

# NESTING OF ASHY STORM-PETRELS AND CASSIN'S AUKLETS IN MONTEREY COUNTY, CALIFORNIA

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**ABSTRACT:** We report the first known nesting of the Ashy Storm-Petrel and Cassin's Auklet in Monterey County, California, on offshore rocks around Castle Rock and Hurricane Point. Four nests and 13 mist-netted storm-petrels, together with the extent of suitable habitat, suggest a population of 10 to 30 pairs. A single abandoned Cassin's Auklet egg, pink guano, and small numbers of other potential nest sites imply no more than five pairs of that species. Similar small colonies of these species may be scattered on similar offshore rocks along the central California coast, linking the major colonies on the Farallon and Channel islands.

The Ashy Storm-Petrel (*Oceanodroma homochroa*) is nearly endemic as a breeding bird to coastal central and southern California. Most of the world population breeds within two main nesting centers: the South Farallon Islands (San Francisco County) off central California and the California Channel Islands (Santa Barbara, Ventura, and Los Angeles counties) off southern California (Sowls et al. 1980; Carter et al. 1992, unpubl. data; Ainley 1995). The breeding range of the Cassin's Auklet (*Ptychoramphus aleuticus*) extends along the Pacific coast of North America from the Aleutian Islands, Alaska, to northern Baja California Sur, Mexico (AOU 1998). Like the storm-petrel, in California most Cassin's Auklets breed at the South Farallon and Channel islands (Sowls et al. 1980, Carter et al. 1992). Until recently, neither the storm-petrel nor the auklet had been known to nest between these locations, except for recent nesting by small numbers of auklets at Año Nuevo Island, San Mateo County (Thayer et al. 1999). Populations of both species in California are thought to have declined in the last two decades, raising concern particularly for the Ashy Storm-Petrel (Carter et al. 1992, Sydeman et al. 1998).

In 1996 and 1997, we discovered nesting by Ashy Storm-Petrels and Cassin's Auklets on a group of offshore rocks collectively known as the Castle/Hurricane colony complex in coastal Monterey County, California. Our reports of nesting by these species are the first for the county.

## STUDY SITE AND METHODS

The Castle/Hurricane colony complex (hereafter, Castle/Hurricane) is located just north of Point Sur, Monterey County, California (Figure 1). This complex of mostly barren offshore rocks and mainland cliffs is composed of three seabird colonies, as defined by Sowls et al. (1980): Bench Mark-227x (BM), Castle Rocks and Mainland (CRM), and Hurricane Point Rocks (HPR).

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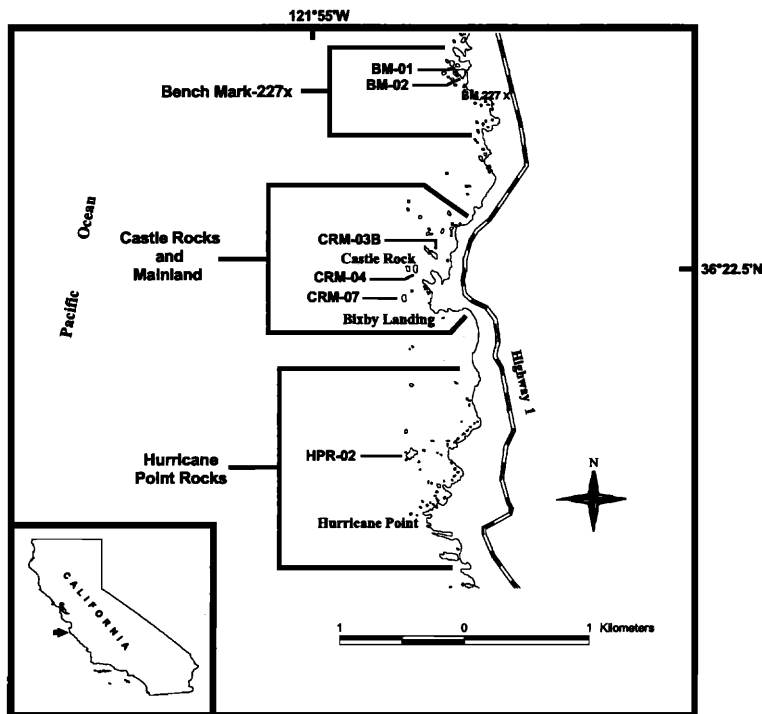


Figure 1. Castle/Hurricane colony complex, Monterey County, California. Abbreviations indicate subcolonies discussed in the text.

The offshore rocks of the complex have been part of the California Islands Wildlife Sanctuary (designated in 1983) and State Ecological Reserve (designated in 1988), managed by the California Department of Fish and Game for the U.S. Bureau of Land Management. In January 2000, the California Islands Wildlife Sanctuary was incorporated into the newly established California Coastal National Monument (P. R. Kelly, Calif. Dept. Fish and Game, pers. comm.). Between 1979 and 1992, seven species of seabirds (two cormorants, one oystercatcher, one gull, and three alcids) were documented nesting or possibly nesting at these colonies, with most birds at CRM and HPR (Sowls et al. 1980, Carter et al. 1992, Roberson and Tenney 1993). In this paper, we refer to the different rocks by their recognized subcolony (or rock) numbers (after Carter et al. 1992, McChesney et al. 1999).

We surveyed for crevice-nesting seabirds at Castle/Hurricane in conjunction with other studies on 20 August 1996 and 2–3 September 1997, after all surface-nesting species had completed breeding activities. Following the discovery of a storm-petrel chick during a low-effort search in 1996, we

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surveyed more thoroughly the following year. In 1997, nearly every rock in the colony complex suitable for nesting birds was landed on by at least one person, and accessible areas were searched for potential nesting habitat and nests of crevice-nesting seabirds. Small hand-held flashlights with bright halogen beams were used to illuminate dark crevices.

We mist-netted on the night of 2–3 September 1997 on two rocks: CRM-07 and HPR-02. On CRM-07, a four-tier 7-foot  $\times$  30-foot (2.1  $\times$  9.2 m) mist net was stretched east–west across the middle of the rock. On HPR-02, a four-tier 7-foot  $\times$  18-foot (2.1  $\times$  5.5 m) mist net was stretched east–west across a broad ledge about a third of the way up the south-facing side of the rock. Mist nets were open from 2026 to 0230 hr on CRM-07 and from 2045 to 0530 hr on HPR-02. Tapes of Ashy Storm-Petrel vocalizations were broadcast from portable cassette players to attract birds to the nets. Each captured bird was marked with a U.S. Geological Survey numbered leg band of incoloy, an alloy resistant to corrosion by salt water. We also examined the condition of the incubation (brood) patch, checked for body, primary, and rectrix molt, measured the lengths of the wing chord, tail, culmen, and tarsus, and recorded body mass. Birds were released immediately following examinations and, in a few cases, photographs were taken.

## RESULTS

### Ashy Storm-Petrel

On 20 August 1996, we discovered a downy storm-petrel chick in a rock crevice near the top of the west-facing cliff on HPR-02. The chick could not be reached for more thorough examination and species identification. However, from the late date, habitat, and location, we inferred the chick to have been an Ashy (cf. Ainley et al. 1974, Carter et al. 1992). Limited investigations of other rocks and mainland cliffs at Castle/Hurricane revealed petrel-like musky odors around crevices on CRM-07 but no other evidence of storm-petrel or auklet nesting.

On 2 and 3 September 1997, we found four storm-petrel nests at Castle/Hurricane: at BM-01, large shell fragments of one storm-petrel egg; at BM-02, one mostly downy chick; at CRM-03B, one adult incubating an egg; and at HPR-02, one unattended egg on 2 September and one adult incubating the egg on 3 September, in the same crevice as the 1996 nest. Both adults were easily identified as Ashy Storm-Petrels from their size, grayish brown plumage, and lack of a white rump (cf. Ainley 1995). They were not handled to minimize disturbance. Other storm-petrel nests were assumed to be of this species. The chick on BM-02 could not be pulled from its deep, narrow crevice to be examined for identifying marks. Nests on BM-01, BM-02, and HPR-02 were in crevices formed by rock fractures, and the nest on CRM-03B was under a boulder.

On the night of 2–3 September 1997, we captured 13 Ashy Storm-Petrels in mist nets: one on CRM-07, 12 on HPR-02. At CRM-07, wind may have hampered netting, but during the course of the capture period only one other bird was noted flying around the net. The net on HPR-02 was more sheltered from the northwest wind, which may have contributed to the

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higher number of captures, although overall activity levels also were higher there. The incubation patches of captured birds indicated that most were breeding: two birds had downy or no patches, four birds had bare patches, and seven birds had refeathering patches. Downy incubation patches indicate nonbreeding birds, bare patches suggest incubating birds, and refeathering patches indicate birds with young (Ainley et al. 1974). Some nonbreeding adults and immature procellariids, however, also may develop a partial or complete incubation patch (Scott 1970, Warham 1990).

### Cassin's Auklet

On 2 September 1997 we removed a whole but punctured all-white egg of a Cassin's Auklet from a large crevice set within the west-facing cliff of CRM-07. Cassin's Auklet eggs are larger than the all-white eggs of storm-petrels and smaller than the all-white eggs of the Rhinoceros Auklet (*Cerorhinca monocerata*) and Tufted Puffin (*Fratercula cirrhata*), which also breed in central California. Unfortunately, the egg broke shortly after being first examined and could not be saved for museum preparation. Other possible evidence of nesting by Cassin's Auklets was a crevice on CRM-04 that had pink guano at its entrance. Pink guano often indicates the consumption of euphausiids (Crustacea), a favorite prey item of Cassin's Auklets in California (Hunt et al. 1981, Ainley et al. 1990).

## DISCUSSION

These observations documented the first known nesting of the Ashy Storm-Petrel and Cassin's Auklet in Monterey County, California. For the Ashy Storm-Petrel, Castle/Hurricane is the only known nesting location within an approximately 450-km stretch of coast between nesting centers at the South Farallon and Channel islands. For the Cassin's Auklet, this is only the second documented nesting location within that same coastal stretch; the other is the small recently established colony on Año Nuevo Island (Thayer et al. 1999). However, Castle/Hurricane probably is not a newly established colony for these species. Surveys of these nocturnal crevice- or burrow-nesting birds often require special efforts, including climbing and searching potential nesting habitat and mist-netting at night. All previous documented surveys at Castle/Hurricane (e.g., Sowls et al. 1980; Carter et al. 1992; Roberson and Tenney 1993; Parker et al. 1997; McChesney et al. 1999) were conducted from boats, the mainland, or from aircraft and thus were limited to diurnal species.

At Castle/Hurricane, auklets and storm-petrels nest in rock crevices like those at other colonies in central and southern California. Although we found other potential but unoccupied nest sites and did not search all habitats, suitable nesting habitat is not abundant, and populations of these species appear small. A rough estimate of 10 to 30 breeding pairs of Ashy Storm-Petrels is plausible given the numbers of nests and potential nest sites found, the number of mist-net captures, and other likely unsurveyed (i.e., inaccessible) habitat. For the Cassin's Auklet, we estimate one to five pairs in 1997 on the basis of a few potential crevice nest sites. Auklets also dig

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burrows for nesting; however, we found very little (if any) soil suitable for burrowing.

The coasts of Monterey and San Luis Obispo counties (as well as other parts of central California) contain many other offshore rocks and cliffs not unlike those at Castle/Hurricane. These areas have yet to be investigated for nocturnal seabirds because of their relative inaccessibility and the potential for detrimental disturbance to surface-nesting species such as Brandt's Cormorant (*Phalacrocorax penicillatus*). Given our findings at Castle/Hurricane, it is likely that small numbers of storm-petrels and auklets breed throughout this area, which may provide some limited connectivity between the major California nesting centers at the South Farallon and Channel islands. More broad-scale surveys are needed if the distributions and abundances of these species in this area are to be better described.

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