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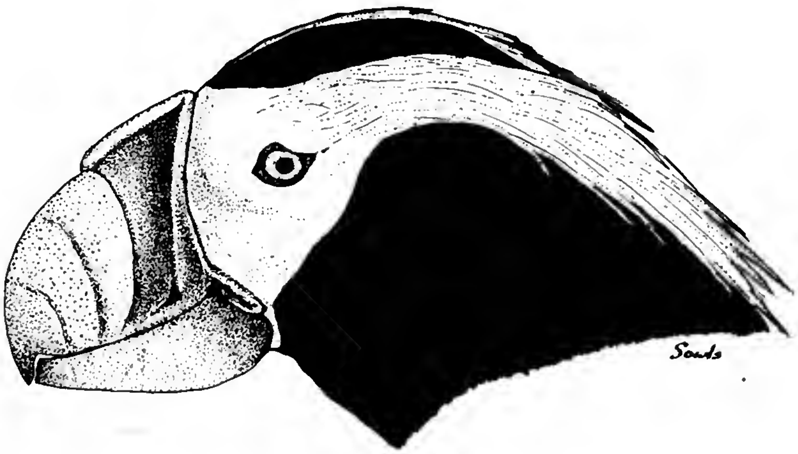
FWS/OBS-80/37

December 1980

Catalog of California Seabird Colonies



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December 1980

Catalog of California Seabird Colonies

by

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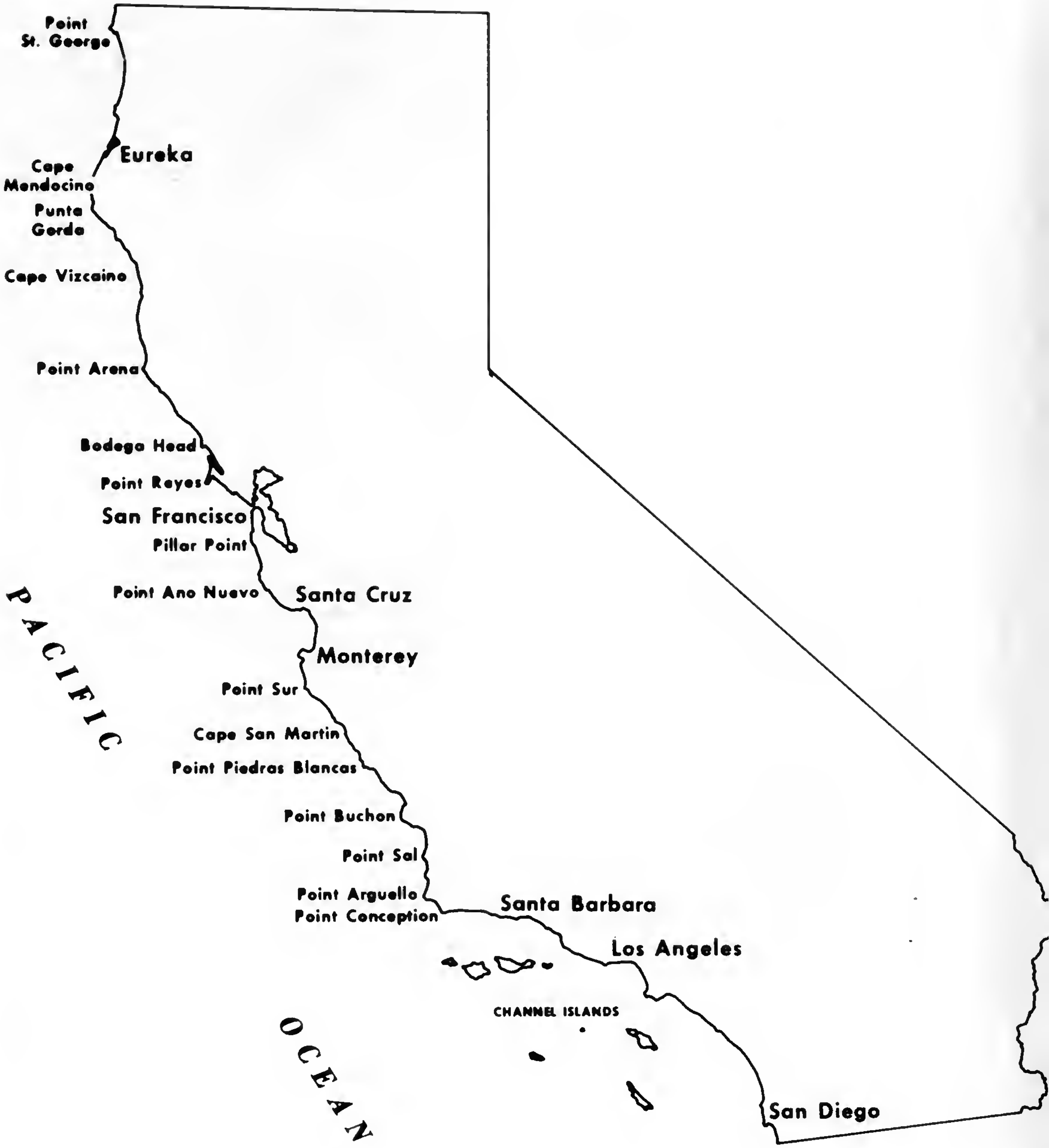
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INTRODUCTION

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 passerines, 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, alcids 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 longterm 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 alcids). 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 absorbtion 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 poly-chlorinated 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

Commerical 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 shear-waters *(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 *(Uria 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 concentra-tions 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). Commerical 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.

Commerical 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).

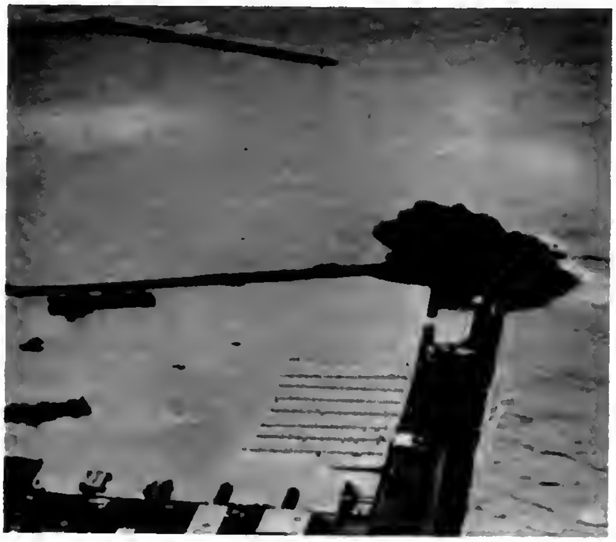
Incubation of eggs and chicks is a means of maintaining an optimum temperature for rapid development. Parents sit on and turn eggs to warm them and will shade eggs and chicks from the sun to keep them from overheating. If parent birds are kept off their nests for a long enough period of time, death of 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 remant 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 reentries 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

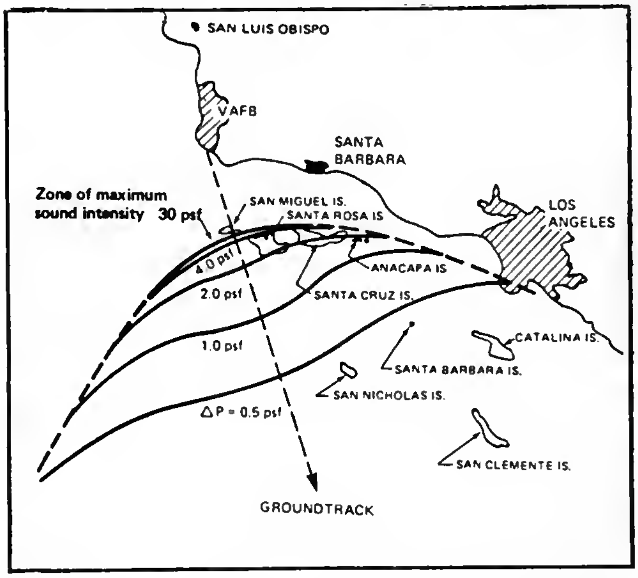


Figure 1. Predicted lines of maximum sonic boom pressures in pounds per square foot (psf) at sea level resulting from Space Shuttle launches into polar orbit from Vandenberg Air Force Base (modified from U.S. Air Force, 1978. Final Environmental Impact Statement, Space Shuttle Program, Vandenberg Air 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 (325 013), 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 *(Cepphus 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.

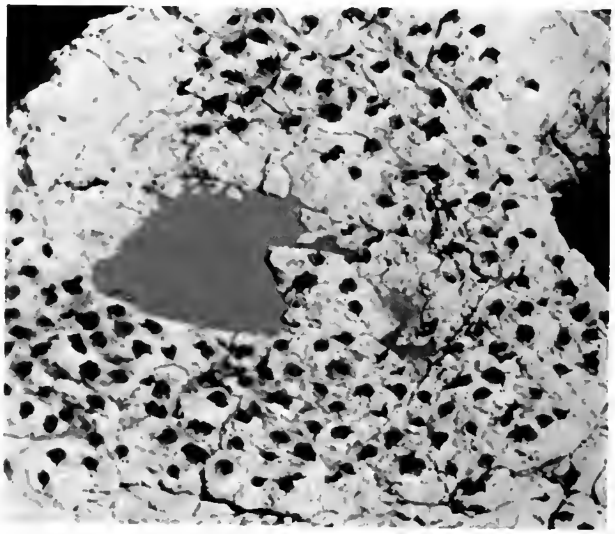
Aerial surveys were our best means of censusing Brandt's Cormorants and Common Murres. In 1979, we conducted nine aerial surveys in order to cover the coast from Point Conception

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.

II. 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 avifauna 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

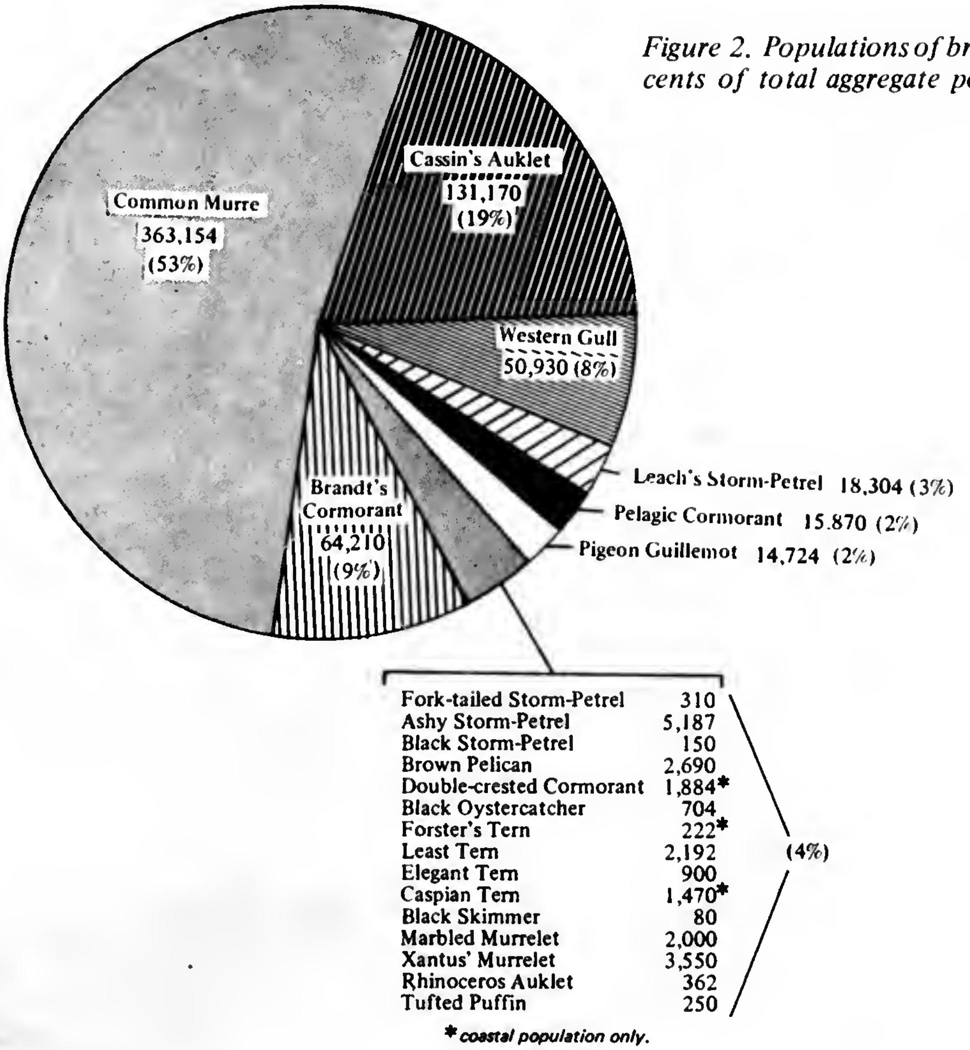


Figure 2. Populations of breeding seabirds and percents of total aggregate population in California.

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

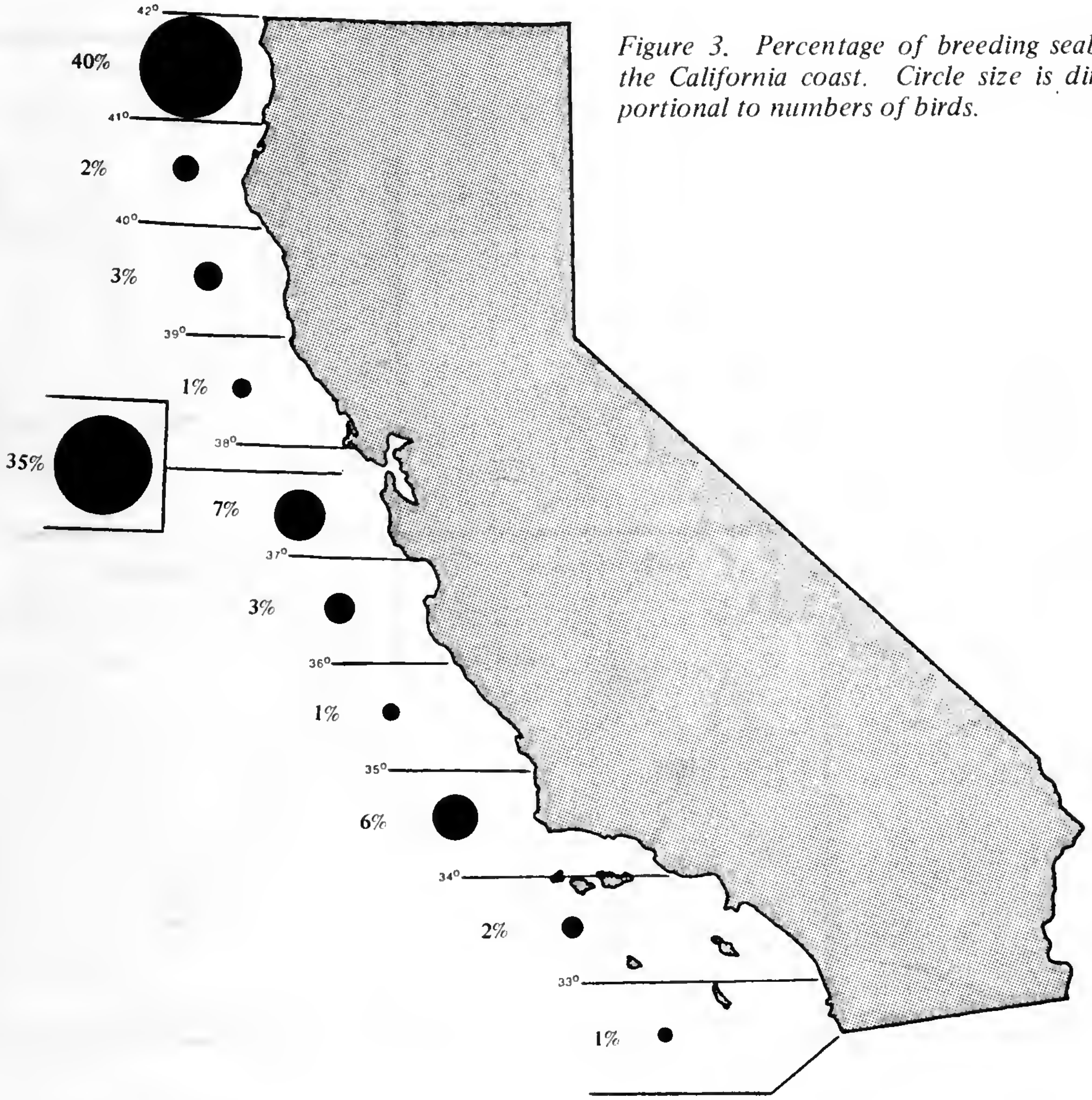


Figure 3. Percentage of breeding seabirds along the California coast. Circle size is directly proportional to numbers of birds.

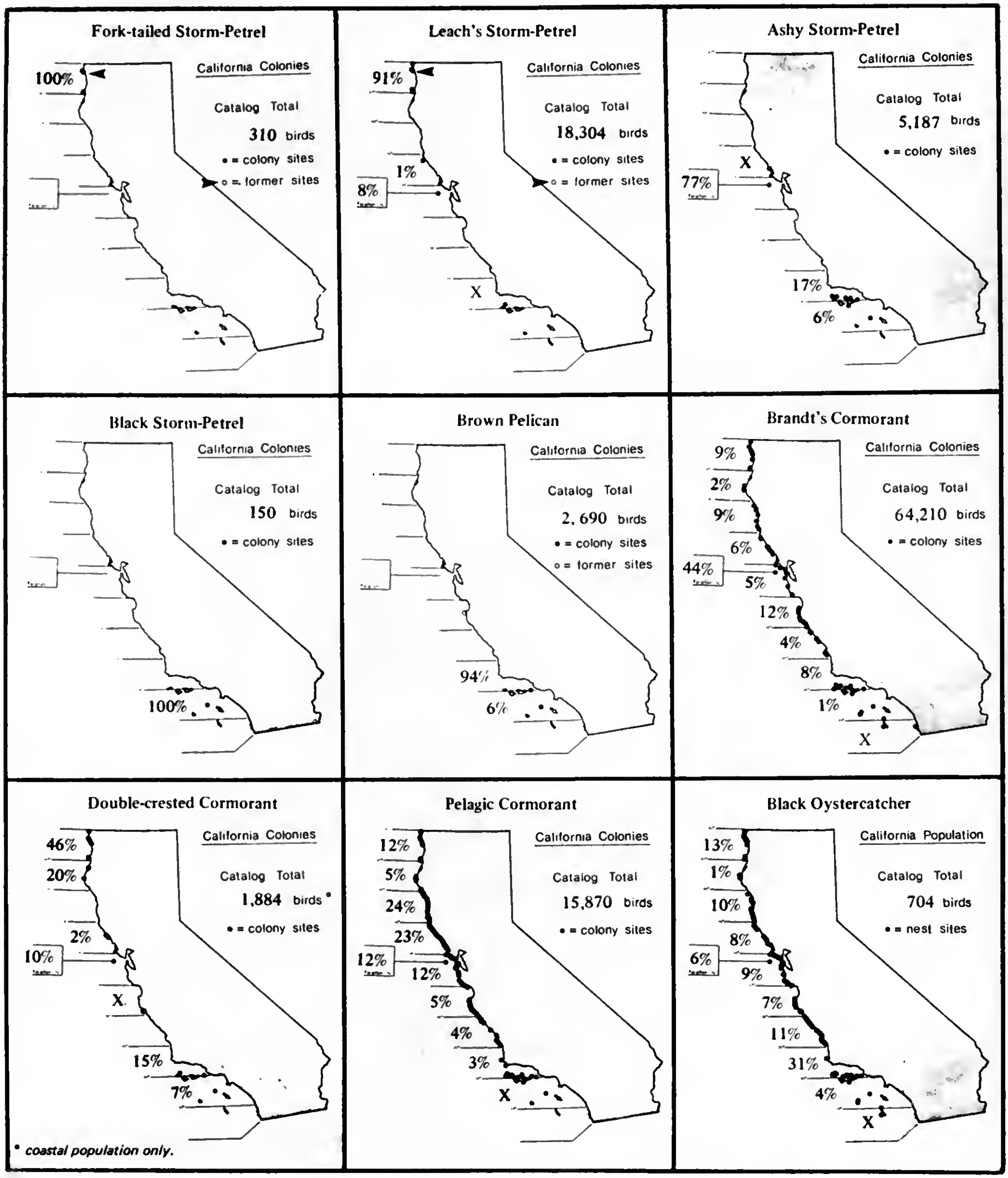
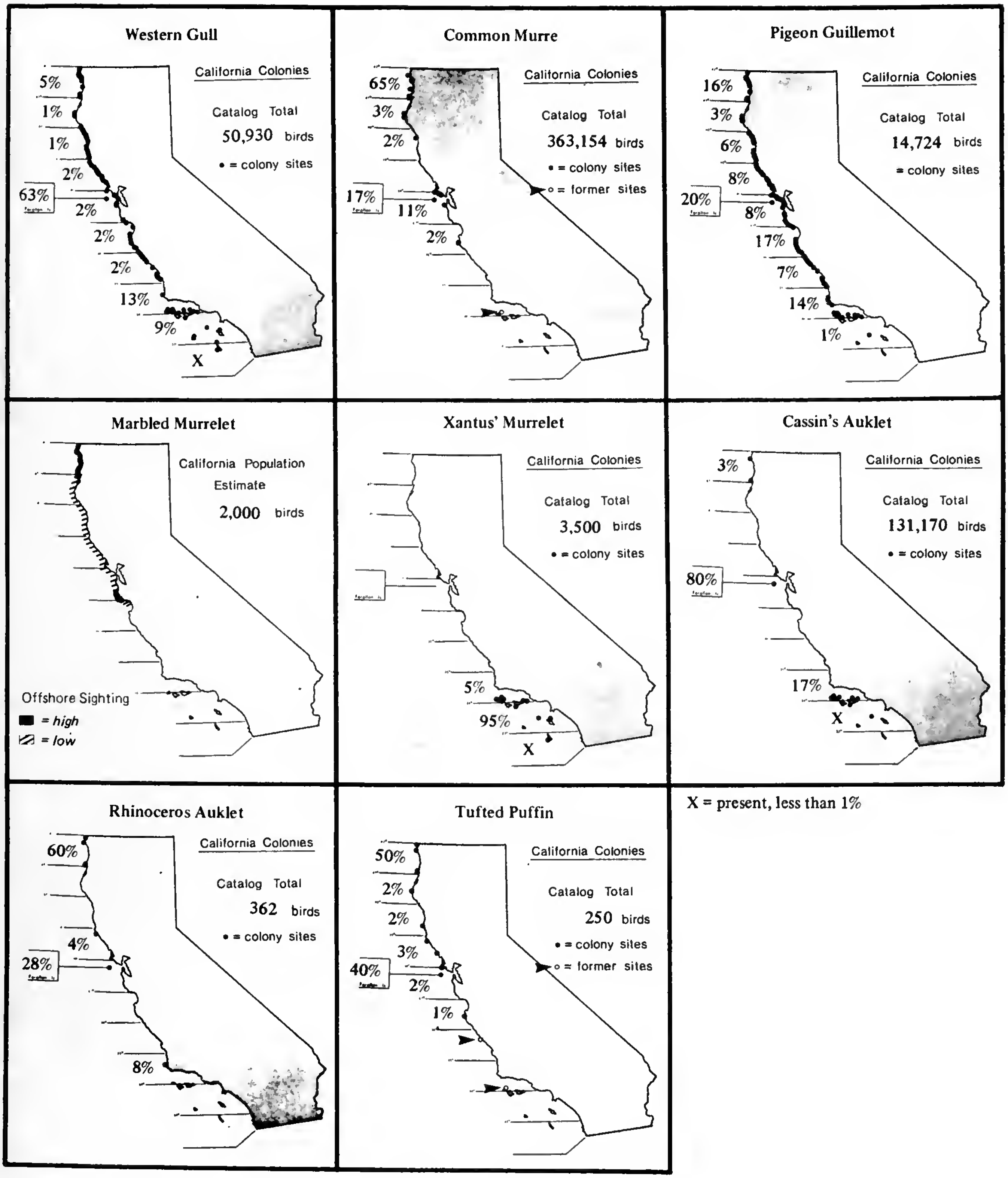


Figure 4. Percentages of the California breeding population of seventeen species of seabirds for



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.

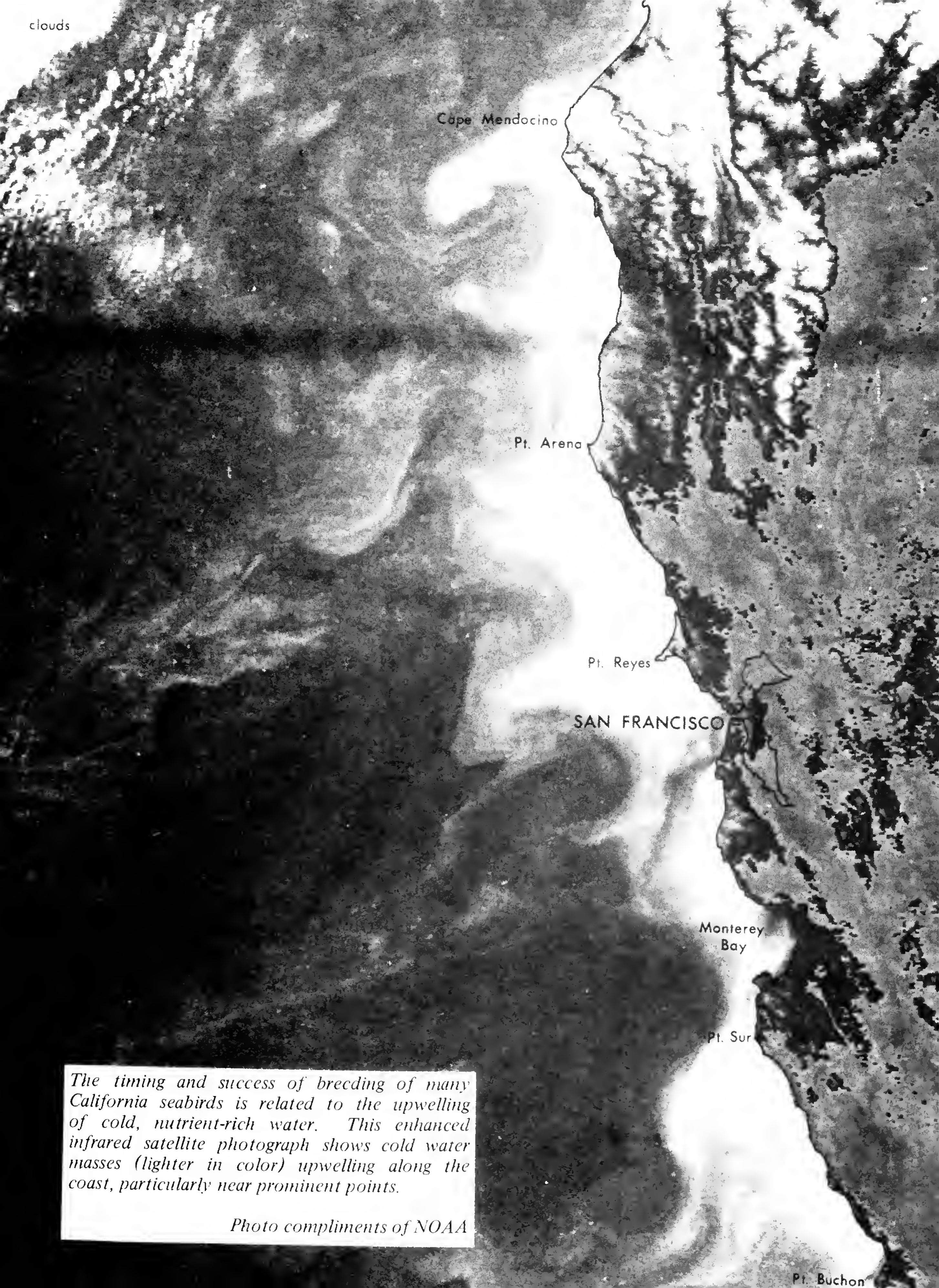
Populations of seabirds living at the edges of their breeding ranges are often small. This is best illustrated in California by Fork-tailed Storm-Petrels, Black Storm-Petrels, and Tufted Puffins. These populations may be particularly susceptible to changing environmental conditions and disturbance. If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



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

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, murres, 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.).

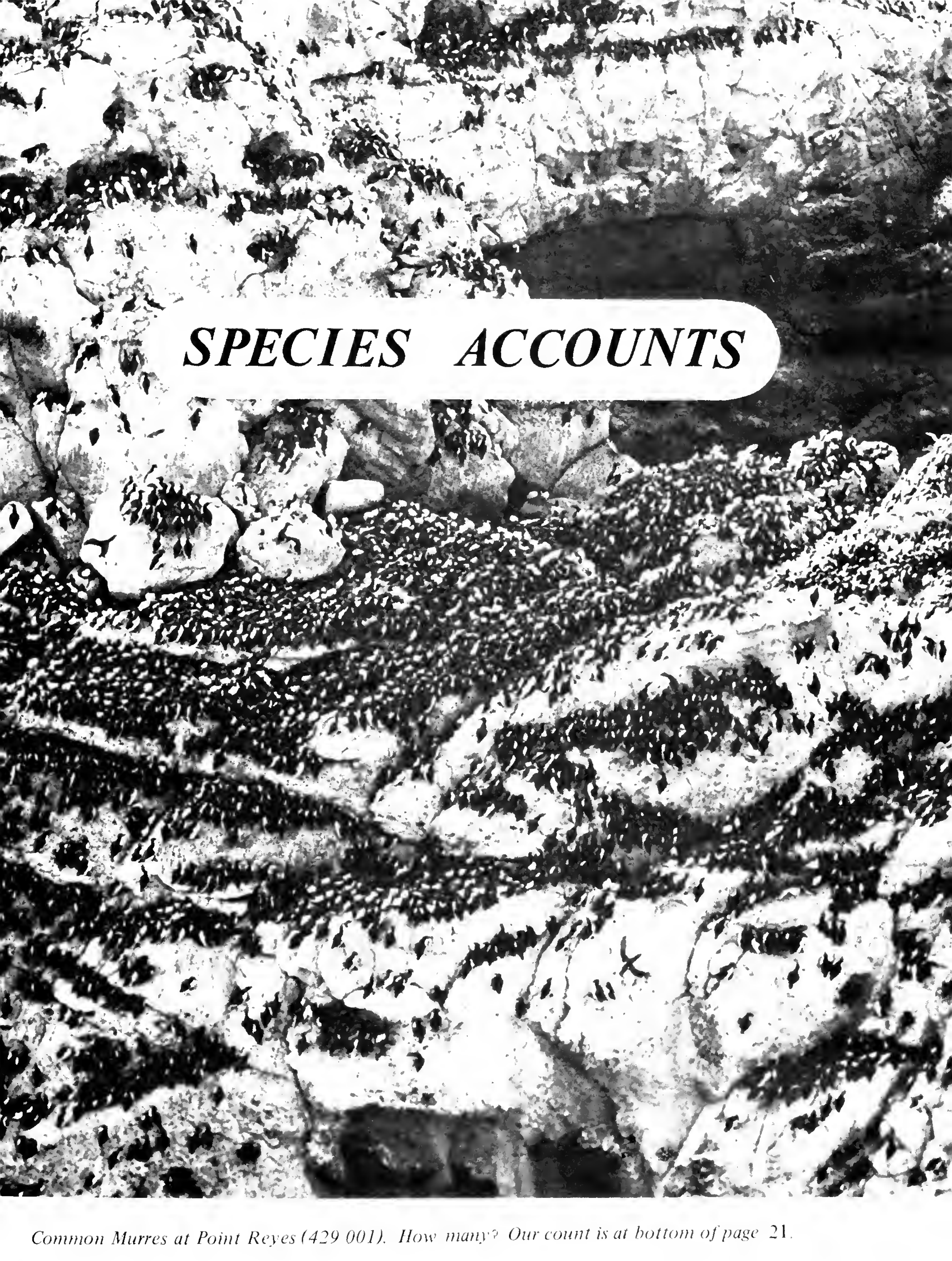
Flatiron Rock (325 023) is an almost bare island in northern California presently inhabited by large numbers of Common Murres, Brandt's Cormorants, Western Gulls, and a very few Pigeon Guillemots and Tufted Puffins. Clay (unpubl. field notes) in 1911 reported Tufted Puffins as numerous there and also 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 activites 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.

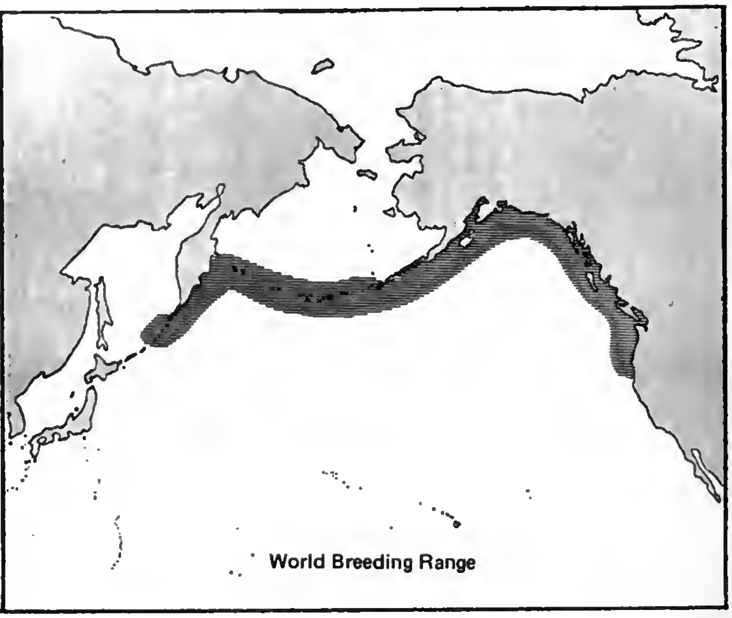
SPECIES ACCOUNTS



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.

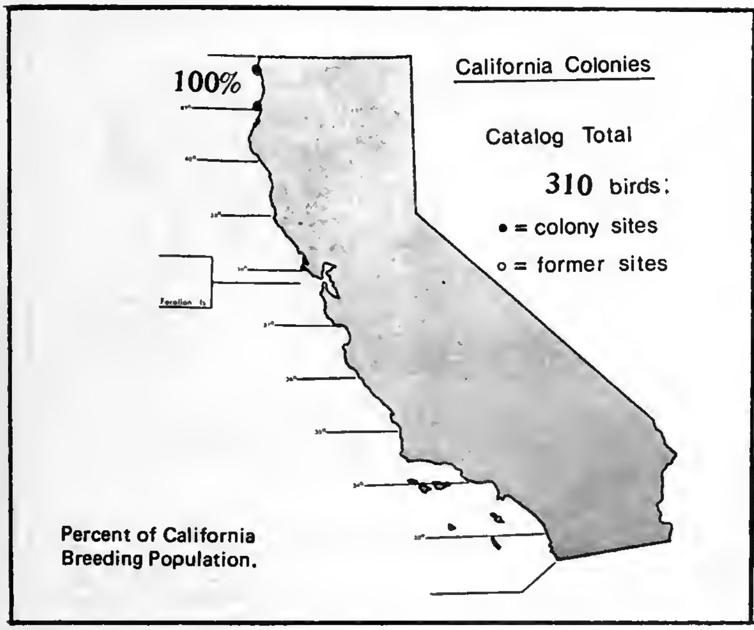
CALIFORNIA COLONIES

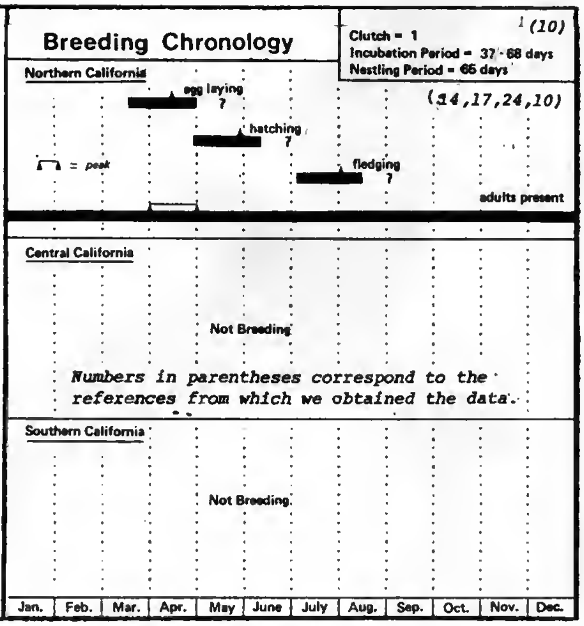
Fork-tailed Storm-Petrels have been identified at six sites in California, all north of Eureka (Harris 1974, this study). The largest of these, Little River Rock (325 035), is inhabited by approximately 200 birds. The population at Castle Rock (325 006) is estimated at 100 birds (Osborne 1972), and the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





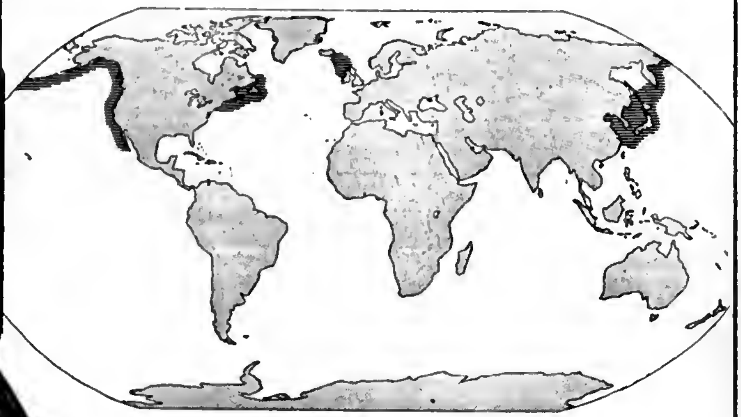
population shows that extremely unfavorable weather conditions or insufficient food supplies will cause parents to temporarily abandon eggs and chicks (Boersma et al. 1980). Such temporary abandonment of nests reduces viability of eggs, causes death among chicks, and lengthens the breeding season (Boersma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



World Breeding Range

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 ususally located in burrows or, less frequently, in rock crevices (Palmer 1962). Leach's Storm-Petrels have a well-developed 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).

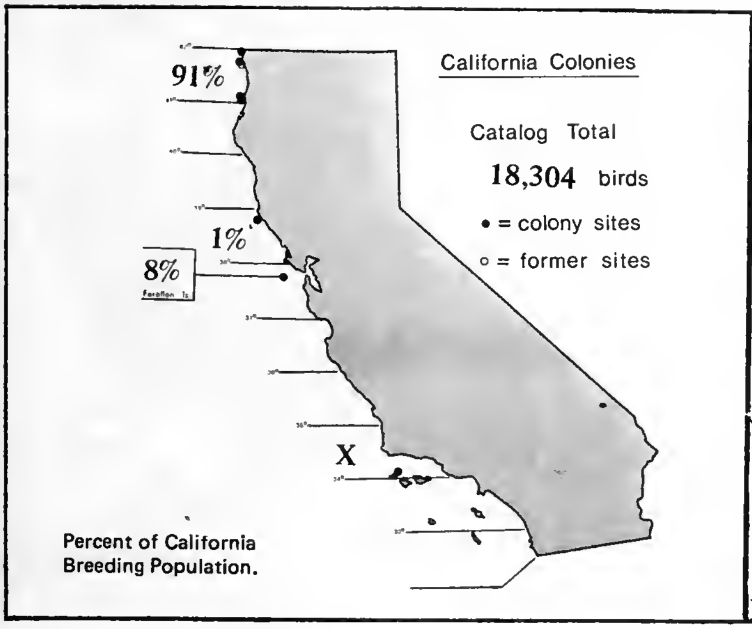
CALIFORNIA COLONIES

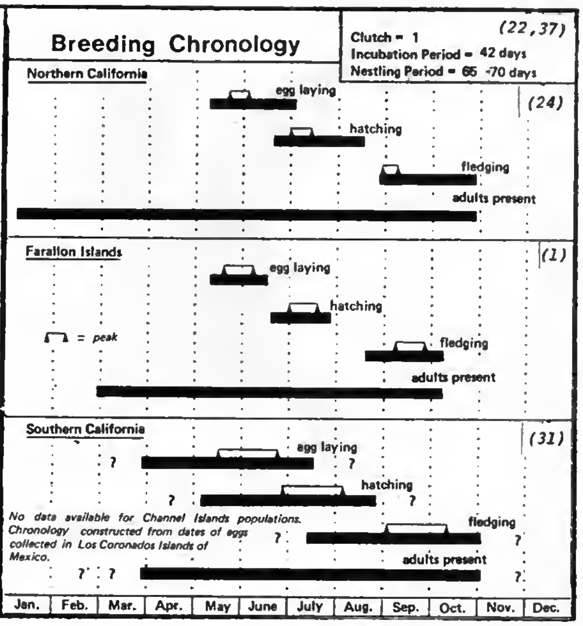
Leach's Storm-Petrels are known or suspected to breed at 13 sites along the California coastline. While most sites are located in the northern part of the state, recent evidence suggests that small numbers of Leach's Storm-Petrels may also nest in the Channel Islands (Hunt et al. 1979).

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 (429 012) 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

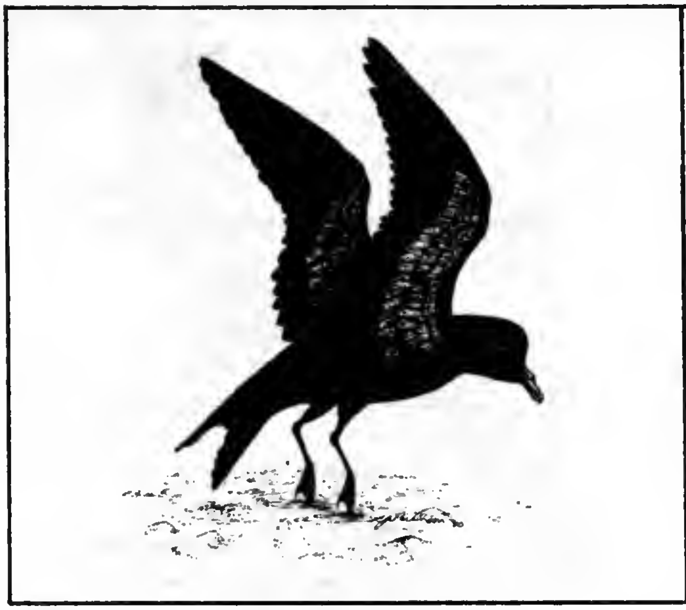
Limited published data suggest that Leach's Storm-Petrels have declined in number in California since the turn of the century. Breeding colonies were once found on Whaler Island (325 045), Blank Rock (325 024), Flatiron Rock (325 023), and Green Rock (325 020). They have been extirpated from the first 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.

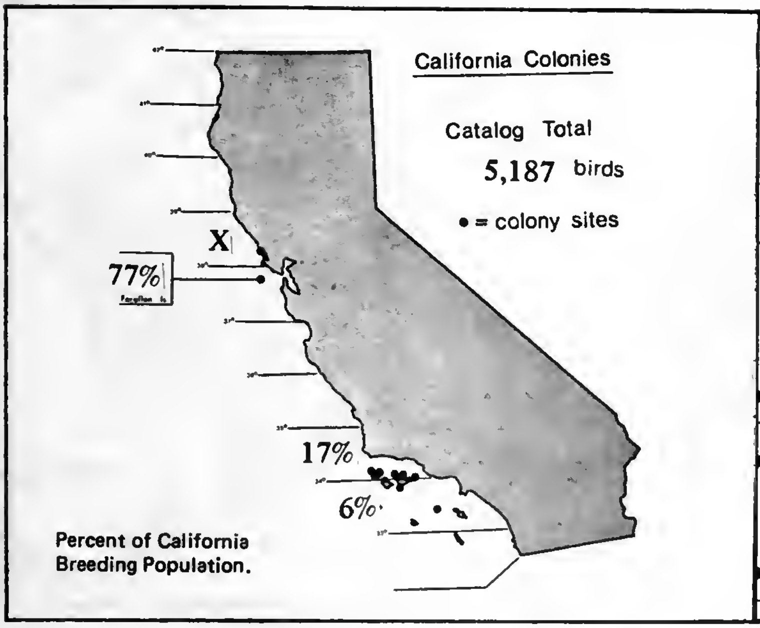
Ashy Storm-Petrels usually nest in natural rock crevices, although the Farallon Island population uses rock walls and building foundations as well (Ainley et al. 1974). Adults are nocturnal at the colonies and may only return with food every few nights. Foraging trips lasting several days probably allow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

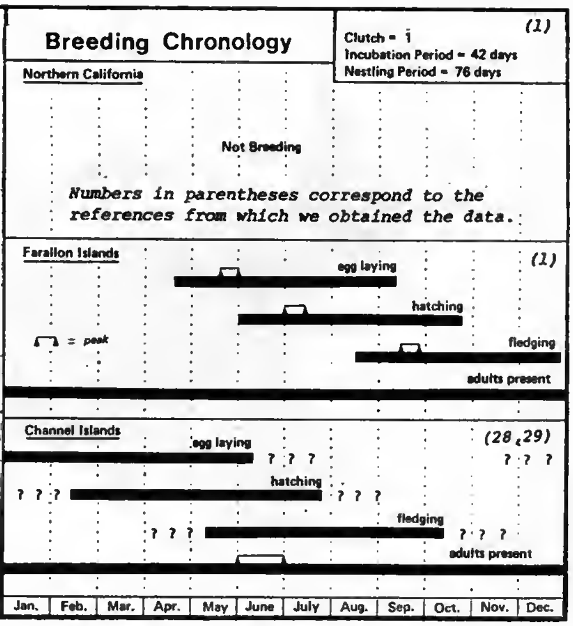
The nocturnal habits of Ashy Storm-Petrels may serve to reduce predation by normally diurnal Western Gulls. On the Farallon Islands, Ainley et al. (1974) found that only one percent of the storm-petrels were taken by Western Gulls each year. In addition, Ashy Storm-Petrel young fledge late in the year 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 (429 012). The remainder of the population, except for a small colony at Bird Rock (404 010), nests in the Channel Islands.

Nine colony sites have been found in the Channel Islands. Major colonies are located on Prince Island (501 004) with 600 birds, Castle Rock (501 005) with 200 birds, and Santa Barbara Island (524 009) with 250 birds. Additional small colonies are located on San Miguel Island (501 006), 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.

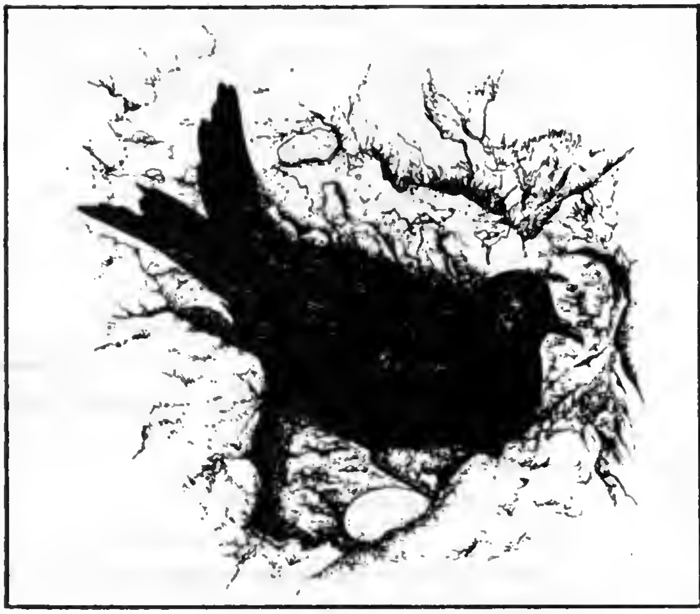
HISTORICAL STATUS AND VULNERABILITY

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

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

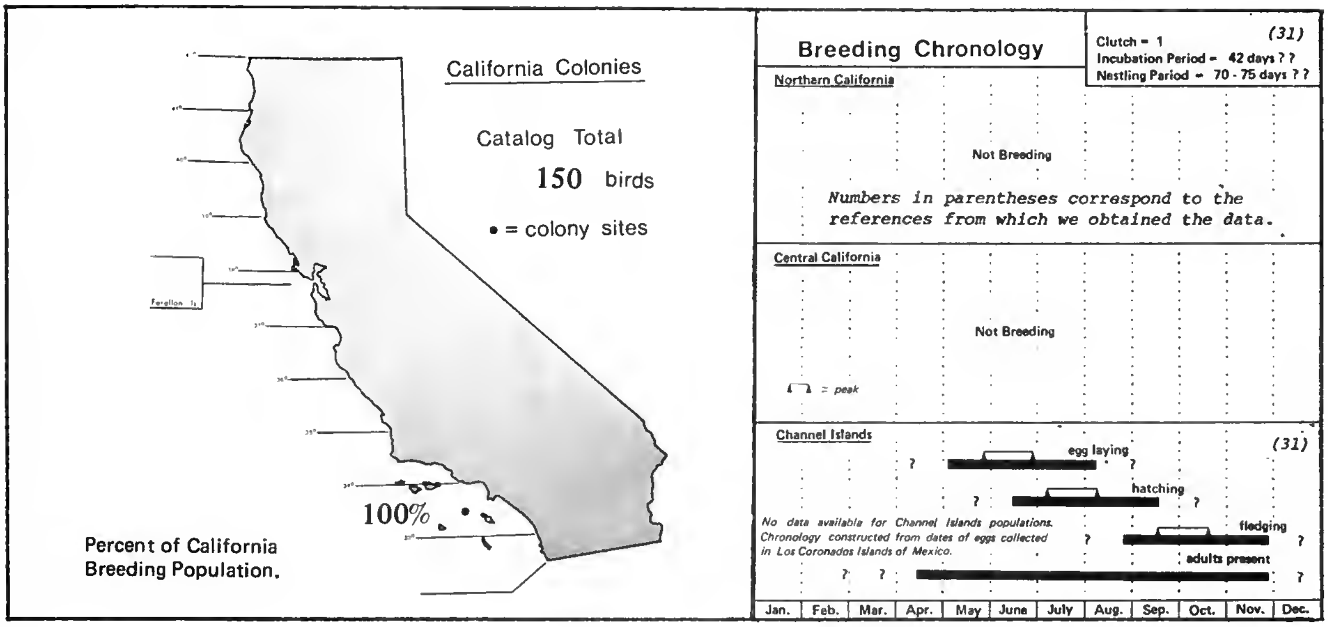
Black Storm-Petrels nest in California only on Santa Barbara Island (524 008) and nearby Sutil Island (524 009) in the Channel Islands (Hunt et al. 1979). The population estimate of 150 breeding birds was deduced primarily by mist net banding and recapture during several nights in 1977 (Hunt et al. 1979). 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

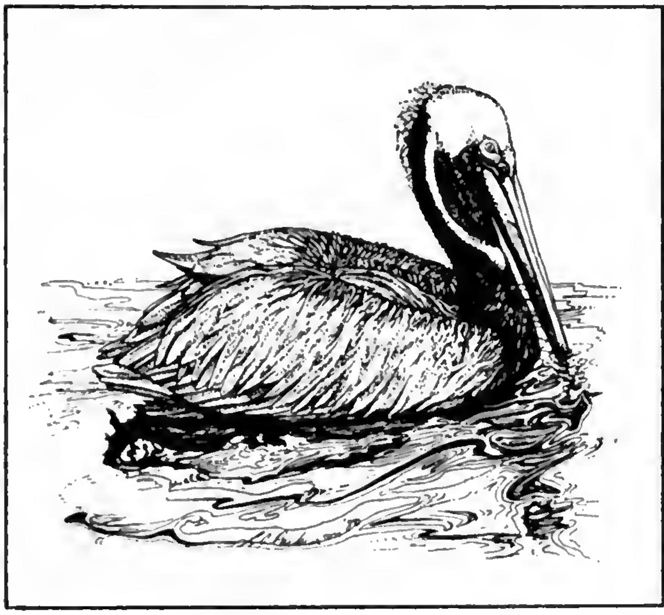
The size of historical breeding populations of Black Storm-Petrels in California is unknown, but it seems unlikely that this species has ever been common. Small numbers of breeding petrels nesting on Santa Barbara Island could easily have been overlooked by previous investigators (Hunt et. al. 1979).

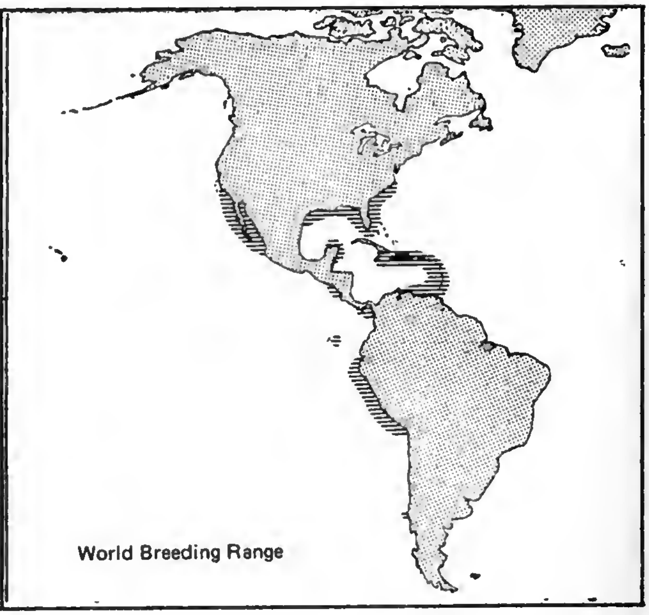
Small peripheral breeding populations such as the Channel Island colonies are extremely vulnerable to extirpation (MacArthur and Wilson 1967). The Santa Barbara and Sutil Island colonies could be destroyed by disturbance either of the breeding grounds or of offshore wintering areas, and care should be 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.

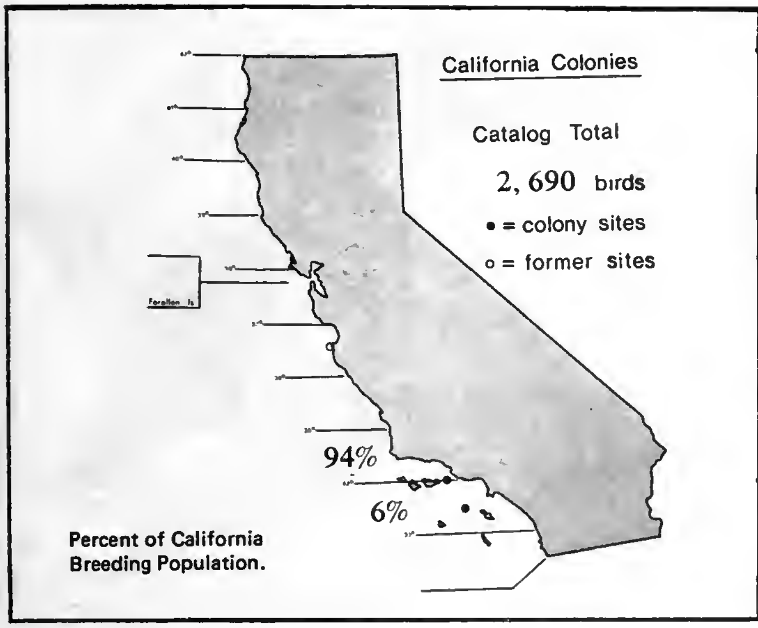
CALIFORNIA COLONIES

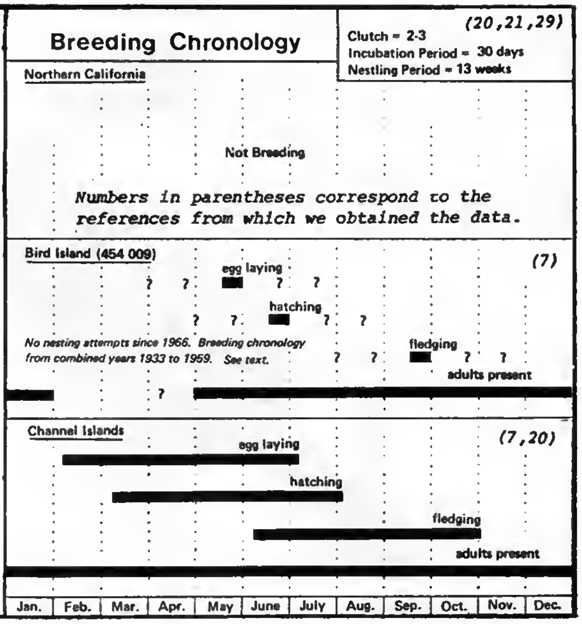
Brown Pelicans breed regularly in California only on West Anacapa Island (502 007). In recent years they have also nested intermittently on Santa Barbara Island (524 008) and Scorpion Rock (502 010).

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, Baldridge 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).

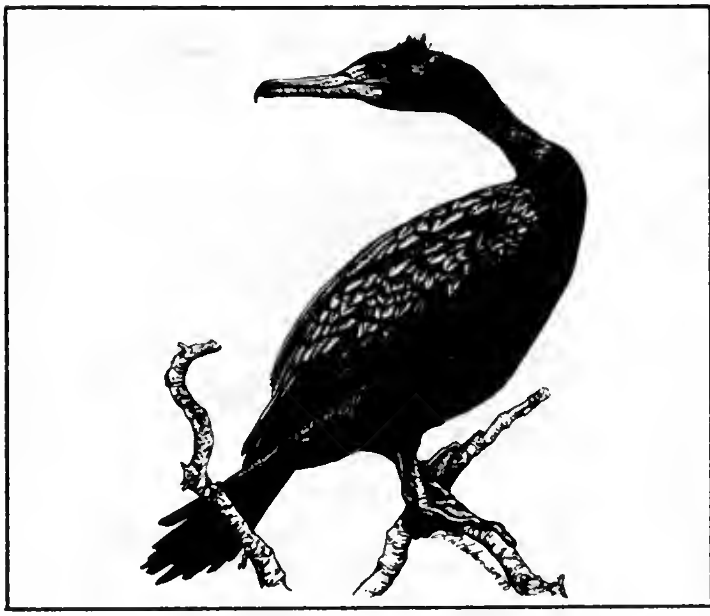
Brown Pelicans in California feed at the top of a food chain that also includes plankton and anchovies. At each higher level of this food chain, concentrations of pesticides were magnified until, in Brown Pelicans, metabolism and deposition of calcium in eggs were impaired and egg shell thicknesses were 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.

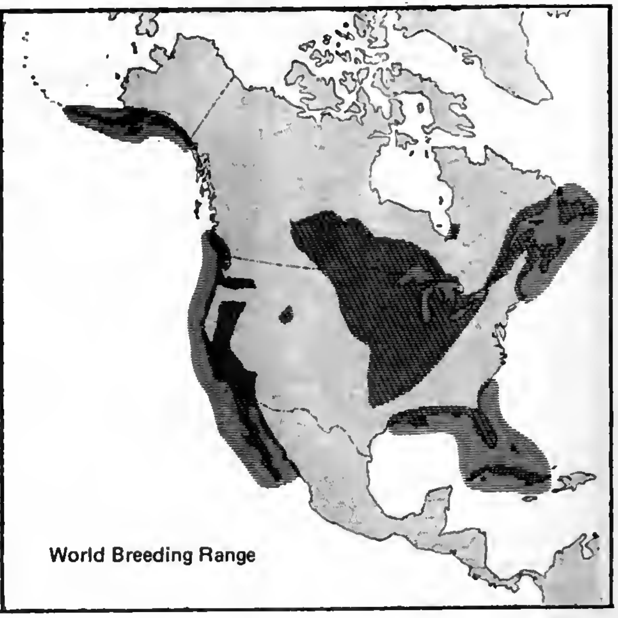
Brown Pelicans reach the northern limit of their breeding range in southern California. Historically, breeding populations of Brown Pelicans in southern California have fluctuated in response to environmental conditions. Current thought suggests that these populations increase during periods of ocean warming (Baldridge 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.

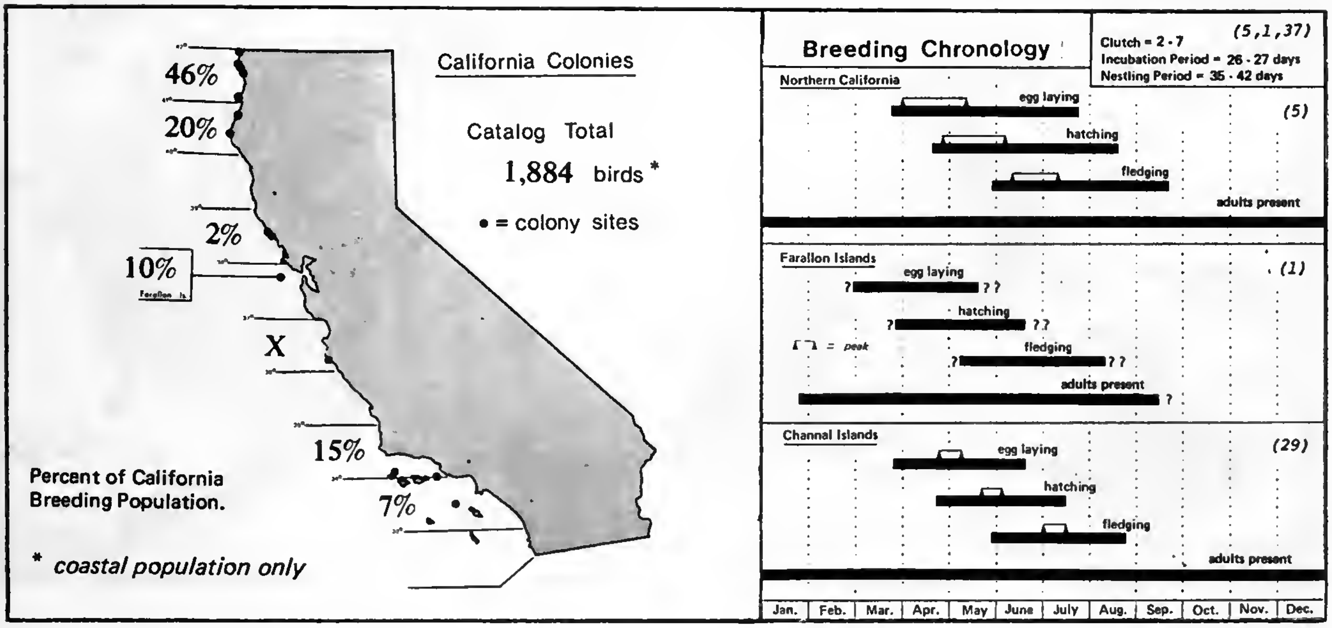
Double-crested Cormorants are sleek and strong swimmers that prey on shallow-water fish (Robertson 1974). After their fishing sessions, they are frequently seen extending their wings to dry. Cormorant feathers become completely saturated during underwater swimming and require periodic drying (Rijke 1968). 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 (429 012) 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 (429 012) 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).

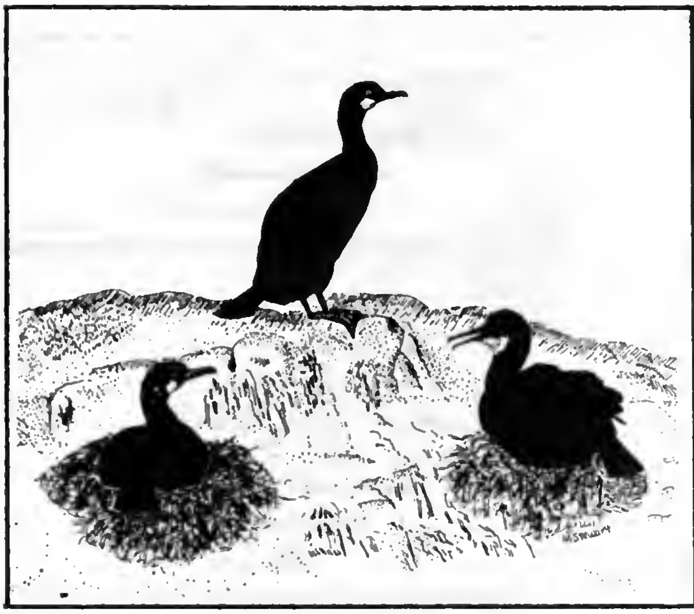
On the Farallon Islands, Double-crested Cormorants were once the second most abundant species of cormorant, numbering in the low thousands (Ainley and Lewis, 1974). This population of cormorants declined in size between the 1800's and the early 1900's as a result of disturbance by commercial egg collectors. 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).

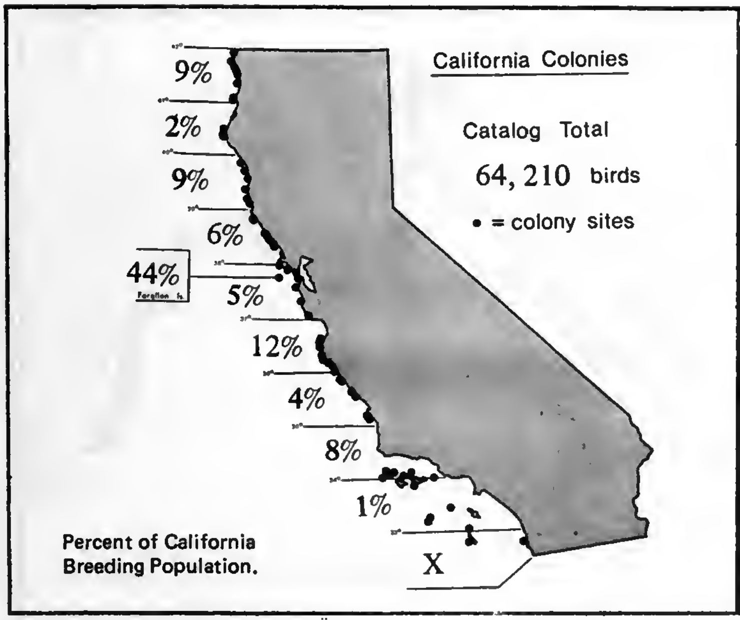
CALIFORNIA COLONIES

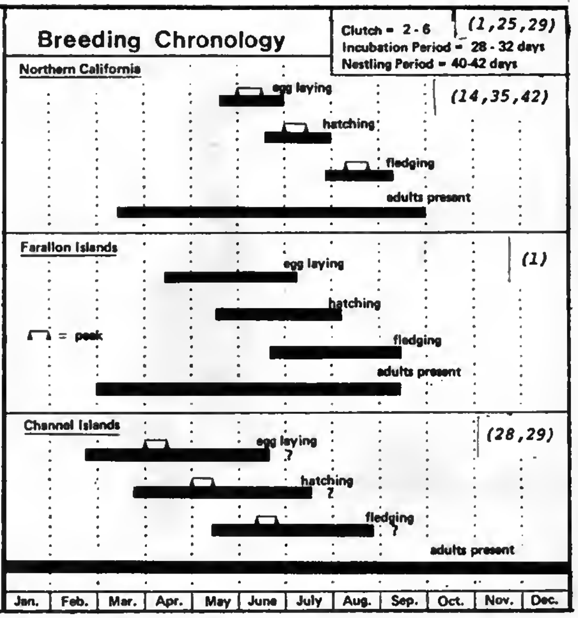
Brandt's Cormorants usually form large colonies compared to most other California nesting seabirds. The largest aggregation of Brandt's Cormorants is on the Farallon Islands (429 012), where 28,000 birds nested in 1979 (Ainley pers. comm.). At least 13 colonies contain more than 1,000 birds.

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.).

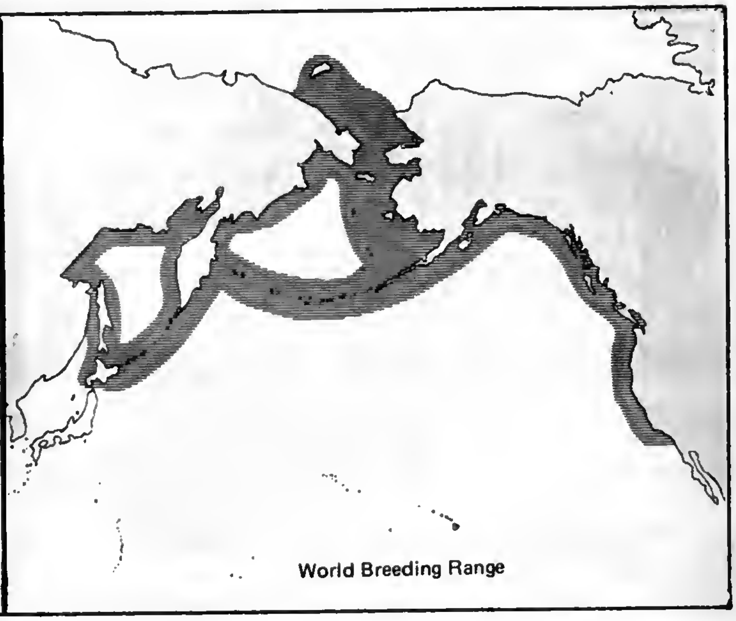
Our population estimates for colonies along the remainder of the California coast are nearly double population figures from 1969 and 1970 (Osborne and Reynolds 1971). The difference may be due, at least in part, to more accurate censusing rather than to real population changes. It may also reflect an 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 per. 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 (1911) 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.

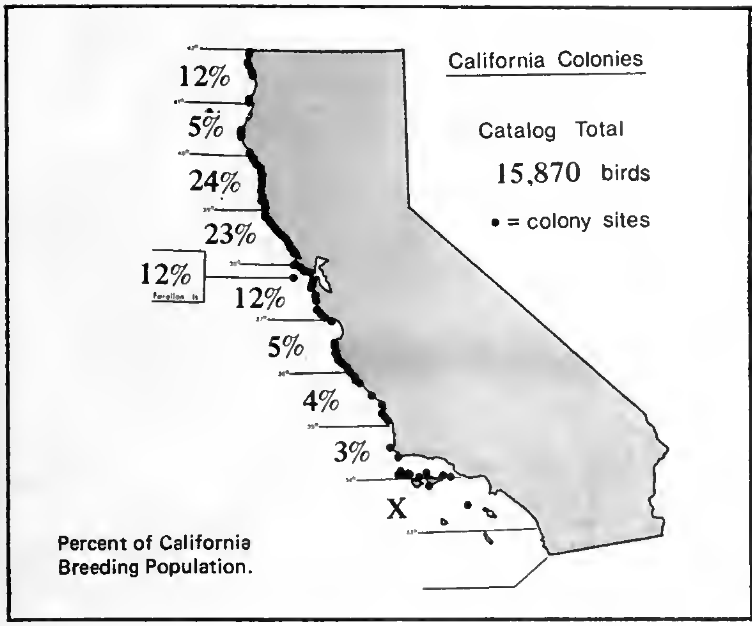
Although Pelagic Cormorants are shy birds, their nesting activities may be observed at a judicious distance. One of the best locations in the state for observing their breeding behavior is Salt Point State Park (see Appendix B).

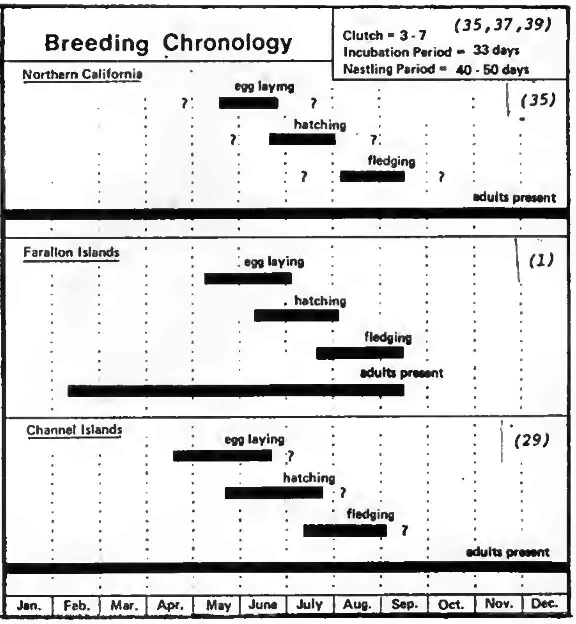
Pelagic Cormorants are often found nesting close to other cormorants. In these locations, direct competition is apparently reduced by staggered nesting chronologies and by differences in nest site selection, behavior, and in selection of food types, food sizes, and feeding locations (Benz and Garrett 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 (429 012). 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 (429 012) 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.).

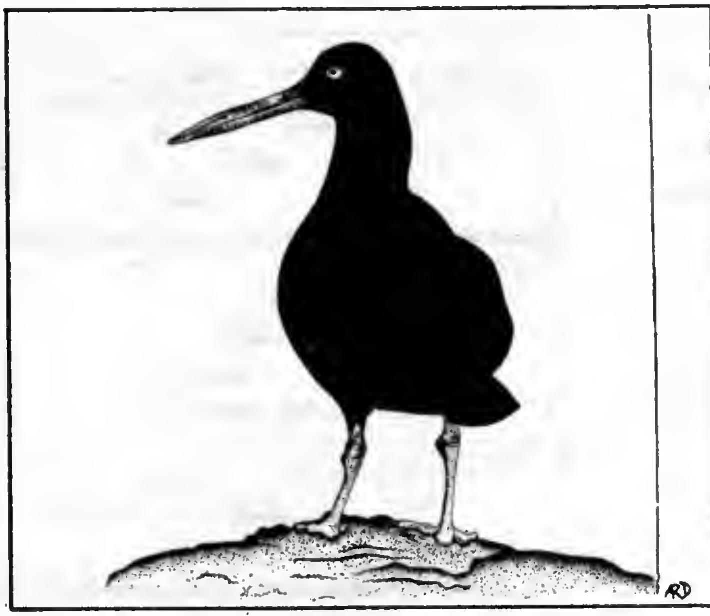
Historical population estimates for northwest California are available from Osborne and Reynolds (1971), although differences in time of survey and survey technique limit comparisons with our 1979-80 data. The tendency of Pelagic Cormorants to move nest sites in succeeding years (Benz and Garrett 1978,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

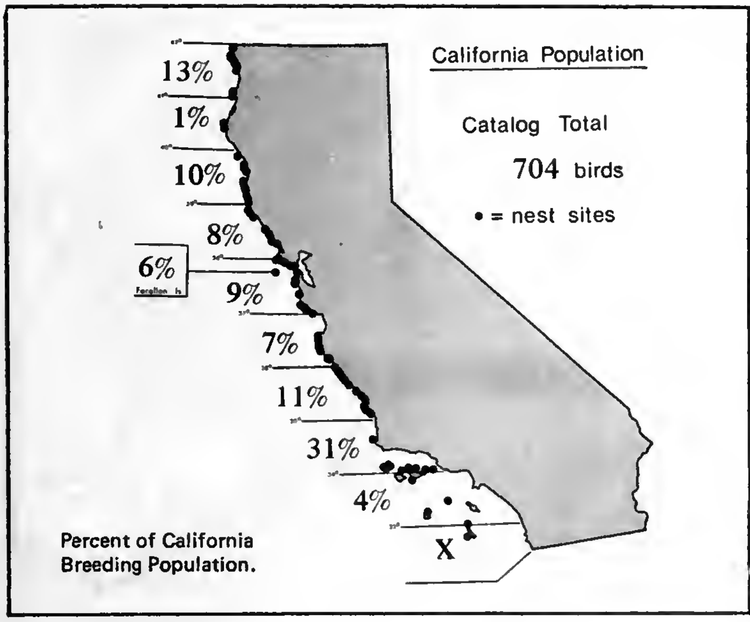
CALIFORNIA POPULATION

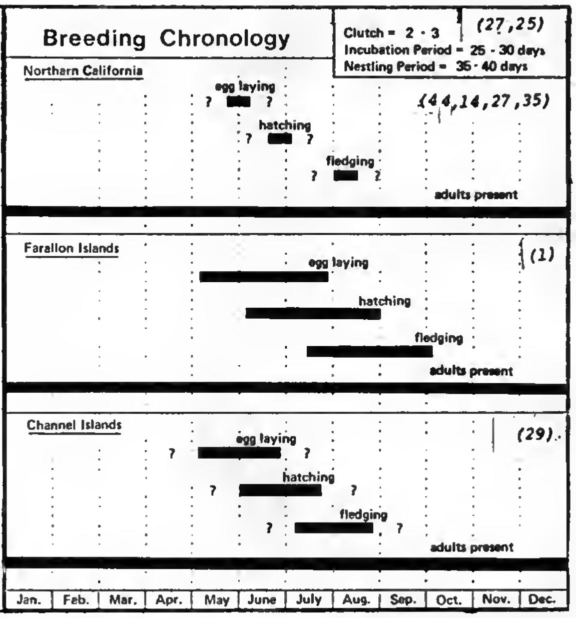
Black Oystercatchers are a non-colonial nesting species, although they are usually found on the same offshore islands and rocks as colonial nesting seabirds. They establish large nesting and feeding territories and thus distribute themselves along the available coastal habitat. Actual nests were pinpointed 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 (429 012) represent nearly half of the catalog breeding total.

HISTORICAL STATUS & VULNERABILITY

Black Oystercatchers disappeared from the



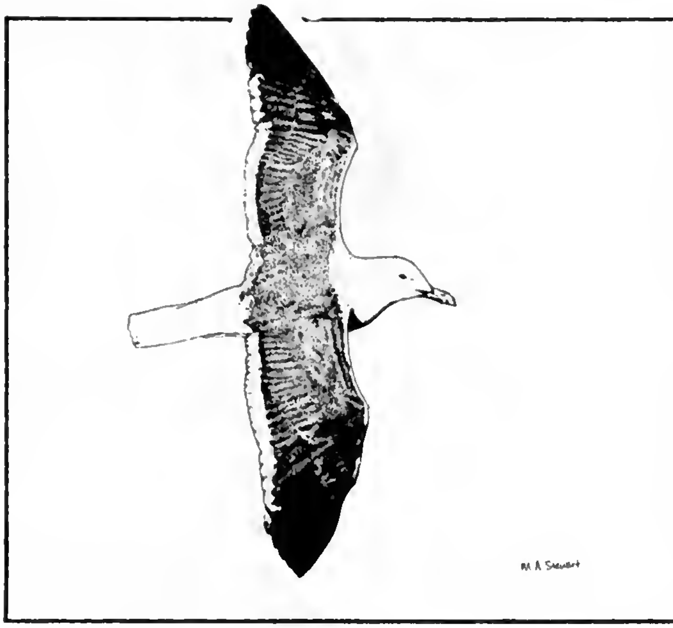


Farallon Islands in the 1860's, possibly as a result of too much human disturbance. A few birds were seen in 1903, but oystercatchers were not observed there on a regular basis until 1956. The breeding population of Black Oystercatchers on the Farallon Islands increased to 16 by 1959 and to 40 in 1972 (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.

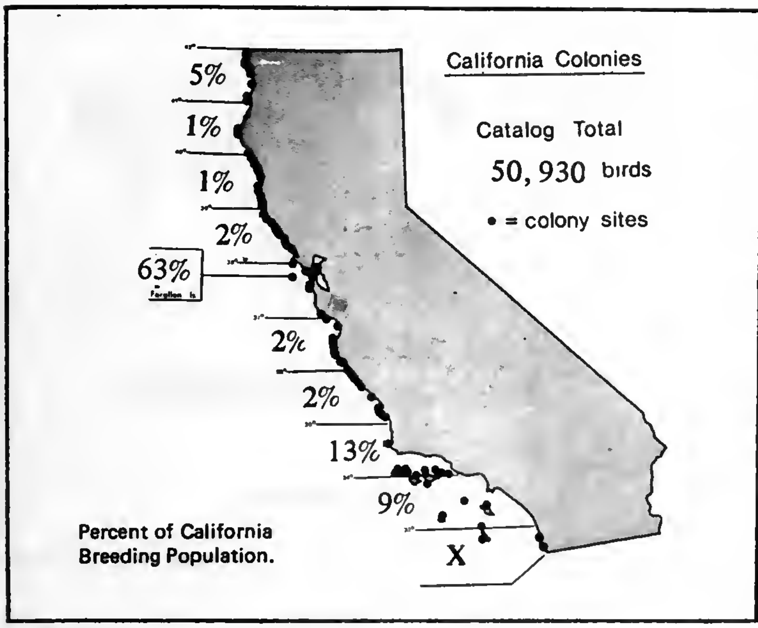
CALIFORNIA COLONIES

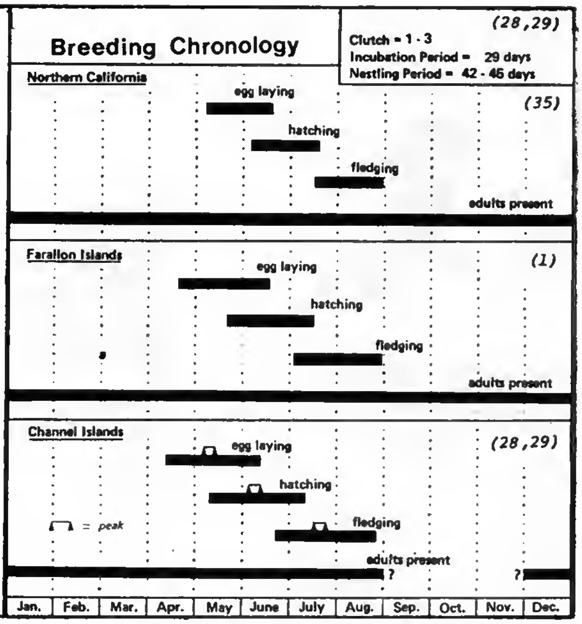
Although Western Gulls breed widely along the California coast, most of the breeding population is concentrated at a few sites. The 32,000 gulls of the Farallon Islands (429 012) make up more than 60 percent of the entire breeding population in California. Other large colonies in California are at Middle 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).





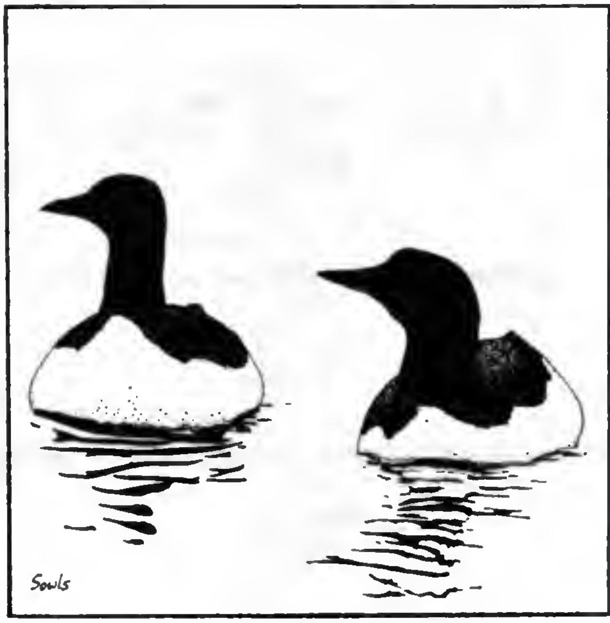
Populations of Western Gulls in California have probably also increased in size during the last two decades, but documentation is difficult to obtain, since historical data for much of the California coast are lacking. Osborne and Reynolds (1971) censused many of the large Western Gull colonies in central 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.

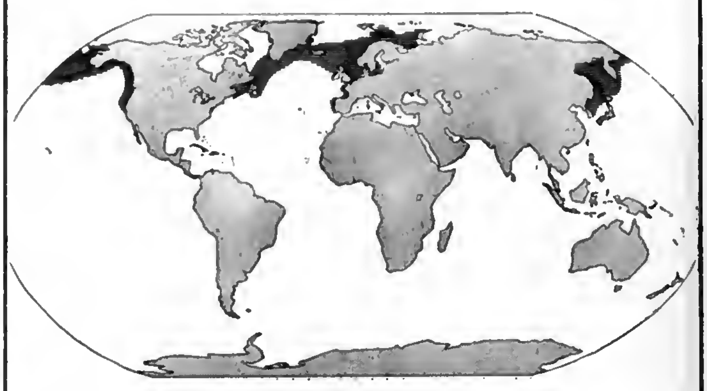
Other evidence suggesting that numbers have increased comes from the Farallon Islands and Prince Island (501 004). The number of Western Gulls on the Farallon Islands plummeted in the mid-late 1800's primarily because of egg collecting and disturbance from domestic animals (Ainley and Lewis 1974). The 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 *(Uria aalge)*





World Breeding Range

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

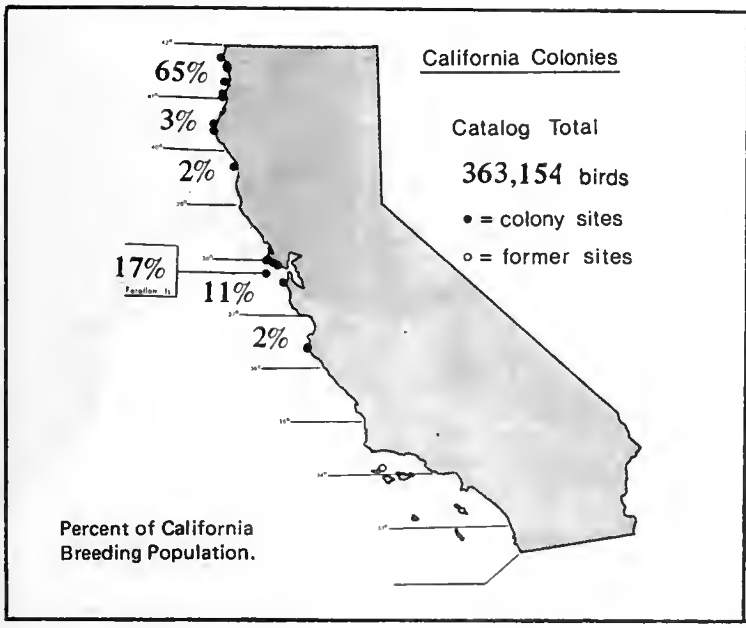
In California, Common Murres breed from Castle Rock (325 006) in the northern part of the state south to Hurricane Point Rocks (454 011) at the north end of the Big Sur coast. They are known to breed at 19 sites in California and a few non-breeders have been seen on three additional islands. These three islands, Kibesillah Rock (379 004), White Rock (379 010), and Gualala Point Island (404 004), all appear to have suitable nesting habitat and should be watched for future nesting.

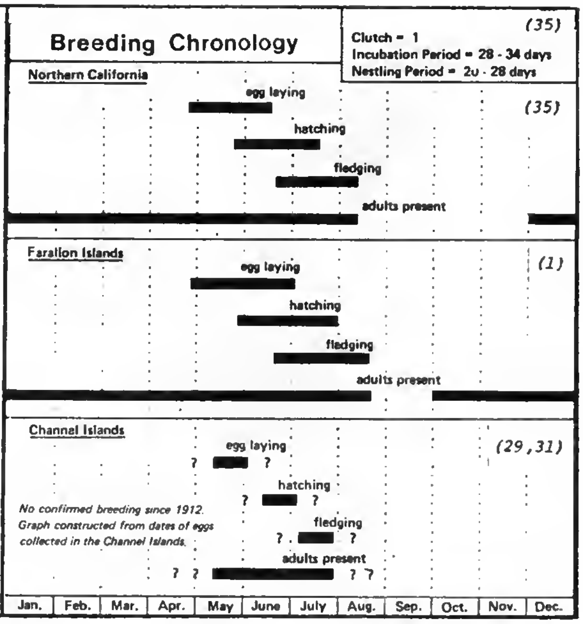
Colonies of Common Murres, although easy to find, are difficult to census. Variables such as time of year, time of day, and the unknown breeding status of many individuals complicate an already difficult task (see Materials and Methods). The estimates of murre numbers presented here and in the tables 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 (1971) 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.

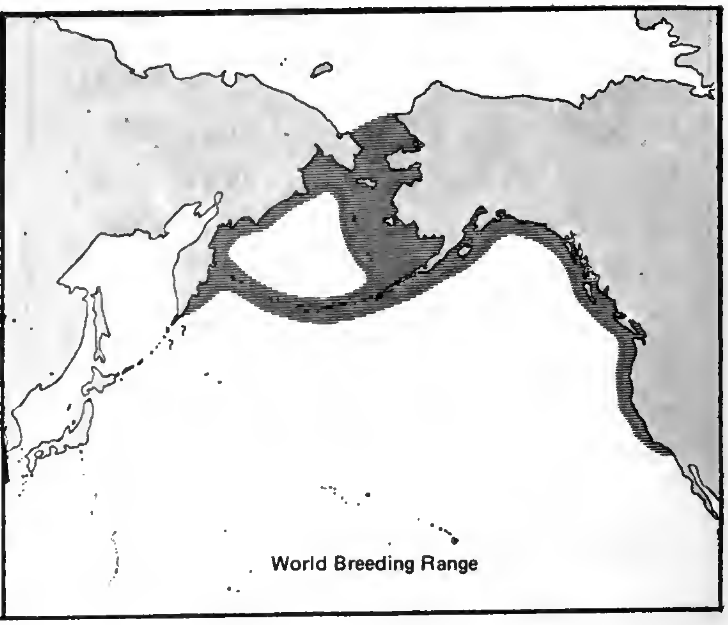
Apparently murre numbers have been increasing throughout much of this century. Osborne (1972) found that the population of Common Murres in the region from Cape Mendocino to the Oregon border has increased from a few thousand birds in the 1910's to about 143,000 birds in 1970. The history of Common Murre 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 (501 004) 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).

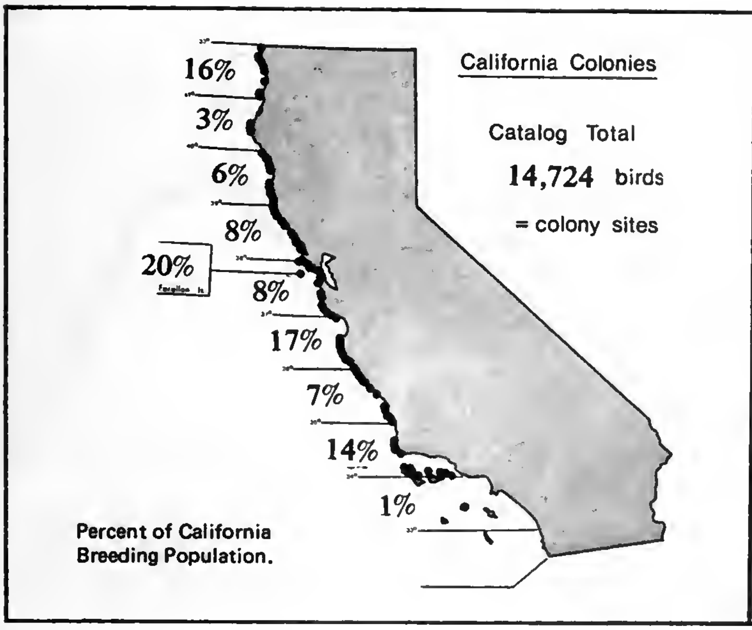
Following breeding, Pigeon Guillemots largely disappear from the California coastline and do not reappear until just before the next year's breeding season. Their wintering range is presently unknown but we suspect that a northward movement of birds takes place.

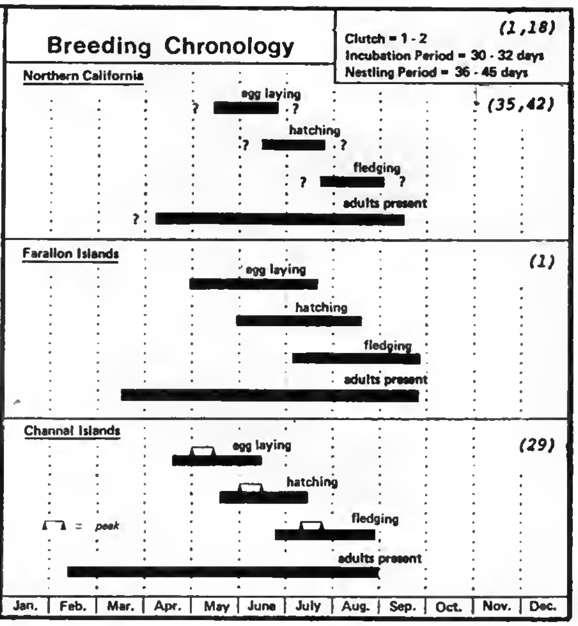
CALIFORNIA COLONIES

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.).

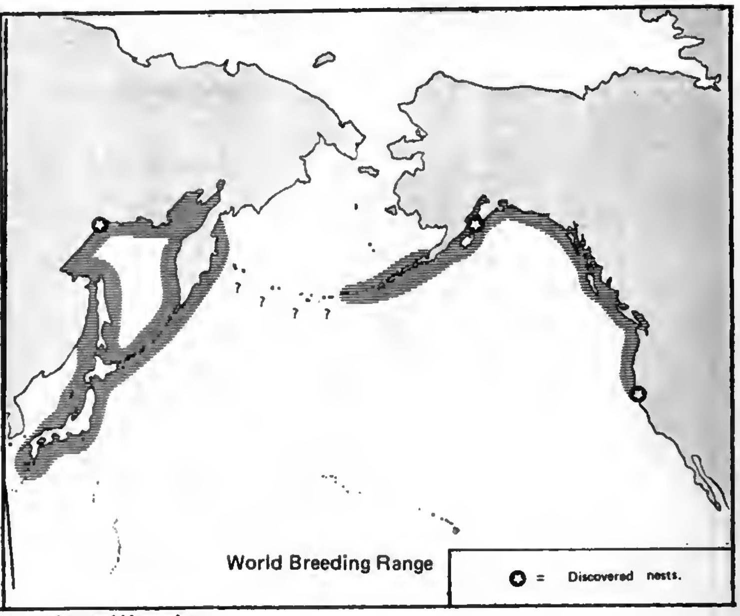
Elsewhere along the California coast it may appear from the data that Pigeon Guillemot numbers have increased dramatically. However, we do not feel there is sufficient information to make this judgement. Previous investigators largely overlooked Pigeon Guillemots since they often nest in low densities 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)*



Drawing by Allan Brooks, compliments of 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.

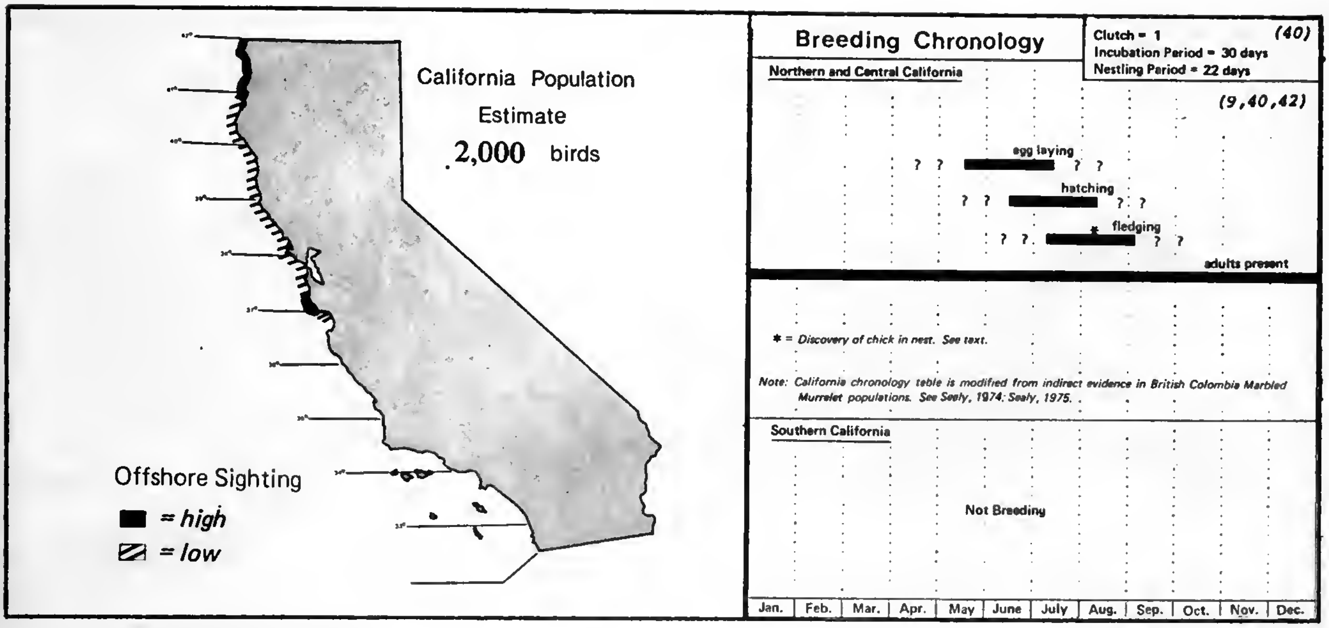
Binford et al. (1975) theorize that the pale green egg, the cinnamon brown breeding plumage of the adult, and the light brown nestling are cryptic adaptations for nesting in trees. The entire breeding population of Marbled Murrelets in California is suspected to nest in trees.

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 (Sealy 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).

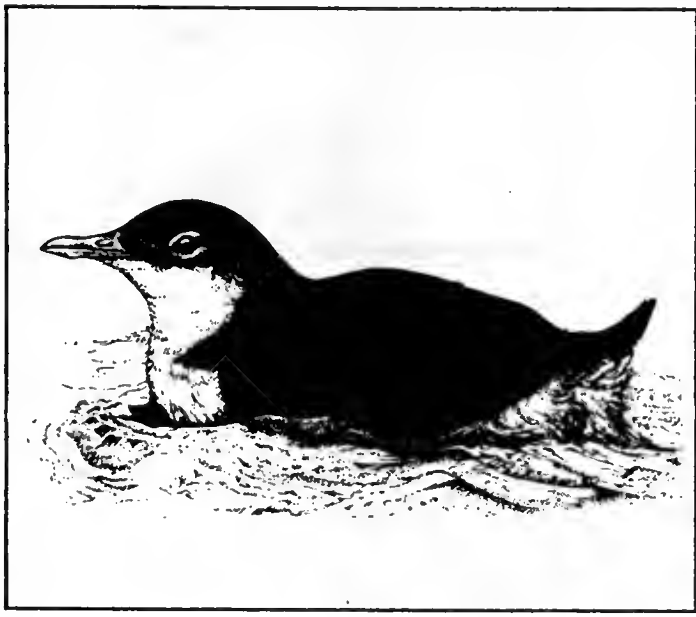
It is difficult to estimate the breeding population of Marbled Murrelets in California, but we speculate that it is about 2,000 birds. This estimate may be conservative since this small alcid's breeding habits are poorly known. It is difficult to see them at sea in other than perfect conditions, and 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.

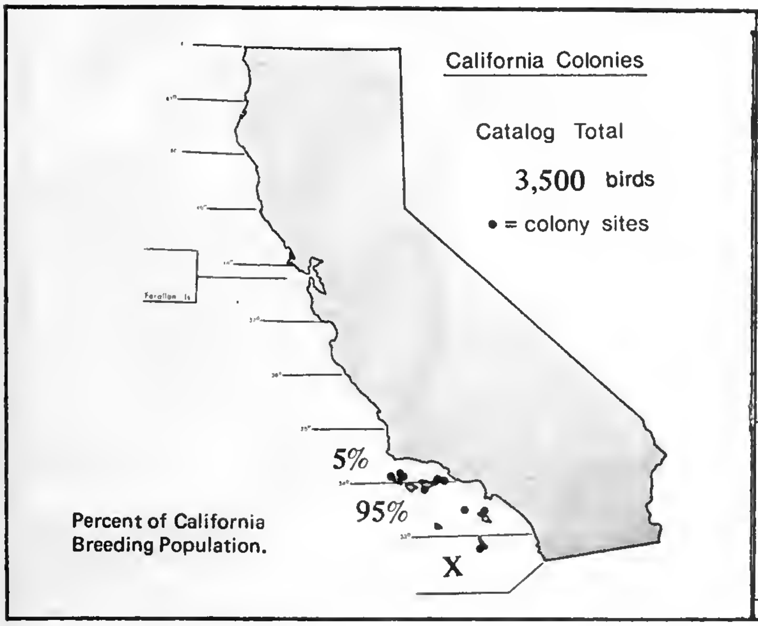
Xantus' Murrelets nest primarily in rock crevices along or near cliff ledges, but also under bushes, in ground vegetation, in abandoned rabbit burrows, under old pelican nests, and in man-made debris (Hunt et al. 1979). These murrelets, unlike most alcids, usually lay two eggs annually. Eggs are incubated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

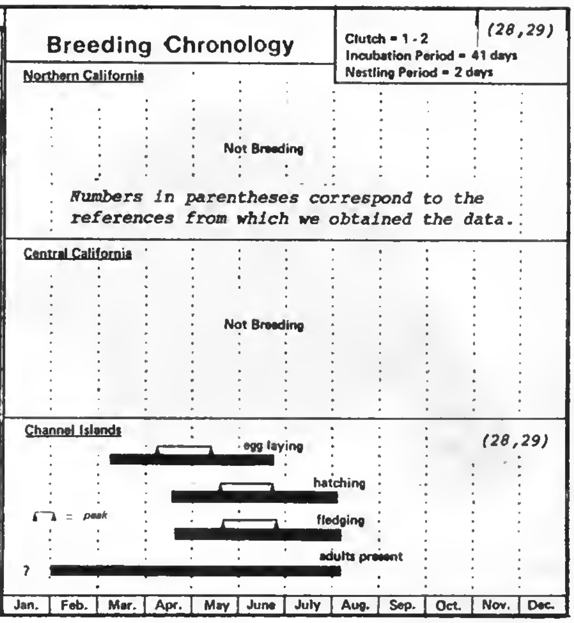
During the breeding season, Xantus' Murrelets spend daylight hours either in the nest or foraging at sea. Other colony activites, such as nest-site selection, incubation shift changes, and fledging, occur at night (Hunt et al. 1979). Xantus' Murrelet chicks are highly precocial and fledge at about two 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 (502 010) 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).

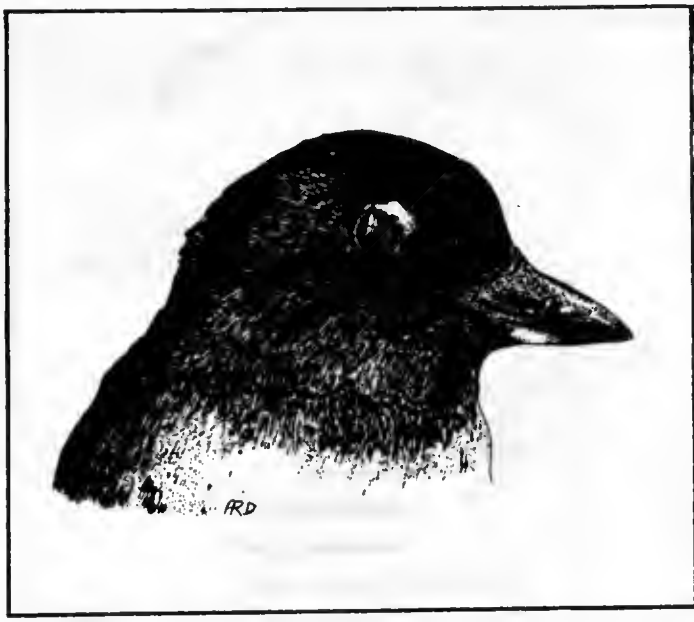
An insular subspecies of Deer Mouse resides on each of the eight large Channel Islands (Nelson and Goldman 1931). They are known to prey on eggs and possibly chicks of the Xantus' Murrelet, but their presence is not a deterrent to successful reproduction (Hunt et al. 1979, Winnet et al. 1979).

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).

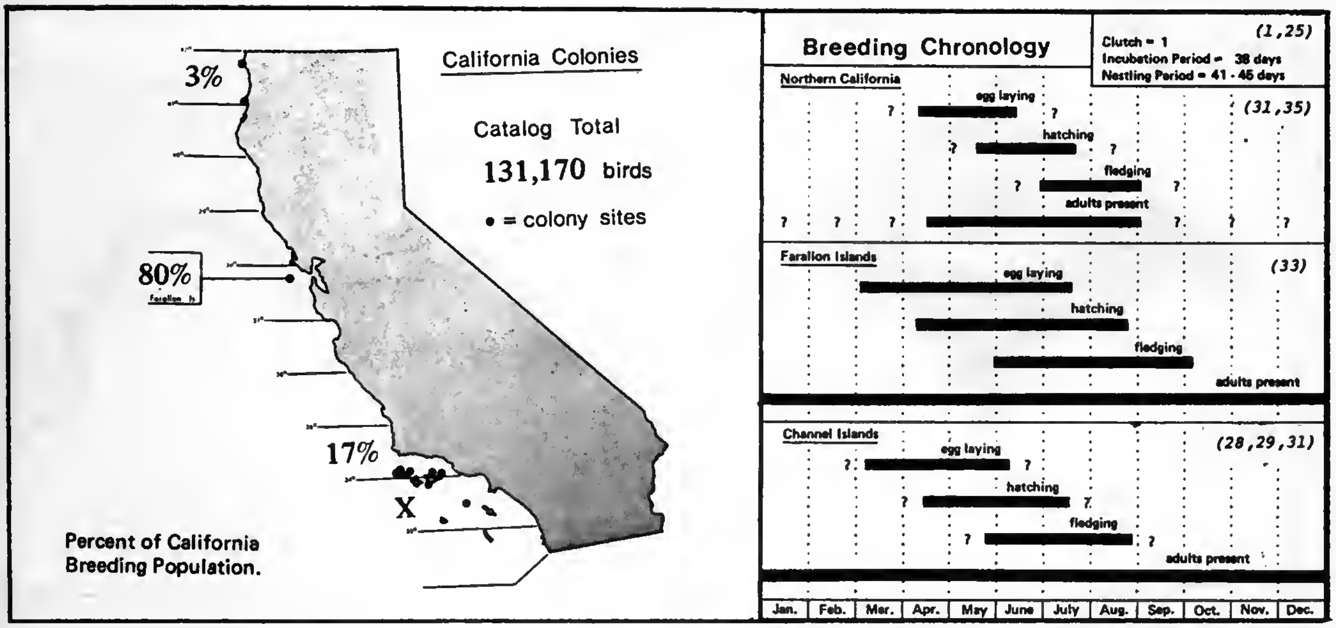
CALIFORNIA COLONIES

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-1800'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.



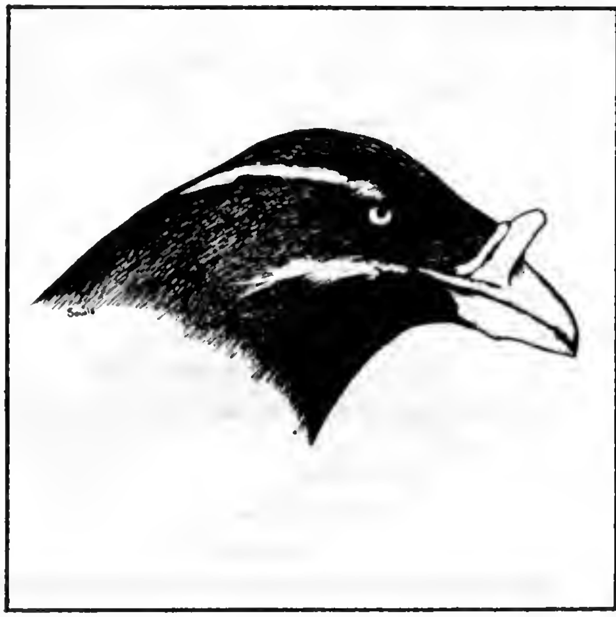
Osborne (1972) estimated that numbers of Cassin's Auklets on Castle Rock increased from 100 seen in 1959 by Thoresen (1964) to 3,600 in 1970. Cassin's Auklets formerly bred on Flatiron Rock (325 023) as late as 1934 (Clay unpubl. field notes). Osborne (1972) believes that soil erosion was the principal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

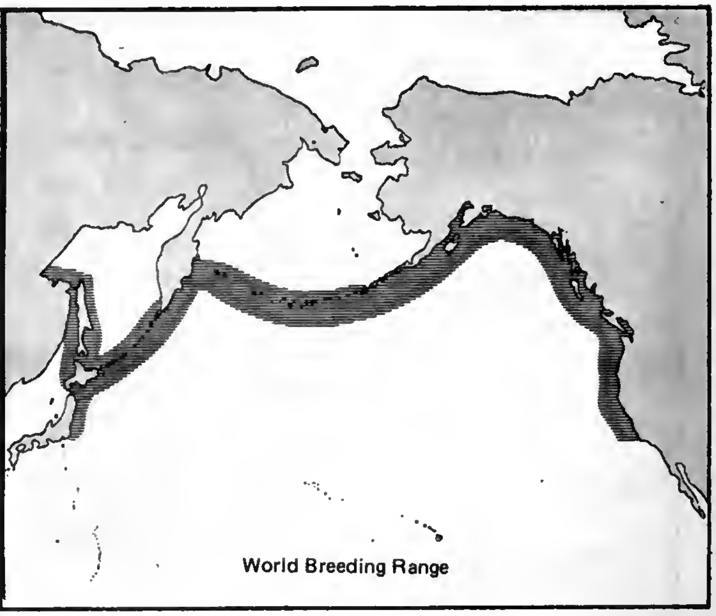
Western Gulls prey heavily on Cassin's Auklets at Castle Rock and the Farallon Islands (Thoresen 1964). Young are pulled by gulls from shallow burrows and adults are killed at night when they unfortunately land at the feet of roosting gulls (Thoresen 1964).

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 unforested 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 (501 010) indicates that this species may also nest in rocky mainland habitats.

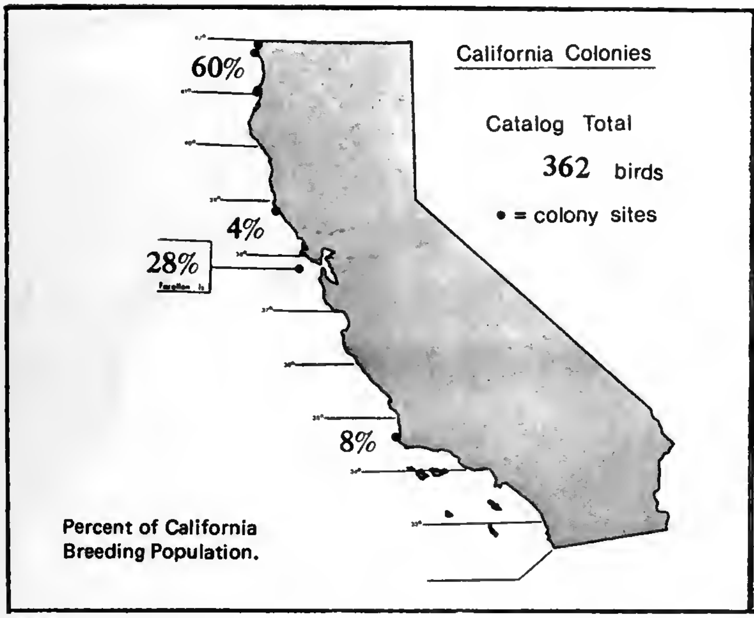
Rhinoceros Auklets almost always enter and leave colonies at night when feeding chicks. This predominantly nocturnal behavior may have evolved as a means to reduce kleptoparasitism by gulls. In California and Oregon, Rhinoceros Auklets can often be observed on or near colonies during the day, but farther 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.

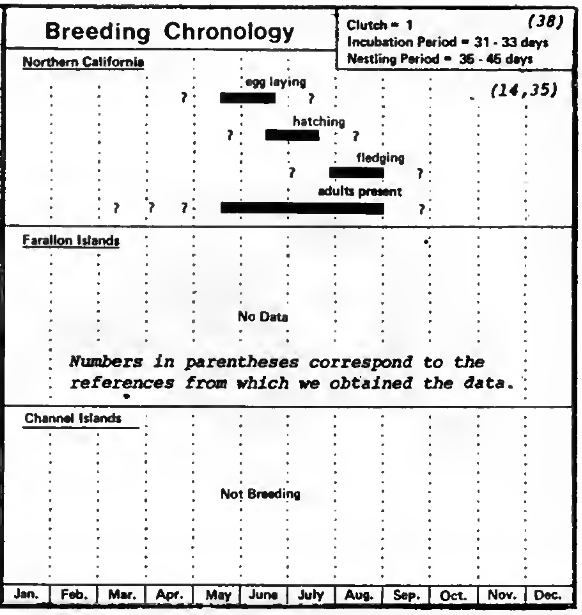
CALIFORNIA COLONIES

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.).

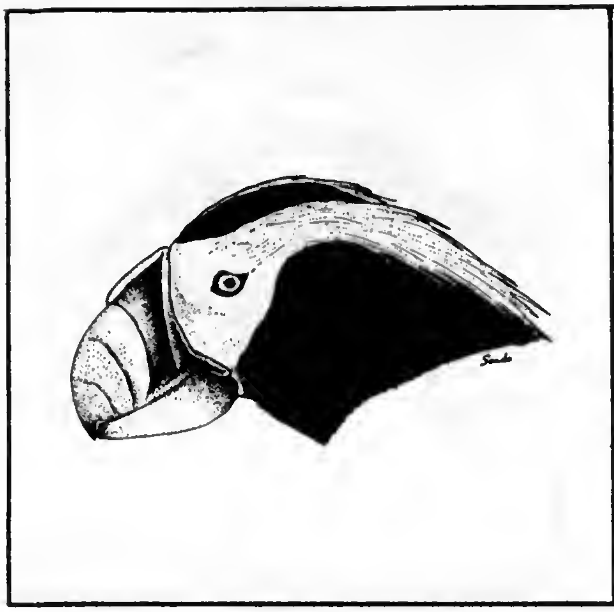
Before 1979, Rhinoceros Auklets were known to nest only as far south as the Farallon Islands. Although our observations at Point Arguello do not constitute a breeding record we are confident that they are breeding there or will do so in the near future. This would represent a range extension of some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

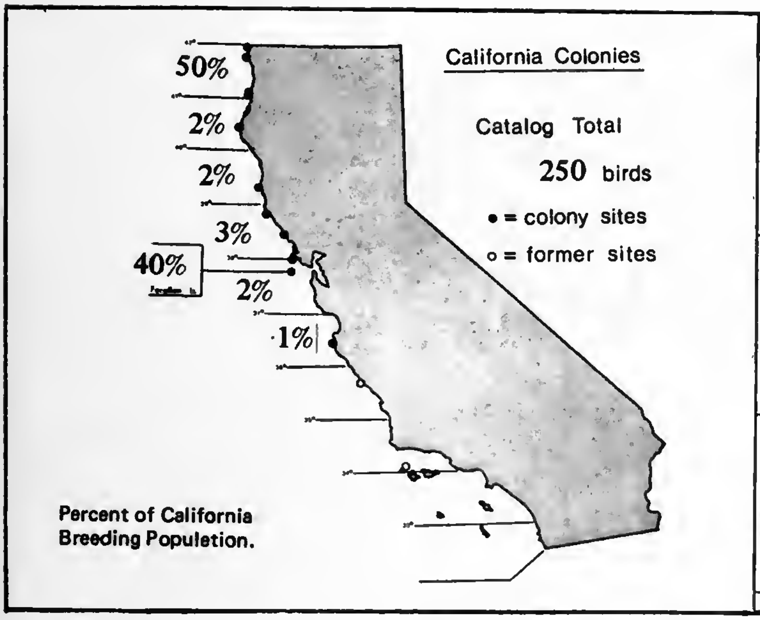
Tufted Puffins usually nest in earth burrows at the edges of cliffs or on the grassy slopes of islands. Tufted Puffins in California also use burrows or small caves found in loose sandstone or unconsolidated conglomerate rock. In California, extensive areas of ideal nesting habitat exist on only a few 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.

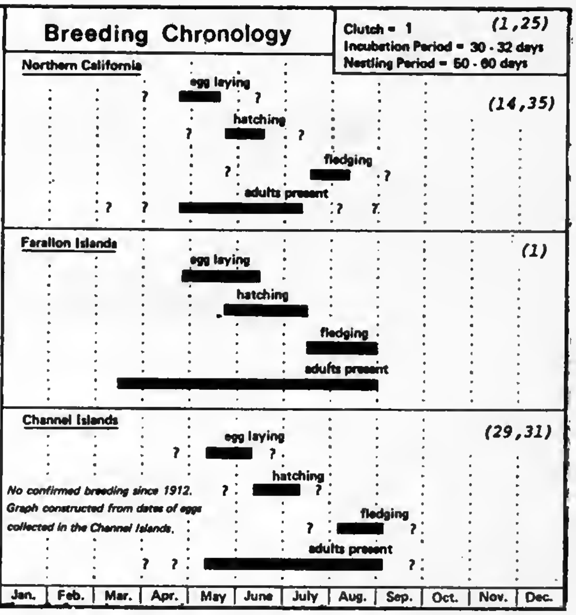
Tufted Puffins can sometimes be observed carrying fish in their bills to their chicks at colonies. Preferred foods include small fish, cephalopods, and crustaceans (Hatch et al. 1979). Although Tufted Puffins are diurnal, fledglings apparently leave their burrows and go to sea only under cover of darkness. In fall, adult puffins lose their brightly colored bill sheathes. 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 (429 012). 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 Califonia 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 1910), 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.

Catalog of California Seabird Colonies

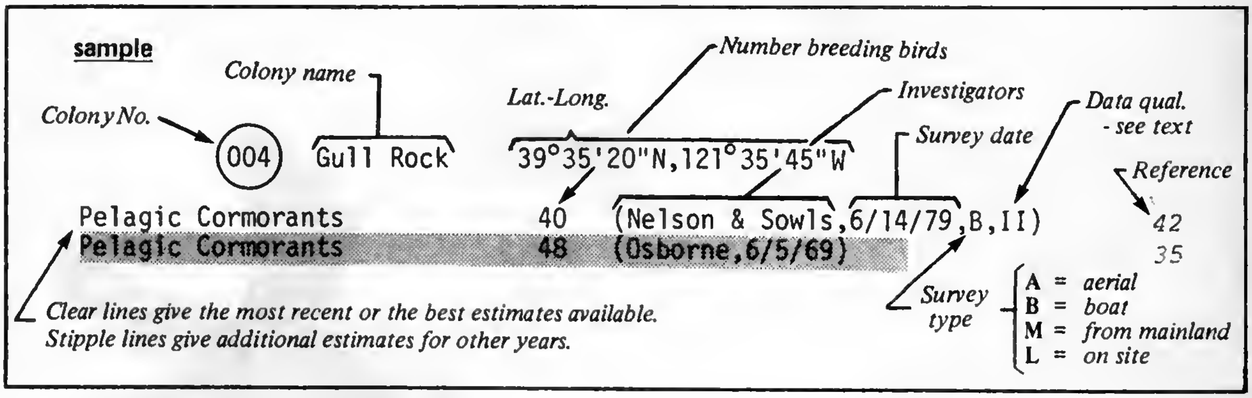
MAPS & TABLES:

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.

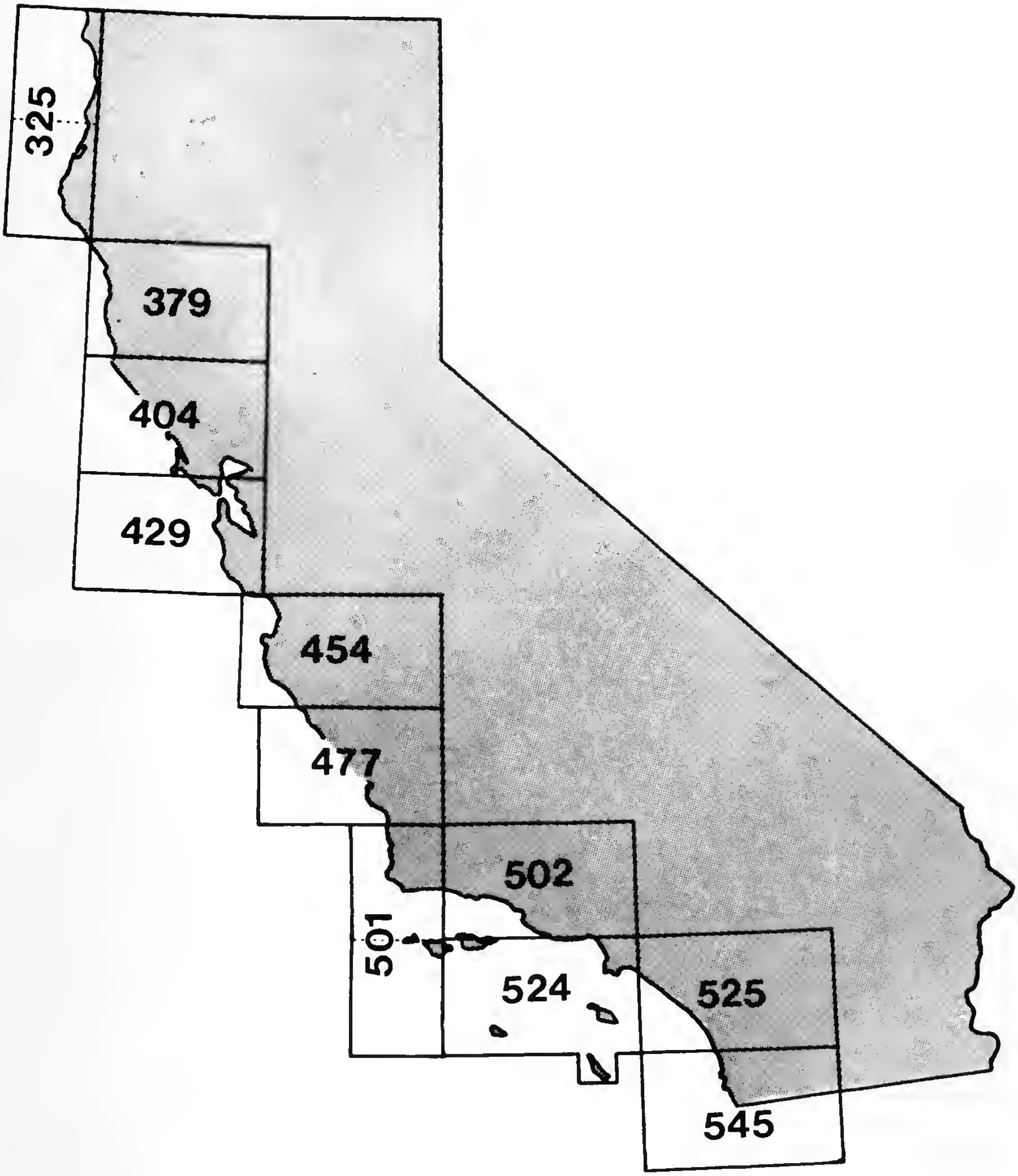
Once you have determined which of these eleven maps covers your area of interest, turn to that section. Heading each section is a map of that area showing the locations of all colonies within that area. The numbers that appear here (001, 002, 003, and so on) are the colony identifiers, each specific 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 similiar 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.

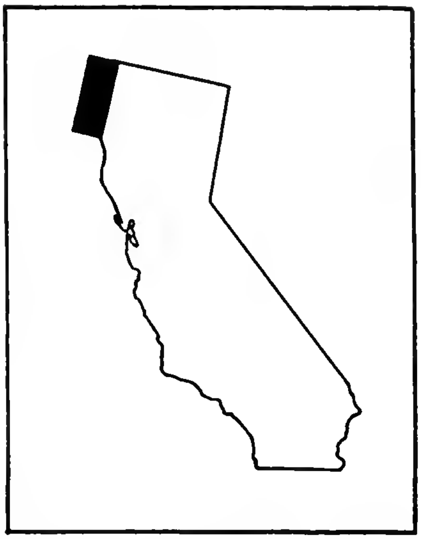


MAP INDEX:



Dots keyed to map sections.

25
379
404
429
454
477
501
502
524
525
545



325

Eureka

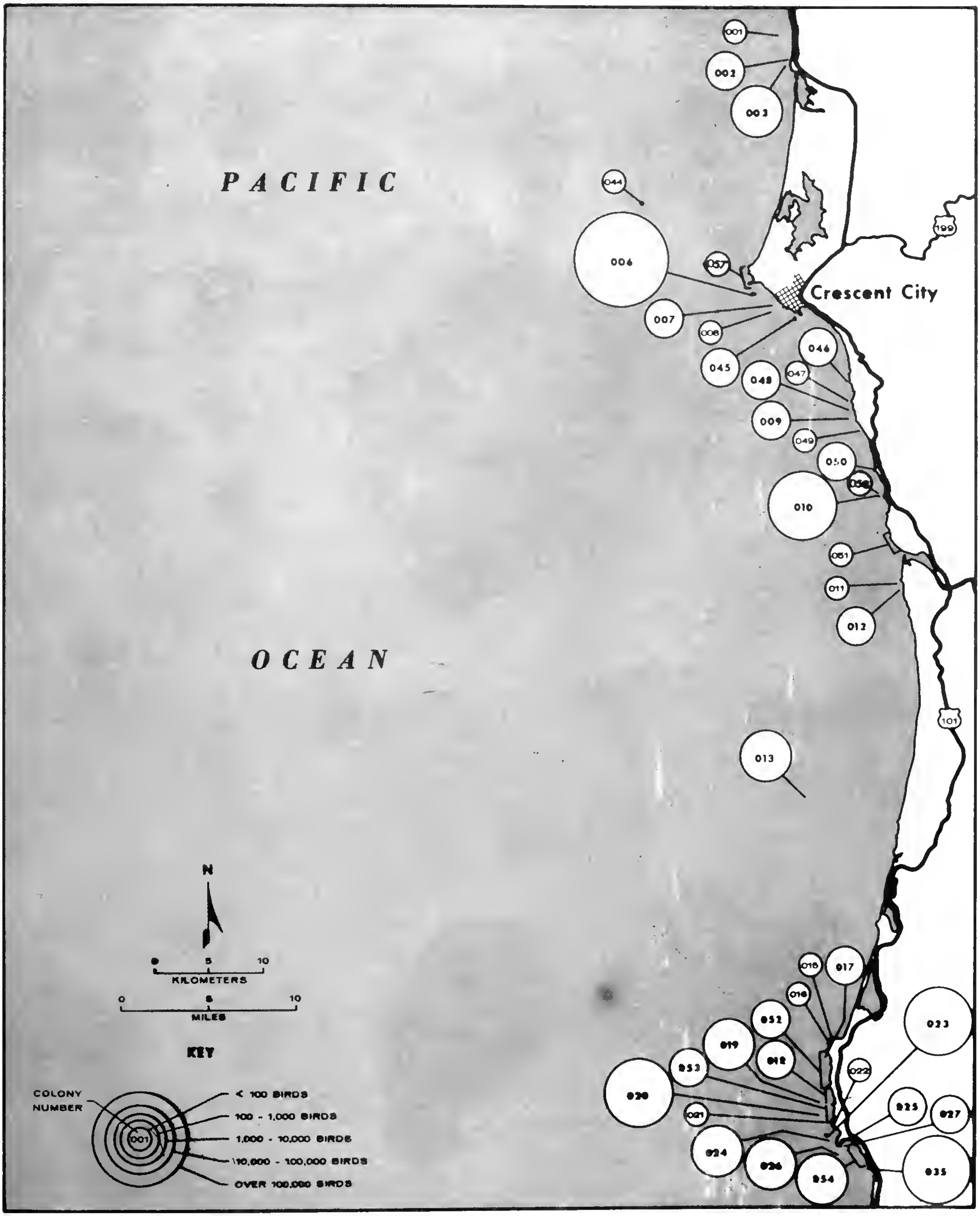
The maps on the facing page and following page are indexes to the locations of colonies within map 325, Eureka. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by 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.

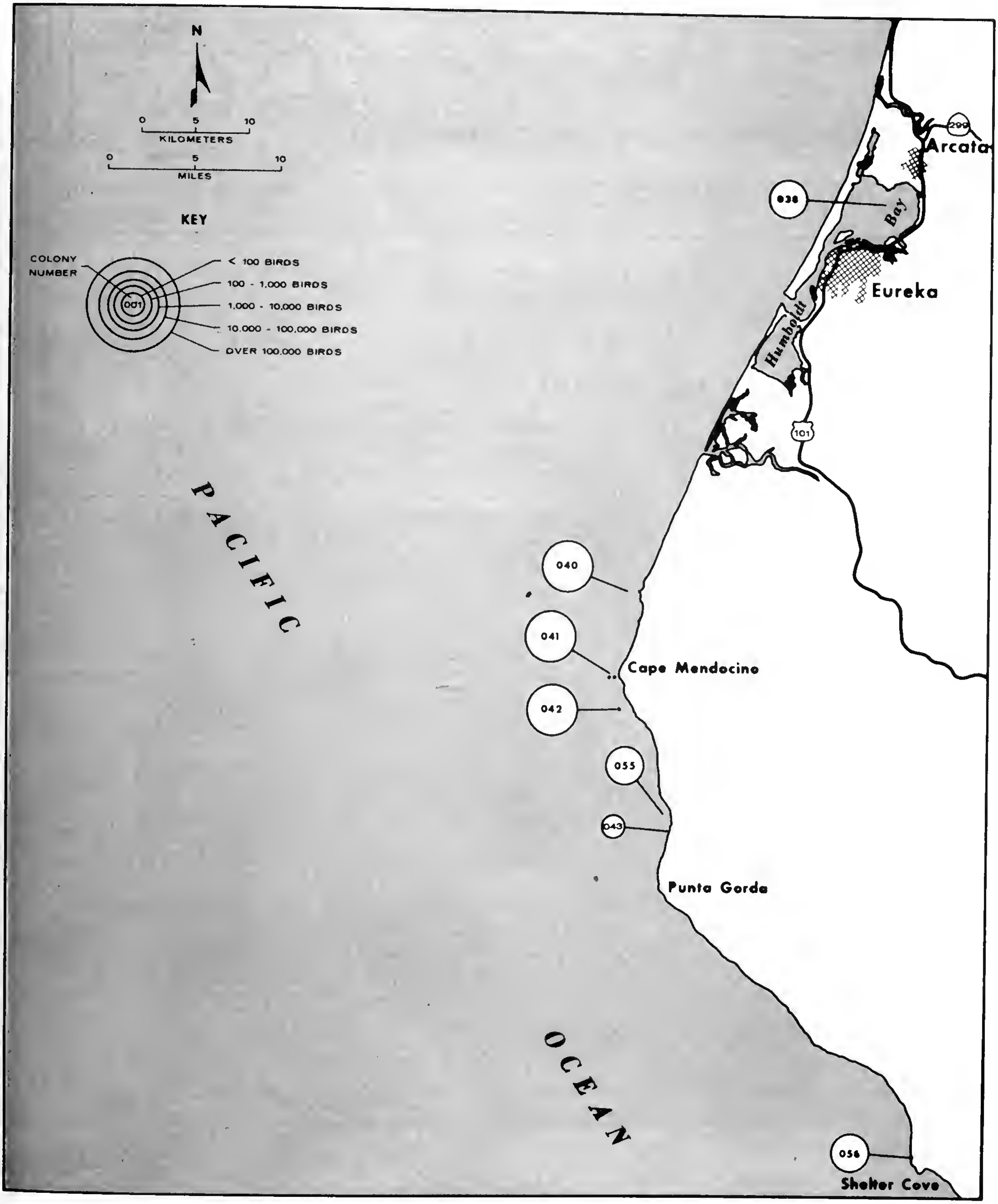
Fork-tailed Storm-Petrel	350
Leach's Storm-Petrel	17,000
Brandt's Cormorant	7,000
Double-crested Cormorant	1,000*
Pelagic Cormorant	3,000
Black Oystercatcher	100
Western Gull	3,500
Common Murre	250,000
Pigeon Guillemot	2,500
Marbled Murrelet	no estimate
Cassin's Auklet	3,600
Rhinoceros Auklet	250
Tufted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

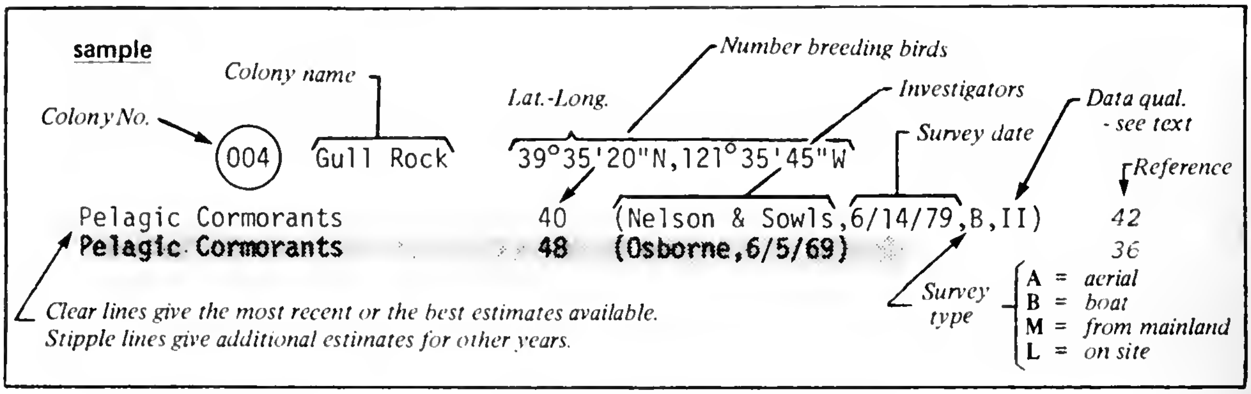
* *coastal population only.*

325 (North) Eureka



325 (South) Eureka



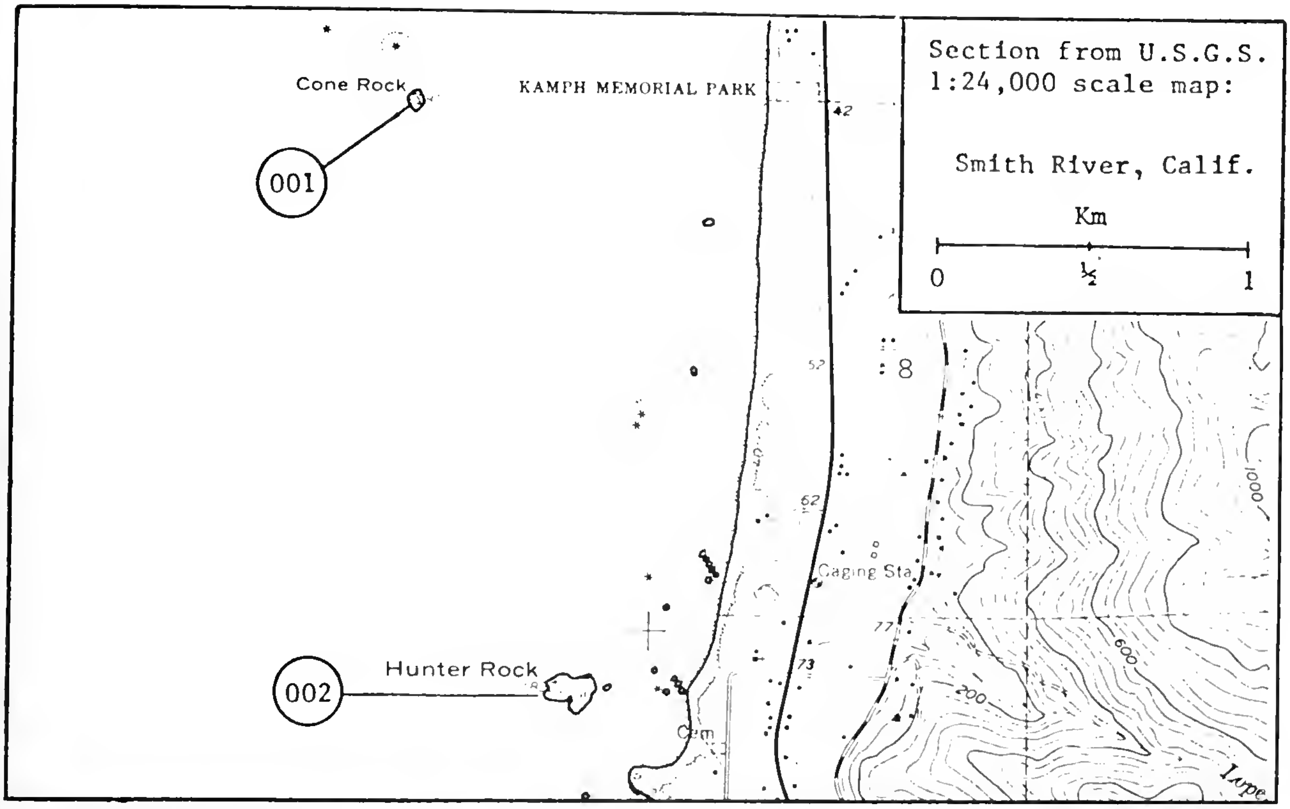


(001) Cone Rock 41°58'21"N, 124°13'02"W

Pelagic Cormorant	0	(DeGange, Lester & Sowls,7/2/80,B,I)	42
Western Gull	10	(DeGange, Lester & Sowls,7/2/80,B,III)	42
Pigeon Guillemot	8	(DeGange, Lester & Sowls,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 & Sowls,7/2/80,B,II)	42
Black Oystercatcher	2	(DeGange, Lester & Sowls,7/2/80,B,III)	42
Western Gull	38	(DeGange, Lester & Sowls,7/2/80,B,III)	42
Pigeon Guillemot	120	(DeGange, Lester & Sowls,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 Art Sowls

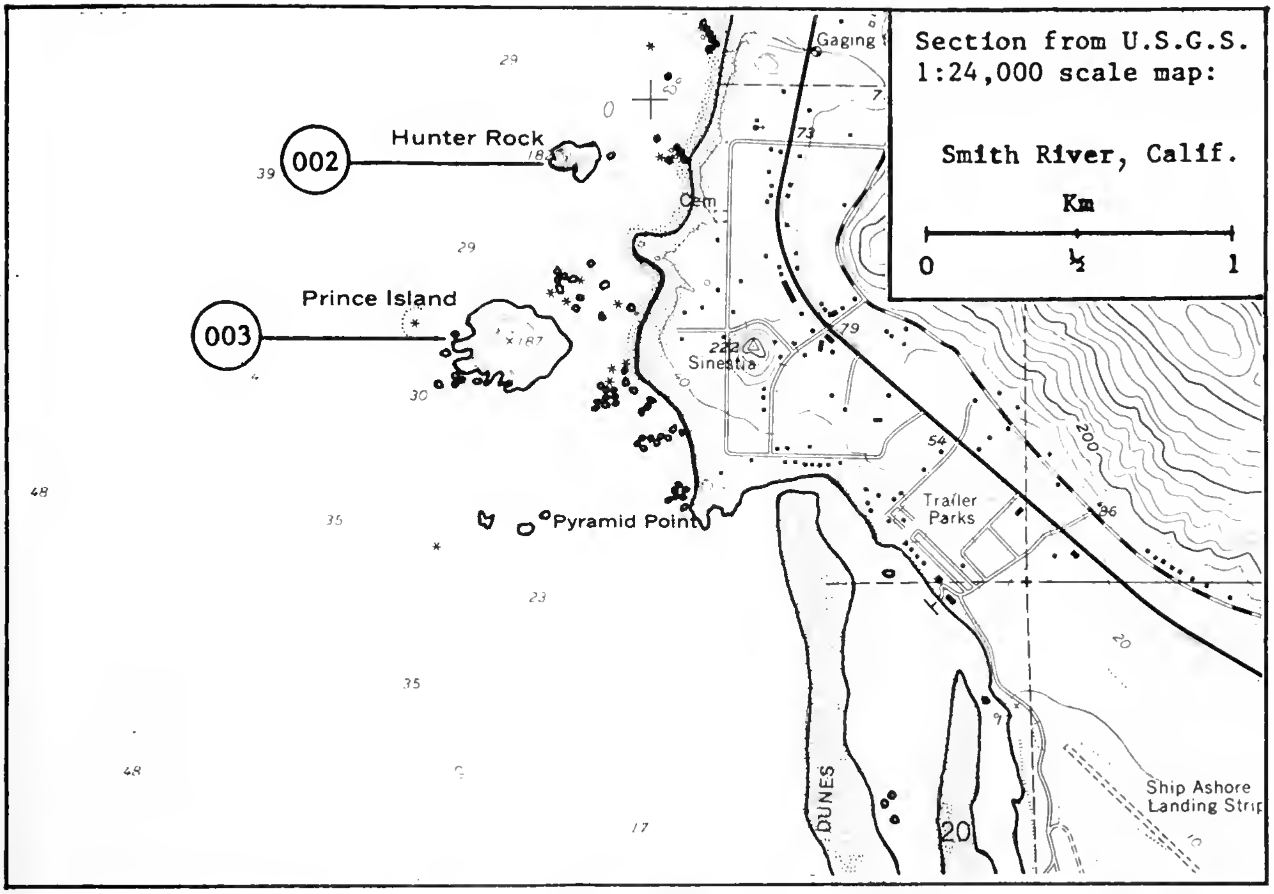
003 Prince Island 41°57'04"N, 124°12'41"W

Leach's Storm-Petrel	P	(DeGange, Lester & Sowls,7/3/80,L)	42
Brandt's Cormorant	0	(DeGange, Lester & Sowls,7/2/80,BL,II)	42
Double-crested Cormorant	450	(DeGange, Lester & Sowls,7/2/80,BL,II)	42
Pelagic Cormorant	146	(DeGange, Lester & Sowls,7/2/80,B,II)	42
Black Oystercatcher	6	(DeGange, Lester & Sowls,5/21/80,L,III)	42
Western Gull	420	(DeGange, Lester & Sowls,5/21/80,L,II)	42
Pigeon Guillemot	450	(DeGange, Lester & Sowls,5/21/80,L,III)	42
Rhinoceros Auklet	12	(DeGange, Lester & Sowls,7/3/80,L,III)	42
Tufted Puffin	8	(DeGange, Lester & Sowls,7/3/80,L,III)	42
Total	1,492		
Brandt's Cormorant	0	(Osborne,1969)	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,6/3/9,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

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.

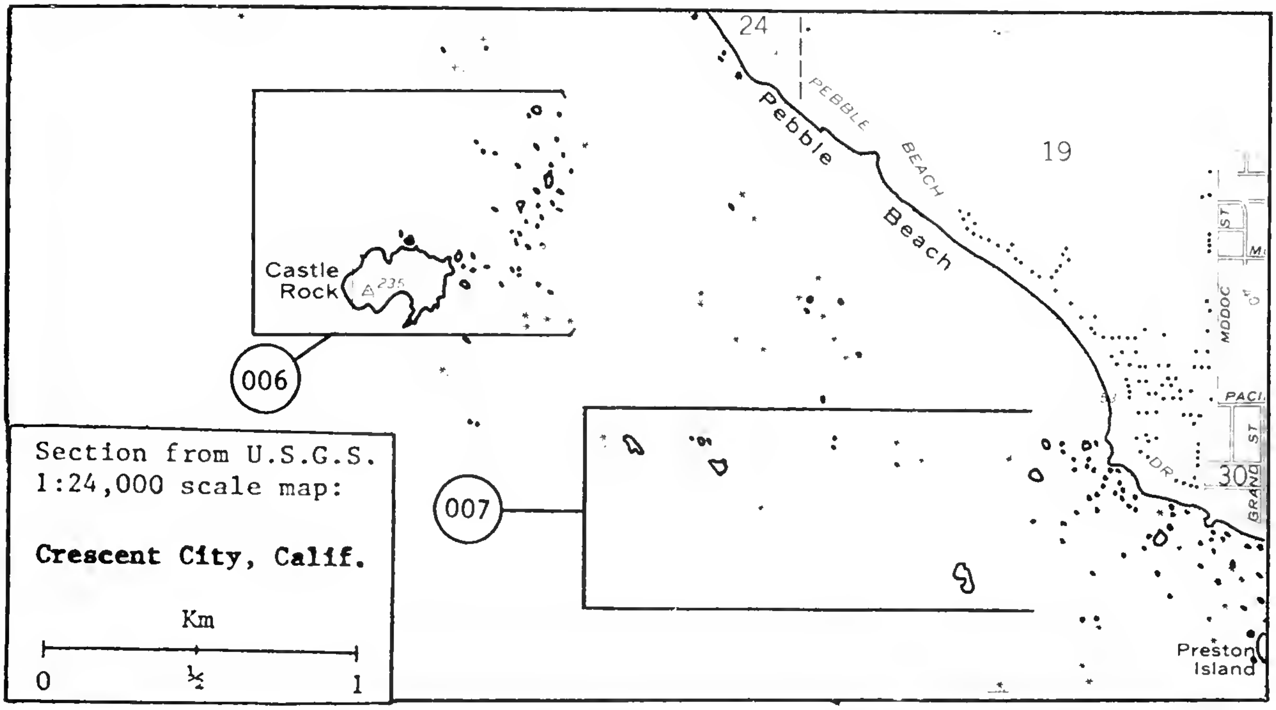
Until 1979, Castle Rock was privately owned and in the 1920's sheep grazed its slopes. Speculators have contemplated guano mining, rock quarrying, and construction of a tourist attraction on the island. Fortunately, in 1979, the Nature Conservancy purchased Castle Rock and it will soon be protected as 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	1,350	(Lester & Rodstrom,7/12/79,A,&7/19/79,A,III)	42
Common Murre	126,000 [1]	(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
Total	139,596		
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

[1] 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
Total	316		
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

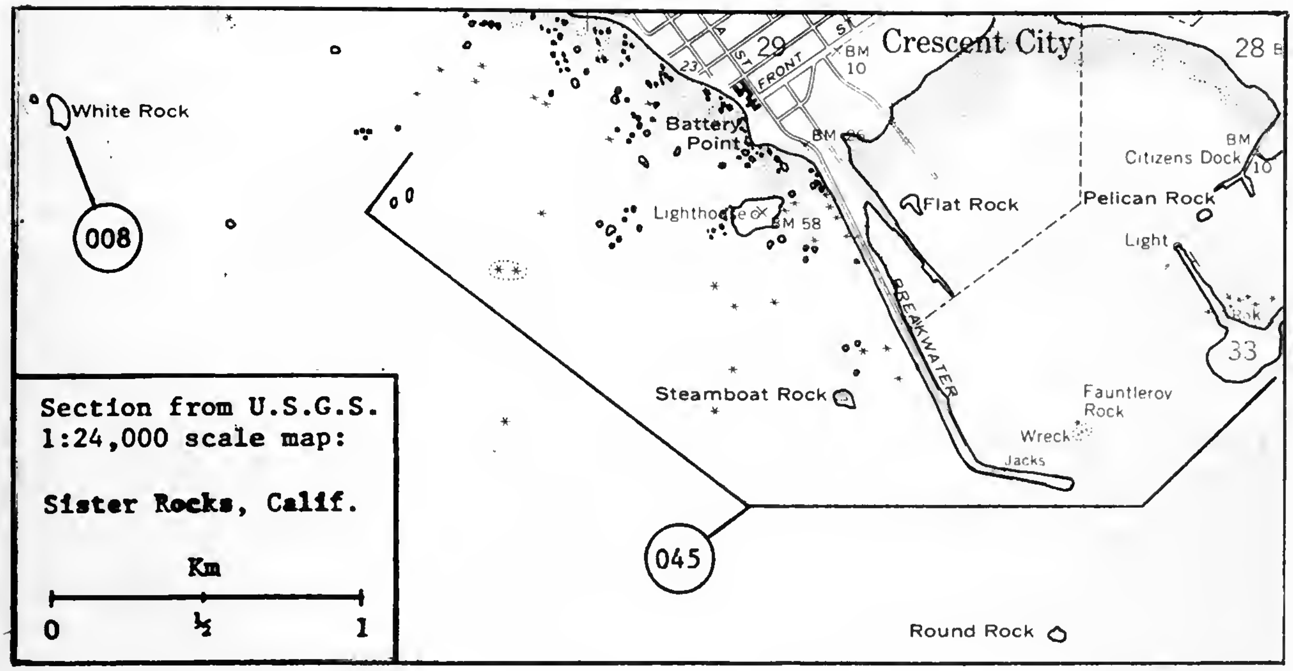
Photo by Gary Lester

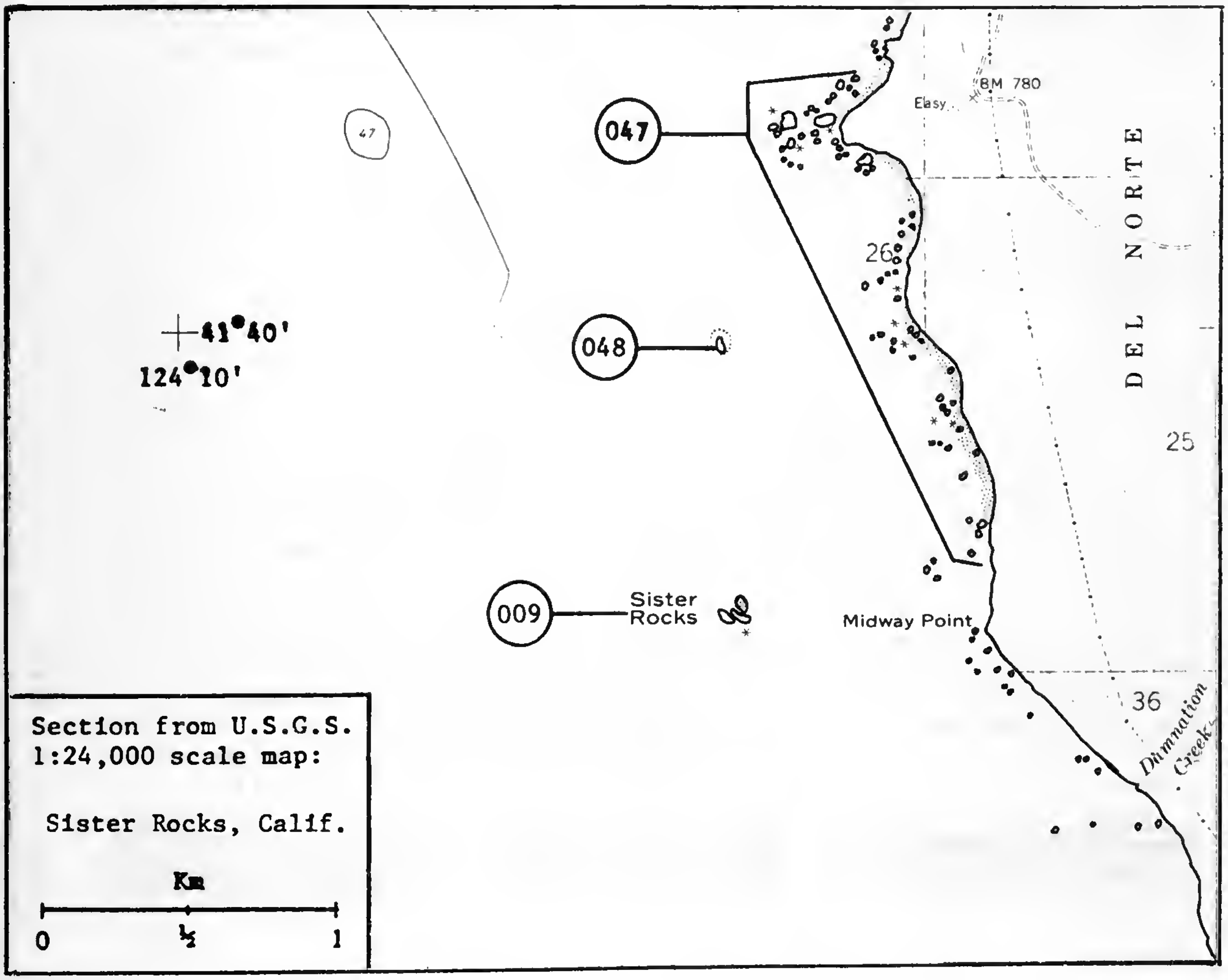
(008) White Rock 41°44'46"N, 124°13'44"W

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	86		
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	196		
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


White Rock
008
Battery Point
Lighthouse
BM 58
Crescent City
29
FRONT
BM 10
Flat Rock
Citizens Dock
BM
10
Pelican Rock
Light
28
33
BREAKWATER
Steamboat Rock
Fauntleroy Rock
Wreck
Jacks
045
Round Rock
Section from U.S.G.S.
1:24,000 scale map:
Sister Rocks, Calif.
Km
0
½
1


47
047
Easy
BM 780
DEL NORTE
26
41°40'
124°10'
048
25
009
Sister Rocks
Midway Point
36
Damnation Creek
Section from U.S.G.S.
1:24,000 scale map:
Sister Rocks, Calif.
Km
0
½
1

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[1]	(Lester,6/19&7/12/79,A,III)	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

[1] 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.

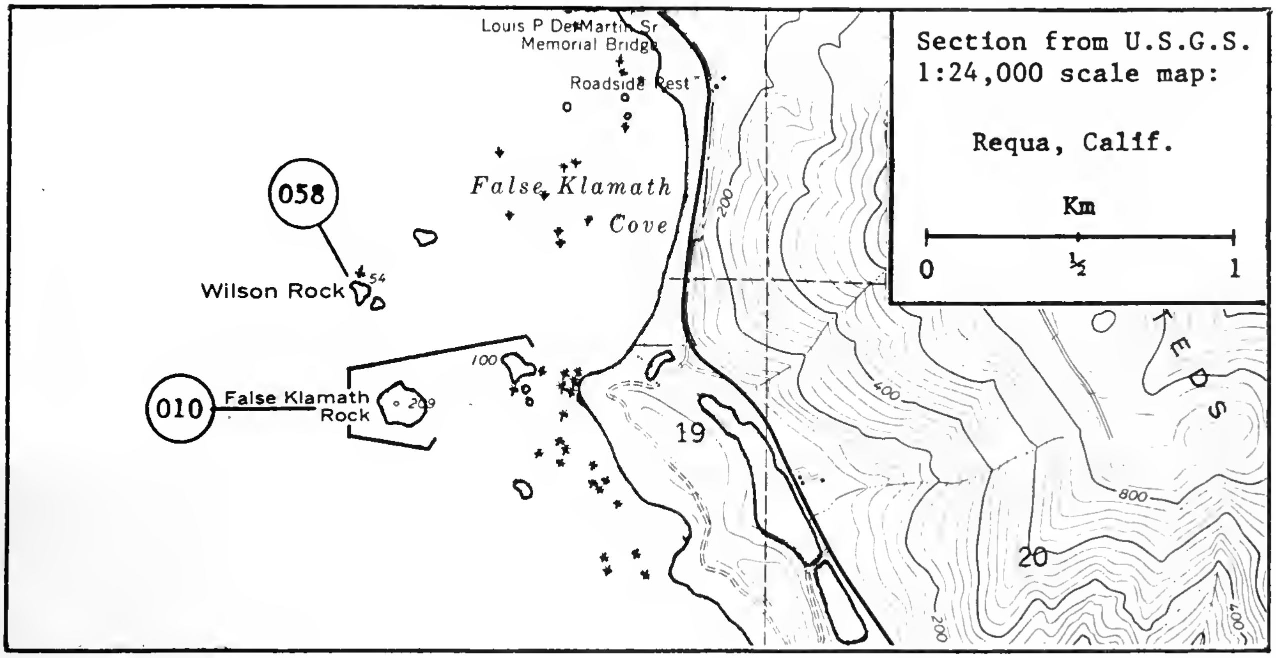
011 Flint Rock Head 41°31'31"N, 124°05'00"W

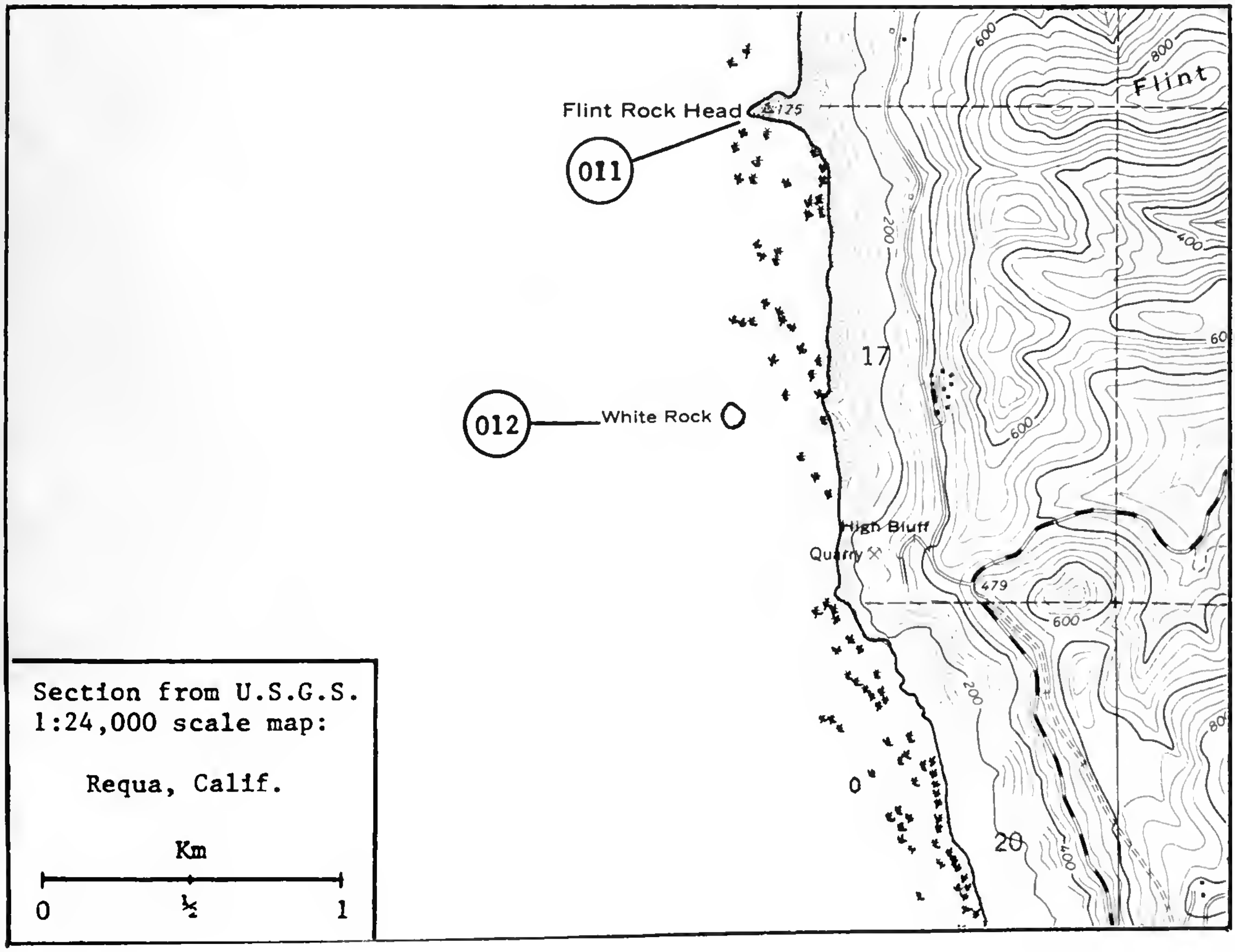
Pelagic Cormorant	4	(Osborne,8/6/69,M)	35

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.

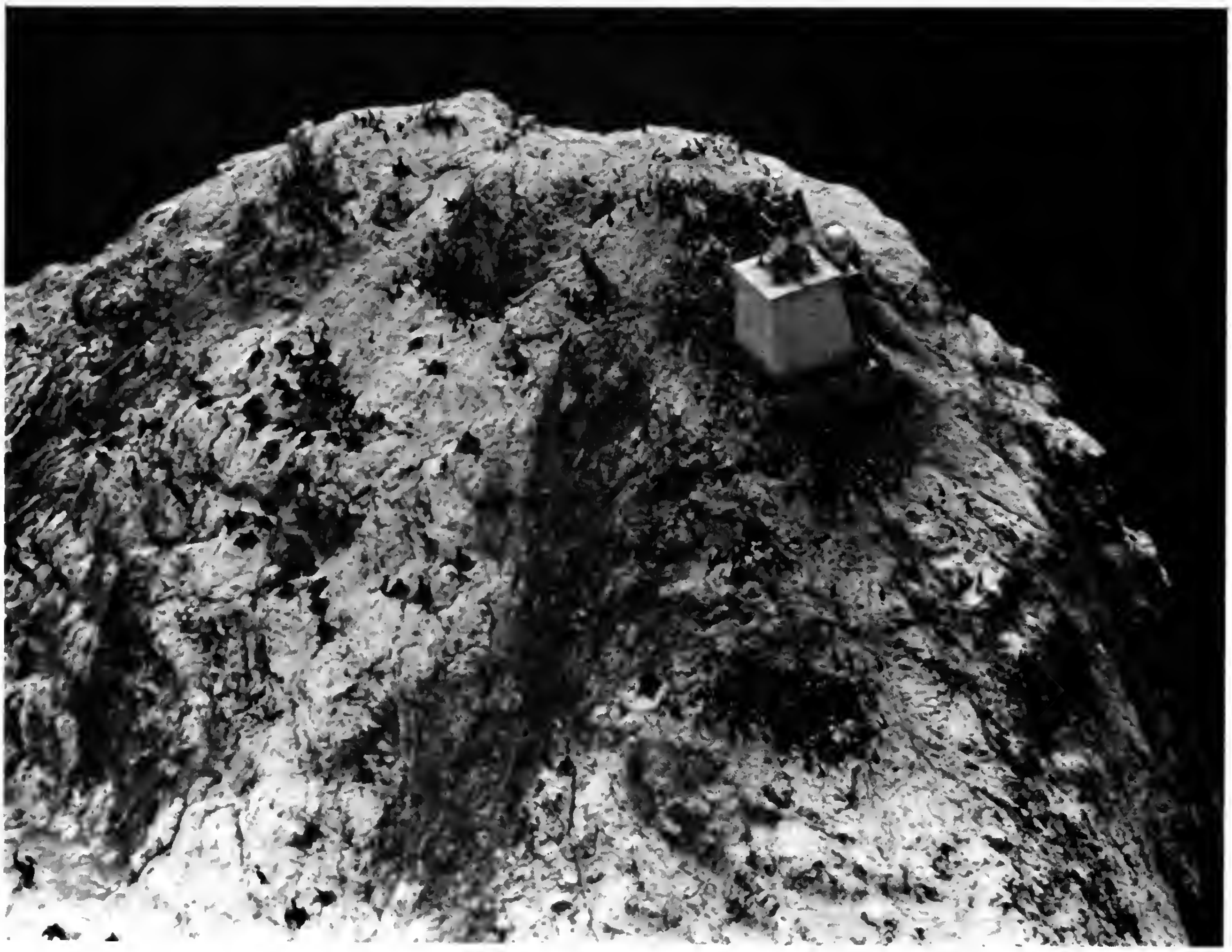
Brandt's Cormorant	240	(DeGange & Nelson,7/25/80,A,II)	42
Double-crested Cormorant	60	(Lester,6/2/80,M,III)	42
Pelagic Cormorant	12	(Lester & Rodstrom,6/5/79,B,I)	42
Black Oystercatcher	2	(Lester & Rodstrom,6/5/79,B,II)	42
Western Gull	24	(Lester & Rodstrom,6/5/79,B,III)	42
Pigeon Guillemot	6	(Lester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


Louis P DeMartin Sr
Memorial Bridge
Roadside Rest
058
False Klamath
Cove
Wilson Rock
010
False Klamath
Rock
100
19
20
800
200
400
Section from U.S.G.S.
1:24,000 scale map:
Requa, Calif.
Km
0
½
1


Flint Rock Head
175
011
Flint
600
800
200
400
17
012
White Rock
High Bluff
Quarry
479
600
20
Section from U.S.G.S.
1:24,000 scale map:
Requa, Calif.
Km
0
½
1

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[1]	(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



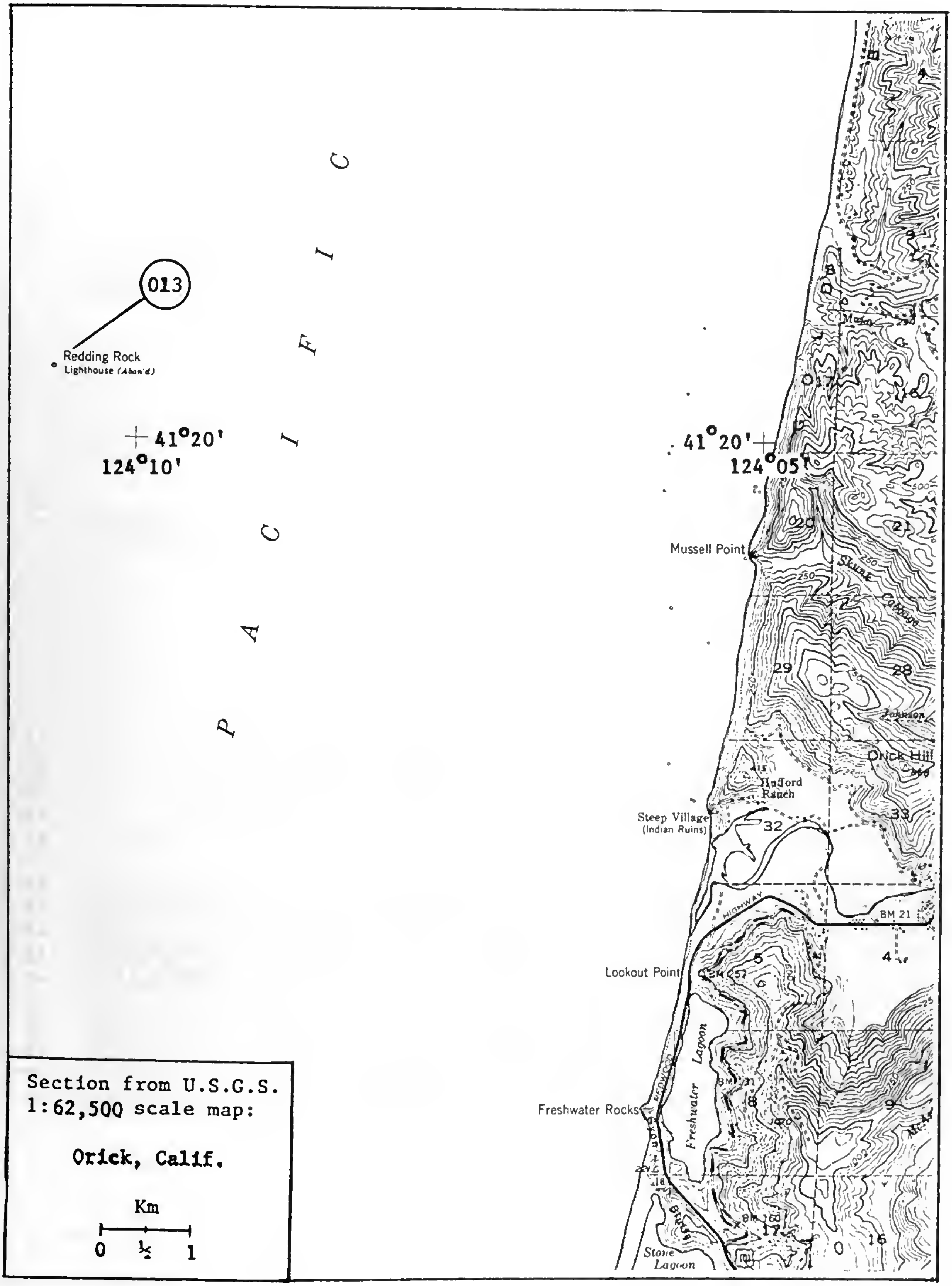
Redding Rock

Photo by Anthony DeGange

[1] 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).


013
Redding Rock
Lighthouse (Aban'd)
41°20'
124°10'
P A C I F I C
41°20'
124°05'
Mussell Point
Skunk Cabbage
Johnson
Orick Hill
Hufford Ranch
Steep Village
(Indian Ruins)
HIGHWAY
BM 21
Lookout Point
Freshwater Lagoon
Freshwater Rocks
Stone Lagoon
Section from U.S.G.S.
1:62,500 scale map:
Orick, Calif.
Km
0 ½ 1

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	18		
Pelagic Cormorant	4	(Osborne,1970,M)	35

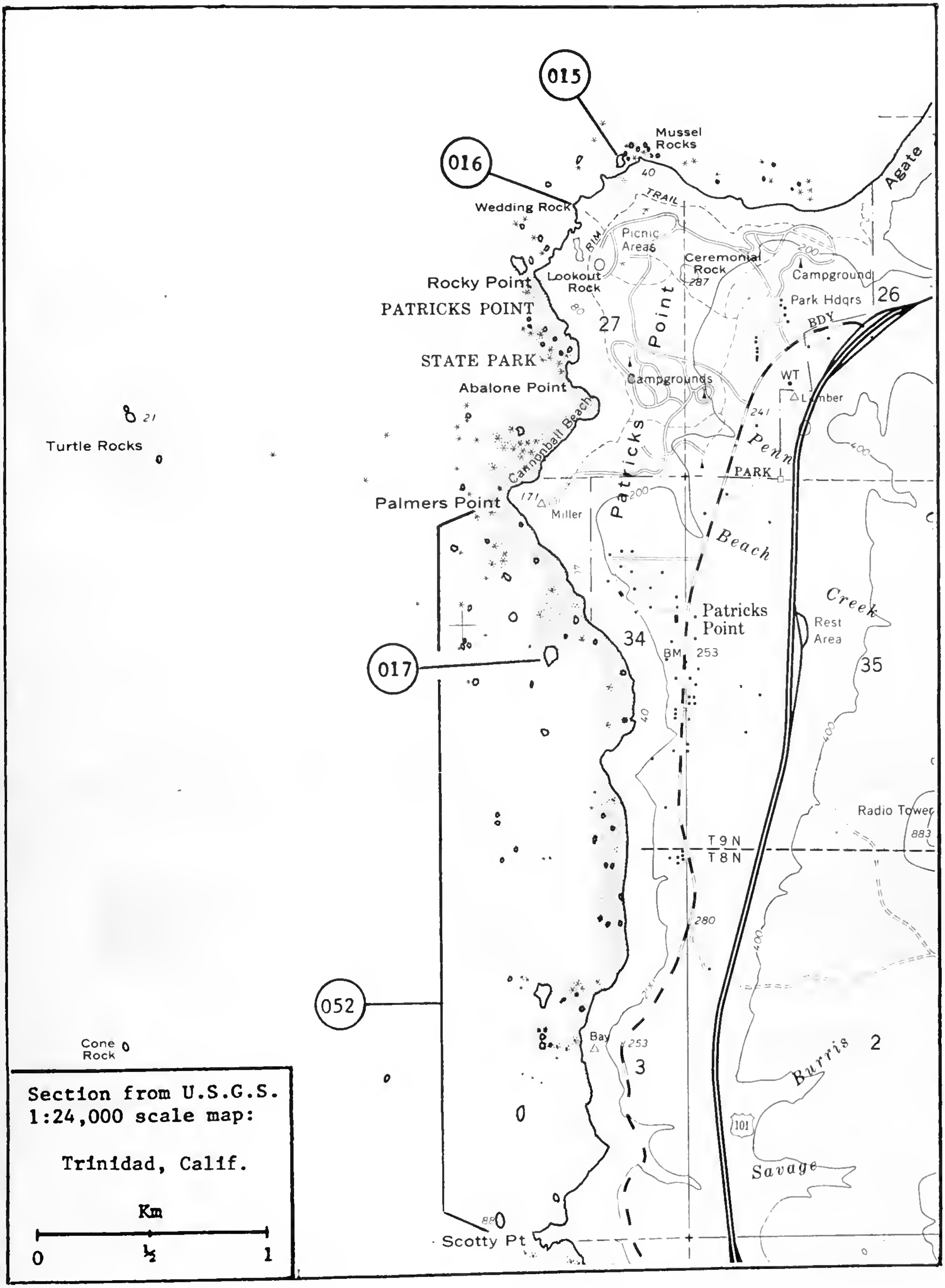
016 Wedding Rock 41°08'28"N, 124°09'32"W

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	306		
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 & Garrett,1978,M)	43
Western Gull	40	(Lester, McKay & Rodstrom,8/1/79,B,I)	42
Pigeon Guillemot	4	(Benz & Garrett,1978,M)	43
Western Gull	20	(Osborne,6/1/69)	35
Pigeon Guillemot	X	(Osborne,6/1/69)	35

X = present


015
016
017
052
Mussel Rocks
Agate
TRAIL
RIM
Wedding Rock
Picnic Areas
Ceremonial Rock
287
Campground
Park Hdqrs
26
Rocky Point
Lookout Rock
PATRICKS POINT
STATE PARK
27
Point
BDY
Campgrounds
WT
Lumber
Abalone Point
Cannonball Beach
Turtle Rocks
241
Penn
Patricks
PARK
Palmers Point
Miller
Beach
Creek
Patricks Point
Rest Area
34
BM 253
35
Radio Tower
883
T 9 N
T 8 N
280
Cone Rock
Bay
253
3
Burris
2
101
Savage
Scotty Pt
Section from U.S.G.S. 1:24,000 scale map:
Trinidad, Calif.
Km
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1

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

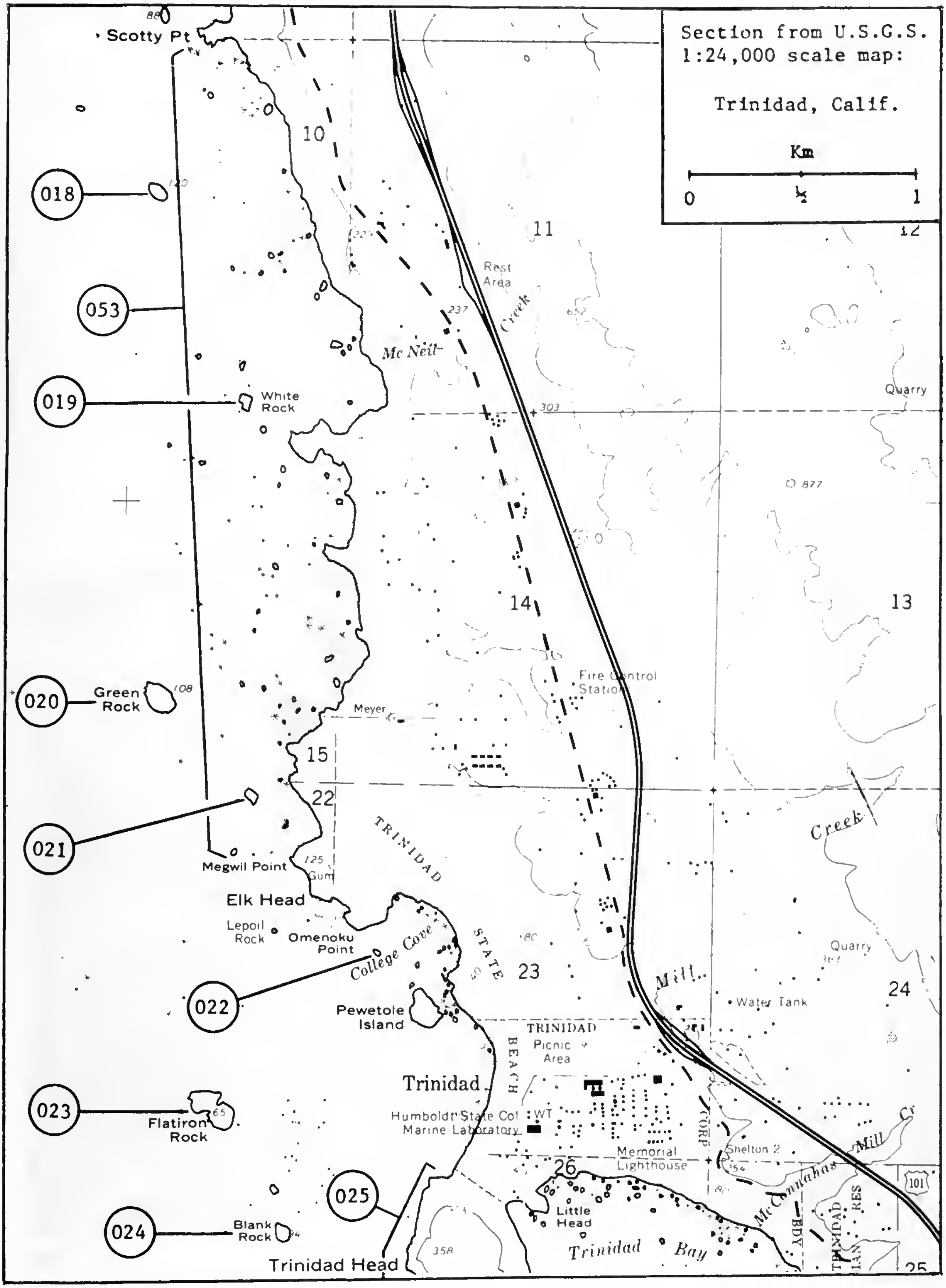
Pelagic Cormorant	36	(Lester & Stewart,6/23/80,B,II)	42
Black Oystercatcher	2	(Lester & Stewart,6/23/80,B,III)	42
Western Gull	28	(Lester & Stewart,6/23/80,B,III)	42
Pigeon Guillemot	20	(Lester, McKay & Rodstrom,8/1/79,B,III)	42
Total	106		
Double-crested Cormorant	16	(Osborne,6/18/70,L)	35
Pelagic Cormorant	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)	4
Western Gull	20	(Lester, McKay & Rodstrom,8/1/79,B,II)	4
Common Murre	2,600[1]	(Lester, Rodstrom & Sowls,5/15/79,A,&6/19/79,A,III)	4
Pigeon Guillemot	24	(Lester, McKay & Rodstrom,8/1/79,B,III)	4
Tufted Puffin	P	(Osborne,6/18/70,M)	3
Total	2,714		
Double-crested Cormorant	24	(Osberne,1970,M)	3
Pelagic Cormorant	62	(Osborne,1970,M)	3
Western Gull	10-20	(Osborne,6/18/70,M)	3
Common Murre	1,200	(Osborne,6/18/70,M)	3

P = probably present

[1] 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.



Section from U.S.G.S. 1:24,000 scale map:
Trinidad, Calif.
Km
0
½
1
Scotty Pt
018
053
019
White Rock
020
Green Rock
021
Megwil Point
Elk Head
Lepoil Rock
Omenoku Point
College Cove
022
Pewetole Island
Trinidad
Humboldt State Col Marine Laboratory
023
Flatiron Rock
024
Blank Rock
025
Trinidad Head
Little Head
Trinidad Bay
Memorial Lighthouse
TRINIDAD Picnic Area
TRINIDAD STATE BEACH
Mc Neil Creek
Rest Area
Fire Control Station
Meyer Cr
Water Tank
Quarry
Quarry
Creek
Mill
McConnahas Mill Cr
Shelton 2
CORP BDY
TRINIDAD IAN RES
101
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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 ⊿	(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 & Sowls,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,8/1/79,8,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

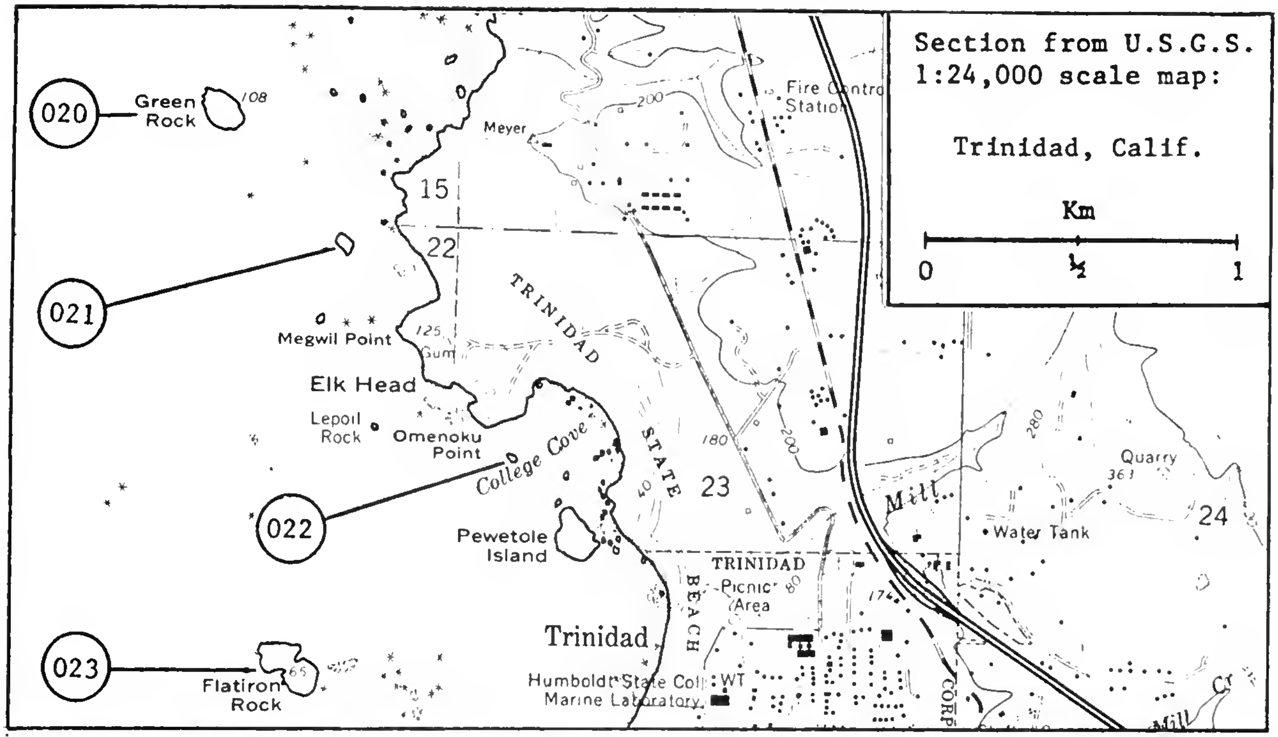
⊿ Estimate is number of birds present times 1.67, see page 10. Briggs et al.'s estimate for 7/2/80 aerial survey (also times 1.67) is 28,300.

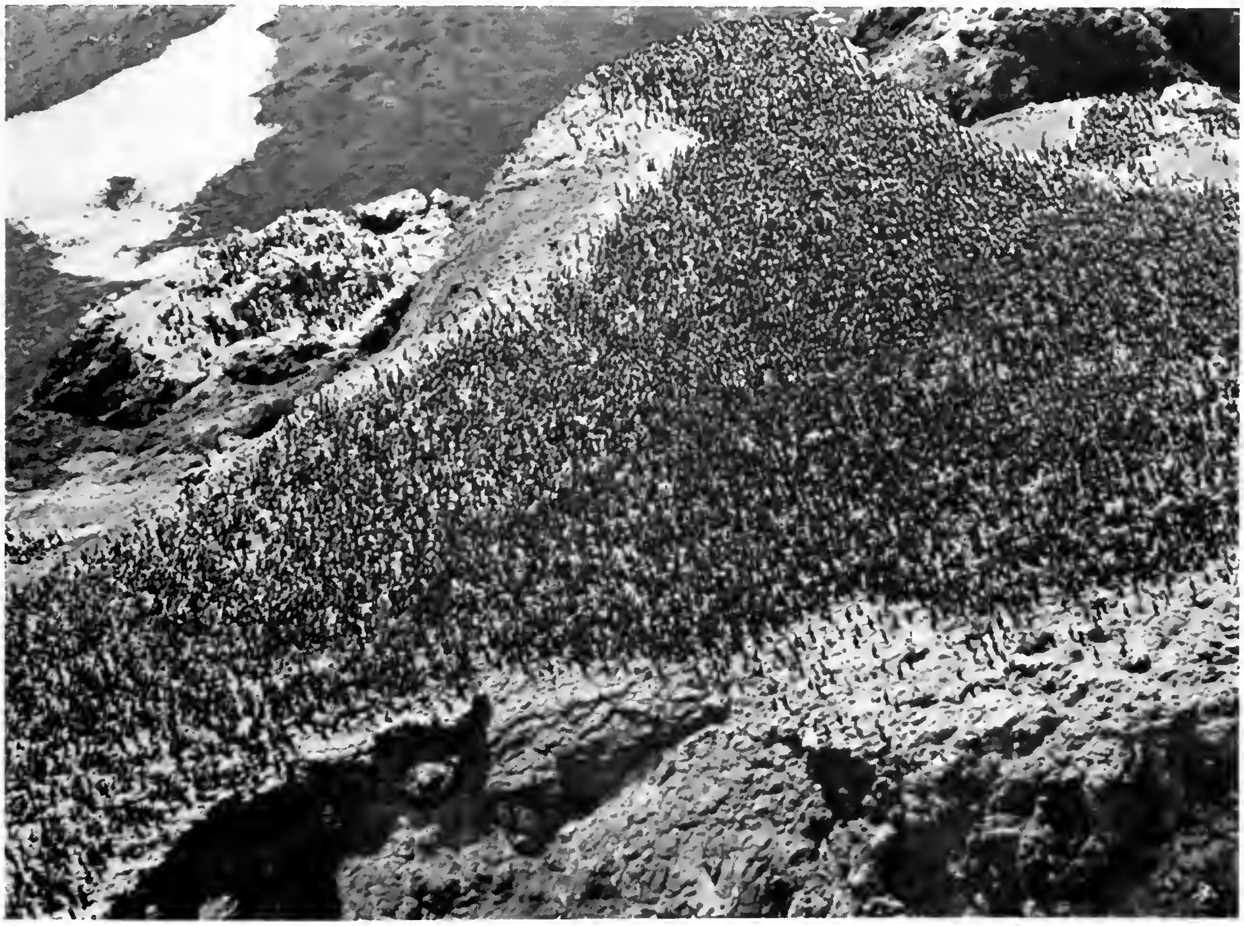
021 "Puffin Rock" 41°04'18"N, 124°09'32"W

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 & Sowls,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

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

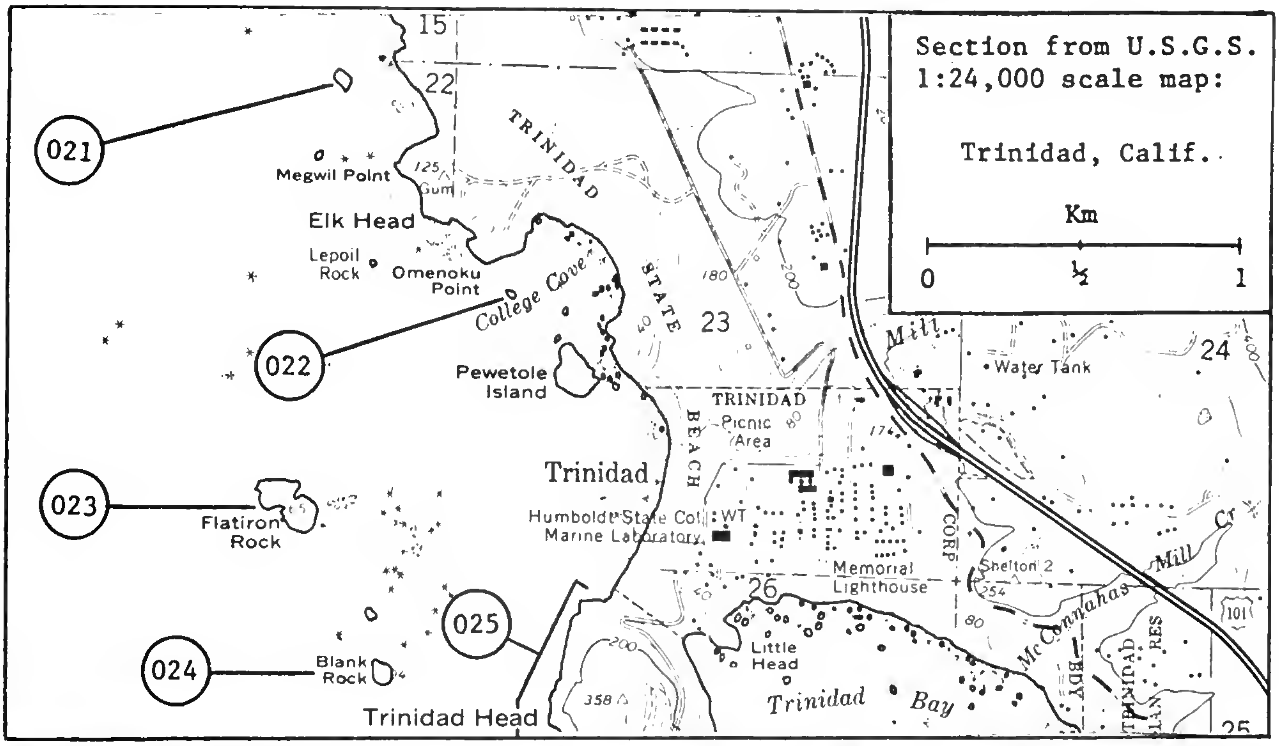
Brandt's Cormorant	1,540	(DeGange,7/9/80,A,III)
Pelagic Cormorant	4	(Lester & Rodstrom,5/9/79,M)
Black Oystercatcher	2	(Osborne,1969-70,LM)
Western Gull	40	(Osborne,1969-70,LM)
Common Murre	24,000 [1]	(Lester & Rodstrom,5/15,6/19&7/12/79,A,III)
Pigeon Guillemot	2	(Lester, McKay & Rodstrom,8/1/79,B,III)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

[1] 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 [1]	(DeGange,7/9/80,A,III)	42
Pigeon Guillemot	20	(Lester & Stewart,6/23/80,B,III)	42
Total	1,154		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)	

[1] 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

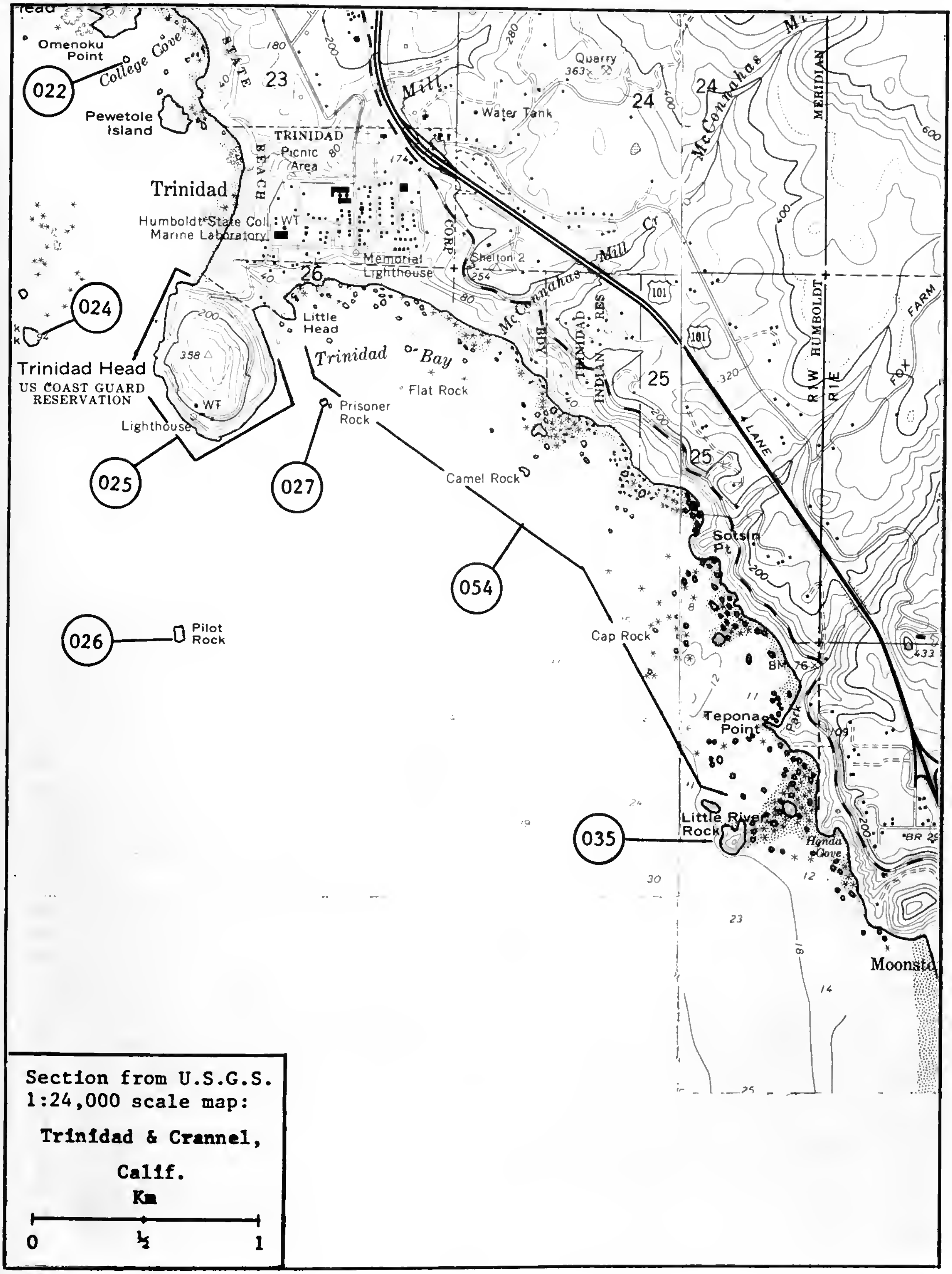
Brandt's Cormorant	0	(DeGange,7/9/80,A;Lester & Stewart,6/23/80,B,I)	*42*
Pelagic Cormorant	8	(Lester, McKay & Rodstrom,8/1/79,B,III)	*42*
Black Oystercatcher	2	(Lester & Stewart,6/23/80,B,III)	*42*
Western Gull	40	(Lester & Stewart,6/23/80,B,III)	*42*
Common Murre	2,500 [1]	(DeGange,7/9/80,A,III)	*42*
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*

[1] 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 ½ 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

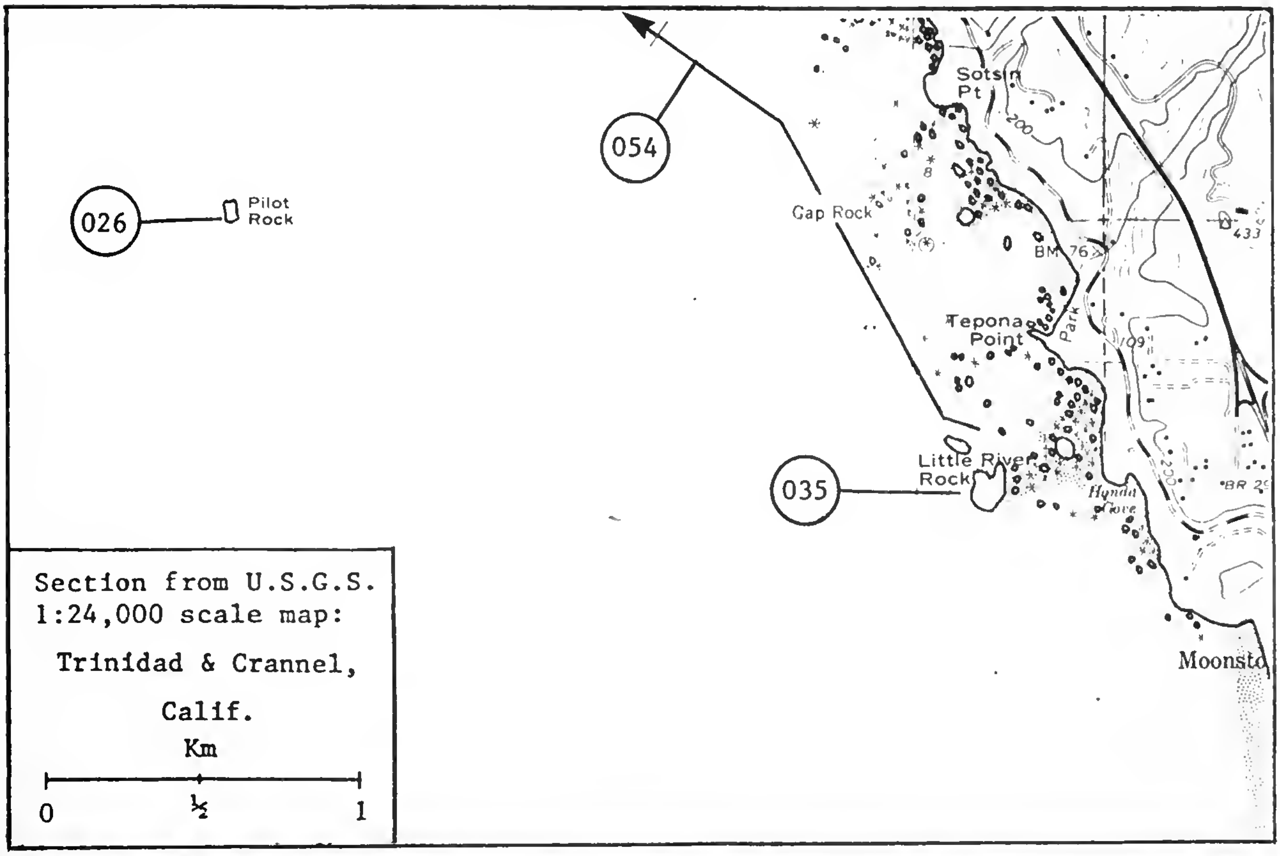
033 "Halfmoon Rock" - see 054

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
Total	10,434		
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

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).

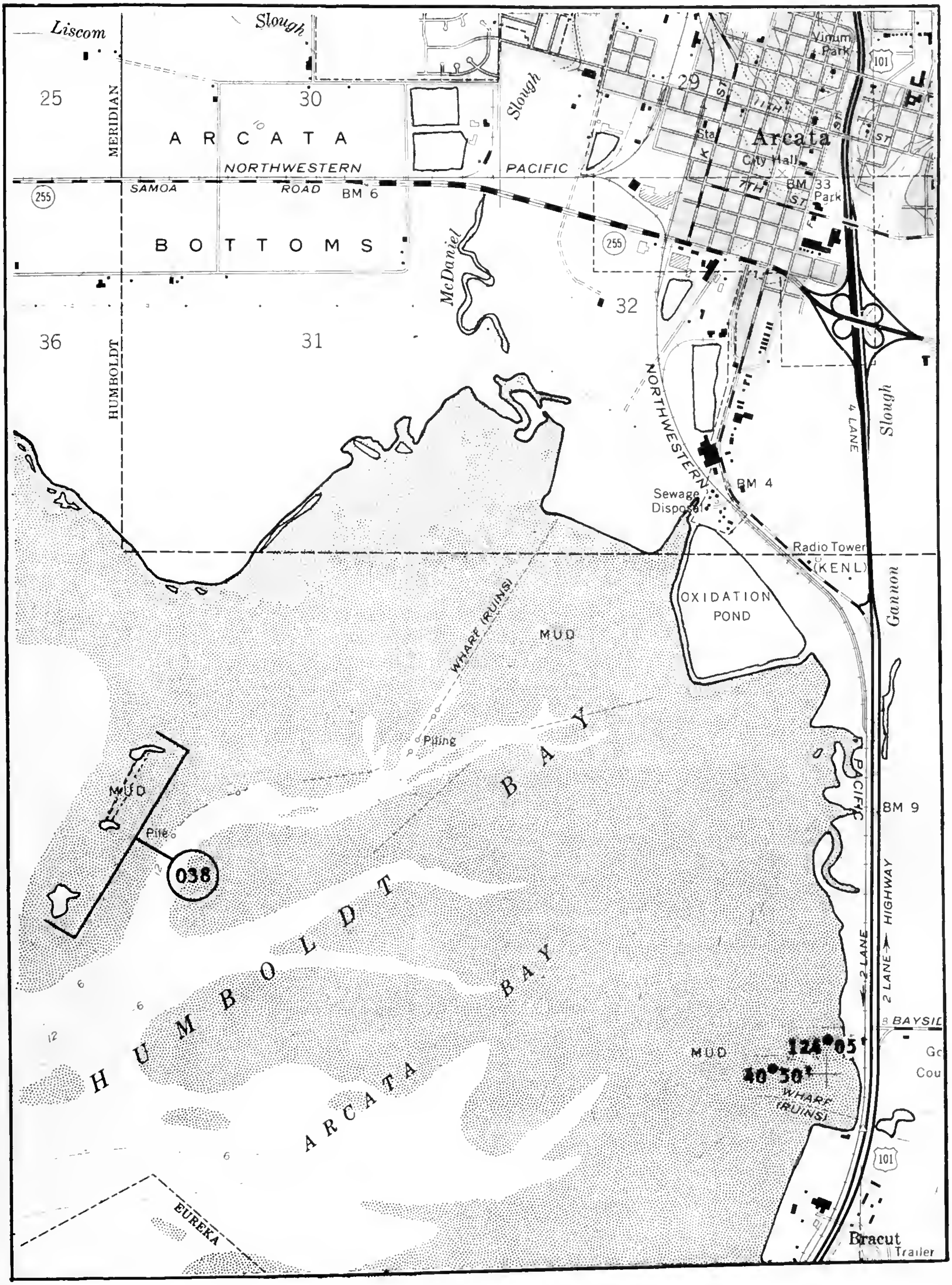
037 "Mad River" was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

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


Liscom
Slough
25
30
29
MERIDIAN
ARCATA
NORTHWESTERN
PACIFIC
Slough
Arcata
City Hall
Vinum Park
Park
7TH ST
11TH
BM 33
101
255
SAMOA
ROAD
BM 6
BOTTOMS
McDaniel
32
36
31
HUMBOLDT
NORTHWESTERN
4 LANE
Slough
BM 4
Sewage Disposal
Radio Tower
(KENL)
OXIDATION POND
Gannon
MUD
WHARF (RUINS)
Piling
BAY
MUD
Pile
038
PACIFIC
BM 9
HIGHWAY
2 LANE
2 LANE
HUMBOLDT BAY
ARCATA BAY
BAYSID
MUD
124°05'
40°50'
WHARF (RUINS)
101
EUREKA
Bracut
Trailer

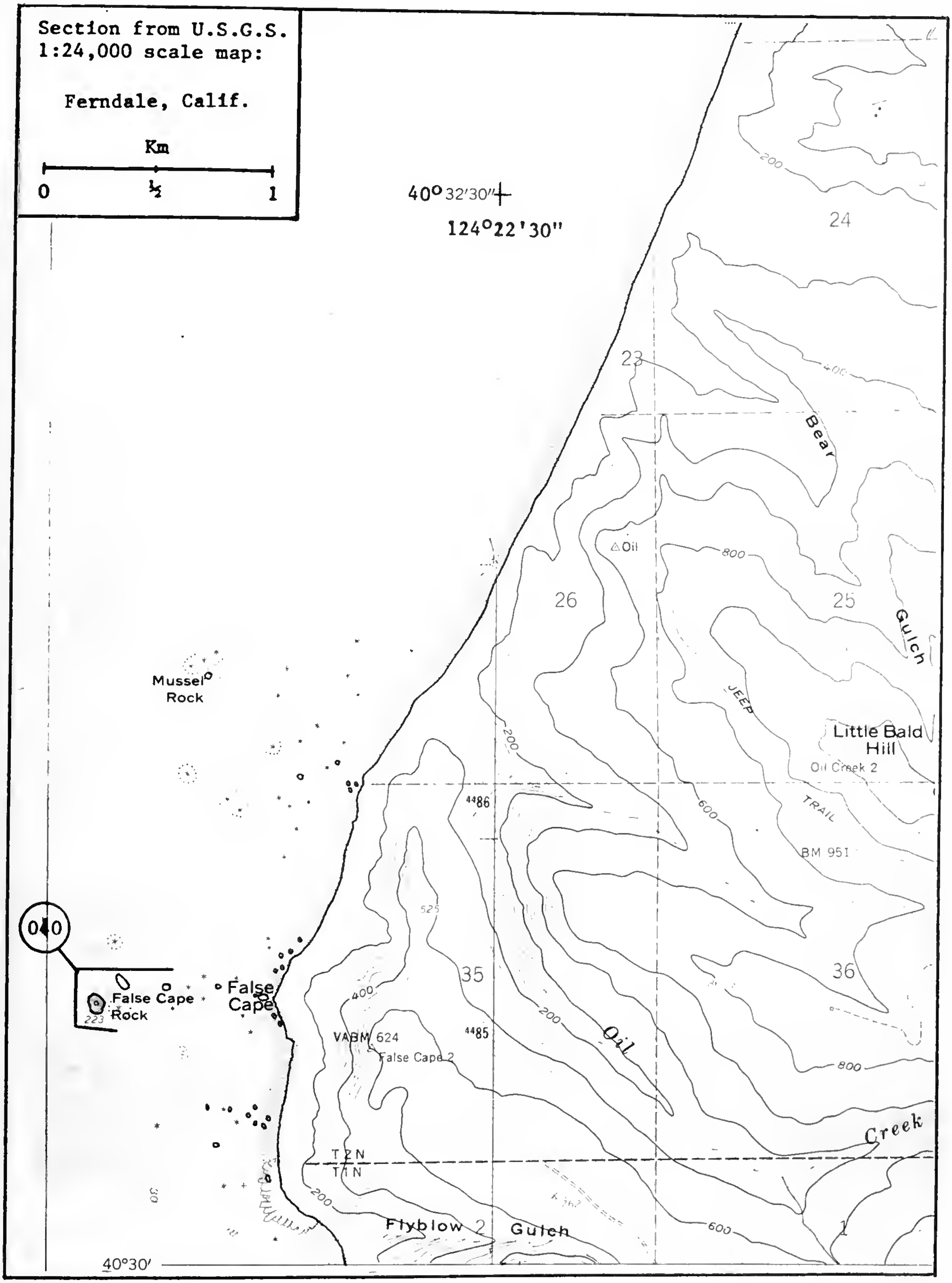
039 Humboldt Bay was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

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 △1	(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

△1 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.


Section from U.S.G.S.
1:24,000 scale map:
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Km
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1
40° 32'30"
124°22'30"
24
23
Bear
Gulch
26
25
800
600
400
200
Oil
JEEP
TRAIL
Little Bald
Hill
Oil Creek 2
BM 951
4486
525
35
36
4485
VABM 624
False Cape 2
Oil
Creek
Mussel
Rock
040
False Cape
Rock
223
False
Cape
T2N
T1N
Flyblow
Gulch
2
1
40°30'

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

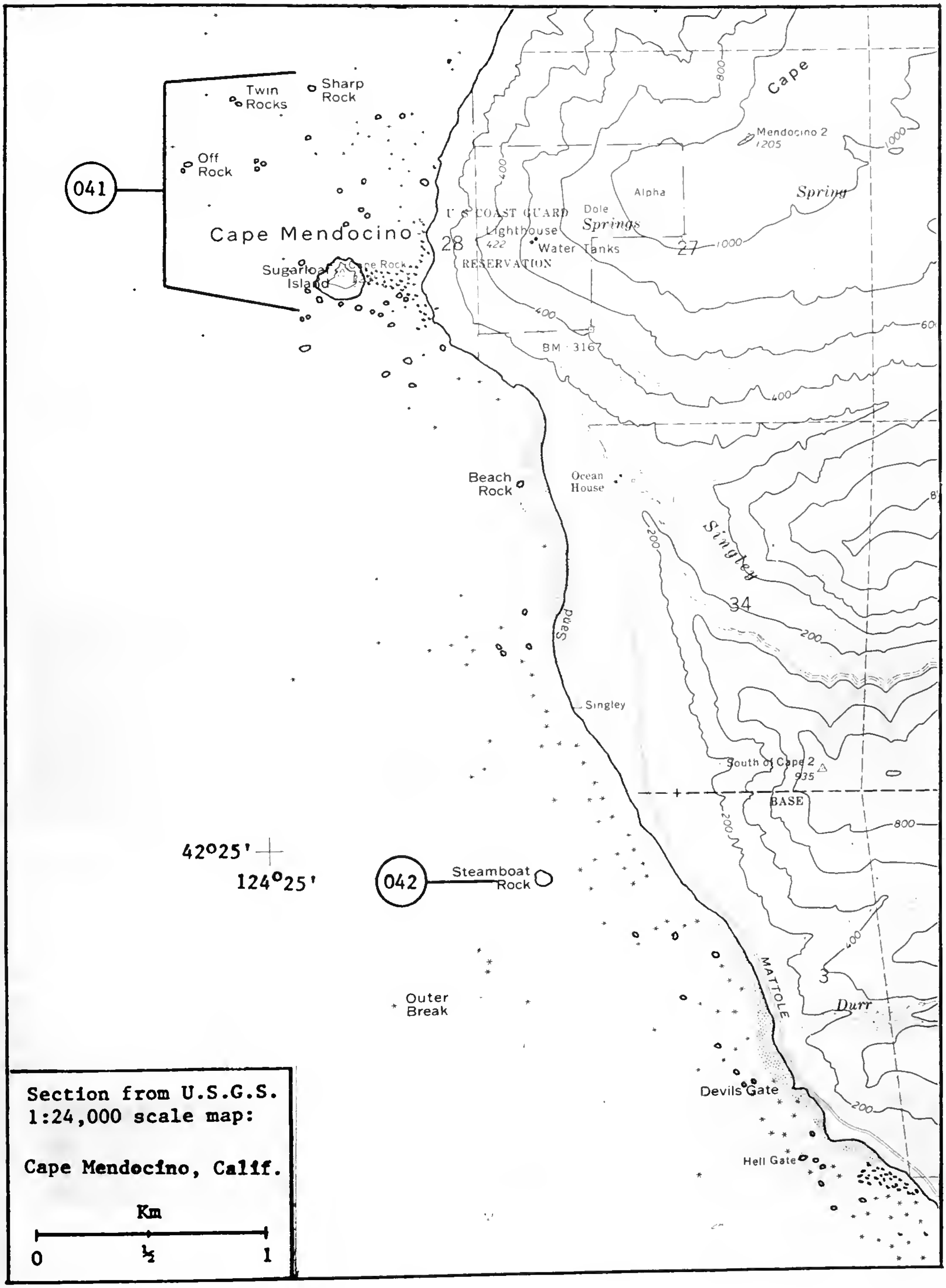
Brandt's Cormorant	200	(Osborne,1970,LM)	35
Double-crested Cormorant	32	(Osborne,1970,LM)	35
Pelagic Cormorant	400	(Osborne,1969-70,LM)	35
Black Oystercatcher	6	(Nelson & Sowls,7/26/79,B,III)	42
Western Gull	320	(Nelson & Sowls,7/26/79,B,III)	42
Pigeon Guillemot	240	(Nelson & Sowls,7/26/79,B,III)	42
Tufted Puffin	4	(Lester & Rodstrom,5/10/79,M,III)	42
Total	1,202		
Cormorant (unid.)	100	(Nelson & Sowls,7/26/79,B,III)	42
Brandt's Cormorant	182	(Nelson & Sowls,7/26/79,B,III)	42
Double-crested Cormorant	?	(Nelson & Sowls,7/26/79,B)	42
Double-Crested Cormorant	6	(Osborne,1969,LM)	35
Pelagic Cormorant	210+	(Nelson & Sowls,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 & Sowls,7/23/80,A,II)	42
Pelagic Cormorant	0	(Lester, Nelson, Rodstrom & Sowls,7/26/79,B,II)	42
Western Gull	60	(Lester, Nelson, Rodstrom & Sowls,7/26/79,B,III)	42
Common Murre	4,500 [1]	(Lester & Rodstrom,7/24/79,A,Lester, Nelson, Rodstrom & Sowls,7/26/79,B,III)	42 42
Pigeon Guillemot	2	(Lester, Nelson, Rodstrom & Sowls,7/26/79,B,III)	42
Total	5,056		
Brandt's Cormorant	340	(Osborne,1969-70,AM)	35
Brandt's Cormorant	640	(Lester & Rodstrom,7/24/79,A,Lester, Nelson, Rodstrom & Sowls,7/26/79,B,II)	42 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

[1] 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.


Twin Rocks
Sharp Rock
Off Rock
041
Cape Mendocino
Sugarloaf Island
Cape Rock
U S COAST GUARD
Lighthouse
422
RESERVATION
Dole
Springs
Water Tanks
Alpha
Cape
Mendocino 2
1205
Spring
28
27
1000
800
400
BM 316
Beach Rock
Ocean House
Singley
34
200
Sand
Singley
South of Cape 2
935
BASE
800
42°25'
124°25'
042
Steamboat Rock
Outer Break
MATTOLE
3
Durr
Devils Gate
Hell Gate
Section from U.S.G.S. 1:24,000 scale map:
Cape Mendocino, Calif.
Km
0
½
1

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
Total	2		
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

No detailed map available see page 59.

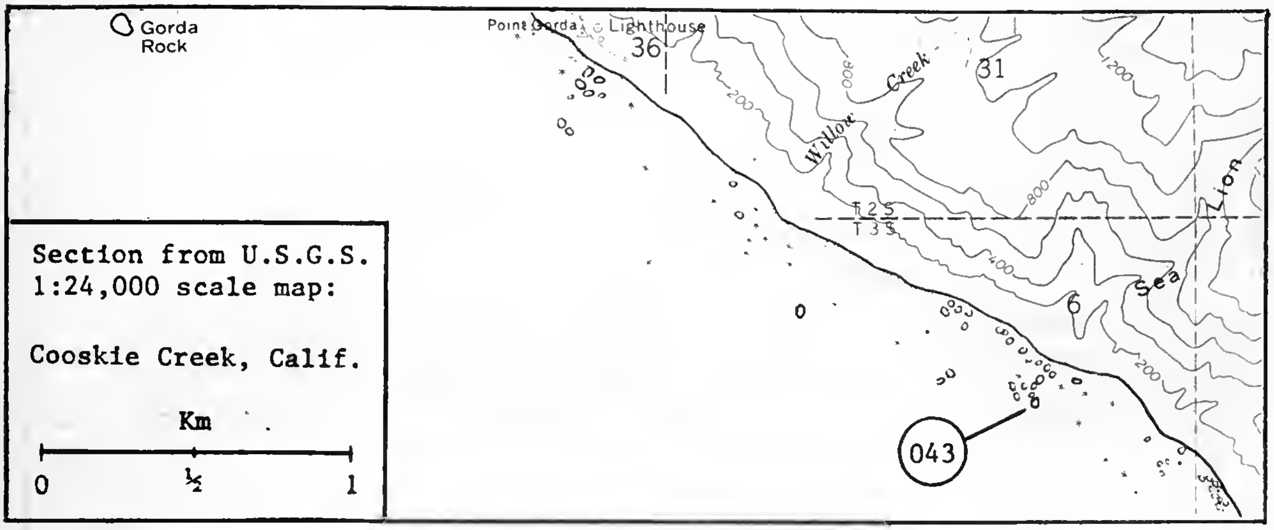
045 "Whaler Island", Crescent City breakwater, Steamboat Rock and unnamed rocks. 41°45'N, 124°13'W.

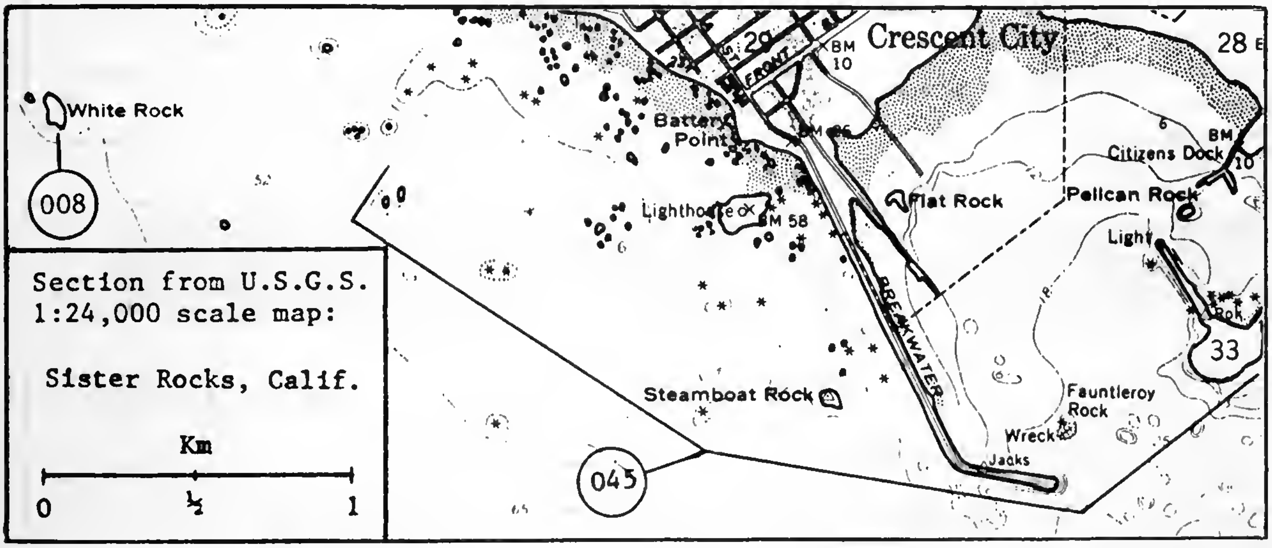
Brandt's Cormorant	40	(Berner & Lester,6/20/80,B,III)	42
Pelagic Cormorant	2	(Berner & Lester,6/20/80,B,I)	42
Black Oystercatcher	4	(Berner & Lester,6/20/80,BL,III)	42
Western Gull	24	(Berner & Lester,6/20/80,BL,III)	42
Pigeon Guillemot	72	(Berner & Lester,6/20/80,BLM,III)	42
Total	142		
Fork-tailed 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 Leach's Storm-Petrel	20,000	(Howell,7/16/19,L)	35
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

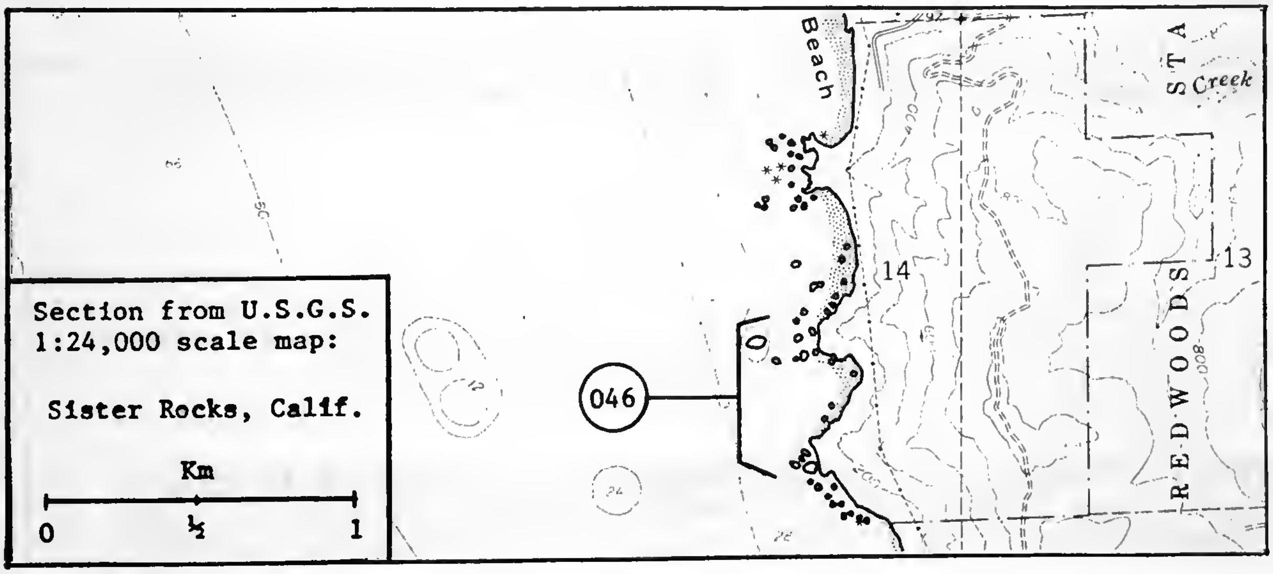
046 Unnamed Small Rocks 41°42'N, 124°08'W

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
Pigeon Guillemot	100	(Berner & Lester,6/20/80,B,III)	42
Total	222		
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


Gorda Rock
Point Gorda
Lighthouse
36
31
Willow Creek
Sea Lion
T 2 S
T 3 S
6
043
Section from U.S.G.S.
1:24,000 scale map:
Cooskie Creek, Calif.
Km
0 ½ 1


White Rock
008
Battery Point
Lighthouse
BM 58
Crescent City
FRONT
BM 10
28
Citizens Dock
Flat Rock
Pelican Rock
Light
33
BREAKWATER
Steamboat Rock
Fauntleroy Rock
Wreck
Jacks
045
Section from U.S.G.S.
1:24,000 scale map:
Sister Rocks, Calif.
Km
0 ½ 1


Beach
Creek
14
13
REDWOODS
046
Section from U.S.G.S.
1:24,000 scale map:
Sister Rocks, Calif.
Km
0 ½ 1

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

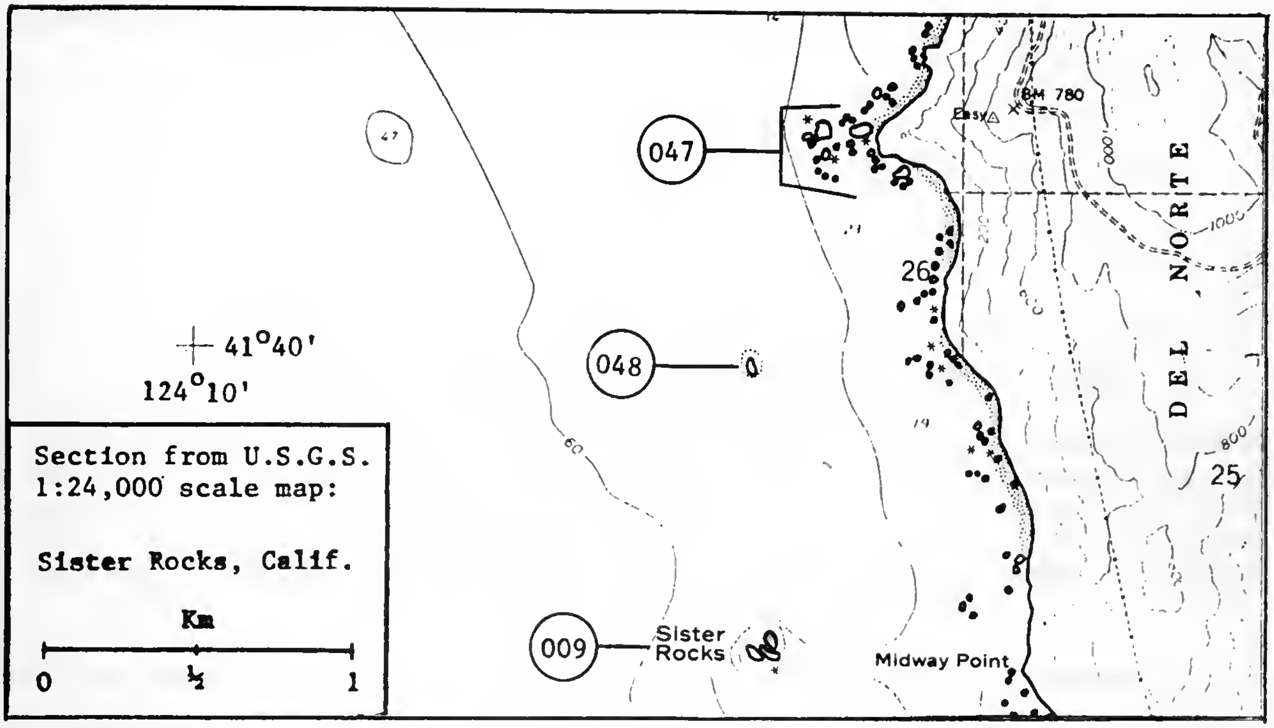
Brandt's Cormorant	140	(DeGange & Nelson,7/25/80,A,II)	42
Pelagic Cormorant	10	(Berner & Lester,6/20/80,B,II)	42
Western Gull	4	(Berner & Lester,6/20/80,B,III)	42
Pigeon Guillemot	2	(Berner & Lester,6/20/80,B,III)	42
Total	156		
Brandt's Cormorant	188	(Lester,6/19&7/12/79,A,I)	42
Pelagic Cormorant	4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

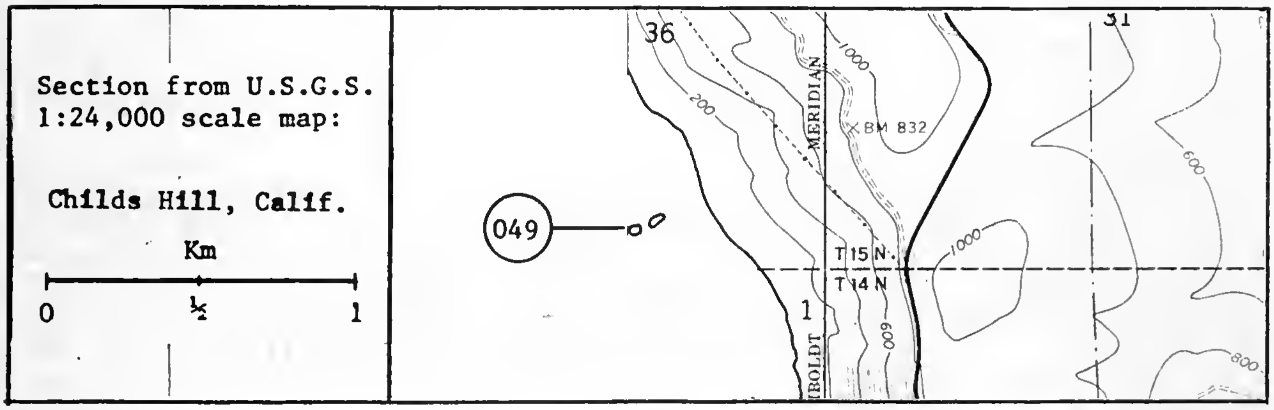
049 "Last Chance Rock" 41°38'05"N, 124°07'30"W

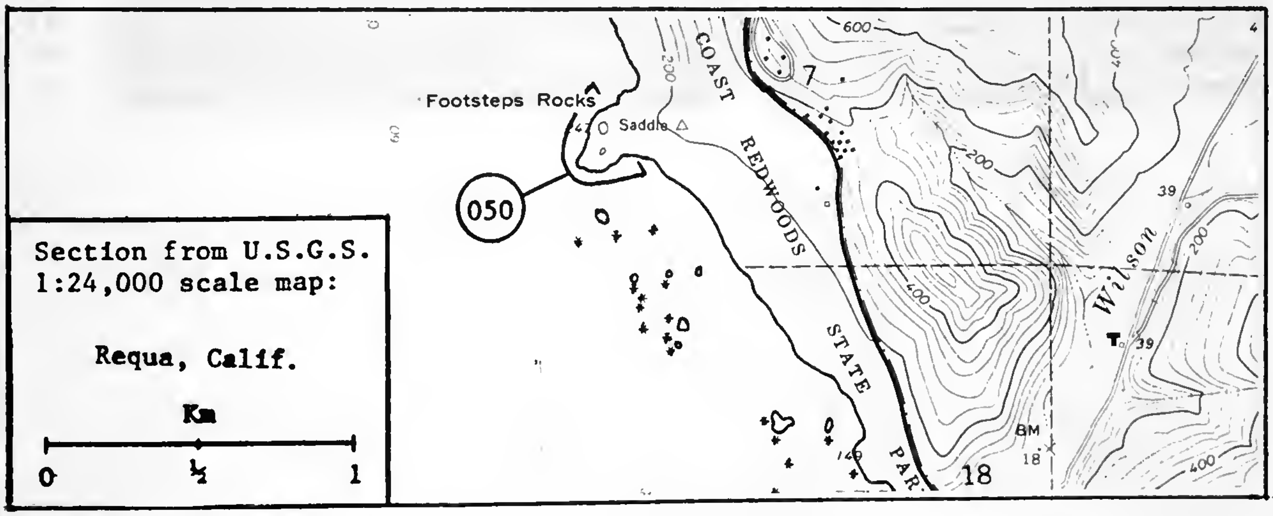
Double-crested Cormorant	4	(Berner & Lester,6/20/80,B,II)	42
Pelagic Cormorant	40	(Berner & Lester,6/20/80,B,II)	42
Western Gull	4	(Berner & Lester,6/20/80,B,III)	42
Total	48		
Pelagic Cormorant	6	(DeGange & Lester,5/22/79,B,II)	42
Western Gull	2	(DeGange & Lester,5/22/79,B,II)	42

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


047
048
009
Sister Rocks
Midway Point
BM 780
Easy
DEL NORTE
26
25
41°40'
124°10'
Section from U.S.G.S.
1:24,000 scale map:
Sister Rocks, Calif.
Km
0
½
1


Section from U.S.G.S.
1:24,000 scale map:
Childs Hill, Calif.
Km
0
½
1
049
36
MERIDIAN
BM 832
T 15 N
T 14 N
1


Footsteps Rocks
Saddle
050
COAST
REDWOODS
STATE
7
Wilson
BM
18
Section from U.S.G.S.
1:24,000 scale map:
Requa, Calif.
Km
0
½
1

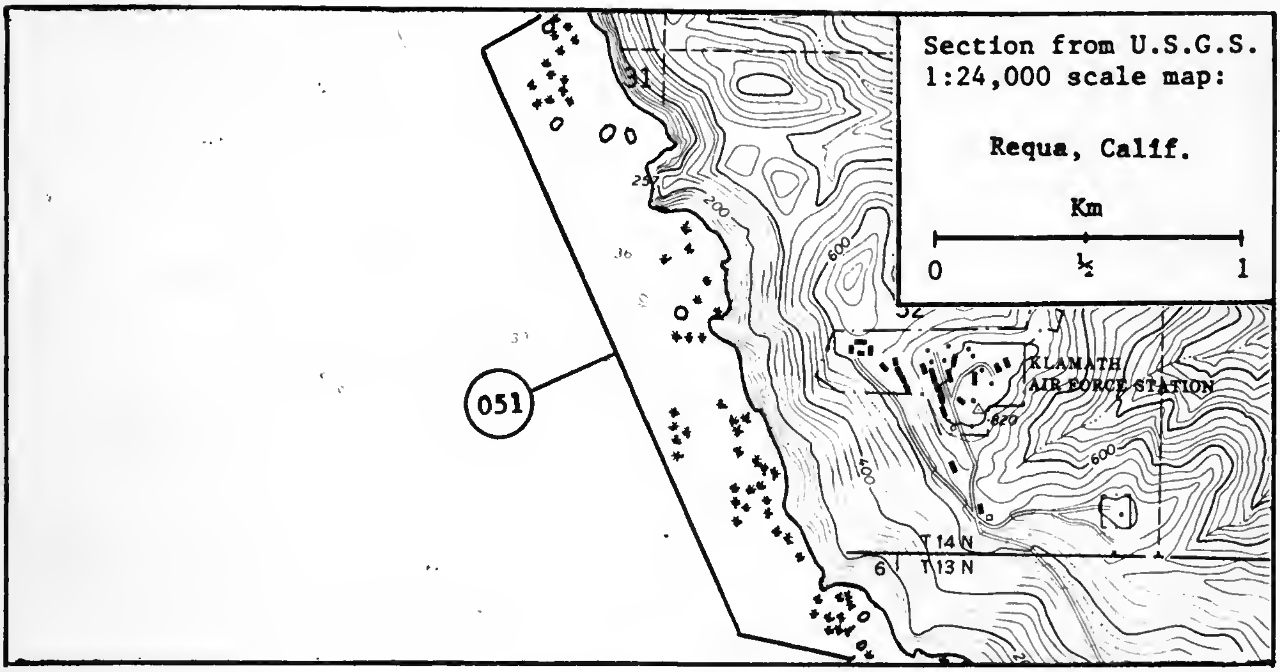
(051) "Radar Station Rocks" 41°33'30"N, 124°06'00"W

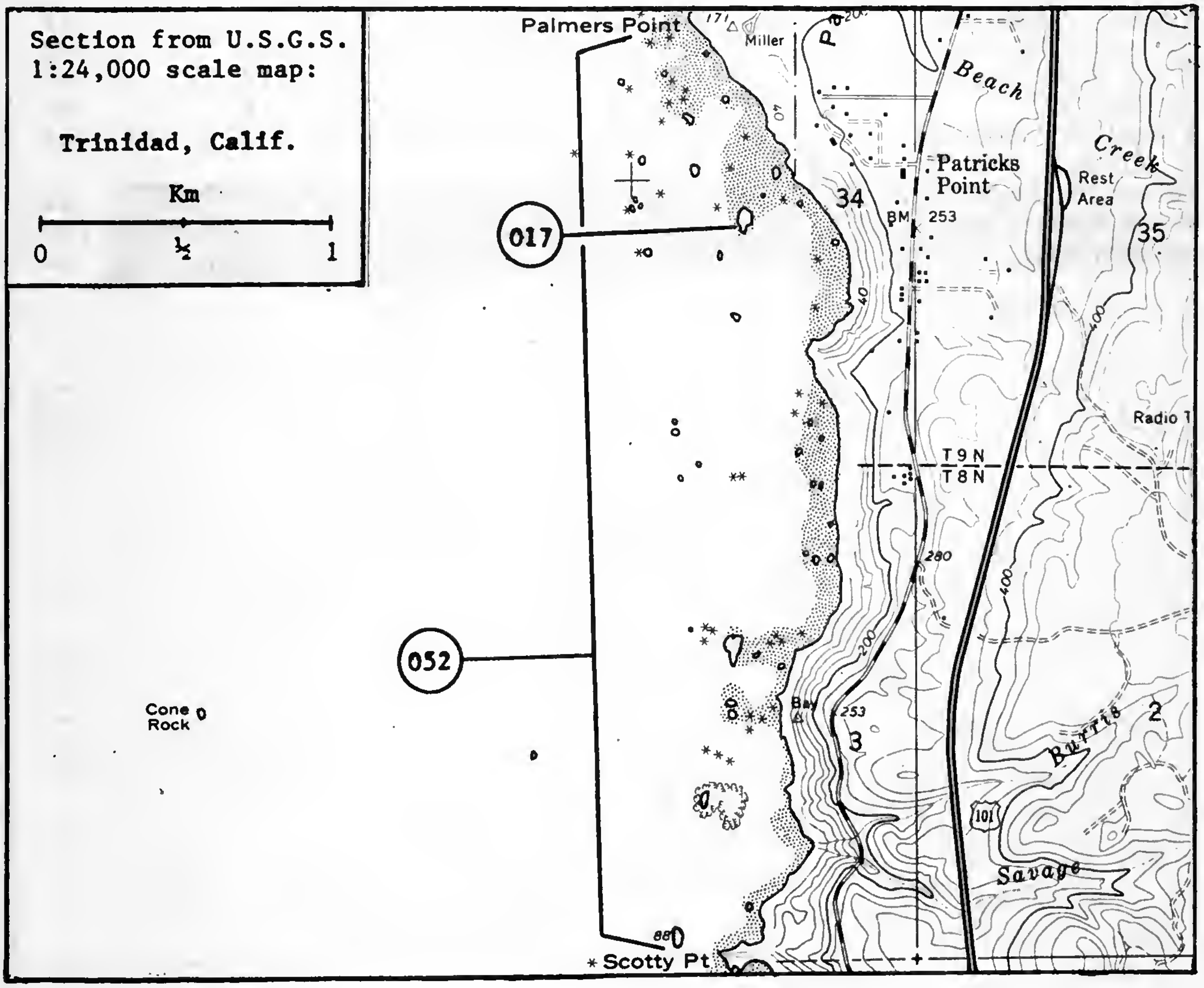
Double-crested Cormorant	20	(Lester & Rodstrom,6/5/79,B,III)	42
Pelagic Cormorant	34	(Lester & Rodstrom,6/5/79,B,II)	42
Black Oystercatcher	P	(Lester & Rodstrom,6/5/79,B)	42
Western Gull	X	(Lester & Rodstrom,6/5/79,B)	42
Pigeon Guillemot	20	(Lester & Rodstrom,6/5/79,B,III)	42
Total	74		

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
Total	170		
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

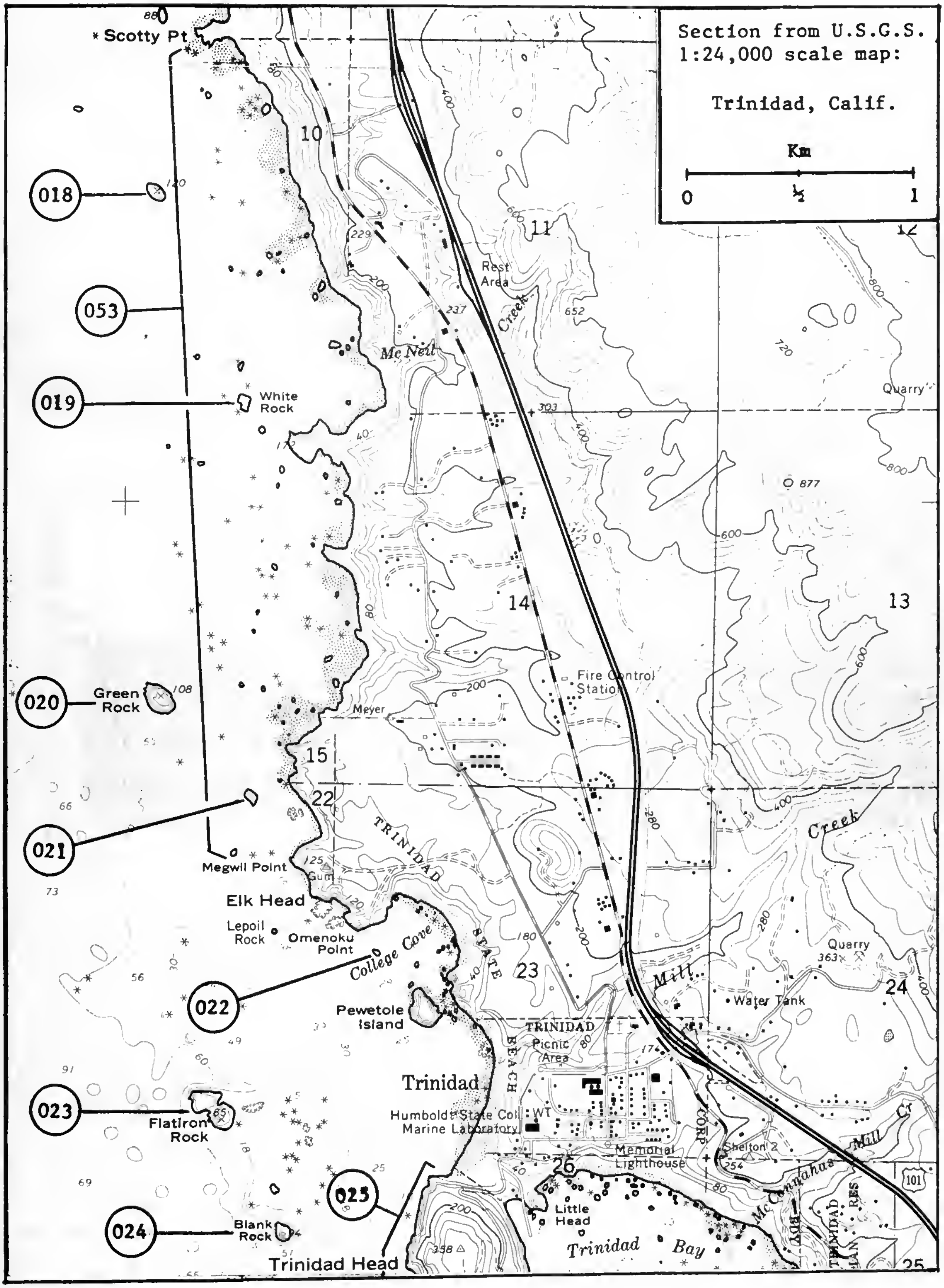

Section from U.S.G.S.
1:24,000 scale map:
Requa, Calif.
Km
0
½
1
051
KLAMATH
AIR FORCE STATION
T 14 N
T 13 N


Section from U.S.G.S.
1:24,000 scale map:
Trinidad, Calif.
Km
0
½
1
Palmers Point
Miller
Beach
Creek
Patricks
Point
Rest
Area
017
052
T 9 N
T 8 N
Cone
Rock
Savage
Burris
Scotty Pt

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*

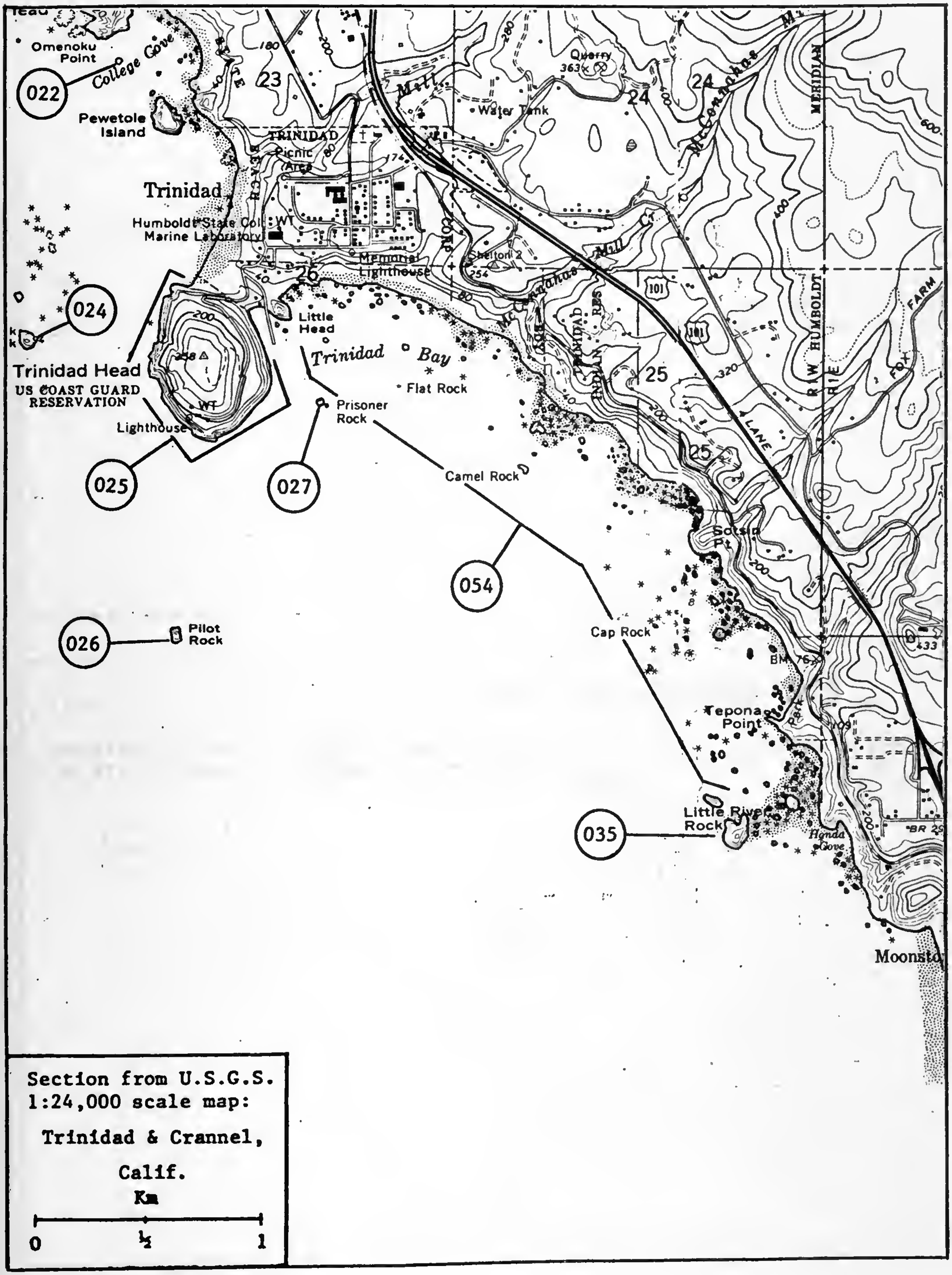
X = present


Section from U.S.G.S. 1:24,000 scale map:
Trinidad, Calif.
Km
0
½
1
Scotty Pt
018
053
019
White Rock
020
Green Rock
021
Megwil Point
Elk Head
Lepoil Rock
Omenoku Point
College Cove
022
Pewetole Island
023
Flatiron Rock
024
Blank Rock
025
Trinidad Head
Trinidad
Humboldt State Coll
Marine Laboratory
Memorial Lighthouse
Little Head
Trinidad Bay
TRINIDAD STATE BEACH
Picnic Area
Mc Neil Creek
Rest Area
Meyer
Fire Control Station
Water Tank
Quarry
Mill Creek
McConnahas Mill Cr
Shelton 2
101

(054) Trinidad Bay Rocks: "Double", "Mr'rp", Cap, "Split", "Button", "Luffenholtz", "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

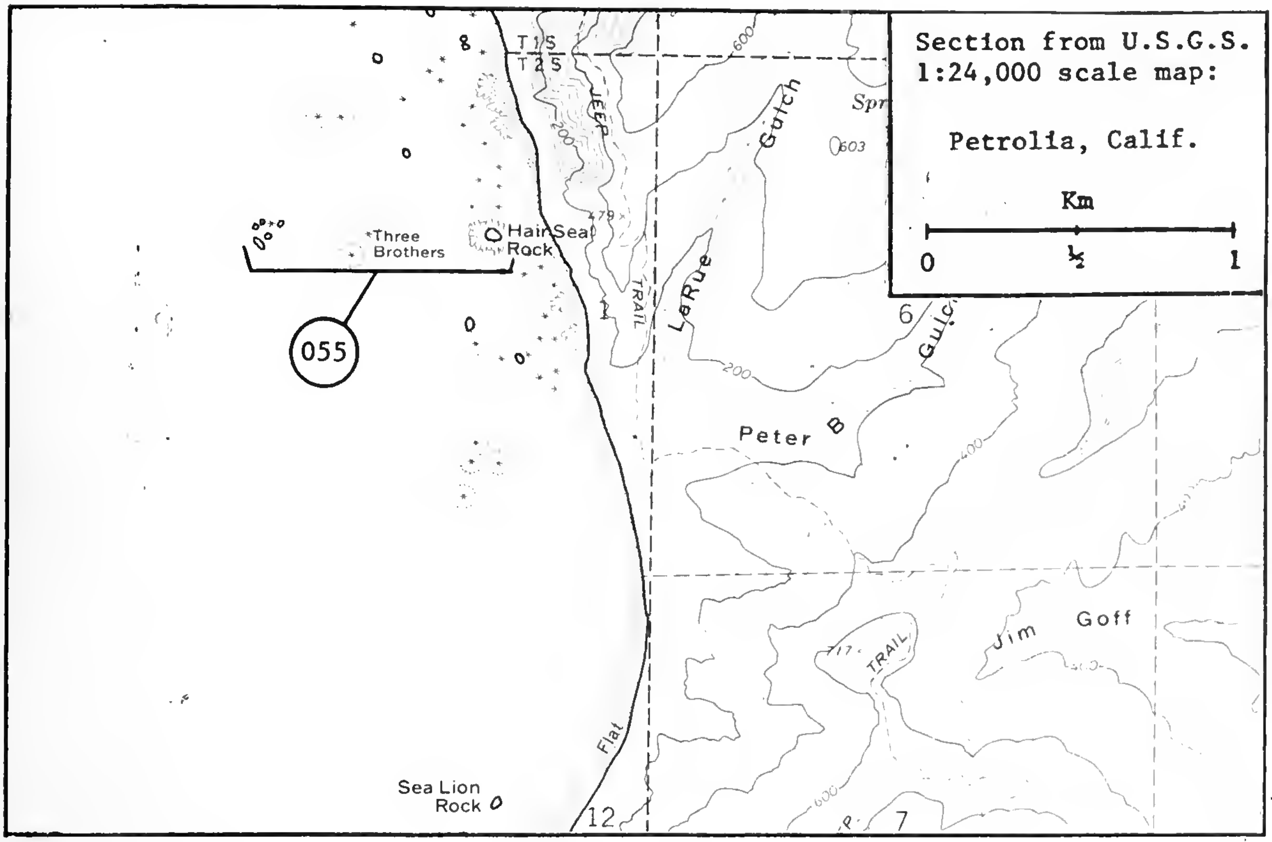

Omenoku Point
College Cove
022
Pewetole Island
Trinidad
Humboldt State Col. WT
Marine Laboratory
TRINIDAD
Picnic Area
Memorial Lighthouse
024
Trinidad Head
US COAST GUARD RESERVATION
Lighthouse
WT
025
Little Head
Trinidad Bay
Flat Rock
Prisoner Rock
027
Camel Rock
054
Quarry
Water Tank
Mill
McConnahas Mill Cr.
Shelton 2
Sotsia Pt.
Cap Rock
Teponas Point
Little River Rock
035
Honda Cove
Moonstone
026
Pilot Rock
MERIDIAN
HUMBOLDT
FARM
FOX
LANE
INDIAN RES
101
23
24
25
26
Section from U.S.G.S. 1:24,000 scale map:
Trinidad & Crannel, Calif.
Km
0
½
1

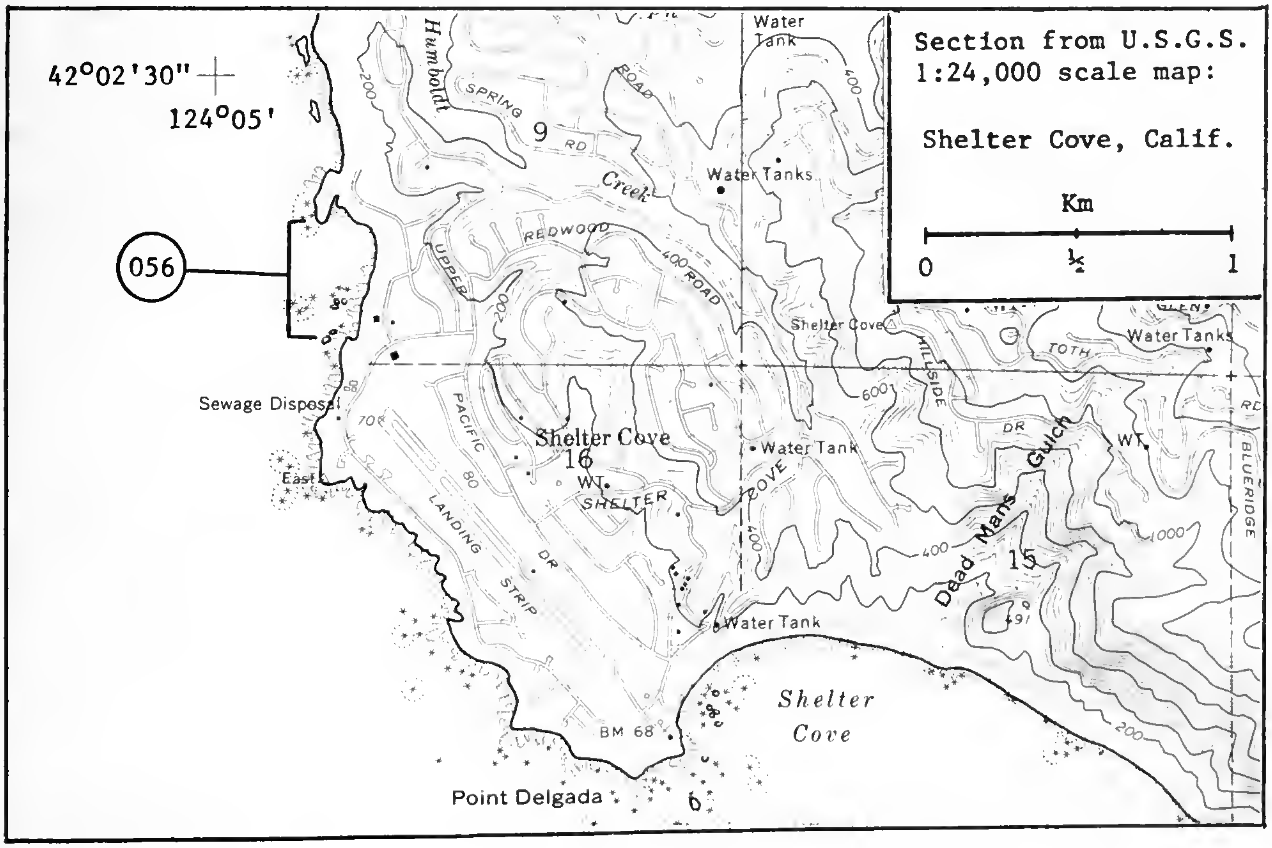
055 Three Brothers & Hair Seal Rocks 40°19'40"N, 124°21'58"W

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

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

Pelagic Cormorant	280	(Lester, Nelson, Rodstrom & Sowls,7/18/79,MB,II)	42
Western Gull	2	(Lester, Nelson, Rodstrom & Sowls,7/18/79,MB,I)	42
Total	282		


Section from U.S.G.S. 1:24,000 scale map:
Petrolia, Calif.
Km
0
½
1
055
Three Brothers
Hair Seal Rock
Sea Lion Rock
Peter B
Jim Goff
LaRue
Gulch
TRAIL
JEEP
Flat
T1S
T2S
8
1
6
12
7

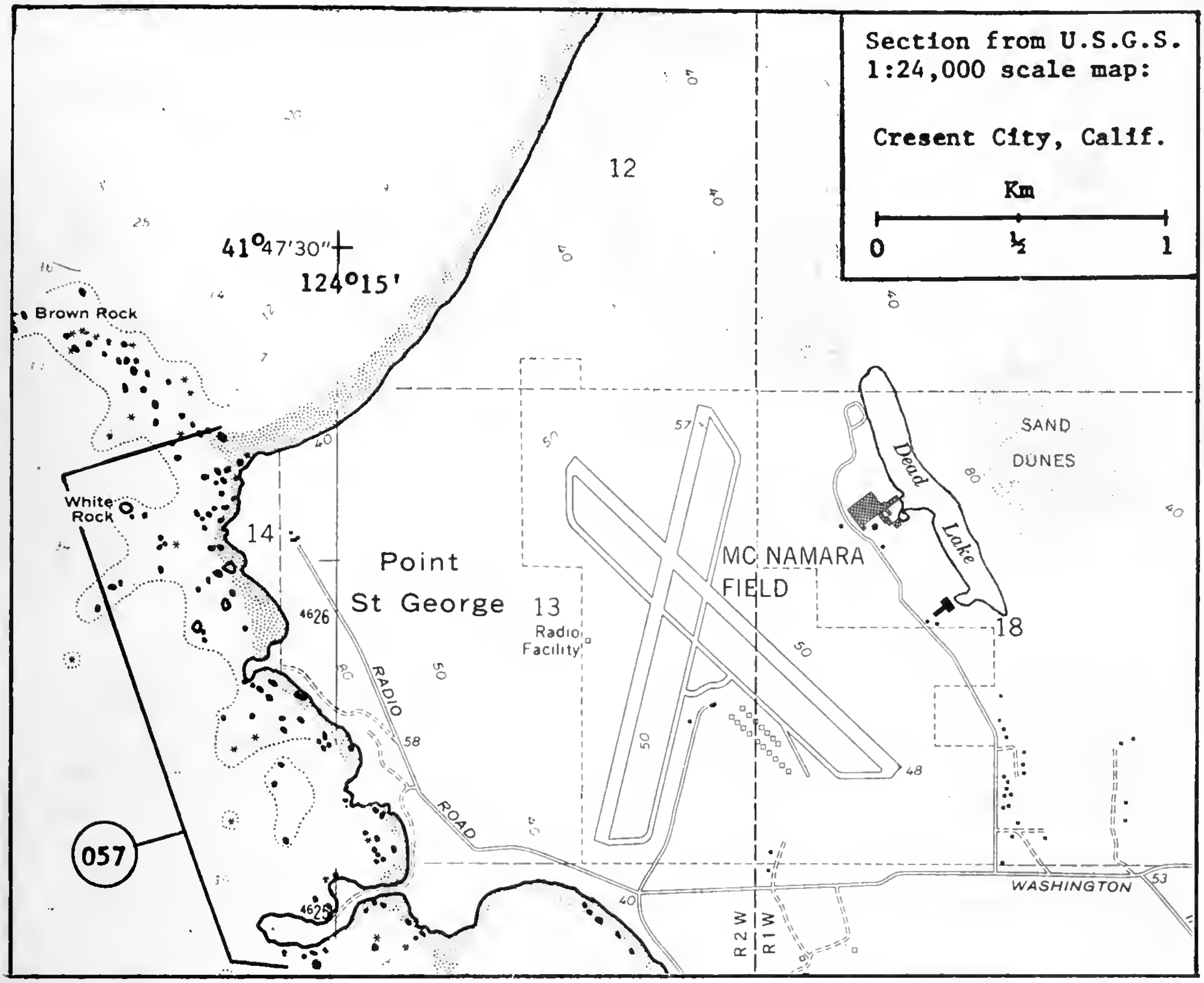

Section from U.S.G.S. 1:24,000 scale map:
Shelter Cove, Calif.
Km
0
½
1
42°02'30"
124°05'
056
Humboldt
SPRING RD
Creek
REDWOOD
400 ROAD
UPPER
Water Tank
Water Tanks
Sewage Disposal
East
PACIFIC
LANDING STRIP
DR
Shelter Cove
16
WT.
SHELTER
COVE
HILLSIDE
TOTH
DR
Dead Mans Gulch
15
BLUERIDGE
Water Tank
BM 68
Point Delgada
Shelter Cove
9

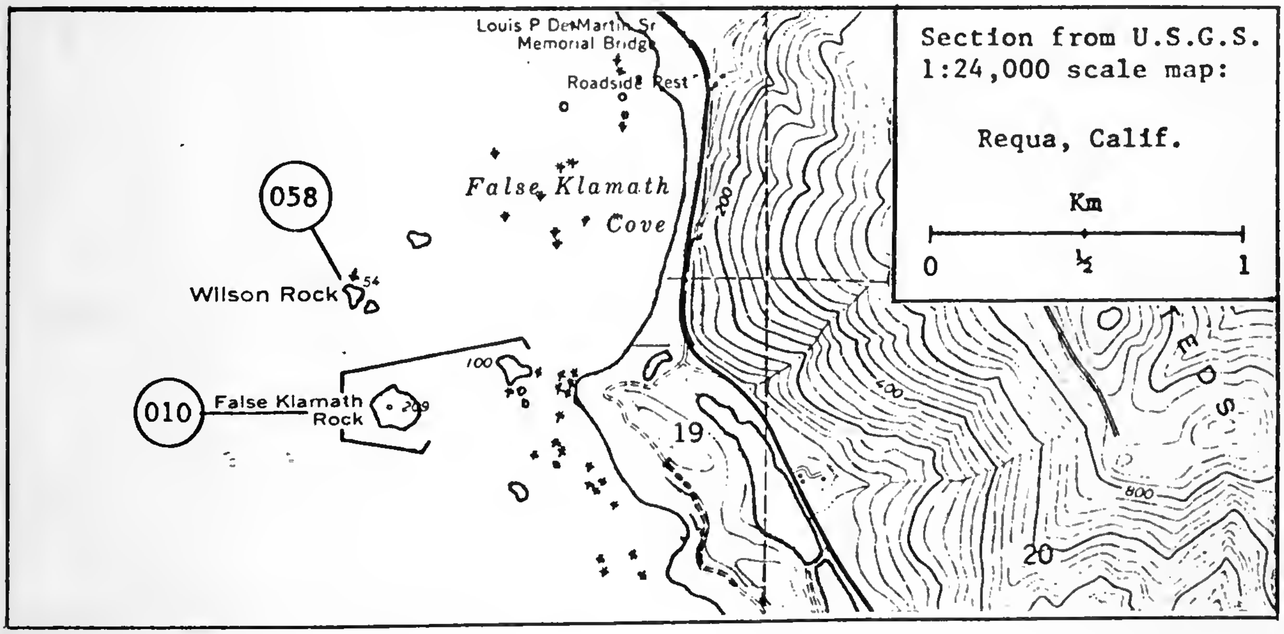
057 Point St. George 41°47'N, 124°15'W

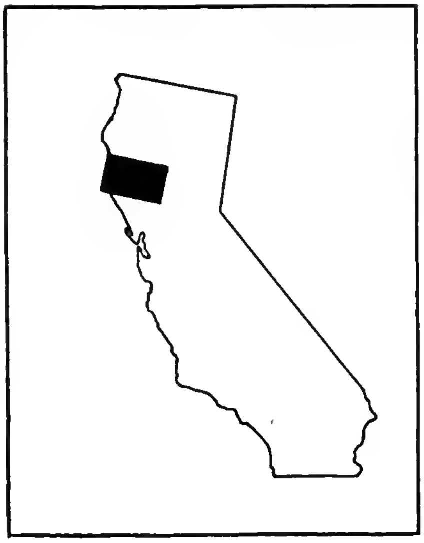
Pelagic Cormorant	14	(Berner & Lester,6/20/80,B,I)	42
Black Oystercatcher	8	(Berner & Lester,6/20/80,B,III)	42
Western Gull	20	(Berner & Lester,6/20/80,B,III)	42
Pigeon Guillemot	40	(Berner & Lester,6/20/80,B,III)	42
Total	82		

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	12		


Section from U.S.G.S.
1:24,000 scale map:
Cresent City, Calif.
Km
0
½
1
41°47'30"
124°15'
Brown Rock
White Rock
057
Point
St George
Radio
Facility
MC NAMARA
FIELD
Dead
Lake
SAND
DUNES
RADIO
ROAD
WASHINGTON
R 2 W
R 1 W
12
13
14
18


Louis P DeMartin Sr
Memorial Bridge
Roadside Rest
Section from U.S.G.S.
1:24,000 scale map:
Requa, Calif.
Km
0
½
1
058
False Klamath
Cove
Wilson Rock
010
False Klamath
Rock
19
20



379

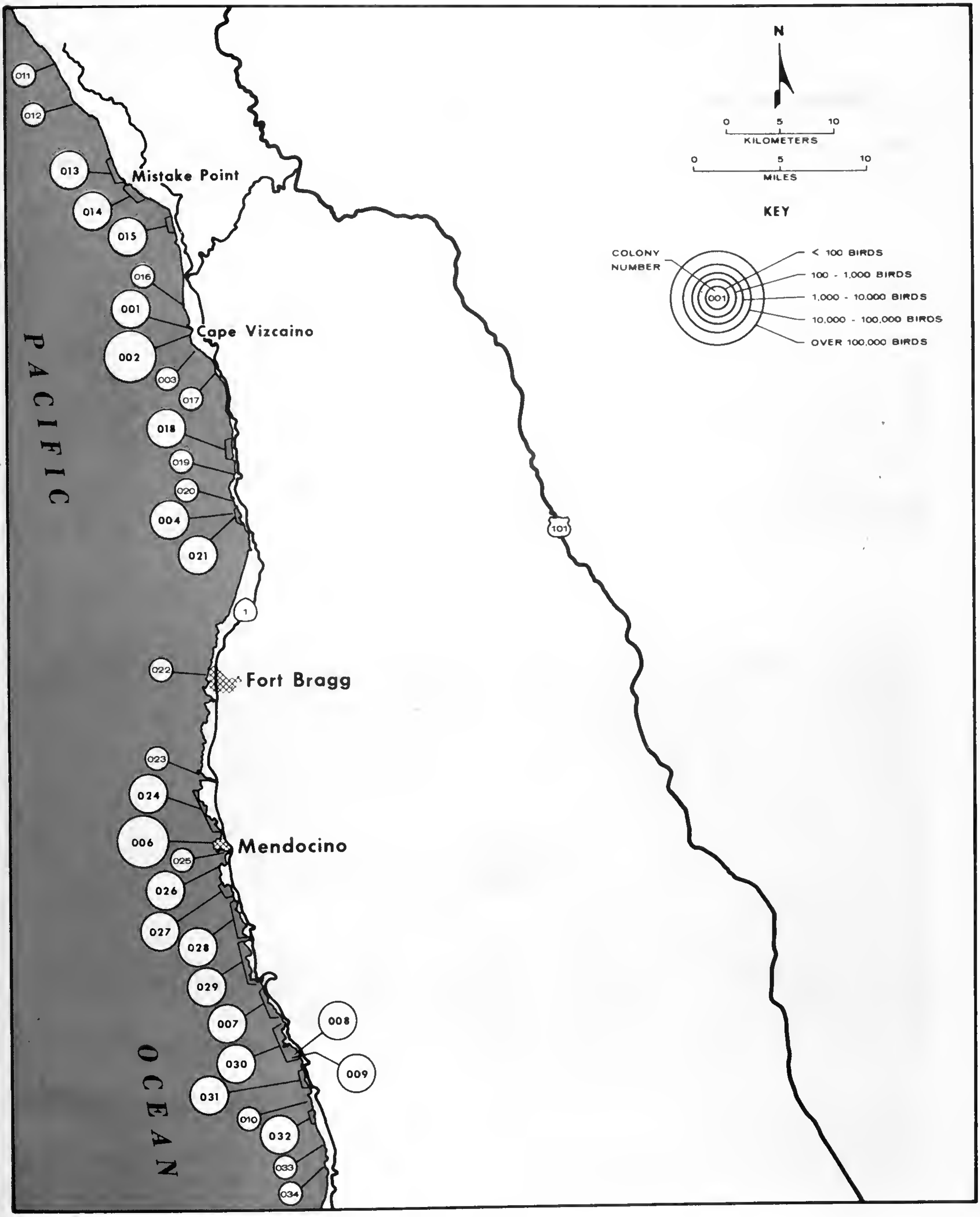
Ukiah

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


N
0 5 10
KILOMETERS
0 5 10
MILES
KEY
COLONY NUMBER
001
< 100 BIRDS
100 - 1,000 BIRDS
1,000 - 10,000 BIRDS
10,000 - 100,000 BIRDS
OVER 100,000 BIRDS
PACIFIC
OCEAN
Mistake Point
Cape Vizcaino
Fort Bragg
Mendocino
101
1
011
012
013
014
015
016
001
002
003
017
018
019
020
004
021
022
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024
006
025
026
027
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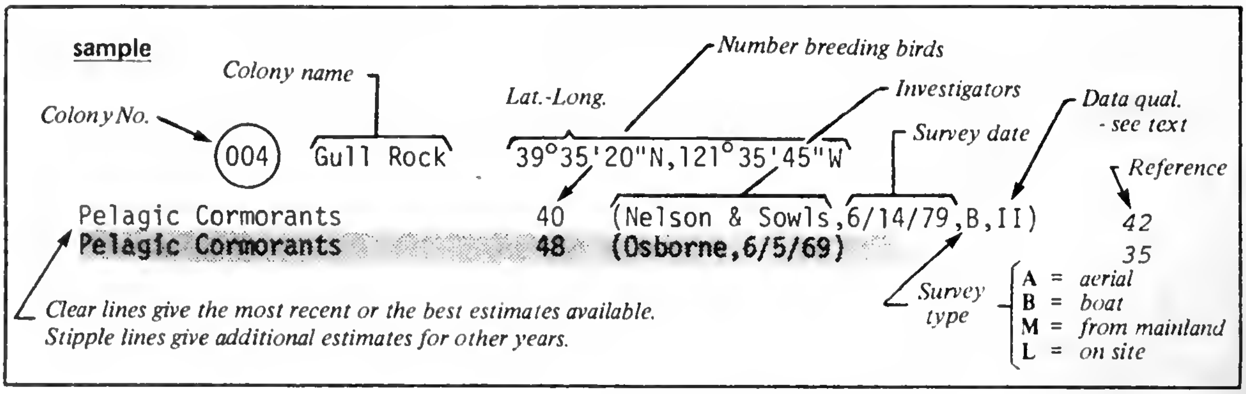
029
007
008
009
030
031
010
032
033
034



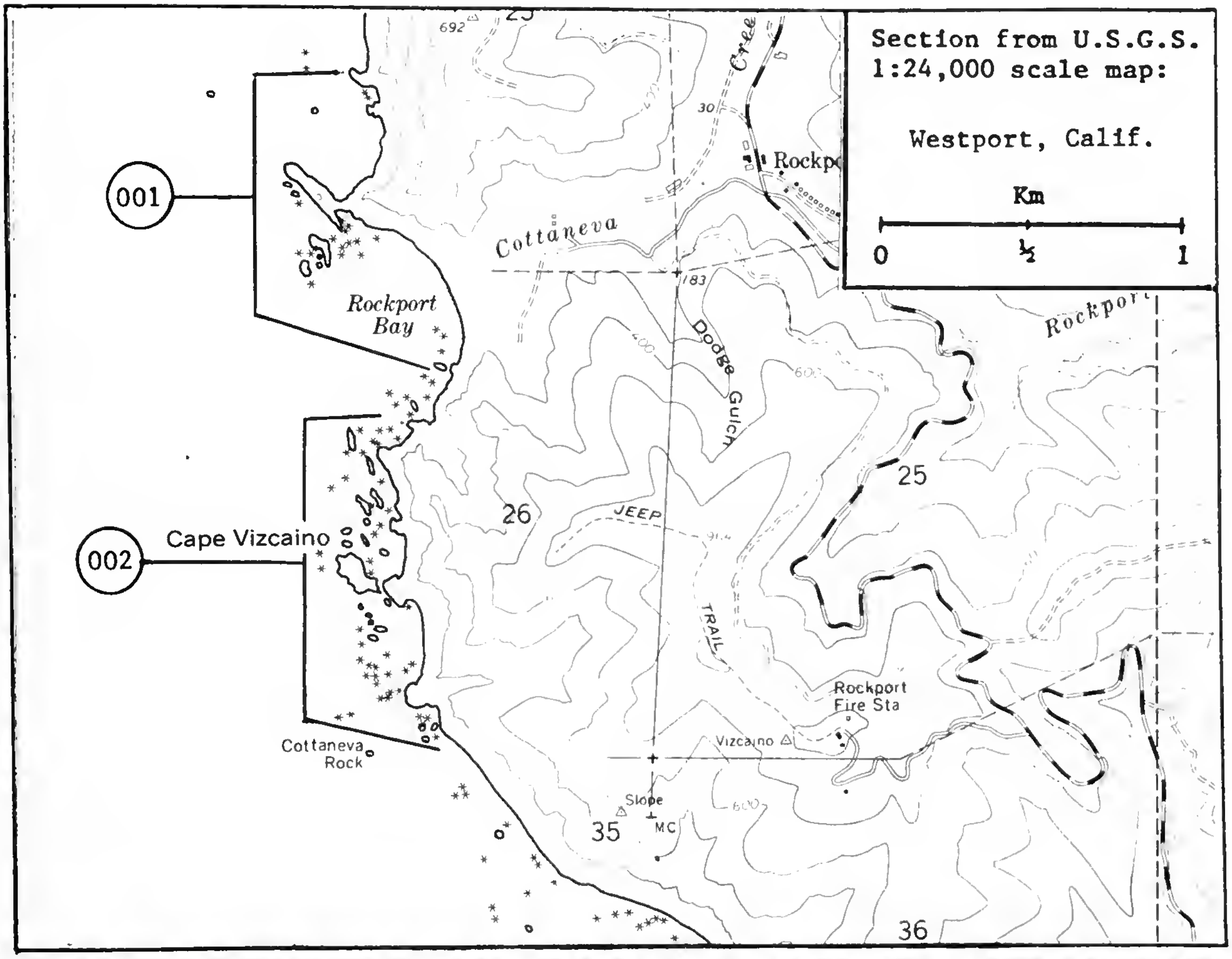
(001) "Rockport Rocks" 39°44'10"N, 123°50'00"W

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

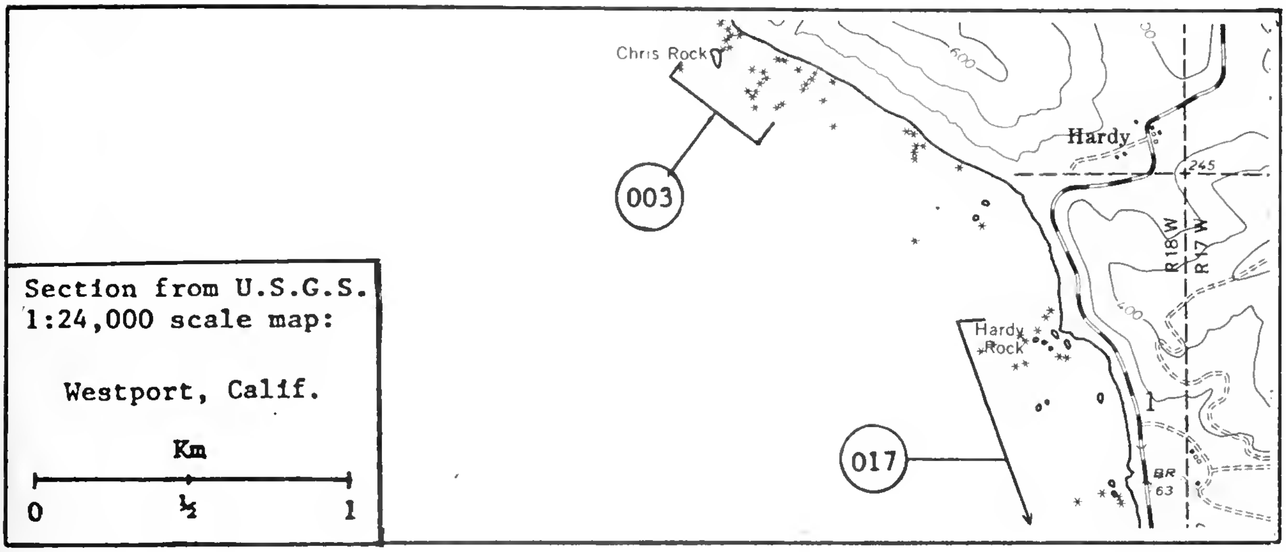
Pelagic Cormorant	54	(Lester & Sowls,7/19/79,B,II)	42
Western Gull	6	(Lester & Sowls,7/19/79,B,III)	42
Total	60		
Pelagic Cormorant	40	(Osborne,8/25/69,M)	36

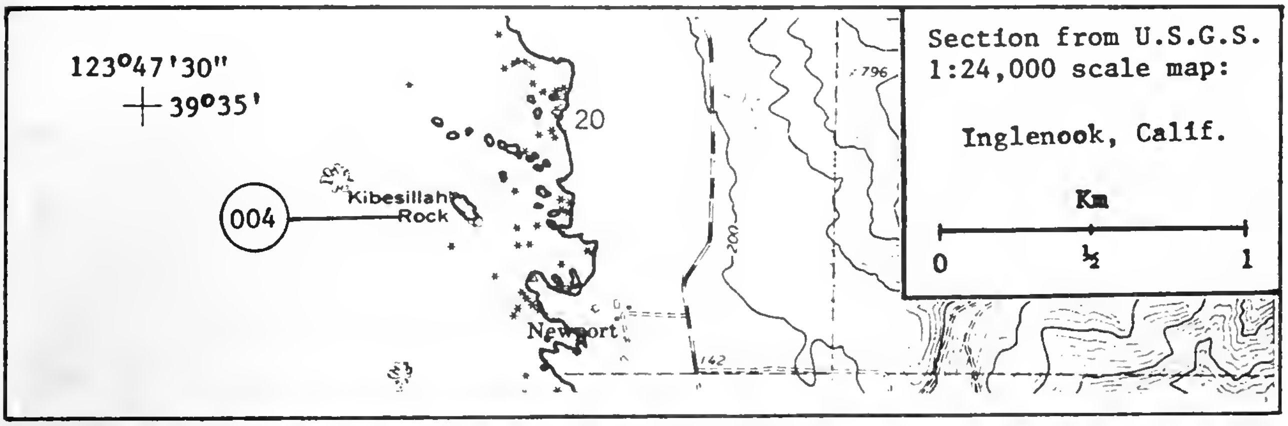
Chris Rock Photo by Tim Osborne

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	462		
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).





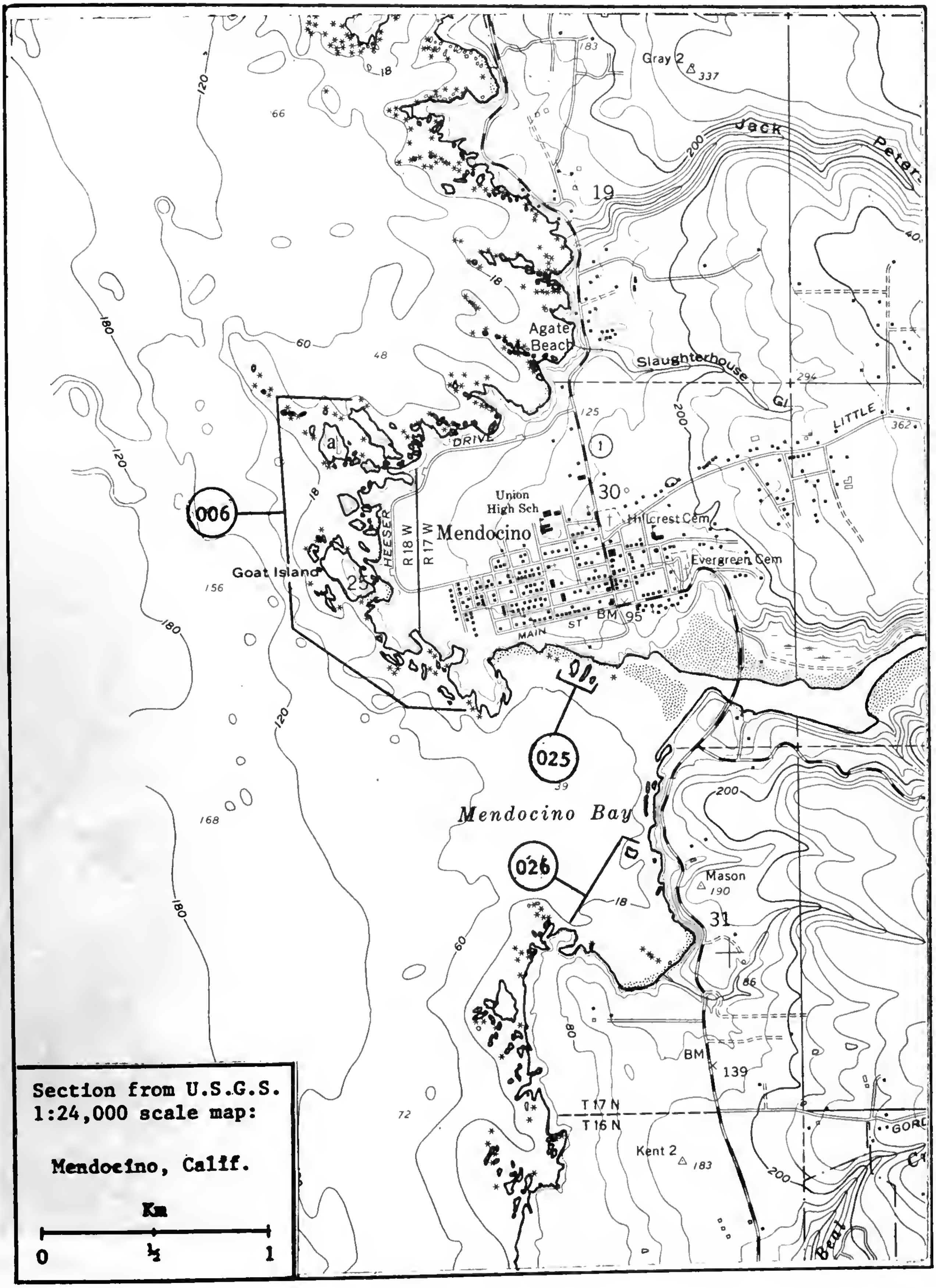
Kibesillah Rock

Photo by Gary Lester

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

Brandt's Cormorant	1,240	(Lester & Sowls,7/23/80,A,II)	42
Pelagic Cormorant	134	(Lester & Sowls,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	(Sowls,6/5/80,BM,III)	42
Tufted Puffin	4	(DeGange, Nelson & Sowls,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



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

Mendocino, Calif.

Km

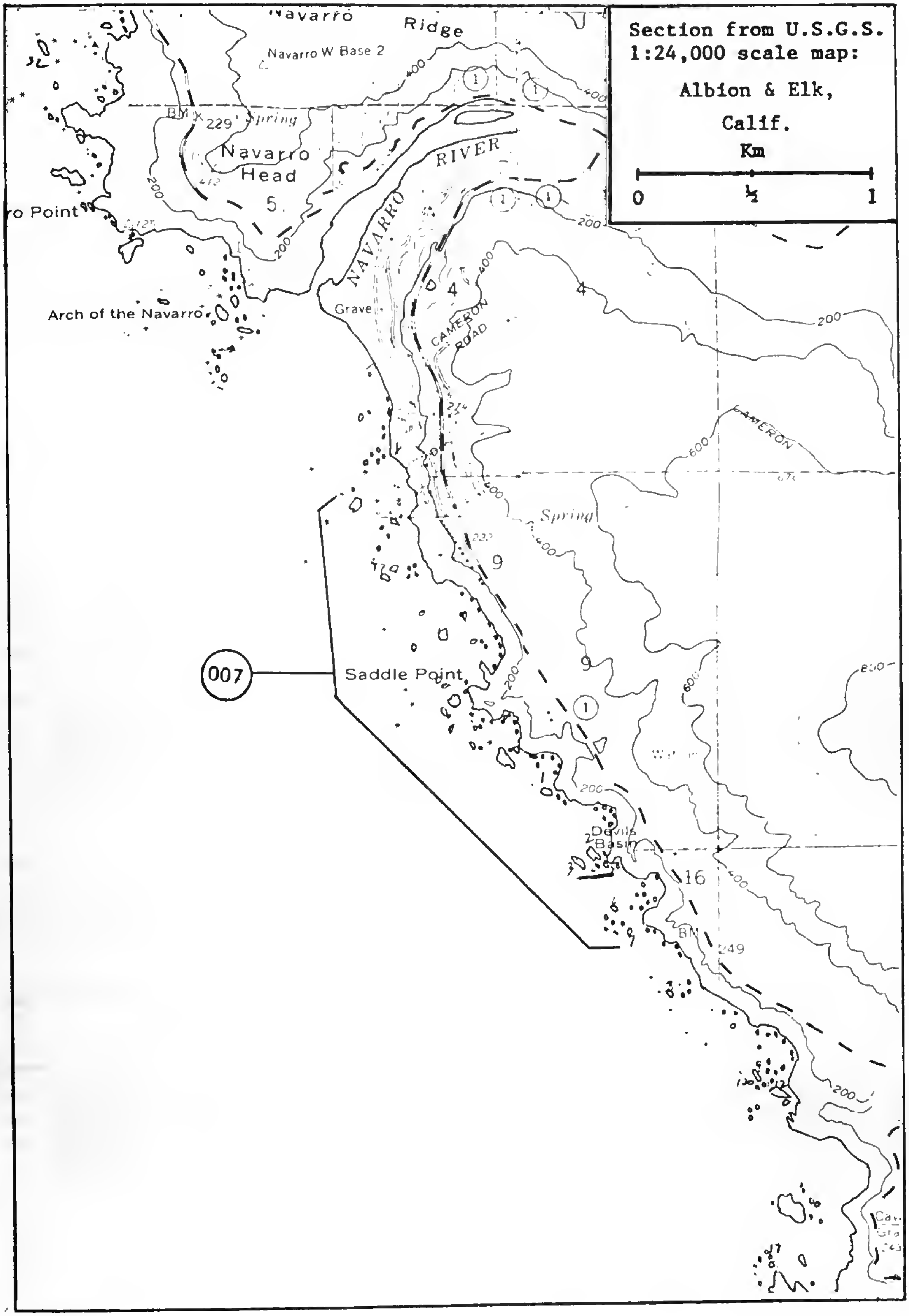
0 ½ 1

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

Brandt's Cormorant	300	(Lester & Sowls,7/23/80,A,III)	*42*
Pelagic Cormorant	132	(Lester, Sowls & Stewart,7/12/80,B,II)	*42*
Black Oystercatcher	2	(Nelson, Sowls & Stewart,6/6/80,B,II)	*42*
Western Gull	14	(Lester, Sowls & Stewart,7/12/80,B,III)	*42*
Pigeon Guillemot	20	(Lester, Sowls & Stewart,7/12/80,B,III)	*42*
Total	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." Photo by Art Sowls


Section from U.S.G.S. 1:24,000 scale map:
Albion & Elk, Calif.
Km
0
½
1
Navarro
Ridge
Navarro W Base 2
Navarro Head
Spring
NAVARRO RIVER
o Point
Arch of the Navarro
Grave
CAMERON ROAD
CAMERON
Spring
007
Saddle Point
Devils Basin
200
400
600

(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

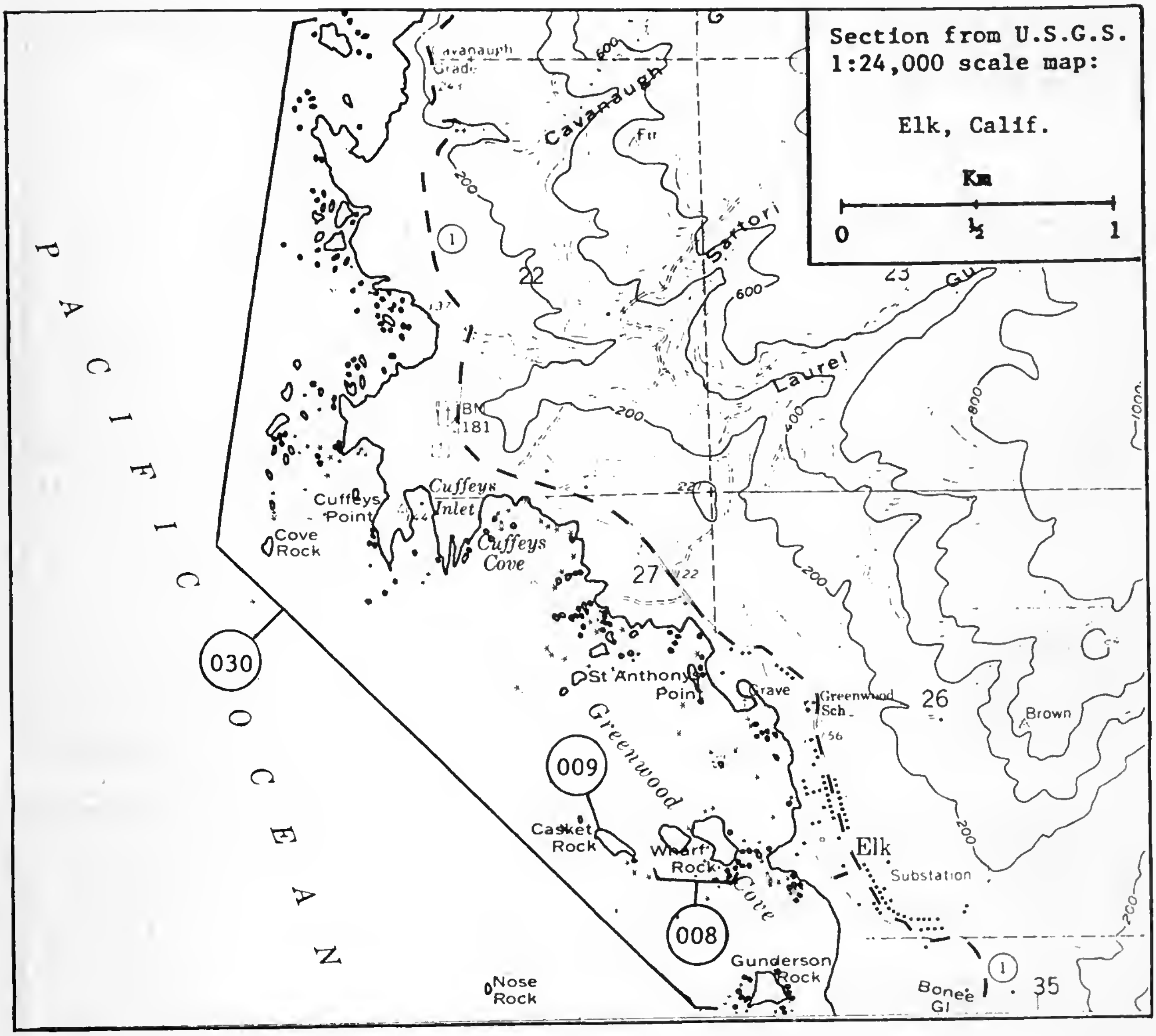
(009) Casket Rock 39°07'49"N, 123°43'39"W

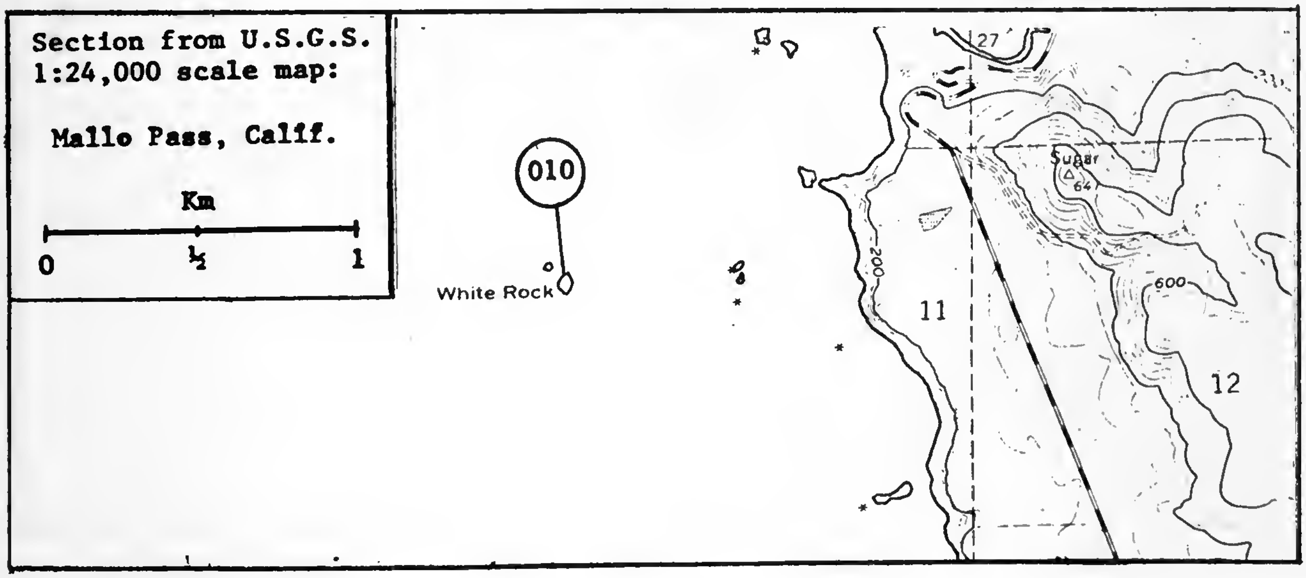
Brandt's Cormorant	330	(Lester & Sowls,7/23/80,A,II)	42
Pelagic Cormorant	0	(Lester, Sowls & Stewart,7/12/80,B,II)	42
Western Gull	2	(Lester, Sowls & Stewart,7/12/80,B,II)	42
Pigeon Guillemot	10	(Lester, Sowls & Stewart,7/12/80,B,III)	42
Total	342		
Brandt's Cormorant	100+	(Osborne,8/25/69,M)	36
Brandt's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


Section from U.S.G.S.
1:24,000 scale map:
Elk, Calif.
Km
0 ½ 1
PACIFIC OCEAN
Cavanaugh
Sartori
Laurel
Cuffeys Point
Cuffeys Inlet
Cuffeys Cove
Cove Rock
030
St Anthony Point
Greenwood
009
Casket Rock
Wharf Rock
Cove
008
Gunderson Rock
Nose Rock
Elk
Substation
Greenwood Sch
Grave
Brown
BM 181
22
23
26
27
35

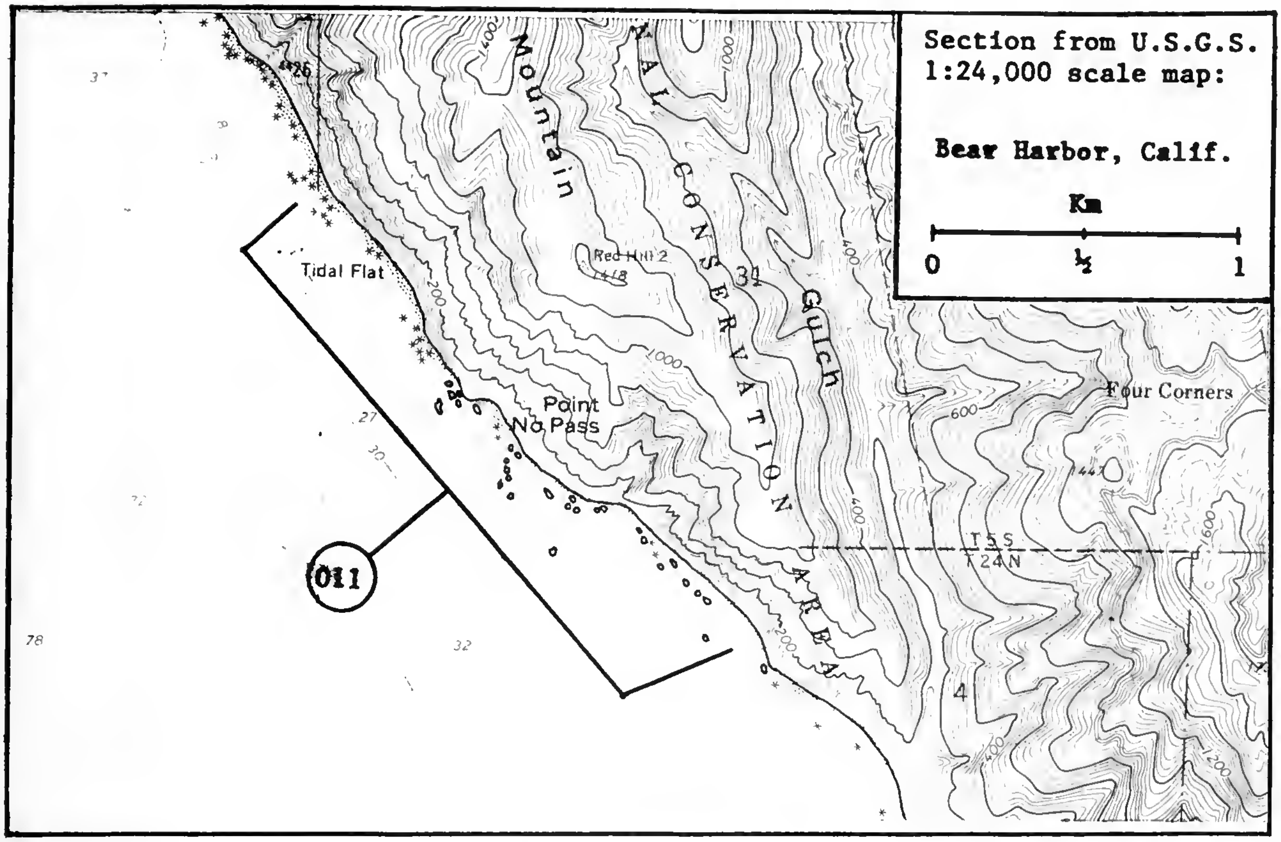

Section from U.S.G.S.
1:24,000 scale map:
Mallo Pass, Calif.
Km
0 ½ 1
010
White Rock
Sugar
11
12
27

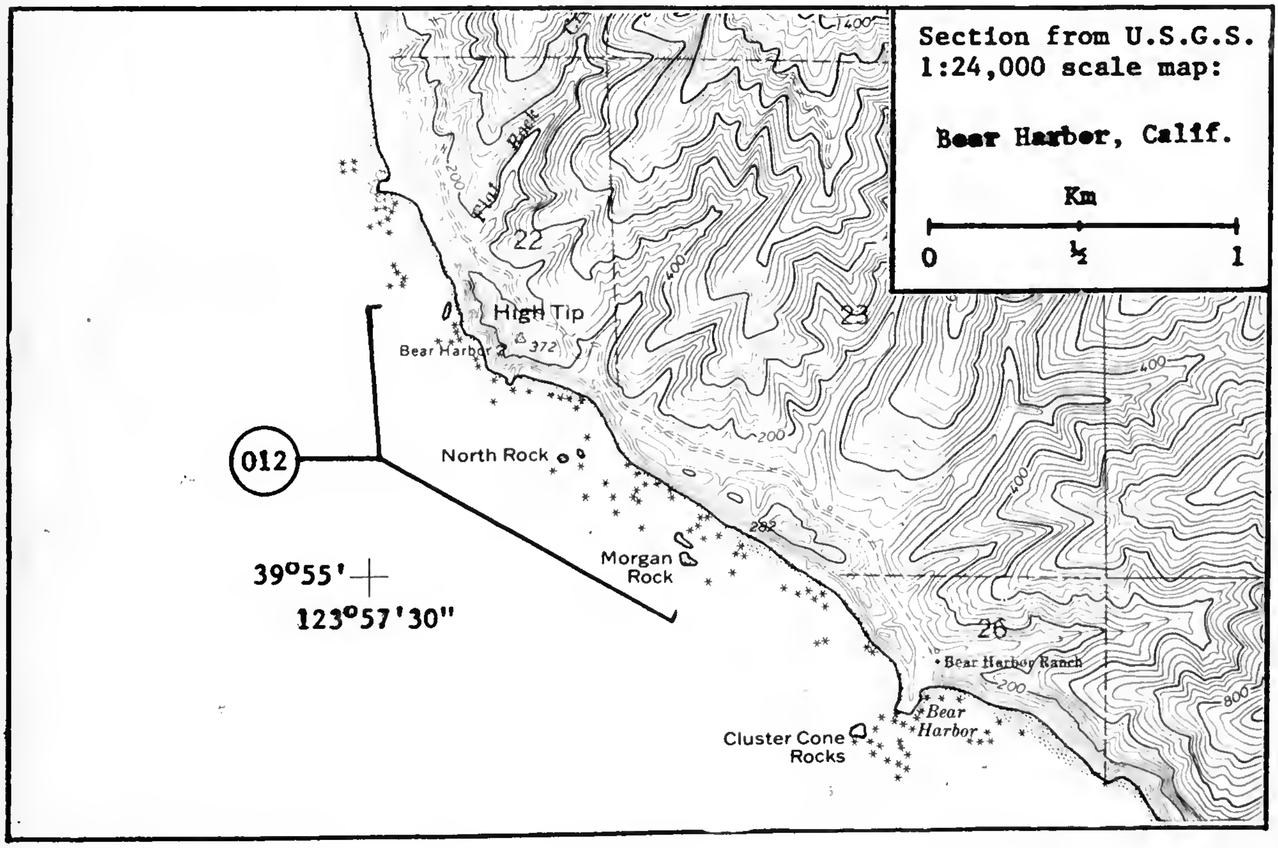
011 Point No Pass 39°58'40"N, 123°59'40"W

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

012 High Tip 39°55'30"N, 123°57'10"W

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


Section from U.S.G.S.
1:24,000 scale map:
Bear Harbor, Calif.
Km
0
½
1
Tidal Flat
Point No Pass
Mountain
Red Hill 2
CONSERVATION AREA
Gulch
Four Corners
T 5 S
T 24 N
011

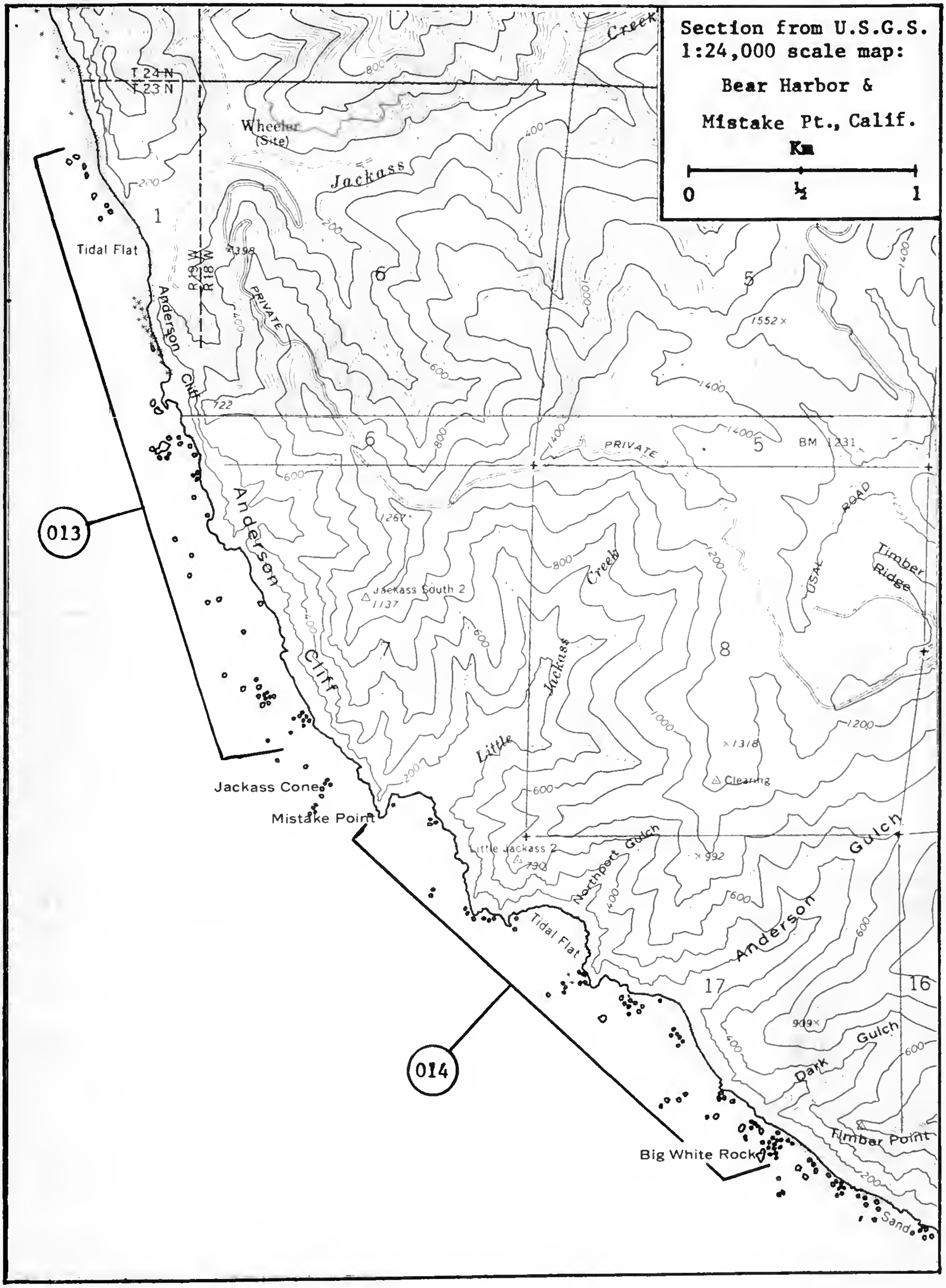

Section from U.S.G.S.
1:24,000 scale map:
Bear Harbor, Calif.
Km
0
½
1
High Tip
Bear Harbor
North Rock
Morgan Rock
Bear Harbor Ranch
Bear Harbor
Cluster Cone Rocks
012
39°55'
123°57'30"

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

Brandt's Cormorant	304	(Lester & Sowls,7/19/79,B,III)	42
Pelagic Cormorant	132	(Lester & Sowls,7/19/79,B,II)	42
Western Gull	4	(Lester & Sowls,7/19/79,B,III)	42
Pigeon Guillemot	40	(Lester & Sowls,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 & Sowls,7/19/79,B,II)	42
Western Gull	2	(Lester & Sowls,7/19/79,B,III)	42
Pigeon Guillemot	100	(Lester & Sowls,7/19/79,B,III)	42
Total	234		

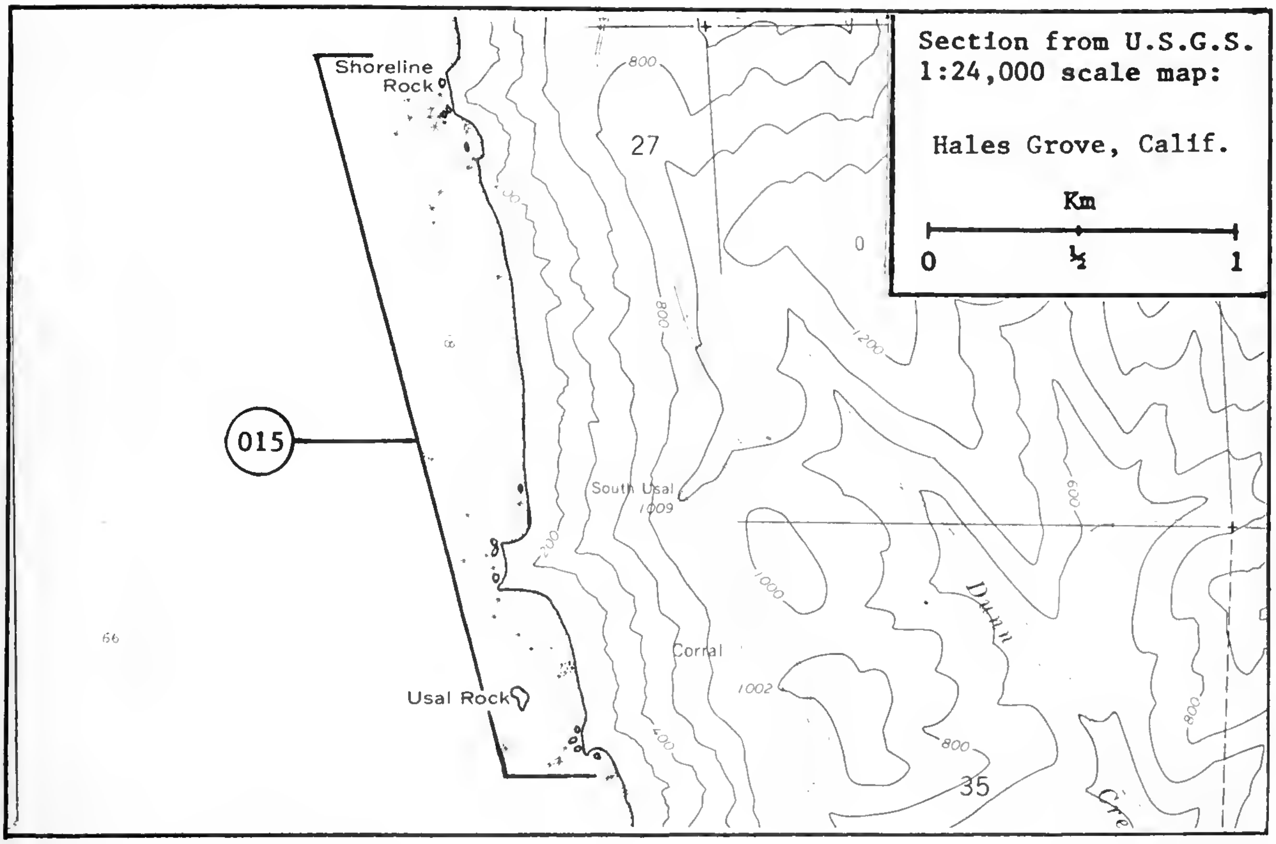

Section from U.S.G.S.
1:24,000 scale map:
Bear Harbor &
Mistake Pt., Calif.
Km
0
½
1
013
014
Tidal Flat
Anderson Cliff
Anderson Cliff
Wheeler (Site)
Jackass
Creek
T 24 N
T 23 N
R 19 W
R 18 W
PRIVATE
PRIVATE
USAL ROAD
Timber Ridge
Jackass South 2
1137
Little Jackass Creek
Jackass Cone
Mistake Point
Little Jackass 2
730
Northport Gulch
Anderson Gulch
Tidal Flat
Dark Gulch
Timber Point
Big White Rock
Sand
Clearing
BM 1231
1552
1318
992
909
1267
722

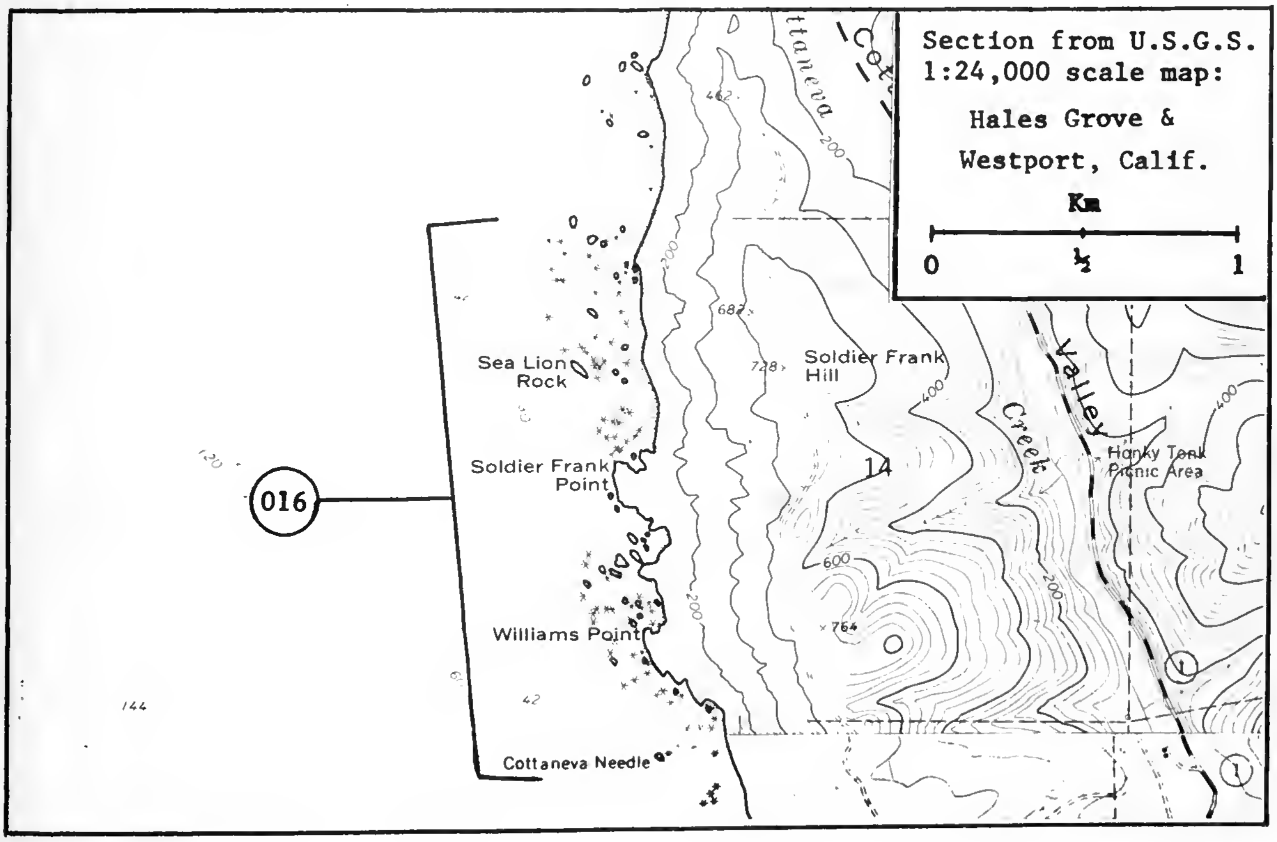
015 Usal Bay 39°48'45"N, 123°50'30"W

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

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

Pelagic Cormorant	18	(Lester & Sowls,7/19/79,B,II)	42
Western Gull	20	(Lester & Sowls,7/19/79,B,III)	42
Pigeon Guillemot	20	(Lester & Sowls,7/19/79,B,III)	42
Total	58		


Section from U.S.G.S.
1:24,000 scale map:
Hales Grove, Calif.
Km
0
½
1
Shoreline Rock
015
South Usal
1009
Corral
Usal Rock
Dunn
27
35
800
1200
1000
1002
600
400
200


Section from U.S.G.S.
1:24,000 scale map:
Hales Grove &
Westport, Calif.
Km
0
½
1
Sea Lion Rock
Soldier Frank Point
Williams Point
Cottaneva Needle
016
Soldier Frank Hill
Valley
Creek
Honky Tonk Picnic Area
14
764
728
682
462
600
400
200

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

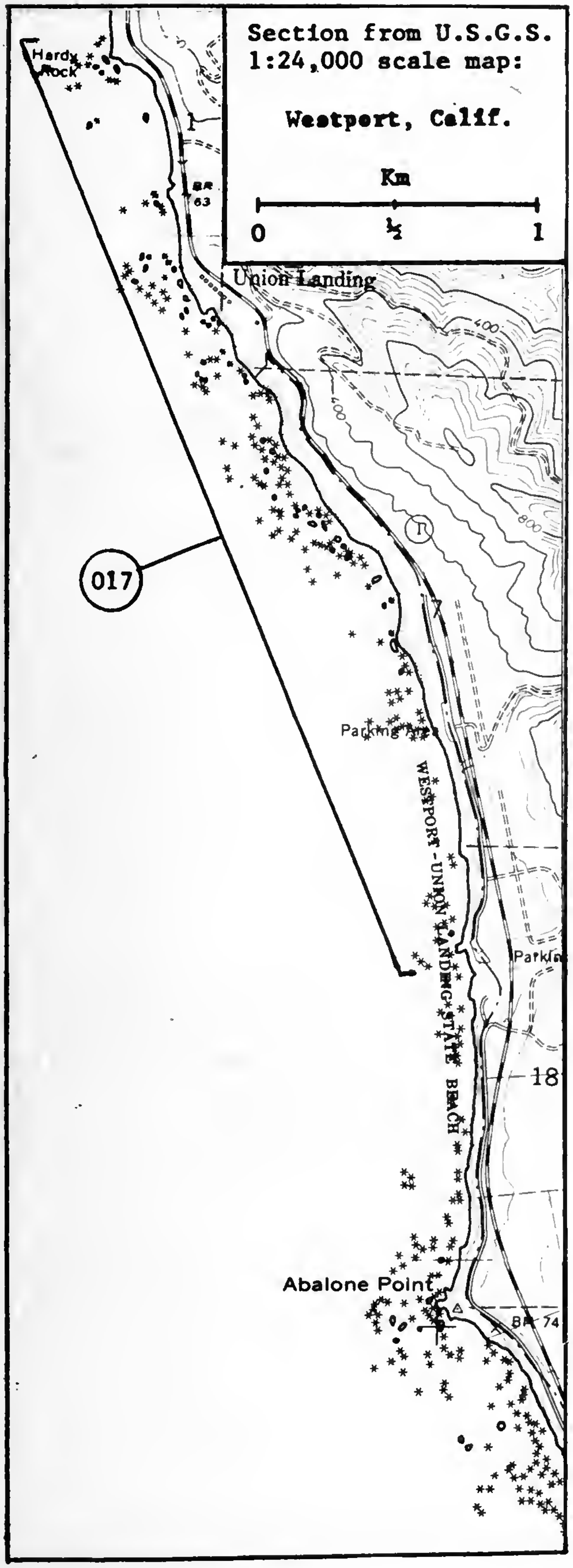
Pelagic Cormorant	46	(Lester, Rodstrom & Sowls,6/10/79,B,8/8/79,M,III)	4
Western Gull	8	(Lester & Sowls,8/8/79,M,III)	4
Pigeon Guillemot	6	(Lester, Rodstrom & Sowls,6/10/79,B,8/8/79,M,III)	4
Total	60		

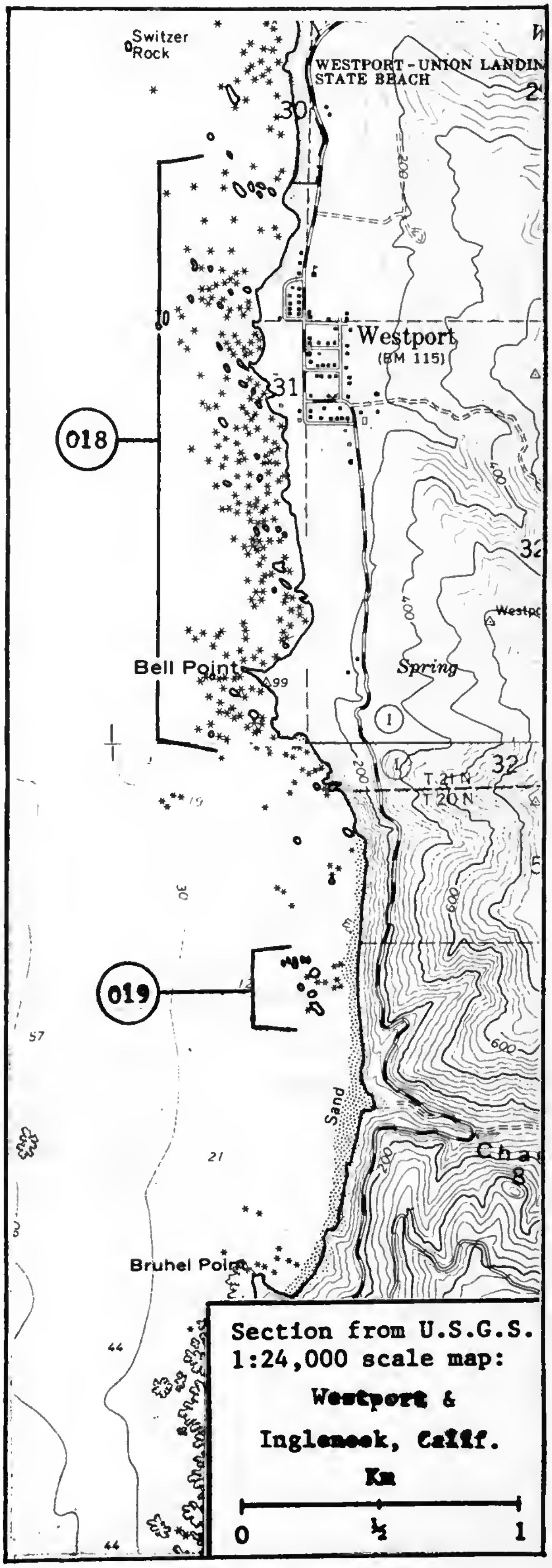
(018) Westport 39°38'00"N, 123°47'20"W

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	188		

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

Pelagic Cormorant	74	(Lester & Rodstrom,6/13/79,BM,II)	*42*


Section from U.S.G.S.
1:24,000 scale map:
Westport, Calif.
Km
0
½
1
Hardy Rock
Union Landing
017
Parking Area
WESTPORT-UNION LANDING STATE BEACH
Abalone Point
18

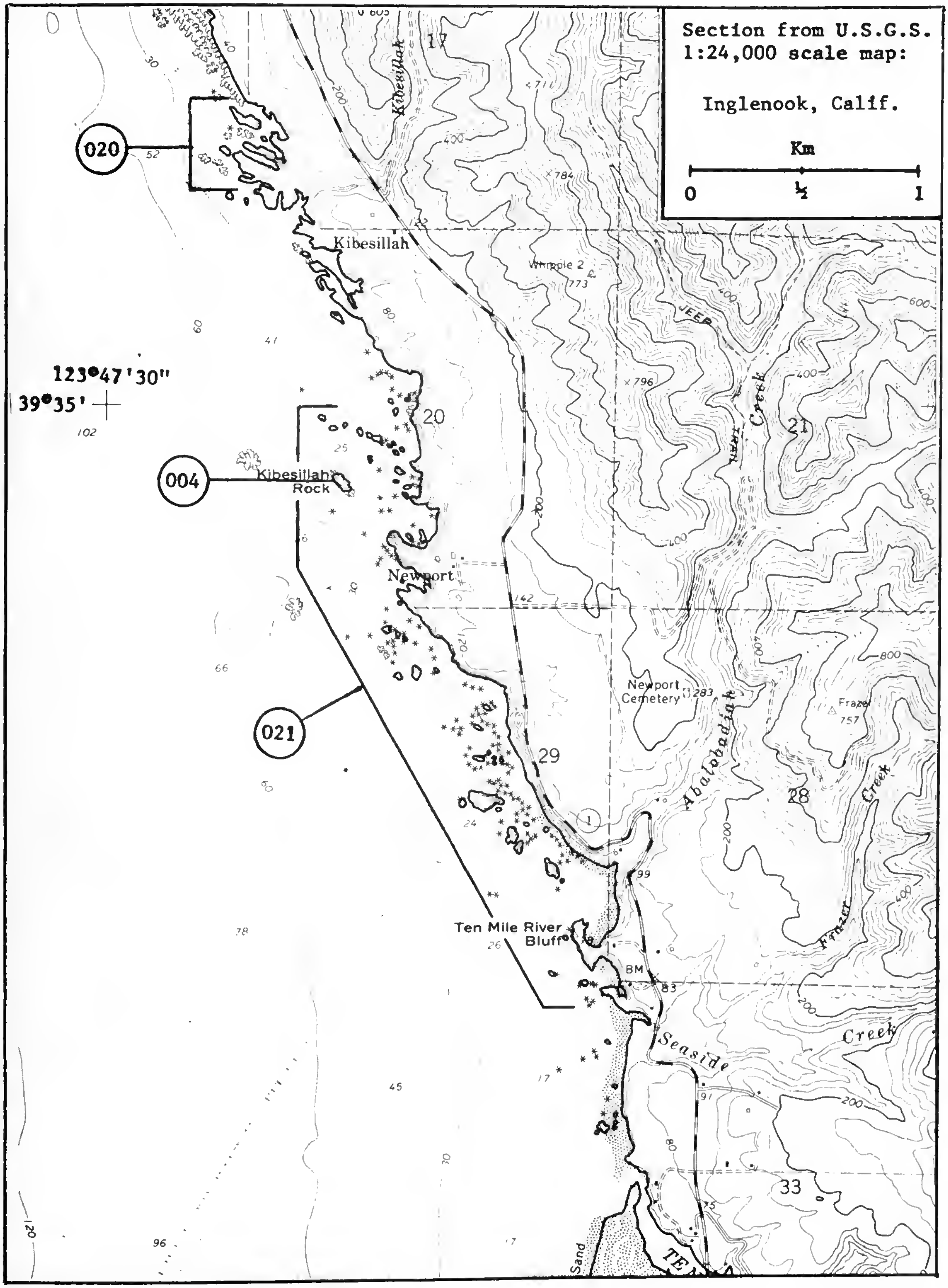

Switzer Rock
WESTPORT-UNION LANDING STATE BEACH
Westport
(BM 115)
018
Bell Point
Spring
T.21N
T.20N
019
Sand
Bruhel Point
Section from U.S.G.S.
1:24,000 scale map:
Westport &
Inglenook, Calif.
Km
0
½
1

(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	96		

(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	226		

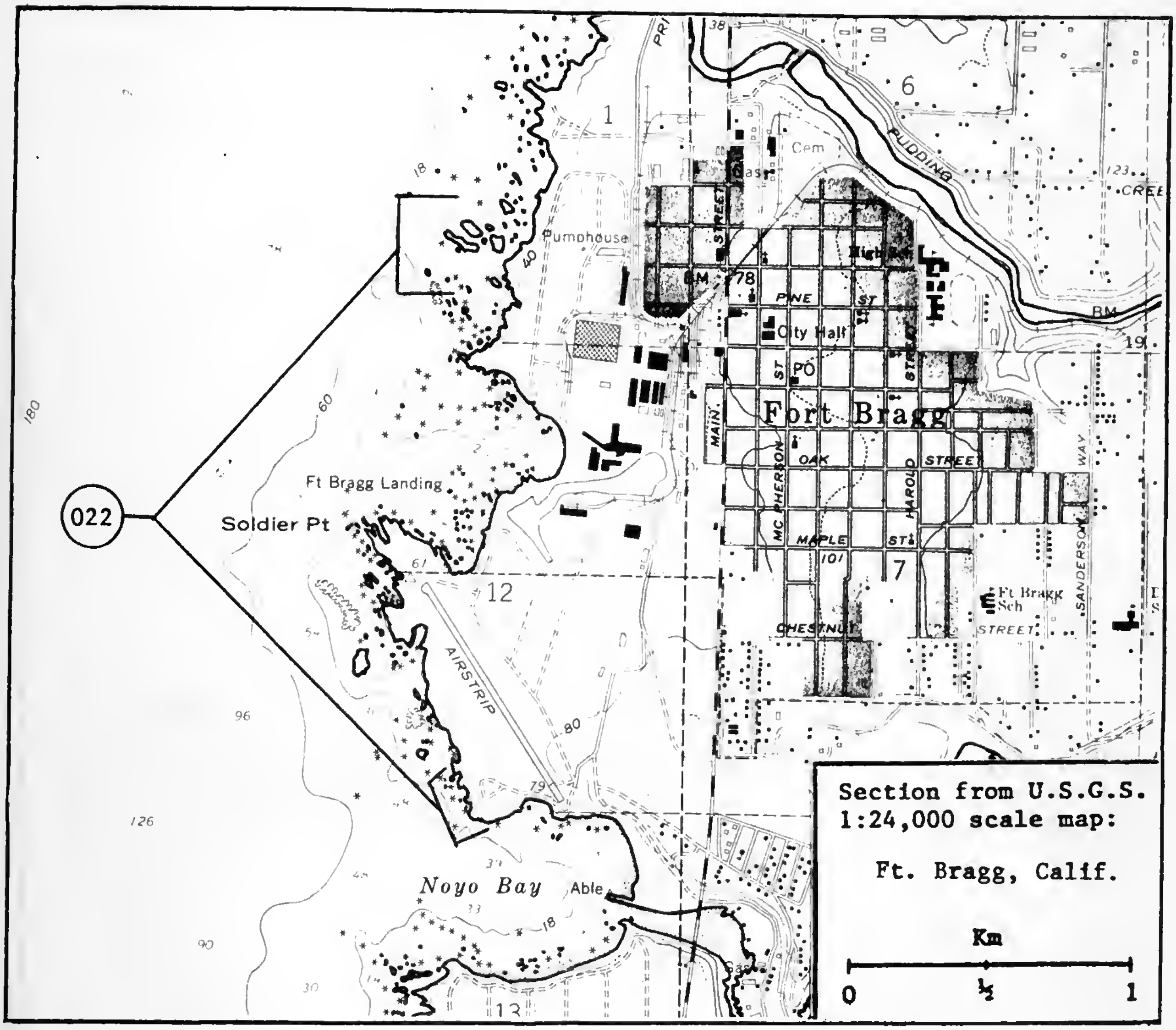

Section from U.S.G.S.
1:24,000 scale map:
Inglenook, Calif.
Km
0
½
1
020
004
021
123°47'30"
39°35'
Kibesillah
Kibesillah Rock
Newport
Ten Mile River Bluff
Newport Cemetery
Whipple 2
Frazer
Abalobadiah
Creek
Seaside
Sand
BM

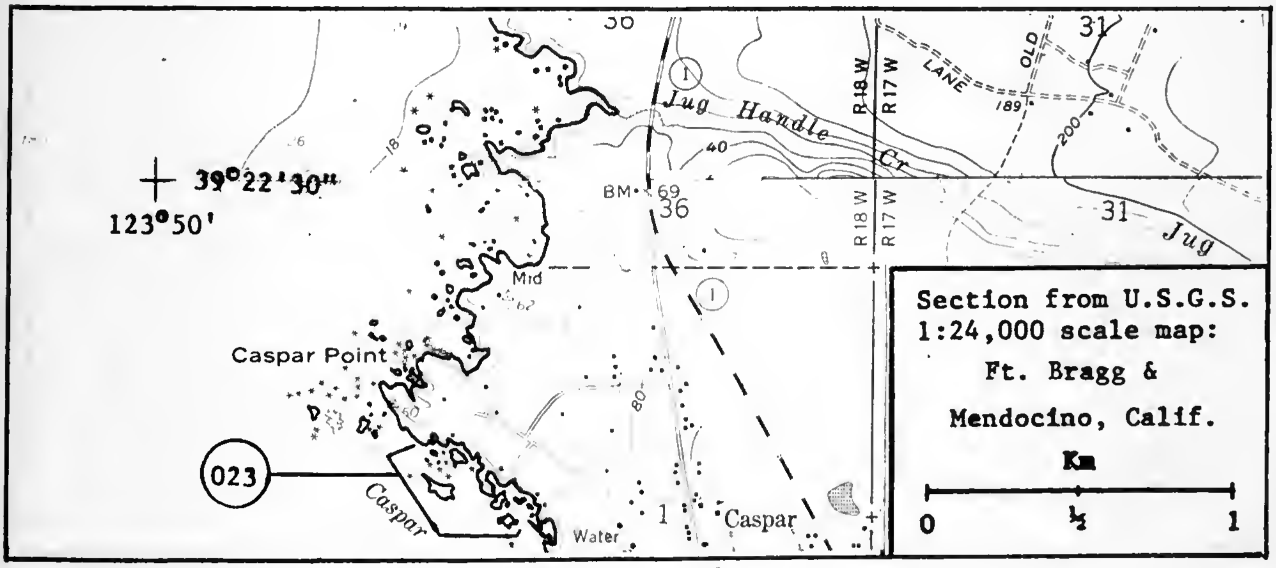
022 "Georgia Pacific" 39°27'N, 123°48'45"W

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	38		

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

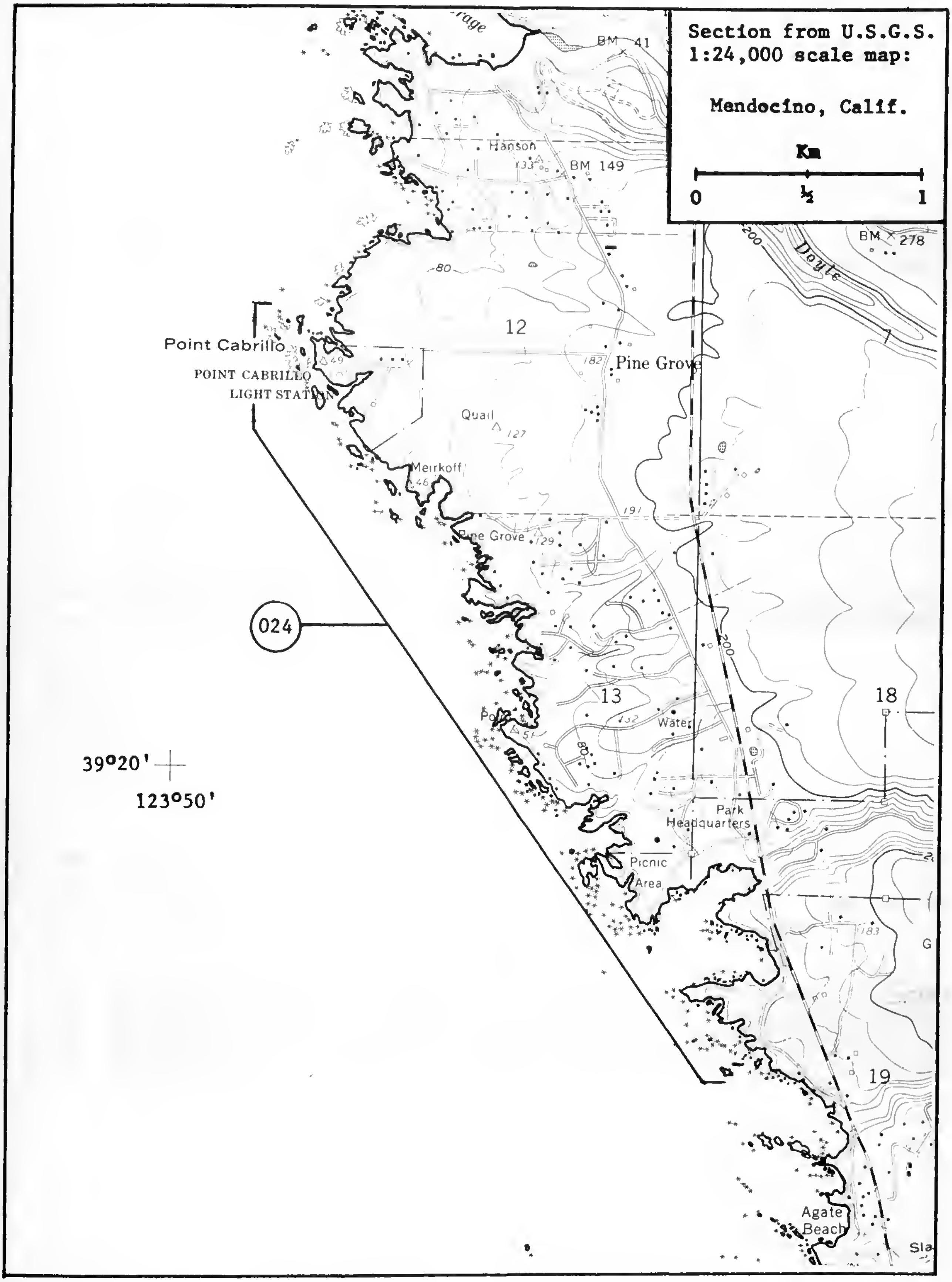
Pelagic Cormorant	58	(Lester & Rodstrom,6/12/79,B,I)	42
Black Oystercatcher	2	(Lester & Rodstrom,6/12/79,B,III)	42
Pigeon Guillemot	2	(Lester & Rodstrom,6/12/79,B,III)	42
Total	62		


Section from U.S.G.S.
1:24,000 scale map:
Ft. Bragg, Calif.
Km
0
½
1
022
Soldier Pt
Ft Bragg Landing
Noyo Bay
Fort Bragg
Pumphouse
City Hall
Cem
PO
AIRSTRIP
PUDDING
CREEK
PINE
OAK
MAPLE
CHESTNUT
MAIN
MC PHERSON
HAROLD
SANDERSON
STREET
Ft Bragg Sch
Able
BM
6
7
12
13
19


Section from U.S.G.S.
1:24,000 scale map:
Ft. Bragg &
Mendocino, Calif.
Km
0
½
1
39°22'30"
123°50'
023
Caspar Point
Caspar
Jug Handle Cr
LANE
OLD
R 18 W
R 17 W
BM 69
36
31
Mid
Water

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		


Section from U.S.G.S.
1:24,000 scale map:
Mendocino, Calif.
Km
0
½
1
BM 41
Hanson
BM 149
BM 278
Doyle
80
12
Point Cabrillo
POINT CABRILLO
LIGHT STATION
Pine Grove
Quail
127
Meirkoff
Pine Grove
129
191
024
200
13
Water
18
39°20'
123°50'
Park
Headquarters
Picnic
Area
183
19
Agate
Beach

025 Mendocino 39°18'10"N, 123°47'50"W

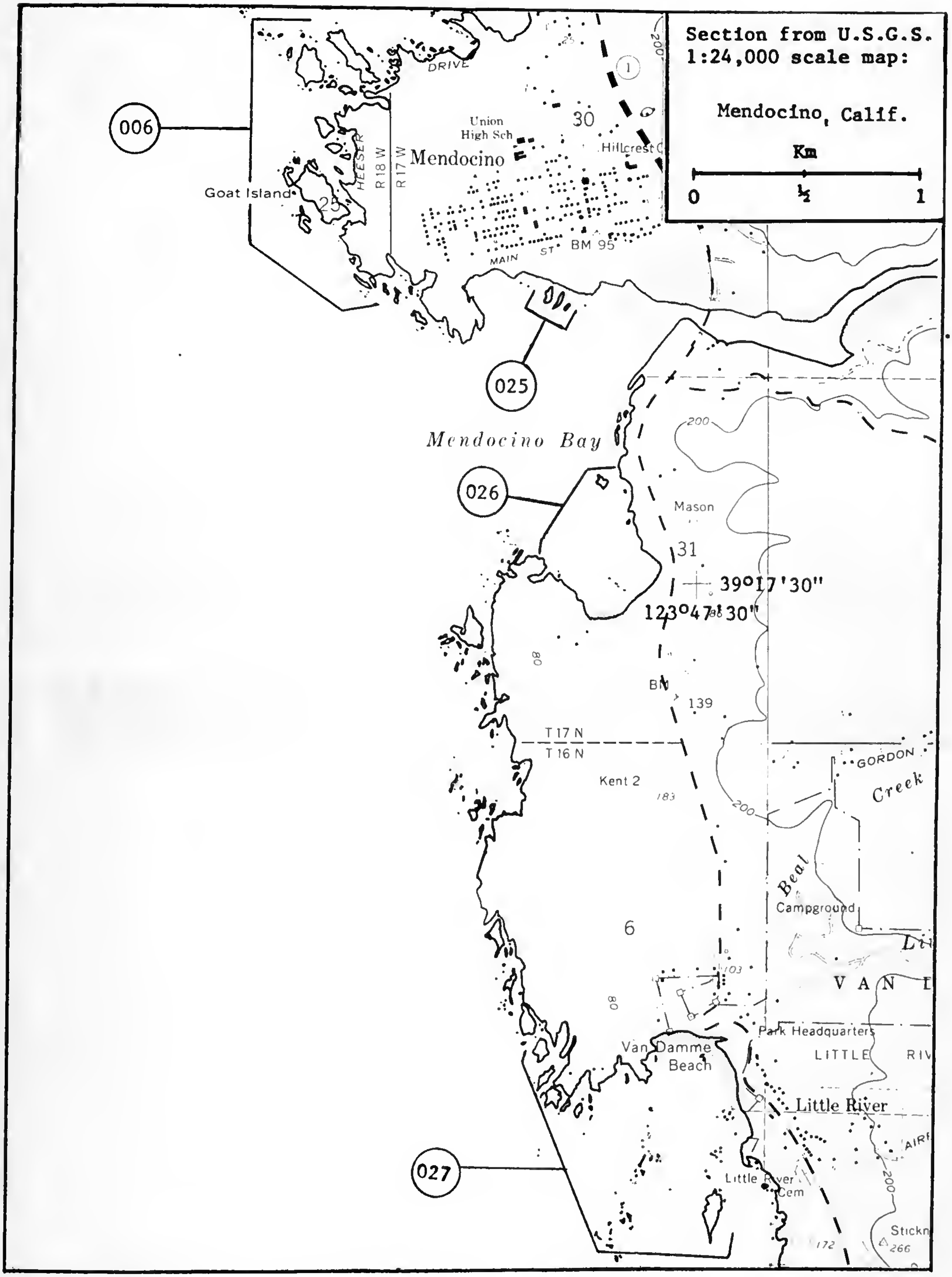
Pelagic Cormorant	52	(Nelson & Sowls,6/5/80,B,I)	42
Black Oystercatcher	2	(DeGange, Lester & Nelson,6/5/80,BL,I)	42
Pigeon Guillemot	32	(Lester & Stewart,6/5/80,M,III)	42
Total	86		
Pelagic Cormorant	44	(Sowls,5/18/79,M,II)	42
Pigeon Guillemot	50	(Sowls,5/18/79,M,III)	42

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

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

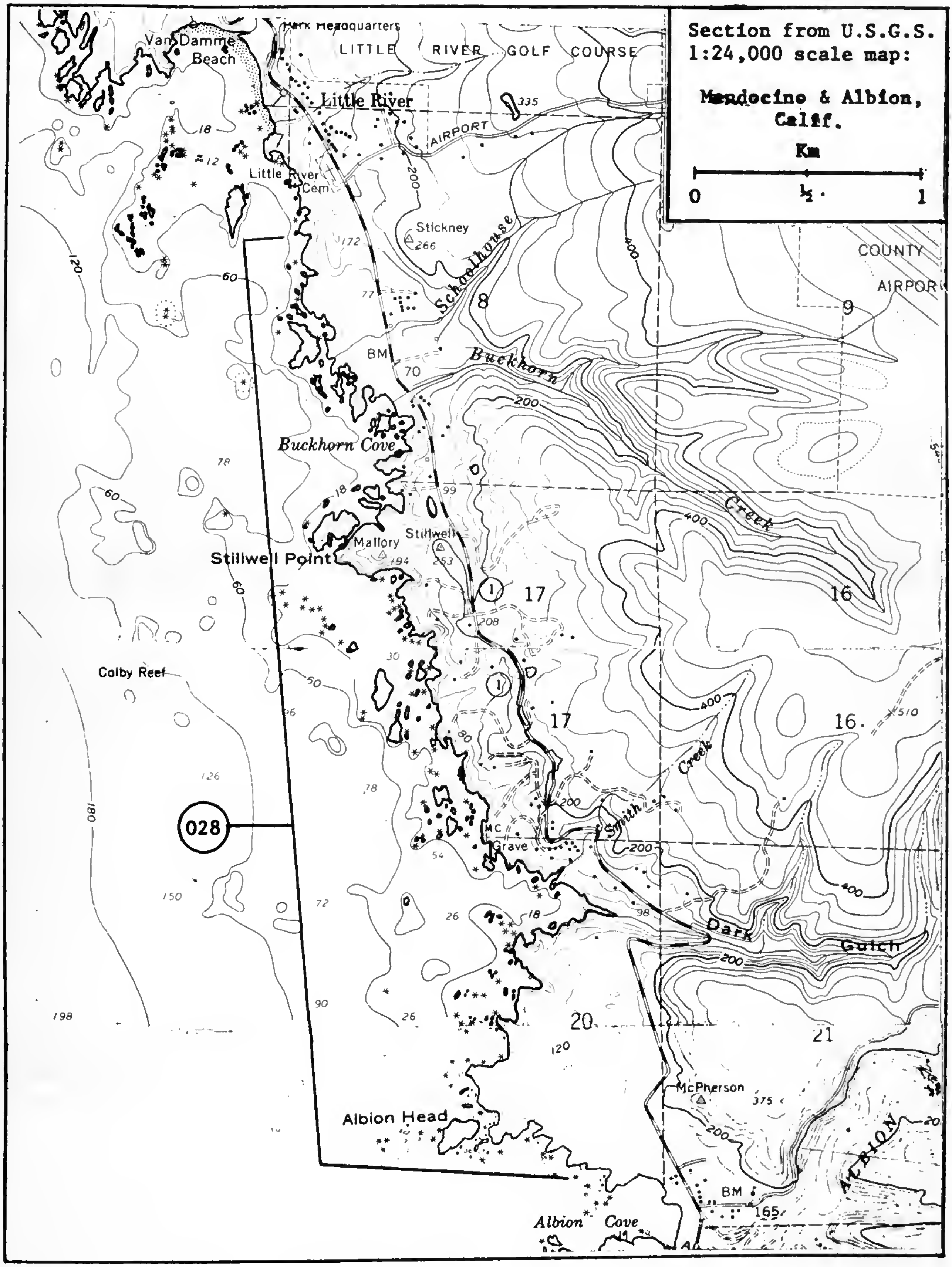
027 "Van Damme Cove" 39°16'10"N, 123°47'28"W

Pelagic Cormorant	26	(DeGange, Nelson & Stewart,6/5/80,B,II)	42
Black Oystercatcher	2	(Lester, Sowls & 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, Sowls & Stewart,6/6/80,L,II)	42
Total	290		
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


Section from U.S.G.S.
1:24,000 scale map:
Mendocino, Calif.
Km
0
½
1
006
025
026
027
Goat Island
Mendocino
Union
High Sch
Hillcrest
DRIVE
MAIN
ST
BM 95
HEESER
R 18 W
R 17 W
30
25
Mendocino Bay
Mason
31
39°17'30"
123°47'30"
BM
139
T 17 N
T 16 N
Kent 2
183
GORDON
Creek
Beal
Campground
6
VAN
Park Headquarters
LITTLE
Van Damme
Beach
Little River
Little River
Cem
Stickn
266
172
200
80
103

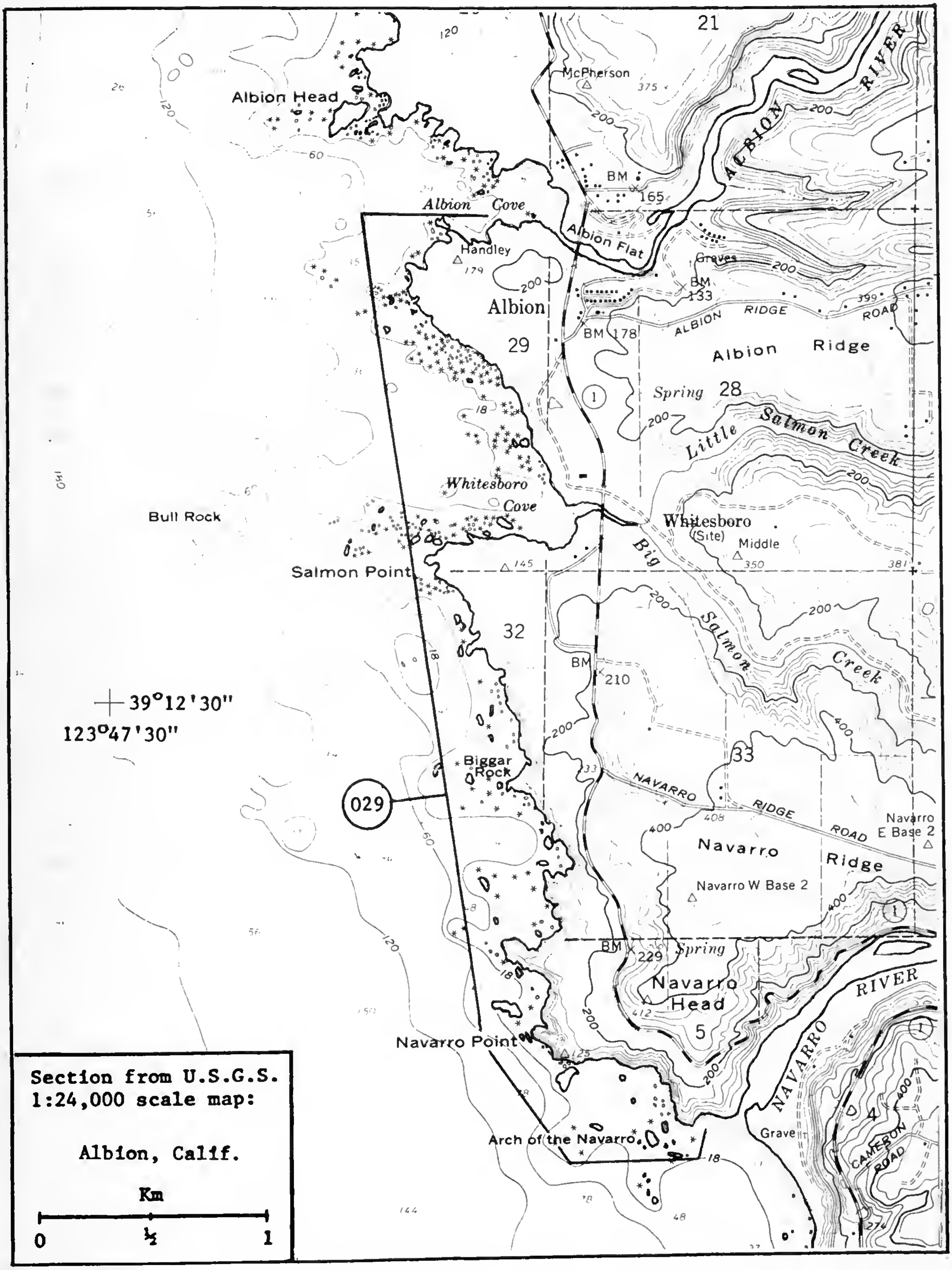
028 Schoolhouse Creek to Albion River 39°15'N, 123°46'30"W

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	552		
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


Section from U.S.G.S.
1:24,000 scale map:
Mendocino & Albion, Calif.
Km
0
½
1
Van Damme Beach
Little River
LITTLE RIVER GOLF COURSE
AIRPORT
Little River Cem
Stickney
Schoolhouse
COUNTY AIRPORT
Buckhorn Creek
Buckhorn Cove
Mallory
Stillwell
Stillwell Point
Colby Reef
028
Smith Creek
MC Grave
Dark Gulch
McPherson
ALBION
Albion Head
Albion Cove
BM

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

Pelagic Cormorant	266	(Nelson, Sowls & Stewart,6/6/80,B,II)	42
Black Oystercatcher	8	(Nelson, Sowls & Stewart,6/6/80,B,II)	42
Western Gull	16	(Nelson, Sowls & Stewart,6/6/80,B,III)	42
Pigeon Guillemot	30	(Nelson, Sowls & 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



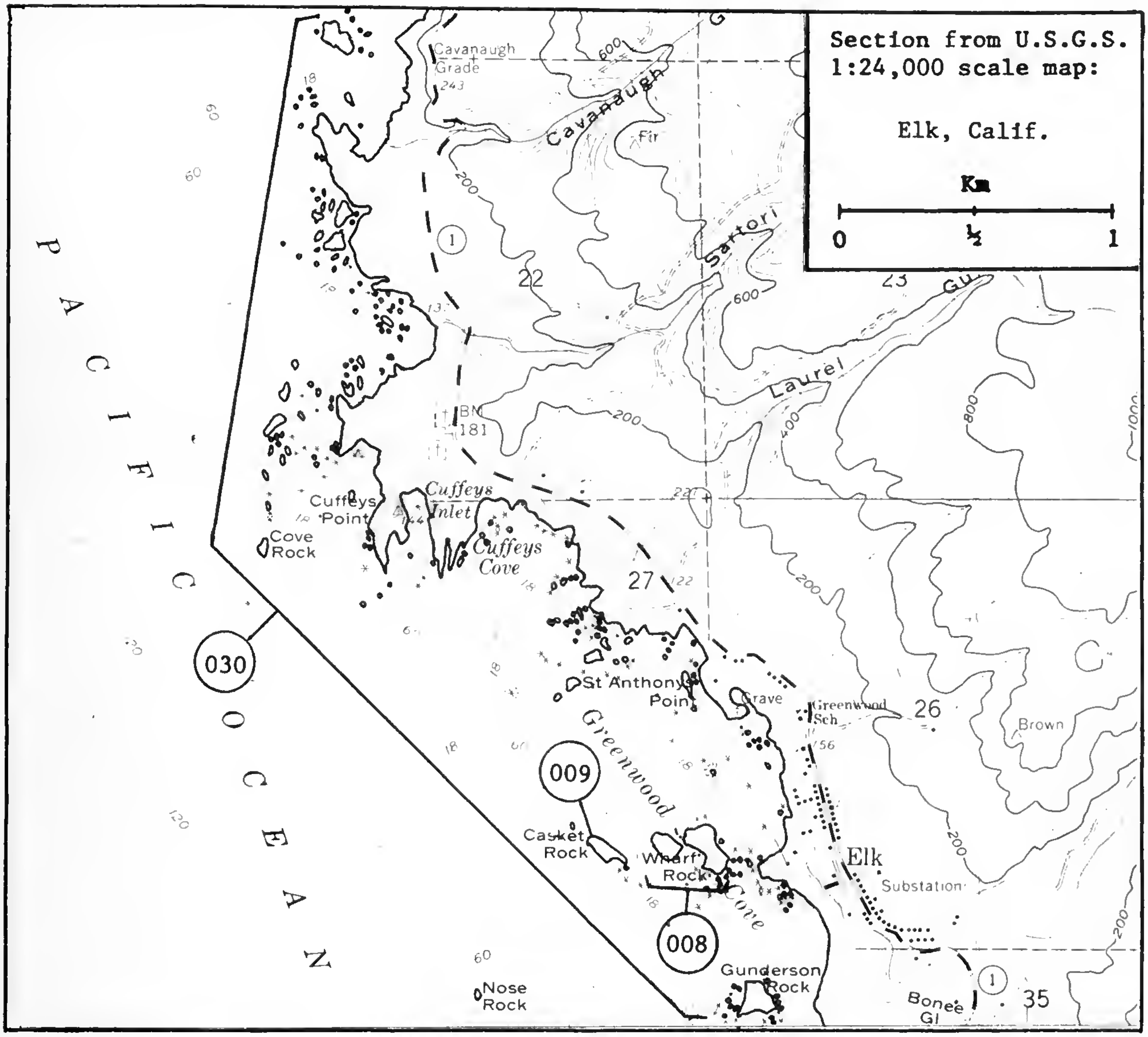
Albion Head
McPherson
ALBION RIVER
Albion Cove
Albion Flat
Handley
Albion
Graves
ALBION RIDGE ROAD
Albion Ridge
Spring
Little Salmon Creek
Whitesboro Cove
Whitesboro (Site)
Middle
Bull Rock
Salmon Point
Big Salmon Creek
39°12'30"
123°47'30"
Biggar Rock
029
NAVARRO RIDGE ROAD
Navarro Ridge
Navarro E Base 2
Navarro W Base 2
Navarro Head
Navarro Point
NAVARRO RIVER
Grave
CAMERON ROAD
Arch of the Navarro
Section from U.S.G.S. 1:24,000 scale map:
Albion, Calif.
Km
0
½
1

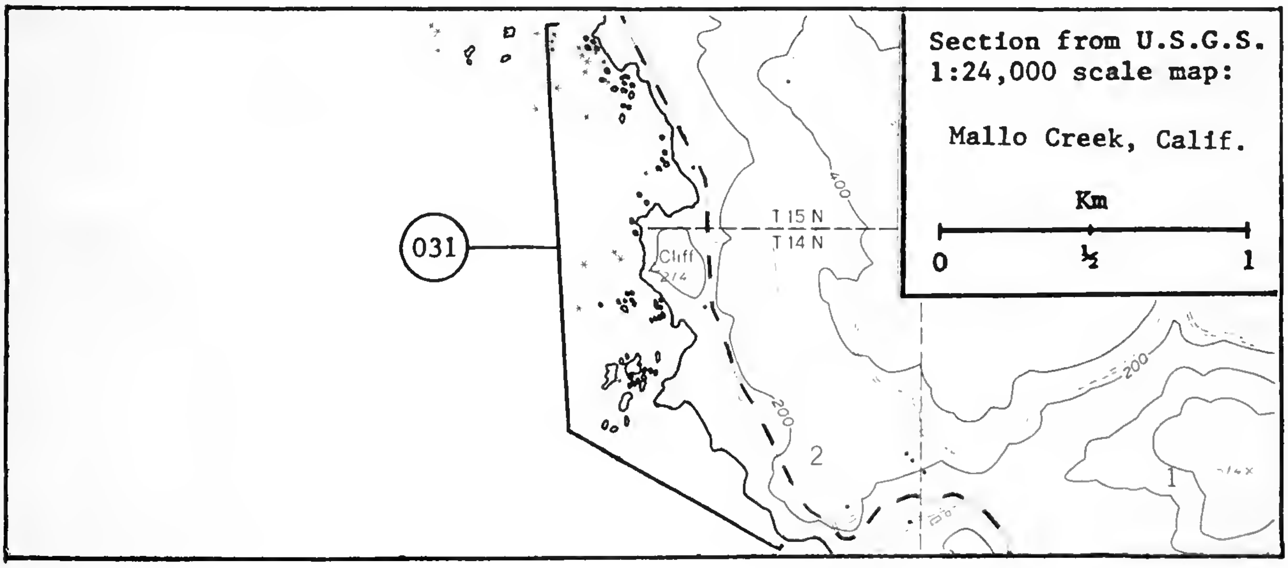
030 Cavanaugh Cove to Gunderson Rock, except Wharf Rock (008) and Casket Rock (009) 39°08'N, 123°44'W

Brandt's Cormorant	4	(Lester, Sowls & Stewart,7/12/80,B,III)	*42*
Pelagic Cormorant	410	(Lester, Sowls & Stewart,7/12/80,B,II)	*42*
Black Oystercatcher	8	(Lester, Sowls & Stewart,7/12/80,B,III)	*42*
Western Gull	20	(Lester, Sowls & Stewart,7/12/80,B,III)	*42*
Pigeon Guillemot	100	(Lester, Sowls & 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		


Section from U.S.G.S.
1:24,000 scale map:
Elk, Calif.
Km
0
½
1
PACIFIC OCEAN
Cavanaugh Grade
Cavanaugh
Fir
Sartori
Laurel
BM 181
Cuffeys Point
Cove Rock
Cuffeys Inlet
Cuffeys Cove
St Anthony Point
Greenwood Cove
Grave
Greenwood Sch
Brown
Casket Rock
Wharf Rock
Elk
Substation
Gunderson Rock
Nose Rock
Bonee Gl
030
009
008


Section from U.S.G.S.
1:24,000 scale map:
Mallo Creek, Calif.
Km
0
½
1
T 15 N
T 14 N
Cliff
031

(032) "333 Point" 39°05'N, 123°42'30"W

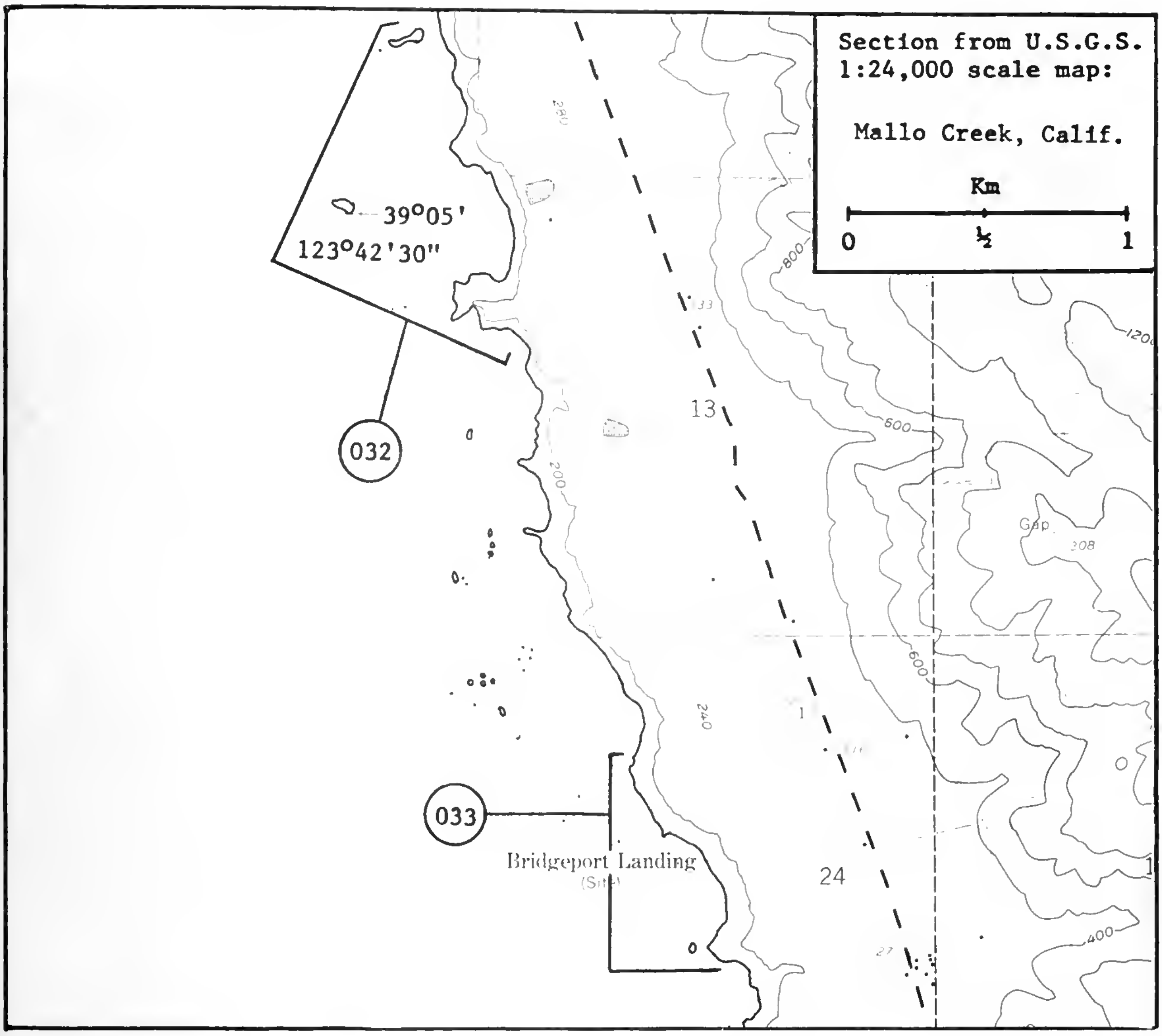
Brandt's Cormorant	360	(Lester & Sowls,7/23/80,A,II)	*42*
Pelagic Cormorant	100	(Lester & Rodstrom,6/22/79,B,III)	*42*
Black Oystercatcher	2	(Lester & Rodstrom,6/22/79,B,III)	*42*
Total	462		
Brandt's Cormorant	0	(Lester & Rodstrom,6/22/79,B,8/2/79,A,II)	*42*

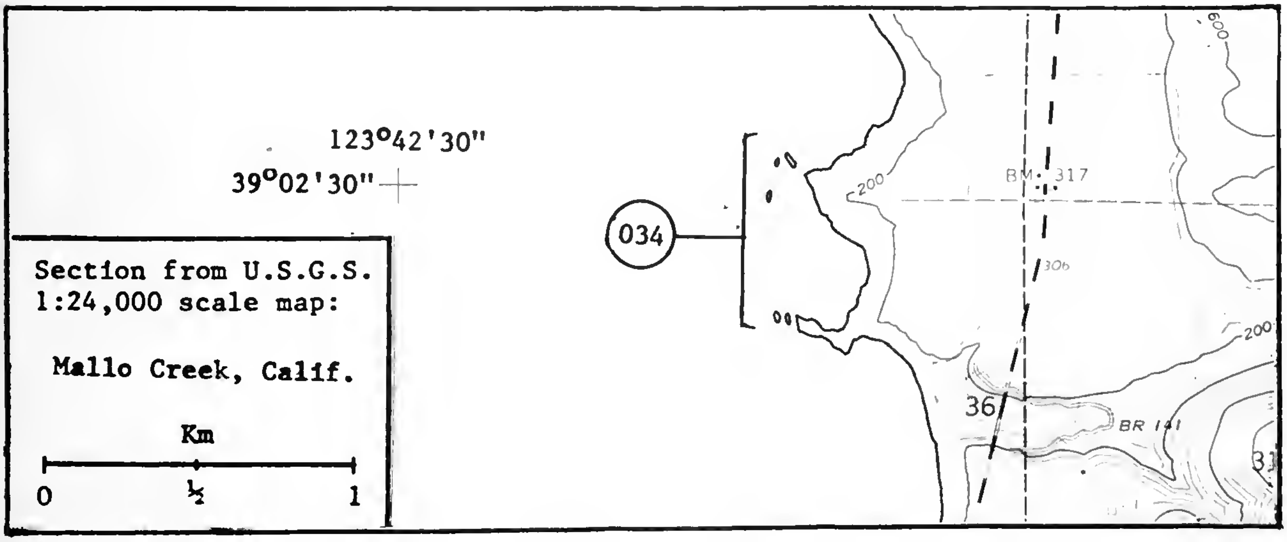
(033) Bridgeport Landing 39°03'45"N, 123°41'50"W

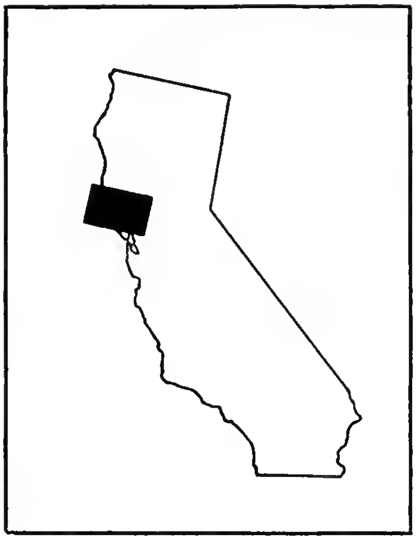
Pelagic Cormorant	16	(Lester & Rodstrom,6/22/79,B,III)	*42*
Western Gull	2	(Lester & Rodstrom,6/22/79,B,III)	*42*
Total	18		

(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	44		


Section from U.S.G.S.
1:24,000 scale map:
Mallo Creek, Calif.
Km
0
½
1
39°05'
123°42'30"
032
033
Bridgeport Landing
(Site)
13
24
600
400
Gap


123°42'30"
39°02'30"
Section from U.S.G.S.
1:24,000 scale map:
Mallo Creek, Calif.
Km
0
½
1
034
BM 317
200
36
BR 141



404

Santa Rosa

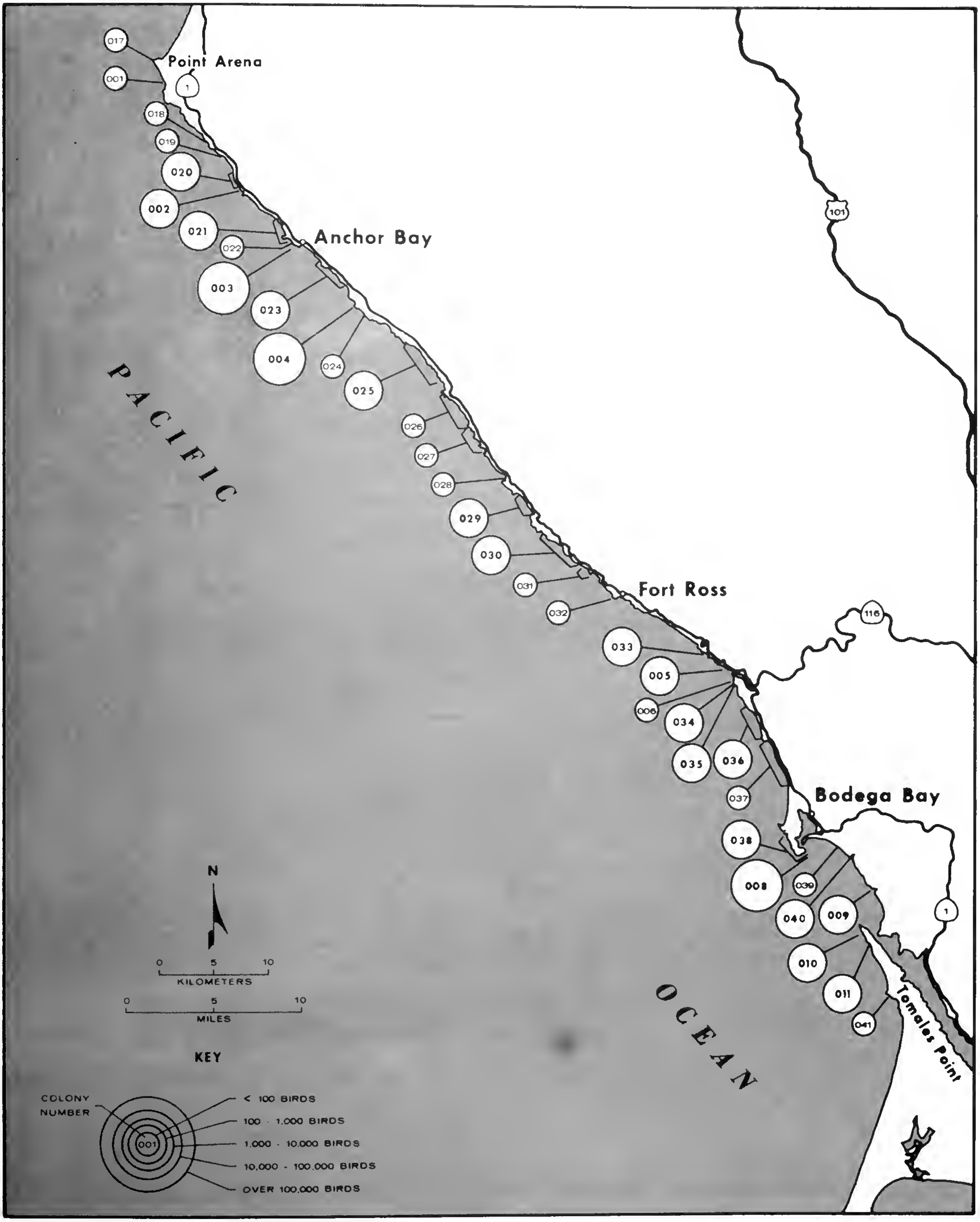
The map on the facing page is an index to the locations of colonies within map 404, Santa Rosa. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979).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

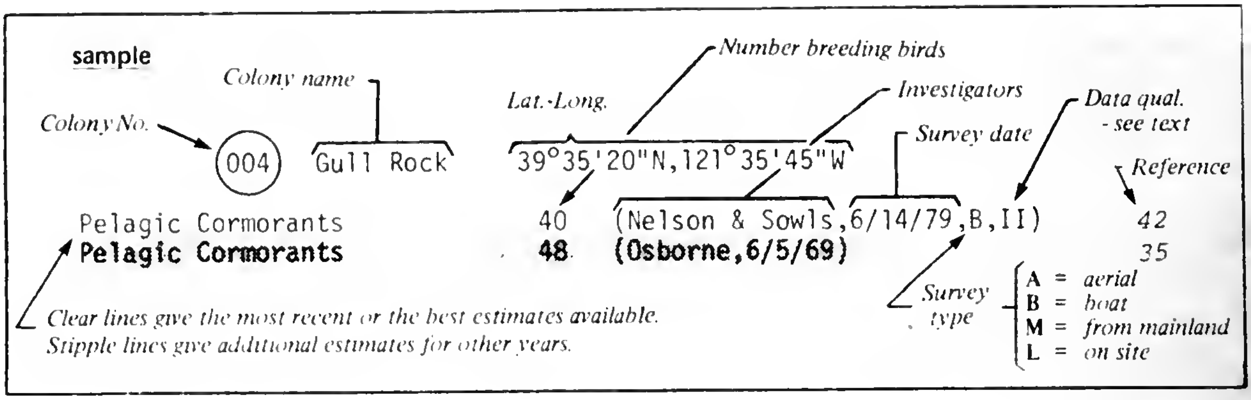
Numbers of breeding seabirds will vary from year to year to year. Below are the approximate numbers of breeding seabirds within this region.

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





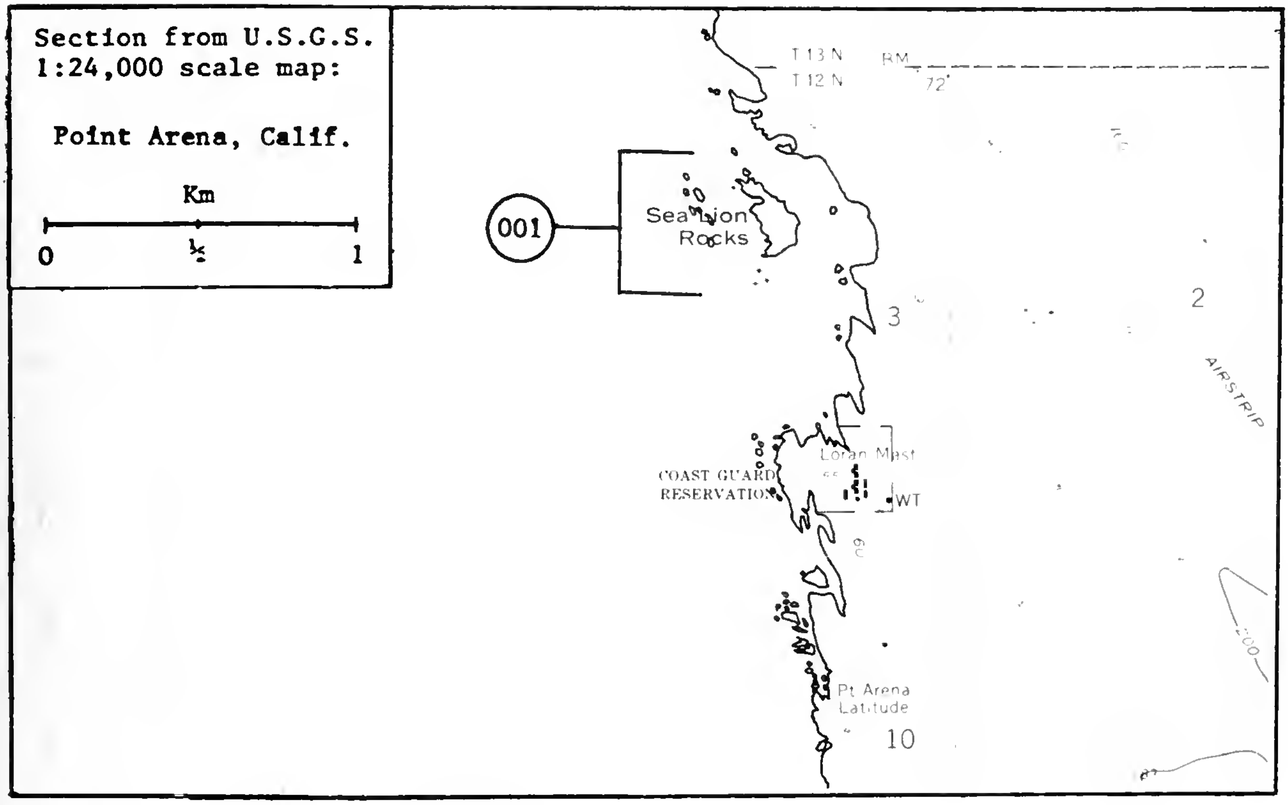
(001) Sea Lion Rocks 38°55'07"N, 123°43'45"W

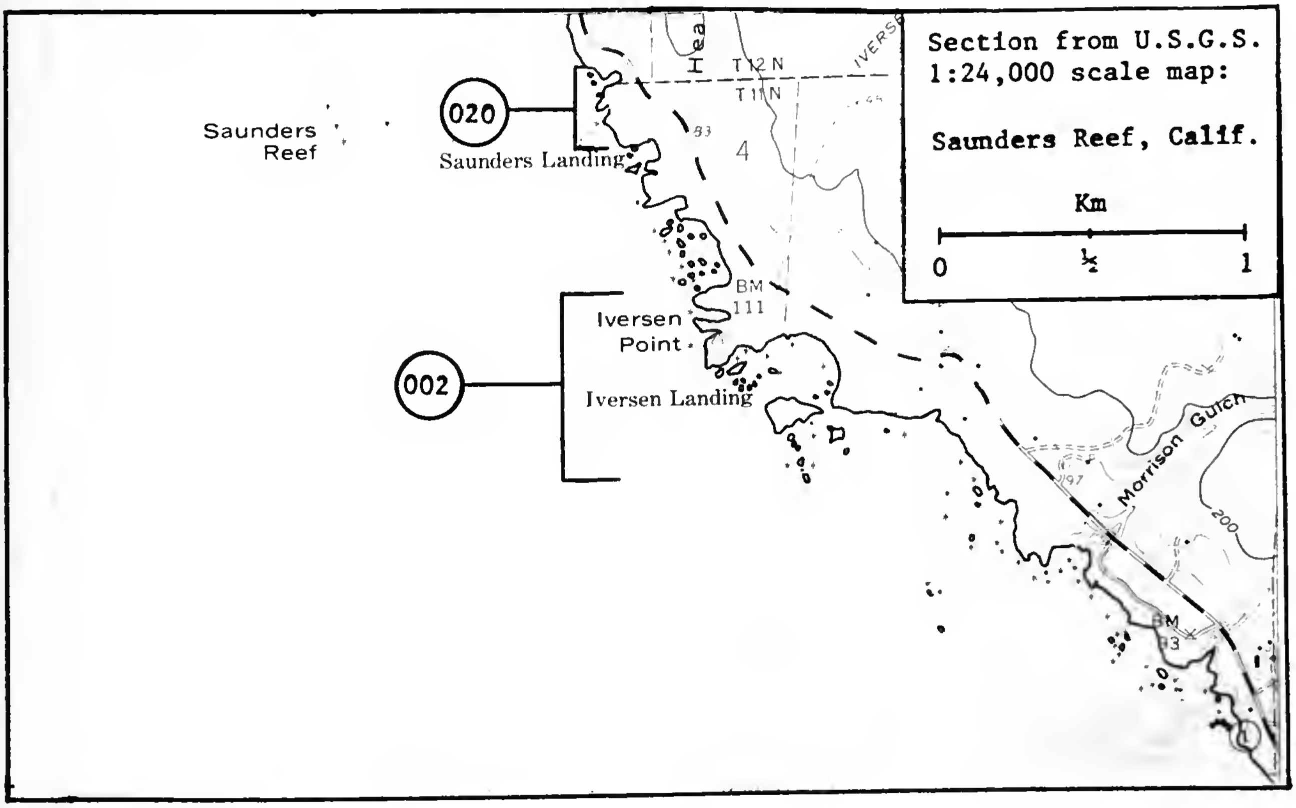
Pelagic Cormorant	6	(Lester & Rodstrom,5/31/79,B,III)	42
Black Oystercatcher	2	(Lester & Rodstrom,5/31/79,B,III)	42
Western Gull	2	(Lester & Rodstrom,5/31/79,B,III)	42
Pigeon Guillemot	60	(Lester & Rodstrom,5/31/79,B,III)	42
Total	70		
Pelagic Cormorant	**40**	**(Osborne,8/25/69,M)**	36
Western Gull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

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)**	36
Pelagic Cormorant	**108**	**(Lester & Rodstrom,5/31/79,B,II)**	42


Section from U.S.G.S.
1:24,000 scale map:
Point Arena, Calif.
Km
0
½
1
001
Sea Lion
Rocks
T 13 N
T 12 N
BM
72
3
2
AIRSTRIP
COAST GUARD
RESERVATION
Loran Mast
WT
Pt Arena
Latitude
10


Section from U.S.G.S.
1:24,000 scale map:
Saunders Reef, Calif.
Km
0
½
1
Saunders
Reef
020
Saunders Landing
T 12 N
T 11 N
4
BM
111
Iversen
Point
002
Iversen Landing
Morrison Gulch
200

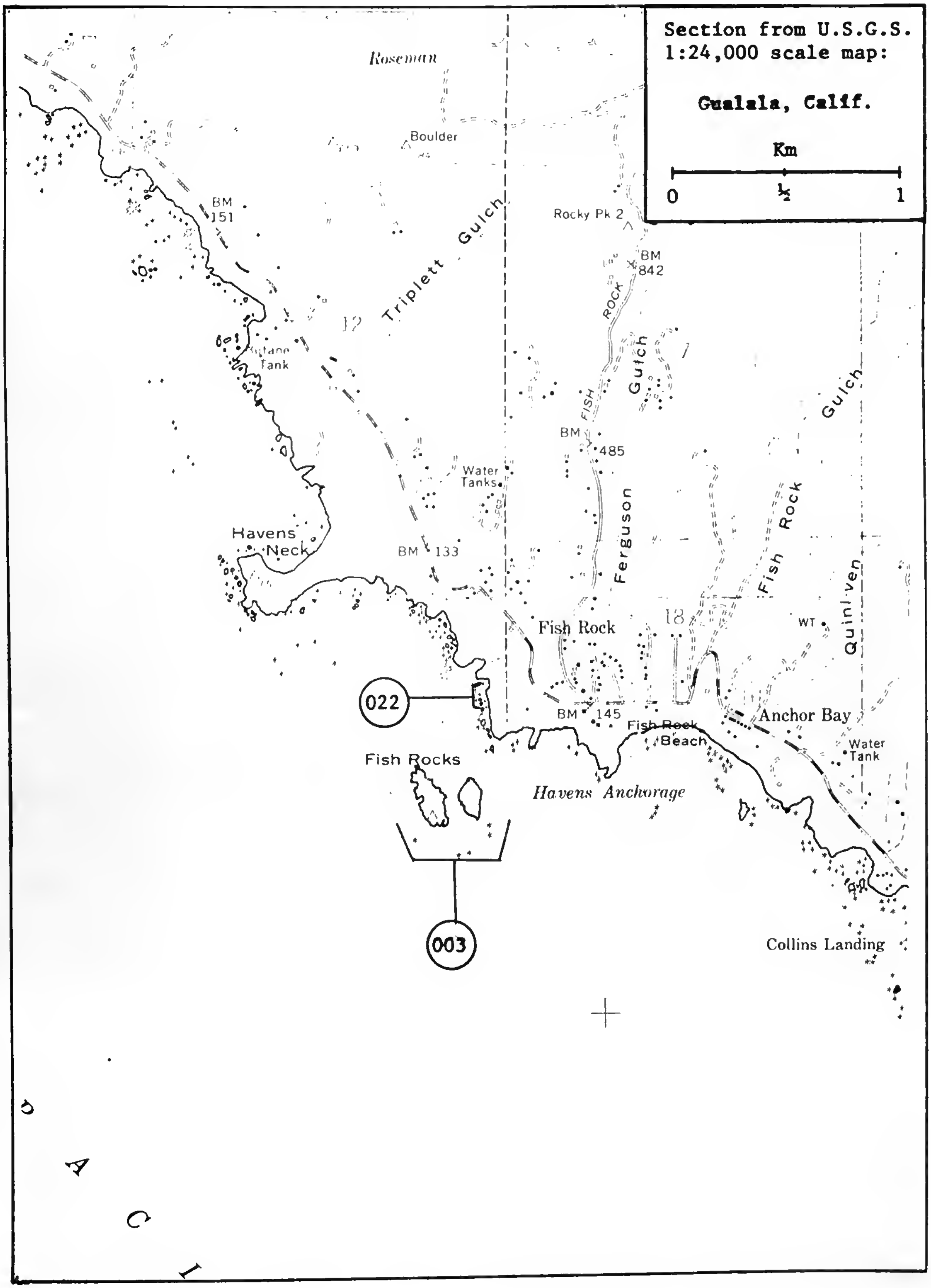
(003) Fish Rocks 38°48'00"N, 123°35'31"W

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 & Sowls,6/7/80,BL,II)	*42*
Pelagic Cormorant	400	(Lester, Nelson, Sowls & 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, Sowls & Stewart,6/7/80,B,III)	*42*
Rhinoceros Auklet	14	(Nelson, Sowls & 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*

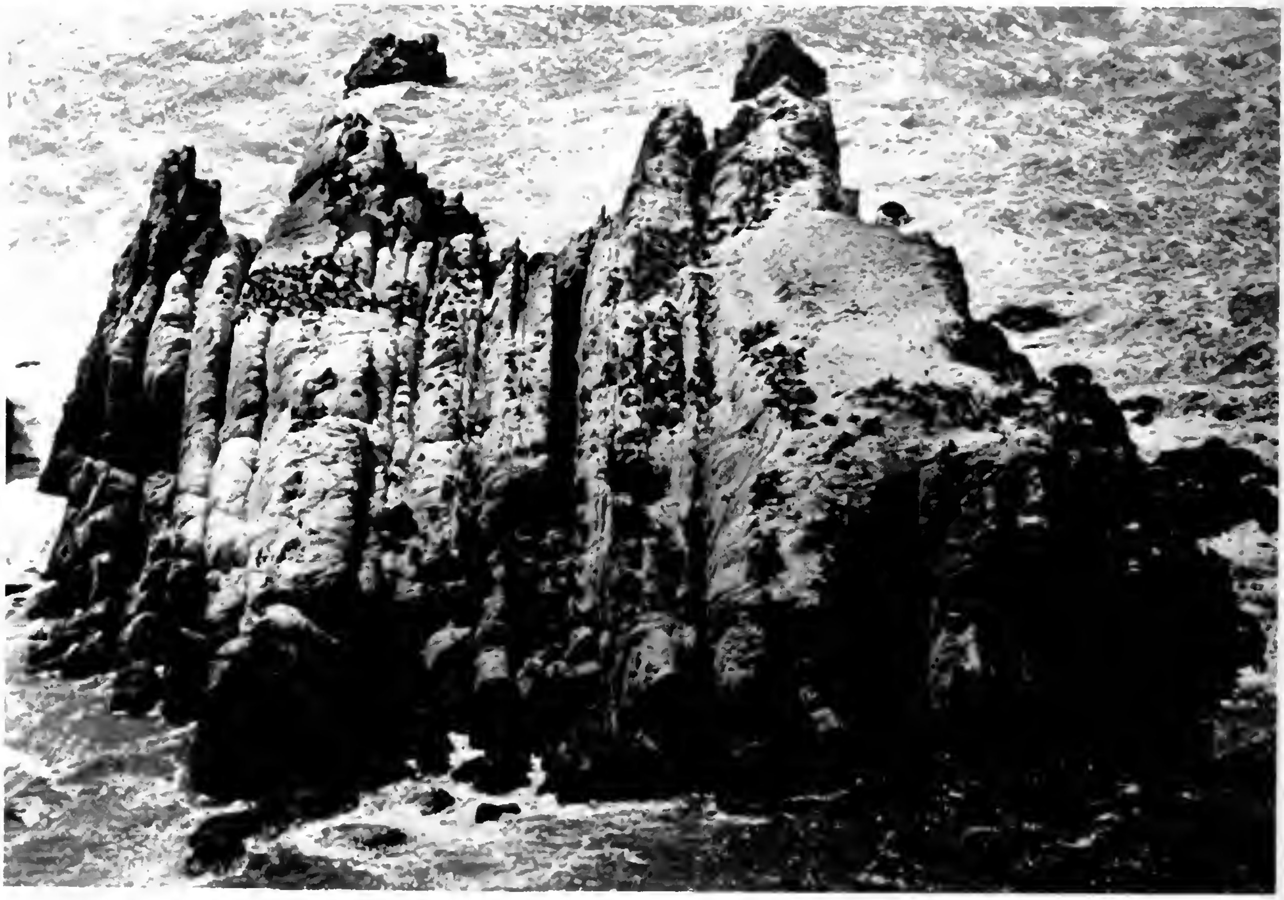
Pelagic Cormorant, Fish Rocks

Photo by Bill Rodstrom


Section from U.S.G.S. 1:24,000 scale map:
Gualala, Calif.
Km
0
½
1
Roseman
Boulder
BM 151
Triplett Gulch
Rocky Pk 2
BM 842
Fish Rock
Gulch
Butane Tank
BM 485
Water Tanks
Gulch
Havens Neck
BM 133
Ferguson
Fish Rock
Fish Rock
Quinliven
WT
022
BM 145
Fish Rock Beach
Anchor Bay
Water Tank
Fish Rocks
Havens Anchorage
003
Collins Landing

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

Brandt's Cormorant	1,240	(Lester & Sowls,7/23/80,A,II)	42
Western Gull	40	(DeGange,6/11/80,M,III)	42
Pigeon Guillemot	40	(Lester, Sowls & 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

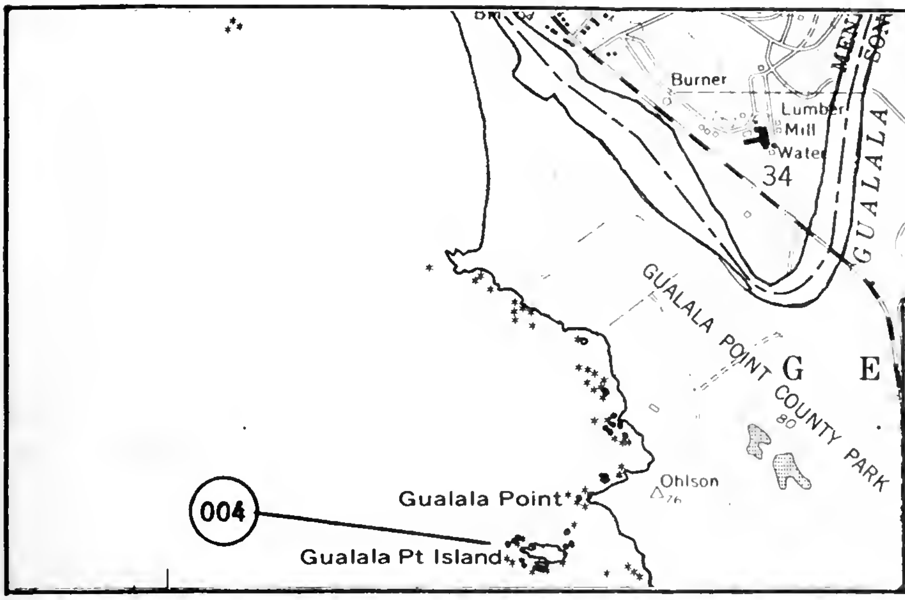


Gualala Point Island

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

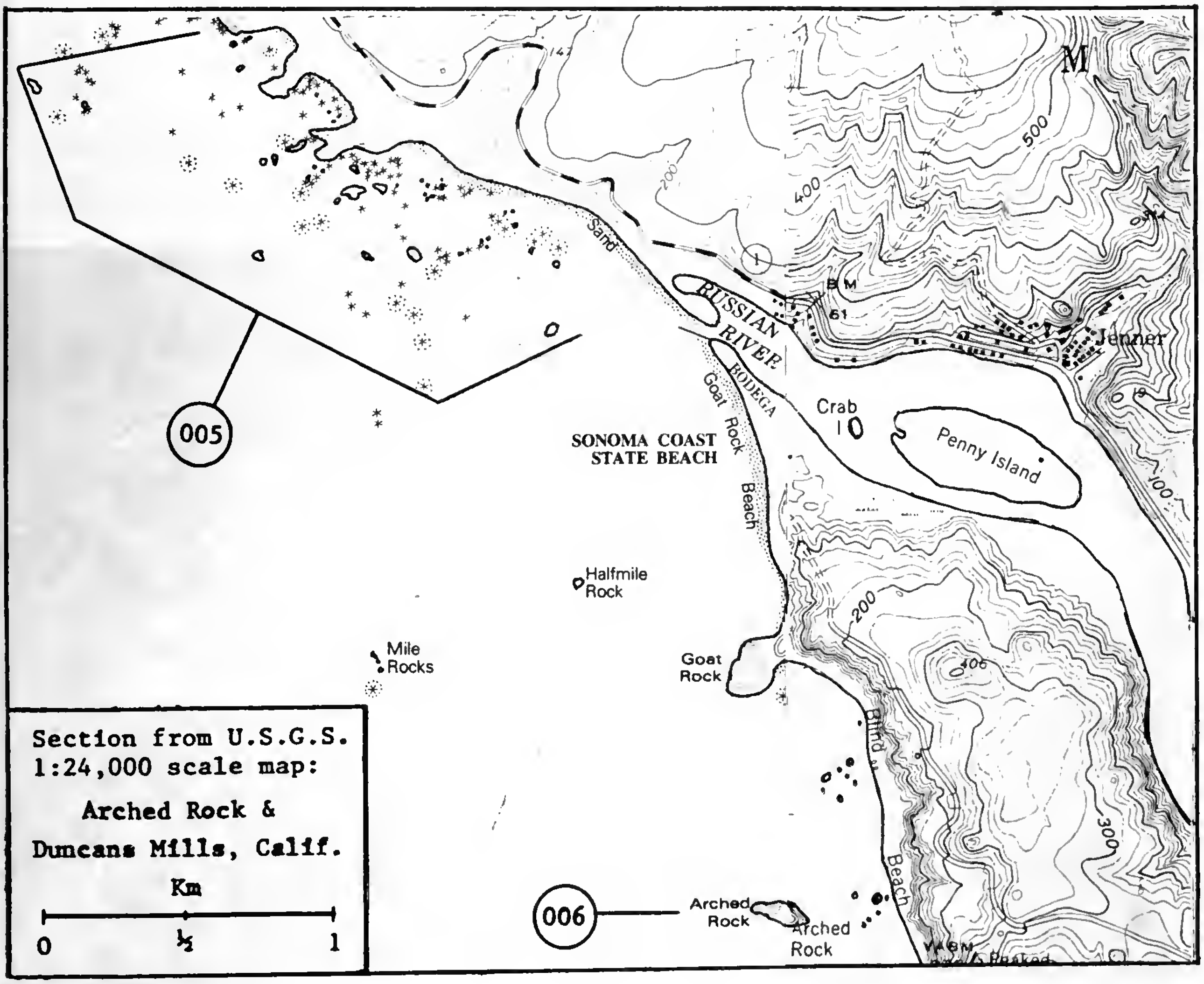


Section from U.S.G.S. 1:24,000 scale map:

Gualala, Calif.

Km

0 ½ 1



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

Arched Rock & Duncans Mills, Calif.

Km

0 ½ 1

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

Brandt's Cormorant	0	(Lester & Sowls,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

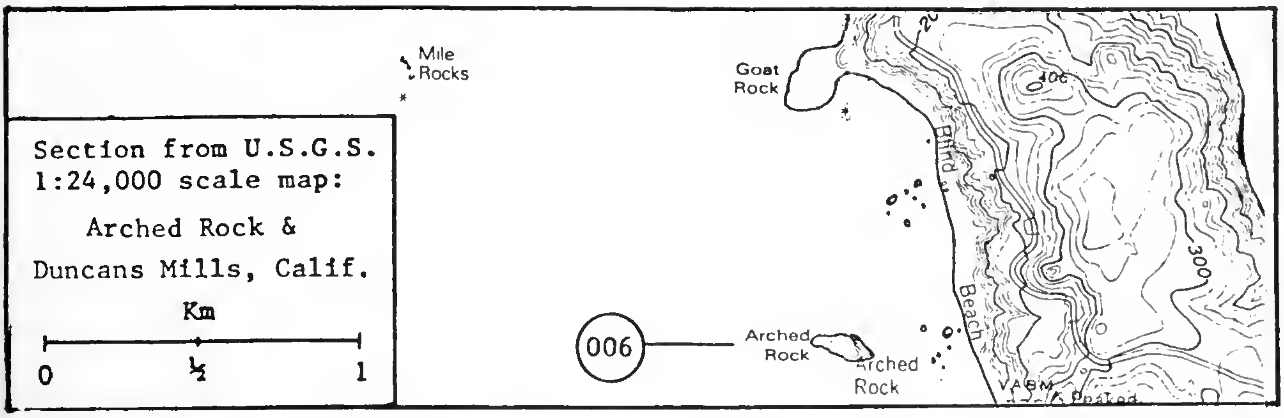
007

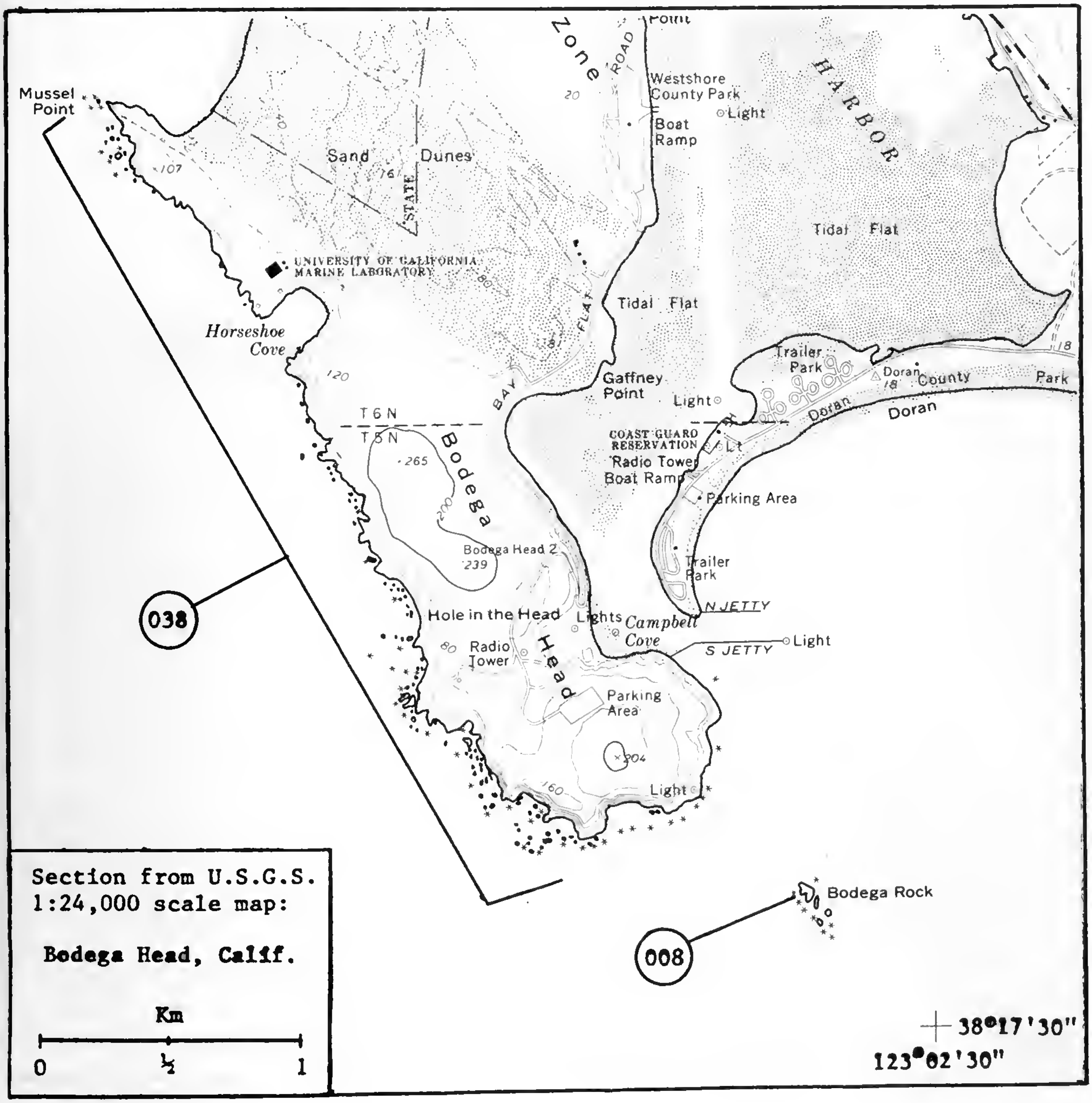
Salmon Creek was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

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

Brandt's Cormorant	1,350	(Nelson & Sowls,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

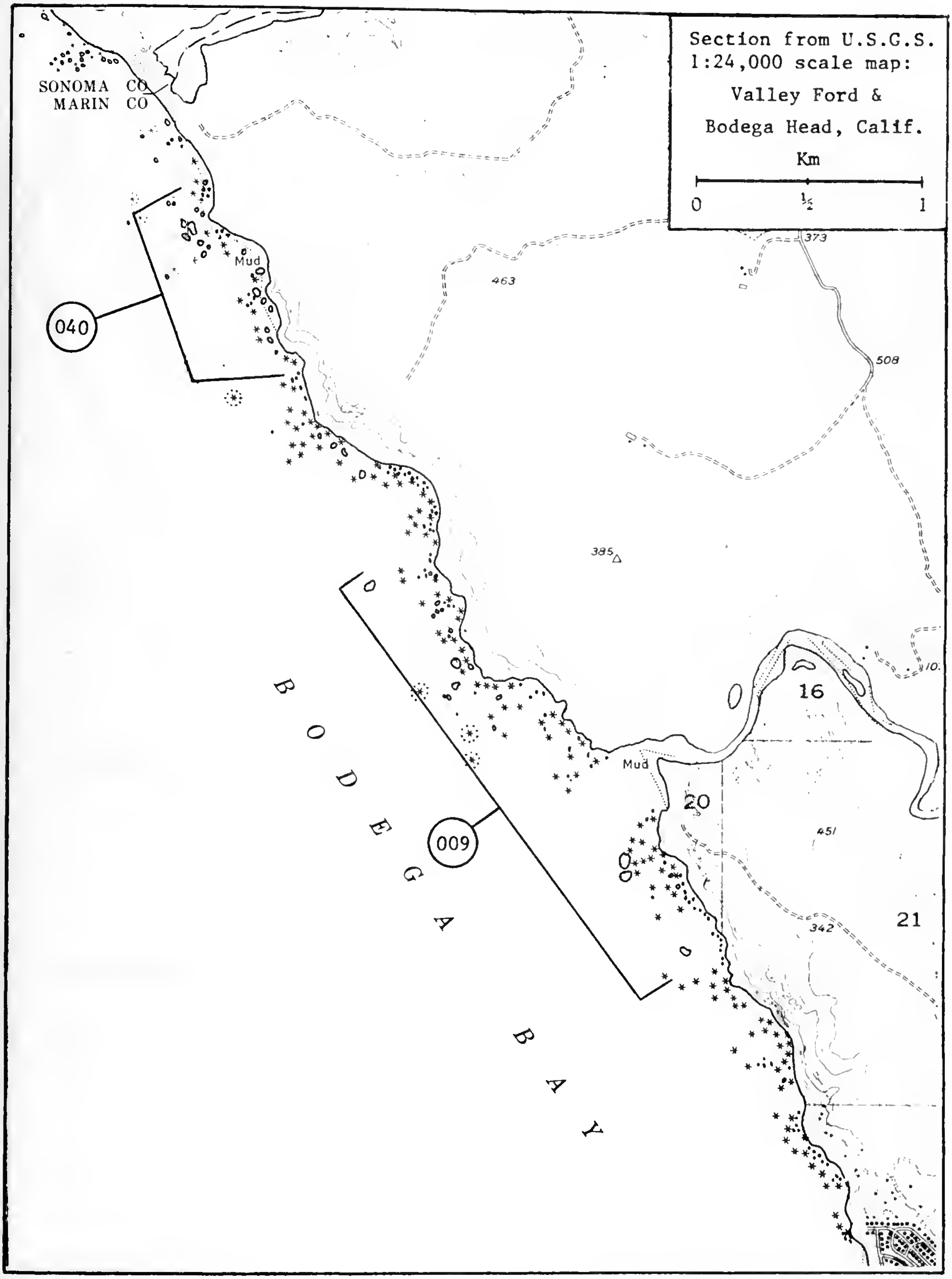
Bodega Rock Photo by Jay Nelson


Section from U.S.G.S.
1:24,000 scale map:
Arched Rock &
Duncans Mills, Calif.
Km
0
½
1
Mile Rocks
Goat Rock
Blind
Beach
006
Arched Rock
Arched Rock
406
300


Mussel Point
Sand
Dunes
STATE
Zone
ROAD
Westshore County Park
Light
Boat Ramp
HARBOR
Tidal Flat
UNIVERSITY OF CALIFORNIA MARINE LABORATORY
Tidal Flat
FLAT
BAY
Horseshoe Cove
Gaffney Point
Light
Trailer Park
Doran
County
Park
Doran
Doran
T6N
T5N
Bodega
COAST GUARD RESERVATION
Radio Tower
Boat Ramp
Parking Area
Bodega Head 2
Trailer Park
N JETTY
038
Hole in the Head
Lights
Campbell Cove
S JETTY
Light
Radio Tower
Head
Parking Area
Light
Bodega Rock
008
Section from U.S.G.S.
1:24,000 scale map:
Bodega Head, Calif.
Km
0
½
1
38°17'30"
123°02'30"

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

Brandt's Cormorant	190	(Lester & Sowls,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	434		
Pelagic Cormorant	**250**	**(Osborne,8/23/69,M)**	36
Brandt's Cormorant	**168**	**(Lester & Rodstrom,6/26/79,B,II)**	42


Section from U.S.G.S.
1:24,000 scale map:
Valley Ford &
Bodega Head, Calif.
Km
0
½
1
SONOMA CO
MARIN CO
Mud
040
009
Mud
463
373
508
385
16
20
21
451
342
B O D E G A
B A Y

010 Bird Rock 38°13'49"N, 122°59'35"W

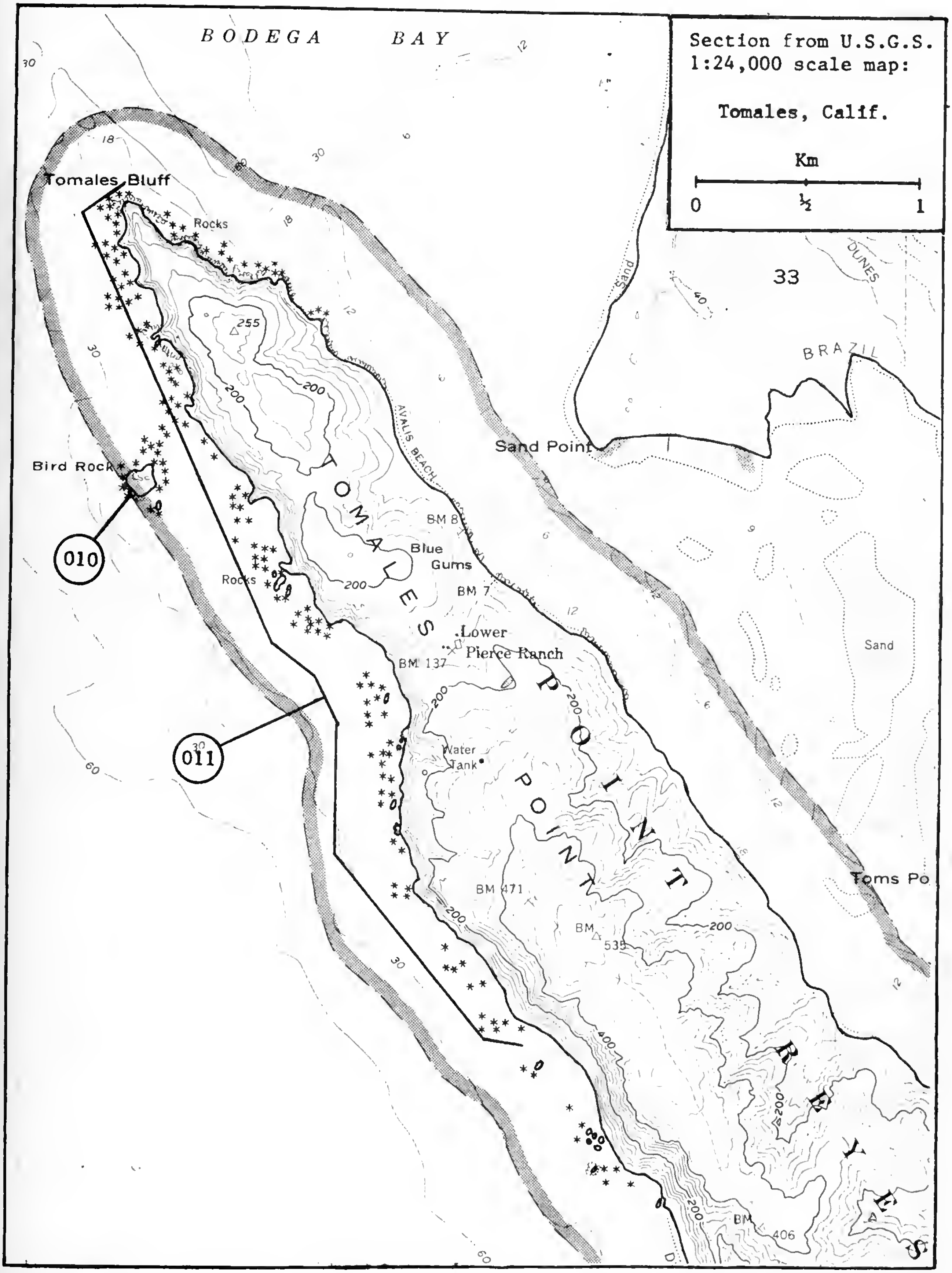
Ashy Storm-Petrel	14	(Lester & Rodstrom,7/1/79,L,II)	42
Pelagic Cormorant	8	(Lester & Rodstrom,7/1/79,L,II)	42
Black Oystercatcher	2	(Lester & Rodstrom,7/1/79,L,III)	42
Western Gull	228	(Lester & Rodstrom,7/1/79,L,III)	42
Pigeon Guillemot	30	(Lester & Rodstrom,7/1/79,L,III)	42
Total	282		
Ashy Storm-Petrel	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).


Section from U.S.G.S.
1:24,000 scale map:
Tomales, Calif.
Km
0
½
1
BODEGA BAY
Tomales Bluff
Rocks
Bird Rock
010
011
TOMALES POINT
POINT REYES
Sand Point
BRAZIL
DUNES
Sand
33
AVALIS BEACH
BM 8
Blue Gums
BM 7
Lower Pierce Ranch
BM 137
Water Tank
BM 471
BM 535
BM 406
Toms Po

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

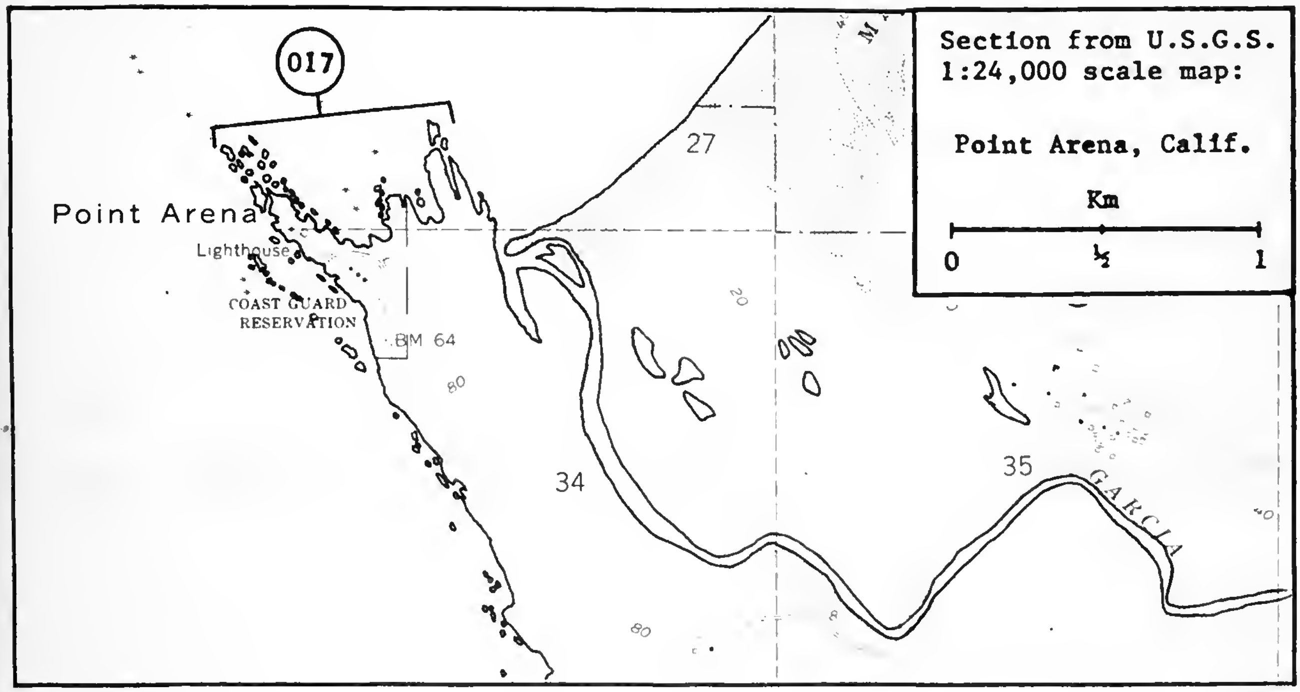
Pelagic Cormorant	28	(Lester,5/23/79,M,II)	*42*
Black Oystercatcher	2	(Lester,5/23/79,M,III)	*42*
Pigeon Guillemot	60	(Lester,5/23/79,M,III)	*42*
Total	90		

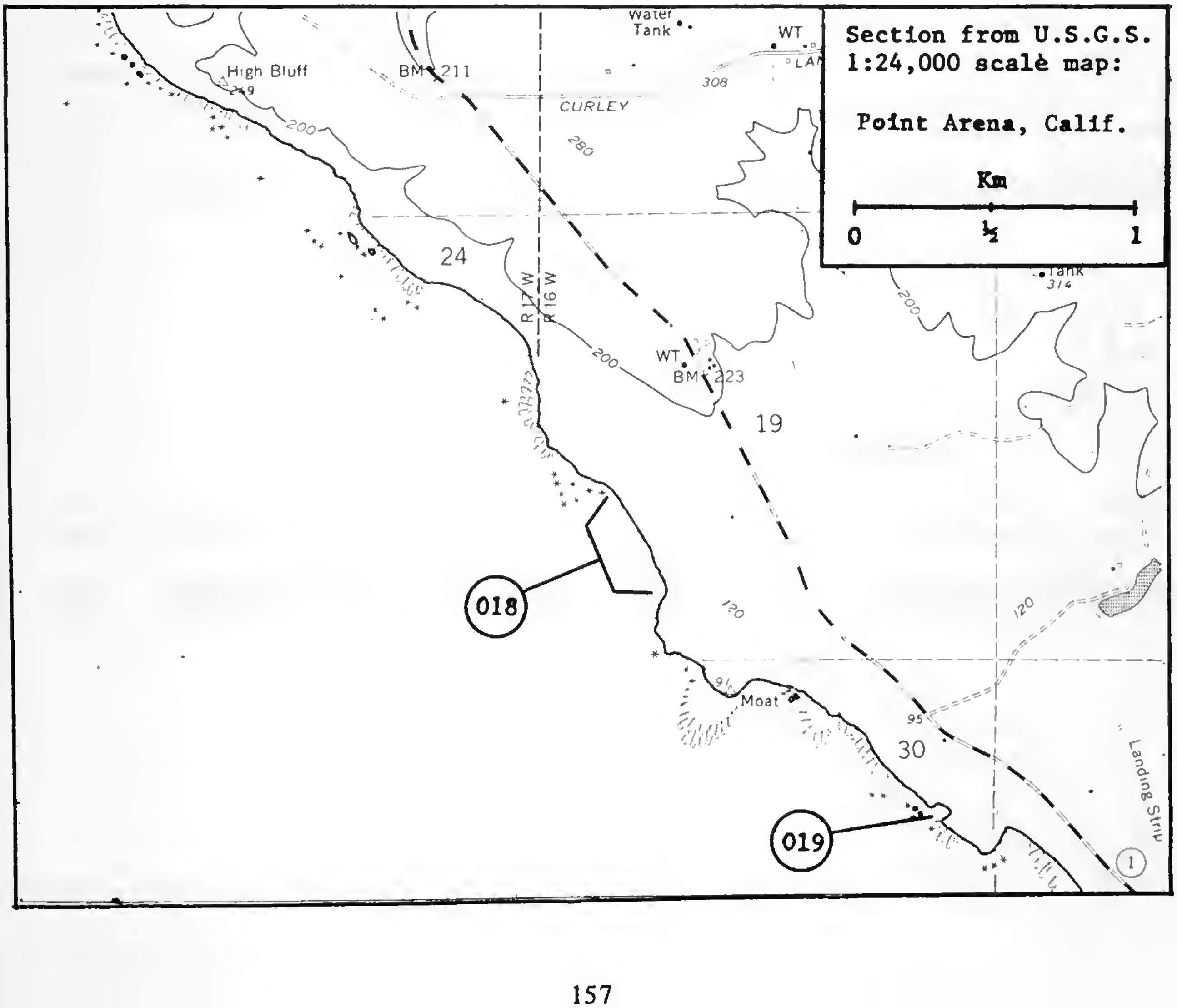
018 "Moat Cove" 38°53'10"N, 123°41'W

Pelagic Cormorant	40	(Lester & Rodstrom,5/31/79,B,III)	*42*

019 "Section 30 Cove" 38°52'39"N, 123°40'10"W

Pigeon Guillemot	30	(Lester & Rodstrom,5/31/79,B,III)	*42*


Section from U.S.G.S. 1:24,000 scale map:
Point Arena, Calif.
Km
0
½
1
017
Point Arena
Lighthouse
COAST GUARD RESERVATION
BM 64
27
34
35
GARCIA


Section from U.S.G.S. 1:24,000 scale map:
Point Arena, Calif.
Km
0
½
1
High Bluff
BM 211
Water Tank
WT
CURLEY
308
24
R 17 W
R 16 W
WT
BM 223
19
018
Moat
30
019
Landing Strip
Tank
314

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

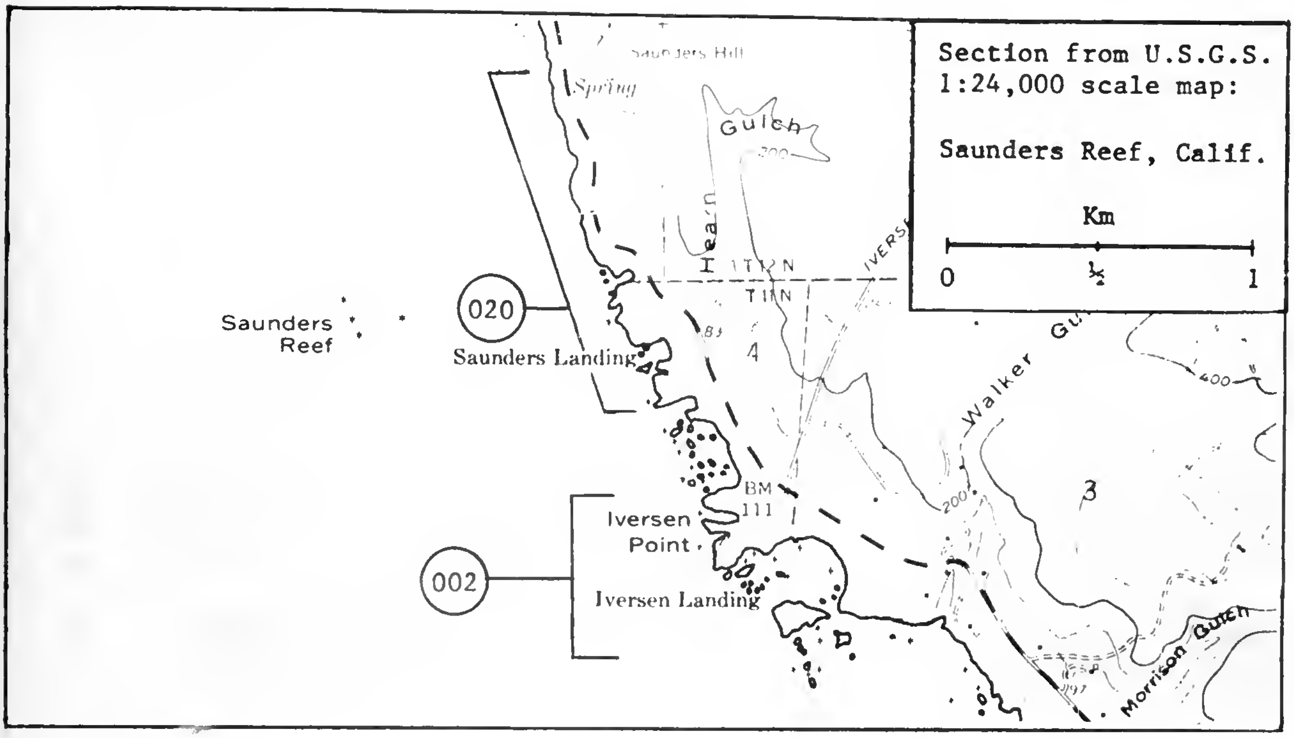
Pelagic Cormorant	174	(Lester, Sowls & Stewart,7/13/80,II)	*42*
Pigeon Guillemot	2	(Lester & Rodstrom,5/31/79,B,III)	*42*
Total	176		
Pelagic Cormorant	**48**	**(Lester & Rodstrom,5/31/79,B,III)**	*42*

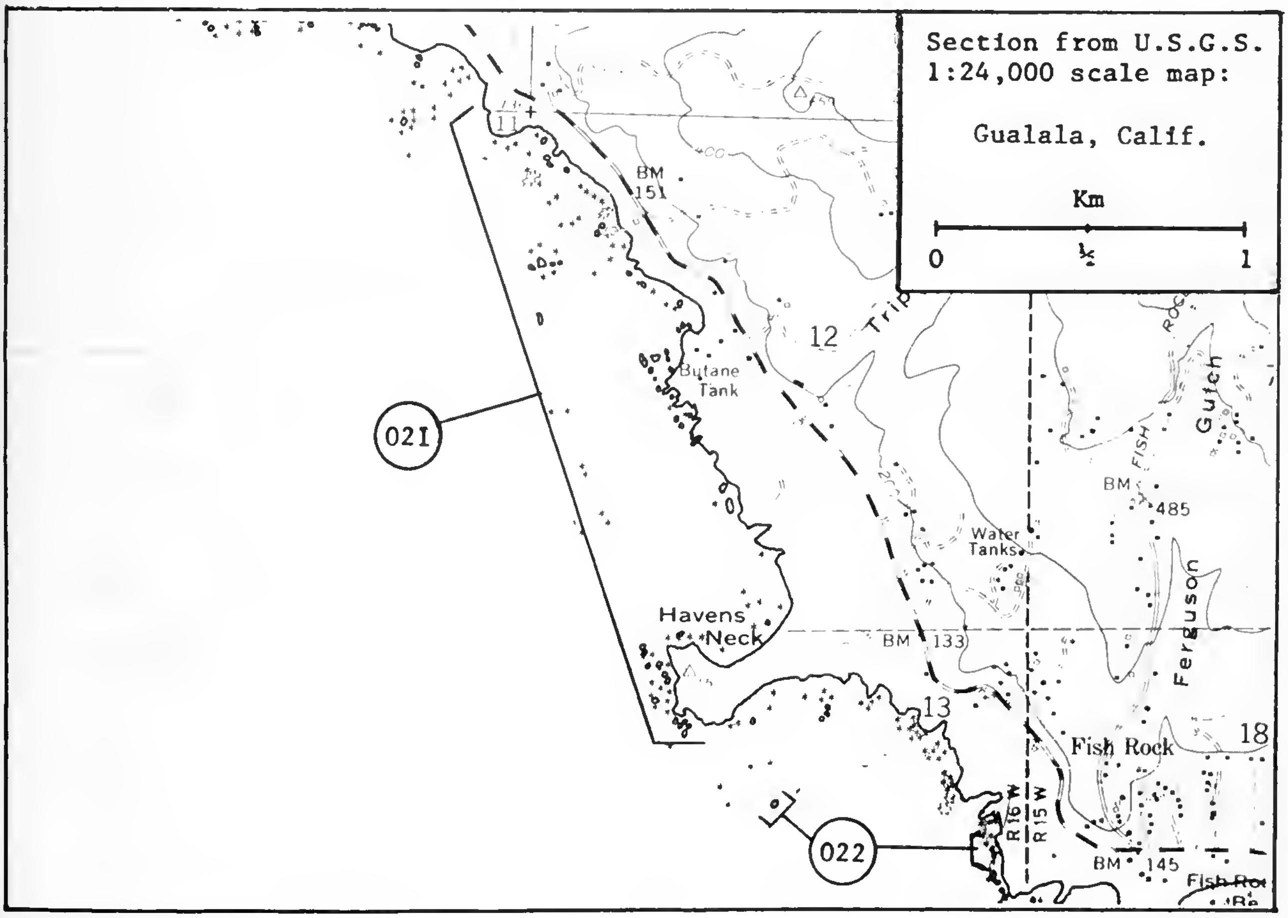
021 Triplett Gulch 38°49'N, 123°36'15"W

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	592		
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	72		
Pelagic Cormorant	**36**	**(Lester & Rodstrom,5/31/79,B,II)**	*42*


Section from U.S.G.S. 1:24,000 scale map:
Saunders Reef, Calif.
Km
0
½
1
Saunders Reef
020
Saunders Landing
002
Iversen Point
Iversen Landing
Gulch
Walker
3
4
BM 111
Morrison Gulch

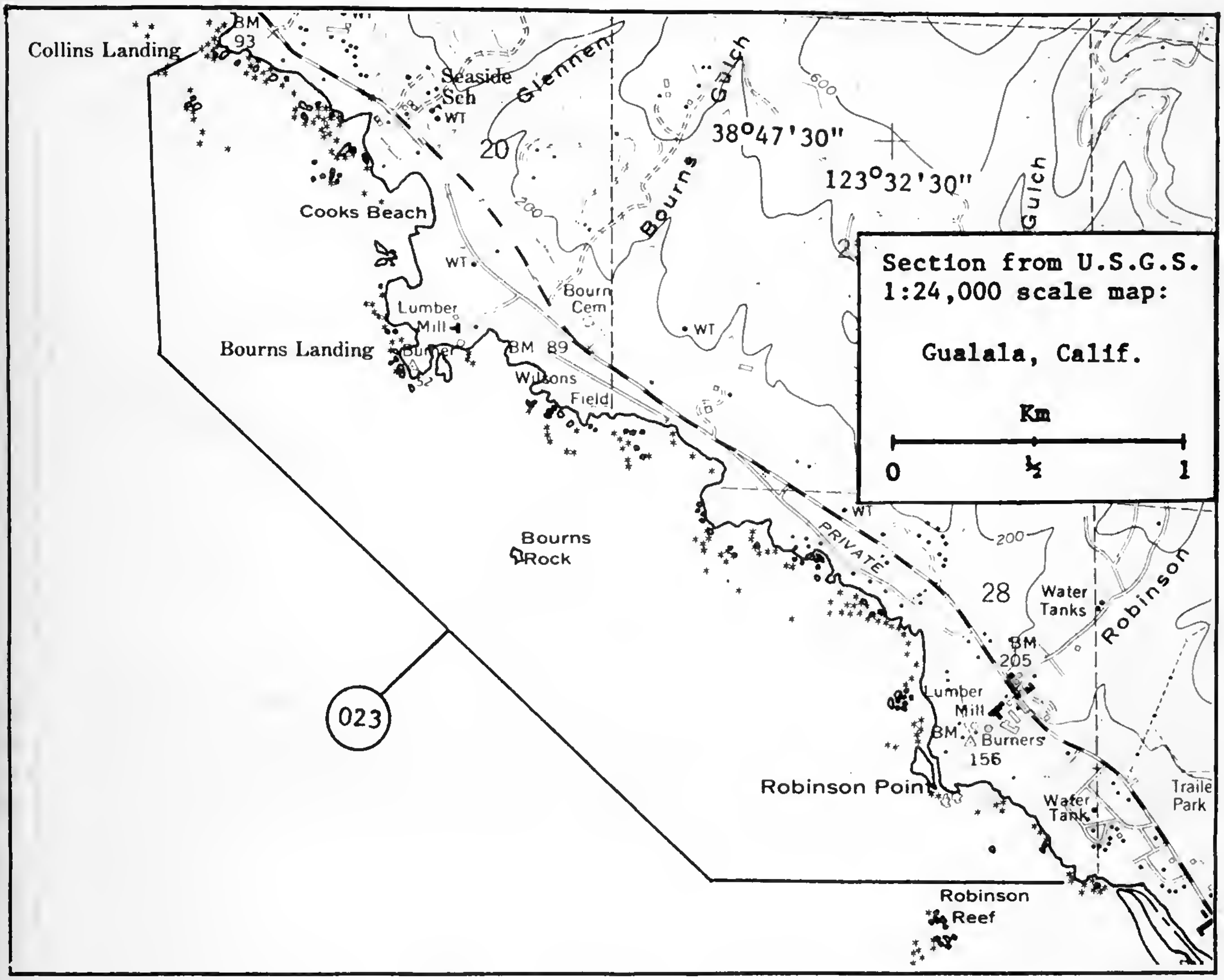

Section from U.S.G.S. 1:24,000 scale map:
Gualala, Calif.
Km
0
½
1
021
022
BM 151
12
Butane Tank
Havens Neck
BM 133
13
Water Tanks
BM 485
Gulch
Ferguson
Fish Rock
18
R16W
R15W
BM 145

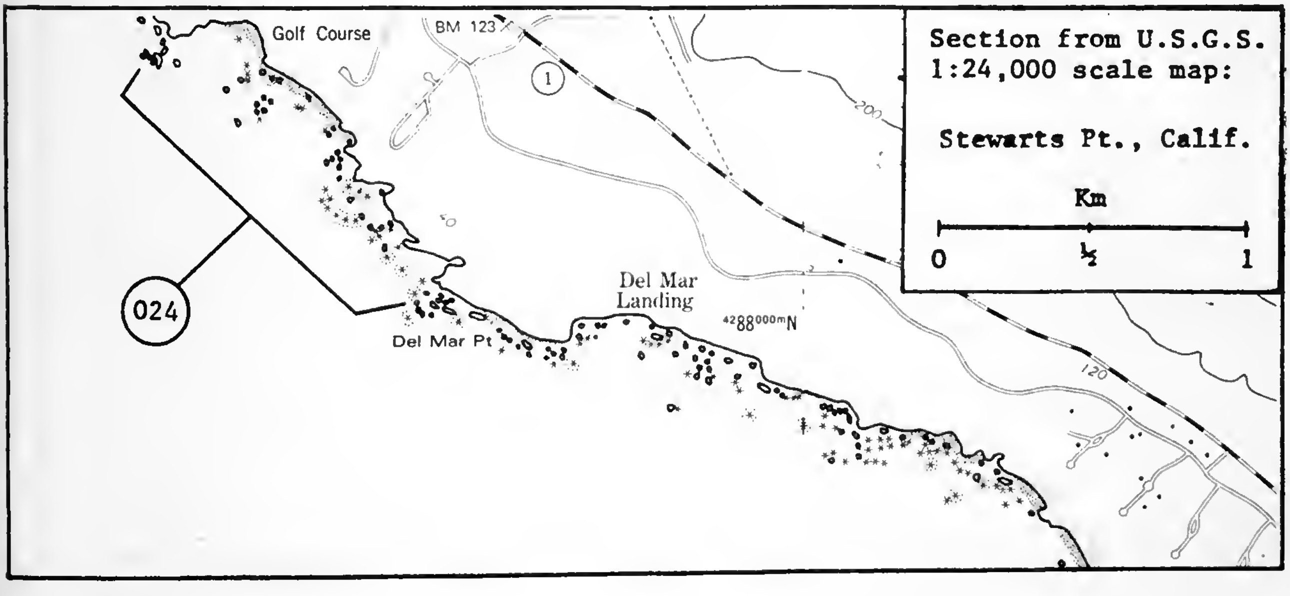
023 Collins Landing to Gualala River 38°46'N, 123°32'40"W

Pelagic Cormorant	368	(Lester, Sowls & Stewart,7/13/80,B,II)	42
Black Oystercatcher	6	(Lester, Sowls & Stewart,7/13/80,B,III)	42
Western Gull	2	(Lester, Sowls & Stewart,7/13/80,B,III)	42
Pigeon Guillemot	30	(Lester, Sowls & 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

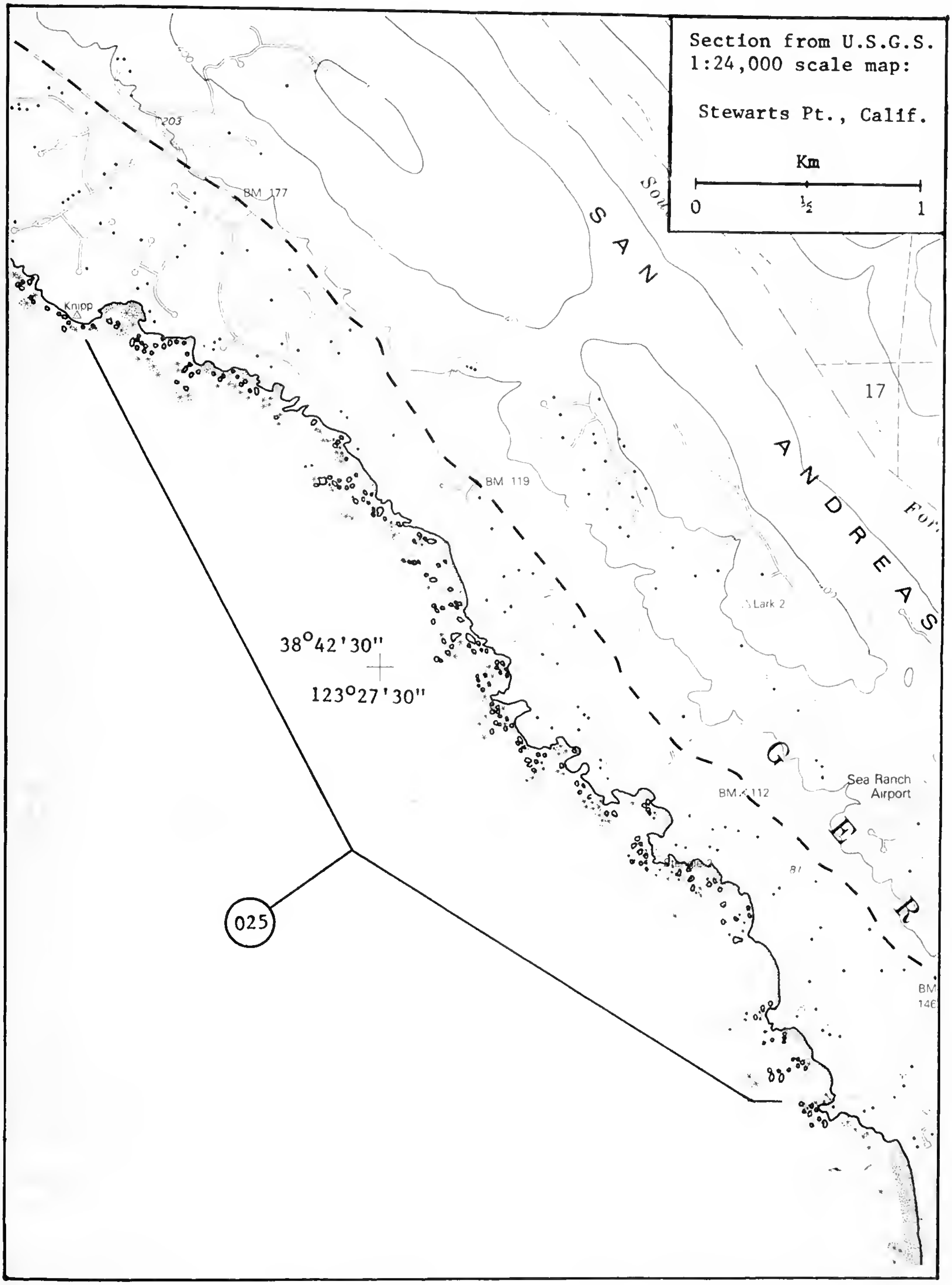
Pelagic Cormorant	12	(Lester & Rodstrom,6/24/79,B,III)	42


Collins Landing
BM 93
Seaside Sch
WT
Glennen
Gulch
Bourns
38°47'30"
123°32'30"
Gulch
Cooks Beach
WT
Bourn Cem
Lumber Mill
Bourns Landing
BM 89
Wilsons Field
WT
Section from U.S.G.S. 1:24,000 scale map:
Gualala, Calif.
Km
0
½
1
Bourns Rock
PRIVATE
28
Water Tanks
Robinson
BM 205
Lumber Mill
BM 156
Burners
023
Robinson Point
Water Tank
Trailer Park
Robinson Reef


Golf Course
BM 123
1
Section from U.S.G.S. 1:24,000 scale map:
Stewarts Pt., Calif.
Km
0
½
1
024
Del Mar Landing
4288000m N
Del Mar Pt
120

025 Sea Ranch 38°42'N, 123°27'30"W

Pelagic Cormorant	164	(Lester & Rodstrom,6/1/79,M,&6/24/79,B,III)	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		

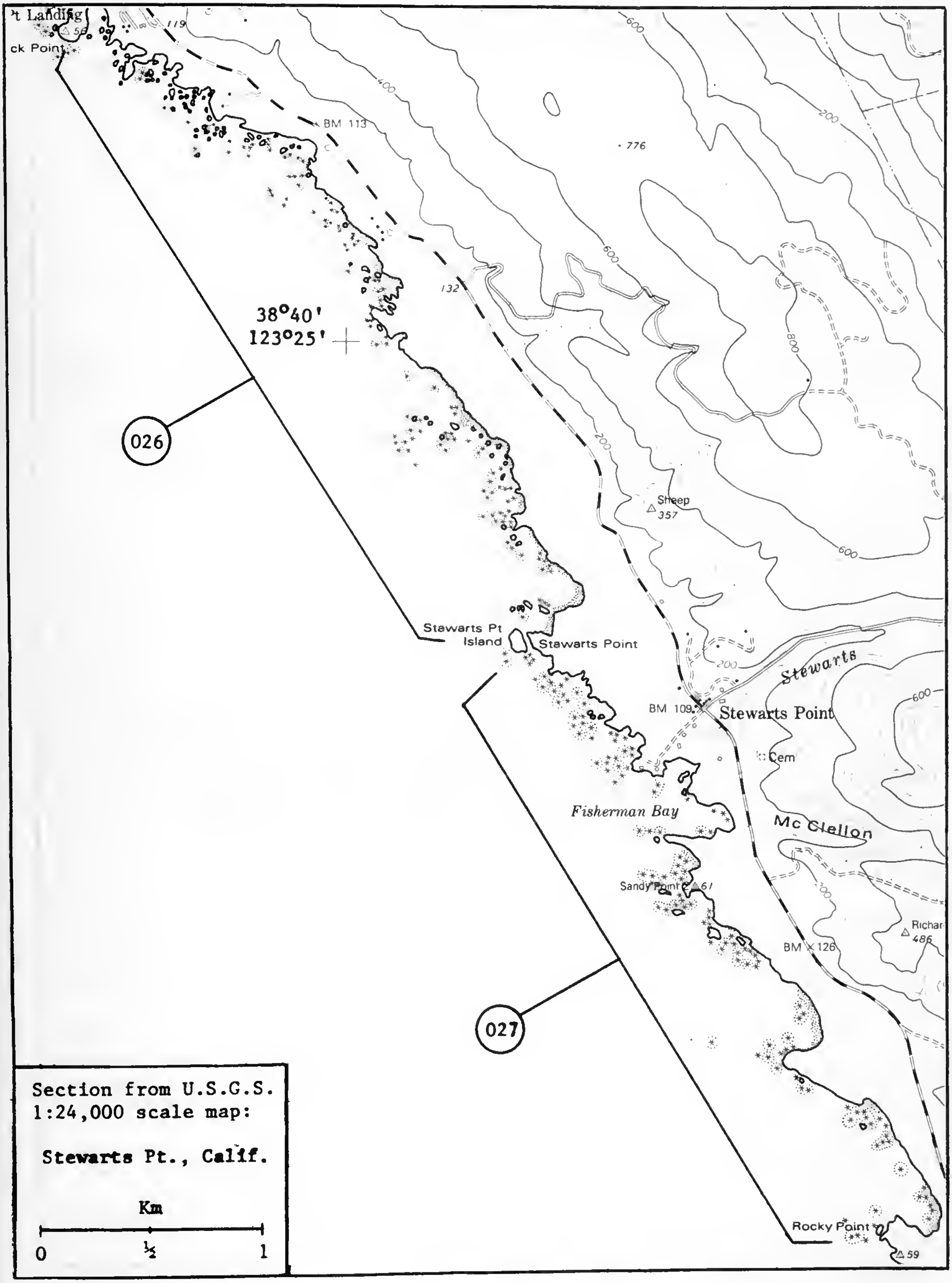

Section from U.S.G.S.
1:24,000 scale map:
Stewarts Pt., Calif.
Km
0
½
1
SAN ANDREAS
SAN GREGORIO
203
BM 177
Knipp
BM 119
17
Lark 2
38°42'30"
123°27'30"
Sea Ranch
Airport
BM 112
025

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	2	(Lester & Rodstrom,6/24/79,B,III)	42
Total	56		

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	6	(Lester & Rodstrom,6/24/79,B,III)	42
Total	90		



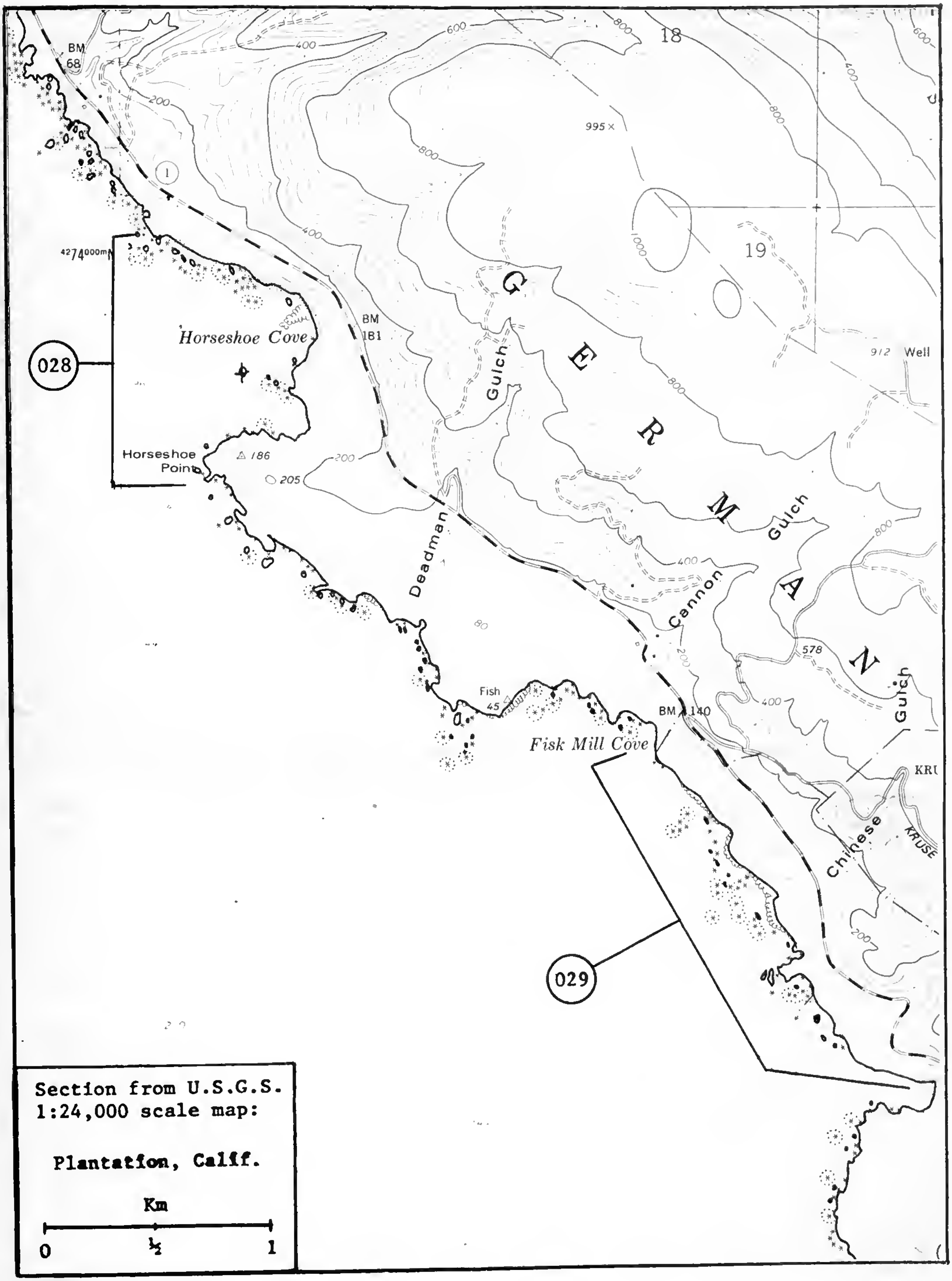
38°40'
123°25'
026
027
BM 113
776
132
Sheep
357
Stawarts Pt
Island
Stawarts Point
Stewarts
BM 109
Stewarts Point
Cem
Fisherman Bay
Mc Clellon
Sandy Point
61
BM 126
Rocky Point
59
Section from U.S.G.S.
1:24,000 scale map:
Stewarts Pt., Calif.
Km
0
½
1

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	64		

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		



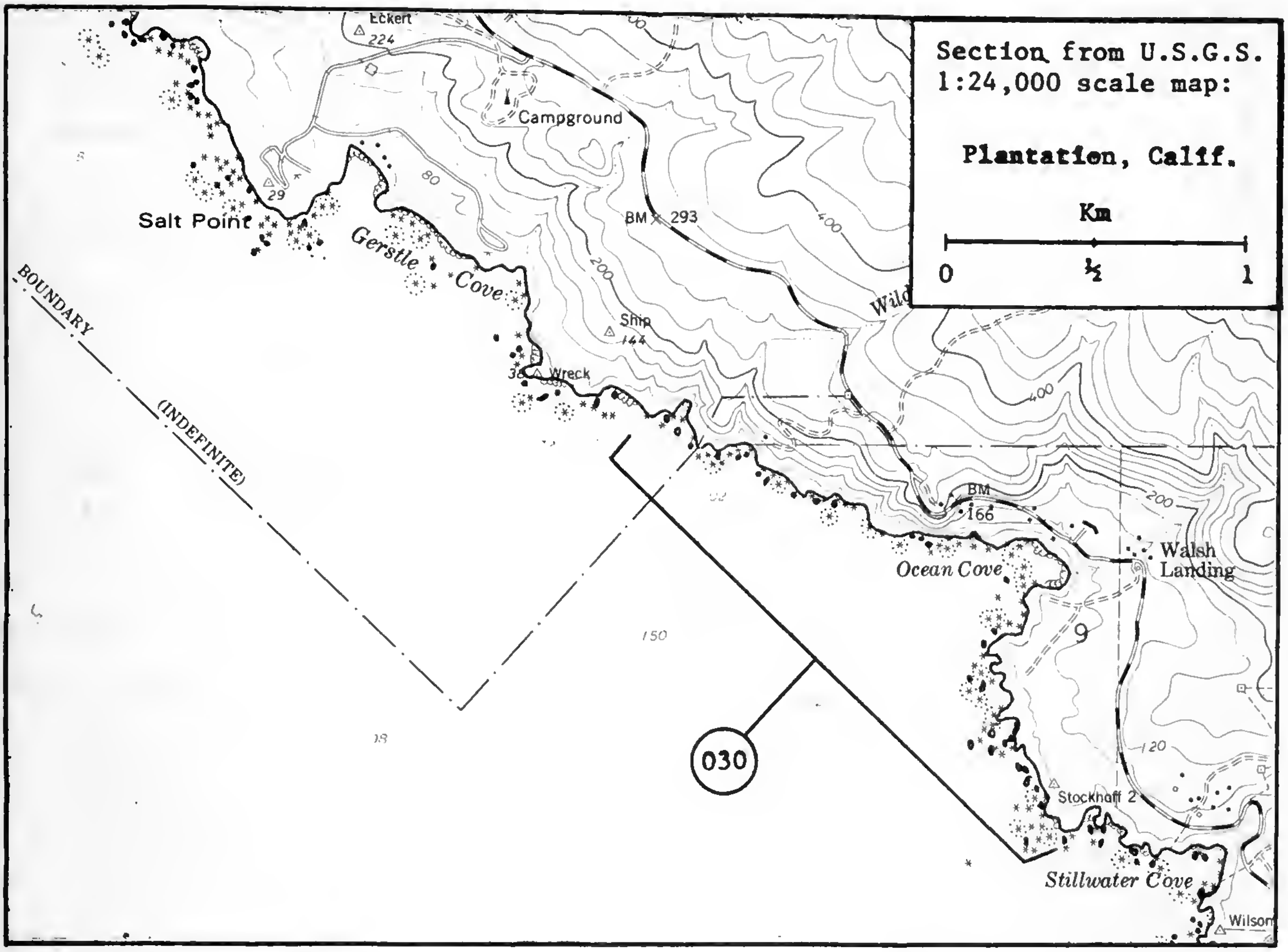
Horseshoe Cove
Horseshoe Point
028
029
Fisk Mill Cove
Deadman Gulch
Gulch
Cannon Gulch
Chinese
GERMAN
BM 68
BM 181
BM 140
Fish 45
995 ×
912 Well
578
4274000m N
18
19
KRUSE
Section from U.S.G.S. 1:24,000 scale map:
Plantation, Calif.
Km
0
½
1

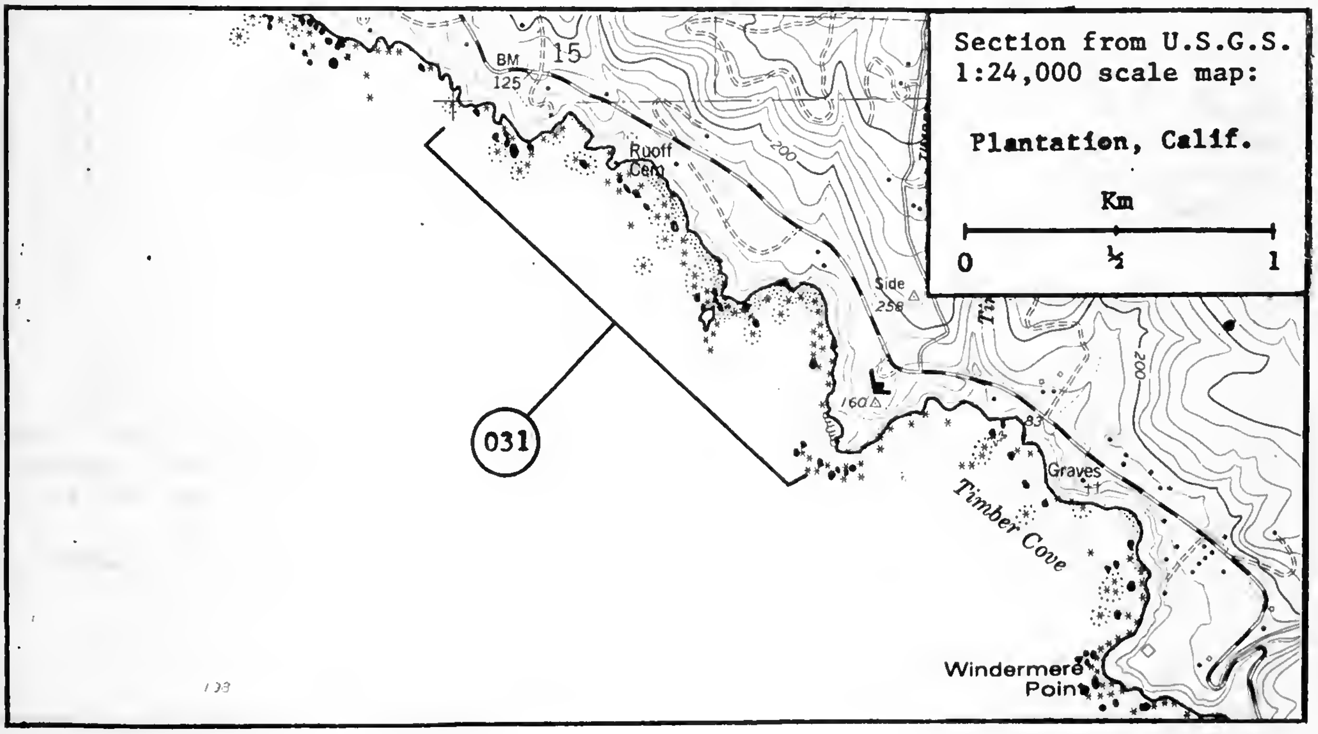
030 Gerstle Cove to Stillwater Cove 38°33'N, 123°18'45"W

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	110		

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	76		


Section from U.S.G.S.
1:24,000 scale map:
Plantation, Calif.
Km
0
½
1
Eckert
224
Campground
Salt Point
29
80
Gerstle Cove
BM 293
400
200
Ship
144
Wreck
BOUNDARY
(INDEFINITE)
030
150
Wild
400
BM
166
200
Walsh
Landing
Ocean Cove
9
120
Stockhoff 2
Stillwater Cove
Wilson

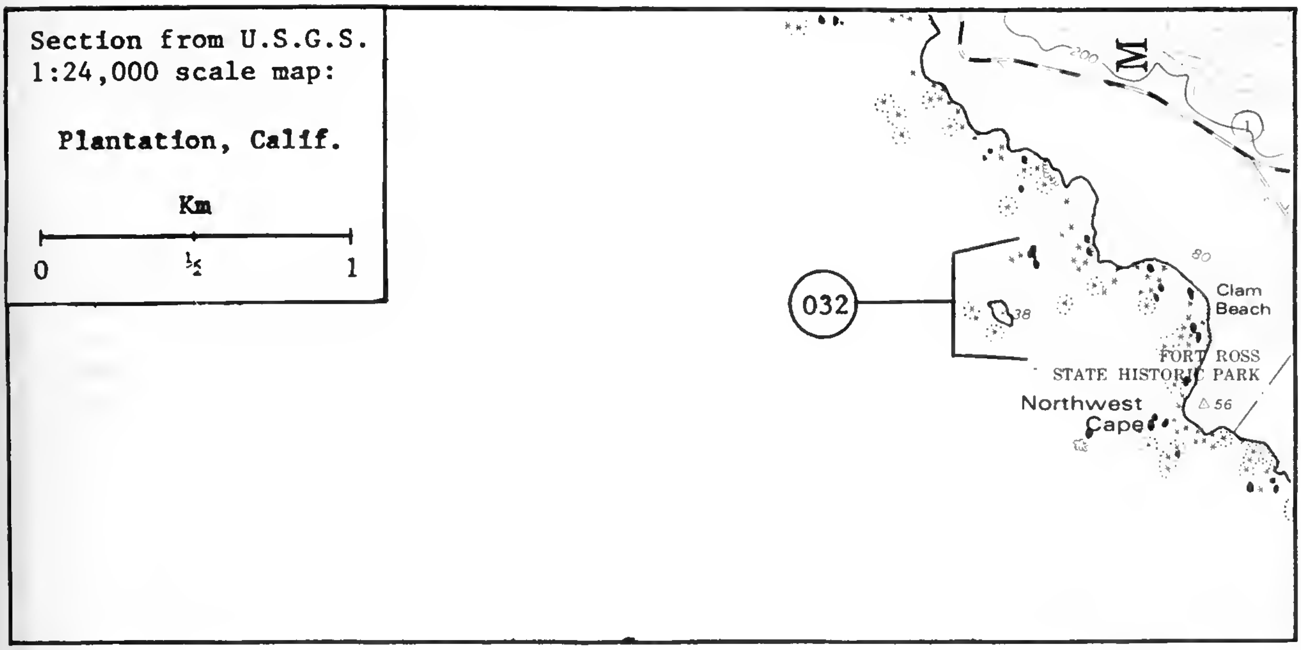

Section from U.S.G.S.
1:24,000 scale map:
Plantation, Calif.
Km
0
½
1
BM
125
15
200
Ruoff
Cem
Side
258
200
160
031
83
Graves
Timber Cove
Windermere
Point

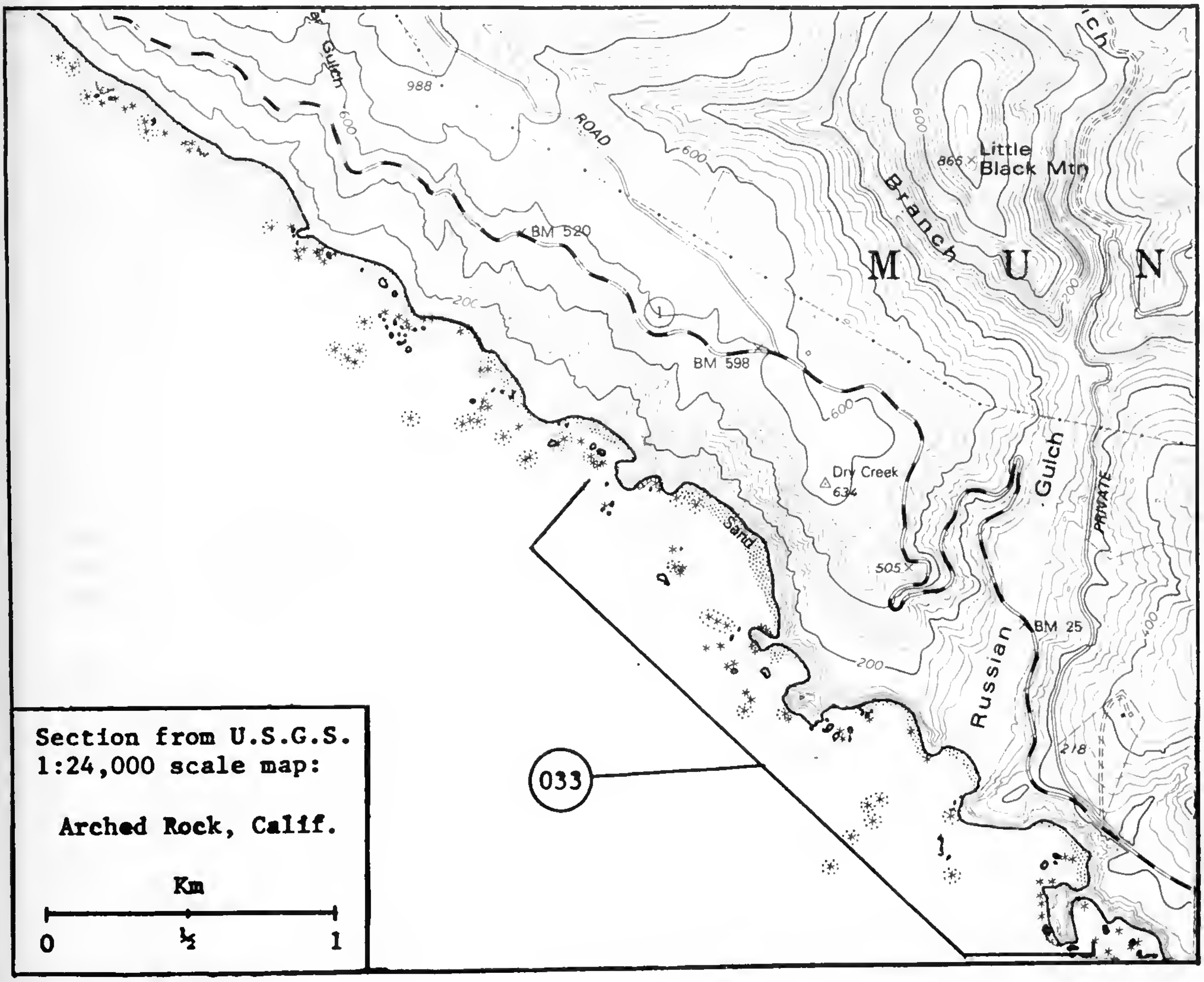
032 "Northwest Cape Rocks" 38°30'40"N, 123°15'17"W

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

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	60	(Lester & Rodstrom,6/25/79,B,III)	42
Total	408		


Section from U.S.G.S.
1:24,000 scale map:
Plantation, Calif.
Km
0
½
1
032
Clam Beach
FORT ROSS
STATE HISTORIC PARK
Northwest Cape
38
56
80
200
1
M


Section from U.S.G.S.
1:24,000 scale map:
Arched Rock, Calif.
Km
0
½
1
033
Little Black Mtn
865
Branch
M
U
N
ROAD
988
600
BM 520
BM 598
Dry Creek
634
505
BM 25
Russian Gulch
PRIVATE
Sand
Gulch
200
218
400
1

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

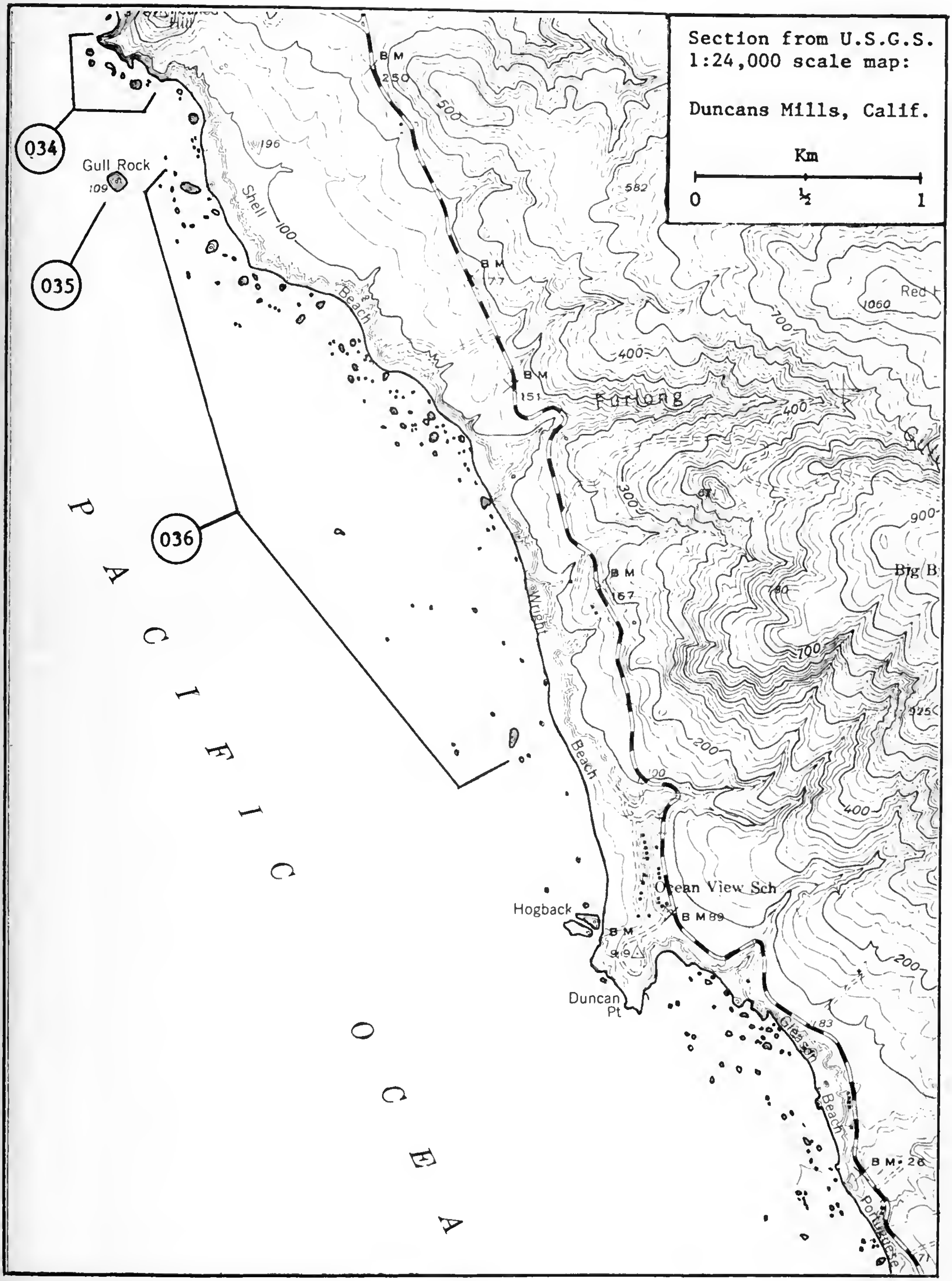
Pelagic Cormorant	156	(Lester & Rodstrom,6/25/79,B,II)	42
Black Oystercatcher	2	(Lester & Rodstrom,6/25/79,B,II)	42
Western Gull	20	(Lester & Rodstrom,6/25/79,B,III)	42
Pigeon Guillemot	80	(Lester & Rodstrom,6/25/79,B,III)	42
Total	258		

035 Gull Rock 38°25'30"N, 123°07'10"W

Brandt's Cormorant	650	(Lester & Sowls,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

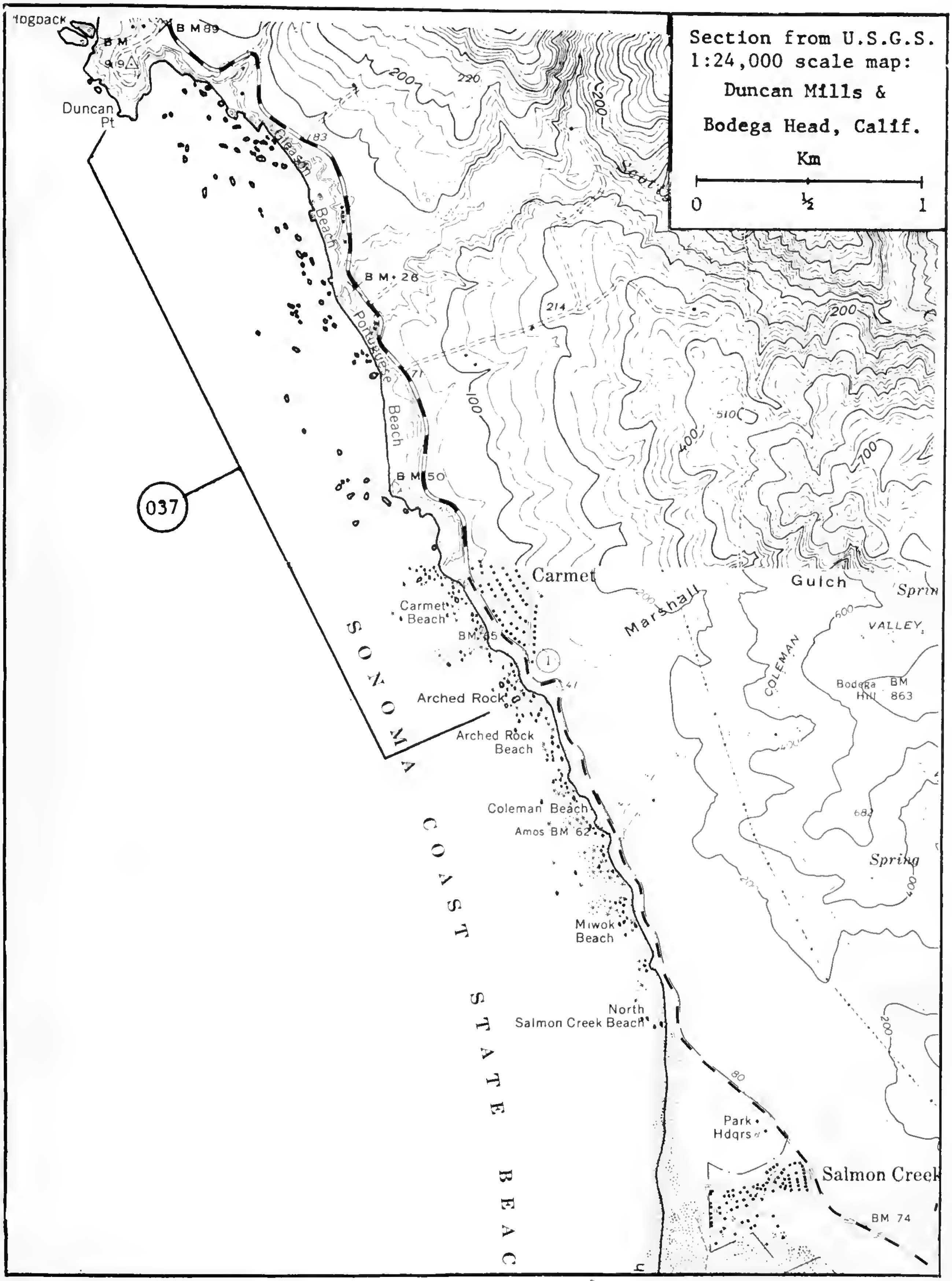
036 Shell-Wright Beach Rocks 38°25'N, 123°06"W

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		


Section from U.S.G.S.
1:24,000 scale map:
Duncans Mills, Calif.
Km
0
½
1
034
035
036
Gull Rock
Shell Beach
Wright Beach
Furlong
Ocean View Sch
Hogback
Duncan Pt
Gleason Beach
Portuguese
PACIFIC OCEA

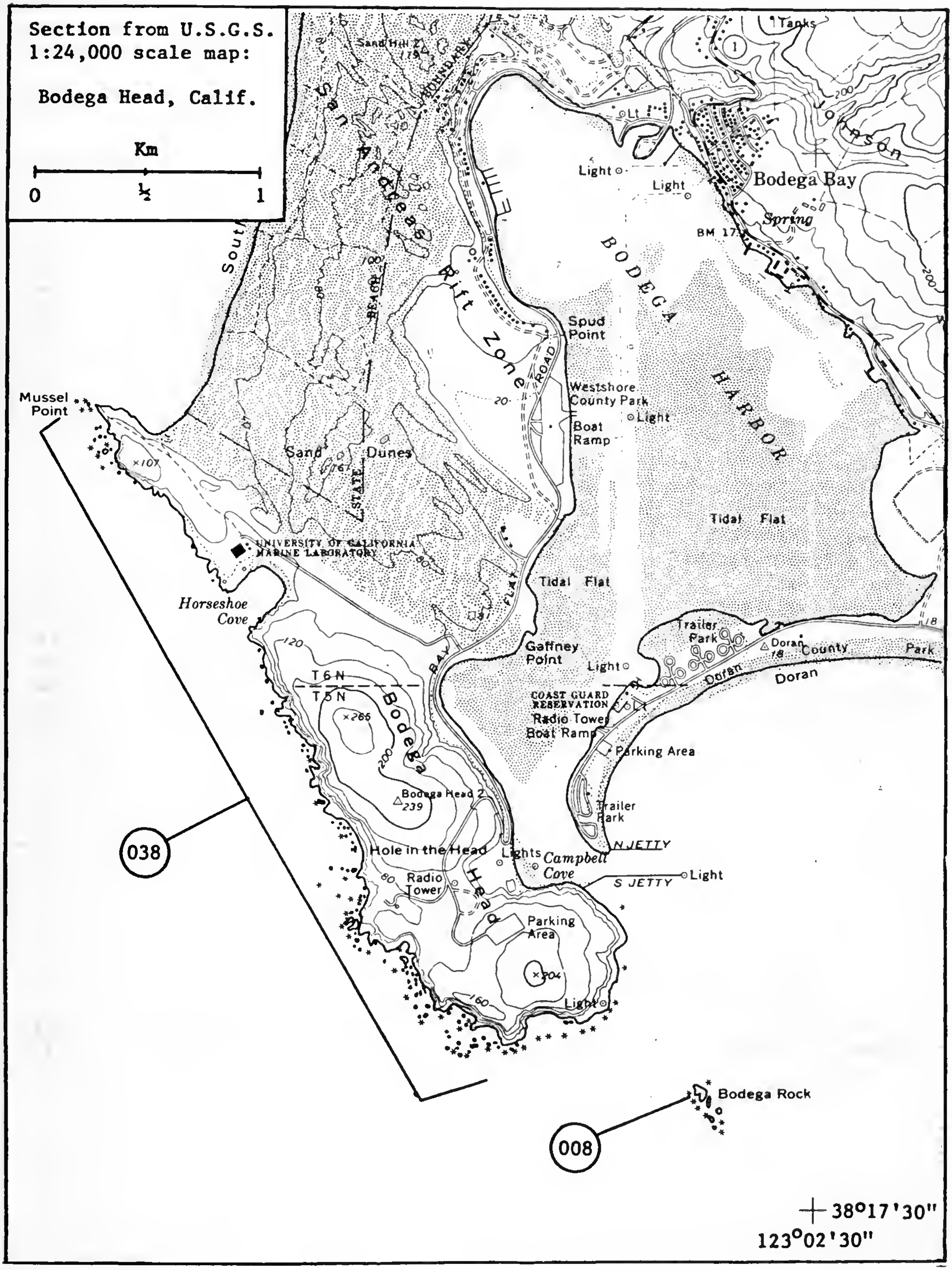
037 Duncan Point to Arched Rock 38°22'30"N, 123°05"W

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	92		


Section from U.S.G.S.
1:24,000 scale map:
Duncan Mills &
Bodega Head, Calif.
Km
0
½
1
Duncan Pt
037
Gleason Beach
Portuguese Beach
Carmet
Carmet Beach
Arched Rock
Arched Rock Beach
Coleman Beach
Amos BM 62
Miwok Beach
North Salmon Creek Beach
Park Hdqrs
Salmon Creek
BM 74
Marshall
Gulch
COLEMAN
VALLEY
Bodega Hill
BM 863
Spring
SONOMA COAST STATE BEAC

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		


Section from U.S.G.S.
1:24,000 scale map:
Bodega Head, Calif.
Km
0
½
1
San Andreas Rift Zone
Sand Dunes
STATE BEACH
Mussel Point
UNIVERSITY OF CALIFORNIA MARINE LABORATORY
Horseshoe Cove
T6N
T5N
Bodega Head
Bodega Head 2
239
265
Hole in the Head
Radio Tower
Parking Area
Light
Lights
Campbell Cove
N JETTY
S JETTY
BODEGA HARBOR
Tidal Flat
Spud Point
Westshore County Park
Boat Ramp
Gaffney Point
COAST GUARD RESERVATION
Radio Tower
Boat Ramp
Parking Area
Trailer Park
Doran County Park
Bodega Bay
Spring
Tanks
Johnson
Bodega Rock
038
008
38°17'30"
123°02'30"

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

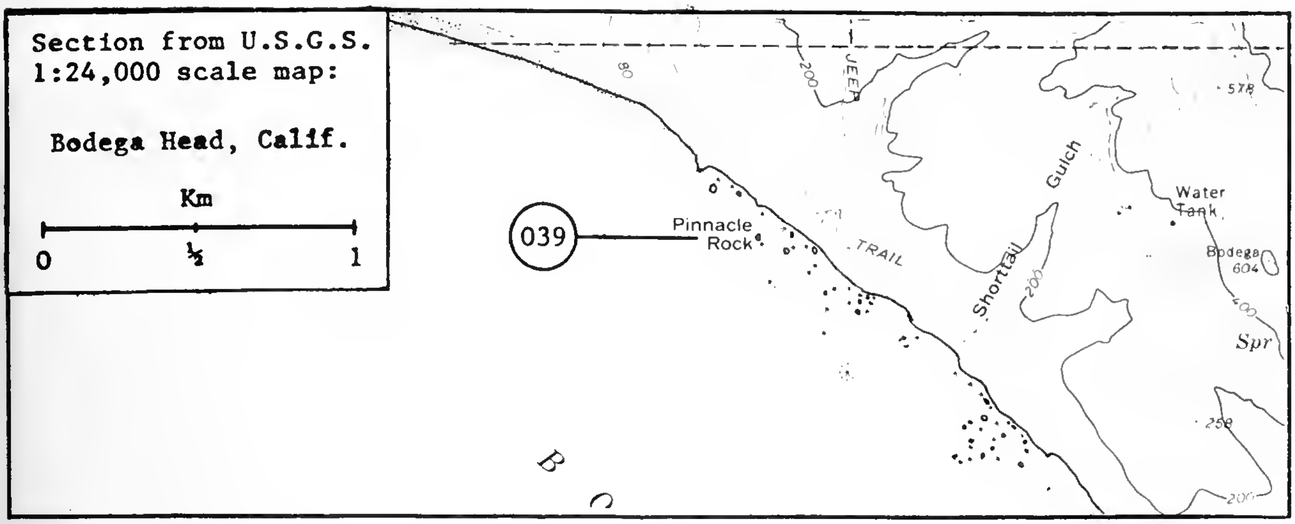
Pelagic Cormorant	4	(Lester & Rodstrom,6/26/79,B,II)	42
Black Oystercatcher	2	(Lester & Rodstrom,6/26/79,B,III)	42
Western Gull	2	(Lester & Rodstrom,6/26/79,B,II)	42
Pigeon Guillemot	30	(Lester & Rodstrom,6/26/79,B,III)	42
Total	38		

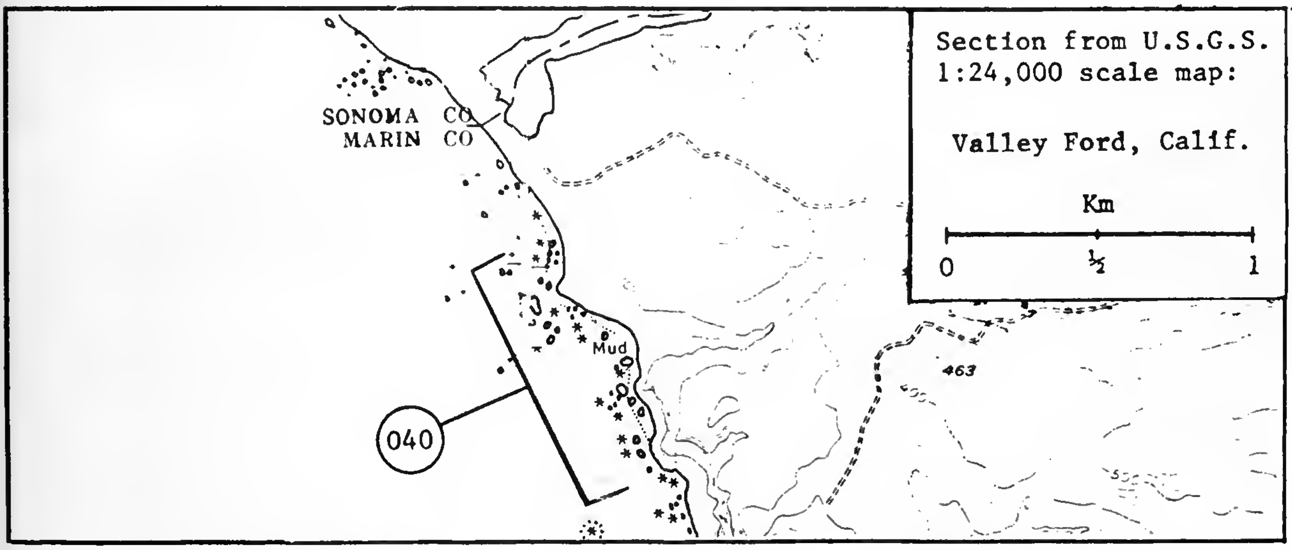
040 "Sonoma-Marin County Line" 38°17'20"N, 123°00'20"W

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	28		


Section from U.S.G.S.
1:24,000 scale map:
Bodega Head, Calif.
Km
0
½
1
039
Pinnacle Rock
TRAIL
JEEP
Gulch
Shorttail
Water Tank
Bodega
604
Spr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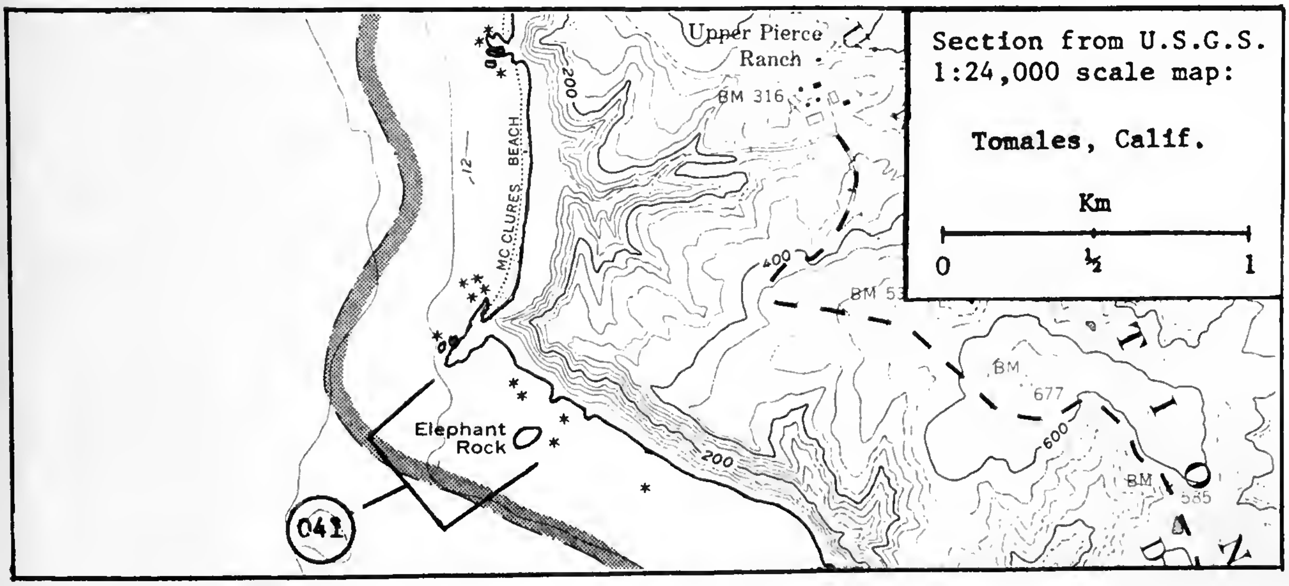
1:24,000 scale map:
Valley Ford, Calif.
Km
0
½
1
SONOMA CO
MARIN CO
Mud
040
463


Section from U.S.G.S.
1:24,000 scale map:
Tomales, Calif.
Km
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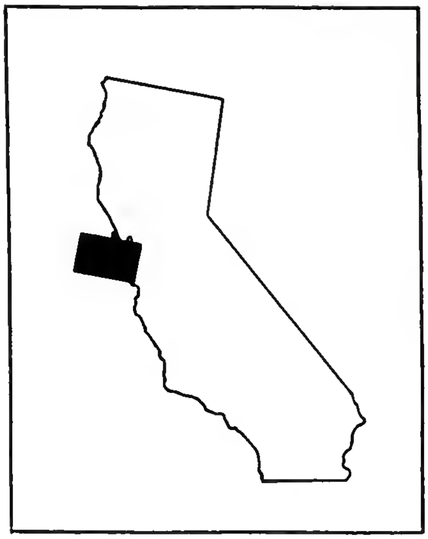
½
1
Upper Pierce Ranch
BM 316
MC CLURES BEACH
Elephant Rock
041
200
400
600
BM
677
585



429

San Francisco

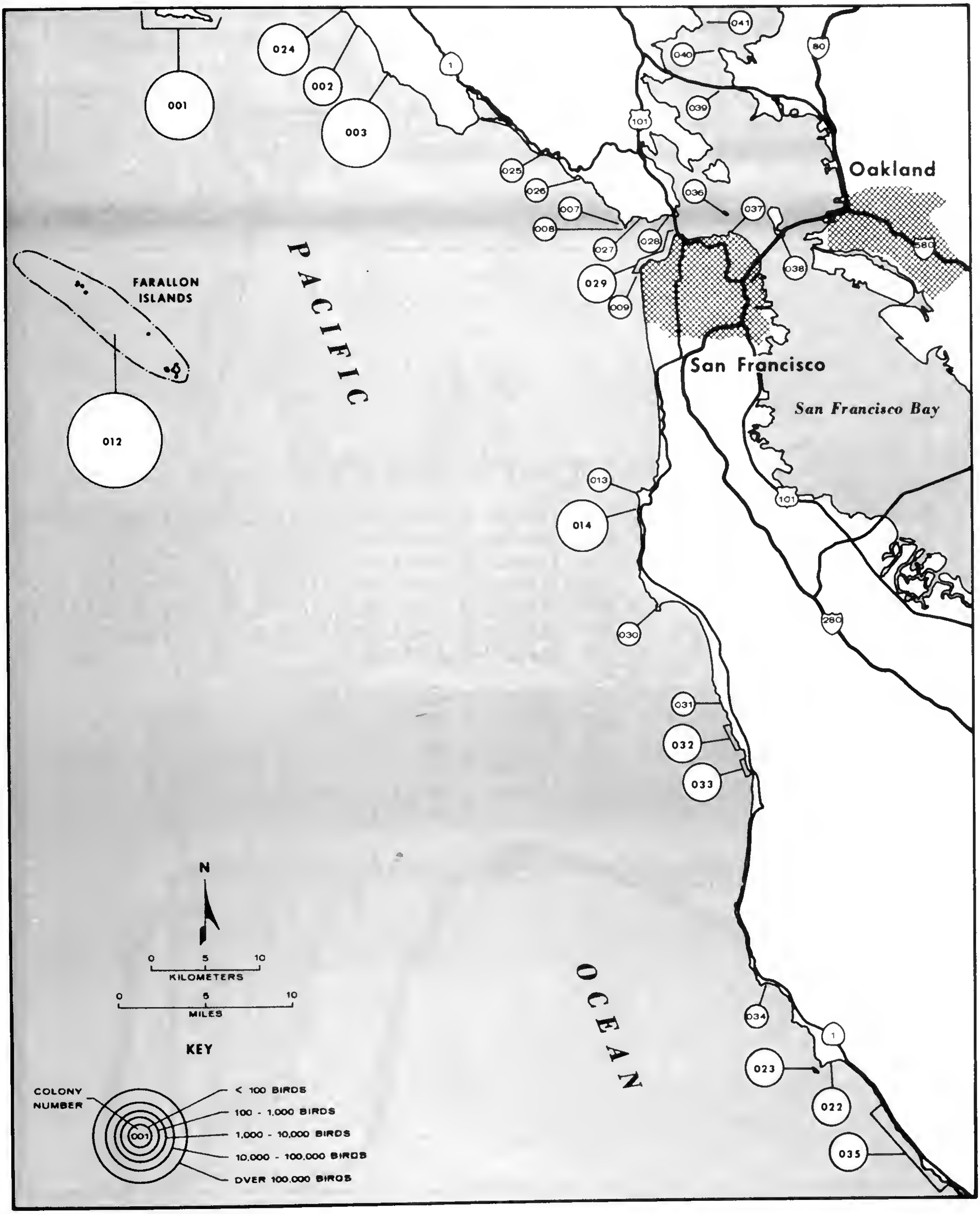
The map on the facing page is an index to the locations of colonies within map 545, San Francisco. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979).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

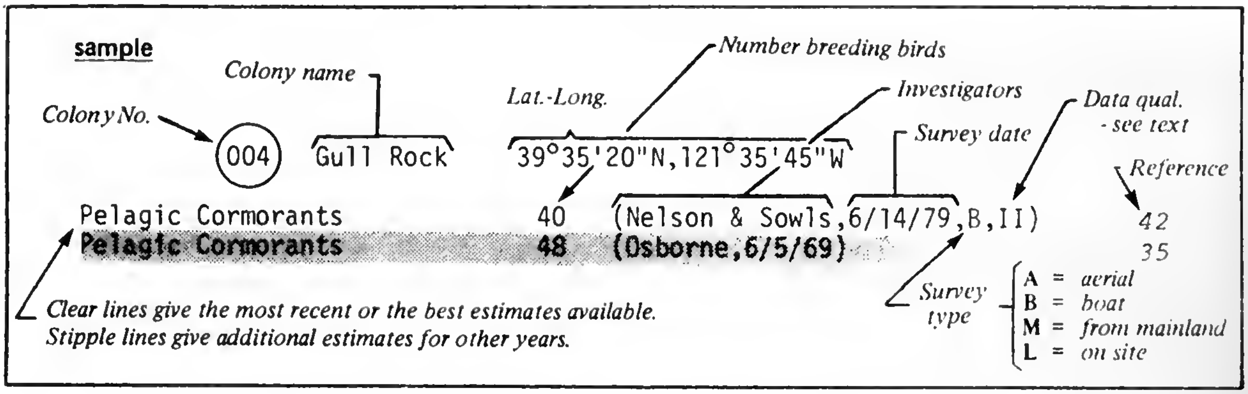
Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region. Most of these birds are at the Farallon Islands (429 012).

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

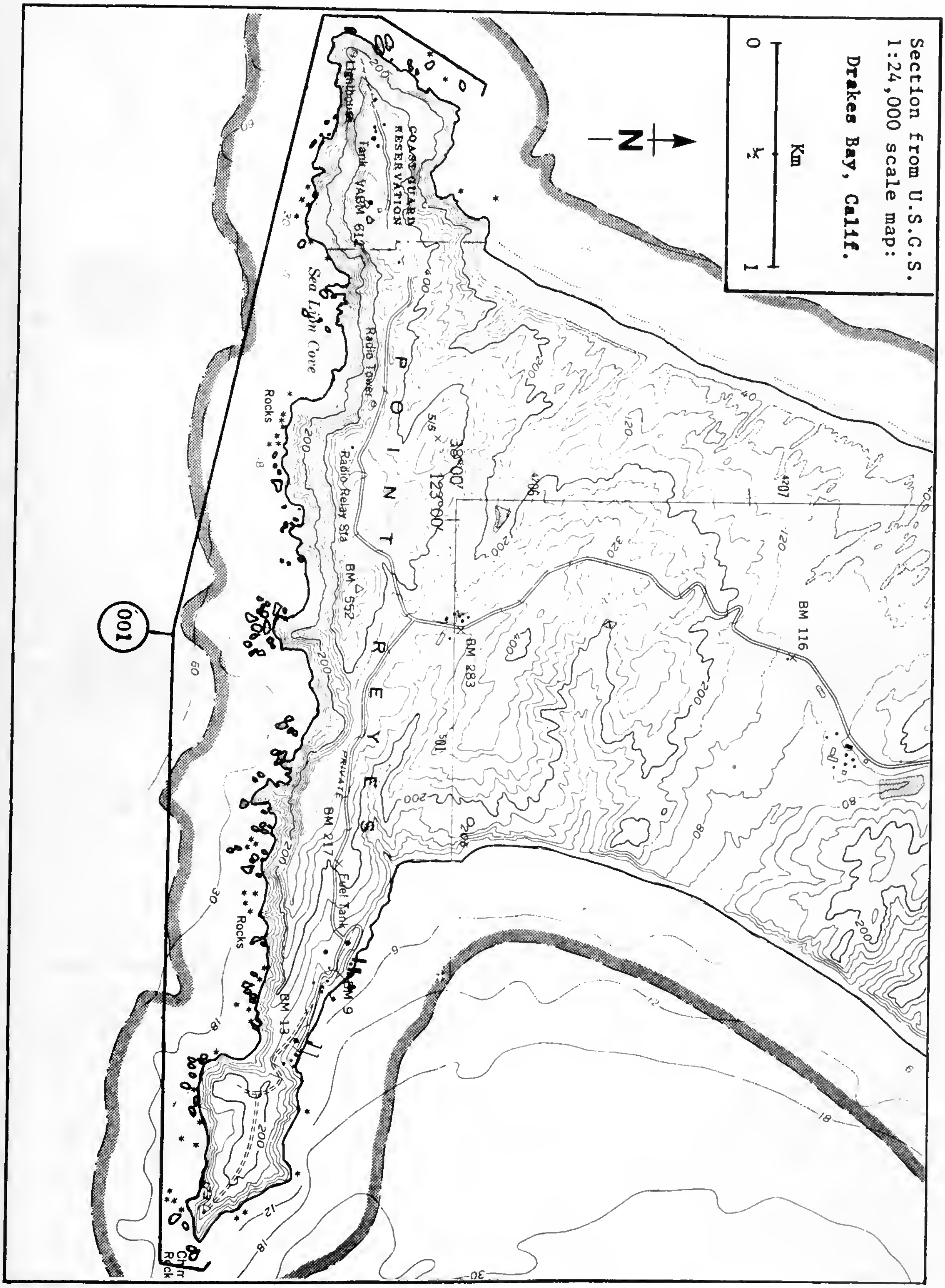




001 Point Reyes 37°59'26"N, 123°59'24"W

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[1]	(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

[1] 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.


Section from U.S.G.S.
1:24,000 scale map:
Drakes Bay, Calif.
Km
0
½
1
N
POINT REYES
COAST GUARD RESERVATION
Lighthouse
Tank
VABM 612
Sea Lion Cove
Radio Tower
Radio Relay Sta
BM 552
BM 283
BM 116
PRIVATE
BM 217
Fuel Tank
BM 9
BM 13
Rocks
Rocks
100

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

Brandt's Cormorant	194	(Nelson & Sowls,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 /1	(Nelson & Sowls,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

/1 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

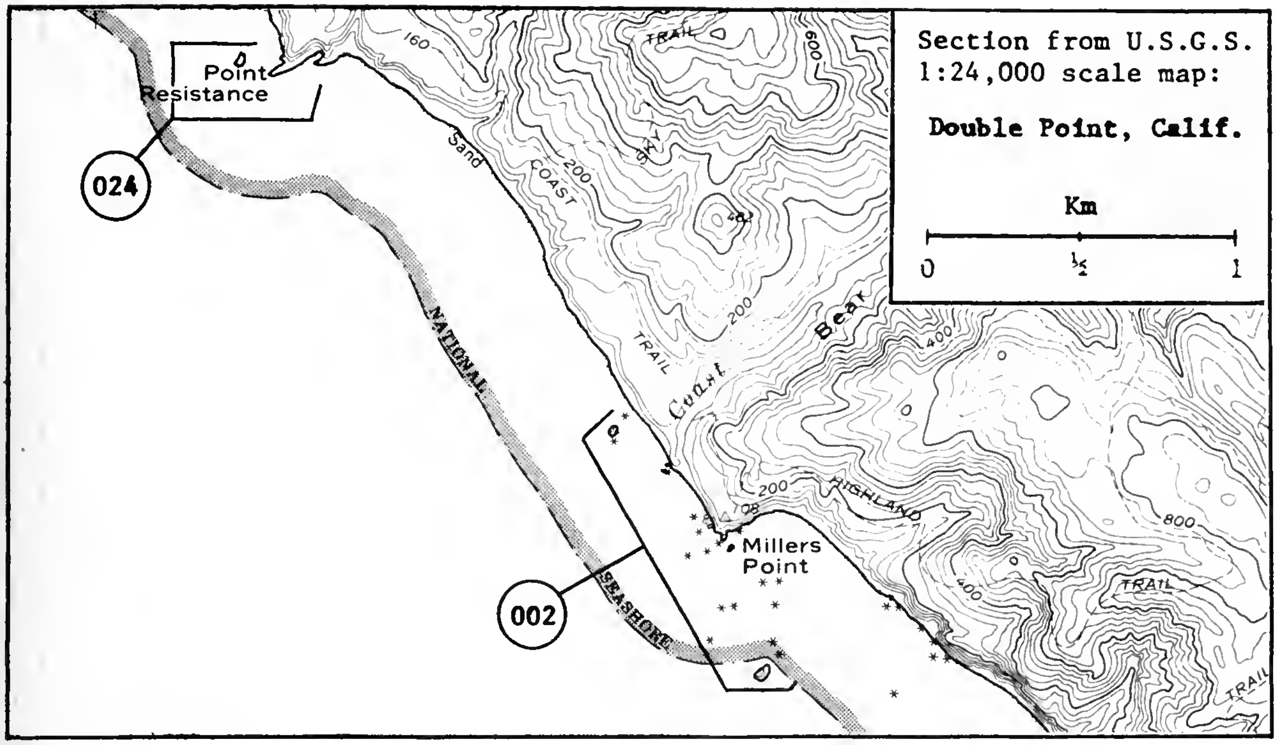
Bolinas Lagoon was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

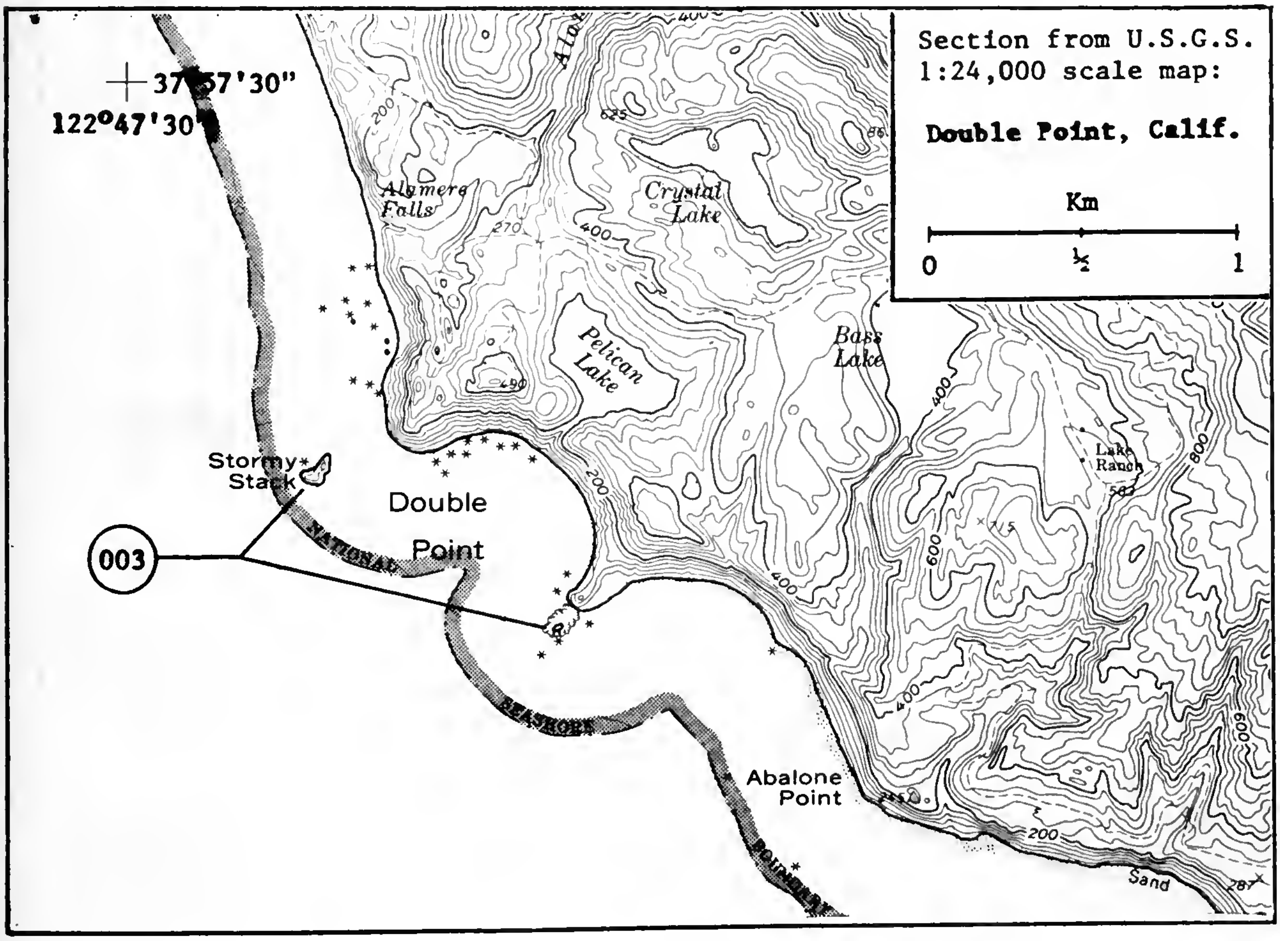
005

San Pablo Creek was previously assigned a catalog number because of California Clapper Rail nesting. We have not inlcuded 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).


Section from U.S.G.S. 1:24,000 scale map:
Double Point, Calif.
Km
0
½
1
Point Resistance
024
002
Millers Point
Sand
COAST
TRAIL
Coast
Bear
HIGHLAND
NATIONAL
SEASHORE
160
200
400
800


Section from U.S.G.S. 1:24,000 scale map:
Double Point, Calif.
Km
0
½
1
37°57'30"
122°47'30"
Alamere Falls
Crystal Lake
Pelican Lake
Bass Lake
Lake Ranch
Stormy Stack
Double Point
003
NATIONAL
SEASHORE
BOUNDARY
Abalone Point
Sand
200
400
600
800

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	6		
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	64		
Pelagic Cormorant	50	(Reynolds,8/19/69,M)	36

X = present

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

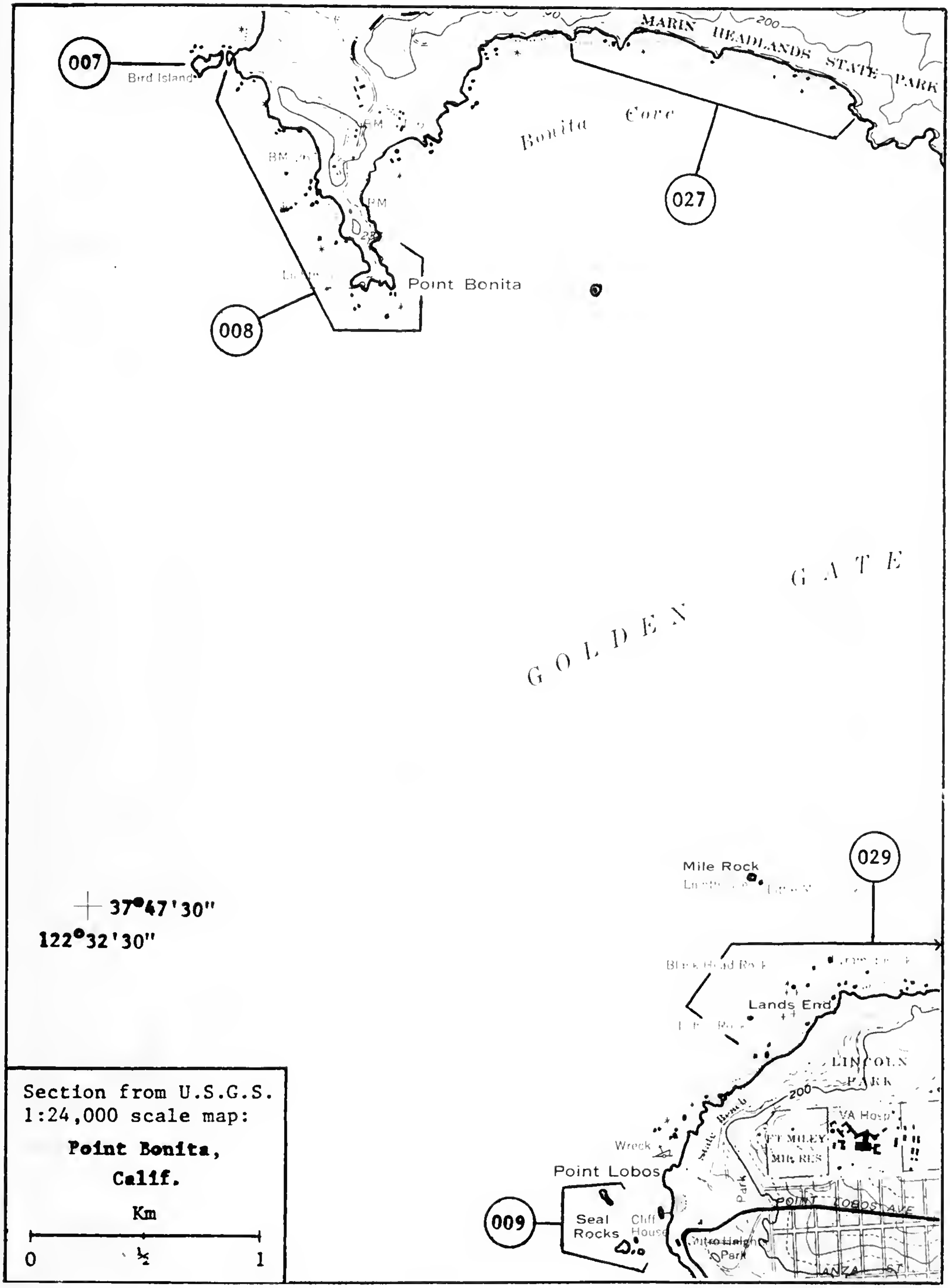
The Seal Rocks colony is an excellent location to see seabirds, particularly Brown Pelicans, even though there are few nesting birds here. California Sea lions can also be observed. See appendix B.

Brandt's Cormorant	0	(Nelson & Sowls,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	52		
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


007
Bird Island
MARIN HEADLANDS STATE PARK
200
Bonita Cove
027
Point Bonita
008
GOLDEN GATE
029
Mile Rock
37°47'30"
122°32'30"
Lands End
LINCOLN PARK
200
VA Hosp
FT MILEY MIL RES
Wreck
Point Lobos
Seal Rocks
Cliff House
009
Park
POINT LOBOS AVE
ANZA ST
Section from U.S.G.S.
1:24,000 scale map:
Point Bonita,
Calif.
Km
0
½
1

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.

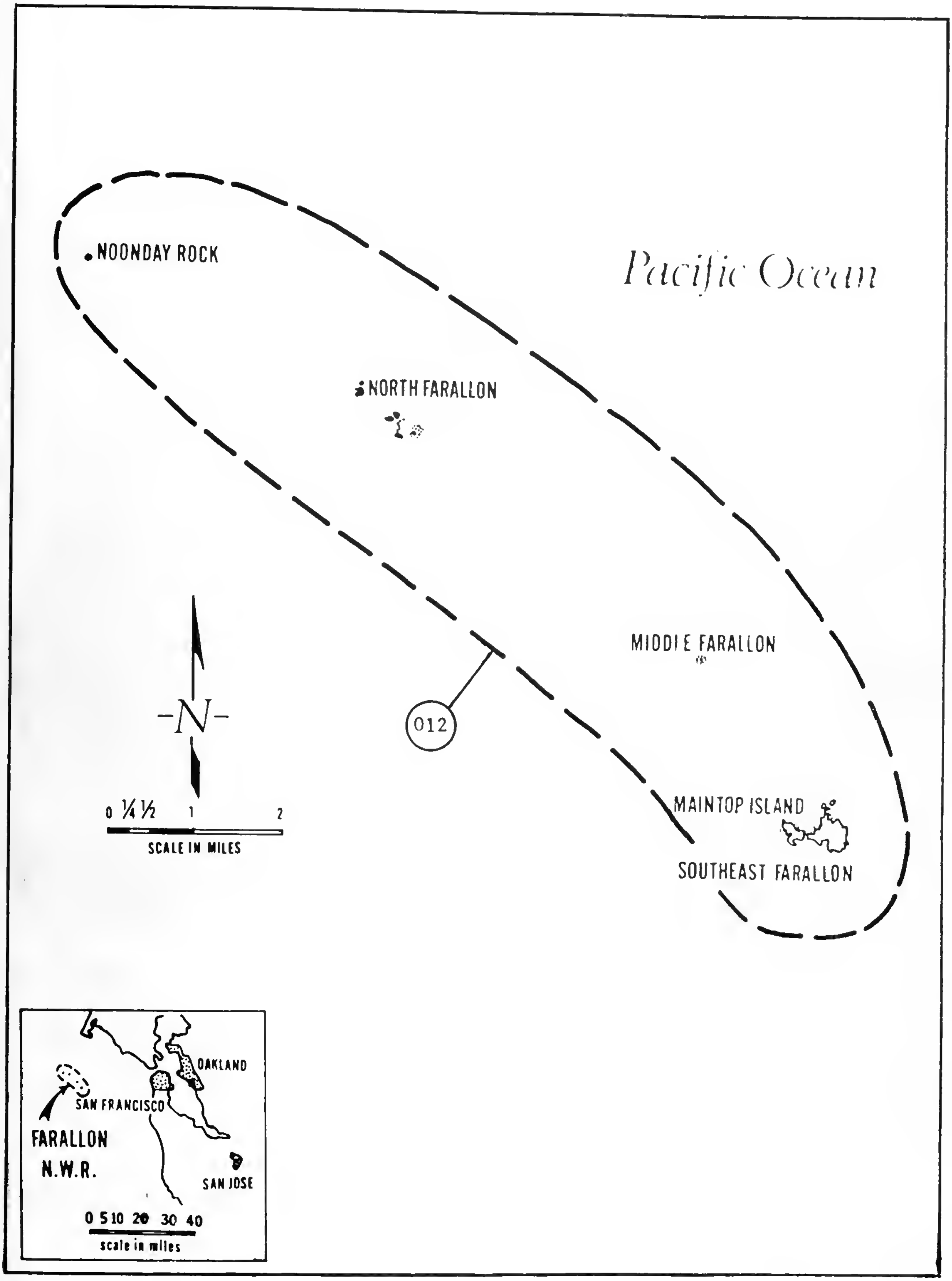
Uncontrolled exploitation in the past of marine mammals and seabirds on the Farallon Islands led to drastic population declines. Russian and American sealers exterminated the Farallon populations of elephant seals *(Mirounga angustirostris)*, fur seals *(Arctocephalus philippi)*, and sea otters *(Enhydra 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 murres declined in number 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[1]	(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 through review of historical data see Ainley and Lewis, 1974.

[1] 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.


NOONDAY ROCK
Pacific Ocean
NORTH FARALLON
MIDDLE FARALLON
012
N
0 ¼ ½ 1 2
SCALE IN MILES
MAINTOP ISLAND
SOUTHEAST FARALLON
OAKLAND
SAN FRANCISCO
FARALLON
N.W.R.
SAN JOSE
0 5 10 20 30 40
scale in miles

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	58		
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 △	(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	2,628		
Common Murre	700	(Reynolds,7/21/70,M)	36
Pigeon Guillemot	2	(Reynolds,7/21/70,M)	36

△ 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

(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

(016) Bair Island 37°31'43"N, 122°13'05"W

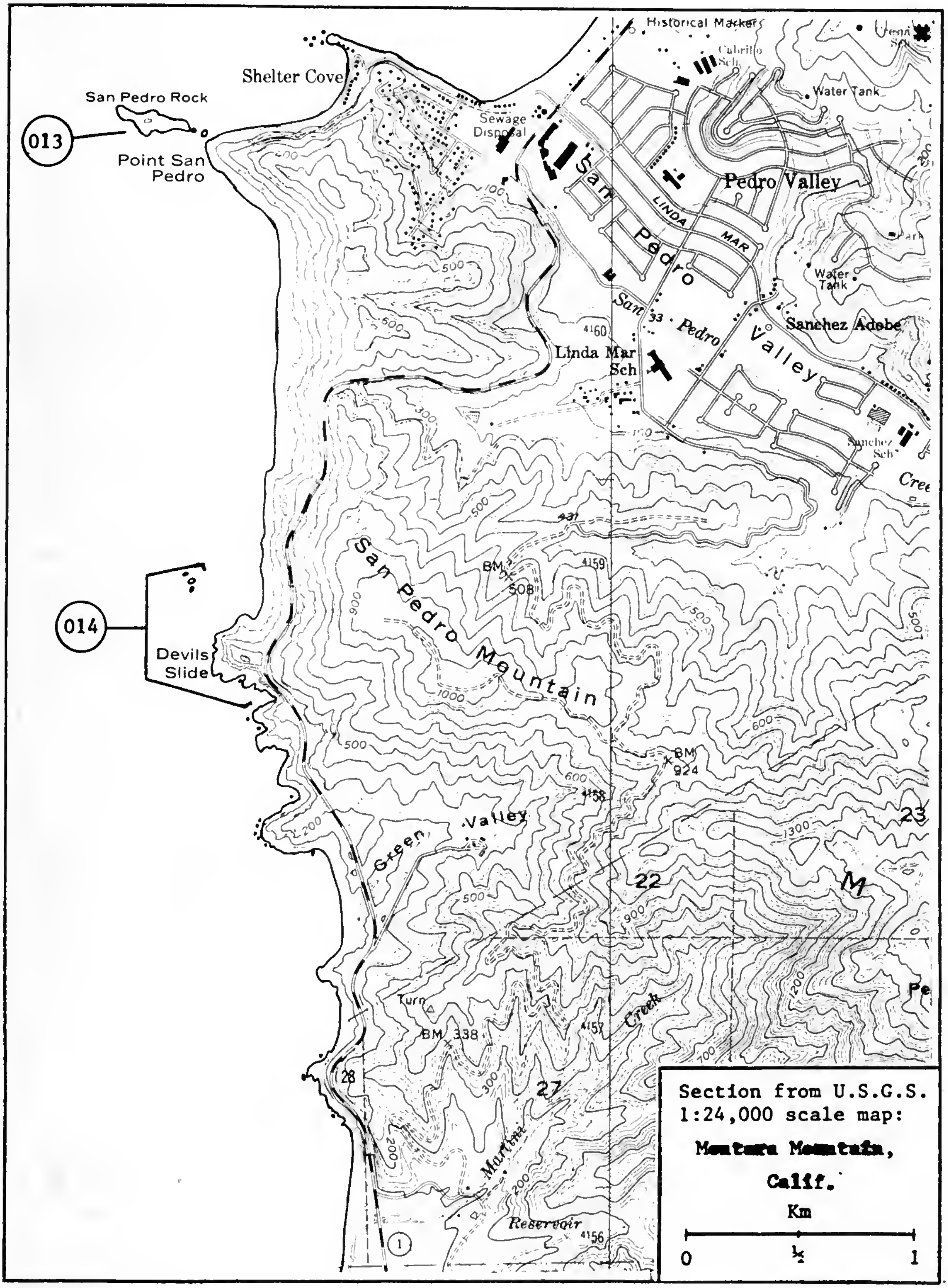
No map is provided for this site in San Francisco Bay. For the most current information contact the California Department of Fish and Game. Least Terns are an endangered species. Populations of Least Terns are surveyed annually.

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 an endangered 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	694		



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

Km

0 ½ 1

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

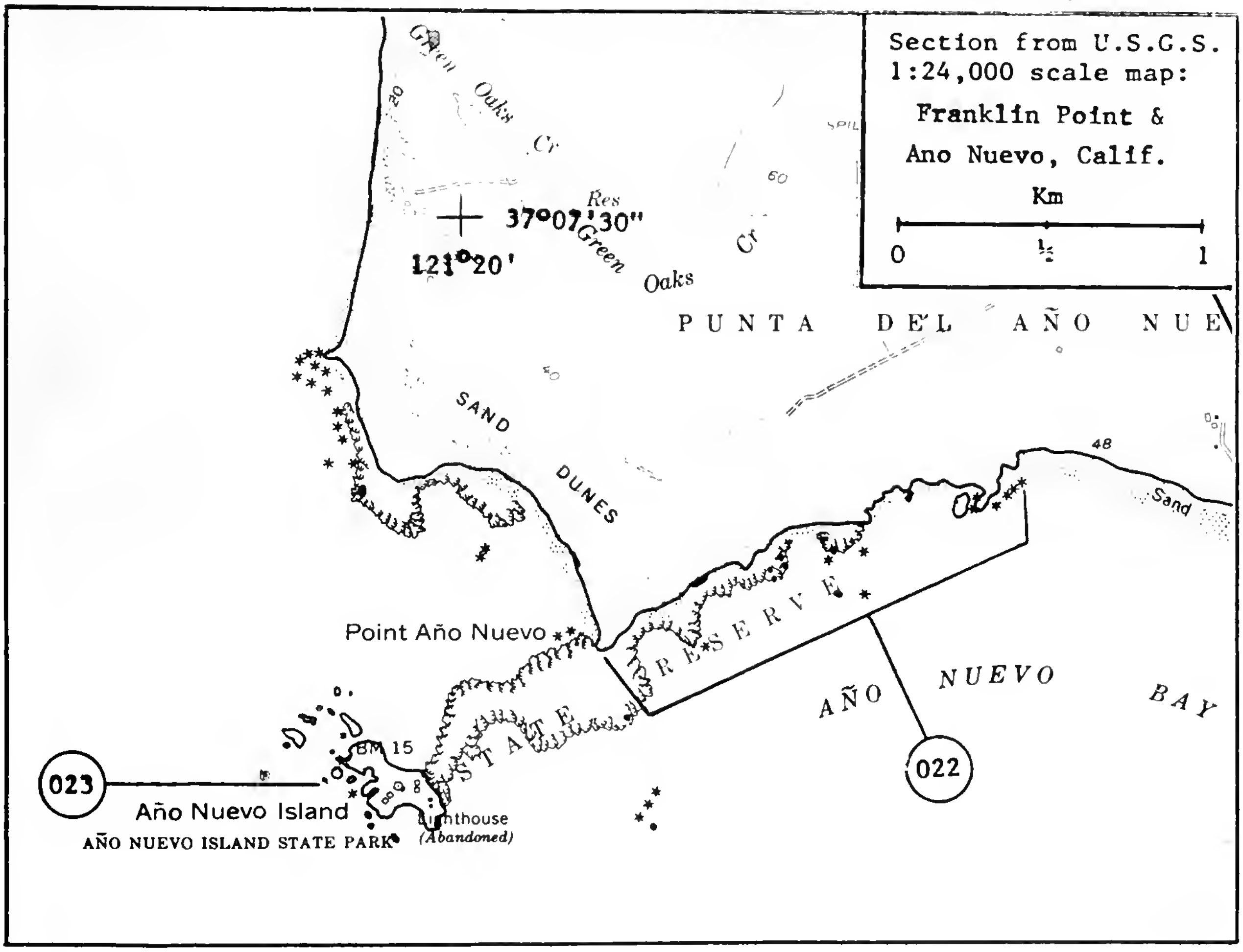
Pelagic Cormorant	210	(Lester & Nelson,6/13/80,B,II)	42
Pigeon Guillemot	70	(Lester & Nelson,6/13/80,B,III)	42
Total	280		
Pelagic Cormorant	200	(Nelson & Lester,7/5/79,B,II)	42

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

Pelagic Cormorant	10	(Briggs,1976,L)	43
Black Oystercatcher	24	(Briggs,1976,L)	43
Western Gull	240	(Briggs,1976,L)	43
Pigeon Guillemot	64	(Briggs,1976,L)	43
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[1]	(Nelson & Sowls,6/24/80,A,III)	42
Pigeon Guillemot	60	(Lester & Rodstrom,7/2/79,B,III)	42
Total	7,836		
Common Murre	400	(Osborne,1970,M)	36

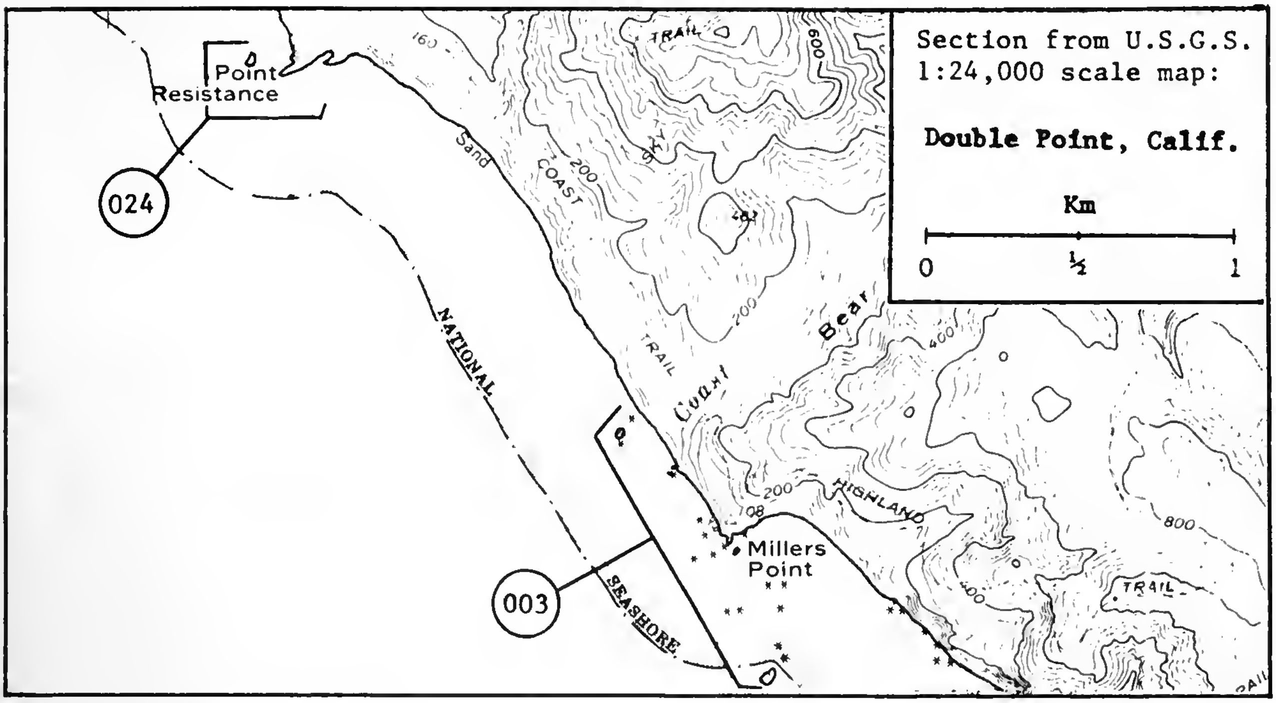
[1] Estimate is number of birds present times 1.67, see page 20. Briggs et al.'s estimate for 7/1/80 aerial survey (also times 1.67) is 6,800.

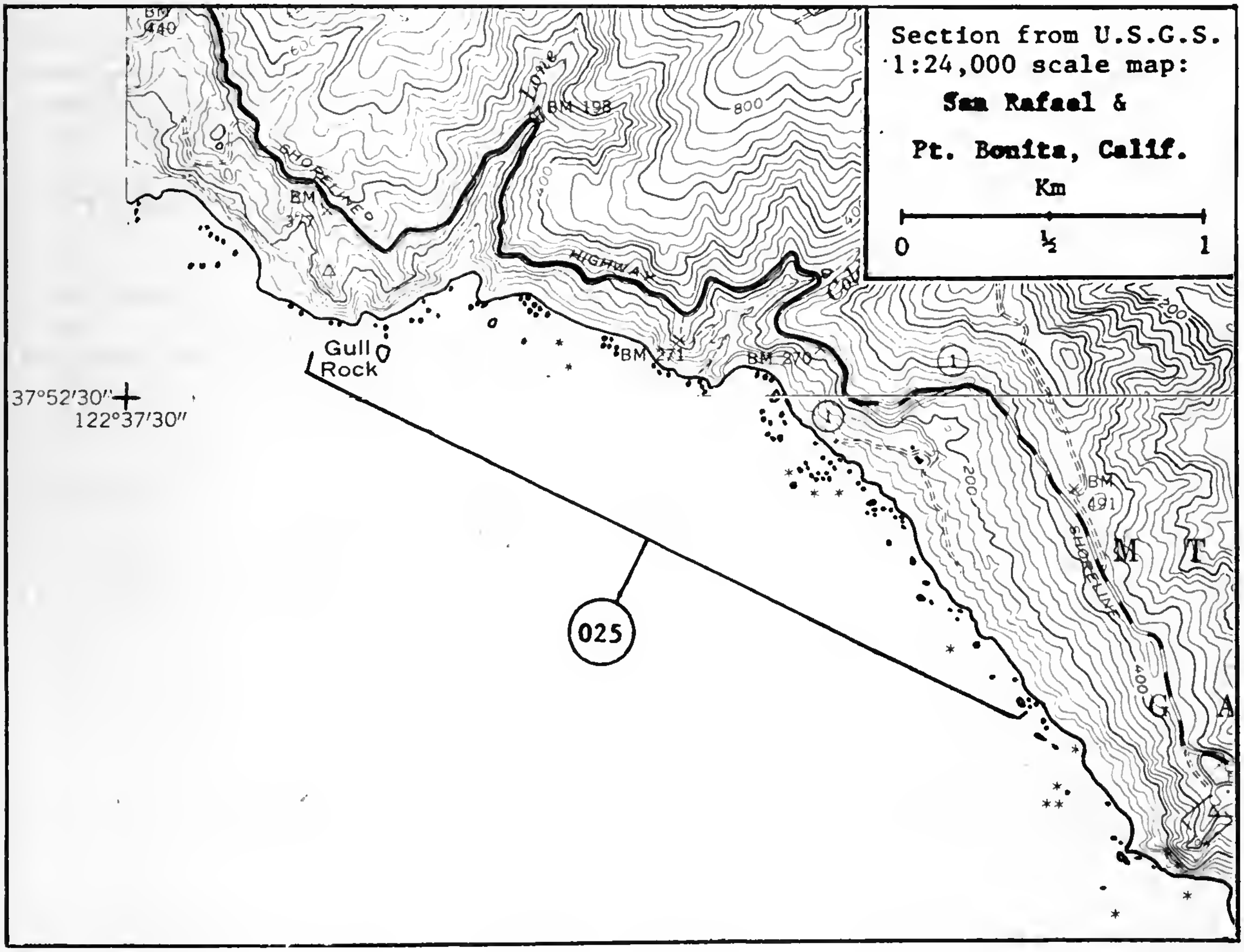
Point Resistance Rock

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	2	(Lester & Rodstrom,7/3/79,B,III)	42
Total	36		


Section from U.S.G.S.
1:24,000 scale map:
Double Point, Calif.
Km
0
½
1
Point Resistance
024
NATIONAL
SEASHORE
Millers Point
003
Sand
COAST
TRAIL
HIGHLAND
Bear


Section from U.S.G.S.
1:24,000 scale map:
San Rafael &
Pt. Bonita, Calif.
Km
0
½
1
Gull Rock
37°52′30″
122°37′30″
025
SHORELINE
HIGHWAY
BM 198
BM 271
BM 270
BM 491

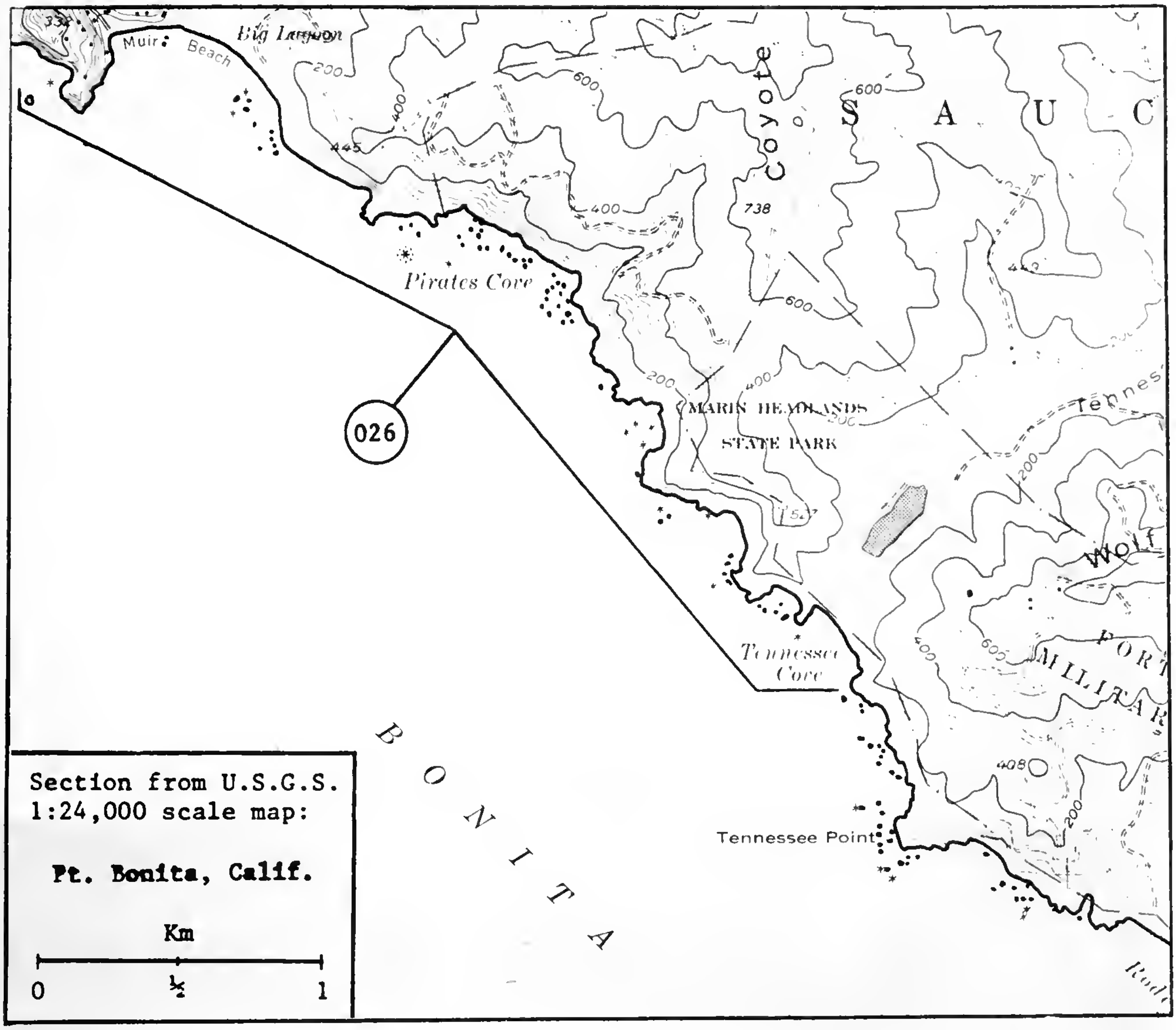
026 Muir Beach Headlands to Tennessee Cove 37°51'00"N, 122°33'45"W

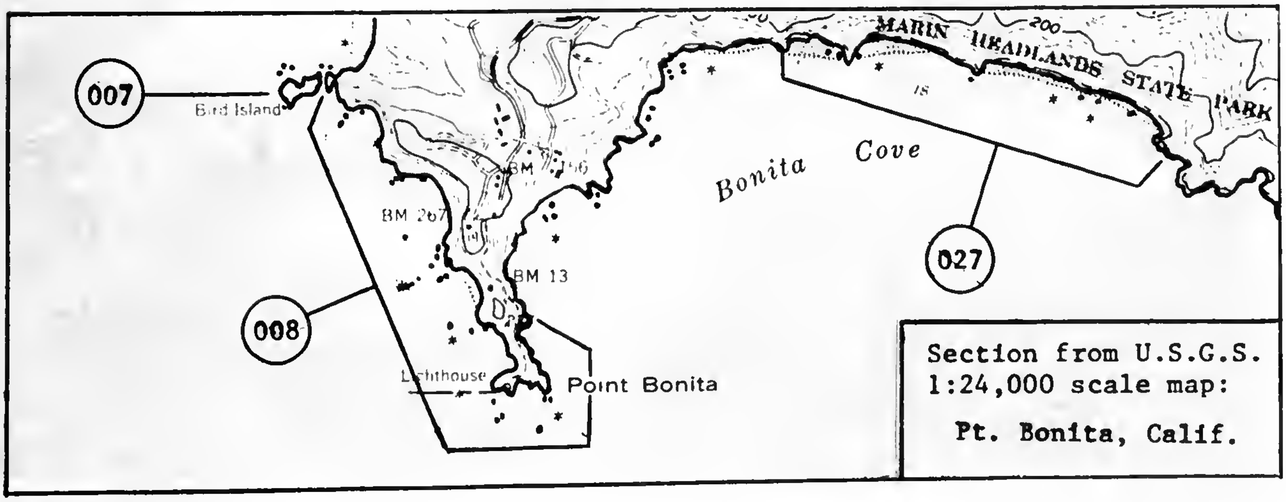
Pelagic Cormorant	34	(Lester & Rodstrom,7/3/79,B,II)	42
Black Oystercatcher	2	(Lester & Rodstrom,7/3/79,B,II)	42
Pigeon Guillemot	X	(Lester & Rodstrom,7/3/79,B,II)	42
Total	36		

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	22		

X = present


Muir Beach
Big Lagoon
Coyote
S A U C
Pirates Cove
026
MARIN HEADLANDS STATE PARK
Tennessee Cove
Tennessee Point
B O N I T A
Wolf
FORT MILITAR
Section from U.S.G.S.
1:24,000 scale map:
Pt. Bonita, Calif.
Km
0
½
1


007
Bird Island
MARIN HEADLANDS STATE PARK
Bonita Cove
BM 267
BM 13
008
Lighthouse
Point Bonita
027
Section from U.S.G.S.
1:24,000 scale map:
Pt. Bonita, Calif.

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

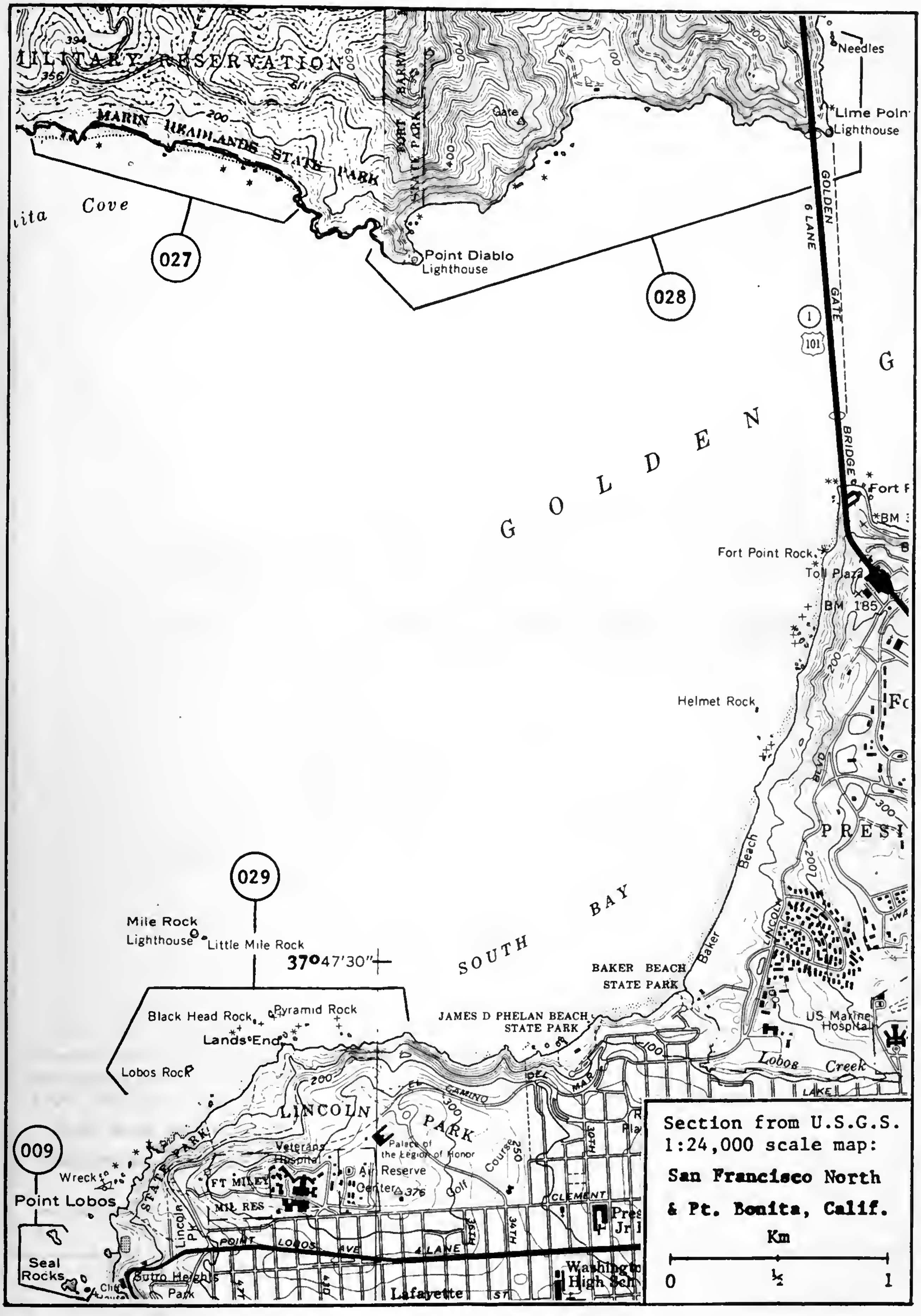
Pelagic Cormorant	64	(Lester & Rodstrom,7/3/79,B,II)	*42*
Western Gull	16	(Lester & Rodstrom,7/3/79,B,II)	*42*
Pigeon Guillemot	X	(Lester & Rodstrom,7/3/79,B)	*42*
Total	80		

X = present

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

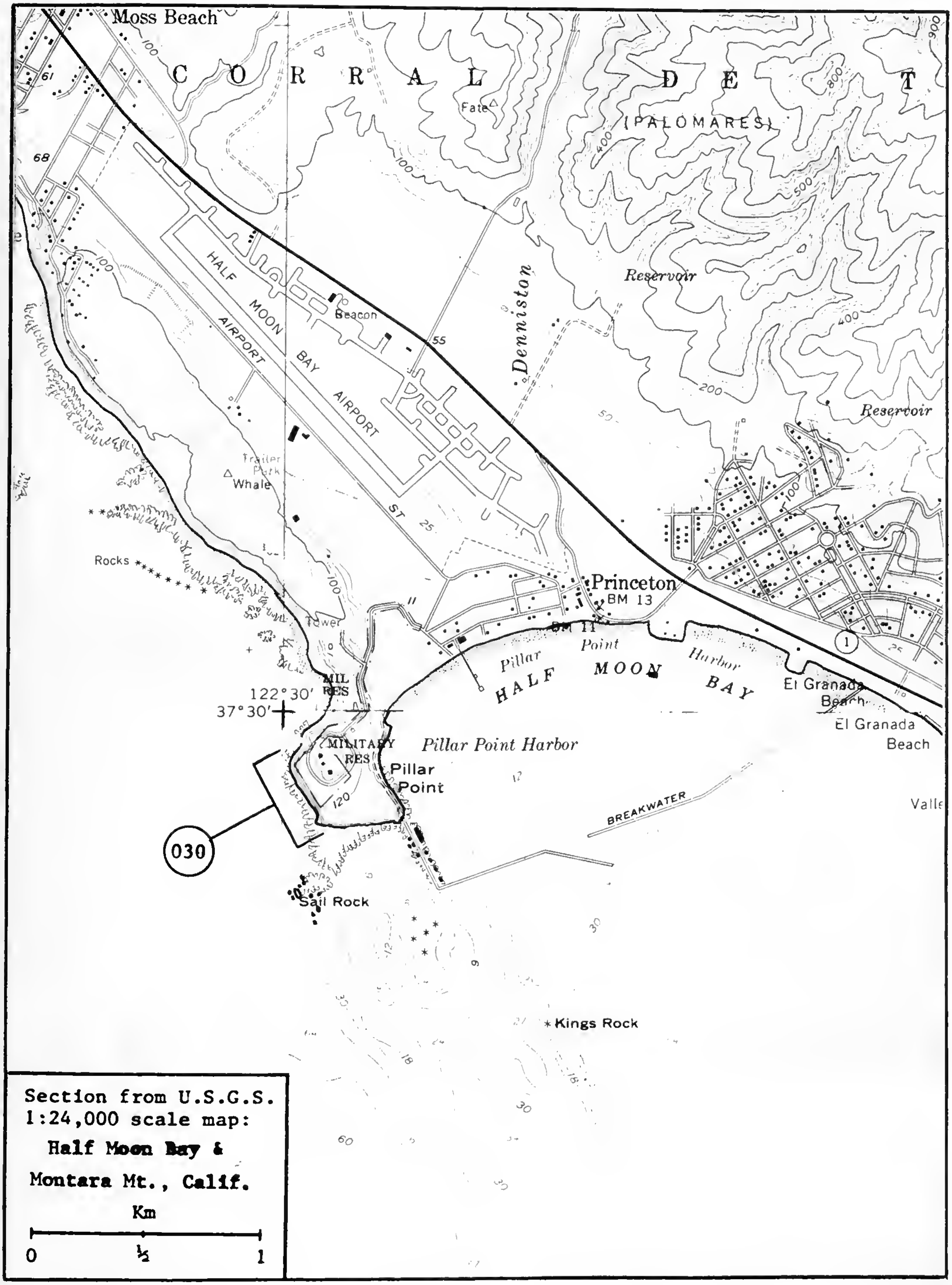
Brandt's Cormorant	80	(Nelson & Sowls,6/24/80,A,II)	*42*
Western Gull	12	(Nelson & Nelson,7/1/79,B,III)	*42*
Pigeon Guillemot	68	(Nelson & Nelson,7/1/79,B,III)	*42*
Total	160		*42*
Brandt's Cormorant	0	(Nelson & Nelson,7/1/79,B,I)	*42*

Lobos Rock Photo by Jay Nelson


MILITARY RESERVATION
MARIN HEADLANDS STATE PARK
FORT BARRY STATE PARK
Needles
Lime Point Lighthouse
Cove
Point Diablo Lighthouse
027
028
029
009
GOLDEN GATE
6 LANE GOLDEN GATE BRIDGE
1
101
Fort Point Rock
Toll Plaza
BM 185
Helmet Rock
SOUTH BAY
Baker Beach
BAKER BEACH STATE PARK
JAMES D PHELAN BEACH STATE PARK
US Marine Hospital
Lobos Creek
Mile Rock Lighthouse
Little Mile Rock
37°47'30"
Black Head Rock
Pyramid Rock
Lands End
Lobos Rock
LINCOLN PARK
EL CAMINO DEL MAR
Veterans Hospital
Palace of the Legion of Honor
Air Reserve Center
Golf Course
FT MILEY MIL RES
Wreck
Point Lobos
Seal Rocks
Sutro Heights Park
POINT LOBOS AVE 4 LANE
CLEMENT
Lafayette
Section from U.S.G.S. 1:24,000 scale map:
San Francisco North & Pt. Bonita, Calif.
Km
0
½
1

030 Pillar Point 37°23'N, 122°29'55"W

Pelagic Cormorant	16	(Nelson, Sowls & Stuart,6/9/79,B,II)	42
Pigeon Guillemot	6	(Nelson, Sowls & Stuart,6/9/79,B,III)	42
Total	22		
Pelagic Cormorant	0	(Reynolds, 1970)	36



Section from U.S.G.S.
1:24,000 scale map:
Half Moon Bay & Montara Mt., Calif.

Km
0 ½ 1

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, Sowls & Stuart,6/9/79,B)	42
Total	12		
Pelagic Cormorant	14	(Nelson, Sowls & Stuart,6/9/79,B,II)	42

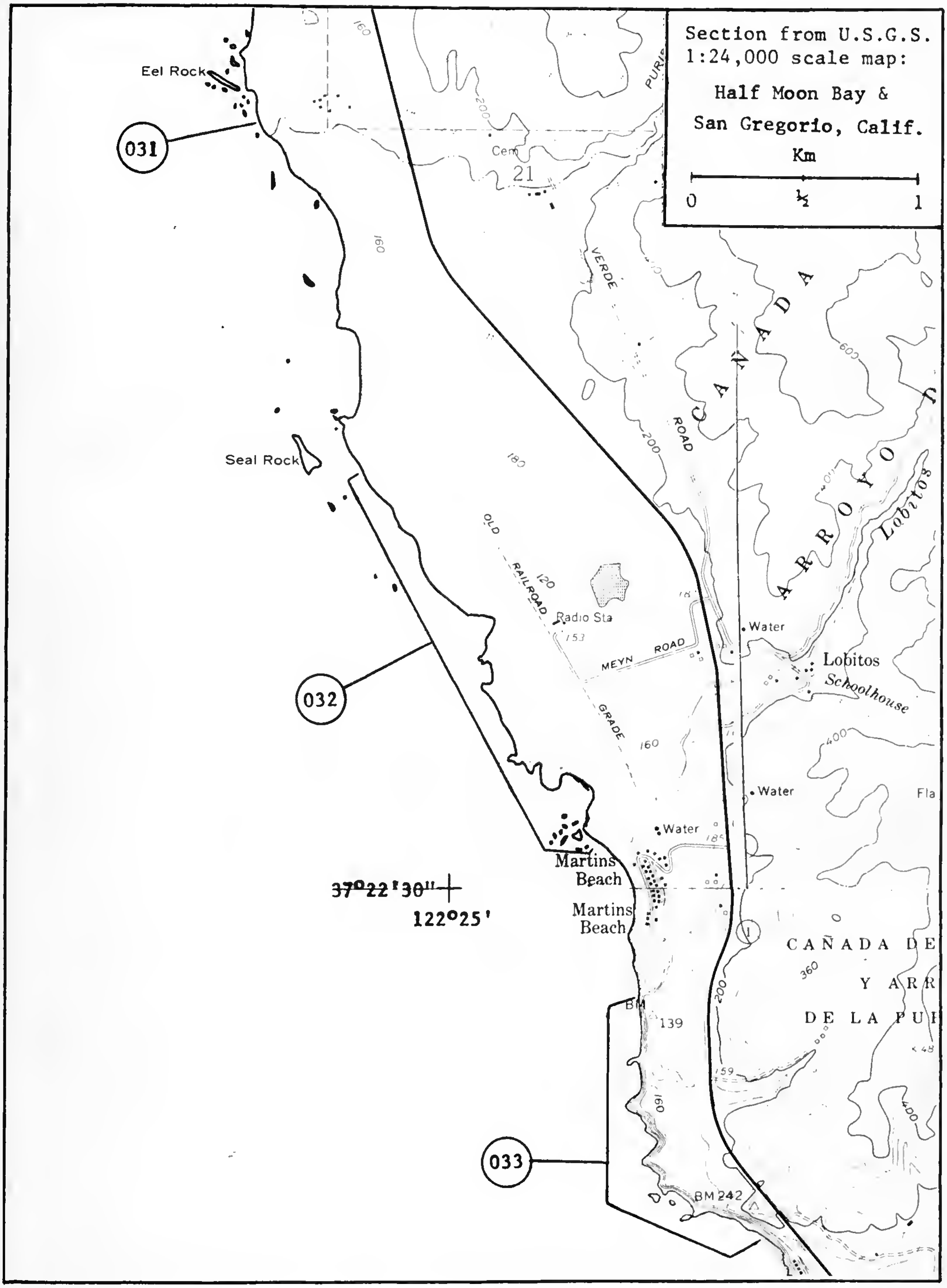
032 Seal Rock Cliffs 37°23'N, 122°25'W

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, Sowls & Stuart,6/9/79,B,II)	42
Black Oystercatcher	P	(Nelson, Sowls & Stuart,6/9/79,B)	42
Pigeon Guillemot	10	(Nelson, Sowls & 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


Section from U.S.G.S.
1:24,000 scale map:
Half Moon Bay &
San Gregorio, Calif.
Km
0
½
1
Eel Rock
031
Seal Rock
032
033
37°22'30"
122°25'
Martins Beach
Martins Beach
Radio Sta
MEYN ROAD
OLD RAILROAD GRADE
VERDE ROAD
CAÑADA
ARROYO
Lobitos
Lobitos
Schoolhouse
Water
Water
Water
CAÑADA DE
Y ARR
DE LA PU
BM 139
BM 242
Cem
21

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

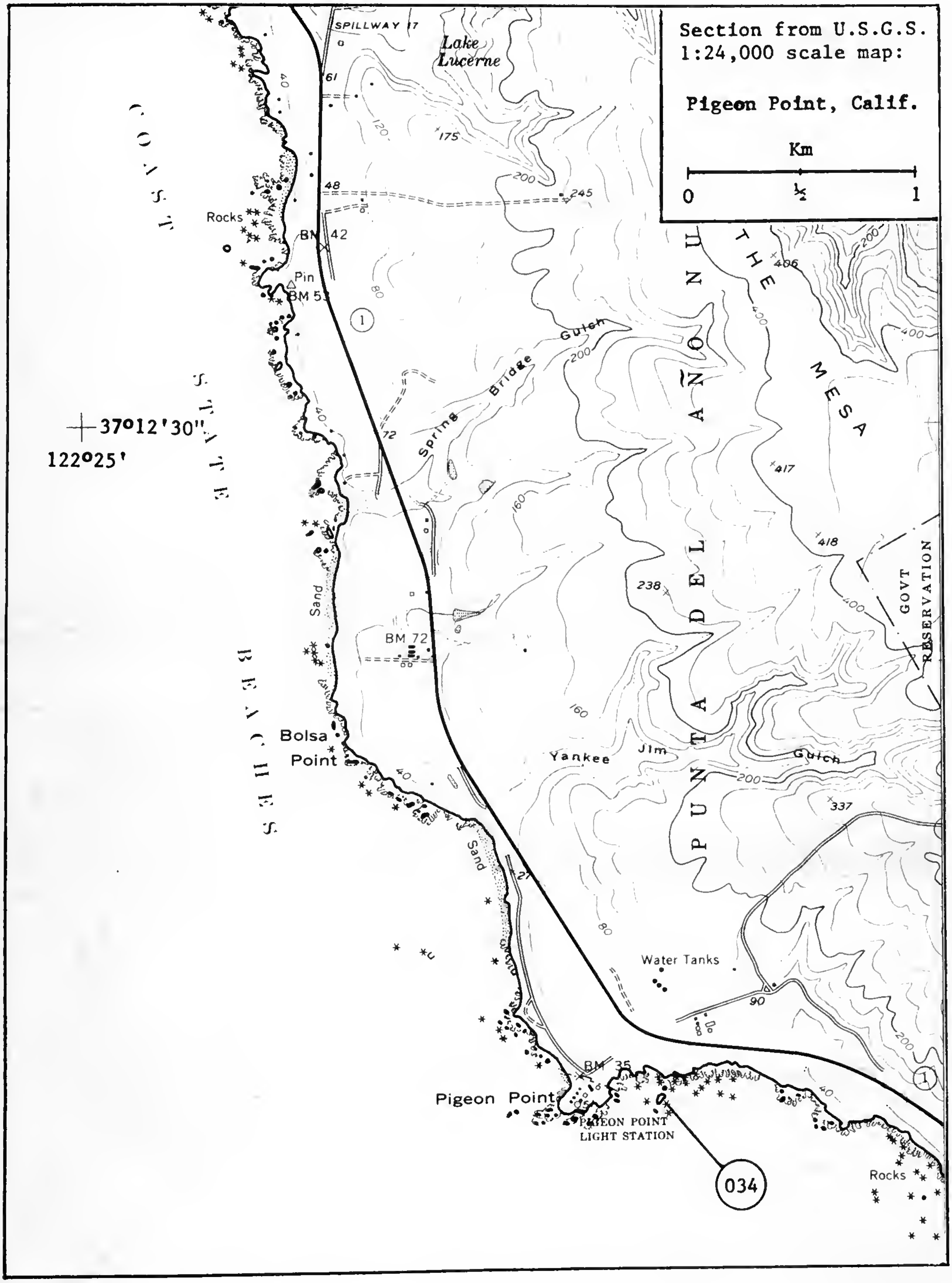
Black Oystercatcher	2	(Lester & Nelson,7/5/79,BM,I)	42
Pigeon Guillemot	6	(Lester & Nelson,7/5/79,BM,III)	42
Total	8		

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[Δ]	(Nelson,7/14/80,M,II)	42
Pelagic Cormorant	50	(Lester & Nelson,7/5/79,B,II)	42
Black Oystercatcher	6	(Lester & Nelson,7/5/79,B,IV)	42
Pigeon Guillemot	400	(Lester & Nelson,7/5/79,B,III)	42
Total	682		

Δ all on pier at Davenport.


Section from U.S.G.S.
1:24,000 scale map:
Pigeon Point, Calif.
Km
0
½
1
SPILLWAY 17
Lake Lucerne
COAST STATE BEACHES
Rocks
BM 42
Pin
BM 53
37°12'30"
122°25'
Spring Bridge Gulch
THE MESA
PUNTA DEL AÑO NUEVO
GOVT RESERVATION
Sand
BM 72
Bolsa Point
Yankee Jim Gulch
Water Tanks
BM 35
Pigeon Point
PIGEON POINT LIGHT STATION
034
Rocks

036 Alcatraz Island 37°49'34"N, 122°25'20"W

Western Gull	X	(Abbore, 1980)	15
Heermann's Gull	2	(Binford, 1980)	8

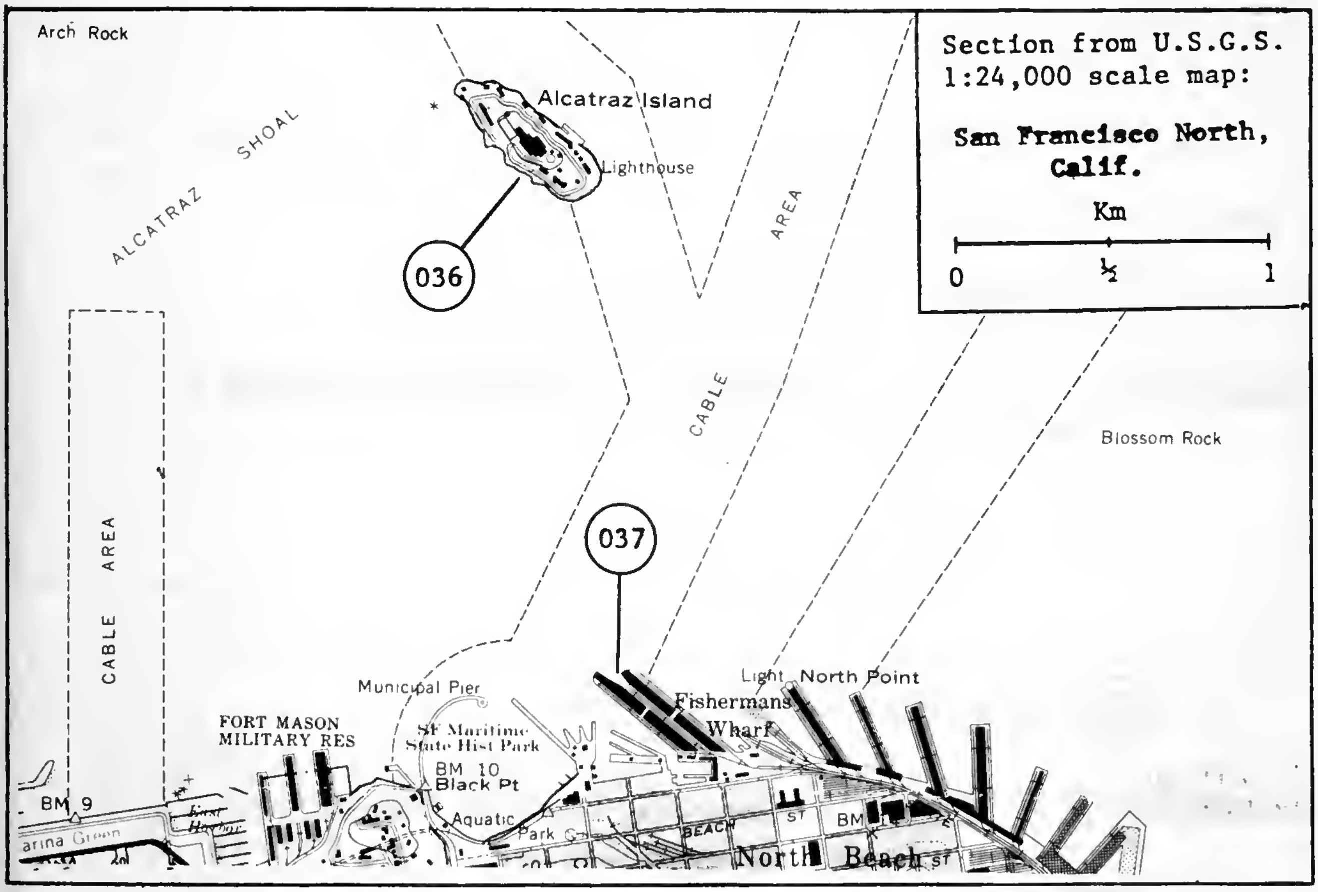
037 Pier 45 37°48'34'N, 122°25'W

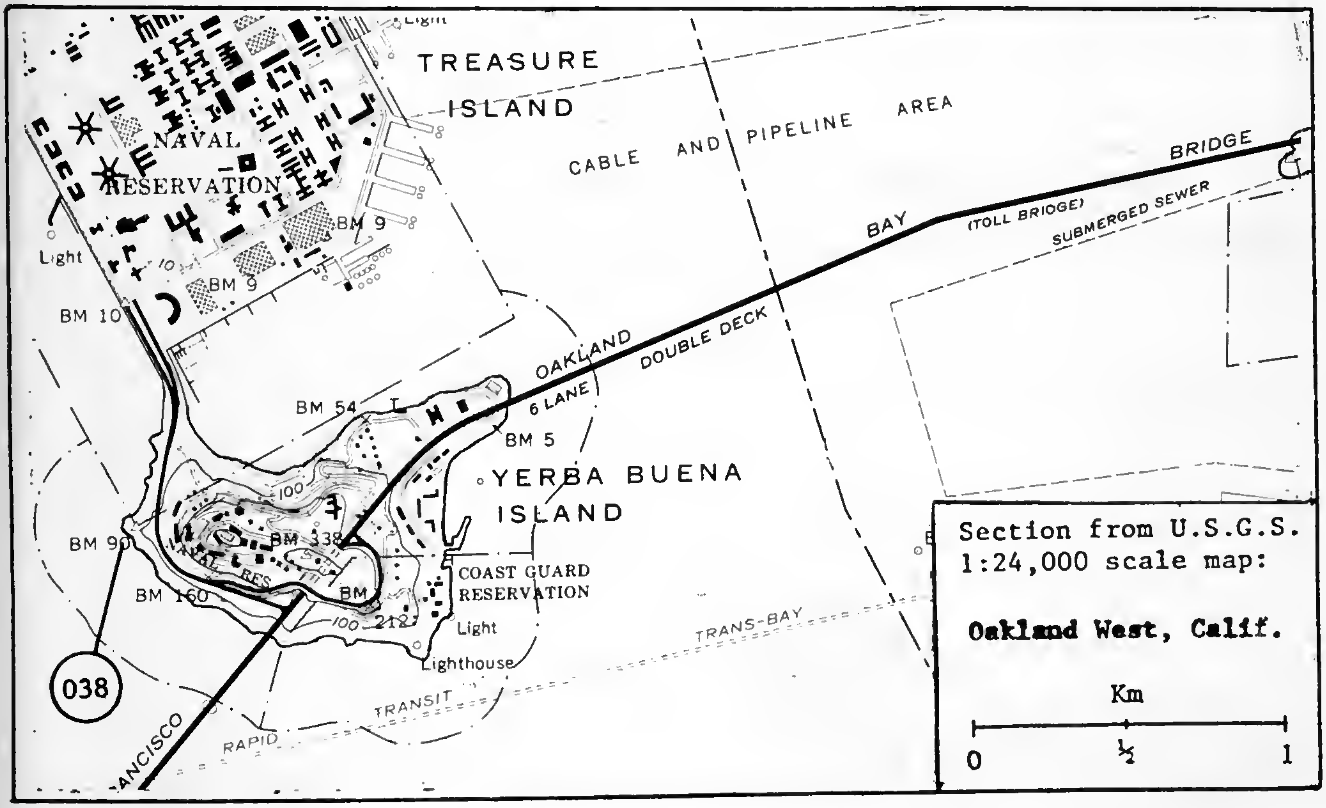
Western Gull	X	(Danielson, 1973)	15

038 Yerba Buena Island 37°48'34"N, 122°22'15'W

Western Gull	80	(Cogswell, 7/28/74)	15
Western Gull	X	(Cogswell, 1967)	15

X = present


Arch Rock
Alcatraz Island
Lighthouse
ALCATRAZ SHOAL
036
AREA
CABLE
CABLE AREA
Blossom Rock
037
Light
North Point
Municipal Pier
Fishermans Wharf
FORT MASON
MILITARY RES
SF Maritime State Hist Park
BM 10
Black Pt
BM 9
Aquatic Park
BEACH
ST
BM
North Beach
Section from U.S.G.S.
1:24,000 scale map:
San Francisco North, Calif.
Km
0
½
1


TREASURE
ISLAND
NAVAL
RESERVATION
CABLE AND PIPELINE AREA
BRIDGE
BAY
(TOLL BRIDGE)
SUBMERGED SEWER
BM 9
Light
BM 9
BM 10
OAKLAND
DOUBLE DECK
6 LANE
BM 54
BM 5
YERBA BUENA
ISLAND
BM 90
BM 338
BM 160
BM
212
COAST GUARD
RESERVATION
Light
Lighthouse
TRANS-BAY
TRANSIT
RAPID
038
Section from U.S.G.S.
1:24,000 scale map:
Oakland West, Calif.
Km
0
½
1

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*

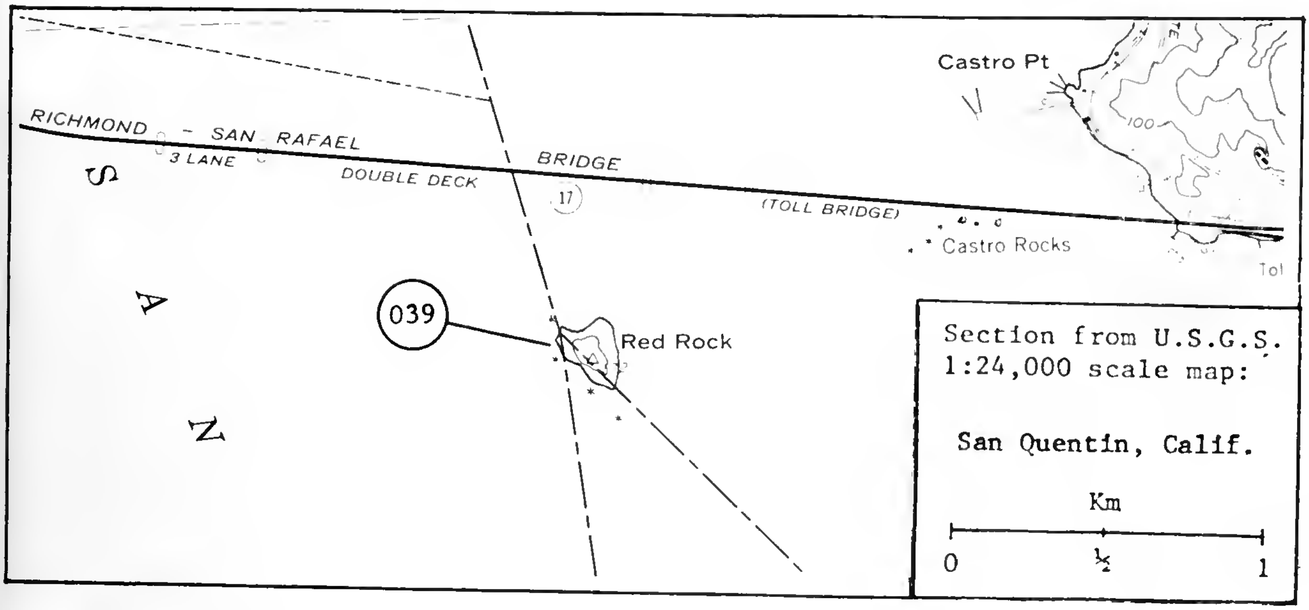
040 The Brothers 37°57'47"N, 122°26'W

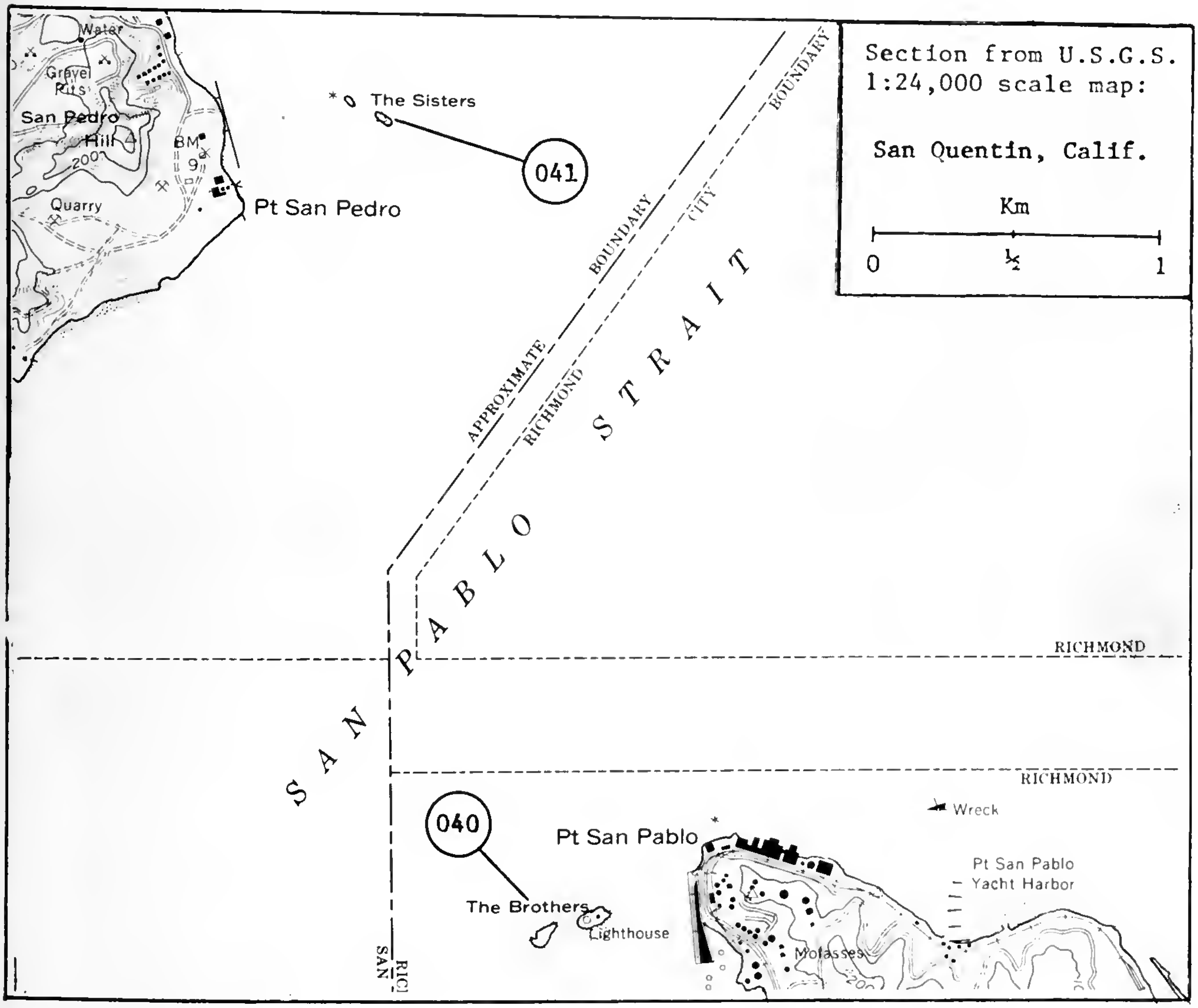
Western Gull	80	(Cogswell,6/22/67,M)	*15*
Western Gull	X	(Cogswell,1968-71,1973,1975-76)	*15*

X = present

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

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


Castro Pt
RICHMOND - SAN RAFAEL BRIDGE
3 LANE
DOUBLE DECK
17
(TOLL BRIDGE)
Castro Rocks
100
039
Red Rock
S
A
N
Section from U.S.G.S. 1:24,000 scale map:
San Quentin, Calif.
Km
0
½
1


Water
Gravel Pits
San Pedro Hill
200
BM
9
Quarry
Pt San Pedro
The Sisters
041
Section from U.S.G.S. 1:24,000 scale map:
San Quentin, Calif.
Km
0
½
1
APPROXIMATE BOUNDARY
RICHMOND CITY BOUNDARY
SAN PABLO STRAIT
RICHMOND
RICHMOND
Wreck
040
Pt San Pablo
The Brothers
Lighthouse
Pt San Pablo Yacht Harbor
Molasses

454

Monterey

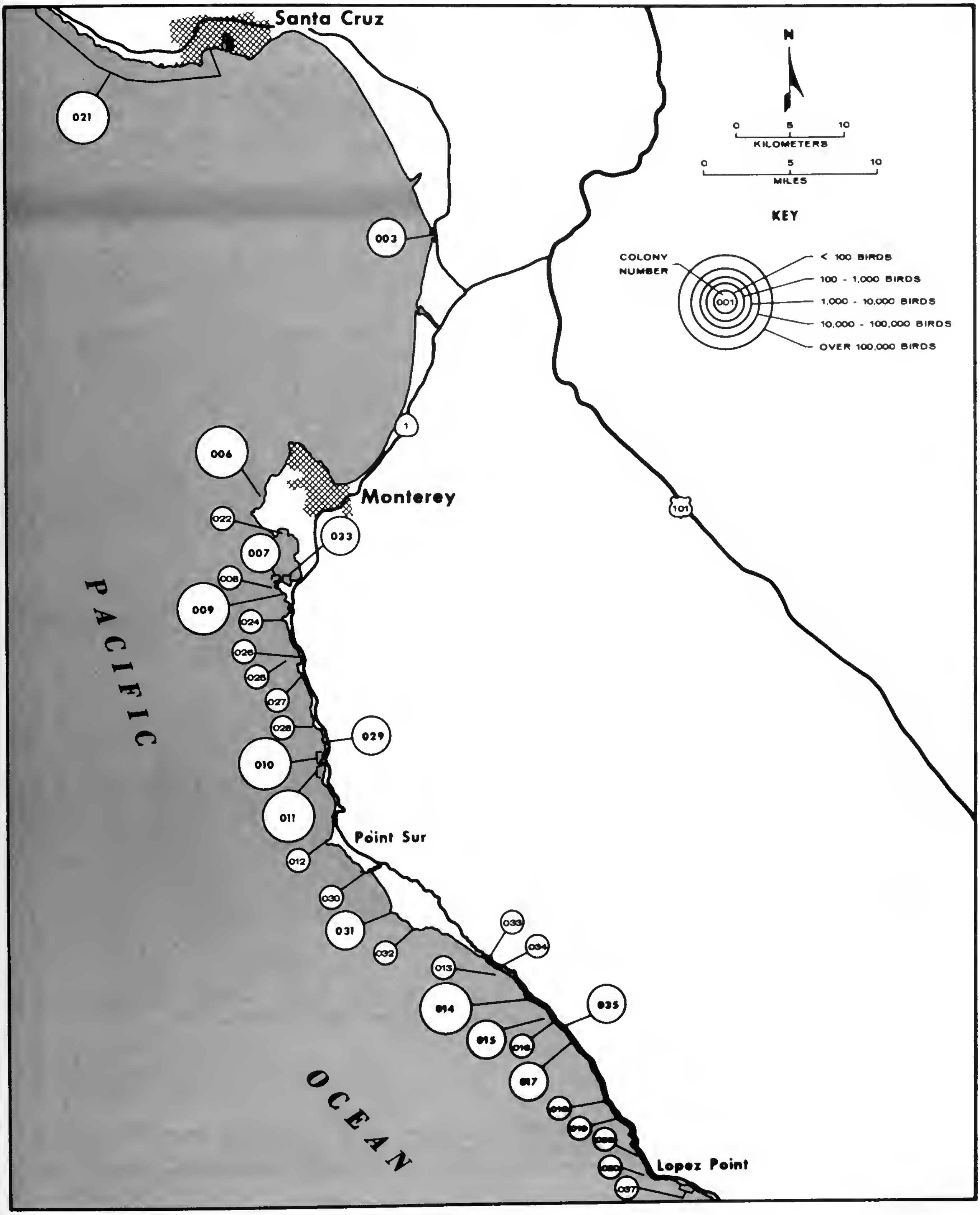
The map on the facing page is an index to the locations of colonies within map 454, Monterey. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979).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



sample

Colony No. — Colony name — Lat.-Long. — Number breeding birds — Investigators — Survey date — Data qual. - see text — Reference

004 Gull Rock 39°35'20"N,121°35'45"W

Pelagic Cormorants	40	(Nelson & Sowls,6/14/79,B,II)	42
Pelagic Cormorants	48	(Osborne,6/5/69)	35

Clear lines give the most recent or the best estimates available.
Stipple lines give additional estimates for other years.

Survey type: A = *aerial*, B = *boat*, M = *from mainland*, L = *on site*

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).

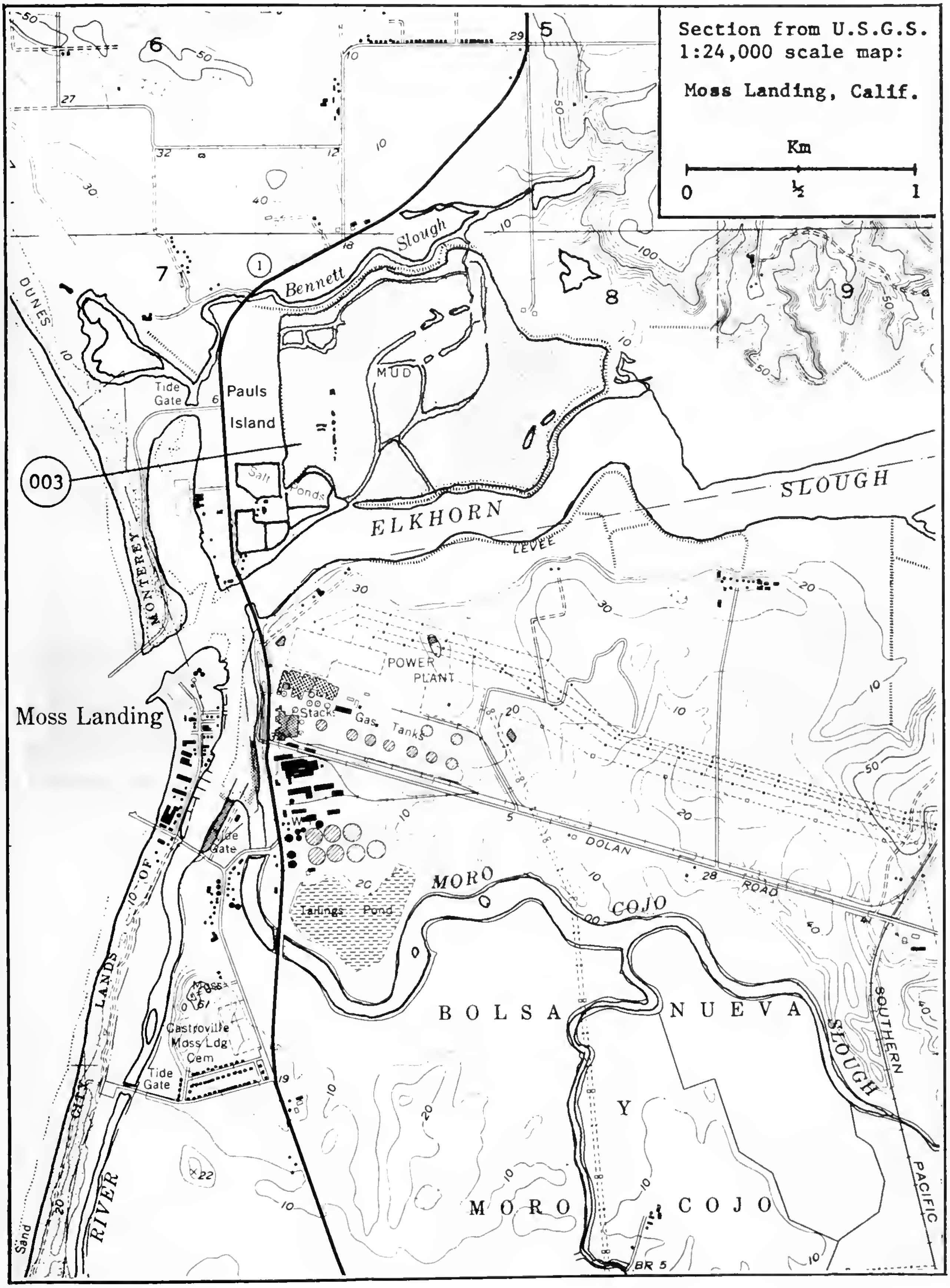
002 Pajaro River was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).

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).

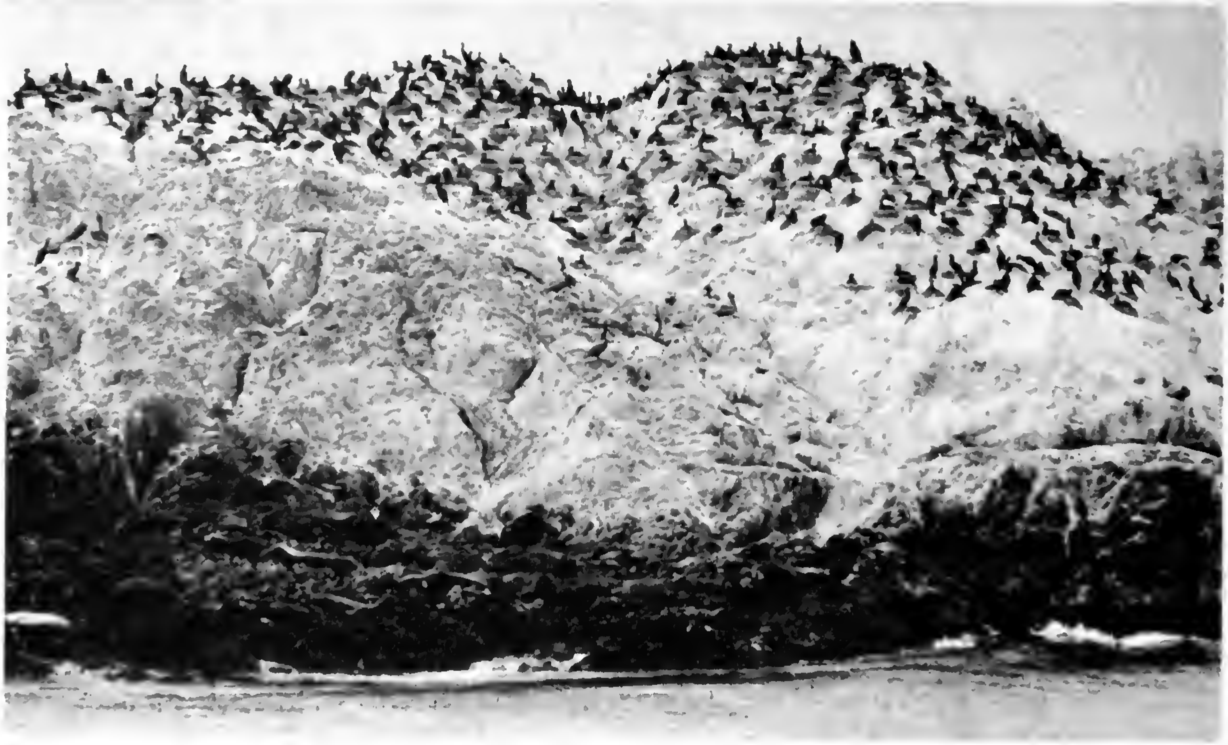
005 Marina Beach was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).


Section from U.S.G.S. 1:24,000 scale map:
Moss Landing, Calif.
Km
0
½
1
Bennett Slough
Pauls Island
MUD
Salt Ponds
Tide Gate
ELKHORN SLOUGH
LEVEE
003
DUNES
MONTEREY
Moss Landing
POWER PLANT
Stacks
Gas Tanks
DOLAN ROAD
MORO COJO
Tailings Pond
Tide Gate
Moss Landing
Castroville Moss Ldg Cem
Tide Gate
BOLSA NUEVA Y MORO COJO
SLOUGH
SOUTHERN PACIFIC
CITY LANDS OF
RIVER
Sand
BR 5
1
5
6
7
8
9

(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



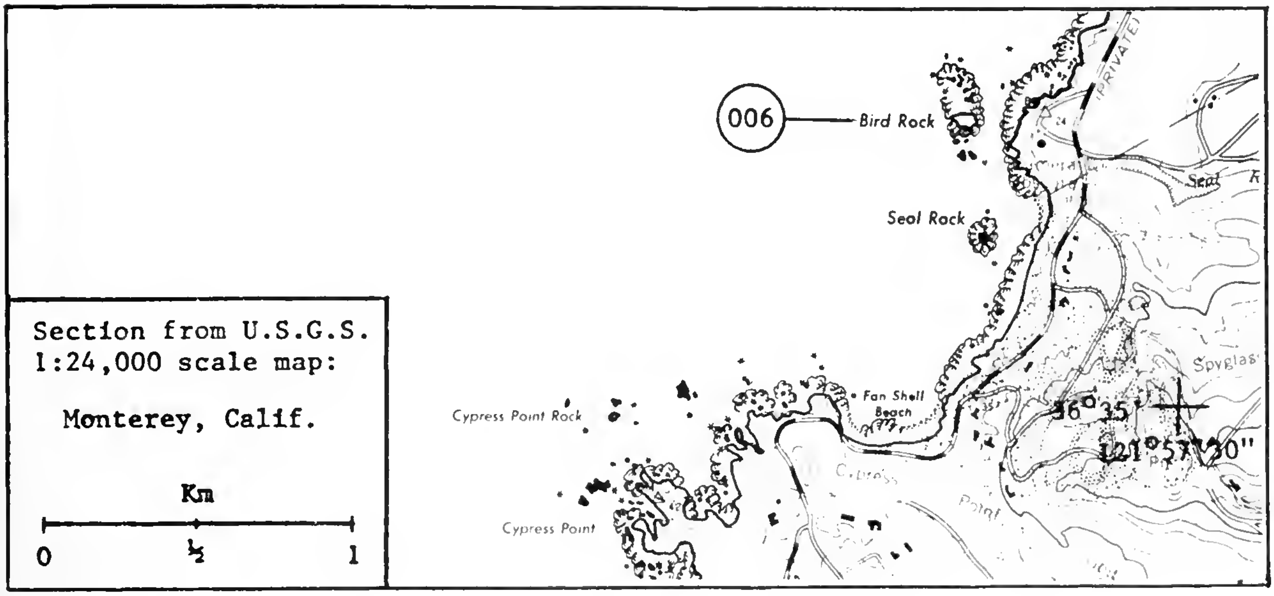
Bird Rock

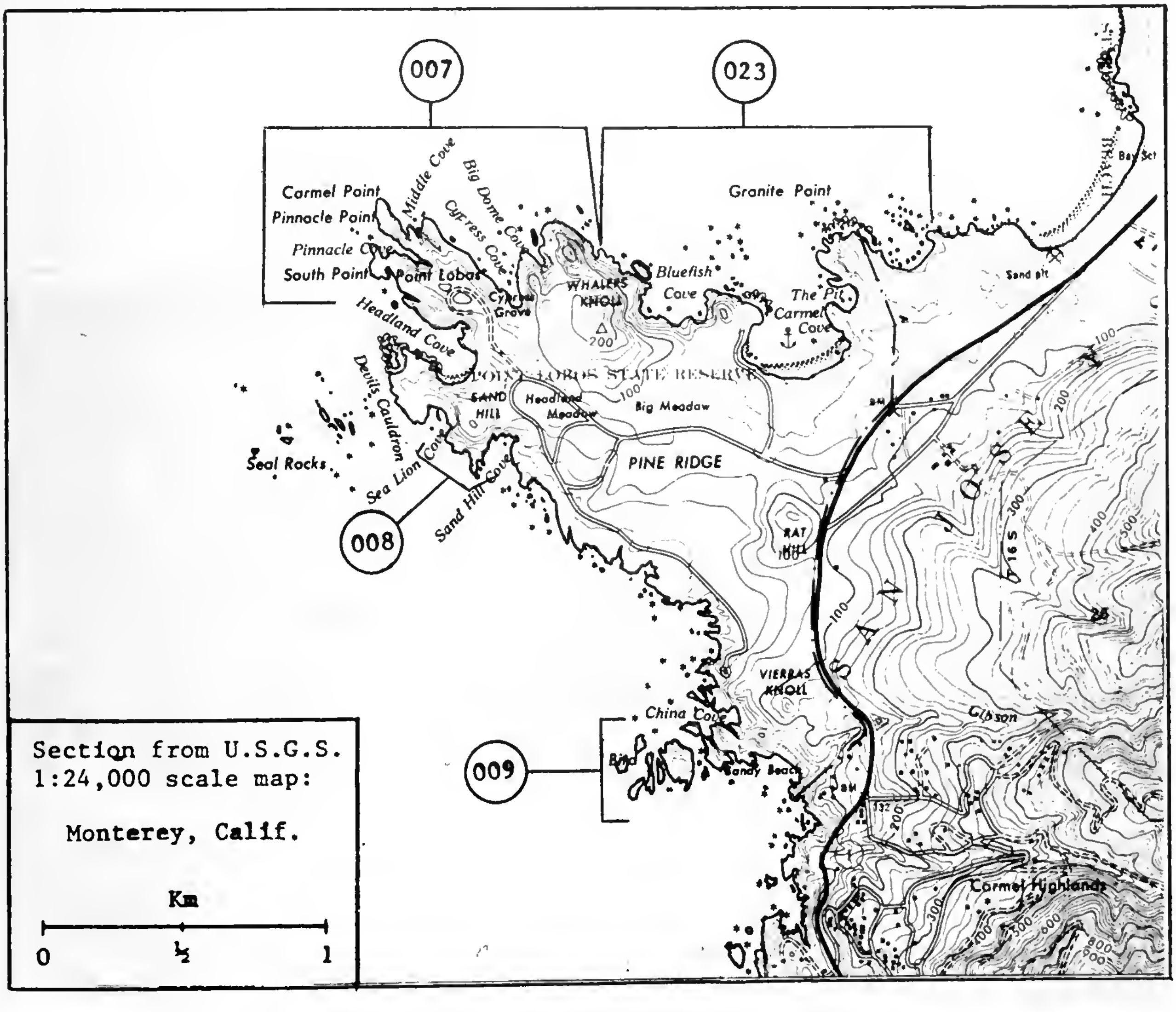
Photo by Art Sowls

(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


006
Bird Rock
Seal Rock
Fan Shell Beach
Cypress Point Rock
Cypress Point
36°35'
121°57'30"
Section from U.S.G.S.
1:24,000 scale map:
Monterey, Calif.
Km
0
½
1


007
023
Carmel Point
Pinnacle Point
Pinnacle Cove
South Point
Point Lobos
Middle Cove
Big Dome Cove
Cypress Cove
Cypress Grove
Whalers Knoll
Granite Point
Bluefish Cove
The Pit
Carmel Cove
Headland Cove
Devils Cauldron
Seal Rocks
Sea Lion Cove
Sand Hill Cove
008
Sand Hill
Headland Meadow
Big Meadow
Point Lobos State Reserve
Pine Ridge
Vierras Knoll
China Cove
Sandy Beach
009
Gibson
Carmel Highlands
Sand pit
Section from U.S.G.S.
1:24,000 scale map:
Monterey, Calif.
Km
0
½
1

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

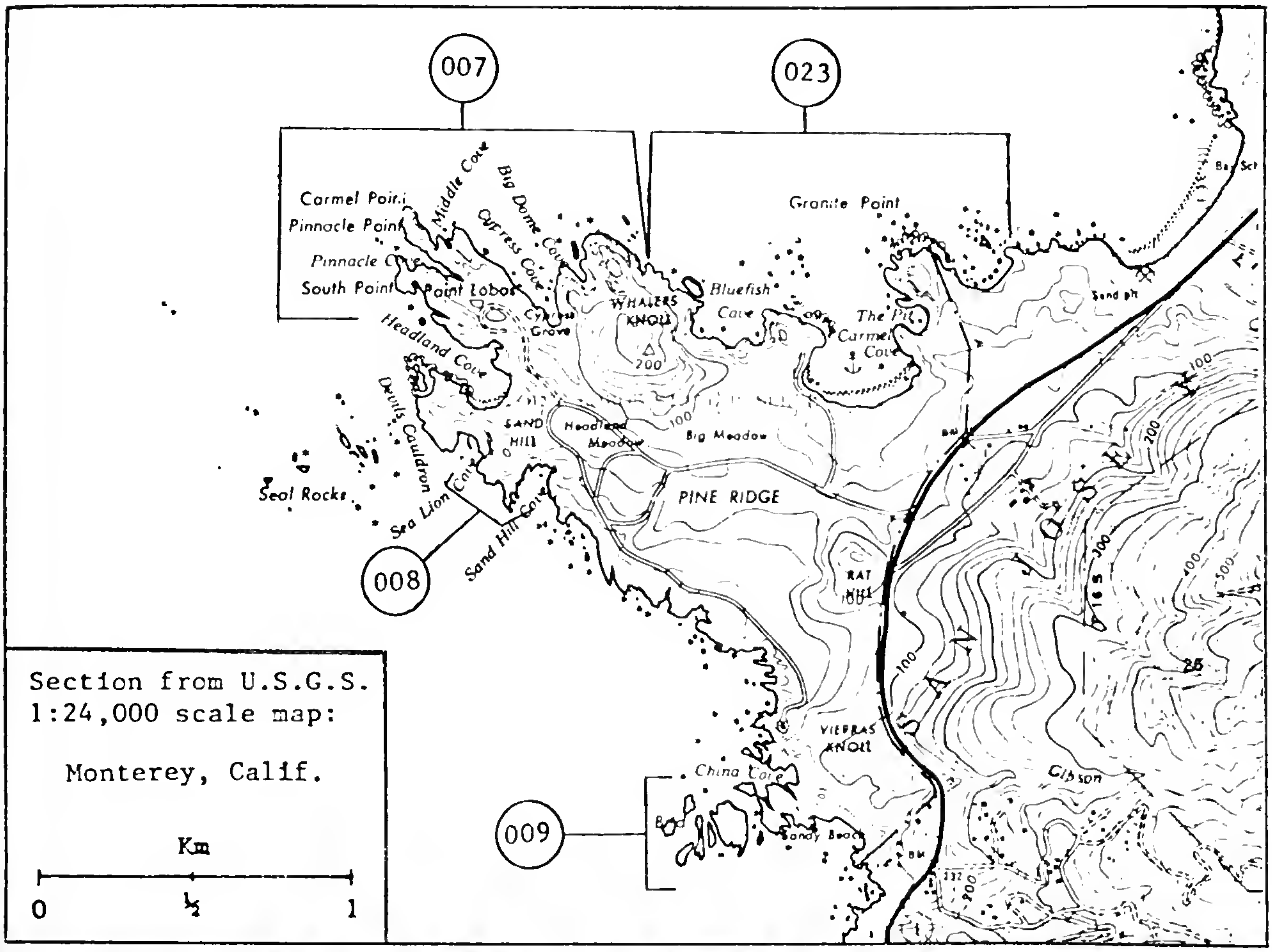
Pelagic Cormorant	36	(Nelson & Sowls,8/2/79,L,I)	42
Black Oystercatcher	2	(Nelson & Sowls,8/2/79,L,III)	42
Western Gull	2	(Nelson & Sowls,6/24/80,L,II)	42
Pigeon Guillemot	20	(Nelson & Sowls,6/24/80,L,III)	42
Total	58		
Pelagic Cormorant	36	(Briggs & Varoujean,4/25&7/14/72,L)	43
Pelagic Cormorant	26	(Nelson & Sowls,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 (429 012). It is also the most northern site for nesting Brown Pelicans ever recorded, although no nesting pelicans have been observed here since 1963 (Baldridge, 1973). If recovery of the Brown Pelican continues, this site may be recolonizied. Bird Island offers excellent viewing opportunities (see appendix B).

Brandt's Cormorant	4,200	(Nelson & Sowls,6/23/80,A,II)	42
Pelagic Cormorant	16	(Nelson & Sowls,8/2/79,L,III)	42
Black Oystercatcher	4	(Nelson & Sowls,6/11/79,B,6/12/79,L,III)	42
Western Gull	46	(Nelson & Sowls,6/11/79,B,III)	42
Pigeon Guillemot	4	(Nelson & Sowls,6/24/80,M,III)	42
Total	4,270		
Brown Pelican	0-110	(1927-1963; see Baldridge 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 & Sowls,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

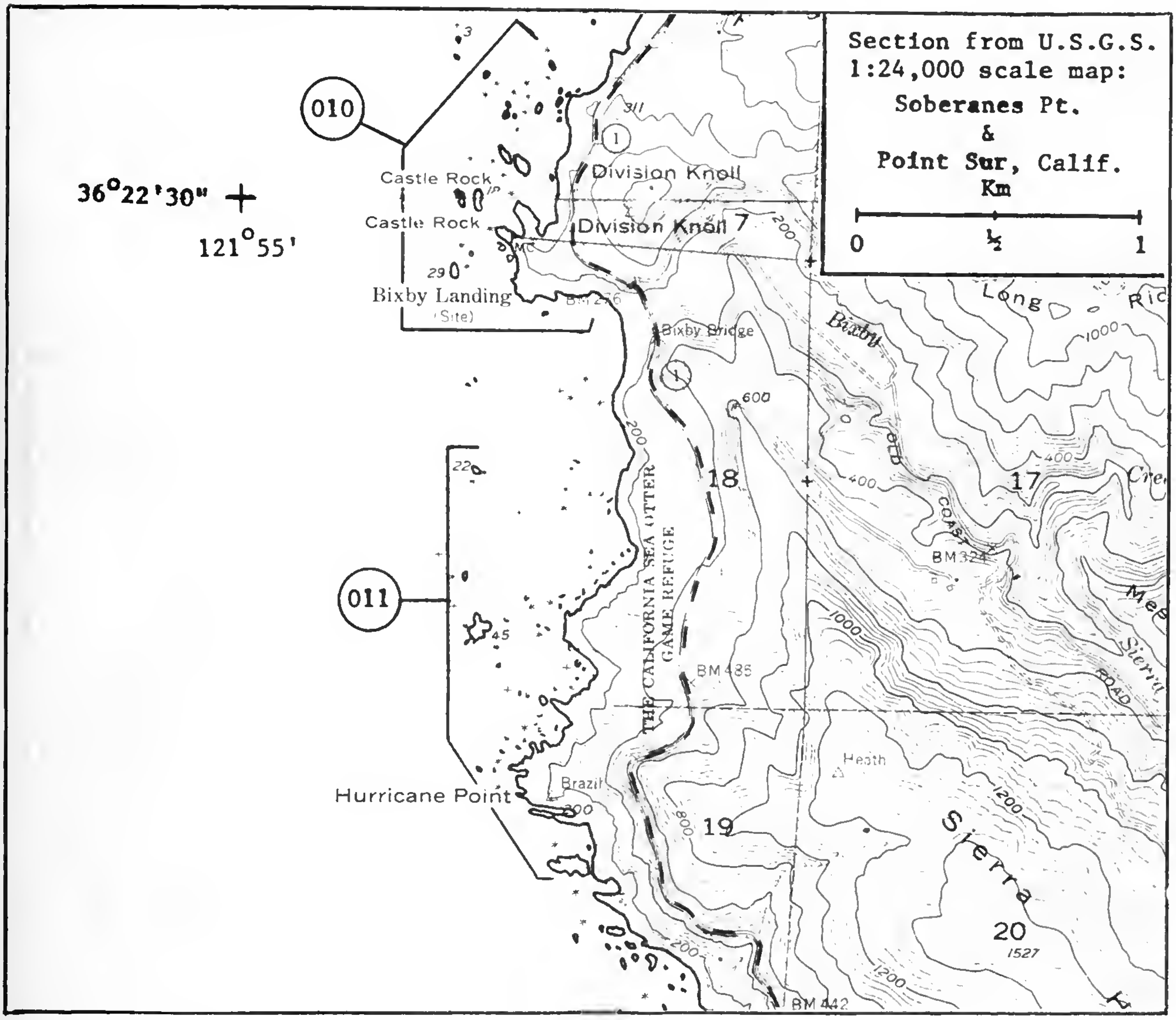
Brandt's Cormorant	18	(Lester, Nelson & Sowls,6/12/80,B,II)	42
Pelagic Cormorant	96	(Lester, Nelson & Sowls,6/12/80,B,II)	42
Black Oystercatcher	6	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Western Gull	78	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Common Murre	3,500	(Lester, Nelson & Sowls,6/12/80,B,III)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

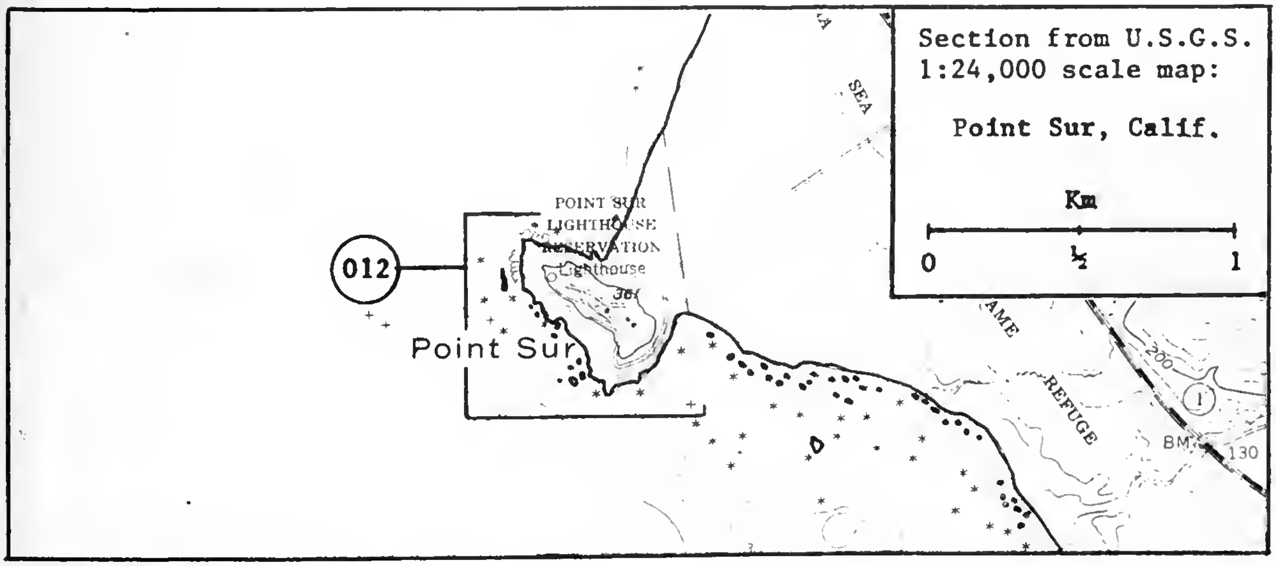
011 Hurricane Point Rocks 36°21'40"N, 121°54'25"W

Brandt's Cormorant	444	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Pelagic Cormorant	50	(Lester, Nelson & Sowls,6/12/80,B,II)	42
Black Oystercatcher	10	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Western Gull	72	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Common Murre	2,300	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Pigeon Guillemot	80	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Tufted Puffin	2	(Lester, Nelson & Sowls,6/12/80,B,II)	42
Total	2,958		
Brandt's Cormorant	582	(Nelson & Sowls,7/14/79,M,8/1/79,B,III)	42
Pelagic Cormorant	10	(Nelson & Sowls,7/14/79,M,8/1/79,B,II)	42
Western Gull	50	(Nelson & Sowls,7/14/79,M,8/1/79,B,III)	42
Common Murre	400	(Reynolds,5/6/70,M)	36
Pigeon Guillemot	4	(Nelson & Sowls,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 & Sowls,6/12/80,B,II)	42
Black Oystercatcher	2	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Western Gull	6	(Lester, Nelson & Sowls,6/12/80,B,III)	42
Pigeon Guillemot	4	(Nelson & Sowls,8/1/79,B,III)	42
Total	66		


Section from U.S.G.S. 1:24,000 scale map:
Soberanes Pt. & Point Sur, Calif.
Km
0 ½ 1
010
011
36°22'30"
121°55'
Castle Rock
Castle Rock
Division Knoll
Division Knoll
Bixby Landing (Site)
Bixby Bridge
Hurricane Point
THE CALIFORNIA SEA OTTER GAME REFUGE
Long Ridge
Bixby
OLD COAST ROAD
Sierra
Heath
18
17
19
20
1527
BM 324
BM 486
BM 442


Section from U.S.G.S. 1:24,000 scale map:
Point Sur, Calif.
Km
0 ½ 1
012
POINT SUR LIGHTHOUSE RESERVATION
Lighthouse
361
Point Sur
SEA
GAME
REFUGE
BM 130

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

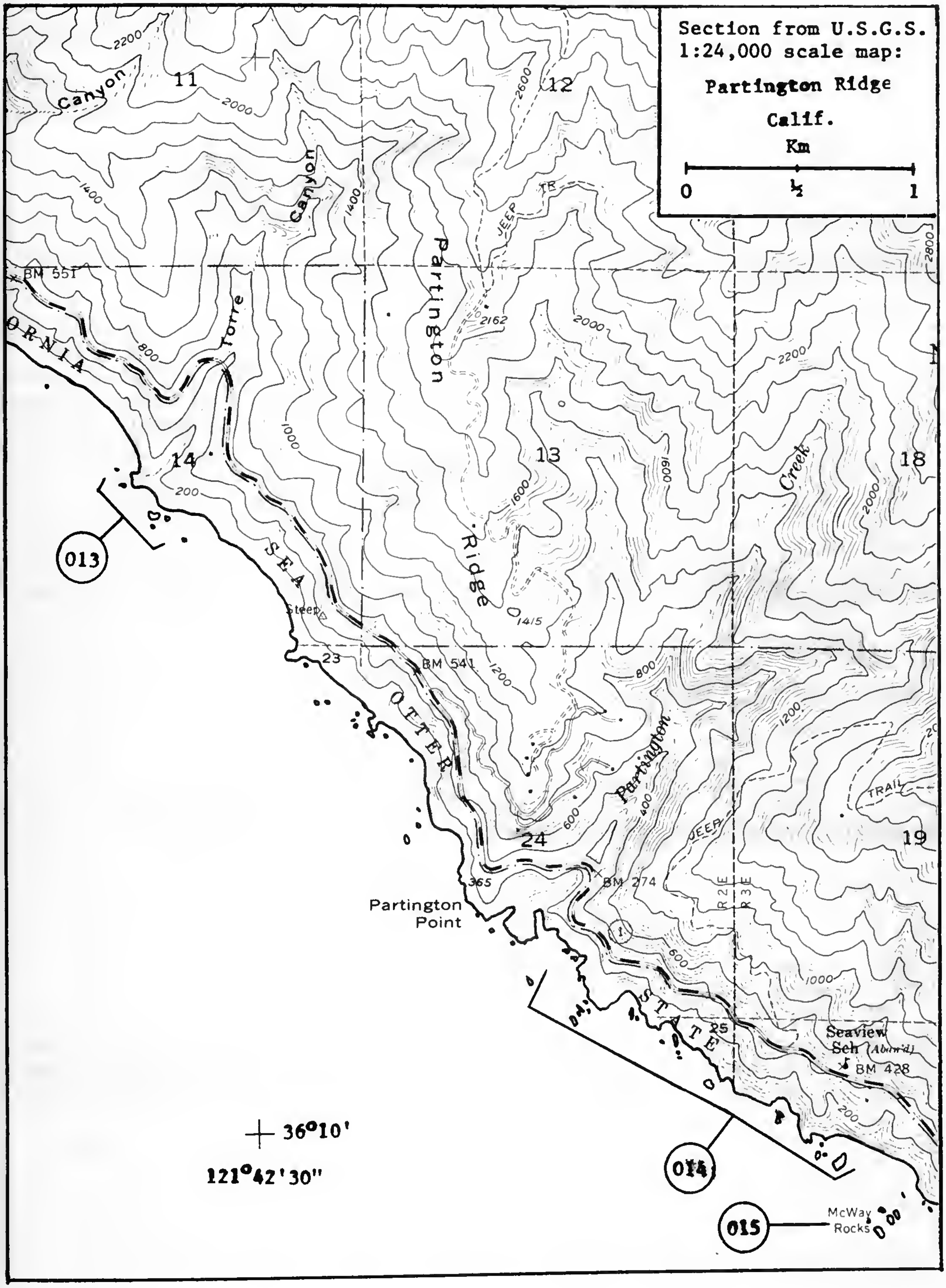
Brandt's Cormorant	0	(Nelson & Sowls,6/22/79,B,I)	42
Pelagic Cormorant	22	(Nelson & Sowls,6/22/79,B,II)	42
Black Oystercatcher	2	(Nelson & Sowls,6/22/79,B,III)	42
Total	24		
Brandt's Cormorant	125	(Reynolds,6/14/70,M)	36

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

Double-crested Cormorant	6	(Baldridge,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	(Baldridge,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


Section from U.S.G.S. 1:24,000 scale map:
Partington Ridge
Calif.
Km
0
½
1
Canyon
11
12
2200
2000
2600
Canyon
1400
JEEP TR
BM 551
Torre
Partington
2162
2000
2200
800
ORNIA
1000
14
13
18
Creek
1600
2000
2800
200
Ridge
1415
SEA
Steep
013
23
BM 541
1200
800
OTTER
Partington
1200
TRAIL
400
600
24
JEEP
19
365
BM 274
R2E
R3E
Partington
Point
600
1000
STATE
25
Seaview
Sch (Abnd)
BM 428
200
014
015
McWay
Rocks
36°10'
121°42'30"

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

Brandt's Cormorant	0	(Nelson & Sowls,6/23/79,B,I)	42
Pelagic Cormorant	82	(Nelson & Sowls,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

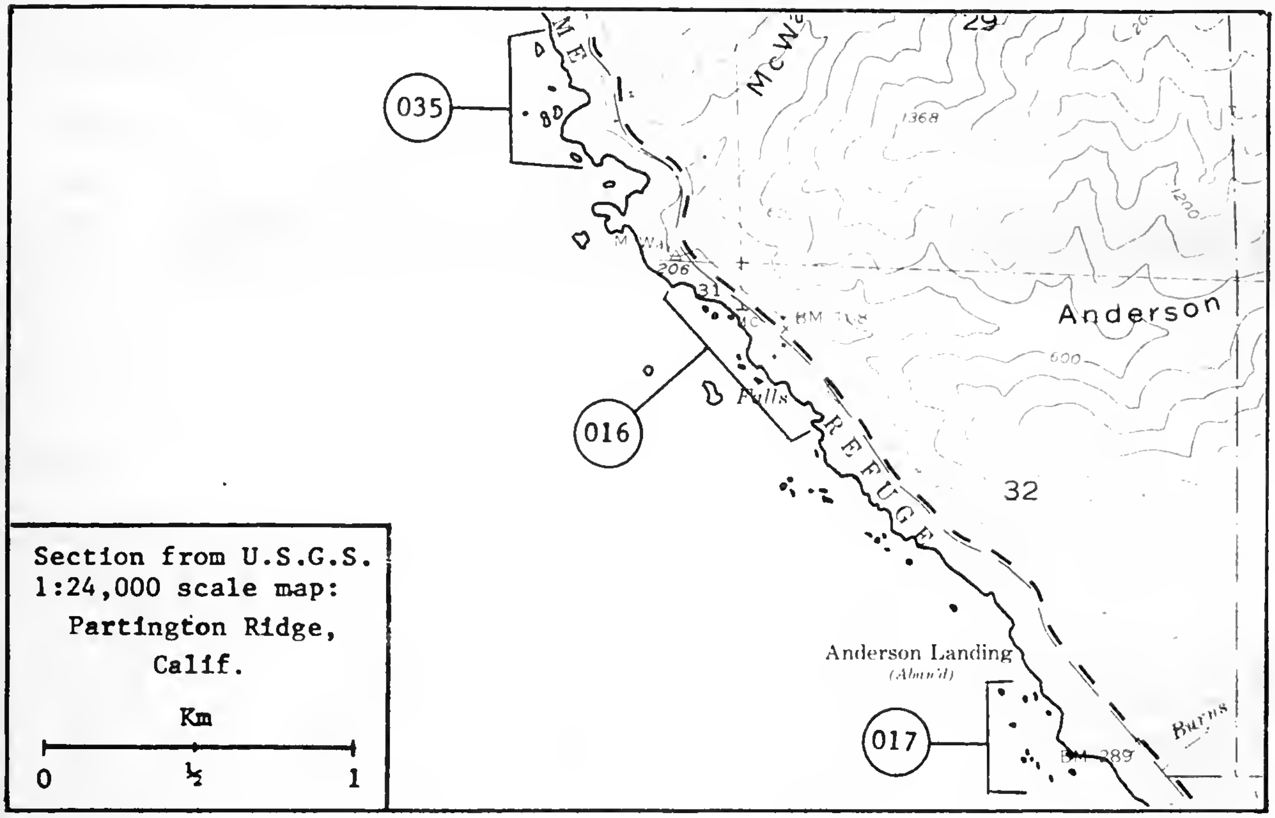
			42
Cormorant (Unid.)	2	(Nelson & Sowls,6/23/79,B,7/13/79,M)	42
Brandt's Cormorant	348	(Nelson & Sowls,6/23/79,B,7/13/79,M,III)	42
Western Gull	4	(Nelson & Sowls,7/13/79,M,III)	42
Pigeon Guillemot	24	(Nelson & Sowls,7/13/79,M,III)	42
Total	378		
Brandt's Cormorant	60	(Reynolds,7/22/70,M)	36

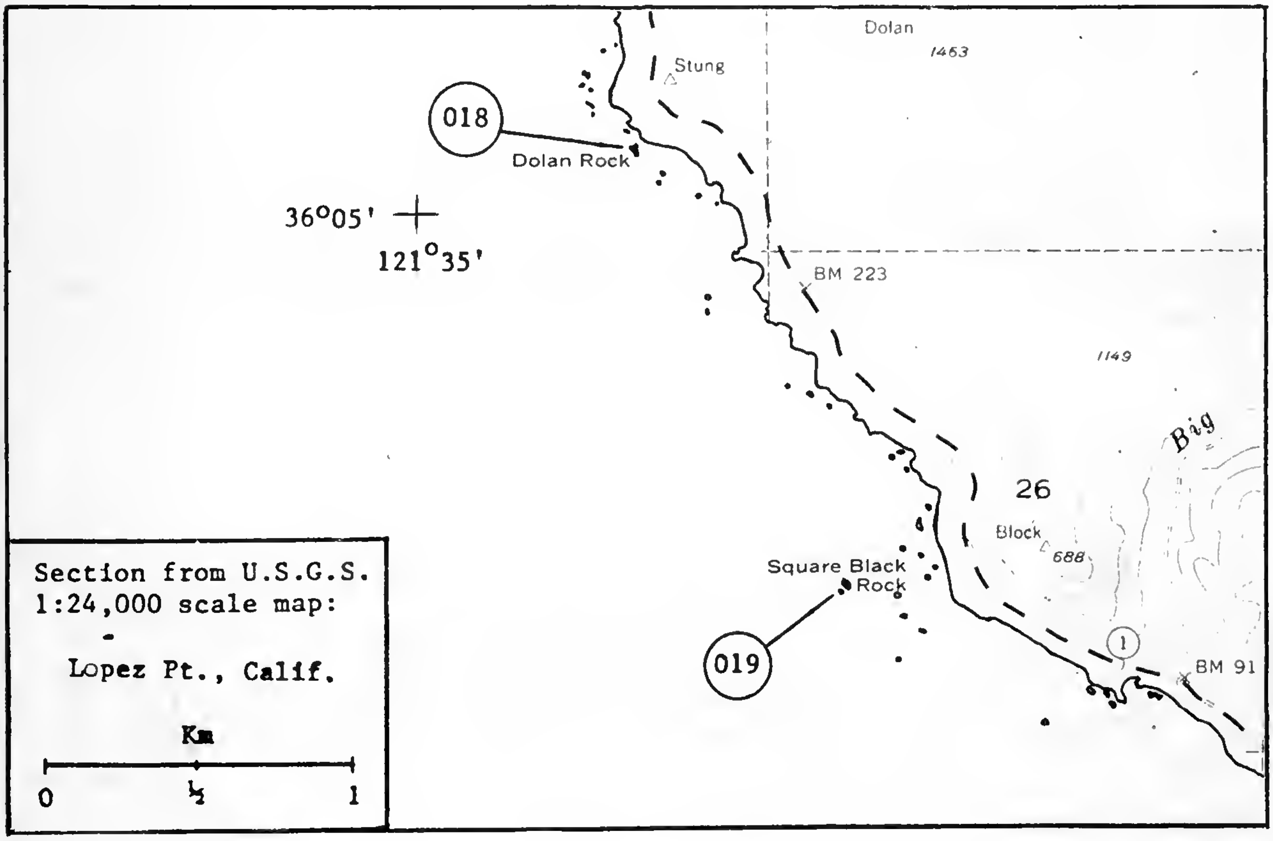
018 Dolan Rock 36°05'06"N, 121°37'02"W

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


035
016
017
McWa
1368
1200
206
31
BM
Anderson
600
Falls
REFUGE
32
Anderson Landing
BM 289
Burns
Section from U.S.G.S.
1:24,000 scale map:
Partington Ridge,
Calif.
Km
0
½
1


Dolan
1463
Stung
018
Dolan Rock
36°05'
121°35'
BM 223
1149
Big
26
Block
688
Square Black
Rock
019
BM 91
Section from U.S.G.S.
1:24,000 scale map:
Lopez Pt., Calif.
Km
0
½
1

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

Brandt's Cormorant	0	(Nelson & Sowls,6/23/80,A,I)	42
Brandt's Cormorant	0	(Nelson & Sowls,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 & Sowls,7/15/79,B,I)	42
Black Oystercatcher	P	(Nelson & Sowls,7/15/79,B,I)	42
Western Gull	2	(Nelson & Sowls,7/15/79,B,II)	42
Pigeon Guillemot	1,200	(Nelson & Sowls,7/15/79,B,III)	42
Total	1,230		

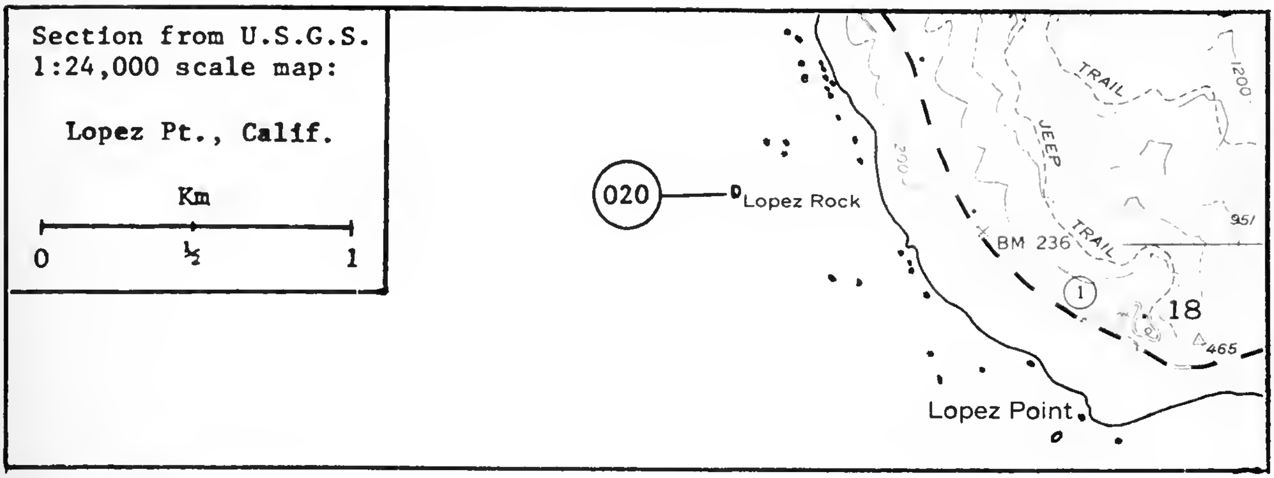
P = probably present

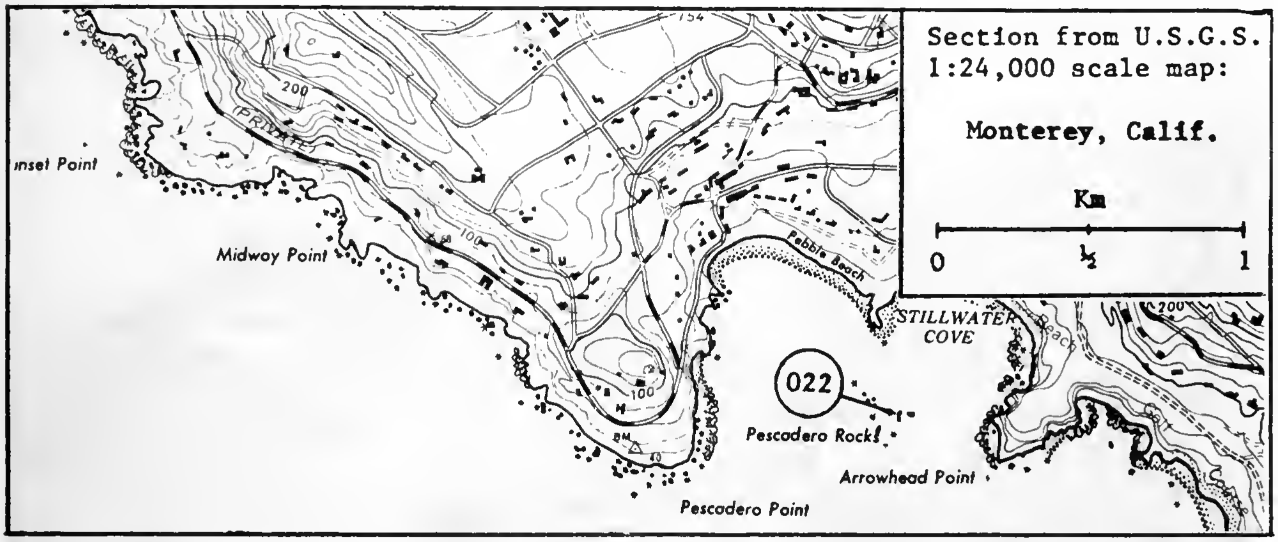
022 Pescadero Rock 36°33'43"N, 121°56'33"W

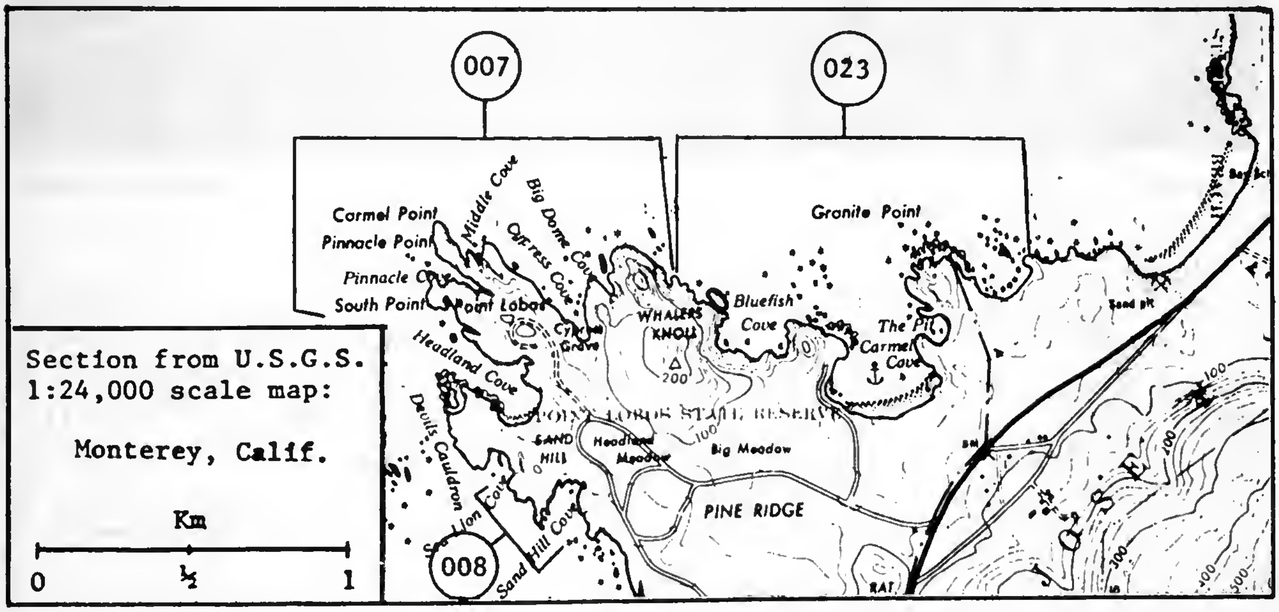
Black Oystercatcher	2	(Nelson & Sowls,6/11/79,BL,III)	42
Western Gull	20	(Nelson & Sowls,6/11/79,BL,I)	42
Total	22		

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

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


Section from U.S.G.S.
1:24,000 scale map:
Lopez Pt., Calif.
Km
0
½
1
020
Lopez Rock
JEEP
TRAIL
BM 236
18
465
Lopez Point


Section from U.S.G.S.
1:24,000 scale map:
Monterey, Calif.
Km
0
½
1
(PRIVATE)
Midway Point
Pebble Beach
STILLWATER
COVE
022
Pescadero Rocks
Arrowhead Point
Pescadero Point


007
023
Carmel Point
Pinnacle Point
Middle Cove
Big Dome Cove
Cypress Cove
Pinnacle Cove
South Point
Point Lobos
Cypress Grove
WHALERS KNOLL
Bluefish Cove
Granite Point
The Pit
Carmel Cove
Headland Cove
Devils Cauldron
SAND HILL
Headland Meadow
Big Meadow
PINE RIDGE
Sea Lion Cove
Sand Hill Cove
008
Section from U.S.G.S.
1:24,000 scale map:
Monterey, Calif.
Km
0
½
1

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

Western Gull	8	(Nelson & Sowls,6/11/79,B,II)	42
Pigeon Guillemot	X	(Nelson & Sowls,6/11/79,B,III)	42
Total	8		

X = present,

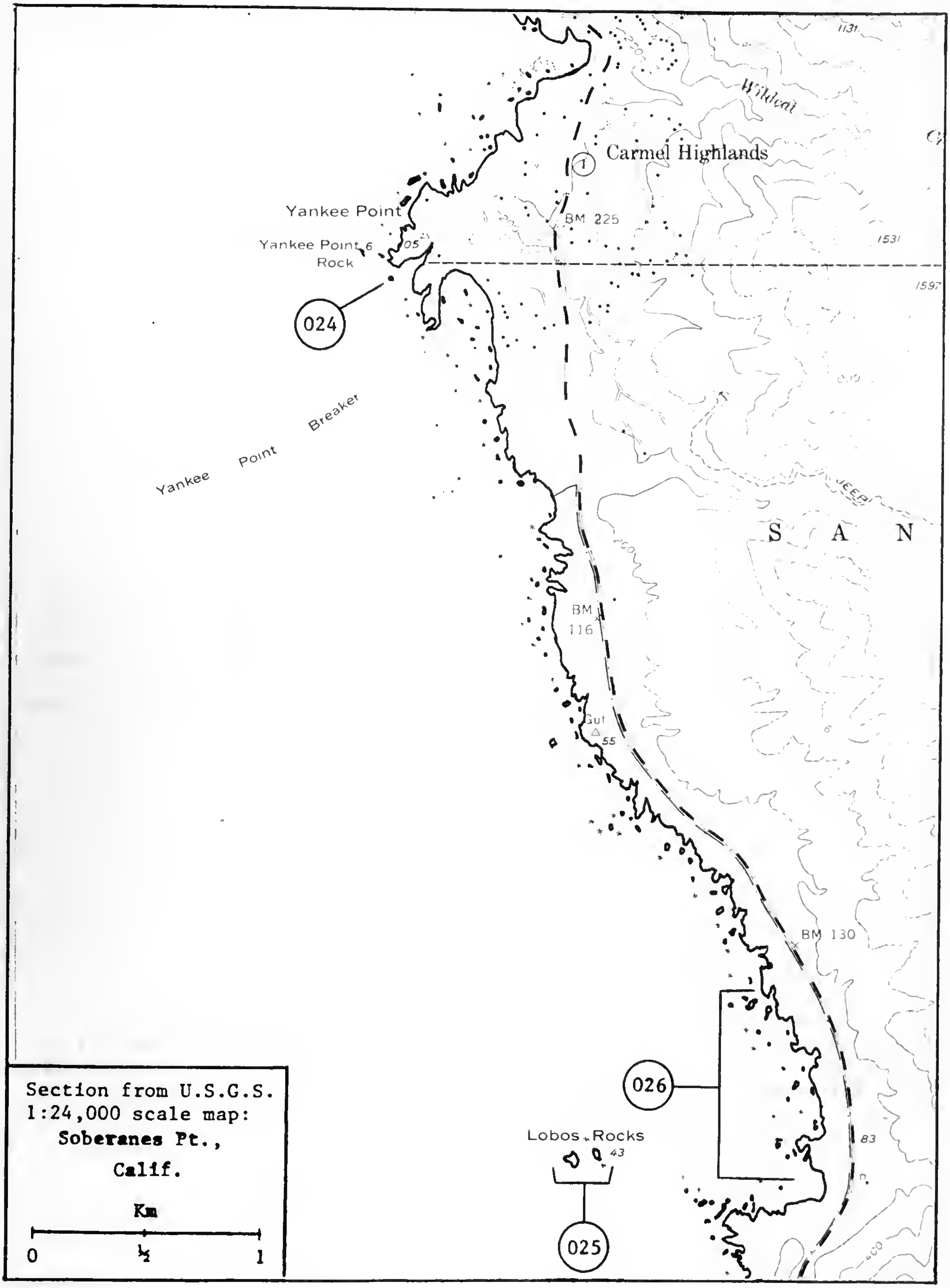
(025) Lobos Rocks 36°27'18"N, 121°56'10"W

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

Lobos Rocks Photo by Art Sowls

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

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



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

Km

0 ½ 1

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

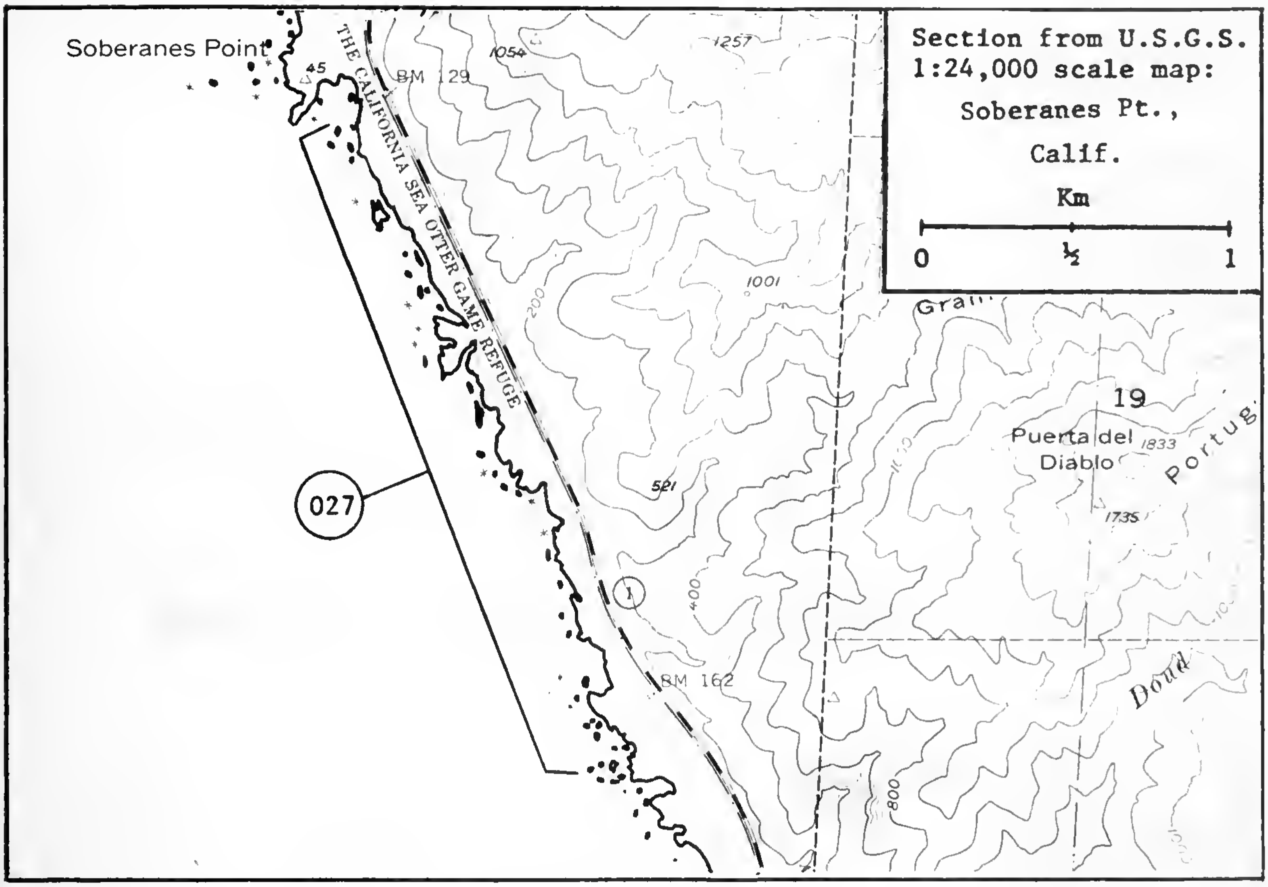
Pelagic Cormorant	2	(Nelson & Sowls,6/11/79,B,I)	42
Black Oystercatcher	4	(Nelson & Sowls,6/11/79,B,III)	42
Western Gull	6	(Nelson & Sowls,6/11/79,B,III)	42
Total	12		

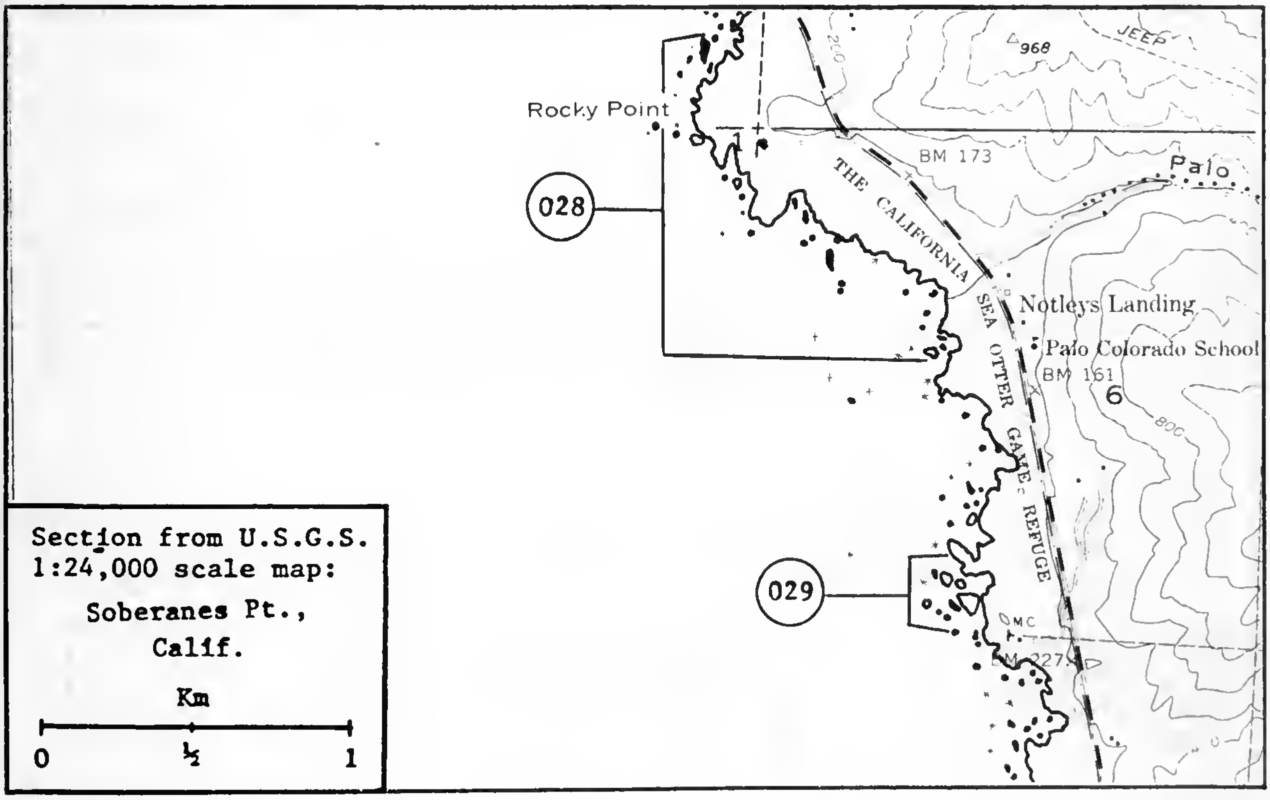
028 Rocky Point 36°24'06"N, 121°54'40"W

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

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

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


Section from U.S.G.S. 1:24,000 scale map:
Soberanes Pt., Calif.
Km
0
½
1
Soberanes Point
THE CALIFORNIA SEA OTTER GAME REFUGE
BM 129
BM 162
027
Puerta del Diablo
19
Doud


Rocky Point
028
029
THE CALIFORNIA SEA OTTER GAME REFUGE
BM 173
Palo
Notleys Landing
Palo Colorado School
BM 161
6
Section from U.S.G.S. 1:24,000 scale map:
Soberanes Pt., Calif.
Km
0
½
1

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

Pelagic Cormorant	26	(Nelson & Sowls,6/22/79,BM,I)	42
Western Gull	8	(Nelson & Sowls,6/22/79,BM,II)	42
Pigeon Guillemot	P	(Nelson & Sowls,6/22/79,BM,II)	42
Total	34		

P = probably present

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

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

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

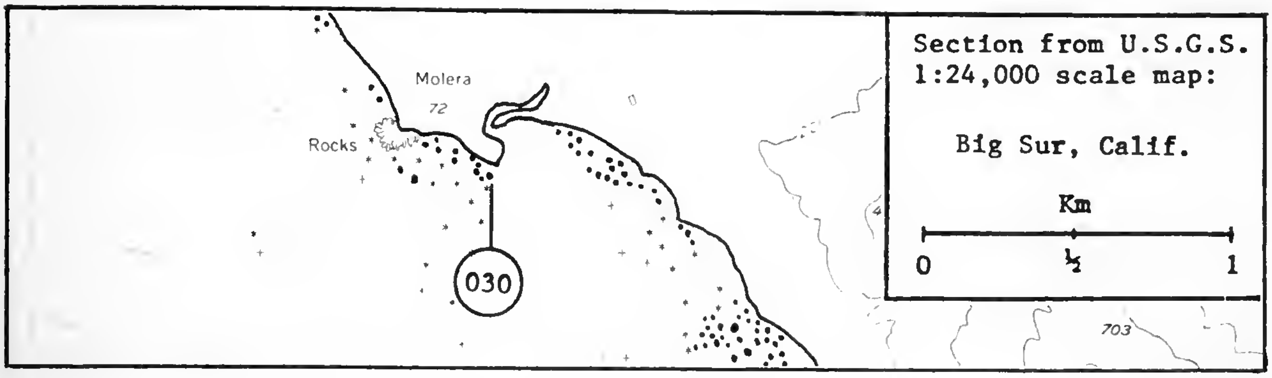
Cormorant (Unid.)	2	(Nelson & Sowls,6/22/79,B,II)	42
Brandt's Cormorant	6	(Nelson & Sowls,6/22/79,B,I)	42
Pelagic Cormorant	4	(Nelson & Sowls,6/22/79,B,I)	42
Pigeon Guillemot	8	(Nelson & Sowls,6/22/79,B,III)	42
Total	20		

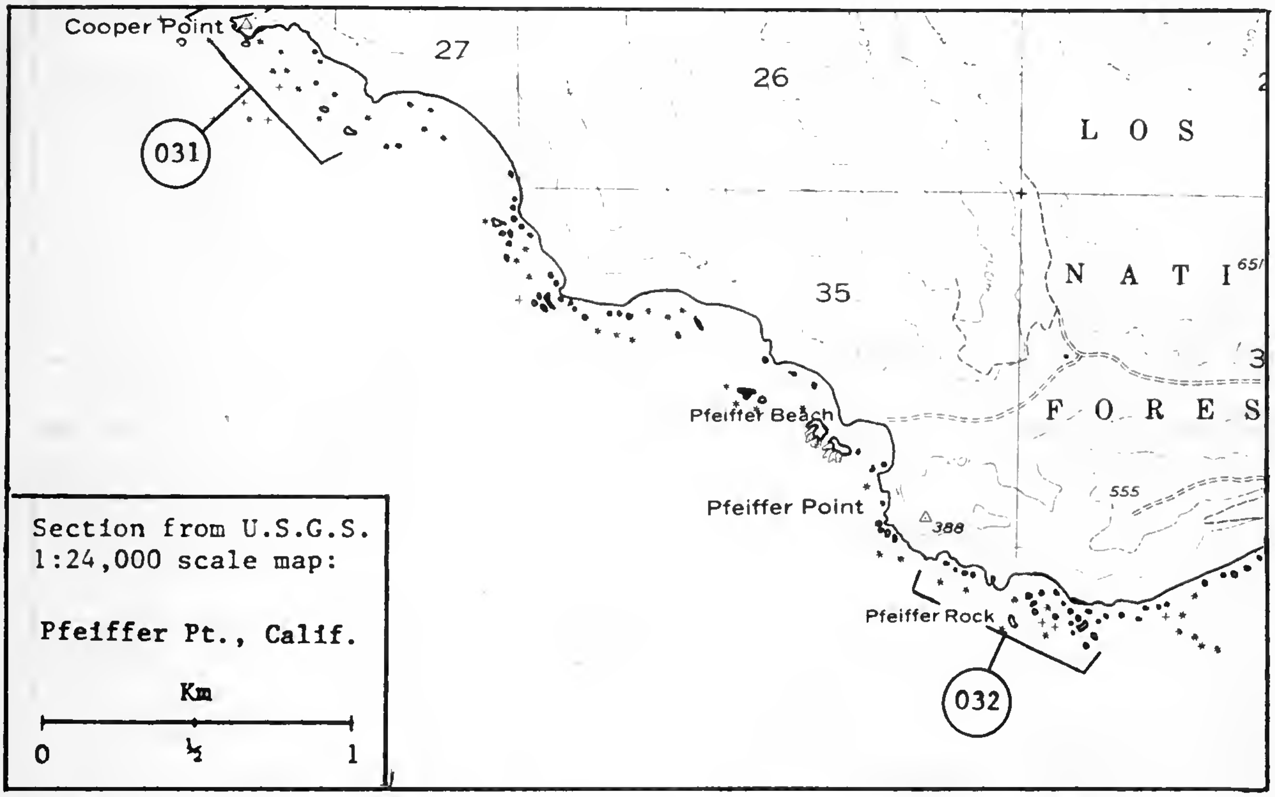
033 Grimes Point 36°12'20"N, 121°44'15"W

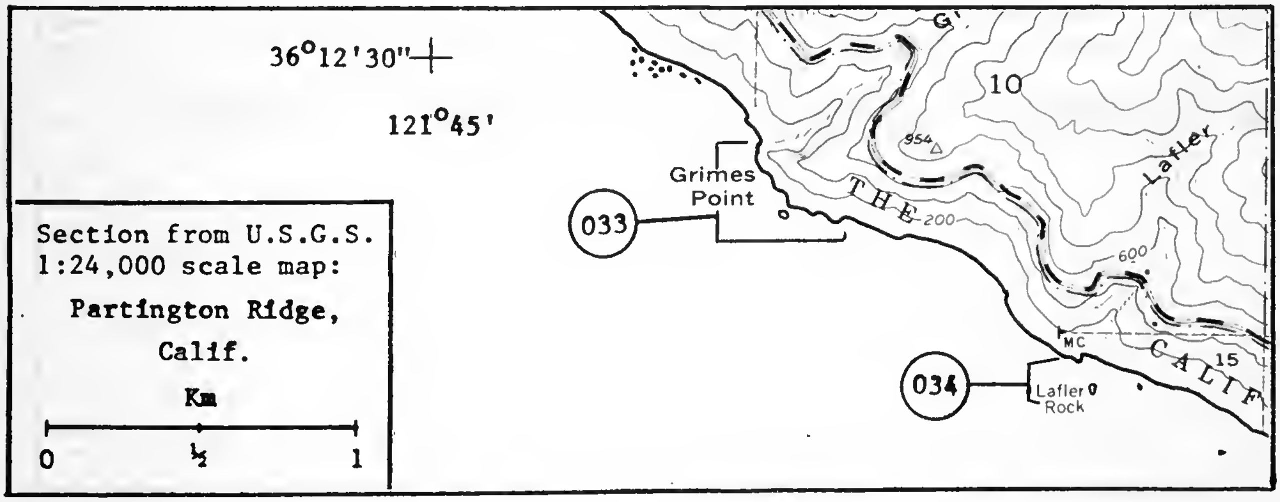
Brandt's Cormorant	16	(Nelson & Sowls,6/22/79,B,II)	42
Pelagic Cormorant	20	(Nelson & Sowls,6/22/79,B,II)	42
Black Oystercatcher	2	(Nelson & Sowls,6/22/79,B,III)	42
Pigeon Guillemot	40	(Nelson & Sowls,6/22/79,B,III)	42
Total	78		

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

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


Molera
72
Rocks
030
703
Section from U.S.G.S.
1:24,000 scale map:
Big Sur, Calif.
Km
0 ½ 1


Cooper Point
031
27
26
35
L O S
N A T I
F O R E S
Pfeiffer Beach
Pfeiffer Point
388
555
Pfeiffer Rock
032
Section from U.S.G.S.
1:24,000 scale map:
Pfeiffer Pt., Calif.
Km
0 ½ 1


36°12'30"
121°45'
10
954
Grimes
Point
033
THE
200
600
Lafler
MC
15
CALIF
034
Lafler Rock
Section from U.S.G.S.
1:24,000 scale map:
Partington Ridge,
Calif.
Km
0 ½ 1

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

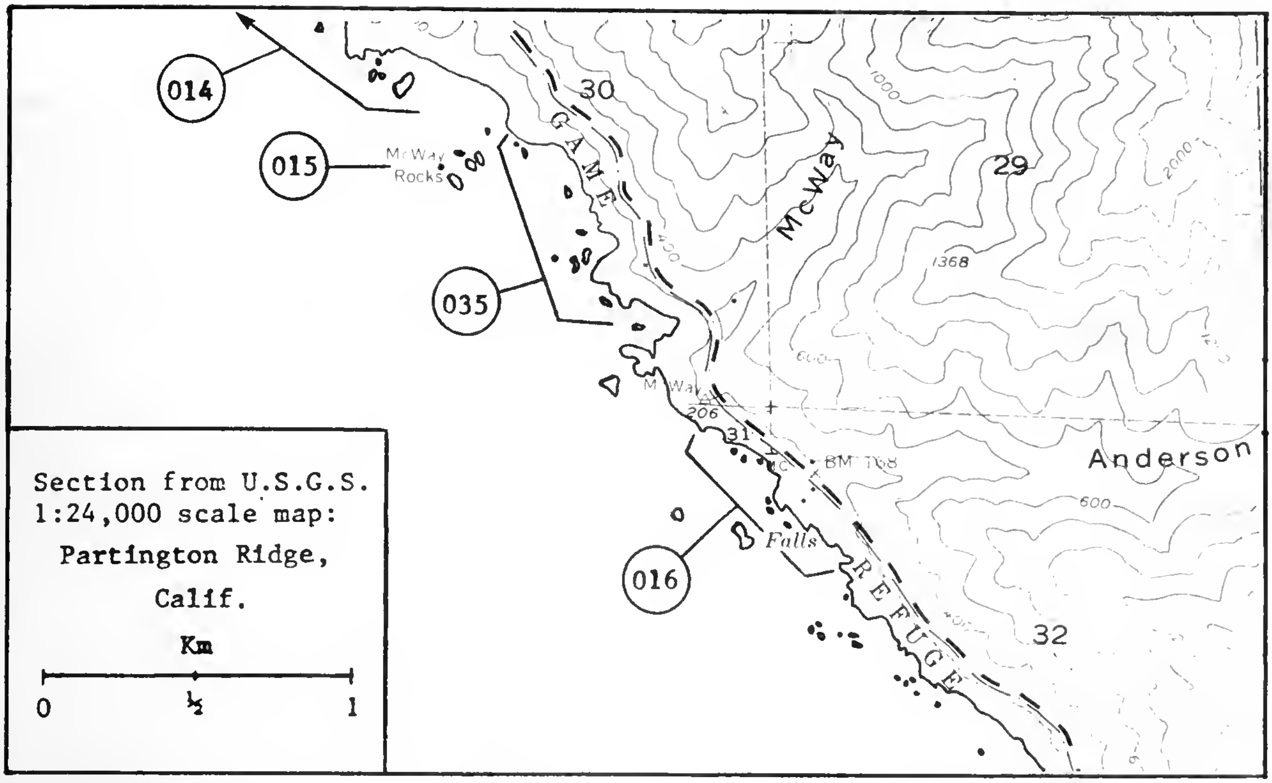
Pelagic Cormorant	20	(Nelson & Sowls,6/23/79,B,I)	42
Western Gull	30	(Nelson & Sowls,6/23&7/13/79,B,III)	42
Pigeon Guillemot	416	(Nelson & Sowls,6/23&7/13/79,B,III)	42
Total	466		

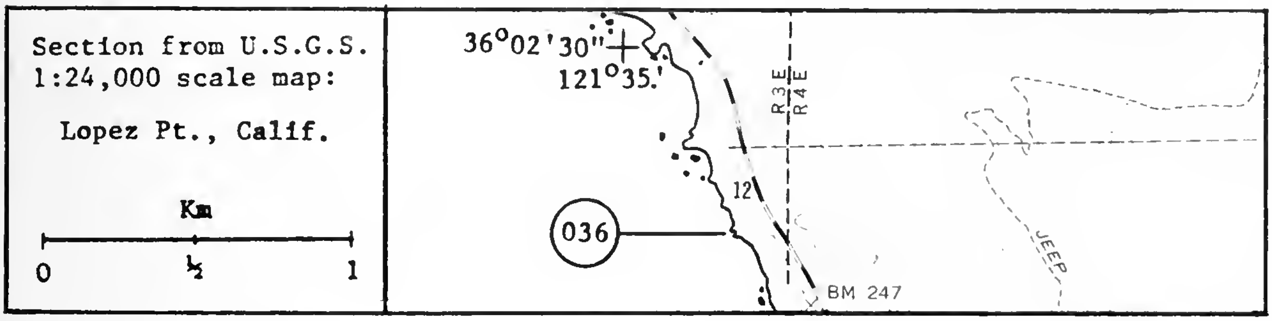
036 "Bench Mark 247" 36°02'N, 121°34'45"W

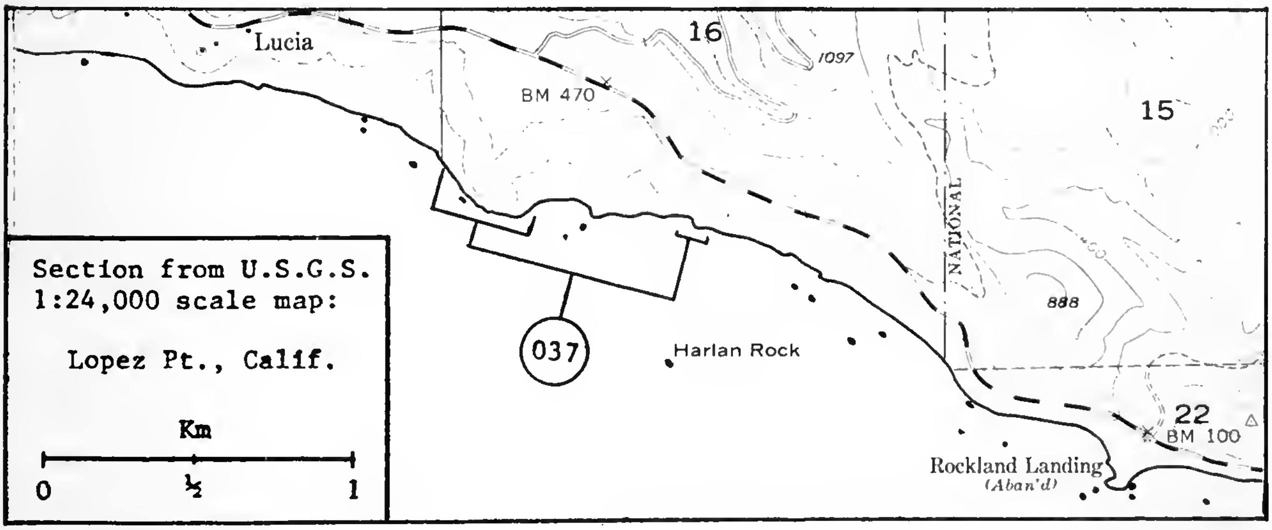
Pelagic Cormorant	6	(Nelson & Sowls,6/23/79,B,I)	42

037 "Rockland Landing North" 36°00'57"N, 121°32'30"W

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


014
015
McWay Rocks
035
016
30
29
31
32
GAME
REFUGE
McWay
Anderson
Falls
1368
206
BM 168
600
400
1000
2000
Section from U.S.G.S. 1:24,000 scale map: Partington Ridge, Calif.
Km
0
½
1


Section from U.S.G.S. 1:24,000 scale map: Lopez Pt., Calif.
Km
0
½
1
36°02'30"
121°35.'
R3E
R4E
12
036
JEEP
BM 247


Lucia
16
1097
BM 470
15
NATIONAL
888
037
Harlan Rock
22
BM 100
Rockland Landing
(Aban'd)
Section from U.S.G.S. 1:24,000 scale map: Lopez Pt., Calif.
Km
0
½
1

477

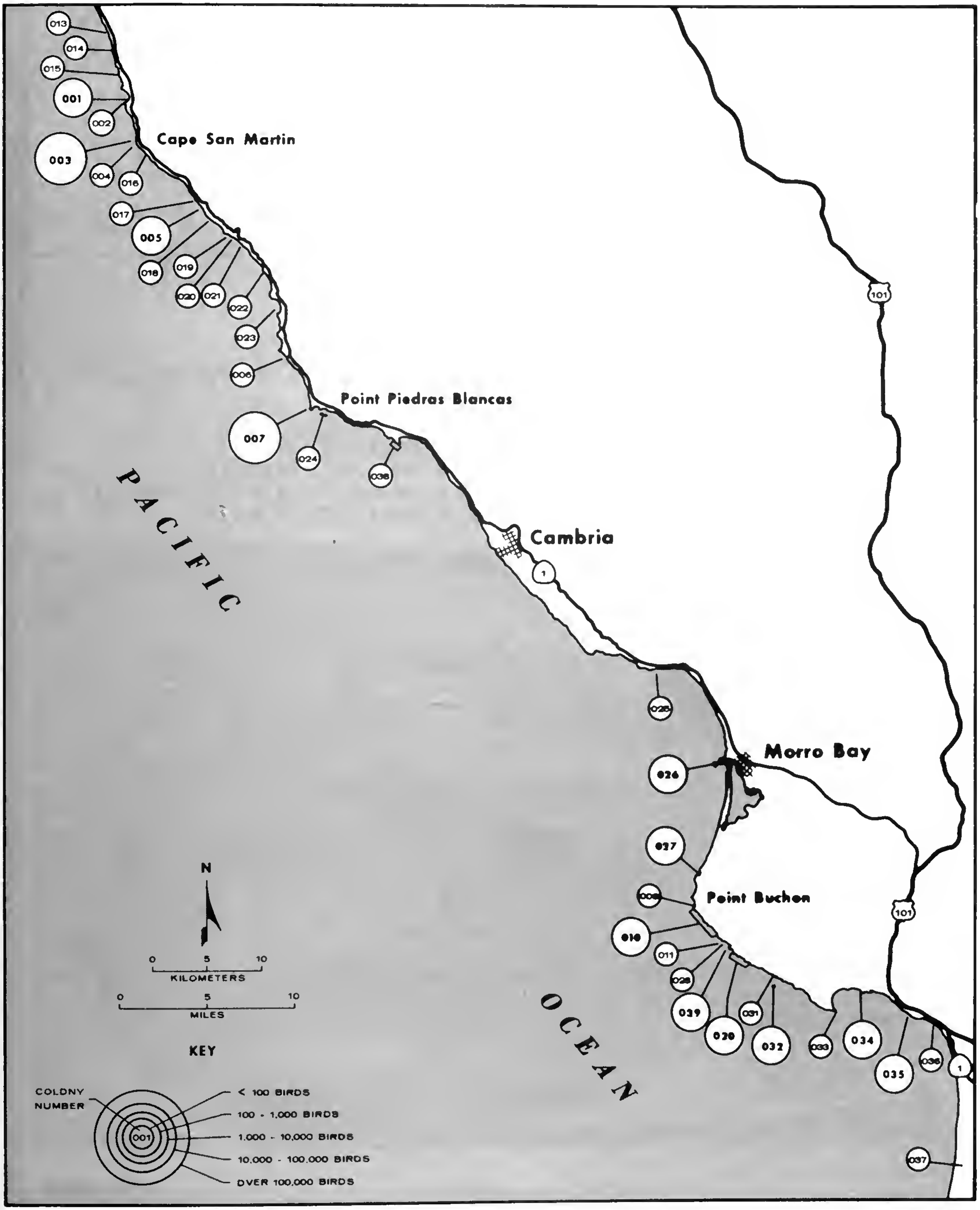
San Luis Obispo

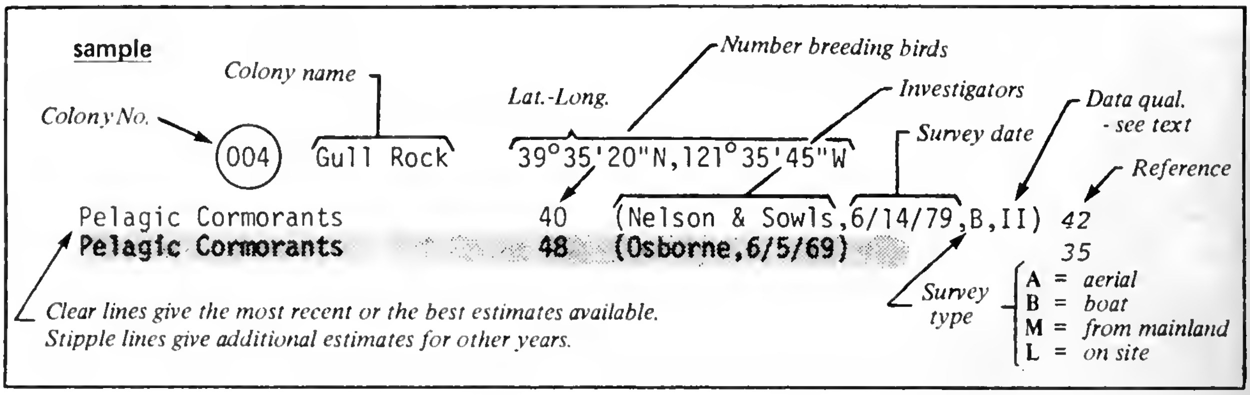
The map on the facing page is an index to the locations of colonies within map 477, San Luis Obispo. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (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	3,000
Pelagic Cormorant	700
Black Oystercatcher	.80
Western Gull	1,100
Pigeon Guillemot	1,200
Tufted Puffin	0-2

477 San Luis Obispo



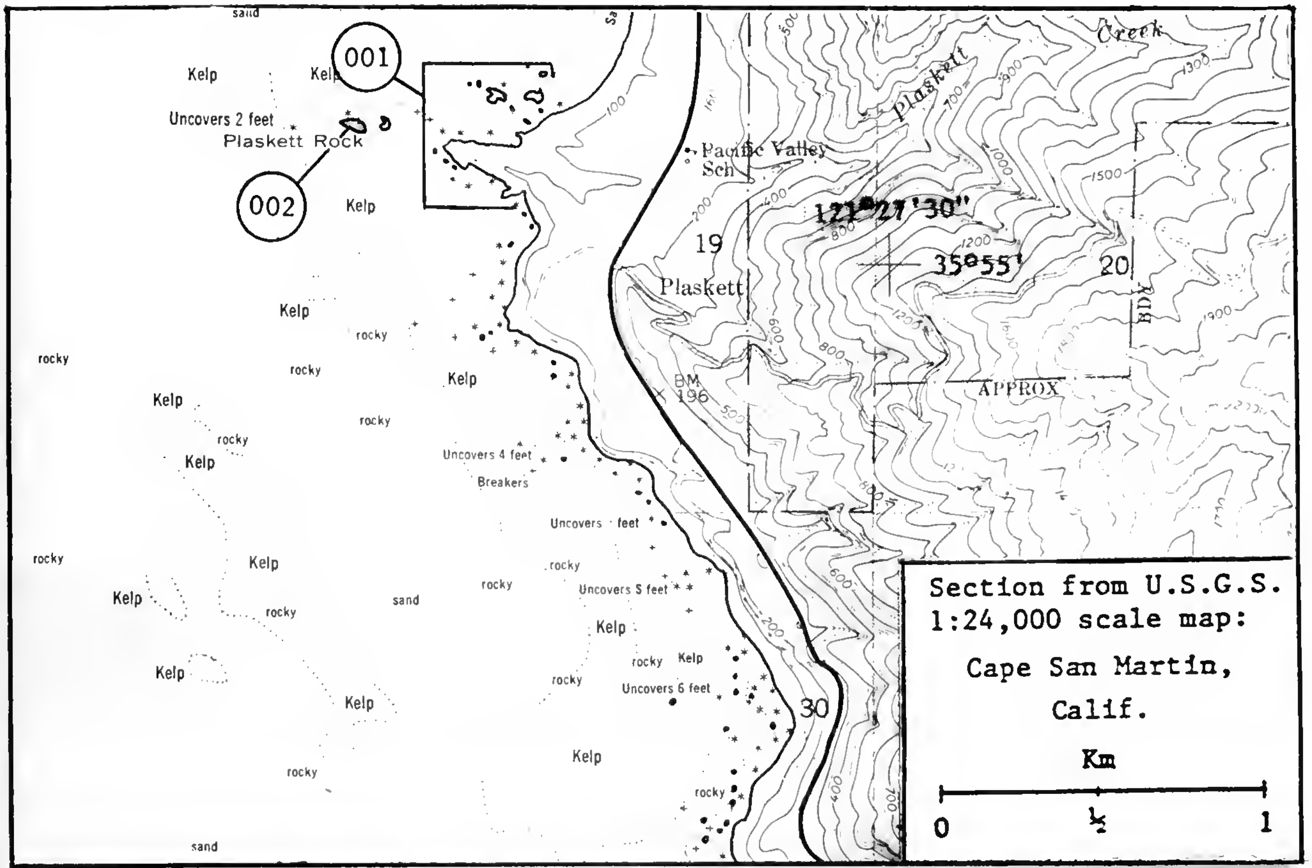


001 Small rocks and mainland north and east of Plaskett Rock
35°55'16"N,121°28'22"W

Pelagic Cormorant	42	(Nelson & Sowls,6/25/79,B,I)	42
Black Oystercatcher	6	(Nelson & Sowls,6/25/79,B,II)	42
Western Gull	64	(Nelson & Sowls,6/25/79,B,7/13/79,M,III)	42
Pigeon Guillemot	30	(Nelson & Sowls,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 & Sowls,6/23/80,A,II)	42
Pelagic Cormorant	10	(Nelson & Sowls,6/25/79,B,II)	42
Black Oystercatcher	2	(Nelson & Sowls,6/25/79,B,III)	42
Western Gull	60	(Nelson & Sowls,6/25/79,B,III)	42
Pigeon Guillemot	20	(Nelson & Sowls,6/25/79,B,III)	42
Total	92		
Brandt's Cormorant	200	(Reynolds,5/4/70,M)	36
Brandt's Cormorant	0	(Nelson & Sowls,6/25/79,B,8/2/79,A,I)	42
Pigeon Guillemot	2	(Reynolds,5/4/70,M)	36



Plaskett Rock

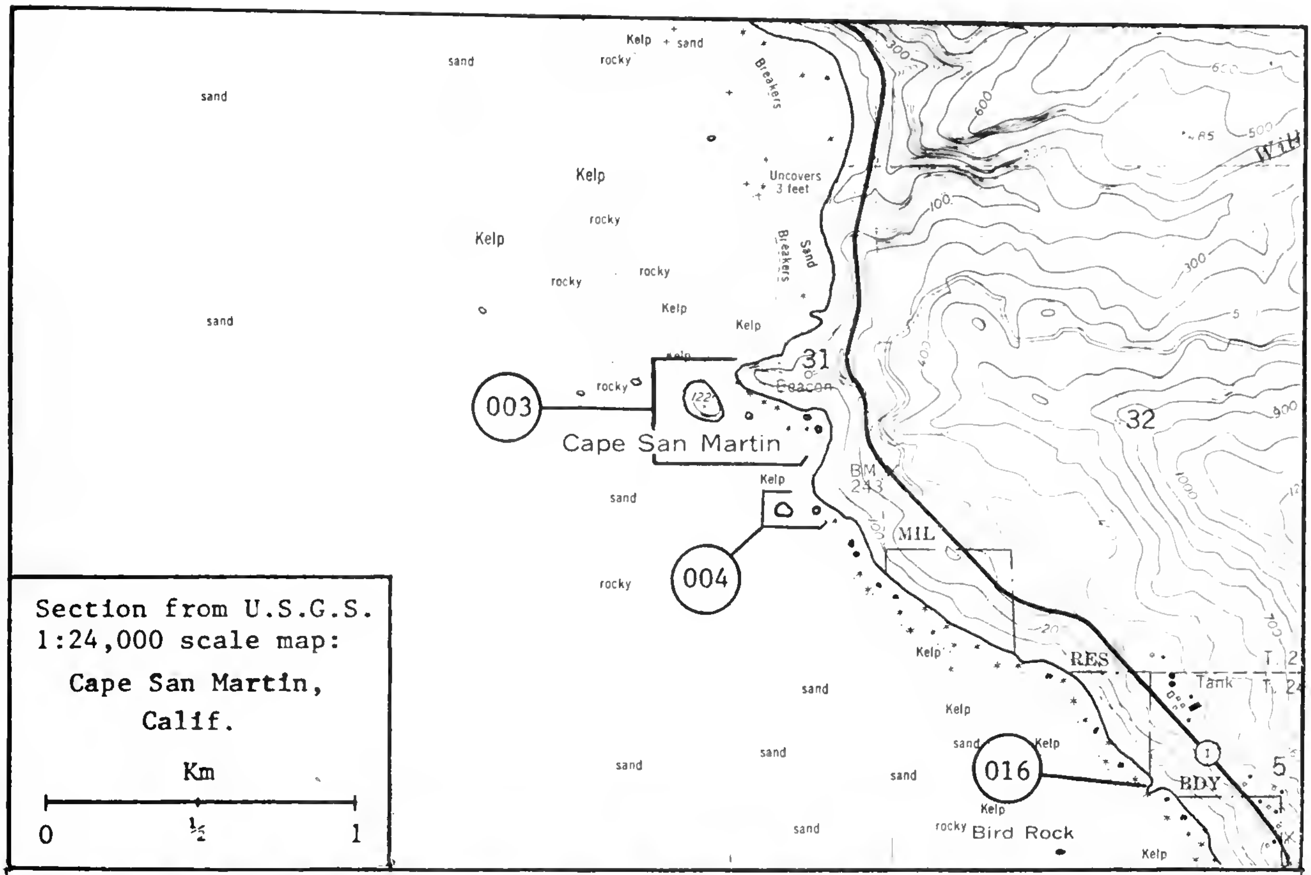
Photo by Jay Nelson

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

Brandt's Cormorant	680	(Nelson & Sowls,6/23/80,A,II)	42
Pelagic Cormorant	26	(Nelson & Sowls,6/24/79,M,6/25/79,B,II)	42
Black Oystercatcher	4	(Nelson & Sowls,6/24/79,M,6/25/79,B,III)	42
Western Gull	474	(Nelson & Sowls,6/24/79,M,6/25/79,B,III)	42
Pigeon Guillemot	8	(Nelson & Sowls,6/24/79,M,6/25/79,B,III)	42
Total	1,192		
Brandt's Cormorant	400	(Reynolds,5/4/70,M)	36
Brandt's Cormorant	1,228	(Nelson & Sowls,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 & Sowls,6/24/79,M,6/25/79,B,II)	42
Black Oystercatcher	2	(Nelson & Sowls,6/24/79,M,6/25/79,B,III)	42
Western Gull	12	(Nelson & Sowls,6/24/79,M,6/25/79,B,III)	42
Total	16		
Brandt's Cormorant	150	(Reynolds,5/4/70,M)	36



Cape San Martin

Photo by Jay Nelson

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

Brandt's Cormorant	478	(Nelson & Sowls,6/24/79,M,6/25/79,B,II)	42
Pigeon Guillemot	2	(Nelson & Sowls,6/24/79,M,6/25/79,B,III)	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 & Sowls,6/25/79,BL,I)	42
Black Oystercatcher	2	(Reynolds,7/19/70,M)	36
Black Oystercatcher	2	(Nelson & Sowls,6/25/79,BL,I)	42
Western Gull	20	(Nelson & Sowls,6/25/79,BL,III)	42

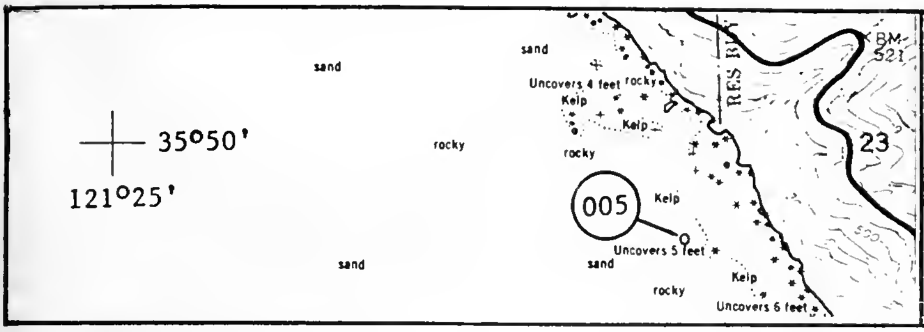
007 Piedras Blancas 35°39'52"N,121°17'18"W

Brandt's Cormorant	1,200	(Nelson & Sowls,6/23/80,A,II)	42
Black Oystercatcher	2	(Sorensen,1980,M,III)	30
Western Gull	56	(Nelson & Sowls,6/26/79,B,III)	42
Pigeon Guillemot	50	(Nelson & Sowls,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 & Sowls,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 & Sowls,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 & Sowls,7/6/79,B,II)	42
Black Oystercatcher	6	(Chambers, Rodstrom & Sowls,7/6/79,B,III)	42
Pigeon Guillemot	20	(Chambers, Rodstrom & Sowls,7/6/79,B,III)	42
Total	30		
Pelagic Cormorant	46	(Frame,1972,M)	19



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

Villa Creek, Calif.

Km

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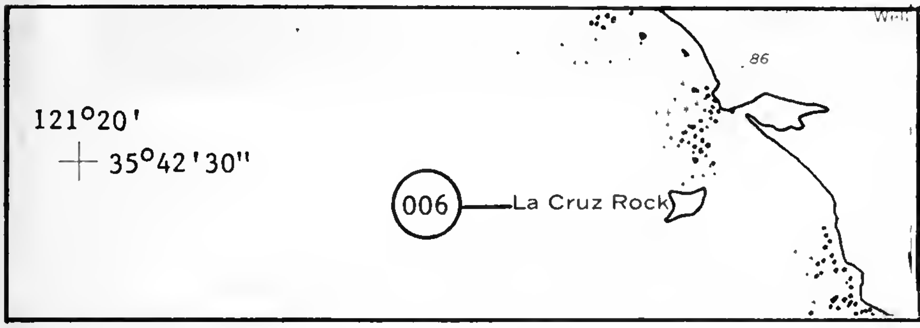

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Pierdas Blancas, Calif.

Km

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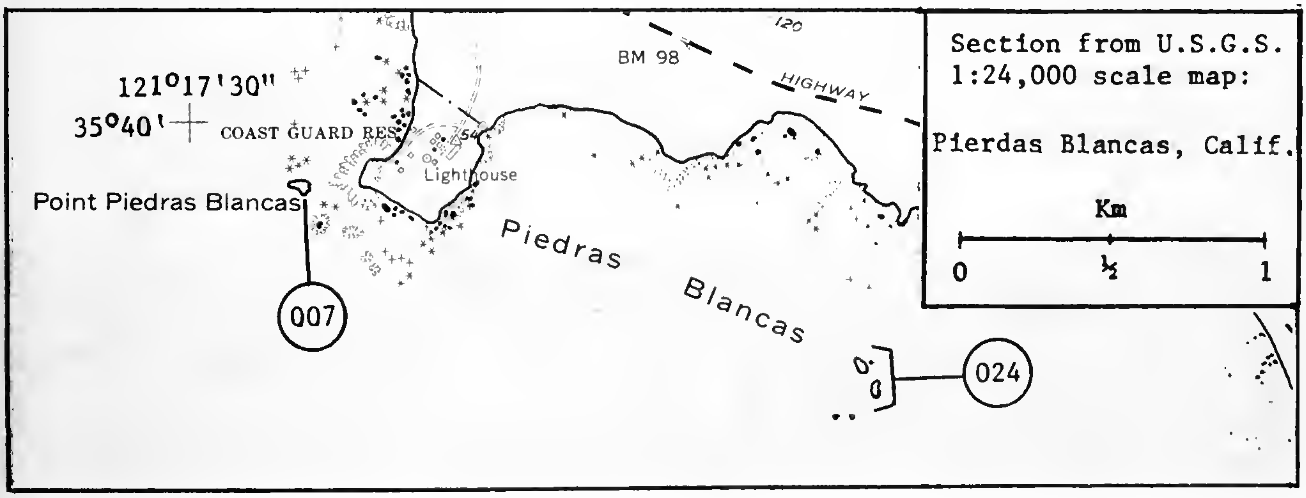

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Pierdas Blancas, Calif.

Km

0 ½ 1

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

Morro Bay, Calif.

Km

0 ½ 1

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

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

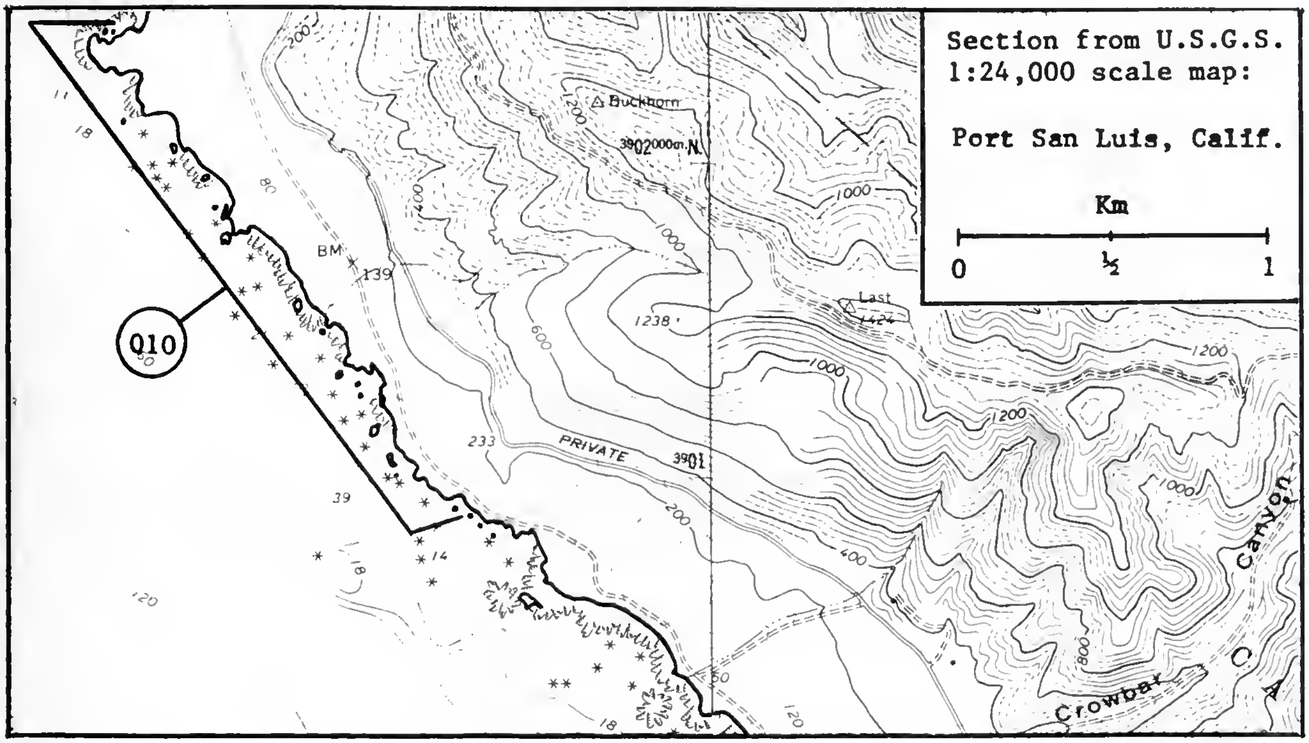
011 Lion Rock 35°31'01"N,120°52'15"W

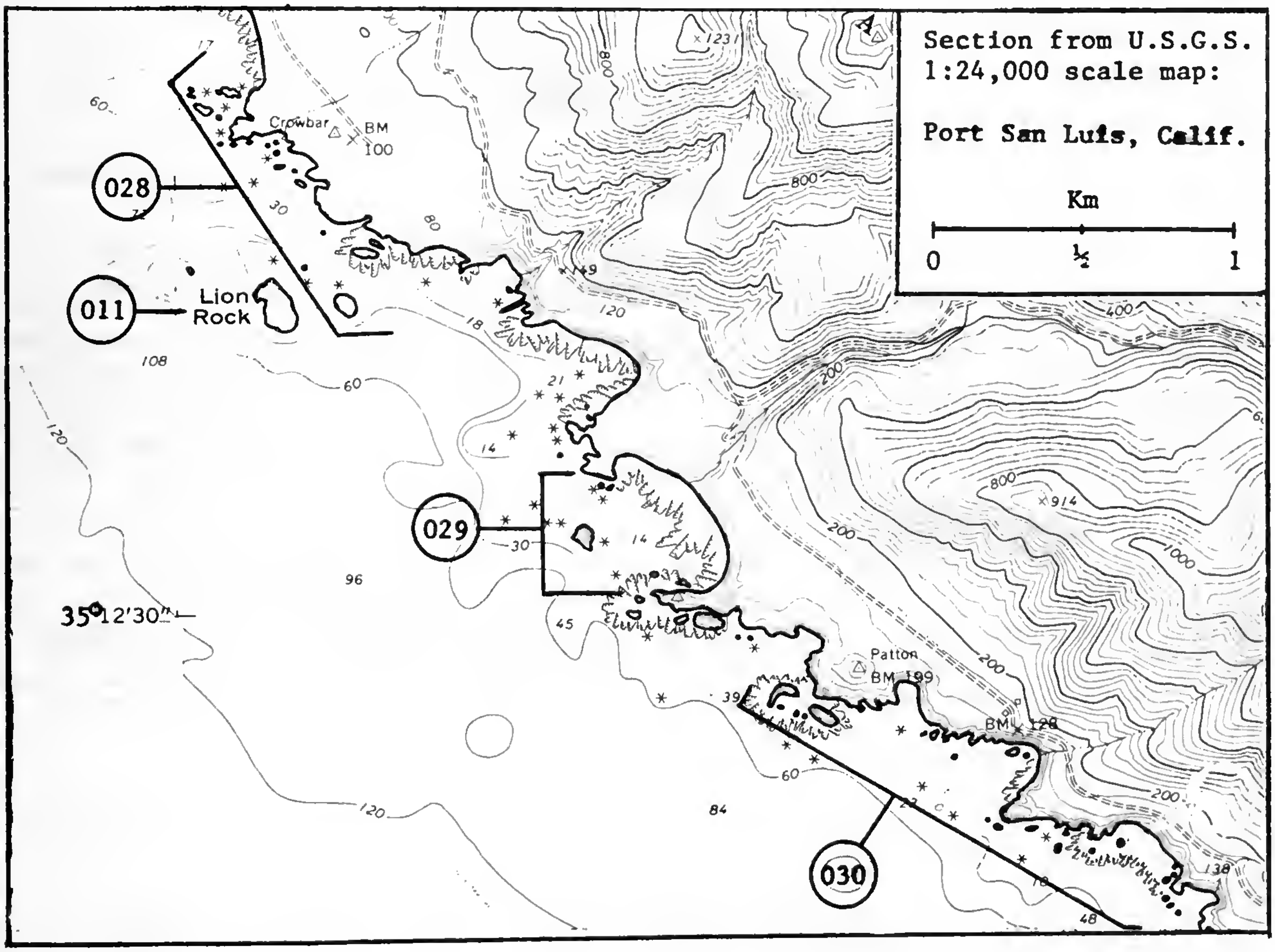
While Lion Rock is not an important nesting island, it is a critical roost rock. In the fall, up to 5,000 cormorants, hundreds of Brown Pelicans, and lesser numbers of Western and Heermann's Gulls roost here. California Sea lions haul out here in large numbers.

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

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.


Section from U.S.G.S. 1:24,000 scale map:
Port San Luis, Calif.
Km
0
½
1
010
Buckhorn
BM
Last
PRIVATE
Canyon
Crowbar


Section from U.S.G.S. 1:24,000 scale map:
Port San Luis, Calif.
Km
0
½
1
028
011
Lion Rock
029
030
Crowbar
BM 100
Patton
BM 199
35°12'30"

013 "36 North" 35°58'36"N,121°29'15"W

Pelagic Cormorant	6	(Nelson & Sowls,6/25/79,B,I)	42

014 "Larus Rock" 35°57'44"N,121°29'01"W

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

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

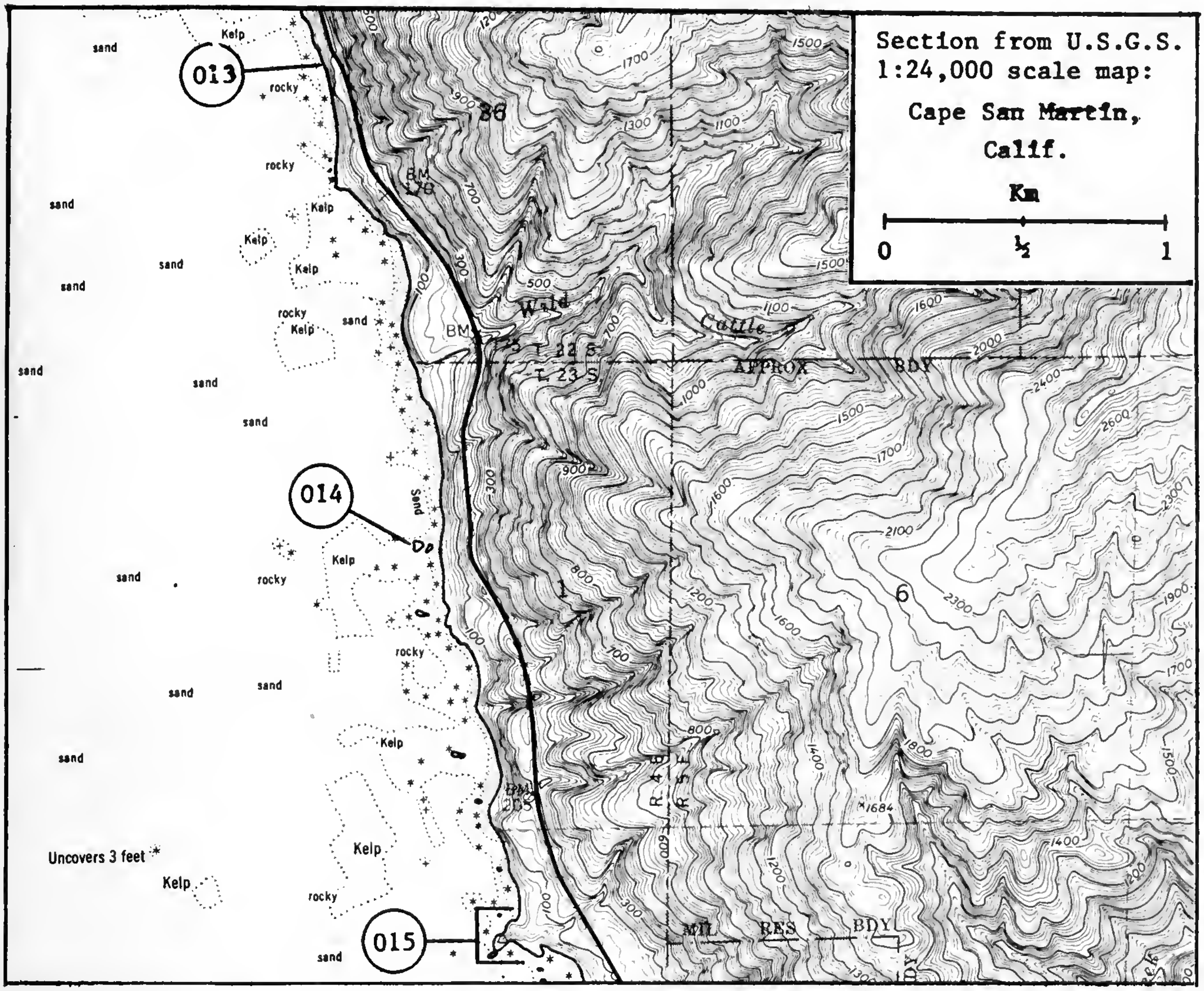
Pelagic Cormorant	6	(Nelson & Sowls,6/25/79,B,I)	42
Black Oystercatcher	2	(Nelson & Sowls,6/25/79,B,III)	42
Western Gull	4	(Nelson & Sowls,6/25/79,B,III)	42
Total	12		

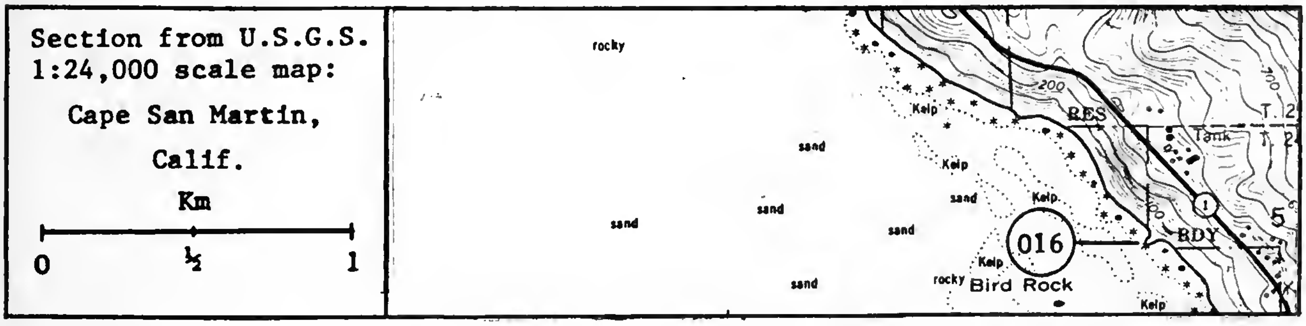
016 Mainland point across from Bird Rock 35°52'37"N,121°26'59"W

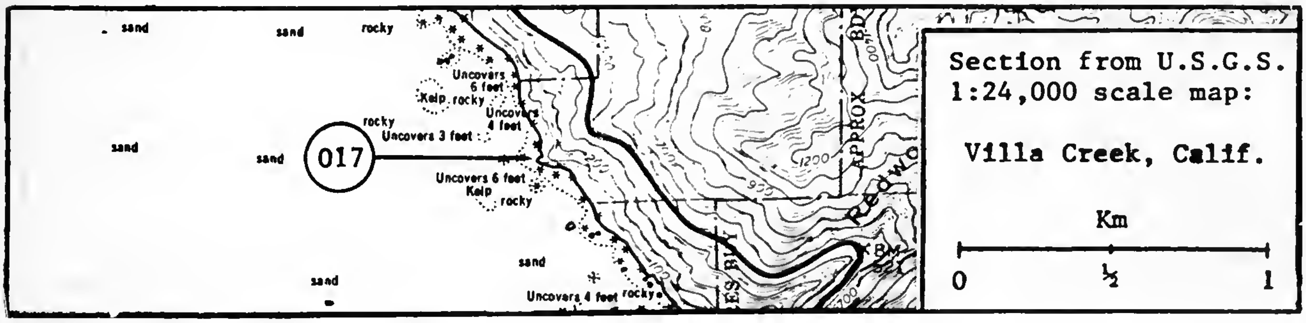
Pelagic Cormorant	38	(Nelson & Sowls,6/25/79,B,I)	42
Black Oystercatcher	2	(Nelson & Sowls,6/25/79,B,III)	42
Total	40		

017 Point north of Redwood Gulch 35°50'20"N,121°24'04"W

Pelagic Cormorant	26	(Nelson & Sowls,6/25/79,B,I)	42


Section from U.S.G.S.
1:24,000 scale map:
Cape San Martin,
Calif.
Km
0 ½ 1
013
014
015
Kelp
rocky
sand
Uncovers 3 feet
Wild
Cattle
APPROX BDY
T 22 S
T 23 S
MIL RES BDY


Section from U.S.G.S.
1:24,000 scale map:
Cape San Martin,
Calif.
Km
0 ½ 1
016
Bird Rock
rocky
sand
Kelp
RES
BDY
Tank


Section from U.S.G.S.
1:24,000 scale map:
Villa Creek, Calif.
Km
0 ½ 1
017
sand
rocky
Kelp
Uncovers 6 feet
Uncovers 4 feet
Uncovers 3 feet
Uncovers 6 feet
Uncovers 4 feet
APPROX BDY

018 Seastack south of Redwood Gulch 35°49'30"N,121°23'22"W

Pelagic Cormorant	16	(Nelson & Sowls,6/25/79,B,I)	42
Black Oystercatcher	P	(Nelson & Sowls,6/25/79,B)	42
Western Gull	6	(Nelson & Sowls,6/25/79,B,I)	42
Total	22		

P = probably present

019 "Unmapped Island" 35°48'20"N,121°22'26"W

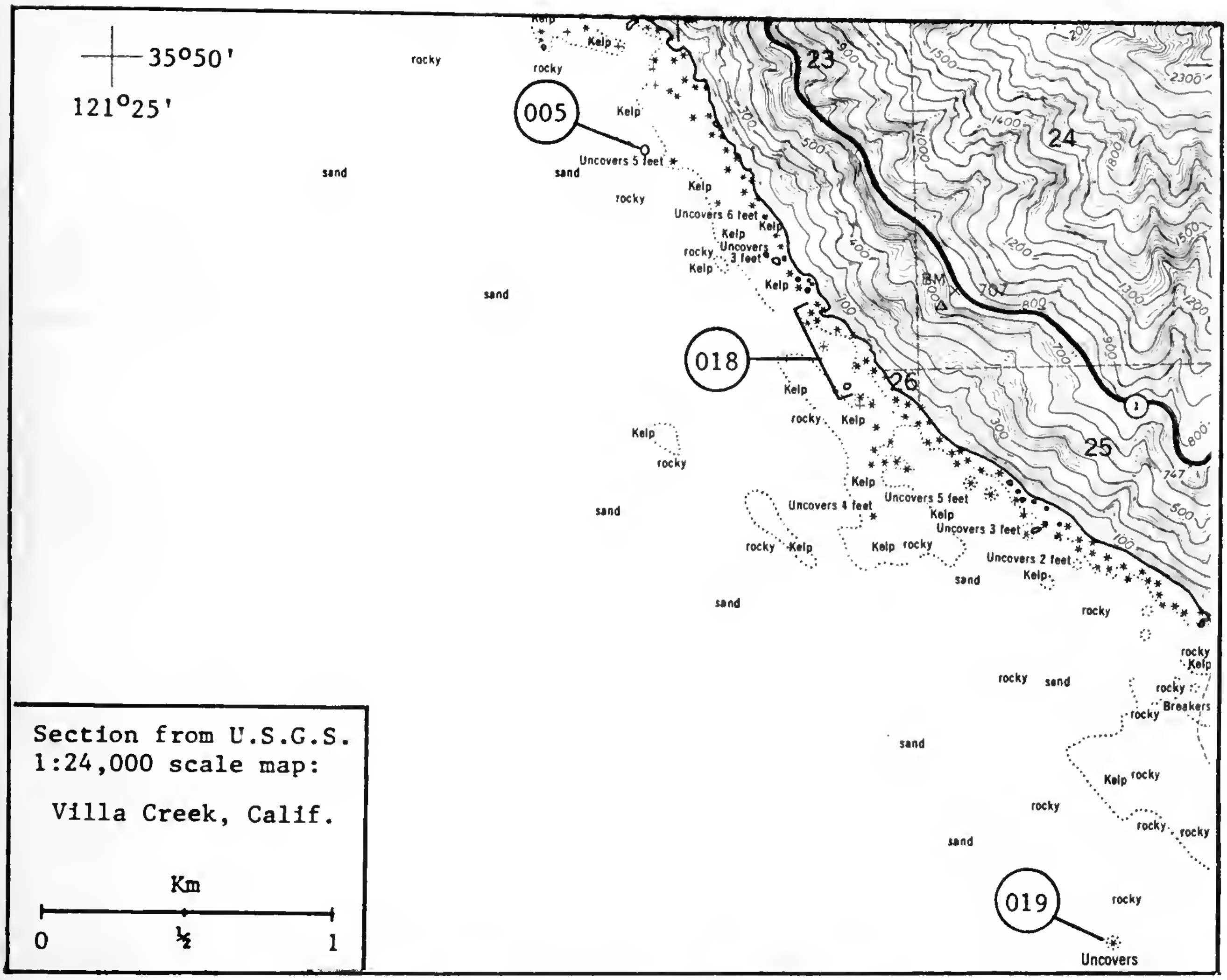
Pelagic Cormorant	56	(Nelson & Sowls,6/25/79,B,II)	42
Pigeon Guillemot	12	(Nelson & Sowls,6/25/79,B,III)	42
Total	68		

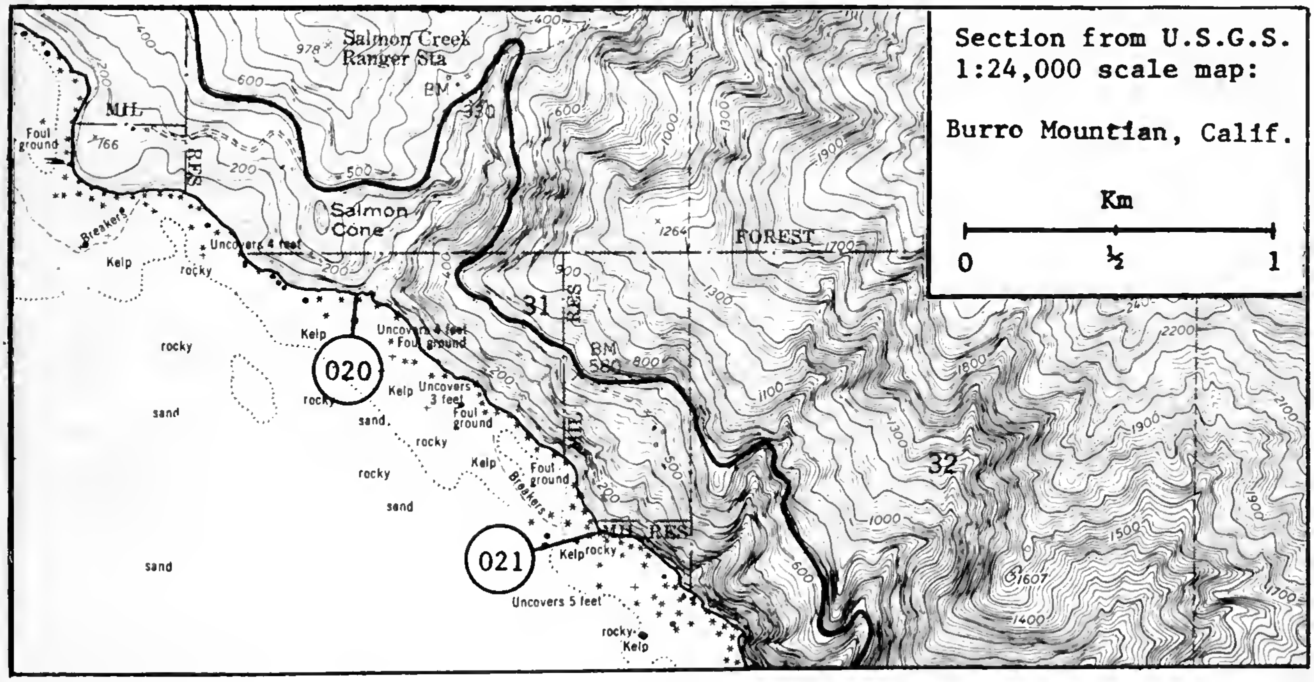
020 "Salmon Creek" 35°48'31"N,121°21'47"W

Pelagic Cormorant	12	(Nelson & Sowls,6/25/79,B,I)	42

021 Arched peninsula South of Salmon Creek 35°48'05"N,121°21'14"W

Pelagic Cormorant	8	(Nelson & Sowls,6/25/79,B,I)	42
Pigeon Guillemot	80	(Nelson & Sowls,6/25/79,B,III)	42
Total	88		


35°50'
121°25'
Section from U.S.G.S.
1:24,000 scale map:
Villa Creek, Calif.
Km
0
½
1
005
018
019
Uncovers 5 feet
Uncovers 6 feet
Uncovers 3 feet
Uncovers 4 feet
Uncovers 5 feet
Uncovers 3 feet
Uncovers 2 feet
Uncovers
Kelp
rocky
sand
Breakers
23
24
25
26
BM
707
747


Section from U.S.G.S.
1:24,000 scale map:
Burro Mountian, Calif.
Km
0
½
1
Salmon Creek
Ranger Sta
Salmon
Cone
FOREST
020
021
Foul ground
Breakers
Uncovers 4 feet
Uncovers 3 feet
Uncovers 5 feet
Kelp
rocky
sand
31
32
BM
580
1264
1607

022 "Ragged Point Lodge Colony" 35°46'53"N,121°19'56"W

Pelagic Cormorant	46	(Nelson & Sowls,6/24/79,M,6/25/79,B,I)	42
Black Oystercatcher	2	(Nelson & Sowls,6/24/79,M,6/25/79,B,III)	42
Western Gull	14	(Nelson & Sowls,6/24/79,M,6/25/79,B,II)	42
Pigeon Guillemot	20	(Nelson & Sowls,6/24/79,M,6/25/79,B,III)	42
Total	82		

023 "3 Rocks" 35°45'06"N,121°19'07"W

Pelagic Cormorant	38	(Nelson & Sowls,6/25/79,B,I)	42
Western Gull	2	(Nelson & Sowls,6/25/79,B,II)	42
Total	40		

024 Two rocks south of Point Piedras Blancas 35°39'30"N,121°16'02"W

Western Gull	48	(Nelson & Sowls,6/26/79,B,II)	42
Pigeon Guillemot	20	(Nelson & Sowls,6/26/79,B,III)	42
Total	68		

025 Island south of Cayucos Point 35°26'45"N,120°55'51"W

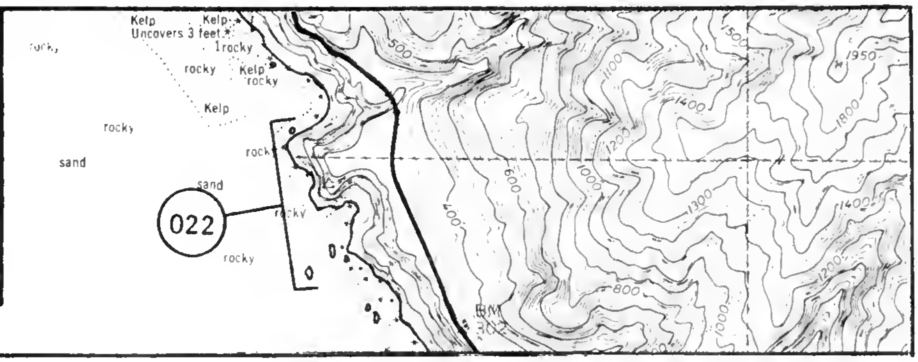
Black Oystercatcher	2	(Nelson & Sowls,6/26/79,BL,I)	42

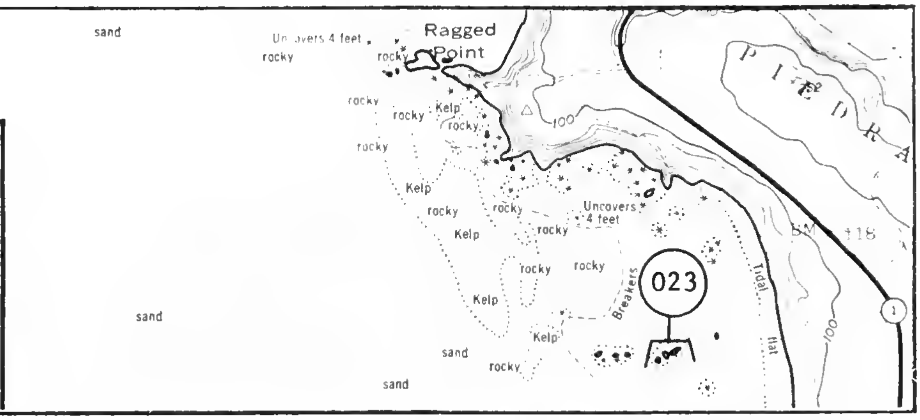
Section from U.S.G.S.
1:24,000 scale map:

Burro Mountian, Calif.

Km

0 ½ 1



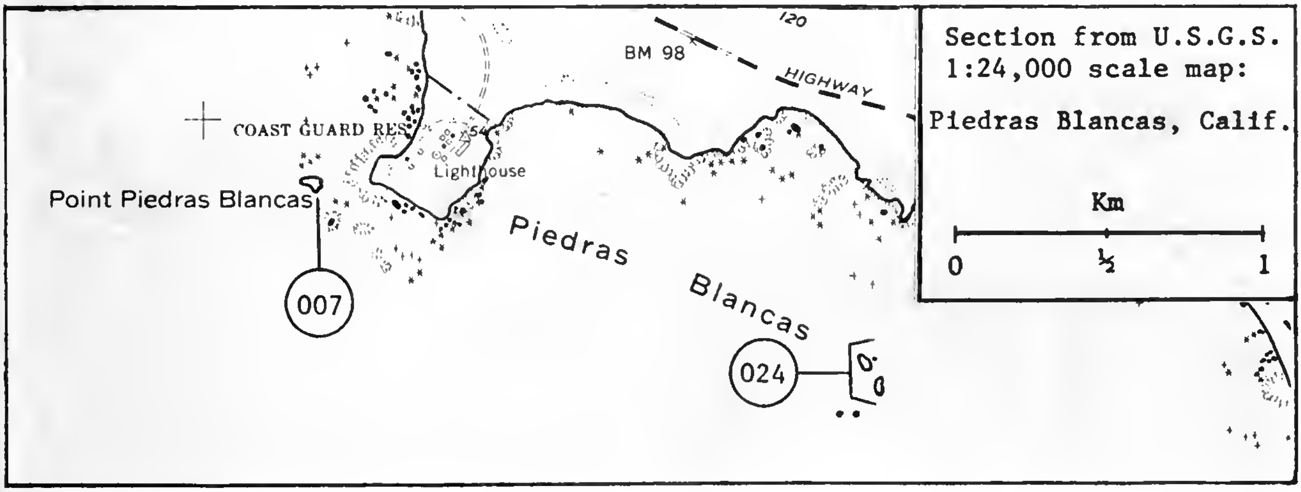


Section from U.S.G.S.
1:24,000 scale map:

Burro Mountian, Calif.

Km

0 ½ 1

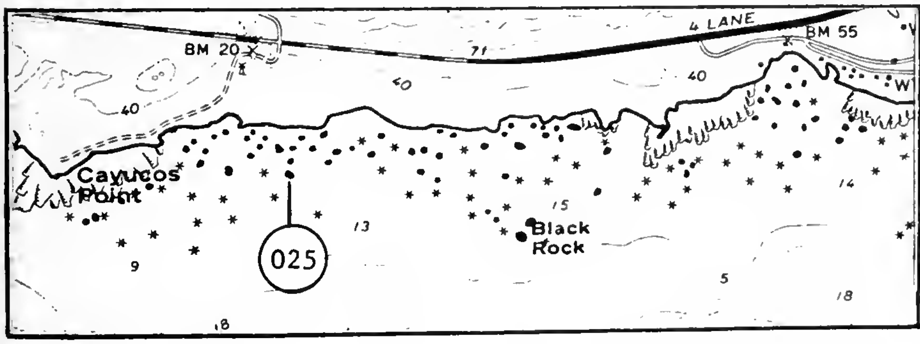


Section from U.S.G.S.
1:24,000 scale map:

Piedras Blancas, Calif.

Km

0 ½ 1



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

Cayucos, Calif.

Km

0 ½ 1

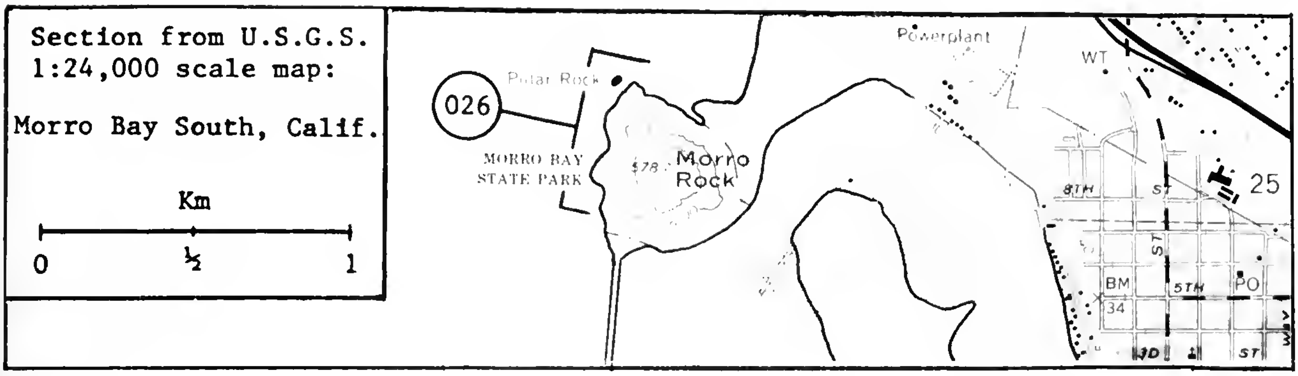
026 Morro Rock and Pillar Rock 35°22'13"N,120°52'08"W

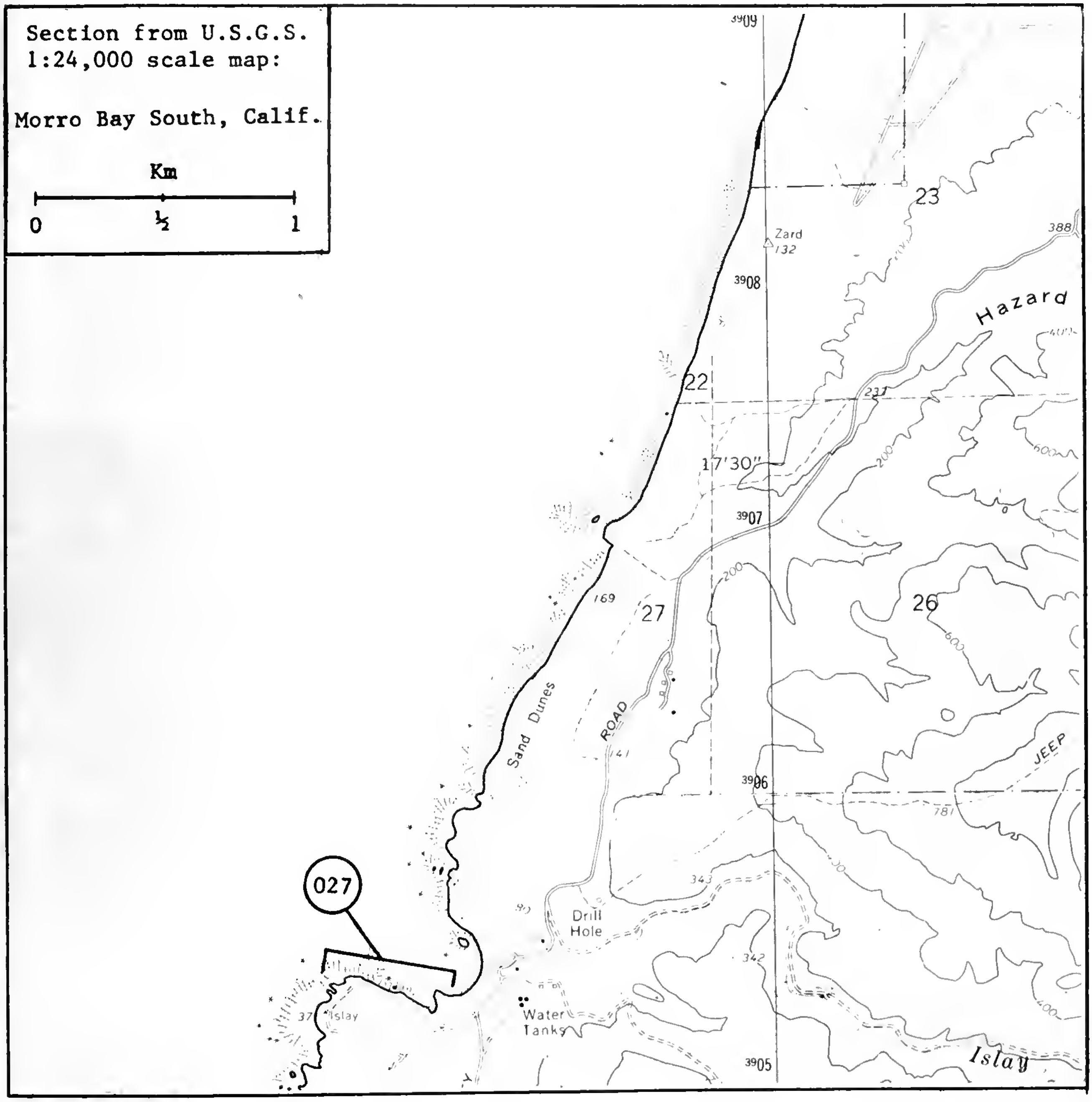
Pelagic Cormorant	40	(Lester & Nelson,7/7/79,B,II)	42
Black Oystercatcher	2	(Lester & Nelson,7/7/79,B,II)	42
Western Gull	120	(Lester & Nelson,7/7/79,B,III)	42
Pigeon Guillemot	40	(Lester & Nelson,7/7/79,B,III)	42
Total	202		

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		


Section from U.S.G.S.
1:24,000 scale map:
Morro Bay South, Calif.
Km
0
½
1
026
Pilar Rock
MORRO BAY
STATE PARK
578
Morro
Rock
Powerplant
WT
25
8TH
ST
BM
34
5TH
PO


Section from U.S.G.S.
1:24,000 scale map:
Morro Bay South, Calif.
Km
0
½
1
3909
23
Zard
132
388
3908
Hazard
22
231
17'30"
3907
169
27
26
Sand Dunes
ROAD
JEEP
3906
781
343
Drill
Hole
342
027
37
Islay
Water
Tanks
3905
Islay

028 "Pup Rock and Adjacent Mainland" 35°13'00N,120°52'11"W

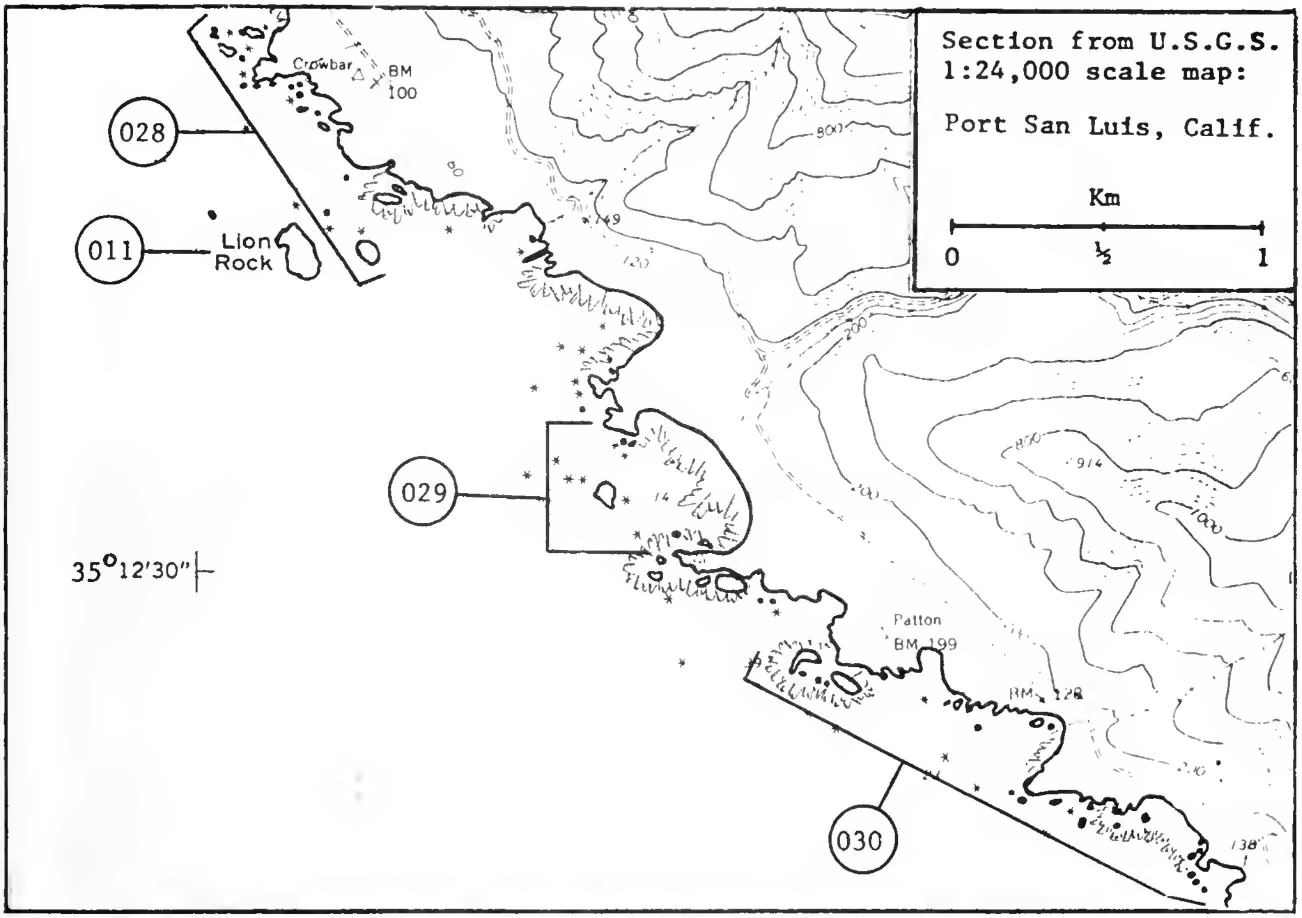
Black Oystercatcher	2	(Lester, Nelson, & Sowls,6/10/80,B,III)	42
Western Gull	54	(Lester, Nelson & Sowls,6/10/80,L,II)	42
Total	56		
Western Gull	40	(Chambers, Rodstrom & Sowls,7/6/79,BL,II)	42

029 Diablo Rock and Adjacent Mainland 35°12'36"N, 120°51'38"W

Brandt's Cormorant	212	(Lester, Nelson & Sowls,6/10/80,B,II)	42
Pelagic Cormorant	16	(Lester, Nelson & Sowls,6/10/80,B,II)	42
Western Gull	4	(Lester, Nelson & Sowls,6/10,80,B,II)	42
Pigeon Guillemot	60	(Lester, Nelson, & Sowls,6/10/80,B,II)	42
Total	292		
Brandt's Cormorant	360	(Nelson & Sowls,8/2/79,A,II)	42
Pelagic Cormorant	22	(Chambers, Rodstrom & Sowls,7/6/79,B,II)	42
Black Oystercatcher	2	(Chambers, Rodstrom & Sowls,7/6/79,B,III)	42
Western Gull	4	(Chambers, Rodstrom & Sowls,7/6/79,B,III)	42
Pigeon Guillemot	30	(Chambers, Rodstrom & Sowls,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 & Sowls,6/10/80,B,III)	42
Pelagic Cormorant	82	(Lester, Nelson & Sowls,6/10/80,B,II)	42
Black Oystercatcher	4	(Chambers, Rodstrom & Sowls,7/6/79,B,III)	42
Western Gull	10	(Lester, Nelson & Sowls,6/10/80,B,II)	42
Pigeon Guillemot	132	(Chambers, Rodstrom & Sowls,7/6/79,B,III)	42
Total	328		
Cormorant (unid.)	16	(Chambers, Rodstrom & Sowls,7/6/79,B,I)	42
Brandt's Cormorant	200	(Reynolds,7/15/70,A)	36
Brandt's Cormorant	16	(Chambers, Rodstrom & Sowls,7/6/79,B,I)	42
Pelagic Cormorant	18	(Chambers, Rodstrom & Sowls,7/6/79,B,II)	42
Western Gull	4	(Chambers, Rodstrom & Sowls,7/6/79,B,III)	42



Diablo Rock off of Diablo Canyon Nuclear Power Plant

Photo by Art Sowls

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

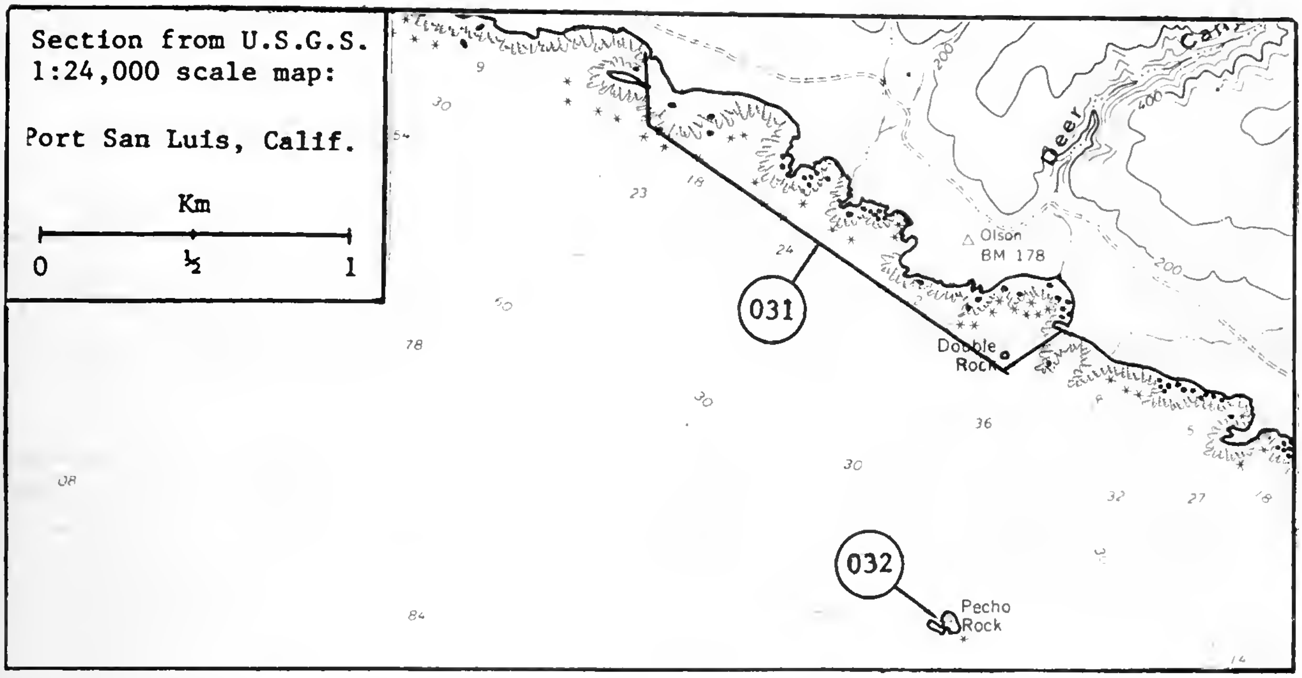
Photo by Art Sowls

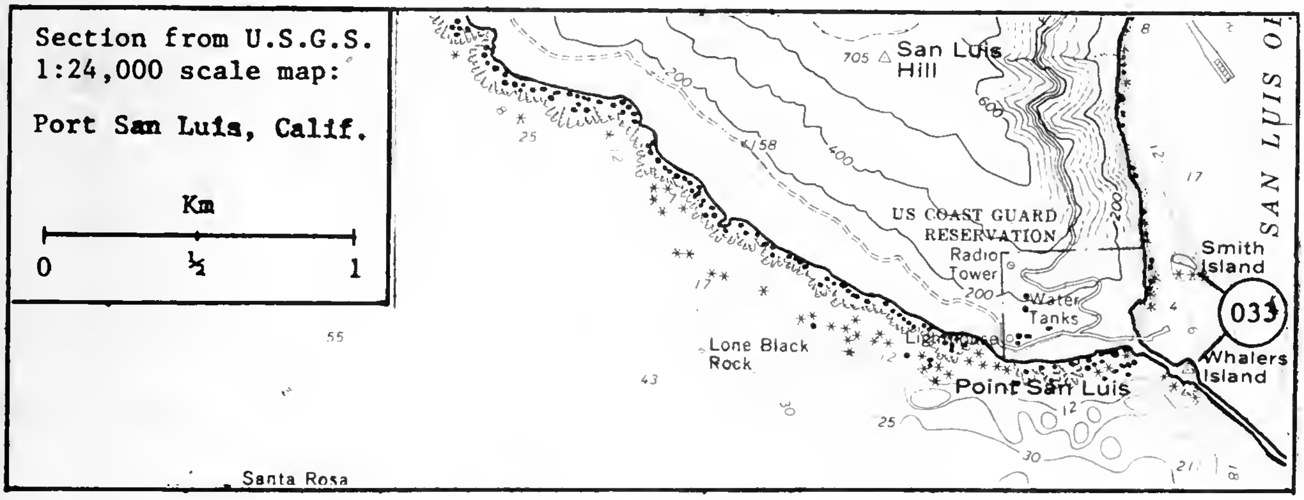
033 Smith and Whaler Islands 35°09'00"N,120°45'15"W

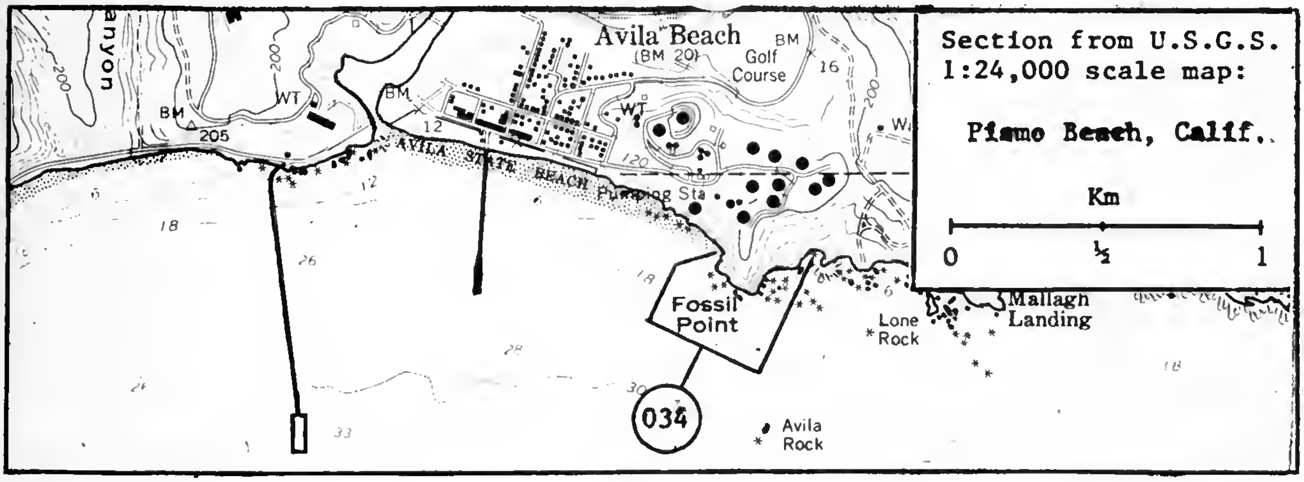
Black Oystercatcher	4	(Nelson, Sowls & Watson,6/28/79,BL,III)	42
Western Gull	2	(Nelson, Sowls & Watson,6/28/79,BL,I)	42
Pigeon Guillemot	20	(Nelson, Sowls & Watson,6/28/79,BL,III)	42
Total	26		

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		


Section from U.S.G.S.
1:24,000 scale map:
Port San Luis, Calif.
Km
0
½
1
Olson
BM 178
Double
Rock
031
032
Pecho
Rock


Section from U.S.G.S.
1:24,000 scale map:
Port San Luis, Calif.
Km
0
½
1
San Luis
Hill
US COAST GUARD
RESERVATION
Radio
Tower
Water
Tanks
Smith
Island
033
Whalers
Island
Lone Black
Rock
Point San Luis
SAN LUIS O
Santa Rosa


Avila Beach
Golf
Course
AVILA STATE BEACH
Fossil
Point
034
Avila
Rock
Lone
Rock
Mallagh
Landing
Section from U.S.G.S.
1:24,000 scale map:
Pismo Beach, Calif.
Km
0
½
1

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 1	(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

1 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	(Nelson & Sowls,5/29/79,M,III)	42
Total	90		

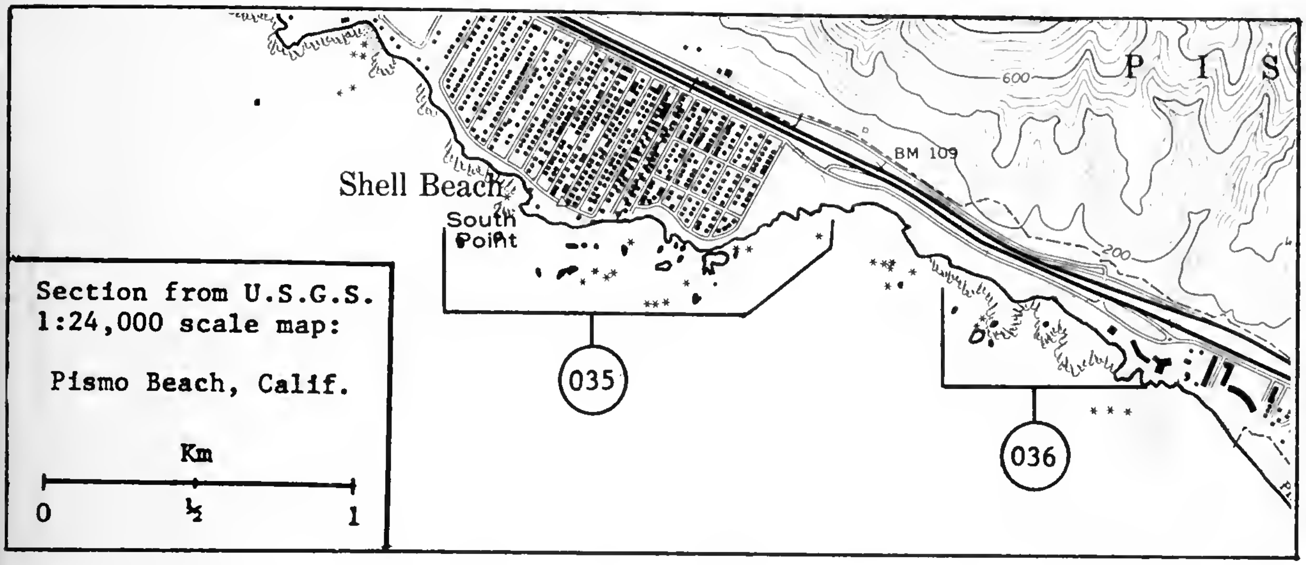
037 Oso Flaco Lake 35°01'42"N, 120°37'40"W

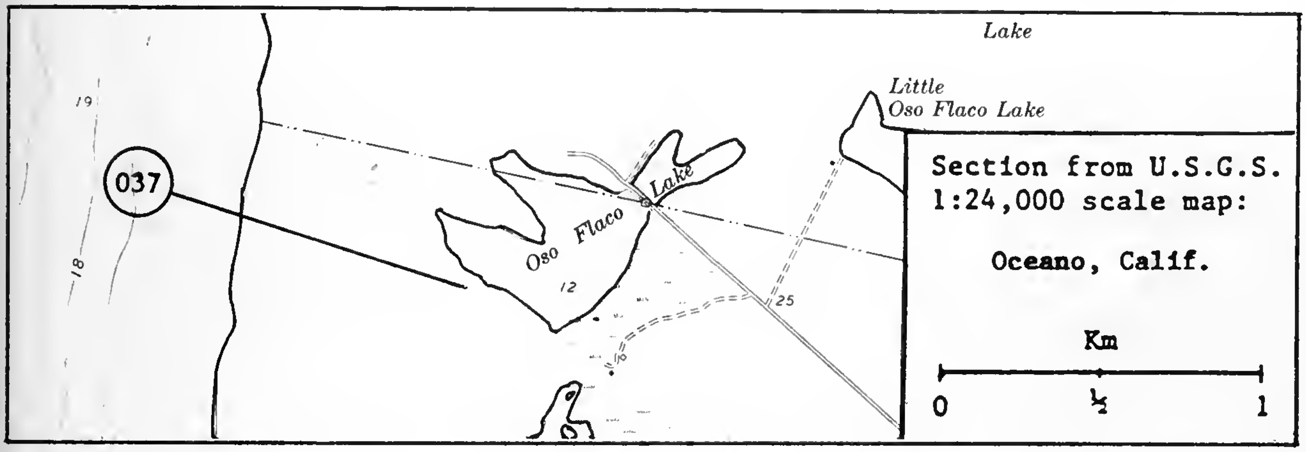
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

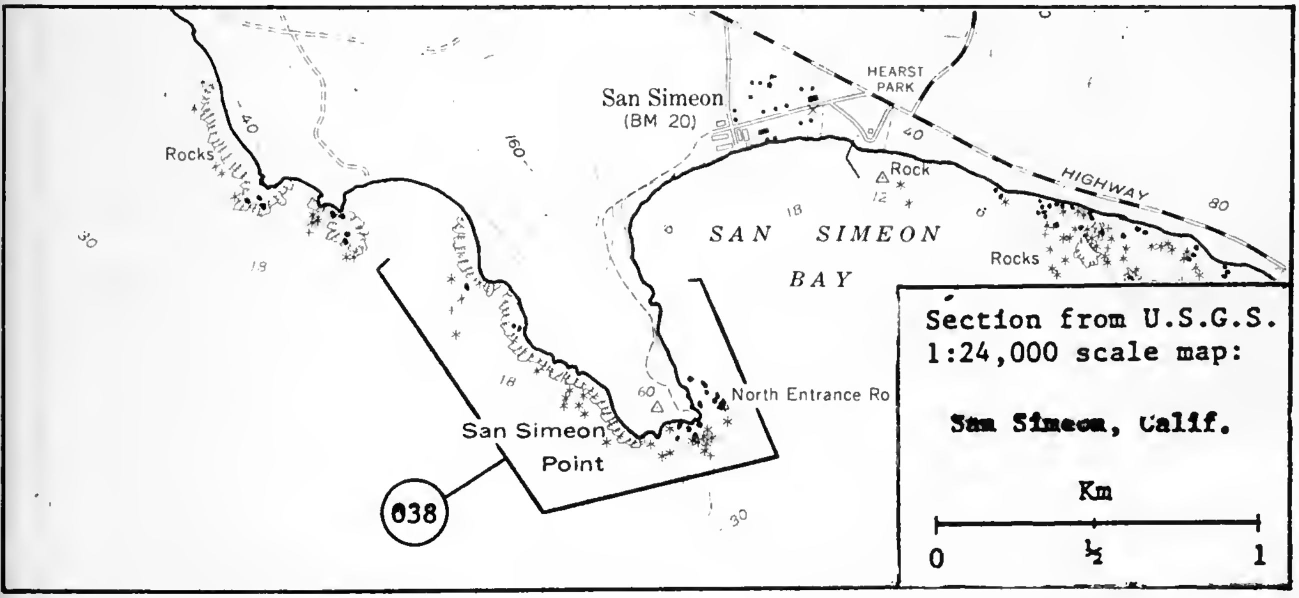
Least Tern	12-20	(Goldwasser,4-8/80,L)	12

038 Point San Simeon 35°38'N, 121°12'W

Pigeon Guillemot	40	(Nelson & Sowls,6/26/79,B,III)	42


P I S
600
BM 109
200
Shell Beach
South Point
035
036
Section from U.S.G.S. 1:24,000 scale map:
Pismo Beach, Calif.
Km
0
½
1


Lake
Little Oso Flaco Lake
037
Oso Flaco Lake
12
25
19
18
Section from U.S.G.S. 1:24,000 scale map:
Oceano, Calif.
Km
0
½
1


HEARST PARK
San Simeon (BM 20)
40
160
Rocks
Rock
HIGHWAY
80
SAN SIMEON BAY
Rocks
North Entrance Ro
San Simeon Point
038
Section from U.S.G.S. 1:24,000 scale map:
San Simeon, Calif.
Km
0
½
1

501

Santa Maria

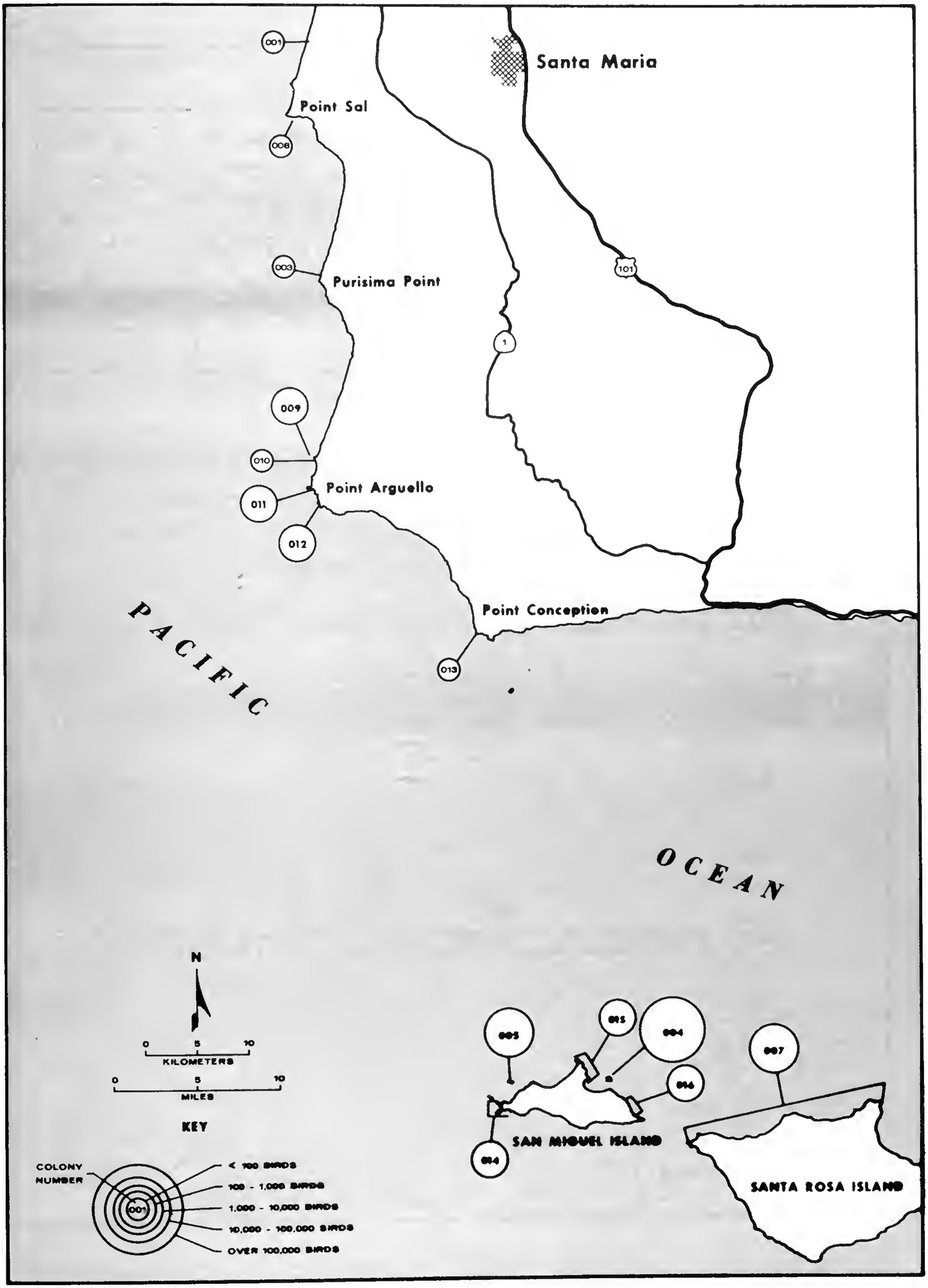
The maps on the facing page and following page are indexes to the locations of colonies within map 501, Santa Maria. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following these two maps, all colonies are listed sequentially and a detailed map of each is provided.

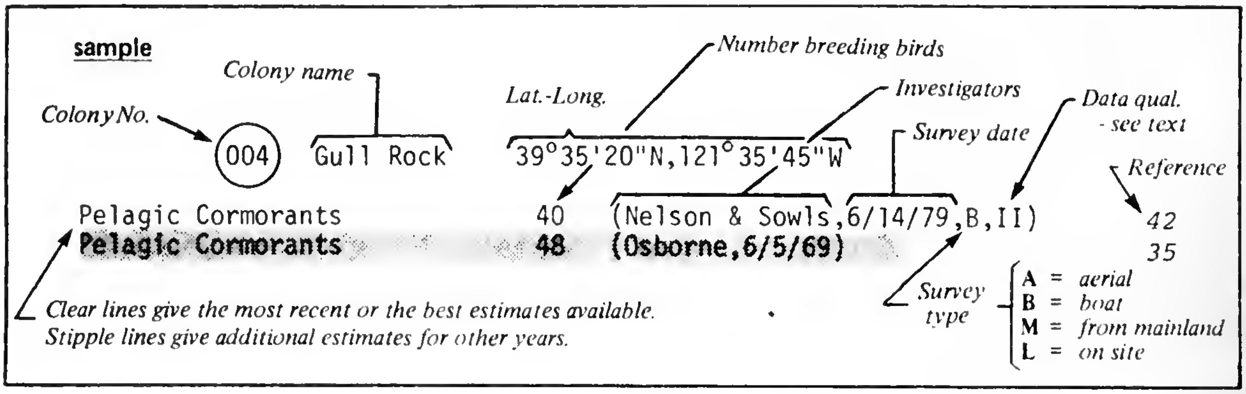
Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

Leach's Storm-Petrel	X
Ashy Storm-Petrel	400
Brandt's Cormorant	5,000
Double-crested Cormorant	150*
Pelagic Cormorant	400
Black Oystercatcher	130
Western Gull	1,200
Pigeon Guillemot	1,400
Xantus' Murrelet	150
Cassin's Auklet	22,000
Rhinoceros Auklet	30

X = present

* *coastal population only.*


Santa Maria
Point Sal
Purisima Point
Point Arguello
Point Conception
101
1
001
006
003
009
010
011
012
013
PACIFIC
OCEAN
SAN MIGUEL ISLAND
SANTA ROSA ISLAND
N
0
5
10
KILOMETERS
0
5
10
MILES
KEY
COLONY NUMBER
001
< 100 BIRDS
100 - 1,000 BIRDS
1,000 - 10,000 BIRDS
10,000 - 100,000 BIRDS
OVER 100,000 BIRDS

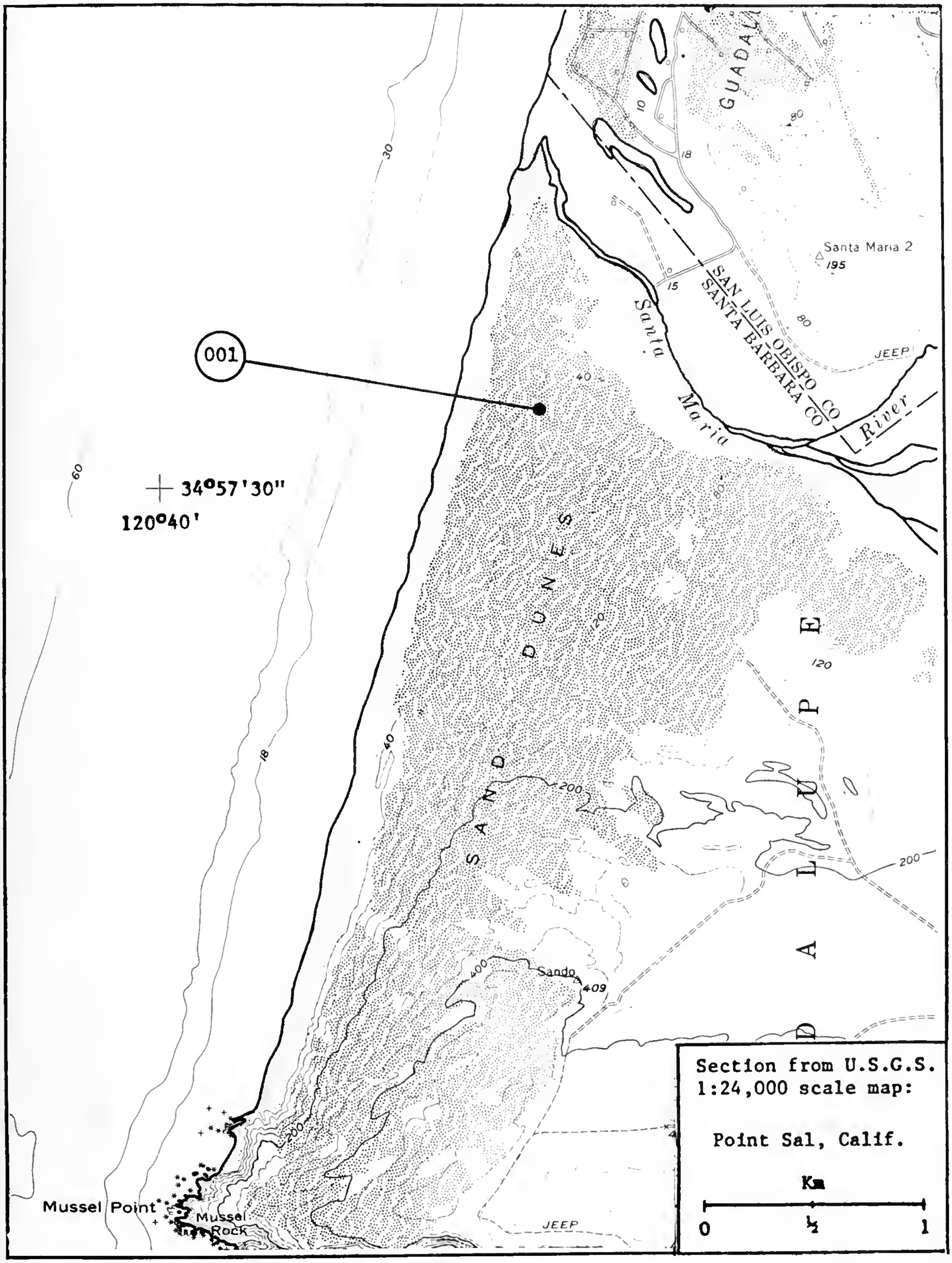


001 Santa Maria River 34°58'09"N, 120°38'51"W

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

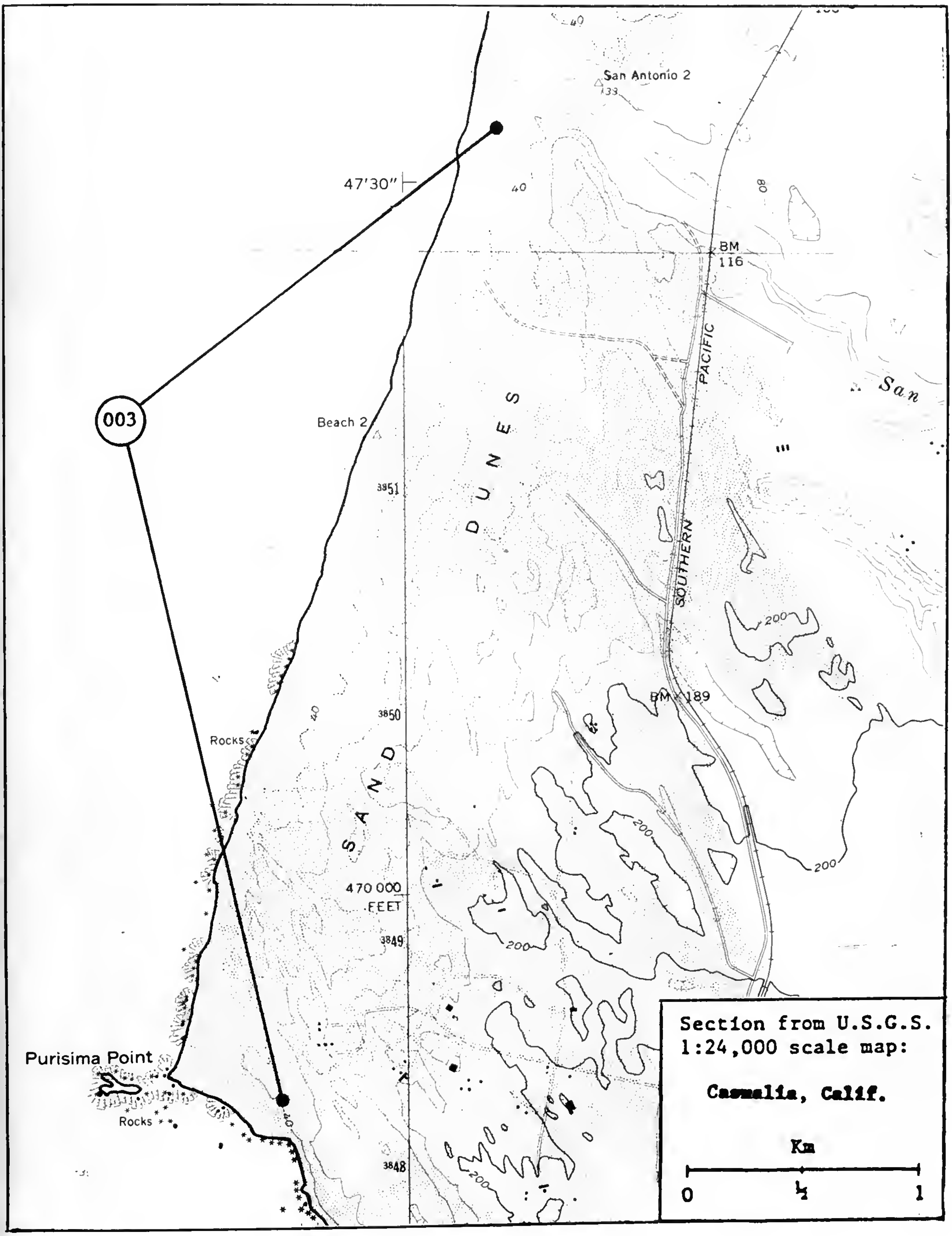
002 Santa Ynez River was previously assigned a catalog number because of Snowy Plover nesting. We have not included information on this species in this report. See Page & Stenzel (1979).


GUADAL
Santa Maria 2
195
SAN LUIS OBISPO CO
SANTA BARBARA CO
Santa Maria River
JEEP
001
34°57'30"
120°40'
SAND DUNES
GUADALUPE
Sando
409
Mussel Point
Mussel Rock
JEEP
Section from U.S.G.S.
1:24,000 scale map:
Point Sal, Calif.
Km
0
½
1

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*


San Antonio 2
47'30"
40
80
BM
116
PACIFIC
San
003
Beach 2
DUNES
3851
SOUTHERN
200
BM 189
3850
Rocks
SAND
470 000
FEET
3849
Purisima Point
Rocks
3848
Section from U.S.G.S.
1:24,000 scale map:
Casmalia, Calif.
Km
0
½
1

(004) Prince Island 34°03'29"N, 120°20'00"W For map see page 281.

Leach's Storm-Petrel	4+	(Δ1 ,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	20,000	(,1975-77)	29
Tufted Puffin	0	(,1975-77)	29
Total	23,420		
Ashy Storm-Petrel	X	(Blietz,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;	29
		Stevens,1930)	29
Brown Pelican	400	(Summer,5/18/39)	29
Brandt's Cormorant	X	(Willet,1910; Pemberton,1922+1928;	29
		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	(Δ1 ,1975)	29
Brandt's Cormorant	1,180	(Δ1 ,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	(Δ1 ,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	(Δ1 ,1976)	29
Common Murre	X	(Bradbury,1885; Burt,1905: Hedrick &	29
		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

004 Prince Islands (Cont'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 29
Tufted Puffin	none	(Craig & Sheppard,1965; POBSP personel,1968)	29

X = 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.

Prince Island

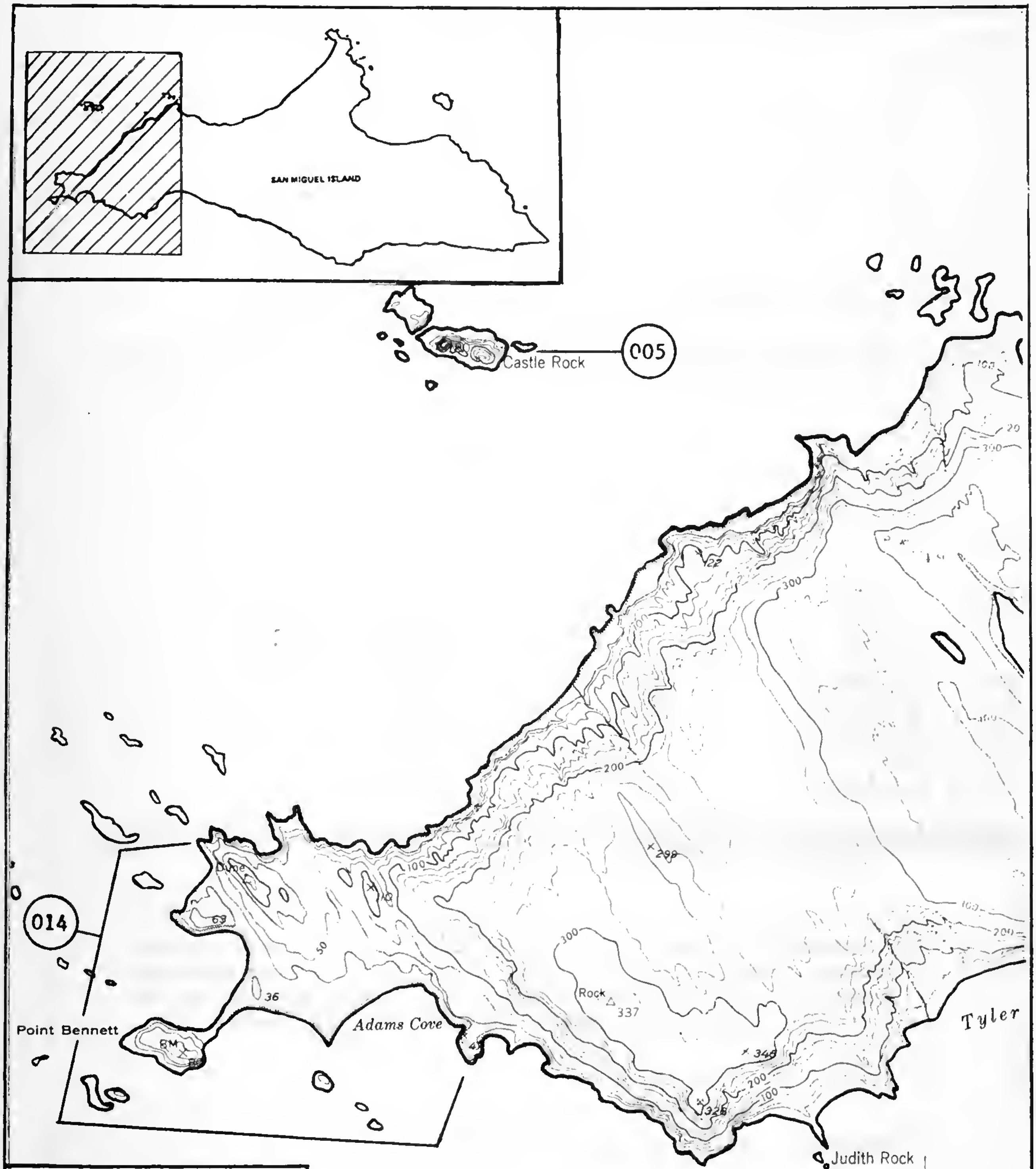
Photo by George Hunt

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
Total	4,488		
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	(△1 ,1975)	29
Brandt's Cormorant	726	(△1 ,6/8/76)	29
Pelagic Cormorant	50	(Huber,1968)	29
Pelagic Cormorant	68	(△1 ,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

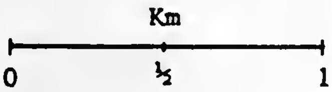
X = present, P = probably present

△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.



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

San Miguel Island West



(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.

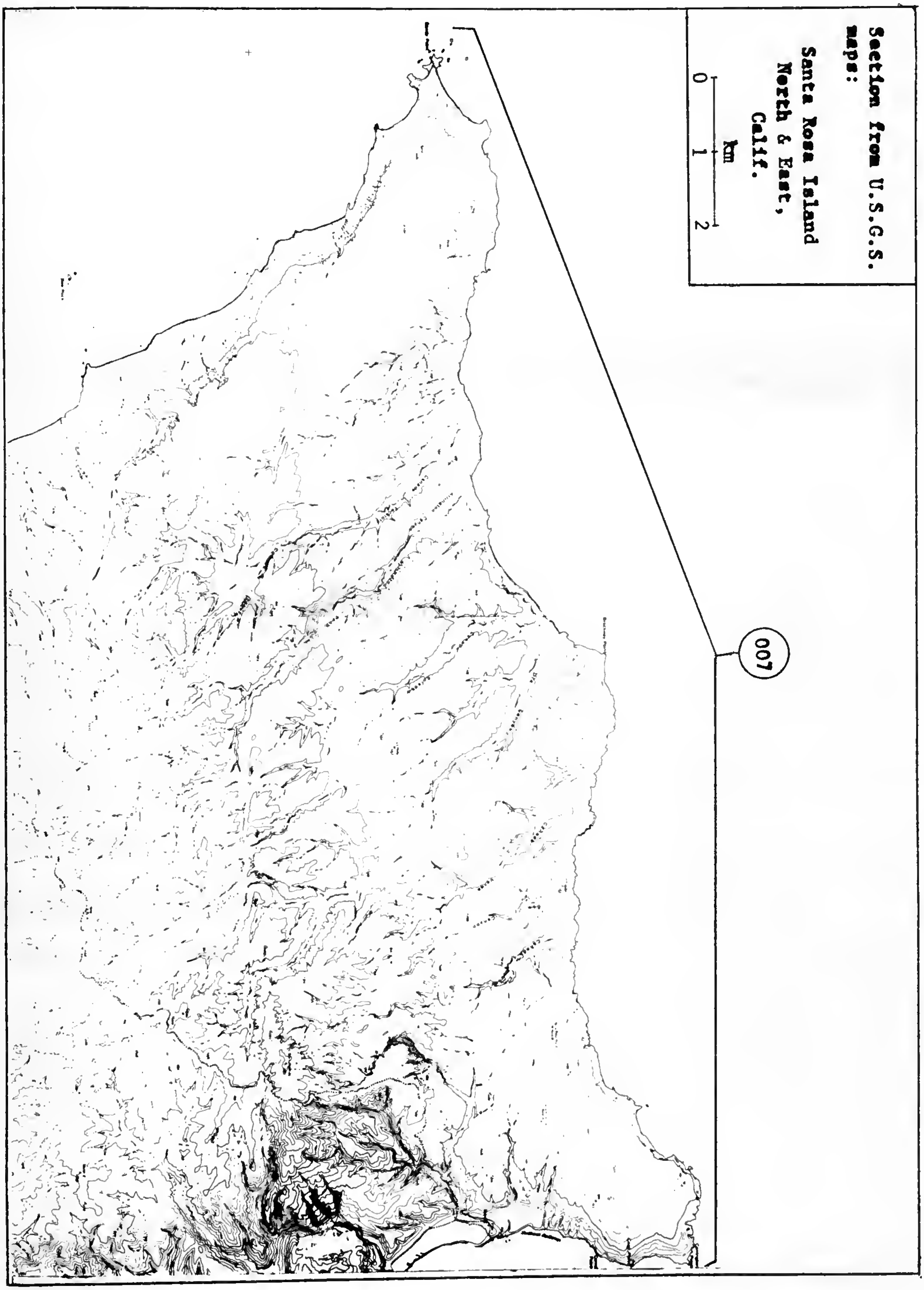
(007) Santa Rosa Is., Sandy Pt. to Carrington Pt.

Brandt's Cormorant	1,400	([1], 1977)	29
Pelagic Cormorant	72	(, 1977)	29
Black Oystercatcher	40 [2]	(, 1976-77)	29
Western Gull	30 [2]	(, 1976-77)	29
Pigeon Guillemot	250	(, 1976-77)	29
Total	1,792		
Pigeon Guillemot	X	(Willet, 1910)	29

X = 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] Population estimate is for all of Santa Rosa Island.


Section from U.S.G.S. maps:
Santa Rosa Island
North & East,
Calif.
0 1 2
km
007

008 Lion Rock at Point Sal 34°53'55"N, 120°39'50"W

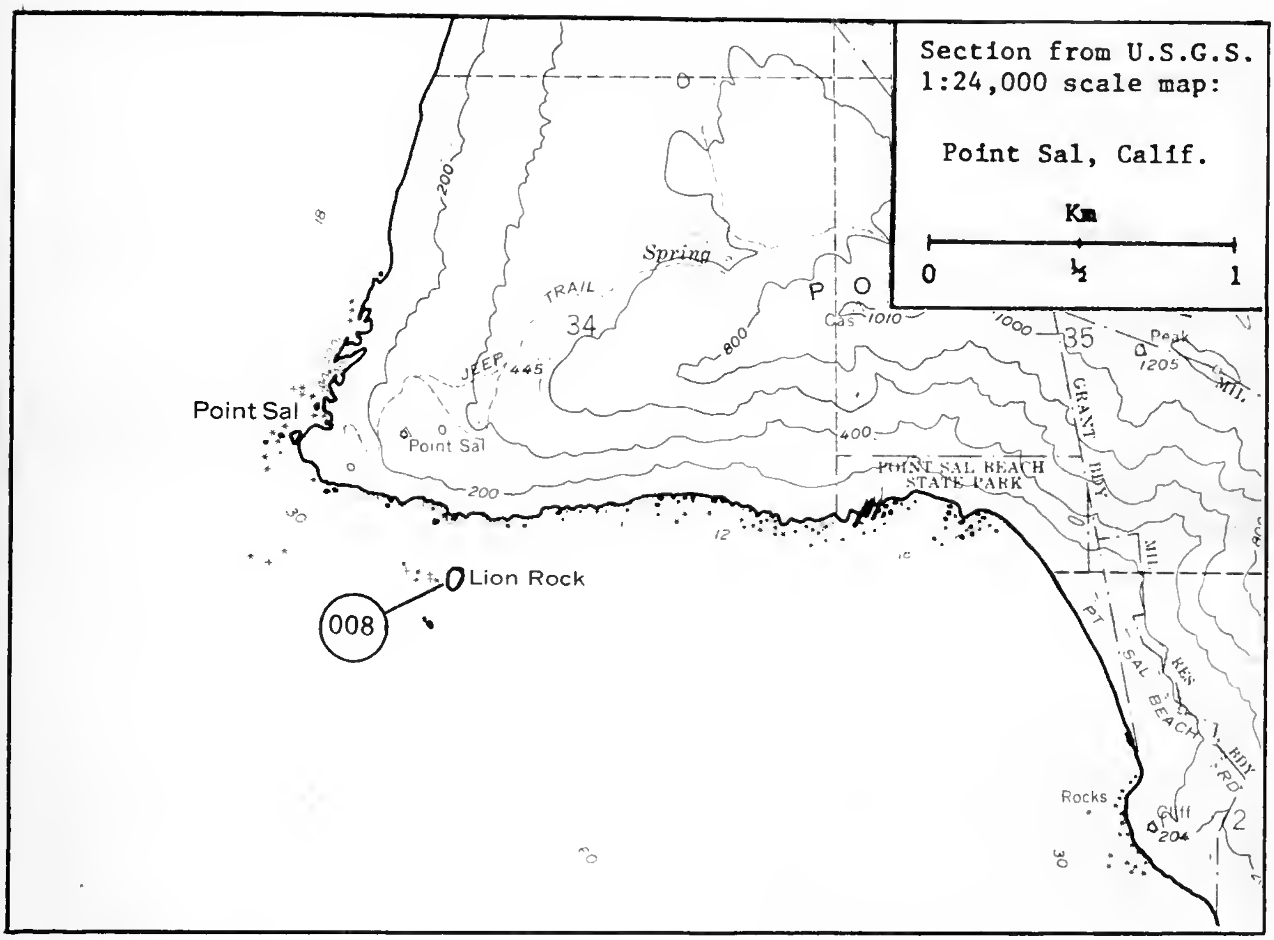
No nesting birds		(Nelson & Sowls,7/12/79,B,I)	42
No nesting birds		(Nelson & Sowls,6/23/80,A,II)	42
No nesting birds		(Reynolds,1970,A)	36

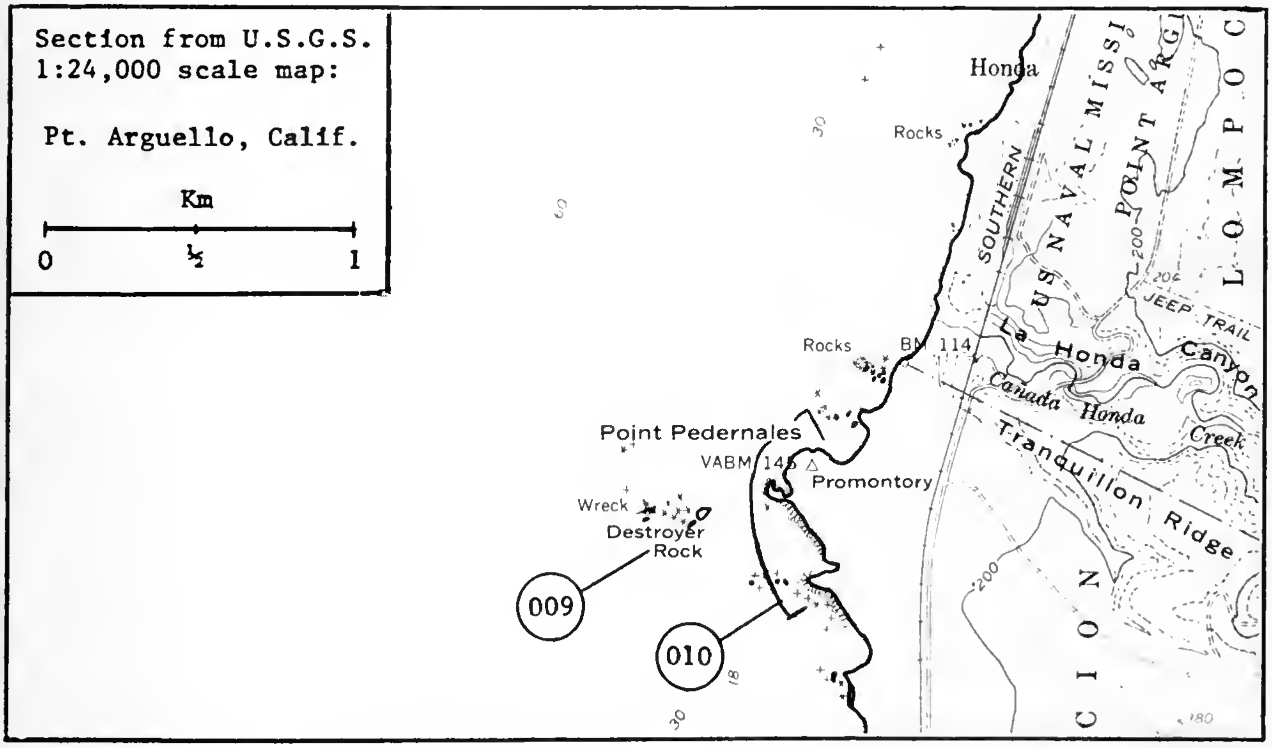
009 Destroyer Rock 34°36'10"N, 120°38'40"W

Pigeon Guillemot	100	(Nelson & Sowls,7/10/79,B,III)	42

010 Mainland and rocks east of Destroyer Rock 34°36'N, 120°38'26"W

Pigeon Guillemot	80	(Nelson & Sowls,7/10/79,B,III)	42


Section from U.S.G.S.
1:24,000 scale map:
Point Sal, Calif.
Km
0
½
1
Point Sal
Lion Rock
008
Spring
TRAIL
JEEP
34
35
Point Sal
POINT SAL BEACH
STATE PARK
Rocks
Peak
1205
Cliff
204


Section from U.S.G.S.
1:24,000 scale map:
Pt. Arguello, Calif.
Km
0
½
1
Honda
Rocks
Rocks
BM 114
Point Pedernales
VABM 145
Promontory
Wreck
Destroyer
Rock
009
010
SOUTHERN
U S NAVAL MISSI
POINT ARG
LOMPOC
La Honda Canyon
Cañada Honda Creek
Tranquillon Ridge
JEEP TRAIL

(011) Point Arguello 34°38'N, 120°38'49"W

Pelagic Cormorant	30	(Lester,6/11/80,M,II)
Western Gull	4	(Nelson & Sowls,7/10/79,B,II)
Black Oystercatcher	2	(DeGange & Nelson,7/18/80,M,III)
Pigeon Guillemot	700	(Lester,6/11/80,M; Nelson & Sowls,7/10/79,B,III)
Rhinoceros Auklets	30[1]	(Lester,6/11/80,M; DeGange & Nelson,7/18/80,M,III)
Total	766	
Pelagic Cormorant	20	(Nelson & Sowls,7/10/79,B,II)
Western Gull	4	(DeGange & Nelson,7/18/80,M,III)

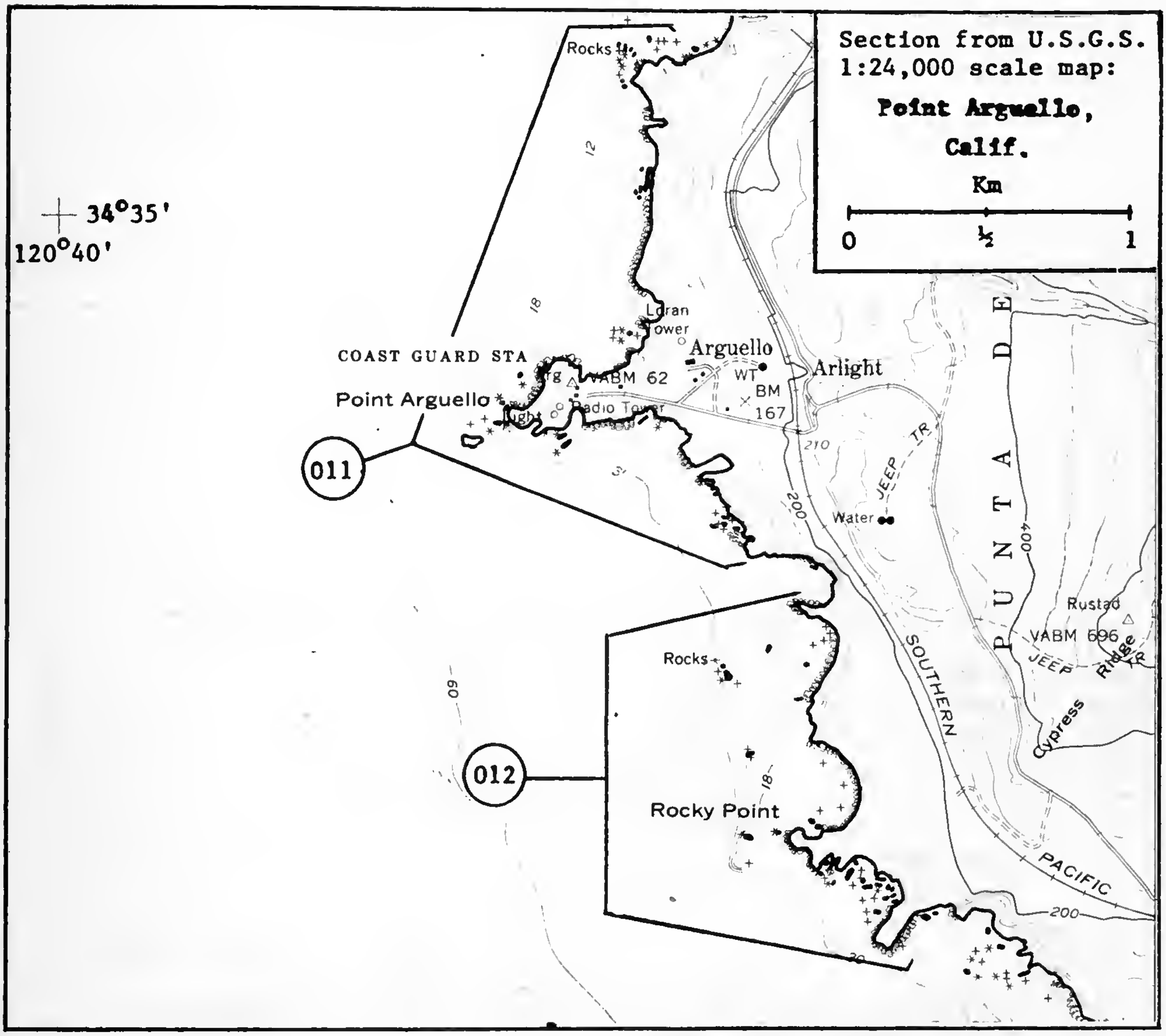
[1] See text, page 50.

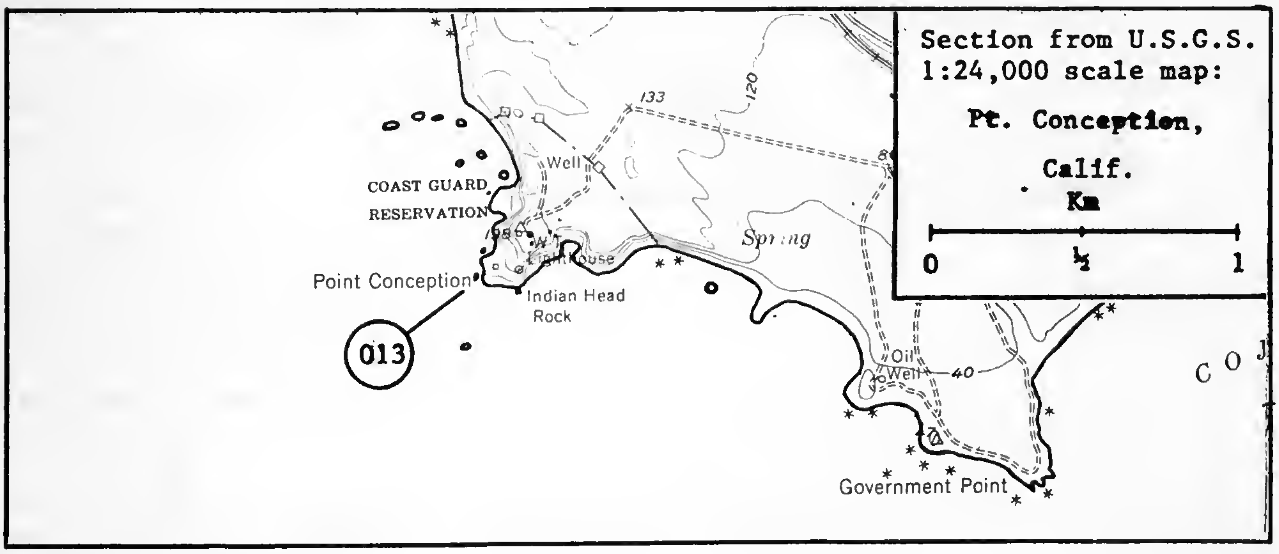
(012) Rocky Point 34°33'45"N, 120 38'11"W

Black Oystercatcher	2	(Nelson & Sowls,7/10/79,B,III)	42
Pigeon Guillemot	100	(Nelson & Sowls,7/10/79,B,III)	42
Total	102		

(013) Point Conception 34°26'54"N, 120 28'13"W

Pelagic Cormorant	6	(Nelson & Sowls,7/10/79,B,III)	42
Pigeon Guillemot	30	(Nelson & Sowls,7/10/79,B,III)	42
Total	36		


Section from U.S.G.S. 1:24,000 scale map:
Point Arguello, Calif.
Km
0 ½ 1
34°35'
120°40'
Rocks
Loran Tower
Arguello
COAST GUARD STA
VABM 62
WT
BM 167
Arlight
Point Arguello
Radio Tower
011
JEEP TR
Water
PUNTA DE
SOUTHERN
Rustad
VABM 696
Rocks
012
Rocky Point
Cypress
PACIFIC
200


Section from U.S.G.S. 1:24,000 scale map:
Pt. Conception, Calif.
Km
0 ½ 1
133
120
Well
COAST GUARD RESERVATION
Spring
Lighthouse
Point Conception
Indian Head Rock
013
Oil Well
40
Government Point
CO

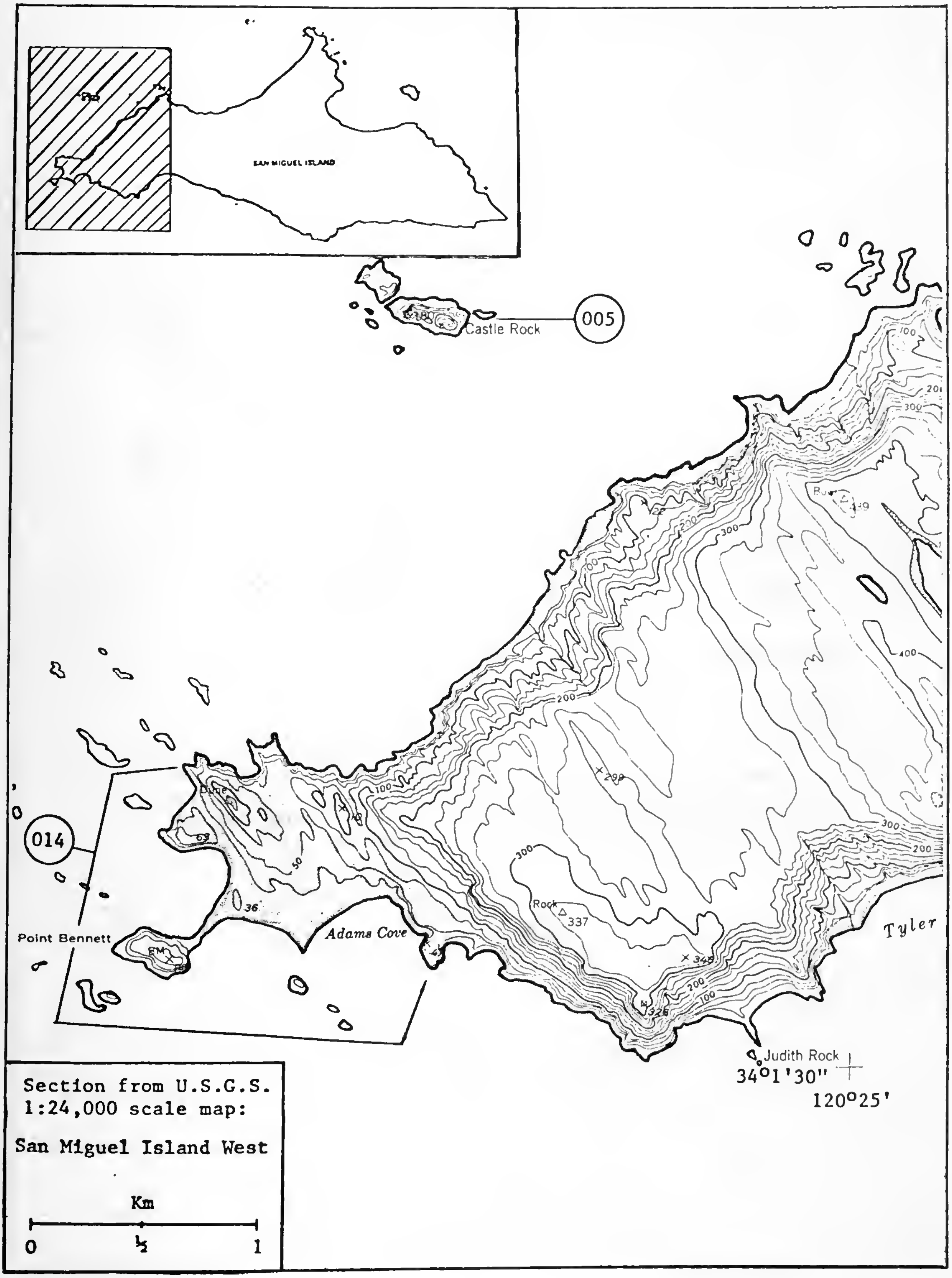
014 Point Bennett, San Miguel Island 34°2'N, 120°3'30"W

Brandt's Cormorant	54	([1] ,7/20/77)	29
Pelagic Cormorant	24 [2]	(" ,1977)	29
Black Oystercatcher	P [2]	(" ,1977)	29
Western Gull	40	(Collins,5/19/77)	29
Cassin's Auklet	20	(Collins & Newman,1977)	29
Total	138		

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 for entire San Miguel Island is 48 birds.


SAN MIGUEL ISLAND
005
Castle Rock
014
Point Bennett
Adams Cove
Tyler
Judith Rock
34°1'30"
120°25'
Section from U.S.G.S.
1:24,000 scale map:
San Miguel Island West
Km
0
½
1

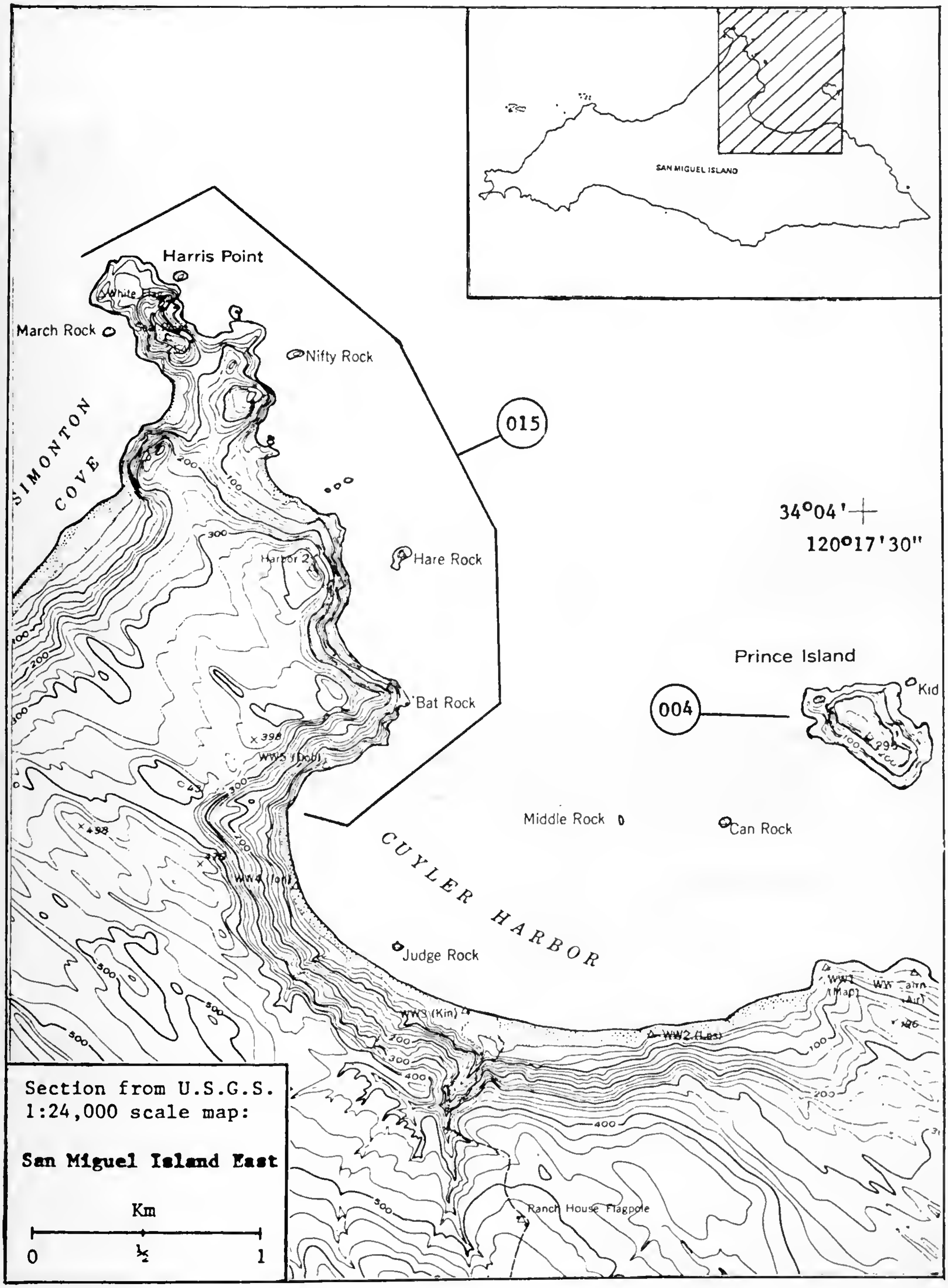
015 Harris Pt. to Cuyler Harbor 34°04'N, 120°22'W

Ashy Storm-Petrel	X	(/1 ,6/25/76)	29
Brandt's Cormorant	10	(,1976)	29
Pelagic Cormorant	124	(,1977)	29
Black Oystercatcher	X /2	(,1977)	29
Western Gull	28	(,1976)	29
Pigeon Guillemot	140	(,1975-76)	29
Xantus' Murrelet	P	(,1975-76)	29
Total	302		

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.


SAN MIGUEL ISLAND
Harris Point
March Rock
Nifty Rock
SIMONTON COVE
015
34°04'
120°17'30"
Harbor 2
Hare Rock
Prince Island
Kid
004
Bat Rock
Middle Rock
Can Rock
CUYLER HARBOR
Judge Rock
WW3 (Kin)
WW2 (Les)
Ranch House Flagpole
Section from U.S.G.S. 1:24,000 scale map:
San Miguel Island East
Km
0
½
1

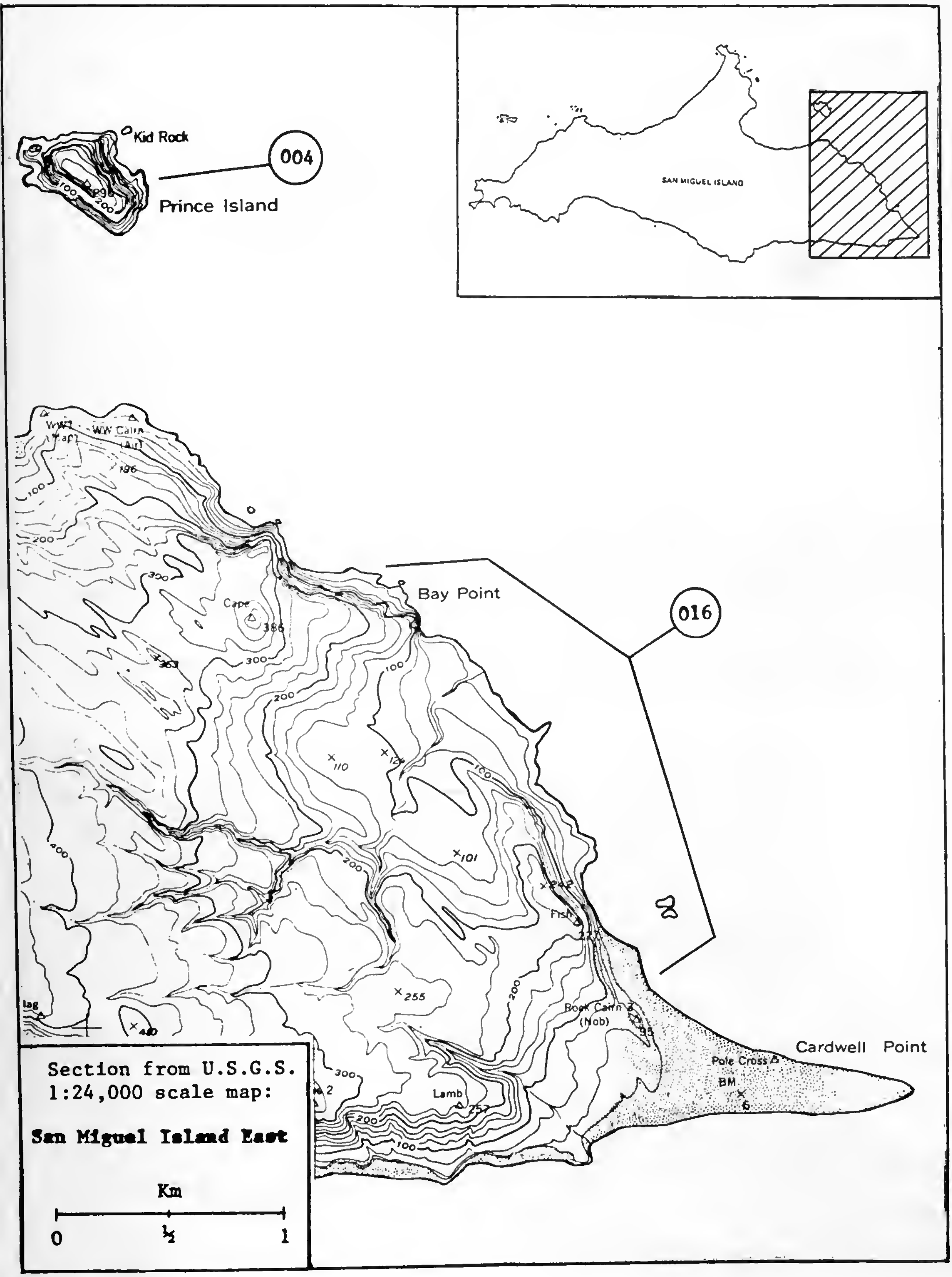
016 Bay Point Area 34°02'N, 120°19'W

Pelagic Cormorant	52	(/1	,1977)	29
Black Oystercatcher	P /2	(|	,1975-77)	29
Pigeon Guillemot	120	(|	,1975-77)	29
	172			

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 Estimate for the entire San Miguel Island is 48 birds.


Kid Rock
004
Prince Island
SAN MIGUEL ISLAND
Bay Point
016
Cape
386
Fish
Rock Cairn (Nob)
Cardwell Point
Pole Cross
BM
Lamb
Section from U.S.G.S. 1:24,000 scale map:
San Miguel Island East
Km
0
½
1

502

Los Angeles

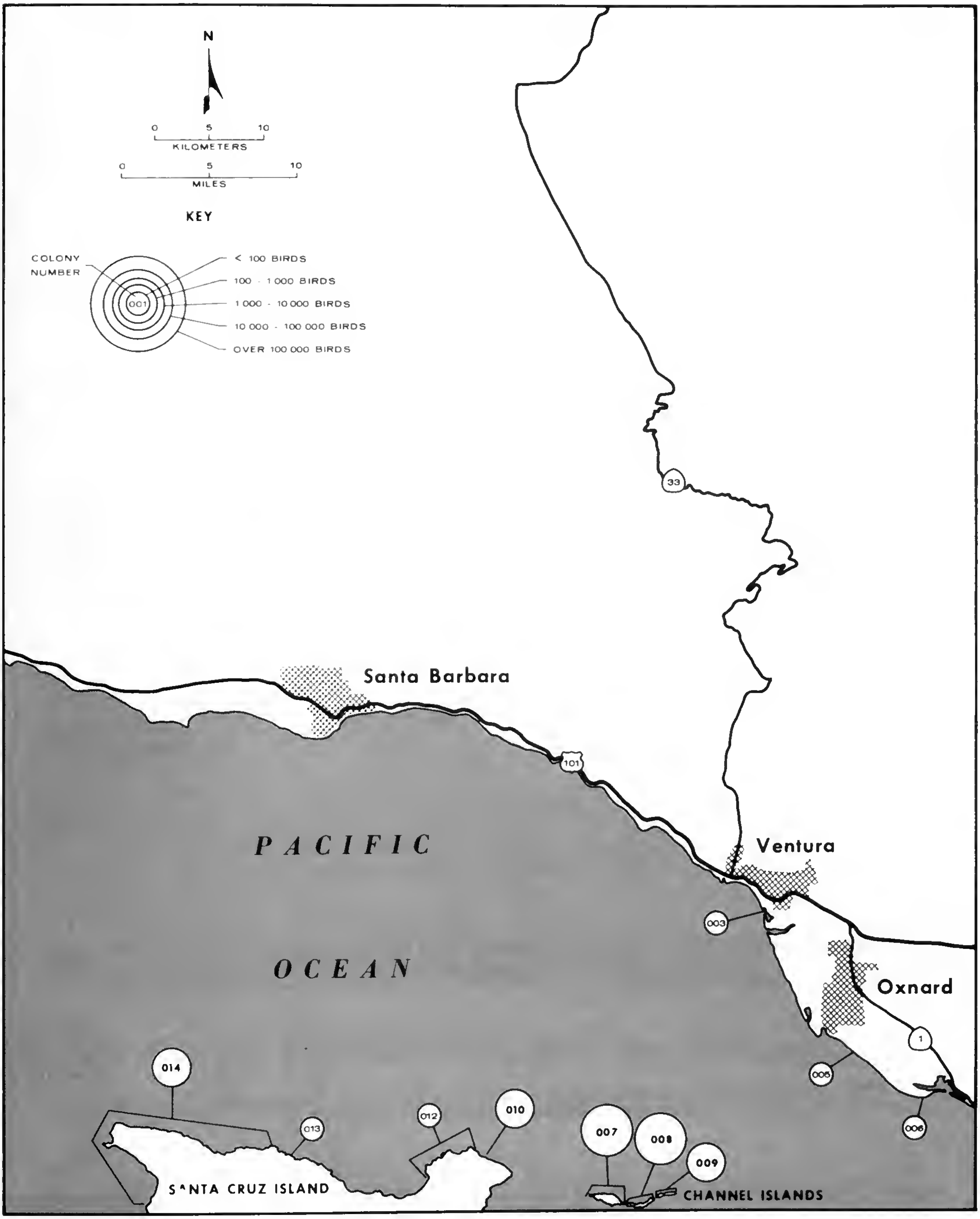
The map on the facing page is an index to the locations of colonies within map 502, Los Angeles. Note that all colonies on the map are not numbered consecutively from north to south, since many previously unreported colonies have been added since initial colony numbers were assigned by Varoujean (1979). On the pages following this map, all colonies are listed sequentially and a detailed map of each is provided.

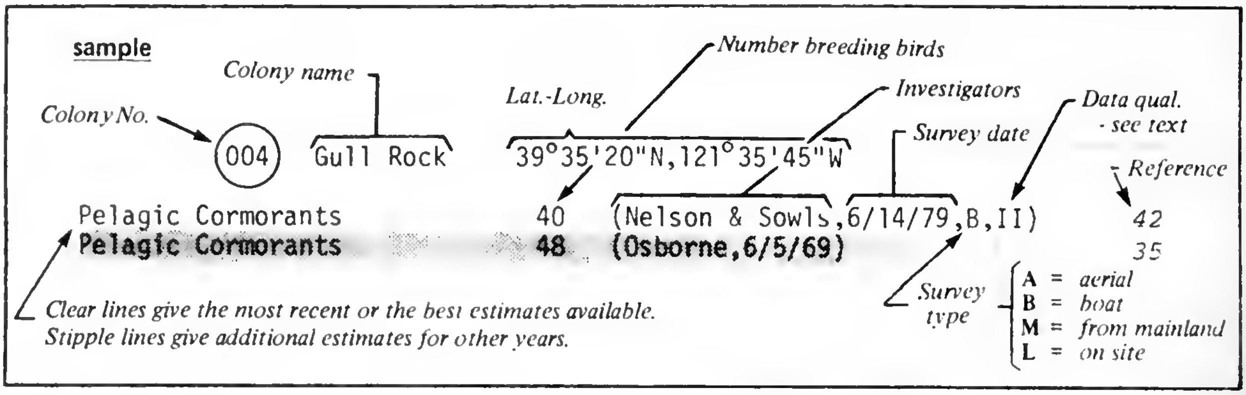
Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

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





001 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 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	34-30	(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 an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

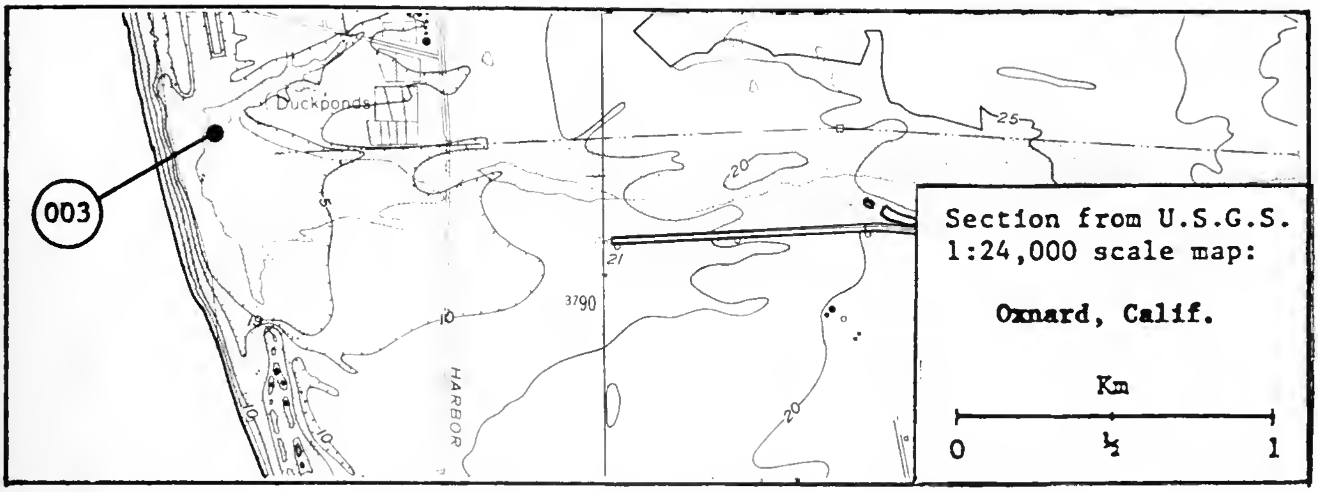
Least Tern	0	(Goldwasser,4-8/80,L)	12
Least Tern	0	(Atwood,4-8/80,L)	12
Least Tern	12-16	(Atwood,4-8/79,L)	12

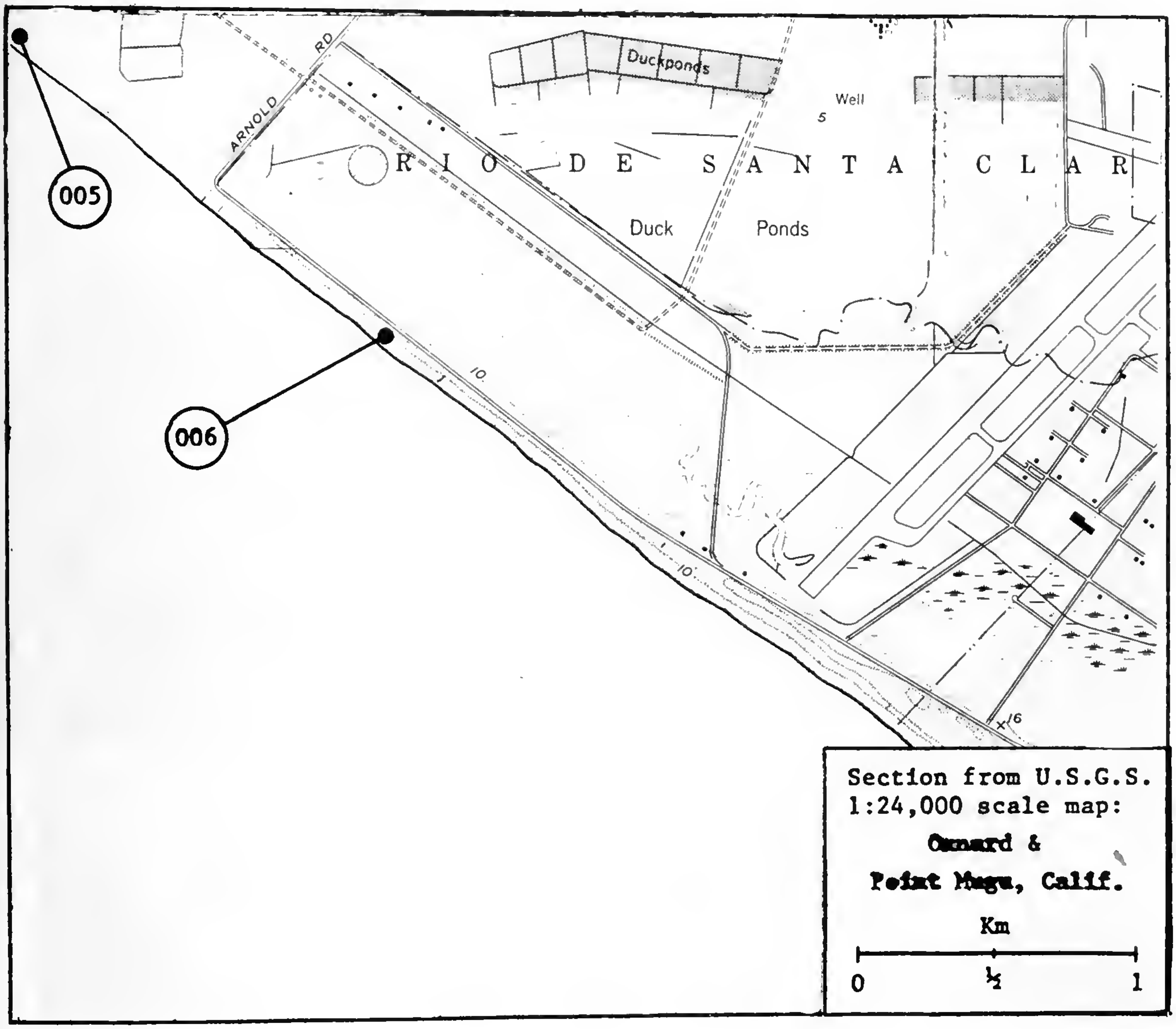
006 Mugu Lagoon 34°06'08"N, 119°06'04"W

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


Duckponds
003
HARBOR
Section from U.S.G.S.
1:24,000 scale map:
Oxnard, Calif.
Km
0
½
1


005
006
ARNOLD RD
Duckponds
Well
RIO DE SANTA CLAR
Duck Ponds
Section from U.S.G.S.
1:24,000 scale map:
Oxnard &
Point Mugu, Calif.
Km
0
½
1

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.

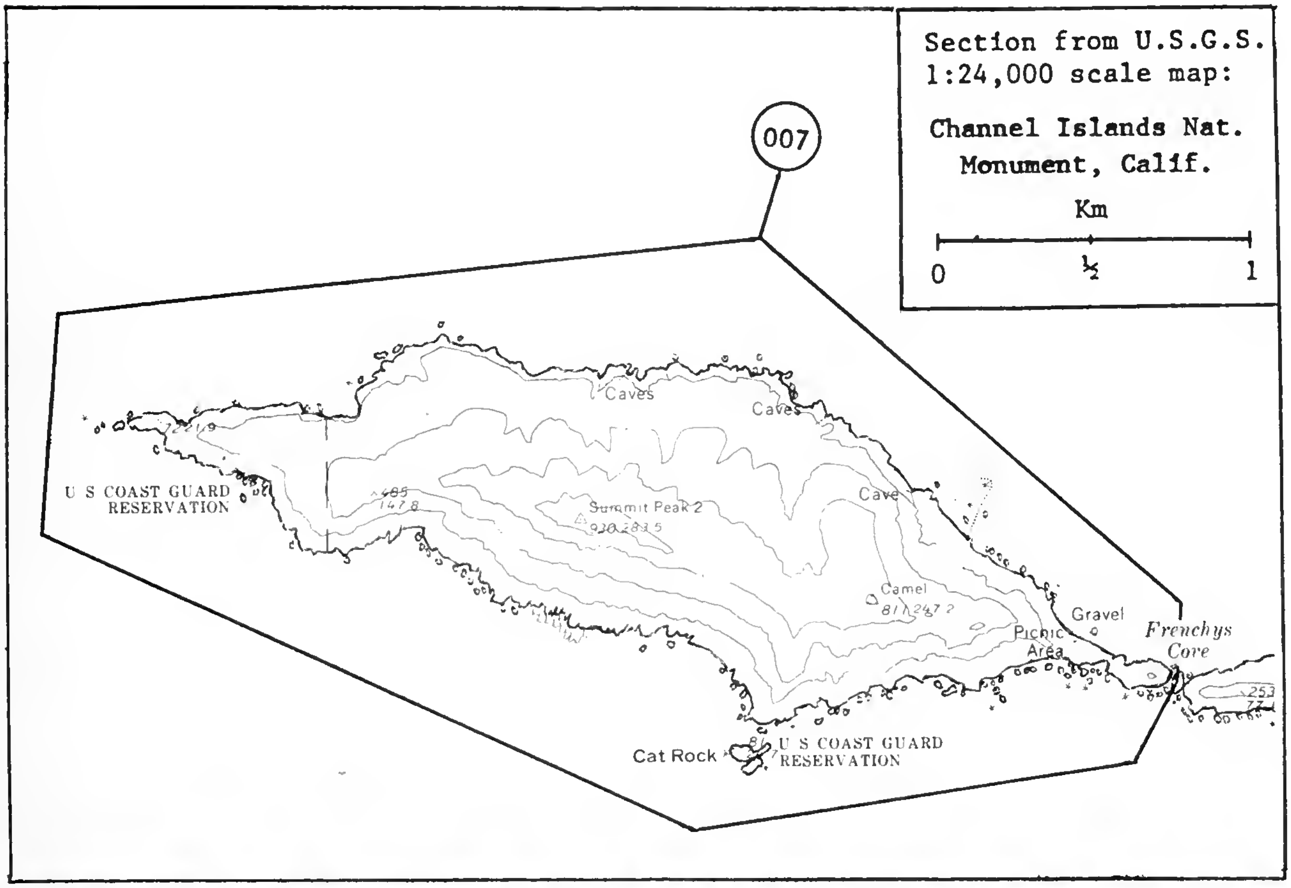
Brown Pelican	2,516	(Anderson & Gress,1979)	4,20
Brandt's Cormorant	0	([1] ,1976)	29
Double-crested Cormorant	132	(Anderson & Gress,1979)	4,20
Pelagic Cormorant	0	([1] ,1976-77)	29
Black Oystercatcher	X [2]	(,1976-77)	29
Western Gull	X	(,1976-77)	29
Pigeon Guillemot	10 [3]	(,6/23/77)	29
Total	2,758		
Brown Pelican	X	(Ashworth,1929; Stevens,1935; Bond,1940)	
Brown Pelican	400	(Ashworth & Thompson,5/9/30)	
Brown Pelican	4,000	(Bond,1935)	
Brown Pelican	4,000	(Stevens & Harrison,3/1/36)	
Brown Pelican	4,000	(Bond & Sumner,4/16/39)	
Brown Pelican	X	(Jensen,1962; Ranks,1963-64; Schreiber & Delong, 1967-68)	
Brown Pelican	2,544	(Risebough,1969)	
Brown Pelican	1,104	(Gress,1970)	
Brown Pelican	1,080	(Anderson & Anderson,1971)	
Brown Pelican	522	(Anderson & Anderson,1972)	
Brown Pelican	494	(Anderson & Anderson,1973)	
Brown Pelican	832	(Anderson & Anderson,1974)	
Brown Pelican	424	(Anderson & Anderson,1975)	
Brown Pelican	834	(Anderson & Anderson,1976)	
Brown Pelican	152	(Anderson & Anderson,1977)	
Brown Pelican	420	(Anderson,1978)	
Brandt's Cormorant	X	(Ashworth & Thompson,1928 & 31)	
Brandt's Cormorant	100	(Bond,5/34)	
Brandt's Cormorant	X	(Crossin & Brownell,5/68)	
Brandt's Cormorant	2	([1] ,1975)	
Double-crested Cormorant	30	([1] ,1977)	
Double-crested Cormorant	68	(Anderson & Gress,1978)	
Pelagic Cormorant	2	([1] ,1975)	
Pigeon Guillemot	X	(Wright & Snyder,7/6/12/ Badger, Peyton & Hanna,5/27/17)	

[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 for entire Anacapa Island.

[3] Estimate is for entire Anacapa, but birds are most likely from West Anacapa.

X = present



Brown Pelicans, Anacapa Island

Photo by Frank Gress

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 ∠4	(,1976-77)	29
Pigeon Guillemot	P	(, .)	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	(,1977)	29
Xantus' Murrelet	X	(,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

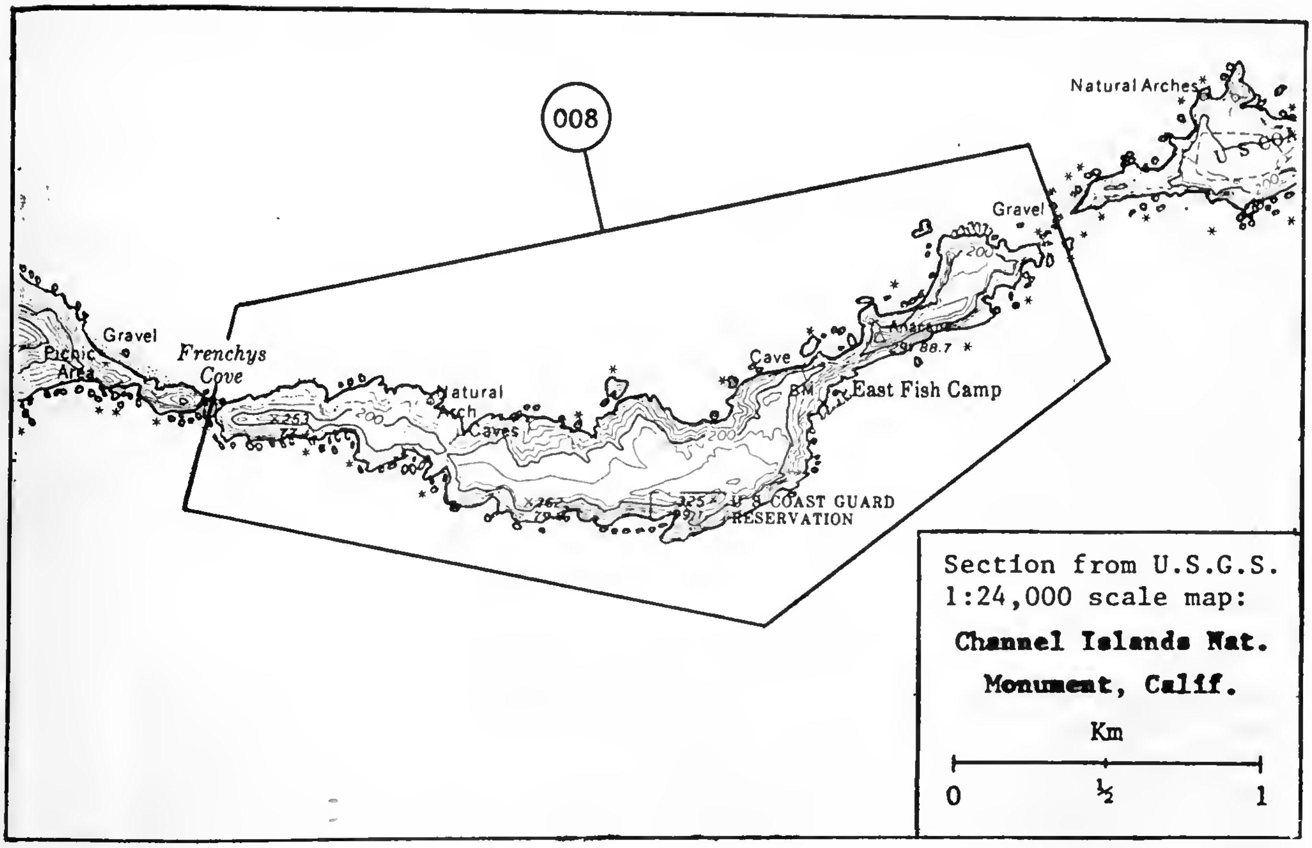
∠1 Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.

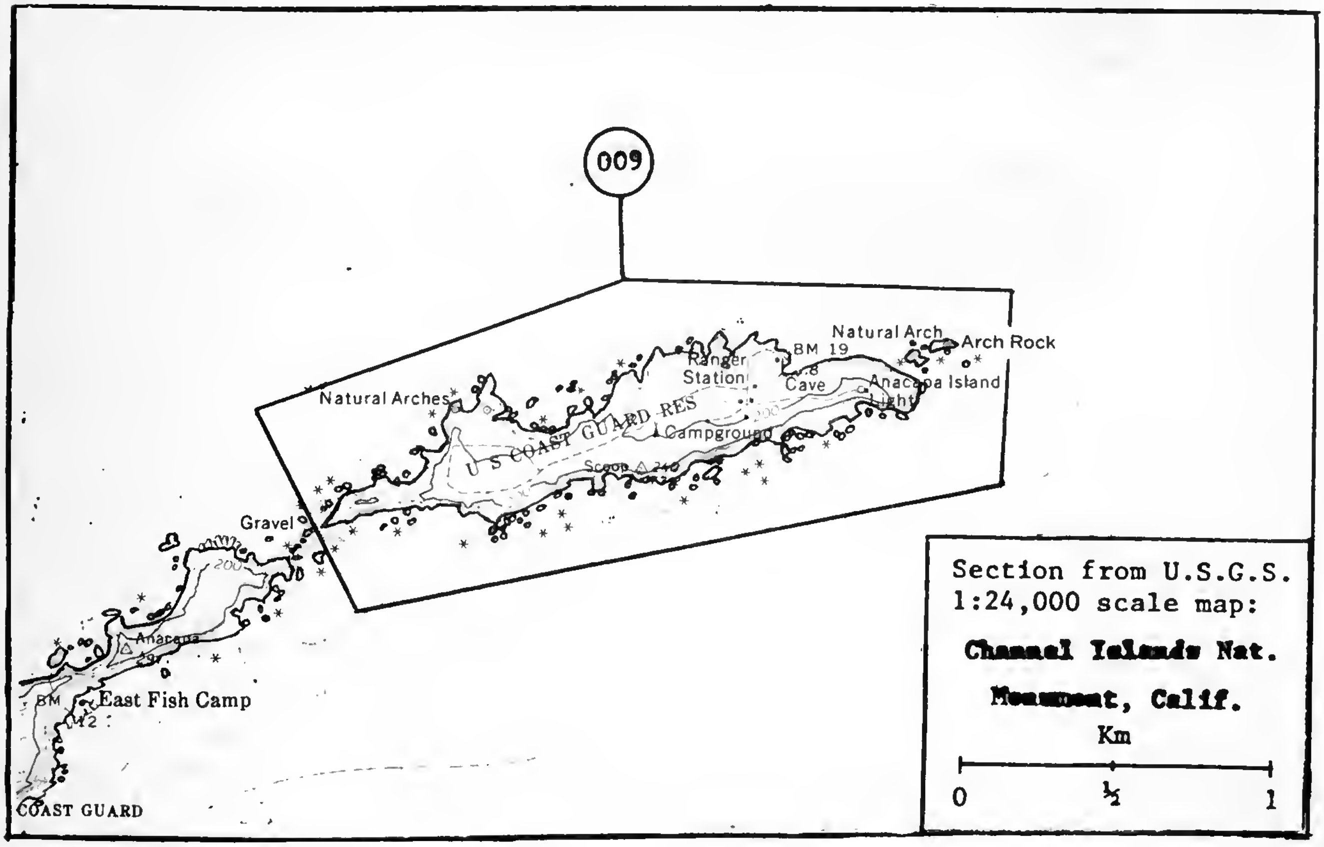
∠2 20+ estimated from entire island.

∠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


008
Natural Arches
Gravel
Frenchys Cove
Picnic Area
Natural Arch
Caves
Cave
East Fish Camp
Anacapa
U S COAST GUARD RESERVATION
Section from U.S.G.S. 1:24,000 scale map:
Channel Islands Nat. Monument, Calif.
Km
0
½
1

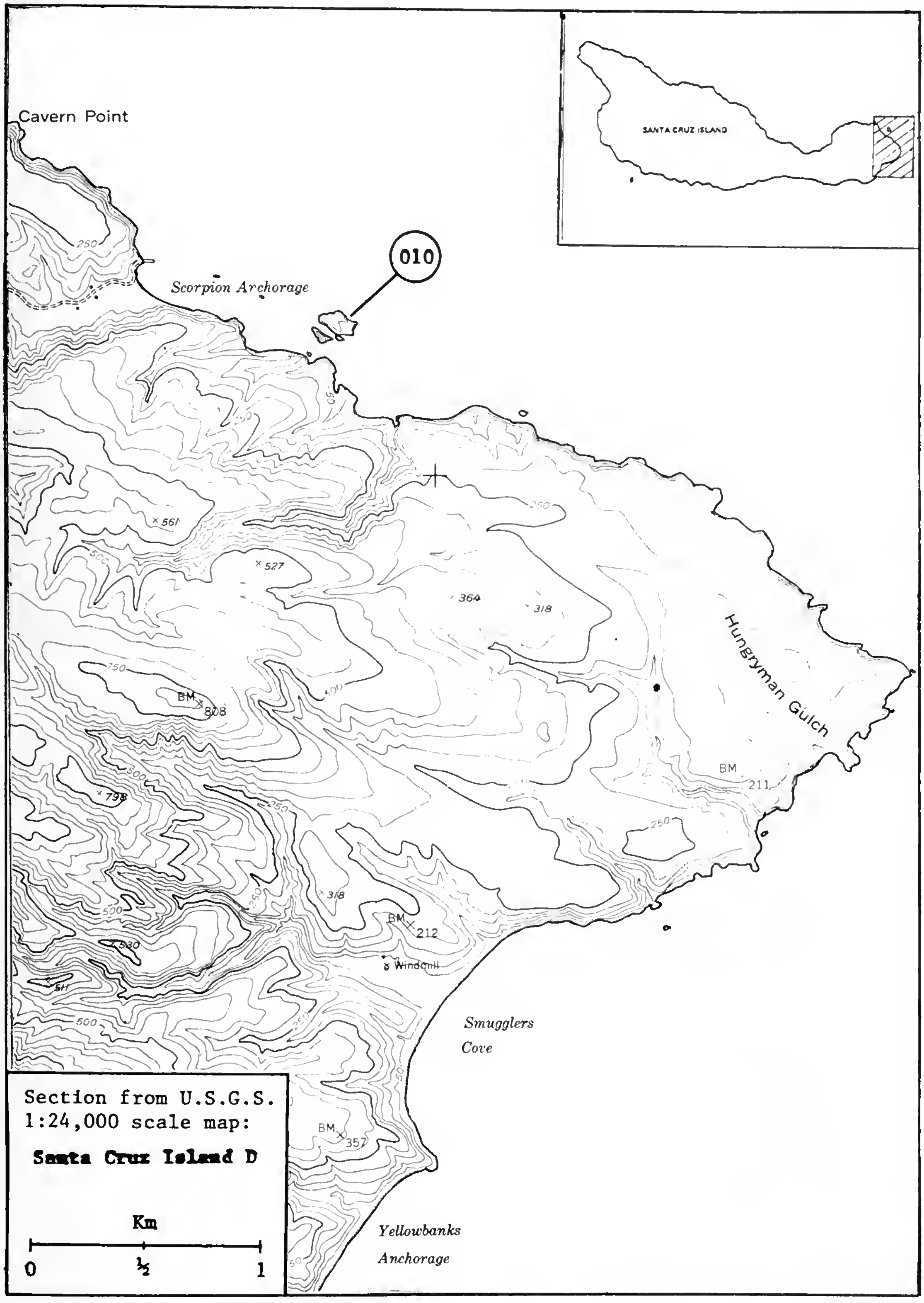

009
Natural Arch
Arch Rock
BM 19
Ranger Station
Cave
Anacapa Island Light
Natural Arches
U S COAST GUARD RES
Campground
Gravel
Anacapa
East Fish Camp
COAST GUARD
Section from U.S.G.S. 1:24,000 scale map:
Channel Islands Nat. Monument, Calif.
Km
0
½
1

010 Scorpion Rock 34°02'50"N, 119°32'47"W

Ashy Storm-Petrel	40	([1] ,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

[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.



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

Santa Cruz Island D

Km

0 ½ 1

011 Santa Cruz Island

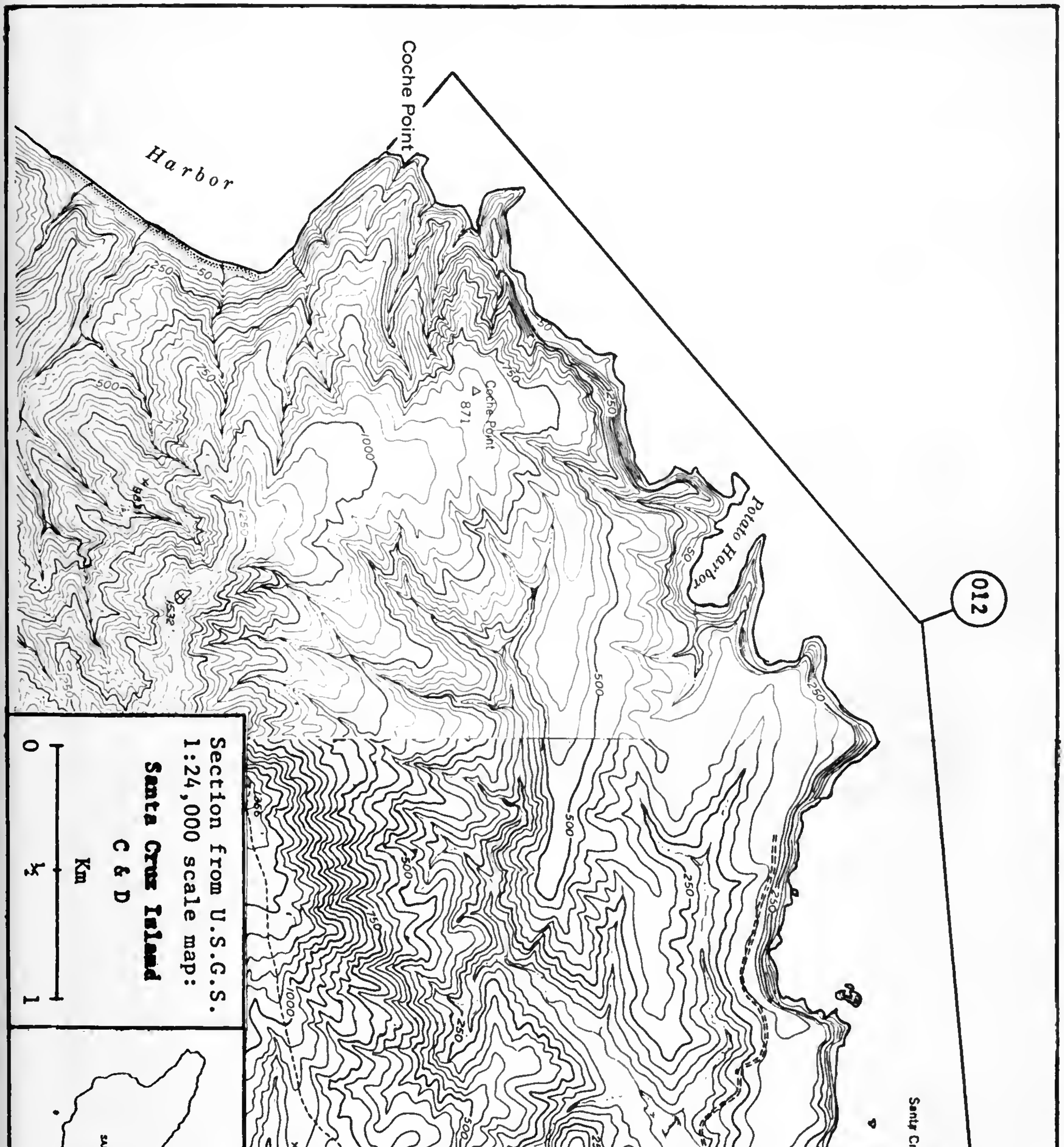
Data has been reorganized so that data for Santa Cruz Island is now under 012, 013 & 014.

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	(/1 ,1977)	29
Pigeon Guillemot	X	(/1 ,1977)	29

X = present

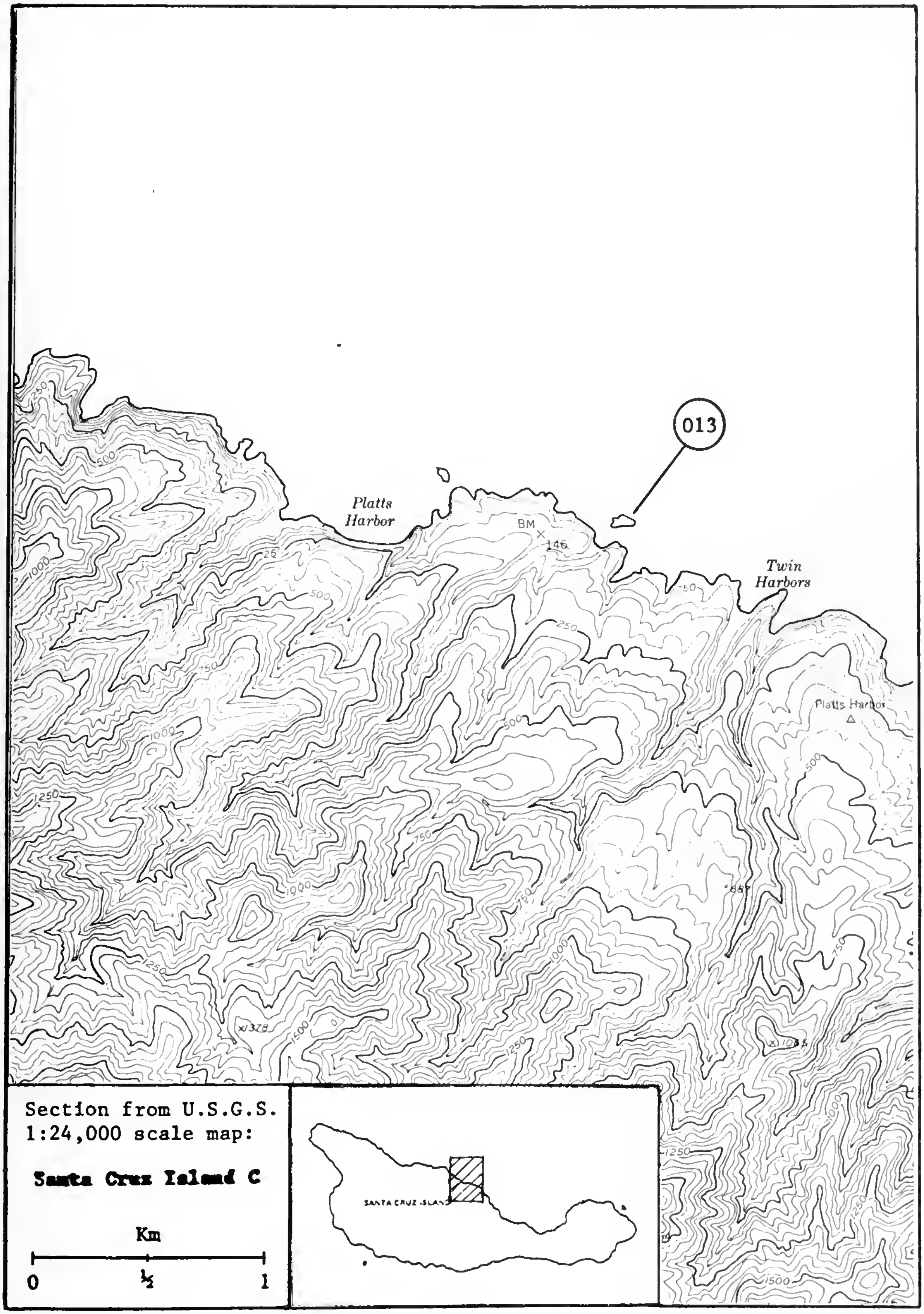
/1 Investigators are some or all of the following: Hunt, Pitman, Naughton, Winnett, Newman, Kelly, Briggs and Speich. Only the most significant historical data has been summarized here from intensive studies conducted in the Channel Islands, see Hunt et al. 1979 for further information.


Coche Point
Harbor
Potato Harbor
Coche Point
871
012
Santa Cruz East
316
Cavern Point
Section from U.S.G.S.
1:24,000 scale map:
Santa Cruz Island
C & D
Km
0
½
1
SANTA CRUZ ISLAND

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	20	(|	,6/22/77)	29
Total	42+			

△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.



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

Santa Cruz Island C

Km

0 ½ 1

014 Santa Cruz Is. - Kinton Pt. 34°0'30"N, 119°53'W to Diablo Pt. 34°3'N, 119°45'W

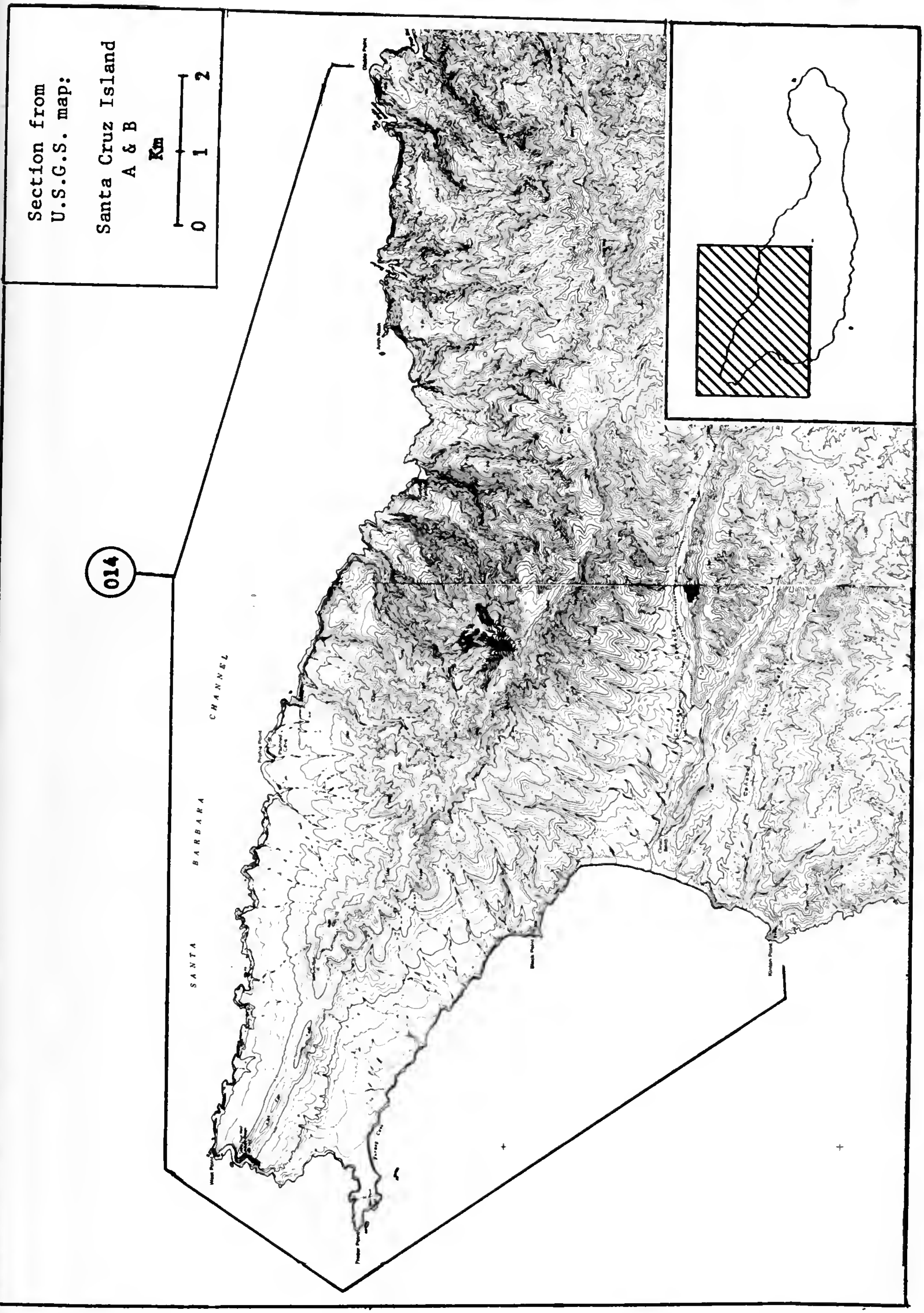
Ashy Storm-Petrel	20	([1] ,7/15/76)	29
Brandt's Cormorant	84	(,1977)	29
Pelagic Cormorant	50	(,1976)	29
Black Oystercatcher	X [2]	(,1977)	29
Western Gull	80	(,1977)	29
Pigeon Guillemot	X [3]	(,1977)	29
Cassin's Auklet	?	(,1977)	29
Total	234		
Ashy Storm-Petrel	X	(Wright & Snyder,1912; Dickey,1913)	29
Pelagic Cormorant	X	(Dawson,1923)	29
Pigeon Guillemot	X	(Wright & Snyder,1912)	29
Tufted Puffin	?	(Wright & Snyder,1912)	29

X = present

[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] 100 estimated for entire Santa Cruz Island, including Gull Island (524 001), Scorpion Rock (502 010) and "Sppit" (502 013).

[3] 400 estimated for entire Santa Cruz Island.


Section from
U.S.G.S. map:
Santa Cruz Island
A & B
0 1 2
Km
014
SANTA BARBARA CHANNEL

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.

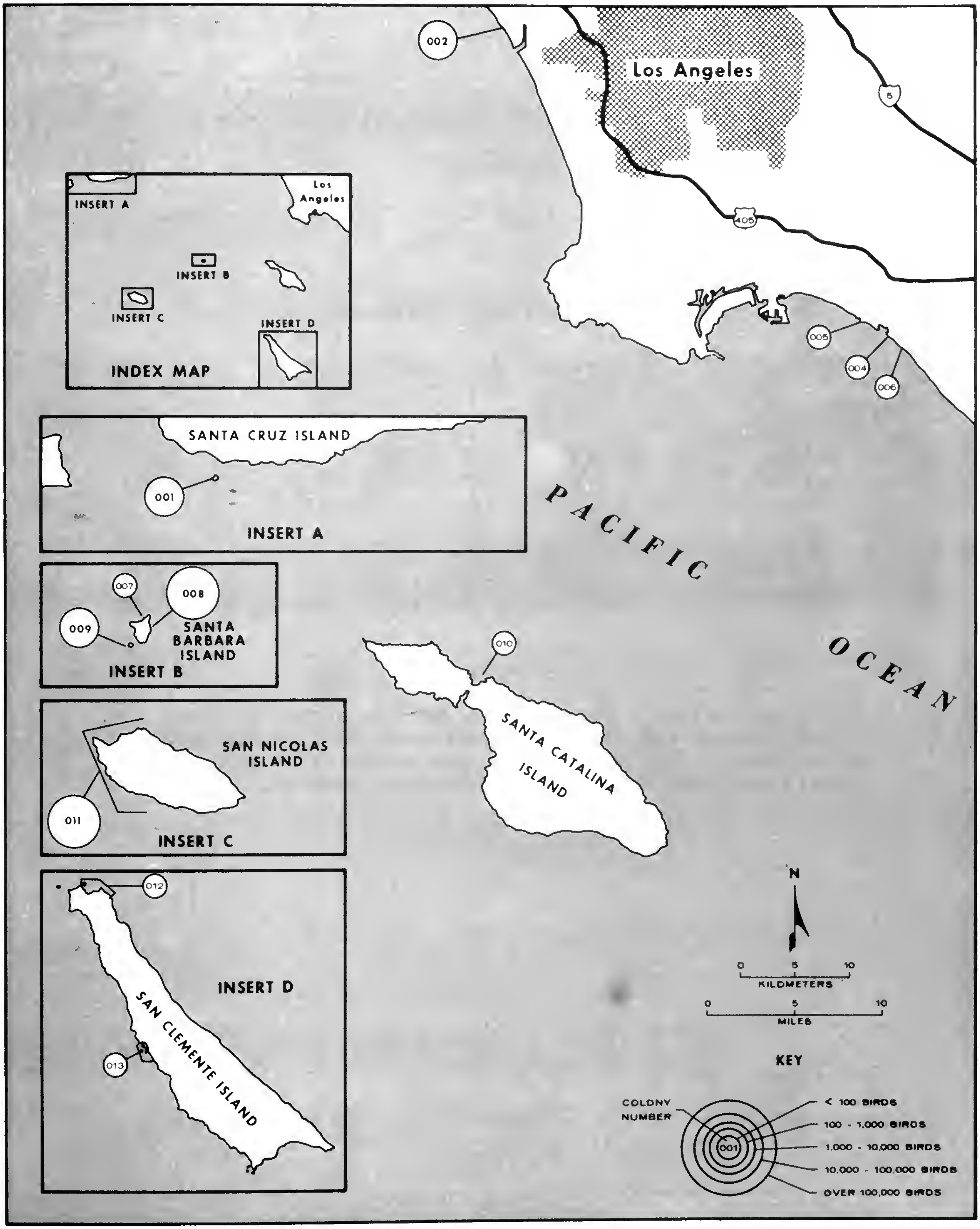
Numbers of breeding seabirds will vary from year to year. Below are the approximate numbers of breeding seabirds within this region.

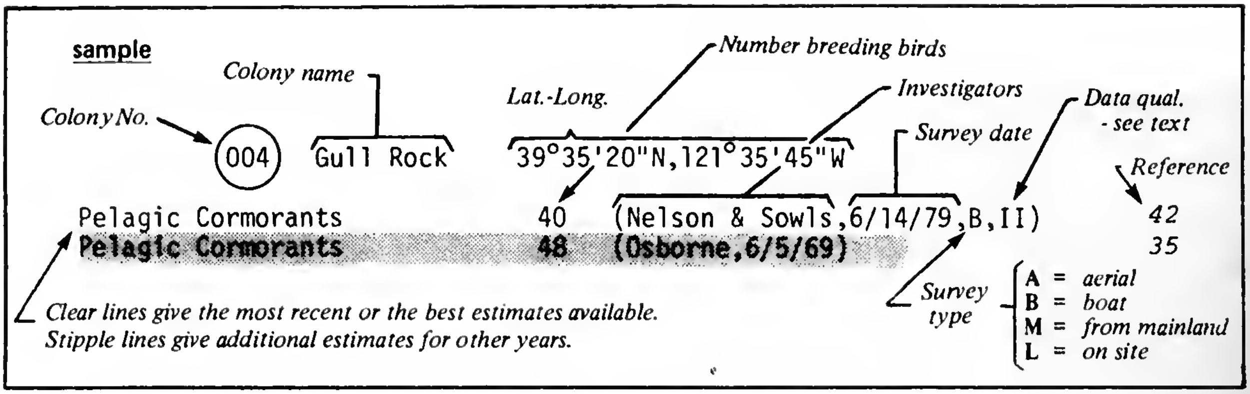
Ashy Storm-Petrel	300
Black Storm-Petrel	150
Brown Pelican	X
Brandt's Cormorant	730
Double-crested Cormorant	150*
Pelagic Cormorant	10
Black Oystercatcher	30
Western Gull	4,700
Pigeon Guillemot	120
Xantus's Murrelet	3,200
Cassin's Auklet	400

X = present

* *coastal population only.*

524 Long Beach

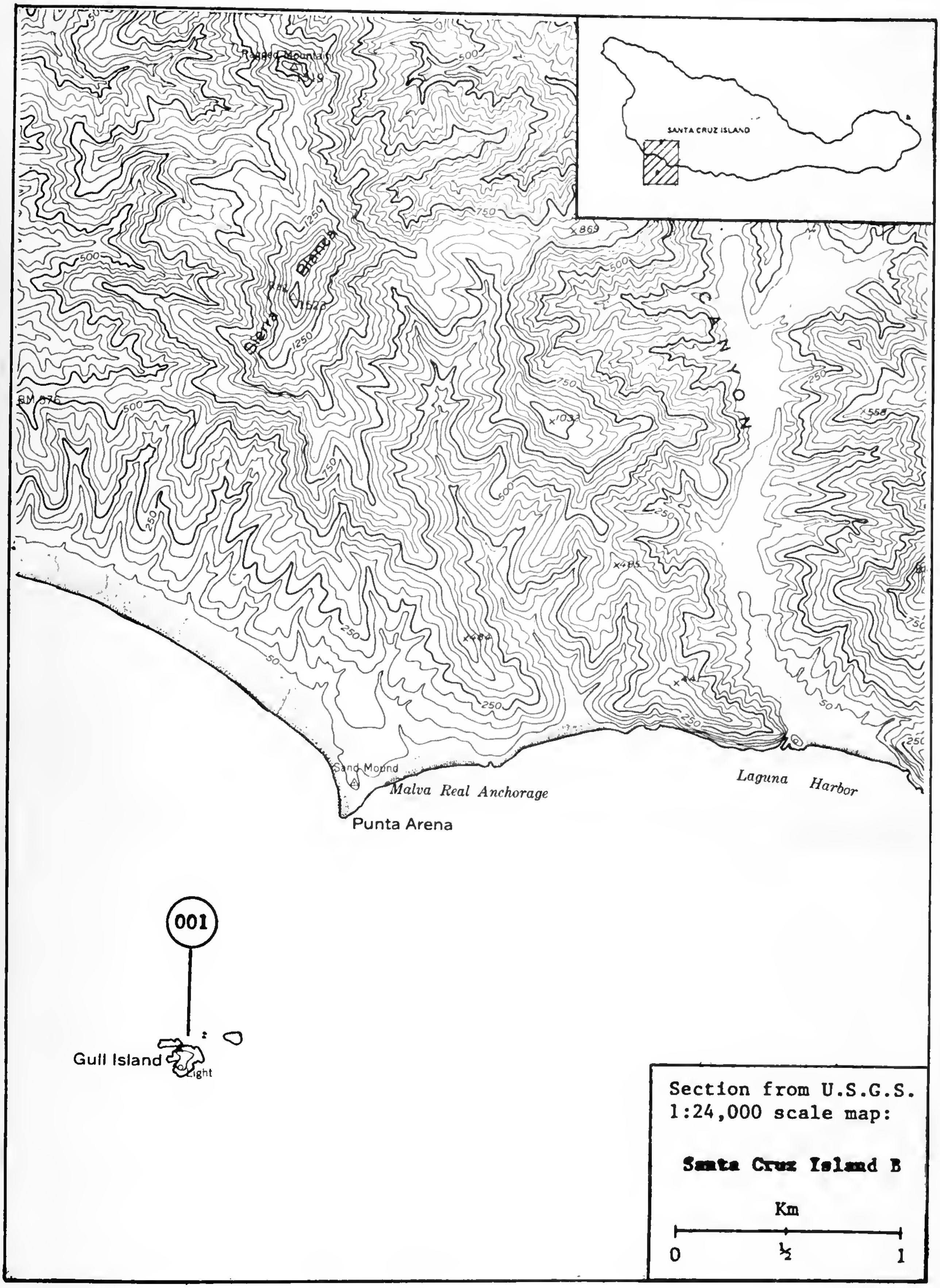




(001) Gull Island 33°57'01"N, 119°49'28"W

Ashy Storm-Petrel	2	(△1	,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+	(△1	,1975)	29
Brandt's Cormorant	110	(	,1976)	29
Pelagic Cormorant	8	(	,1975)	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.


SANTA CRUZ ISLAND
Ragged Mountain
Sierra Blanca
CANYON
Sand Mound
Malva Real Anchorage
Punta Arena
Laguna Harbor
001
Gull Island
Light
Section from U.S.G.S.
1:24,000 scale map:
Santa Cruz Island B
Km
0
½
1

(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

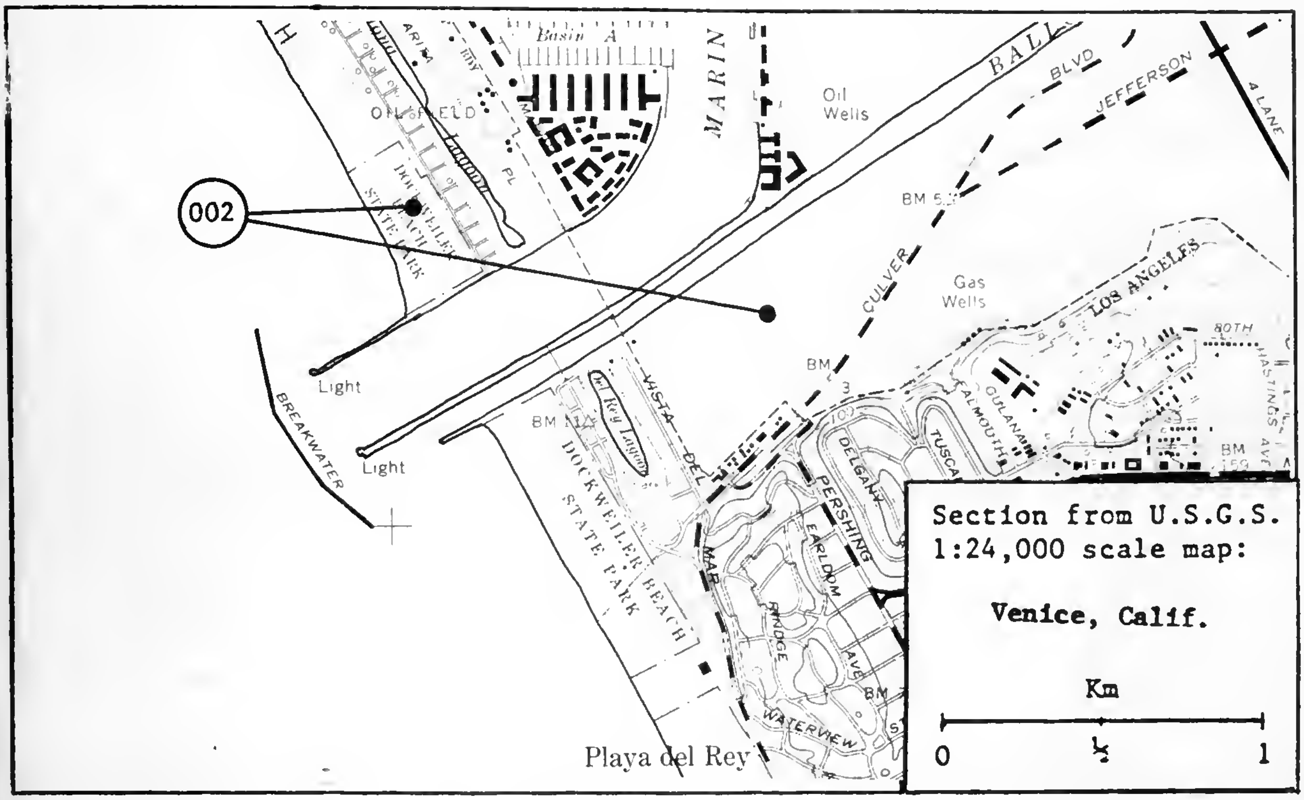
(003) Terminal Island 33°57'30"N, 118°27'30"W

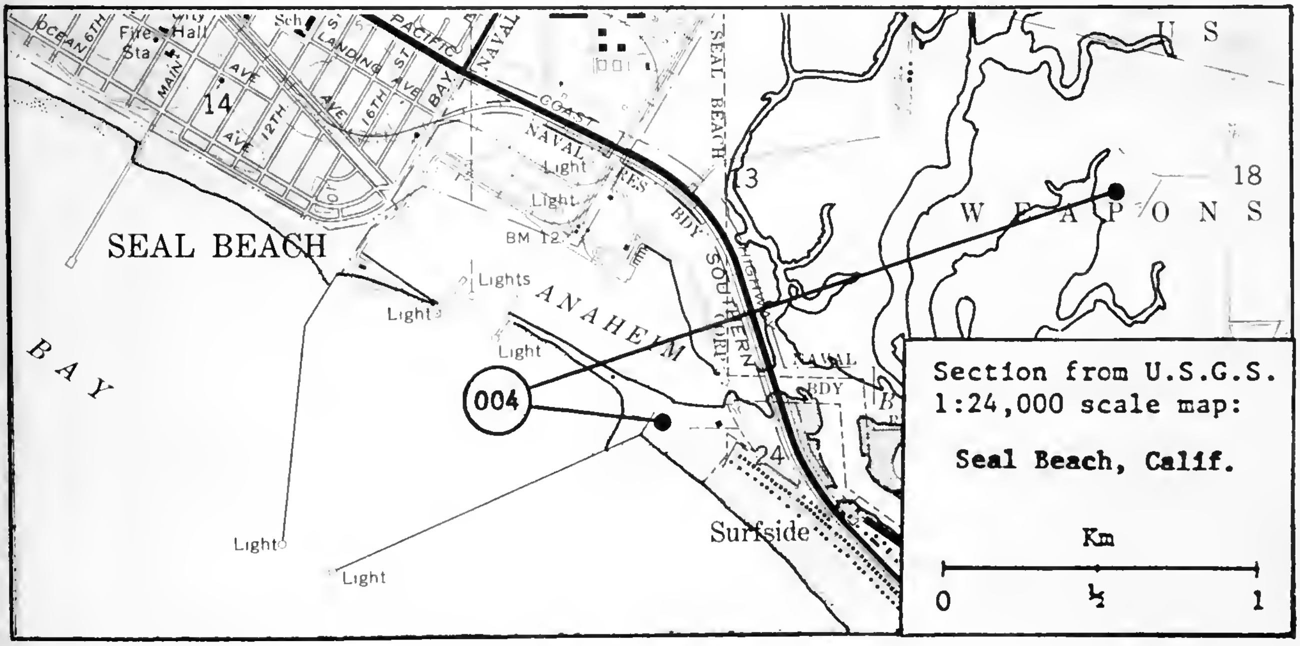
Least Terns no longer use this site for nesting.

(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


002
Light
Light
BREAKWATER
DOCKWEILER STATE PARK
DOCKWEILER BEACH STATE PARK
OIL FIELD
Basin A
MARIN
BALL
BLVD
JEFFERSON
4 LANE
Oil Wells
Gas Wells
CULVER
LOS ANGELES
VISTA DEL MAR
PERSHING
DELGANY
EARLDOM
RINDGE
WATERVIEW
Playa del Rey
Section from U.S.G.S. 1:24,000 scale map:
Venice, Calif.
Km
0
½
1


SEAL BEACH
B A Y
004
Light
Light
Light
Light
Lights
ANAHEIM
NAVAL
COAST
PACIFIC
SEAL BEACH
SOUTHERN
Fire Sta
City Hall
MAIN
14
13
18
24
US
WEAPONS
Surfside
Section from U.S.G.S. 1:24,000 scale map:
Seal Beach, Calif.
Km
0
½
1

005 San Gabriel River 33°45'12"N, 118°06'15"W

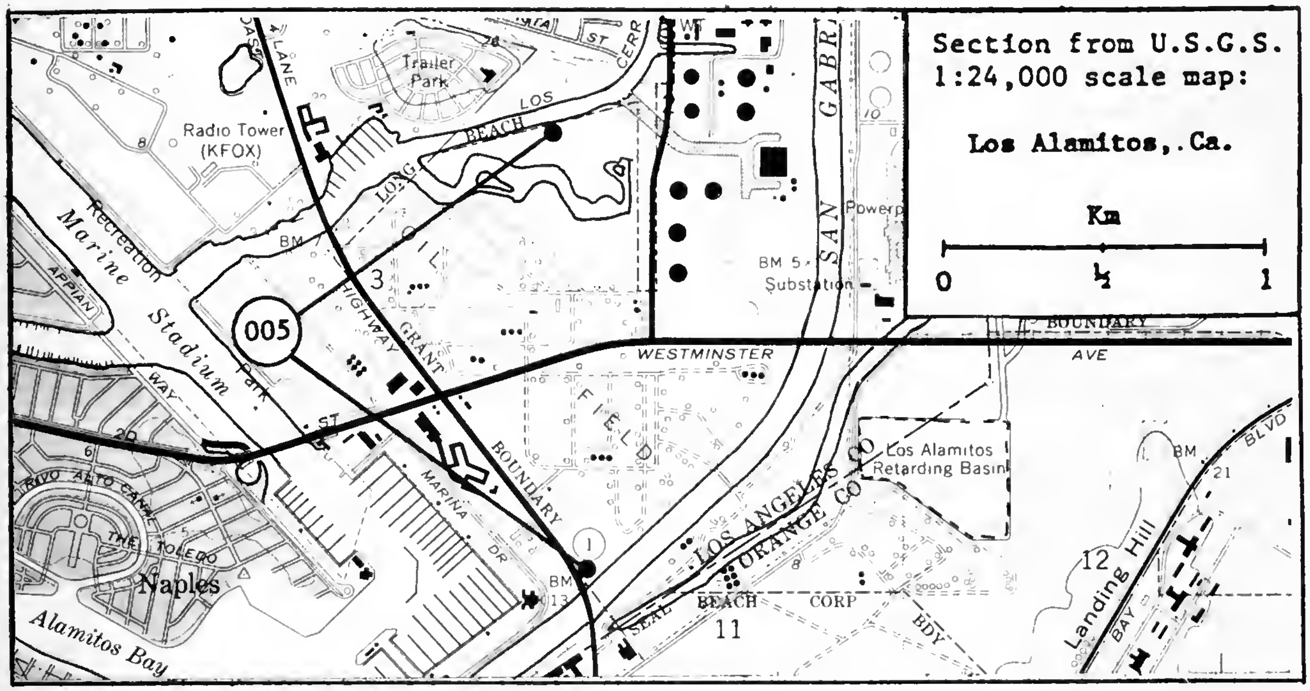
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

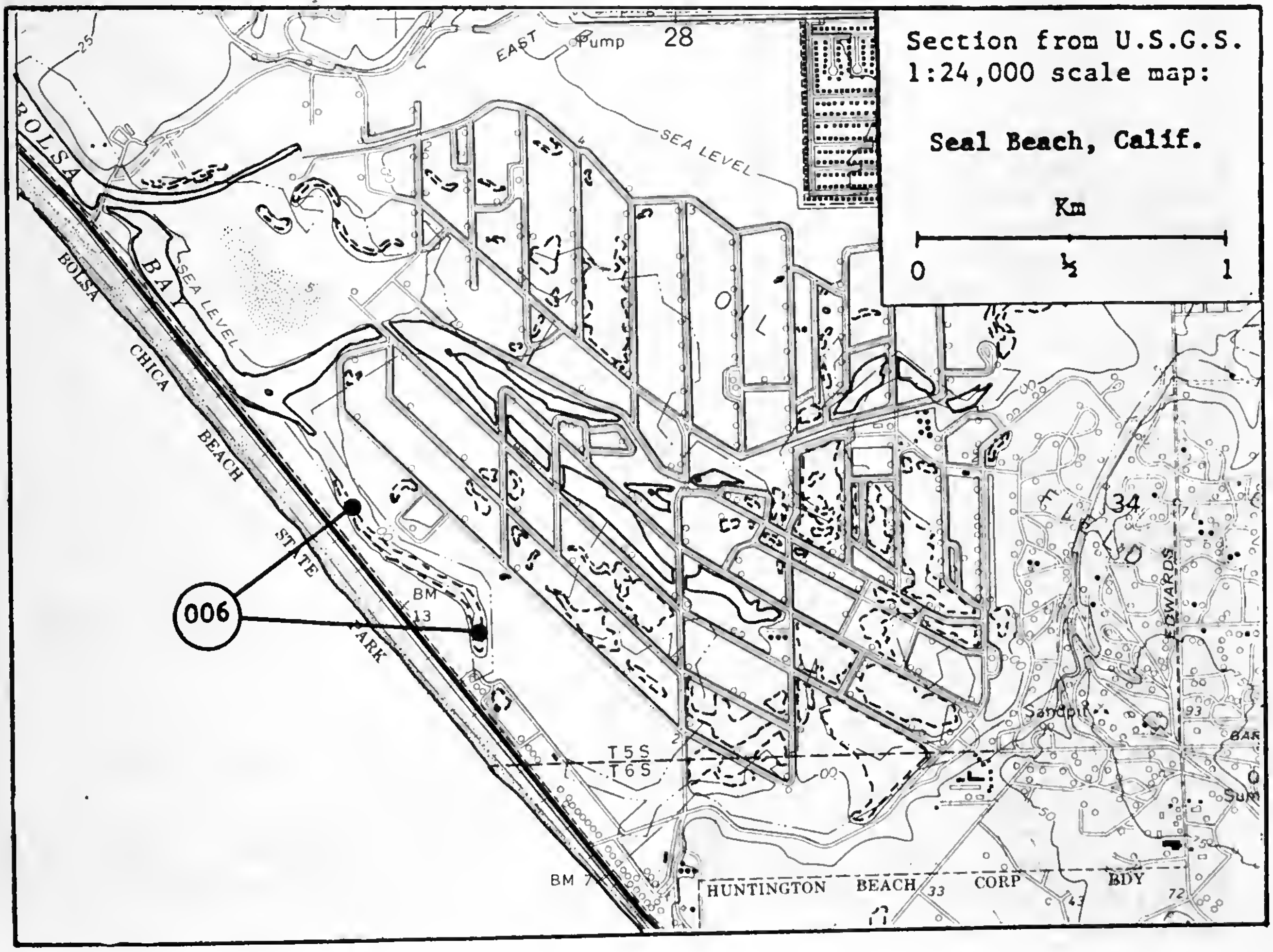
Least Tern	24-30	(Atwood,4-8/80,L)	12
Least Tern	120-130	(Atwood,4-8/78,L)	12
Least Tern	100-110	(Atwood,4-8/79,L)	12

006 Bolsa Chica Beach 33°42'05"N, 118°03'05"W

Least Terns are 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	40-52	(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


Section from U.S.G.S. 1:24,000 scale map:
Los Alamitos,.Ca.
Km
0
½
1
005
Trailer Park
Radio Tower (KFOX)
Marine Stadium Park
Recreation
APPIAN WAY
LONG BEACH
GRANT
WESTMINSTER AVE
BOUNDARY
FIELD
Substation
Powerp
SAN GABRIEL
Los Alamitos Retarding Basin
LOS ANGELES CO
ORANGE CO
SEAL BEACH CORP BDY
Naples
Alamitos Bay
RIVO ALTO CANAL
THE TOLEDO
MARINA DR
Landing Hill
BAY BLVD
12
11
3


Section from U.S.G.S. 1:24,000 scale map:
Seal Beach, Calif.
Km
0
½
1
006
Pump
28
SEA LEVEL
BOLSA
BOLSA BAY
BOLSA CHICA BEACH STATE PARK
OIL
34
EDWARDS
Sandpit
T5S
T6S
HUNTINGTON BEACH CORP BDY

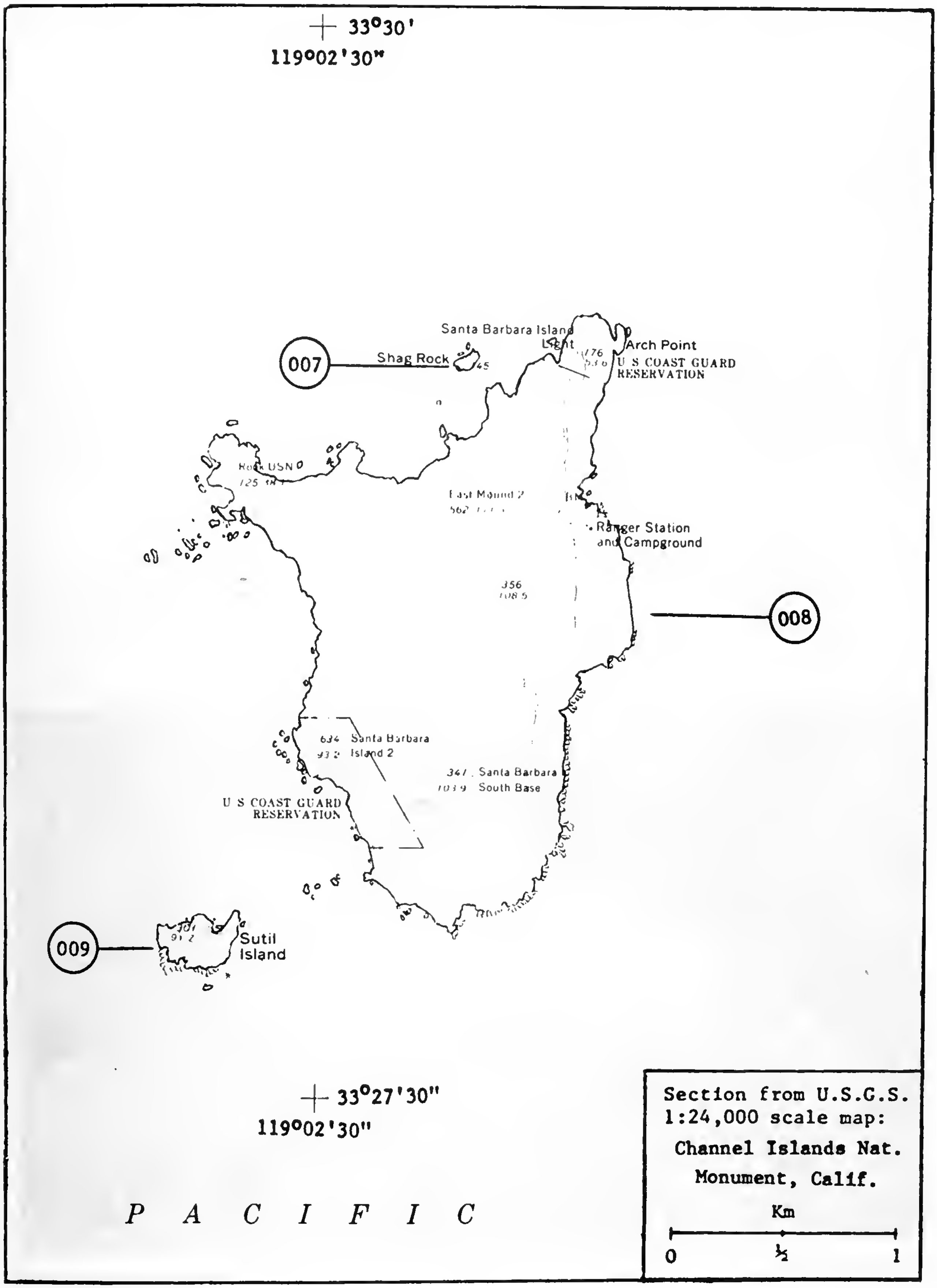
007 Shag Rock 33°29'15"N, 119°02'05"W

Western Gull	20	(/1 ,1976)
Xantus' Murrelet	30	(| ,1977)
Total	50	

008 Santa Barbara Island 33°28'37"N, 119°02'03"W

Black Storm-Petrel	120-130	(/1 ,1976-77)	29
Ashy Storm-Petrel	250	(| ,1976-77)	29
Brown Pelican	174	(Gress,1980)	20
Brandt's Cormorant	102	(/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)	
Brown Pelican	50	(Willet,6/14/11)	
Brown Pelican	300-400	(Wright & Snyder,7/2/12)	
Brown Pelican	X	(Peyton,5/7/14; Schreiber & Delong,1967)	
Brown Pelican	none	(/1 ,1975-77)	
Brown Pelican	none	(Gress,1978-1979)	
Brandt's Cormorant	X	(Grinnell,1897; Howell,1908)	
Brandt's Cormorant	92	(Jehl,7/11/74)	
Brandt's Cormorant	52	(/1 ,1975)	
Brandt's Cormorant	146	(| ,1976)	
Double-crested Cormorant	X	(Cooper,1863; Grinnel,1897; Peyton,1914; Wyman,1920+27; Sumner,1939)	
Double-crested Cormorant	none	(Crossin & Brownell,5/68)	
Double-crested Cormorant	132	(Hunt & Hunt,7/2/72)	
Double-crested Cormorant	20	(/1 ,1976)	
Pelagic Cormorant	X	(Grinnell,1897; Pemberton,1927)	
Pelagic Cormorant	2	(/1 ,1975)	
Pelagic Cormorant	none	(| ,1976)	
Western Gull	X	(Grinnell,1897)	
Western Gull	1,000	(Chambers,1889)	
Western Gull	3,000	(Hunt & Hunt,7/7/72)	
Western Gull	2,324	(/1 ,1975)	
Western Gull	2,230	(| ,1976)	
Western Gull	1,622	(| ,1977)	
Western Gull	850	(| ,1978)	
Pigeon Guillemots	X	(Grinnell,1897; Sumner,1939; Small,1960)	
Xantus' Murrelet	X	(Wright & Snyder,7/3/12)	
Cassin's Auklet	X	(Cooper,1863; Grinnel,1897)	
Cassin's Auklet	none	(Howell,1908; Willet,1911; Wright & Snyder,1912)	
Cassin's Auklet	none	(Sumner & Bond,1939; Hunt & Hunt,1972)	
Tufted Puffin	?	(Grinnel,1897)	

X = present

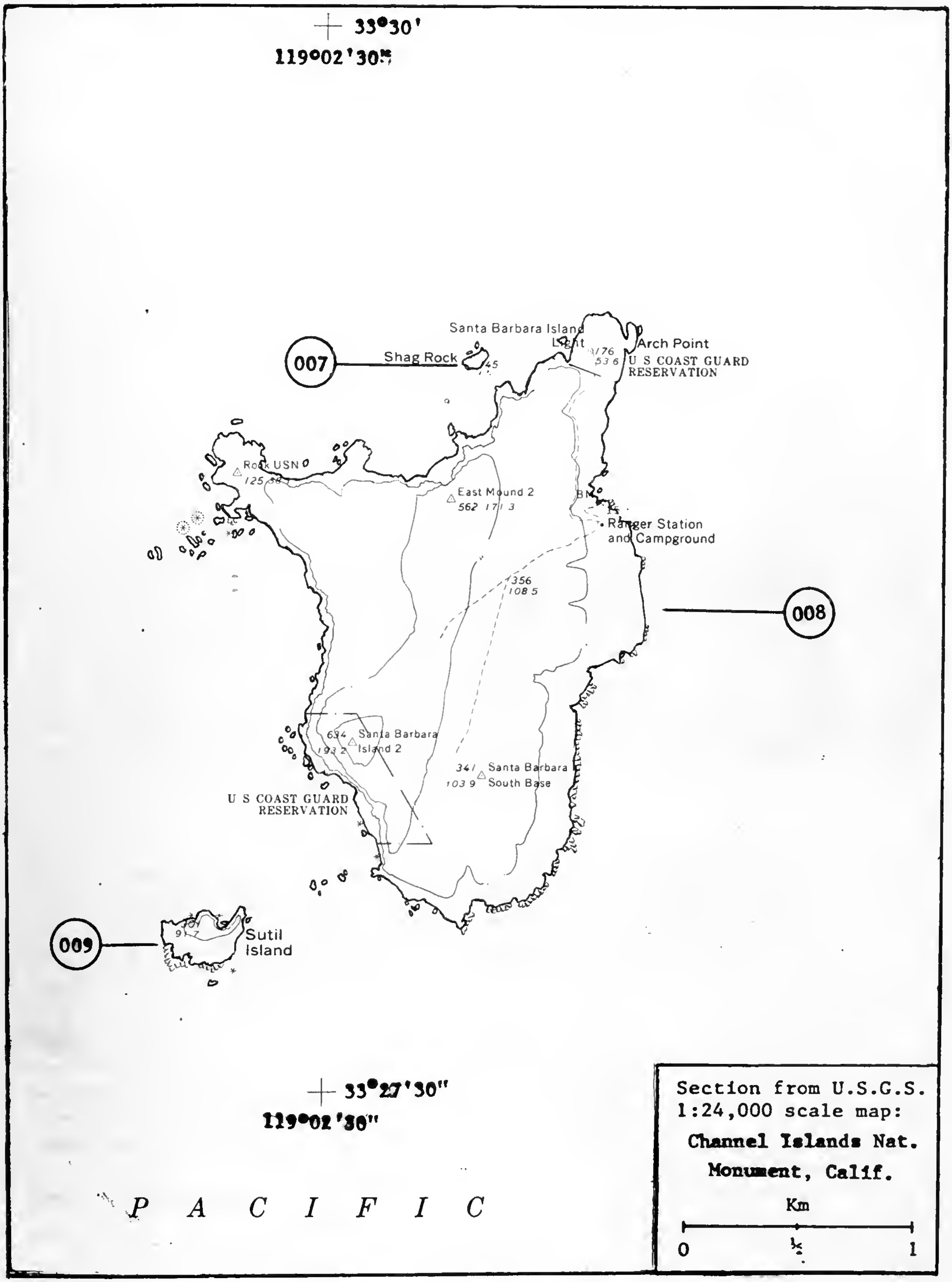

33°30'
119°02'30"
Santa Barbara Island Light
Shag Rock
007
Arch Point
U S COAST GUARD RESERVATION
Ranger Station and Campground
008
Santa Barbara Island 2
Santa Barbara South Base
U S COAST GUARD RESERVATION
009
Sutil Island
33°27'30"
119°02'30"
P A C I F I C
Section from U.S.G.S. 1:24,000 scale map:
Channel Islands Nat. Monument, Calif.
Km
0
½
1

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	(Jehl,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	(Willett,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



Section from U.S.G.S. 1:24,000 scale map:
Channel Islands Nat. Monument, Calif.

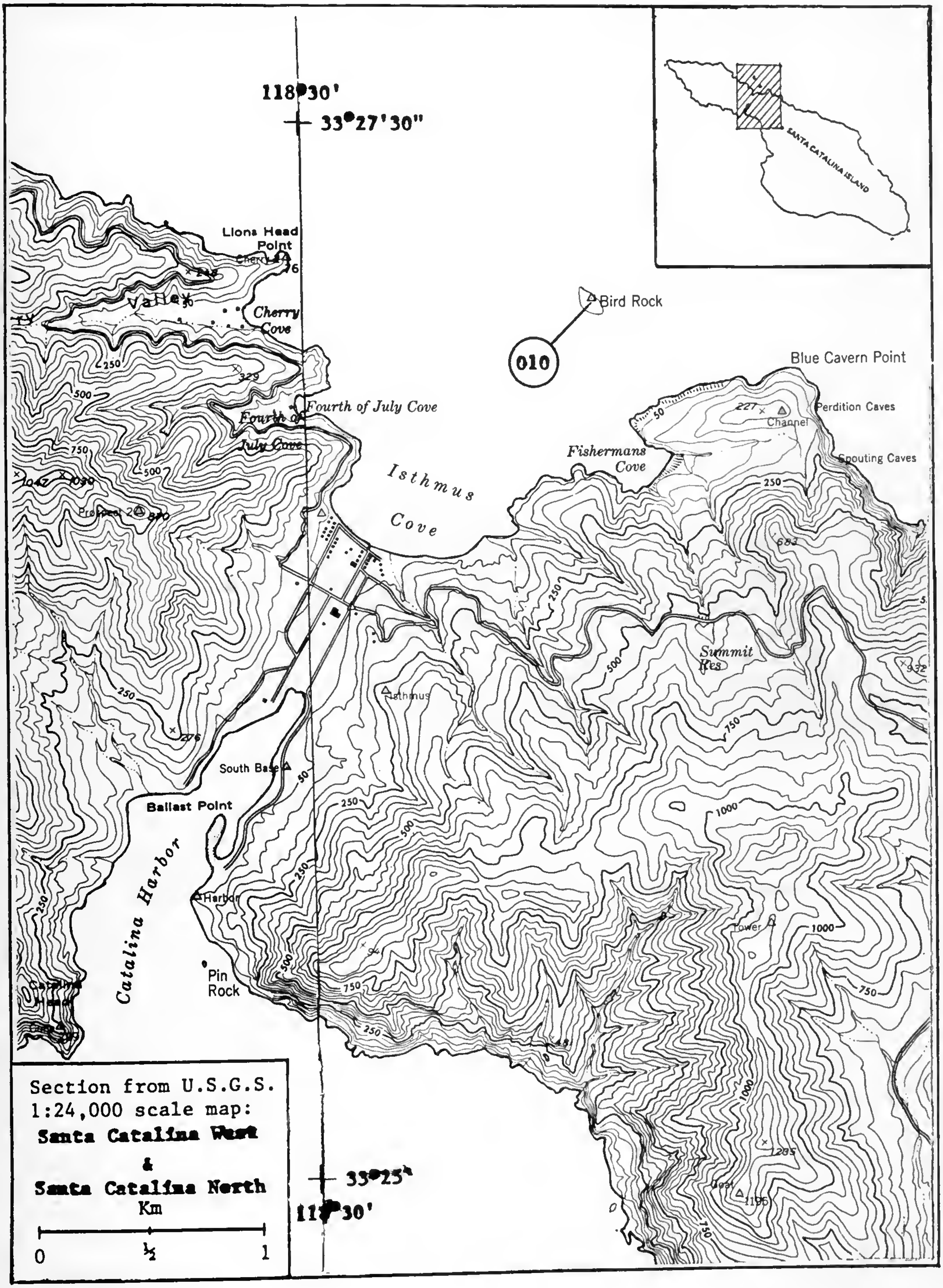
Km
0 ½ 1

010 Bird Rock 33°27'04"N, 118°29'04"W

Brandt's Cormorant	0	(1 ,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	(1 ,1975)	29
Xantus' Murrelet	X	(Bleitz,1967)	29

X = 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.

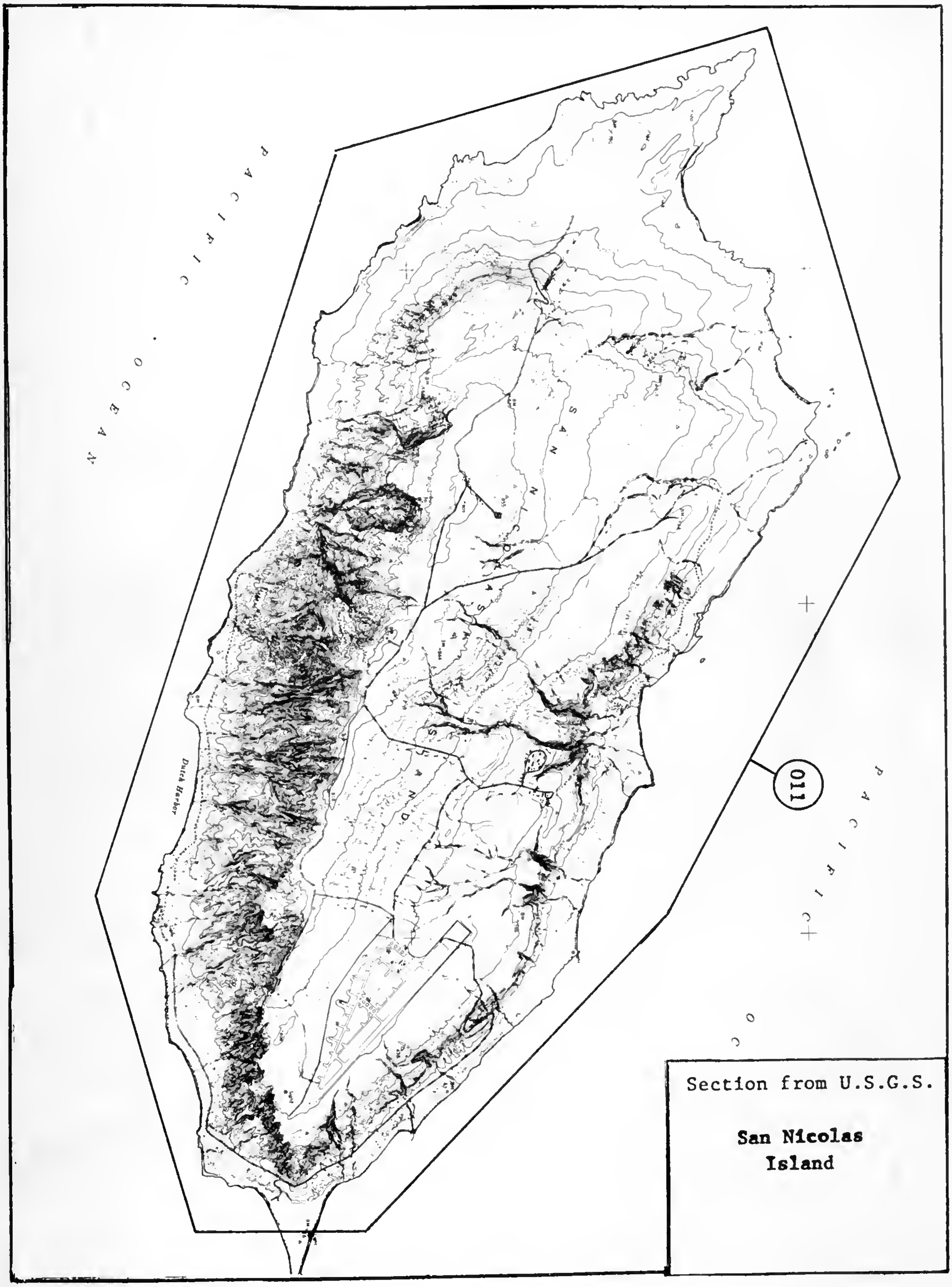

118°30'
33°27'30"
SANTA CATALINA ISLAND
Lions Head Point
Valley
Cherry Cove
Bird Rock
010
Blue Cavern Point
Fourth of July Cove
Perdition Caves
Channel
Fishermans Cove
Spouting Caves
Isthmus Cove
Prospect 2
Summit Res
Isthmus
South Base
Ballast Point
Catalina Harbor
Harbor
Tower
Pin Rock
Goat
33°25'
118°30'
Section from U.S.G.S.
1:24,000 scale map:
Santa Catalina West
&
Santa Catalina North
Km
0
½
1

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

/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.

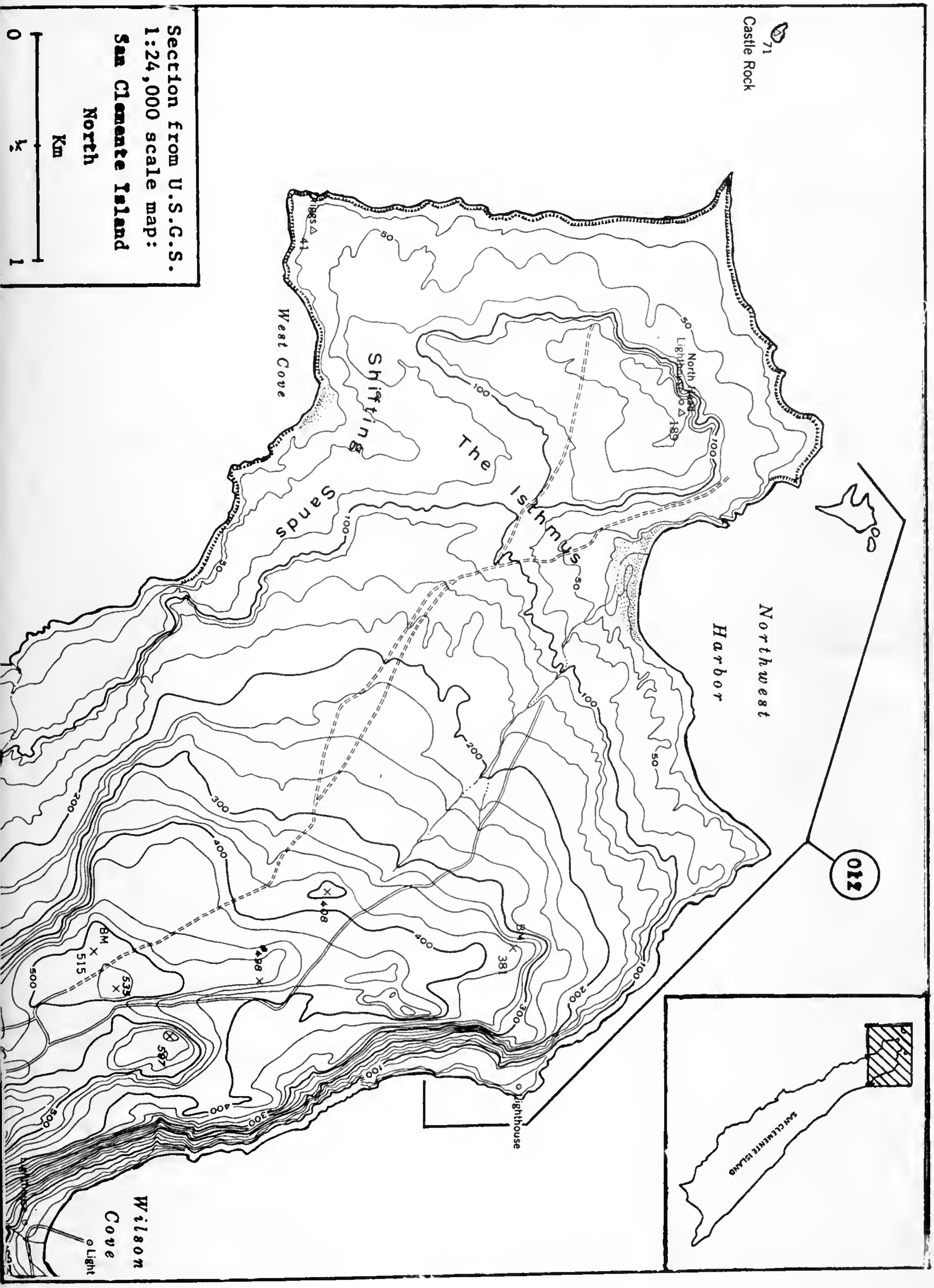

PACIFIC OCEAN
SAN NICOLAS ISLAND
Dutch Harbor
PACIFIC OC
011
Section from U.S.G.S.
San Nicolas
Island

012 Bird Rock and N.W. San Clemente Is. 33°02'N, 118°35'W

Brandt's Cormorant	10	(/1 ,1976)	29
Black Oystercatcher	2	(| ,1977)	29
Western Gull	56	(| ,1976)	29
Total	68		
Brandt's Cormorant	X	(Linton,1907; Jehl,1973)	29
Western Gull	X	(Jehl,1973)	29
Western Gull	62	(/1 ,1975)	29

X = 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.

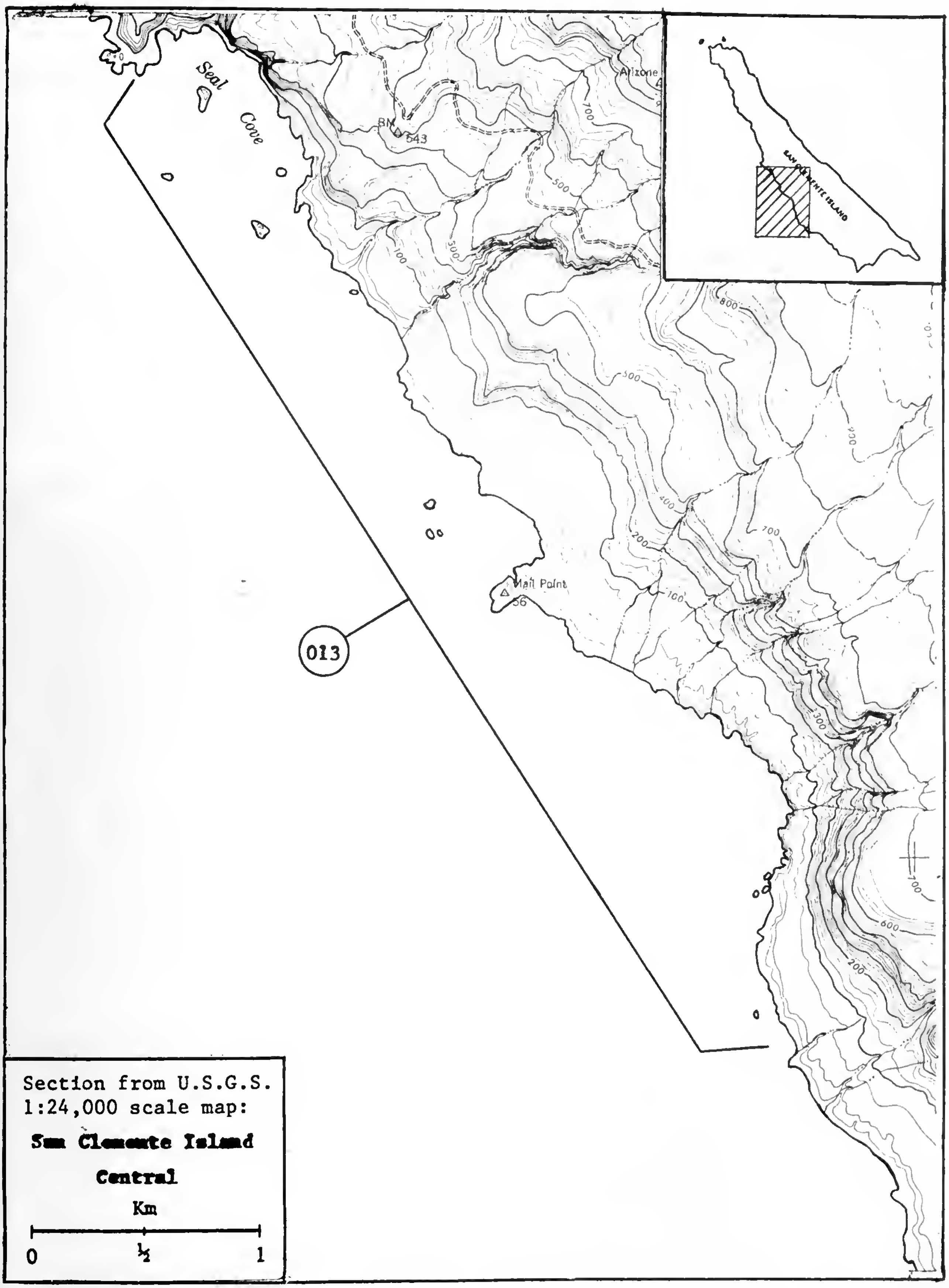

Section from U.S.G.S.
1:24,000 scale map:
San Clemente Island
North
Km
0
½
1
Castle Rock
West Cove
Shifting Sands
The Isthmus
Northwest Harbor
Wilson Cove
Light
Lighthouse
210
SAN CLEMENTE ISLAND

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	([1] ,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

[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.

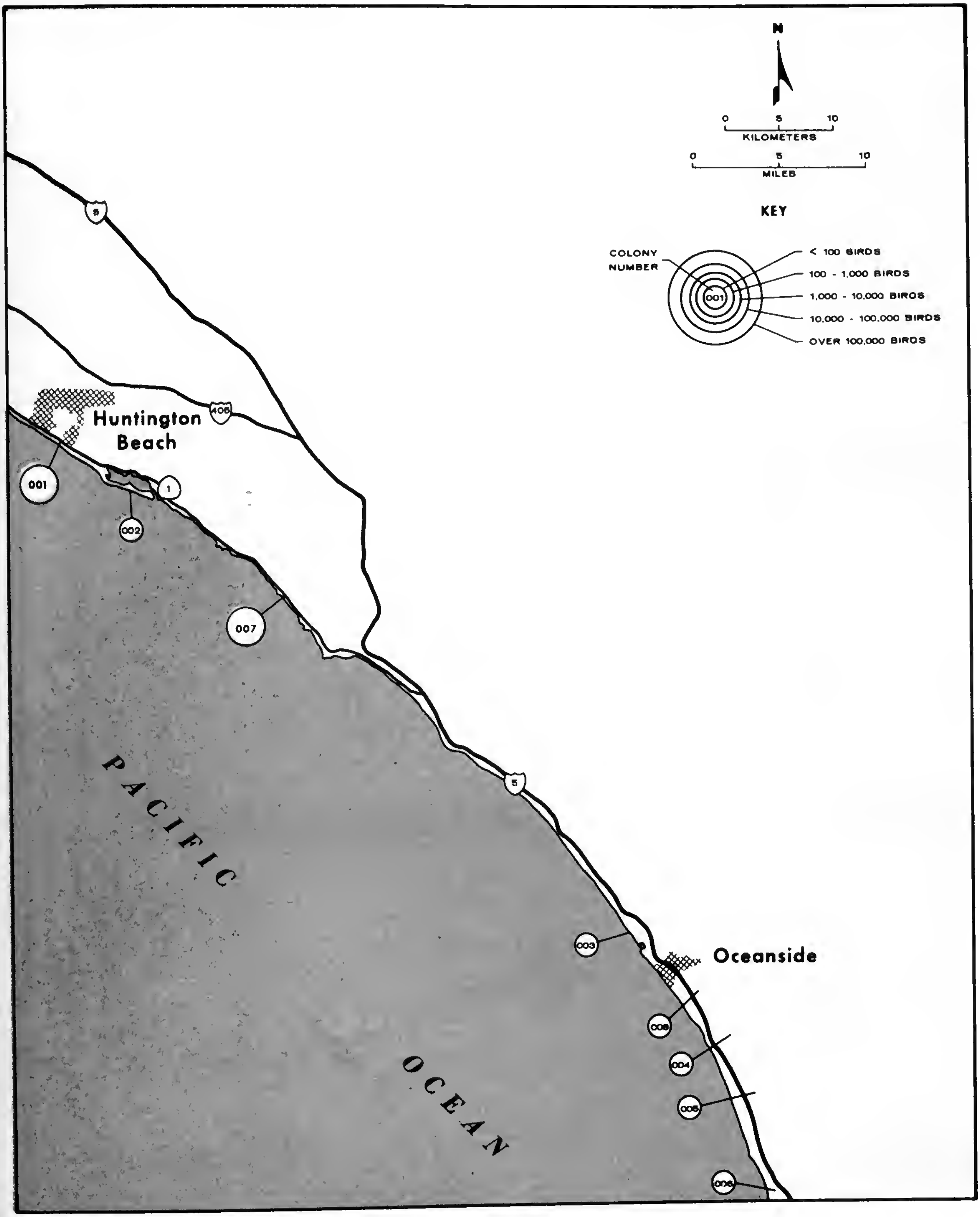

Seal Cove
BM 543
Mail Point
56
013
SAN CLEMENTE ISLAND
Section from U.S.G.S. 1:24,000 scale map:
San Clemente Island
Central
Km
0
½
1

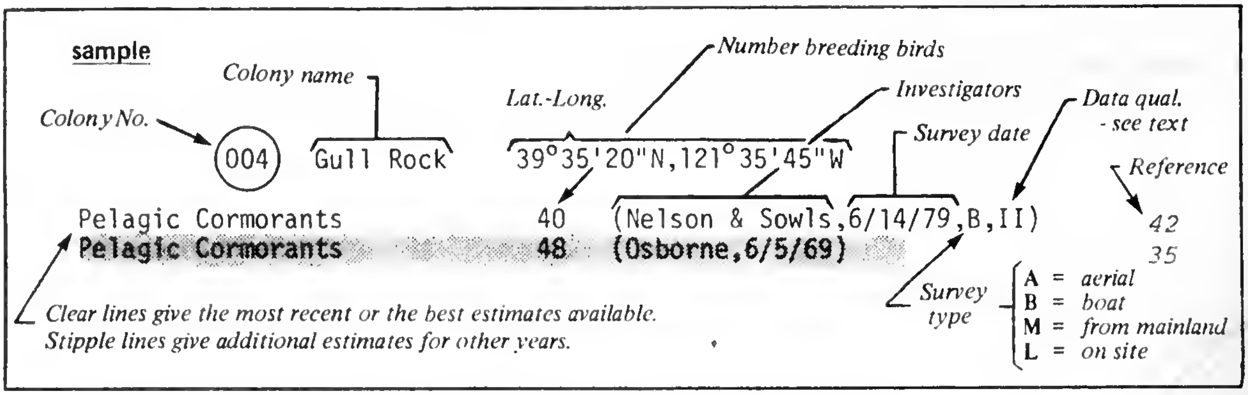
525

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





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

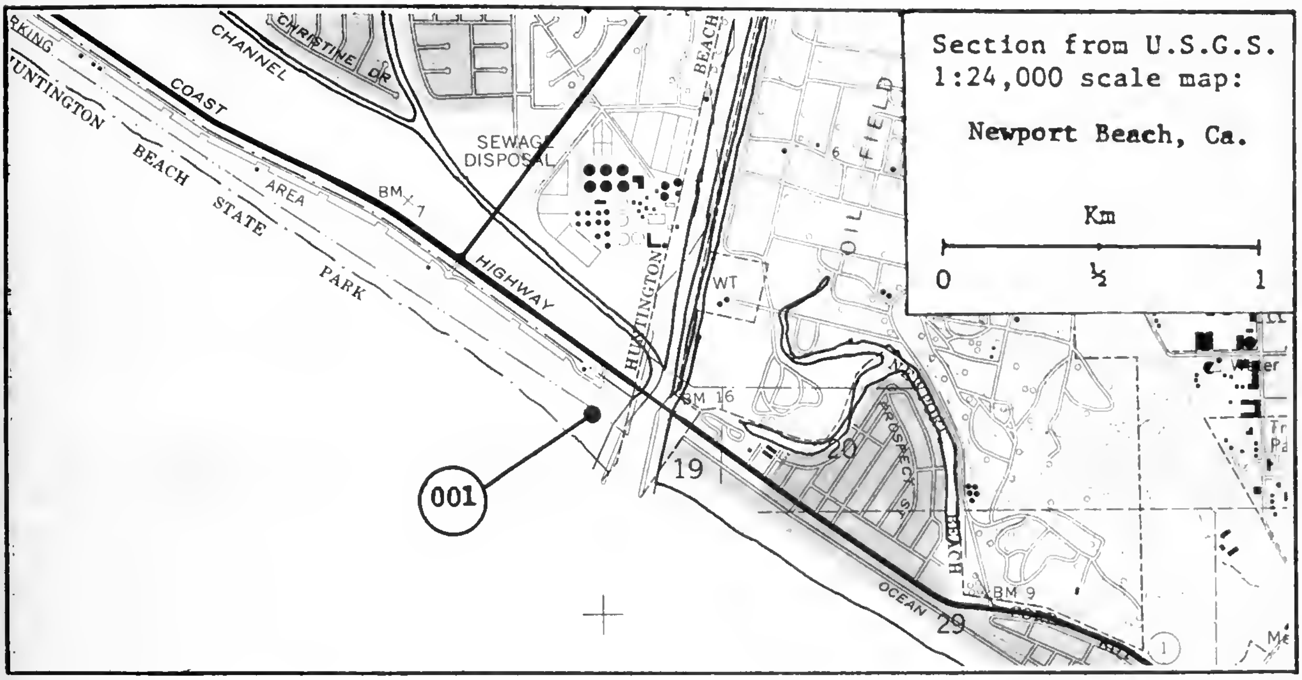
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

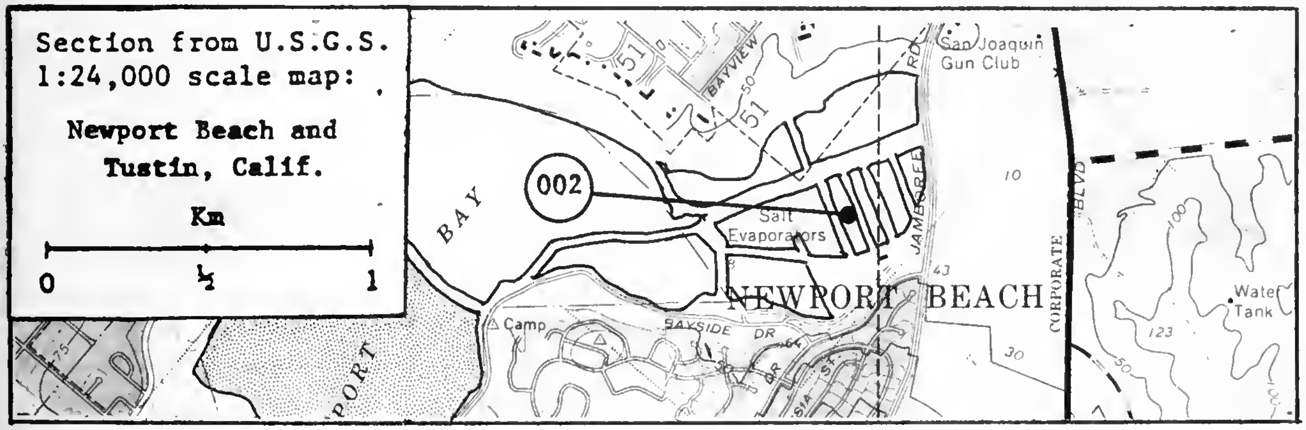
Least Tern	4-10	(Atwood,4-8/80,L)	12
Least Tern	16-20	(Atwood,4-8/78,L)	12
Least Tern	12-14	(Atwood,4-8/79,L)	12

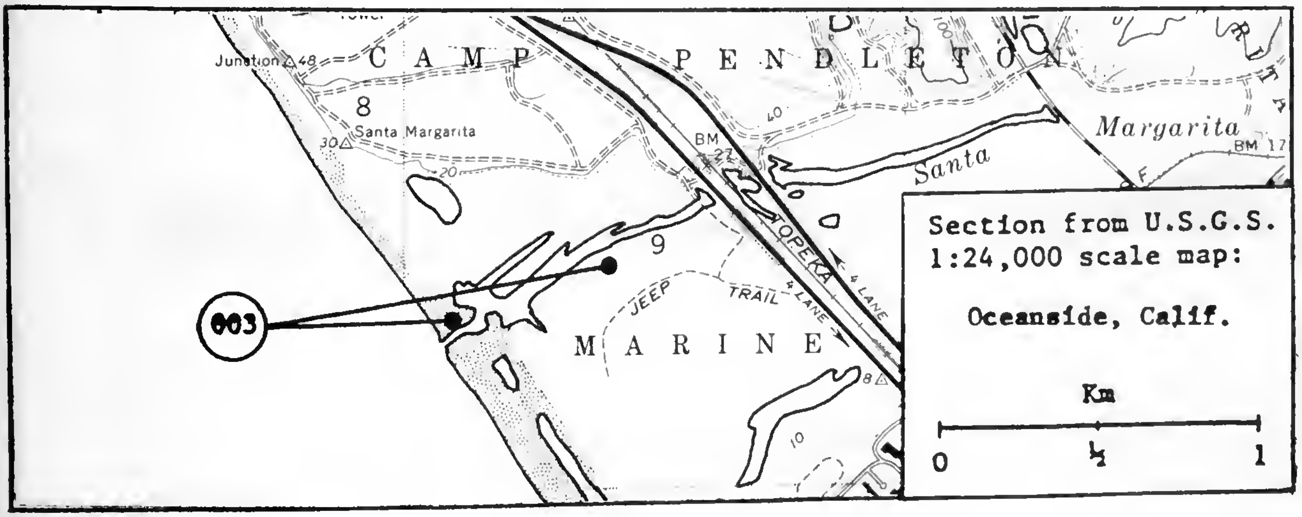
003 Santa Margarita River 33°13'57"N, 117°24'37"W

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


Section from U.S.G.S.
1:24,000 scale map:
Newport Beach, Ca.
Km
0
½
1
001
CHANNEL
CHRISTINE DR
COAST
HUNTINGTON
BEACH
STATE
PARK
AREA
HIGHWAY
SEWAGE DISPOSAL
HUNTINGTON
BEACH
OIL
FIELD
WT
BM 16
BM 9
19
20
29
OCEAN
PROSPECT
Water


Section from U.S.G.S.
1:24,000 scale map:
Newport Beach and
Tustin, Calif.
Km
0
½
1
002
BAY
BAYVIEW
San Joaquin
Gun Club
Salt
Evaporators
JAMBOREE
NEWPORT BEACH
CORPORATE
BLVD
Camp
BAYSIDE DR
Water
Tank


Section from U.S.G.S.
1:24,000 scale map:
Oceanside, Calif.
Km
0
½
1
003
Junction
CAMP PENDLETON
Santa Margarita
8
9
Margarita
Santa
BM 17
TOPEKA
4 LANE
JEEP
TRAIL
MARINE

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

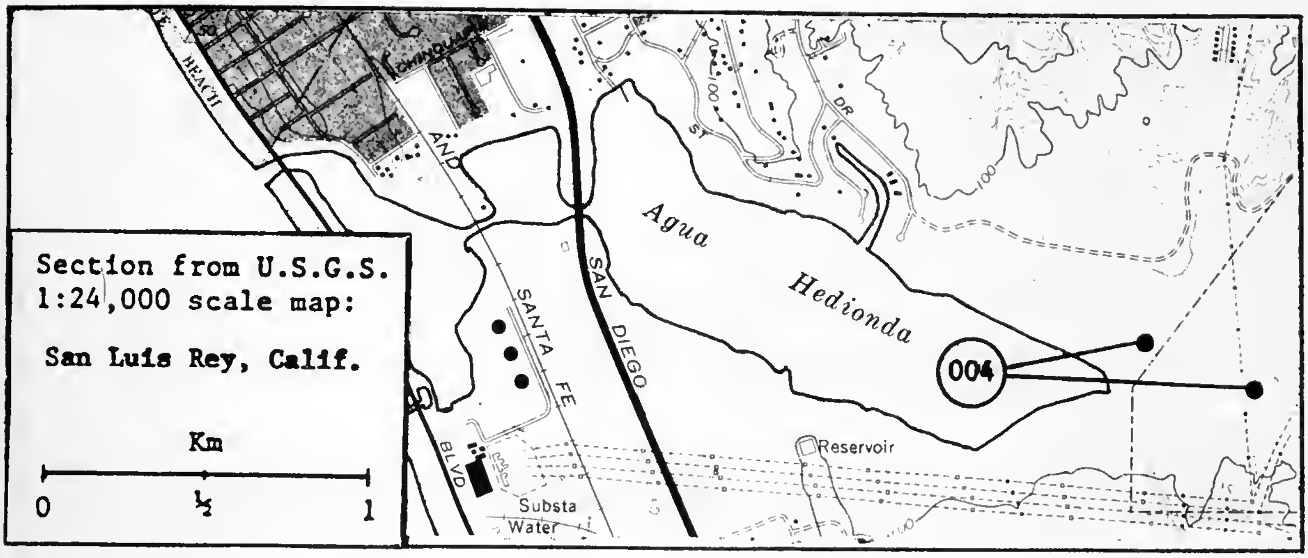
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

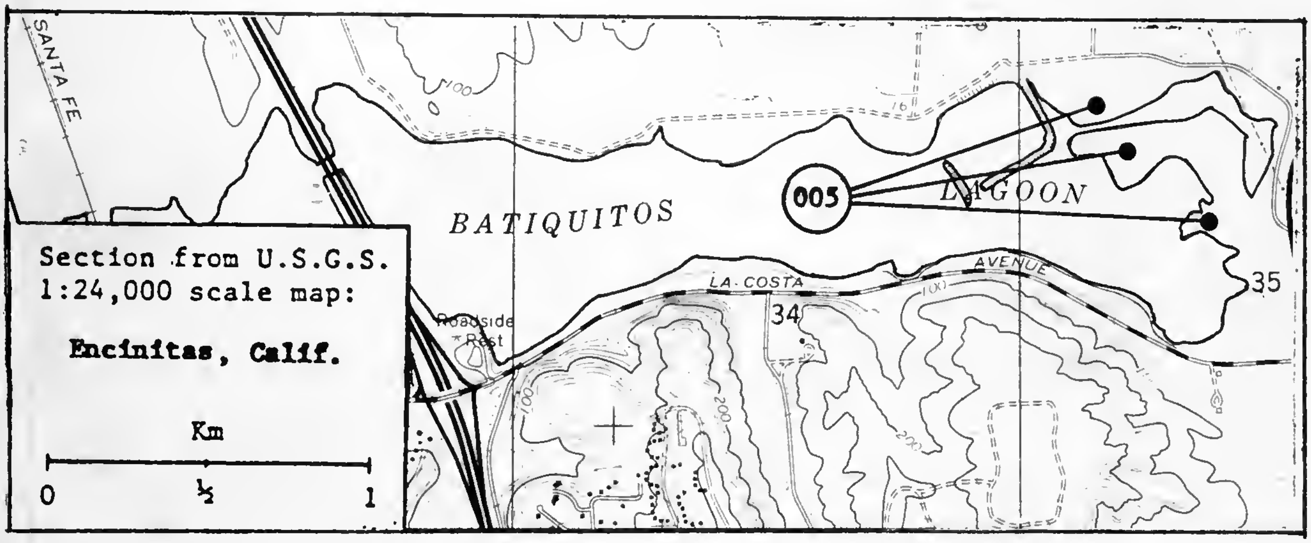
Least Tern	50-60	(Copper,4-8/80,L)	12
Least Tern	44-54	(Unitt,4-8/78,L)	12
Least Tern	76-80	(Copper,4-8/79,L)	12

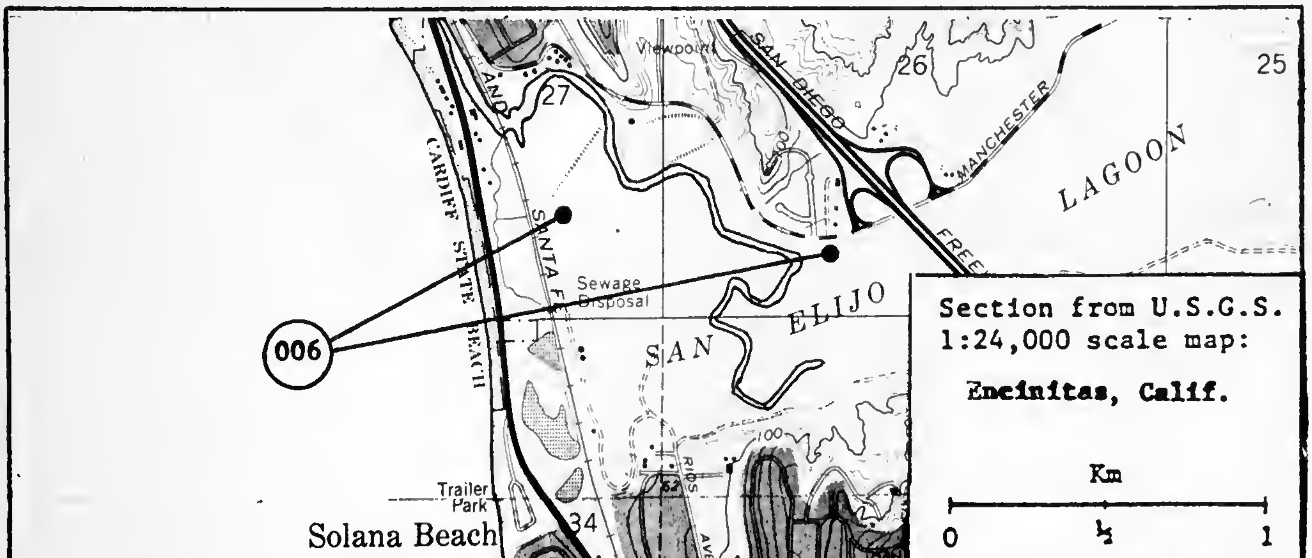
006 San Elijo Lagoon 33°00'58"N, 117°16'52"W

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


Section from U.S.G.S.
1:24,000 scale map:
San Luis Rey, Calif.
Km
0
½
1
Agua
Hedionda
004
SANTA FE
SAN DIEGO
AND
BLVD
BEACH
Reservoir
Substa
Water


Section from U.S.G.S.
1:24,000 scale map:
Encinitas, Calif.
Km
0
½
1
BATIQUITOS
LAGOON
005
SANTA FE
LA COSTA
AVENUE
Roadside
Rest
34
35


Section from U.S.G.S.
1:24,000 scale map:
Encinitas, Calif.
Km
0
½
1
006
SAN
ELIJO
LAGOON
SANTA FE
SAN DIEGO
CARDIFF STATE BEACH
MANCHESTER
Viewpoint
Sewage
Disposal
Trailer
Park
Solana Beach
27
26
25
34

007 Aliso Creek 33°30'35"N, 117°45'12"W

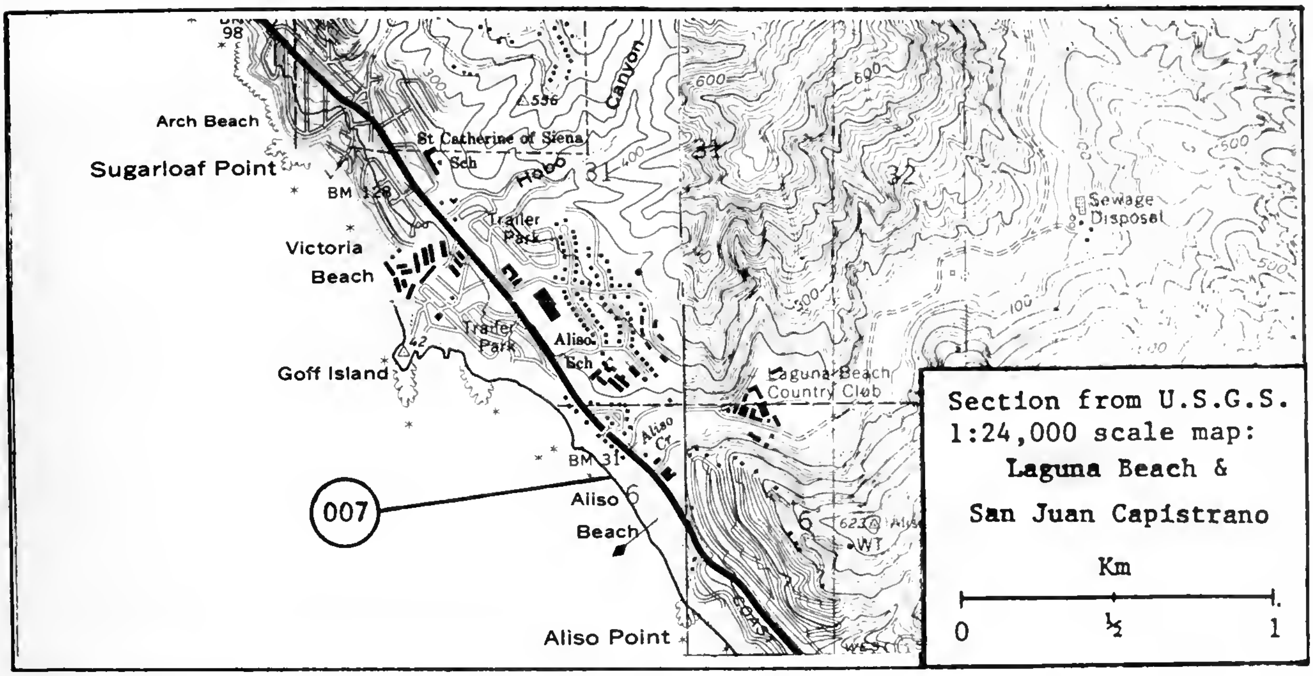
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

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

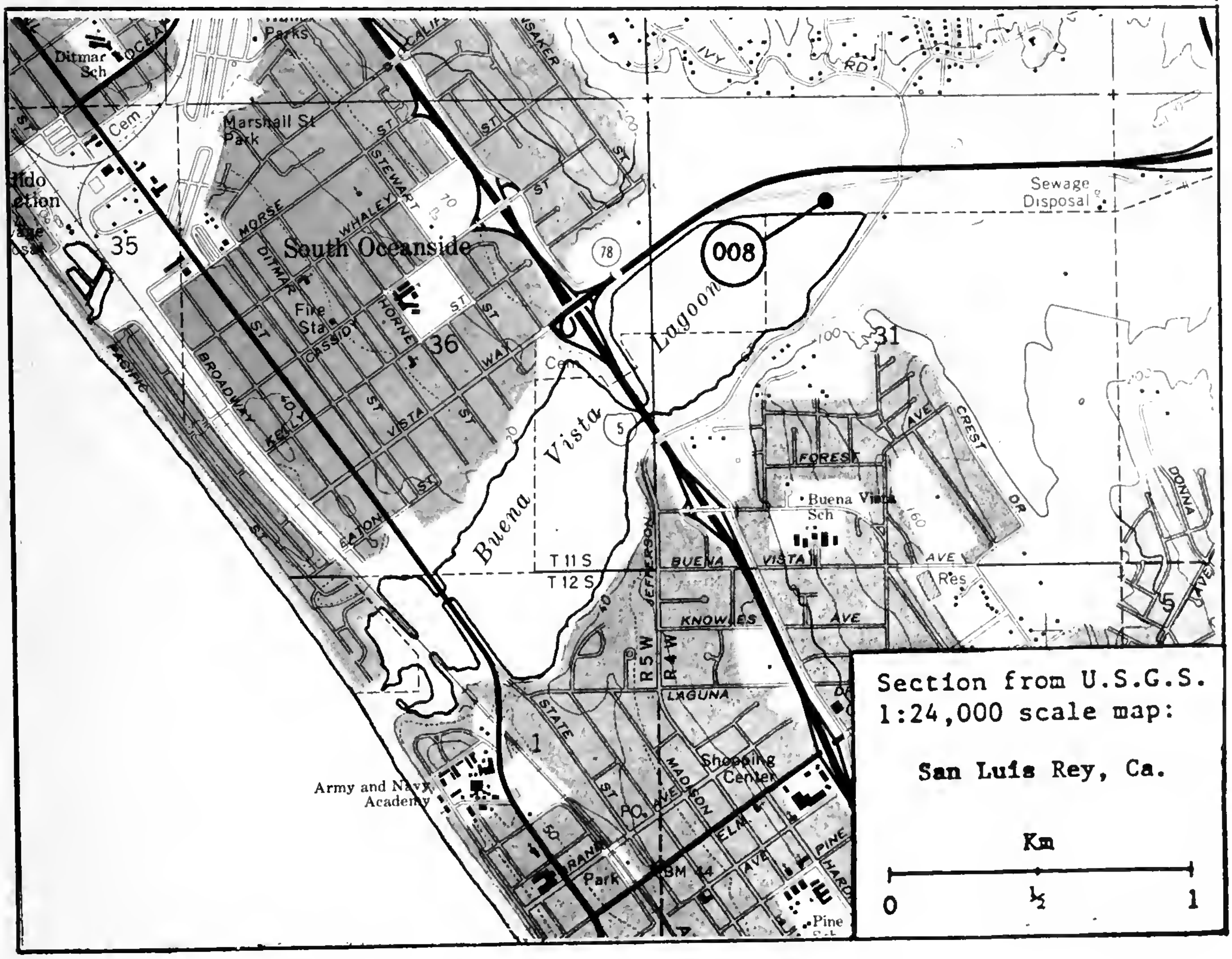
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	2	(Copper,4-8/80,L)	12



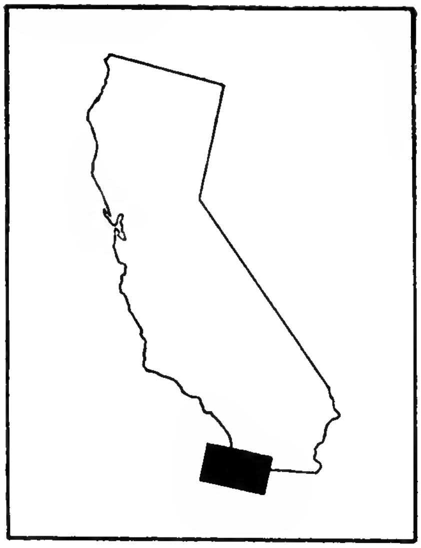
Section from U.S.G.S. 1:24,000 scale map: **Laguna Beach & San Juan Capistrano**

Km
0 ½ 1



Section from U.S.G.S. 1:24,000 scale map: **San Luis Rey, Ca.**

Km
0 ½ 1

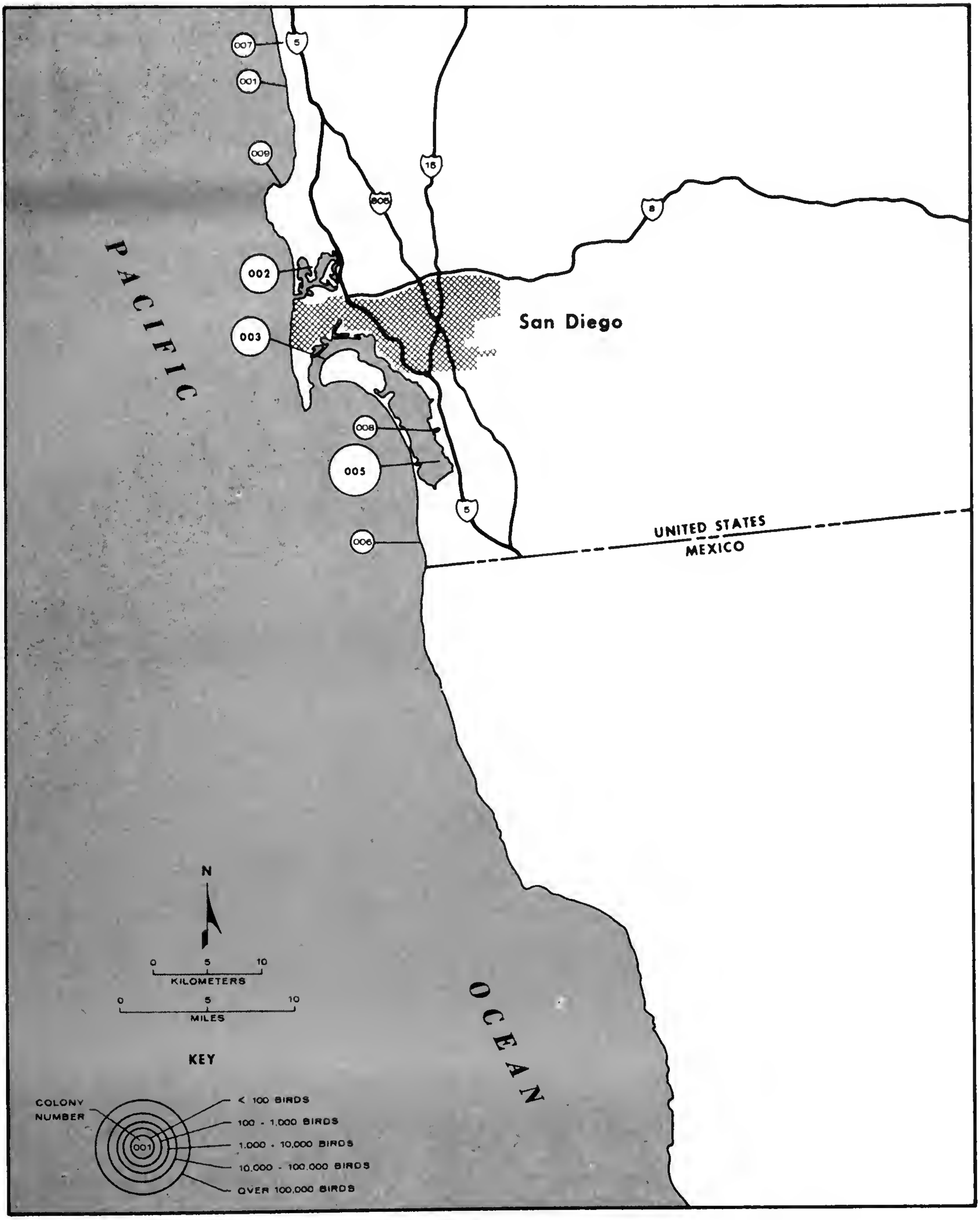


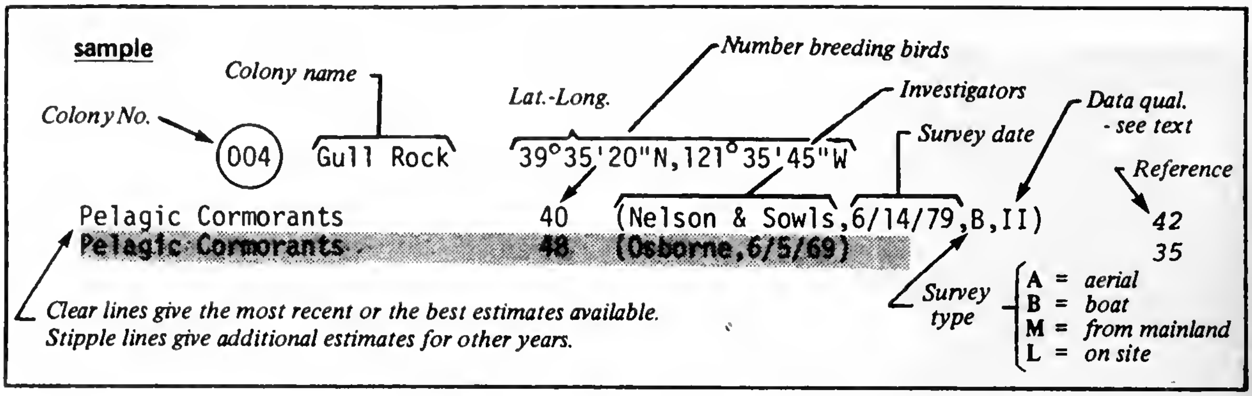
545

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

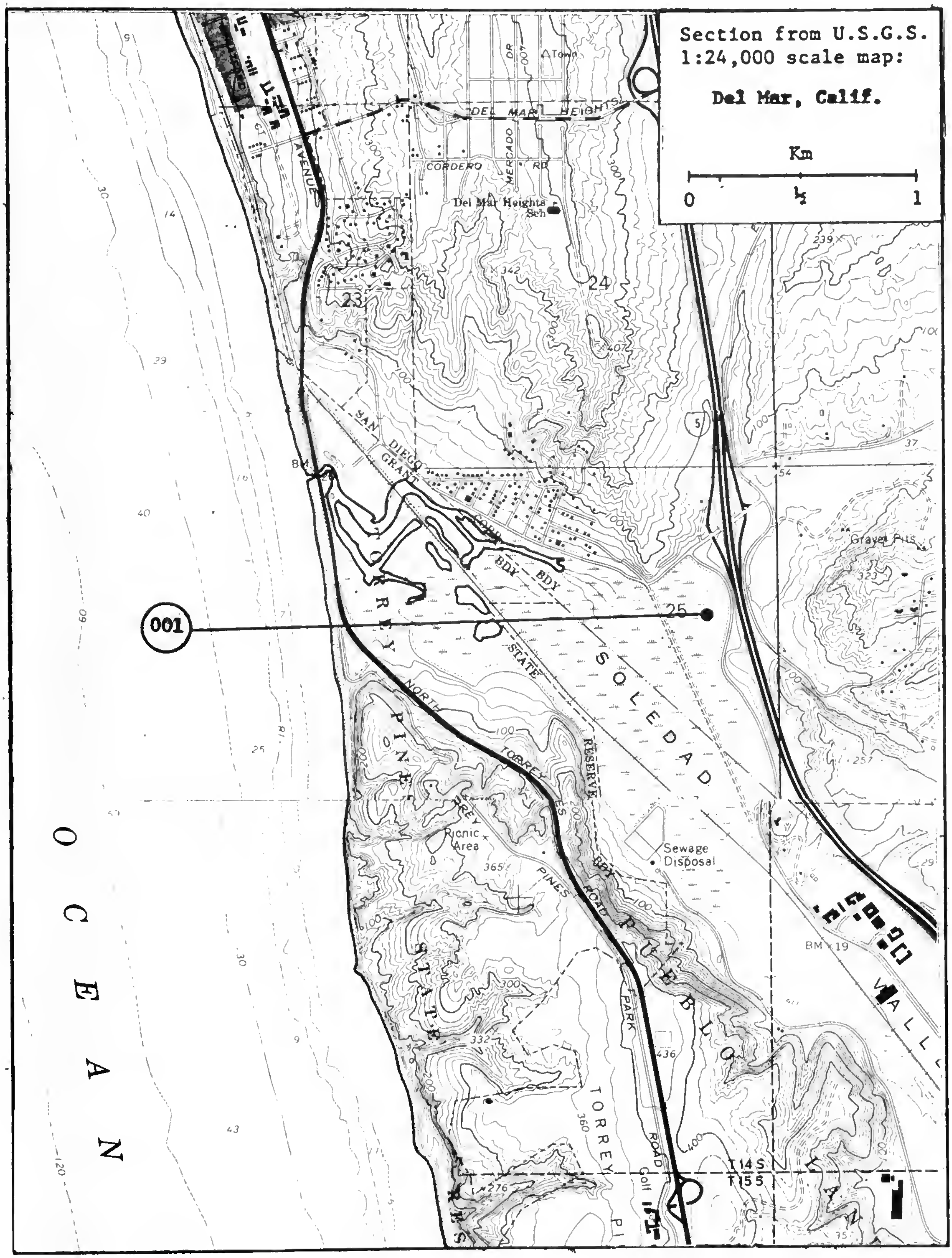




001 Los Penasquitos Lagoon 32°55'49"N, 117°14'54"W

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


Section from U.S.G.S.
1:24,000 scale map:
Del Mar, Calif.
Km
0
½
1
001
DEL MAR HEIGHTS
CORDERO RD
MERCADO
Del Mar Heights Sch
AVENUE
SAN DIEGO GRANT BDY
SOLEDAD
TORREY PINES STATE RESERVE
NORTH TORREY PINES ROAD
Picnic Area
Sewage Disposal
Gravel Pits
PUEBLO
VALLE
TORREY PINES PARK ROAD
Golf
T 14 S
T 15 S
OCEAN
5

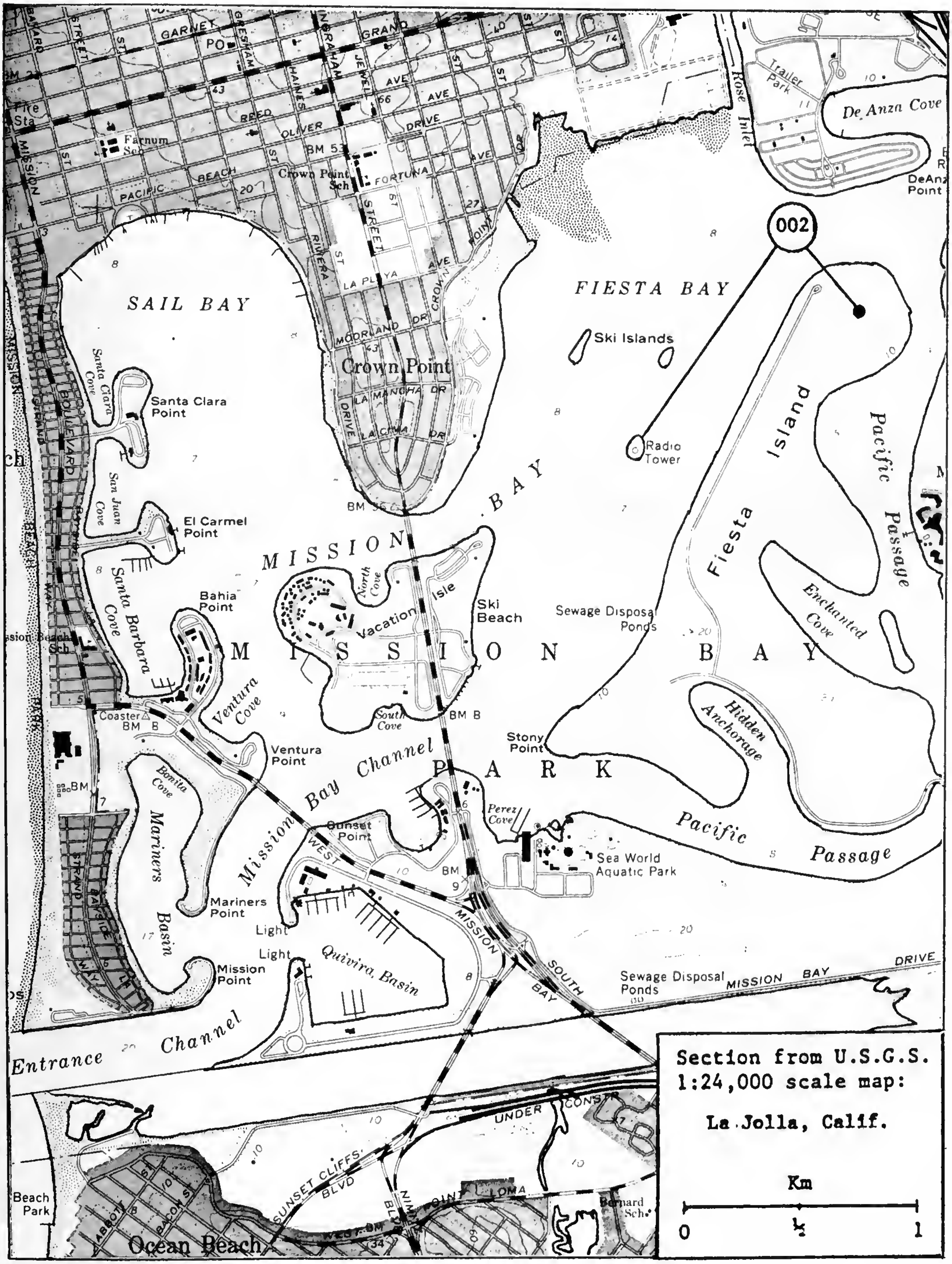
(002) Mission Bay 32°46'42"N, 117°13'46"W

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


002
SAIL BAY
FIESTA BAY
Crown Point
Santa Clara Cove
Santa Clara Point
San Juan Cove
El Carmel Point
Santa Barbara Cove
Bahia Point
Ski Islands
Radio Tower
MISSION BAY
Vacation Isle
North Cove
South Cove
Ski Beach
Sewage Disposal Ponds
Fiesta Island
Pacific Passage
Enchanted Cove
Hidden Anchorage
De Anza Cove
DeAnza Point
Trailer Park
Rose Inlet
MISSION BAY PARK
Ventura Cove
Ventura Point
Stony Point
Mission Bay Channel
Bonita Cove
Mariners Basin
Mariners Point
Mission Point
Sunset Point
Perez Cove
Sea World Aquatic Park
Quivira Basin
Light
Entrance Channel
Coaster
Farnum Sch
Crown Point Sch
Fire Sta
Mission Beach Sch
Beach Park
Ocean Beach
Bernard Sch.
SUNSET CLIFFS BLVD
MISSION BAY DRIVE
UNDER CONSTR
Section from U.S.G.S. 1:24,000 scale map:
La Jolla, Calif.
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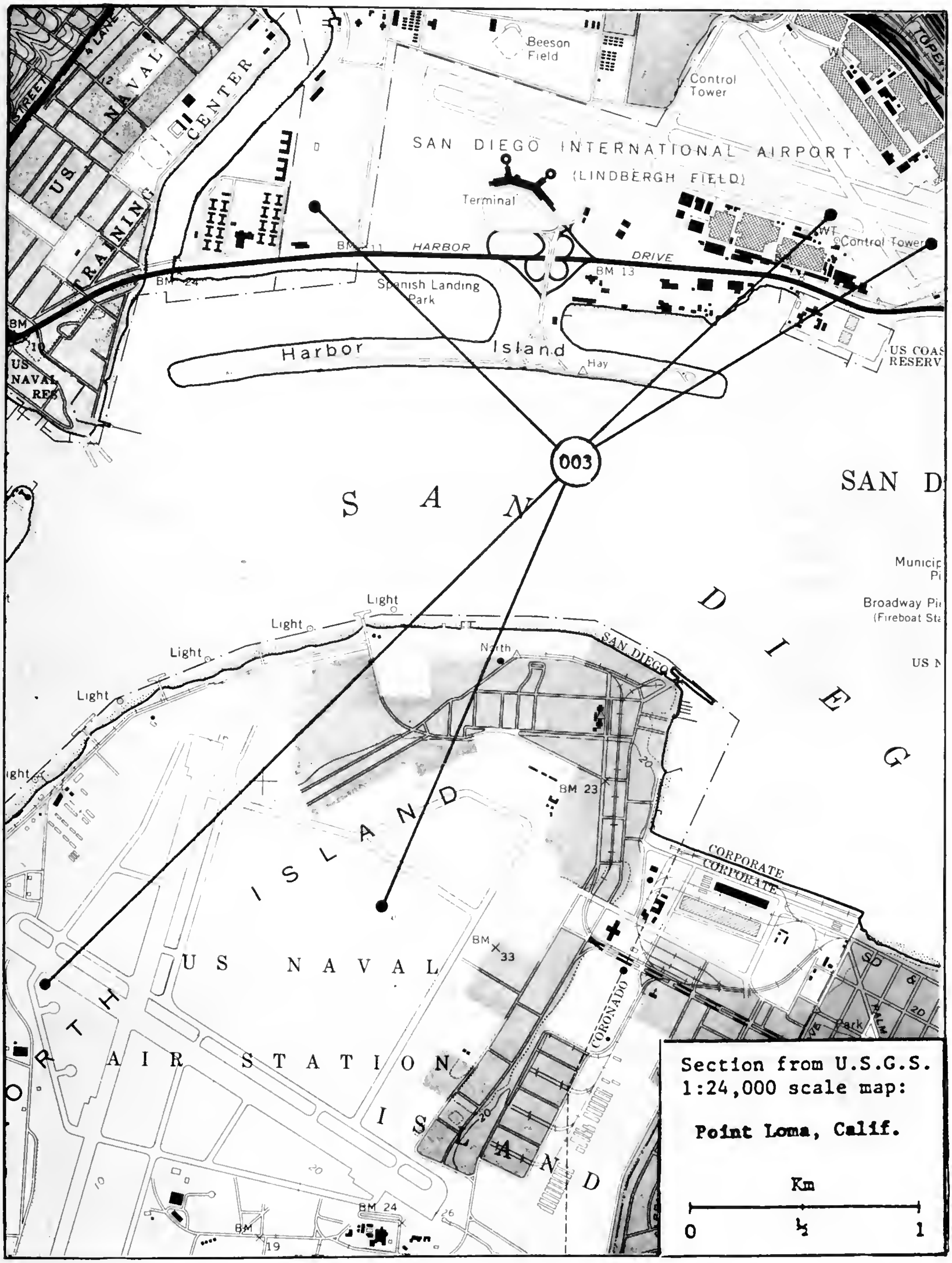
003 North San Diego Bay 32°44'N, 117°12'W

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	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).


Beeson Field
Control Tower
SAN DIEGO INTERNATIONAL AIRPORT
(LINDBERGH FIELD)
Terminal
HARBOR DRIVE
Control Tower
Spanish Landing Park
Harbor Island
US COAST RESERVE
US NAVAL TRAINING CENTER
US NAVAL RES
003
SAN DIEGO
Municipal Pier
Broadway Pier (Fireboat Sta
Light
Light
Light
Light
North
NORTH ISLAND
US NAVAL AIR STATION
CORPORATE
CORONADO
ISLAND
Section from U.S.G.S. 1:24,000 scale map:
Point Loma, Calif.
Km
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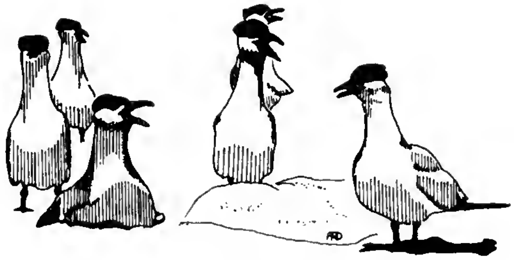
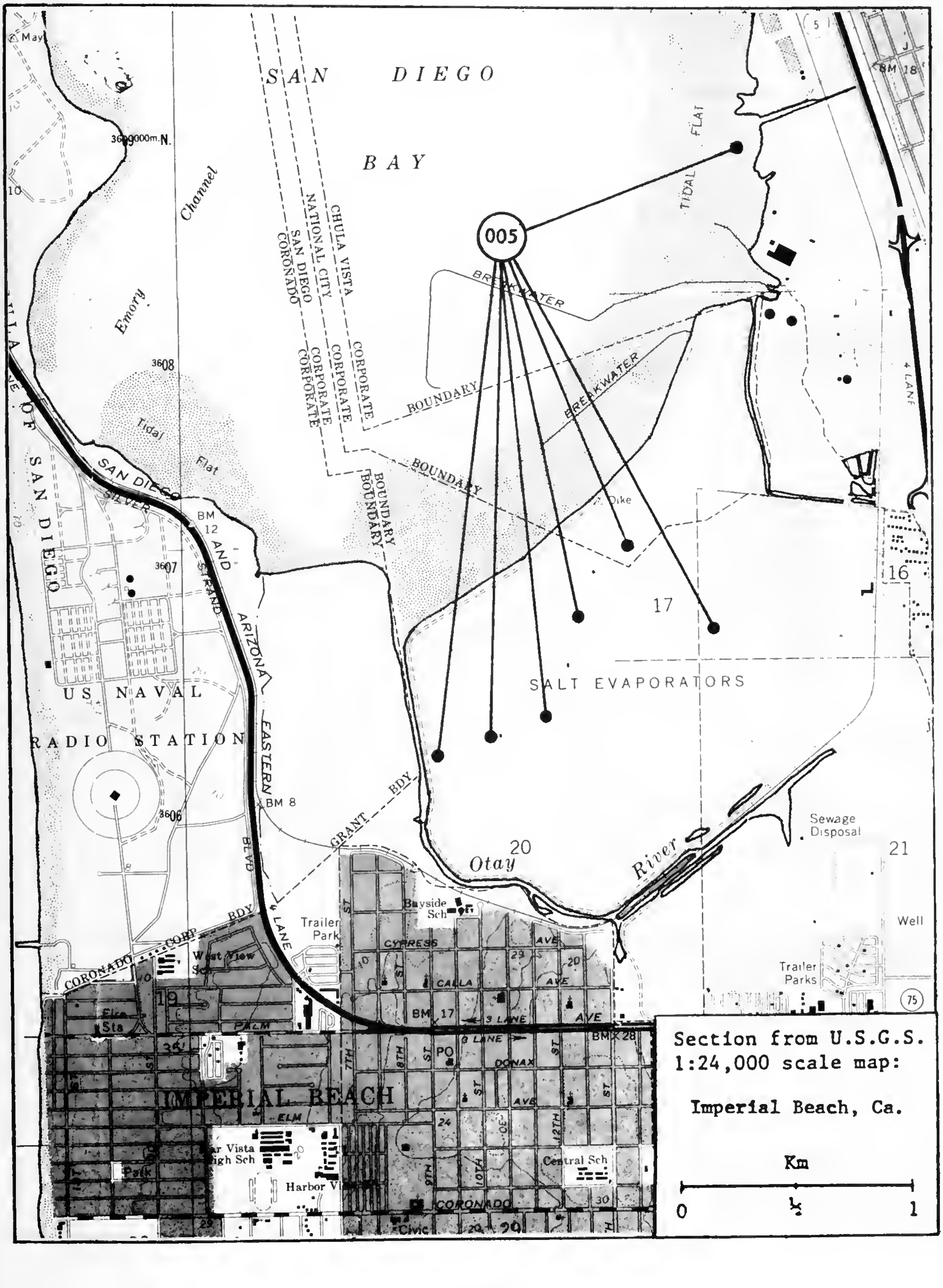
(005) South San Diego Bay 32°36'N, 117°07'W

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



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

Imperial Beach, Ca.

Km

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(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

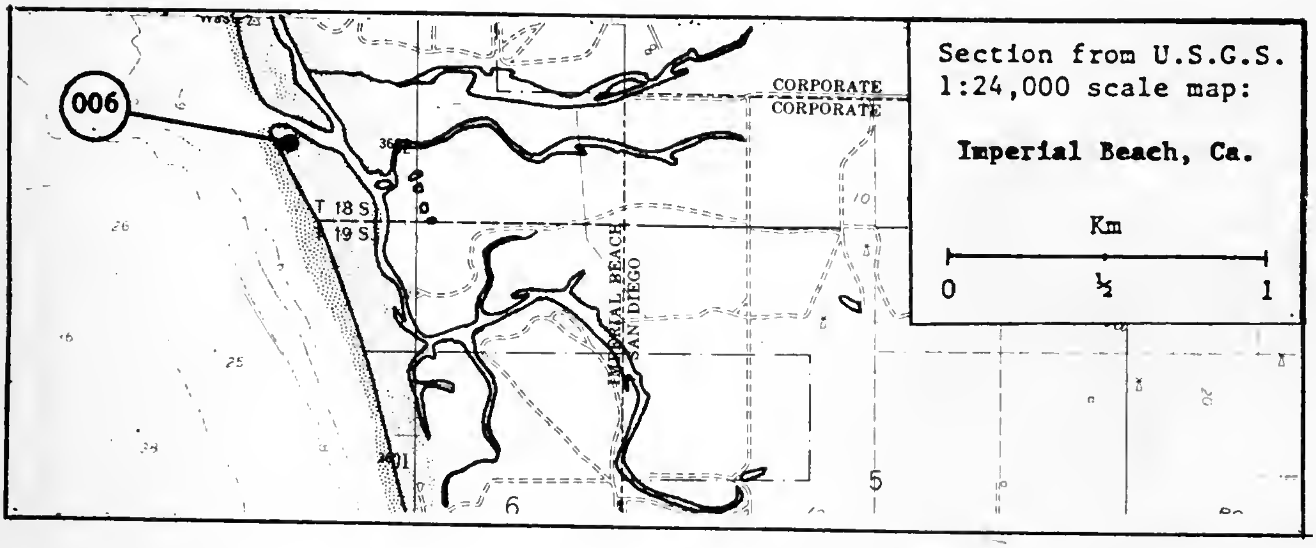
Least Terns are an endangered species. Populations of Least Terns are surveyed annually. For the most current information contact the California Department of Fish and Game.

Least Tern	10	(Denson,1980,L)	12

(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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CORPORATE
CORPORATE
T 18 S
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SAN DIEGO
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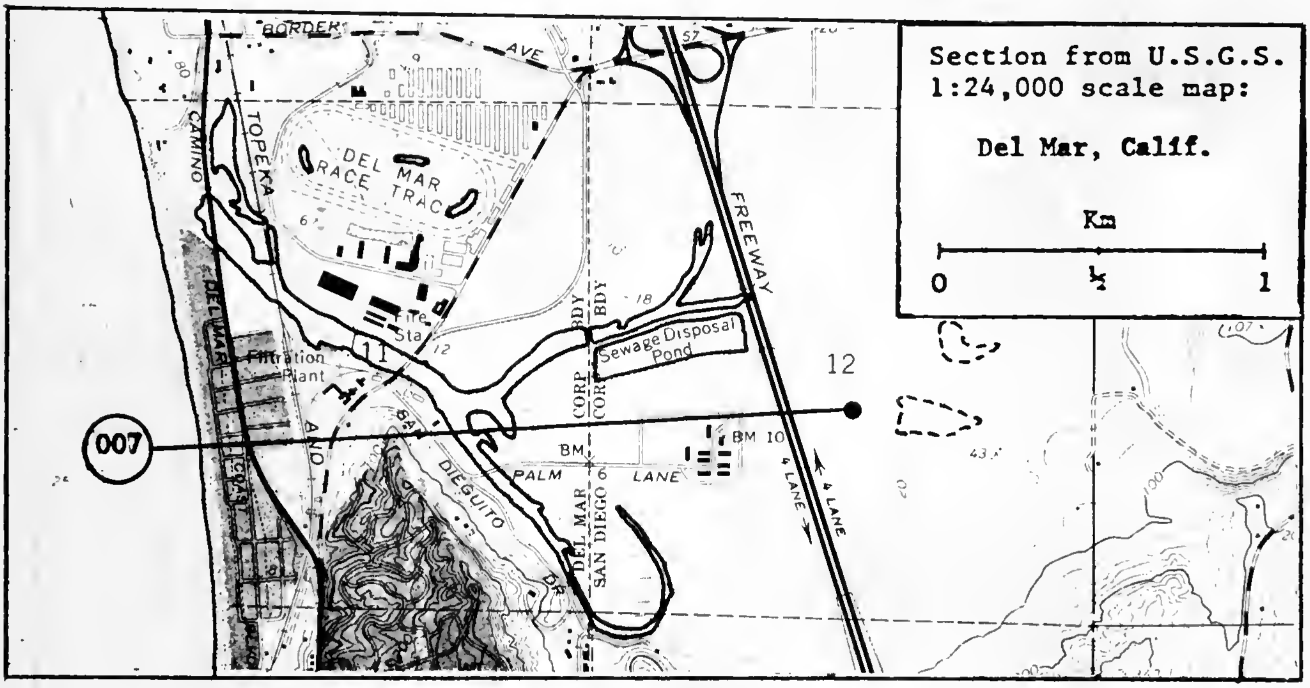
BORDER
AVE
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Del Mar, Calif.
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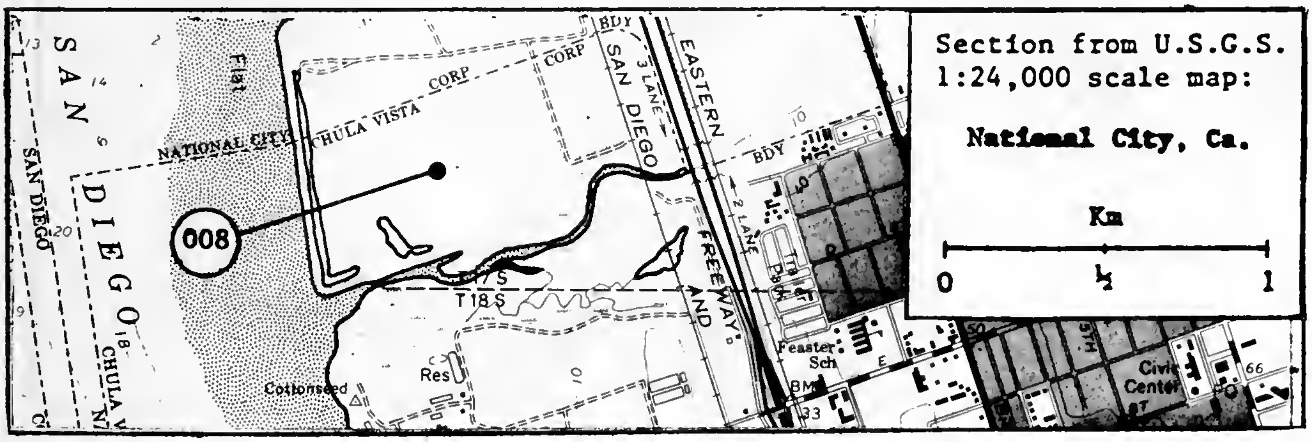
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Feaster
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Civic
Center
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1:24,000 scale map:
National City, Ca.
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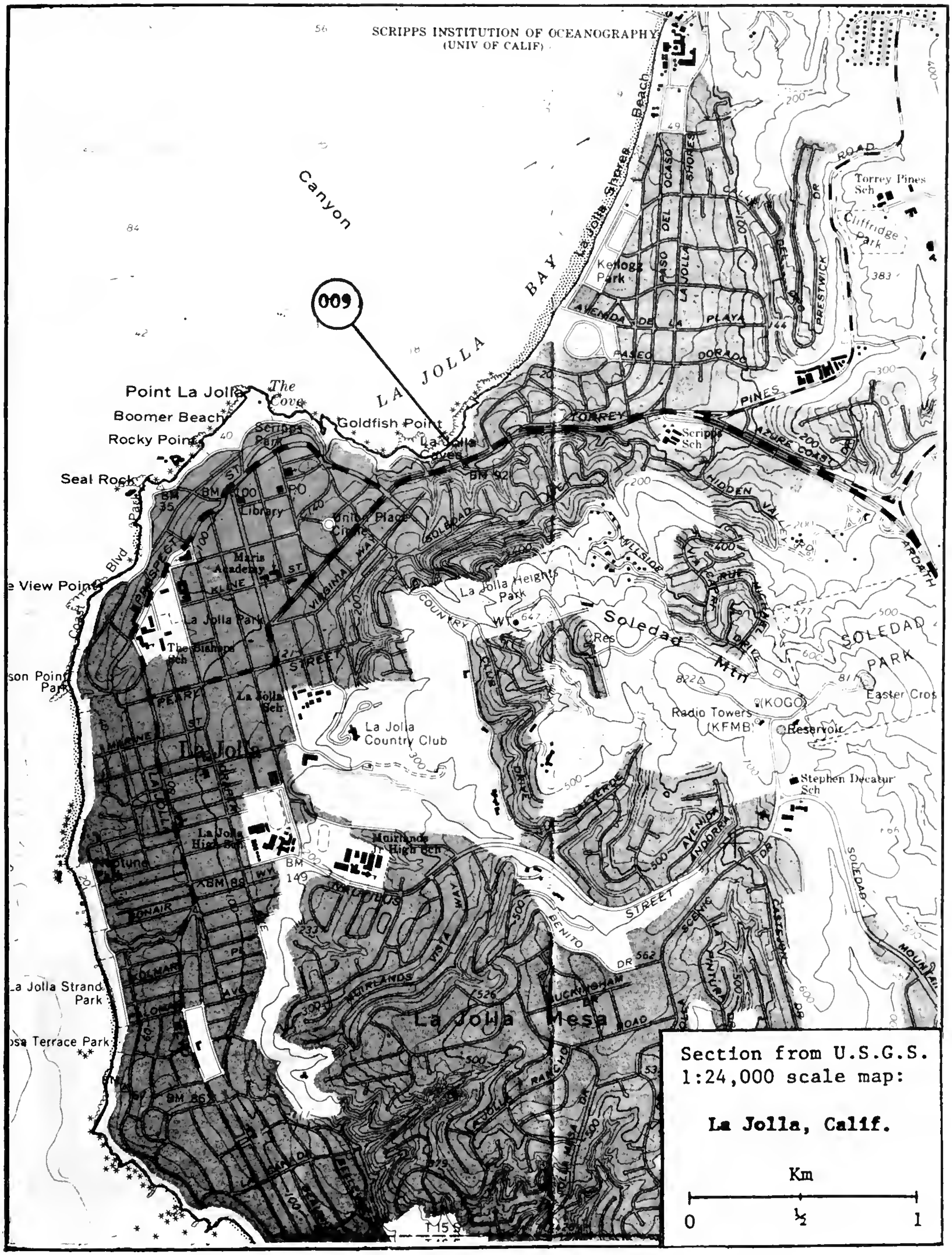
009 La Jolla 32°51'N, 117°15'55"W

Brandt's Cormorant	6	(Everett,1980,L)	*16*
Western Gull	4	(Everett,1980,L)	*16*
Total	10		



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1:24,000 scale map:

La Jolla, Calif.

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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 5) 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
to be assigned 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 9:40 Date 6/26/79 - boat; 8/2/79 - aerial

Weather 6/26 overcast, light breeze from NW, swells 6', waves 1'.

Species	No. Nests	No. Birds (use codes below[1])	Remarks (estimated minimum & maximum, egg & chick status, etc.)
Fork-tailed Storm Petrel			
Leach's Storm Petrel			
Ashy Storm Petrel			
Brown Pelican		roost	
Cormorant (unid.)		roost	count made from aerial slide taken 8/2/79.
Brandt's Cormorant	C 680	1360	Most nests in a "bowl" on the S.W. side of
Double-crested Cormorant			the island - these cannot be counted from
Pelagic Cormorant			the mainland or from a boat. Data qual. = II.
Black Oystercatcher			
Gull (unid.)			
Glaucous-winged Gull			Birds were counted that appeared to be on
Western Gull	E 28		territories, number estimated conservative.
Least Tern			Data quality = III. 15 nests est. on N. side,
Forster's Tern			9 nests est. on western side & 4 nests est.
Caspian Tern			on S.E. side.
Common Murre			
Pigeon Guillemot	E 25		Good habitat, 24 birds either on the island
Marbled Murrelet			or just offshore.
Xantus' Murrelet			
Cassin's Auklet			
Rhinoceros Auklet			One seen flying N. from island on 6/25 in
Tufted Puffin	E 1		the evening. Reynolds, CDF&G est. 1 pr. here
			in 1970. Mark Rauzon, USFWS - seaotter prog.
			has seen no more than 2-3 puffins here. Rock
			does not appear to have soil, but it may be
			present and covered with guano.

Recommended Classification: Colony Complex ____ Colony X Sub-colony ____ Roost Area ____

MARINE MAMMALS

Species	No. Nests	No. Birds	Remarks
Steller Sealion			Hauled out primarilly on the west, south &
California Sealion		E 500	eastern sides of the island. Boat distance
Northern Elephant Seal			must be maintained to avoid disturbance &
Harbor Seal		E 10	landing on island at this time not possible
			without causing disturbance.
			Hauled out on intertidal rock E. of island

[1] Use these abbreviations to describe numbers. Use C & E whenever possible, avoid P & X. T = Total count, C = count, E = estimate, P = probably present (state reason under remarks), X = present pr = pairs, B = breeding, NB = non-breeding

Figure 5. Colony Status Record, front.

AREA Number 477 007

Pierdas Blancas Rock
Description of Colony

DATE 6/26 & 8/2/79

Access Excellent landing beach (see map), unless S.W. 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 recomended due to disturbance problem with sealions.

Vegetation & Physiographic Characteristics This large island has a large bowl on the S.W. side were 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.

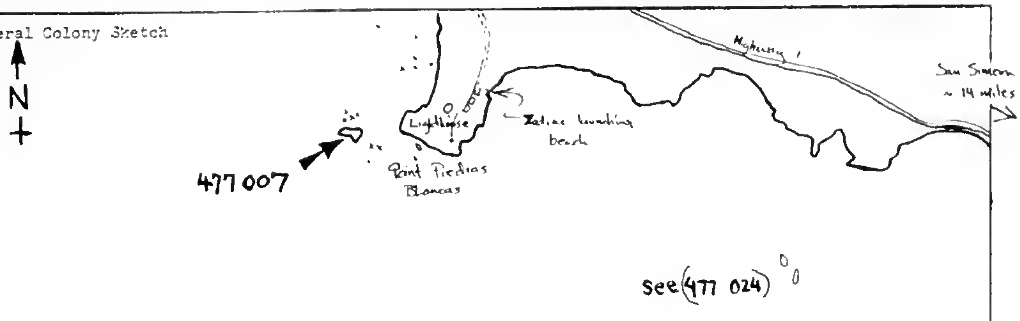
~~Special Plans Explained~~ For future surveys it is recommended the island be watched from mainland for a long period when Tufted Puffins should be feeding chicks. Aerial photos work well for Brandt's & boating is necessary for Western Gulls & for Pelagic Cormorants. Island should be landed on if disturbance to sealions & birds is avoided.

Photo Coverage Aerial color slides & B+W's taken from 500-800 ft. w/ a 70-210 zoom & a 300 mm len @ 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 southern**most** breeding point of the Tufted Puffin on the west coast.

Supplemental Material & Data Attached (list) Photographs attached.

General Colony Sketch



MAP: tracing from U.S.G.S. 1:24,000 map Pierdas Blancas, Calif.

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.

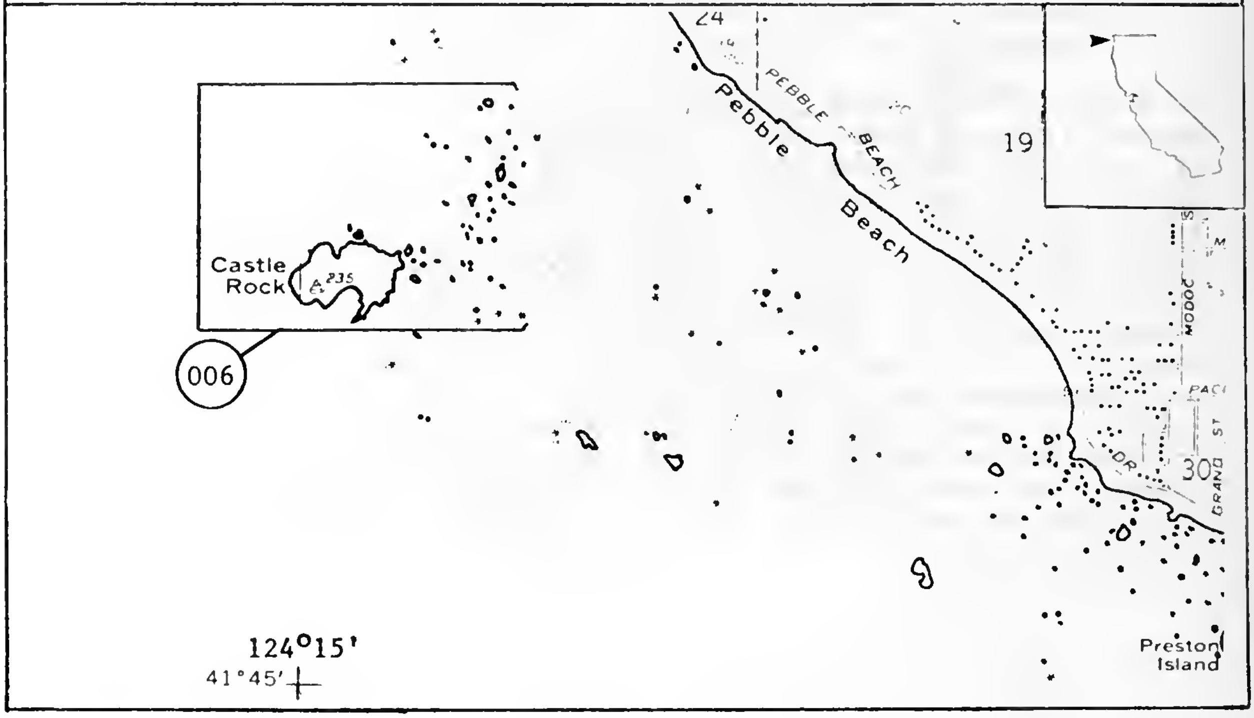
VIEW POINT: Point St. George or Pebble Beach Drive, Crescent City.

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.



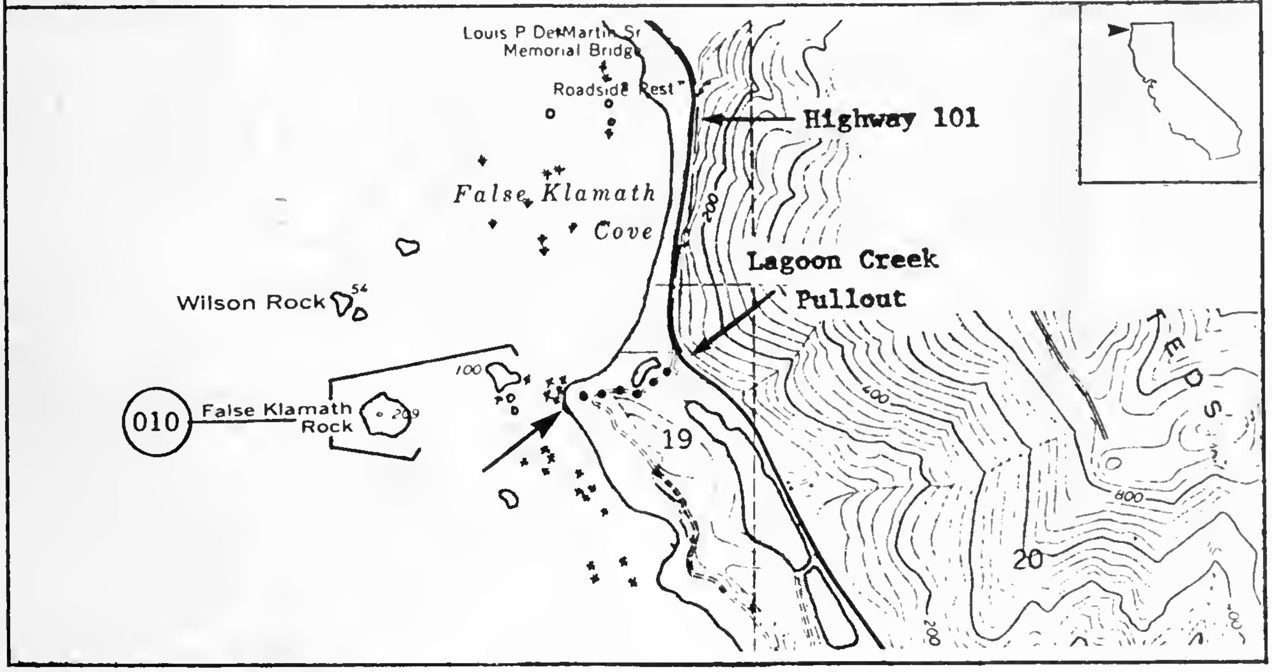
VIEW POINT: False Klamath Rock Overlook, Redwood National Park.

COLONY: False Klamath Rock (325 010).

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.



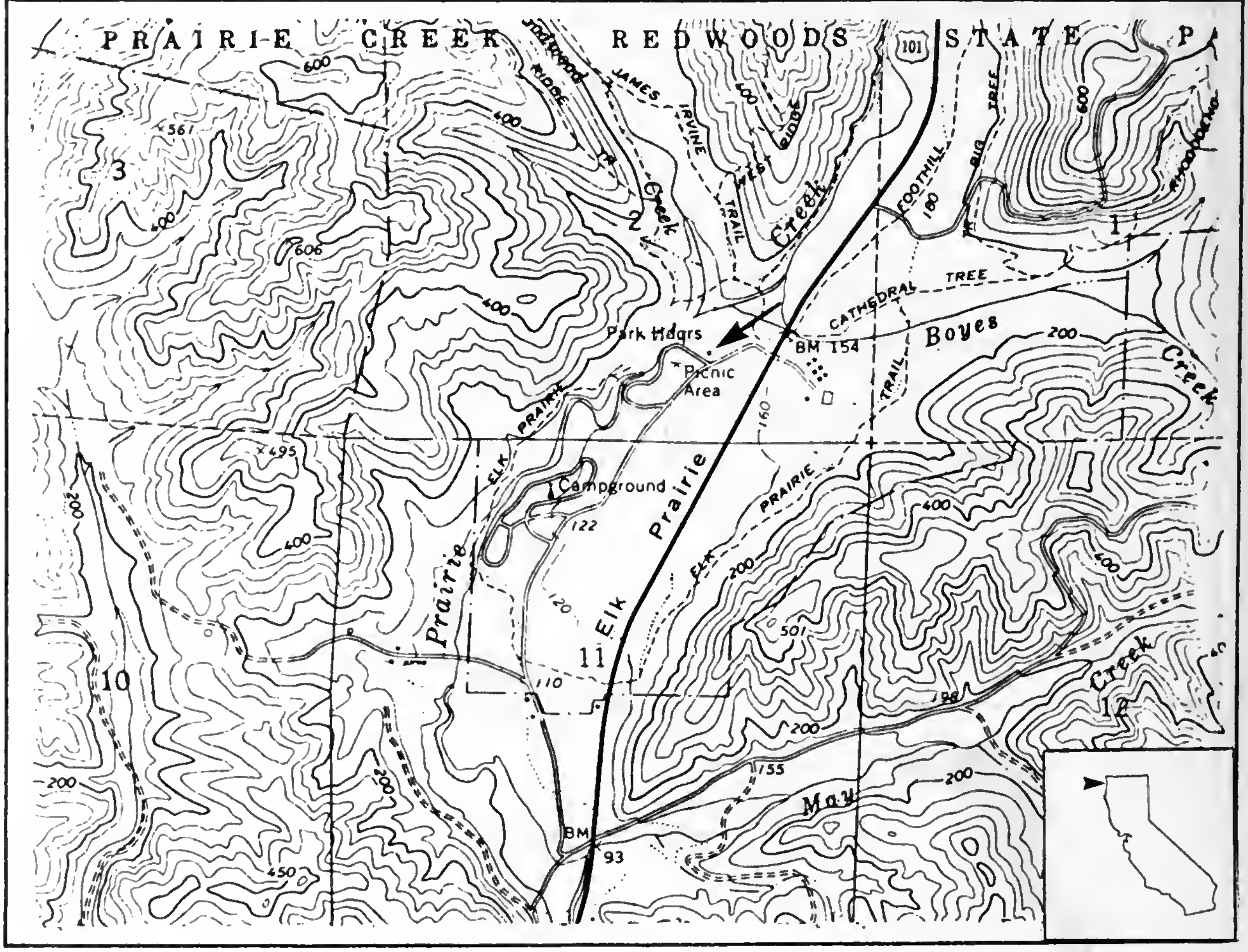
VIEW POINT: Prairie Creek Redwoods State Park, Orick.

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.



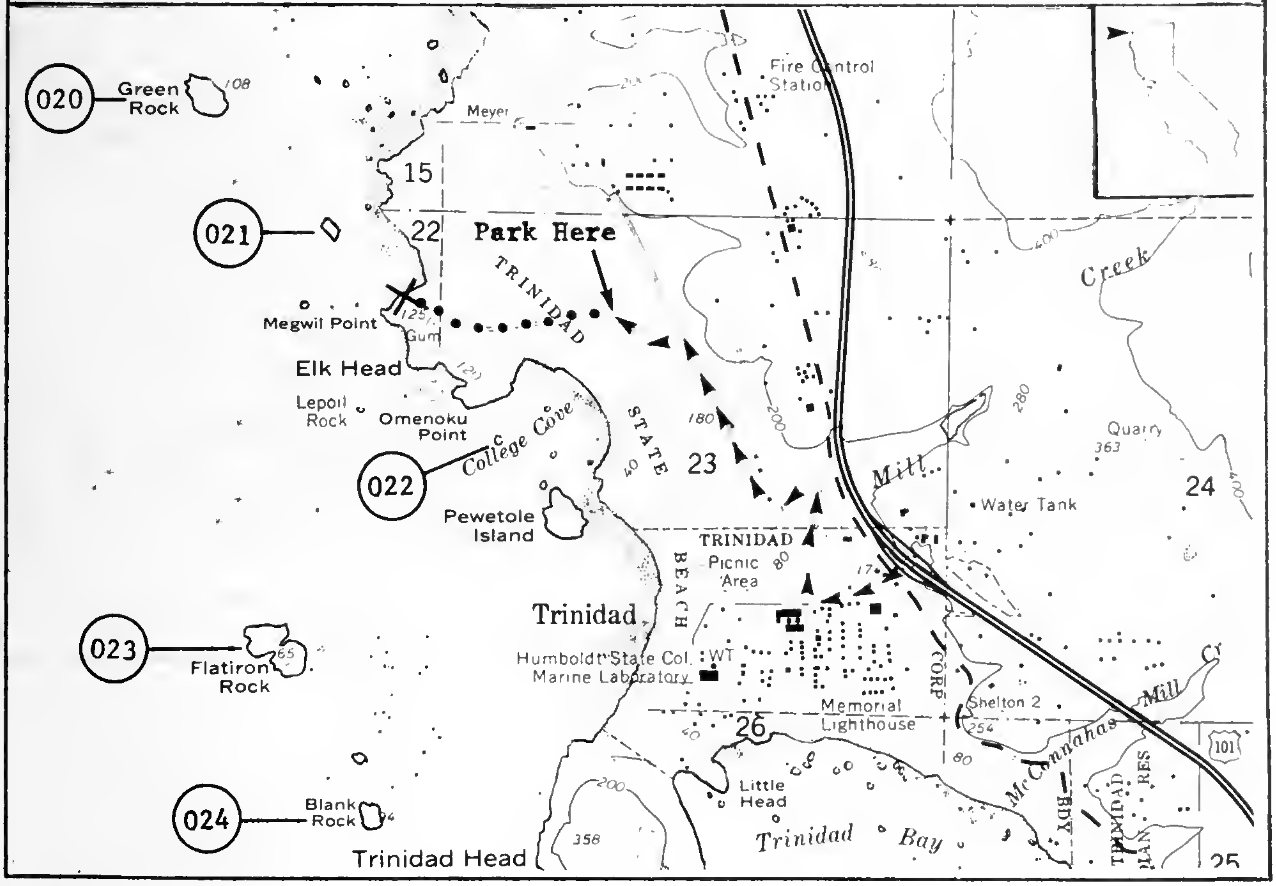
VIEW POINT: Elk Head, Trinidad State Beach.

COLONIES: Green Rock (325 020), Puffin Rock (325 021), 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.



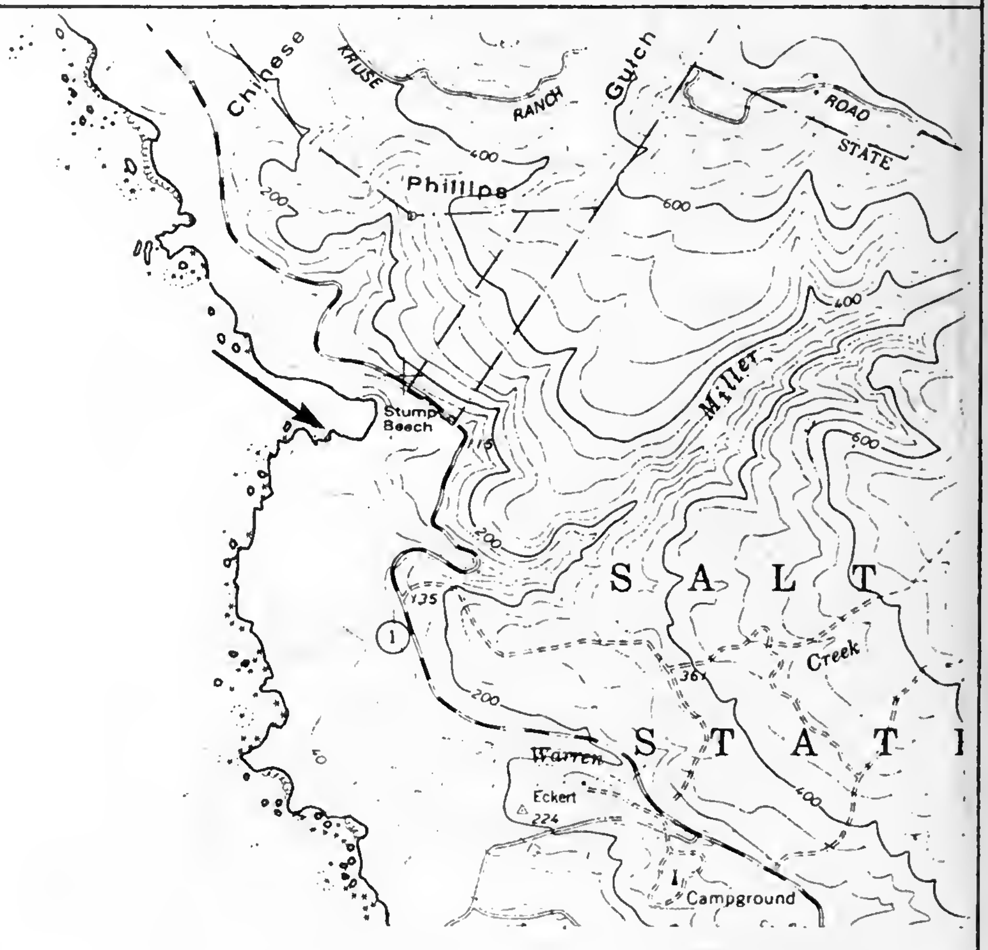
VIEW POINT: Stump Beach, Salt Point State Park.

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.



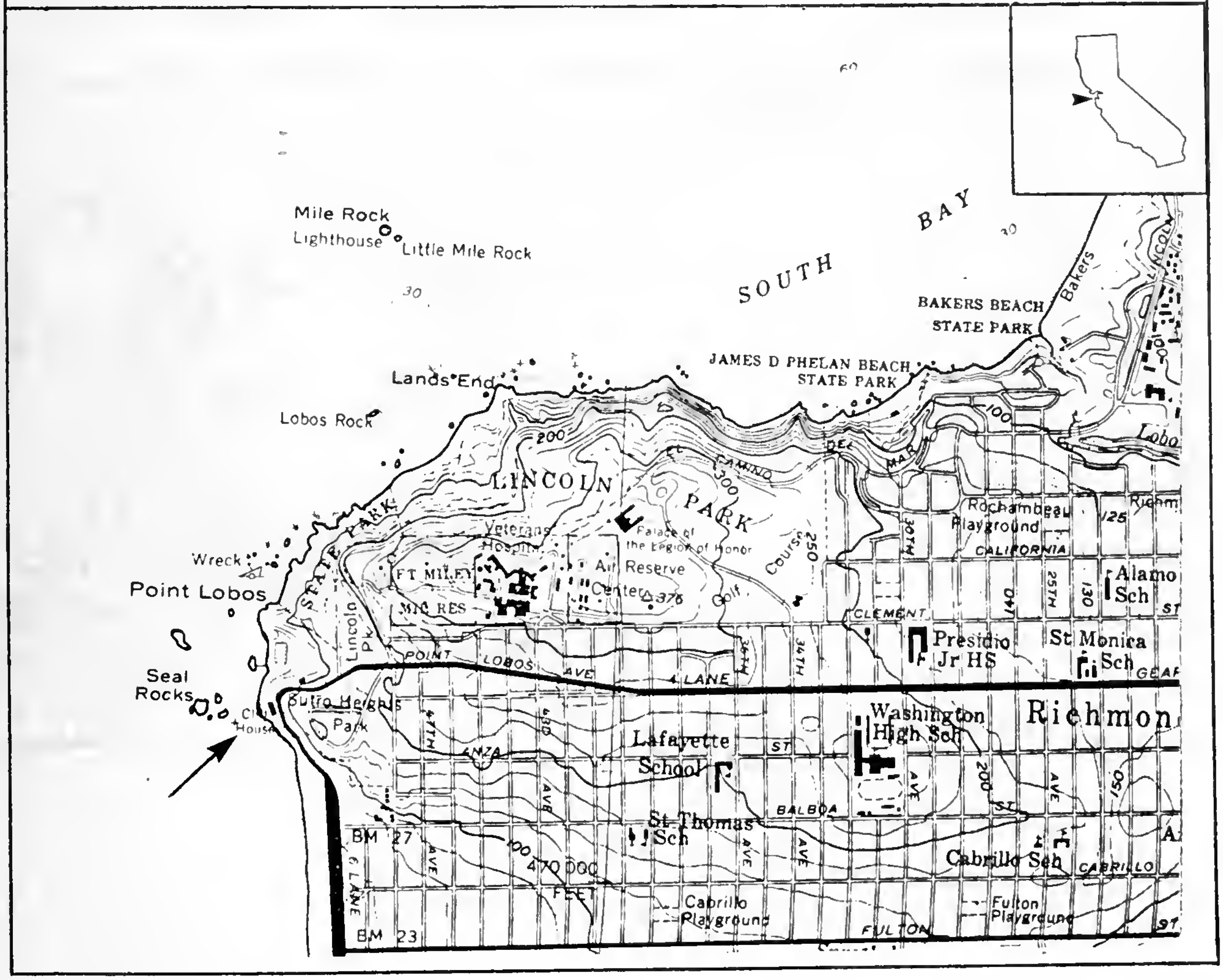
VIEW POINT: Cliff House, San Francisco.

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).

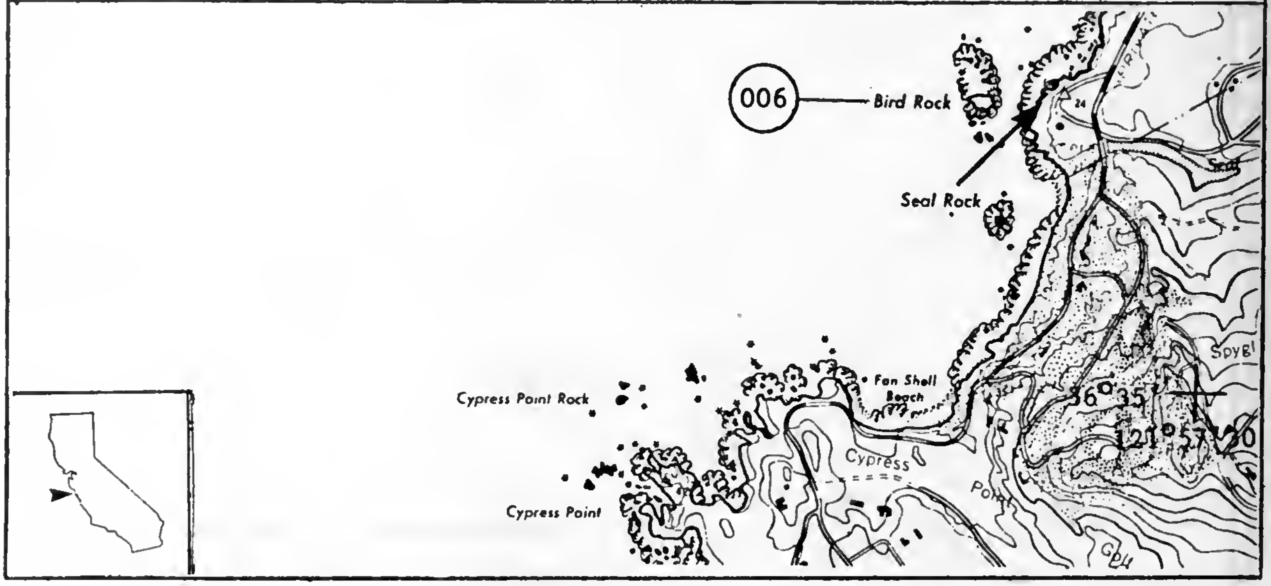
ACCESS: Via 17 Mile Drive near Carmel, a scenic private road. There is a charge to enter and a map showing points of interest is provided. Bird Rock can be seen well since it is close to land and coin-operated telescopes are available.

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 here in 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.

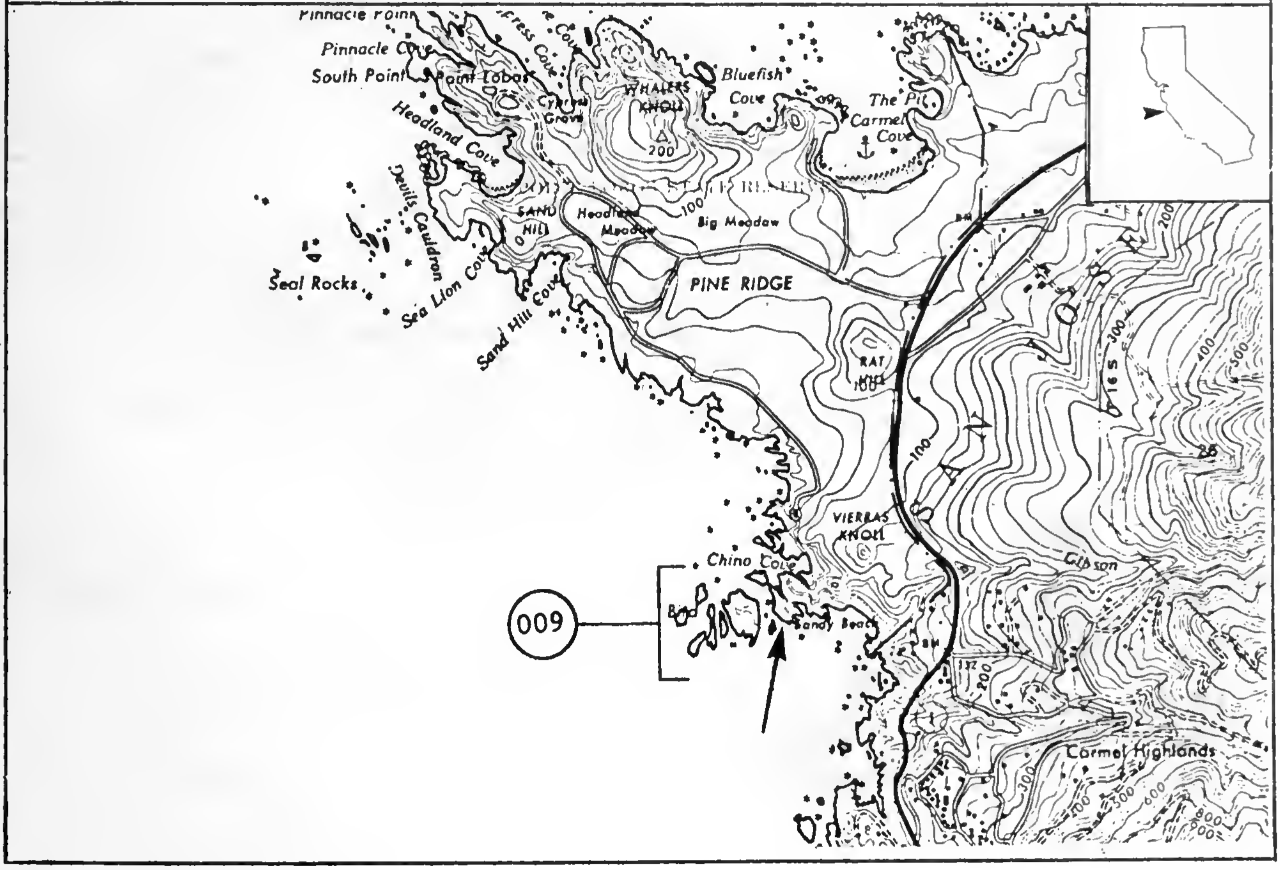
Western Gull - Low numbers nest in the area. These and other species of gulls winter in the area.

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.



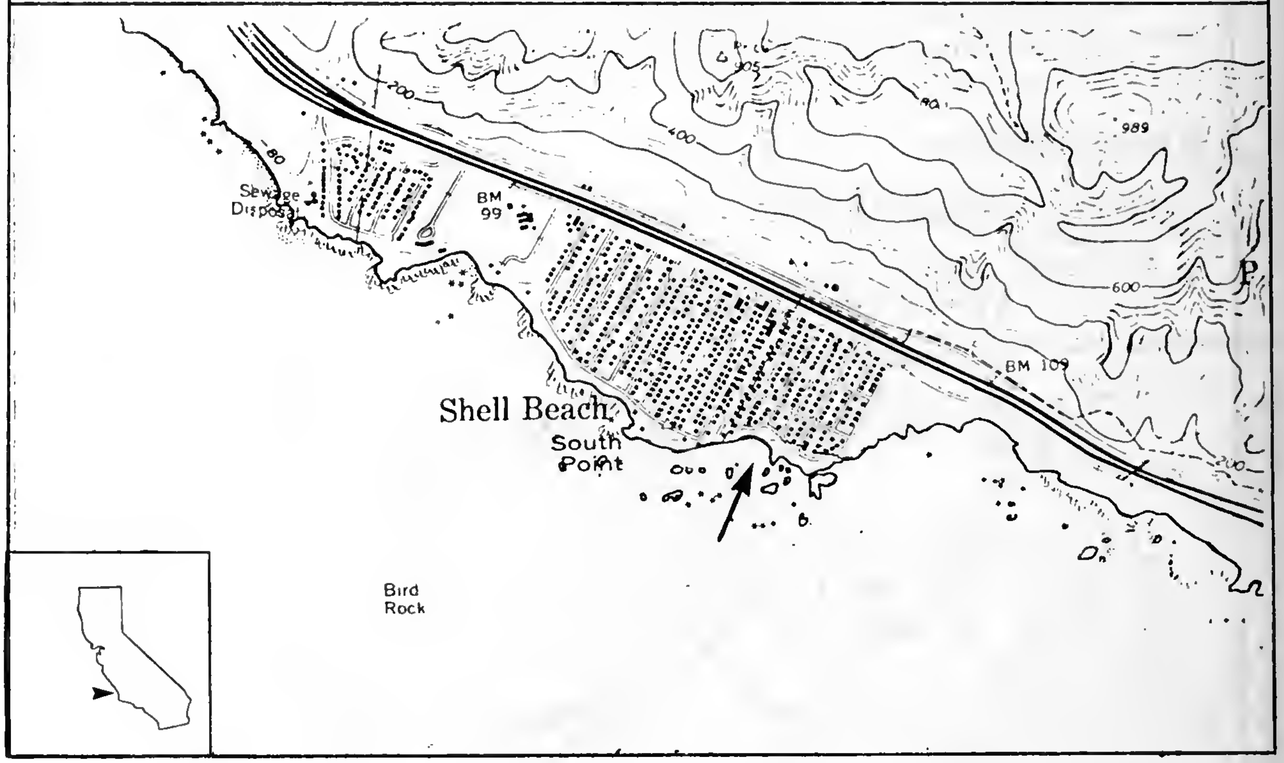
VIEW POINT: Shell Beach

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.

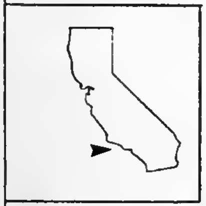
SEABIRD SPECIES:

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).

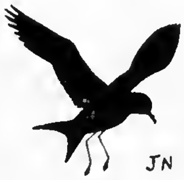
ACCESS: Access to the Channel Islands is by charter boat from Ventura and Los Angeles, California. The waters on the north side of West Anacapa Island are closed to boats out to nine fathoms during the nesting season. All interested persons are encouraged to contact the National Park Service for more 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 accomodate 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 (429 012)

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 locally used or were assigned by us or previous investigators.

Name	Colony	Lat., Long.	Page
Agua Hedionda	524 004	33°08'45"N, 117°19'30"W	322
Alameda Creek	429 015	37°36'59"N, 122°07'20"W	192
Albion Cove to Navarro River	379 029	39°12'30"N,123°46'20"W	136
Alcatraz Island	429 036	37°49'34"N, 122°25'20"W	208
Aliso Creek	525 007	33°30'35"N,117°45'12"W	324
Anacapa Island - East	502 009	34°00'46"N,119°25'26"W	288
Anacapa Island - Middle	502 008	24°00.19"N,119°23'43"W	288
Anacapa Island - West.	502 007	34°00'54"N,119°21'57"W	286
Anaheim Bay and Surfside Beach	524 009	33°44'05"N,118°05'34"W	302
"Anderson Canyon Rock"	454 016	36°06'58"N,121°36'58"W	224
Anderson Cliffs	379 013	39°52'30"N,123°54'30"W	120
Ano Nuevo Island	429 023	37°06'30"N,122°20'09"W	194
Arched Rock	404 006	38°25'53"N,123°07'32"W	150
Bair Island	429 016	37°31'43"N,122°13'05"W	192
Batiquitos Lagoon	524 005	33°05'25"N,117°17'30"W	322
Bay Point Area	501 016	34°02'N,120°19'W	280
Bench Mark 125 to Timber Cove	404 031	38°32'20"N,123°17'W	168
"Bench Mark 227x"	454 029	36°23'21"N,121°54'13"W	230
"Bench Mark 247"	454 036	36°02'N,121°34'45"W	234
Bird Island	429 007	37°49'27"N,122°32'09"W	186
Bird Island	454 009	36°30'25"N,121°56'33"W	218
Bird Rock	404 010	38°13'49"N,122°59'35"W	154
Bird Rock	454 006	36°35'31"N,121°57'59"W	216
Bird Rock	524 010	33°27'04"N,118°29'04"W	310
Bird Rock and N.W. San Clemente Is.	524 012	33°02'N,118°35'W	314
Bird Rock, mainland point across from	477 016	35°52'37"N,121°26'59"W	246
Black Point to Stewarts Point	404 026	38°40'N,123°25'15"W	164
Blank Rock	325 024	41°03'15"N,124°09'26"W	80
Bodega Head	404 038	38°18'N,123°03'45"W	176
Bodega Rock	404 008	38°17'48"N,123°02'50"W	150
Bolsa Chica Beach	524 006	33°42'05"N,118°03'05"W	304
"Bonee Cliffs"	379 031	39°07'N,123°42'45"W	138
Bonita Cove	429 027	37°49'30"N,122°31'W	198
Bridgeport Landing	379 033	39°03'45"N,123°41'50"W	140
Brothers, The	429 040	37°57'47"N,122°26'W	210
Buena Vista Lagoon	525 008	33°10'30"N,117°21'15"W	324
"Burns Creek Rocks"	454 017	36°08'29"N,121°39'28"W	224
"Button Rock"	325 054	41°03'N,124°08'W	100
Cap Rock	325 054	41°03'N,124°08'W	100
Cape San Martin	477 003	35°53'17"N,121°27'55"W	240
Cape Vizcaino	379 002	39°43'34"N,123°49'55"W	108
Cannon Gulch to Stump Beach	404 029	38°35'30"N,123°20'30"W	166
Casket Rock	379 009	39°07'49"N,123°43'39"W.	116
Caspar Anchorage	379 023	39°22'N,123°49'10"W	128
Castle Rock	325 006	41°43'37"N,124°15'W	66
Castle Rock	501 005	34°03'17"N,120°26'17"W	268
Castle Rocks & Mainland	454 010	36°22'35N,121°54'25"W	220
Cavanaugh Cove to Gunderson Rock	379 030	39°08'N,123°44'W	138
Cayucas Point, island south of	477 025	35°26'46"N,120°55'51"W	250
"Chadbourne Rocks"	379 019	39°37'02"N,123°47'W	124

Name	Colony	Lat., Long.	Page
Chris Rocks	379 003	39°42'51"N,123°48'07"W	110
Collins Landing to Gualala River	404 023	38°46'N,123°32'40"W	160
Coche Pt. to Cavern Pt.	502 012	34°2'N,119°36'50"W to 3'20"N,119°38'45"W	292
Cone Rock	325 001	41°58'21"N,124°13'02"W	62
Cooper Point and Islands	454 031	36°14'55"N,121°50'10"W	232
"Cormorant Hotel"	325 056	40°02'10"N,124°04'50"W	102
"Cormorant Rock"	325 015	41°08'32"N,124°09'39"W	74
Coyote Creek	429 019	37°28'41"N,122°02'51"W	194
Coyote Hills	429 017	37°32'48"N,122°07'28"W	192
Davenport to Point Santa Cruz	454 021	36°58'N,122°07'W	226
Del Mar	545 006	32°33'25"N,117°07'48"W	336
Del Mar Point	404 024	38°15'N,123°31'W	160
Destroyer Rock	501 009	34°36'10"N,120°38'40"W	272
Destroyer Rock, mainland and rocks east of	501 010	34°36'N,120°38'26"W	272
"Devils Basin"	379 007	39°10'14"N,123°44'50"W	114
Devil's Slide Rock and headlands	429 014	37°34'28"N,122°31'39"W	192
Diablo Canyon Nuclear Power Plant South	477 030	35°12'07",120°50'39"W	254
Diablo Rock & Adjacent Mainland	477 029	35°12'36"N,120°51'38"W	254
Dillon Beach Rocks	404 009	38°16'26"N,122°59'11"W	152
Dolan Rock	454 018	36°05'06"N,121°37'02"W	224
Double Point Rocks	429 003	37°56'51"N,122°47'08"W	184
"Double Rock"	325 054	41°03'00"N,124°08'W	100
"Double Rock Region"	477 031	35°11'39"N,120°50'29"W	256
Duncan Point to Arched Rock	404 037	38°22'30"N,123°05'W	174
"Easy Triangle Rocks"	325 047	41°40'22"N,124°08'30"W	94
Eel Rock Cliffs	429 031	37°24'15"N,122°25'30"W	204
"Elephant Rocks Complex"	404 041	38°11'N,122°58'W	178
Elkhorn Slough	454 003	36°49'04"N,121°46'30"W	214
False Cape Rocks	325 040	40°30'38"N,124°23'40"W	40
False Klamath Rock	325 010	41°35'40"N,124°06'36"W	70
Farallon Islands	429 012	37°41'53"N,123°00'05"W	188
"Fish Rock Cove"	404 022	38°47'45"N,123°35'20"W	158
Fish Rocks	404 003	38°48'N,123°35'31"W	146
Flatiron Rock	325 023	41°03'34"N,124°09'39"W	80
Flint Rock Head	325 011	41°31'31"N,124°05'00"W	70
Footsteps Rock	325 050	41°37'00"N,124°07'10"W	94
Fossil Point	477 034	35°10'26"N,120°43'26"W	256
"Georgia Pacific"	379 022	39°27'N,123°48'45"W	128
Gerstle Cove to Stillwater Cove	404 030	38°33'N,123°18'45"W	168
Goat Island	379 006	39°18'28"N,123°48'49"W	112
Green Rock	325 020	41°04'32"N,124°09'48"W	78
Greyhound Rock to Davenport	429 035	37°03'N,122°15'W	206
Grimes Point	454 033	36°12'20"N,121°44'15"W	232
Guadalupe Slough	429 020	37°28'12"N,122°04'52"W	194
Gualala Point Island	404 004	38°45'04"N,123°31'42"W	148
"Guillemot Island Area"	454 023	36°31'25"N,121°56'47"W	226
Gull Island	524 001	33°57'01"N,119°49'28"W	300
Gull Rock	404 035	38°25'30"N,123°07'10"W	172
Gull Rock Area	429 025	37°52'35"N,122°37'W	196
"Halfmoon Rock"	325 054	41°03'N,124°08'W	100
Hardy Rock & Union Landing	379 017	39°42'20"N,123°38'30"W	124
Harris Pt. to Cuyler Harbor	501 015	34°04'N,120°22'W	278
High Tip	379 012	39°55'30"N,123°57'10"W	118
"Horseshoe Cove"	404 028	38°36'30"N,123°22'10"W	166

Name	Colony	Lat., Long.	Page
Hunter Rocks	325 002	41°57'22"N,124°12'41"W	62
Huntington Beach	525 001	33°38'43"N,117°59'02"W	320
Hurricane Point Rocks	454 011	36°21'40"N,121°54'25"W	220
"Iverson Landing"	404 002	38°50'39"N,123°38'37"W	144
Kibesillah Rock	379 004	39°34'49"N,123°46'51"W	110
La Cruz Rock	477 006	35°42'23"N,121°18'45"W	242
La Jolla	545 009	32°51'00"N,117°15'55"W	338
Lafler Rock & Mainland	454 034	36°12'N,121°43'36"W	232
Lake Talawa Beach	325 005	41°50'03"N,124°13'18"W	64
"Larus Rock"	477 014	35°57'44"N,121°29'01"W	246
"Last Chance Rock"	325 049	41°38'05"N,124°07'30"W	94
Limantour Estero	404 013	38°01'52"N,122°55'53"W	154
Lion Rock	477 011	35°31'01"N,120°52'15"W	244
Lion Rock at Point Sal	501 008	34°53'55"N,120°39'50"W	272
"Little Pewetole Rock"	325 022	41°04'N,124°09'W	78
Little River Rock	325 035	41°02'08"N,124°07'16"W	84
Lobos Rocks	454 025	36°27'18"N,121°56'10"W	228
Lobos Rock & Lands End	429 029	37°47'15"N,122°30'20"W	200
Lopez Rock	454 020	36°01'34"N,121°34'46"W	226
Los Panasquitos Lagoon	545 001	32°55'49"N,117°14'54"W	328
"Luffenholtz Rock"	325 054	41°03'N,124°08'W	100
Mallo Pass Creek	379 034	39°02'20"N,123°41'50"W	140
Martin's Beach	429 033	37°22'N,122°24'30"W	204
McWay Rocks	454 015	36°09'46"N,121°40'44"W	222
Mendocino	379 025	39°18'10"N,123°47'50"W	132
Mendocino Bay	379 026	39°17'30"N,123°47'40"W	132
Millers Point Rocks	429 002	37°58'53"N,122°48'35"W	184
Mission Bay	545 002	32°46'42"N,117°13'46"W	330
Mistake Point to Big White Rock	379 014	39°51'30"N,123°53'30"W	120
"Moat Cove"	404 018	38°53'10"N,123°41'W	156
"Molera Rock"	454 030	36°16'45"N,121°51'30"W	232
Morro Rock and Pillar Rock	477 026	35°22'13"N,120°52'08"W	252
"Mr'rp Rock"	325 054	41 03'N,124°08'W	100
Mugu Lagoon	502 006	34°06'08"N,119°06'04"W	284
Muir Beach Headlands to Tennessee Cove	429 026	37°51'00"N,122°33'45"W	198
Newport Bay	525 002	33°38'46"N,117°53'08"W	320
"Newport Rocks"	379 021	39°34'49"N,123°46'51"W	126
"North Pismo Beach Rocks"	477 036	35°08'57"N,120°39'23"W	258
North San Diego Bay	545 003	32°44'N,117°12'W	332
"Northwest Cape Rocks"	404 032	38°30'40"N,123°15'17"W	170
Oakland International Airport	429 011	37°43'21"N,122°13'46"W	188
Old Arcata Wharf	325 038	40°50'59"N,124°05'58"W	86
Ormond Beach	502 005	34°08'13"N,119°10'56"W	284
Oso Flaco Lake	477 037	35°01'42"N,120°37'40"W	258
Palmer's Point to Scotty Point	325 052	41°07'N,124°09'W	96
"Partington Ridge North"	454 014	36°10'06"N,121°41'14"W	222
"Partington Ridge South"	454 035	36°00'N,121°40'40"W	234
"Peaked Hill"	404 034	38°25'45"N,123°07'10"W	172
Pecho Rock	477 032	35°10'45"N,120°49'00"W	256
Pescadero Rock	454 022	36°33'43"N,121°56'33"W	226
Pfeiffer Point	454 032	36°35'18"N,121°47'35"W	232
Piedras Blancas	477 007	35°39'52"N,121°17'18"W	242
Pier 45	429 037	37°48'34"N,122°25'W	208
Pigeon Point	429 034	37°10'55"N,122°23'20"W	206
Pillar Point	429 030	37°23'N,122°29'55"W	202
Pilot Rock	325 026	41°03'06"N,124°09'09"W	82
Pinnacle Point Area	454 007	36°31'25"N,121°57'14"W	216
Pinnacle Rock	404 039	38°18'20"N,123°01'10"W	178

Name	Colony	Lat., Long.	Page
Plaskett Rock	477 002	35°55'14"N,121°28'41"W	238
Plaskett Rock, small rocks and mainland N. and E. of	477 001	35°55'16"N,121°28'22"W	238
Point Arena	404 017	38°57'20"N,123°44'30"W	156
Point Arguello	501 011	34°38'N,120°38'49"W	274
Point Bennett, San Miguel Island	501 014	34°2'N,120°3'30"W	276
Point Bonita	429 008	37°48'55"N,122°31'40"W	186
Point Buchon	477 009	35°15'20"N,121°53'58"W	242
Point Cabrillo to Jack Peters Gulch	379 024	39°20'N,123°49'W	130
Point Conception	501 013	34°26'54"N,120°28'13"W	274
Point Diablo Bluffs and Needles	429 028	37°49'30"N,122°29'W	200
Point No Pass	379 011	39°58'40"N,123°59'40"W	118
Point Piedras Blancas, two rocks south of	477 024	35°39'30"N,121°16'02"W	250
Point Resistance	429 024	37°59'55"N,122°49'40"W	196
Point Reyes	429 001	37°59'26"N,123°59'24"W	182
Point Reyes Beach	404 012	38°04'00"N,122°58'47"W	154
Point San Simeon	477 038	35°38'N,121°12'W	258
Point St. George	325 057	41°47'N,124°15'W	104
Point St. George Lighthouse	325 044	41°50'N,124°22'W	92
Point Sur	454 012	36°18'22"N,121°53'39"W	220
Prince Island	325 003	41°57'04"N,124°12'41"W	64
Prince Island	501 004	34°03'29"N,120°20'00"W	266
Prisoner Rock	325 027	41°03'07"N,124°08'34"W	82
"Puffin Rock"	325 021	41°04'18"N,124°09'32"W	78
Punta del Ano Nuevo	429 022	37°07'07"N,122°20'09"W	194
"Pup Rock and Adjacent Mainland"	477 028	35°13'00"N,120°52'11"W	254
"Radar Station Rocks"	325 051	41°33'30"N,124°06'00"W	96
"Ragged Point Lodge Colony"	477 022	35°46'53"N,121°19'56"W	250
Red Rock	429 039	37°55'45"N,122°25'50"W	210
Redding Rock	325 013	41°20'29"N,124°10'26"W	72
Redwood Gulch, point north of	477 017	35°50'20"N,121°24'04"W	246
"Redwood Gulch Rock"	477 005	35°49'32"N,121°23'29"W	242
Redwood Gulch, Seastack south of	477 018	35°49'30"N,121°23'22"W	248
"Rock R"	325 048	41°40'00"N,124°08'30"W	94
"Rockland Landing North"	454 037	36°00'57"N,121°32'30"W	234
"Rockport Rocks"	379 001	39°44'10"N,123°50'00"W	108
Rocky Point	454 028	36°24'06"N,121°54'40"W	230
Rocky Point	501 012	34°33'45"N,120°38'11"W	274
"Russian Gulch"	404 033	38°28'N,123°09'36"W	170
"Russian River Rocks"	404 005	38°27'14"N,123°08'34"W	148
Salmon Creek	404 007	38°20'27"N,123°03'58"W	150
"Salmon Creek"	477 020	35°48'31"N,121°21'47"W	248
Salmon Creek, arched peninsula south of	477 021	35°48'05"N,121°21'14"W	248
San Elijo Lagoon	525 006	33°00'58"N,117°16'52"W	322
San Gabriel River	524 005	33°45'12"N,118°06'15"W	304
San Miguel Island	501 006	34°02'32"N,120°22'30"W	270
San Nicolas Island	524 011	33°14'30"N,119°30'30"W	312
San Pedro Rock	429 013	37°35'43"N,122°31'20"W	192
Sand Hill Cove	454 008	36°31'01"N,121°57'01"W	218
Santa Barbara Island	524 008	33°28'37"N,119°02'03"W	306
Santa Clara River	502 003	34°14'08"N,119°15'51"W	284
Santa Cruz Island	502 010		294
Santa Cruz Island - Kinton Pt. to Diablo Pt.	502 014	34°0'30"N,119°53'W to 34°3'N,119°45'W	296
Santa Margarita River	525 003	33°13'57"N,117°24'37"W	320
"Santa Maria River"	501 001	34°58'09"N,120°38'51"W	262
Santa Rosa Island, Sandy Pt. to Carrington Pt.	501 007		270
Saunders Landing	404 020	38°51'13"N,123°30'05"W	158

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Name	Colony	Lat., Long.	Page
Schoolhouse Creek to Albion River	379 028	39° 15'N,123°46'30"W	134
Scorpion Rock	502 010	34°02'50"N,119°32'47"W	290
Scotty Point to Megwill Point	325 053	41°05'N,124°09'W	98
"Sea Gull Rock"	325 017	41°05'21"N,124°09'07"W	74
"Sea Lion Rock"	325 018	41°05'40"N,124°09'49"W	76
Sea Lion Rock	325 043	40°19'35"N,124°21'38"W	92
Sea Lion Rocks	404 001	38°55'07"N,123°43'45"W	144
Sea Ranch	404 025	38°42'N,123°27'30"W	162
Seal Cove to Lost Point	524 013	32°52'N,118°31'W to 32°54'10"N,118°32'20"W	316
Seal Rocks	429 009	37°46'42"N,122°30'53"W	186
Seal Rock Cliffs	429 032	37°23'N,122°25'W	204
"Section 30 Cove"	404 019	38°52'39"N,123°40'10"W	156
Shag Rock	524 007	33°29'15"N,119°02'05"W	306
"Shell Beach Rocks"	477 035	35°09'06"N,120°40'11"W	258
Shell Wright Beach Rocks	404 036	38°25'N,123°06'W	172
Sister Rocks	325 009	41°39'29"N,124°08'47"W	68
Sisters, The	429 041	37°59'22"N,122°26'25"W	210
Smith and Whaler Islands	477 033	35°09'00"N,120°45'15"W	256
"Snag Rock"	325 054	41°03'N,124°08'W	100
"Soberanes Creek Rocks"	454 026	36°27'18"N,121°55'35"W	228
"Soberanes Point South"	454 027	36°26'47"N,121°55'35"W	230
Soldier Frank Point	379 016	39°45'18"N,123°50'15"W	122
"Sonoma-Marin County Line"	404 040	38°17'20"N,123°00'20"W	178
South San Diego Bay	545 005	32°36'N,117°07'W	334
"Split Rock"	325 054	41°03'N,124°08'W	100
Sponner's Cove	477 027	35° 16'21"N,120°53'57"W	252
"Sppit Rock"	502 013	34°02'45"N,119°43'30"W	294
Square Black Rock	454 019	36°04'21"N,121°36'35"W	224
Steamboat Rock	325 042	40°24'54"N,124°24'09"W	90
Stewarts Point to Rocky Point	404 027	38°39'N,123°38'45"W	164
"Strawberry Cove"	379 020	39°35'37"N,123°47'10"W	126
Sugarloaf Island	325 041	40°26'18"N,124°24'41"W	90
Sutil Island	524 009	33°28'50"N,119°02'50"W	308
Sweetwater River	545 008	32°38'30"N,117°06'35"W	336
"Tepona Rock"	325 054	41°03'N,124°08'W	100
Terminal Island	524 003	33°57'30"N,118°27'30"W	302
Three Brothers & Hair Seal Rocks	325 055	40°19'40"N,124°21'58"W	102
Tijuana River Mouth	545 006	32°33'25"N,117°07'48"W	336
Tolowa Rocks	325 007	41°45'15"N,124°14'W	66
Tomales Point	404 011	38°12'13"N,122°57'39"W	154
"Torre Canyon Rocks"	454 013	36°11'25"N,121°42'46"W	222
Trinidad Bay Rocks	325 054	41°03N,124°08'W	100
Trinidad Head	325 025	41°03'09"N,124°08'58"W	82
Triplett Gulch	404 021	38°49'N,123°36'15"W	158
"Unmapped Island"	477 019	35°48'20"N,121°22'26"W	248
Unnamed Point	477 015	35°57'00"N,121°28'51"W	246
Unnamed Rock	477 004	35°53'05"N,121°27'46"W	240
Unnamed Rocks	477 010	35°14'40"N,120°53'39"W	244
Unnamed Small Rocks	325 046	41°42'N,124°08'W	92
Usal Bay	379 015	39°48'45"N,123°50'30"W	122
Van Damme Cove	379 027	39°16'10"N,123°47'28"W	132
Venice Beach	524 002	33°57'30"N,118°27'30"W	302
Wedding Rock	325 016	41°08'28",124°09'32"W	74
Westport	379 018	39°38'00"N,123°47'10"W	124
"Whaler Island"	325 045	41°45'N,124°13'W	92
Wharf Rocks	379 008	39°07'49"N,123°43'24"W	116

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Name	Colony	Lat., Long.	Page
White Rock	325 008	41° 44'46"N,124°13'44"W	60
White Rock	325 012	41° 30'56"N,124°05'06"W	70
White Rock	325 019	41°05'13N,124°09'33"W	76
White Rock	379 010	39°05'42"N,123°43'11"W	116
Wilson Rock	325 058	41°35'45"N,124°06'37"W	104
Yankee Point	454 024	36° 29'29"N,121° 56'41"W	228
Yerba Buena Island	429 038	37°48'34"N,122°22'15"W	208
"333 Point"	379 032	39°05'N,123°42'30"W	140
"3 Rocks"	477 023	35°45'06"N,121°19'07"W	250
"36 North"	477 013	35°58'36"N,121°29'15"W	246

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

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