



The Nesting of the Apapane in Lava Caves on the Island of Hawaii

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was noted on 27 May. On 28 May several stalks of grass were present, protruding from the algal masses. On 3 June a two-foot-long grass stalk was hanging from the nest's outer surface, and a cup had been formed.

I also observed the construction of a nest on a flat beam inside a wooden porch in one of the unoccupied brick buildings on Great Gull Island. Small algal globs had been placed in a ring on a flat surface; several stalks of grass were present. This nest was first discovered on 30 May. The algae formed a ring about a bare hollow of wood. On 3 June I found several dried wads of algae in the hollow.

Great Gull Island offers several possible sources of freshwater algae. After exploring these, I found that the single actual source was one flooded, roofless cement bunker. The alga (*Schizomeris*), which formed a surface mat covering a depth of approximately two feet of stagnant water, was easily separated into small pieces. I saw Barn Swallows obtaining small algal masses from the bunker, and watched while one swallow flew to the bunker, disappeared within, and emerged with algae in its bill. It then added the algae to the rim of a nest located approximately 250 feet away.

I did not detect mud in the early construction stages of nests although nests that were being reused had bases of dried sandy soil. I dissected a deserted Barn Swallow nest that had been active in 1970 and observed the presence of dried *Schizomeris* algae and several different kinds of marine algae that are commonly found in the vegetation deposit along the high tide line. There are few reliable sources of mud on the island. It would be interesting to note whether or not the relative amounts of freshwater and marine algae employed vary significantly from year to year, how the use of the algae affects nesting success, and whether or not algae are employed as a nesting material by the Barn Swallow in areas where both algae and mud are amply available.

I am indebted to Helen Hays for assistance in preparing this note. I would also like to thank Dr. Kenneth Parkes for suggesting possible references and critically reading the manuscript. I would like to acknowledge the assistance of Isabelle Fries and Bill Schiller for help in identifying algal samples.—KATHLEEN DUFFIN, 211 Montross Road, Yorktown Heights, New York 10598, 30 August 1972.

Immature Robin gathering nest material.—On 22 August 1972 a Robin (*Turdus migratorius*) with throat and extreme upper breast still in the spotted juvenal plumage was foraging on my lawn in Larchmont, Baltimore County, Maryland. At one place it tore off, sometimes tugging hard to do so, about half a dozen blades of fine, dead grass. It carried these in its bill for several steps, then dropped them and foraged again. A minute later it ran at an immature Song Sparrow (*Melospiza melodia*) on the lawn and put it to flight.

Nice (Trans. Linnaean Soc. New York, 6:78-79, 1943) has assembled records of nest-material carrying by young birds of some other species. Other breeding behavior known for immature Robins includes attempts at copulation (Young, Amer. Midl. Nat., 53: 332, 1955) and, in captivity, the feeding of still younger birds (Favell, Wilson Bull., 47: 298, 1935).—HERVEY BRACKBILL, 2620 Poplar Drive, Baltimore, Maryland, 21207, 11 September 1972.

The nesting of the Apapane in lava caves on the island of Hawaii.—The Apapane (*Himatione sanguinea*) is one of the few members of the Hawaiian honeycreeper family (Drepanididae) that is still found in any numbers throughout the state. It inhabits the wet native forests and is a permanent resident of these areas.

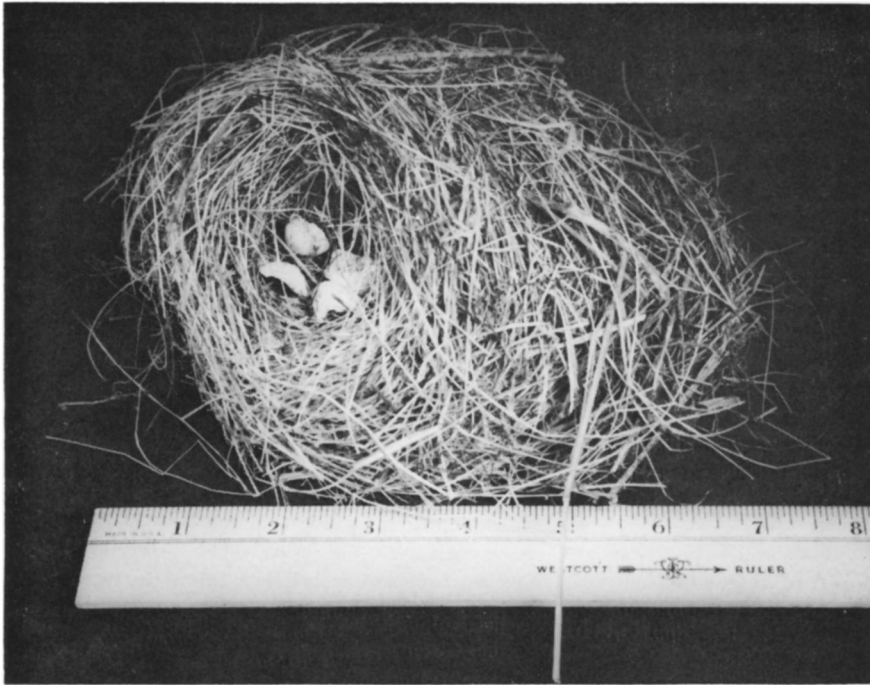


FIG. 1. Apapane nest on Hualalai.

Most authors have said that this bird nests high in the native ohia (*Metrosideros collina*) or other suitable trees. Henshaw (Birds of Hawaiian Islands. Thos. G. Thrum, Honolulu, 1902) writes: "The akakani (Apapane) usually nests in the tall forest ohias . . ." Perkins (Aves. Part IV, Fauna Hawaiiensis or the Zoology of the Sandwich (Hawaiian) Islands, 1903) and Munro (Birds of Hawaii, Tongg Publ. Co., Honolulu, 1944) also mention that it often nests in the tops of ohia trees. Eddinger (unpubl. Ph.D. thesis, Univ. Hawaii, 1970) found 67 Apapane nests on Kauai and all were placed 12 to 24 inches below the terminal cluster of leaves in ohia trees. None of his nests were found below 17 feet seven inches and most were located at heights of 30 or more feet. Many of the Apapane nests I have observed were placed high in the tops of trees.

Berger (Hawaiian Birdlife, Univ. Press of Hawaii, 1972), however, mentions four nests he found on the fronds of the tree fern (*Cibotium glaucum*) in the Kilauea forest on the slopes of Mauna Loa. In the Wailuku River region the Apapane also utilizes the tree fern as a nesting site. I have also found a number of nests in lava tubes on both Mauna Loa and Hualalai. Insofar as I have been able to determine, there appear to be no published data on the Apapane nesting in lava caves on Hawaii.

This situation was first brought to my attention on 22 June 1971, by Mr. George Schattauer of Kona, Hawaii. The area was on the southwest slope of Mauna Loa at an elevation of approximately 5,300 feet. On the wall of a lava tube, he pointed out a nest that he had visited on occasion for three years. He had never actually observed the bird; but, since the nest was only seven feet from the ground, he believed it belonged to

the Hawaiian Thrush (*Phaenomis obscura*). The nesting site presumably had been used by the same bird on four different nesting occasions. Each new nest was superimposed directly on top of the last, and an accumulated height of 5¾ inches had been reached.

One unhatched egg in the nest had a whitish background with tan markings scattered irregularly over the surface. Reddish-brown markings formed a dense ring around the larger end. The egg measured 19.4 × 14.1 mm. There was a powerful musky scent noticeable about the nest, which Henshaw (op. cit.) considers as perfectly distinctive of the family Drepanididae. Neither the nest nor the egg fit the description Berger (Living Bird, 8:243-250, 1969) gives for that of the Hawaiian Thrush.

I was curious whether this was a local specialization or was a common practice for birds in other areas. I examined lava tubes on Mt. Hualalai, a dormant volcano, and, on 9 August 1971, found six deserted nests in five different lava tubes. I began to make periodic trips to this study area in January 1972. On 12 February, as I approached a lava tube, I saw an Apapane fly from the entrance. I entered it and found a nest directly above the opening (Fig. 1).

The nest was seven feet five inches from the ground, supported by a lava ledge overhanging the entrance to the tube. The back of the nest, built against the wall, was flat while the front sloped downward to the base. The nest measured 2 inches from top to bottom on the backside and 5.8 inches on the inclined front side. This declivity was due to an accumulation of three separate nests placed one on top of the other with each consecutive nest situated closer to the wall.

The width across the top of the most recent nest varied from 3.5-4.8 inches; the rim of the nest, from 0.6-1.3 inches; the inside diameters of the nest cup were 1.5 inches on the narrow side and 2.8 inches from front to back. The nest cup had a depth of 1.5 inches.

Both the body and lining of this nest were primarily composed of grasses. There were a few large ohia twigs around the base. Interwoven throughout the main part of the nest were fine dark rootlets, one strip of ohia bark, and a few pieces of moss. The bottom nest had a base composed of mosses.

When I found the nest, it contained two eggs and contour feathers with crimson tips. I climbed out of the lava tube and moved off a short distance. Forty-five minutes later the Apapane returned to the nest to incubate the eggs.

I returned to the study area on 19 February, and the Apapane was still incubating the eggs. On two subsequent visits there was no adult at the nest. On 28 February I found both eggs broken and the nest deserted.—CHARLES VAN RIPER III, *Department of Zoology, University of Hawaii, Honolulu, Hawaii 96822, 8 August 1972.*

New host records for the Bronzed Cowbird.—While recently engaged in field studies in Costa Rica, I found nests of three species, Black-billed Nightingale-Thrush (*Catharus gracilirostris*), Yellow-billed Cacique (*Amblycercus holosericeus*), and Scarlet-rumped Tanager (*Ramphocelus passerinii*), which contained one or more eggs of the Bronzed Cowbird (*Molothrus aeneus*). In his summaries of cowbird host records, Friedmann (U.S. Natl. Mus. Bull., 233, 1963; Smiths. Misc. Coll., 149, no. 11, 1966; Auk, 88:239-255, 1971) does not list any of these species as hosts of the Bronzed Cowbird.

All of the records discussed here refer to the nominate race of the cowbird. Identification of the parasite was made on the basis of the color, texture, and dimensions of eggs which I collected. Upon comparison, my specimens appear to be virtually identical in these regards to a series of 107 *Molothrus aeneus* eggs in the collection of the Western