

bird had begun wing molt before the onset of tail molt. The flight of owls lacking functional tails seemed unimpaired except for the takeoffs which were slow and wobbly when compared to takeoffs with normal length rectrices. The effect of simultaneous tail molt on aerial foraging was not observed.

The other 29 owls did not undergo a simultaneous tail molt during the summer of 1970. Some of them were known to have undergone a gradual tail molt. Two were seen to begin gradual tail molt by loss of the central rectrices first when their young were 30 days old. It is interesting to note that the simultaneous tail molt in the field occurred after the young had reached some measure of independence and that a majority of the wild, breeding population did not undergo a simultaneous or nearly simultaneous tail molt.

These results supplement Mayr and Mayr's (loc. cit.) finding of a simultaneous tail molt in a museum specimen of *S. cunicularia*. Burrowing Owls can successfully secure insects on the ground without flying. If these owls can capture a sufficient number of prey on the ground, then the short period of complete tail loss may only represent a slight hindrance to foraging activities of the species.

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Another record of a short incubation period for the Robin.—Taft's note (Audubon Field Notes, 24:652, 1970) on the possible 7- or 8-day incubation period for a Robin (*Turdus migratorius*) prompts me to add a verifying observation made by one of my students, Ruth Ellen Sands, in 1956 in Athens, Ohio. She found a nest with 2 eggs on 20 April. On 22 April there were three eggs, the third having been laid between noon of 21 April and noon of 22 April. The three eggs hatched during the day on 30 April, from 8 to 8½ days after the laying of the last egg. All three young left the nest on 16 May, 2 in the morning and one around supper time.—HENRI C. SEIBERT, *Department of Zoology, Ohio University, Athens, Ohio 45701, 10 June 1971.*

Discovery of the nest of the Kauai Akepa.—The Hawaiian Islands are inhabited by a unique family of birds—the Hawaiian Honeycreepers (family Drepanididae). Of the twenty-two full species of drepanidids, eight are already extinct and eight others currently considered to be in danger of extinction (Fisher, Simon, and Vincent, *Wildlife in danger*. New York, 1969). The six remaining species have at least one race each in danger of extinction.

The Akepa (*Loxops coccinea*) has distinct subspecies on four of Hawaii's main islands: *Loxops coccinea caeruleirostris* on Kauai; *L. c. rufa* on Oahu; *L. c. ochracea* on Maui; and *L. c. coccinea* on Hawaii. The species is fairly common only in the Alakai Swamp region of Kauai, less common at Kokee State Park on Kauai; it is extinct on Oahu, and rare on both Maui and Hawaii.

The nest, eggs, and nestlings have not been described previously for any of the subspecies of Akepa. Perkins (Aves. *in* Fauna Hawaiiensis 1 (4):365-466, 1903) wrote:

"On one occasion I saw a pair of the Maui species building their nest high up in a tall ohia, near the extremity of a horizontal branch. Both sexes kept coming to the ground for material and were carrying off the woolly down or 'pulu' of some stunted tree-ferns, probably as a lining for the nest. This was so well concealed that even with glasses

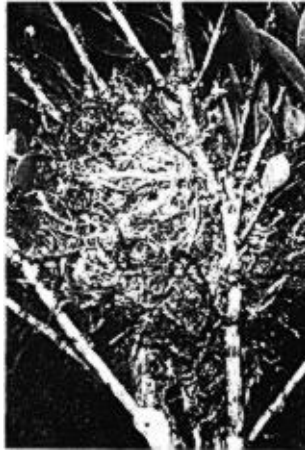


FIG. 1. The exterior of an Akepa nest to show method of nest attachment.

I was unable to make out the details of structure with any certainty, and the eggs and unfledged young I have not seen." I have found no other references to the nests of any subspecies of Akepa.

I discovered the first Kauai Akepa nest in Kokee State Park on 9 March 1969, while conducting a study of the breeding biology of four more common species of drepanidids (Amakihi (*L. virens*), Anianiau (*L. parva*), Apapane (*Himatione sanguinea*), and Iwi (*Vestaria coccinea*)). The Akepa is not common in the Kokee area but I have seen as many as five in one day of field work there. The nest was in the terminal crown of a non-blooming ohia tree (*Metrosideros*), 30.5 feet above the ground. The top of the tree was too thin to support my weight but I was able to see into the nest by using a mirror attached to the end of a six-foot pole. The nest was empty and appeared incomplete in that one side was still thin. After checking the nest I concealed myself in the underbrush beneath the tree. I then saw one bird fly to the nest, hop in and remain for two or three seconds, after which it flew down to within 15 feet of me. I could plainly see that it was an Akepa. It gave repeated call notes and then flew back to the nest.

I watched both the male and female Akepa adding material to the nest. Between 8:30 and 10:30 on 11 March, each added material eight times. The male often sang from a tall neighboring ohia tree as the female was adding to the nest. His song was a high trill, higher in pitch and shorter in duration than the song of the Anianiau. The male also uttered a variety of whisper songs, similar to those of the Amakihi.

I observed courtship feeding on several occasions, usually on a branch a short distance from the nest but once on a branch only three feet from the ground. The female solicited feeding by crouching slightly, depressing and quivering her wings, and giving a vocalization similar to that of a fledgling begging for food.

A pair of Apapane were building in a neighboring ohia tree 40 feet from the Akepa nest. On several occasions the Apapane flew to the Akepa nest, pulled loose nesting material, and added it to their own nest. This stealing was usually done during the absence of the Akepa but on 14 March an Apapane flew to the nest while the Akepa were present. The male Akepa gave the alarm call and chased the Apapane from the nest



FIG. 2. The Akepa nest is lined with soft bark fragments.

and through several nearby trees, but in less than 15 minutes the Apapane returned and, in the absence of the Akepa, again took material from the nest. The Akepa were still adding material on 18 March. On 27 March I found half of an egg shell on a branch about a foot below the nest. The shell fragment looked very much like the eggs of the other drepanidids—white with irregularly shaped brown markings. The lining had been torn out of the nest and neither adult was near. I continued to observe the nest until 4 April but never saw the Akepa near it again.

The construction of the Akepa nest differs from that of the Apapane in that fewer twigs and coarse materials are employed, the Akepa nest being composed largely of mosses. Construction is less compact so that from the ground the nest appears quite large. Measurements were as follows: rim thickness, $\frac{3}{4}$ to $1\frac{1}{2}$ inches; outside diameter, $3\frac{1}{4}$ to $4\frac{1}{2}$ inches; measurement from the top rim to the bottom of the nest, $4\frac{1}{2}$ inches; inside diameter of the nest cup, $1\frac{3}{4}$ to $2\frac{1}{2}$ inches; depth of the nest cup, $1\frac{3}{4}$ inches.

In 1970 I found two inaccessible Akepa nests, the first on 26 March and the second on 11 April. I estimated their heights to be approximately 40 feet above the ground. Both were in the terminal crowns of non-blooming ohia trees. The first nest was under construction when I found it and I observed courtship feeding in this pair. The second probably contained eggs because the female spent periods of 15 to 20 minutes in the nest.

On 29 March 1970 I found an accessible Akepa nest 37.5 feet above the ground in the terminal crown of a non-blooming ohia tree. The nest appeared to be complete when I found it. The first egg was laid in this nest on 2 April, the second on 3 April. The eggs measured 16.6×13.3 mm and 16.6×13.1 mm. They had a whitish background with irregularly shaped dark brown markings scattered over the entire surface, but more concentrated at the large end of the egg. On 4 March the nest lining had been pulled up, burying the two eggs. I observed the nest until 6 April when it was apparent that it had been deserted. I broke one of the eggs to see the yolk. It was yellow, as in the eggs of the Amakihi and Anianiau, as opposed to orange as in Apapane and Iiwi eggs.

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