

THE STATUS OF THE
HAWAIIAN DARK-RUMPED PETREL AT HALEAKALA

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The Hawaiian Dark-rumped Petrel, or 'Ua'u (Pterodroma phaeopygia sandwichensis), a rare and endangered oceanic seabird, has probably been nesting at Haleakala continuously for many centuries. The eggs and young were considered a delicacy by the Hawaiians who learned to excavate a hole in the burrow through which they could "harvest" the birds every year. Dogs were also sometimes used to locate the burrows and dig out their occupants.

Although the species was rediscovered to science at Haleakala by Richardson and Woodside in 1954, it was heard by Ted Rodrigues and other CCC personnel in the mid-1930's and observed as well as heard by Clifford McCall and other Park Rangers in the late 1940's.

A history of the Hawaiian Dark-rumped Petrel compiled by Winston E. Banko in 1971 is the most complete study of the population status and distribution of the species in Hawai'i. Between 1966 and 1971 James Larson, Warren King, Jitsumi Kunioki, and others initiated work to locate and monitor the Haleakala population (Appendix A). From 15 known burrows in 1966 the total has now risen to 437; of the original 15 known burrows only 47% were active, and of that number active one-third failed to produce fledglings. Predation by rats and cats were considered the major problem.

Monitoring records prior to 1970 are limited; however, since that time fairly complete reports have been made on population studies, banding predator control, and bird mortality. Since 1968 the percent of activity in known burrows has ranged from 39% in 1969 to 95% in 1970, with recent years averaging about 69%. With the beginning of a predator trapping program in 1968 the nesting success rose to 93% and went as high as 99.9% in 1973. The average has been 96.5%.

Since 1969, 22 dead adults and six juveniles have been recovered. Most adult deaths have been attributed to collisions with rocks and, in a couple of instances, with automobiles whose lights appear to attract and blind the birds. Juvenile mortality has been attributed primarily to predators although other factors such as parent death, adverse weather, and burrow collapse undoubtedly contribute.

Due primarily to lack of personnel Haleakala National Park has done very little work on the breeding biology of the species and has instead concentrated on population studies. Access to the primary nesting areas on White Hill and Kilohana Pali is difficult and hazardous due to the steep unstable terrain which has helped to limit work on the species. The other major problem in conducting research on the Petrel at Haleakala has been the difficulty in locating burrows, even known ones. Each located burrow is numbered with white spray painted numerals and one or more white spots which serve both to catch the eye and to indicate the entrance.

Magnetic disturbances are evident in many places on the "Petrel slopes" and even with the use of an artificial north, conventional mapping techniques cannot be applied to determining exact locations of individual burrows. Prior to the development of the Haleakala Petrel Burrow Location System in 1977 burrows were frequently plotted by "guesstimate" and although they were occasionally close to their actual location, more often they were many yards off.

To rectify this situation a photographic based burrow plotting system was produced with the aid of a grant from the Hawaii Natural History Association. The tactic was to photograph all the "Petrel slopes" from the air from three different angles. Four series of pictures totaling 67 photographs were produced with each burrow plotted on at least two photos. The system is cross referenced by area and burrow number to increase versatility and although it takes about a day's practice to become familiar with the methods involved, the accuracy is so high that the location time has been cut significantly.

Last year 290 successful breeding pairs were recorded in the primary nesting area and it is safe to estimate that there are at least another 20 pairs in more remote areas of Haleakala. It has been estimated that the population that nests at Haleakala, including all those birds that have not yet reached breeding maturity, is somewhere in the vicinity of 1600 ± 500 individuals. Although the breeding population has remained more or less stable during the last 10 years there is little cause for optimism. Feral animal predation remains the largest single problem. Recently feral pigs moving up from Ko'olau Gap have dug up burrows in the Holua area. Dogs have never been observed but cats, mongoose, rats, and mice have all been trapped in the primary nesting areas. Perhaps one of the greatest problems is the almost total lack of breeding biology data which makes it difficult to accurately assess all the factors that may be involved in the survival of this species.

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APPENDIX A

Summation of Haleakala Petrel data compiled by King, Guth, Larson, Kunioki, Kjargaard, and Others

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Total Known Burrows	15	15	15	36	226	?	344	344	344	362	428	437
Total Burrows Checked	15	0	15	36	210	113	322	250	275	315	334	415
Percent Active	47	—	60	39	95	71	82	76	62	65	67	71
Percent Failed	33	—	7	8	5	1	3	0.1	4	3	2	1
Total Rats Trapped	—	—	—	—	15	4	24	?	?	12	6	12
<u>Rattus norvegicus</u>	—	—	—	—	2	4	?	—	—	0	0	7
<u>Rattus rattus</u>	—	—	—	—	11	0	?	—	—	11	1	5
<u>Rattus exulans</u>	—	—	—	—	2	0	?	—	—	1	5	0
Total Mice Trapped	—	—	—	—	0	0	3	?	?	17	0	1
Total Cats Trapped	—	—	—	—	6	0	0*	0*	0	0	0	0
Total Mongoose Trapped	—	—	—	—	0	0	0	1	0	1	0	0
Dead Adults Recovered	—	—	—	3	1	1	1	3	3	2	6	2
Dead Juveniles Recovered	—	—	—	0	?	2	3	1	0	0	0	0
Recorded Bandings by the Park	—	—	1	1	5	1	1	0	2	3	0	0
Banded by Maui Zoo	—	—	—	—	—	—	—	—	—	—	—	7
successfully released	—	—	—	—	—	—	—	—	—	—	—	5
died in captivity	—	—	—	—	—	—	—	—	—	—	—	2

* observed but not trapped