

total length and weighed 123 g. There was no body fat, and the digestive tract was empty and flaccid.

It appears that the fall molt was incomplete, as remnants of the white eye stripe and bars at the side of the nape are in evidence.

The first Nevada record of the family Alcidae, an Ancient Murrelet collected at Elko on 14 November 1955 and described by Gullion (*Condor*, 58:163, 1956), appeared under circumstances very similar to our own, soon after a period of storms in Nevada and along the west coast.

Munyer, from his review of weather conditions and the scattered literature recording about 27 inland occurrences of the Ancient Murrelet (*Wilson Bull.*, 77:235-42, 1965), concluded that most of these were forced by severe coastal storms. Although he sees evidence that on rare occasions a bird might overwinter in the interior of North America, most of the specimens described were in a very poor state of nutrition when found, indicating inability to adapt to freshwater conditions (I assume that the Ancient Murrelet does accumulate fall fat).

Another point of interest is what appears to be a disproportionately large number of females among the recorded specimens.—BILL SMITH, *Zoologist, The Nevada State Museum, Carson City, Nevada, 24 January 1966.*

**Albinistic Feathers in Storm Petrels (Hydrobatidae).**—Albinistic members of the family Procellariidae were mentioned by Sage (*British Birds*, 56:409, 1963) who had six records of one species, and by Gross (*Bird-banding*, 36:67, 1965) who mentions seven individuals of three species. In the family Hydrobatidae, partially albinistic Ashy Petrels (*Oceanodroma homochroa*) were mentioned by Loomis (*Proc. Calif. Acad. Sci.*, ser. 4, 2 (2):171, 1918) who noticed "albinistic feathers" in some specimens. Looking through series of storm petrels, I found these abnormalities in 10 species. Skins from the California Academy of Sciences (CAS), from the Stanford University collection (SU) now at the Academy, and from the Museum of Vertebrate Zoology (MVZ) in Berkeley were examined, in all 852 skins of which 73 were albinistic. The museum number of each albinistic specimen was recorded and is available to those interested.

In a few of the species I examined, significantly high percentages had albinistic feathers. Several workers have found that the incidence of albinism is greater in certain families than others. Deane (*Bull. Nuttall Ornithol. Club*, 1:20-24, 1876) states that in the families Fringillidae, Tetraonidae, and Anatidae it is of comparatively frequent occurrence. Nero (*Auk*, 71:137-155, 1954) states that: "Plumage aberrations are common among Icterids and have attracted the attention of several previous observers," and mentions eight species, he himself having found a high percentage in Red-winged Blackbirds (*Agelaius phoeniceus*). Edson (*Auk*, 45:377-378, 1928) found a high percentage in a population of Brewer's Blackbird (*Euphagus cyanocephalus*), and Hanson (*Auk*, 66:164-167, 1949) in one of Canada Geese. Gross (*op. cit.*) compiled a list of 304 species of American birds with records of albinism, many showing high incidences, and Sage (*op. cit.*) had records of 163 species compiled from workers in Great Britain and others.

Gross (*op. cit.*) divides albinistic birds into four groups: (1) "total or pure" where there is complete absence of melanism; (2) "incomplete" when pigment is absent from the plumage, eyes, or naked parts, but not all three; (3) "imperfect" when pigment is reduced or diluted in any or all three areas but never completely absent; and (4) "partial" when it is absent from localized areas. The petrels here recorded all come under the fourth category. Gross also speaks of "symmetrical" and "asymmetrical" albinism. These petrels come under the latter grouping. Nero (*op. cit.*) divides partial albinism into two categories: (1) Random, when white occurs in dissimilar areas from bird to bird, and (2) Specific, when it occurs in approximately the same area in each specimen. To a certain degree, albinism in these Storm Petrels could be designated as specific in that in the majority of the specimens it was manifested as one or a few white feathers on the head, nape, or throat, that is, on the more anterior regions. Nero (*op. cit.*) found a similar situation in Red-winged Blackbirds, and Hanson (*op. cit.*), studying albinism in a population of Canada Geese in Illinois, noted that "unusual amounts of white on the head and neck are not uncommon."

In Red-winged Blackbirds, Nero (*op. cit.*) observed that "in most museum specimens and in

TABLE 1  
PERCENTAGE OF INDIVIDUALS SHOWING SOME ALBINISM IN DESCENDING ORDER OF FREQUENCY

Species	No. of birds	No. with albinistic feathers	Per cent with albinistic feathers
<i>Oceanodroma monorhis</i>	7	3	42.8
<i>Halocyptena microsoma</i>	46	10	21.7
<i>Oceanodroma leucorhoa chapmani</i>	71	13	18.3
<i>Oceanodroma castro</i>	30	4	13.3
<i>Oceanodroma homochroa</i>	147	19	11.1
<i>Oceanodroma tethys tethys</i>	85	9	10.7
<i>Oceanodroma leucorhoa beali</i>	86	5	5.8
<i>Loomelania melania</i>	220	7	3.1
<i>Oceanites gracilis</i>	97	2	2.0
<i>Oceanodroma leucorhoa socorroensis</i>	50	1	2.0
<i>Oceanodroma leucorhoa leucorhoa</i>	13	0	0.0

nearly all fresh specimens, the majority of the marked feathers are concealed by overlapping feathers." With the petrels too the white areas were often thus hidden either entirely or with only the edges of the albinistic feathers discernible. For example CAS ♂ 18015 *Oceanodroma homochroa* and MVZ ♀ 117637 *Oceanodroma monorhis* (described below) would have been obvious piebalds were it not for this condition.

*Oceanodroma homochroa*. Ashy Petrel. 170 skins (147, CAS; 16, MVZ; 7, SU) were examined. Of these 17 from the CAS and two from the MVZ collection had albinistic feathers—a total of 19 out of 170 or 11.1 per cent of the birds. Five of the CAS birds and one MVZ specimen had white feathers on their heads; four CAS birds had single white feathers on their napes; two had it on their breasts; one on the back; one on the back and flank; one on the wing; one on the shoulder; one on the shoulder and above both eyes; and one MVZ specimen had white on its side. CAS ♂ 18015 had the largest amount of white in that two feathers just below the right wing on the lower breast and three below the left wing on the lower breast and side proved albinistic; however, except for one white feather on its left side, these were concealed in most part by the surrounding normal feathers, revealing only the edges. CAS ♂ 18018 had two white feathers on its back; these were almost entirely covered by the feathers above. CAS ♀ 18045 had one single white covert on its left wing—conspicuous because of its being almost entirely exposed. All the 17 CAS specimens were taken on the Farallon Islands. Of the MVZ specimens one was taken at sea between Los Angeles and San Francisco and the other off the Monterey County coast.

The following is a description of the incidence and types of albinism present in the specimens of Hydrobatidae that I examined (see table 1).

*Oceanodroma leucorhoa leucorhoa*. Leach's Petrel. Of 13 skins (7, MVZ; 6, CAS) examined, no albinistic feathers were noted.

*Oceanodroma leucorhoa beali*. 86 skins (45, CAS; 31, MVZ; 10, SU) were examined. Of these, five birds or 5.8 per cent had albinistic feathers. Two from the CAS and one from the MVZ collection had white on their foreheads, one from the SU collection had white below the bill. CAS ♂ 43451 had a patch of albinistic feathers forming a white pyramid below the bill. The birds were taken at 35° 40' N, 133° 14' W; Sitka Bay, Alaska; Humboldt County; and two at Del Norte County, California.

*Oceanodroma leucorhoa chapmani*. 71 skins (64, CAS; 7, MVZ) were examined. Thirteen birds or 18.3 per cent had albinistic feathers. All were from the CAS collection, and all were taken in their breeding grounds, the San Benito Islands. Six had single white feathers on their heads; two had white on their napes; two below the bill. CAS ♀ 538 had two white feathers on its forehead and one below its bill. CAS ♂ 539 had one on its nape and one on its throat. CAS ♂ 31745 was a less-common white-rumped form of this petrel, with one albinistic feather below its bill. Thus, albinism occurs in both color phases of this petrel.

*Oceanodroma leucorhoa socorroensis*. 50 skins (2, CAS; 48, MVZ) were examined. Of these only one specimen, MVZ ♀ 134031, taken in Guadalupe Island, California, their breeding stronghold, had albinistic feathers, one above and one below its bill.

*Oceanodroma monorhis* (= *Oceanodroma leucorhoa monorhis*). Old World Leach's Petrel. Of the seven skins from the MVZ collection, three had albinistic feathers, all taken in Sanganjima, Iwate Prefecture, Honshu. MVZ ♀ 117637 was a piebald specimen with large patches of white below each wing extending onto the abdomen and breast; the white feathers of the breast and abdomen, however, were covered in most part by the normal plumage. There was also a white patch on its back above the left wing. MVZ ♀ 117638 had one white feather below the left wing; ♀ 119979 had white on its forehead just above the beak.

*Oceanodroma tethys tethys*. Galápagos Petrel. 85 skins (10, SU; 75, CAS) were examined. Of these, nine birds (all males taken about the Galápagos Islands) or 10.7 per cent had albinistic feathers. One specimen had one white feather on its forehead; two specimens had single white feathers on their throats; one had a single white feather concealed at the center of its breast; four specimens had small white feathers near the base of their nasal tubes; one had a small white feather on its left cheek.

*Oceanodroma castro*. Harcourt's Petrel. Of 30 skins in the CAS collection, three males and one female had albinistic feathers, that is, four out of 30 or 13.3 per cent. The female was taken 70 miles S of Charles Island, Galápagos Islands. It had one white feather in front of its right shoulder. One male had a white feather on its forehead; a second had one concealed on its throat; a third had two white feathers concealed on its nape. These were taken 2° 00' S, 89° 30' W; two miles W of James, Galápagos Islands; and 20° 29' S, 90° 04' W.

*Loomelania melania*. Black Petrel. 220 skins (62, MVZ; 158, CAS) were examined. Of these, seven (3.1 per cent of the total) had albinistic feathers; six were males and one a female. The female was taken in Monterey Bay, California, as were two males; two males came from the San Benito Islands; one male from the Los Coronados Islands; and one male near Pt. Pinos, California. Four birds had single white feathers on their throats; one had a white feather on its back; one on its nape; and one on the left side of its neck.

*Halocyptena microsoma*. Least Petrel. 46 skins (30, CAS; 1, SU; 15, MVZ). Of these, eight CAS and two MVZ birds (21.7 per cent) had albinistic feathers. Six were males, and four were females. Three were taken on Isla Partida and seven on the San Benito Islands. One had a white feather on its forehead; two had single white feathers on their throats; one had one on its breast; one bird had two at the base of its nasal tube, and one bird had one in the same region; two had single white feathers below the bill; one specimen had one on the wing and one on the neck; the last specimen had one on its cheek.

*Oceanites gracilis*. Lowe's Petrel. 97 skins (11, SU; 3, MVZ; 83, CAS). Of these only two (2 per cent of the total) had albinistic feathers. CAS ♀ 715, taken on Indefatigable, Galápagos Islands, had two white feathers, one on the nape and one behind the right eye. CAS ♀ 742, taken at the same place, had two small white feathers below the left eye.

There are many possible explanations for the phenomenon of albinism. Sage (British Birds, 55:201-225, 1962) discusses hereditary albinism, albinism due to inbreeding, diet, senility, shock, disease and injury. He compiled 3134 records involving 42 families and concluded that: "Nearly all migratory species (with the striking exception of the swallow) as well as those which tend to breed in isolated pairs, show a low incidence of albinism." He observed further that: "The highest incidence of albinism appears to be found in species that are both social in their breeding habits and also fairly sedentary. In such conditions the chances of matings between individuals heterozygous for albinism must be relatively high." He mentions a historical case to illustrate partial albinism evolving in isolation in a population of ravens in the Faeroes with a speckled mutant known since the Middle Ages, present-day specimens still having pale tips to some feathers of the hind neck. Due to their habits this could very well apply to petrels.

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