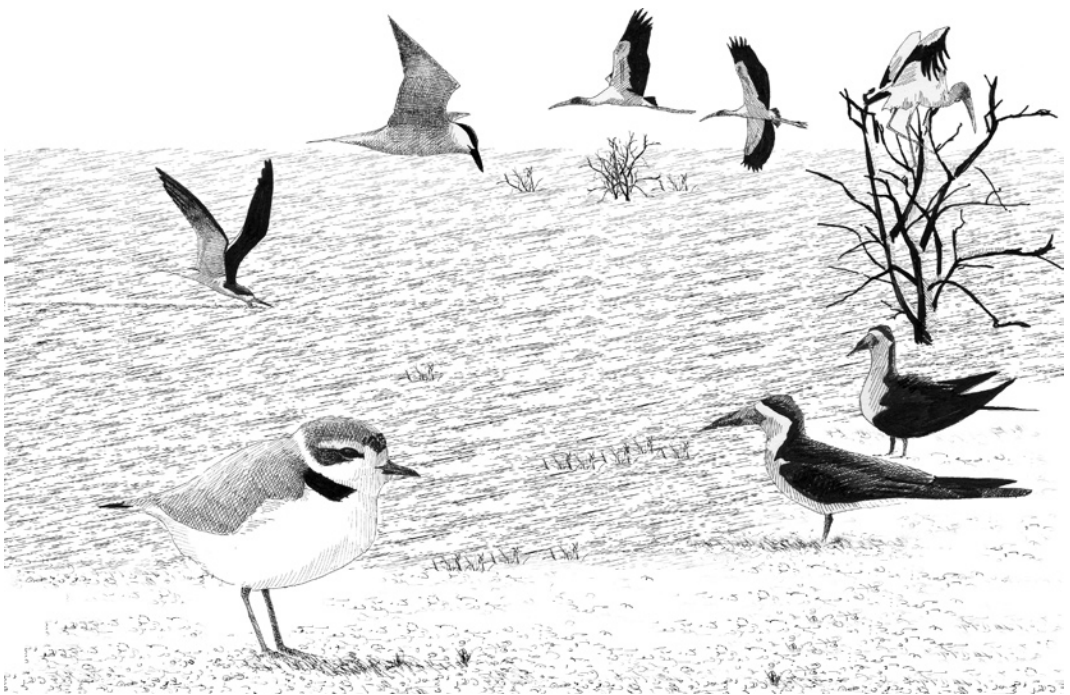


## II

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# SPECIES ACCOUNTS

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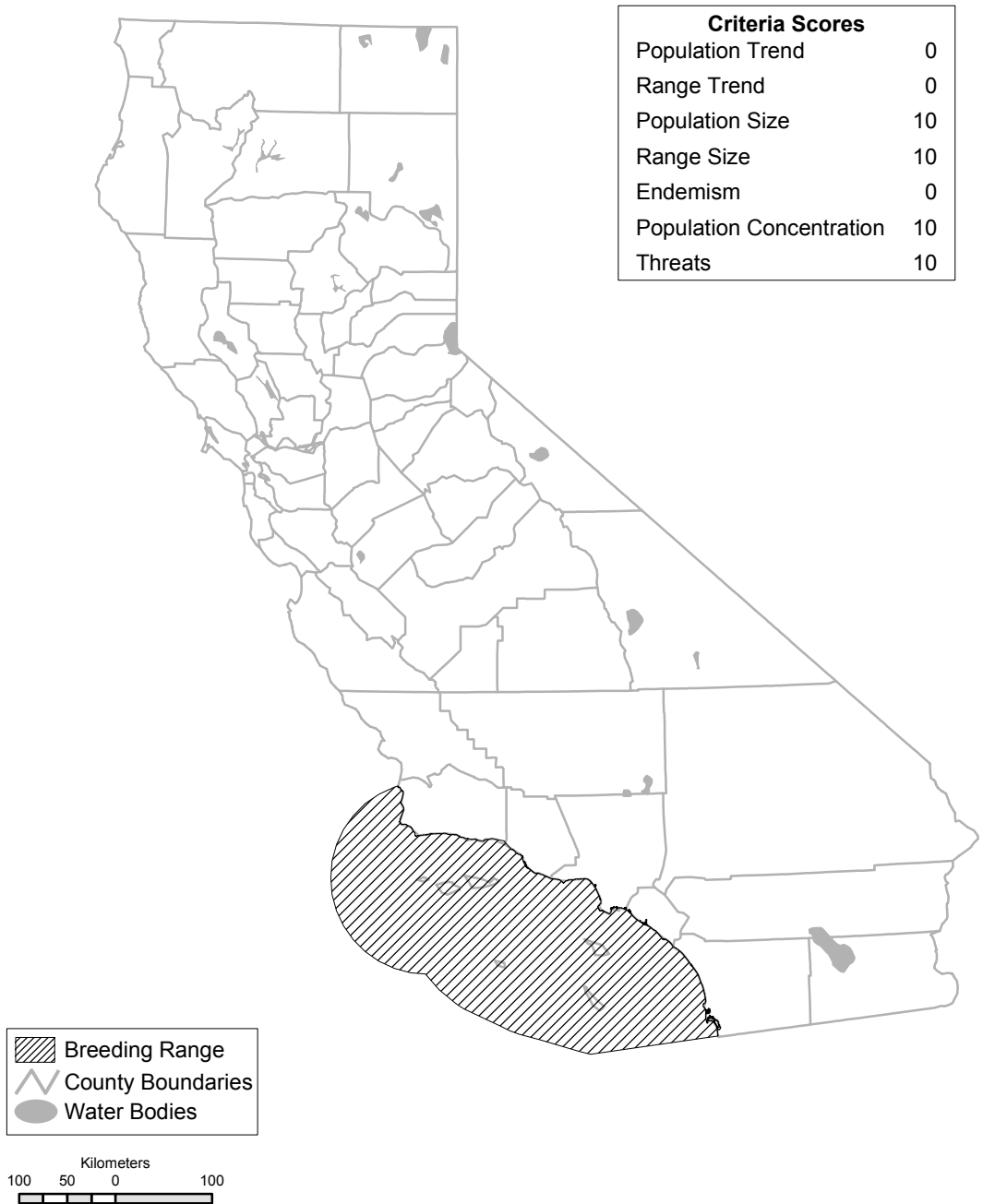
*Andy Birch*

**PDF of Black Storm-Petrel account from:**

Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

# BLACK STORM-PETREL (*Oceanodroma melania*)

DAVID G. AINLEY



Breeding-season range of the Black Storm-Petrel in California; known to breed in the state only since the 1970s at Sutil and Santa Barbara islands. At-sea distribution reflects transit to and from nesting islands and foraging areas in waters over the edge and upper slope of the continental shelf. In nonbreeding season, birds disperse at sea northward in numbers to about 39° N off Pt. Arena, with biggest congregations in Monterey Bay.

**SPECIAL CONCERN PRIORITY**

Currently considered a Bird Species of Special Concern (breeding), priority 3. Included on both prior special concern lists (Remsen 1978, 3rd priority; CDFG 1992).

**BREEDING BIRD SURVEY STATISTICS FOR CALIFORNIA**

Not sampled by the Breeding Bird Survey.

**GENERAL RANGE AND ABUNDANCE**

Nests mainly on islands in the Gulf of California and along the Pacific coast of Baja California, Mexico, with the breeding range extending north into the Southern California Bight to include the Channel Islands (Everett and Ainley 2001, Spear and Ainley 2007). The breeding population, which may reach more than a million birds, currently is centered at Islas San Benitos (central Baja California), where about 300,000 birds nest. In southern California, at the northern periphery of its range, breeds in small numbers (50–100) on a few small islands (see below for details). Owing to the introduction of predatory mammals to breeding islands, especially in Baja California, the species' world population now is likely much smaller than before Europeans arrived.

At sea, occurs northward in numbers along the coast to 39° N off northern California (Pt. Arena), south to 15° S off southern Peru, including the Gulf of California, Gulf of Panama, and Gulf of Guayaquil (Everett and Ainley 2001, Spear and Ainley 2007).

**SEASONAL STATUS IN CALIFORNIA**

Occurs year round in waters overlying the continental shelf off southern California. In waters off California, as far north as central California, numbers reach many thousands during fall, when birds move northward from breeding sites in Baja California. Black Storm-Petrels' first visits to California nesting colonies occur in mid- to late April, and breeding occurs from mid-May to October (Everett and Ainley 2001).

**HISTORIC RANGE AND ABUNDANCE IN CALIFORNIA**

The Black Storm-Petrel was not known to have bred in California prior to 1945 (Grinnell and Miller 1944), but it may have been overlooked.

**RECENT RANGE AND ABUNDANCE IN CALIFORNIA**

The species was first discovered breeding in California at Sutil Island off Santa Barbara Island in 1976 (Pitman and Speich 1976). It possibly has bred or breeds among several of the other Channel Islands (see map), as individuals have been captured in mist nets or found dead during the nesting season on Prince (off San Miguel Island), Anacapa, and San Clemente islands (Howell 1917, Hunt et al. 1980, Carter et al. 1992). Estimates for the size of California breeding colonies are Sutil Island, 15 pairs in 1975–1977, 37 pairs in 1991; Santa Barbara Island, 60 pairs in 1975–1977, 100 pairs in 1991 (Hunt et al. 1980, Carter et al. 1992).

As the California Current warms (e.g., McGowan et al. 1998), the Black Storm-Petrel, like other subtropical species (Ainley and Divoky 2001), is becoming more abundant in offshore waters farther north than in historic times (Ainley et al. 1995, Hyrenbach 2000, NCCOS 2003). Unless the first discovery of its breeding in California in 1976 is associated with a range expansion, the species, although very difficult to census on its nesting grounds, does not appear to be colonizing new sites, nor is it increasing at existing ones.

**ECOLOGICAL REQUIREMENTS**

Black Storm-Petrels frequent ocean waters of the shelf, shelf break, and continental slope (100–3000 m deep), where they feed on zooplankton and small fish. They are present in the northern part of their range (central California) from late spring to winter but mainly autumn; the highest numbers occur off California when warm waters intrude farther north than usual (e.g., El Niño; Everett and Ainley 2001, NCCOS 2003, Spear and Ainley 2007).

As with other small cavity-nesting seabirds, a key limiting factor for the Black Storm-Petrel is habitat free of mammalian predators, hence offshore islands, on which to breed. Birds nest in cavities, but do not excavate burrows. Thus, breeding Black Storm-Petrels need rocky talus or cliff crevices, with rocks large enough to afford spaces that allow access to the storm-petrels but not their larger nesting-space competitors, such as the Cassin's Auklet (*Ptychoramphus aleuticus*). The Black Storm-Petrel readily shares crevices with other storm-petrel species and sequentially replaces the earlier-breeding Xantus's Murrelet

(*Synthliboramphus hypoleucus*) in the same crevices. Brush and cactus may afford storm-petrels some protection from predation by owls (Everett and Ainley 2001).

## THREATS

A key threat to the species is the degradation of nesting habitat by the introduction of non-native predators. Breeding populations of this species are limited on islands, as exemplified by the species' history at Islas Los Coronados (where the species' natural history is best known; Everett 1991), by availability of suitable nesting habitat free of introduced cats, rats, and other mammalian predators. Fishermen and seafarers introduced these animals (and sometimes still do), often inadvertently but sometimes as a source of meat. As a consequence, seabird populations (including storm-petrels) likely have been reduced (Hunt et al. 1980, Everett and Anderson 1991). During the 1980s, numbers seen at sea were said to have declined in the vicinity of Islas Los Coronados, which is a common destination for weekend boaters from San Diego (Everett and Anderson 1991). No similar data exist for other local areas, but the Coronados may once have been a source colony for populations in the Southern California Bight. Among the Channel Islands, while the introduction of rats in the mid-19th century may have led to reductions in the populations of cavity-nesting birds, the endemic Island Fox (*Urocyon littoralis*) and Island Spotted Skunk (*Spilogale gracilis amphiala*) may also have limited the presence of Black Storm-Petrels on all of the larger islands except Santa Barbara. However, on all islands, some storm-petrel breeding habitat exists that would be inaccessible to these predators, that is, steep cliffs, particularly on smaller offshore islands where these predators are absent (Hunt et al. 1980, McChesney and Tershy 1998). Since 1995, Island Fox numbers have declined sharply, however, leading to listing of the subspecies on four islands as federally endangered (USFWS 2004) and implementation of recovery efforts on their behalf.

As with other storm-petrels, the Black Storm-Petrel likely is vulnerable to pollution, including oil spills (Butler et al. 1988) and pesticides (Nisbet 1994), but no direct data on this subject exist for this species. Eggshell thinning and reduced hatching success owing to elevated levels of DDT and PCBs are evident in the Ashy Storm-Petrel (*O. homochoera*) at Santa Cruz Island (H. Carter pers. comm.). The same problem could be affecting the

Black Storm-Petrel at the Channel Islands. The population feeds even closer to mainland shores, thus closer to pesticide sources, than the Ashy Storm-Petrel. Storm-petrels readily ingest plastic particles floating on the sea, and for some species this can lead to, at the least, a decrease in body condition (Spear et al. 1995). No direct data on this subject exist for this species, however.

Among the Channel Islands, a recent problem may result from the rapid increase in squid-fishing vessels during summer (H. Carter pers. comm.). These boats, using very powerful lights to attract squid, are spread densely over extensive areas near to island shores. In the lighted night sky, owl predation on small seabirds may be enhanced. No direct information exists on whether or not this activity affects Black Storm-Petrels or whether or not recent regulations to reduce the amount of light reaching colonies have been effective.

Storm-petrels are very sensitive to disturbance by humans (Ainley 1995, Huntington et al. 1996, Everett and Ainley 2001). Included would be persistent loud noises, handling of nesting birds by researchers, and disruption by foot traffic on talus slopes where the species nests.

## MANAGEMENT AND RESEARCH RECOMMENDATIONS

- Institute measures to guard against introductions and remove feral animals where they have been introduced (e.g., McChesney and Tershy 1998).
- Actively pursue (re-)introduction of storm-petrels to islands, such as Anacapa, where rats have been removed. Playback should be performed in suitable habitat during the nesting season; storm-petrel feathers, which have a distinctive odor, could be collected elsewhere and scattered about. It would be reasonable to induce colonization at other suitable island sites in southern California, given the northward increase of this species at sea in response to warmer temperatures (Ainley and Divoky 2001).
- Reduce disturbance by excluding tourists from areas of suitable habitat on the Channel Islands during the storm-petrel breeding season (especially the egg period).
- Conduct a genetic study of all the storm-petrel populations (island by island) from central California to central Baja California to determine the potential of various colonies to act as sources of birds to colonize or

augment populations on other islands and, particularly, the degree to which colonies are isolated (e.g., is Sutil Island, immediately offshore of the larger Santa Barbara Island, a distinct colony in the case of the Black Storm-Petrel?).

- Test for eggshell thinning and contaminant levels.
- Conduct observations to determine whether or not owl predation is enhanced as a result of bright lights.

## MONITORING NEEDS

Well-designed capture-recapture studies should be repeated on all storm-petrel nesting islands at regular intervals, for example, for at least 3 years of every 10 years. Methods, for example, mist-net locations, should be exactly the same in all replications. Such monitoring should include searches for new colonies and attempts to document nesting on those of the Channel Islands not currently known to be occupied. Long-term data sets collected at sea also could be analyzed to reveal trends within the larger Black Storm-Petrel population (e.g., Hyrenbach and Veit for southern California; Ainley, Allen, Keiper, Nevins, Spear for central California; see Clarke et al. 2003). If instituted, introduction (or reintroduction) of Black Storm-Petrels to Anacapa Island should be followed closely to see if the population takes hold and increases.

## ACKNOWLEDGMENTS

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