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A NEW GENUS AND SPECIES OF BIRD FROM THE ISLAND OF MAUI, HAWAII (PASSERIFORMES: DREPANIDIDAE)

TONNIE L. C. CASEY[1] AND JAMES D. JACOBI[2]

University of Hawaii
and
B.P. Bishop Museum

FIGURE 1.—The typical habitat of *Melamprosops phaeosoma* in the Koolau Forest Reserve, northeast slope of Haleakala, Maui, Hawaii. (Photo by Robert J. Shallenberger.)

DEDICATION

WE WISH TO DEDICATE the description of *Melamprosops phaeosoma* to the memory of Dr. R. C. L. Perkins and Mr. George C. Munro, two of the most indefatigable field students of the Hawaiian biota, whose work serves as an inspiration to all field workers studying the natural history of the Hawaiian Islands.

INTRODUCTION

The Drepanididae (the family of Hawaiian honeycreepers) are endemic to the Hawaiian Islands. The origin of the islands as a series of central Pacific volcanoes, with the nearest continental land mass more than 2,000 miles distant, and their long-time isolation, have fostered extensive adaptive radiation of the drepanidids. Current classification of the family recognizes two subfamilies; Psittirostrinae and Drepanidinae, with twenty-two species in nine genera (Amadon, 1950; Bock, 1970).

Many of the species are characterized by specialization of the bill relative to the feeding niche; the more specialized genera of the Drepanidinae, *Vestiaria* and *Drepanis,* tend toward nectar-feeding, while the Psittirostrinae have adapted particularly toward a diet of insects *(Hemignathus* and *Pseudonestor),* or seeds *(Psittirostra).*

During the summer of 1973, the authors were members of the Hana Rain Forest Project.[3] The objective of the project was to conduct basic ecological research in a previously little studied portion of the rain-drenched *'ohi'a-lehua (Metrosideros collina* var. *polymorpha)* forest on the northeastern slope of Haleakala Volcano, Maui. Previous biological research in the area had been limited because of difficult access and inclement weather conditions: torrential rain, fog, and near freezing night-time temperatures. With the assistance of a helicopter for transport and with the advantage of abnormal summer drought conditions, the project was able to establish a base camp on the upper reaches of the slope.

The island of Maui harbors one endemic monotypic genus, *Pseudonestor xanthophrys,* and another genus, *Palmeria dolei. Palmeria* was originally found on Maui and Molokai, but is now apparently extinct on Molokai. Seven subspecies of the drepanidids also exist on the island of Maui. Of these nine species, five are listed as

rare by the United States Department of the Interior: (1) *ʻoʻu (Psittirostra psittacea),* (2) the *nukupuʻu (Hemignathus lucidus affinis)* (3) the *ʻakepa (Loxops coccinea ochracea),* (4) the Maui parrotbill *(Pseudonestor xanthophrys),* and (5) the crested honeycreeper *(Palmeria dolei).* The other four species, (6) the Maui creeper *(Loxops maculata newtoni),* (7) the *ʻamakihi (Loxops virens wilsoni),* (8) the *ʻapapane (Himatione sanguinea),* and (9) the *ʻiʻiwi (Vestiaria coccinea),* are relatively common in the native forest areas. We were particularly eager to observe and study those rare species which had been seen only a few times since the turn of the century. However, we did not anticipate the discovery of what proves to be a striking new species of the Drepanididae. Apparently this species had escaped previous detection owing to a very limited range in a difficult terrain (Fig. 1).

With the cooperation of the Hawaii State Division of Fish and Game, and particularly of David H. Woodside, authorization was obtained to collect the two specimens on which the following description is based. Woodside did the actual collecting, with the help of the authors.

We enlisted the support of Dean Amadon of The American Museum of Natural History, in evaluating the systematic position of the new species. We consulted with Dean Amadon and Walter Bock of Columbia University in December, 1973, and utilized the excellent collection of Hawaiian birds in The American Museum in evaluation of the new bird. On the recommendation of the Hawaii State Division of Fish and Game, and with our full accord, Bernice P. Bishop Museum, Honolulu, is designated as the depository of the holotype skin and preserved body, and The American Museum of Natural History, New York, of the single paratype skin and preserved body.

FAMILY DREPANIDIDAE

Melamprosops: Casey & Jacobi, gen. nov.

Etymology: The generic name is derived from Greek roots, meaning "black forehead." It is of masculine gender.

Description: Medium sized drepanidids, apparently belonging to the Psittirostrinae, although the plumage is without any trace of yellow, red, or green, and is very dense and fluffy. The general form

is very robust. The bill is relatively heavy and strong; the culmen is slightly curved; the upper mandible overhangs the lower slightly at the tip. The tail is very short, almost square; the feathers are weak and slightly pointed. The legs, feet, and claws are proportionately large for the family, and strong.

The tongue of the holotype specimen was submitted to Walter Bock for anatomical study (see Figs. 2, 3). Following further examination of the tongues of the two specimens of *Melamprosops,* Bock will publish a complete anatomical description. However, he has kindly supplied preliminary remarks, summarized for inclusion here.

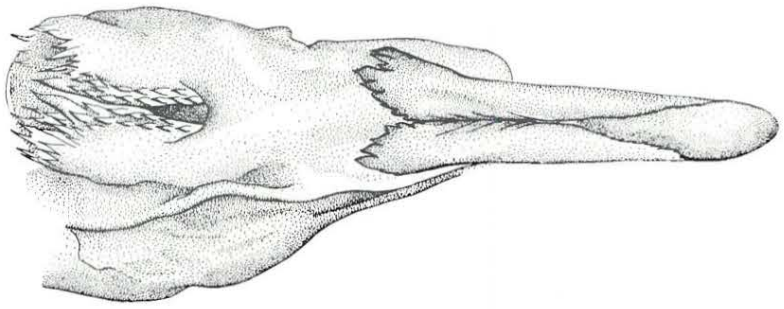

FIGURE 2.—A dorsal view of the tongue of *Melamprosops.*

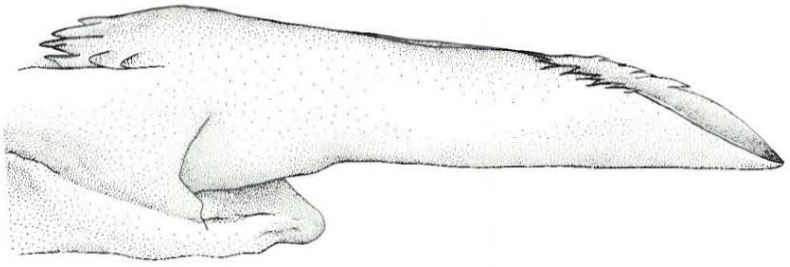

FIGURE 3.—Magnified 25 times, the fringed anterior portion of the corneous tongue is visible.

The corneous tongue is straight and relatively thick, the anterior end being rounded and entire. The dorsal surface contains a distinct trough, shaped like a narrow spoon, being widest and deepest anteriorly and sloping upward posteriorly and ending in a narrow, shallow

slit. The lateral walls increase in height from the anterior lip and slightly overhang the lumen in the posterior half of the trough.

Bock concludes (pers. comm.):

> The corneous tongue of this species appears to have evolved from the tubular fringed tongue of other drepanidids such as *Ciridops* or *Loxops virens* and *L. coccinea*. The anterior trough, short laciniae along the lateral edges of the trough, the entire rounded anterior tip without a terminal tuft, all suggest that this tongue is derived from a tubular tongue and does not represent a primitive condition from which more specialized tubular tongues evolved. The morphology of the corneous tongue supports strongly the conclusion that this species is a member of the Drepanididae.

The morphology of the tongue skeleton and musculature provides further support for the inclusion of this new form in the Drepanididae (Bock, pers. comm.).

Melamprosops phaeosoma: Casey & Jacobi, sp. nov. (Fig. 4.)

Etymology: The species name is derived from Greek roots meaning "brown body."

The species apparently was not known to the ancient Hawaiians. Mrs. Mary Kawena Pukui, a leading authority on the Hawaiian language, suggested the common name of *po'o uli,* meaning "black-faced" in Hawaiian.

Type series and location: Holotype and one paratype, both male (?), taken in Koolau Forest, northeastern slopes of Haleakala Volcano, Maui, Hawaii, 20° 45′ north latitude, 156° 07′ west longitude, 1,980 m. (6,500 ft.), 17 September 1973 (holotype), and 15 September 1973 (paratype), collected by David H. Woodside with Tonnie L. C. Casey and James D. Jacobi. The holotype is deposited in Bernice P. Bishop Museum, Honolulu (No. BBM-X-147112); the paratype is deposited in The American Museum of Natural History, New York (AMNH No. 810456).

Description: With the characteristics given in the generic diagnosis, and the following features:

(a) *Holotype:* Measurements in millimeters: Wing 74, tail 38, exposed culmen 15, tarsus 27, total length 135. Above dark grayish brown, washed from nape back with paler cinnamon brown, which becomes brighter on the upper tail coverts and feathers, and on the outer vanes of the wing quills. Wing quills otherwise dark brownish slate. A dull black mask extends across the forehead, on chin and

FIGURE 4.—The intact specimen (holotype) of *Melamprosops phaeosoma*, September 17, 1973. (Photo by James D. Jacobi.)

around eyes, extending backward and terminating in a point (Fig. 5). Sides of head and throat (posterior to the black area) and lower parts pale buff, washed with gray across the breast. Sides and under tail coverts washed with dull rufous brown, flanks light cinnamon brown. Iris dark brown. Legs and feet dark brown. Bill black, except an area at the tip of the lower mandible which is shell pink.

(b) *Paratype:* Measurements in millimeters: Wing 72, tail 36.5, exposed culmen 14.5, tarsus 25, total length 122. Essentially similar to holotype, but differing as follows: Upper parts throughout, including crown, duller grayish brown. Although a cinnamon wash increasing posteriorly is evident, as in the holotype, it is considerably less pronounced. Blackish area on head slightly mixed and stippled with buff, especially on chin. Tip of lower mandible only slightly lighter in color, washed with gray rather than shell pink.

REMARKS

Despite the extreme diversity already known in the Drepanididae, *Melamprosops* stands well apart from the other genera. The bill shape is closest to that of the extinct *'ula-'ai-hawane (Ciridops anna)* in the subfamily Drepanidinae. However, we consider this similarity to be superficial because of distinctly different tongue structure and behavioral aspects.

Unlike *Melamprosops*, the tongue of *Ciridops* is distinctly tubular, with a fringed anterior tip (Bock, 1972; Amadon, 1950). Little is known of the feeding habits of the now extinct *Ciridops* although its native name, *'ula-'ai-hawane*, might indicate that it fed on the fruits of the *lo'ulu* palms *(Pritchardia* spp.*)*. Bock (1972, p. 75) asserts, "in the absence of any contrary factual information, I would conclude

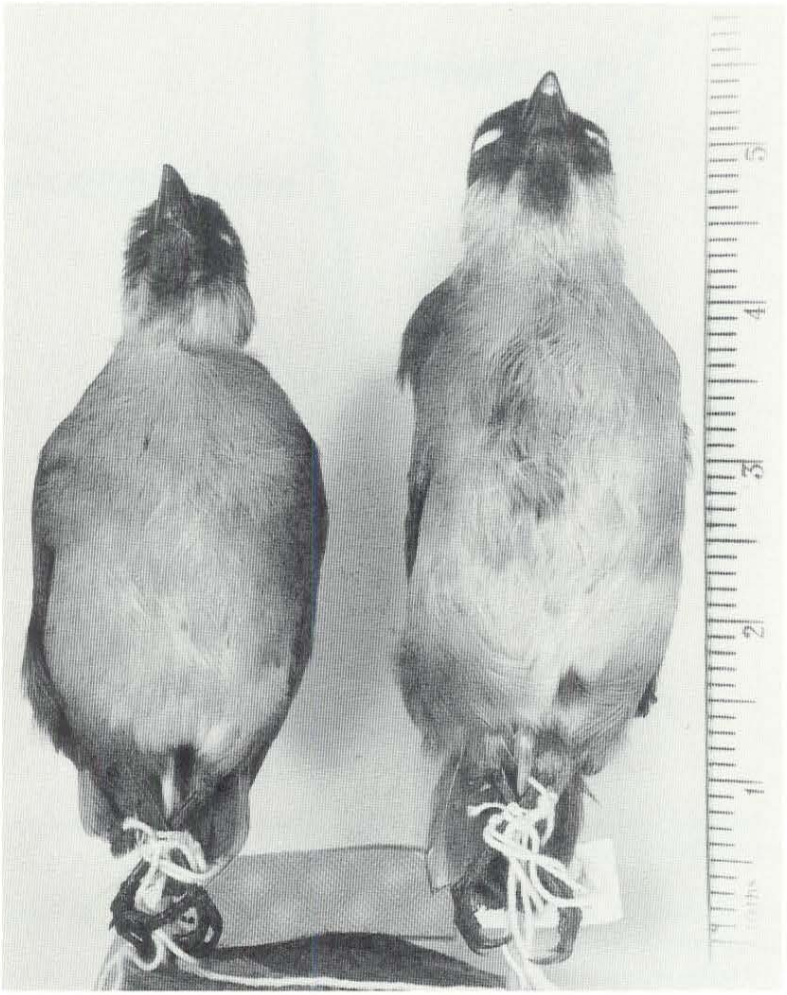

FIGURE 5.—The single paratype (left) and holotype of *Melamprosops phaeosoma*. (Photo by James Q. Casey.)

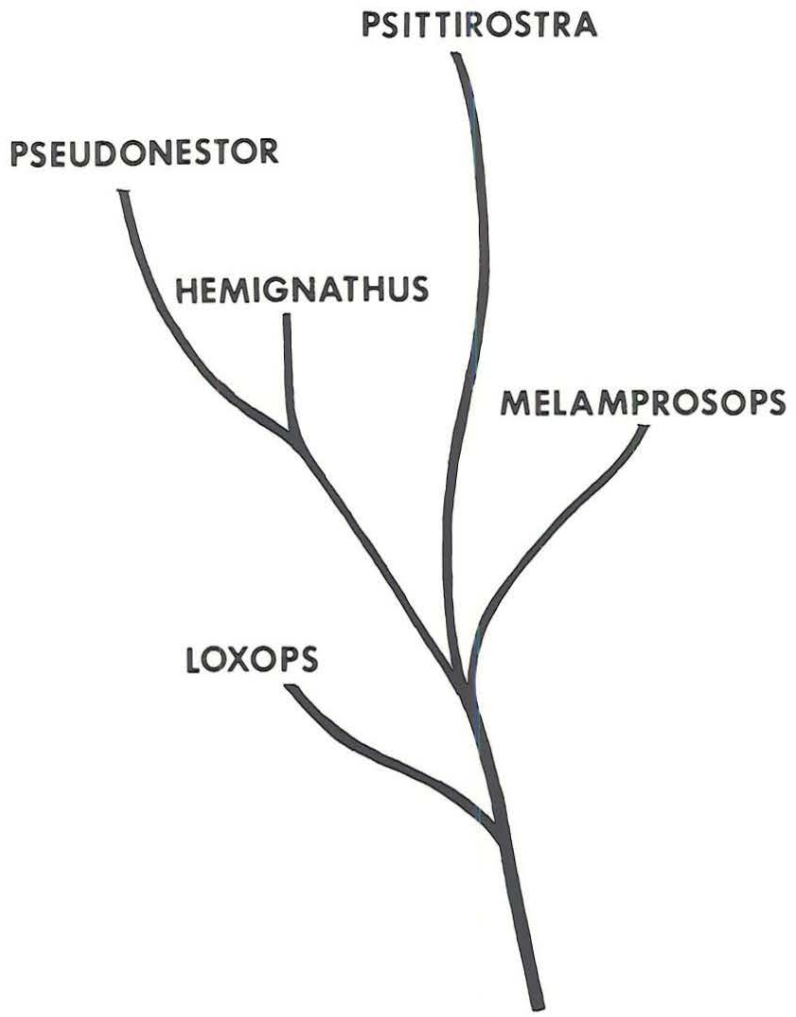

FIGURE 6.—Relationships of *Melamprosops* to the other genera of the subfamily Psittirostrinae. (Adapted from Amadon, 1950.)

from its tongue morphology, that *Ciridops* fed on nectar at least during part of the year."

Melamprosops appears to feed exclusively on insects, moving methodically over branches and trunks of trees, picking and prying at the cracks and crevices in the bark. On one occasion, a bird was

seen hammering at a branch with its bill, apparently in search of food, reminiscent of the manner in which the *'akiapola'au (Hemignathus wilsoni)* often feeds (Perkins, 1903; Jacobi, 1974).

The only vocalization thus far heard from *Melamprosops* is a single distinct call note: "chik," uttered sharply and harshly. It is very similar to the notes given by the Maui creeper *(Loxops maculata newtoni),* and *Pseudonestor.* However, it is distinct enough to be distinguished from those two birds. This type of call note is not known for the subfamily Drepanidinae (Perkins, 1903; Baldwin, 1953).

For the above reasons, *Melamprosops* is placed in the Psittirostrinae. Following consultation with Dr. Amadon, we regard it as a specialized offshoot of the psittirostrine genus *Loxops.* Relative to the three other genera in the subfamily, *Hemignathus, Pseudonestor,* and *Psittirostra, Melamprosops* appears to be less specialized than *Pseudonestor,* and less than some of the species of *Psittirostra.* Amadon suggests a sequence for the subfamily of *Loxops, Melamprosops, Hemignathus, Pseudonestor,* and *Psittirostra,* although *Melamprosops* may not be as closely related to *Loxops* as is *Hemignathus* (Fig. 6).

IMPLICATIONS FOR CONSERVATION

The discovery of *Melamprosops phaeosoma* adds another facet to the taxonomy and evolution of the Drepanididae. It especially emphasizes how much we have to learn about the structure, ecology and evolution of the Hawaiian biota. *Melamprosops,* with a very localized range, might well have become extinct before being discovered, as has undoubtedly happened to other life forms. Today, only a small percentage of the land in Hawaii remains as relatively intact native habitat. The destruction of the native environment by man and the introduction of herbivores is well documented by Wilson (1890), Wilson and Evans (1890-1899), Henshaw (1902), Perkins (1903), Munro (1944), Warner (1961), and Berger (1972). The remaining native biotic elements are now largely concentrated in the usually small pockets of forest and other primary ecosystems scattered throughout the islands.

The upper *'ohi'a* rain forest on the northeastern slopes of Haleakala represents one of the largest remaining, little altered ecosystem areas. Until now, most expeditions on East Maui have focused on

Kipahulu Valley, an area of proven biological wealth. As a result, *Melamprosops* eluded discovery until the present.

Melamprosops phaeosoma should be included in the Department of the Interior's List of Endangered Species, and the State of Hawaii's Endangered Bird List, and should be given complete protection. High priority should be placed on determining the status and distribution of this species, as well as other endangered species in the islands, and strict preservation of the remaining vital habitat should be accomplished. This is even more important in that the other endangered Maui birds listed above are all found in the same habitat.

FUTURE STUDIES AND PLANS

A more complete documentation of *Melamprosops* ecology, feeding habits, foods, behavior, and vocalization is being prepared.

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ful field observations and comments, and made possible a very successful and enjoyable expedition.

NOTES

* Volume XXIV of the Occasional Papers is published in honor of Edwin H. Bryan, Jr., whose service to Bishop Museum began in 1919. He was for many years Curator of Collections, and at present is Manager of the Museum's Pacific Scientific Information Center. A Symposium, at which several of the papers in this volume were read, was held at the Museum on April 13, 1968, honoring Mr. Bryan on the occasion of his 70th birthday.

[1] Undergraduate student in Department of Animal Science, Manoa Campus, University of Hawaii. Mailing Address: 4059 Round Top Drive, Honolulu, Hawaii 96822.

[2] Associated with the Hilo Campus, University of Hawaii, during the Hana Rain Forest Project; Research Assistant, Department of Entomology, Bernice P. Bishop Museum, Honolulu, Hawaii, 1971—present. Mailing address: P. O. Box 178, Volcano, Hawaii 96785.

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