endangered species. Populations of Least Terns are surveyed annually.

Least Tern	0 (Erickson, 1978, L)	12
Least Tern	14 (Atwood, 1977, L)	12

012 Farallon Islands 37°41'53"N, 123°00'05"W

The Farallon Islands constitute the most important area for nesting seabirds on the California coast. Together they contain the largest breeding populations of Ashy Storm-Petrels, Brandt's Cormorants, and Western Gulls in the world and a large percentage of many other California breeding seabirds (Figure 4). The importance of these islands to marine birds and mammals cannot be overemphasized.

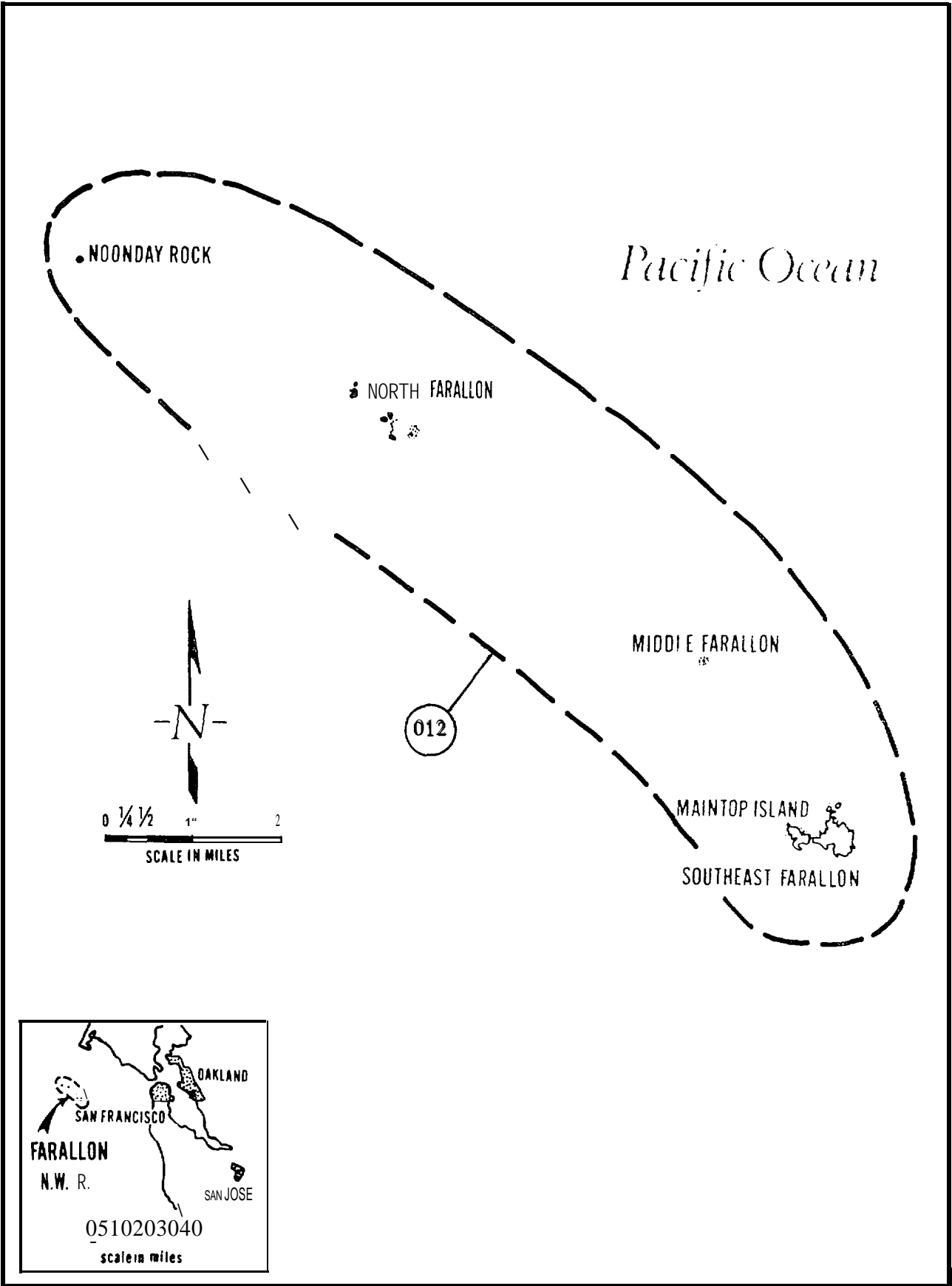
Uncontrolled exploitation in the past of marine mammals and seabirds on the Farallon Islands led to drastic population declines. Russian and American sealers exterminated the Farallon populations of elephant seals (*Mirounga angustirostris*), fur seals (*Arctocephalus philippi*), and sea otters (*Enhydra lutris*). Seabird eggs were collected commercially during the gold rush and were sold as food. Well over 14 million murre eggs alone were taken over a 45-year period and murre numbers declined from about 400,000 in 1860 to less than 5,000 in 1924 (Ainley and Lewis, 1974). For a thorough review of this history read Ainley and Lewis, 1974.

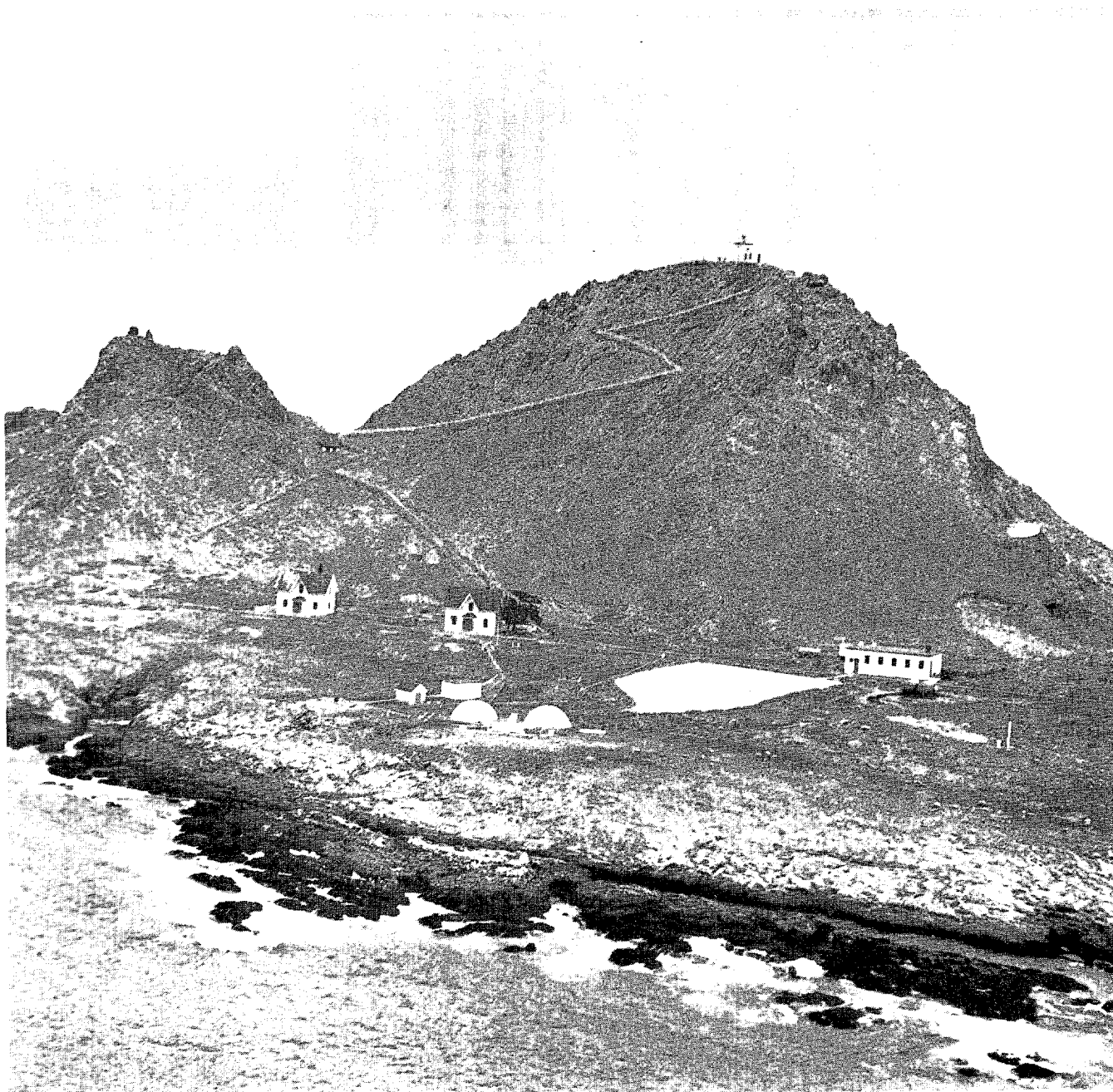
Today the Farallon Islands are protected as a National Wildlife Refuge and all waters within one mile of the islands make up a state refuge. Most marine mammal and seabird populations are increasing dramatically in numbers and eventual full recovery seems possible. Longterm scientific research on marine mammals and seabirds is being conducted by Point Reyes Bird Observatory (PRBO). Only through such studies can we hope to understand and protect these magnificent resources.

Leach's Storm-Petrel	1,400 (Ainley & Lewis, 1972)	2
Ashy Storm-Petrel	4,000 (Ainley & Lewis, 1972)	2
Brandt's Cormorant	28,000 (PRBO Staff, 1979)	1
Double-crested Cormorant	180 (PRBO Staff, 1979)	1
Pelagic Cormorant	2,000 (Ainley & Lewis, 1972)	2
Black Oystercatcher	40 (Ainley & Lewis, 1972)	2
Western Gull	32,000 (PRBO Staff, 1979)	1
Common Murre	60,000 <sup>1</sup> (PRBO Staff, 1979)	1
Pigeon Guillemot	3,000 (PRBO Staff, 1979)	1
Cassin's Auklet	105,000 (Manuwal, 1971)	33
Rhinoceros Auklet	100 (PRBO Staff, 1979)	2
Tufted Puffin	100 (PRBO Staff, 1979)	2
Total	236,320	

For a thorough review of historical data see Ainley and Lewis, 1974.

<sup>1</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al's estimate for 7/2/80 aerial survey (also times 1.67) is 138,500. PRBO estimates do not include North Farallon.





Southeast Farallon Island

U. S. F.W.S. photo



Southeast Farallon Island

Photo by Bill Parsons

013 San Pedro Rock 37°35'43"N, 122°31'20"W

Brandt's Cormorant	0	(Nelson, SOWls & Stuart, 6/9/79, BL, I)	42
Pelagic Cormorant	8	(Nelson, SOWls & Stuart, 6/9/79, BL, I)	42
Black Oystercatcher	2	(Nelson, SOWls & Stuart, 6/9/79, BL, II)	42
Western Gull	8	(Nelson, SOWls & Stuart, 6/9/79, BL, I)	42
Pigeon Guillemot	40	(Nelson, SOWls & Stuart, 6/9/79, BL, III)	42
Total	<u>58</u>		
Cormorant (unid.)	50	(Reynolds, 7/21/70, A)	36

014 Devil's Slide Rock 37°34'28"N, 122°31'39"W

Brandt's Cormorant	22	(Nelson, SOWls & Stuart, 6/9/79, B, 6/30/79, M, II)	42
Pelagic Cormorant	180	(Nelson, SOWls & Stuart, 6/9/79, B, 6/30/79, M, III)	42
Black Oystercatcher	4	(Nelson, SOWls & Stuart, 6/9/79, B, 6/30/79, M, II)	42
Western Gull	2	(Nelson, SOWls & Stuart, 6/9/79, B, 6/30/79, M, II)	42
Common Murre	2,300 <sup>Δ</sup>	(Nelson & SOWls, 6/30/79, M, 7/6/79, A, III)	42
Pigeon Guillemot	120	(Nelson, SOWls & Stuart, 6/9/79, B, 6/30/79, M, III)	42
Total	<u>2,628</u>		
Common Murre	700	(Reynolds, 7/21/70, M)	36
Pigeon Guillemot	2	(Reynolds, 7/21/70, M)	36

<sup>Δ</sup> Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/1/80 aerial survey (also times 1.67) is 2,900<sup>Δ</sup>

015 Alameda Creek 37°36'59"N, 122°07'20"W

No map is provided for this site in San Francisco Bay.

Forster's Tern	200	(Sibley, 5/28/48)	43
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016 Bair Island 37°31'43"N, 122°13'05"W

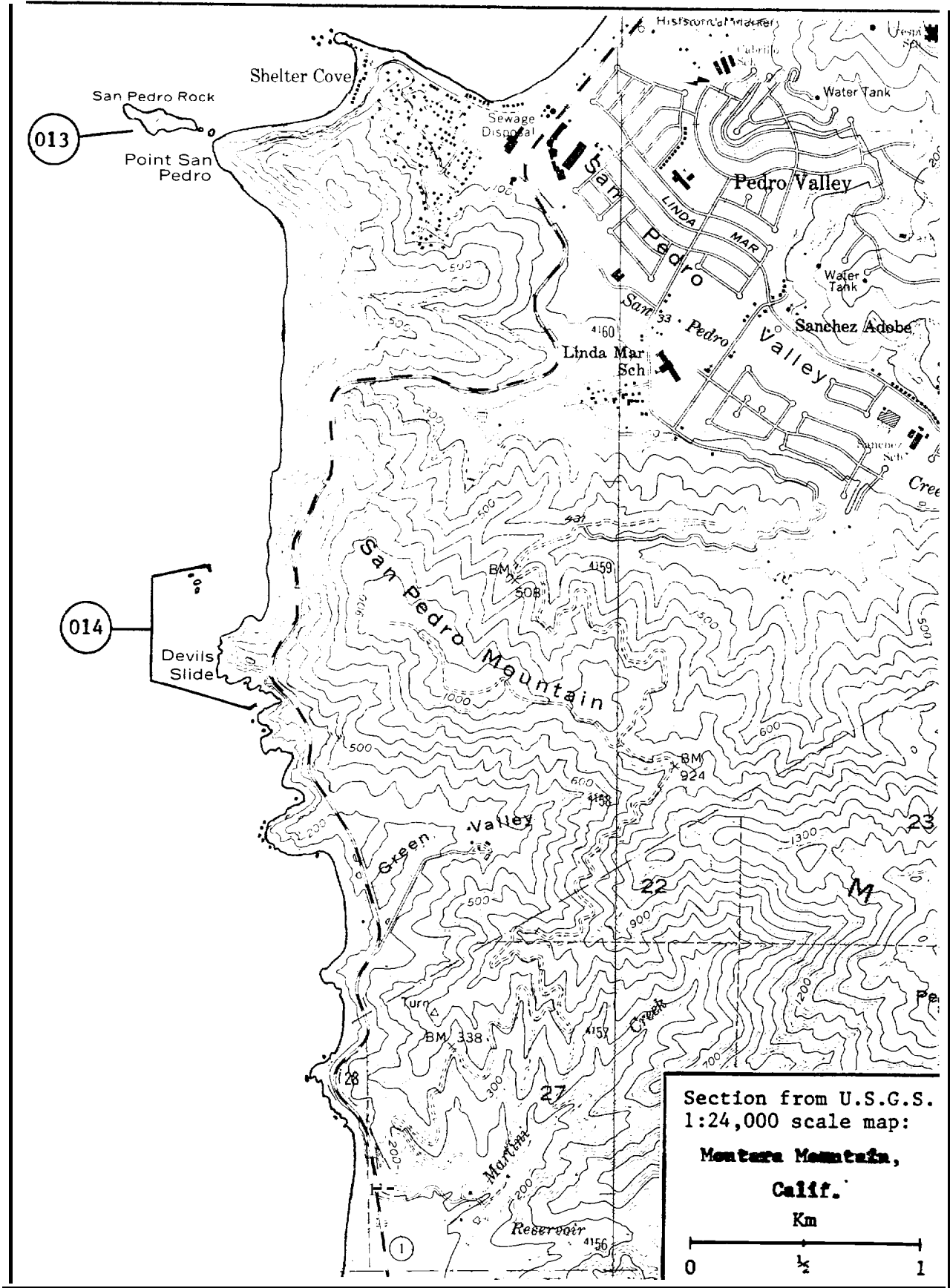
No map is provided for this site in San Francisco Bay. For the most current information contact the California Department of Fish and Game. Least Terns are an endangered species. Populations of Least Terns are surveyed annually.

Least Tern	8	(Erickson, 1979, L)	12
Least Tern	2	(Atwood et al., 5-6/77)	12

017 Coyote Hills 37°32'48"N, 122°07'28"W

No map is provided for this site in San Francisco Bay. For the most current information contact the California Department of Fish and Game. Least Terns are unendangered species. Populations of Least Terns are surveyed annually.

Forster's Tern	614	(Gill, 4-8/71)	43
Least Tern	80	(Gill, 4-8/71)	43
Total	<u>694</u>		



**AREA 429, San Francisco (cent'd.)**

018 Greco Island was previously assigned a catalog number because of California Clapper Rail and Snowy Plover nesting. We have not included data on these species in this report. See Gill (1972) and Page Stenzel (1979).

019 Coyote Creek 37°28'41"N, 122°02'51"W

No map is provided for this site in San Francisco Bay. For further information see Gill (1972).

Caspian Tern 400 (Gill, 4-8/71) **43**

020 Guadalupe Slough 37°28'12"N, 122°04'52"W

No map is provided for this site in San Francisco Bay. For further information see Gill (1972).

Forster's Tern 1,256 (Gill, 4-8/71) **43**

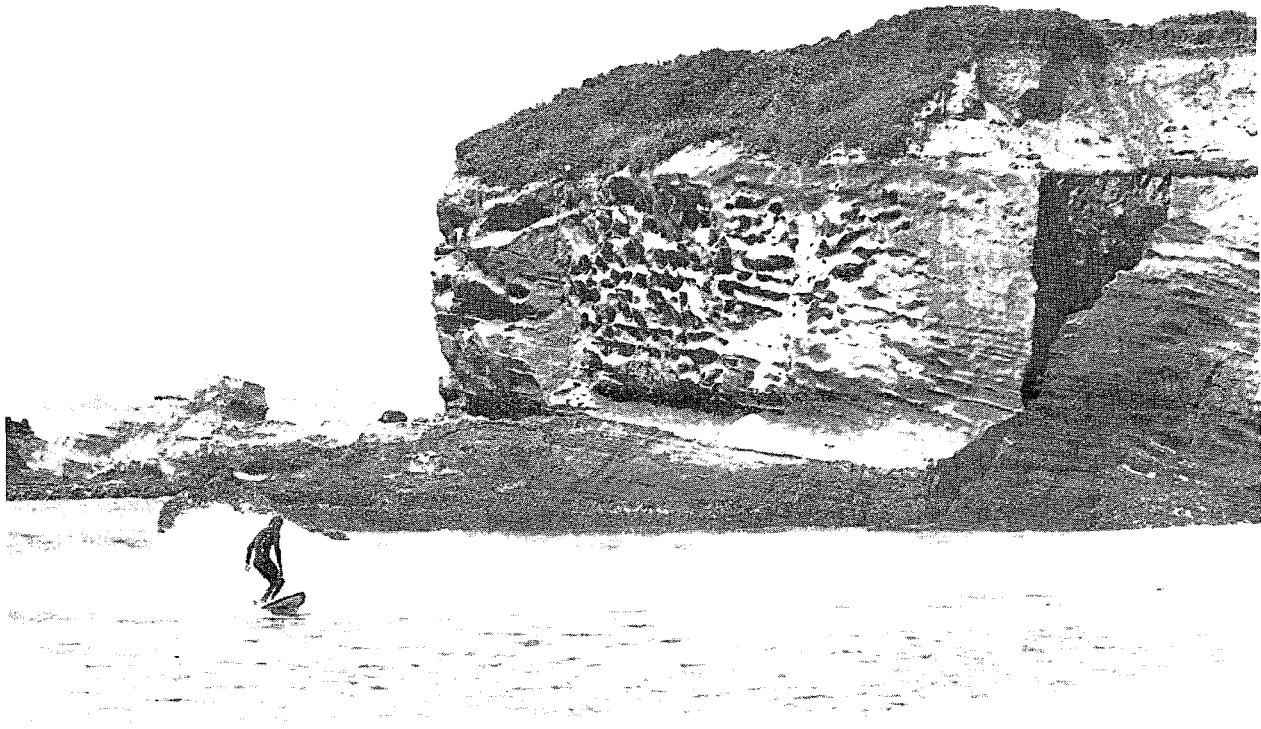
021 Pescadero Creek was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

022 Punta del Año Nuevo 37°07'07"N, 122°20'09"W

Pelagic Cormorant	210	(Lester & Nelson, 6/13/80, B, II)	42
Pigeon Guillemot	70	(Lester & Nelson, 6/13/80, B, III)	42
Total	<u>280</u>		
Pelagic Cormorant	200	(Nelson & Lester, 7/5/79, B, II)	42

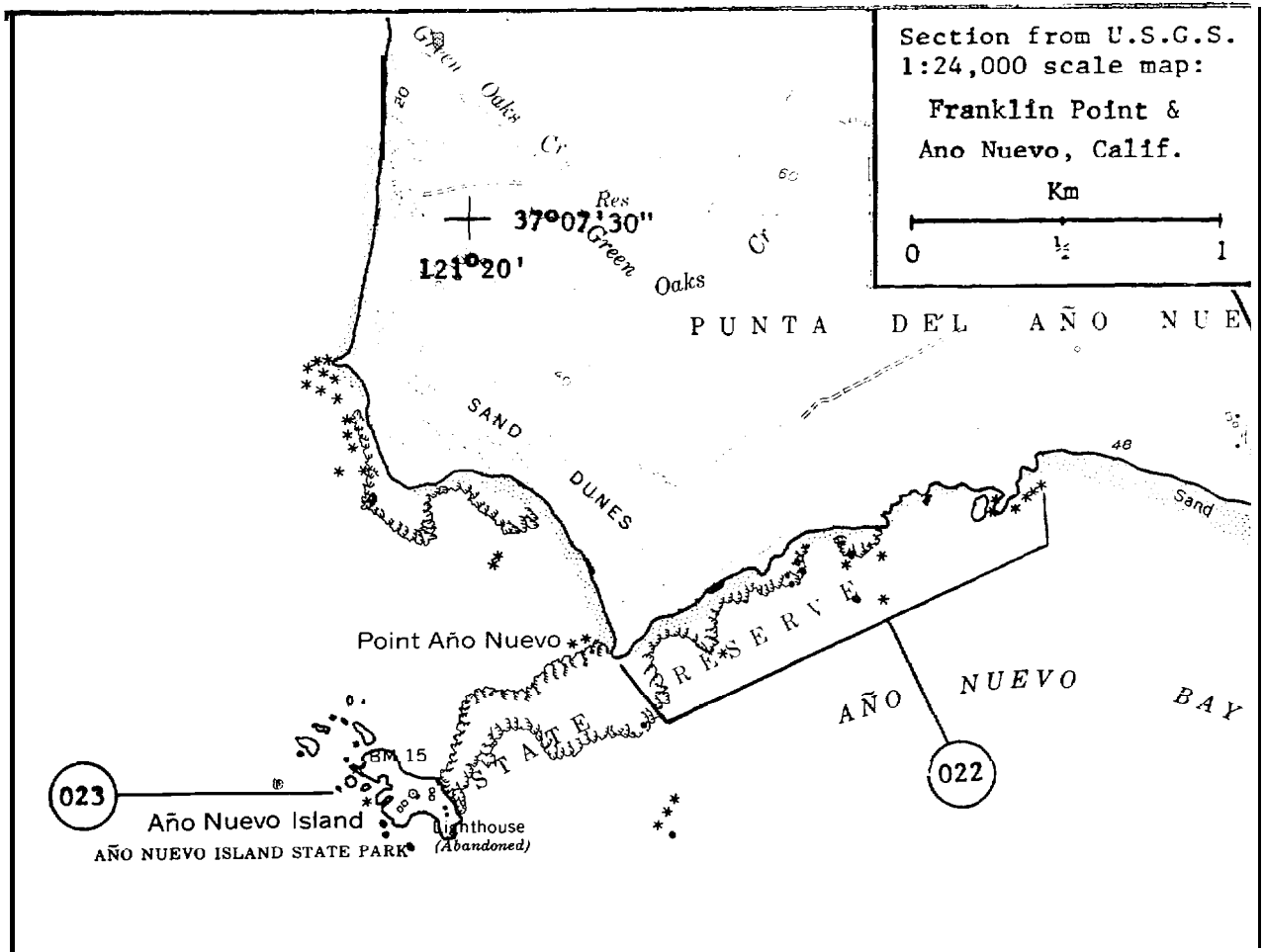
023 Año Nuevo Island 37°06'30"N, 122°20'09"W

Pelagic Cormorant	10	(Briggs, 1976, L)	<b>43</b>
Black Oystercatcher	24	(Briggs, 1976, L)	<b>43</b>
Western Gull	240	(Briggs, 1976, L)	<b>43</b>
Pigeon Guillemot	64	(Briggs, 1976, L)	<b>43</b>
Total	338		



Pelagic Cormorants, Punta del Año Nuevo

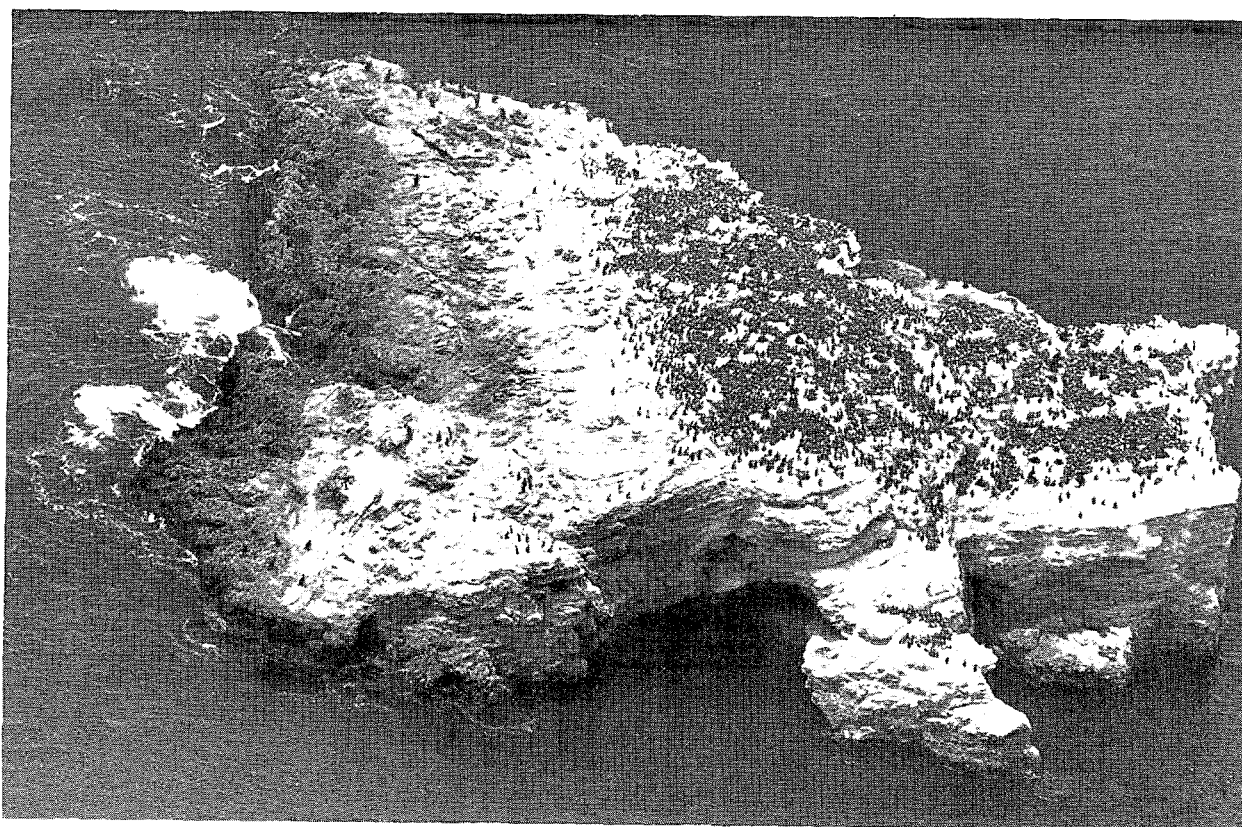
Photo by Art Sowls



024 Point Resistance 37°59'55"N, 122°49'40"W

Brandt's Cormorant	150	(Rodstrom, 7/11/79, A, III)	42
Pelagic Cormorant	104	(Lester & Rodstrom, 7/2/79, B, II)	42
Black Oystercatcher	2	(Lester & Rodstrom, 7/2/79, B, III)	42
Western Gull	20	(Lester & Rodstrom, 7/2/79, B, III)	42
Common Murre	7,500	∧ (Nelson & Sows, 6/24/80, A, III)	42
Pigeon Guillemot	60	(Lester & Rodstrom, 7/2/79, B, III)	42
Total	<u>7,836</u>		
Common Murre	400	(Osborne, 1970, M)	36

∧ Estimate is number of birds present times 1.67, see page 20. Briggs et al.'s estimate for 7/1/80 aerial survey (also times 1.67) is 6,800.

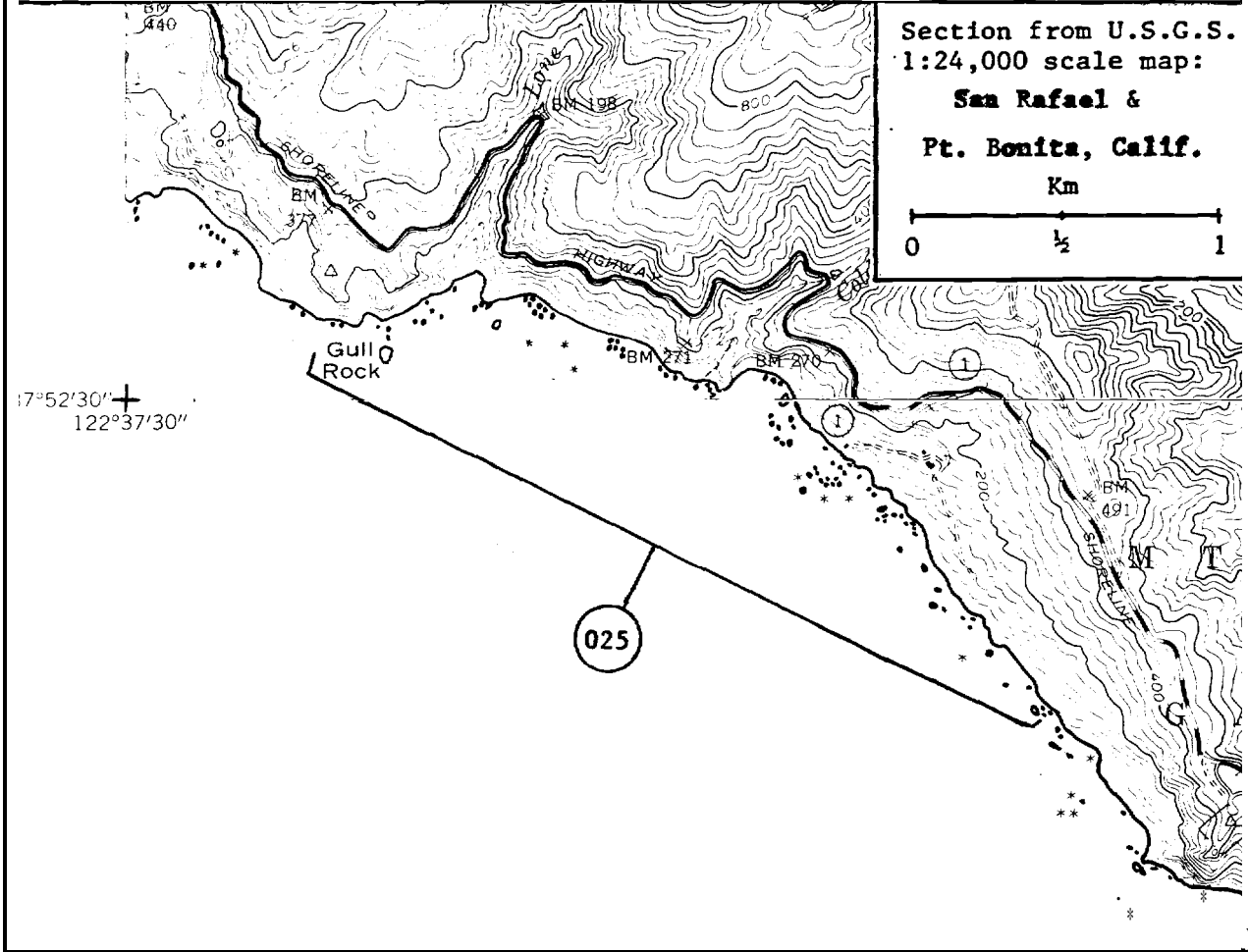
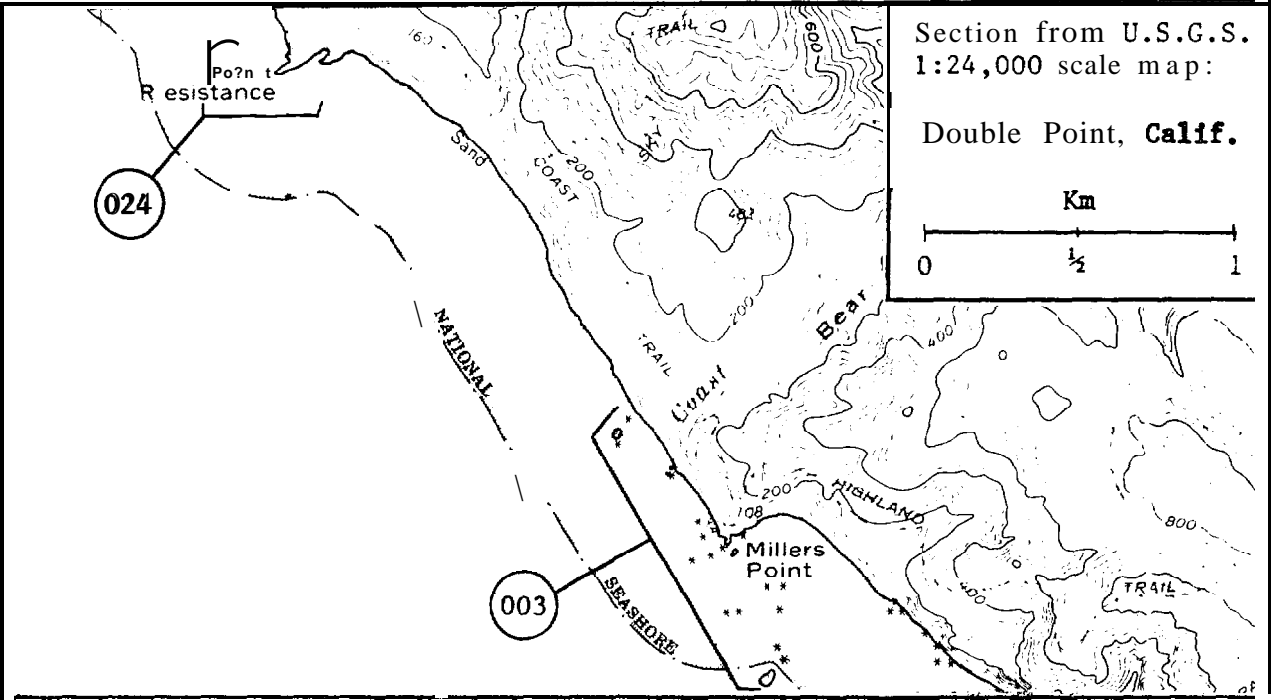


Point Resistance Rock

Photo by Jay Nelson

025 Gull Rock Area 37°52'35"N, 122°37'W

Pelagic Cormorant	28	(Lester & Rodstrom, 7/3/79, B, II)	42
Black Oystercatcher	2	(Lester & Rodstrom, 7/3/79, B, III)	42
Western Gull	4	(Lester & Rodstrom, 7/3/79, B, III)	42
Pigeon Guillemot	<u>2</u>	(Lester & Rodstrom, 7/3/79, B, III)	42
Total	<u>36</u>		



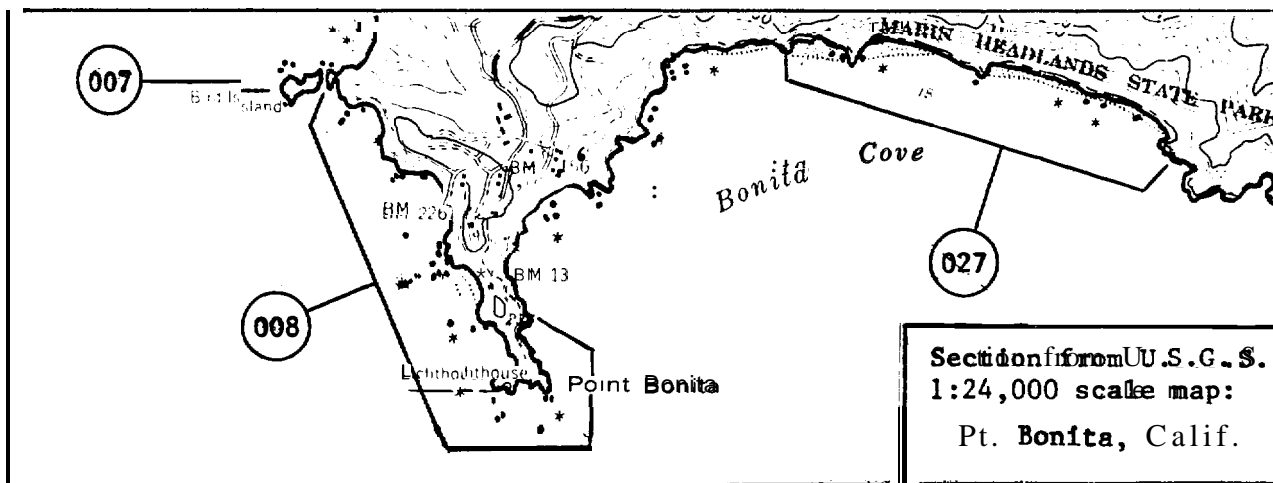
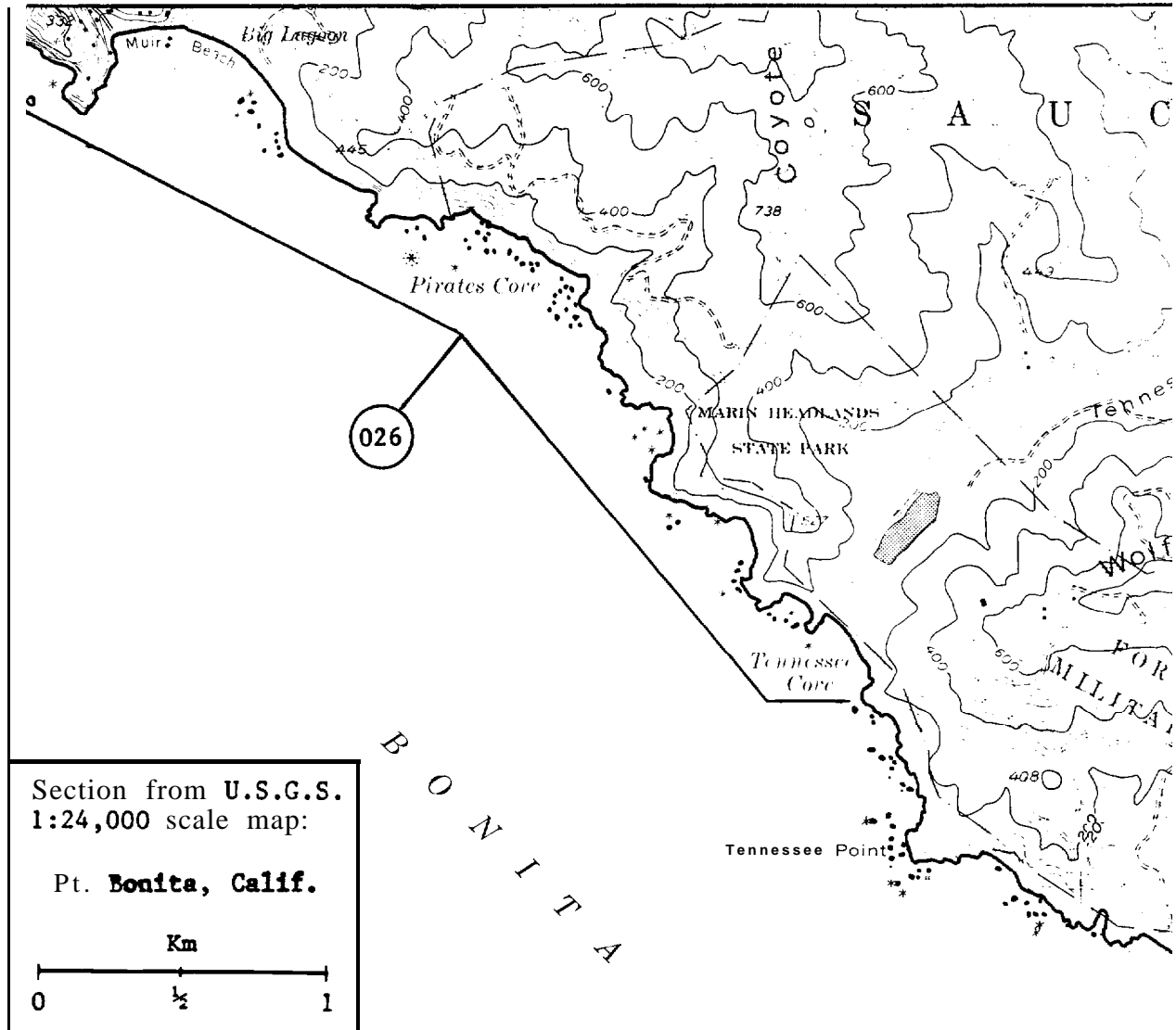
026 Muir Beach Headlands to Tennessee Cove 37°51'00"N, 122°33'45"W

Pelagic Cormorant	34 (Lester & Rodstrom, 7/3/79, B, II)	42
Black Oystercatcher	2 (Lester & Rodstrom, 7/3/79, B, II)	42
Pigeon Guillemot	X (Lester & Rodstrom, 7/3/79, B, II)	42
Total	<u>36</u>	

027 Bonita Cove 37°49'30"N, 122°31'W

Pelagic Cormorant	20 (Lester & Rodstrom, 7/3/79, B, II)	42
Western Gull	2 (Lester & Rodstrom, 7/3/79, B, I)	42
Pigeon Guillemot	X (Lester & Rodstrom, 7/3/79, B)	42
Total	<u>22</u>	

X = present



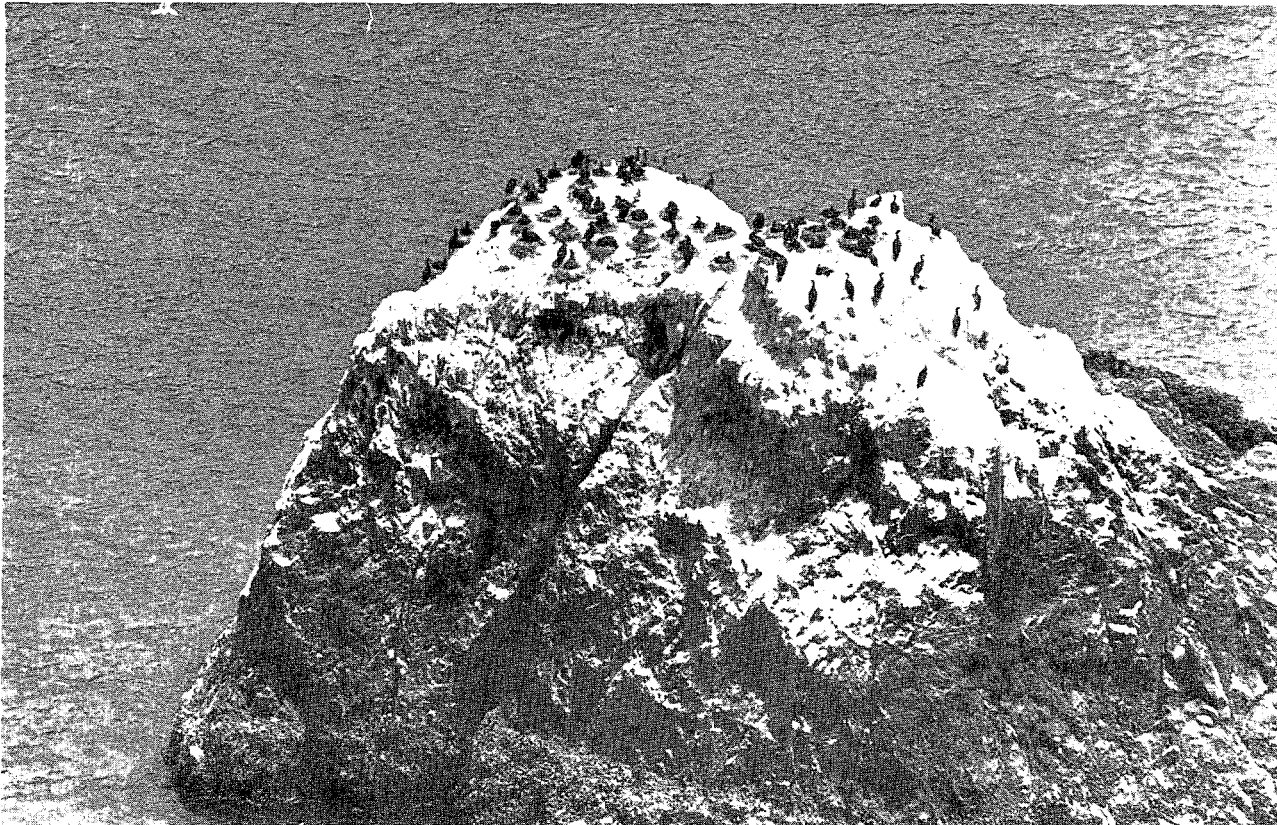
028 Point Diablo Bluffs and Needles 37°49'30"N, 122°29'W

Pelagic Cormorant	64 (Lester & Rodstrom, 7/3/79, B, II)	42
Western Gull	16 (Lester & Rodstrom, 7/3/79, B, II)	42
Pigeon Guillemot	X (Lester & Rodstrom, 7/3/79, B)	42
Total	<u>80</u>	

X = present

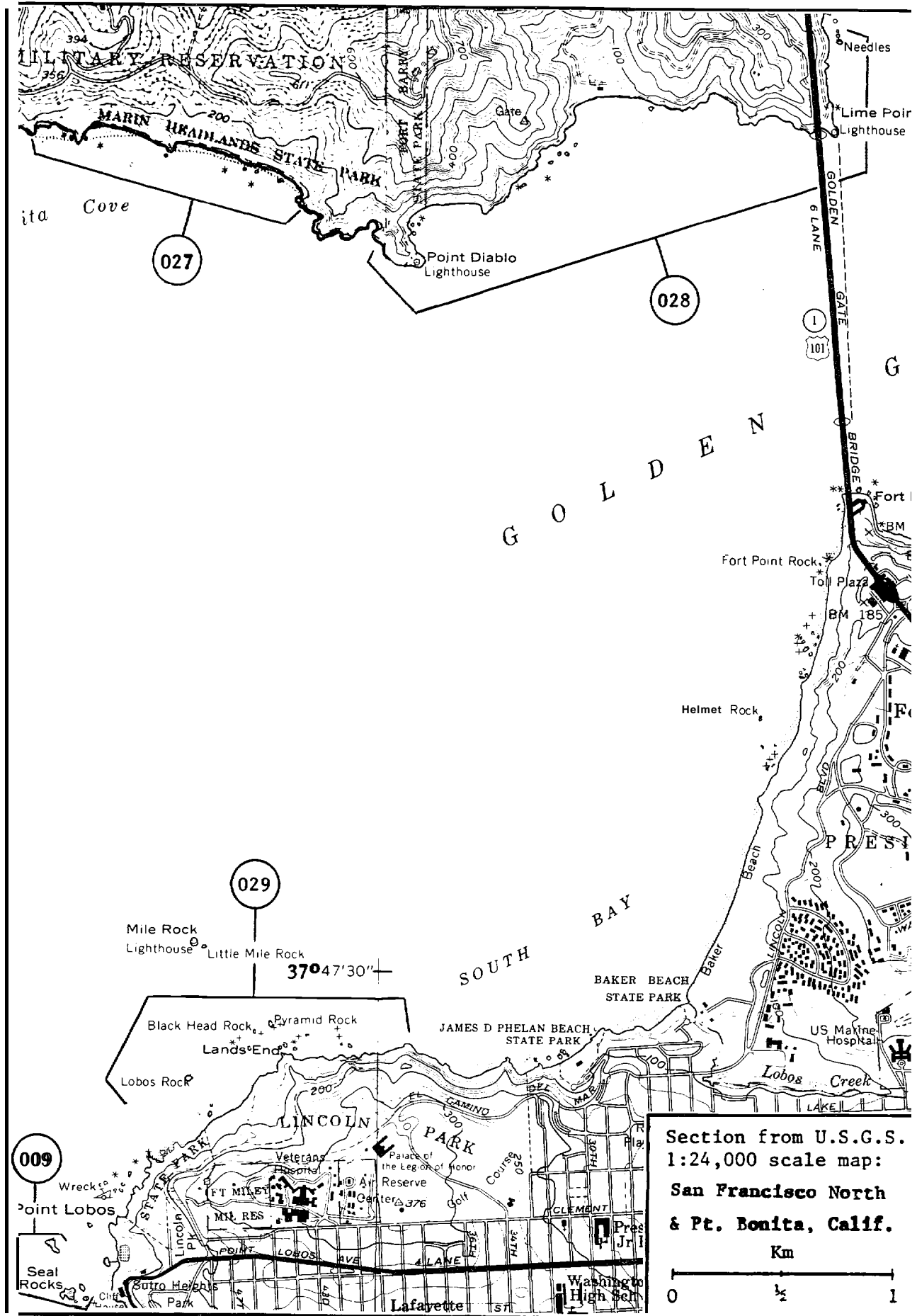
029 Lobos Rock and Lands End 37°47'15"N, 122°30'20"W

Brandt's Cormorant	80 (Nelson & Sows, 6/24/80, A, II)	42
Western Gull	12 (Nelson & Nelson, 7/1/79, B, III)	42
Pigeon Guillemot	68 (Nelson & Nelson, 7/1/79, B, III)	42
Total	<u>160</u>	42
Brandt's Cormorant	0 (Nelson & Nelson, 7/1/79, B, I)	42



Lobos Rock

Photo by Jay Nelson

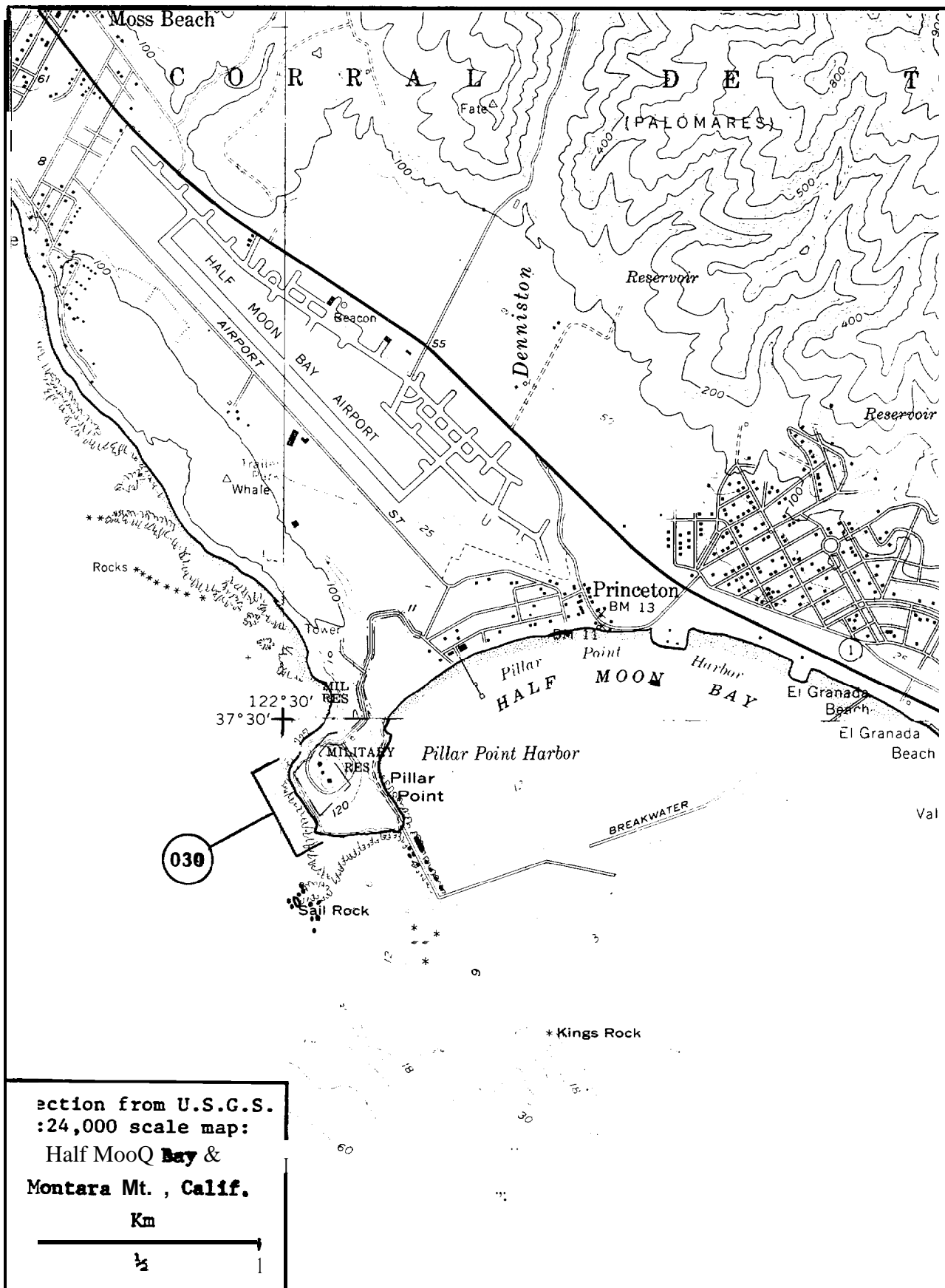


Section from U.S.G.S. 1:24,000 scale map: San Francisco North & Pt. Bonita, Calif.

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AREA 429, San Francisco (cent'd.)

(030)	Pillar Point	37°23'N, 122°29'55"W	
Pelagic Cormorant	16	(Nelson, Sows & Stuart, 6/9/79, B, II)	42
Pigeon Guillemot	6	(Nelson, Sows & Stuart, 6/9/79, B, III)	42
Total	<u>22</u>		
Pelagic Cormorant	0	(Reynolds, 1970)	36



031 Eel Rock Cliffs 37°24'15"N, 122°25'30"W

Pelagic Cormorant	12	(Lester & Nelson,6/13/80,B,I)	42
Pigeon Guillemot	P	(Nelson, Sows & Stuart,6/9/79,B)	42
Total	12		
Pelagic Cormorant	14	(Nelson, Sows & Stuart,6/9/79,B,II)	42

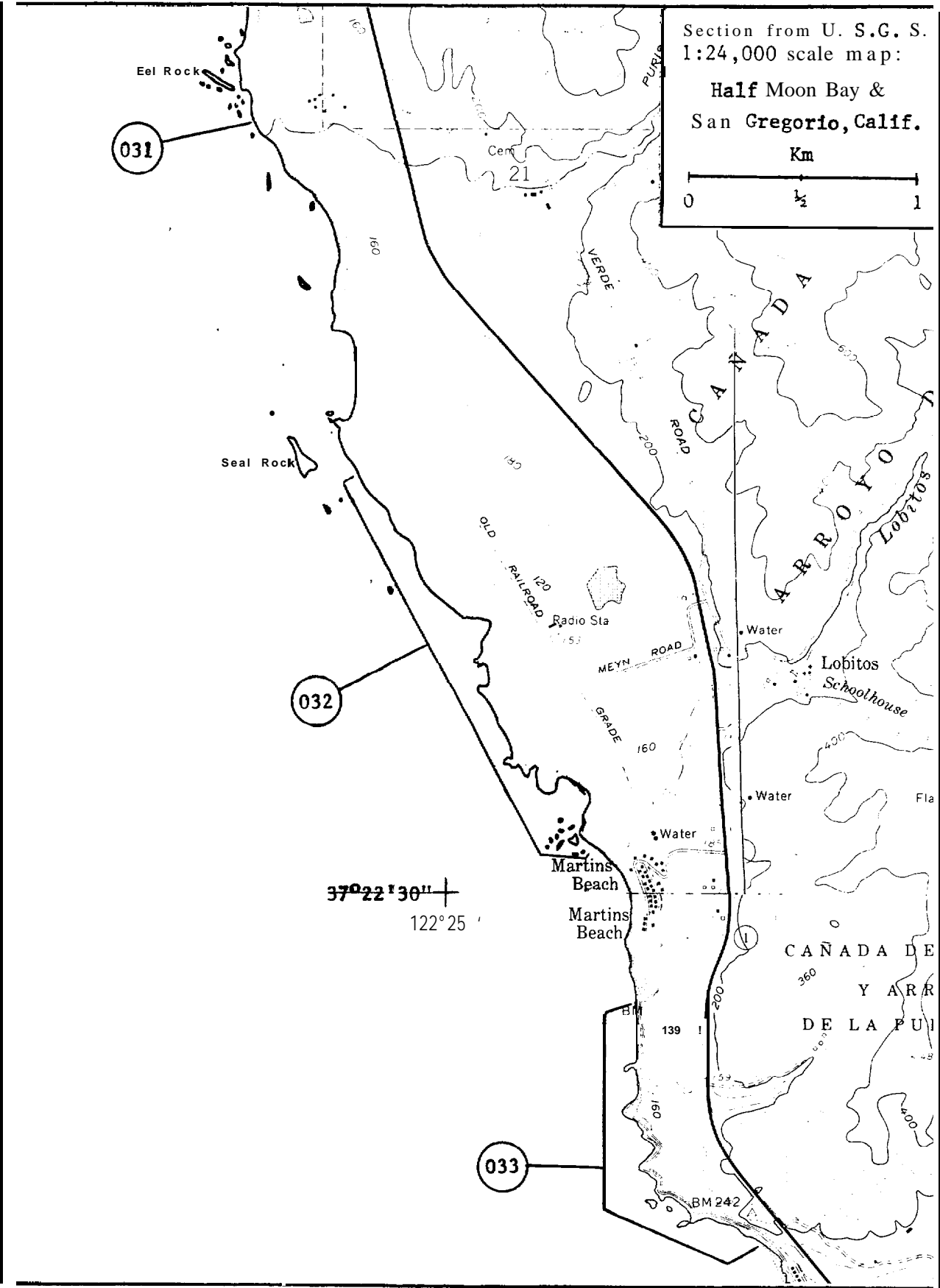
032 Seal Rock Cliffs 37°23'N, 122°25'W

Brandt's Cormorant	50	(Lester & Nelson,6/13/80,B,II)	42
Pelagic Cormorant	108	(Lester & Nelson,6/13/80,B,II)	42
Black Oystercatcher	4	(Lester & Nelson,6/13/80,B,III)	42
Pigeon Guillemot	10	(Lester & Nelson,6/13/80,B,II)	42
Total	172		
Pelagic Cormorant	168	(Nelson, Sows & Stuart,6/9/79,B,II)	42
Black Oystercatcher	P	(Nelson, Sows & Stuart,6/9/79,B)	42
Pigeon Guillemot	10	(Nelson, Sows & Stuart,6/9/79,B,III)	42

P = probably present

033 Martins Beach 37°22'N, 122°24'30"W

Brandt's Cormorant	40	(Lester & Nelson,6/13/80,B,II)	42
Pelagic Cormorant	100	(Lester & Nelson,6/13/80,B,II)	42
Black Oystercatcher	2	(Lester & Nelson,6/13/80,B,III)	42
Pigeon Guillemot	120	(Lester & Nelson,6/13/80,B,III)	42
Total	262		
Pelagic Cormorant	152	(Nelson & Lester,7/5/79,B,II)	42
Black Oystercatcher	2	(Nelson & Lester,7/5/79,B,III)	42



034 Pigeon Point 37 °10' 55"N, 122 °23'20"W

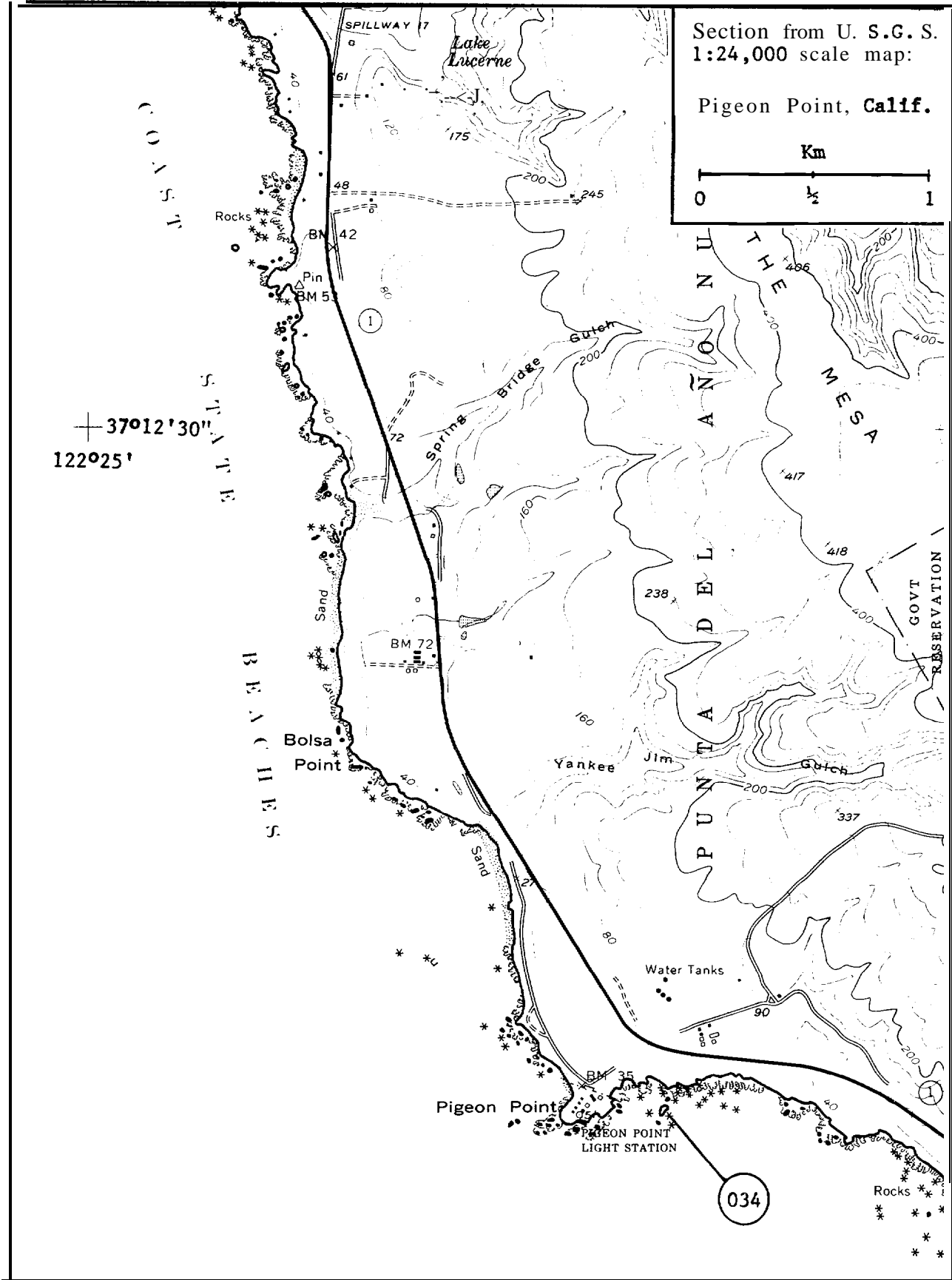
Black Oystercatcher	2 (Lester & Nelson, 7/5/79, BM, I)	42
Pigeon Guillemot	6 (Lester & Nelson, 7/5/79, BM, III)	42
Total	<u>8</u>	

035 Greyhound Rock 37°04'40"N, 122°16'W to  
Davenport 37°00'30"N 122°11'30"W

No map is provided for this site as it extends along a lengthy stretch of coastline.

Brandt's Cormorant	236 $\Delta$ (Nelson, 7/14/80, M, II)	42
Pelagic Cormorant	50 (Lester & Nelson, 7/5/79, B, II)	<b>42</b>
Black Oystercatcher	6 (Lester & Nelson, 7/5/79, B, IV)	42
Pigeon Guillemot	400 (Lester & Nelson, 7/5/79, B, III)	42
Total	682	

$\Delta$  all on pier at Davenport.



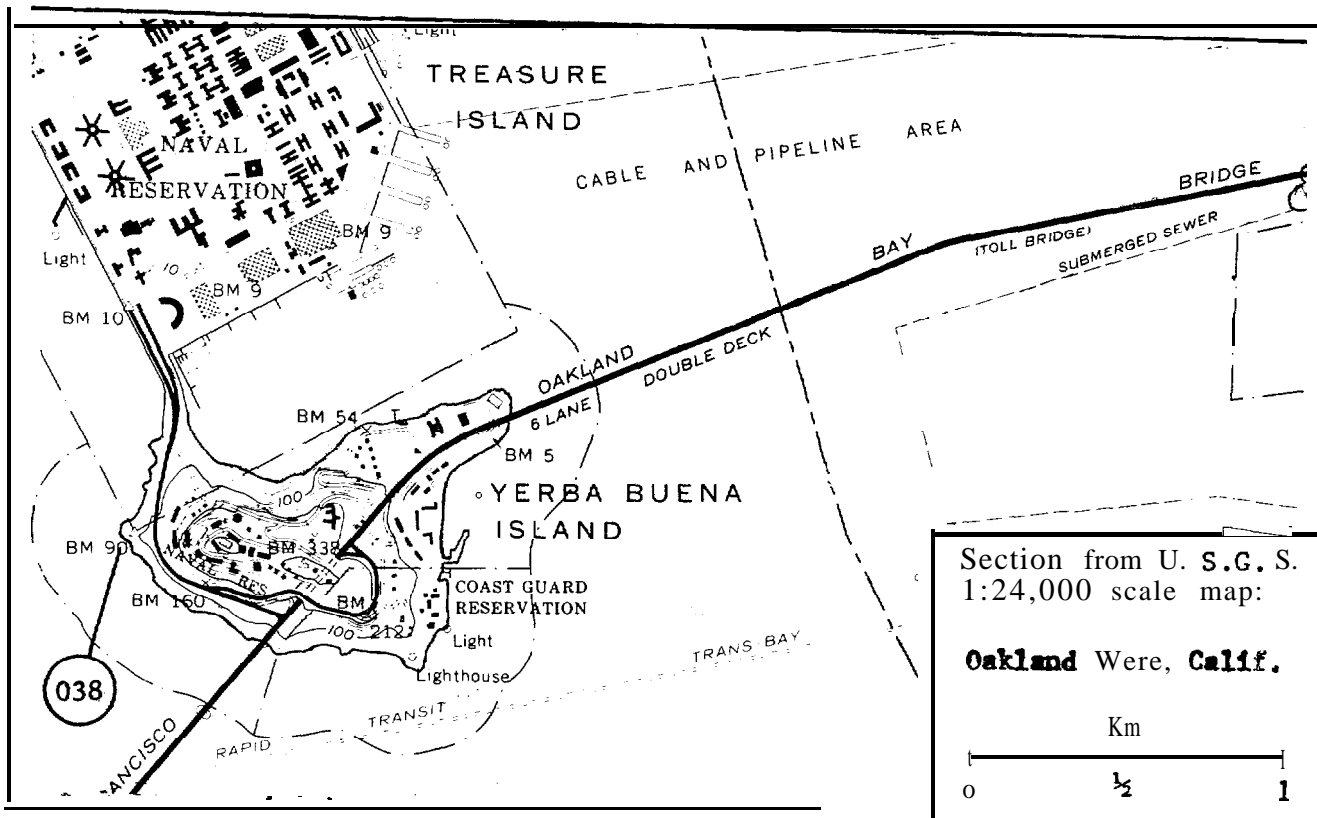
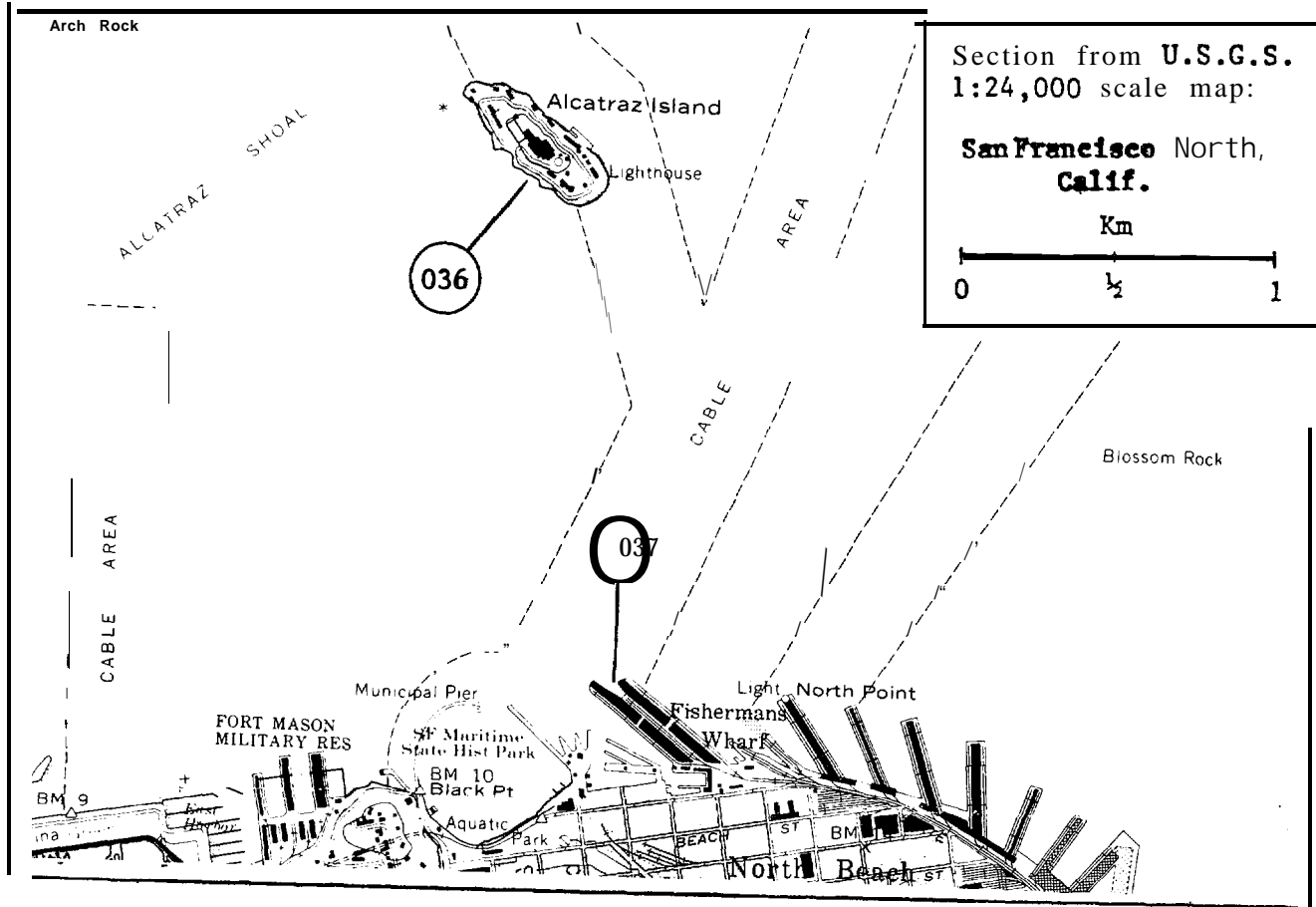
AREA 429, San Francisco (cent'd.)

<p>036</p> <p>Western Gull</p> <p>Heermann's Gull</p>	<p>Alcatraz Island 37°49'34''N, 122°25'20''W</p> <p>X (Abbores, 1980)</p> <p>2 (Binford, 1980)</p>	<p>15</p> <p>8</p>
---	--	--------------------

<p>037</p> <p>Western Gull</p>	<p>Pier 45 37°48'34''N, 122°25''W</p> <p>X (Danielson, 1973)</p>	<p>15</p>
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<p>038</p> <p>Western Gull</p> <p><del>Western Gull</del></p>	<p>Yerba Buena Island 37°48'34''N, 122°22'15''W</p> <p>80 (Cogswell, 7/28/74)</p> <p><del>X (Cogswell, 1967)</del></p>	<p>15</p> <p>15</p>
---	--	---------------------

X = present



039 Red Rock 37°55'45"N, 122°25'50"W

Western Gull 92+ (Cogswell, 5/20/70, L) 15  
Western Gull X (Cogswell, 1960, 1969, 1971, 1976, 1978) 15

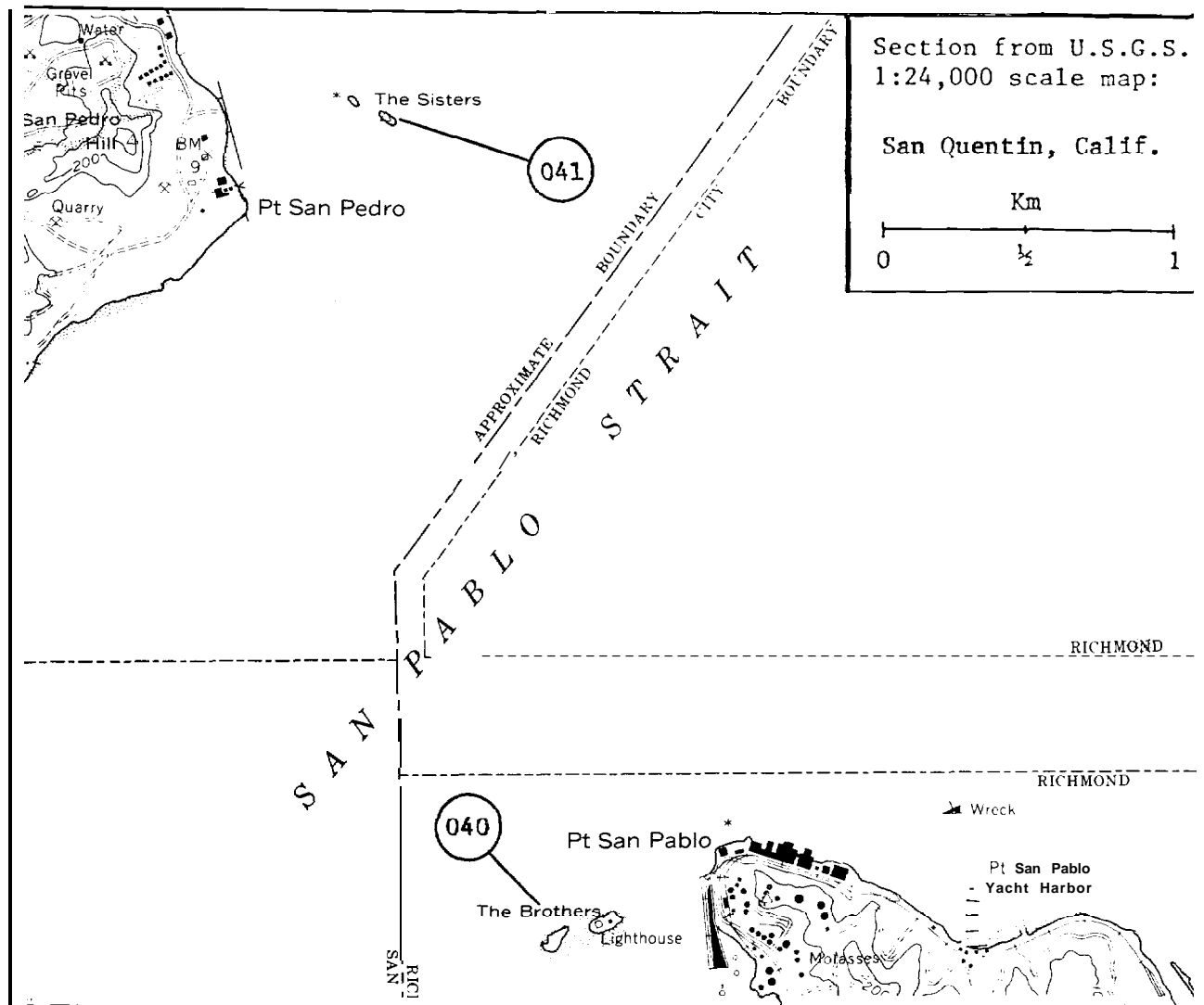
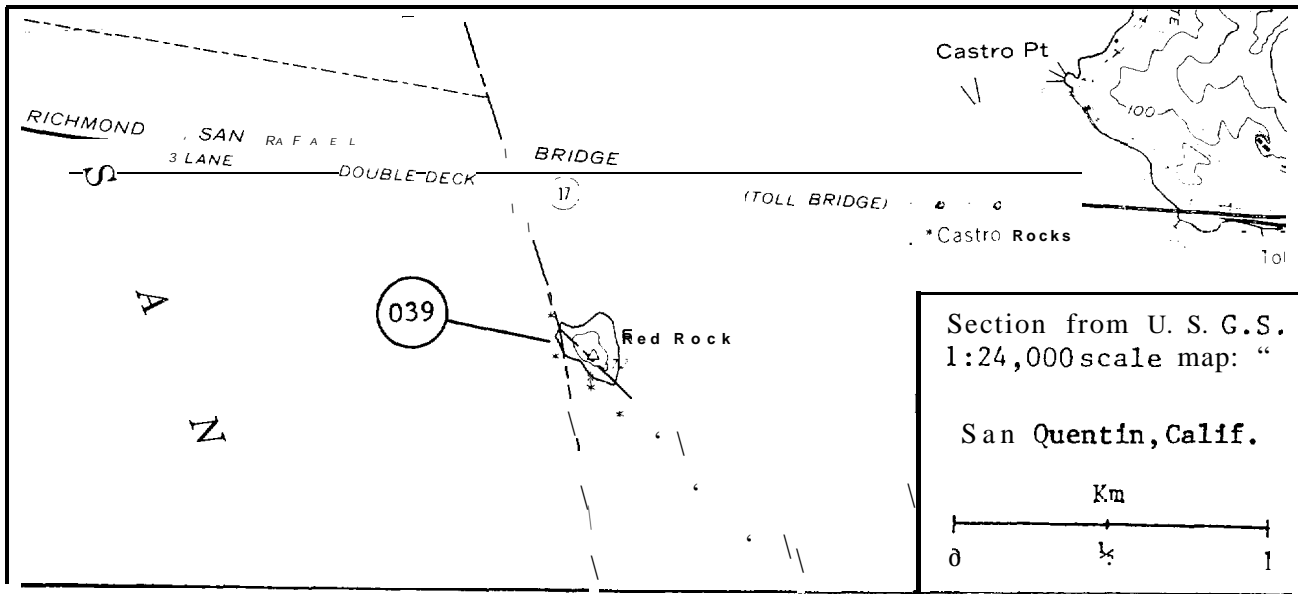
040 The Brothers 37°57'47"N, 122°26'W

Western Gull 80 (Cogswell, 6/22/67, M) 15  
Western Gull X (Cogswell, 1968-71, 1973, 1975-76) 15

X present

041 The Sisters 37°59'22" N, 122°26'25"

Western Gull 40+ (Cogswell, 6/13/75) 15





454

**Monterey**

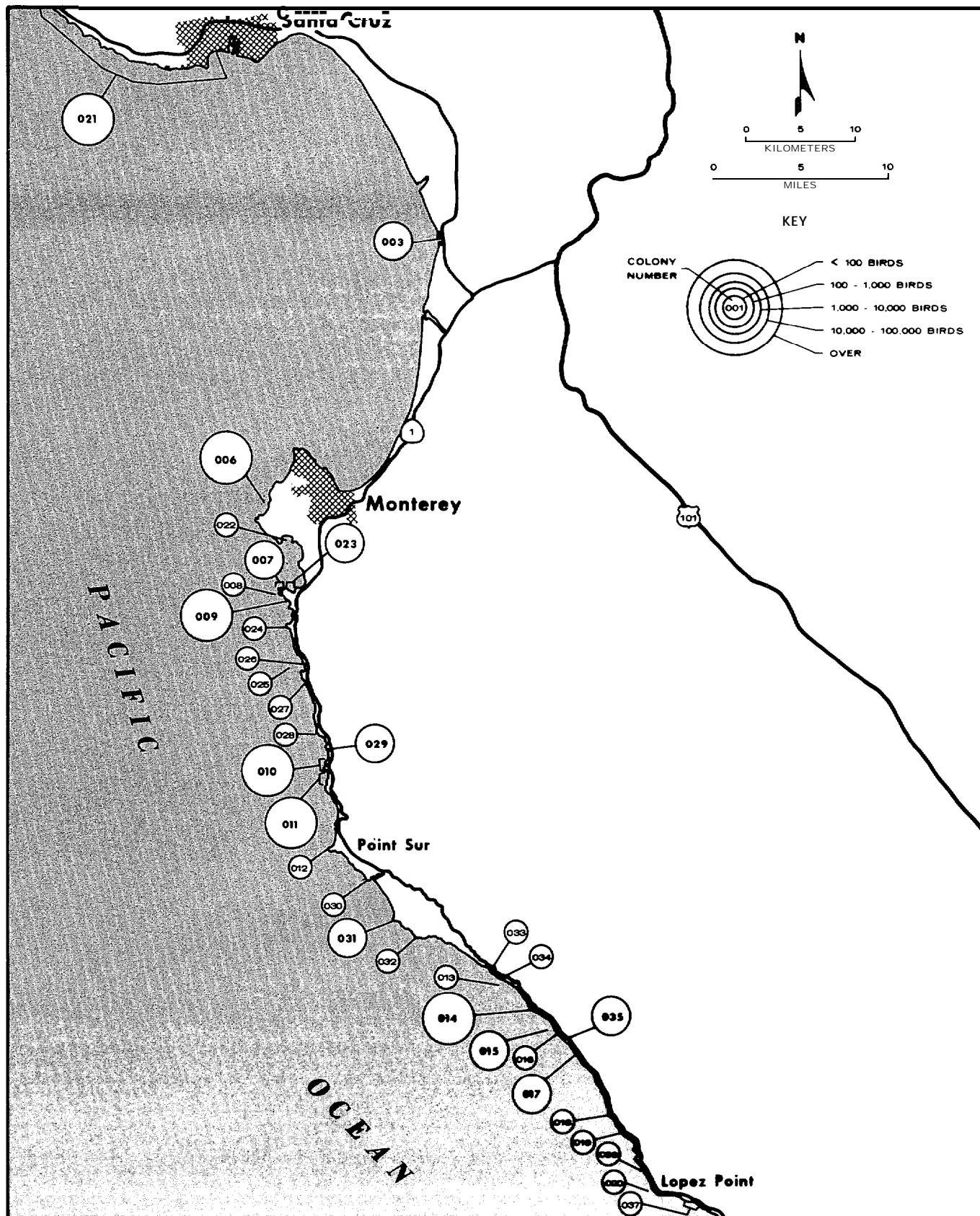
The map on the facing page is an index to the locations of colonies within map 454, Monterey. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

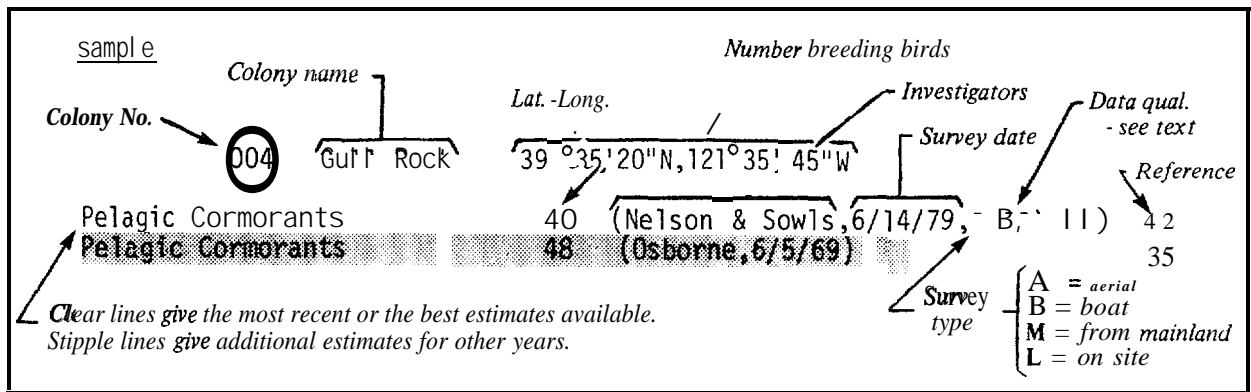
Brandt's Cormorant . . . . .	8,000
Double-crested Cormorant . . . . .	X
Pelagic Cormorant . . . . .	800
Black Oystercatcher . . . . .	.60
Western Gull . . . . .	900
Common Murre . . . . .	6,000
Pigeon Guillemot . . . . .	2,600
Marbled Murrelet . . . . .	. . P
Tufted Puffin . . . . .	. . . 2

P = probably present

# 454 Monterey



AREA 454, Monterey (cent'd.)



001 Wilder Creek was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

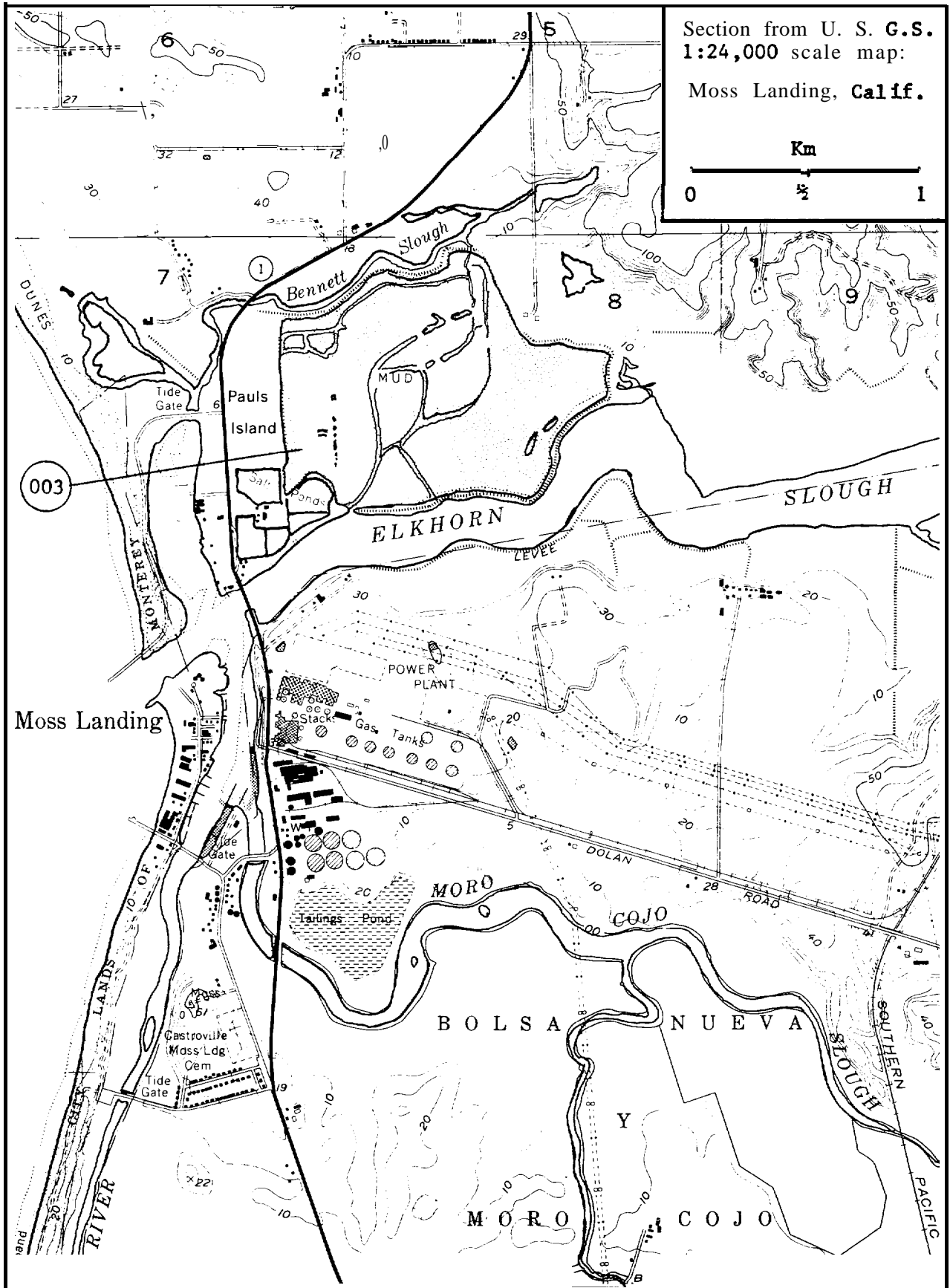
002 Pajaro River was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

003 Elkhorn Slough 36°49'04"N, 121°46'30"W

Western Gull	122	(Harvey, 1980, L)	26
Forster's Tern	95	(Harvey, 1980, L)	26
Caspian Tern	180	(Harvey, 1980, L)	26
Total	397		
Western Gull	74	(Varoujean et al., 5-8/1972, L)	43
Western Gull	110	(Harvey, 1978, L)	26
Western Gull	102	(Harvey, 1979, L)	26
Forster's Tern	165	(Harvey, 1978, L)	26
Forster's Tern	550-600	(Harvey, 5/25/79, L)	26
Caspian Tern	170	(Harvey, 1978, L)	26
Caspian Tern	160-180	(Harvey, 1979, L)	26

004 Salinas River Beach was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

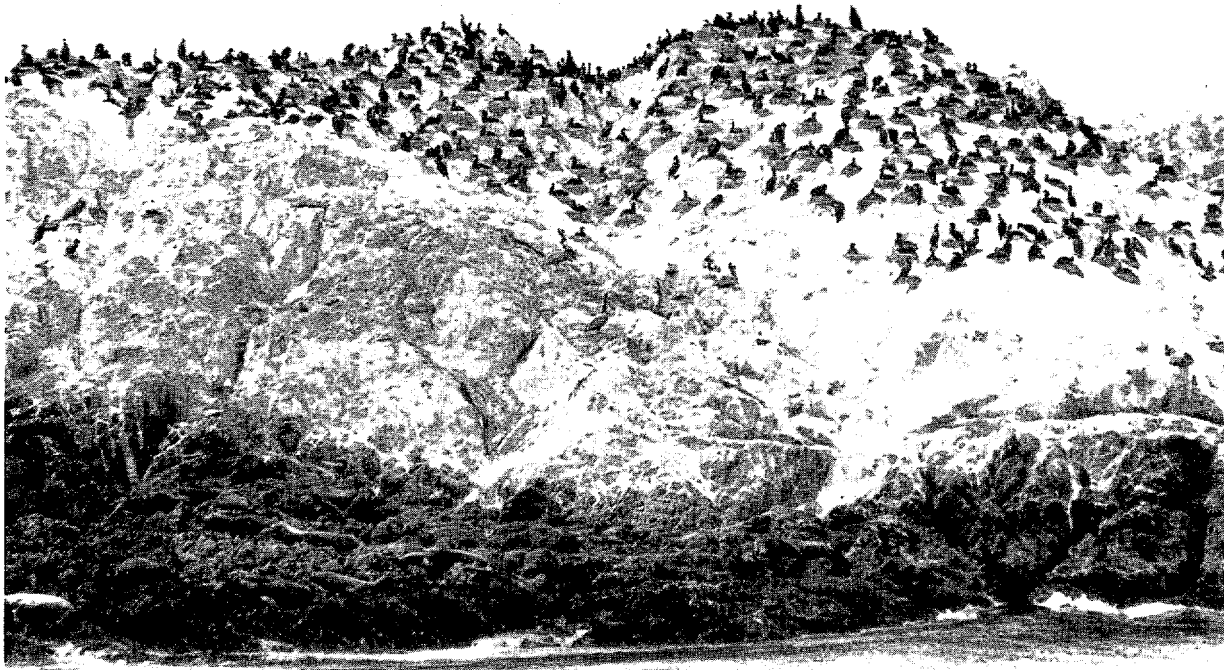
005 Marina Beach was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).



006 Bird Rock 36°35'31"N, 121°57'59"W

Bird Rock offers excellent viewing opportunities for seabirds, sea lions and harbor seals. See appendix B.

Brandt's Cormorant	1,340	(Nelson & SOWls, 6/23/80, A, II)	42
Black Oystercatcher	2	(Nelson & SOWls, 6/10/79, M, II)	42
Western Gull	10	(Nelson & SOWls, 6/10/79, M, III)	42
Total	1,352		
Brandt's Cormorant	2,000	(Nelson & SOWls, 7/6/79, A, III)	42
Brandt's Cormorant	600	(Reynolds, 7/15/70, A)	36



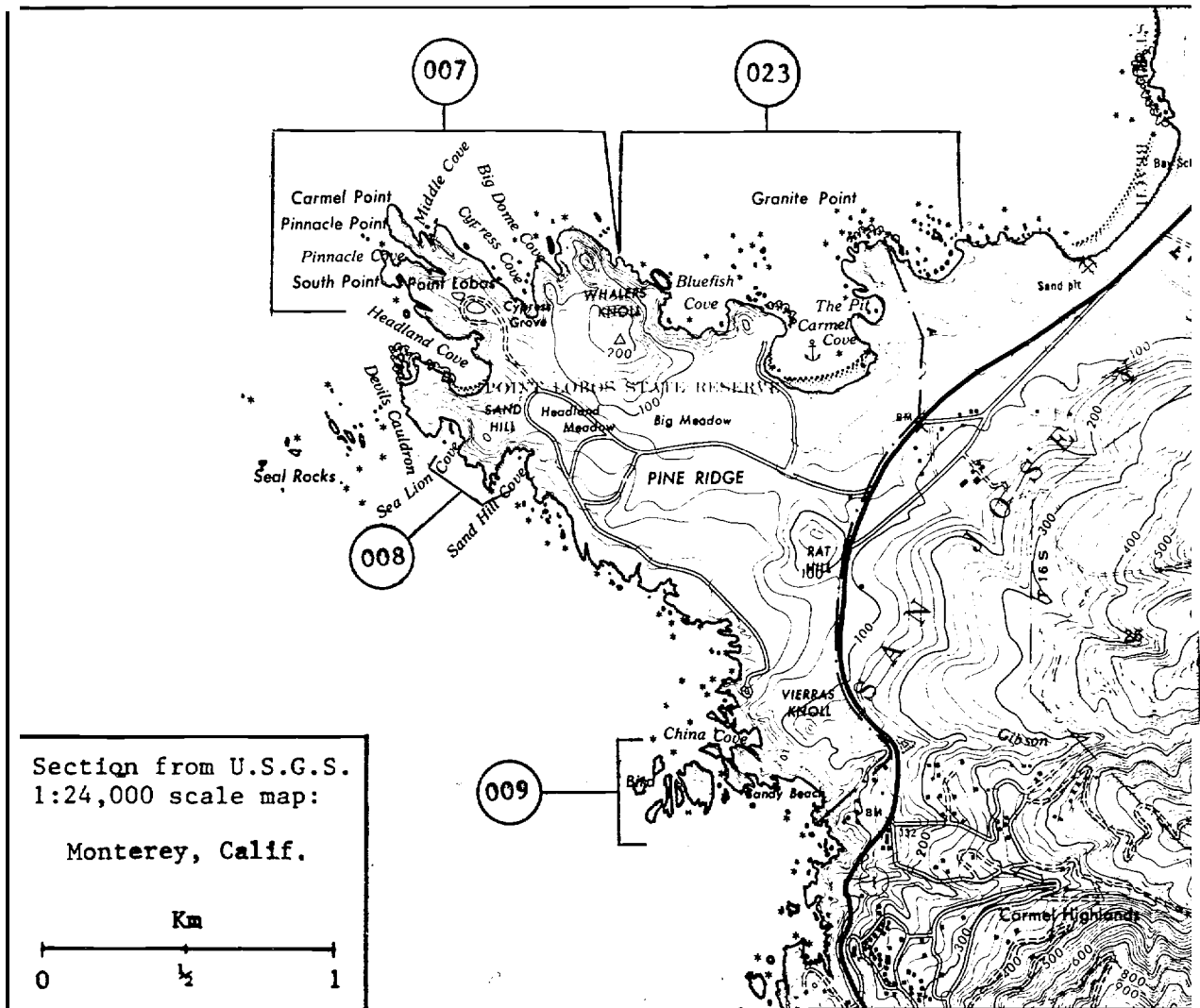
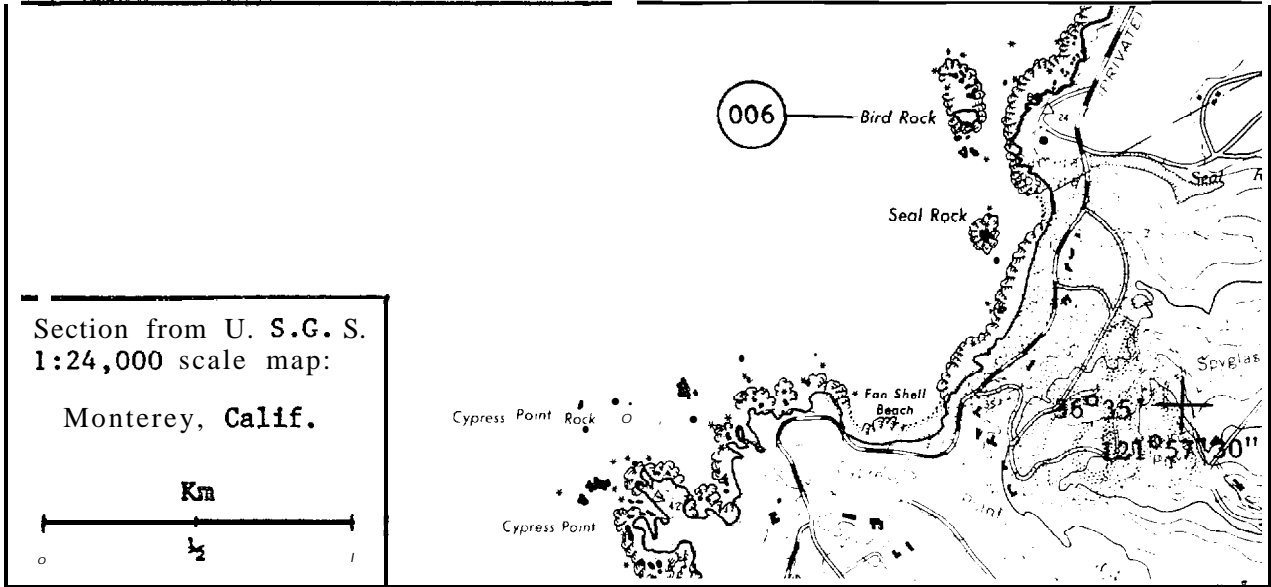
Bird Rock

Photo by ArtSOWls

007 Pinnacle Point Area 36°31'25"N, 121°57'14"W

Brandt's Cormorant	200	(Nelson & SOWls, 6/11/79, B, 7/31&8/3/79, L, III)	42
Pelagic Cormorant	22	(Nelson & SOWls, 6/11/79, B, 7/31&8/3/79, L, II)	42
Black Oystercatcher	P	(Nelson & SOWls, 6/11/79, B, 7/31&8/3/79, L, II)	42
Western Gull	14	(Nelson & SOWls, 6/11/7/13&8/3/79, B, L, III)	42
Pigeon Guillemot	100	(Nelson & SOWls, 6/11/79, B, 7/31&8/3/79, L, III)	42
Total	336		
Brandt's Cormorant	125	(Varoujean & Briggs, 4/25&7/14/72, M)	43
Brandt's Cormorant	30	(Reynolds, 5/6/70, M)	36
Pelagic Cormorant	30	(Reynolds, 5/6/70, M)	36
Black Oystercatcher	2	(Reynolds, 5/6/70, M)	36
Western Gull	25	(Reynolds, 5/6/70, M)	36
Pigeon Guillemot	2	(Reynolds, 5/6/70, M)	36

P = probably present



AREA 454, Monterey (cent'd.)

008 Sand Hill Cove 36°31'01"N, 121°57'01"W

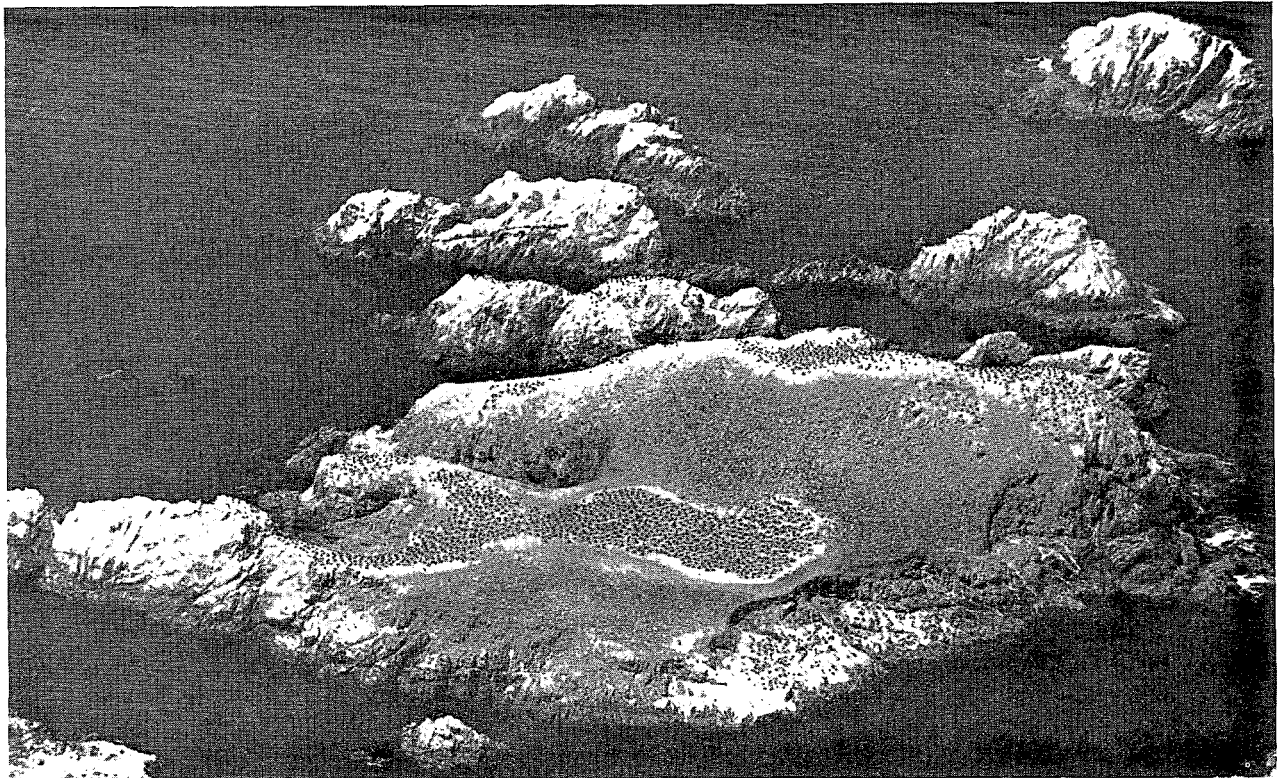
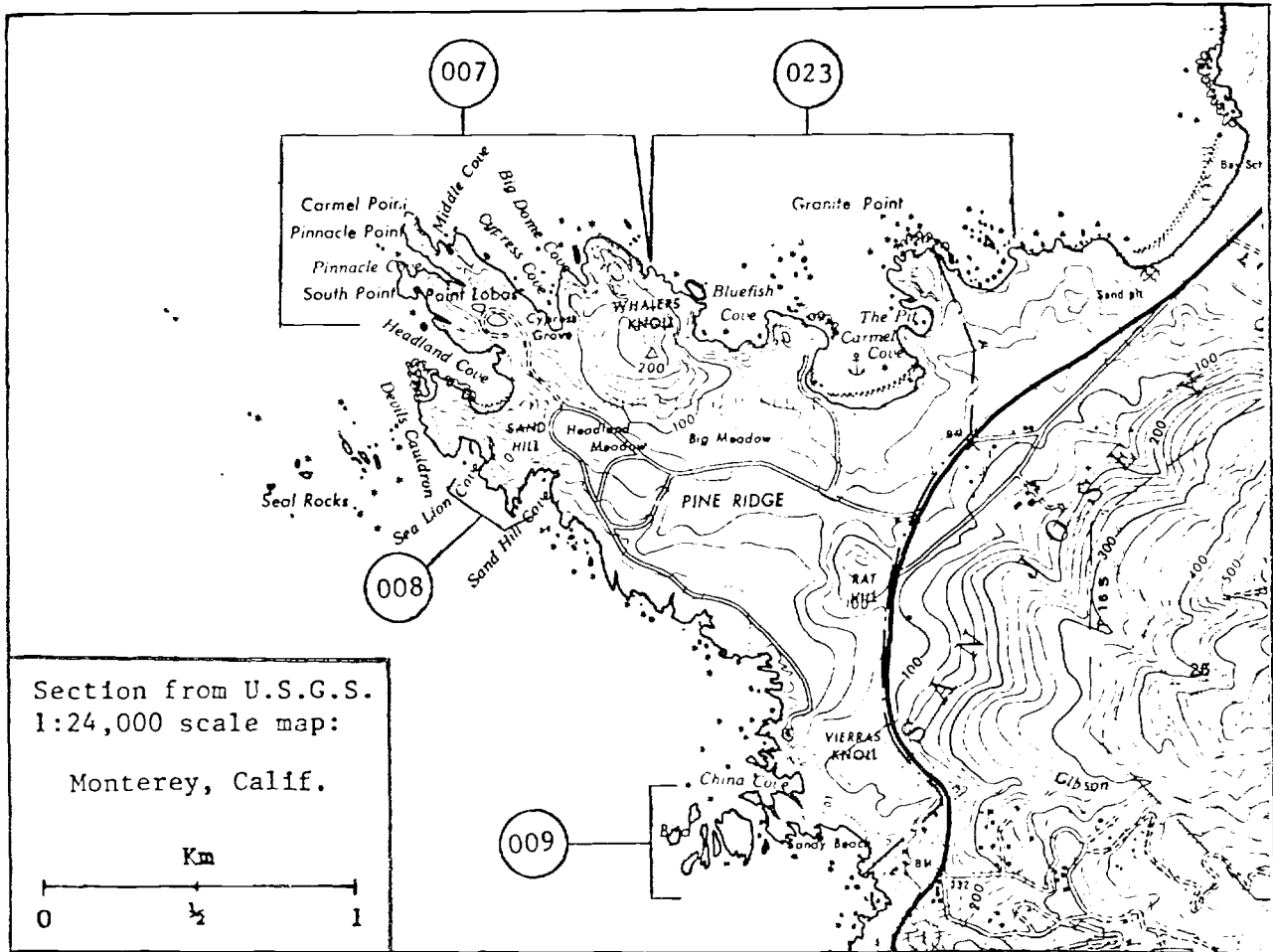
Pelagic Cormorant	36	(Nelson & Sows, 8/2/79, L, I)	42
Black Oystercatcher	2	(Nelson & Sows, 8/2/79, L, III)	42
Western Gull	2	(Nelson & Sows, 6/24/80, L, II)	42
Pigeon Guillemot	20	(Nelson & Sows, 6/24/80, L, III)	42
Total	58		
Pelagic Cormorant	36	(Briggs & Varoujean, 4/25&7/14/72, L)	43
Pelagic Cormorant	26	(Nelson & Sows, 6/24/80, L, II)	42
Pigeon Guillemot	12	(Briggs & Veroujean, 4/25&7/14/72, L)	43

009 Bird Island 36°30'25"N, 121°56'33"W

Bird Island is the second largest Brandt's Cormorant colony in California, after the Farallon Islands (429 O 12). It is also the most northern site for nesting Brown Pelicans ever recorded, although no nesting pelicans have been observed here since 1963 (Baldrige, 1973). If recovery of the Brown Pelican continues, this site may be recolonized. Bird Island offers excellent viewing opportunities (see appendix B').

Brandt's Cormorant	4,200	(Nelson & Sows, 6/23/80, A, II)	42
Pelagic Cormorant	16	(Nelson & Sows, 8/2/79, L, III)	42
Black Oystercatcher	4	(Nelson & Sows, 6/11/79, B, 6/12/79, L, III)	42
Western Gull	46	(Nelson & Sows, 6/11/79, B, III)	42
Pigeon Guillemot	4	(Nelson & Sows, 6/24/80, M, III)	42
Total	4,270		
Brown Pelican	0-110	(1927-1963; see Baldrige 1973)	7
Brandt's Cormorant	800	(Reynolds, 5/6/69, M)	36
Brandt's Cormorant	1,568	(Briggs & Varoujean, 4/25&7/14/72, M)	43
Brandt's Cormorant	6,000	(Nelson & Sows, 7/6/79, A, III)	42
Black Oystercatcher	2	(Briggs & Varoujean, 4/25&7/14/72, M)	43
Western Gull	X	(Briggs & Varoujean, 4/25&7/14/72, M)	43
Pigeon Guillemot	X	(Briggs & Varoujean, 4/25&7/14/72, M)	43

X = present



Bird Island

Photo by Jay Nelson

010 Castle Rocks & Mainland 36°22'35"N, 121°54'25"W

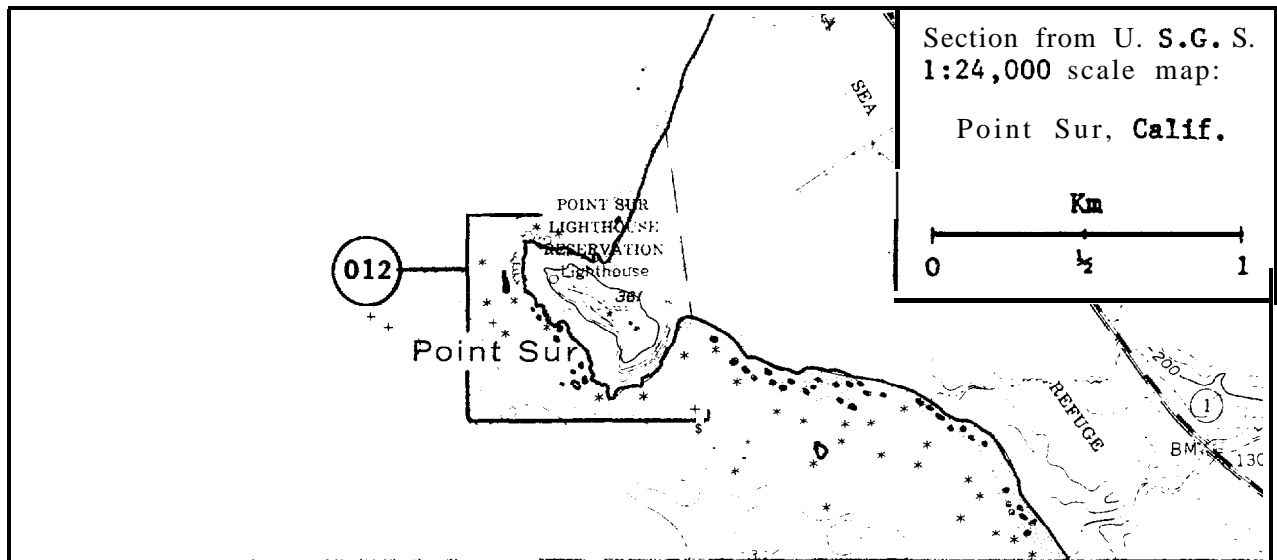
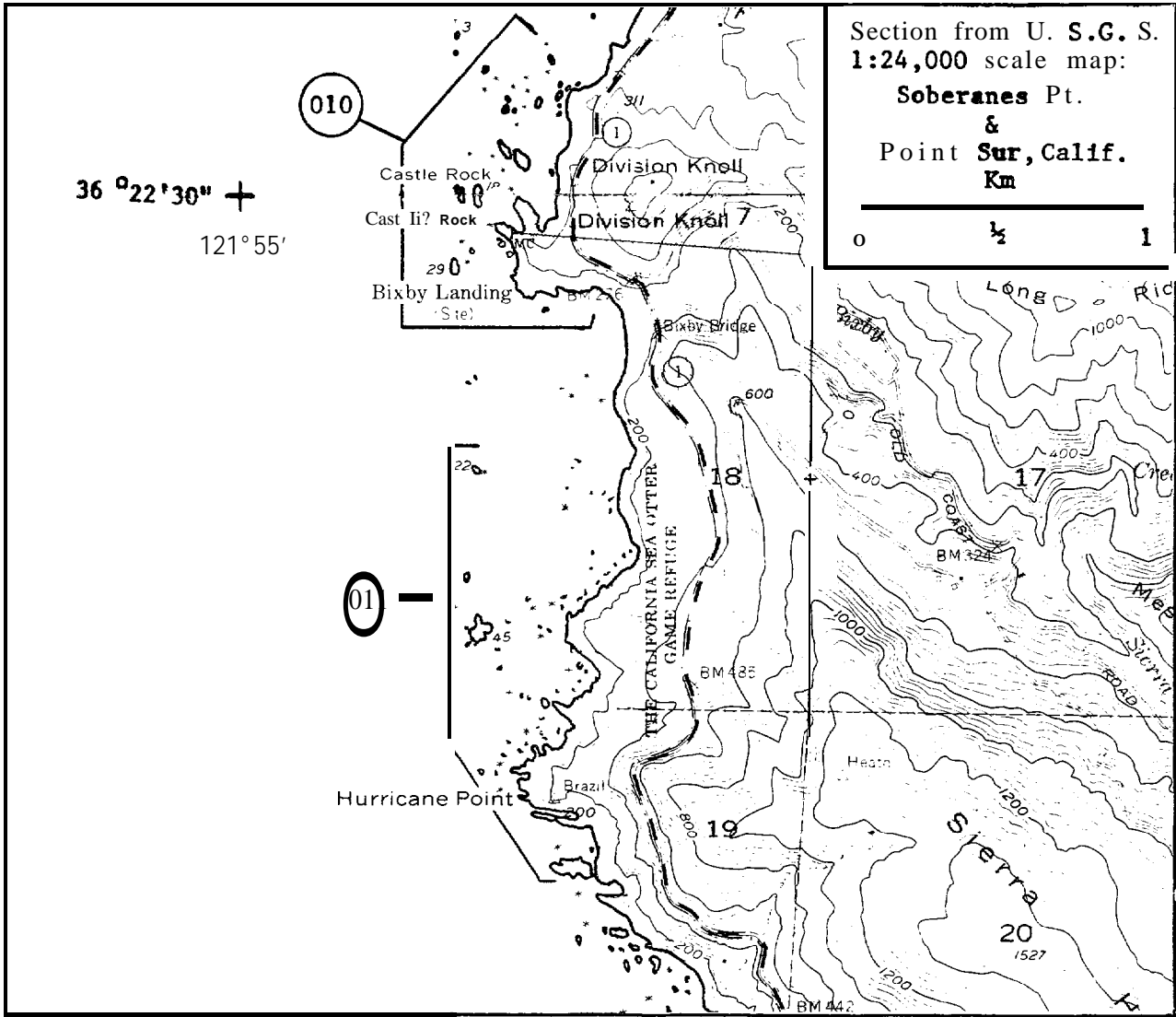
Brandt's Cormorant	18	(Lester, Nelson & Sows, 6/12/80, B, II)	42
Pelagic Cormorant	96	(Lester, Nelson & Sows, 6/12/80, B, II)	42
Black Oystercatcher,	6	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Western Gull	78	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Common Murre	3,500	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Pigeon Guillemot	88	(Nelson & Sows, 7/14/79, M, 6/20&8/1/79, B, 111)	42
Total	3,780		
Brandt's Cormorant	534	(Nelson & Sows, 7/14/79, M, 6/20&8/1/79, B, II)	42
Brandt's Cormorant	300	(Reynolds, 5/6/70, M)	36
Pelagic Cormorant	62	(Nelson & Sows, 6/20&8/1/79, B, II)	42
Black Oystercatcher	6	(Nelson & Sows, 6/20/79, B, II)	42
Black Oystercatcher	2	(Reynolds, 5/6/70, M)	36
Western Gull	50	(Nelson & Sows, 6/20&8/1/79, B, II)	42
Western Gull	20	(Reynolds, 5/6/70, M)	36
Common Murre	200	(Reynolds, 5/6/70, M)	36
Pigeon Guillemot	2	(Reynolds, 5/6/70, M)	36

011 Hurricane Point Rocks 36°21'40"N, 121°54'25"W

Brandt's Cormorant	444	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Pelagic Cormorant	50	(Lester, Nelson & Sows, 6/12/80, B, II)	42
Black Oystercatcher	10	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Western Gull	72	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Common Murre	2,300	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Pigeon Guillemot	80	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Tufted Puffin	2	(Lester, Nelson & Sows, 6/12/80, B, II)	42
Total	2,958		
Brandt's Cormorant	582	(Nelson & Sows, 7/14/79, M, 8/1/79, B, III)	42
Pelagic Cormorant	10	(Nelson & Sows, 7/14/79, M, 8/1/79, B, II)	42
Western Gull	50	(Nelson & Sows, 7/14/79, M, 8/1/79, B, III)	42
Common Murre	400	(Reynolds, 5/6/70, M)	36
Pigeon Guillemot	4	(Nelson & Sows, 7/14/79, M, 8/1/79, B, III)	42

012 Point Sur 36°18'22"N, 121°53'39"W

Pelagic Cormorant	54	(Lester, Nelson & Sows, 6/12/80, B, II)	42
Black Oystercatcher	2	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Western Gull	6	(Lester, Nelson & Sows, 6/12/80, B, III)	42
Pigeon Guillemot	4	(Nelson & Sows, 8/1/79, B, III)	42
Total	66		



013 "Torre Canyon Rocks" 36°11'25"N, 121°42'46"W

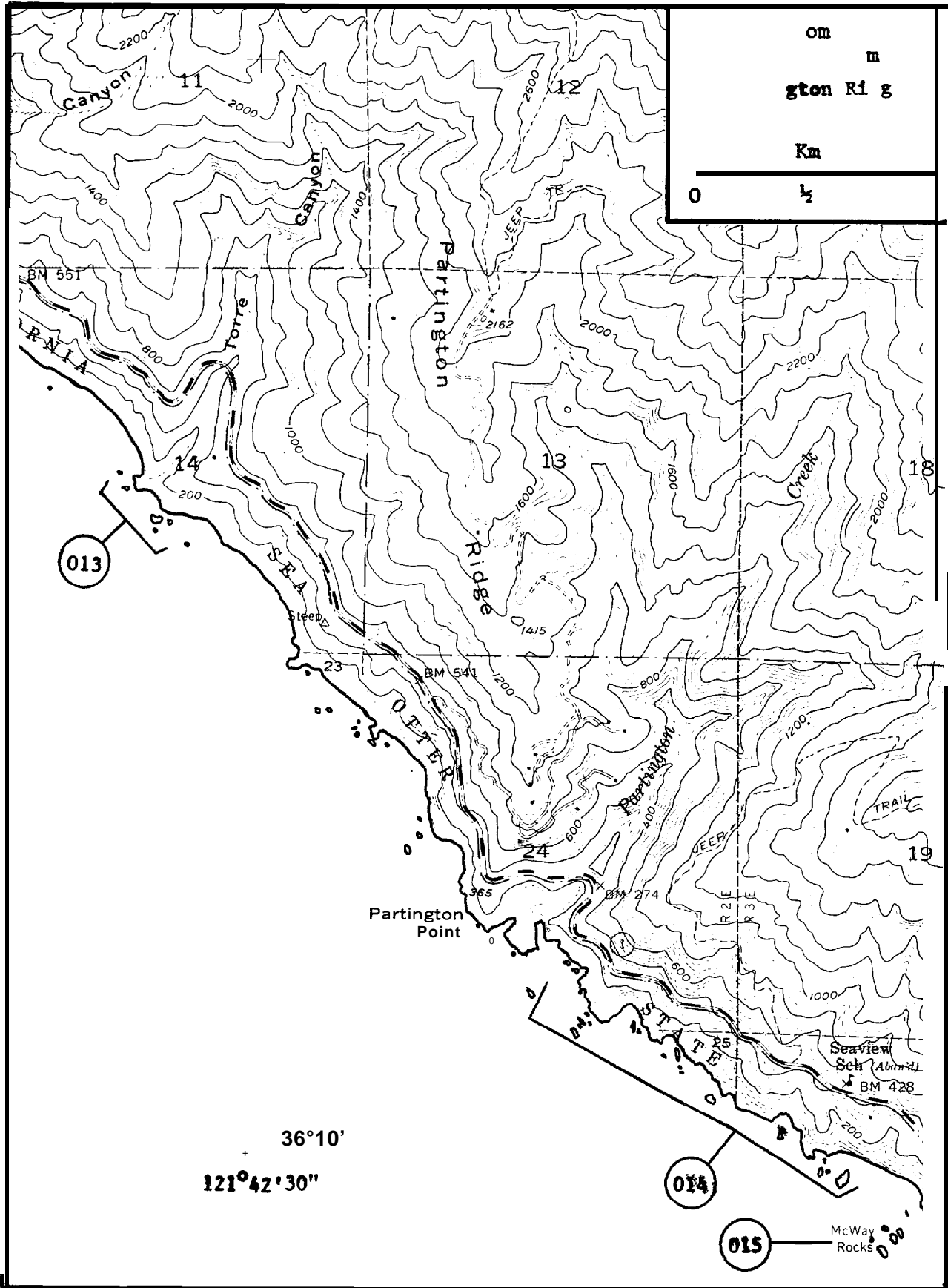
Brandt's Cormorant	0	(Nelson & SOWls,6/22/79,B,I)	42
Pelagic Cormorant	22	(Nelson & SOWls,6/22/79,B,II)	42
Black Oystercatcher	2	(Nelson & SOWls,6/22/79,B,III)	42
Total	24		
Brandt's Cormorant	125	(Reynolds,6/14/70,M)	36

014 "Partington Ridge North" 36°10'06"N, 121°41'14"W

Double-crested Cormorant	6	(Baldrige,1980,M)	6
Brandt's Cormorant	910	(Nelson & SOWls,6/23/79,B,7/13/79,M,III)	42
Pelagic Cormorant	26	(Nelson & SOWls,6/23/79,B,II)	42
Black Oystercatcher	4	(Nelson & SOWls,6/23/79,B,III)	42
Western Gull	30	(Nelson & SOWls,6/23/79,B,III)	42
Pigeon Guillemot	80	(Nelson & SOWls,6/23/79,B,III)	42
Total	1,050		
Double-crested Cormorant	0-10	(Baldrige,1963-79,M)	6
Brandt's Cormorant	125	(Reynolds,5/14/70,M)	36

015 McWay Rocks 36°09'46"N, 121°40'44"W

Brandt's Cormorant	20	(Nelson & SOWls,6/23/79,B,I)	42
Black Oystercatcher	2	(Nelson & SOWls,6/23/79,B,III)	42
Western Gull	8	(Nelson & SOWls,6/23/79,B,III)	42
Pigeon Guillemot	100	(Nelson & SOWls,6/23/79,B,III)	42
Total	130		
Brandt's Cormorant	80	(Reynolds,7/22/70,M)	36



AREA 454, Monterey (cent'd.)

016 "Anderson Canyon Rock" 36°06'58"N, 121°36'58"W

Brandt's Cormorant	0 (Nelson & Sows, 6/23/79, B, I)	42
Pelagic Cormorant	82 (Nelson & Sows, 6/23/79, B, II)	42
Total	82	
Brandt's Cormorant	284 (Reynolds, 7/22/70, M)	36

017 "Burns Creek Rocks" 36°08'29"N, 121°39'28"W

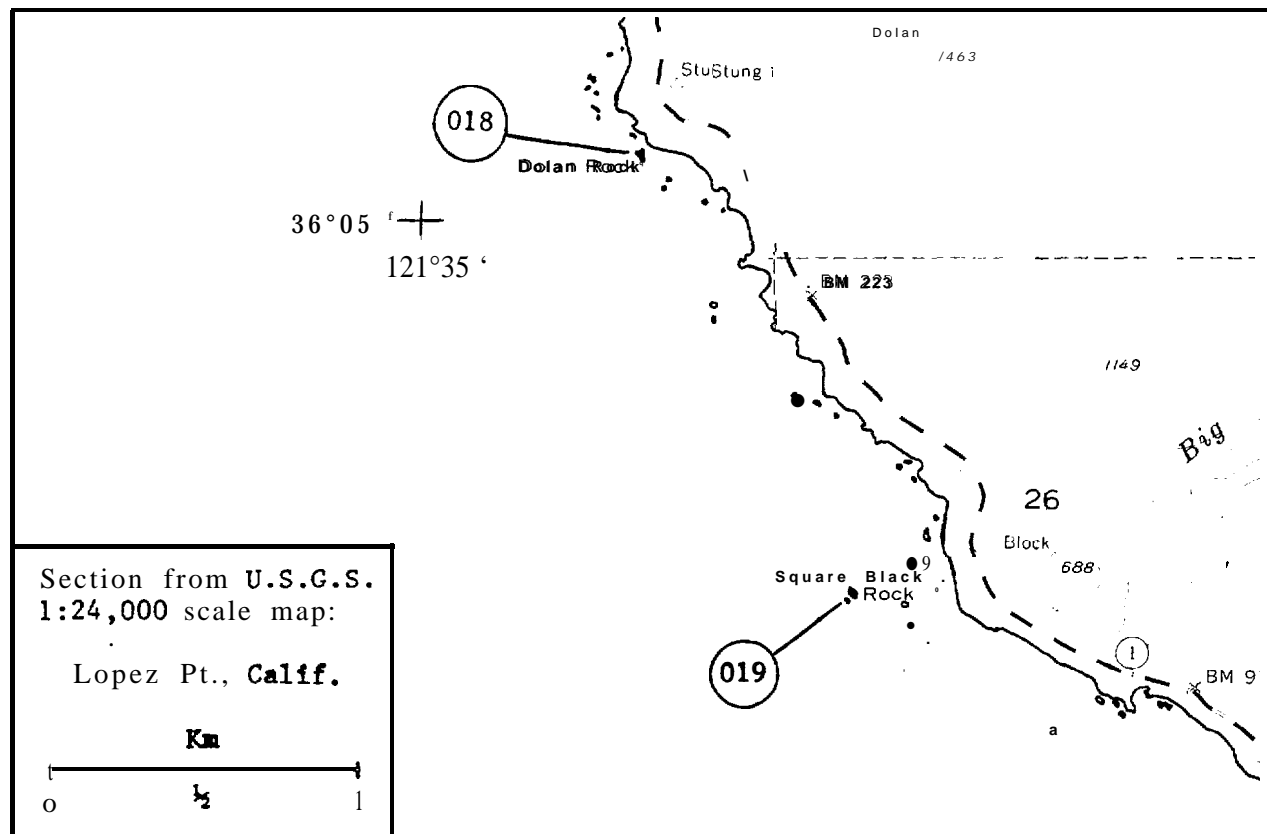
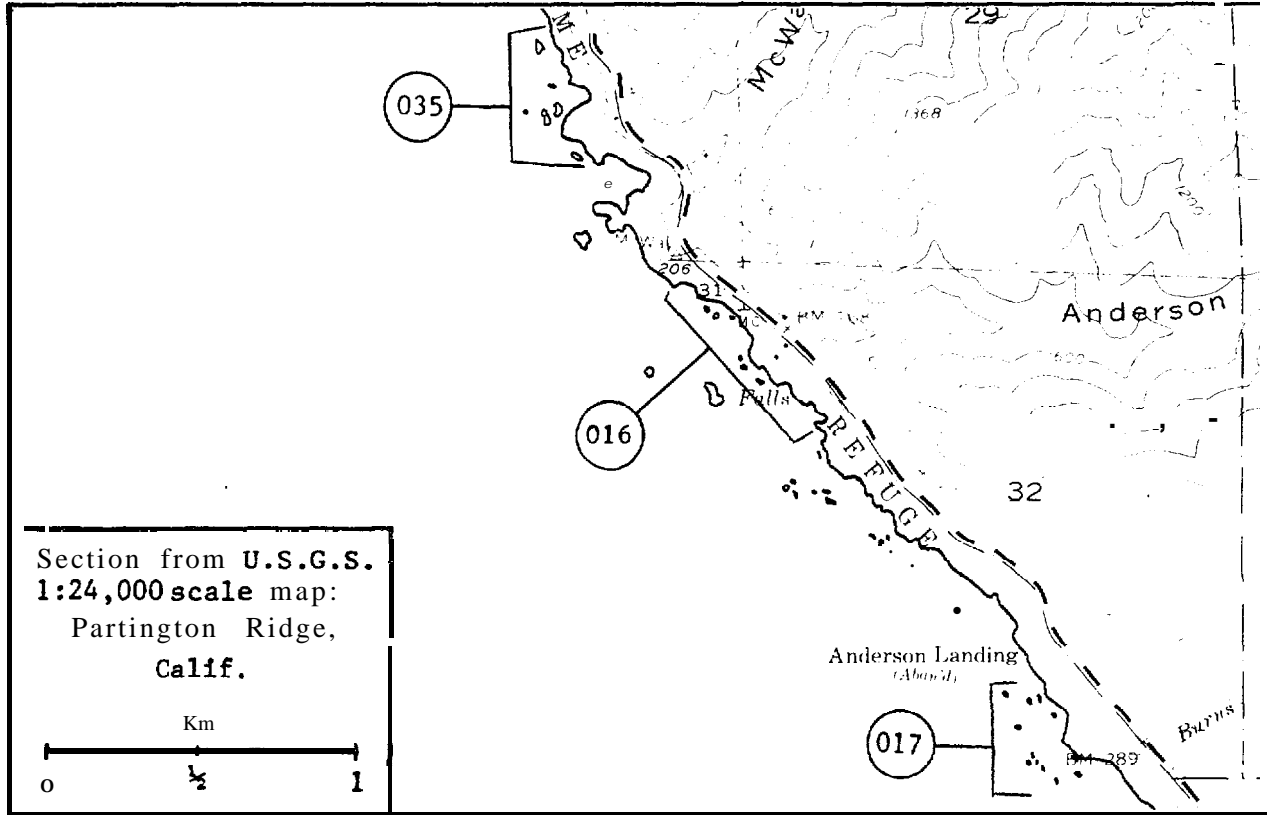
Cormorant (Unid.)	2 (Nelson & Sows, 6/23/79, B, 7/13/79, M)	42
Brandt's Cormorant	348 (Nelson & Sows, 6/23/79, B, 7/13/79, M, III)	42
Western Gull	4 (Nelson & Sows, 7/13/79, M, III)	42
Pigeon Guillemot	24 (Nelson & Sows, 7/13/79, M, III)	42
Total	378	
Brandt's Cormorant	60 (Reynolds, 7/22/70, M)	36

018 Dolan Rock 36°05'06"N, 121°37'02"W

Brandt's Cormorant	0 (Nelson & Sows, 7/23/79, B, 8/2/79, A, I)	42
Brandt's Cormorant	100 (Reynolds, 7/15/70, A)	36

019 Square Black Rock 36°04'21"N, 121°36'35"W

Brandt's Cormorant	0 (Nelson & Sows, 6/23/80, A, I)	42
Brandt's Cormorant	0 (Nelson & Sows, 7/23/79, B, 8/2/79, A, I)	42
Brandt's Cormorant	20-40 (Reynolds, 7/15/70, A)	36



AREA 454, Monterey (cent'd.)

020 Lopez Rock 36°01'34"N, 121°34'46"W

Brandt's Cormorant	0	(Nelson & Sows, 6/23/80, A, I)	42
Brandt's Cormorant	0	(Nelson & Sows, 7/23/79, B, 8/2/79, A, I)	42
Brandt's Cormorant	100	(Reynolds, 7/23/70, M)	36

021 Davenport 37°00'30"N, 122°11'30"W to  
Pt. Santa Cruz 37°57'10"N, 122°01'15"

No map is provided for this site as it extends along a lengthy stretch of coastline. See page 213.

Pelagic Cormorant	28	(Nelson & Sows, 7/15/79, B, I)	42
Black Oystercatcher	P	(Nelson & Sows, 7/15/79, B, I)	42
Western Gull	2	(Nelson & Sows, 7/15/79, B, II)	42
Pigeon Guillemot	1,200	(Nelson & Sows, 7/15/79, B, III)	42
Total	1,230		

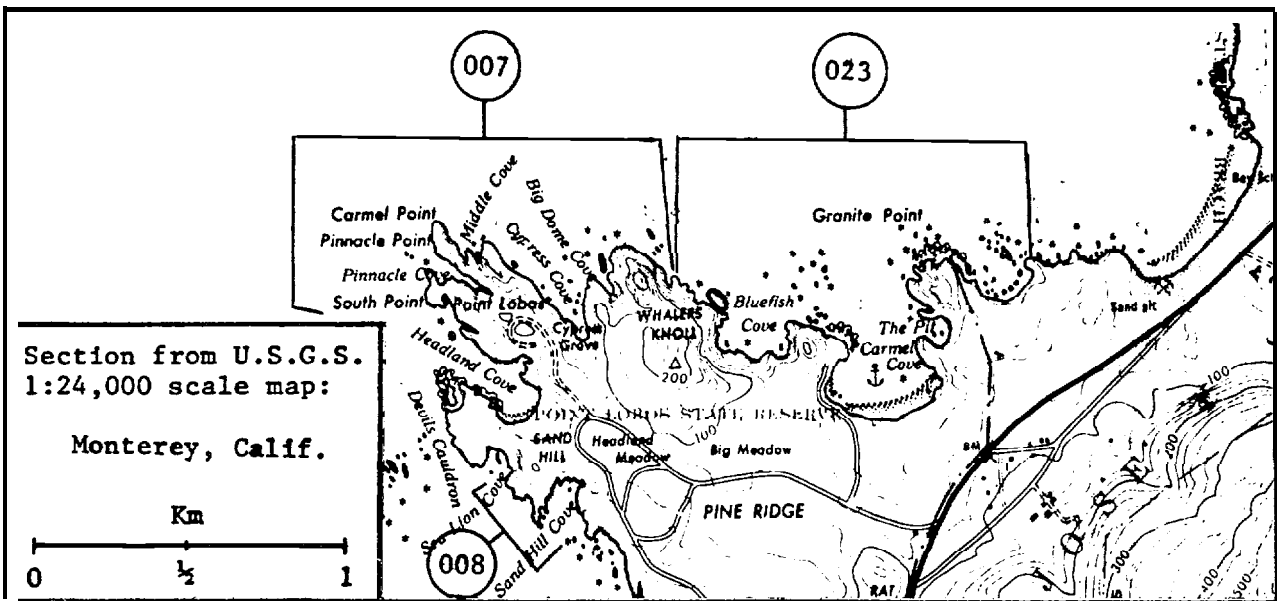
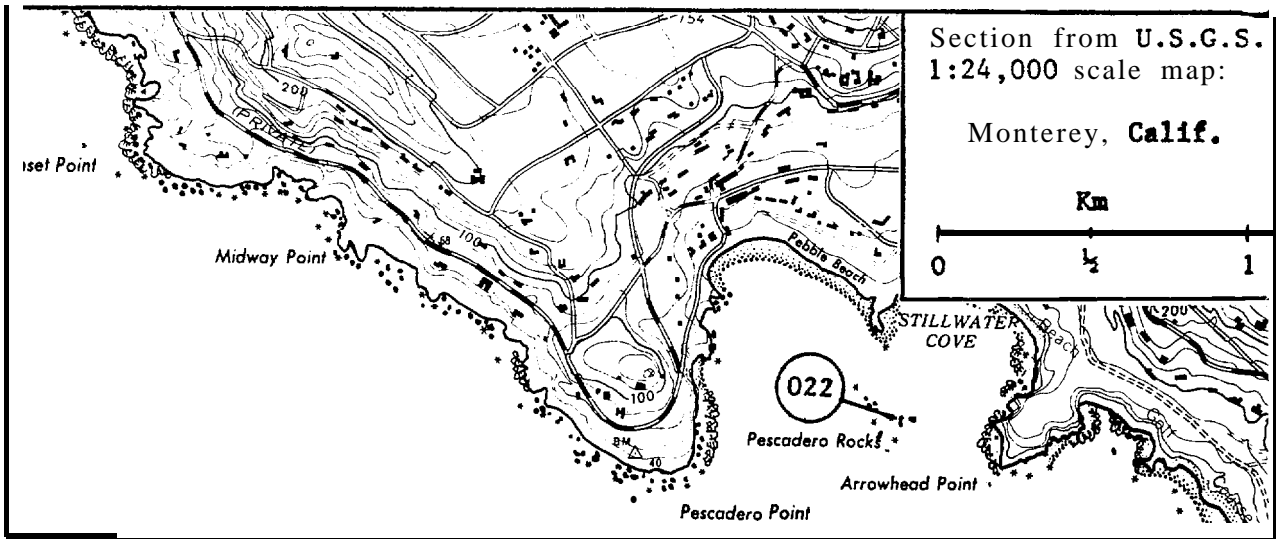
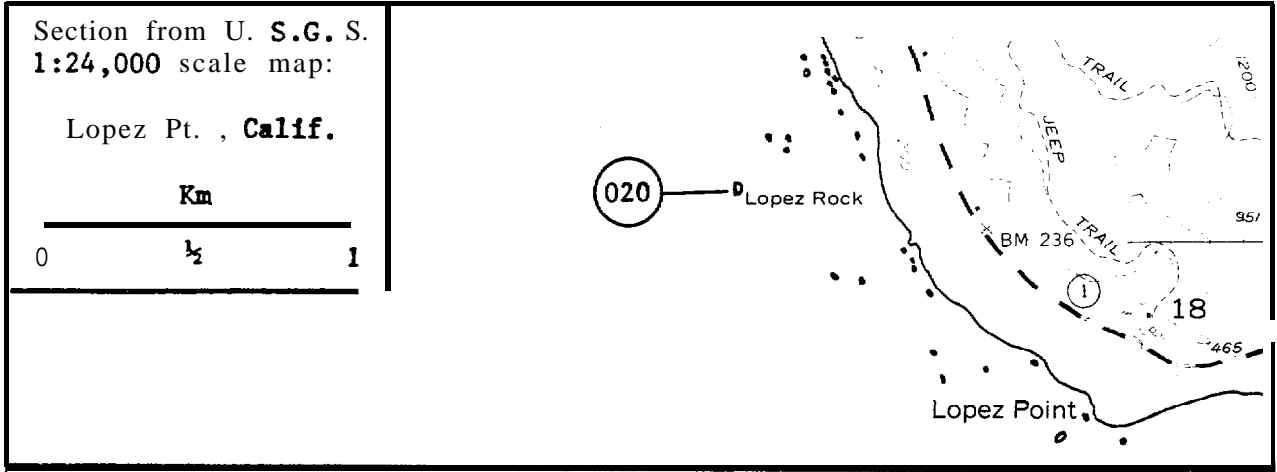
P = probably present

022 Pescadero Rock 36°33'43"N, 121°56'33"W

Black Oystercatcher	2	(Nelson & Sows, 6/11/79, BL, III)	42
Western Gull	20	(Nelson & Sows, 6/11/79, BL, I)	42
Total	22		

023 "Guillemot Island Area" 36°31'25"N, 121°56'47"W

Pelagic Cormorant	14	(Nelson & Sows, 6/11/79, BL, 8/3/79, M, II)	42
Black Oystercatcher	4	(Nelson & Sows, 6/11/79, BL, II)	42
Western Gull	60	(Nelson & Sows, 6/11/79, BL, 8/3/79, M, II)	42
Pigeon Guillemot	40	(Nelson & Sows, 6/11/79, BL, 8/3/79, M, III)	42
Total	118		



AREA 454, Monterey (cont'd.)

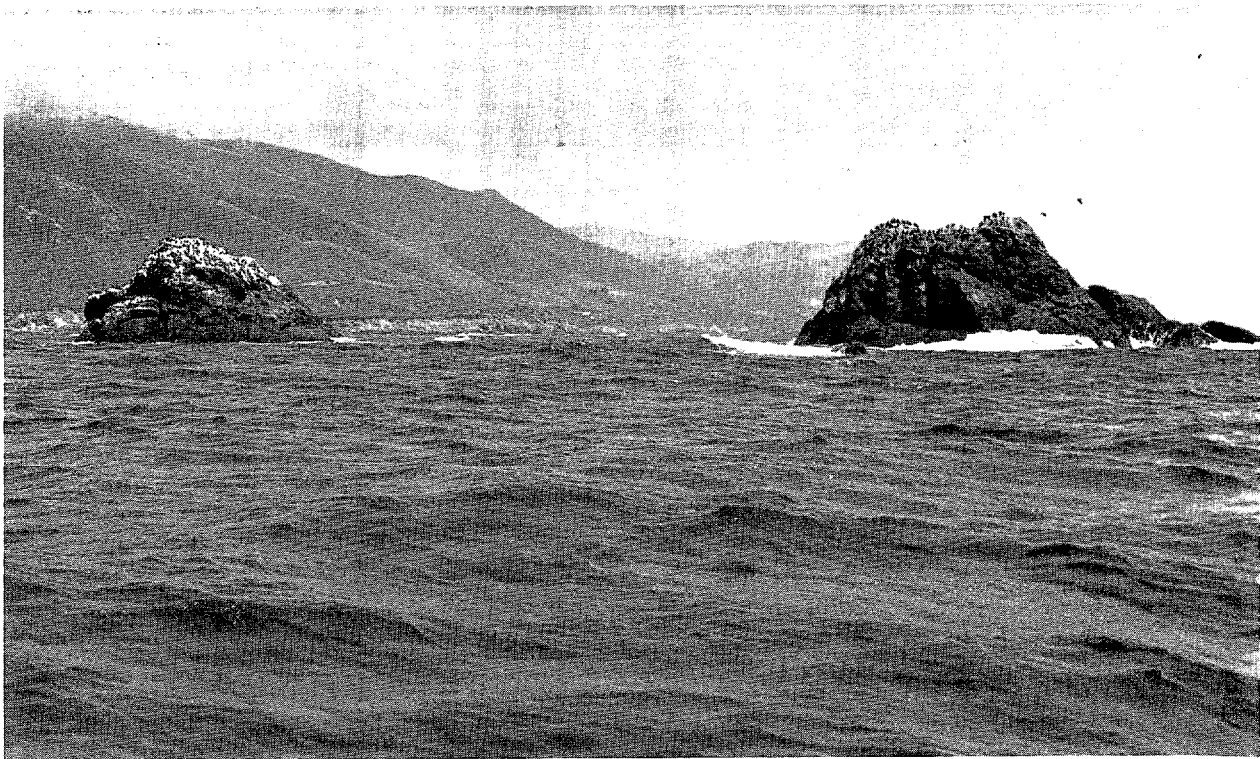
024 Yankee Point 36°29' 29"N, 121°56'41"W

Western Gull	8 (Nelson & Sows, 6/11/79, B, II)	42
Pigeon Guillemot	X (Nelson & Sows, 6/11/79, B, III)	42
Tots 1	<u>8</u>	

X = present,

025 Lobos Rocks 36°27'18"N, 121°56'10"W

Western Gull	12 (Nelson & Sows, 6/11/79, B, II)	42
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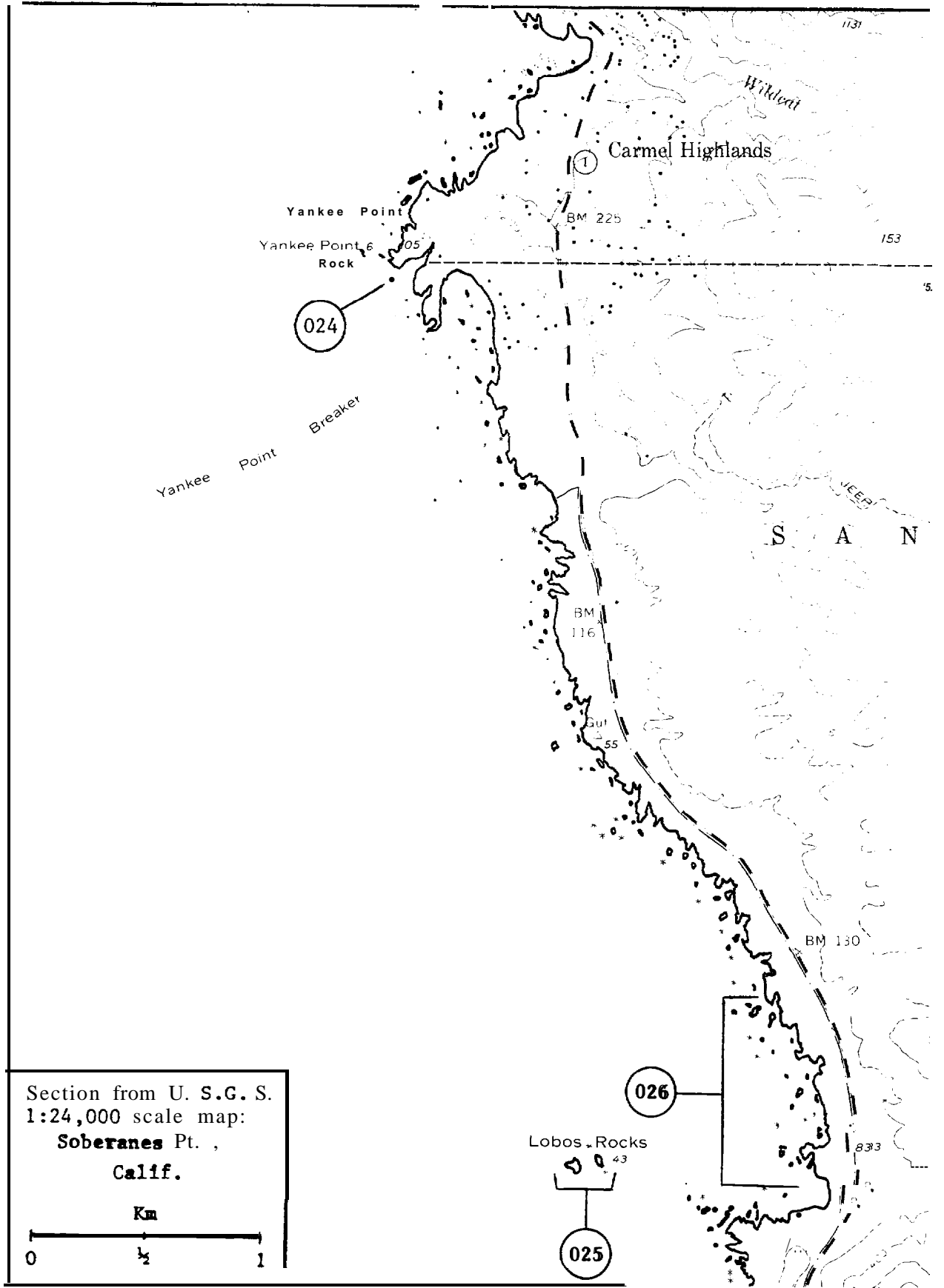


Lobos Rocks

Photoby ArtSows

026 "Soberanes Creek Rocks" 36°27'18"N, 121°55'35"W

Pelagic Cormorant	30 (Nelson & Sows, 6/11/79, B, I)	42
Western Gull	4 (Nelson & Sows, 7/17/79, M, II)	42
Pigeon Guillemot	40 (Nelson & Sows, 6/11/79, B, III)	42
Total	<u>74</u>	



Section from U. S.G. S.  
1:24,000 scale map:  
**Soberanes Pt. ,  
Calif.**

Km  
0 1/2 1

AREA 454, Monterey (cont'd.)

027 "Soberanes Point South" 36°26'47"N, 121°55'35"W

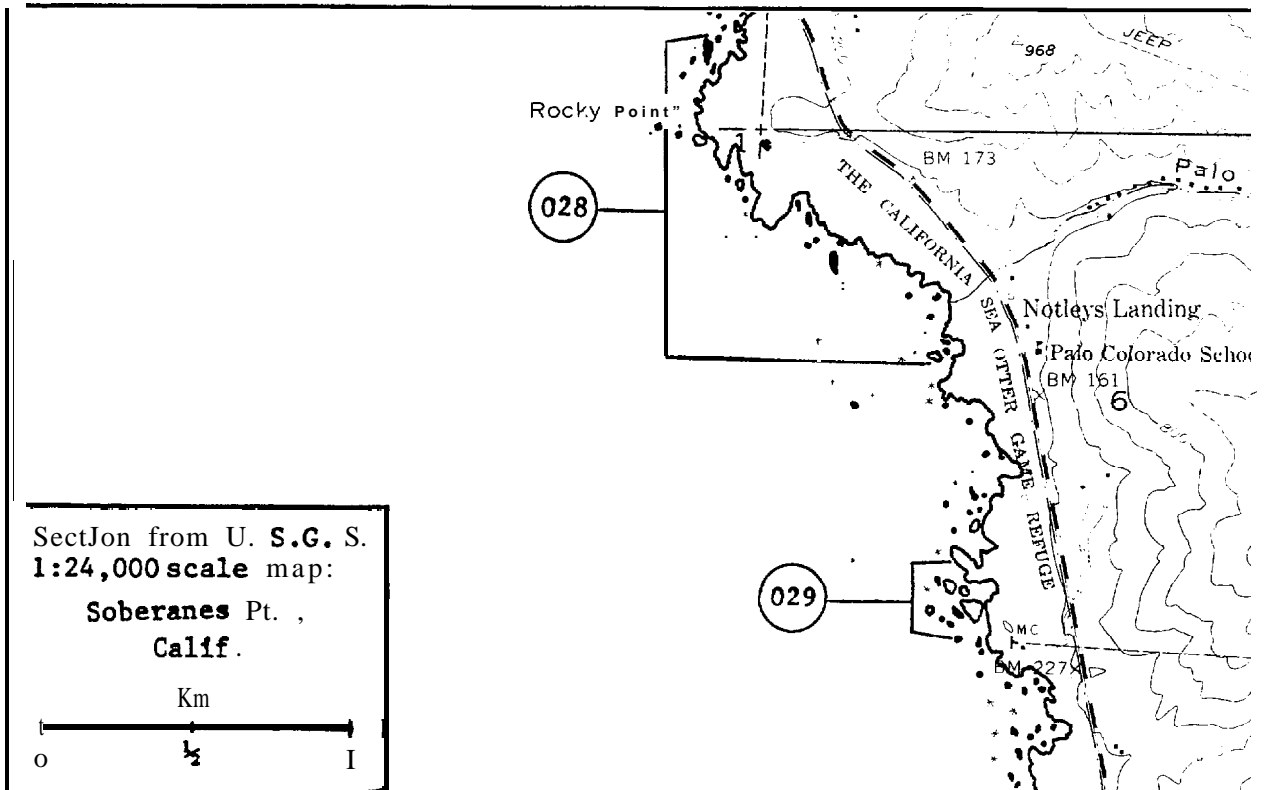
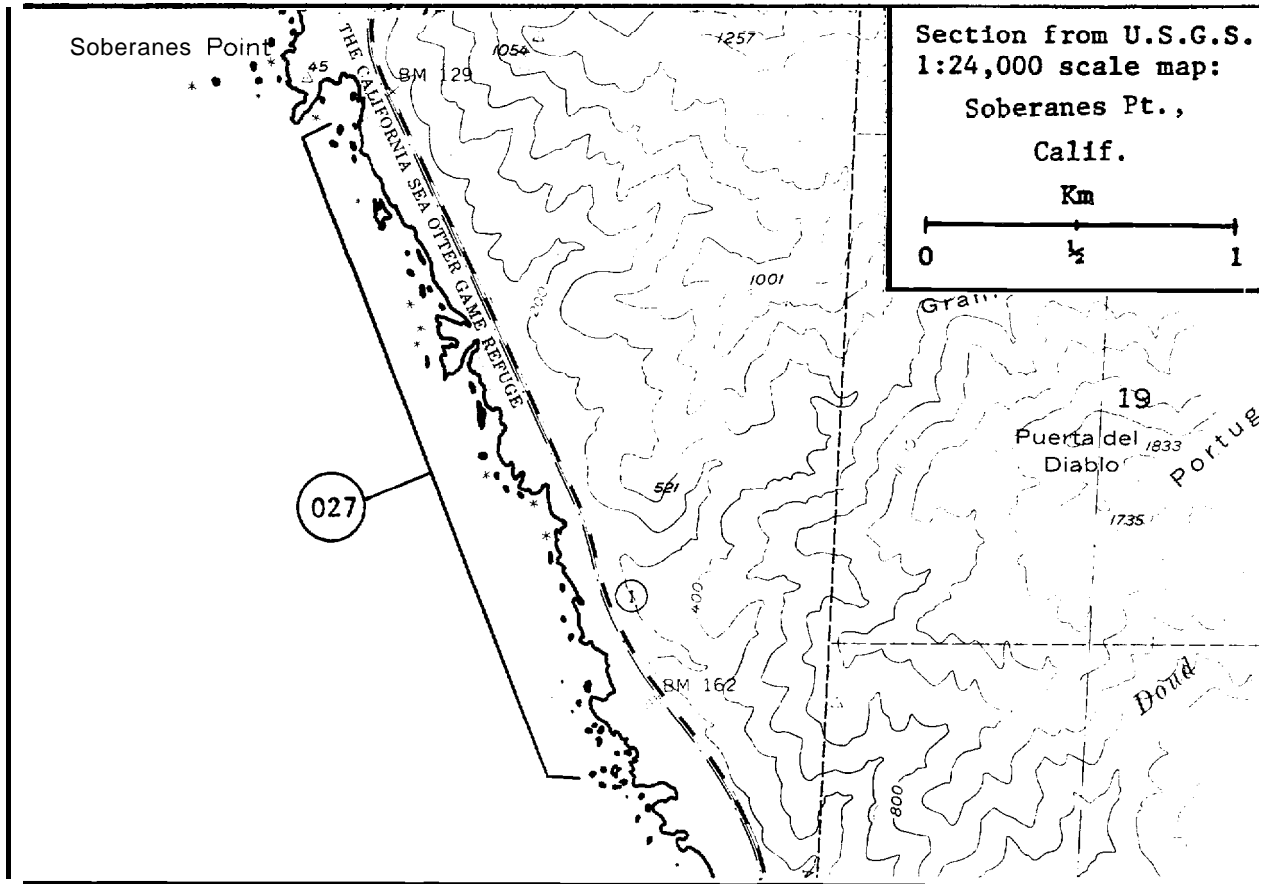
Pelagic Cormorant	2 (Nelson & Sows,6/11/79,B,I)	42
Black Oystercatcher	4 (Nelson & Sows,6/11/79,B,III)	42
Western Gull	6 (Nelson & Sows,6/11/79,B,III)	42
Total	<u>12</u>	

028 Rocky Point 36°24'06"N, 121°54'40"W

Pelagic Cormorant	6 (Nelson & Sows,6/11/79,B,I)	42
Black Oystercatcher	4 (Nelson & Sows,6/11/79,B,III)	42
Western Gull	20 (Nelson & Sows,6/11/79,B,III)	42
Pigeon Guillemot	40 (Nelson & Sows,6/11/79,B,III)	42
Total	<u>70</u>	

029 "Bench Mark-227x" 36°23'21"N, 121°54'13"W

Pelagic Cormorant	68 (Nelson & Sows,6/11/79,B,6/12/79,BM,II)	42
Black Oystercatcher	2 (Nelson & Sows,6/11/79,B,6/12/79,BM,III)	42
Western Gull	300 (Nelson & Sows,6/11/79,B,6/12/79,BM,III)	42
Pigeon Guillemot	160 (Nelson & Sows,6/11/79,B,6/12/79,BM,III)	42
Total	530	



AREA 454, Monterey (cent'd.)

030 "Molera Rock" 36°16'45"N, 121°51'30"W

Pelagic Cormorant	26	{Nelson & Sows, 6/22/79, BM, I}	42
Western Gull	8	(Nelson & Sows, 6/22/79, BM, II)	42
Pigeon Guillemot	P	(Nelson & Sows, 6/22/79, BM, II)	42
Total	<u>34</u>		

P = probably present

031 Cooper Point and Islands 36°14'55"N, 121°50'10"W

Brandt's Cormorant	72	(Nelson & Sows, 6/22/79, B, II)	42
Pelagic Cormorant	20	(Nelson & Sows, 6/22/79, B, II)	42
Pigeon Guillemot	40	(Nelson & Sows, 6/22/79, B, III)	42
Total	<u>132</u>		
No nesting birds		(Reynolds, 7/15/70, A)	36

032 Pfeiffer Point 36°35'18"N, 121°47'35"W

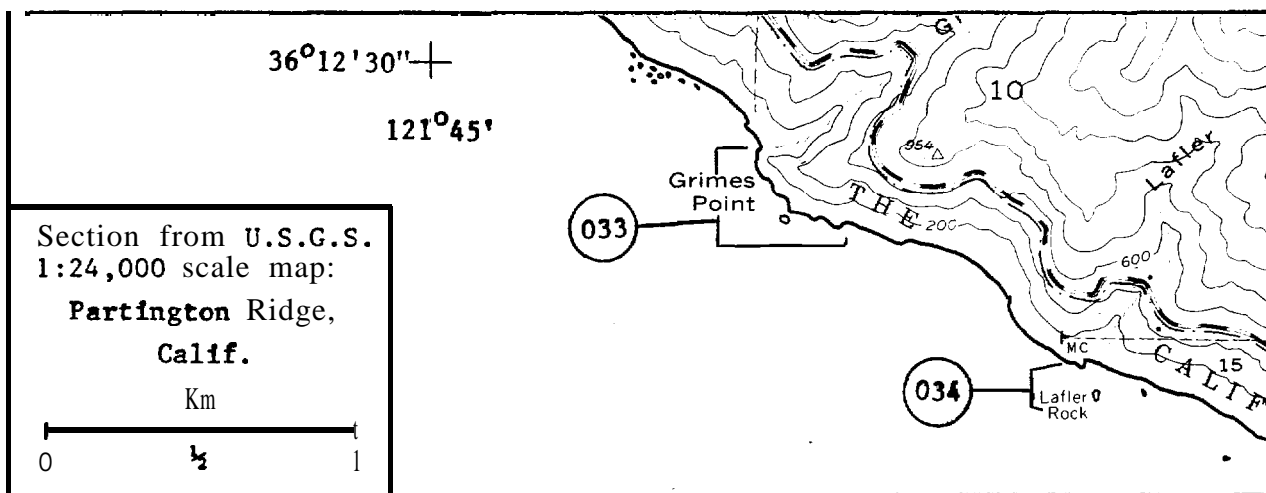
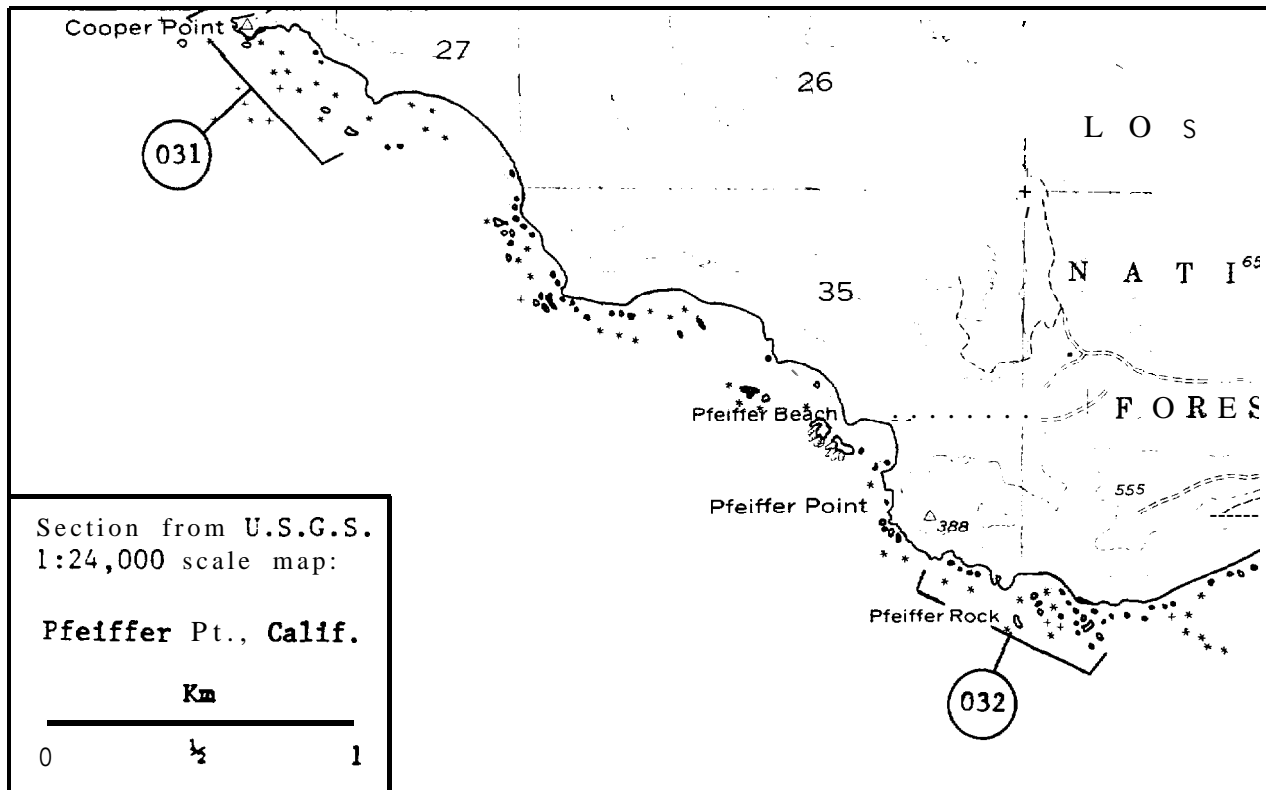
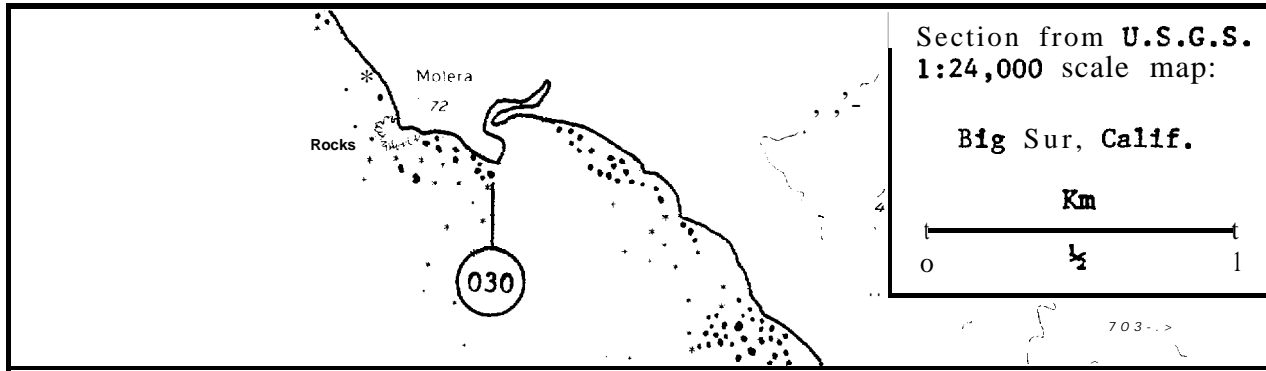
Cormorant (Unid.)	2	(Nelson & Sows, 6/22/79, B, II)	42
Brandt's Cormorant	6	(Nelson & Sows, 6/22/79, B, I)	42
Pelagic Cormorant	4	(Nelson & Sows, 6/22/79, B, I)	42
Pigeon Guillemot	8	(Nelson & Sows, 6/22/79, B, III)	42
Total	<u>20</u>		

033 Grimes Point 36°12'20"N, 121°44'15"W

Brandt's Cormorant	16	(Nelson & Sows, 6/22/79, B, II)	42
Pelagic Cormorant	20	(Nelson & Sows, 6/22/79, B, II)	42
Black Oystercatcher	2	(Nelson & Sows, 6/22/79, B, III)	42
Pigeon Guillemot	40	(Nelson & Sows, 6/22/79, B, III)	42
Total	<u>78</u>		

034 Lafier Rock and Mainland 36°12' N, 121°43'36"W

Brandt's Cormorant	12	(Nelson & Sows, 6/22/79, B, I)	42
Pelagic Cormorant	6	(Nelson & Sows, 6/22/79, B, I)	42
Pigeon Guillemot	<u>20</u>	(Nelson & Sows, 6/22/79, B, III)	42
Total	<u>38</u>		



035 "Partington Ridge South" 36°00'N, 121°40'40"W

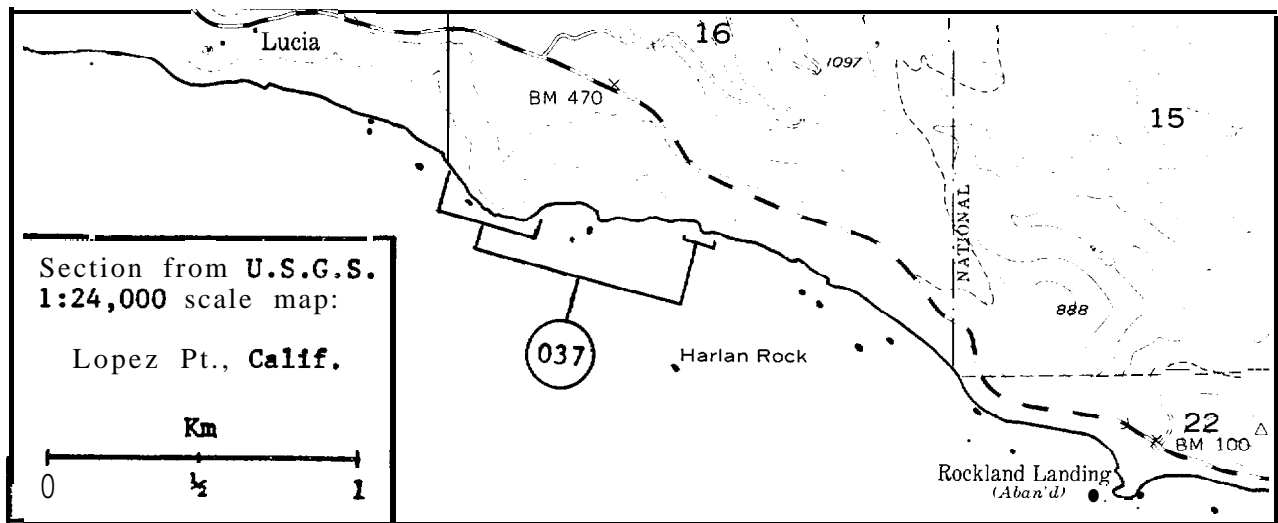
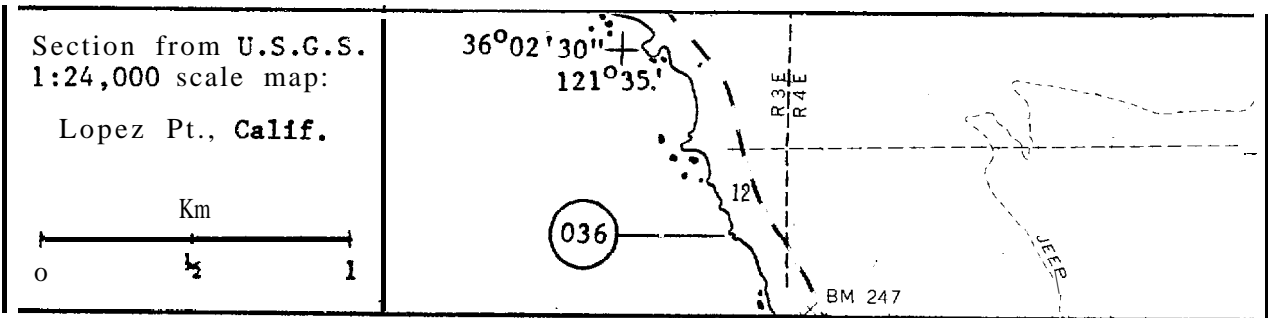
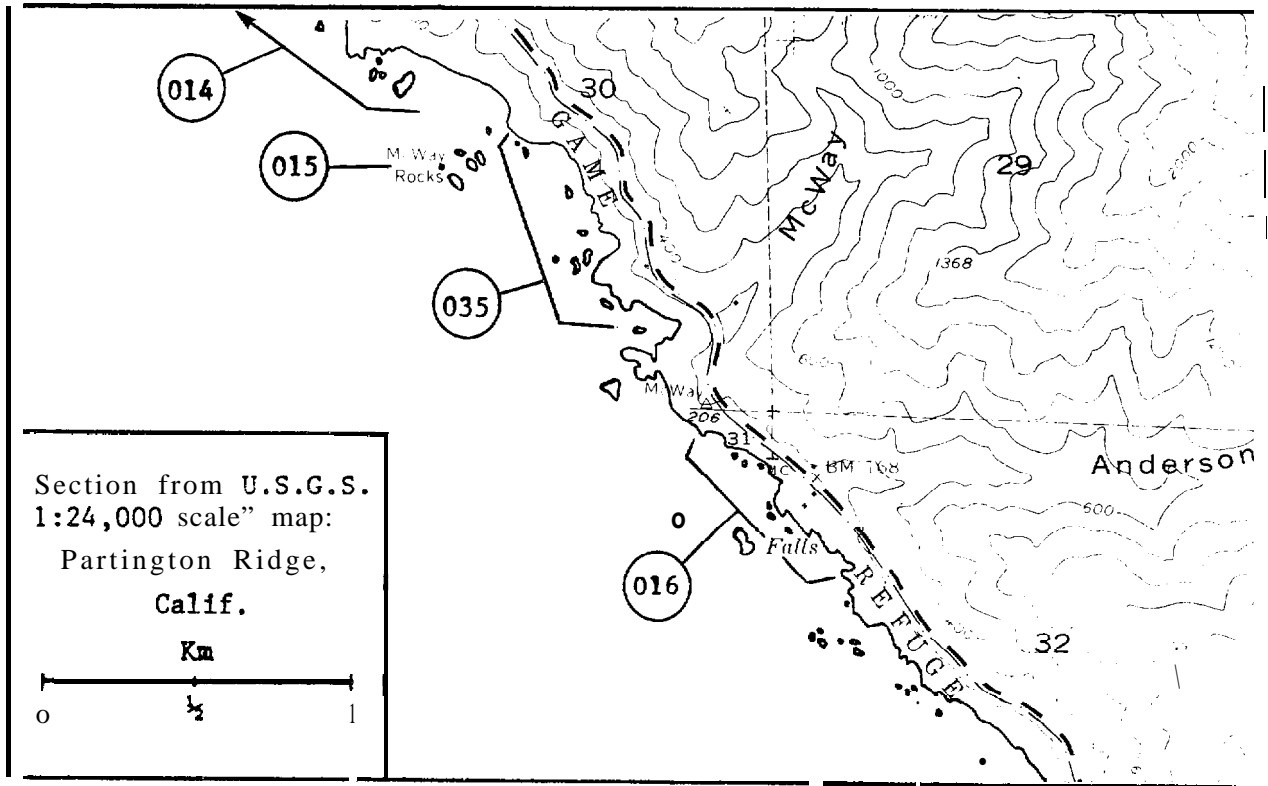
Pelagic Cormorant	20	(Nelson & Sows,6/23/79,B,I)	42
Western Gull	30	(Nelson & Sows,6/23&7/13/79,B,III)	42
Pigeon Guillemot	416	(Nelson & Sows,6/23&7/13/79,B,III)	42
Total	466		

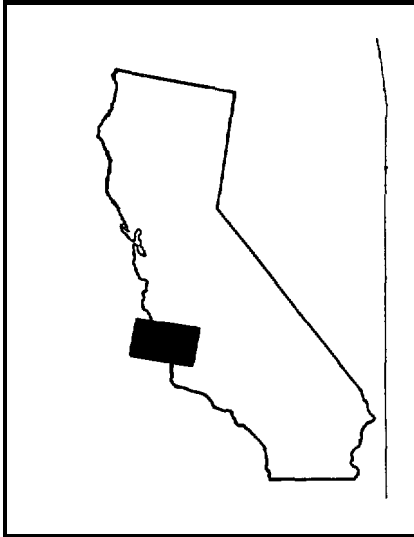
036 "Bench Mark 247" 36°02'N, 121°34'45"W

Pelagic Cormorant	6	(Nelson & Sows,6/23/79,B,I)	42
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037 "Rockland Landing North" 36°00'57"N, 121°32'30"W

Brandt's Cormorant	16	(Nelson & Sows,6/23/79,B,II)	42
Pelagic Cormorant	64	(Nelson & Sows,6/23/79,B,II)	42
Total	80		
Pelagic Cormorant	20-40	(Reynolds,7/23/70,M)	36





477

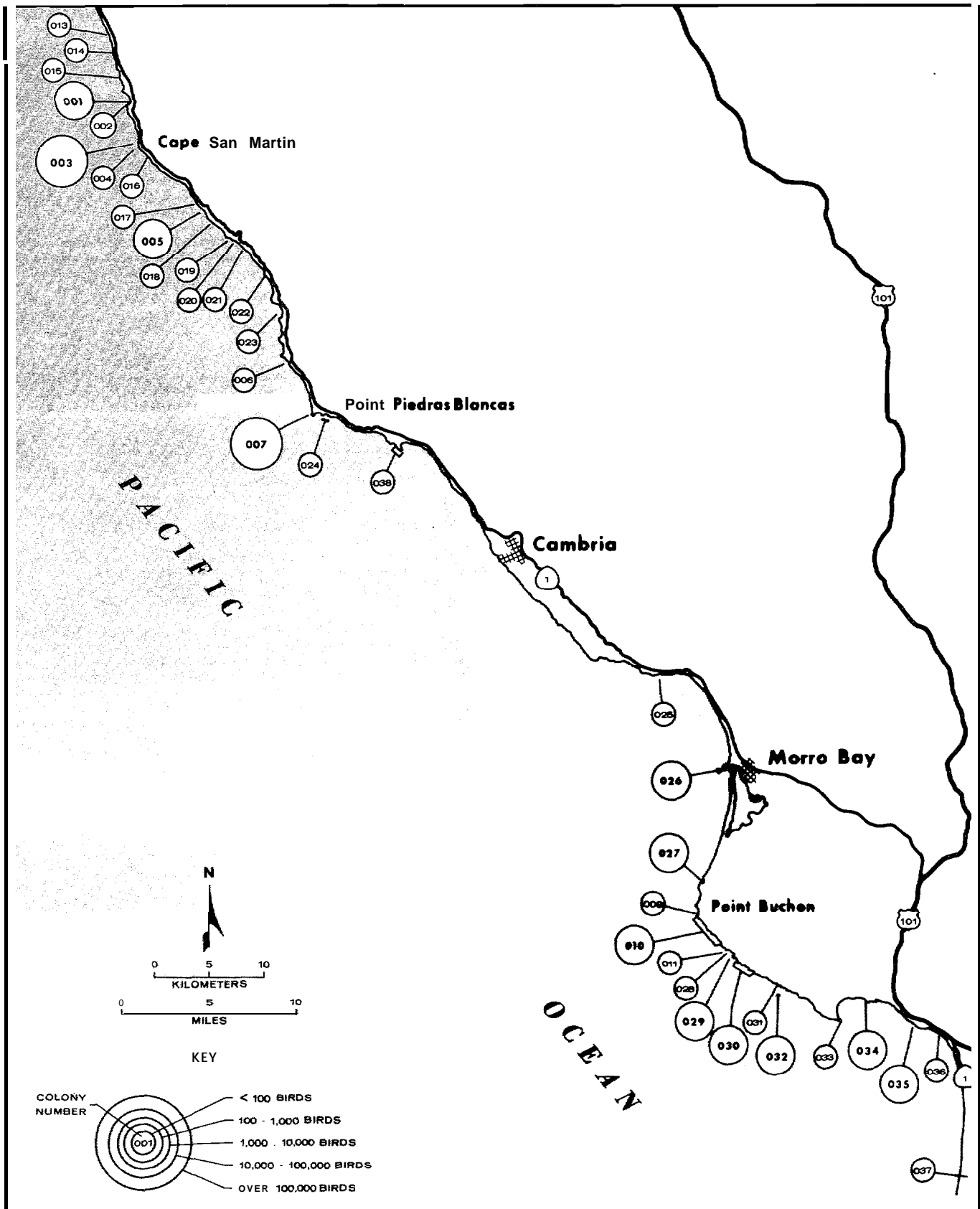
**San Luis Obispo**

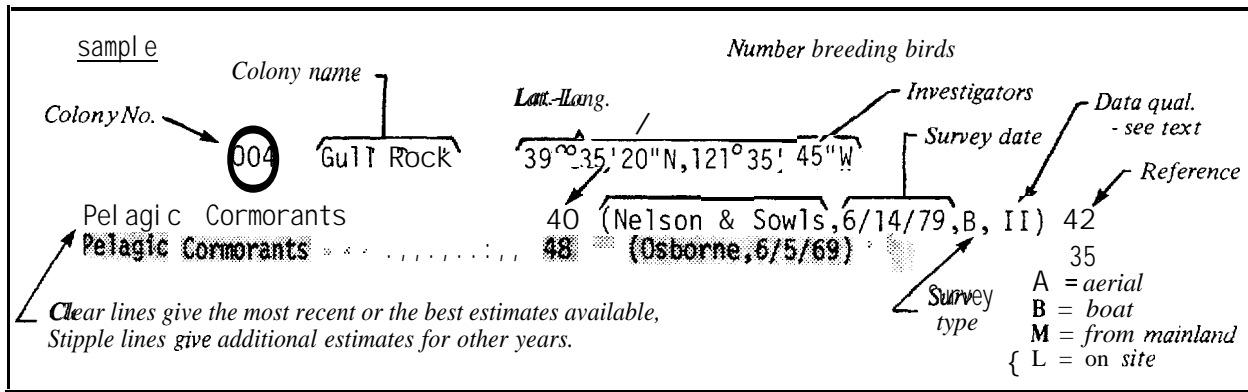
The map on the facing page is an index to the locations of colonies within map 477, San Luis Obispo. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujan (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

Brandt's Cormorant . . . . .	3,000
Pelagic Cormorant . . . . .	700
Black Oystercatcher . . . . .	80
Western Gull . . . . .	1,100
Pigeon Guillemot . . . . .	1,200
Tufted Puffin . . . . .	0-2

# 477 San Luis Obispo



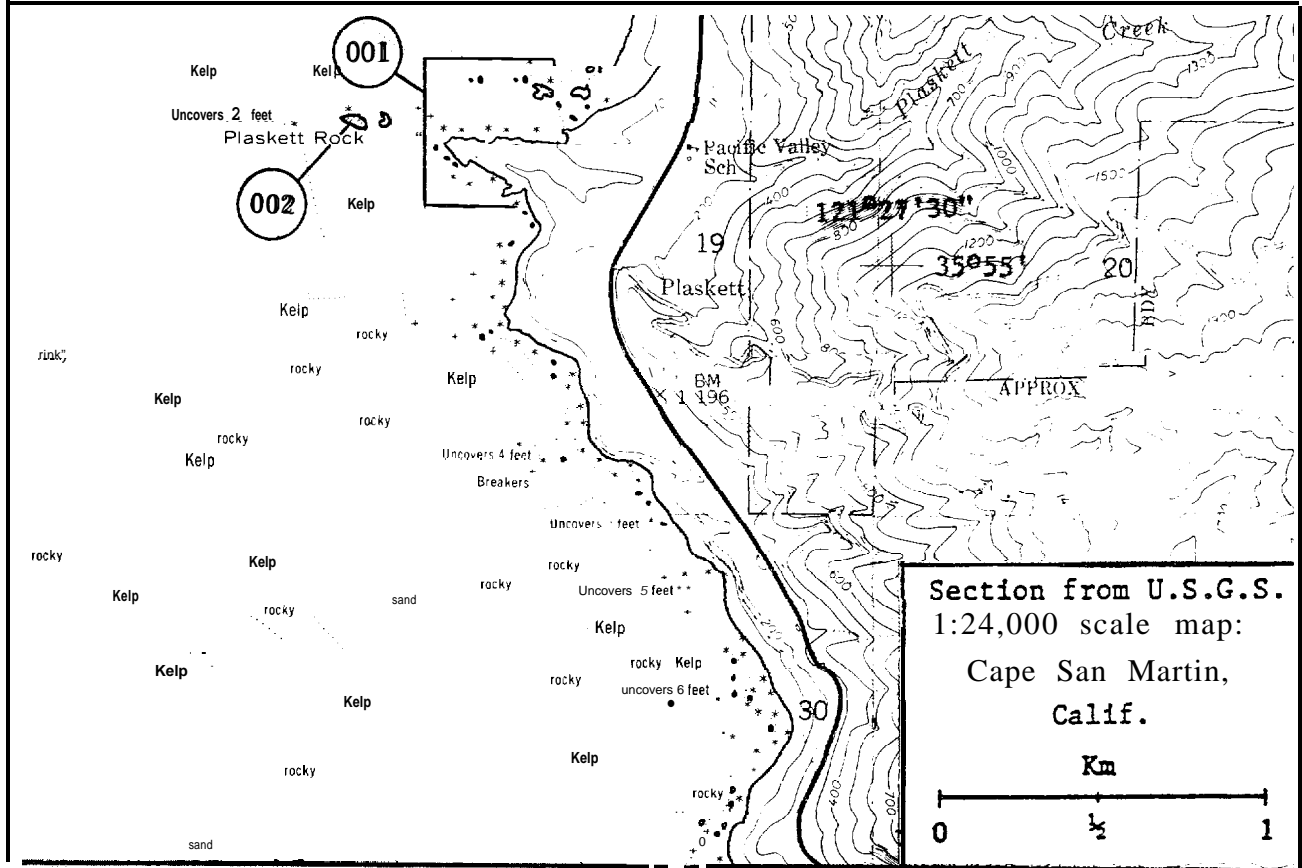


001 Small rocks and mainland north and east of Plaskett Rock  
35°55'16''N, 121°28'22''W

Pelagic Cormorant	42	(Nelson & Sows, 6/25/79, B, I)	42
Black Oystercatcher	6	(Nelson & Sows, 6/25/79, B, II)	42
Western Gull	64	(Nelson & Sows, 6/25/79, B, 7/13/79, M, III)	42
Pigeon Guillemot	30	(Nelson & Sows, 6/25/79, B, III)	42
Total	142		
Western Gull	40	(Reynolds, 5/4/70, M)	36

002 Plaskett Rock 35°55'14"N, 121°28'41"W

Brandt's Cormorant	0	(Nelson & Sows, 6/23/80, A, II)	42
Pelagic Cormorant	10	(Nelson & Sows, 6/25/79, B, II)	42
Black Oystercatcher	2	(Nelson & Sows, 6/25/79, B, III)	42
Western Gull	60	(Nelson & Sows, 6/25/79, B, III)	42
Pigeon Guillemot	20	(Nelson & Sows, 6/25/79, B, III)	42
Total	92		
Brandt's Cormorant	200	(Reynolds, 5/4/70, M)	36
Brandt's Cormorant	0	(Nelson & Sows, 6/25/79, B, 8/2/79, A, I)	42
Pigeon Guillemot	2	(Reynolds, 5/4/70, M)	36



Plaskett Rock

Photo by Jay Nelson

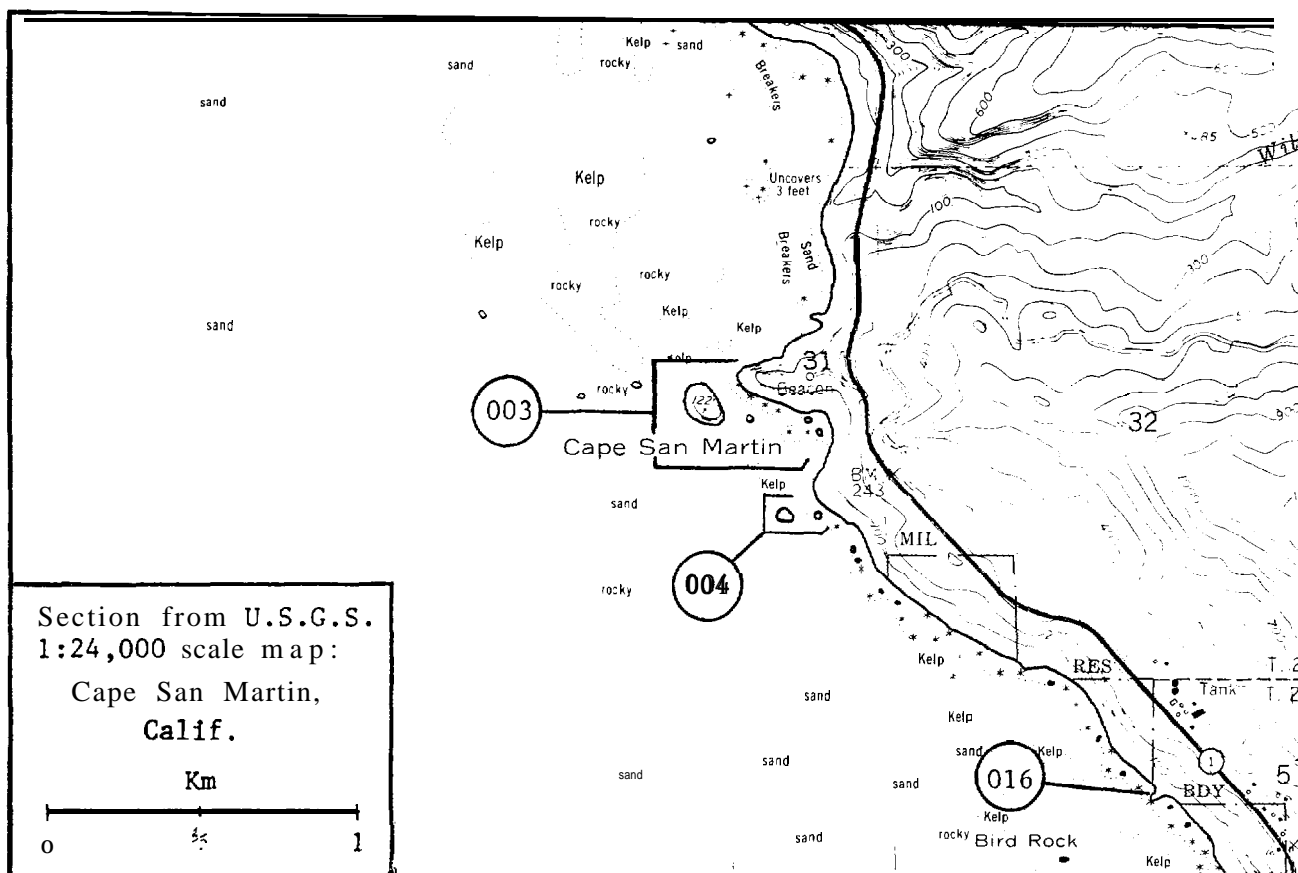
AREA 477, San Luis Obispo (cent'd.)

003 Cape San Martin 35°53' 17"N, 121°27'55"W

Brandt's Cormorant	680	(Nelson & Sows, 6/23/80, A, II)	42
Pelagic Cormorant	26	(Nelson & Sows, 6/24/79, M, 6/25/79, B, II)	42
Black Oystercatcher	4	(Nelson & Sows, 6/24/79, M, 6/25/79, B, III)	42
Western Gull	474	(Nelson & Sows, 6/24/79, M, 6/25/79, B, III)	42
Pigeon Guillemot	8	(Nelson & Sows, 6/24/79, M, 6/25/79, B, III)	42
Total	<u>1,192</u>		
Brandt's Cormorant	400	(Reynolds, 5/4/70, M)	36
Brandt's Cormorant	1,228	(Nelson & Sows, 6/24/79, M, 6/25/79, B, 8/2/79, A, II)	42
Western Gull	140	(Reynolds, 5/4/70, M)	36
Pigeon Guillemot	2	(Reynolds, 5/4/70, M)	36

004 Unnamed Rock 35°53' 05'' N, 121°27' 46'' W

Pelagic Cormorant	2	(Nelson & Sows, 6/24/79, M, 6/25/79, B, II)	42
Black Oystercatcher	2	(Nelson & Sows, 6/24/79, M, 6/25/79, B, III)	42
Western Gull	<u>12</u>	(Nelson & Sows, 6/24/79, M, 6/25/79, B, III)	42
Total	<u>16</u>		
Brandt's Cormorant	150	(Reynolds, 5/4/70, M)	36



Cape San Martin

Photo by Jay Nelson

AREA 477, San Luis Obispo (cent'd.)

005 "Redwood Gulch Rock" 35°49'32"N, 121°23'29"W

Brandt's Cormorant	478	(Nelson & Sows, 6/24/79, M, 6/25/79, B, II)	42
Pigeon Guillemot	2	(Nelson & Sows, 6/24/79, M, 6/25/79, B, II)	42
Total	480		
Brandt's Cormorant	600	(Reynolds, 7/21/70, M)	36

006 La Cruz Rock 35°42'23"N, 121°18'45"W

Cormorant (unid.)	0	(DeGange & Nelson, 7/15/80, L, I)	42
Black Oystercatcher	2	(DeGange & Nelson, 7/15/80, L, I)	42
Western Gull	10	(DeGange & Nelson, 7/15/80, L, II)	42
Total	12		
Cormorant (unid.)	4	(Nelson & Sows, 6/25/79, BL, I)	42
Black Oystercatcher	2	(Reynolds, 7/19/70, M)	36
Black Oystercatcher	2	(Nelson & Sows, 6/25/79, BL, I)	42
Western Gull	20	(Nelson & Sows, 6/25/79, BL, III)	42

007 Piedras Blancas 35°39'52"N, 121°17'18"W

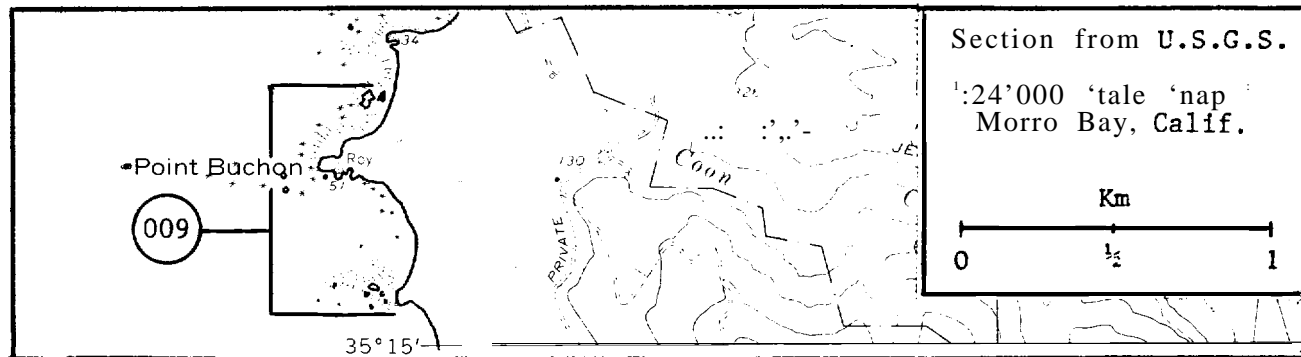
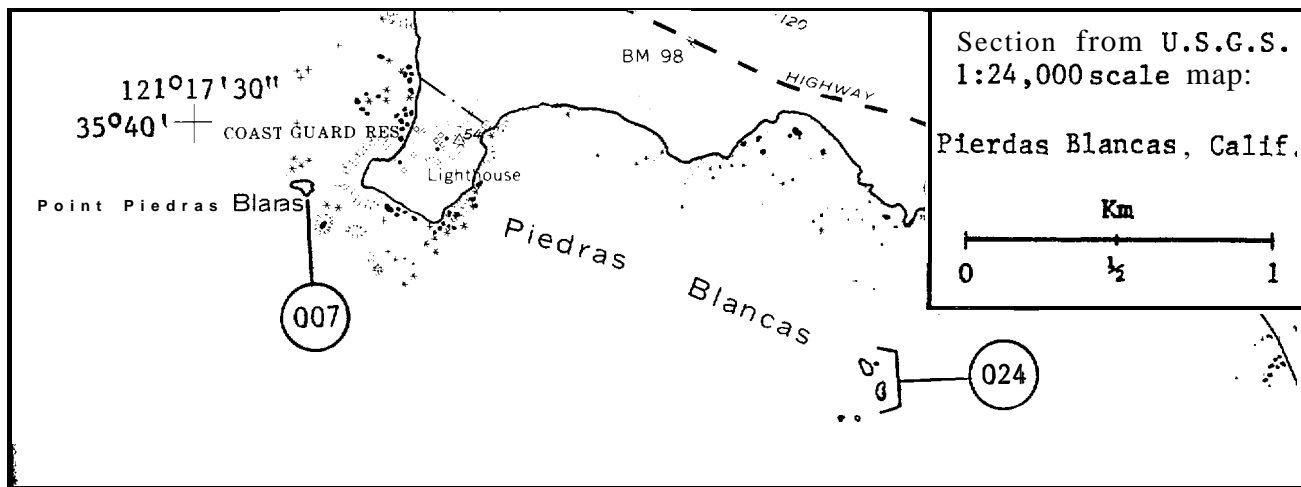
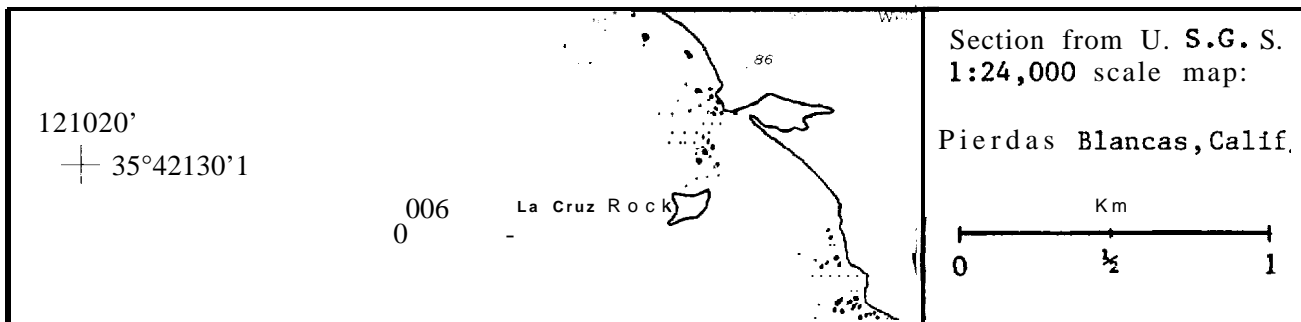
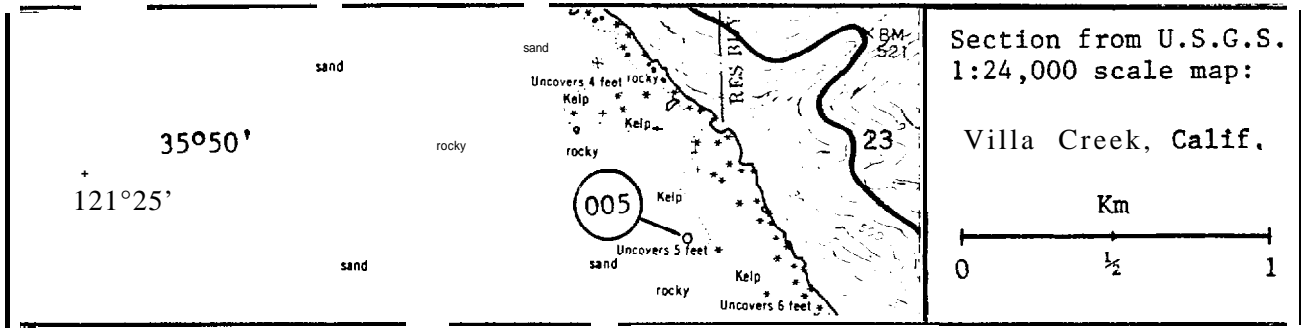
Brandt's Cormorant	1,200	(Nelson & Sows, 6/23/80, A, II)	42
Black Oystercatcher	2	(Sorensen, 1980, M, III)	30
Western Gull	56	(Nelson & Sows, 6/26/79, B, III)	42
Pigeon Guillemot	50	(Nelson & Sows, 6/26/79, B, III)	42
Tufted Puffin	0	(Jameson, 1980, M)	30
Total	1,308		
Brandt's Cormorant	200	(Reynolds, 7/15-19/70, AM)	36
Brandt's Cormorant	1,360	(Nelson & Sows, 8/2/79, A, II)	42
Western Gull	8	(Reynolds, 7/15-19/70, AM)	36
Pigeon Guillemot	2	(Reynolds, 7/15-19/70, AM)	36
Tufted Puffin	2	(Reynolds, 7/15-19/70, AM)	36
Tufted Puffin	2	(Nelson & Sows, 6/26/79, B, III)	42

008 Morro Bay was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979). For information on Morro Rock see 026.

009 Point Buchon 35°15'20"N, 121°53'58"W

Pelagic Cormorant	4	(Chambers, Rodstrom & Sows, 7/6/79, B, II)	42
Black Oystercatcher	6	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42
Pigeon Guillemot	20	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42
Total	30		
Pelagic Cormorant	46	(Frame, 1972, M)	19

AREA 477, San Luis Obispo (cent'd.)



AREA 477, San Luis Obispo (cont'd.)

010 Unnamed Rocks 35°14'40"N, 120°53'39"W

Pelagic Cormorant	64	(Lester, Nelson & Sows, 6/10/80, B, II)	42
Black Oystercatcher	10	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42
Western Gull	22	(Lester, Nelson & Sows, 6/10/80, B, III)	42
Pigeon Guillemot	200	(Chambers, Rodstrom & Sows, 7/16/79, B, III)	42
Total	296		
Pelagic Cormorant	50	(Frame, 1972, M)	19
Pelagic Cormorant	62	(Chambers, Rodstrom & Sows, 7/6/79, B, II)	42
Black Oystercatcher	4	(Lester, Nelson & Sows, 6/10/80, B, III)	42
Western Gull	54	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42

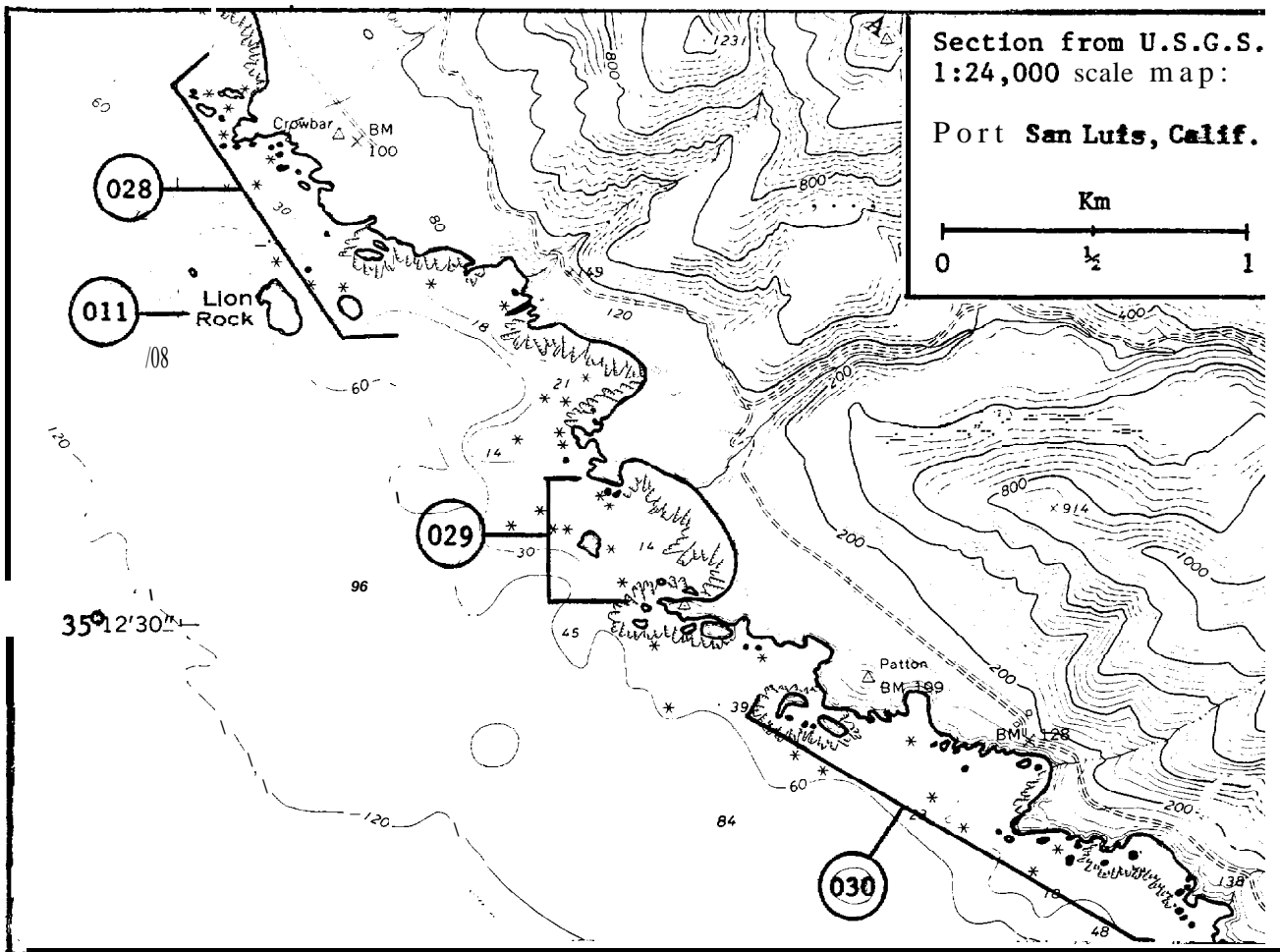
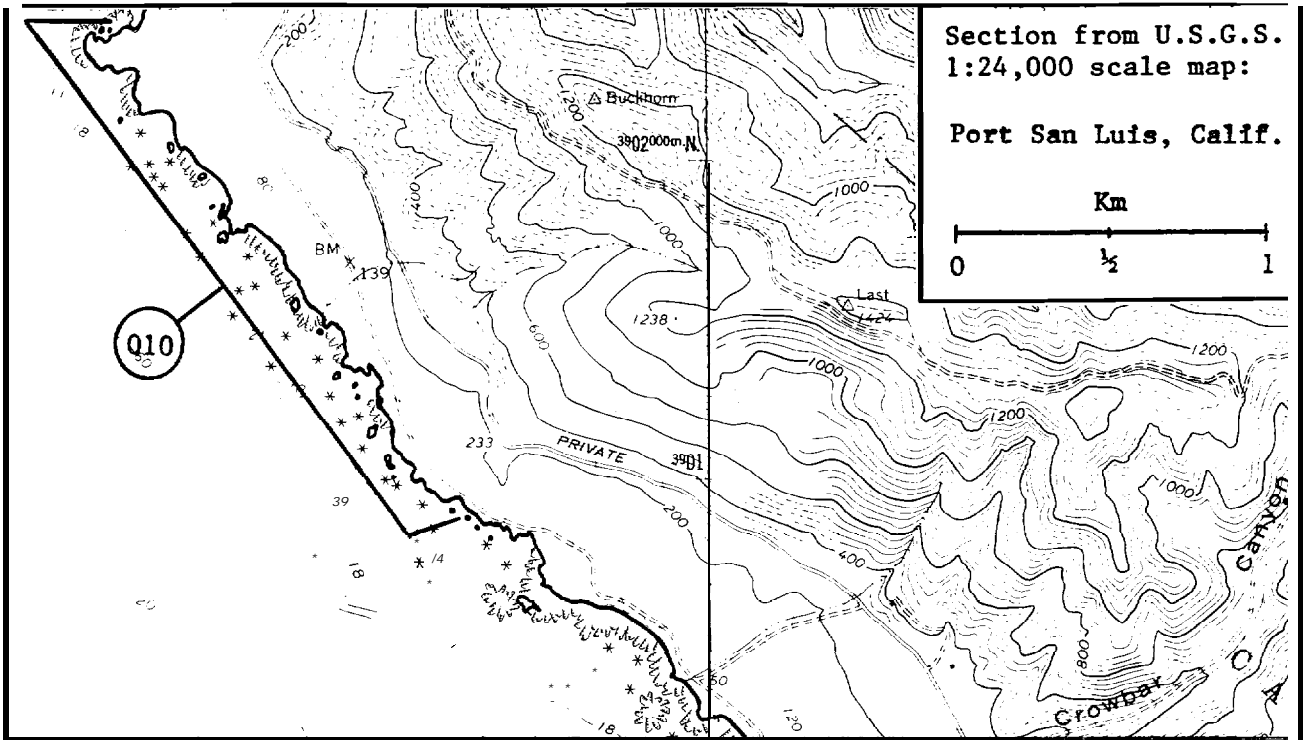
011 Lion Rock 35°31'01"N, 120°52'15"W

While Lion Rock is not an important nesting island, it is a critical roost rock. In the fall, up to 5,000 cormorants, hundreds of Brown Pelicans, and lesser numbers of Western and Heermann's Gulls roost here. California Sea lions haul out here in large numbers.

Brandt's Cormorant	0	(Nelson & Sows, 6/23/80, A, I)	42
Pelagic Cormorant	0	(Lester, Nelson & Sows, 6/10/80, B, II)	42
Black Oystercatcher	2	(Lester, Nelson & Sows, 6/10/80, B, II)	42
Western Gull	34	(Lester, Nelson & Sows, 6/10/80, B, III)	42
Pigeon Guillemot	30	(Chambers, Rodstrom & Sows, 7/6/79, BL, III)	42
Total	66		
Brandt's Cormorant	700	(Reynolds, 7/15/70, A)	36
Brandt's Cormorant	200+	(Frame, 1972, L)	19
Brandt's Cormorant	100	(Chambers, 1978, BL)	13
Brandt's Cormorant	0	(Chambers, Rodstrom & Sows, 7/6/79, B, L, 8/2/79, A, I)	42
Pelagic Cormorant	30	(Frame, 1972, L)	19
Black Oystercatcher	4	(Chambers, Rodstrom & Sows, 7/6/79, BL, III)	42
Western Gull	20	(Chambers, Rodstrom & Sows, 7/6/79, BL, III)	42

012 Unnamed Rock 35°12'06"N, 120°50'28"W

This site was reported by Reynolds in 1970. Exact location of this site is uncertain. Data has been combined with number 030.



**AREA 477, San Luis Obispo (cent'd.)**

013 "36 North" 35°58'36"N, 121°29'15"W

Pelagic Cormorant	6 (Nelson & Sows, 6/25/79, B, I)	42
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014 "Larus Rock" 35°57'44"N, 121°29'01"W

Pelagic Cormorant	2 (Nelson & Sows, 6/24/79, M, 6/25/79, B, I)	42
Black Oystercatcher	2 (Nelson & Sows, 6/24/79, M, 6/25/79, B, I)	42
Western Gull	20 (Nelson & Sows, 6/24/79, M, 6/25/79, B, II)	42
Total	<u>24</u>	

015 Unnamed Point 35°57'00"N, 121°28'51"W

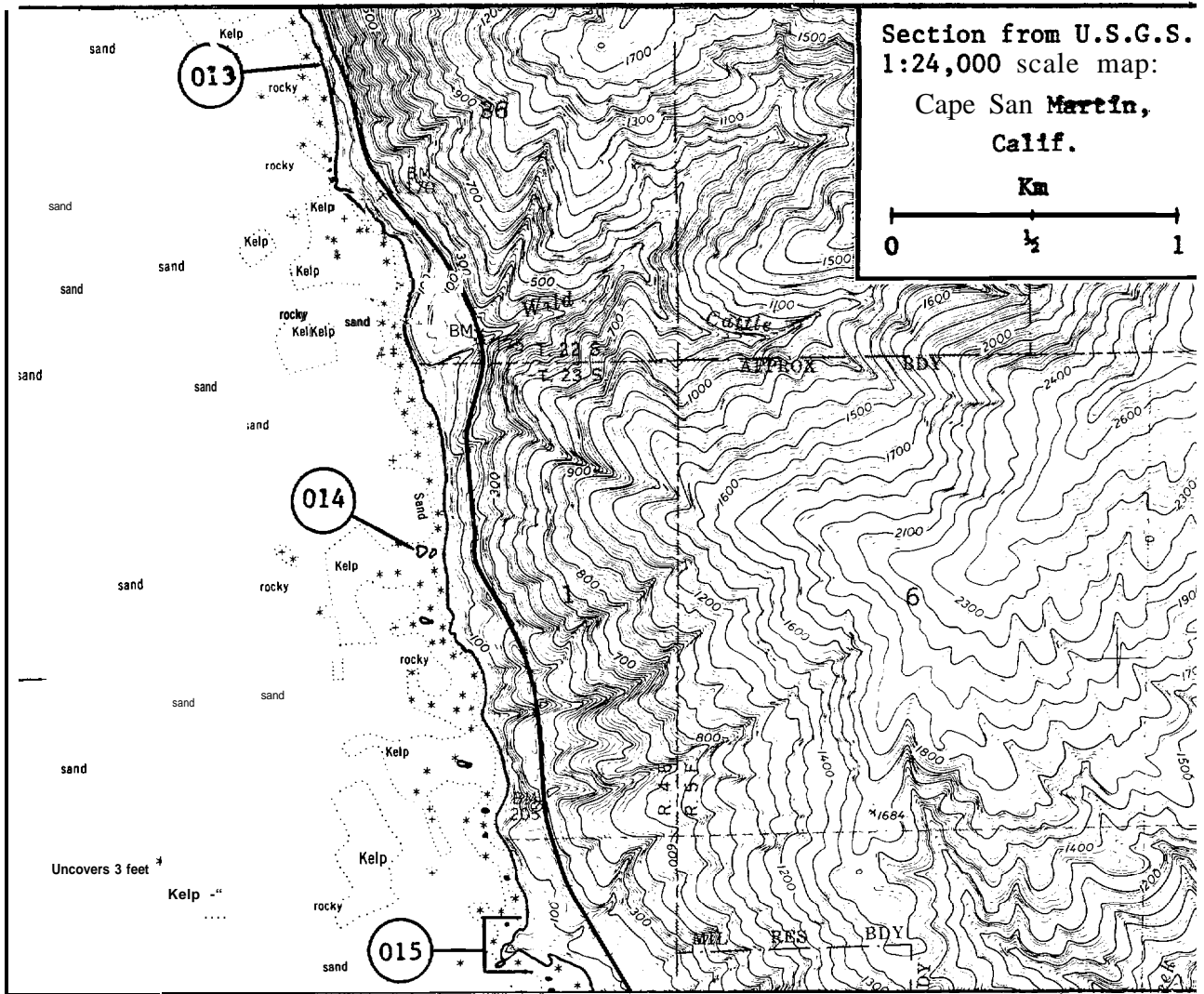
Pelagic Cormorant	6 (Nelson & Sows, 6/25/79, B, I)	42
Black Oystercatcher	2 (Nelson & Sows, 6/25/79, B, III)	42
Western Gull	4 (Nelson & Sows, 6/25/79, B, III)	42
Total	<u>12</u>	

016 Mainland point across from Bird Rock 35°52'37'' N, 121°26'59'' W

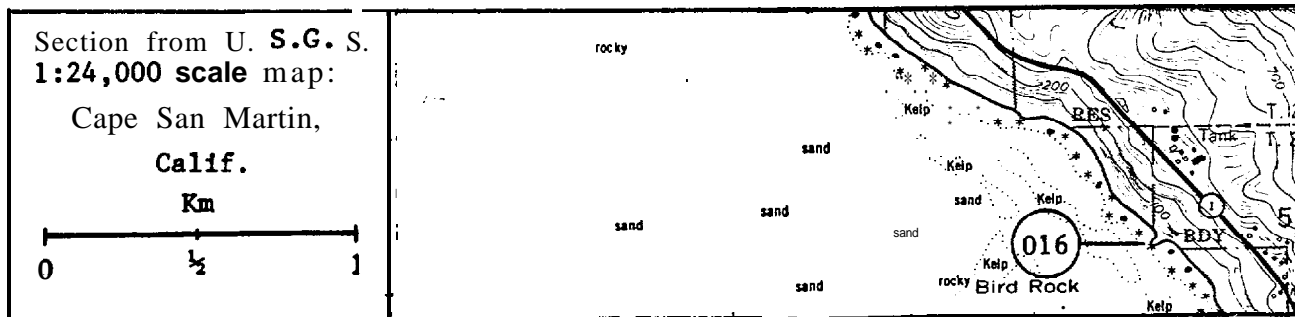
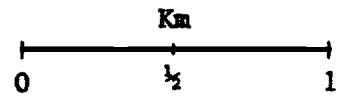
Pelagic Cormorant	38 (Nelson & Sows, 6/25/79, B, I)	42
Black Oystercatcher	2 (Nelson & Sows, 6/25/79, B, III)	42
Total	<u>40</u>	

017 Point north of Redwood Gulch 35°50'20'' N, 121°024'04'' W

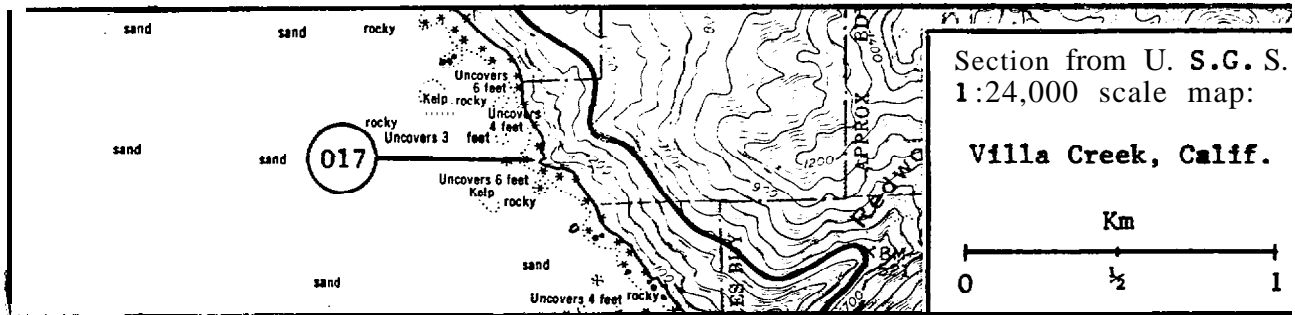
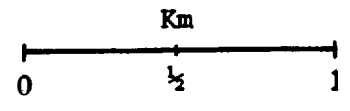
Pelagic Cormorant	26 (Nelson & Sows, 6/25/79, B, I)	42
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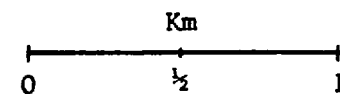
Section from U.S.G.S.  
1:24,000 scale map:  
Cape San Martin,  
Calif.



Section from U. S.G. S.  
1:24,000 scale map:  
Cape San Martin,  
Calif.



Section from U. S.G. S.  
1:24,000 scale map:  
Villa Creek, Calif.



AREA 477, San Luis Obispo (cont'd.)

018 Seastack south of Redwood Gulch 35°49'30'' N, 121°023' 22'' W

Pelagic Cormorant	16 (Nelson & Sows, 6/25/79, B, I)	42
Black Oystercatcher	P (Nelson & Sows, 6/25/79, B)	42
Western Gull	6 (Nelson & Sows, 6/25/79, B, I)	42
Total	<u>22</u>	

P = probably present

019 "Unmapped Island" 35°48'20'' N, 121°022' 26'' W

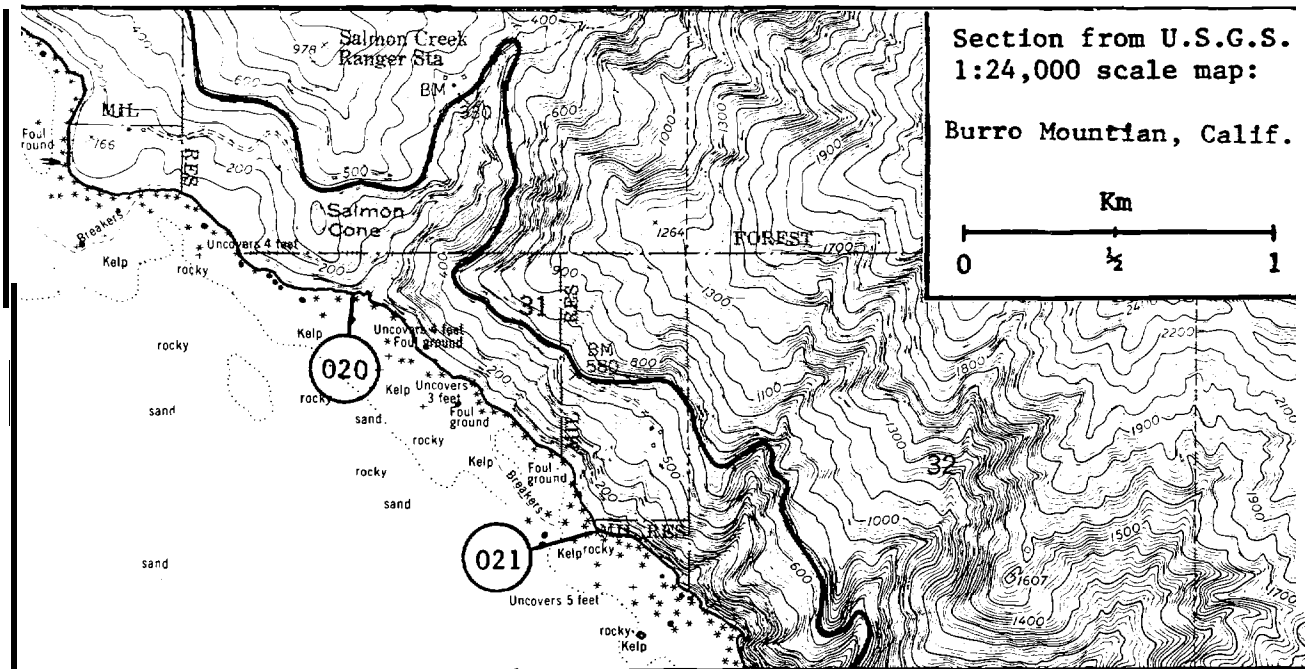
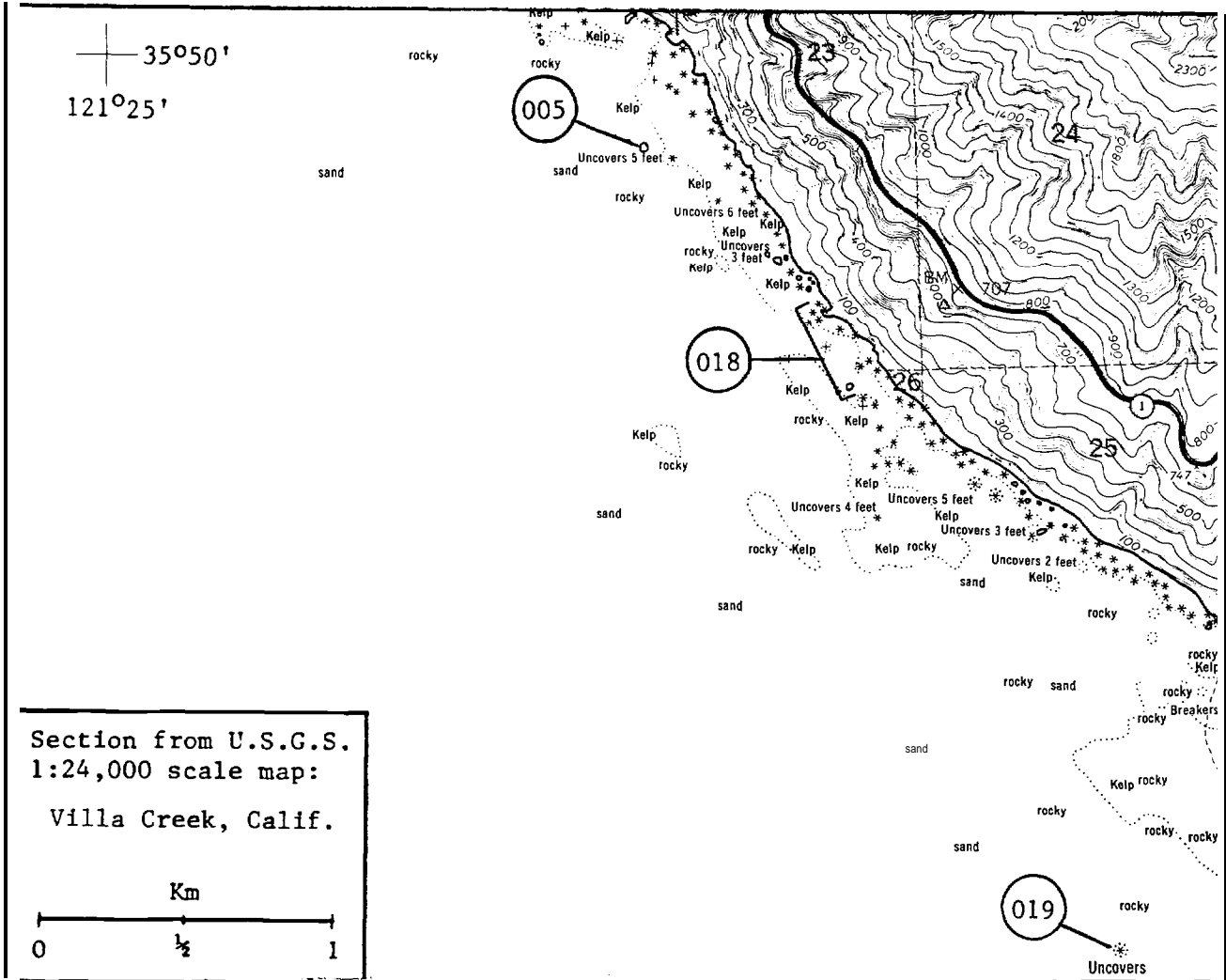
Pelagic Cormorant	56 (Nelson & Sows, 6/25/79, B, II)	42
Pigeon Guillemot	12 (Nelson & Sows, 6/25/79, B, III)	42
Total	<u>68</u>	

020 "Salmon Creek" 35°48'31'' N, 121°021 '47'' W

Pelagic Cormorant	12 (Nelson & Sows, 6/25/79, B, I)	42
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021 Arched peninsula South of Salmon Creek 35°48'05'' N, 121°21' 14'' W

Pelagic Cormorant	8 (Nelson & Sows, 6/25/79, B, I)	42
Pigeon Guillemot	80 (Nelson & Sows, 6/25/79, B, III)	42
Total	<u>88</u>	



022 "Ragged Point Lodge Colony" 35°46'53"N, 121°19'56"W

Pelagic Cormorant	46	(Nelson & Sows, 6/24/79, M, 6/25/79, B, I)	42
Black Oystercatcher	2	(Nelson & Sows, 6/24/79, M, 6/25/79, B, III)	42
Western Gull	14	(Nelson & Sows, 6/24/79, M, 6/25/79, B, II)	42
Pigeon Guillemot	<u>20</u>	(Nelson & Sows, 6/24/79, M, 6/25/79, B, III)	42
Total	<u>82</u>		

023 "3 Rocks" 35°45'06'' N, 121°19'07"W

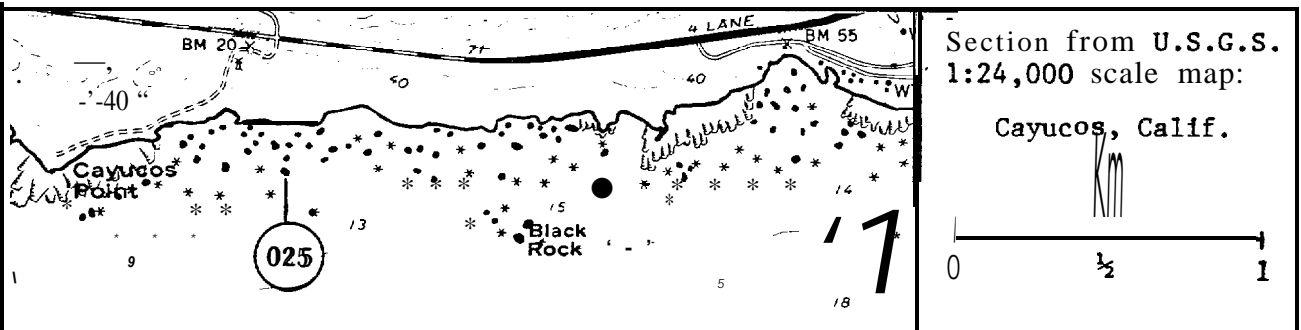
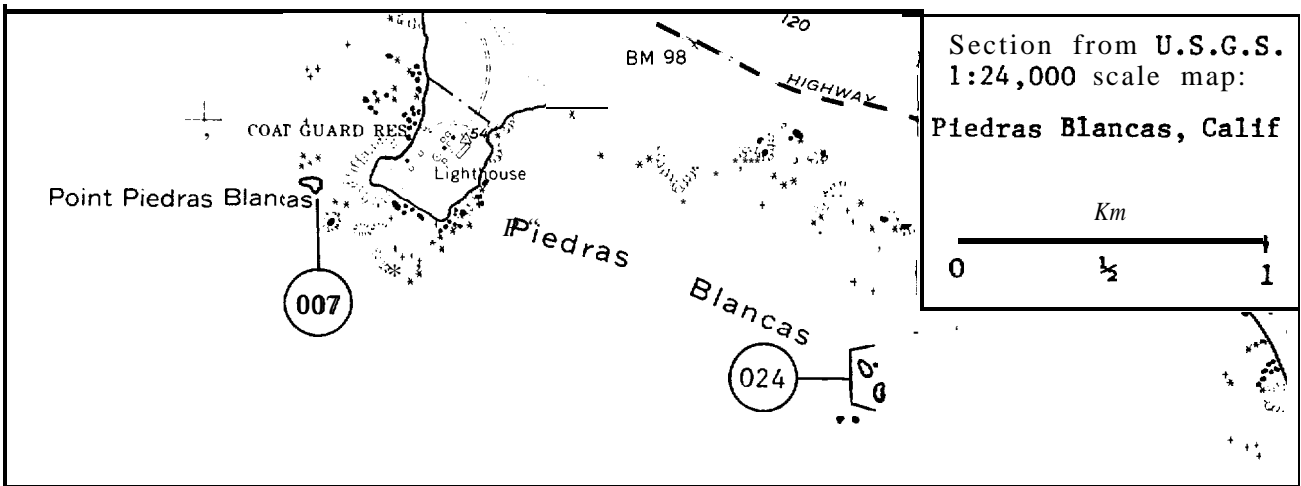
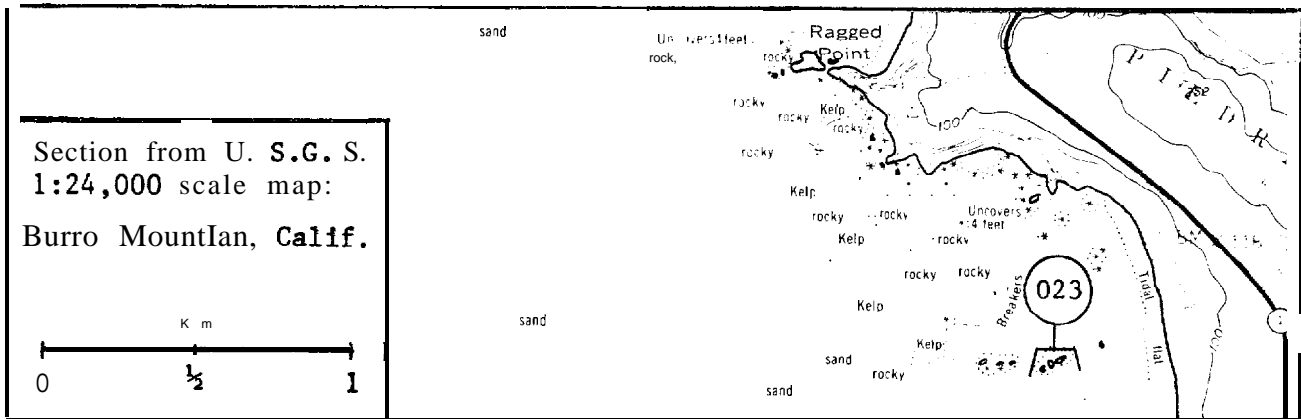
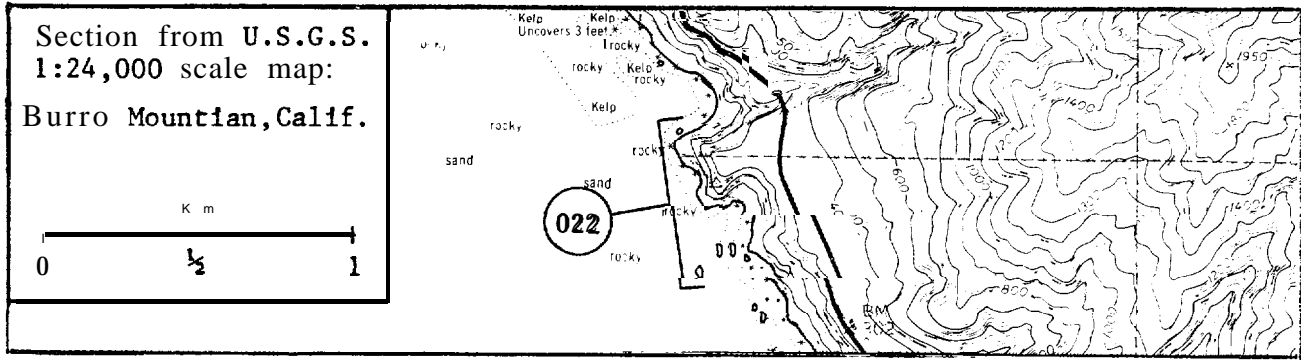
Pelagic Cormorant	38	(Nelson & Sows, 6/25/79, B, I)	42
Western Gull	<u>2</u>	(Nelson & Sows, 6/25/79, B, II)	42
Total	<u>40</u>		

024 Two rocks south of Point Piedras Blancas 35°39'30"N, 121°16'02"W

Western Gull	48	(Nelson & Sows, 6/26/79, B, II)	42
Pigeon Guillemot	<u>20</u>	(Nelson & Sows, 6/26/79, B, III)	42
Total	<u>68</u>		

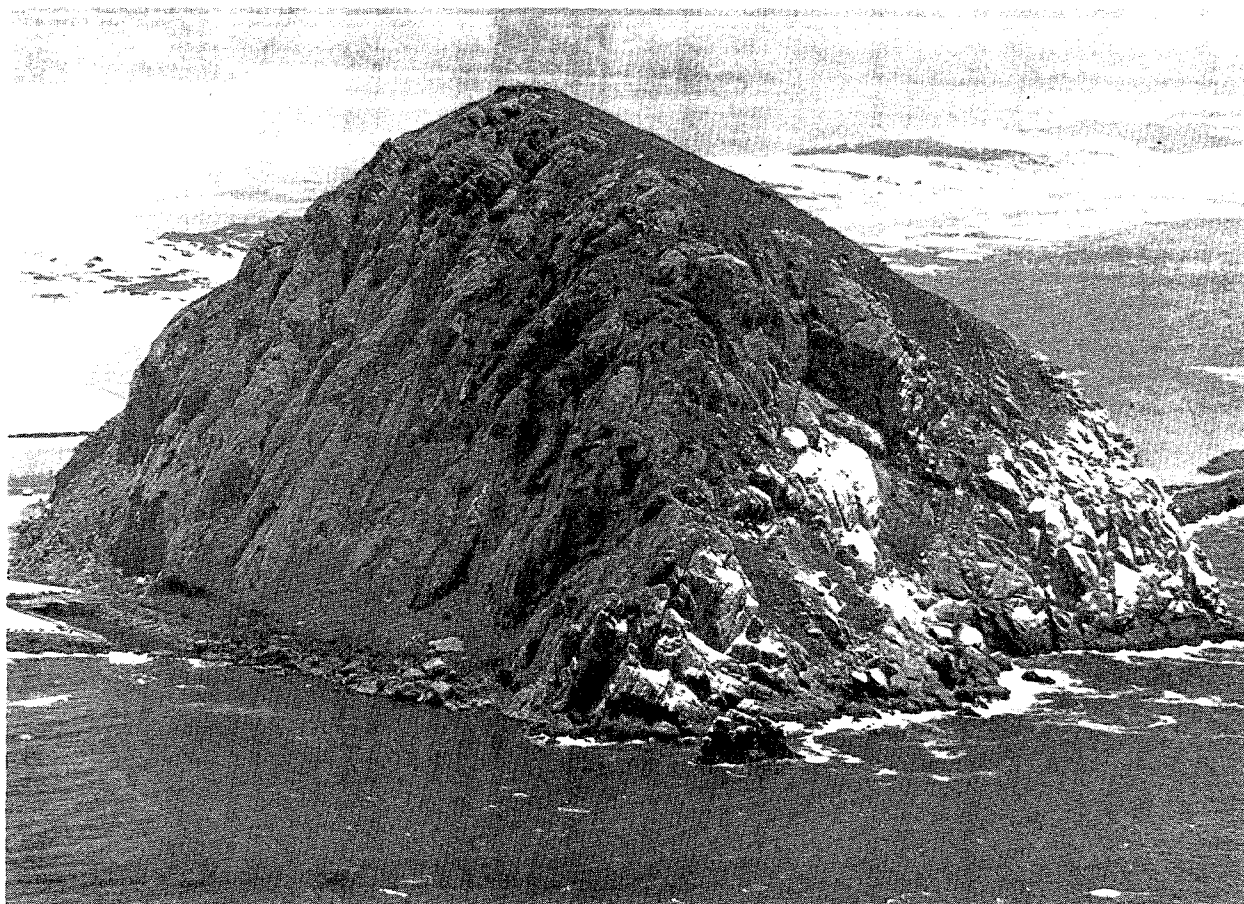
025 Island south of Cayucos Point 35°26'45'' N, 120°55'51"W

Black Oystercatcher	2	(Nelson & Sows, 6/26/79, BL, I)	42
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026 Morro Rock and Pillar Rock 35°22'13"N, 120°52'08"W

Pelagic Cormorant	40	(Lester & Nelson, 7/7/79, B, II)	42
Black Oystercatcher	2	(Lester & Nelson, 7/7/79, B, II)	42
Western Gull	120	(Lester & Nelson, 7/7/79, B, III)	42
Pigeon Guillemot	40	(Lester & Nelson, 7/7/79, B, III)	42
Total	202		

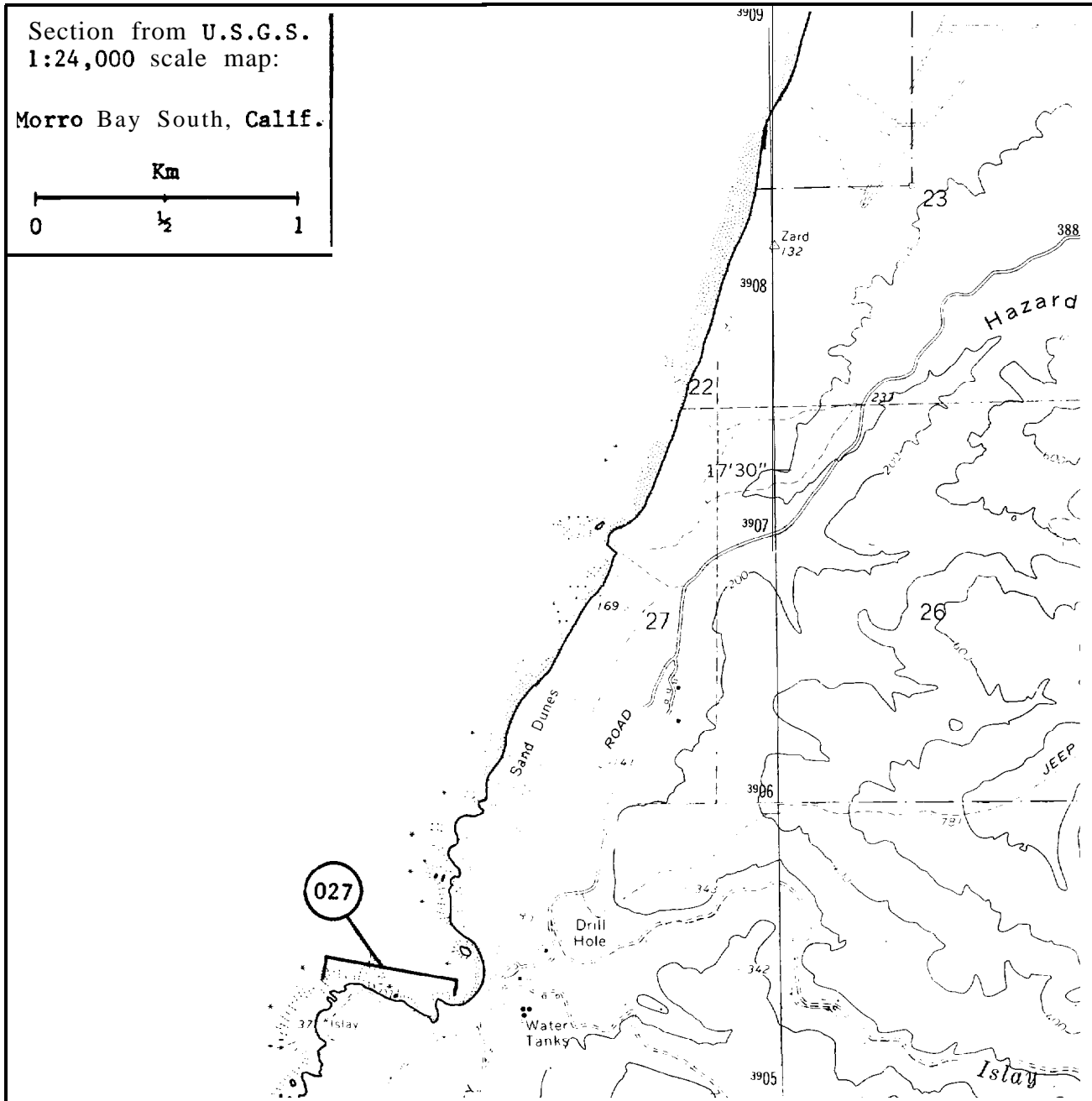
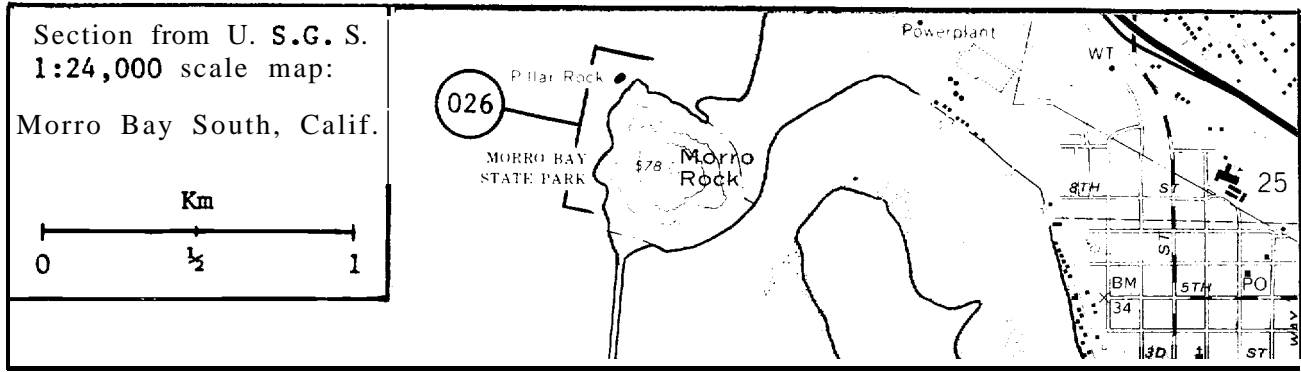


Morro Rock

Photo by Jay Nelson

027 Spooner's Cove 35°16'21'' N, 120°53'57'' W

Western Gull	2	(Nelson, 6/11/80, M, I)	42
Pigeon Guillemot	100	(Nelson, 6/11/80, M, III)	42
Total	102		



AREA 477, San Luis Obispo (cont'd.)

028 "Pup Rock and Adjacent Mainland" 35°13'00N, 120°52'11"W

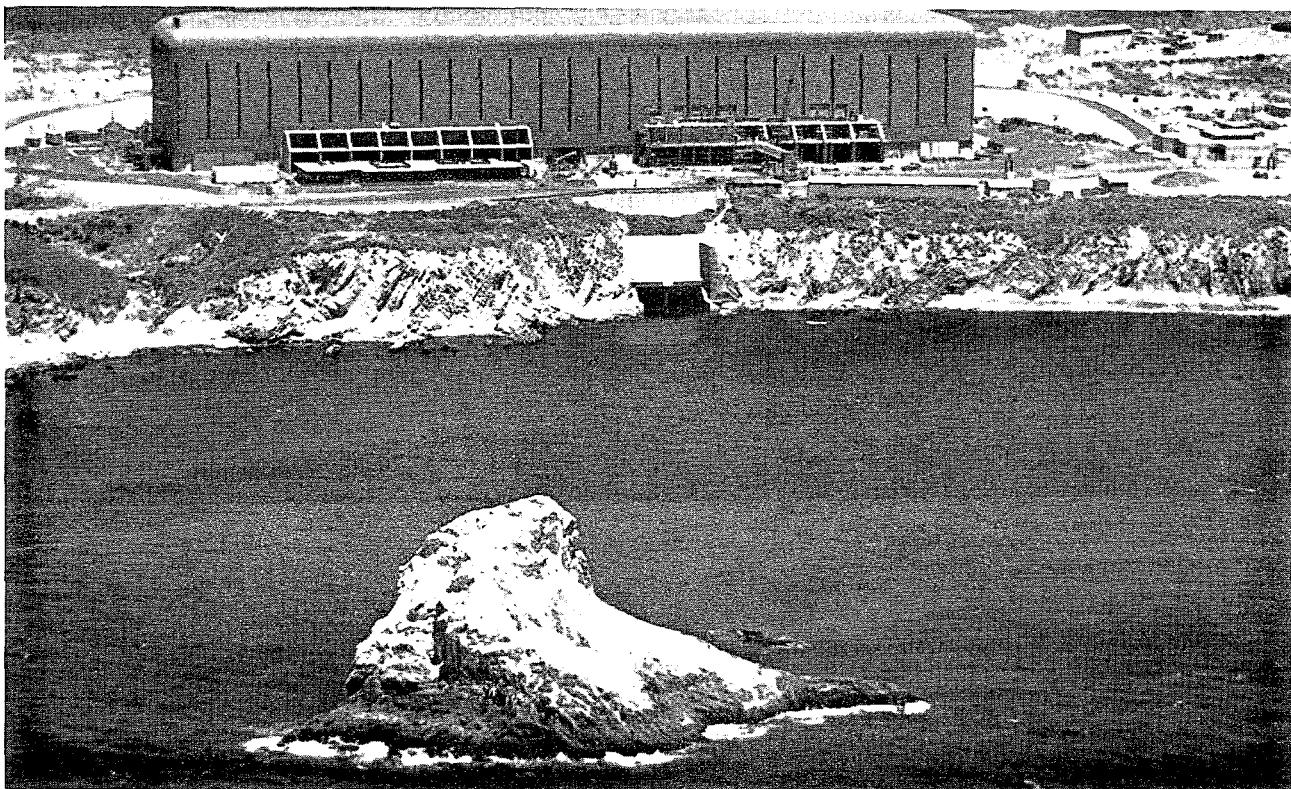
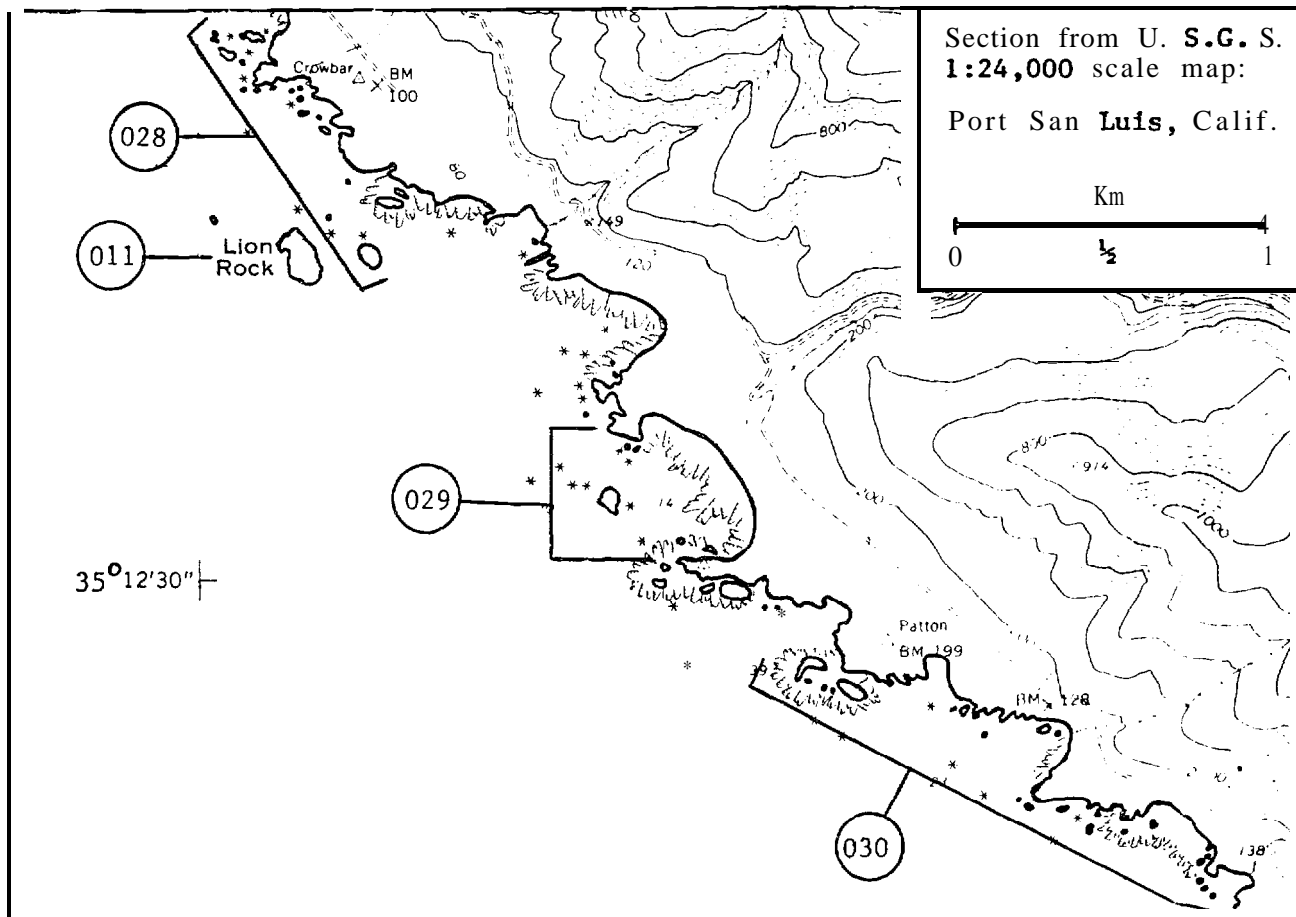
Black Oystercatcher	2	(Lester, Nelson, & Sows, 6/10/80, B, III)	42
Western Gull	54	(Lester, Nelson & Sows, 6/10/80, L, II)	42
Total	56		
Western Gull	40	(Chambers, Rodstrom & Sows, 7/6/79, BL, II)	42

029 Diablo Rock and Adjacent Mainland 35°12'36"N, 120°51'38"W

Brandt's Cormorant	212	(Lester, Nelson & Sows, 6/10/80, B, II)	42
Pelagic Cormorant	16	(Lester, Nelson & Sows, 6/10/80, B, II)	42
Western Gull	4	(Lester, Nelson & Sows, 6/10, 80, B, II)	42
Pigeon Guillemot	60	(Lester, Nelson, & Sows, 6/10/80, B, II)	42
Total	292		
Brandt's Cormorant	360	(Nelson & Sows, 8/2/79, A, II)	42
Pelagic Cormorant	22	(Chambers, Rodstrom & Sows, 7/6/79, B, II)	42
Black Oystercatcher	2	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42
Western Gull	4	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42
Pigeon Guillemot	30	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42

030 Diablo Canyon Nuclear Power Plant South 35°12'07"N, 120°50'39"W

Brandt's Cormorant	100	(Lester, Nelson & Sows, 6/10/80, B, III)	42
Pelagic Cormorant	82	(Lester, Nelson & Sows, 6/10/80, B, II)	42
Black Oystercatcher	4	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42
Western Gull	10	(Lester, Nelson & Sows, 6/10/80, B, II)	42
Pigeon Guillemot	132	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42
Total	328		
Cormorant (unid.)	16	(Chambers, Rodstrom & Sows, 7/6/79, B, I)	42
Brandt's Cormorant	200	(Reynolds, 7/15/70, A)	36
Brandt's Cormorant	16	(Chambers, Rodstrom & Sows, 7/6/79, B, I)	42
Pelagic Cormorant	18	(Chambers, Rodstrom & Sows, 7/6/79, B, II)	42
Western Gull	4	(Chambers, Rodstrom & Sows, 7/6/79, B, III)	42



Diablo Rock off of Diablo Canyon Nuclear Power Plant

Photo by Art Sowls

AREA 477, San Luis Obispo (cent'd.)

031 "Double Rock Region" 35°11'39"N, 120°50'29"W

Pelagic Cormorant 16 (Nelson, SOWls & Watson, 6/28/79, B, II) 42

032 Pecho Rock 35°10'45"N, 120°49'00"W

Brandt's Cormorant	148	(Nelson & SOWls, 6/23/80, A, II)	42
Western Gull	4	(Lester, Nelson & SOWls, 6/10/80, B, II)	42
Total	152		
Brandt's Cormorant	none	(Reynolds, 7/15/70, A)	36
Brandt's Cormorant	140	(Nelson & SOWls, 8/2/79, A, II)	42



Pecho Rock

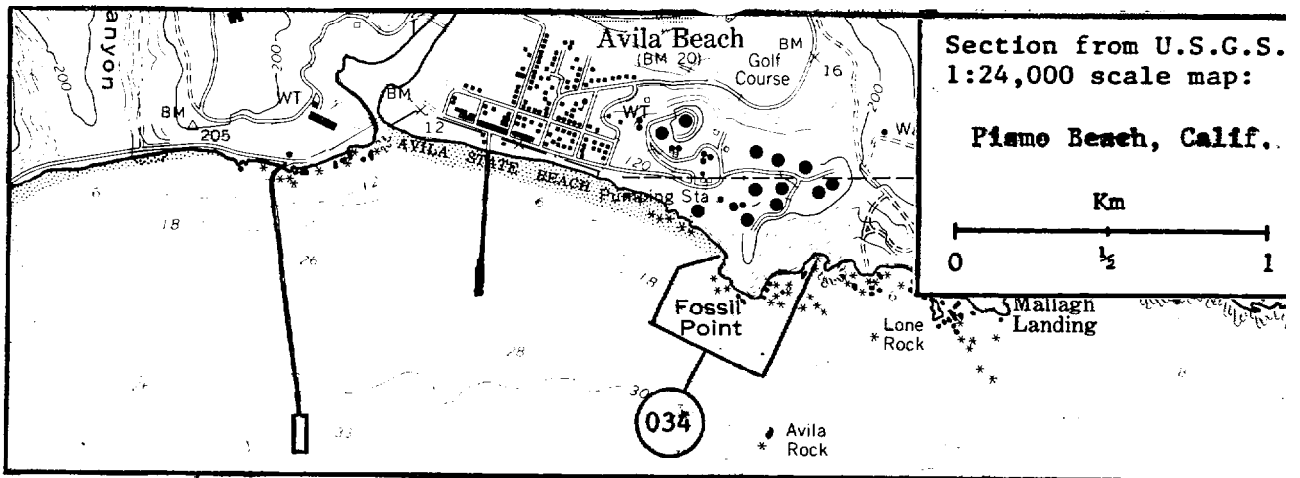
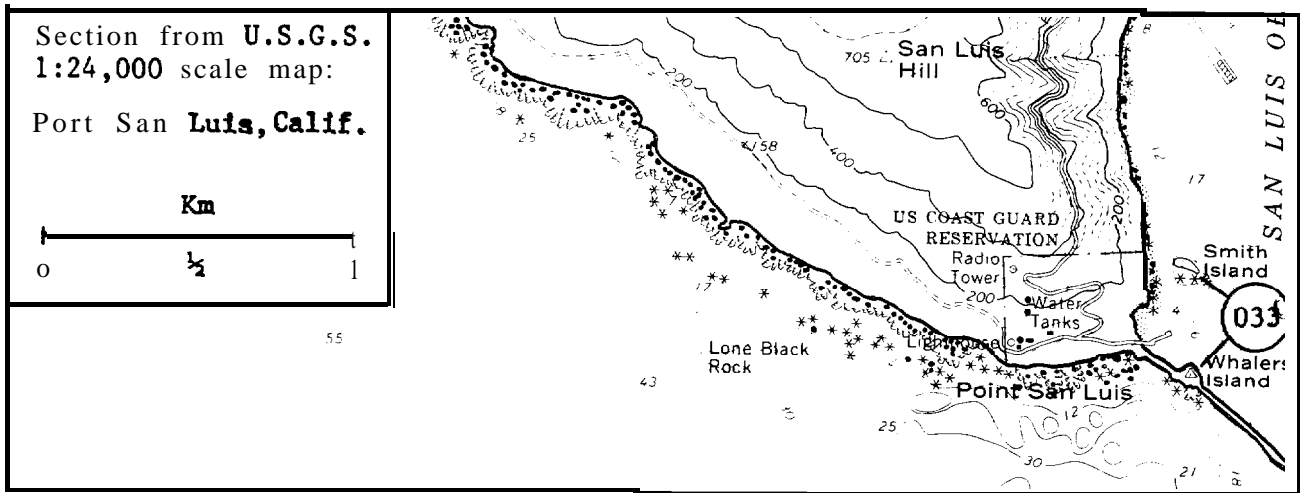
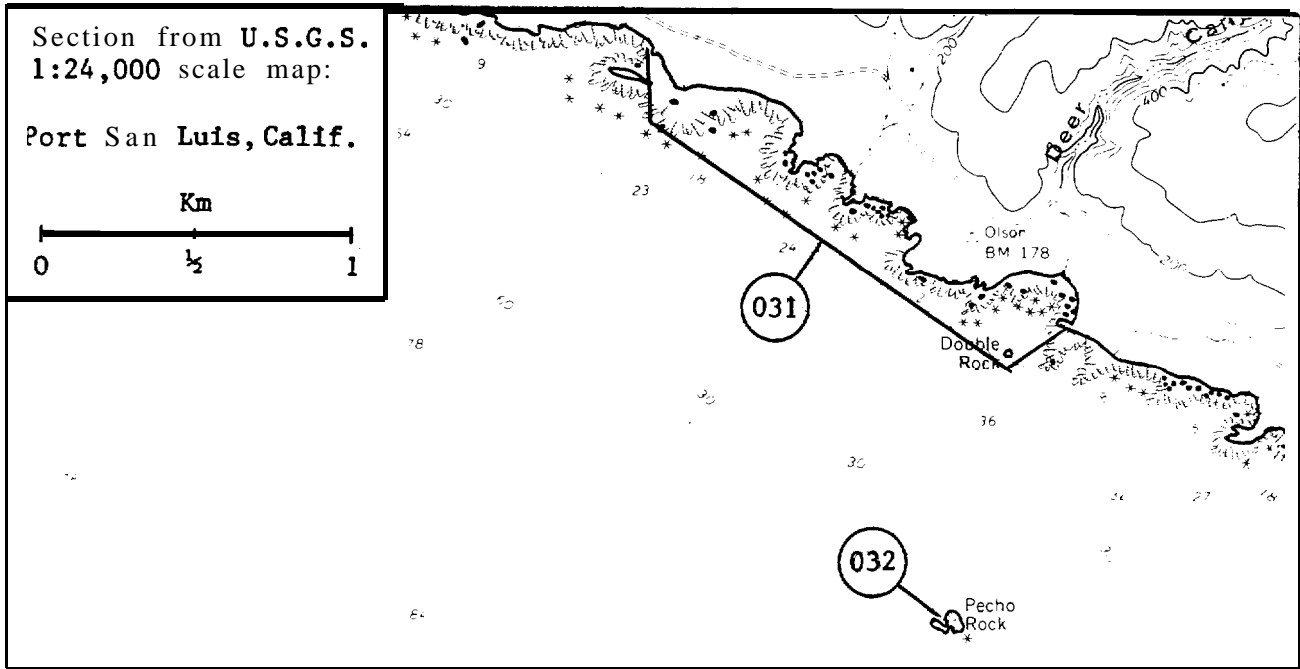
Photoby ArtSOWls

033 Smith and Whaler Islands 35°09'00"N, 120°45'15"W

Black Oystercatcher	4	(Nelson, SOWls & Watson, 6/28/79, BL, III)	42
Western Gull	2	(Nelson, SOWls & Watson, 6/28/79, BL, I)	42
Pigeon Guillemot	20	(Nelson, SOWls & Watson, 6/28/79, BL, III)	42
Total	26		

034 Fossil Point 35°10'26"N, 120°43'26"W

Pelagic Cormorant	44	(Rodstrom & SOWls, 7/7/79, B, I)	42
Black Oystercatcher	6	(Rodstrom & SOWls, 7/7/79, B, III)	42
Western Gull	6	(Rodstrom & SOWls, 7/7/79, B, II)	42
Pigeon Guillemot	110	(Rodstrom & SOWls, 7/7/79, B, III)	42
Total	166		



035 "Shell Beach Rocks" 35°09'06"N, 120°40'11"W

Pelagic Cormorant	4	(Rodstrom & SOWls, 7/7/79, B, I)	42
Black Oystercatcher	6	(SOWls, 6/11/80, M, II)	42
Western Gull	14	(DeGange, 5/26/80, M, II)	42
Heermann's Gull	X	(DeGange, 5/26/80, M, II)	42
Pigeon Guillemot	100	(SOWls, 6/11/80, M, III)	42
Total	124		
Black Oystercatcher	6	(Rodstrom & SOWls, 7/7/79, B, III)	42

∟ Before 1980 Heermann's Gulls were known to breed only in the Gulf of California and 'along the west coast of Baja California, Mexico. Two pairs attempted to nest at Shell Beach in 1980. These represent 2 of 3 known nesting attempts by Heermann's Gulls in the state of California in 1980; the other being at Alcatraz in San Francisco Bay (Binford 1980). All 3 nesting attempts were unsuccessful. See Appendix B.

X = present

036 "North Pismo Beach Rocks" 35°08' 57"N, 120°39' 23"W

Pelagic Cormorant	18	(Rodstrom & SOWls, 7/7/79, B, II)	42
Black Oystercatcher	4	(Rodstrom & SOWls, 7/7/79, B, III)	42
Western Gull	8	(Rodstrom & SOWls, 7/7/79, B, II)	42
Pigeon Guillemot	60	(Nel son & SOWls, 5/29/79, M, III)	42
Total	90		

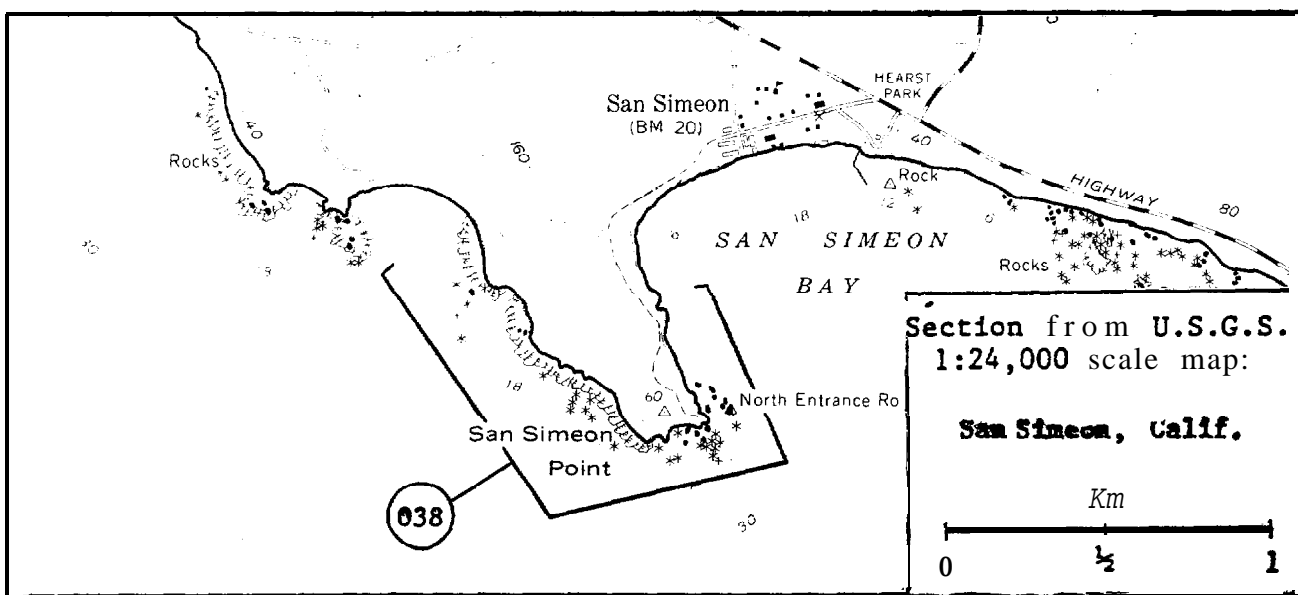
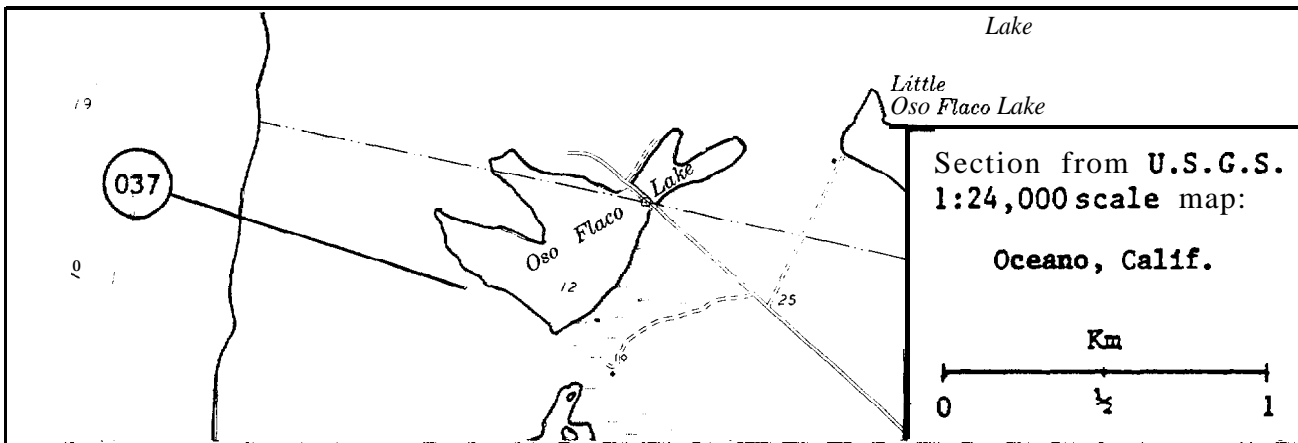
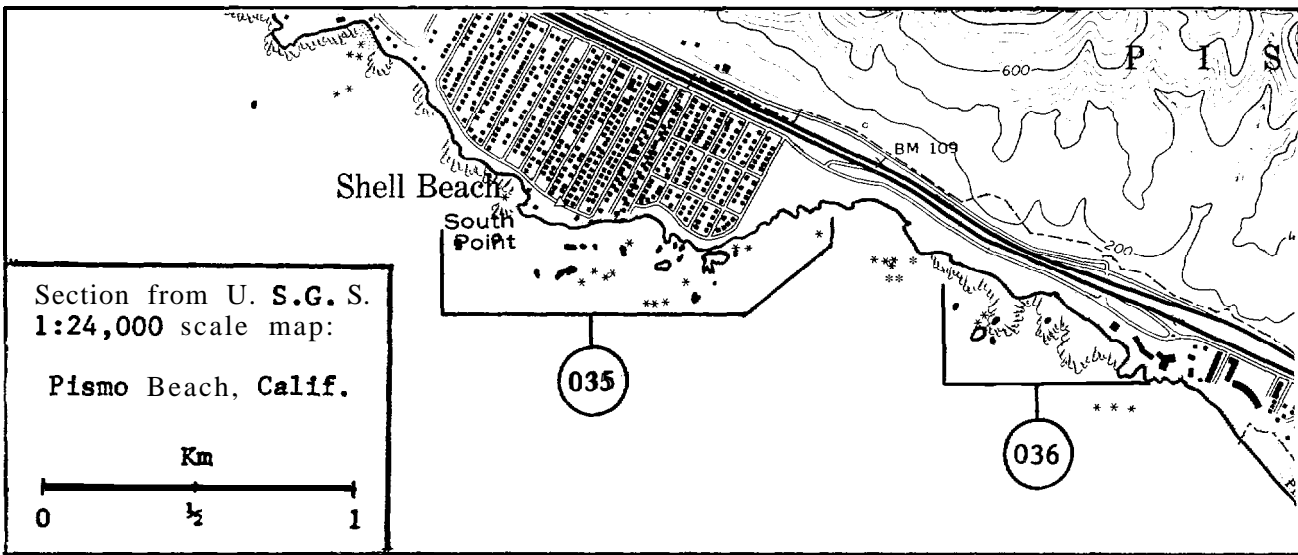
037 Oso Flaco Lake 35°01'42"N, 120 °37'40"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	12-20	(Gol dwasser, 4-8/80, L)	12
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038 Point San Simeon 35°38' N, 121°12'W

Pigeon Guillemot	40	(Nel son & SOWls, 6/26/79, B, III)	42
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**501**  
**Santa Maria**

The maps on the facing page and following page are indexes to the locations of colonies within map 501, Santa Maria. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following these two maps, all colonies are listed sequentially and a detailed map of each is provided.

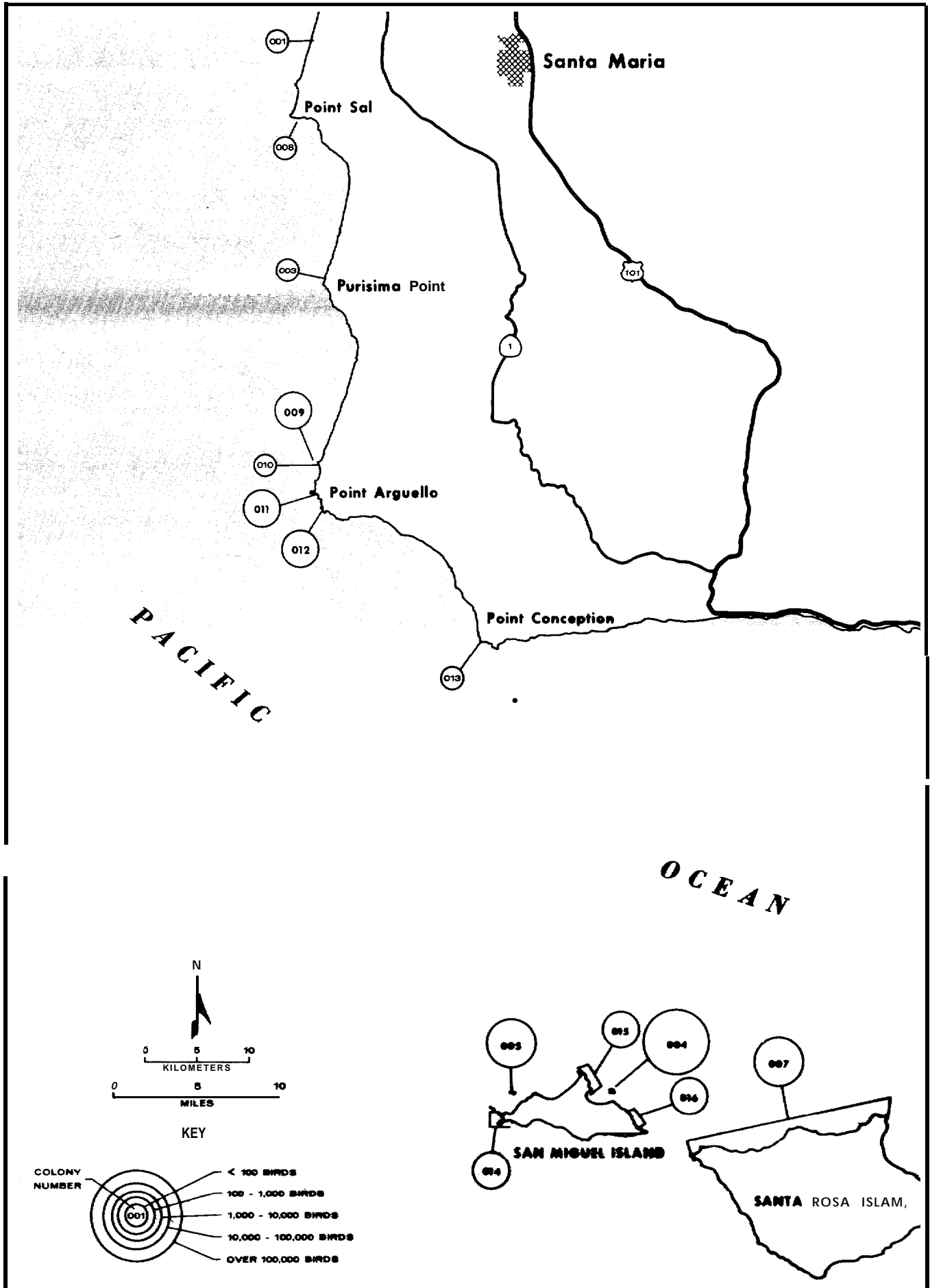
Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

Leach's Storm-Petrel . . . . .	X
Ashy Storm-Petrel . . . . .	400
<b>Brandt's</b> Cormorant. . . . .	5,000
Double-crested Cormorant. . . . .	150*
Pelagic Cormorant . . . . .	400
Black Oystercatcher . . . . .	130
Western Gull . . . . .	1,200
Pigeon Guillemot. . . . .	1,400
<b>Xantus' Murrelet</b> . . . . .	150
<b>Cassin's Auklet</b> . . . . .	22,000
Rhinoceros Auklet . . . . .	30

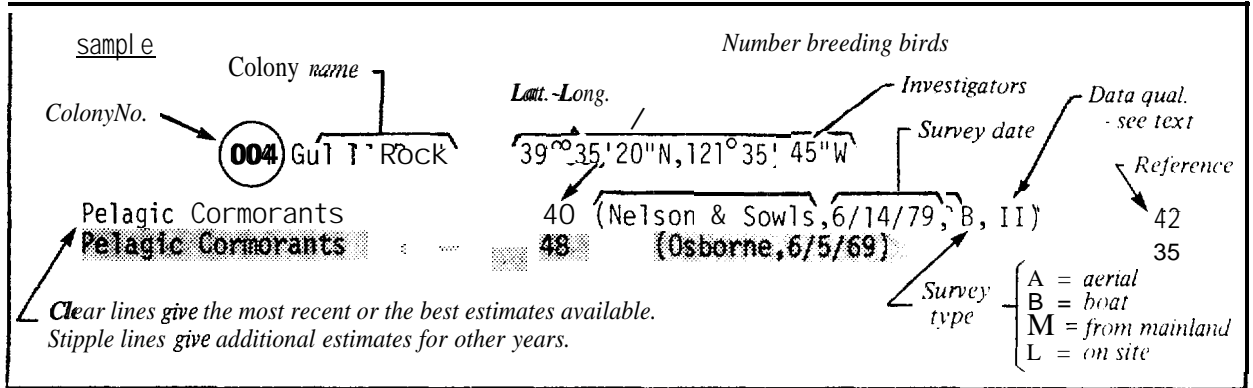
X = present

*\*coastal population only.*

# 501 Santa Maria



AREA 501, Santa Maria (cent'd.)

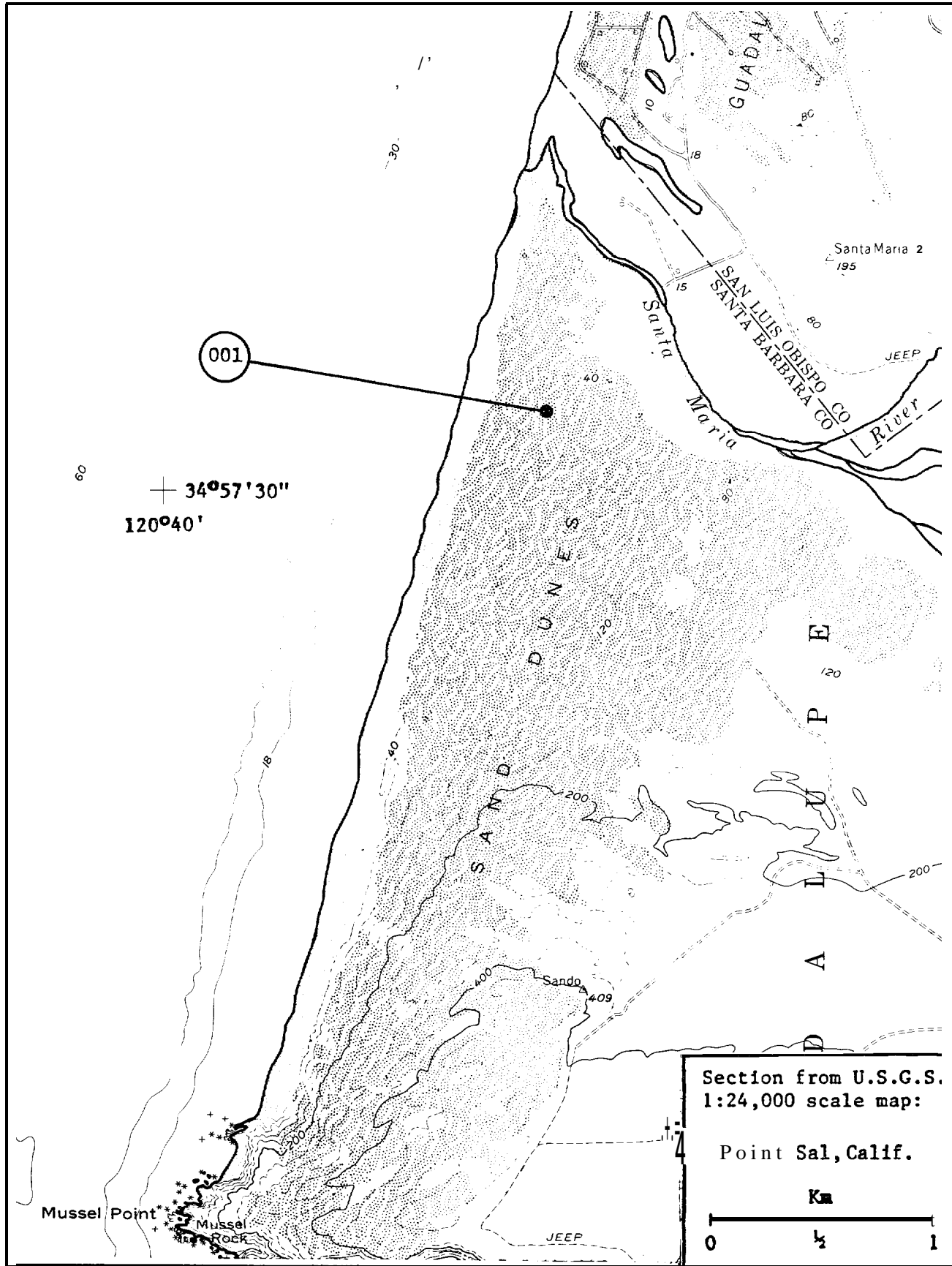


**001** Santa Maria River 34°58'09"N, 120°38'51"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	40	(Goldwasser, 4-8/80, L)	12
Least Tern	34-40	(Atwood, 4-8/ , L)	12
Least Tern	36-46	(Atwood, 4-8/79, L)	12

**002** Santa Ynez River was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

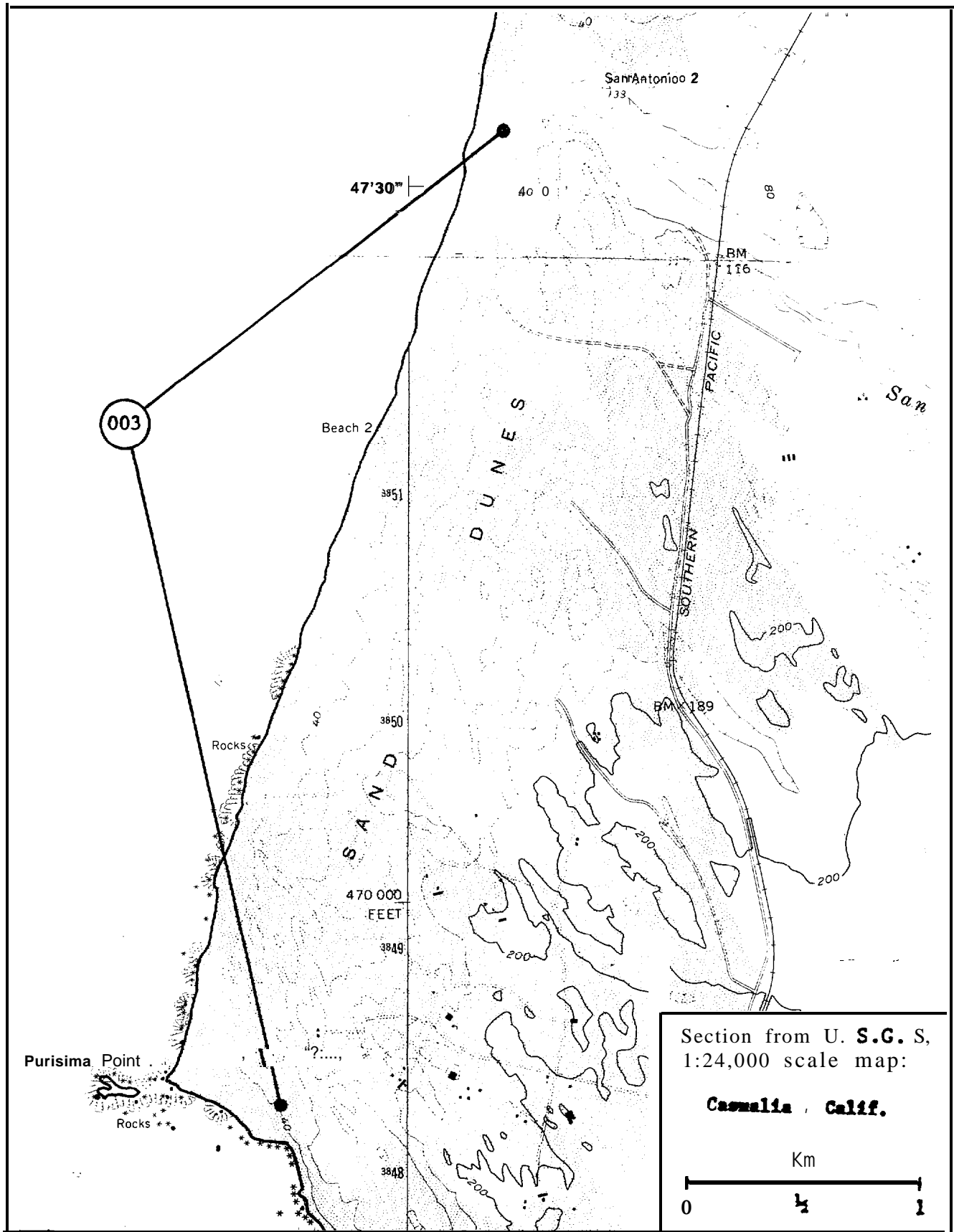


AREA 501, Santa Maria (cent'd.)

003 San Antonio Creek and Purisima Point 34° 47' 120° 38'

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	54-64	(Goldwasser, 4-8/80, L)	12
Least Tern	26-30	(Atwood, 4-8/80, L)	12
Least Tern	58-68	(Atwood, 4-8/79, L)	12



AREA 501, Santa Maria (cent'd.)

004

Prince Island 34°03' 29"N, 120°20'00"W Formap seepage 281.

Leach's Storm-Petrel	4+	( $\Delta$ )	,1976-77,L)	29
Ashy Storm-Petrel	600	(	,1976-77)	29
Brown Pelican	0'	(	,1976-77)	29
Brandt's Cormorant	1,814	(	,6/21/77)	29
Double-crested Cormorant	150	(	,1976-77)	29
Pelagic Cormorant	40	(	,1977)	29
Black Oystercatcher	6	(	,1977)	29
Western Gull	960	(	,1977)	29
Common Murre	0	(	,1975-77)	29
Pigeon Guillemot	300	(	,1975-77)	29
Xantus' Murrelet	150	(	,1975-77)	29
Cassin's Auklet	20,00:	(	,1975-77)	29
Tufted Puffin		(	,1975-77)	29
<b>Total</b>	<b>23,420</b>			

Ashy Storm-Petrel	X	(Blitz,7/50+7/61)	29
Ashy Storm-Petrel	800	(Craig & Sheppard,7/65)	29
Ashy Storm-Petrel	50-100	(Huber,1968)	29
Brown Pelican	X	(Willet,1910; Everman,1919; Degoot,1927; Stevens,1930)	29
Brown Pelican	400	(Summer,5/18/39)	29
Brandt's Cormorant	X	(Willet,1910; Pemberton,1922+1928; Stevens,1929)	29
Brandt's Cormorant	3,000	(Craig & Sheppard,7/65)	29
Brandt's Cormorant	2,000	(Anderson,4/27/72)	29
Brandt's Cormorant	1,720	( $\Delta$ ,1975)	29
Brandt's Cormorant	1,180	( $\Delta$ ,1976)	29
Double-crested Cormorant	200	(Appleton,6/6/06)	29
Double-crested Cormorant	X	(Willet,1910)	29
Double-crested Cormorant	60	(Crossin & Borwnell,5/15/68)	29
Double-crested Cormorant	40	(Huber,1968)	29
Pelagic Cormorant	X	(Streator,1886)	29
Pelagic Cormorant	24	(Appleton,6/6/06)	29
Pelagic Cormorant	10	(Huber,1968)	29
Pelagic Cormorant	20	( $\Delta$ ,1976)	29
Western Gull	X	(Willet,6/10)	29
Western Gull	1,000-2,000	(Wright & Snyder,5/25/29)	29
Western Gull	4,000	(Craig & Sheppard,7/65)	29
Western Gull	480-500	(Huber,1968)	29
Western Gull	1,000	( $\Delta$ ,1976)	29
Common Murre	X	(Bradbury,1885; Burt,1905; Hedrick & Appleton,1906)	29
Common Murre	200	(Willet,6/15/10)	29
Common Murre	X	(Wright & Snyder,7/12/12)	29
Pigeon Guillemot	X	(Willet,6/15/10)	29
Pigeon Guillemot	400	(Craig & Sheppard,1965)	29
Pigeon Guillemot	100	(Huber,1968)	29

X = present

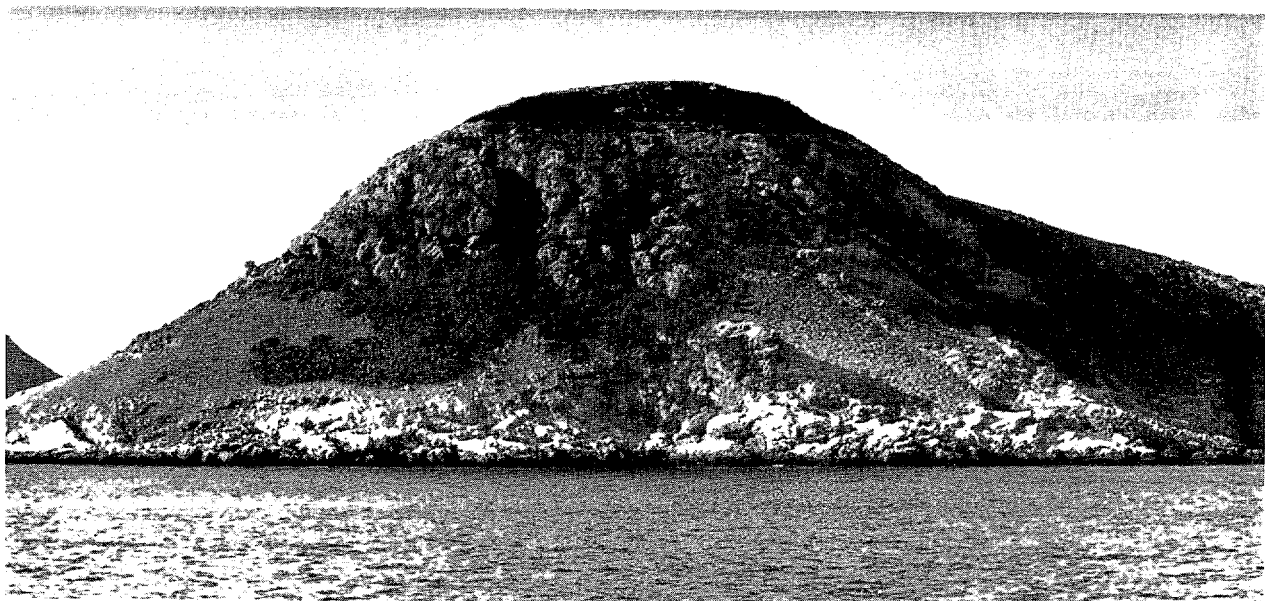
AREA 501, Santa Maria (cent'd.)

004 Prince Islands (Cent' d. )

Xantus' Murrelet	X	(Huber, 1968)	29
Cassin's Auklets	X	(Streator, 1886; Wright & Snyder, 1912)	29
Cassin's Auklets	2,000+	(Burt & Appleton, 6/6/06)	29
Cassin's Auklets	200	(Van Denburgh, 5/19/19)	29
Cassin's Auklets	100	(Pemberton & DeGoot, 3/31/27)	29
Cassin's Auklets	6,000	(Craig & Sheppard, 7/4/65)	29
Cassin's Auklets	10,000	(Crossin & Brownell, 5/68)	29
Cassin's Auklets	3,000	(Huber, 1968)	29
Tufted Puffin	X	(Burt, 1905; Burt & Appleton, 1906; Willet, 1910; Wright & Snyder, 1912)	29
Tufted Puffin	none	(Craig & Sheppard, 1965; POBSP personnel, 1968)	29

X = present

⌈ Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



Prince Island

Photo by George Hunt

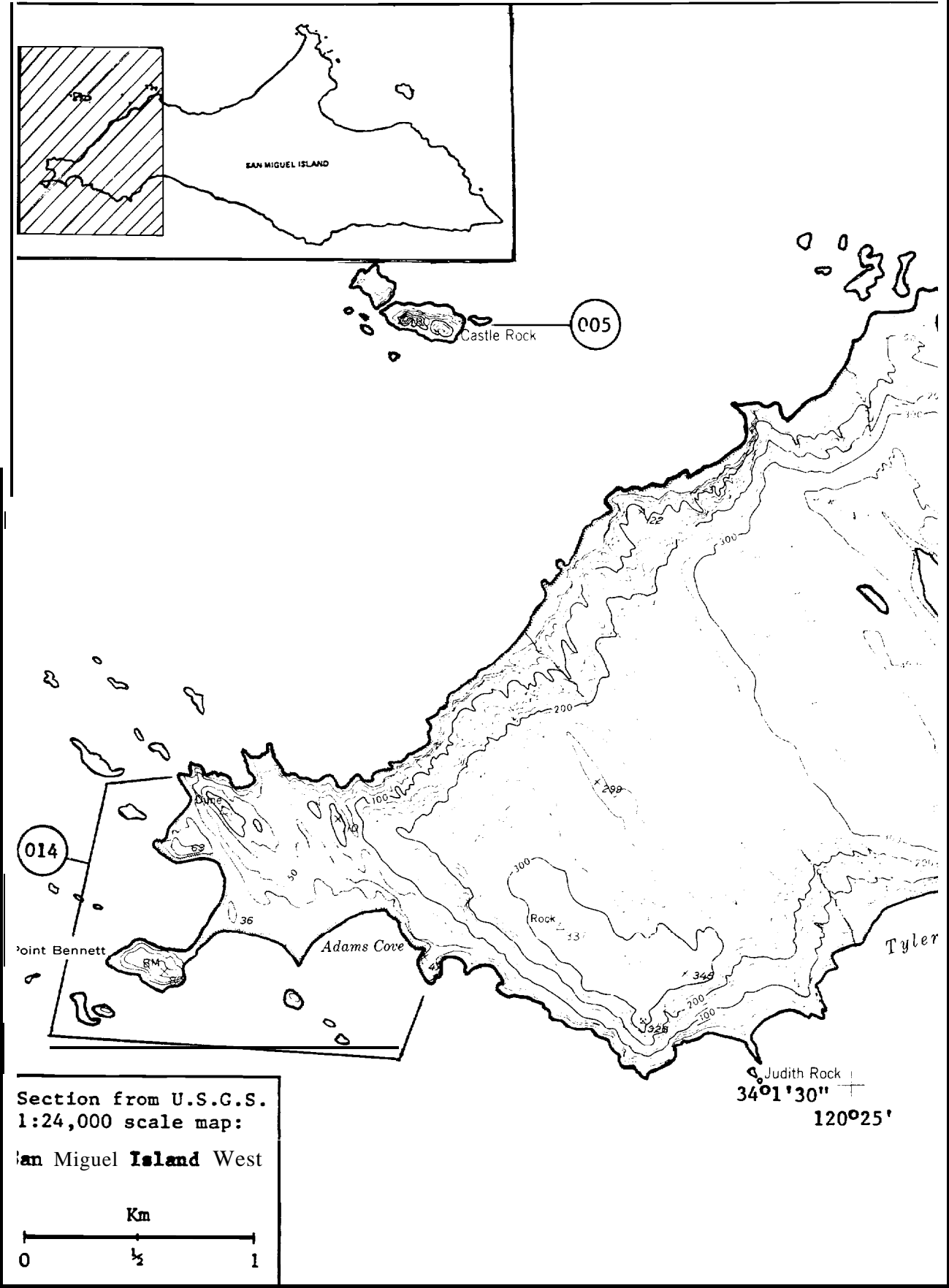
AREA 501, Santa Maria (cent'd.)

005 Castle Rock 34°03' 17" N, 120 °26'17"W

Ashy Storm-Petrel	200	( /1_	, 1976-77)	29
Brandt's Cormorant	1,832	(	, 1977)	29
Pelagic Cormorant	50	(	, 1977)	29
Black Oystercatcher	6	(	, 6/8/76)	29
Western Gulls	100	(	, 6/8/79)	29
Pigeon Guillemot	200	{	, 1976-77)	29
Xantus' Murrelet	P	(	, 1975-77)	29
Cassin's Auklet	2,000	(	, 1977)	29
<b>Total</b>	<b>4,488</b>			
Ashy Storm-Petrel	X	(	Crossin & Brownell, 5/15/68)	29
Brandt's Cormorant	X	(	Crossin & Brownell, 5/15/68)	29
Brandt's Cormorant	1,100	(	Anderson, 4/27/72)	29
Brandt's Cormorant	432	(	△, 1975)	29
Brandt's Cormorant	726	(	△, 6/8/76)	29
Pelagic Cormorant	50	(	Huber, 1968)	29
Pelagic Cormorant	68	(	△, 1976)	29
Western Gull	200-300	(	Huber, 1968)	29
Pigeon Guillemot	X	(	Crossin & Brownell, 5/15/68)	29
Xantus' Murrelet	X	(	Crossin & Brownell, 5/14/68)	29
Cassin's Auklet	X	(	Willet, Ca. 1912)	29
Cassin's Auklet	5,000	(	Crossin & Brownell, 5/15/68)	29

X = present, P probably present

△ Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



AREA 501, Santa Maria (cent'd.)

006 San Miguel Island 34°02'32"N, 120°22'30"W

Data has been reorganized so that data for San Miguel Island is now under numbers 014, 015 and 016.

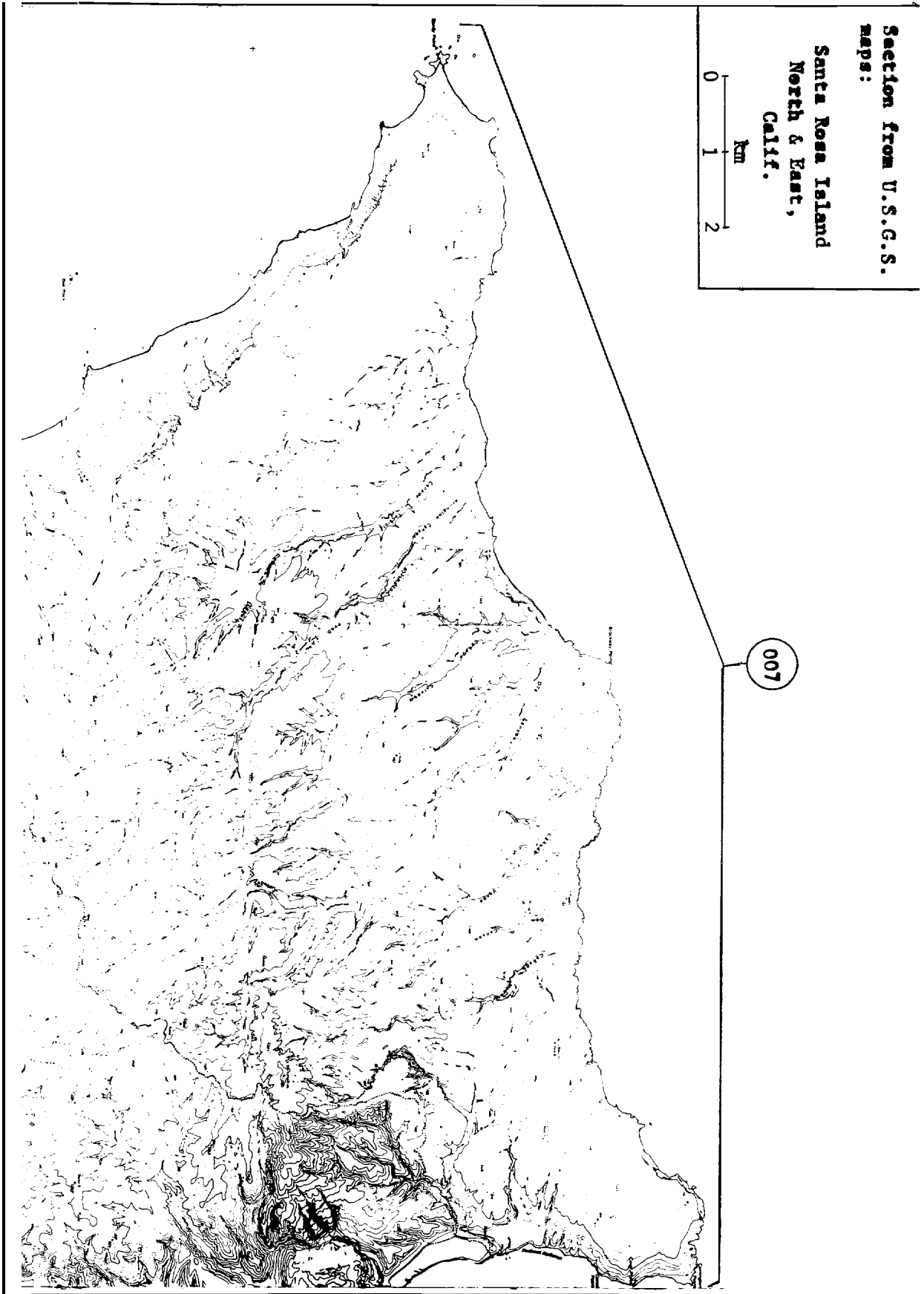
007 Santa Rosa Is., Sandy Pt. to Barrington Pt.

Brandt's Cormorant	1,400	(	<u>1</u>	, 1977)	<b>29</b>
Pelagic Cormorant	72	(		, 1977)	29
Black Oystercatcher	40 <sup>2</sup>	(		, 1976-77)	29
Western Gull	30 <sup>2</sup>	(		, 1976-77)	29
Pigeon Guillemot	250	(		, 1976-77)	29
Total	<u>1,792</u>				
Pigeon Guillemot		X	(Willet, 1910)		29

X = present

<sup>1</sup> Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

<sup>2</sup> Population estimate is for all of Santa Rosa Island,



AREA 501, Santa Maria (cent'd.)

008 Lion Rock at Point Sal 34°53'55"N, 120°39'50"W

No nesting birds	(Nelson & Sows, 7/12/79, B, I)	42
No nesting birds	(Nelson & Sows, 6/23/80, A, III)	42
No nesting birds	(Reynolds, 1970, A)	36

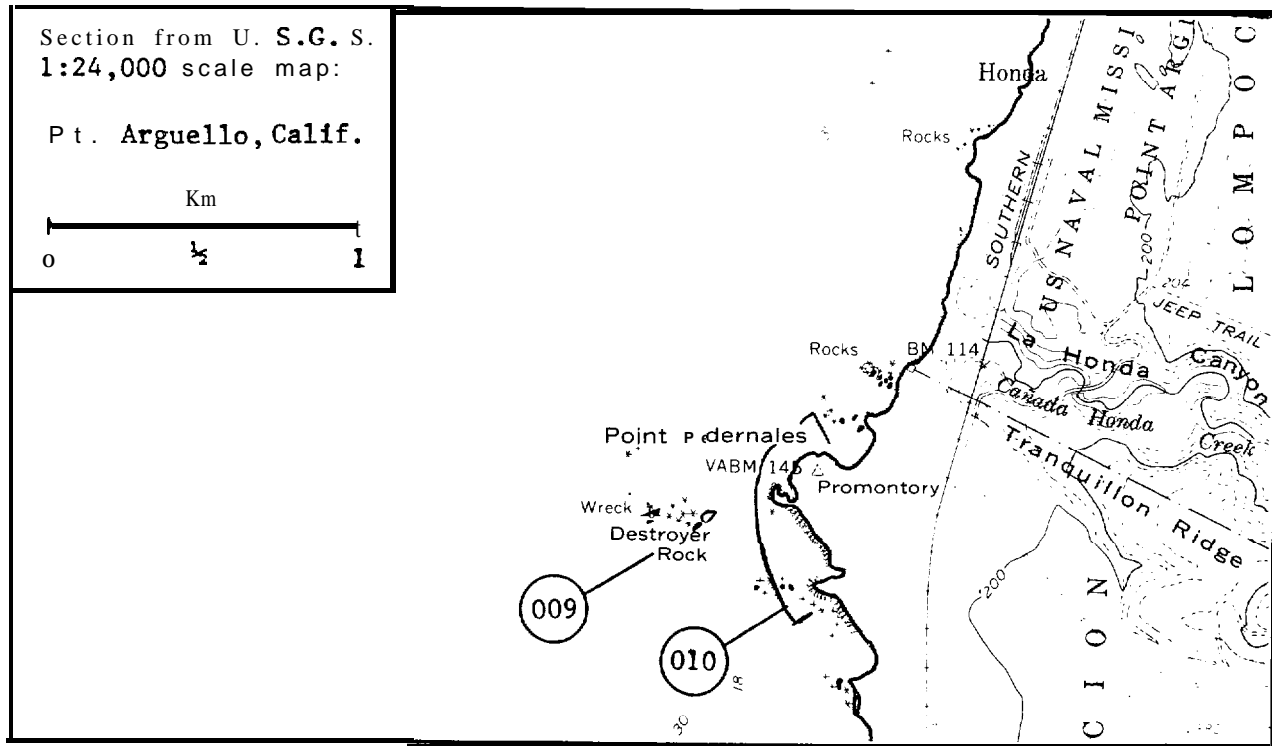
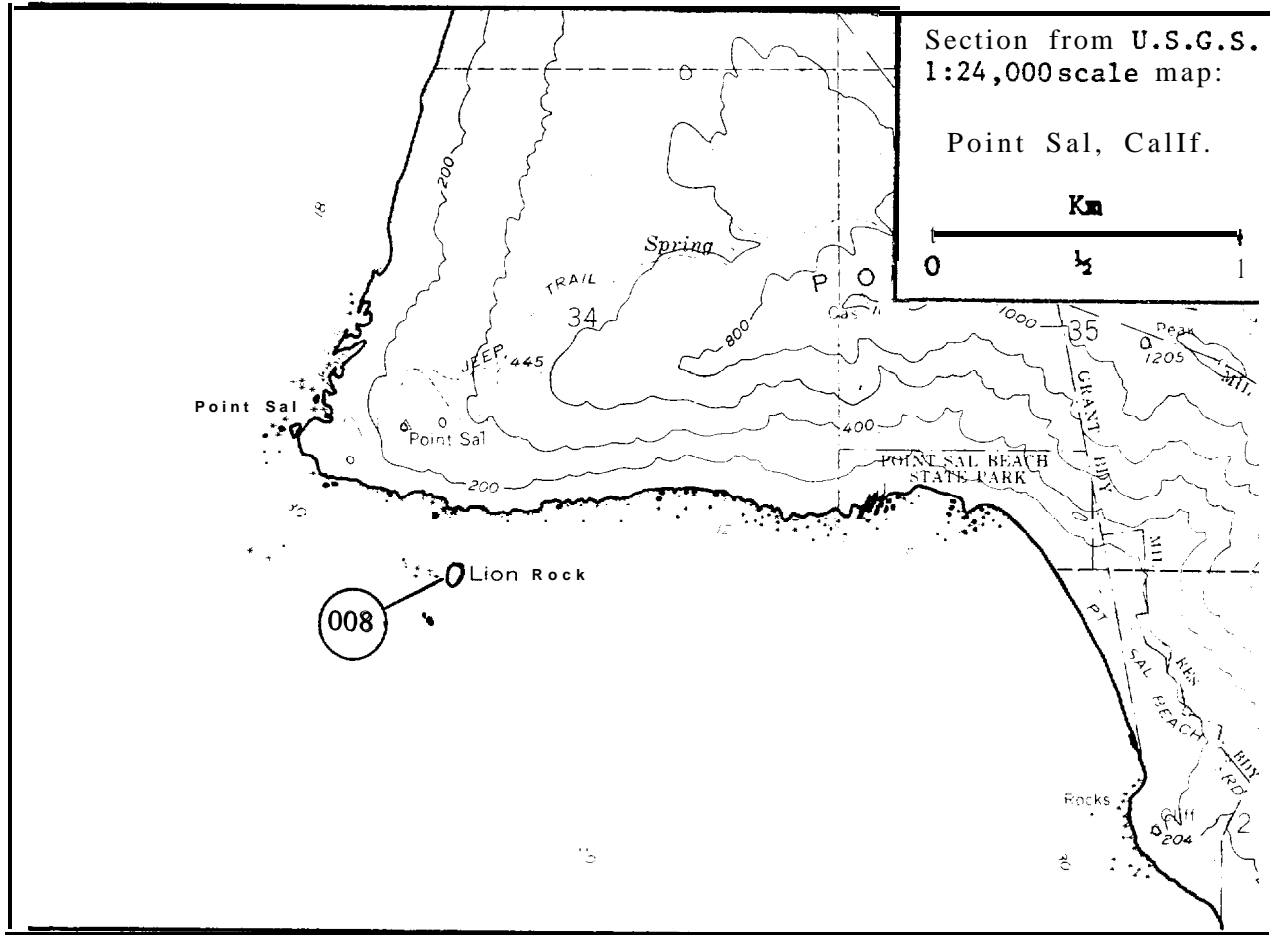
009 Destroyer Rock 34°36'10"N, 120°38'40"W

Pigeon Guillemot	100 (Nelson & Sows, 7/10/79, B, III)	42
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010 Mainland and rocks east of Destroyer Rock 34°36' N, 120°38'26"W

Pigeon Guillemot	80 (Nelson & Sows, 7/10/79, B, III)	42
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AREA 501, Santa Maria (cent'd.)



AREA 501, Santa Maria (cent'd.)

011 Point Arguello 34°38'N, 120°38'49"W

Pelagic Cormorant	30 (Lester, 6/11/80, M, II)	42
Western Gull	4 (Nelson & Sows, 7/10/79, B, II)	42
Black Oystercatcher	2 (DeGange & Nelson, 7/18/80, M, III)	42
Pigeon Guillemot	700 (Lester, 6/11/80, M; Nelson & Sows, 7/10/79, B, III)	42
Rhinoceros Auklets	30 (Lester, 6/11/80, M; DeGange & Nelson, 7/18/80, M, III)	42
Tota l	766	
Pelagic Cormorant	20 (Nelson & Sows, 7/10/79, B, II)	42
Western Gull "	4 (DeGange & Nelson, 7/18/80, M, III)	42

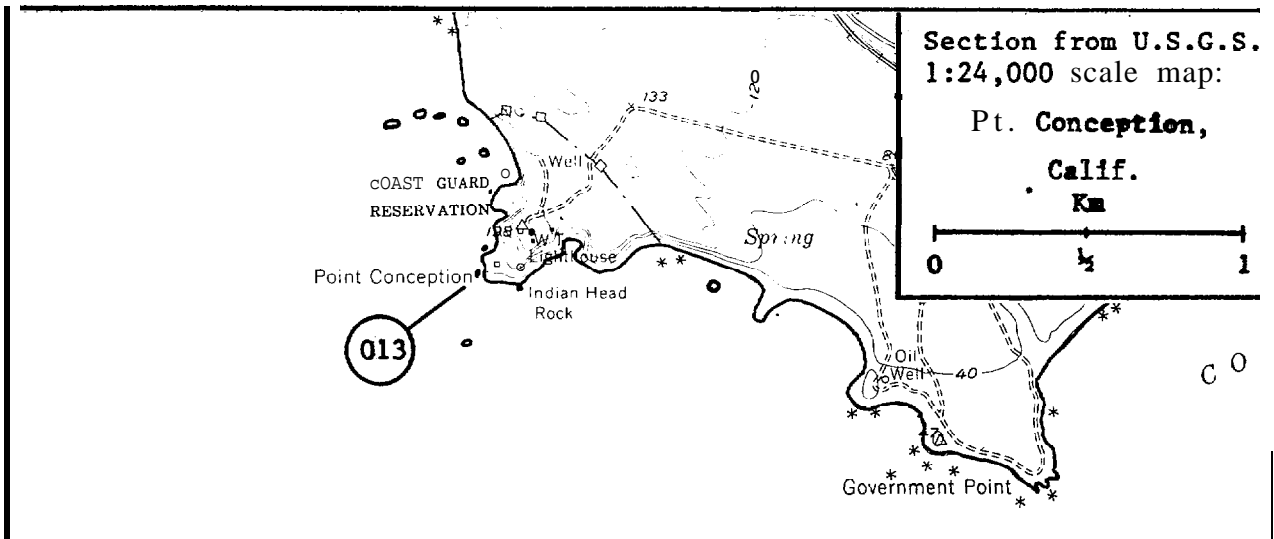
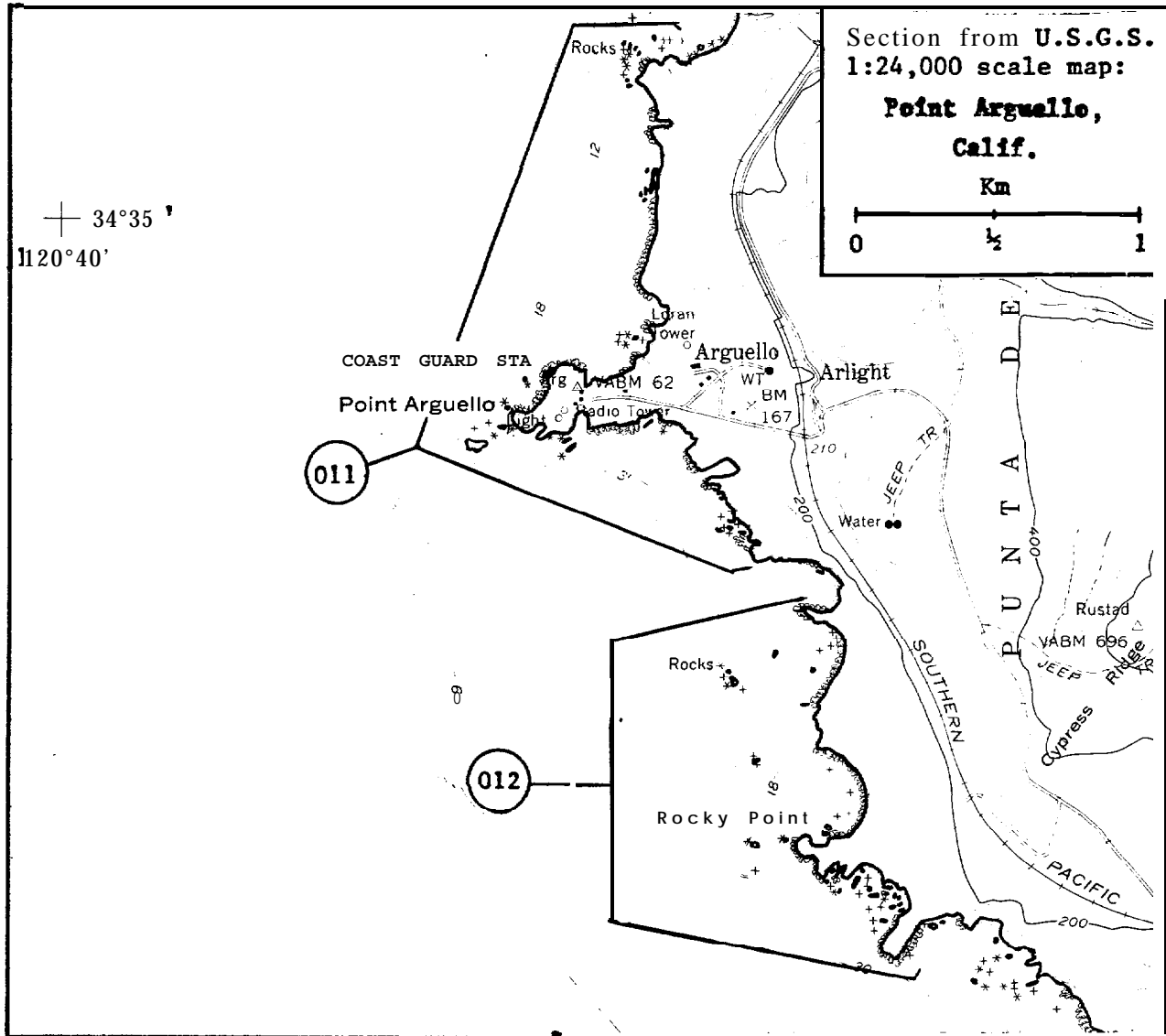
∠ See text, page 50.

012 Rocky Point 34°33'45"N, 120°38'11"W

Black Oystercatcher	2 (Nelson & Sows, 7/10/79, B, III)	42
Pigeon Guillemot	100 (Nelson & Sows, 7/10/79, B, III)	42
Tota l	102	

013 Point Concepti on 34°26'54"N, 120°28'13"W

Pelagic Cormorant	6 (Nelson & Sows, 7/10/79, B, III)	42
Pigeon Guillemot	30 (Nelson & Sows, 7/10/79, B, III)	42
Tota l	36	



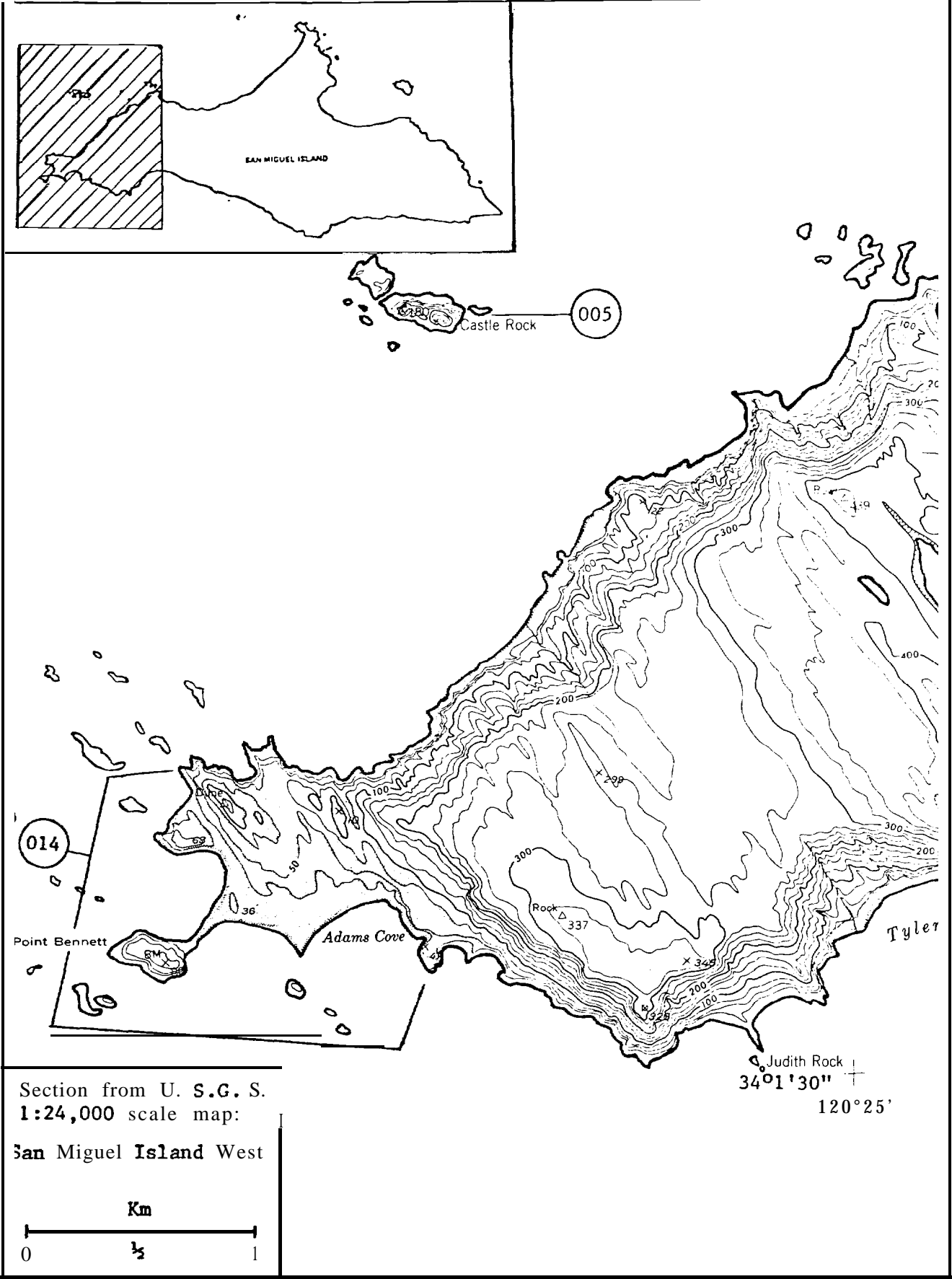
014 Point Bennett, San Miguel Island 34°2'N, 120°3'30"W

Brandt's Cormorant	54 ( $\Delta$ 1, 7/20/77)	29
Pelagic Cormorant	24 $\Delta$ 1 ( 1, 1977)	29
Black-Oystercatcher	P $\Delta$ 1 ( 1, 1977)	29
Western Gull	40 (Collins, 5/19/77)	29
Cassin's Auklet	20 (Collins & Newman, 1977)	29
Total	138	

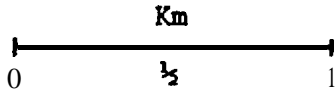
P = probably present

$\Delta$ 1: Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

$\Delta$ 2: The estimate for entire San Miguel Island is 48 birds.



Section from U. S.G. S.  
 1:24,000 scale map:  
 San Miguel Island West



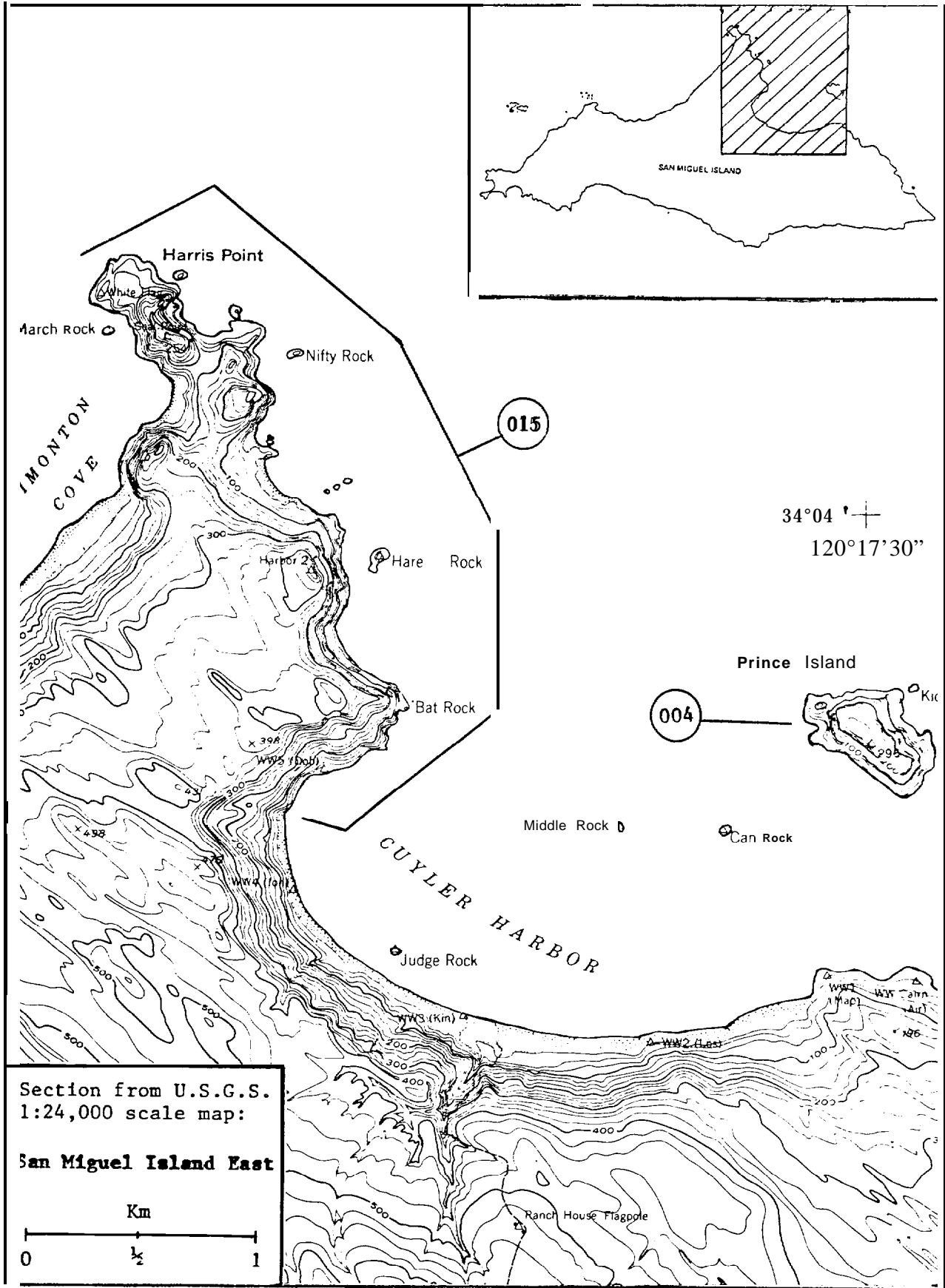
015 Harris Pt. to Cuyler Harbor 34°04' N, 120°22' W

Ashy Storm-Petrel	X (	∠1	, 6/25/76)	29
Brandt's Cormorant	10 (		, 1976)	29
Pelagic Cormorant	124 (		, 1977)	29
Black Oystercatcher	X <sup>∠2</sup> (		, 1977)	29
Western Gull	28 (		, 1976)	29
Pigeon Guillemot	140 (		, 1975-76)	29
Xantus' Murrelet	P (		, 1975-76)	29
Tota 1	<u>302</u>			

X = present, P = probably present

∠1 Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

∠2 The estimate is for entire San Miguel Island is 48 birds.



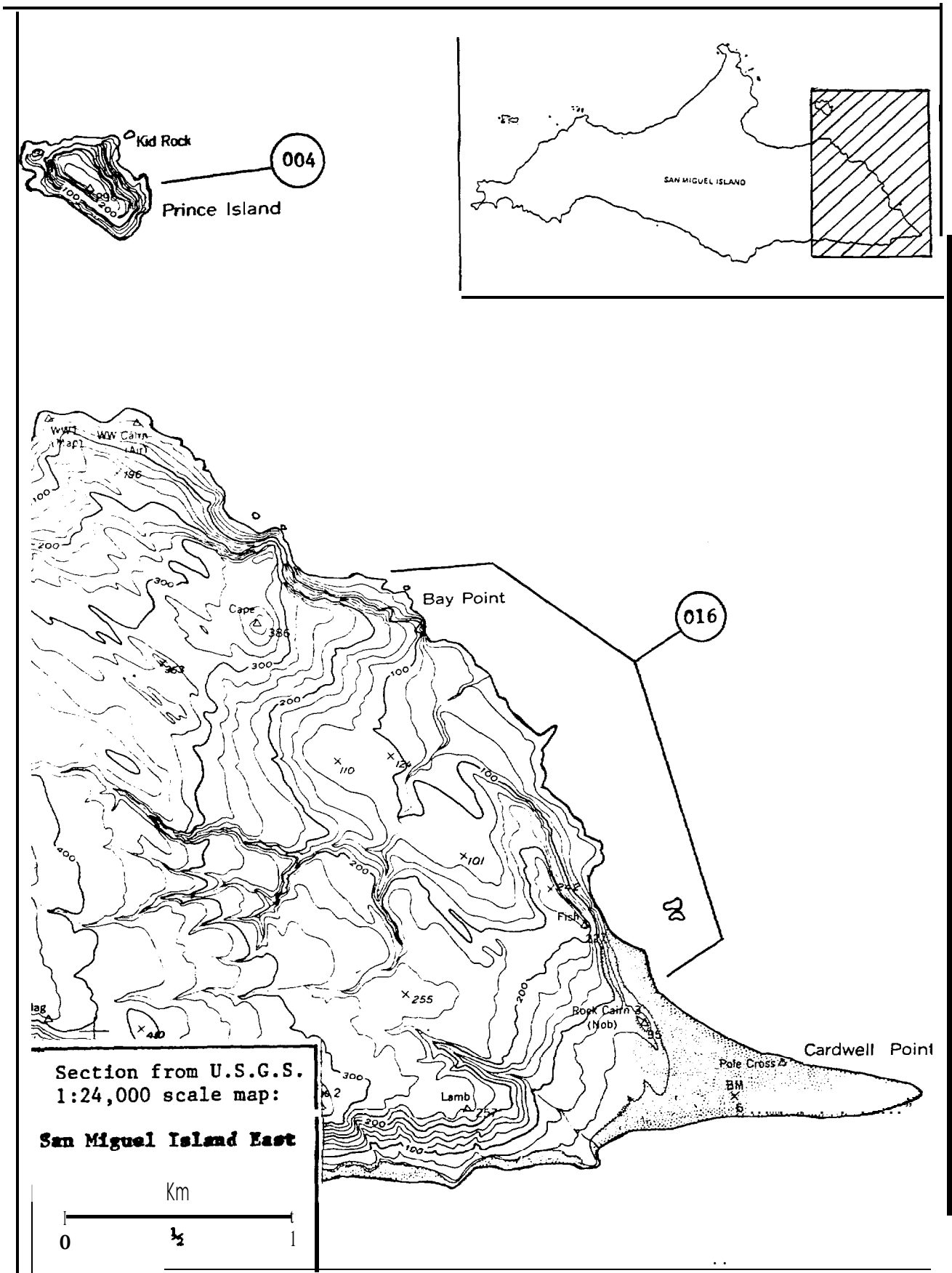
016 Bay Point Area 34°02' N, 120°19' W

Pelagic Cormorant	52 (	△1	, 1977)	29
Black Oystercatcher	P <sup>1</sup> △2 (		, 1975-77)	26
Pigeon Guillemot	120 (		, 1975-77)	29
	<u>172</u>			

P<sup>1</sup> = probably present

△1 Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

△2 Estimate for the entire San Miguel Island is 48 birds.





502

**Los Angeles**

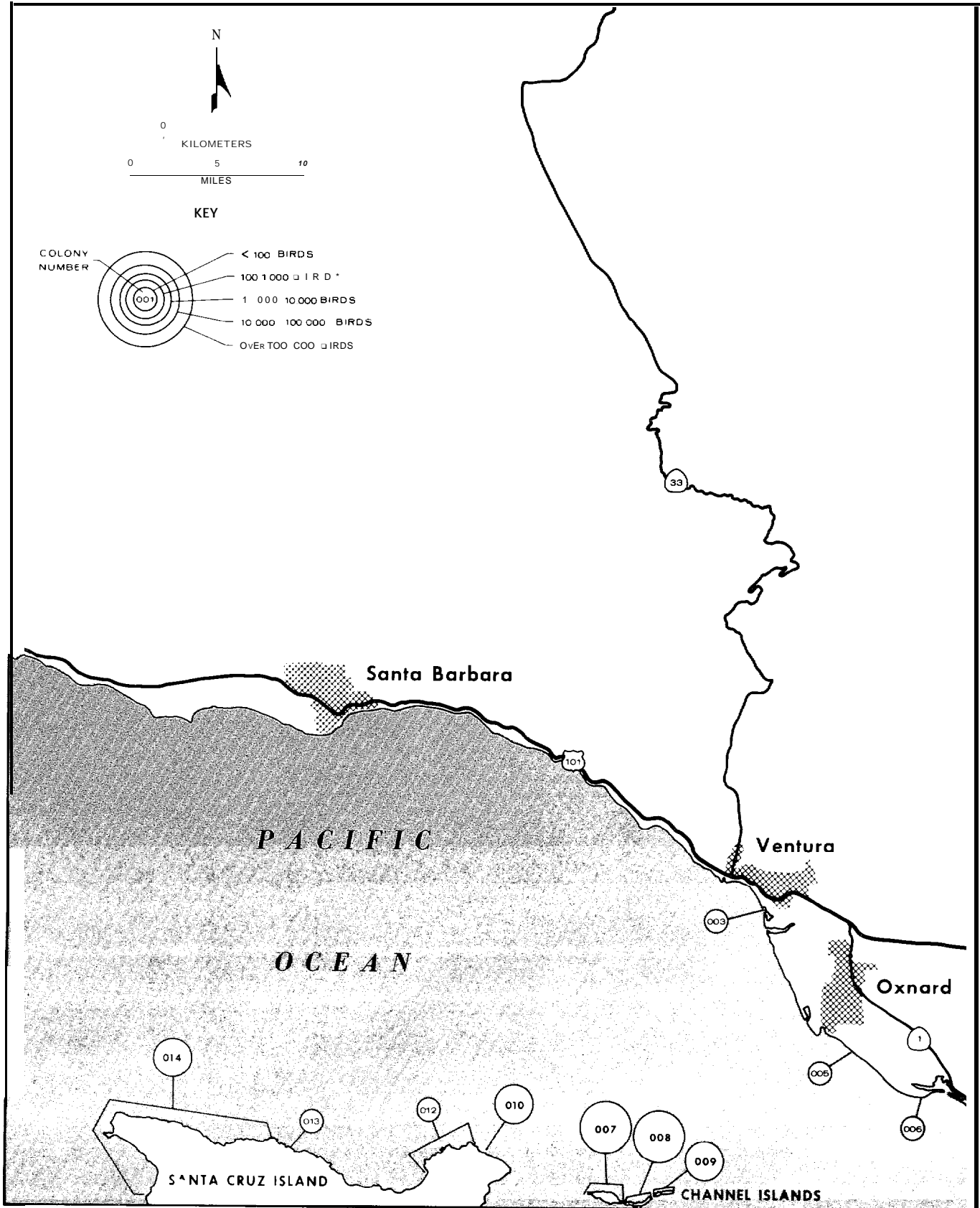
The map on the facing page is an index to the locations of colonies within map 502, Los Angeles. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided,

Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

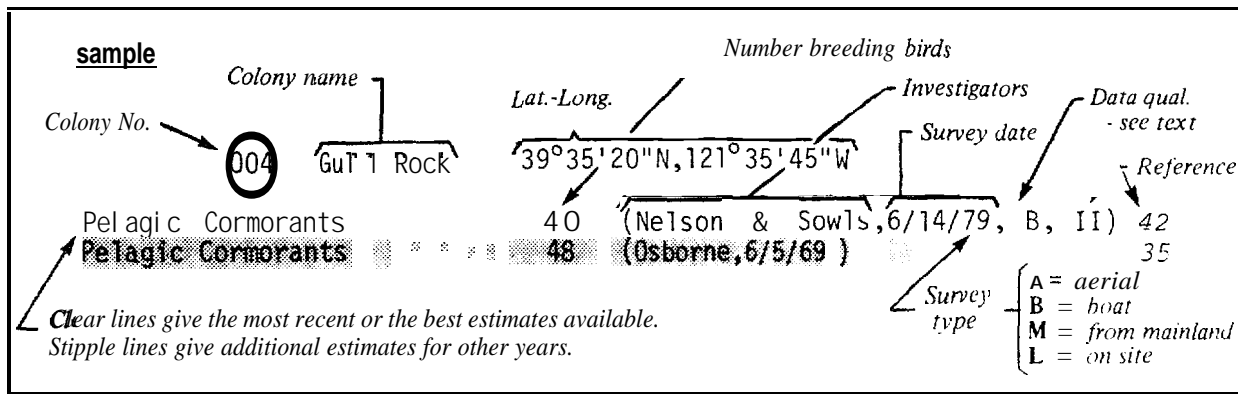
Ashy Storm-Petrel . . . . .	. 80
Brown Pelican. . . . .	. 2,500
Brandt's Cormorant . . . . .	. 100
Double-crested Cormorant . . . . .	. 150*
Pelagic Cormorant. . . . .	. 60
Black Oystercatcher. . . . .	. 130
Western Gull . . . . .	. 6,700
Pigeon Guillemot . . . . .	. 500
Cassin's Auklet. . . . .	. 120

\* coastal population only.

# 502 Los Angeles



AREA 502, Los Angeles (cent'd.)



000 Goleta Slough was previously assigned a catalog number because of Light-footed Clapper Rail nesting. We have not included information on this species in this report. See Wilbur (1974).

002 El Estero was previously assigned a catalog number because of Light-footed Clapper Rail nesting. We have not included information on this species in this report. See Wilbur (1974).

003 Santa Clara River 34°14'08"N, 119°15'51"W

Least Terns are unendangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	34-30	(Goldwasser, 4-8/80, L)	12
Least Tern	20-30	(Atwood, 4-18/78, L)	12
Least Tern	30-40	(Atwood, 4-18/79, L)	12

004 McGrath Lake was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

005 Ormond Beach 34°08'13"N, 119°10'56"W

Least Terns are unendangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

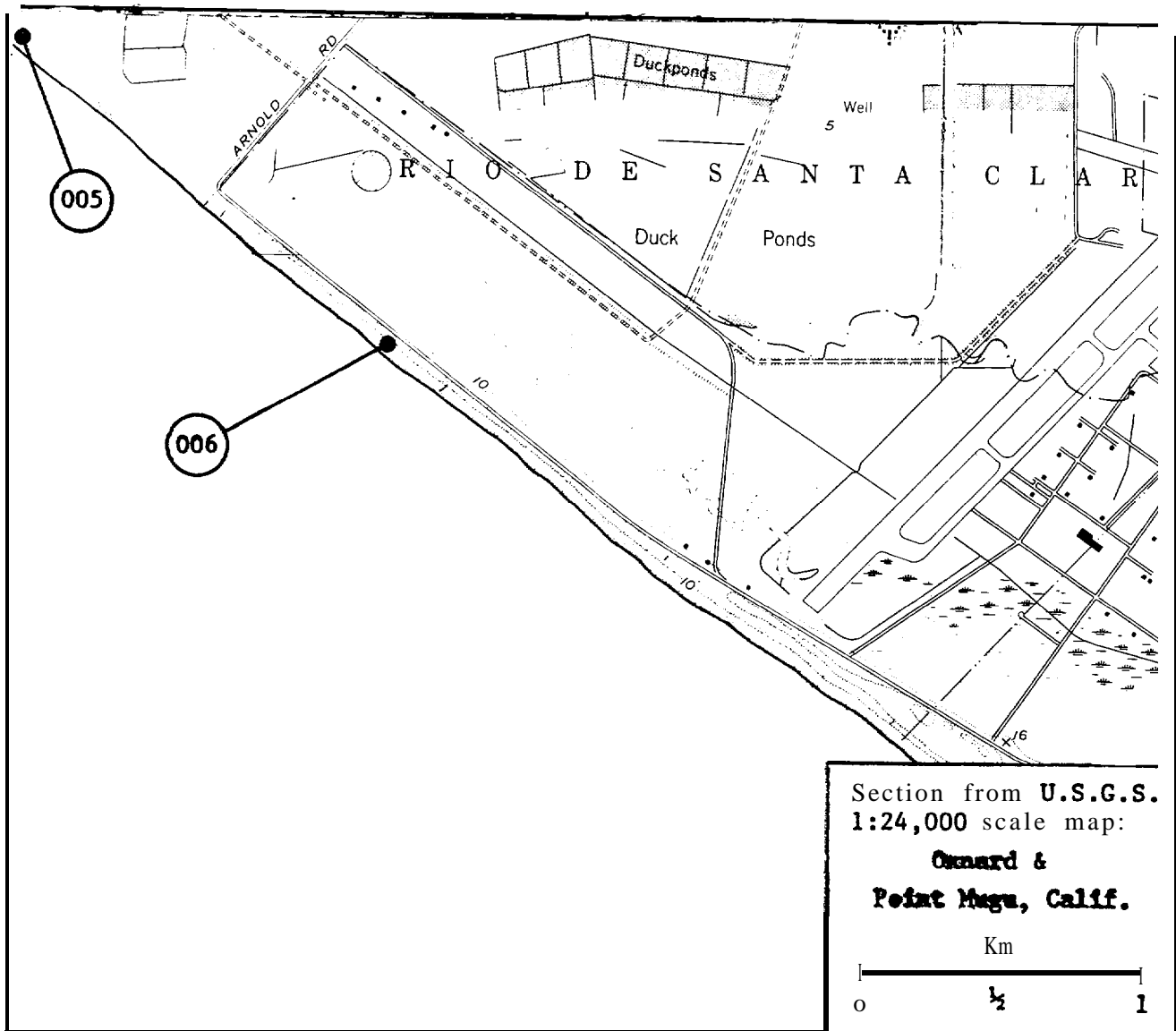
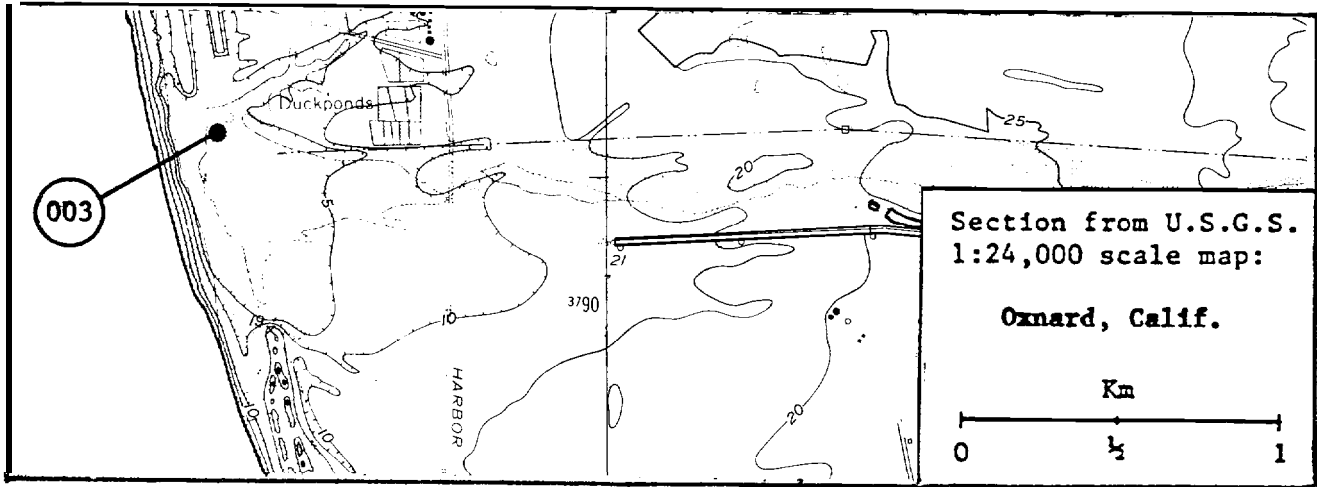
Least Tern	0	(Goldwasser, 4-8/80, L)	12
Least Tern	0	(Atwood, 4-8/80, L)	12
Least Tern	12-16	(Atwood, 4-8/79, L)	12

006 Mugu Lagoon 34°06'08"N, 119°06'04"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	24	(Goldwasser, 4-8/80, L)	12
Least Tern	20-24	(Atwood, 4-8/80, L)	12
Least Tern	X	(Atwood, 4-8/79, L)	12

X = present



AREA 502, Los Angeles (cent'd.)

007 Anacapa Island - West 34°00'54"N, 119°21'57"W

Anacapa Island - West is the most important breeding site for Brown Pelicans in California.

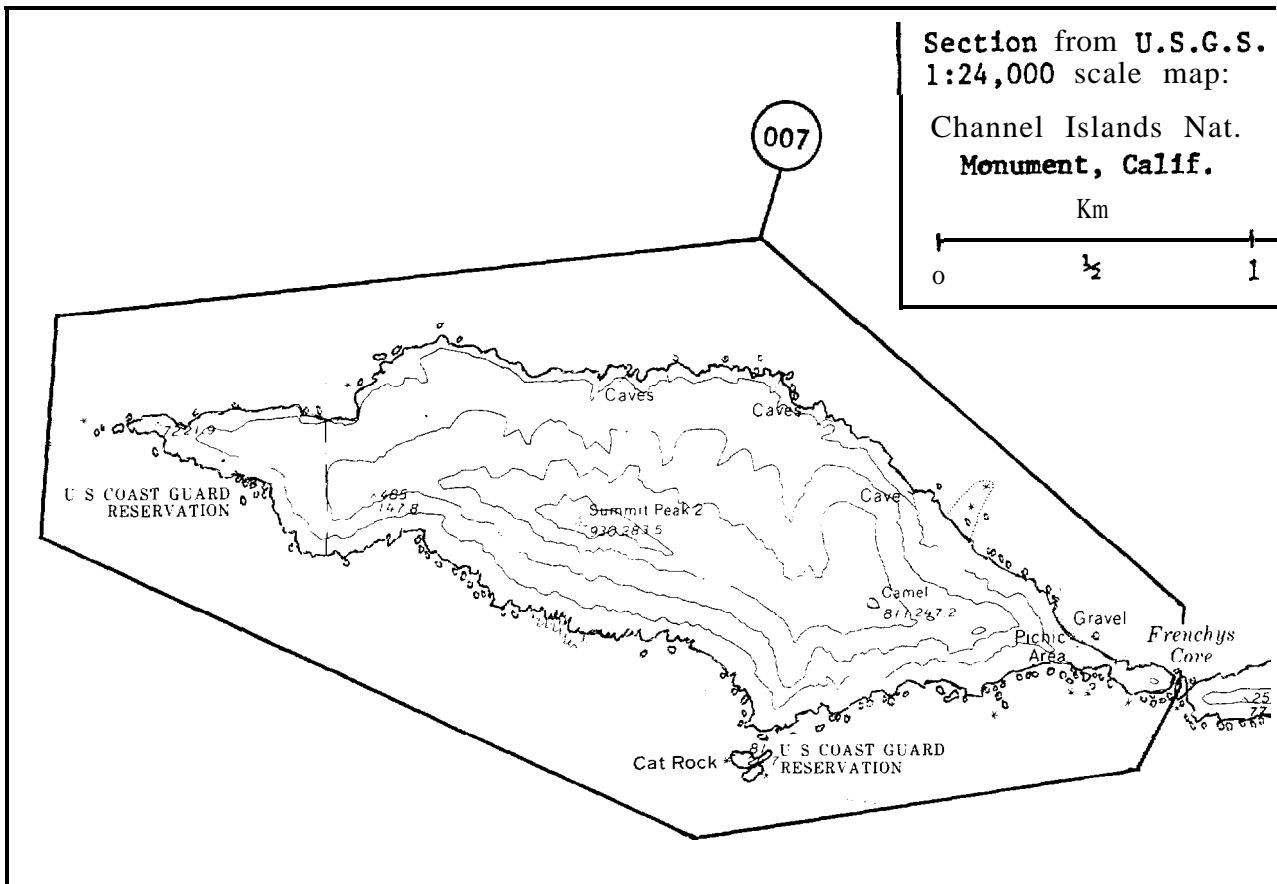
Brown Pelican	2,516	(Anderson & Gress, 1979)	4,20
Brandt's Cormorant	0	( <sup>1</sup> , 1976)	29
Double-crested Cormorant	132	(Anderson & Gress, 1979)	4,20
Pelagic Cormorant	0	( <sup>1</sup> , 1976-77)	29
Black Oystercatcher	X <sup>2</sup>	( <sup>1</sup> , 1976-77)	29
Western Gull	X	( <sup>1</sup> , 1976-77)	29
Pigeon Guillemot	10 <sup>3</sup>	( <sup>1</sup> , 6/23/77)	29
Total	2,758		
Brown Pelican	X	(Ashworth, 1929; Stevens, 1935; Bond, 1940)	29
Brown Pelican	400	(Ashworth & Thompson, 5/9/30)	29
Brown Pelican	4,000	(Bond, 1935)	29
Brown Pelican	4,000	(Stevens & Harrison, 3/1/36)	29
Brown Pelican	4,000	(Bond & Sumner, 4/16/39)	29
Brown Pelican	X	(Jensen, 1962; Ranks, 1963-64; Schreiber & DeLong, 1967-68)	29
Brown Pelican	2,544	(Risebough, 1969)	29
Brown Pelican	1,104	(Gress, 1970)	29
Brown Pelican	1,080	(Anderson & Anderson, 1971)	29
Brown Pelican	522	(Anderson & Anderson, 1972)	29
Brown Pelican	494	(Anderson & Anderson, 1973)	29
Brown Pelican	832	(Anderson & Anderson, 1974)	29
Brown Pelican	424	(Anderson & Anderson, 1975)	29
Brown Pelican	834	(Anderson & Anderson, 1976)	29
Brown Pelican	152	(Anderson & Anderson, 1977)	29
Brown Pelican	420	(Anderson, 1978)	4
Brandt's Cormorant	X	(Ashworth & Thompson, 1928 & 31)	29
Brandt's Cormorant	100	(Bond, 5/34)	29
Brandt's Cormorant	X	(Crossin & Brownell, 5/68)	29
Brandt's Cormorant	2	( <sup>1</sup> , 1975)	29
Double-crested Cormorant	30	( <sup>1</sup> , 1977)	29
Double-crested Cormorant	68	(Anderson & Gress, 1978)	4,20
Pelagic Cormorant	2	( <sup>1</sup> , 1975)	29
Pigeon Guillemot	X	(Wright & Snyder, 7/6/12; Badger, Peyton & Hanna, 5/27/17)	29

<sup>1</sup>Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

<sup>2</sup> 20+ estimated for entire Anacapa Island.

<sup>3</sup> Estimate is for entire Anacapa, but birds are most likely from West Anacapa.

X = present



Brown-Pelicans, Anacapa island

Photo by Frank Gress

AREA 502, Los Angeles (cent'd.)

008 Anacapa Island - Middle 34°00'19"N, 119°23'43"W

Brandt's Cormorant	4	{	∟1	, 6/23/77)	29
Pelagic Cormorant	4	{	∟2	, 1977)	29
Black Oystercatcher	X	{	∟3	, 1976-77)	29
Western Gull	5,000	{	∟3	, 1976-77)	29
Pigeon Guillemot	P	{	∟4	, )	29
Total	5,008				

009 Anacapa Island - East 34°00'41"N, 119°25'26"W

Brown Pelican	0	{	∟2	(Anderson, 1976-77)	4
Black Oystercatcher	X	{	∟1	, 1976-77)	29
Western Gull	200	{	∟4	, 1977)	29
Pigeon Guillemot	P	{	∟4	, 1977)	29
Xantus' Murrelet	X	{	∟4	, 1976-77)	29
Total	200				
Brown Pelican	X	{		(Holder, 1898)	29
Brown Pelican	1,000	{		(Willet, 6/5/10)	29
Brown Pelican	400	{		(Peyton, 3/12/11)	29
Brown Pelican	2,000+	{		(Peyton, 1914)	29
Brown Pelican	3,000	{		(Peyton, 1916)	29
Brown Pelican	4,000	{		(Peyton, 1917)	29
Brown Pelican	10,000	{		(Peyton, 1920)	29
Brown Pelican	1,000	{		(DeGoot, 3/5/28)	29

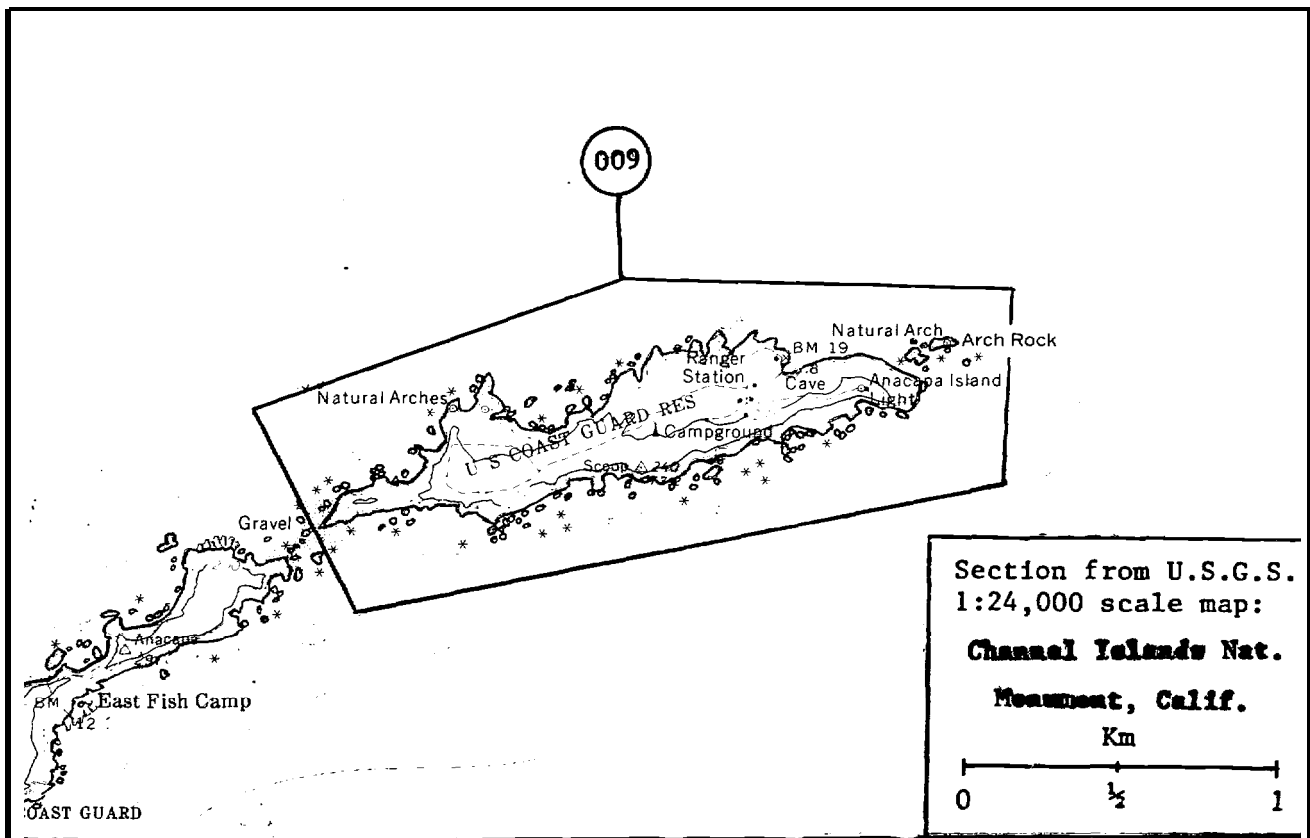
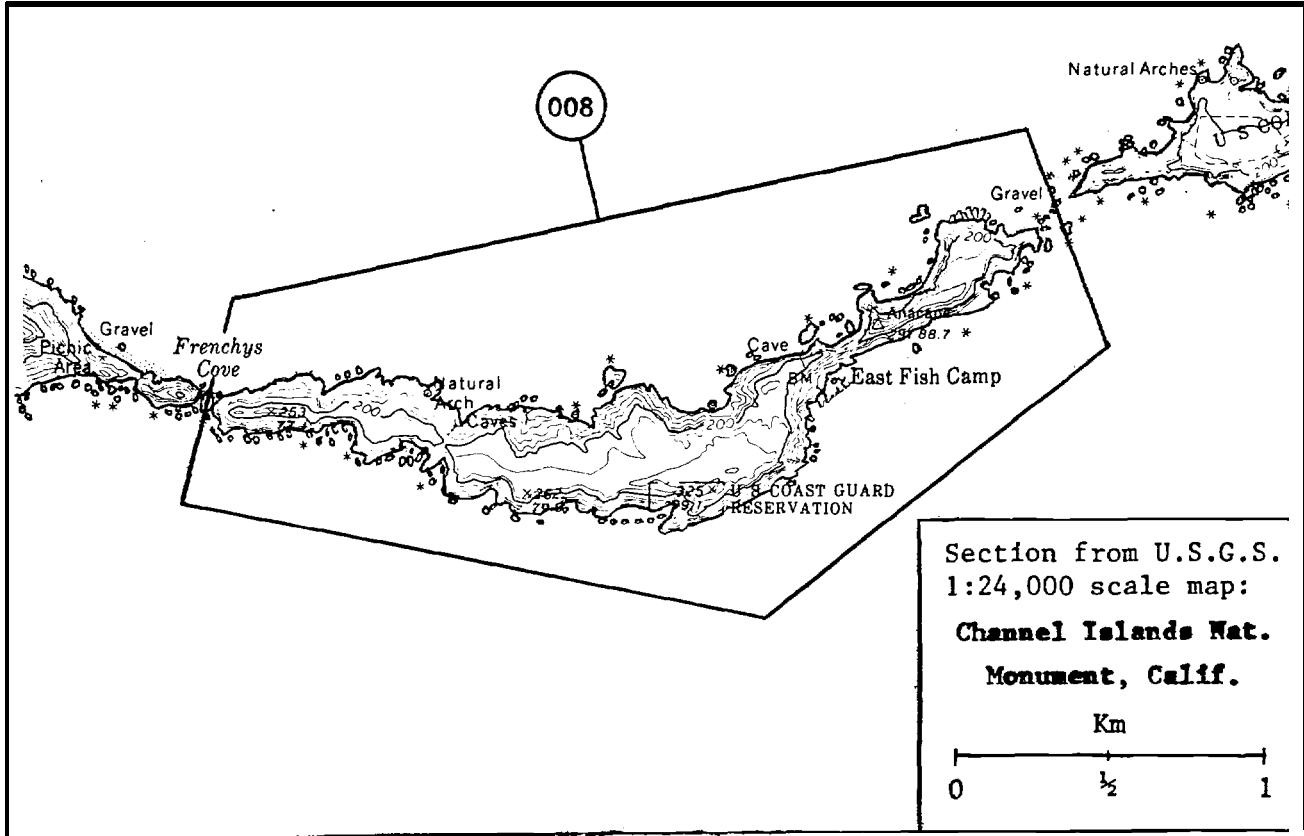
∟1 Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

∟2 20+ estimated from entire island,

∟3 Estimate includes birds from West Anacapa.

∟4 Estimate of 10 birds is for entire Anacapa. Birds most likely from West Anacapa.

X = present, P = probably present



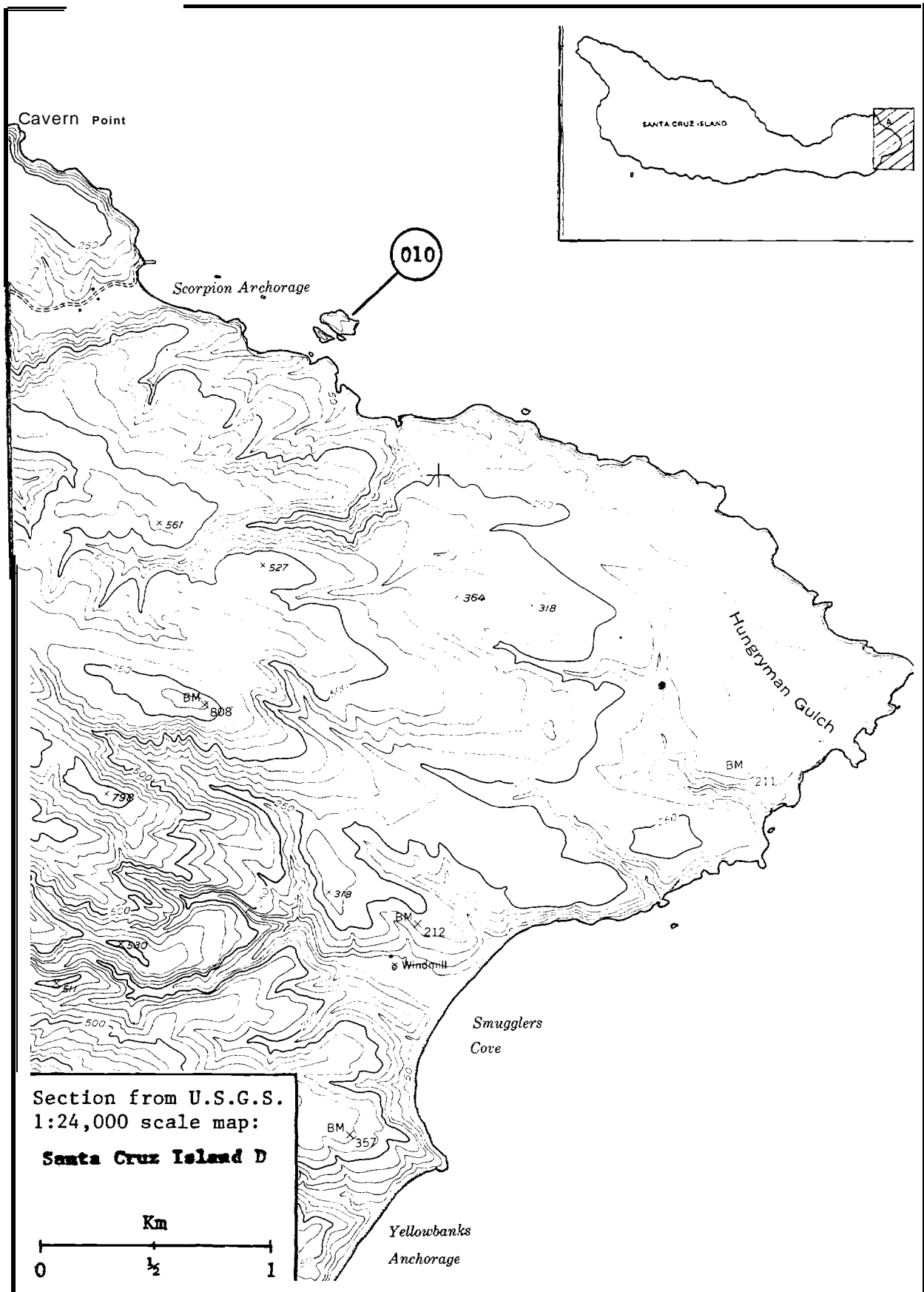
AREA 502, Los Angeles (cent'd.)

010 Scorpion Rock 34°02' 50"N, 119°32' 47"W

Ashy Storm-Petrel	40	(	∠	, 1976-77)	29
Brown Pelican	0	(		, 1976-77)	29
Double-crested Cormorant	0	(		, 1976-77)	29
Black Oystercatcher	2	(		, 1977)	29
Western Gull	300	(		, 1977)	28
Pigeon Guillemot	8	(		, 1975-77)	29
Xantus' Murrelet	P	(		, 1975-77)	29
Cassin's Auklet	100	(		, 6/22/76)	29
Total	400				
Ashy Storm-Petrel	X	(		(Stevens, 1937-41)	29
Brown Pelican	X	(		(Anderson & Anderson, 1972)	29
Brown Pelican	160	(		(Anderson et al., 1975)	29
Brown Pelican	210	(		(Anderson, et al., 1974)	29
Double-crested Cormorant	X	(		(Beck, 1895)	29
Pelagic Cormorant	X	(		(Beck, 1895)	29
Western Gull	X	(		(Beck, 1895)	29
Xantus' Murrelet	X	(		(Badger, 1928-29)	29
Xantus' Murrelet	X	(		(Stevens, Harrison & Badger, 1936+38)	29
Cassin's Auklet	X	(		(Beck, 1895; Badger, 1919+29)	29

X = present

∠ Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



011 Santa Cruz Island

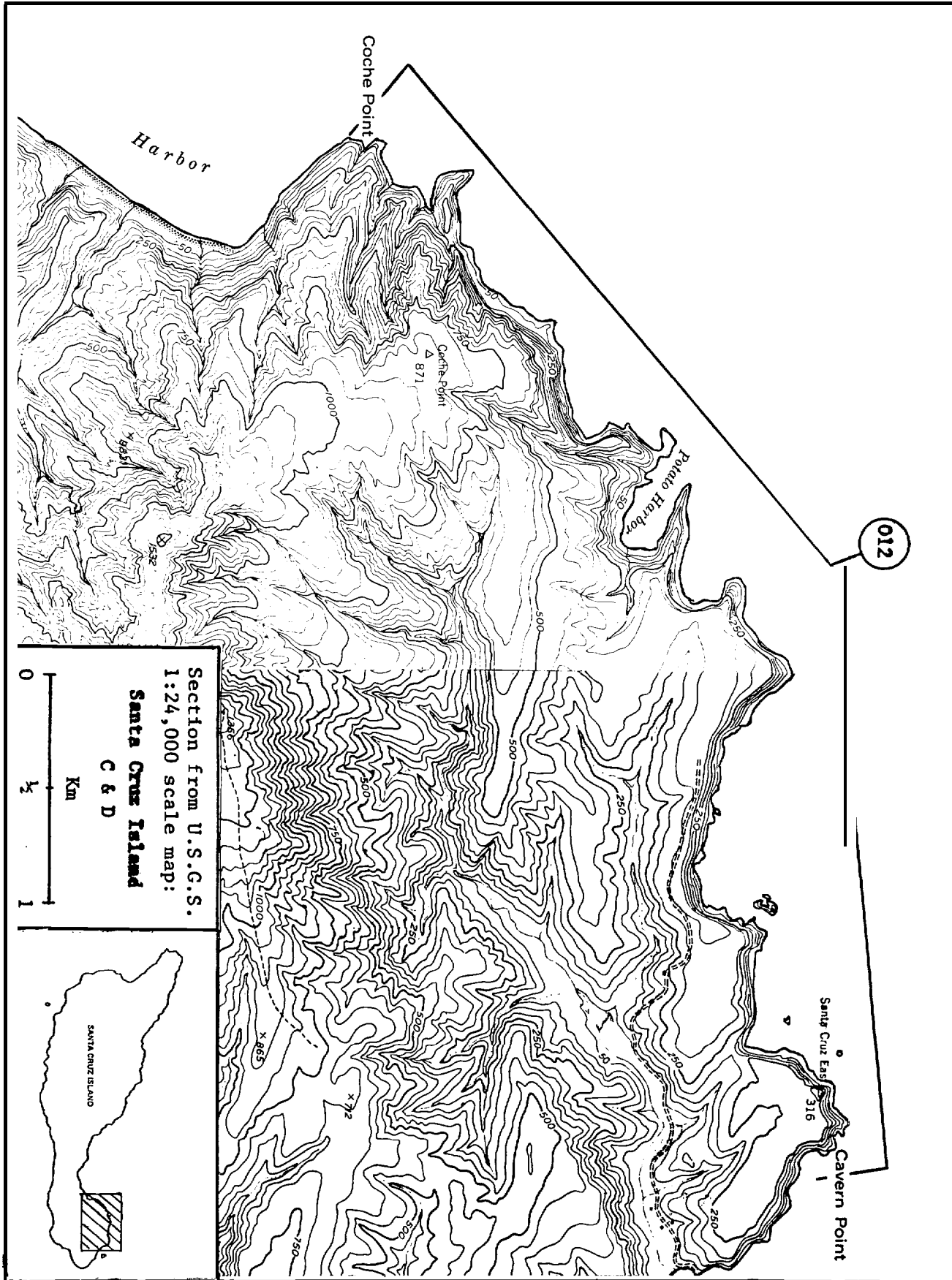
Data has been reorganized so that data for Santa Cruz Island is now under 012, 013 & 014.

012 Coche Point to Cavern Pt. 34°2' N, 119°36'50"W to 34°3'20"N,  
119°33'45"W

Western Gull	92	(	$\frac{1}{1}$	, 1977)	29
Pigeon Guillemot	X	(	$\frac{1}{1}$	, 1977)	29

X = present

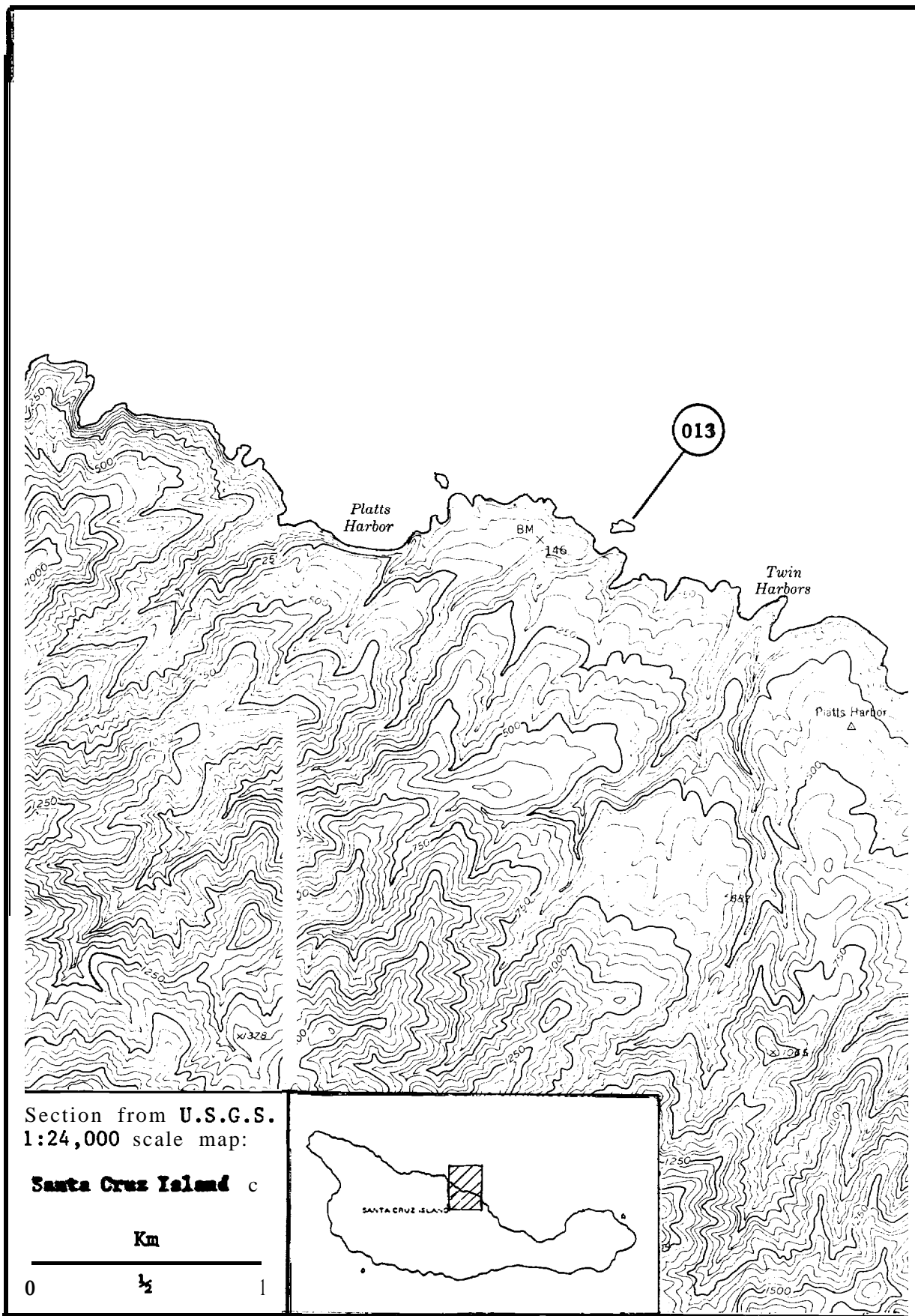
\*Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



AREA 502, Los Angeles (cent'd.)

	013	"Sppit Rock"	34°02'45"N, 119 °43'30"W		
Ashy Storm Petrel	16+	(	∠1	, 7/15/76)	29
Black Oystercatcher	6	(		, 1977)	29
Cassin's Auklet	<u>20</u>	(		, 6/22/77)	<b>29</b>
Total	<u>42+</u>				

∠1 Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



AREA 502, Los Angeles (cent'd.)

014 Santa Cruz Is. - Kinton Pt. 34°0'30"N, 119°53'W to  
Diablo Pt. 34°3'N, 119°45'W

Ashy Storm-Petrel	20 (	△	,7/15/76)	29
Brandt's Cormorant	84 (		,1977)	29
Pelagic Cormorant	50 (		,1976)	29
Black Oystercatcher	X <sup>2</sup> (		,1977)	29
Western Gull	80 (		,1977)	29
Pigeon Guillemot	X <sup>3</sup> (		,1977)	29
Cassin's Auklet	? [		,1977)	29
Total	234			
Ashy Storm-Petrel	X	(Wright & Snyder, 1912; Dickey, 1913)		29
Pelagic Cormorant	X	(Dawson, 1923)		29
Pigeon Guillemot	X	(Wright & Snyder, 1912)		29
Tufted Puffin	?	(Wright & Snyder, 1912)		29

X = present

investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

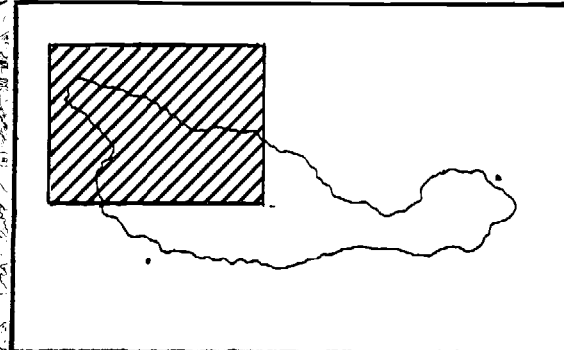
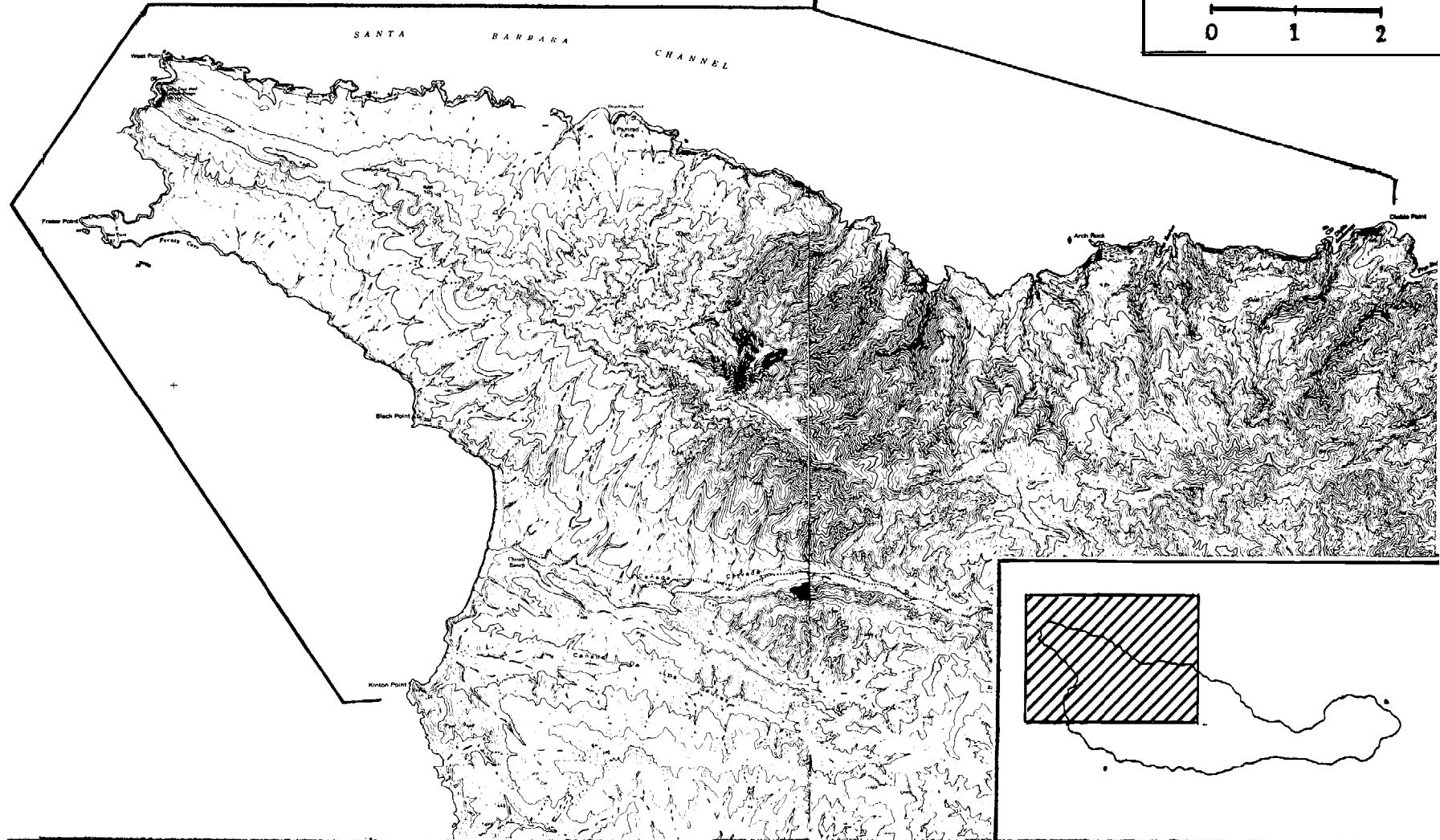
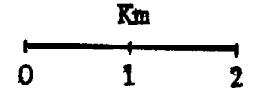
<sup>2</sup> 100 estimated for entire Santa Cruz Island, including Gull Island (524 001), Scorpion Rock (502 010) and "Sppit" (502 013).

<sup>3</sup> 400 estimated for entire Santa Cruz Island.

014

Section from  
U.S.G.S. map.

Santa Cruz Island  
A & B





# 524

## Long Beach

The map on the facing page is an index to the locations of colonies within map 524, Long Beach. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

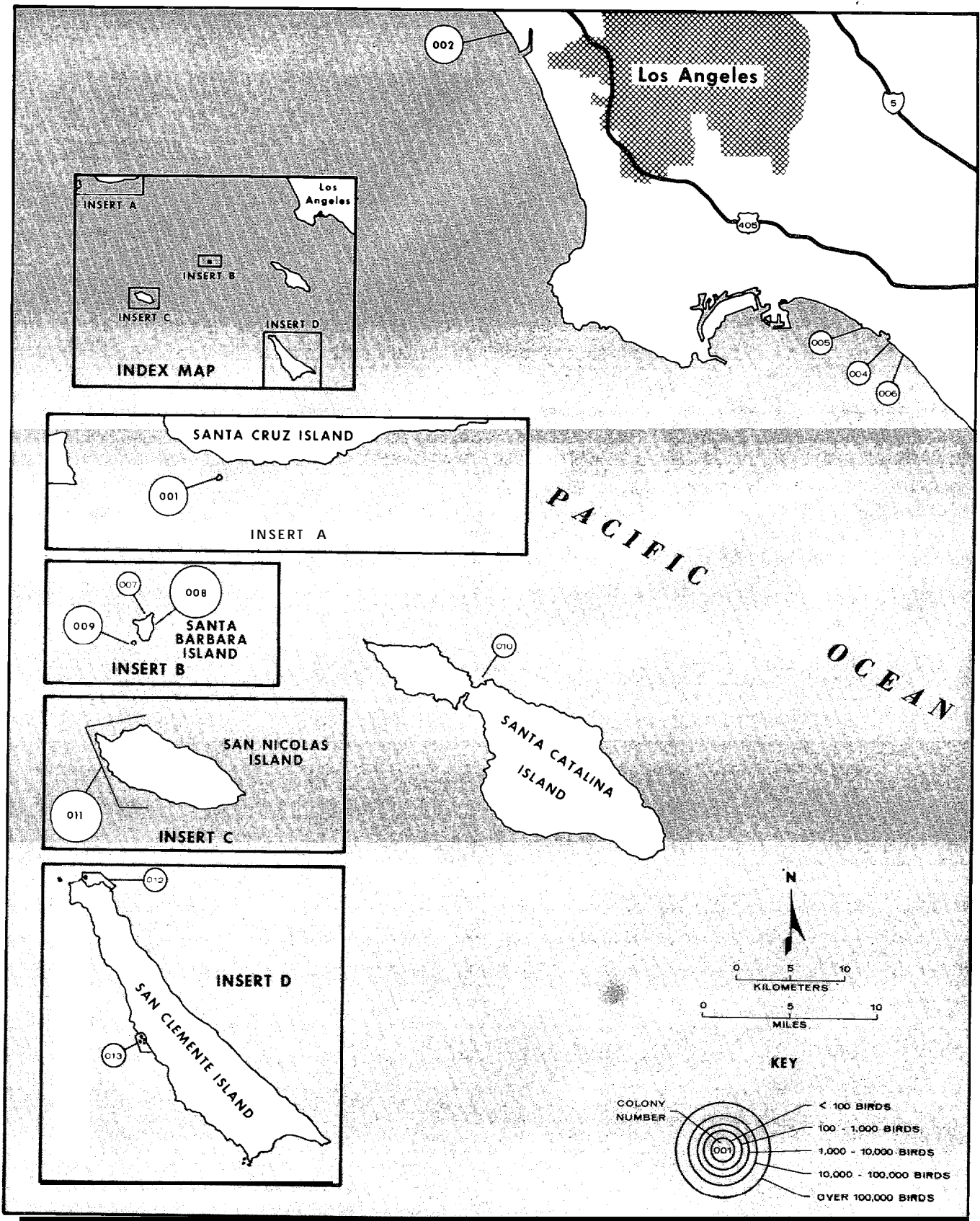
Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

Ashy Storm-Petrel . . . . .	300
Black Storm-Petrel . . . . .	150
Brown Pelican . . . . .	X
Brandt's Cormorant . . . . .	730
Double-crested Cormorant . . . . .	150*
Pelagic Cormorant . . . . .	10
Black Oystercatcher . . . . .	30
Western Gull . . . . .	4,700
Pigeon Guillemot . . . . .	120
Xantus's Murrelet . . . . .	3,200
Cassin's Anklet . . . . .	400

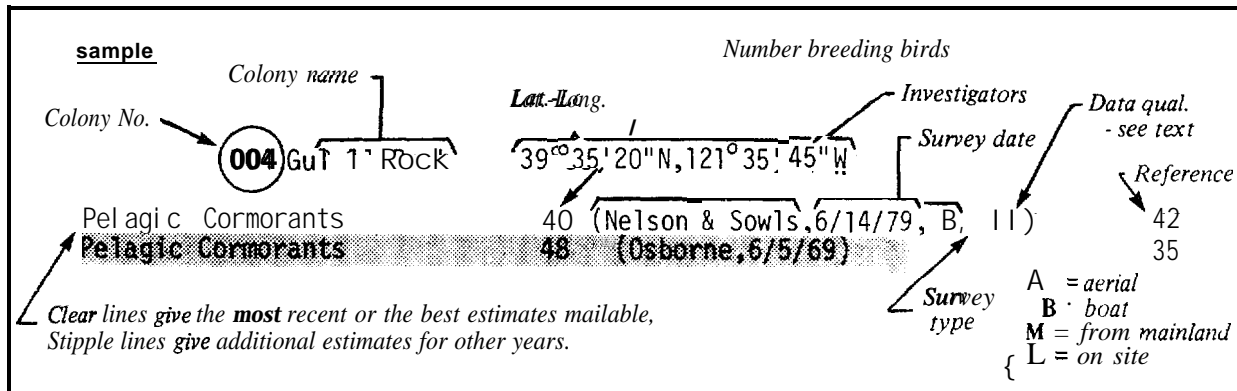
X = present

\* *coastal population only.*

# 524 Long Beach

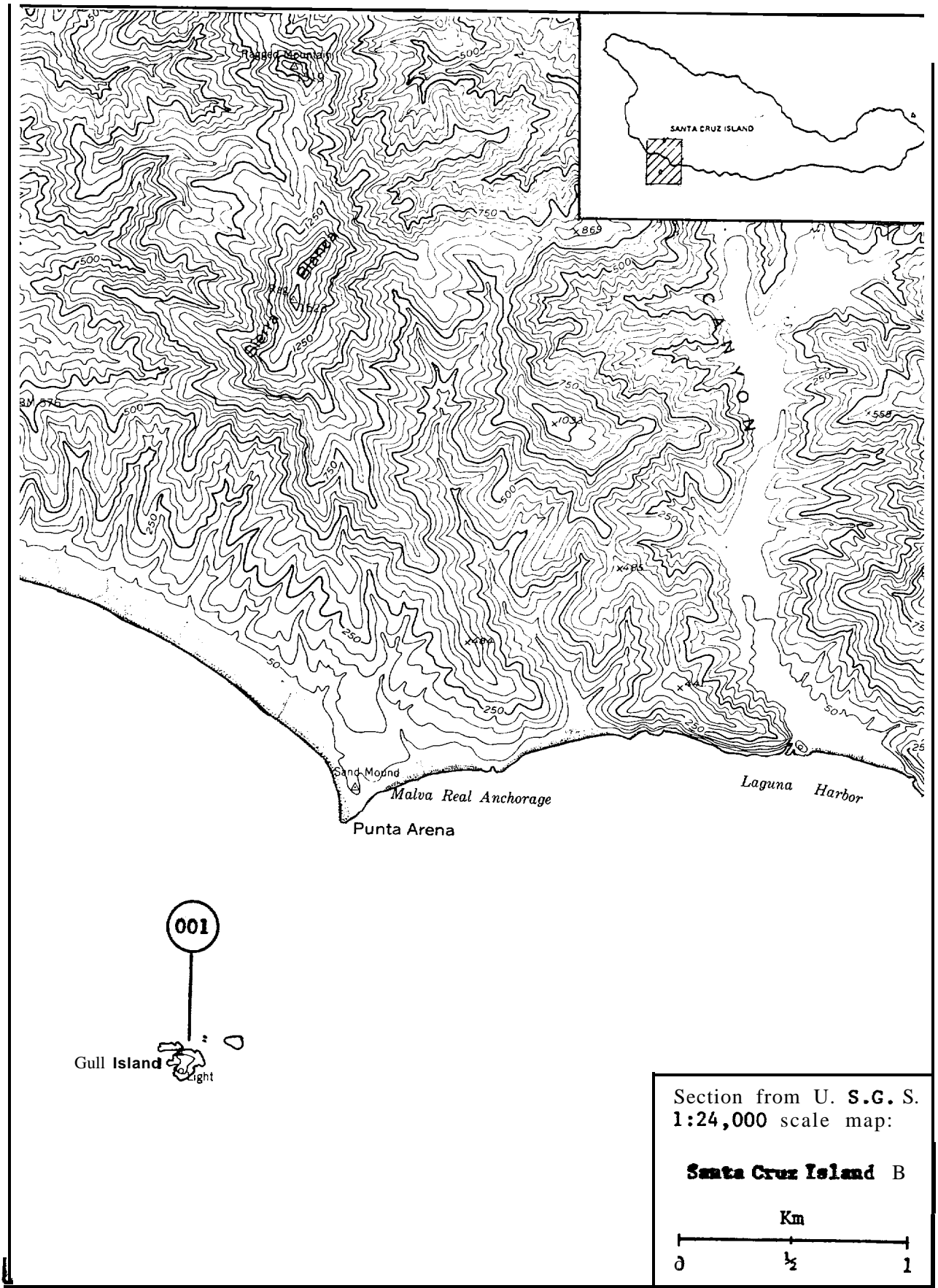


AREA 524, Long Beach (cent'd.)



Sample No.	Colony Name	Lat.-Long.	Number breeding birds	Investigators	Survey date	Survey type	Data qual.
001	Gull Island	33° 57' 01" N, 119° 49' 28" W					
	Ashy Storm-Petrel		2	(	△	, 4/12/77)	29
	Brandt's Cormorant		134	(		, 1977)	29
	Pelagic Cormorant		0	(		, 1976-77)	29
	Black Oystercatcher		8	(		, 1977)	29
	Western Gull		170	(		, 1977)	29
	Xantus' Murrelet		2	(		, 1976-77)	29
	Cassin's Auklet		150	(		, 1975-77)	29
	Total		466				
	Brandt's Cormorant		46+	(	△	, 1975)	29
	Brandt's Cormorant		110	(		, 1976)	29
	Pelagic Cormorant		8	(		, 1975)	29

△ Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



AREA 524, Long Beach (cent'd.)

002 Venice Beach and Playa del Rey 33°57'30"N, 118°27'30"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	300-330	(Atwood, 4-8/80, L)	12
Least Tern	170-210	(Atwood, 4-8/78, L)	12
Least Tern	196-240	(Atwood, 4-8/79, L)	12

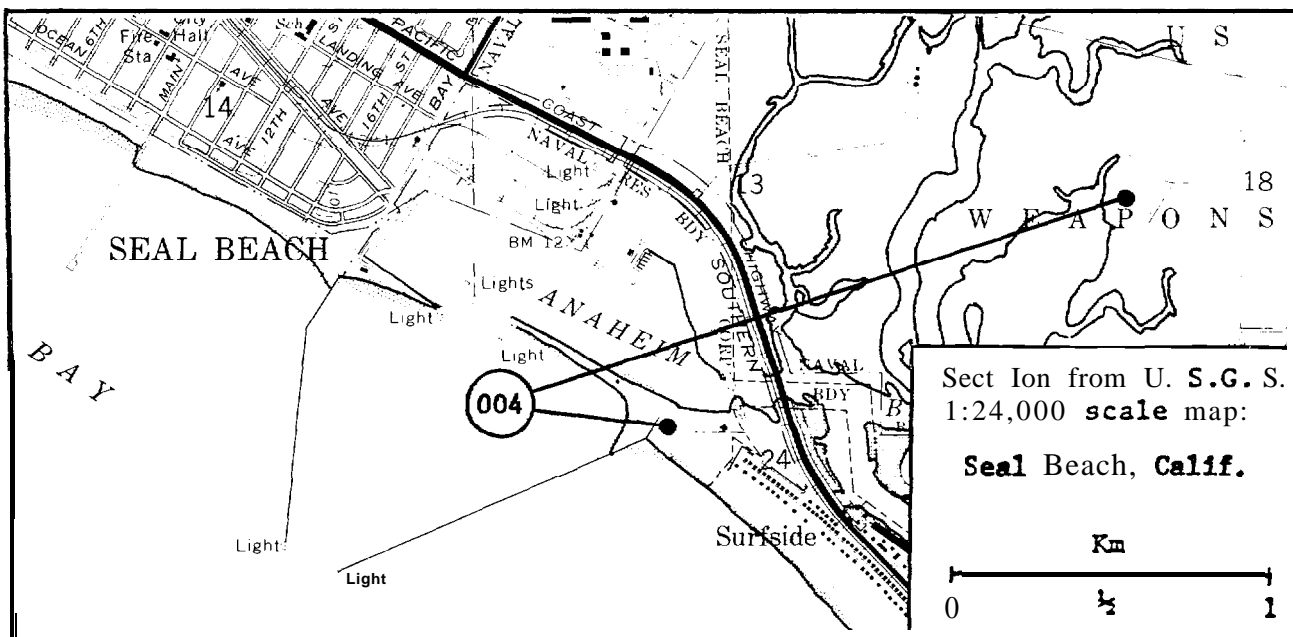
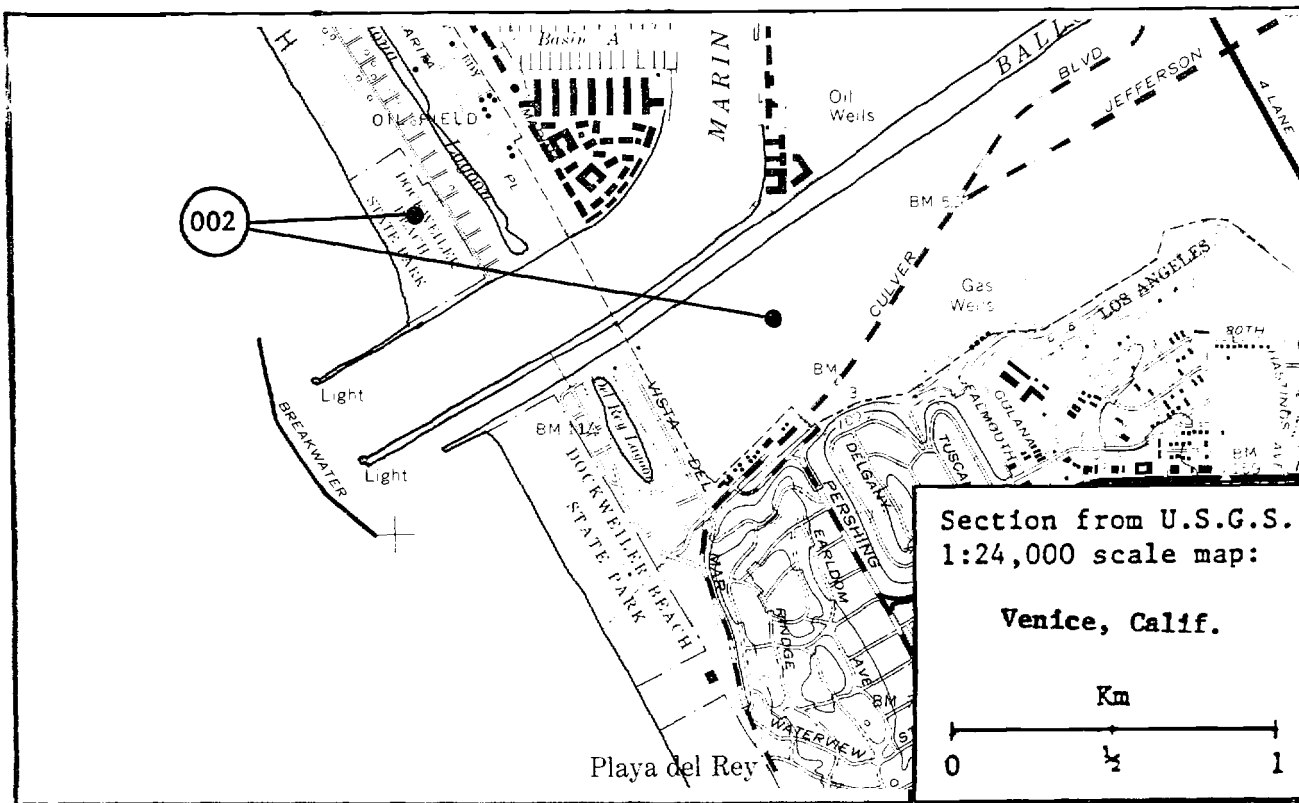
003 Terminal Island 33°57'30"N, 118°27'30"W

*Least Terns no longer use this site for nesting.*

004 Anaheim Bay and Surfside Beach 33°44'05"N, 118°05'34"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	80-96	(Atwood, 4-8/80, L)	12
Least Tern	12	(Atwood, 4-8/79, L)	12



AREA 524, Long Beach (cent'd.)

005 San Gabriel River 33°45'12"N, 118°06'15"W

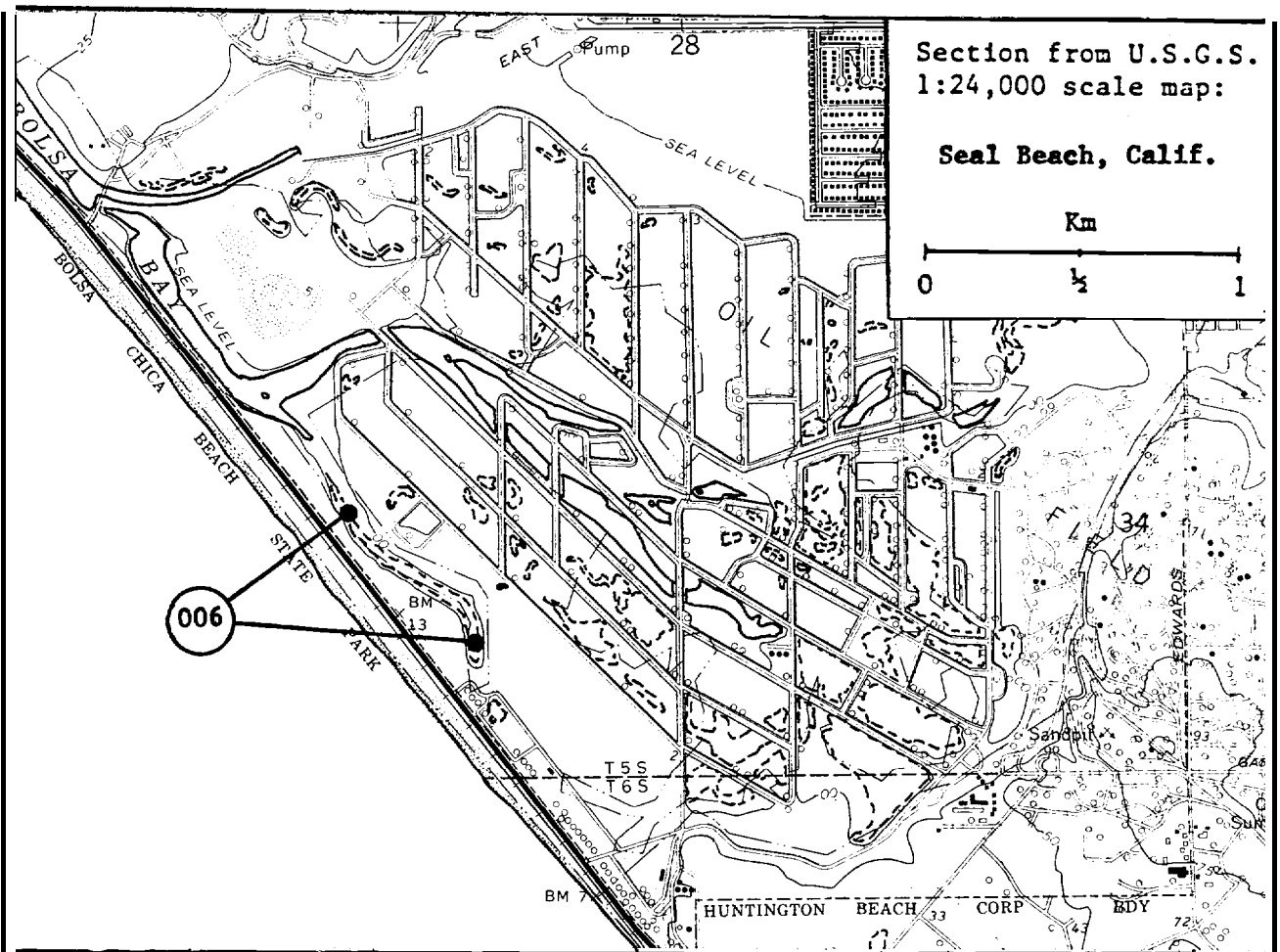
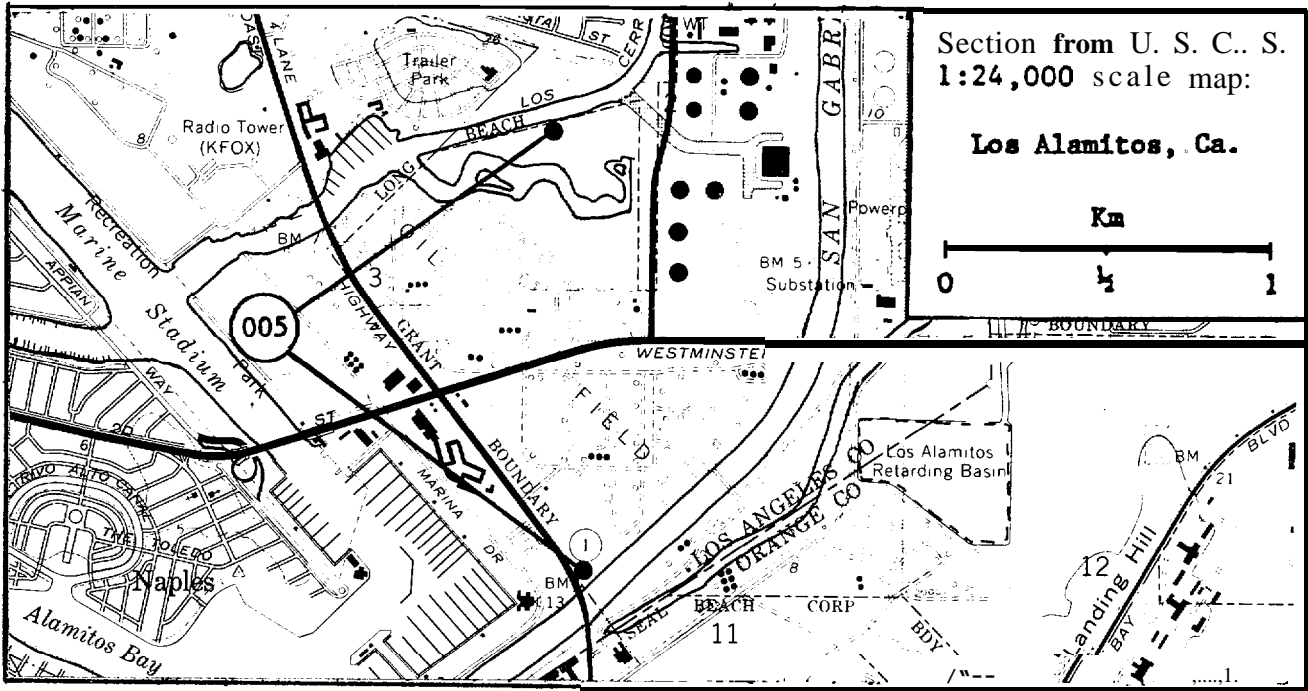
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	24-30	(Atwood, 4-8/80, L)	12
Least Tern	120-130	(Atwood, 4-8/78, L)	12
Least Tern	100-110	(Atwood, 4-8/79, L)	12

006 Bolsa Chica Beach 33°42'05"N, 118°03'05"W

Least Terns are unendangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	40-52	(Atwood, 4-8/80, L)	12
Least Tern	0	(Atwood, 4-8/78, L)	12
Least Tern	68-92	(Atwood, 4-8/79, L)	12



AREA 524, Long Beach (cent'd.)

007 Shag Rock 33 °29'15"N, 119°02'05"W

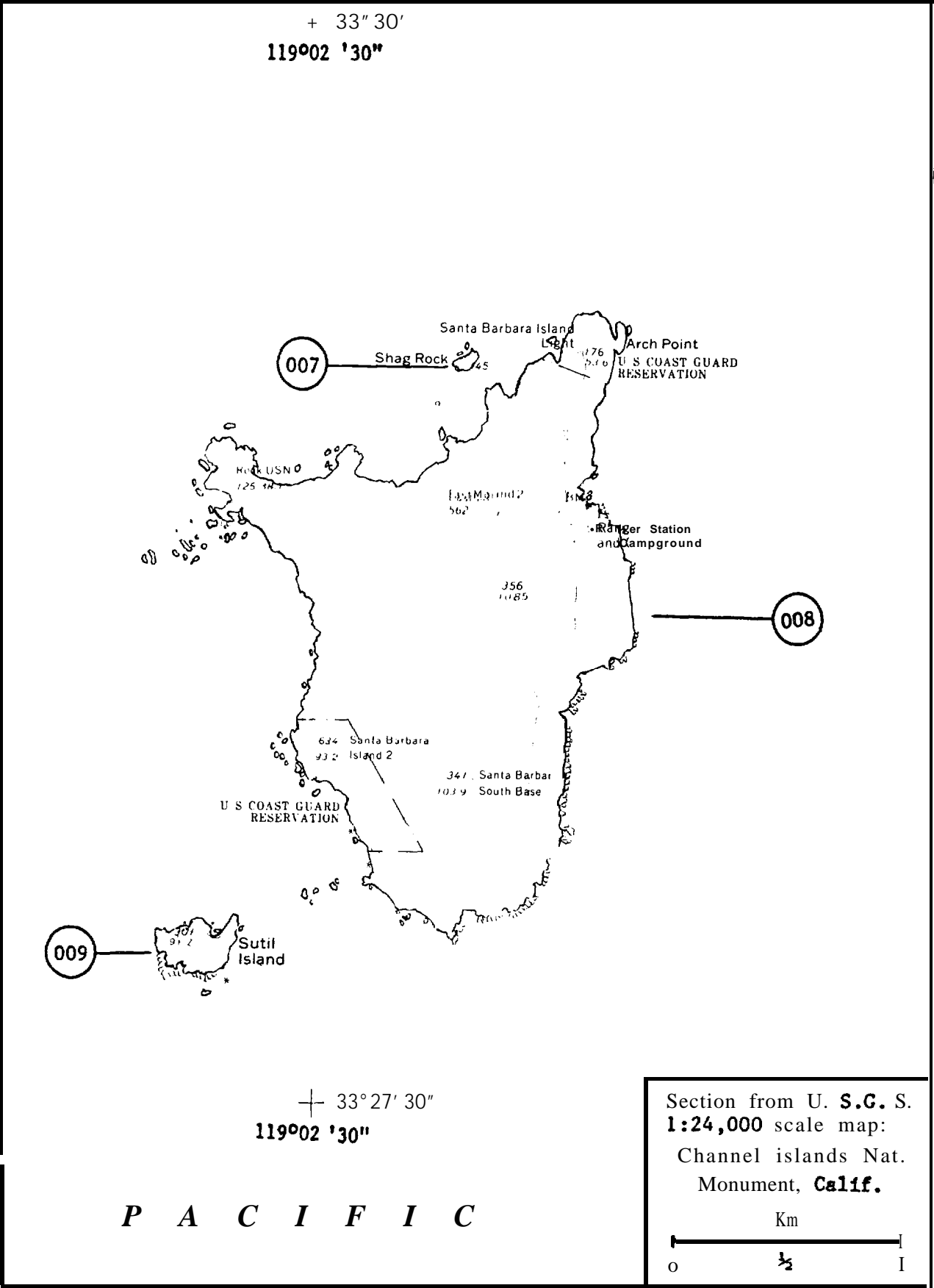
Western Gull	20	(	$\frac{1}{1}$	, 1976)
Xantus' Murrelet	30	(	$\frac{1}{1}$	, 1977)
Total	50			

008 Santa Barbara Island 33°28'37"N, 119°02'03"W

Black Storm-Petrel	120-130	(	$\frac{1}{1}$	, 1976-77)	25
Ashy Storm-Petrel	250	(	$\frac{1}{1}$	, 1976-77)	29
Brown Pelican	174	(Gress, 1980)			20
Brandt's Cormorant	102	(	$\frac{1}{1}$	, 1977)	29
Double-crested Cormorant	14	(		, 1977)	29
Pelagic Cormorant	4	(		, 1977)	29
Black Oystercatcher	12	(		, 1977)	29
Western Gull	2,300	(		, 1975-78)	29
Pigeon Guillemot	90	(		, 1976)	29
Xantus' Murrelet	2-4,000	(		, 1977)	29
Cassin's Auklet	150	(		, 1977)	29
Total	6,220				

Brown Pelican	none	(Grinnel, 1897)			29
Brown Pelican	50	(Willet, 6/14/11)			29
Brown Pelican	300-400	(Wright & Snyder, 7/2/12)			29
Brown Pelican	X	(Peyton, 5/7/14; Schreiber & DeLong, 1967)			29
Brown Pelican	none	( $\frac{1}{1}$ , 1975-77)			29
Brown Pelican	none	(Gress, 1978-1979)			20
Brandt's Cormorant	X	(Grinnell, 1897; Howell, 1908)			29
Brandt's Cormorant	92	(Jehl, 7/11/74)			29
Brandt's Cormorant	52	( $\frac{1}{1}$ , 1975)			29
Brandt's Cormorant	146	( $\frac{1}{1}$ , 1976)			29
Double-crested Cormorant	X	(Cooper, 1863; Grinnel, 1897; Peyton, 1914; Wyman, 1920+27; Sumner, 1939)			29
Double-crested Cormorant	none	(Crossin & Brownell, 5/68)			29
Double-crested Cormorant	132	(Hunt & Hunt, 7/2/72)			29
Double-crested Cormorant	20	( $\frac{1}{1}$ , 1976)			29
Pelagic Cormorant	X	(Grinnell, 1897; Pemberton, 1927)			29
Pelagic Cormorant	2	( $\frac{1}{1}$ , 1975)			29
Pelagic Cormorant	none	( $\frac{1}{1}$ , 1976)			29
Western Gull	X	(Grinnell, 1897)			29
Western Gull	1,000	(Chambers, 1889)			29
Western Gull	3,000	(Hunt & Hunt, 7/7/72)			29
Western Gull	2,324	( $\frac{1}{1}$ , 1975)			29
Western Gull	2,230	( $\frac{1}{1}$ , 1976)			29
Western Gull	1,622	( $\frac{1}{1}$ , 1977)			29
Western Gull	850	( $\frac{1}{1}$ , 1978)			29
Pigeon Guillemots	X	(Grinnell, 1897; Sumner, 1939; Small, 1960)			29
Xantus' Murrelet	X	(Wright & Snyder, 7/3/12)			29
Cassin's Auklet	X	(Cooper, 1863; Grinnel, 1897)			29
Cassin's Auklet	none	(Howell, 1908; Willet, 1911; Wright & Snyder, 1912)			29
Cassin's Auklet	none	(Sumner & Bond, 1939; Hunt & Hunt, 1972)			29
Tufted Puffin	?	(Grinnel, 1897)			29

X = present

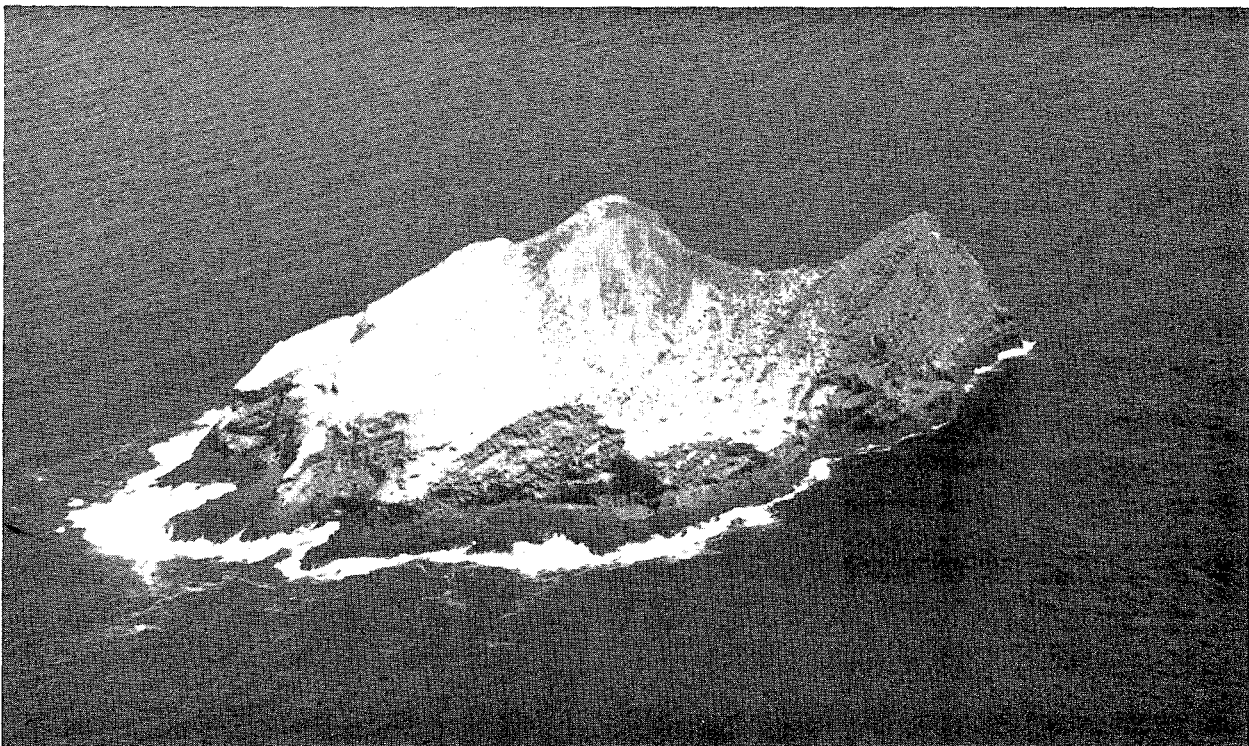


AREA 524, Long Beach (cent'd.)

009 Sutil Island 33 °28'50"N, 119 °02'50"W

Black Storm-Petrel	20-30	(	△1	, 1976-77)	29
Ashy Storm-Petrel	40-50	(		, 1976-77)	29
Brandt's Cormorant	152	(		, 1977)	29
Double-crested Cormorant	120	(		, 1977)	29
Pelagic Cormorant	4	(		, 1977)	29
Black Oystercatcher	4	(		, 1977)	29
Western Gull	150	(		, 1976)	29
Pigeon Guillemot	30	(		, 1976)	29
Xantus' Murrelet	150	(		, 1977)	29
Cassin's Auklet	70	(		, 6/27/76, L)	29
Total	750				
Brandt's Cormorant	80	(	Jeh1, 7/11/74)		29
Brandt's Cormorant	186	(	△1	, 1975)	29
Brandt's Cormorant	140	(	△1	, 1976)	29
Double-crested Cormorant	60	(	△1	, 1976)	29
Cassin's Auklet	200	(	Willlett, 6/14/11, L)		29

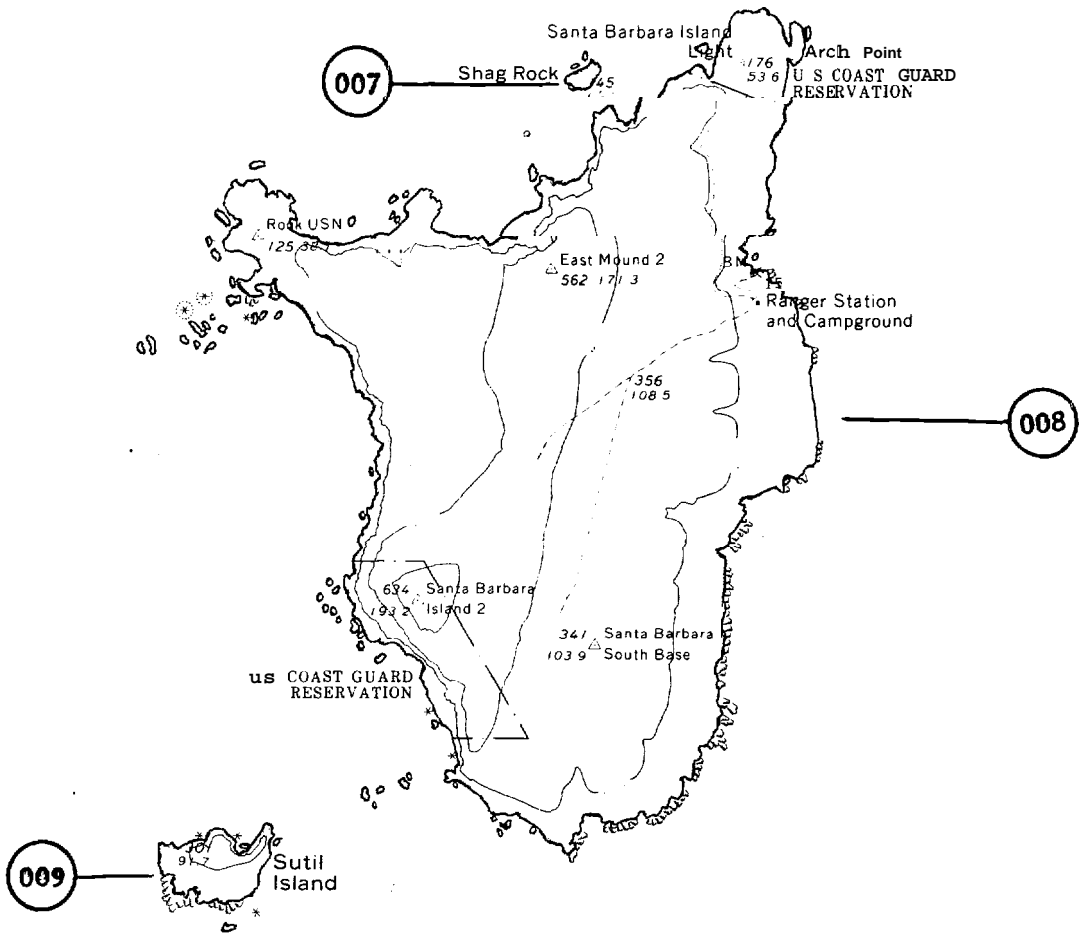
△1 Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most Significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



Sutil Island

Photo by George Hunt

+ 33°30'  
119°02' 30"



+ 33°27'30"  
119°02'30"

“ ’ P A C I F I C

Section from U. S.G. S.  
1:24,000 scale map:  
**Channel Islands Nat.  
Monument, Calif.**

Km

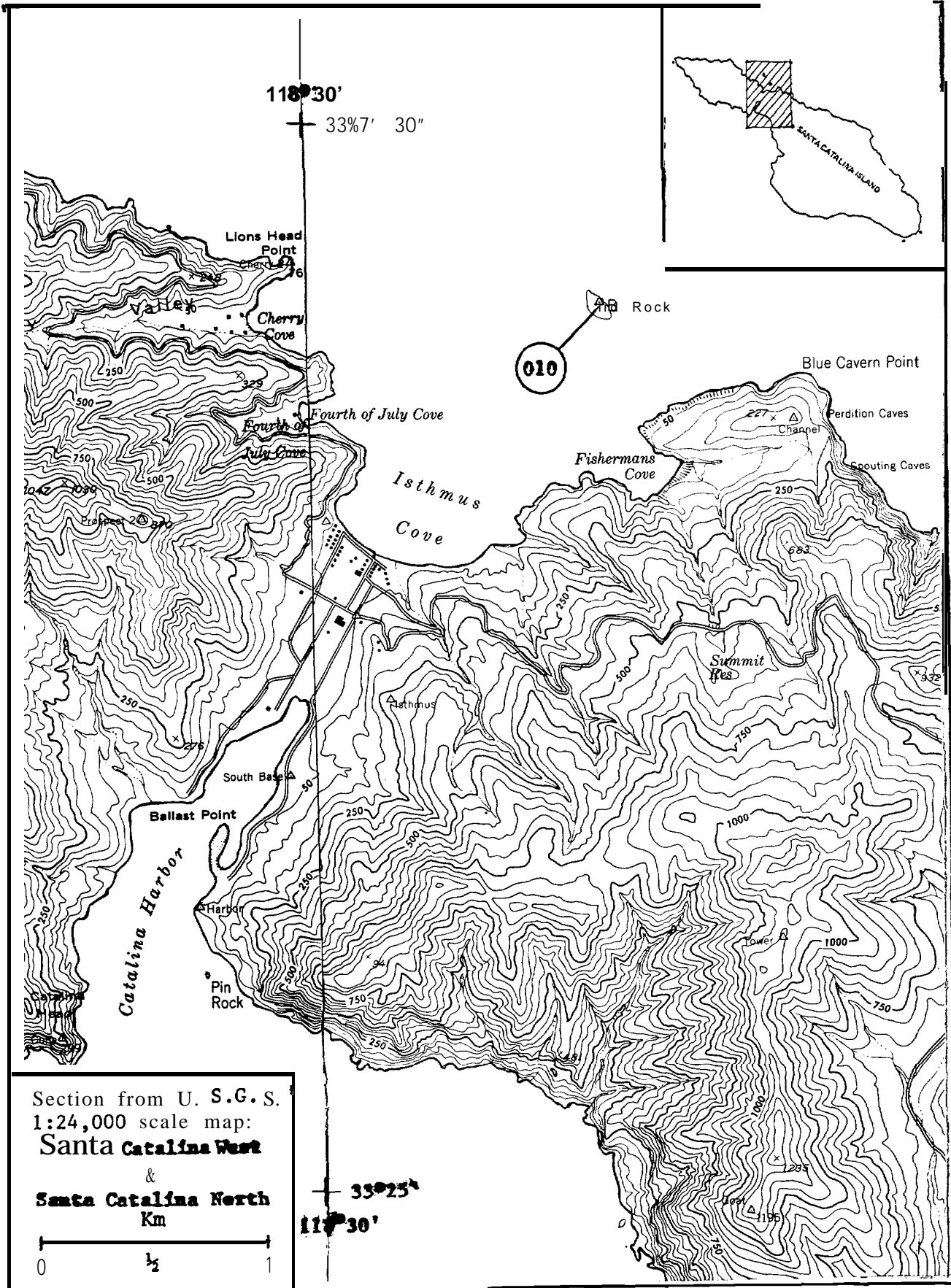
0 1/2 1

010 Bi rd Rock 33 °27'04"N, 118 °29'04"W

Brandt's Cormorant	0	(	∟	, 1975-76)	29
Western Gull	52	(		, 1976)	29
Xantus' Murrelet	0	(		, 1976-77)	29
Total	52				
Brandt's Cormorant	X	(	Willet, 4/11/04)		29
Brandt's Cormorant	none	(	Jehl, 7/9/74)		29
Western Gull	X	(	Grinnell, 1897)		29
Western Gull	48	(	Harper, 1965)		29
Western Gull	50	(	Harper, 1966)		29
Western Gull	20	(	Jehl, 7/1974)		29
Western Gull	58	(	Hand, 1974)		29
Western Gull	50-60	(	∟, 1975)		29
Xantus' Murrelet	X	(	Bleitz, 1967)		29

X = present

∟ Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



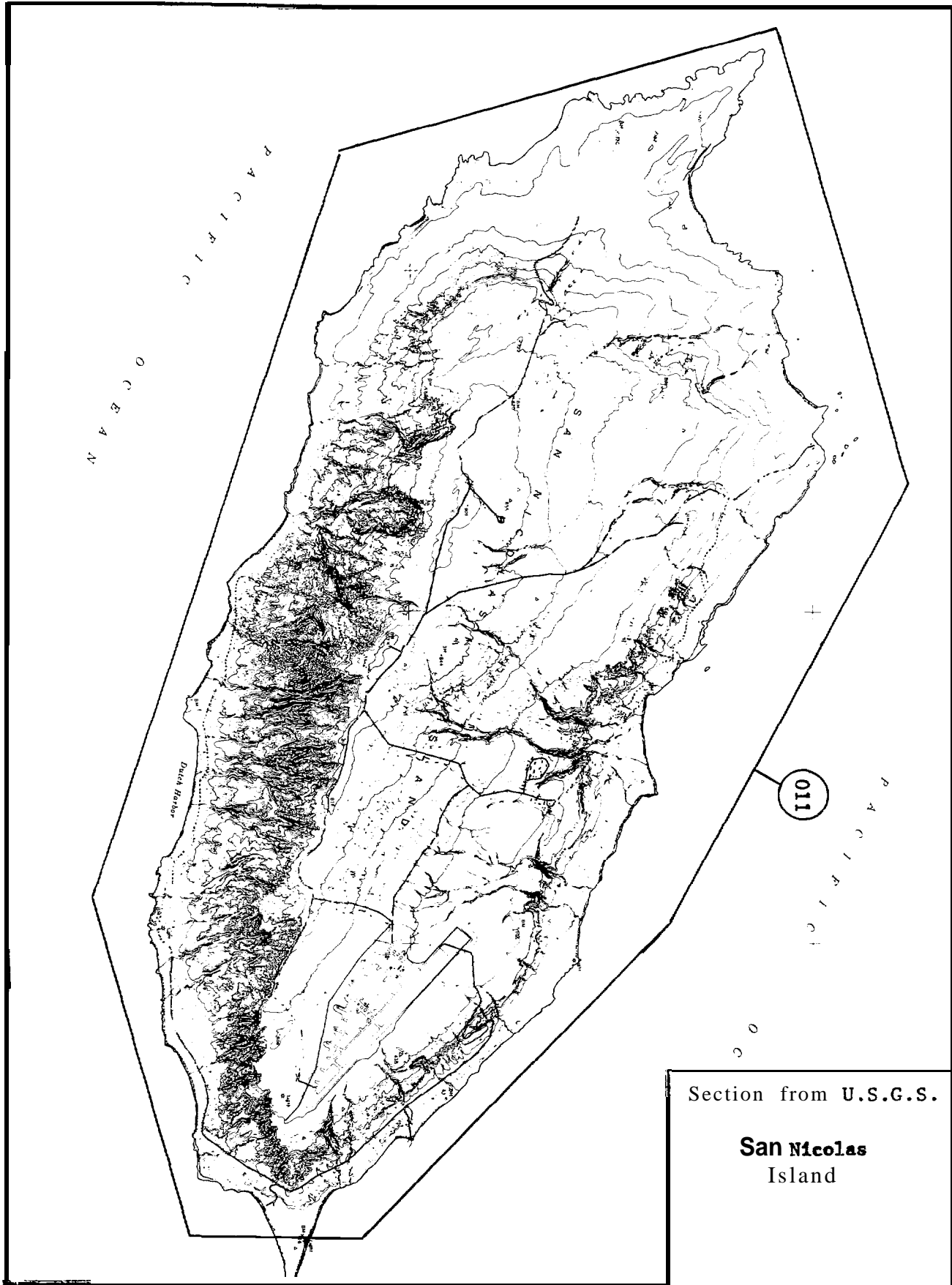
AREA 524, Long Beach (cont'd.)

011 San Nicolas Island 33 °14'30"N, 119 °30'30"W

Brandt's Cormorant	290	( /1_ ,1977)	29
Black Oystercatcher	2	{   ,1977)	29
Western Gull	1,800	{   ,1975-77)	29
Total	2,092		
Brandt's Cormorant	X	(Gaylord, 1897)	29
Brandt's Cormorant	1,200	(Schreiber, 6/17/68)	29
Brandt's Cormorant	1,200	(Anderson, 6/14/72)	29
Brandt's Cormorant	970	(Anderson, 1973)	29
Brandt's Cormorant	1,230	(Hunt & Leach, 5/22/74)	29
Brandt's Cormorant	266	{ /1 ,1975)	29
Brandt's Cormorant	340	{ /1 ,1976)	29
Western Gull	6,000	(DeLong, 7/29/67)	29
Western Gull	1,200	(Schreiber, 1968)	29

X = present

Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



Section from U.S.G.S.

**San Nicolas**  
Island

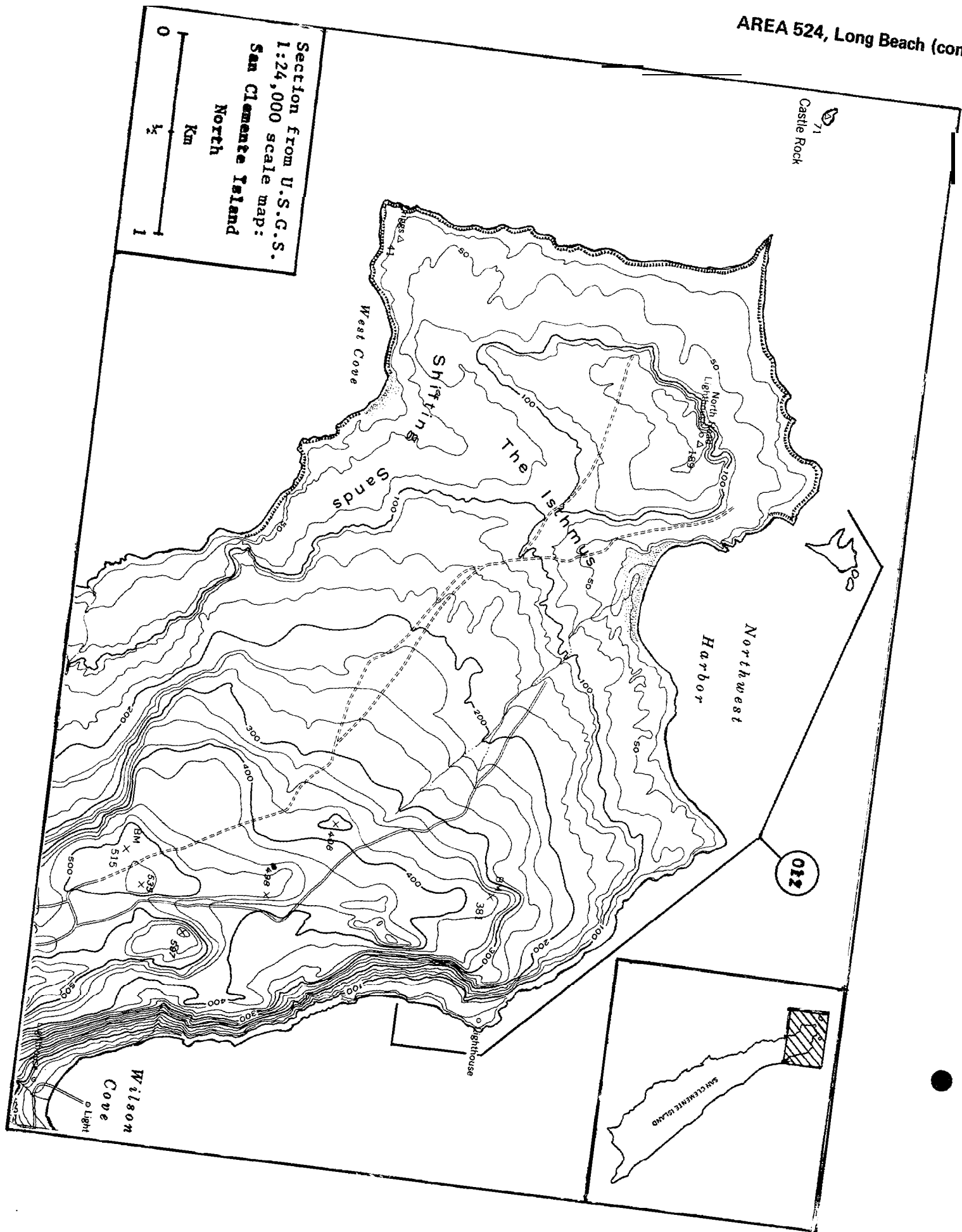
012 Bird Rock and N.W. San Clemente Is. 33°02'N, 118°35'W

Brandt's Cormorant	10	(	∧	,1976)	29
Black Oystercatcher	2	(		,1977)	29
Western Gull	56	(		,1976)	29
Total	<u>68</u>				
Brandt's Cormorant	X	(	Linton,1907; Jehl,1973)		29
Western Gull	X	(	Jehl,1973)		29
Western Gull	62	(	∧	,1975)	29

X = present

∧ Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

AREA 524, Long Beach (cont'd.)



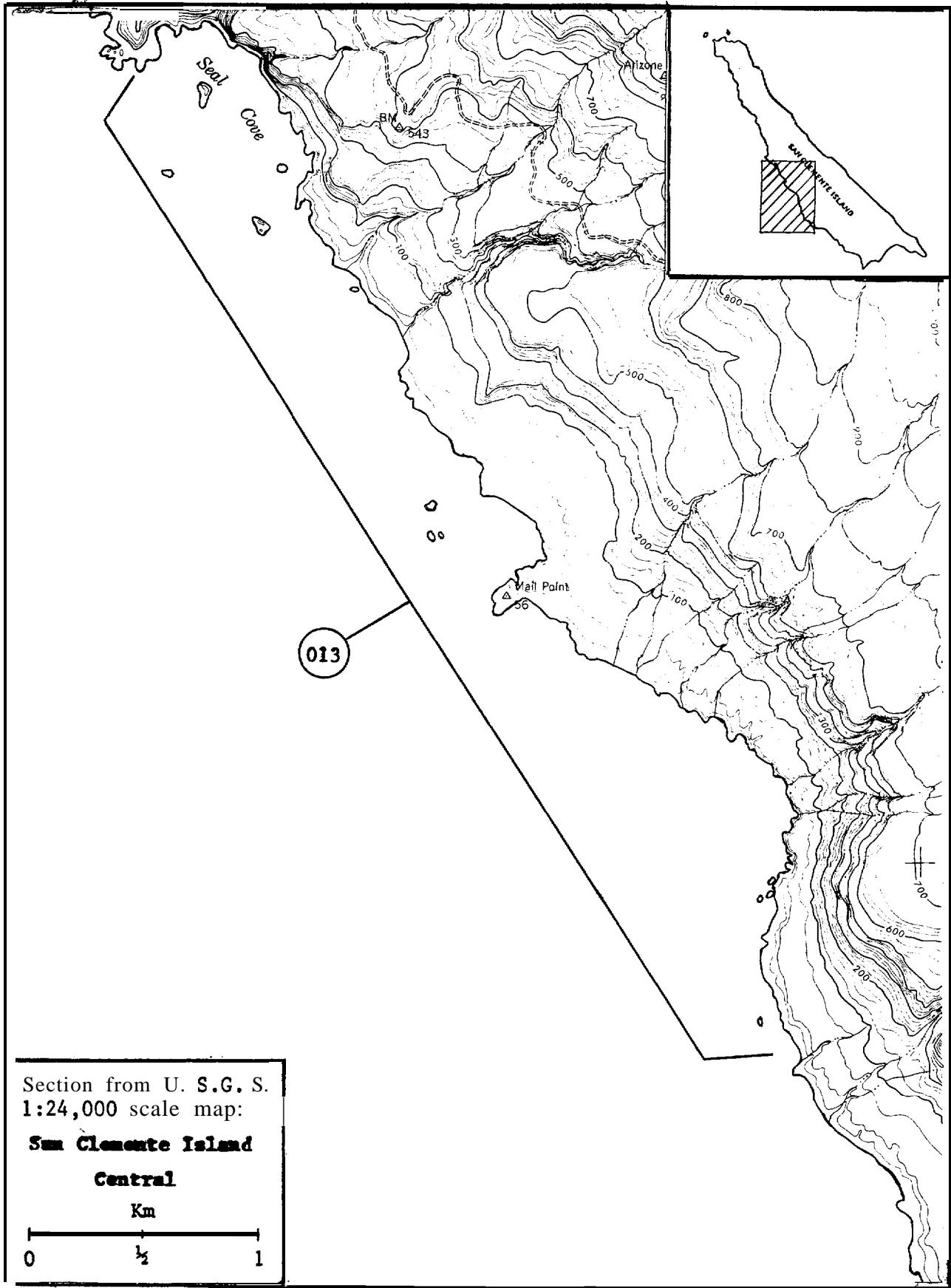
AREA 524, Long Beach (cont'd.)

013 Seal Cove to Lost Point 32 °52' N, 118°31'W to 32 °54'10"N,  
118 °32'20"W

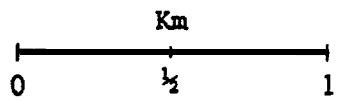
Brandt's Cormorant	30	(	△	,1976)	29
Black Oystercatcher	2	(		,1976-77)	29
Western Gull	56	(		,1976-77)	29
Xantus' Murrelet	X	(		,1976)	29
Total	88				
Brandt's Cormorant	X	(Leatherwood & Coulombe, 1972; Jones & Jehl, 1973)			29
Western Gull	X	(Jehl, 1973)			29

X = present

△ Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.



Section from U. S.G. S.  
1:24,000 scale map:  
**San Clemente Island**  
**Central**

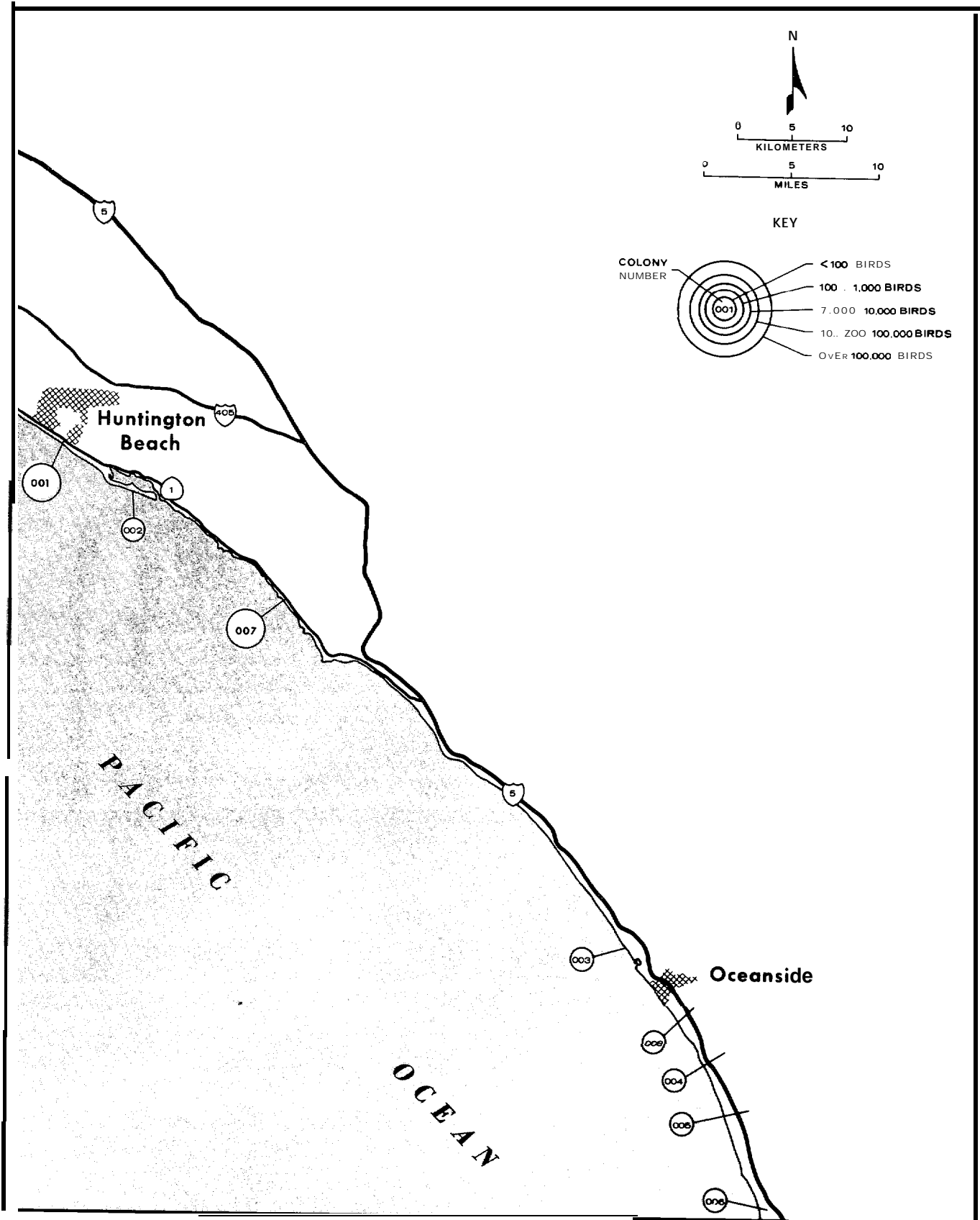




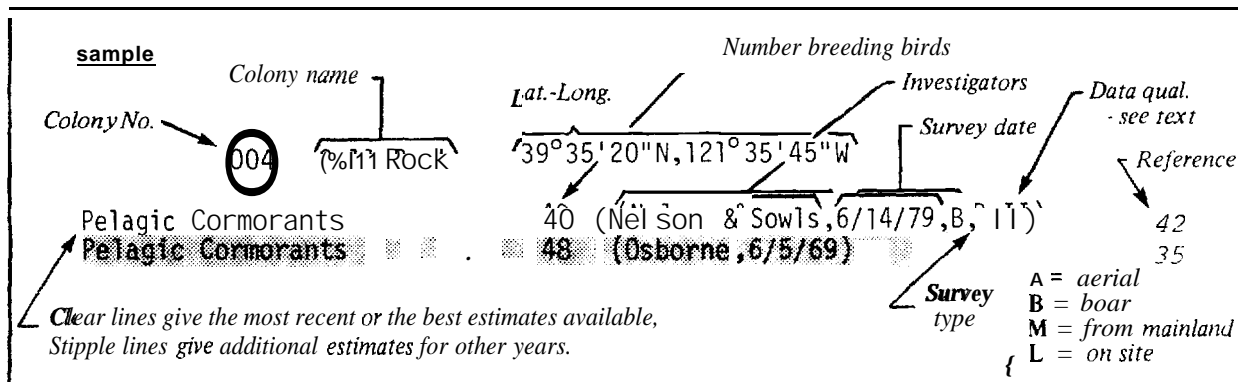
**525**  
**Santa Ana**

The map on the facing page is an index to the locations of colonies within map 525, Santa Ana. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

525 Santa Ana



AREA 525, Santa Ana (cent'd.)



001 Huntington Beach 33°38'43"N, 117°59'02"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	140-180	(Atwood, 4-8/80, L)	12
Least Tern	150-180	(Atwood, 4-8/78, L)	12
Least Tern	160-190	(Atwood, 4-8/79, L)	12

002 Newport Bay 33°38'46"N, 117°53'08"W

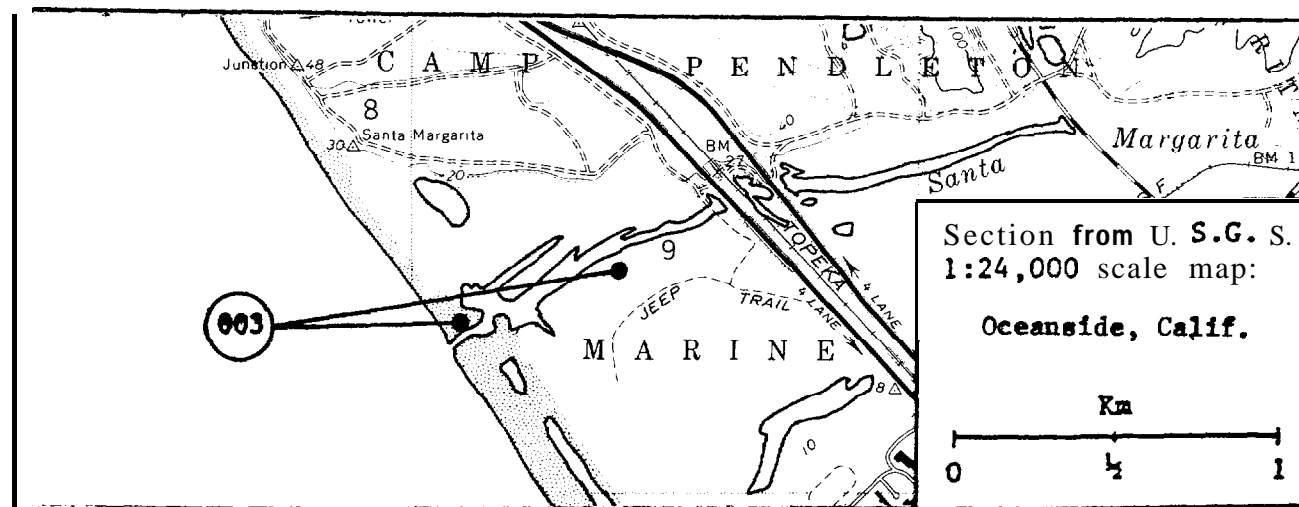
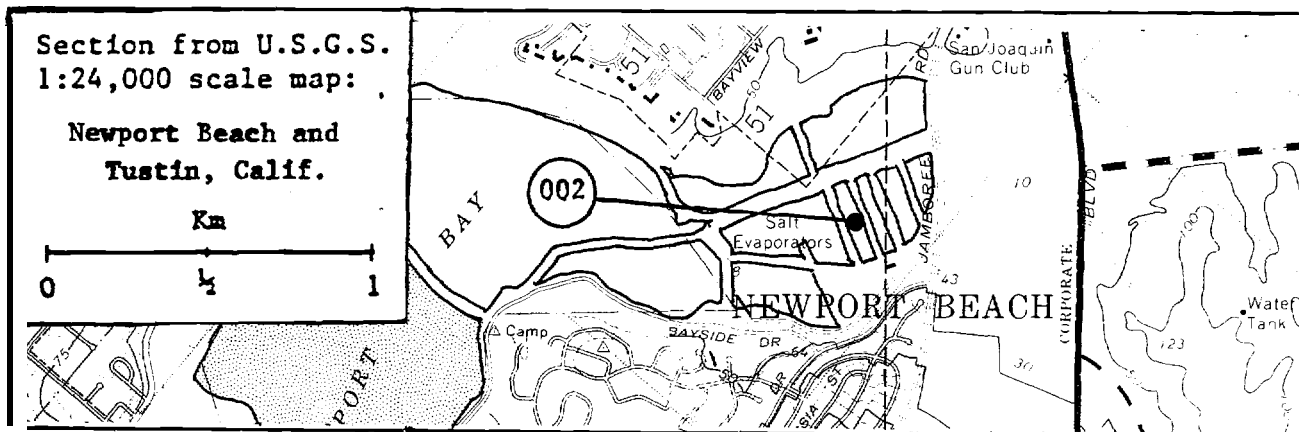
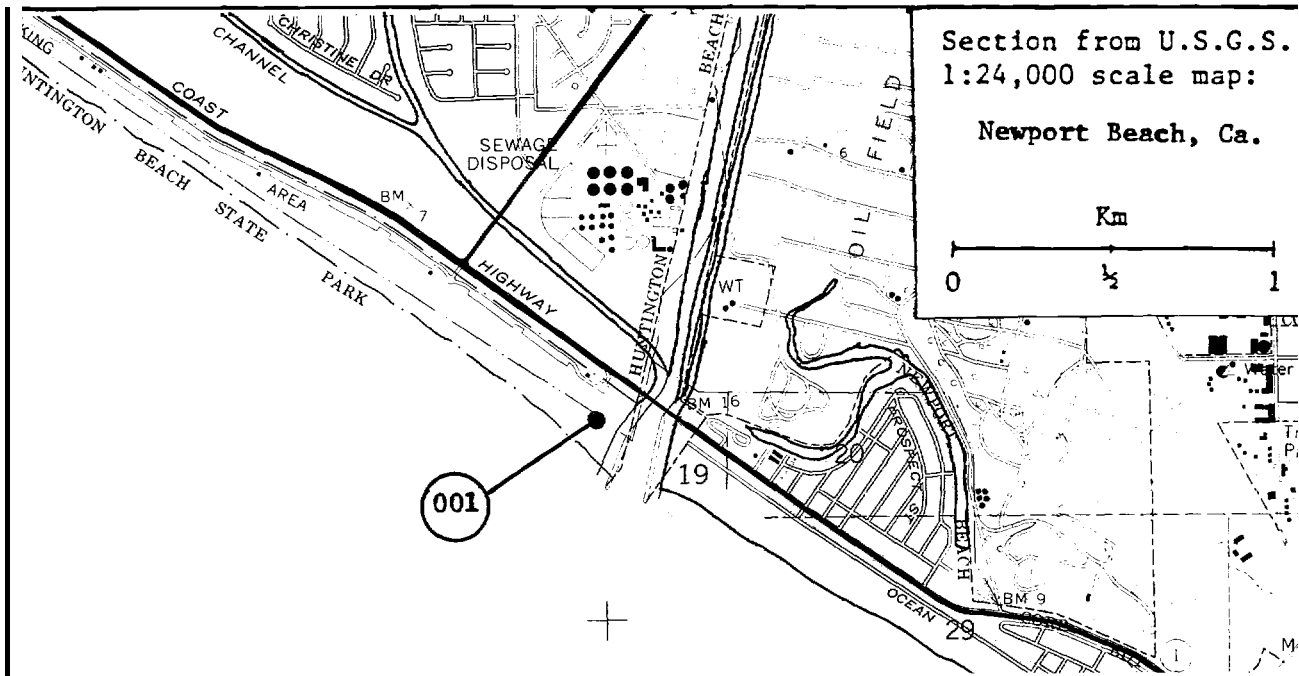
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	4-10	(Atwood, 4-8/80, L)	12
Least Tern	16-20	(Atwood, 4-8/78, L)	12
Least Tern	12-14	(Atwood, 4-8/79, L)	12

003 Santa Margarita River 33°13'57"N, 117°24'37"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	80	(Copper and Belluomini, 4-8/80, L)	12
Least Tern	60-80	(Unitt, 4-8/78, L)	12
Least Tern	64-80	(Unitt, 4-8/78, L)	12



004 Agua Hedionda 33°08' 45"N, 117 °19' 30"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	16-20	(Copper, 4-8/80, L)	12
Least Tern	22-30	(Unitt, 4-8/78, L)	12
Least Tern	46-56	(Copper, 4-8/78, L)	12

005 Batiquitos Lagoon 33 °05' 25"N, 117 °17' 30"W

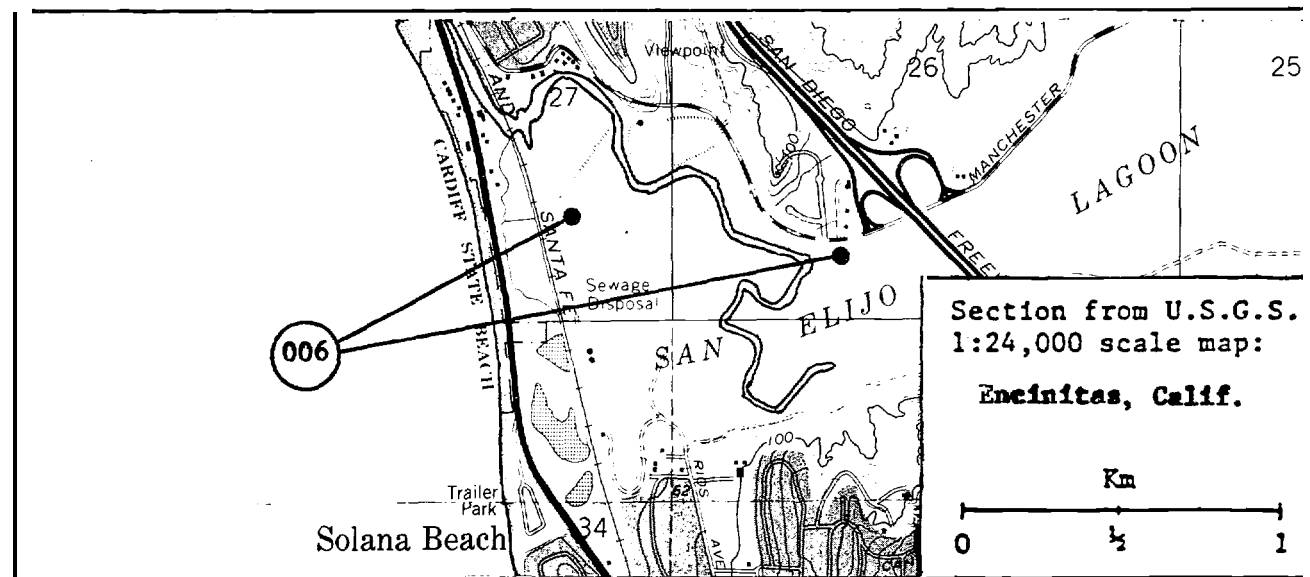
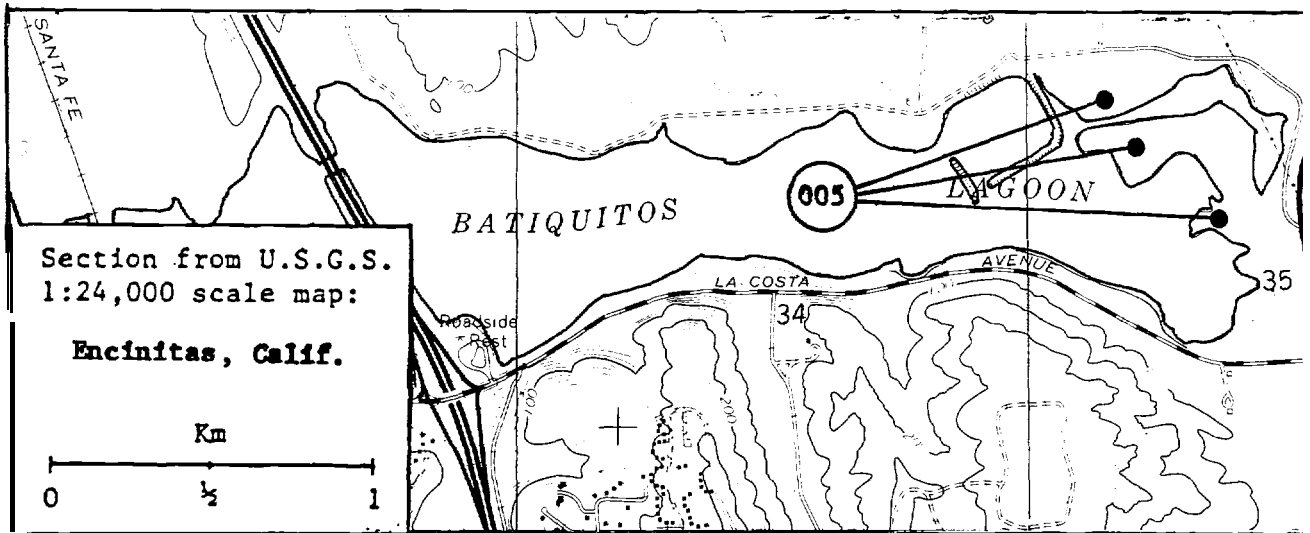
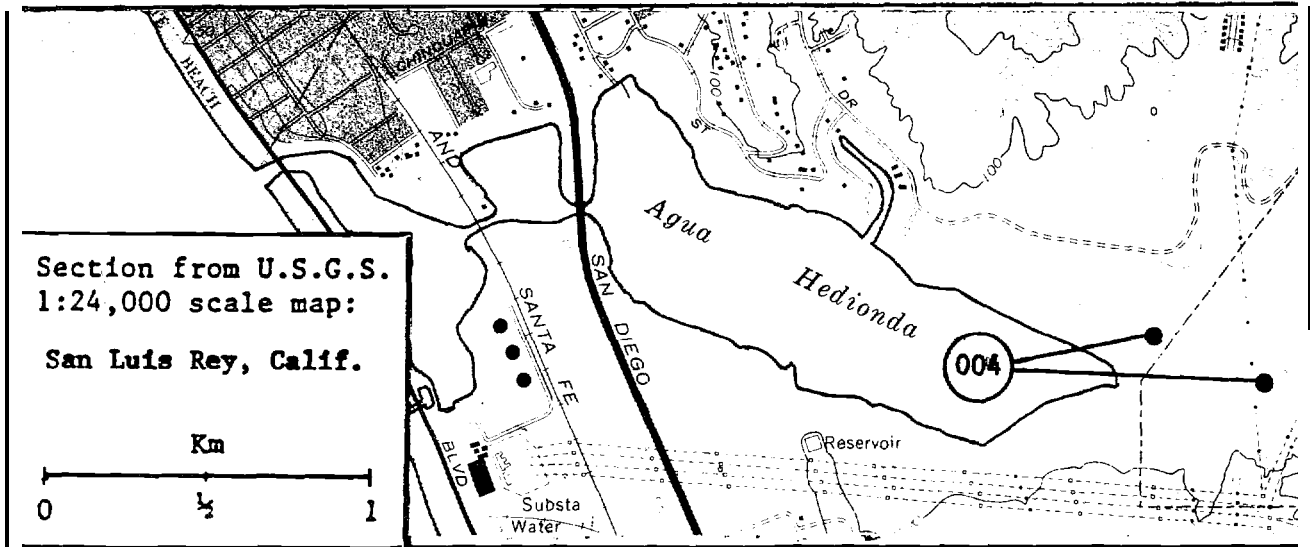
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	50-60	(Copper, 4-8/80, L)	12
Least Tern	44-54	(Unitt, 4-8/78, L)	12
Least Tern	76-80	(Copper, 4-8/79, L)	12

006 San Elijo Lagoon 33°00' 58"N, 117°16' 52"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	34	(Copper, 4-8/80, L)	12
Least Tern	18	(Unitt, 4-8/78, L)	12
Least Tern	24	(Copper, 4-8/79, L)	12



007

Al i so Creek 33 °30'35"N, 117 °45'12"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

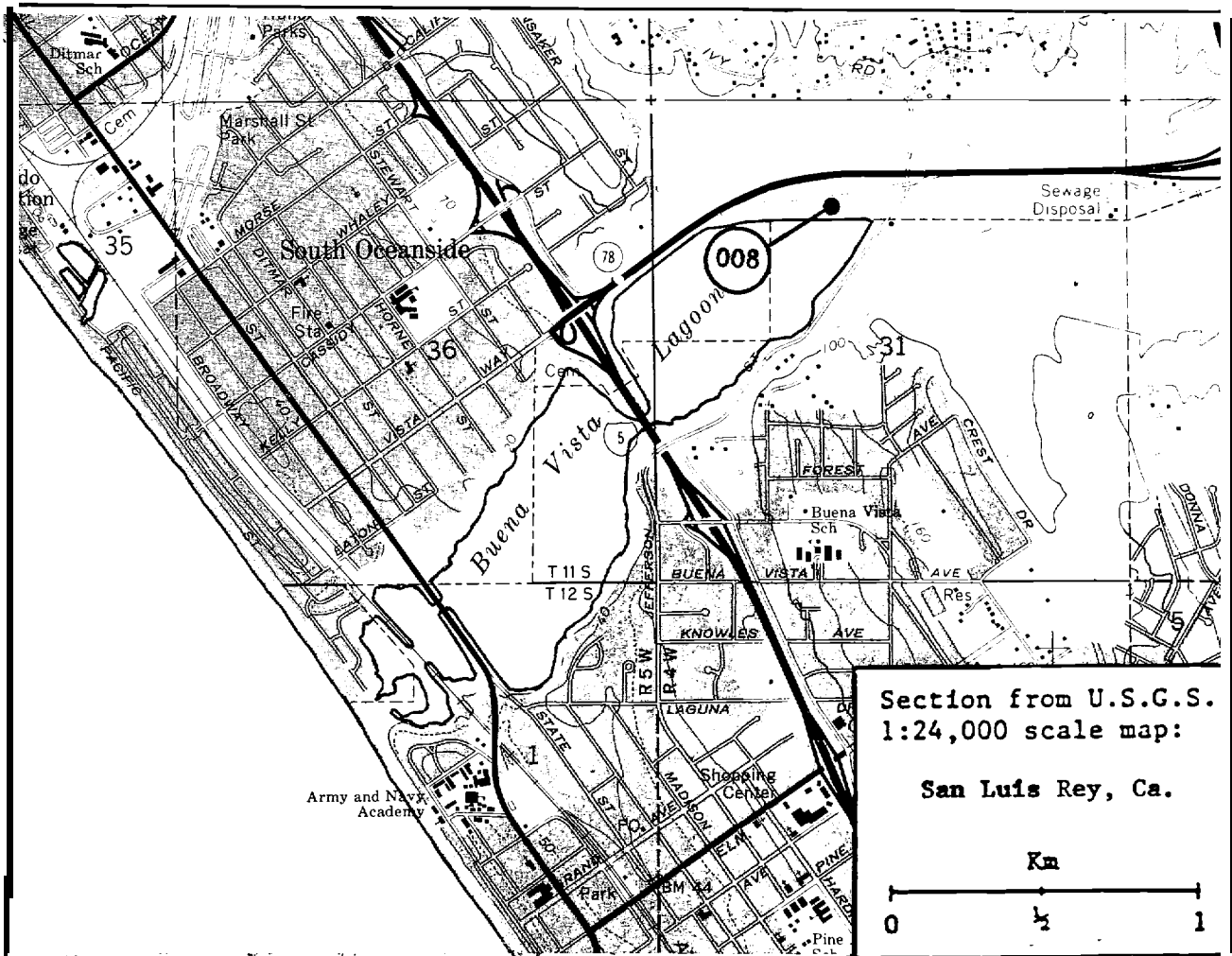
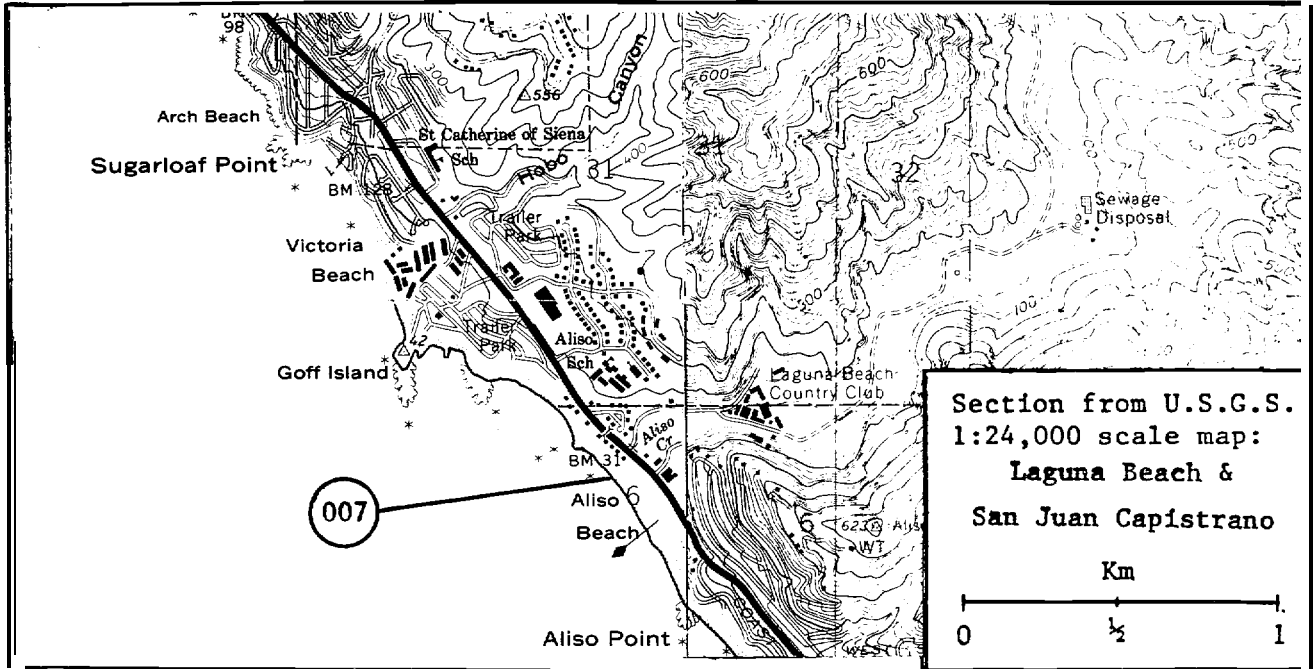
Least Tern	100 (Copper, 4-8/80, L)	12
Least Tern	30 (Copper, 4-8/79, L)	12

008

Buena Vista Lagoon 33 °10'30"N, 117 °21'15"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	2 (Copper, 4-8/80, L)	12
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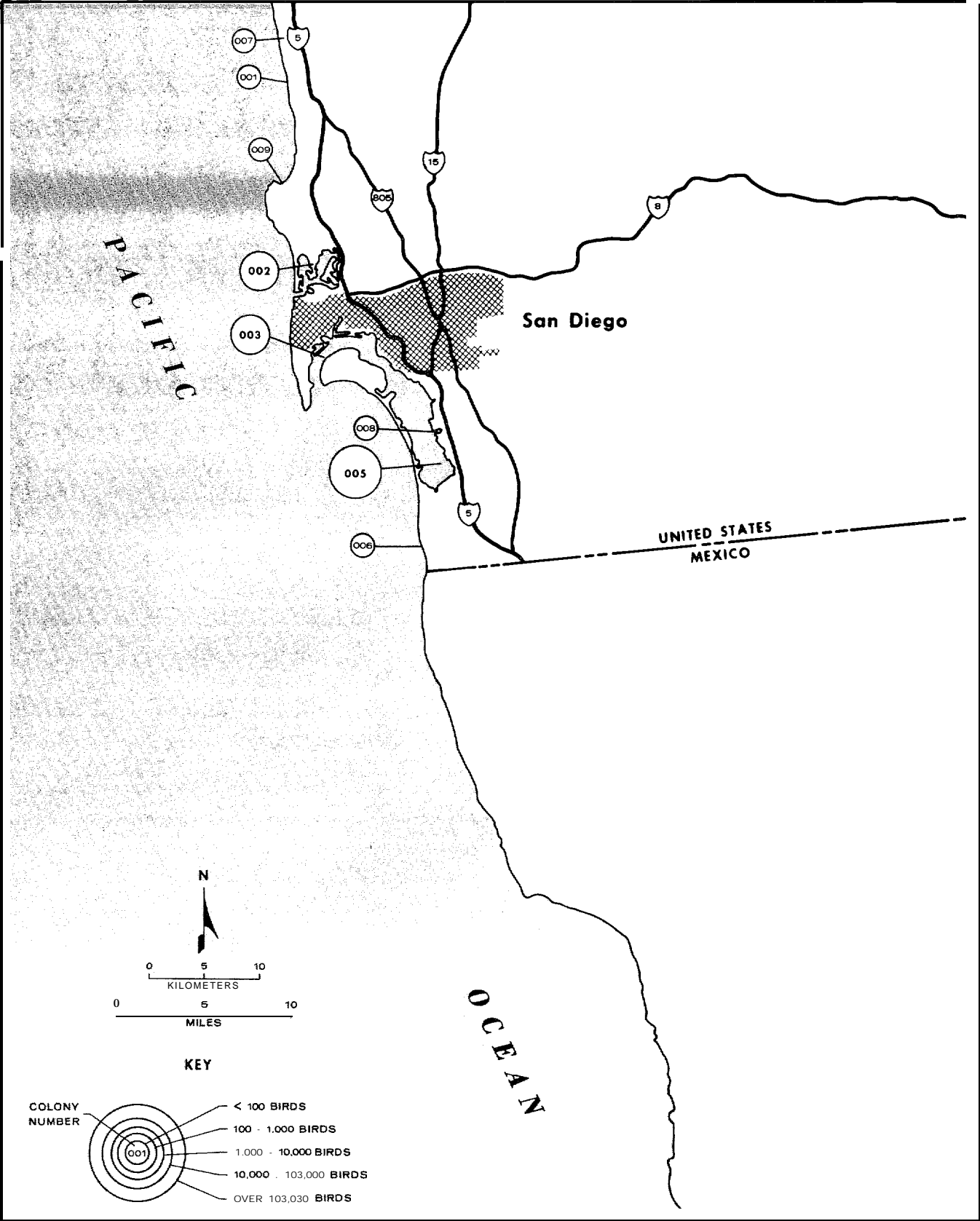


545

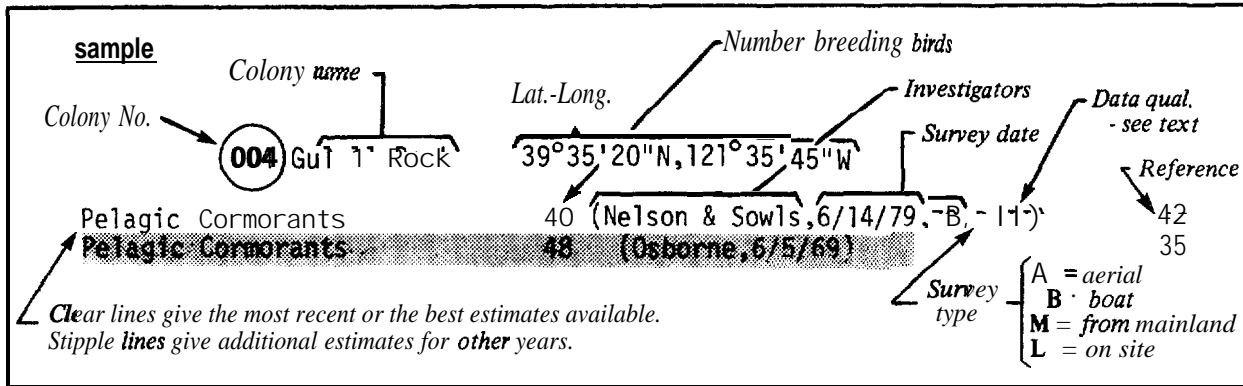
## **San Diego**

The map on the facing page is an index to the locations of colonies within map 545, San Diego. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

# 545 San Diego



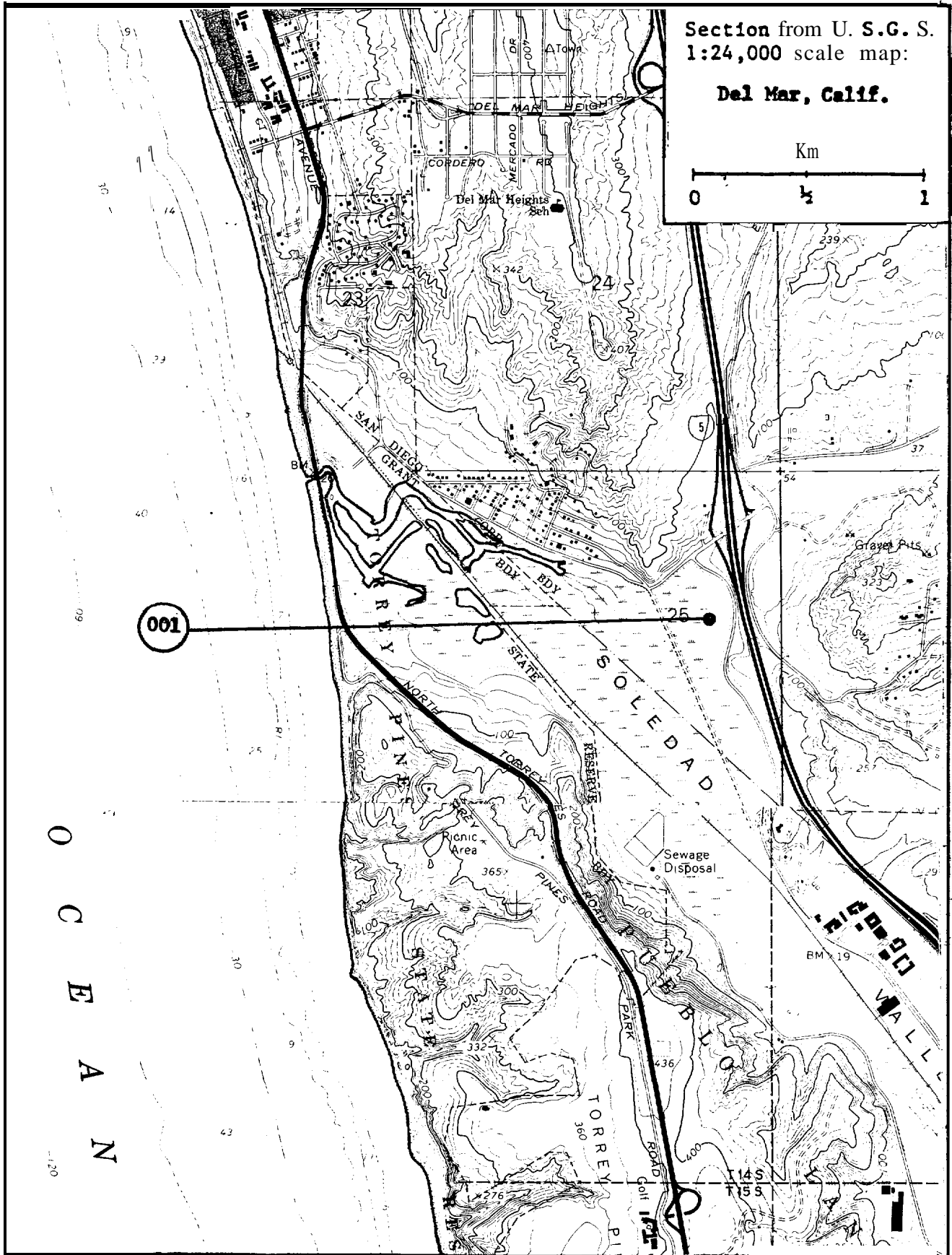
AREA 545, San Diego (cent'd.)



**001** Los Penasquitos Lagoon 32°55' 49"N, 117°14'54"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

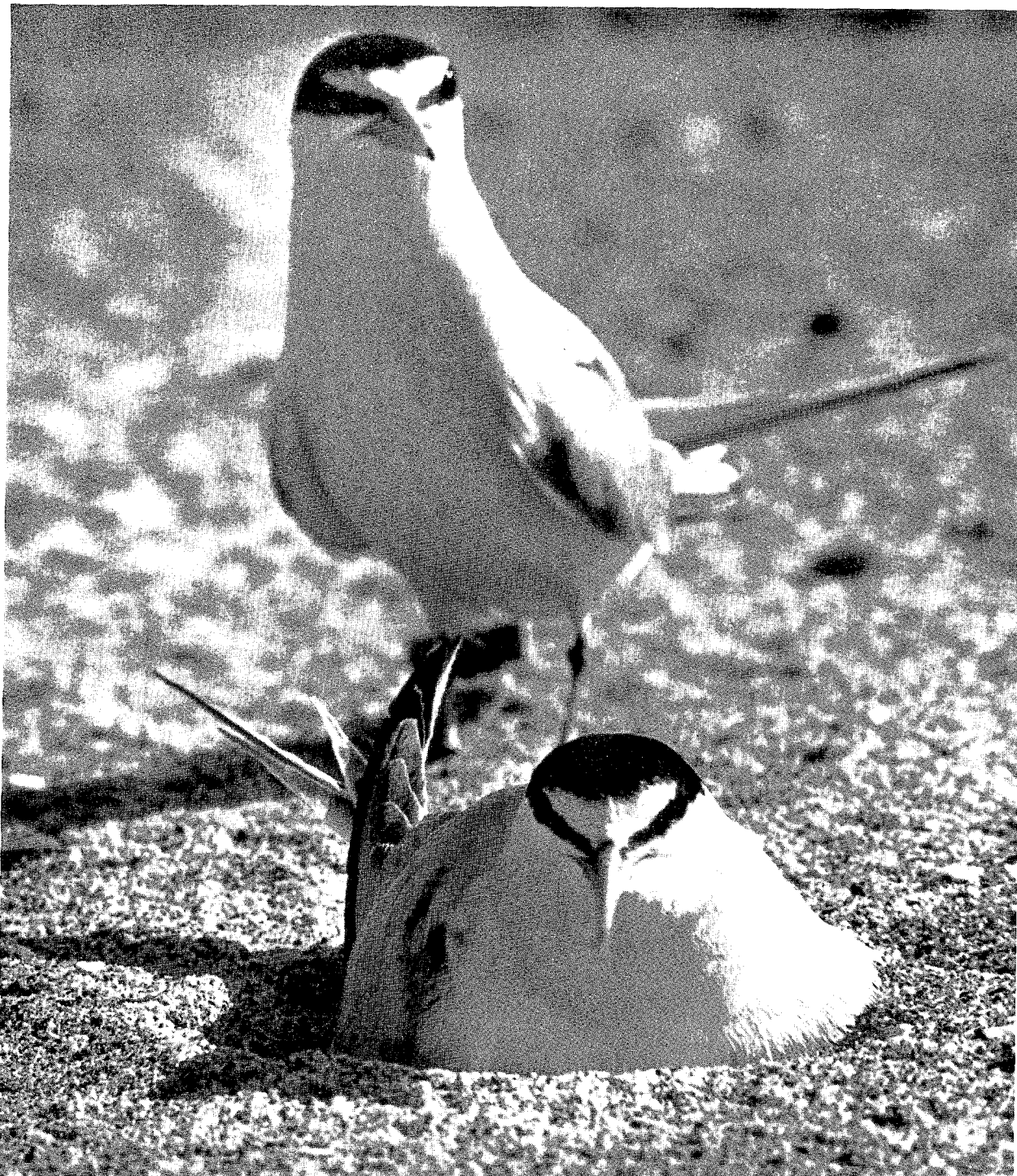
Least Tern	30	(Copper, 4-8/80, L)	12
Least Tern	36-50	(Unitt, 4-8/78, L)	12
Least Tern	32	(Copper, 4-8/79, L)	12



002 Mission Bay 32°46'42"N, 117°13'46"W

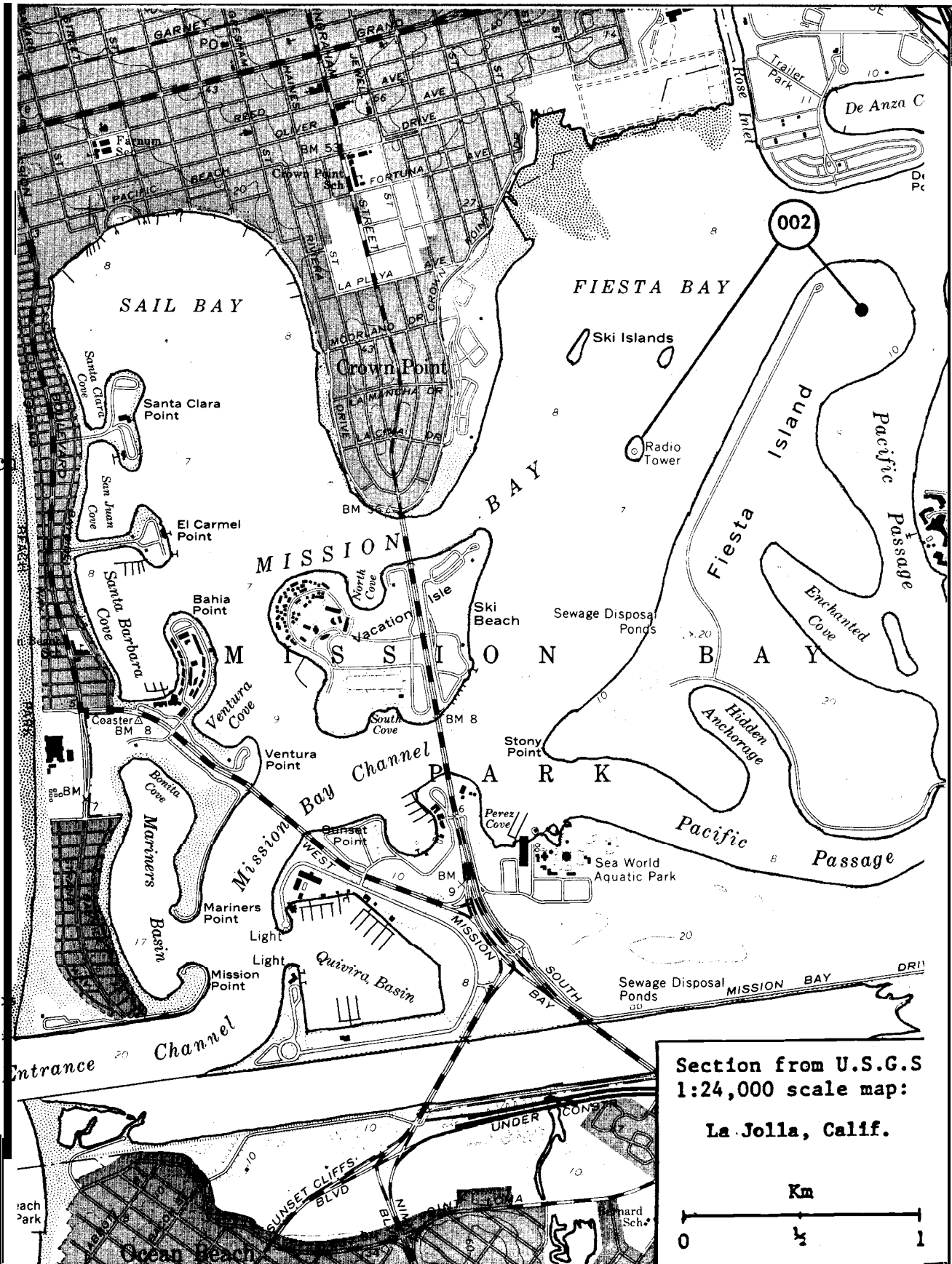
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game,

Least Tern	262-266	(Copper, 4-8/80, L)	12
Least Tern	246-328	(Unitt, 4-8/78, L)	12
Least Tern	222	(Copper, 4-8/79, L)	12

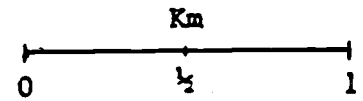


Least Terns

Photo by Bill Beebe, Santa Monica Evening Look



Section from U.S.G.S  
1:24,000 scale map:  
La Jolla, Calif.



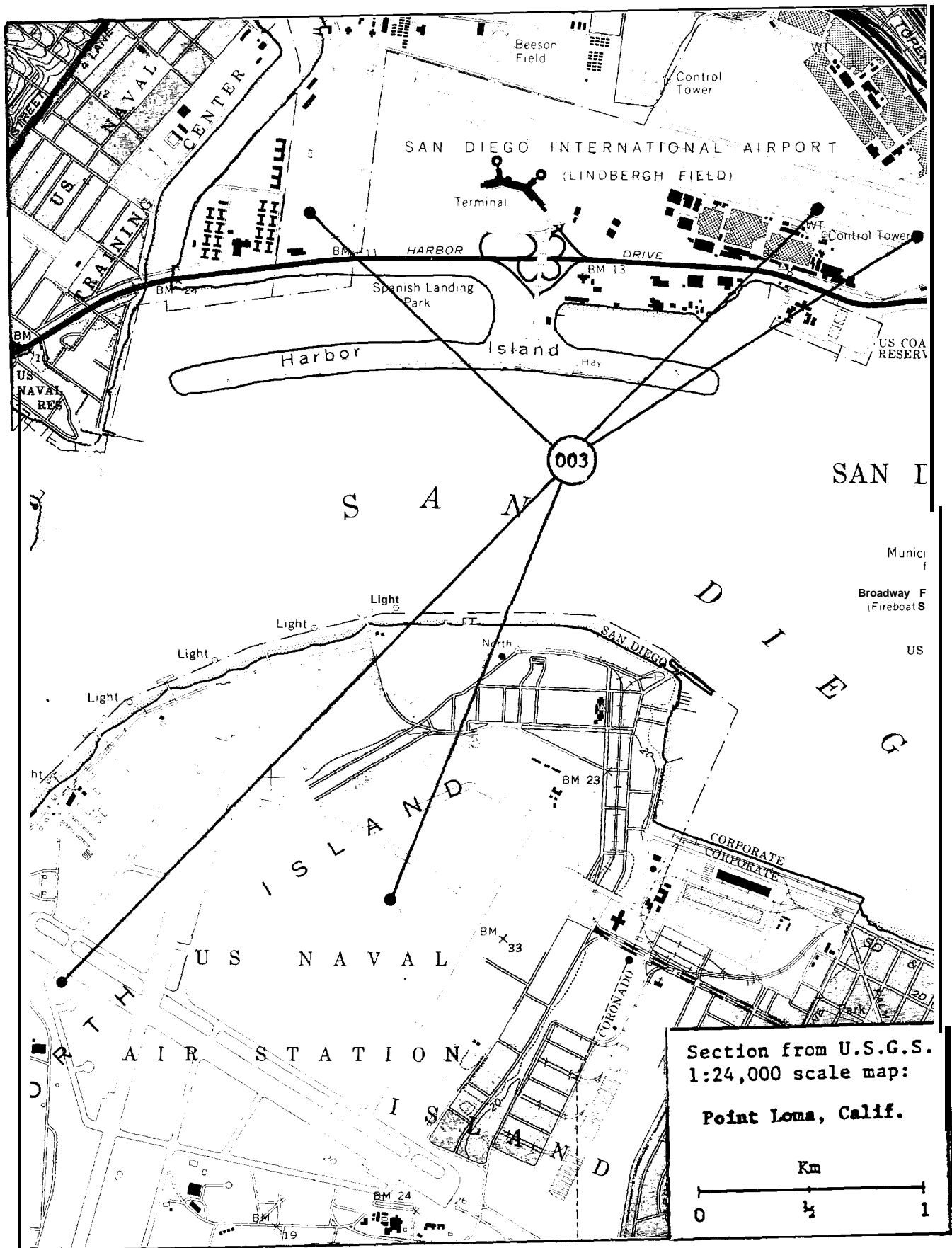
AREA 545, San Diego (cent'd.)

003 North San Diego Bay 32°44' N, 117°12' 14

Least Terns are an **endangered** species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	342	(Copper, 4-8/80, L)	12
Western Gull	20	(Copper & Jorgensen, 4-8/80, L)	16
Total	362		
Least Tern	182-190	(Unitt, 4-8/78, L)	12
Least Tern	386-400	(Copper, 4-8/79, L)	12

004 Silver Strand Beach was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).



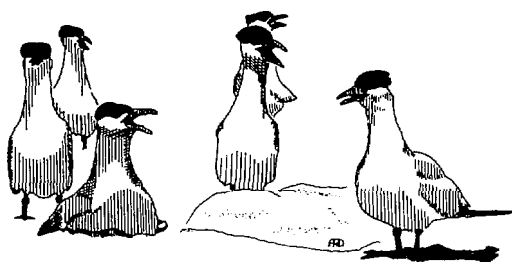
AREA 545, San Diego (cent'd.)

005

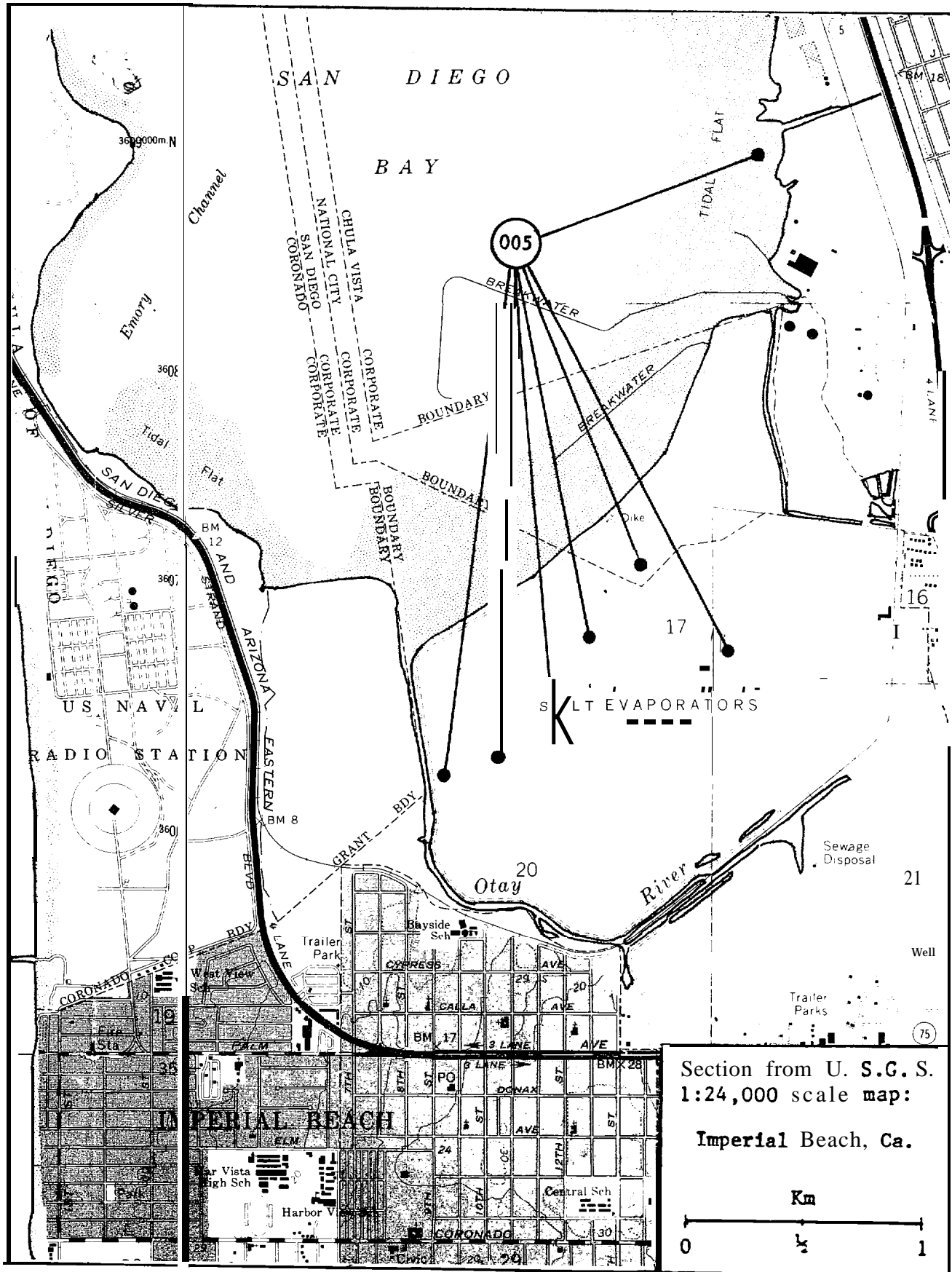
South San Diego Bay 32°36' N, 117°07' W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	130	(Copper & Evans, 4-8/80, L)	12
Forster's Tern	2,000	(Copper & Evans, 4-8/80, L)	12, 16
Elegant Tern	900	(Copper & Evans, 4-8/80, L)	12, 16
Caspian Tern	900	(Copper & Evans, 4-8/80, L)	12, 16
Black Skimmer	70-80	(Copper & Evans, 4-8/80, L)	12, 16
Total	4,010		
Least Tern	74-78	(Unitt, 4-8/80, L)	12
Least Tern	122-140	(Copper, 4-8/79, L)	12
Black Skimmer	2	(Evans, 1976, L)	12, 16
Black Skimmer	6	(Evans, 4-8/77, L)	12, 16



Caspian Terns



AREA 545, San Diego (cent'd.)

006 Tijuana River Mouth 32°33'25"N, 117°07'48"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	50	(Copper, 4-8/80, L)	12
Least Tern	16-24	(Unitt, 4-8/78, L)	12
Least Tern	50-60	(Copper, 4-8/79, L)	12

007 Del Mar 32°58'10"N, 117°14'45"W

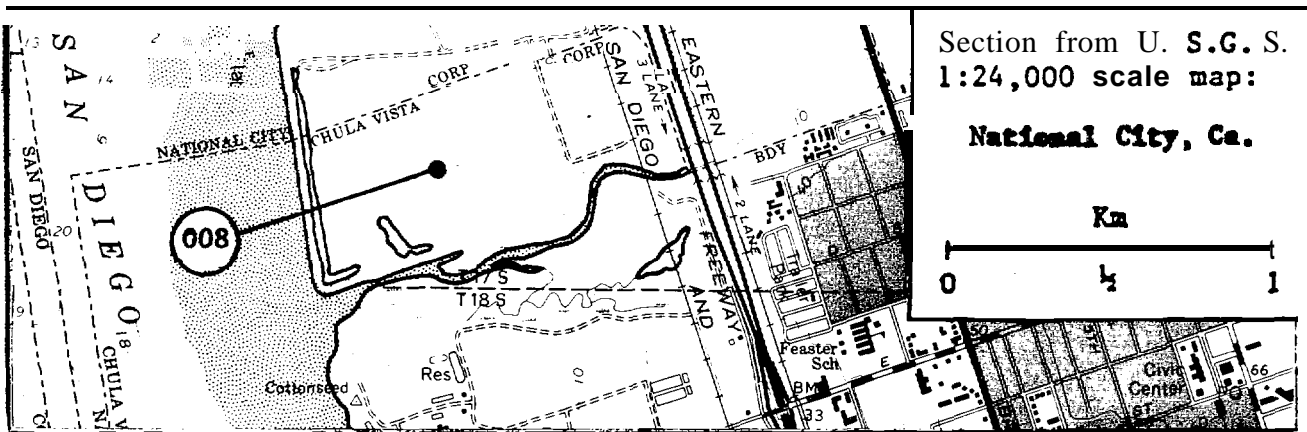
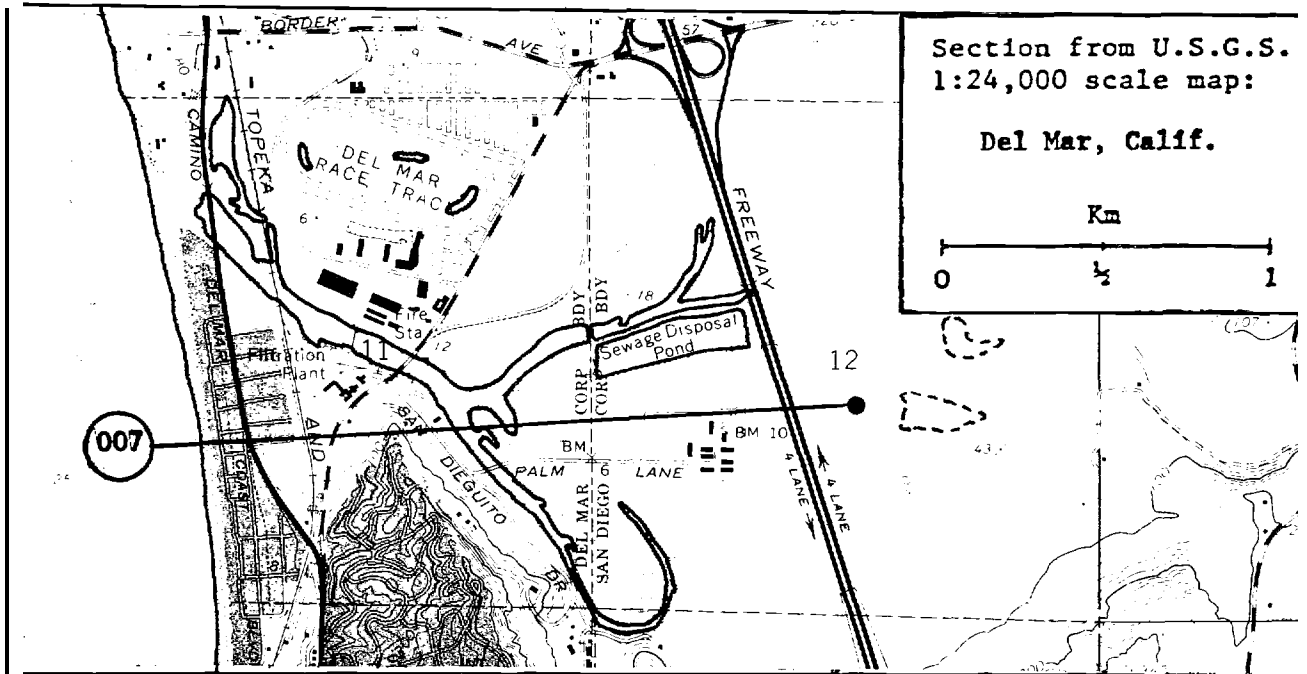
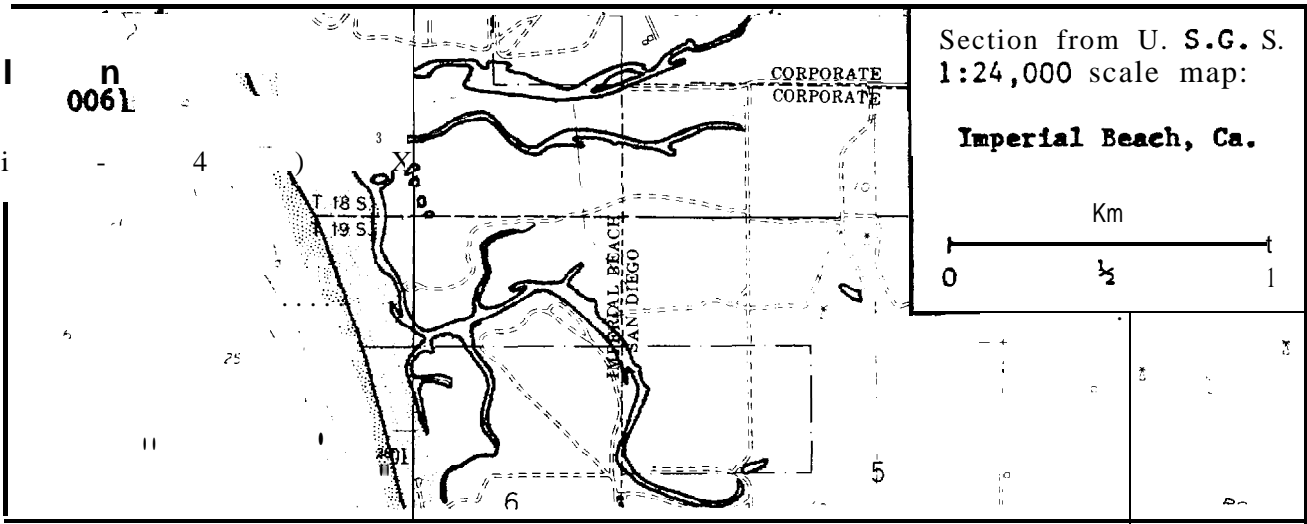
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	10	(Denson, 1980, L)	12
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008 Sweetwater River 32°38'30" N, 117°06'35"W

Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	24-30	(Copper, 4-8/80, L)	12
Least Tern	94	(Unitt, 4-8/78, L)	12
Least Tern	48-56	(Copper, 4-8/79, L)	12

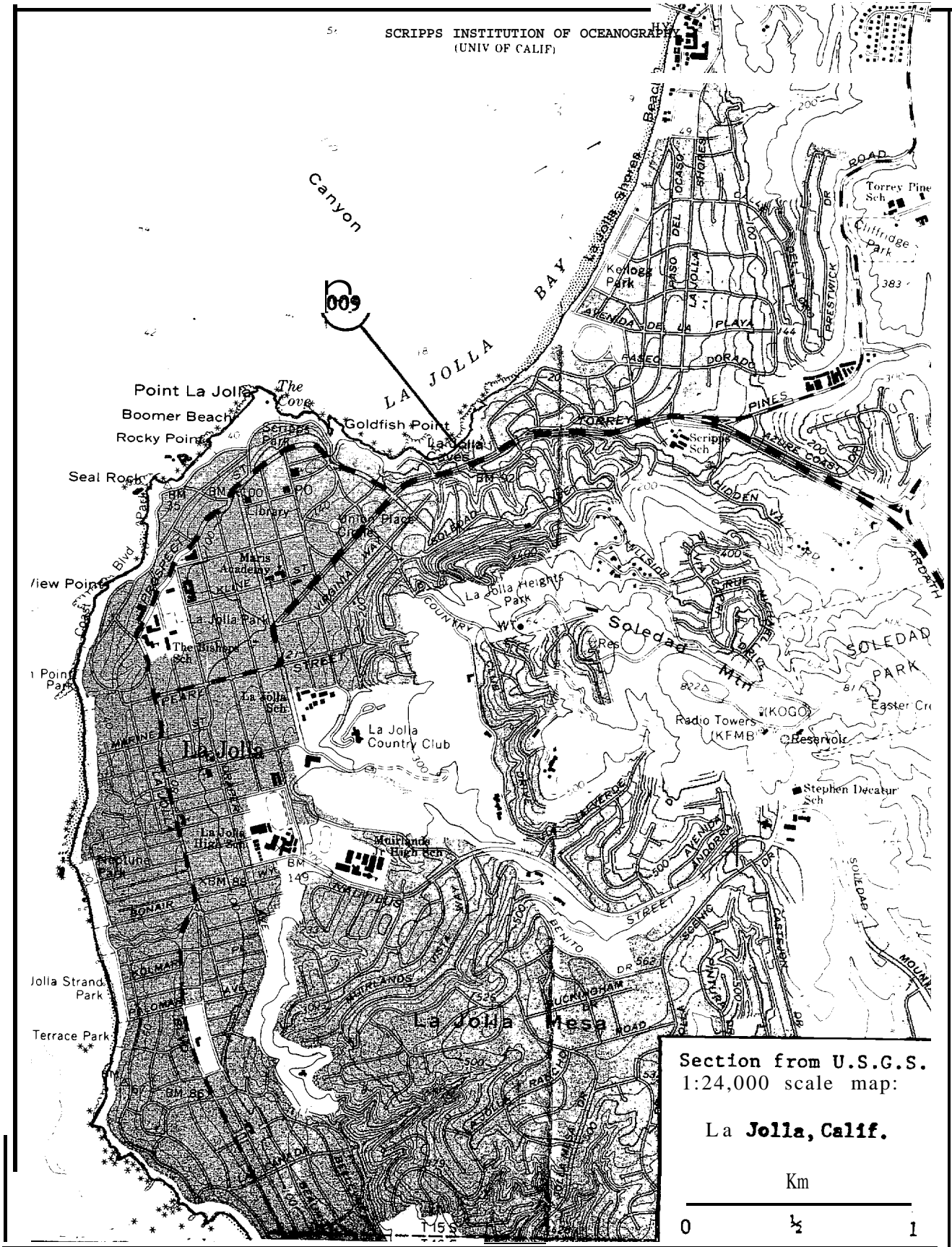


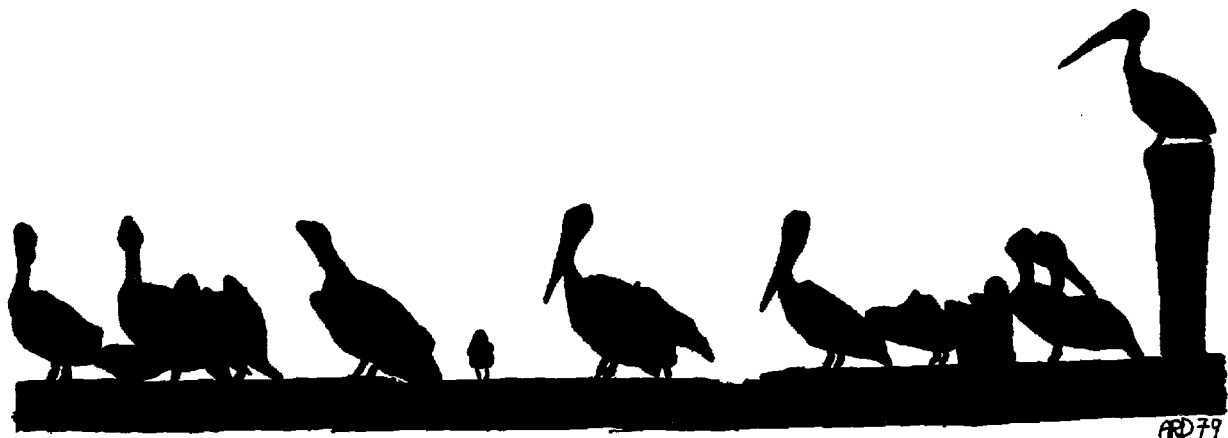
AREA 545, San Diego (cont'd.)

009

La Jolla 32°51'N, 117°15'55"W

Brandt's Cormorant	6 (Everett, 1980, L)	16
Western Gull	4 (Everett, 1980, L)	16
Tota 1	<u>10</u>	





## REFERENCES

Italicized numbers in the margin (*1*, *z*, etc.) correspond to italicized numbers in the maps and tables and in the breeding chronology figures in the species accounts.

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- Ainley, D.C., 1976. The occurrence of seabirds in the coastal region of California. *Western Birds* 7:33-68.
- 1* Airdey, D.G., R.J. Boekelheide, T.J. Lewis, H. R. Huber, C.S. Strong, and S. H. Morrell. Unpubl. data on Farallon Islands, 1971-1980. Point Reyes Bird Observatory, 4990 Shoreline Highway, Stinson Beach, CA 94970.
- Ainley, D.G., C.R. Grau, S.H. Morrell, T.E. Roudebush, R.R. LeValley, H.R. Huber, C.S. Strong, and T.A. Wooton. 1979. Influence of petroleum on egg formation and embryonic development in seabirds. Final Report. NOAA, Juneau, Alaska.
- 2* Ainley, D.G., and T.J. Lewis. 1974. The history of Farallon Island marine bird population, 1854-1972. *Condor* 76:432-446.
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## APPENDIX A: DATA ARCHIVING

This catalog is a summary of data from many sources and more detailed information on many of these sites is available. This information may include more detailed maps, notes on reproductive success, vegetation, marine mammals, pelagic birds in the area, land ownership, access, management problems, and photographs. We have provided this section for those who may desire access to this information.

Field data collected by the U.S. Fish and Wildlife Service in 1979 and 1980 were recorded onto Colony Status Records (Figure s) or into a field notebook arranged by species. Other data compiled in this catalog are referenced as to their sources. This catalog can serve as an index to the Colony Status Records since their numbering systems are identical. Copies of the Colony Status Records and our field notebook have been deposited at:

Bureau of Land Management  
Pacific OCS Office  
1340 W. 6th Street  
Los Angeles, CA 90017

California Academy of Sciences  
Golden Gate Park  
San Francisco, CA 94118

California Dept. of Fish and Game  
Wildlife Investigations  
1416 Ninth Street  
Sacramento, CA 95814

Patuxent Research Lab  
U.S. Fish & Wildlife Service  
Laurel, MD 20810

Colonial Bird Register  
Laboratory of Ornithology  
Cornell University  
159 Sapsucker Woods Road  
Ithaca, NY 14850

U.S. Fish & Wildlife Service  
Lloyd 500 Building, Suite 1692  
500 N.E. Multnomah Street  
Portland, OR 97232

Photographs will be of great value in the future, particularly for evaluating changes in habitat and changes in populations of Brandt's Cormorants and Common Murres. Some black and white prints and some color slides are included with each set of Colony Status Records. Nearly all of these photographs were taken during our study. All remaining photographs and all black-and-white negatives taken during our study have been divided between the U.S. Fish and Wildlife Service office in Portland and the California Academy of Sciences in San Francisco. These were divided so that nearly identical photographs are at both locations. Important photographs from other sources have also been copied and included when possible or reference to their existence has been made on the Colony Status Records under the section "Photo Coverage".

More historical data probably exist than have been summarized in this study and future studies may obtain much new information. We consider this study a step toward a better understanding of marine birds and we welcome any comments, corrections, or additions to our files or to this report. Comments should be addressed to our Portland office.



**Colony Status Record**  
U.S. Fish & Wildlife Service

Area Number 477 007  
(use appropriate by office)

Colony Name Piedras Blancas Rock Field No. \_\_\_\_\_ Observer (s) Nelson, SOWLS  
Map Piedras Blancas, Ca. Lat. 35°39'52" Long. 121°17'18" Time 2/26:40 Date 6/26/79/79 boat  
weather 6/26 overcast, light breeze from NW, swells 6', waves 1'. 8/2/79 - aerial

Species	No. Nests <small>use codes below</small>	No. Birds	Remarks <small>(estimated minimum &amp; maximum, egg &amp; chick status, etc. &gt;</small>
Fork-tailed Storm Petrel	_____	_____	_____
Leach's Storm Petrel <sup>1</sup>	_____	_____	_____
Ashy Storm Petrel	_____	_____	_____
Brown Pelican	_____	<u>roost</u>	_____
Cormorant (unid.)	_____	<u>roost</u>	} <u>count made from aerial slide taken 8/2/79.</u> <u>most nests in a "bowl" on the S.W. side of</u> <u>the island - these cannot be counted from</u> <u>the mainland or from a boat. data qual. = II.</u>
Brandt's cormorant	<u>C 680</u>	<u>1360</u>	
Double-crested Cormorant	_____	_____	
Pelagic Cormorant	_____	_____	_____
Black Oystercatcher	_____	_____	_____
Gull (unid.)	_____	_____	_____
Glaucous-winged Gull	_____	_____	} <u>Birds were counted that appeared to be on</u> <u>territories, number estimated conservative.</u> <u>Data quality = III. 15 nests est. on N. side,</u> <u>9 nests est. on western side &amp; 4 nests est.</u> <u>on S.E. side.</u>
Western Gull	<u>E 28</u>	_____	
Least Tern	_____	_____	
Forster's Tern	_____	_____	_____
Caspian Tern	_____	_____	_____
Common Murre	_____	_____	_____
Pigeon Guillemot	<u>E 25</u>	_____	} <u>Good habitat, 24 birds either on the island</u> <u>or just off shore.</u>
Marbled Murrelet	_____	_____	
Xantus' Murrelet	_____	_____	_____
Cassin's Auklet	_____	_____	_____
Rhinoceros Auklet	_____	_____	} <u>One seen flying N. from island on 6/25 in</u> <u>the evening. Reynolds, CDF&amp;G est. 1 pr. here</u> <u>in 1970. Mark Rauzon, USFWS - seatter prog.</u> <u>has seen no more than 2-3 puffins here. Rock</u> <u>does not appear to have soil, but it may be</u> <u>present and covered with guano.</u>
Tufted Puffin	<u>E 1</u>	_____	
_____	_____	_____	
_____	_____	_____	

Recommended Classification: Colony Complex \_\_\_\_\_ Colony X Sub-colony \_\_\_\_\_ Roost Area \_\_\_\_\_

**MARINE MAMMALS**

Steller Sealion	_____	_____	} <u>Hauled out primarily on the west south &amp;</u> <u>eastern sides of the island. Boat distance</u> <u>must be maintained to avoid disturbance &amp;</u> <u>landing on island at this time not possible</u> <u>without causing disturbance.</u> <u>Hauled out on intertidal rock E. of island</u>
California Seal Ion	_____	<u>E 500</u>	
Northern Elephant Seal	_____	_____	
Harbor Seal	_____	<u>E 104</u>	

Use these abbreviations to describe numbers. Use C & E whenever possible, avoid P & F. T = Total count, C = count, E = estimate, P = probably present (state reason under remarks), F = present, pr = pairs, S = breeding, N = non-breeding

Figure 5. Colony Status Record, front.

Pierdas Blancas Rock  
Description of Colony

AREA Number 477 007 DATE 6/26 & 8/2/79

Access Excellent landing beach (see map), unless S. Swell at Pierdas Blancas lighthouse. Mainland adjacent property currently USFWS - seaotter research station, phone (408) 375-2278. Landing on island would be difficult, but not recommended due to disturbance problem with sealions.

Vegetation & Physiographic Characteristics This large island has a large pool on the S.W. side where most of the Brandt's Cormorants are nesting. A rock stack is at the north end. No vegetation or soil is evident but soil may be covered by guano. See Photographs.

Human Activity Probably boats from San Simeon fish off shore and the people at Pierdas Blancas they have seen airplanes buzz the island disturbing the sealions. This area is within the California Seaotter Game Reserve - flying below 1000 ft. is prohibited. Mammalian Predators, Livestock, etc. probably none.

Census Methods & Data Status Island passed by in zodiac on 6/25, 6/26 island was zodiaced on the N., W. & S. sides - E. side could be seen well also. Distance was kept larger than usual so as not to disturb sealions. August 2, 1979 the island was photographed through the open window of a Cessna 182. Aerial photos used for counts of Brandt's Cor.

~~Sealions & Puffins~~ For future surveys it is recommended the island be watched from mainland for a long period when Tufted Puffins should be feeding chicks. Aerial photos work well for Brandt's & boating is necessary for Western Gulls & for Pelagic cormorants. Island should be landed on if disturbance to sealions & birds is avoided.

Photo Coverage Aerial color slides & B+W' taken from 500-800 ft. w/ a 70-210 zoom & a 300 mm lens @ 1/1000 of a sec. Photos through open window of Cessna 182. Permission to fly below 1000 ft. must be obtained from CDF&G prior to flight.

Overall Evaluation of Colony Regionally a large colony and a major hauling area for sealions. At present this may be the southernmost breeding point of the Tufted Puffin on the west coast.

Supplemental Material & Data Attached (List) Photographs attached.

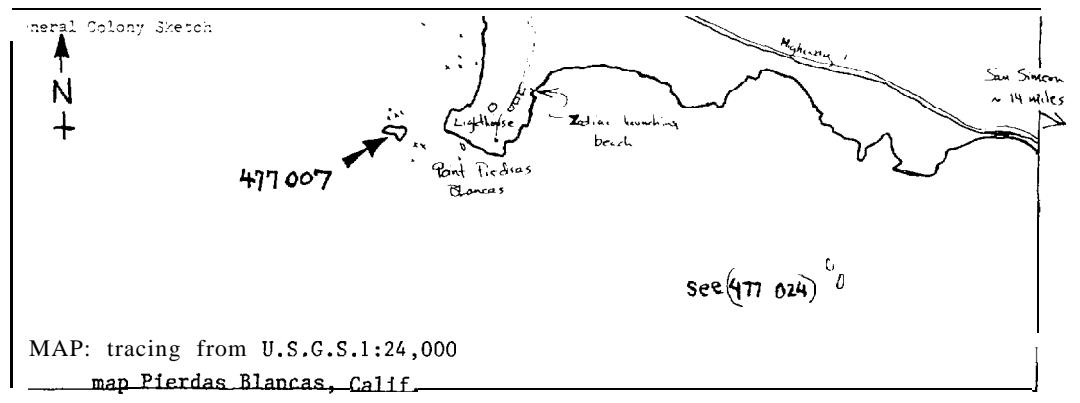


Figure 5 (continued). Colony Status Record, back.



*"For fearlessness, pluck and dash the Tufted Puffins have no equal on the island" - Harold Heath (1915).*

## APPENDIX B: OBSERVATION POINTS FOR SEABIRD COLONIES

Birdwatching is a major form of recreation throughout North America. It contributes to the enjoyment and education of people and furthers their appreciation of the natural world. Hatler, Campbell and Dorst (1978) describe the philosophy of birdwatching as follows:

“It wasn’t the gold I was wanting, as much as just finding the gold.” This line, from one of the most famous poems by Robert Service, alludes to the passion for discovering existing to some extent in everyone. It is likely that the widespread appeal of birdwatching is based, to a considerable degree, on its potential for providing thrills of discovery at all levels of “importance. ” At any moment the observer may discover a species he has not seen before, a significant personal event because it represents a broadening of one’s experience. Or, he may discover a bird which few people have seen in that season or at that locality. Then, oh happy day, there is the occasional discovery of a species which has never, or only rarely, been seen previously in a province, country, or even continent. The birdwatcher may also contribute to knowledge of the ecology of a species by observing birds involved in their various annual activities. Finally, even if a series of observations does not include anything unusual, the observer will likely have discovered, or rediscovered, the sense of satisfaction which comes from relating to other creatures with which we share the Earth.

Birders in California have the opportunity to view not only large colonies of seabirds but also several species of marine birds that are difficult to see, either because they are uncommon or because they rarely come close to land. However, the well-meaning student of natural history can easily disrupt seabird colonies in his or her quest to observe or photograph nesting seabirds. Recognizing the rewards of observing seabirds and the need for information about viewing opportunities, as well as the disturbance problems that can occur, we have included this section. We have listed viewing points where large seabird colonies can be observed as well as locations where less common species can be seen without causing disturbances. Readers are encouraged to read the section on human disturbance (page 5) before visiting these sites. The use of binoculars or better yet, a spotting scope are essential.

One of the best ways to view marine birds is through pelagic boat trips, regularly offered at several ports in California. Pelagic trips result in little or no disturbance to birds and the viewer can see several species that are infrequently observed from land, such as the albatross, storm-petrels, and shearwaters. Interested parties should contact local chapters of the Audubon Society for information.

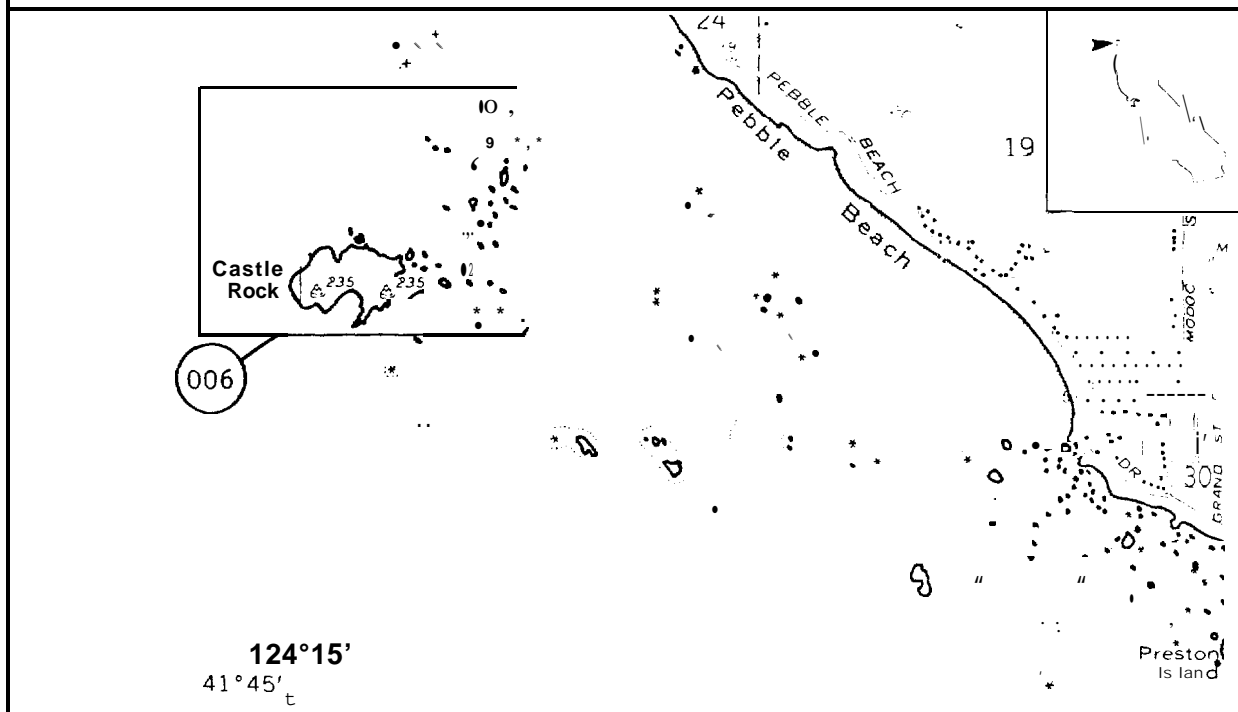
VIEW POINT : Point St. George or Pebble Beach Drive, Crescent City.

COLONY: Castle Rock (325 006).

ACCESS : From Crescent City take any of the several arterial roads leading west from Highway 101 to Pebble Beach Drive. The best locations for viewing are any of the large pullouts near Point St. George (see map). No attempt should be made to land on Castle Rock since a great deal of disturbance would occur.

SEABIRD SPECIES:

Castle Rock is a breeding ground for 12 species of seabirds, but because of its distance from shore, birds can only be seen with a spotting scope, Point St. George is noteworthy because of excellent views offered of Aleutian Canada Geese. The geese are present in greatest numbers in the spring. Up to nearly 1,500 birds can be seen in April. The dawn departure of the geese from Castle Rock to their mainland feeding grounds is a great wildlife spectacle. This is best viewed from anywhere on Point St. George.



VIEW POINT: False Klamath Rock Overlook, Redwood National Park.

COLONY : False Klamath Rock (325 O 10),

ACCESS: Take the Lagoon Creek pullout from Highway 101, approximately 40 miles south of the Oregon Border and 25 miles north of Orick. A coastal hiking trail leads to an overlook of False Klamath Rock.

SEABIRD SPECIES:

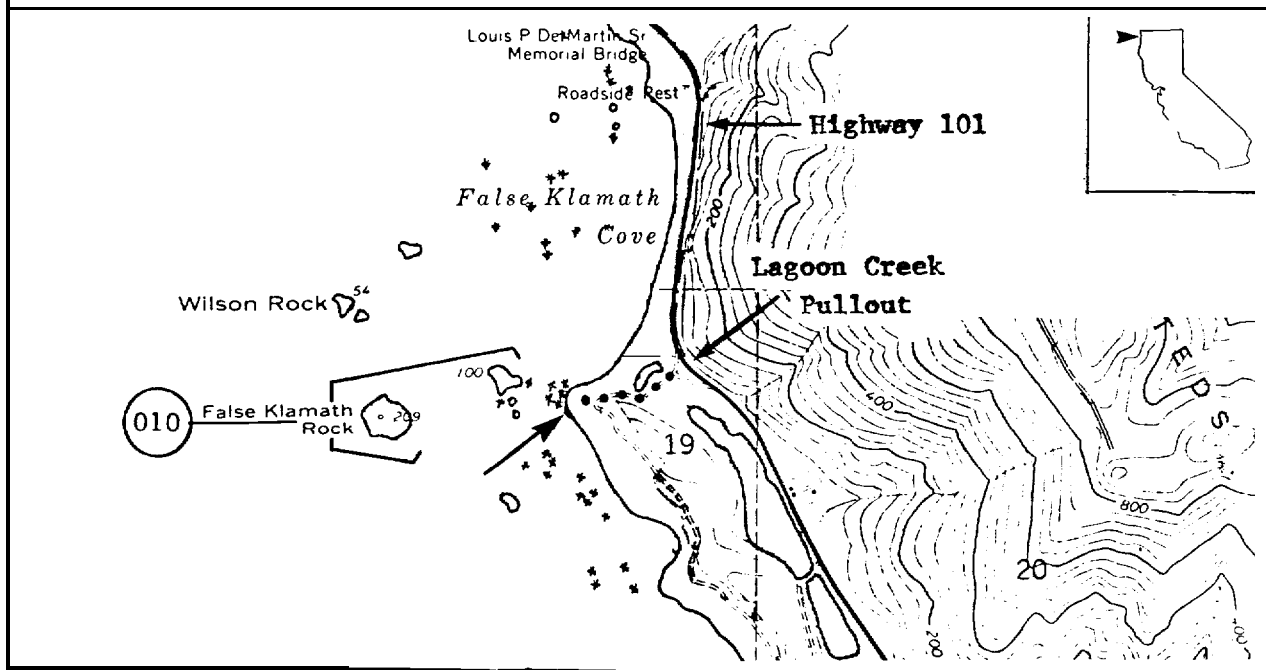
Cormorants - All three species can be seen, particularly during summer.

Brown Pelican - Non-breeding birds are in the area during summer and early fall.

Black Oystercatcher - A few are present in the area all year.

Common Murre - Thousands nest on False Klamath Rock in summer. (May to early August). Birds are sporadically present from November to May.

Pigeon Guillemot - A few birds are in the area from mid-April until September. They are most frequently seen on the water.



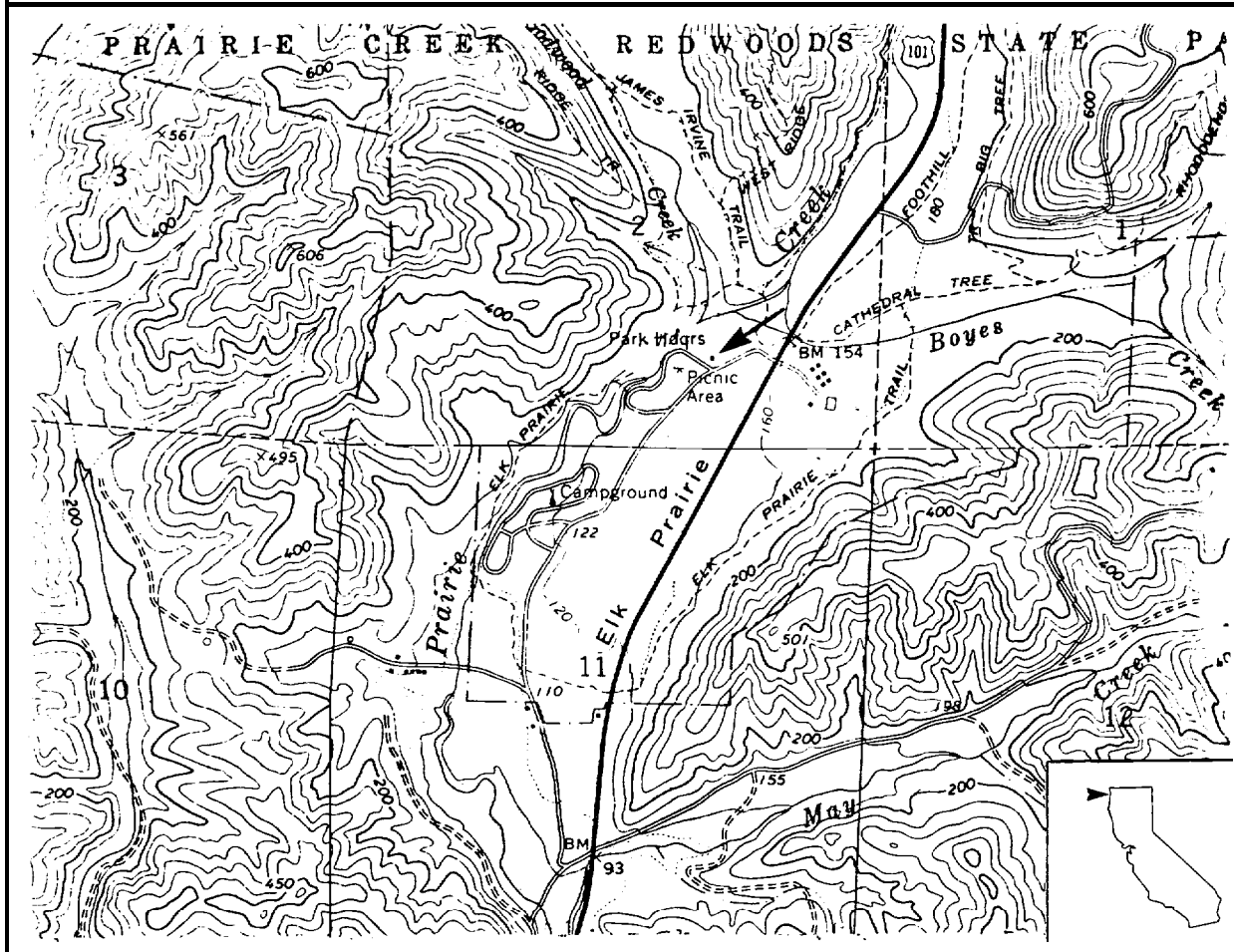
VIEW POINT: Prairie Creek Redwoods State Park, Orick.

SPECIES: Marbled Murrelet inland nesting location.

ACCESS: Take the marked turnoff to the Prairie Creek Redwoods State Park headquarters, 30 miles north of Eureka on Highway 101 and about 7 miles north of the town of Orick.

SEABIRD SPECIES:

This is one of the best locations to observe the flight of Marbled Murrelets in the forests. The local population can be seen at dawn from the entrance station circling the tops of the nearby redwoods. In the evening the birds return and their high pitched whistles can be heard in the forest stillness. The best opportunity to observe the murrelets is during the months of May through July. Contact State Park personnel when arriving at the park for more information.



VIEW POINT: Elk Head, Trinidad State Beach.

COLONIES : Green Rock (325 020), Puffin Rock (32502 1), and Flatiron Rock (325 023).

ACCESS : Take Trinidad exit off Highway 101, approximately 18 miles north of Eureka. Drive to Trinity Ave., about .2 miles from the exit, and turn right, Proceed .8 mile to a parking lot on the west side of the road. Walk down the trail from the northwest corner of the parking lot to Megwil Point (see map), or near Elk Head to view Flatiron Rock,

SEABIRD SPECIES:

Cormorants - All three species can be seen, particularly during summer.

Brown Pelican - Non-breeding birds are in the area during the summer and early fall.

Black Oystercatcher - A few are present in the area all year.

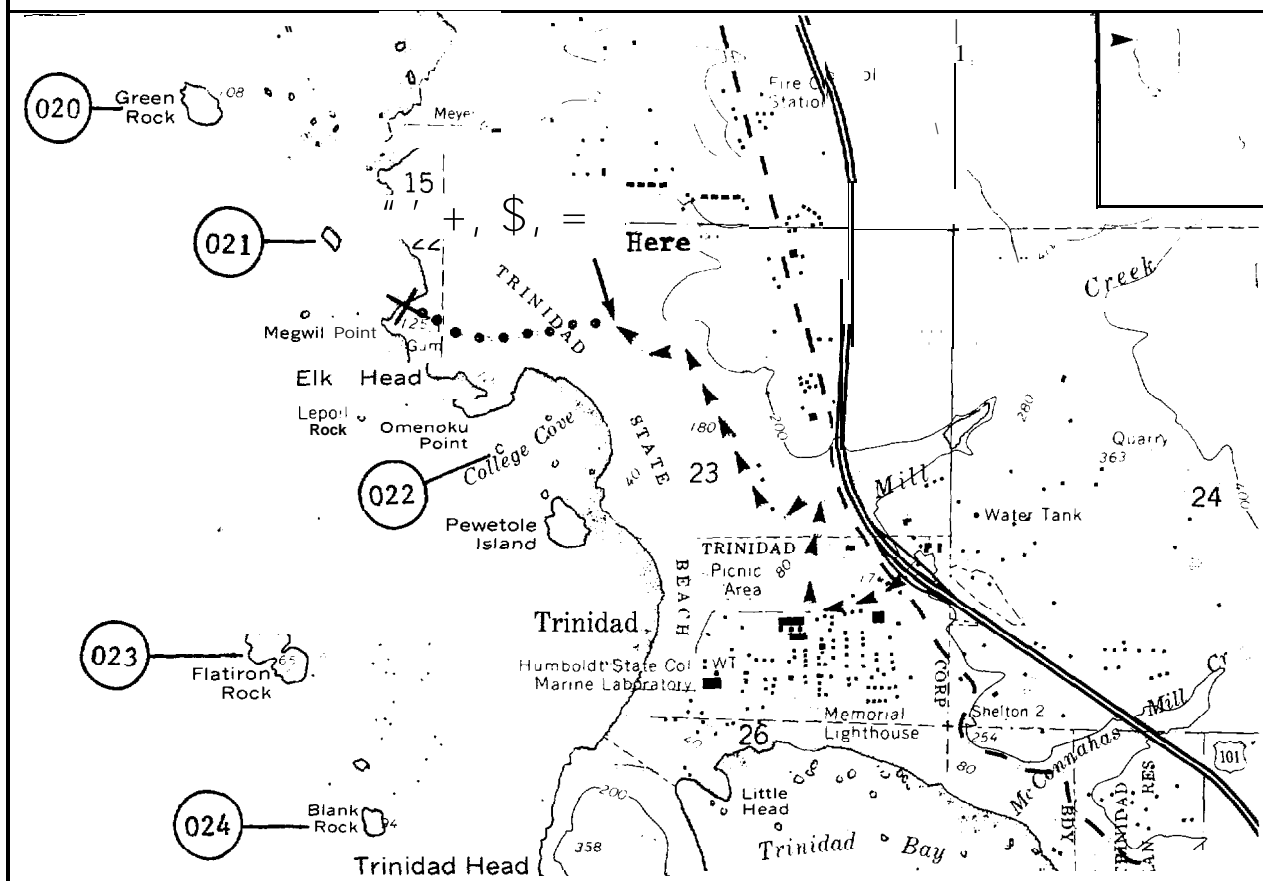
Western Gull - Birds are present in the area all year.

Common Murre - Thousands nest on Green Rock and Flatiron Rock from May to early August. Birds are sporadically present from November to May.

Pigeon Guillemot - A few birds are present in the area from mid-April until September. They are most often seen on the water.

Rhinoceros Auklet - A few are present on Green Rock from mid-April to mid-August. They are rarely seen except early in the morning.

Tufted Puffin - A few are present on both Green and Puffin Rocks during summer. They are most likely to be seen standing by burrow entrances in the morning.



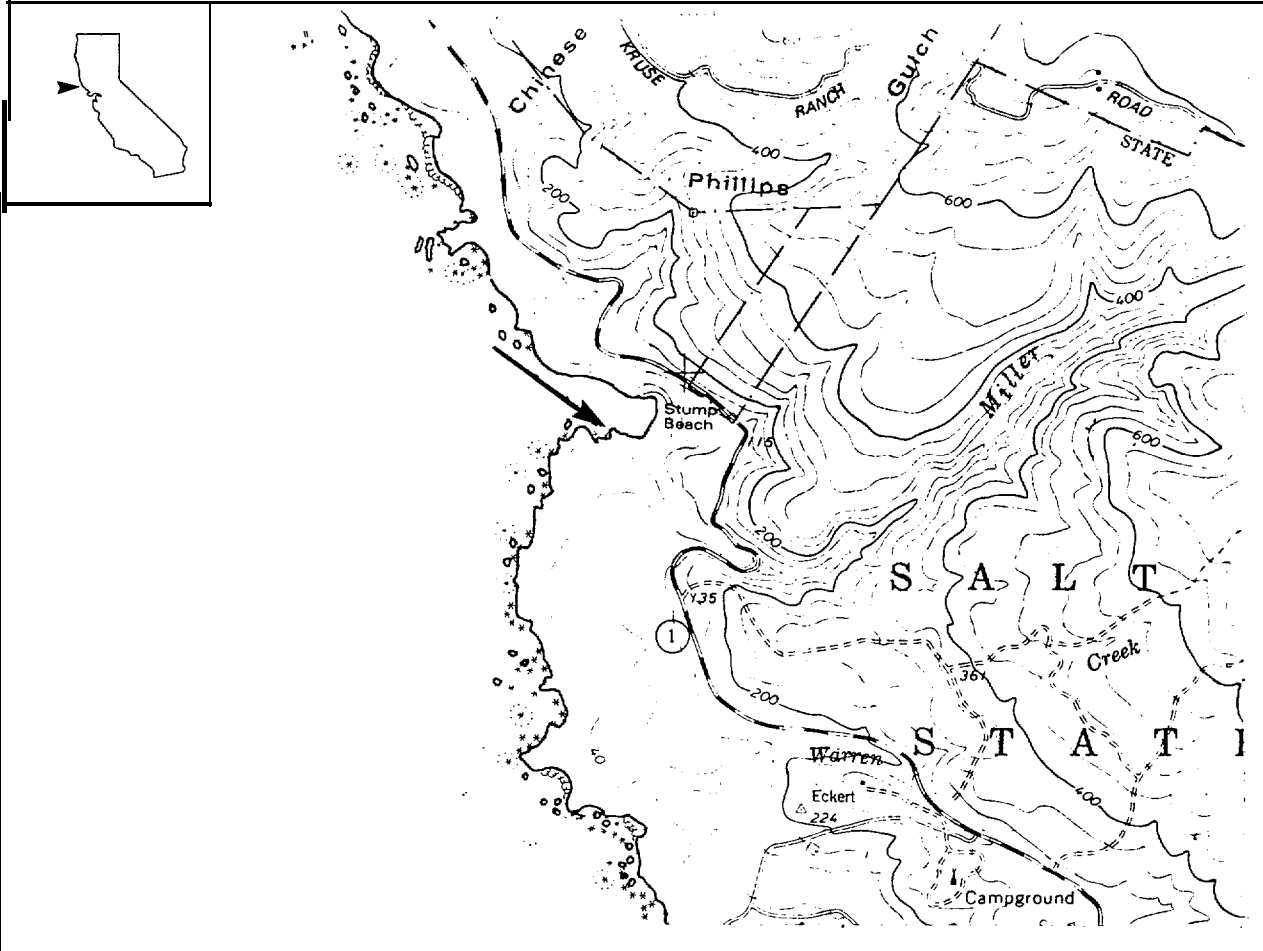
VIEW POINT: Stump Beach, Salt Point State Park.

COLONY: Cannon Gulch to Stump Beach (404 029).

ACCESS: Salt Point State Park is about 20 miles north of Jenner on Highway 1 and about 80 miles north of San Francisco. A parking area off the highway at the Stump Beach picnic grounds is about 2 miles north of the Salt Point State Park campground entrance. Walk the access trail to the beach, then head up the bluffs on the trail south of the Stump Beach cove.

SEABIRD SPECIES:

Pelagic Cormorants nest on the northern mainland cliffs of Stump Beach. Take extreme care not to disturb nesting birds. Vantage points at the bluff's edge can be found to observe Pelagic Cormorants nesting during June, July and August. A small population of Pigeon Guillemots is also present in the summer. Binoculars and spotting scopes are recommended for better viewing.



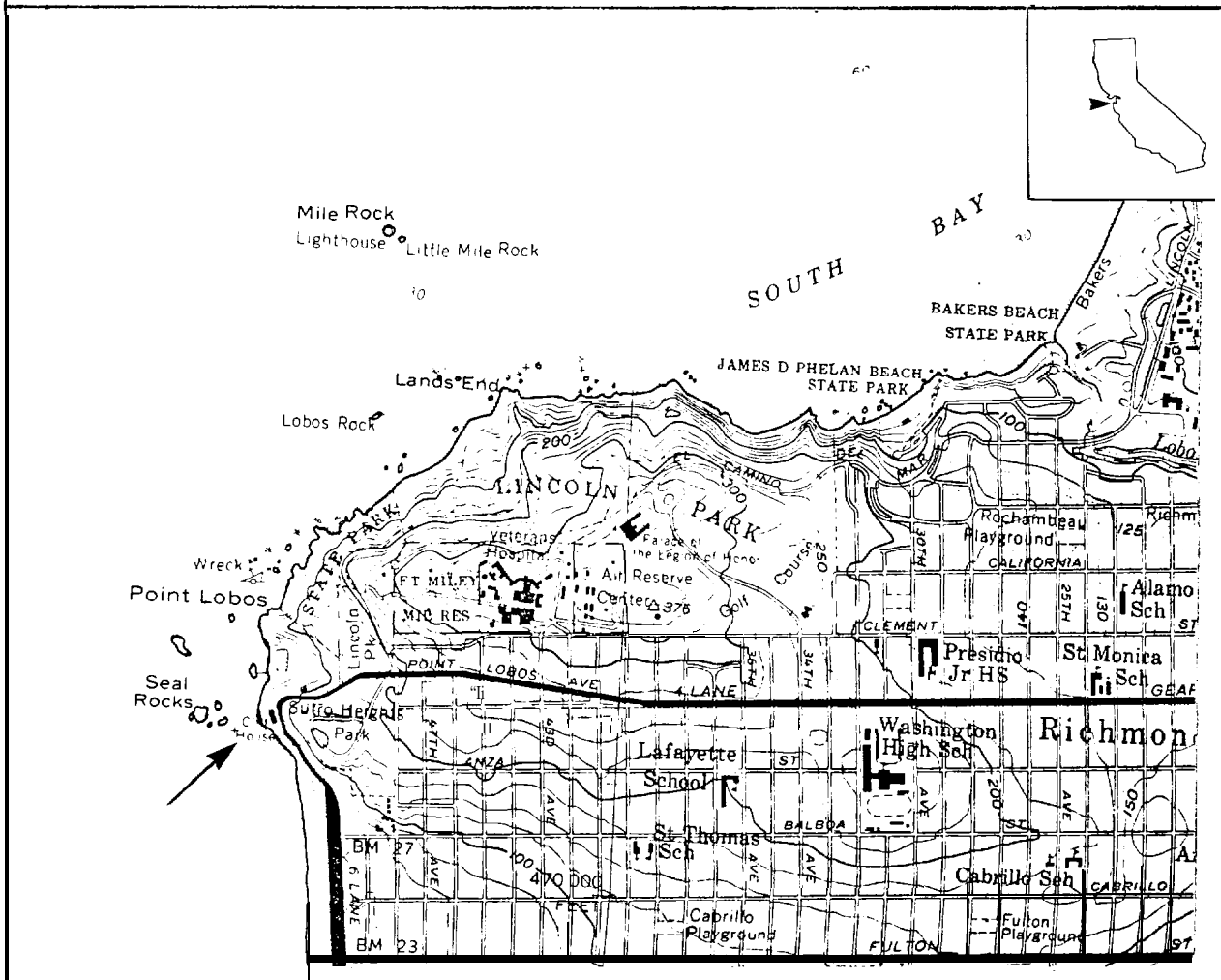
VIEW POINT: Cliff House, San Francisco.

COLONY : Seal Rocks (429 009).

ACCESS: The Cliff House overlooks the ocean from a bluff just north of Golden Gate Park on the west side of San Francisco. Access is by bus or private car from downtown. The best viewing is from a platform below the restaurants, where coin-operated spotting scopes are available. The Golden Gate National Recreation Area maintains an interpretive center there.

SEABIRD SPECIES:

Relatively few birds use this site for nesting, but good views of breeding Western Gulls and occasionally of Black Oystercatchers can be made there. During the nonbreeding season, especially in late summer and fall, Seal Rocks are used for roosting by hundreds of Brown Pelicans and Brandt's Cormorants, as well as by Heermann's and Western Gulls. Seal Rocks is also one of the best locations on the California coast to view California Sea Lions and occasionally Steller Sea Lions.



VIEW POINT: Seal and Bird Rock Picnic Area, 17 Mile Drive.

COLONY: Bird Rock (454 006).

ACCESS: Via 17 Mile Drive near **Carmel**, a scenic private road. There is a charge to enter and a map showing points of interest is provided, Bird Rock can be seen well since it is close to land and coin-operated telescopes are available,

SEABIRD SPECIES:

Brandt's Cormorant - This is the principal nesting species at this colony. Large numbers of Cormorants are present during summer.

Western Gull - A few nest on Bird Rock in summer. These and several other gulls winter in the area.

Brown Pelican - Non-breeding birds can be seen herein summer and fall.

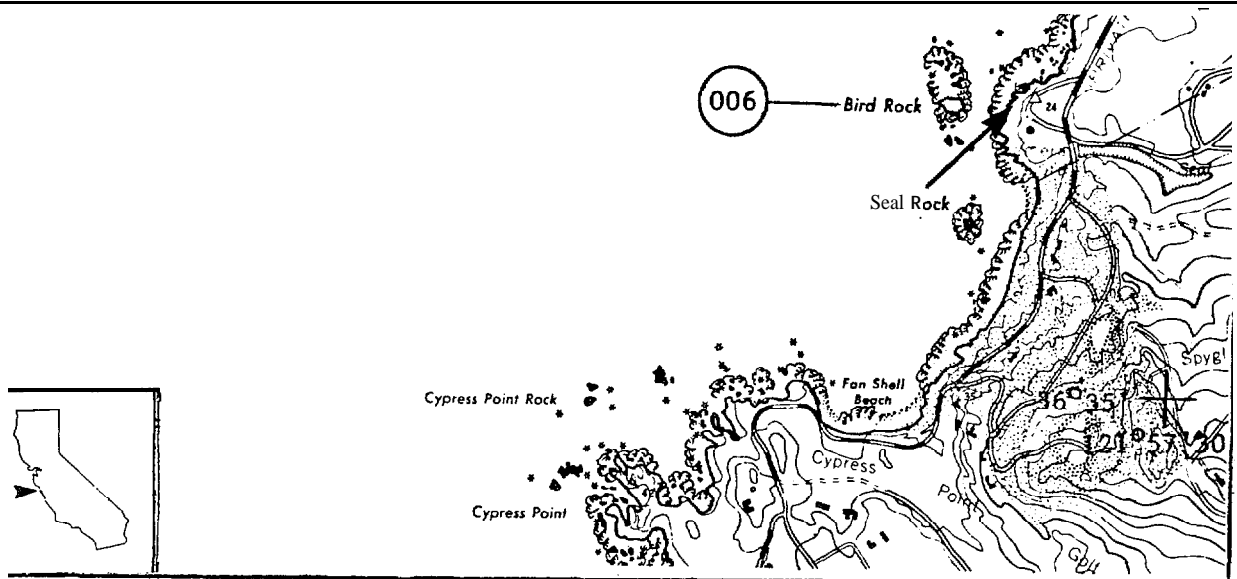
Black Oystercatcher - A few are probably present all year.

MARINE MAMMALS:

California Sea Lion - Large numbers haul out on Bird Rock. This is an excellent place to see sea lions.

Harbor Seal - A few are present year-round. They are most likely to be seen hauled out on small intertidal rocks.

Sea Otter - A few are present in the area year-round.



VIEW POINT: Bird Island Overlook, Point Lobos State Park.

COLONY: Bird Island (454 009).

ACCESS: Enter Point Lobos State Park four miles south of Carmel off Highway 1. Roads and trails to Bird Island Overlook are clearly marked. State park service naturalists offer guided tours, including one to see Bird Island.

SEABIRD SPECIES:

Brandt's Cormorant - This is the principal nesting species at this colony. Large numbers are present during summer, fewer in winter.

Pelagic Cormorant - Small numbers nest at several locations in this state park. Sand Hill Cove, a short distance north of Bird Island, is a good spot to see this species.

Brown Pelican - Non-breeding birds can be seen in the area during summer and fall.

Black Oystercatcher - A few are probably present all year.

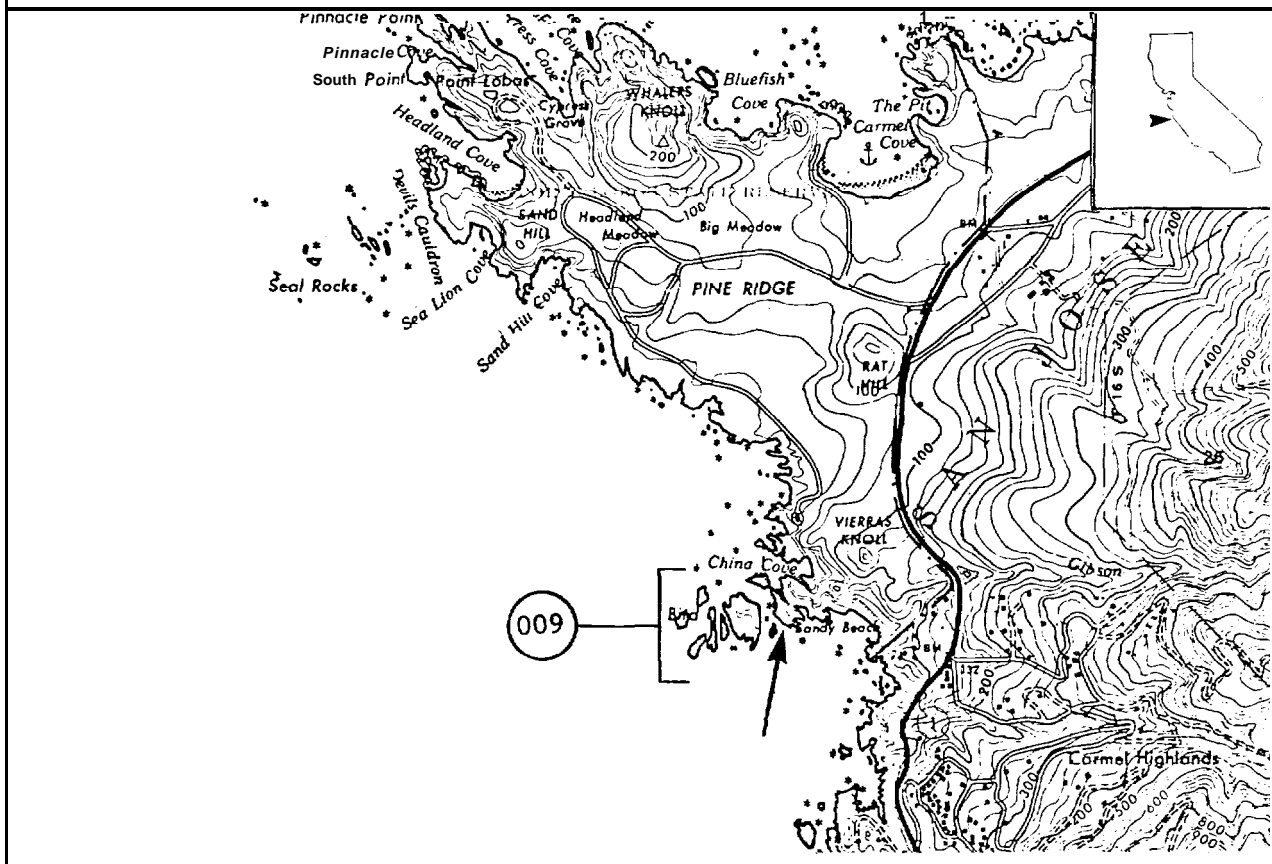
Western-Gull - Low numbers nest in the area. These and other species of gulls winter in the area.

MARINE MAMMALS :

California Sea Lion - These can be seen at Sea Lion Rocks, a short distance north of Bird Island.

Harbor Seal - A few are present in the area all year.

Sea Otter - A few are present in the area all year.



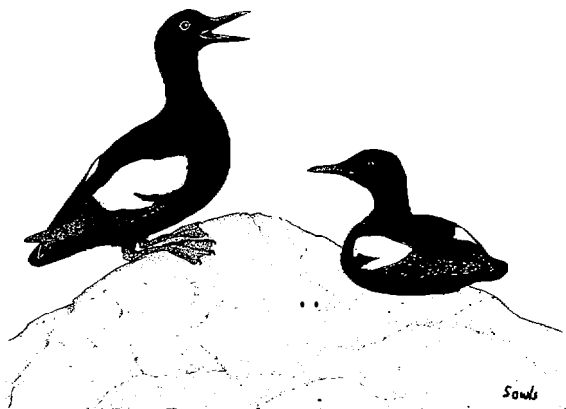
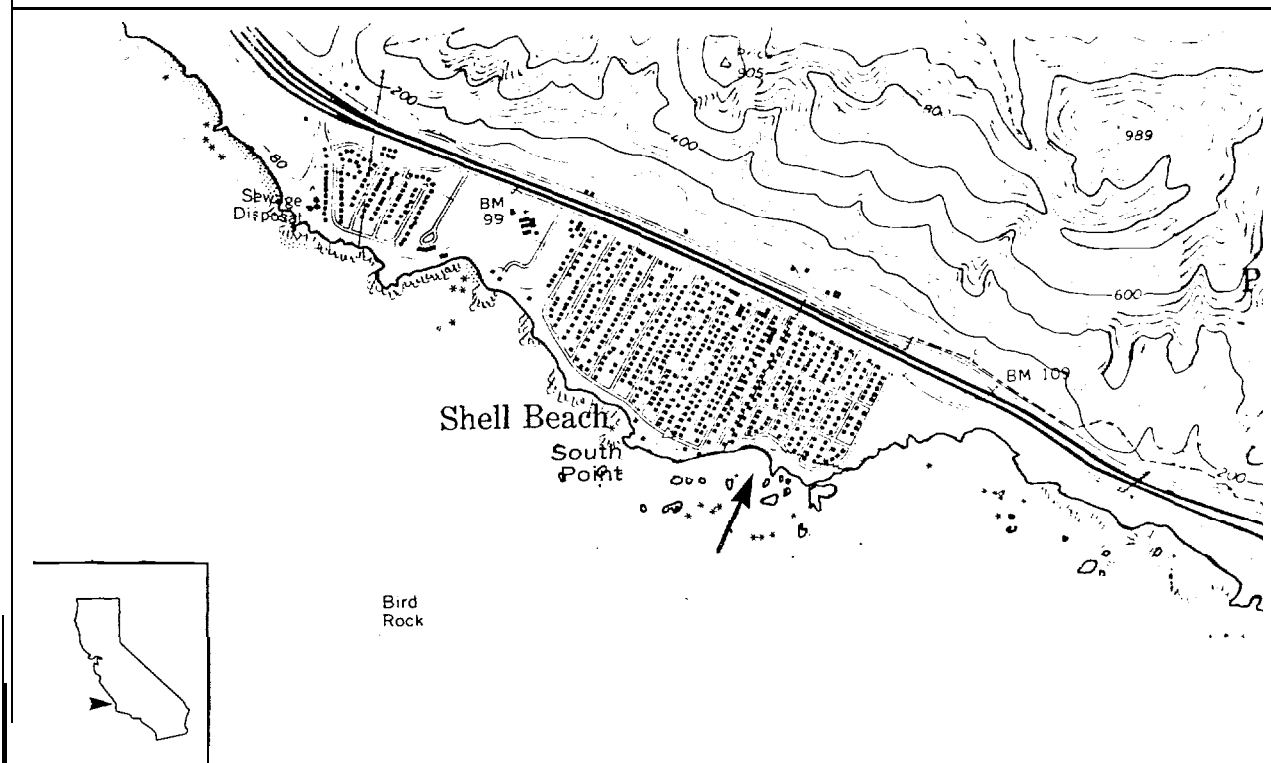
VIEW POINT : Shell Beach

COLONY: Shell Beach Rocks (477 035).

ACCESS: Highway 101 south of San Luis Obispo to Shell Beach. Go to the south end of town and take any residential street west to the shoreline.

SEABIRD SPECIES:

Shell Beach Rocks are an excellent location for viewing breeding Pigeon Guillemots, Black Oystercatchers, and Western Gulls. In 1980 this was one of only two sites in California where Heermann's Gulls attempted to nest. During summer, fall, and winter months, Shell Beach Rocks are used by many Brown Pelicans, Brandt's Cormorants, Heermann's Gulls, and Western Gulls for roosting. At low tide more than 100 Harbor Seals can usually be easily observed.



COLONIES: East Anacapa Island (502 009) and Santa Barbara Island (524 008).

ACCESS: Access to the Channel Islands is by charter boat from Ventura and Los Angeles, California. The waters on the north side of West Anacapa Island are closed to boats out to nine fathoms during the nesting season. All interested persons are encouraged to contact the National Park Service for more information at:



Channel Islands National Park  
1699 Anchors Way  
Ventura, CA 93003  
(805) 644-8157

SEABIRD SPECIES:

A diverse assemblage of marine birds and mammals can be seen in the Channel Islands. At present both East Anacapa Island and Santa Barbara Island have trails to accommodate visitors. Colonies of Western Gulls can be observed at both islands and breeding Brown Pelicans may be observed from boats offshore of West Anacapa Island (502 007). For overnight camping, permits must be obtained from the National Park Service.



COLONY : Farallon Islands (429 O 12)

ACCESS : From San Francisco by tour boat chartered by local natural history groups. No landings are allowed. For more information contact:



Refuge Manager  
San Francisco Bay National Wildlife Refuge  
Box 524  
Newark, CA 94560  
(415) 792-0222

SEABIRD SPECIES:

Teeming with many thousands of breeding seabirds, the Farallon Islands contain the most important seabird colonies of the California coast. Although visits to the islands are restricted, a boat is an excellent vantage point to observe the bird life of the Farallones.

Appendix C

Below are listed in alphabetical order the names of seabird colonies listed in this catalog. Names given are as on U.S. Geological Survey maps unless they are in quotation marks. Names in quotation marks are of sites which are not named on U. S.G.S. maps. These names are either Iotally used or were assigned by us or previous investigators.

Name	Colony	Lat., Long.	Page
Agua Hedionda	524004	33°08'45"N, 117°19'30"W	322
Alameda Creek	429015	37°36'59"N, 122°37'32"W	192
Albion Cove to Navarro River	379029	39°12'30"N, 123°46'20"W	136
Alcatraz Island	429036	37°49'34"N, 122°25'20"W	208
Aliso Creek	52.5007	33°30'35"N, 117°45'12"W	324
Anacapa Island - East	502009	34°00'46"N, 119°25'06"W	288
Anacapa Island - Middle	502008	24°00'19"N, 119°23'43"W	288
Anacapa Island - West,	502007	34°00'54"N, 119°21'57"W	286
Anaheim Bay and Surfside Beach	524009	33°04'47.35"N, 118°03'30"W	302
"Anderson Canyon Rock"	454016	36°06'58"N, 121°36'58"W	224
Anderson Cliffs	379013	39°52'30"N, 123°54'30"W	120
Ano Nuevo Island	429023	37°06'30"N, 122°20'09"W	194
Arched Rock	404006	38°25'53"N, 123°07'32"W	150
Bair Island	429016	37°31'43"N, 122°13'05"W	192
Batiquitos Lagoon	524005	33°05'25"N, 117°17'30"W	322
Bay Point Area	501016	34°02'N, 120°19'W	280
Bench Mark 125 to Timber Cove	404031	38°32'20"N, 123°01'17"W	168
"Bench Mark 227x"	454029	36°23'21"N, 121°54'13"W	230
"Bench Mark 247"	454036	36°02'N, 121°34'45"W	234
Bird Island	429007	37°49'27"N, 122°03'09"W	186
Bird Island	454009	36°30'25"N, 121°05'33"W	218
Bird Rock	404010	38°13'49"N, 122°05'35"W	154
Bird Rock	454006	36°35'31"N, 121°05'19"W	216
Bird Rock	524010	33°27'04"N, 118°29'04"W	310
Bird Rock and N.W. San Clemente Is.	524012	33°02'N, 118°35'W	314
Bird Rock, mainland point across from	477016	35°52'37"N, 121°02'59"W	246
Black Point to Stewarts Point	404026	38°40'N, 123°02'15"W	164
Blank Rock	325024	41°03'15"N, 124°09'26"W	80
Bodega Head	404038	38°18'N, 123°03'45"W	176
Bodega Rock	404008	38°17'48"N, 123°02'50"W	150
Bolsa Chica Beach	524006	33°42'05"N, 118°03'05"W	304
"Bonee Cliffs"	379031	39°07'N, 123°04'45"W	138
Bonita Cove	429027	37°49'30"N, 122°03'11"W	198
Bridgeport Landing	379033	39°03'45"N, 123°04'15"W	140
Brothers, The	429040	37°57'47"N, 122°26'W	210
Buena Vista Lagoon	525008	33°10'30"N, 117°21'15"W	324
"Burns Creek Rocks"	454017	36°08'29"N, 121°03'28"W	224
"Butt on Rock"	325054	41°03'N, 124°08'W	100
Cap Rock	325054	41°03'N, 124°08'W	100
Cape San Martin	477003	35°53'17"N, 121°02'55"W	240
Cape Vizcaino	379002	39°43'34"N, 123°04'55"W	108
Cannon Gulch to Stump Beach	404029	38°35'30"N, 123°02'30"W	166
Casket Rock	379009	39°07'49"N, 123°04'39"W	116
Caspar Anchorage	379023	39°22'N, 123°49'10"W	128
Castle Rock	325006	41°43'37"N, 124°15'W	66
Castle Rock	501005	34°03'17"N, 120°26'17"W	268
Castle Rocks & Mainland	454010	36°22'35"N, 121°54'25"W	220
Cavanaugh Cove to Gunderson Rock	379030	39°08'N, 123°04'W	138
Cayucas Point, island south of	477025	35°26'46"N, 120°05'51"W	250
"Chadbourne Rocks"	379019	39°37'02"N, 123°04'W	124

## Appendix C (Continued)

Name	Colony	Lat., Long.	Page
Chris Rocks	379003	39°42'51"N,123°48'07"W	110
Collins Landing to Gualala River	404023	38°46'N,123032'40"W	160
Coche Pt. to Cavern Pt.	502012	34°2'N,119°36'50"W to 3'20"N,119°38'45"W	292
Cone Rock	325001	41°58'21"N,124013'02"W	62
Cooper Point and Islands	454031	36°14'55"N,121°50'10"W	232
"Cormorant Hotel"	325056	40°02'10"N,124°04'50"W	102
"Cormorant Rock"	325015	41°08'32"N,124009'39"W	74
Coyote Creek	429019	37°28'41"N,122002'51"W	194
Coyote Hills	429017	37°32'48"N,122°07'28"W	192
Davenport to Point Santa Cruz	454021	36°58'N,122°07'W	226
Del Mar	545006	32°33'25"N,117°07'48"W	336
Del Mar Point	404024	38°15'N,123031'W	160
Destroyer Rock	501009	34°36'10"N,120°38'40"W	272
Destroyer Rock, mainland and rocks east of "Devils Basin"	501010 379007	34°36'N,120°38'26"W 39°10'14"N,123044'50"W	272 114
Devil's Slide Rock and headlands	429014	37°34'28"N,122031'39"W	192
Diablo Canyon Nuclear Power Plant South	477030	35°12'07"N,120050'39"W	254
Diablo Rock & Adjacent Mainland	477029	35°12'36"N,120°51'38"W	254
Dillon Beach Rocks	404009	38°16'26"N,122059'11"W	152
Dolan Rock	454018	36°05'06"N,121037'02"W	224
Double Point Rocks	429003	37°56'51"N,122047'08"W	184
"Double Rock"	325054	41°03'00"N,124°08'W	100
"Double Rock Region"	477031	35°11'39"N,120°50'29"W	256
Duncan Point to Arched Rock	404037	38°22'30"N,123005'W	174
"Easy Triangle Rocks"	325047	41°40'22"N,124008'30"W	94
Eel Rock Cliffs	429031	37°24'15"N,122°25'30"W	204
"Elephant Rocks Complex"	404041	38°11'N,122°58'W	178
Elkhorn Slough	454003	36°49'04"N,121046'30"W	214
False Cape Rocks	325040	40°30'38"N,124023'40"W	40
False Klamath Rock	325010	41°35'40"N,124006'36"W	70
Farallon Islands	429012	37°41'53"N,123000'05"W	188
"Fish Rock Cove"	404022	38°47'45"N,123035'20"W	158
Fish Rocks	404003	38°48'N,123°35'31"W	146
Flatiron Rock	325023	41°03'34"N,124009'39"W	80
Flint Rock Head	325011	41°31'31"N,124°05'00"W	70
Footsteps Rock	325050	41°37'00"N,124°07'10"W	94
Fossil Point	477034	35°10'26"N,120°43'26"W	256
"Georgia Pacific"	379022	39°27'N,123048'45"W	128
Gerstle Cove to Stillwater Cove	404030	38°33'N,123°18'45"W	168
Goat Island	379006	39°18'28"N,123°48'49"W	112
Green Rock	325020	41°04'32"N,124009J48JW	78
Greyhound Rock to Davenport	429035	37°03'N,122°15'W	206
Grimes Point	454033	36°12'20"N,121°44'15"W	232
Guadalupe Slough	429020	37°28'12"N,122°04'52"W	194
Gualala Point Island	404004	38°45'04"N,123031'42"W	148
"Guillemot Island Area"	454023	36°31'25"N,121°56'47"W	226
Gull Island	524001	33°57'01"N,119°49'28"W	300
Gull Rock	404035	38°25'30"N,123007'10"W	172
Gull Rock Area	429025	37°52'35"N,122°37'W	196
"Halfmoon Rock"	325054	41°03'N,124°08'W	100
Hardy Rock & Union Landing	379017	39°42'20"N,123°38'30"W	124
Harris Pt. to Cuyler Harbor	501015	34°04'N,120°22'W	278
High Tip	379012	39°55'30"N,123°57'10"W	118
"Horseshoe Cove"	404028	38°36'30"N,123°22'10"W	166

Appendix C (Continued)

Name	Colony	Lat., Long,	Page
Hunter Rocks	325002	41°57'22''N,124012'41''W	62
Huntington Beach	525001	33°38'43''N,117059'02''W	320
Hurricane Point Rocks	454011	36°21'40''N,121°54'25''W	220
“Iverson Landing”	404002	38°50'39''N,123°38'37''W	144
Kibesillah Rock	379004	39°34'49''N,123°46'51''W	110
La Cruz Rock	477006	35°42'23''N,121°18'45''W	242
La Jolla	545009	32°51'00''N,117°15'55''W	338
Lafler Rock & Mainland	454034	36°12'N,121°43'36''W	232
Lake Talawa Beach	325005	41°50'03''N,124013'18''W	64
“Lams Rock”	477014	35°57'44''N,121029'01''W	246
“Last Chance Rock”	325049	41°38'05''N,124°07'30''W	94
Limantour Estero	404013	38°01'52''N,122055'53''W	154
Lion Rock	477011	35°31'01''N,120°52'15''W	244
Lion Rock at Point Sal	501008	34°53'55''N,120°39'50''W	272
“Little Pewetole Rock”	325022	41°04'N,124°09'W	78
Little River Rock	325035	41°02'08''N,124°07'16''W	84
Lobos Rocks	454025	36°27'18''N,121°56'10''W	228
Lobos Rock& Lands End	429029	37°47'15''N,122°30'20''W	200
Lopez Rock	454020	36°01'34''N,121034'46''W	226
Los Panasquitos Lagoon	545001	32°55'49''N,117°14'54''W	328
“Luffenholtz Rock”	325054	41°03'N,124008'W	100
Mallo Pass Creek	379034	39°02'20''N,123041'50''W	140
Martin’s Beach	429033	37°22'N,122024'30''W	204
McWay Rocks	454015	36°09'46''N,121°40'44''W	222
Mendocino	379025	39°18'10''N,123°47'50''W	132
Mendocino Bay	379026	39°17'30''N,123°47'40''W	132
Millers Point Rocks	429002	37°58'53''N,122°48'35''W	184
Mission Bay	545002	32°46'42''N,117°13'46''W	330
Mistake Point to Big White Rock	379014	39°51'30''N,123053'30''W	120
“Moat Cove”	404018	38°53'10''N,123041'W	156
“Molera Rock”	454030	36°16'45''N,121°51'30''W	232
Morro Rock and Pillar Rock	477026	35°22'13''N,120052'08''W	252
“Mr’rp Rock”	325054	41°03'N,124°08'W	100
Mugu Lagoon	502006	34°06'08''N,119°06'04''W	284
Muir Beach Headlands to Tennessee Cove	429026	37°51'00''N,122033'45''W	198
Newport Bay	525002	33°8'46''N,117°53'08''W	320
“Newport Rocks”	379021	39°34'49''N,123046'51''W	126
“North Pismo Beach Rocks”	477036	35°08'57''N,120039'23''W	258
North San Diego Bay	545003	32°44'N,117°12'W	332
“Northwest Cape Rocks”	404032	38°30'40''N,123015'17''W	170
Oakland International Airport	429011	37°43'21''N,122013'46''W	188
Old Arcata Wharf	325038	40°50'59''N,124°05'58''W	86
Ormond Beach	502005	34°08'13''N,119010'56''W	284
Oso Flaco Lake	477037	35°01'42''N,120037'40''W	258
Palmer’s Point to Scotty Point	325052	41°07'N,124°09'W	96
“Partington Ridge North”	454014	36°10'06''N,121041'14''W	222
“Partington Ridge South”	454035	36°00'N,121°40'40''W	234
“Peaked Hill”	404034	38°25'45''N,123°07'10''W	172
Pecho Rock	477032	35°10'45''N,120°49'00''W	256
Pescadero Rock	454022	36°33'43''N,121°56'33''W	226
Pfeiffer Point	454032	36°35'18''N,121047'35''W	232
Piedras Blancas	477007	35°39'52''N,121°17'18''W	242
Pier 45	429037	37°48'34''N,122°25'W	208
Pigeon Point	429034	37°10'55''N,122°23'20''W	206
Pillar Point	429030	37°23'N,122029'55''W	202
Pilot Rock	325026	41°03'06''N,124009'09''W	82
Pinnacle Point Area	454007	36°31'25''N,121057'14''W	216
Pinnacle Rock	404039	38°18'20''N,123°01'10''W	178

## Appendix C (Continued)

Name	Colony	Lat., Long.	Page
Plaskett Rock	477002	35°55'14''N,121028'41''W	238
Plaskett Rock, small rocks and mainland N. and E. of	477001	35°55'16''N,121028'2'2''W	238
Point Arena	404017	38° 57'20''N,123° 44'30''W	156
Point Arguello	501011	34°38'N,120038'49''W	274
Point Bennett, San Miguel Island	501014	34° 2'N,120° 3'30''W	276
Point Bonita	429 008	37°48'55''N,122031'40''W	186
Point Buchon	477009	35°15'20''N,121053'58''W	242
Point Cabrillo to Jack Peters Gulch	379024	39°20'N,123° 49'W	130
Point Conception	501013	34°26'54''N,120°28'13''W	274
Point Diablo Bluffs and Needles	429028	37°49'30''N,122°29'W	200
Point No Pass	379011	39°58'40''N,123059'40''W	118
Point Piedras Blancas, two rocks south of	477024	35 °39'30''N,1210 16'02''W	250
Point Resistance	429024	37°59'55''N,122°49'40''W	196
Point Reyes	429001	37 °59'26''N,123059'24''W	182
Point Reyes Beach	404012	38° 04'00''N,122° 58'47''W	154
Point San Simeon	477038	35°38'N,121012'W	258
Point St. George	325057	41° 47'N,124° 15'W	104
Point St. George Lighthouse	325044	41° 50'N,124° 22'W	92
Point Sur	454012	36° 18'22''N,121° 53'39''W	220
Prince Island	325003	41°57'04''N,124012'4 1''W	64
Prince Island	501004	34° 03'29''N,120°20'00''W	266
Prisoner Rock	325027	41° 03'07''N,124° 08'34''W	82
“Puffin Rock”	325021	41°04'18''N,124009'3 2''W	78
Punts del Ano Nuevo	429022	37°07'07''N,122°20'09''W	194
“Pup Rock and Adjacent Mainland”	477028	35° 13'00''N,120° 52'11''W	254
“Radar Station Rocks”	325051	41° 33'30''N,124° 06'00''W	96
“Ragged Point Lodge Colony”	477022	35 °46'53''N,1210 19'56''W	250
Red Rock	429039	37 °55'45''N,122025'5 0''W	210
Redding Rock	325013	41° 20'29''N,124° 10'26''W	72
Redwood Gulch, point north of	477017	35°50'20''N,121° 24'04''W	246
“Redwood Gulch Rock”	477005	35°49'32''N,121023'29''W	242
Redwood Gulch, Seastack south of	477018	35°49'30''N,121023'22''W	248
“Rock R”	325048	41° 40'00''N,124° 08'30''W	94
“Rockland Landing North”	454037	36°00'57''N,121032'30''W	234
“Rockport Rocks”	379001	39°44'10''N,123° 50'00''W	108
Rocky Point	454028	36°24'06''N,121° 54'40''W	230
Rocky Point	501012	34°33'45''N,120°38'11''W	274
“Russian Gulch”	404033	38°28'N,123009'36''W	170
“Russian River Rocks”	404005	38°27'14''N,123008'3 4''W	148
Salmon Creek	404007	38°20'27''N,123003'5 8''W	150
“Salmon Creek”	477020	35 °48'31''N,121° 21'47''W	248
Salmon Creek, arched peninsula south of	477021	35 °48'05''N,121° 21'14''W	248
San Elijo Lagoon	525006	33° 00'58''N,117° 16'52''W	322
San Gabriel River	524005	33°45'12''N,118°06'15''W	304
San Miguel Island	501006	34°02'32''N,120°22'30''W	270
San Nicolas Island	524011	330 14'30''N,119°30'30''W	312
San Pedro Rock	429013	37°35'43''N,122031'20''W	192
Sand Hill Cove	454008	36° 31'01''N,121° 57'01''W	218
Santa Barbara Island	524008	33° 28'37''N,119° 02'03''W	306
Santa Clara River	502003	34° 14'08''N,119° 15'51''W	284
Santa Cruz Island	502010		294
Santa Cruz Island - Kinton Pt. to Diablo Pt.	502014	34° 0'30''N,119° 53'W to 34°3'N,119045'W	296
Santa Margarita River	525003	33° 13'57''N,117°24'37''W	320
“Santa Maria River”	501001	34° 58'09''N,120°38'51 ''W	262
Santa Rosa Island, Sandy Pt. to Barrington Pt.	501007		270
Saunders Landing	404020	38°51'13''N,123030'05''W	158

## Appendix C (Continued)

Name	Colony	Lat., Long.	Page
Schoolhouse Creek to <b>Albion River</b>	379028	39° 15'N,123°46'30"W	134
Scorpion Rock	502010	<b>34°02'50"N,119°32'47"W</b>	290
Scotty Point to Megwill Point	325053	41°05'N,124009W	98
"Sea Gull Rock"	325017	41°05'21"N,124009°0 7"W	74
"Sea Lion Rock"	325018	41°05'40"N,124009°49"W	76
Sea Lion Rock	325043	<b>40°19'35"N,124°21'38"W</b>	92
Sea Lion Rocks	404001	38° 55'07"N,123°43'45"W	144
Sea Ranch	404025	38°42'N,123°27'3 0"W	162
Seal Cove to Lost Point	524013	<b>32°52'N,118°31'W</b> to <b>32°54'10"N,118°32'20"W</b>	316
Seal Rocks	429009	37°46'42"N,122°30'5 3"W	186
Seal Rock Cliffs	429032	<b>37°23'N,122°25'W</b>	204
"Section 30 Cove"	404019	38°52'39"N,123°40' 10"W	156
Shag Rock	524007	<b>33°29'15"N,119°02'05"W</b>	306
"Shell Beach Rocks"	477035	35° 09'06"N,120°40'1 1"W	258
Shell Wright Beach Rocks	404036	<b>38°25'N,123°06'W</b>	172
Sister Rocks	325009	41° 39'29"N,124° 08'47"W	68
Sisters, The	429041	37°59'22"N,122°26'25"W	210
Smith and Whaler Islands	477033	35°09'00"N,120° 5' 1 5"W	256
"Snag Rock"	325054	41° 03'N,124° 08'W	100
"Soberanes Creek Rocks"	454026	36 °27'18"N,121°55'3 5"W	228
"Soberanes Point South"	454027	36 °26'47"N,121°55'3 5"W	230
Soldier Frank Point	379016	<b>39°45'18"N,123°50'15"W</b>	122
"Sonoma-Marin County Line"	404040	38° 17'20"N,1 23° 00'20"W	178
South San Diego Bay	545005	<b>32°36'N,117°07'W</b>	334
"Split Rock"	325054	<b>41°03'N,124°08'W</b>	100
Sponner's Cove	477027	35° 16'21"N,120°53'5 7"W	252
"Sppit Rock"	502013	3 4602J457",119°43>3WW	294
Square Black Rock	454019	36°04'21"N,121°03'35"W	224
Steamboat Rock	325042	40 °24'54"N,124° 24'09"W	90
Stewarts Point to Rocky Point	404027	38°39'N,123°38'45"W	164
"Strawberry Cove"	379020	39 °35'37"N,123°47'1 0"W	126
Sugarloaf Island	325041	<b>40°26'18"N,124°24'41"W</b>	90
Sutil Island	524009	33°02'50"N,119°02'50"W	308
Sweetwater River	545008	32°38'30"N,117°06'3 5"W	336
"Tepona Rock"	325054	41 °03'N,124°08'W	100
Terminal Island	524003	33 °57'30"N,118°27'3 0"W	302
Three Brothers & Hair Seal Rocks	325055	40°19'40"N,124°21'5 8"W	102
Tijuana River Mouth	545006	32 °33'25"N,117°07'48"W	336
ToIowa Rocks	325007	41°45'15"N,124°14'W	66
Tomales Point	404011	38 °12'13"N,122°57'3 9"W	154
"Terre Canyon Rocks"	454013	36°1 1'25"N,121°42'46"W	222
Trinidad Bay Rocks	325054	41° 03'N,124° 08'W	100
Trinidad Head	325025	<b>41°03'09"N,1 24°08'58"W</b>	82
Triplett Gulch	404021	<b>38°49'N,123°36'15"W</b>	158
"Unmapped Island"	477019	35° 48'20"N,1 21° 22'26"W	248
Unnamed Point	477015	35° 57'00"N,121° 28'5 1"W	246
Unnamed Rock	477004	<b>35°53'05"N,121° 27'46"W</b>	240
Unnamed Rocks	477010	35 °14'40"N,120°53'3 9'W	244
Unnamed Small Rocks	325046	<b>41°42'N,124°08'W</b>	92
Usal Bay	379015	<b>39°48'45"N,123° 50'30"W</b>	122
Van Darnme Cove	379027	<b>39°16'10"N,123° 47'28"W</b>	132
Venice Beach	524002	33°57'30"N,118° 27'30'W	302
Wedding Rock	325016	41° 08'28",124°09'3 2'W	74
Westport	379018	39°38'00"N,123°47' 10'W	124
'Whaler Island'	325045	41°45'N,124°13'W	92
Wharf Rocks	379008	39°07'49"N,123°43'24"W	116

Appendix C (Continued)

Name	Colony	Lat., Long.	Page
White Rock	325008	41 °44'46"N,124013'44"W	60
White Rock	325012	41° 30' 36" N, 124005' 06" W	70
White Rock	325019	41 °05'13N,124009'3 3"W	76
White Rock	379010	39°05'42"N,123°43'11"W	116
Wilson Rock	325058	41 °35'45"N,124006'3 7"W	104
Yankee Point	454024	36°29'29"N,121056'41"W	228
<b>Yerba Buena Island</b>	429038	37°48'34"N,122022' 15"W	208
"333 Point"	379032	39 °05'N,123042'30"W	140
"3 Rocks"	477023	35 °45'06"N,121019'07"W	250
"36 North"	477013	35 °58'36"N,121° 29'15"W	246



## DEPARTMENT OF THE INTERIOR U.S. FISH AND WILDLIFE SERVICE



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.