

a pale bluish green sparingly marked with dark brown spots (some of which are smeared) and with small lavender markings principally at the larger ends.

Another nest containing four young a few days old was found on March 18. This was in a tall rugged fir growing on the edge of a rocky bluff. The nest was situated eight feet from the trunk on a stout limb forty feet above the ground and was quite invisible from below. While hunting carefully over this hillside, stopping frequently for ten-minute intervals to watch for crossbills, the very quiet female flew into a tree a few yards from me and after a wait of five minutes flew directly to the nest. The young were naked save for small patches of filamentous gray down on the head and back. The bill and gape were conspicuously yellow. One of these nestlings was taken and an examination of the stomach showed a mass of softened fir seeds.

With the rush of migrants in the latter part of April and May, my interest in crossbills rather flagged, although it was noted that most of the birds were paired and very quiet. On June 14, small flocks appeared in the fringe of poplars along the lake shore in front of my house. This piece of brush is under almost daily observation and no crossbills had ever been seen there before. They were feeding on green choke-cherries and tiny salmon-colored lepidopterous larvae that crawled on the under sides of the poplar leaves. To reach these the birds hang head downward in the position they often assume when extracting fir seeds from the cones.

All day long small flocks were flying up and down the road and alighting in the trees. It is likely that they were moving to new feeding grounds as none were seen the next morning or during the days following. Probably sixty birds were seen during the day. Of these at least forty were red males in the moult and the rest were adult females and juvenals in the striped plumage.

Okanagan Landing, British Columbia, January 21, 1919.

NOTES ON THE NESTING OF TWO LITTLE-KNOWN SPECIES OF PETREL

By GEORGE WILLETT

WHILE stationed on Laysan Island, Hawaiian Archipelago, during the winter of 1912-13, I was much interested in observing the nesting habits of two species of petrel, *Pterodroma hypoleuca* and *Oceanodroma tristrami*. As I have never seen a published description of the nest and eggs of either of these birds, the following notes may be worth recording.

The White-breasted Petrel (*Pterodroma hypoleuca*) is an abundant nesting bird on Laysan, Lisianski and Midway islands, Pearl and Hermes Reef, and French Frigate Shoal. It is the most abundant nesting bird on the Hawaiian Bird Reservation, there being on Laysan Island alone, probably not less than 50,000 pairs. It was already present on the island at the time of our arrival, December 22, 1912, and from this time until January 7 following, the air at night fairly swarmed with the birds. After this date, while still abundant, the numbers in the air decreased considerably as the birds began to incubate their eggs. Laying commenced the first week in January and was at its height about January 20.

The nesting burrows of this petrel were in sandy soil in nearly all the drier parts of the island. They were generally from six to ten inches in diameter at the mouth, and seven or eight feet in length; it is very probable that part of this extensive excavation is done by the Wedge-tailed Shearwater (*Puffinus cuneatus*), as these birds are known to use the same burrows later in the season. The shallow nest cavity at the end of the burrow is generally fairly well lined with grass and leaves. An exceptional nesting site of the species was noted on January 25, when a nest and egg were found under an overturned basket near the cabin. The single egg is pure white, unmarked. Six typical eggs measure (in inches) as follows: Largest, 1.98x1.45; smallest, 1.85x1.42; average, 1.91x1.44.

Heavy sandstorms during early February filled up several thousand burrows of this species, smothering many of the incubating birds. While walking among the colonies at this time, birds were frequently found imprisoned in sand at the mouths of burrows, often with their heads above the surface and still alive.

The Sooty Petrel (*Oceanodroma tristrami*) at the time of our visit to the islands, was considered one of the rarest of the petrels, being known from a very few specimens. We were therefore much pleased to find a substantial breeding colony on Laysan Island, also a smaller one on Pearl and Hermes Reef. A series of the birds was secured and, as little has been previously published regarding the species, the measurements obtained may be worthy of record. It will be noted that the females are appreciably larger than the males, in most instances this being clearly perceptible in living birds.

The average measurements (in inches) of six breeding males follow. Length, 9.98; wing, 7.09; tail, 4.07. The largest measures: Length, 10.20; wing, 7.25; tail, 4.27. The smallest: Length, 9.40; wing, 6.68; tail, 3.77. Six breeding females average: Length, 10.39; wing, 7.43; tail, 4.33. The largest measures: Length, 10.92; wing, 7.61; tail, 4.58. The smallest: Length, 10.15; wing, 7.32; tail, 4.25.

The nesting colony of the Sooty Petrel on Laysan Island was situated along the shores of the shallow salt-water lagoon that lies approximately in the center of the island. A rise in the water of this lagoon, caused by heavy rainfall February 6, flooded and destroyed several hundred of the petrels' nests, as well as numerous nests of the Laysan Albatross (*Diomedea immutabilis*). One of the sand storms previously mentioned, coming two days later, also destroyed many nests by filling the burrows with sand. Probably at least half of the petrel colony was wiped out by these two catastrophes.

The burrows of the Sooty Petrel were much smaller than those of the White-breasted, averaging about five inches in diameter and from two and one-half to three and one-half feet in length. In most instances they were quite crooked, resembling in this respect nesting burrows of *Oceanodroma leucorhoa* or *O. furcata*. The nest at the end of the burrow was composed of rootlets, weedstems and leaves. The eggs, deposited mostly during the first two weeks in January, are typical of the genus *Oceanodroma*, though, of course, larger than those of any of the genus along our Pacific coast, being approached in size only by those of *O. macrodactyla*, of Guadalupe Island. They are creamy white in color, more or less faintly dotted, scrawled or wreathed, with purplish and pinkish brown, mostly around the larger end. Average measurements (in inches) of six eggs are: 1.52x1.07; largest, 1.63x1.08; smallest, 1.48x1.07.

Los Angeles, California, December 6, 1918.