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HAWAIIAN XANTHIDAE (DECAPODA: BRACHYURA)  
II. DESCRIPTION OF *GARTHIELLA*, NEW  
GENUS, WITH A REDESCRIPTION OF  
*G. ABERRANS* (RATHBUN, 1906)

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*Abstract.* — The new genus *Garthiella* is erected to accommodate the xanthid species described as *Chlorodopsis aberrans* Rathbun, 1906. It is readily distinguished from the genus *Pilodius* (= *Chlorodopsis*) by the sharp fingers of the chelipeds, the shape of the first pleopod of the male, and the wide orbital hiatus.

Rathbun (1906) published the first comprehensive study of Hawaiian Crustacea Decapoda. Her report was based primarily on the collections made in 1902 by the U.S.F.C. Steamer *Albatross* from waters surrounding the Hawaiian Islands, but included additional Hawaiian material from the U.S. National Museum of Natural History, the Museum of Comparative Zoology, and the Philadelphia Academy of Natural Science. She also cited literature records of an additional 28 species. Her report remains the basis of decapod research in the Hawaiian Islands.

Of the 213 species and subspecies of Brachyura she reported, Rathbun (1906) placed 94 species in the family Xanthidae, 21 of which were described as new species. One new species, *Chlorodopsis aberrans*, was described and placed in the genus *Chlorodopsis* A. Milne Edwards, 1873, because it "has much in common with *C. woodmasoni* Alcock." However, as noted by its specific epithet, Rathbun recognized that it was not a typical *Pilodius* Dana, 1851 (= *Chlorodopsis*) by reason of pointed tips on the fingers of its chelipeds. All species of *Pilodius* are presently recognized as having chelipeds with the fingers hollowed at the tip.

While studying the xanthid crabs in the Bishop Museum, the author noted that this species did not fit into the accepted concept for the genus *Pilodius* because of its aberrant

chelipeds, nor could it be assigned to any other described xanthid genus. Accordingly, the new genus *Garthiella* is here erected to accommodate *Chlorodopsis aberrans*.

*Garthiella*, new genus

*Diagnosis.* — Carapace hexagonal to transversely subovate, about  $\frac{3}{5}$  as long as wide, flattish from side to side, slightly convex longitudinally, front turned down and convex. Regions more or less separated anteriorly, but vague posteriorly; surface variously sculptured with spines or tubercles. Front bilobed, approximately  $\frac{1}{3}$  carapace width; frontal-orbital border about  $\frac{3}{5}$  carapace width. Anterolateral border divided into 4 granulated lobes or teeth (excluding external orbital angle). Posterolateral border slightly longer than anterolateral. Basal antennal article rather broad, inner angle touching ventral prolongation of front; outer angle prolonged partway into wide orbital hiatus, not closing hiatus to antenna. Palatal ridges developed only posteriorly, not extending forward to anterior boundary of buccal cavern. Chelipeds equal or subequal in both sexes, covered by tubercles; fingers pointed. Ambulatory legs anteriorly spinose, with scattered hairs. Male abdomen with 7 segments, 3-5 fused; gonopod curved and tapered, with several long setae near tip and conical spines on distal half.

*Type-species.*—*Chlorodopsis aberrans* Rathbun, 1906.

*Etymology.*—This genus is named for a student of the Xanthidae, Dr. John S. Garth of the Allan Hancock Foundation, Los Angeles, California; the gender is feminine.

*Remarks.*—The new genus *Garthiella* is erected to accommodate the “aberrant” species *Chlorodopsis aberrans* Rathbun, 1906. *Garthiella* resembles *Pilodius* (= *Chlorodopsis*) in general appearance, but can be distinguished by the pointed fingers on the chelipeds and the tip of the first pleopod of the male. All species of *Pilodius* are presently recognized as having chelipeds with the fingers hollowed at the tip. The reduced beak at the tip of the gonopod of *Garthiella aberrans* is not like the larger, fuller beaks of species of *Pilodius*.

In species of *Pilodius* the orbital hiatus varies from being open to give the antennal flagellum access to the eye, to being closed. In general, though, the orbital hiatus is not wide, whereas, in *Garthiella aberrans* the orbital hiatus is quite wide.

*Garthiella aberrans* (Rathbun, 1906),  
new combination  
Figs. 1, 2

*Chlorodopsis aberrans* Rathbun, 1906:859, fig. 20.—Edmondson, 1925:43; 1946:295; 1962:274, fig. 20a.—Serène & Van Luom, 1958:90, 91; 1959:302, 328, text-figs. 2L, 5L, pl. 2 fig. D, pl. 3 fig. K.—Forest & Guinot, 1961:89.

*Material examined.*—3 males, 6 females, 2 juveniles, BPBM S1351, Johnston Island, coll. C. H. Edmondson, Jul 1923.

*Redescription.*—Carapace hexagonal to transversely subovate, flattish from side to side, slightly convex longitudinally, front turned down and convex; length about  $\frac{3}{5}$  width (Fig. 1a). Regions and subregions separated by wide smooth grooves lacking hair. Gastric and branchial regions defined and subdivided; 2M incompletely subdivided. Cardiac and intestinal regions blending into

branchial region with no clear divisions. Anterior of carapace sculptured with sharp tubercles decreasing in size posteriorly to granules; scattered short hairs originating at many tubercles and granules.

Front bilobed and slightly greater than  $\frac{1}{2}$  carapace width. Frontal lobes rounded, granular, and slightly produced adjacent to U-shaped median sinus; small lateral frontal lobes separated by shallow emarginations. Orbital margins spinulose with 1 median dorsal and 1 ventrolateral notch; wide smooth groove just posterior to orbital margins continuous behind front. Frontal-orbital border about  $\frac{3}{5}$  carapace width.

Anterolateral border of carapace granular and divided into 4 lobes or teeth (excluding external orbital angle). First lobe granular and blunt, originating behind and below outer orbital angle; posterior 3 lobes granular and spinose. First 3 lobes obliquely directed anteriorly, increasing in size posteriorly; fourth lobe slightly smaller than third, more laterally directed. Posterolateral border slightly longer than anterolateral, and rather straight; posterior border slightly emarginate at midline.

Pterygostomial region similar to dorsum, granular to spiny (Fig. 1b). Third maxilliped densely bristled medially, with scattered hairs over exterior surface (Fig. 2a). Palatal ridges developed only posteriorly, not extending forward to anterior border of buccal cavern. Basal antennal article broad, inner angle touching ventral prolongation of front; outer angle prolonged partway into wide orbital hiatus, not closing hiatus to antenna (Fig. 1b).

Chelipeds slightly unequal, tubercular, with scattered short hairs. Tubercles on wrist and most of hand conical and sharp; lower surface of propodus with rounded tubercles. Two teeth on inner margin of carpus, indicated by slightly larger tubercles. Upper and lower borders of palm rounded; spinules on outer surface of palm tend to form lines, especially middle row. Fingers deeply grooved, acute (Fig. 2b); spinous tubercles

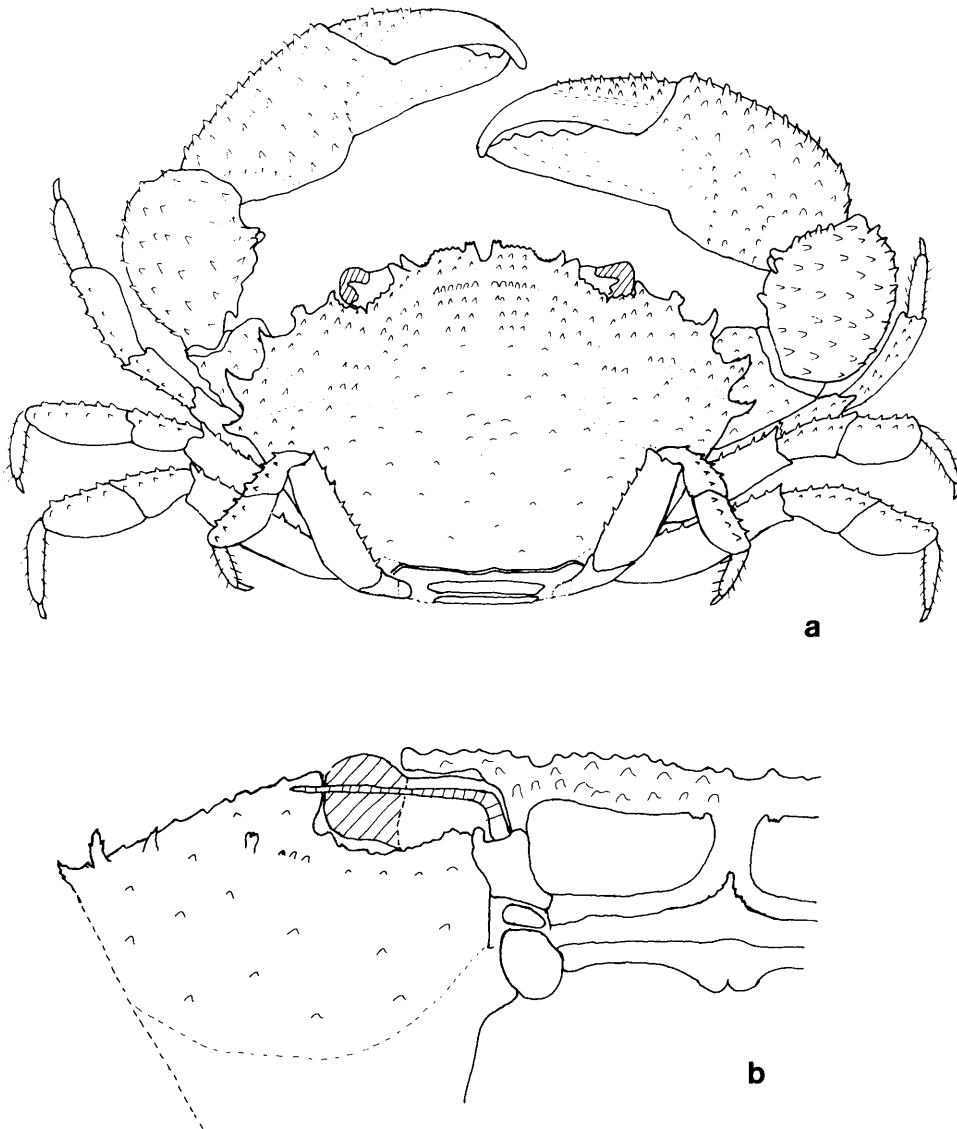


Fig. 1. *Garthiella aberrans*: a, Male, dorsal view; b, Front.

extending onto dorsal surface of dactylus about half its length, and onto outer face of pollex between grooves (more developed in females); teeth well developed; tip of dactylus curved, overlapping pollex internally when fingers closed, leaving no gap between teeth.

Ambulatory legs lightly granular, upper margins spinulate (Fig. 2c). Upper margin of propodus, and especially carpus, bicari-

nate. Legs with scattered long hairs, more dense on upper and lower margins.

Abdomen of male with 7 segments, third to fifth fused, suture lines not recognizable (Fig. 2d). Abdomen of female oval, with 2 longitudinal grooves joining at seventh segment (Fig. 2e); fringe of long hair around border, outer surface lightly covered by short hair.

First pleopod of male curved, with sev-

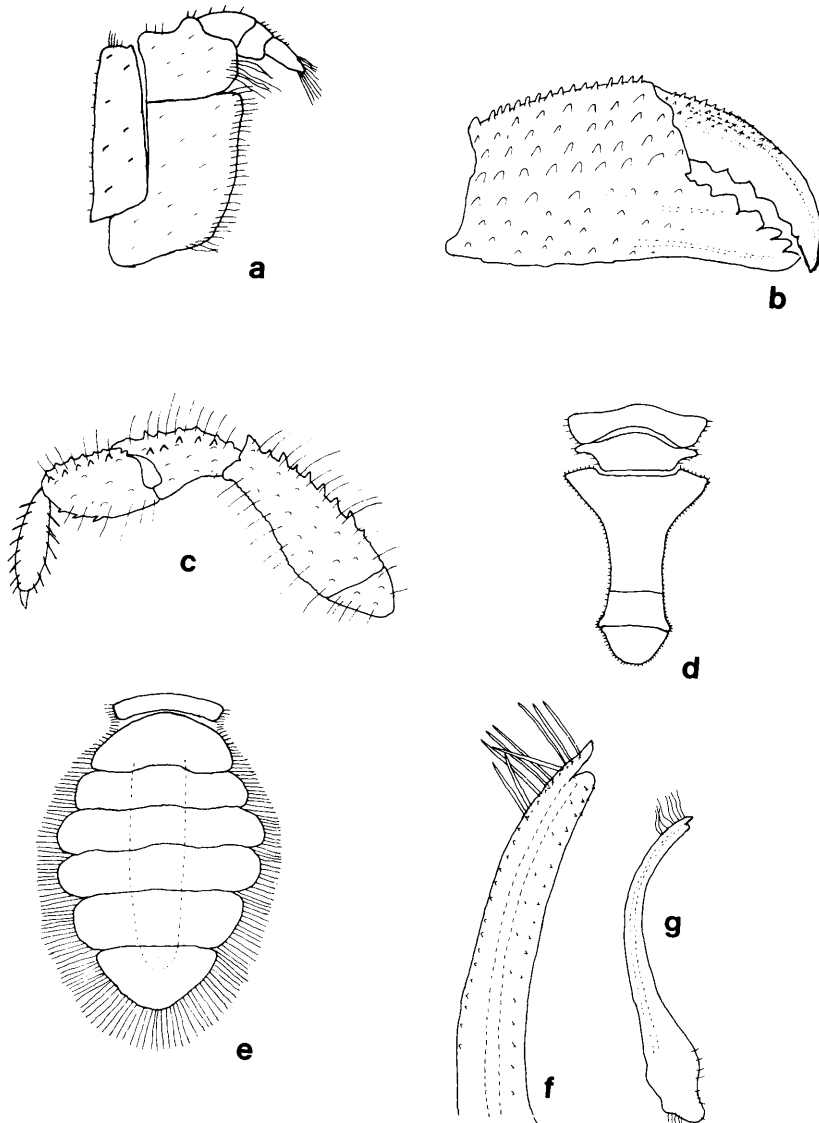


Fig. 2. *Garthiella aberrans*: a, Third maxilliped; b, Chela of male; c, Pereiopod; d, Abdomen of male; e, abdomen of female; f, g, First pleopod of male.

eral long setae near tip; conical spines on distal half; beak reduced (Fig. 2f, g).

*Remarks.* — *Garthiella aberrans* (Rathbun, 1906) was originally described from a single male specimen (USNM 29434). It was dredged in the vicinity of Nihoa Island (Modu [Moku] Manu or Bird Island) at U.S.F.C. Steamer *Albatross* Station D.4146,

at a depth of 42–48 meters, on a bottom of coarse coral, sand, and forams. The only other reported specimens were collected at Johnston Island (Edmondson 1925). The Bishop Museum catalog states that 15 specimens were collected at Johnston Island, as reported by Edmondson (1925). However, Edmondson (1962) stated that there were

13 specimens in the Bishop Museum collections, of which only 11 can now be located.

Unlike the Nihoa specimen from deeper water (42–48 meters), Edmondson (1962) reported that the Johnston Island specimens were collected in shoal water. This information is not on the specimen label, in the Bishop Museum catalogue, or reported previously by Edmondson (1925). Because Edmondson collected the Johnston Island specimens, it must be presumed that these depth records are from memory or, less probably, from private field notes.

*Distribution.*—Near Nihoa Island, Northwestern Hawaiian Islands (Rathbun 1906); and Johnston Island (Edmondson 1925).

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#### Literature Cited

- Dana, J. D. 1851. Crustacea Grapsoidea (Cyclometopa, Edwardsii): Conspectus Crustaceorum quae in Orbis Terrarum circumnavigatione, Carolo Wilkes e Classe reipublicae Foederatae Duce. — Proceedings of the Academy of Natural Sciences of Philadelphia 5:247–254.
- Edmondson, C. H. 1925. Marine zoology of tropical Central Pacific. Crustacea. — Bernice P. Bishop Museum Bulletin 27:3–62, figs. 1–8.
- . 1946. Reef and shore fauna of Hawaii. — Bernice P. Bishop Museum Special Publication 22:i–iii, 1–381, figs. 1–223.
- . 1962. Xanthidae of Hawaii. — Occasional Papers of Bernice P. Bishop Museum 22(13):215–309, figs. 1–34.
- Forest, J., and D. Guinot. 1961. Crustacés Décapodes Brachyours de Tahiti et des Tuamotu. In Expédition française sur les récifs coralliens de la Nouvelle-Calédonie. Volume préliminaire. — Paris, Éditions de la Fondation Singer-Polignac, pp. I–XI, 1–195, figs. 1–178, pls. 1–18.
- Milne Edwards, A. 1873. Recherches sur la faune carcinologique de la Nouvelle-Calédonie, Deuxième Partie. — Nouvelles Archives du Muséum d'Histoire Naturelle (Paris) 9:155–332, pls. 4–18.
- Rathbun, M. J. 1906. The Brachyura and Macrura of the Hawaiian Islands. — Bulletin of the United States Fish Commission for 1903, part 3:827–930, text-figs. 1–79, pls. 1–24.
- Serène, R., and N. Van Luom. 1958. *Chlorodopsis* (Brachyura) du Viet-Nam. — Annales de la Faculté des Sciences de Saigon 1958:87–147, text-figs. 1, 2, pls. 1–4.
- , and ———. 1959. Note additionnelle sur les espèces de *Chlorodopsis* (Brachyures). — Annales de la Faculté des Sciences de Saigon 1959: 301–340, text-figs. 1–5, pls. 1–3.

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