

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

ANOTHER ASELOTTE, *HAWAIANIRA PELEAE* NEW
GENUS AND SPECIES, FROM THE HAWAIIAN
ISLANDS (CRUSTACEA; ISOPODA)

BY MILTON A. MILLER

Department of Zoology, University of California, Davis

Only four species of the isopod suborder Asellota have previously been reported from the Hawaiian Islands. These represent four genera, four families, and two of the four asellote superfamilies as follows (the Aselloidea and Parastenetrioidea are not known from Hawaii).

Stenetrioidea: Stenetriidae: *Stenetrium medipacificum* Miller, 1941.

Paraselloidea: Munnidae: *Munna acarina* Miller, 1941.

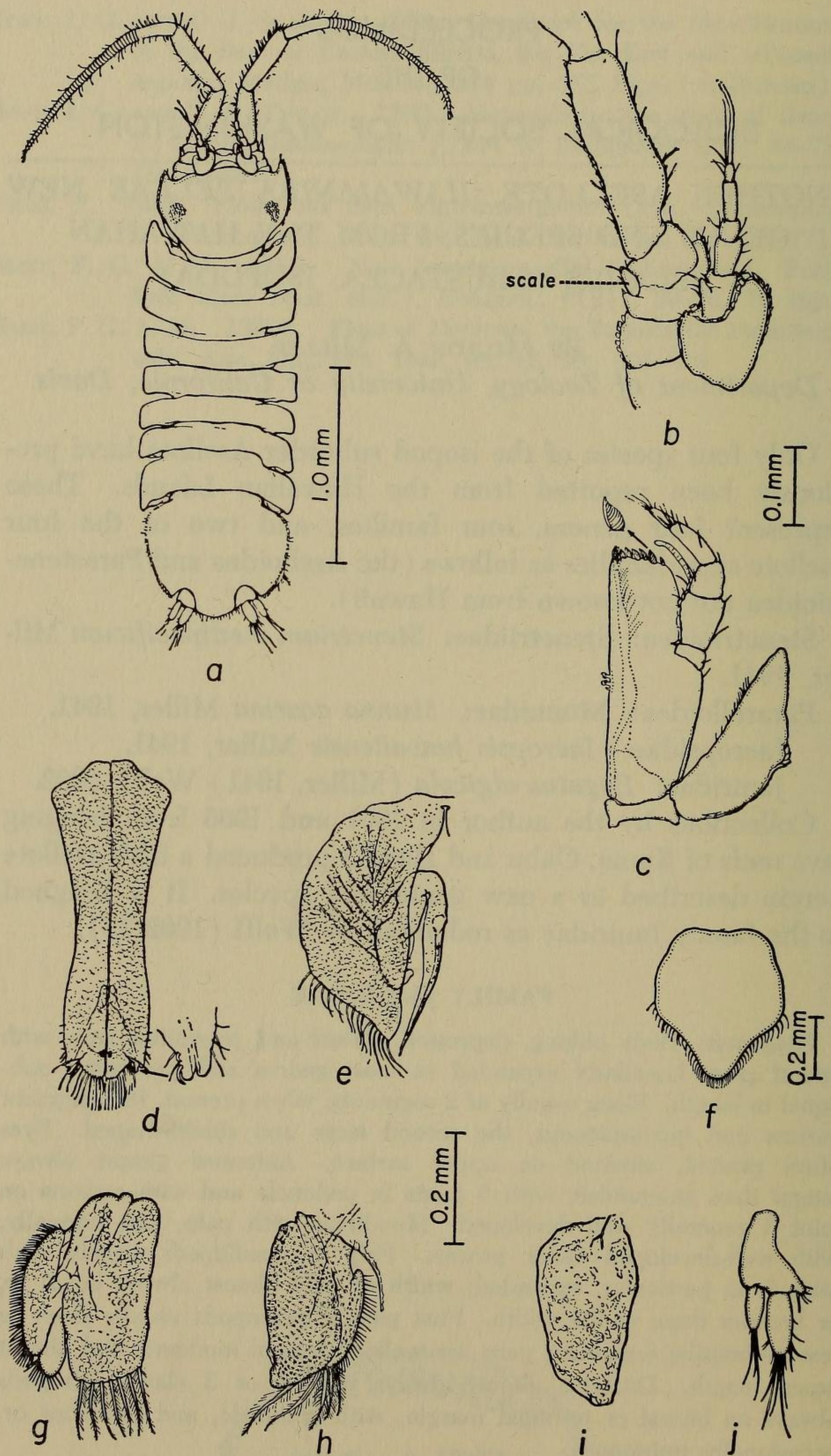
Jaeropsidae: *Jaeropsis hawaiiensis* Miller, 1941.

Janiridae: *Bagatus algicola* (Miller, 1941) Wolff, 1962.

Collections by the author in 1961 and 1966 from fringing lava reefs of Kauai, Oahu and Hawaii produced a fifth asellote herein described as a new genus and species. It is assigned to the family Janiridae as redefined by Wolff (1962:33):

FAMILY JANIRIDAE

Diagnosis: Body oblong, depressed. Head and pereonites free, with lateral parts lamellarly expanded in most genera and pereonites subequal in length. Pleon usually of 2 segments; when present, first segment narrow and inconspicuous, the second large and shield-shaped. Eyes often present, situated on upper surface. Antennae almost always longer than antennulae, with 6 joints in peduncle and with squama on joint 3 generally well developed. Mandibles with palp, and normally, with well-developed molar process. Palp of maxillipeds usually with joint 3, in particular, expanded; width of palp almost always equal to, or broader than, endite width. First pair of pereopods usually more or less prehensile; remaining pairs are walking legs of moderate and almost equal length. Dactylus almost always with 2 or 3 claws. Uropods always on lateral or terminal margin, with peduncle, and biramous or, occasionally, uniramous.



Hawaianira new genus

Type-species: *H. peleae* new species

Diagnosis: Janiridae with cephalon, pereon, and pleon laterally expanded, but lacking projecting lappets or spinous processes. Cephalon wider than long with acute anterolateral projections. Slightly convex frontal margin, but no rostrum. Eyes dorsal. Pereonites subequal in width with sides parallel, not markedly different in length. Coxal plates (epimera) normally not visible dorsally. Pleonites and telson completely consolidated with no sign of sutures. Pleotelson deeply incised posterolaterally on each side of broadly rounded apex for insertion of short uropodal peduncle. Marginal shelf on underside of pleotelson bordering pleopodal chamber.

First antennae (antennules) short, with dilated basal joint. Second antennae longer than first, but shorter than body, with 6-jointed peduncle bearing scale on third article and multiarticulate flagellum. Mandibles with triarticulate palp, toothed incisive processes subtended by spine rows and lacinia mobilis on left, and well-developed, subcylindrical molar process ending in truncate grinding apex. Maxillipedal palp 5-jointed, with last two points narrower than first three, which are half or less width of endite. Pereopod I biunguiculate, and similar to pereopods II–VII, which are unmodified walking legs not prehensile. First pleopod of male with apex narrower than base, lateral apical processes only slightly divergent. Second male pleopod with geniculate appendix masculinum. First pleopoda completely lacking in female, second operculate. Third and fourth pleopoda in both sexes similar, biramous; fifth uniramous. Anus opens between bases of posterior pleopods. Uropoda biramous with short peduncle and branches.

Etymology: Generic name feminine, compounded from "Hawaii," where found, and "*Janira*," typical genus of family to which it is assigned.

Hawaianira peleae new species

(Figs. 1–2)

To the generic diagnosis, the following specific characteristics are added.

Description: Holotype male. Body compact, depressed, three times longer than wide (2.4 by 0.8 mm). Surface smooth, sparsely setose at margins, but microscopically scaly or denticulate on areas described below. Sides parallel. Color uniform, pale beige in alcohol, without

←

FIG. 1. *Hawaianira peleae* new species. a, ♀ paratype, dorsal view, slightly flattened and extended. b, antennule and base of antenna. c, maxilliped ♀. d, e, first and second pleopods ♂. f, second pleopod ♀; g, h, i, third, fourth and fifth pleopods ♂. j, uropod ♂.

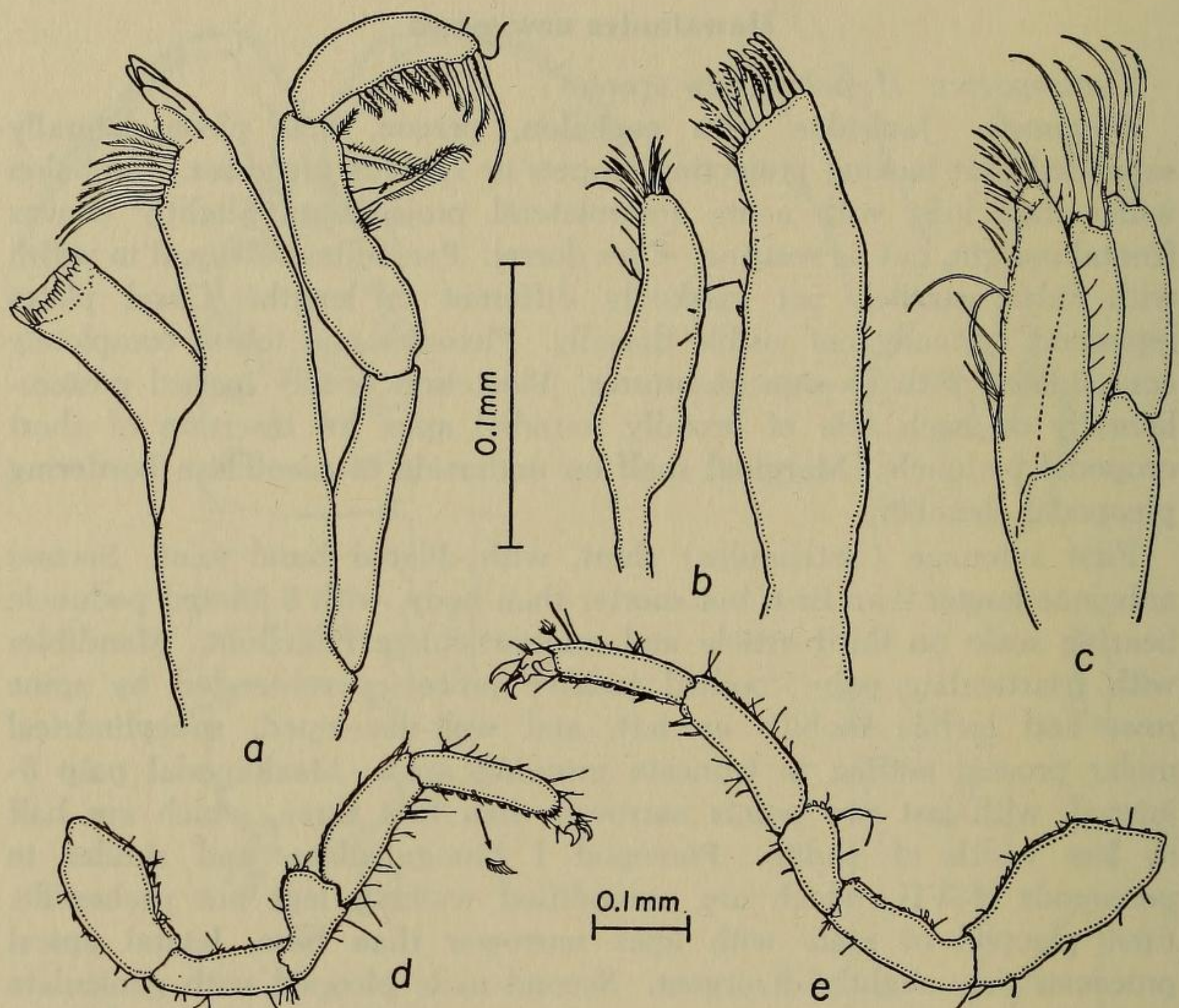


FIG. 2. *Hawaiianira peleae* new species, ♀ mouthparts and pereopods. a, mandible. b, first maxilla. c, second maxilla. d, first pereopod. e, seventh pereopod.

apparent chromatophores. Allotype ovigerous female (2.5 by 0.9 mm). Paratype, ovigerous female (2.0 by 0.7 mm).

Head broad with pointed anterolateral projections. Frontal margin between these weakly trilobate with slightly convex median lobe. Antennal line evident on frons running between antennule sockets. Lateral margin of head scaly. Posterior convex margin fits into concave anterior margin of first pereonite. Eyes dorsal, each composed of about 20–25 ocelli.

First antennae (antennules) composed of greatly dilated basal joint and five narrower articles. Apex of basal article, especially inner side, produced forward on each side of much narrower second article; margin roughly scaly. Pauciarticulate flagellum not extending beyond fifth peduncular joint of second antennae. Flagellum tipped by long bristle and long subcylindrical seta. Second antennae about two-thirds body length, with peduncle of 4 short and 2 subequal long joints and multiarticulate flagellum. Spinose squama at end of third joint. Basal articles scaly and spinose. Number of flagellar articles varies with size (age) and on different sides of same individual. Holotype has 43–

45 articles; allotype markedly asymmetrical with 40 articles on left, but only 17 on shorter right flagellum. First joint of flagellum long, showing incipient segmentation toward end, followed by many short discoidal joints. Setae along sides and tuft of setae at tip.

Mouthparts biting. Mandibles as in genus. Distal article of triarticulate palp bearing comb of about 9 plumose setae and terminal smooth seta, second article with 2 long plumose setae. Molar processes truncate and denticulate, incisive processes with 3 and 5 teeth on right and left, respectively. Lacinia mobilis with several teeth, number varies among specimens. Spine rows well developed with ctenate setae. First maxillae with outer lamina terminating in 8-9 toothed setae, narrower inner plate ending in many simple curved setae. Second maxillae trilobed, with inner lobe fringed by many simple setae, outer two each ending in 3-4 long, finely plumose setae. Maxilliped with triangular, somewhat scaly epipod, narrow basal (coxal ?) plate and broad basis bearing broad endite and a narrower five-jointed palp as described for genus. Palp sparsely setiferous with apical tuft. Long tubular (probably sensory) seta extends inward from distal end of second joint. Setiferous flange extends at right angle toward maxillae along median edge of each maxilliped. Two large coupling hooks on median margin of each maxilliped.

Pereonites subequal in width and length with lateral margins entire and parallel. Fourth pereonite quadrangular, anterior three bent forward, posterior three bent backward. Pleura of first pereonite embrace posterior part of head with anterolateral angles reaching to eye level. Coxal plates normally not visible dorsally, but discernible on flattened specimens posterior to sixth and seventh and anterior to first pereonite.

All pereopods ambulatory with biunguiculate dactyls, becoming progressively longer from anterior to posterior with seventh one-third longer than first. Dactylus with low knob or tubercle and seta between claws. Inferior margin of propodus with row of low ctenate scales and three stout setae. Basis always, and more distal podomeres sometimes, shows minutely serrated margins.

Pleon as in genus. Several small denticles on margin lateral to excavation for uropod, and few setae along lateral and posterior margin. Caudal lobe between uropodal excavations broadly rounded.

Pleopods in male and female as shown in Fig. 1. First pleopods in male elongate, tightly appressed in midline, laterally slightly constricted, apex narrower than base; distal margin of medial apical lobes rounded, each fringed with about six setae and extending beyond lateral subapical lobes. Subapical lobes indented at tip, not laterally produced. First pleopods absent in female.

Second male pleopods with geniculate appendix masculinum having sharply pointed tip. Second (first apparent) pleopod of female operculate, distal half triangulate and fringed with setae.

Third, fourth and fifth pleopods similar in both sexes. Third with two-jointed exopod and broad, truncate endopod bearing 6-8 plumose

setae. Fourth pleopod with membranous exopod bearing 4–5 apical plumose setae and lateral fringe of simple setae, and thicker, bare endopod. Fifth pleopods uniramous, somewhat fleshy, non-setiferous.

Uropoda biramous. Peduncle short, completely immersed in deep posterolateral excavations of telson, inserted anterior and ventral to these excavations, posteromedial angle acutely produced. Endopod broadly styliform, subequal in length to peduncle. Exopod slightly shorter and narrower than endopod. Both branches with apical setae.

Localities: KAUAI: Poipu Beach (13♂♂, 8♀♀), 12 September 1966, M. A. Miller. OAHU: Hanauma Bay (3♂♂, 2♀♀), 26 August 1961, M. A. Miller. HAWAII: Laupahoehoe (2♂♂, 2♀♀), 8 August 1961, M. A. Miller and P. Q. Tomich. Honaunau (type-locality) (2♂♂, 3♀♀), 15 September 1966, M. A. Miller.

At all localities, the specimens were taken in shallow water over lava reefs (aa or pahoehoe) from wash bucket samples of rocks, coral and algae. This species has not been collected in protected bays such as Kaneohe Bay, Oahu and Hanamaula Bay, Kauai. Many other isopods, amphipods, tanaidaceans, decapods and other small crustaceans are generally found in samples with *Hawaiianira peleae* including all the other asellote species mentioned in the introduction. Of the two janirid species now known from the Hawaiian Islands, *Bagatus algicola* is much more widely distributed and abundant than *H. peleae*. More selective sampling is needed to help determine the ecological associations and niches of the various species.

Disposition of material: Types are deposited in the U. S. National Museum, catalog nos. 119767–119769. Other material indicated above has been divided between the B. P. Bishop Museum, Honolulu and the author's collection.

Etymology: The single known species in the genus is named for "Pele," the Hawaiian fire goddess who, according to legend lives in volcanos that produced the lava reefs where it occurs.

Relationships: Before assigning *Hawaiianira* to family, a decision was necessary between two recent interpretations of the family Janiridae as found in major revisions of the Asellota by Menzies (1962a, 1962b) and by Wolff (1962). Both authors recognize that the Janiridae has long been a large heterogeneous assemblage of genera. Attempts by various authors to divide it in some natural manner, however, have not been too successful, at least at the family level (for review, see Wolff, 1962).

Of special interest is Menzies' (supra) proposal to remove from Janiridae all genera (1) with pleotelson composed of a single "somite," instead of two, and (2) with only two claws on pereopods II–VII, that is, lacking an accessory third claw. On both counts, *Hawaiianira* would be excluded from Janiridae as restricted by Menzies. Unfortunately, however, it can not be placed in any of the families established by Menzies for the janirid outcasts. Hence, if Menzies' restricted concept of Janiridae were accepted, it would be necessary to create a new family for *Hawaiianira*. *Hawaiianira* comes close to Ianirellidae, especially

as diagnosed in Menzies (1962a), less so to the amended version published later the same year (1962b). From the latter it differs in three important respects: (1) eyes present, (2) molar process of mandible not expanded at apex, and (3) first three articles of maxillipedal palp much wider than the last two, but only half as wide, instead of as wide, as endite. Also, the genera included in Ianirellidae (*Ianirella* Bonnier, *Spinianirella* Menzies and possibly *Rhacura* Richardson) all have lateral lappets or spiny processes extending from the body, and usually a rostrum. This seems to be true also for other genera contained in the earlier diagnosis of this family (Menzies, 1962a), namely, *Iolella* Richardson, *Jolanthe* Beddard, *Janthopsis* Beddard, *Acanthaspidia* Stebbing and *Microprotus* Richardson. Since these structures seem to be associated with deep or cold water habitats in many other asellote families, they may be regarded as convergent characters of little or no systematic value.

Wolff (supra) rejected Menzies' revision mainly on the grounds that ". . . the number of pleonites varies within well-defined families and even within other genera in the Asellota . . ." and some janirids with a distinctly 2-segmented pleotelson have only two claws. Accordingly, he reconstituted the Janiridae with a broad diagnosis embracing 35 genera, restoring those extracted by Menzies. *Hawaiianira* comfortably fits Wolff's liberal diagnosis of Janiridae.

Considering the alternatives, I prefer to assign *Hawaiianira* to the family Janiridae in Wolff's sense. Although this action adds a 36th genus to an already overburdened family, I believe it gives a better indication of relationships than creation of a new family for a monotypic genus. The basis for such a family would have to be a combination of characters, as none by itself appears to be diagnostic, even at the generic level. Further systematic studies of the janirid complex are indicated.

Hawaiianira resembles several other janirid or near-janirid genera in certain characteristics besides those mentioned above. It is like *Jaeropsis* Koehler and *Caecijaera* Menzies in body configuration with broad pereonites lacking lateral incisions or processes, epimera not visible dorsally, and reduced uropods deeply inserted in excavations in the pleotelson. All three genera also have short antennules with expanded basal articles, biunguiculate dactyls, and narrow apex of the first male pleopod.

Hawaiianira differs from the above genera in several important respects. From *Jaeropsis* it differs in the characters which have been used to separate *Jaeropsis* from the Janiridae as a distinct family (Jaeropsidae), notably the presence in *Hawaiianira* of an antennal scale, multiarticulate (instead of pauciarticulate) flagellum of second antenna, non-tapering molar process and lacinia mobilis of mandible, and longer branches of uropod. From *Caecijaera*, another janirid genus, *Hawaiianira* can easily be distinguished by the presence of eyes, in having the basal three articles of the maxillipedal palp only half or

less as wide as the endite (rather than equal in width), by its well-developed (rather than reduced) molar process, by its much narrower endopod of first maxilla, and in having a biramous (rather than uniramous) fourth pleopod.

LITERATURE CITED

- MENZIES, R. J. 1962a. The zoogeography, ecology, and systematics of the Chilean marine isopods. Lund Univ. Årsskr. N. F. Avd. 2, 57(11): 3-162, 51 Figs. in text.
- . 1962b. The isopods of abyssal depths in the Atlantic Ocean. Abyssal Crustacea. Vema Research Series, no. 1: 79-206, 74 Figs. in text.
- MILLER, M. A. 1941. The isopod Crustacea of the Hawaiian Islands, II. Asellota. Occas. Pap. B. P. Bishop Mus., 16(13): 305-320, 4 Figs. in text.
- WOLFF, T. 1962. The systematics and biology of bathyal and abyssal Isopoda Asellota. Galathea Report, 6: 7-320, pls. 1-19, 184 Figs. in text.

