

## LITERATURE CITED

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**Discovery of the nest of the Kauai Creeper.**—The Creeper (*Loxops maculata*), family Drepanididae, has a distinct subspecies on each of Hawaii's main islands. The Kauai Creeper (*L. m. bairdi*) is relatively common in the Alakai Swamp of Kauai, less common in Kokee State Park of Kauai.

The breeding biology of none of the Creeper subspecies is well-known. Perkins (Fauna Hawaiiensis, or the zoology of the Sandwich (Hawaiian) Islands. In Aves, part 4, No. 1 (David Sharp, Ed.), Cambridge, Cambridge Univ. Press, 1903, pp. 415-416) reports finding a nest with a single young but never with eggs, presumably of the Hawaii Creeper (*L. m. mana*). The eggs and nestlings of the Molokai Creeper (*L. m. flammea*) have never been described; Bryan (Occ. Pap., B. P. Bishop Mus., 4: 133-176, 1908) found one nest under construction. Bryan (Occ. Pap., B. P. Bishop Mus., 1: 228-241, 1905) collected the first nest (empty) of the Oahu Creeper (*L. m. maculata*) and described two eggs in a nest secured by Seale on Oahu. I have found no other references to Creeper nests.

On 19 April 1969 in Kokee State Park, Kauai, I saw a Creeper fly down to a low tree stump, pull some moss loose from the base of the stump, and fly away with it. I searched the area and again saw the Creeper, this time adding nesting material to a nearly completed nest in the terminal crown of a nonblooming Ohia tree. While I watched the male joined the female in nest construction. The nest was 26 feet 6 inches above the ground.

The nest, composed largely of moss, had the following measurements (in inches): Rim thickness,  $\frac{1}{4}$ - $1\frac{1}{4}$ ; outside diameter,  $3\frac{1}{4}$ - $4\frac{1}{4}$ ; outside height,  $2\frac{3}{4}$ ; inside diameter,  $1\frac{1}{2}$ - $2\frac{1}{4}$ ; cup depth,  $1\frac{3}{4}$ .

The first egg was laid prior to 11:40 on 3 May 1969. The female did not leave the nest until my hand was less than 1 foot from the nest. She then jumped from the nest cup onto the nest rim, looked at me, ruffled her feathers, and then flew to a neighboring tree where she gave a very soft alarm call. The single egg had a white background with few irregularly shaped brown speckles scattered over the entire surface of the egg, but most concentrated at the large end of the egg. It measured  $18.3 \times 23.3$  mm. On 4 May, the last day I saw the female on or near the nest, she behaved exactly the

same way. I continued to check the nest until 14 May, but the birds had deserted it, and if they re-nested I failed to find the new site.

I found the second Kauai Creeper nest on 26 April 1970. This nest was 28 feet above the ground in the terminal crown of a thin branch growing horizontally from the trunk of a large nonblooming Ohia tree. I could climb to within 10 feet of the nest but could neither reach it nor climb above it to look down into it. On 26 April the female was in the nest and she remained there while I attempted to check the nest. This strong tenacity to remain on the nest continued throughout all of my days of observation and is markedly different from what I have observed in other drepanidids, which fly off and away from the nest at the slightest disturbance. On 9 May I again tried to check the nest. The female crouched down into the nest while I was in the nest tree and I assumed that she was still incubating.

On 20 May the nest contained two well-feathered nestlings. They had brownish green feathers on the back and wings, cream-white feathers on the chest, and a considerable amount of long white down ( $\frac{1}{2}$  inch in length) sticking up between the feathers over each eye and on the back. The inside of the mouth was bright pink and the margin of the bill was bright yellow. The legs and feet were pinkish gray. The nestlings gaped readily and showed no fear reaction.

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**Tool-use by the New Caledonian Crow (*Corvus moneduloides*).**—Although various types of tool-use by birds have been described in recent years (Morse, *Wilson Bull.*, 80:220, 1968; van Lawick-Goodall, *in* *Advances in the study of behaviour*, vol. 3 (Lehrman, Hinde, and Shaw, Eds.), New York, Academic Press, 1970, p. 195; Hobbs, *Emu*, 71: 84, 1971), the use of a twig or other object as a probe during food search has been known only in the Galapagos finches *Cactospiza pallida* and *C. heliobates*. The following observation of activity of this type in an unrelated species is therefore of some interest.

During a brief visit to New Caledonia I visited the Reserve de Chasse et de Pêche de la Haute-Yaté in the southern mountains of the island on 7 August 1970. In an isolated patch of forest about 8 m in height, with a dense, large-leaved canopy layer and little understory, I saw a pair of New Caledonian Crows (*Corvus moneduloides*) about 1.5 m below the canopy level. One bird was bobbing its head vigorously up and down, with its neck arched and its bill pointed vertically downward. After repeating this action several times, it wiped its bill on a branch. Looking at it with binoculars, I discovered that it held in its beak a slender twig (leaf petiole?) about 10 cm long. It proceeded to insert one end of this under a piece of bark and probe vigorously with it to a depth of about 5 cm, using the same action I had seen previously. I watched the bird for about 10 minutes until the pair flew off, and I saw what I presume was the same individual repeat this action at least four times, inserting the twig under bark or into the end of a hollow branch. I never saw it actually catch or eat anything. The bird held the twig aligned with the length of the bill, with the proximal tip approximately at eye level. While probing, the crow often clung to vertical limbs or branches, but the probing motion was always in an up-and-down direction with the bill pointed downwards.

As the bird had the twig when I first saw it, I cannot say whether the crow