

TRANSFER TO *PSEUDOMEDAEUS* OF THE XANTHID CRAB
MICROPANOPE DISTINCTUS (RATHBUN)

Austin B. Williams

Abstract.—Generic placement of a xanthid crab living on offshore reefs in the southwestern North Atlantic is reconsidered in the light of a suite of characters (carapace, chelipeds, mouth field, sternum, male first pleopods). All three species now placed in *Pseudomedeus* (*africanus* (Monod), *agassizii* (A. Milne Edwards), and *distinctus* (Rathbun)) agree with respect to the first four of these characters. However, first pleopods of the males, though constructed on the same general plan, clearly differ in details of setation, spination, and terminal curvature. Similarities and contrasts among these structures are pointed out in species of the genera *Pseudomedeus*, *Paraxanthodes*, *Gaudichaudia*, *Lophopanopeus*, and *Micropanope*.

The xanthid crab treated by Menzies (1948) as *Micropanope distinctus* (Rathbun) ranges from off Cape Hatteras, N.C., through the Straits of Florida and the West Indies to Barbados. Originally identified as *M. sculptipes* Stimpson by A. Milne Edwards (1880a, 1880b-1881) but later described as a new species, *Lophopanopeus distinctus* Rathbun (1898, 1930), it was returned to *Micropanope* when Menzies revised *Lophopanopeus*. Menzies apparently based his decision on examination of a tiny male (USNM 20717 designated as a "homeotype," following a note in the specimen vial) which was mistakenly called a female, perhaps because of its immaturity (carapace length 3.1 mm, width 4.7 mm). Cerase-Vivas and Gray (1966) later listed the species from Carolinian waters as *Lophopanopeus distinctus*, the identification based on Rathbun's (1930) monograph.

The conflicting opinions of these authors concerning generic placement can be viewed in new light following preliminary revision of the family Xanthidae (Guinot, 1967, 1968, 1969, 1971) in which a number of genera have been restricted. Aided by Guinot's papers and by examination of new material in the crustacean collection of the Smithsonian Institution, I have concluded that the crab in question is allied to members of the genus *Pseudomedeus* Guinot 1968, although there is room for doubt that this assemblage is a closely knit one. Reasons for this judgment are brought out below in comparisons among members of selected xanthid genera.

In the following discussion, station data are recorded in Rathbun (1930) for numbers succeeded by (R); numbers marked with an asterisk were determined as *Leptodius agassizii* by Rathbun (1930). Museum of Com-

parative Zoology catalog numbers = (MCZ), National Museum of Natural History = (USNM), University of North Carolina Institute of Marine Science = (UNC-IMS).

Pseudomadaeus Guinot

Guinot 1968:726.

Diagnosis.—Carapace rather broad, moderately inflated, dorsal regions clearly marked; 5 anterolateral teeth including outer orbital, second reduced and above subhepatic tubercle in granular zone, third conical, fourth stronger, fifth smaller. Front about $\frac{1}{3}$ maximum width, anterior margin dorsally paralleled by line of granules and divided by median notch into oblique, rectilinear lobe on each side; supraorbital notch pitlike. Basal antennal article closing orbital hiatus. Epistome broad, respiratory channel (notch) reduced. Third maxilliped with merus of endopodite somewhat projecting anterolaterally; lacinia of first maxilliped moderately elongated transversely with bare suggestion of lobe mesially, anterior margin slightly concave. Low endostomial crest posteriorly. Chelipeds unequal, fingers a little excavated toward slightly crossed tips. Walking legs short and relatively stocky. Sternum broad, longitudinal groove anterior to abdomen; male abdomen relatively short, formed of 5 segments, sutures between 3–4 and 4–5 visible or not. First male pleopod rather short, with inclined apical lobe and subdistal clump of plumose hairs continued posteriorly by short hairs and pointed tubercles. (Translated and slightly modified after Guinot.)

Pseudomadaeus distinctus (Rathbun, 1898), new combination

Figs. 1, 2, 4b

Micropanope sculptipes: A. Milne Edwards 1880a:14.—1880b–1881:325, pl. 54, fig. 2–2c.

Lophopanopeus distinctus Rathbun 1898:272.—1930:331, pl. 155, figs. 1–2.
—Cerame-Vivas and Gray 1966:263 (in faunal list).

Micropanope distinctus: Menzies 1948:24 (new combination).

Description.—Resembling species of the Atlantic *Pseudomadaeus* Guinot (1968:726). Integument granulated, especially on elevations and margins of carapace, granules especially crowded on chelipeds. Carapace broadly oval, slightly arched dorsally, regions distinctly marked and moderately raised, adult length-width ratio about 0.63 (.70 in juvenile holotype). Front with slightly deflexed and oblique lobes separated by broad median notch; double edged, each lobe with advanced inner angle, intermediate nearly straight section and less advanced outer angle almost paralleled dorsally by row of granules; antennal notch deep. Orbits rather small, lateral notch

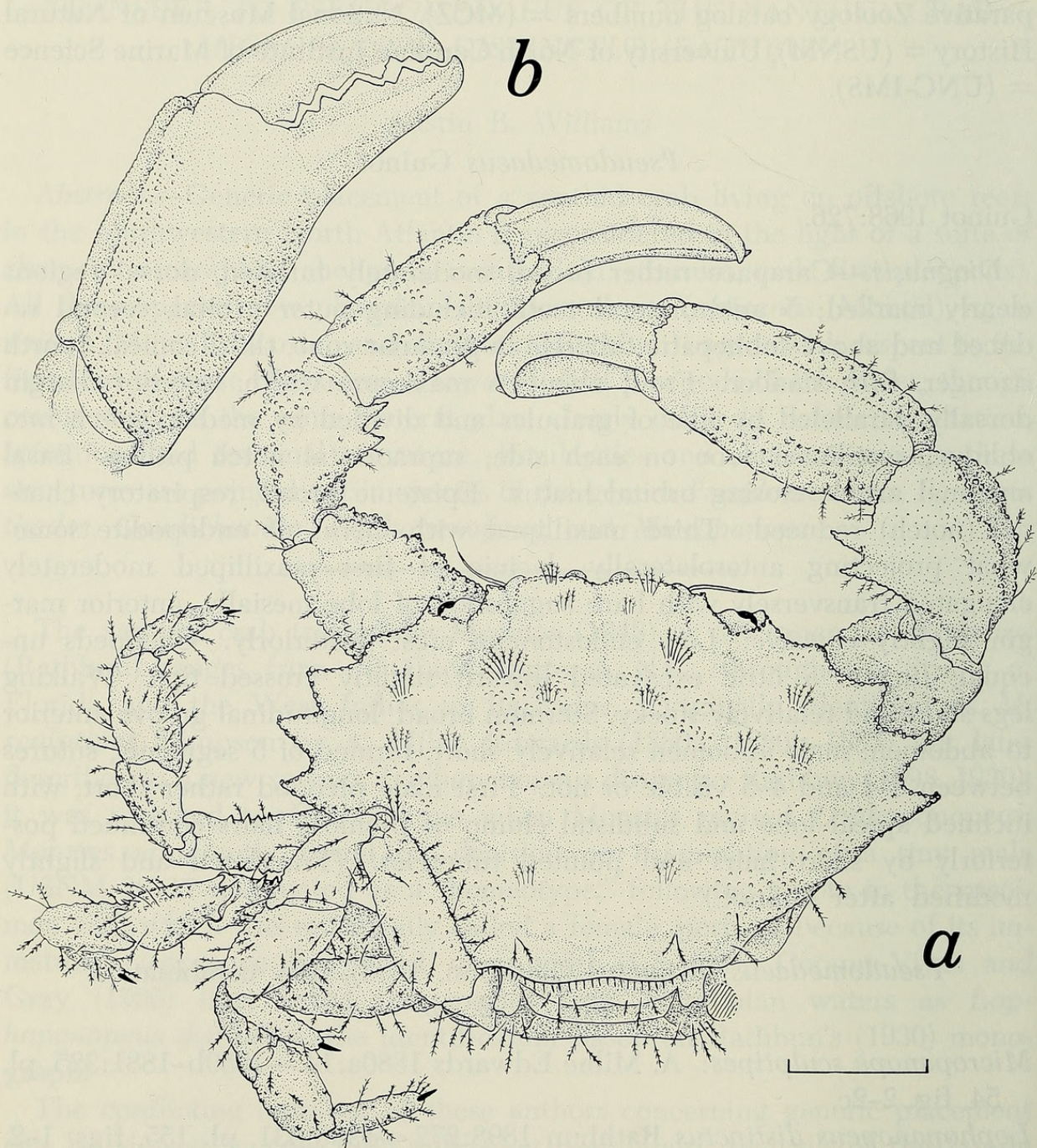


Fig. 1. *Pseudomedeus distinctus*, USNM 101477 ♂. *a*, Dorsal view, walking legs of right side deleted; *b*, Major (rt.) chela, external view. Scale = 5 mm.

moderate, 2 dorsal fissures, infraorbital tooth obscured by inner orbital angle, outer suborbital tooth larger than rather acute outer orbital angle. Long anterolateral margin with 5 teeth; second tooth a low granular lobe, subhepatic eminence below and slightly in front of it barely visible in dorsal view; third to fifth teeth prominent, acute, slightly hooked forward at tip, last 2 nearly in line laterally in large adults. Posterolateral margins strongly converging. Antennules folding obliquely. Basal fixed article of antenna slightly inclined, meeting edge of front, tip of peduncle subequal

to edge of outer frontal lobe. Buccal frame almost rectangular, merus of third maxilliped with anterolateral corner produced laterally. Lacinia of first maxilliped covering approximately 40% of endostome and reaching across $\frac{3}{4}$ of its width. Low endostomial ridge posteriorly. Sternum with median longitudinal groove anterior to abdominal tip.

Chelipeds strong, somewhat elongate, unequal; carpus spined internally; ungaping, longitudinally ridged fingers tapered to crossed tips, teeth on opposed edges sectorial and nearly uniform. Ambulatory legs strong and densely furred.

Male abdomen with telson rather triangular in young but broadly rounded distally in adults, segments 3–5 fused but distinguishable, their lateral margins converging distally.

Male first pleopods rather stout, terminating in elongate, flattened, membranous tip bent mesioventrally at approximately a right angle to axis of shaft; dorsal (sternal) surface with tract of scattered, elongate spinules proximal to tip; ventral (abdominal) surface with tract of much shorter, scattered spinules near base of tip; shaft with long tract of spinules proximal to these groups along dorsomesial border.

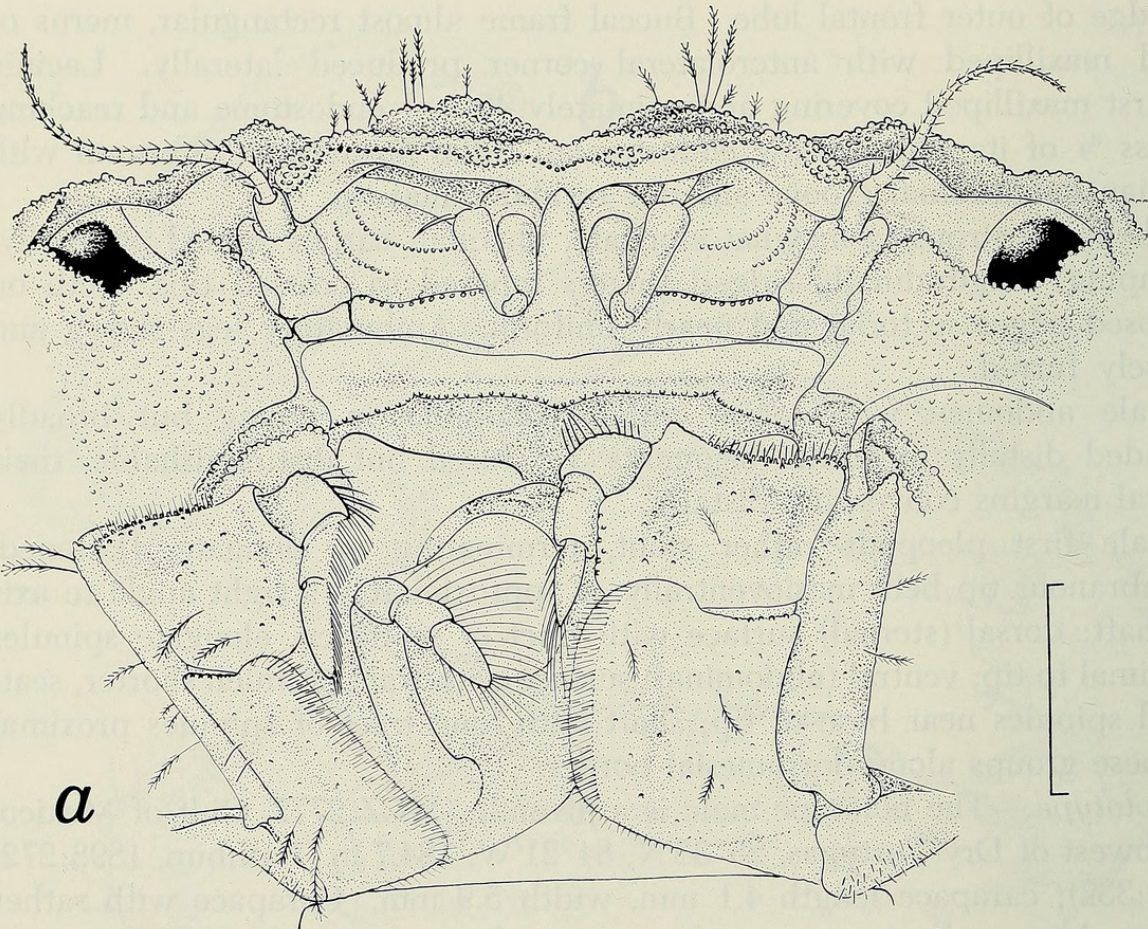
Holotype.—The holotype male is a juvenile (MCZ 2772, Gulf of Mexico, northwest of Dry Tortugas, 25°33'N, 84°21'W, 184.7 m (Rathbun, 1898:272; 1930:332); carapace length 4.1 mm, width 5.9 mm. Carapace with rather dense, sharp, subspinous granules on raised areas and along anterior and lateral margins. Even stronger, nearly spinelike granules on chelipeds, tending to form longitudinal rows on external surface of palms; strong internal carpal spine acute, another slightly smaller spine below it. The specimen is damaged, having the sternum and abdomen crushed inward, giving the impression that it may have been dried at one time. Only the chelipeds and left first and second walking legs are attached. The pleopods are not visible.

Color.—Large adult; body mottled gray and reddish gray or light brown, longitudinally elongate spot in anterior extension of mesogastric area darkest; fingers light brown. Small specimen; body more darkly blotched, legs banded with brownish speckled bands of same color as blotches on body.

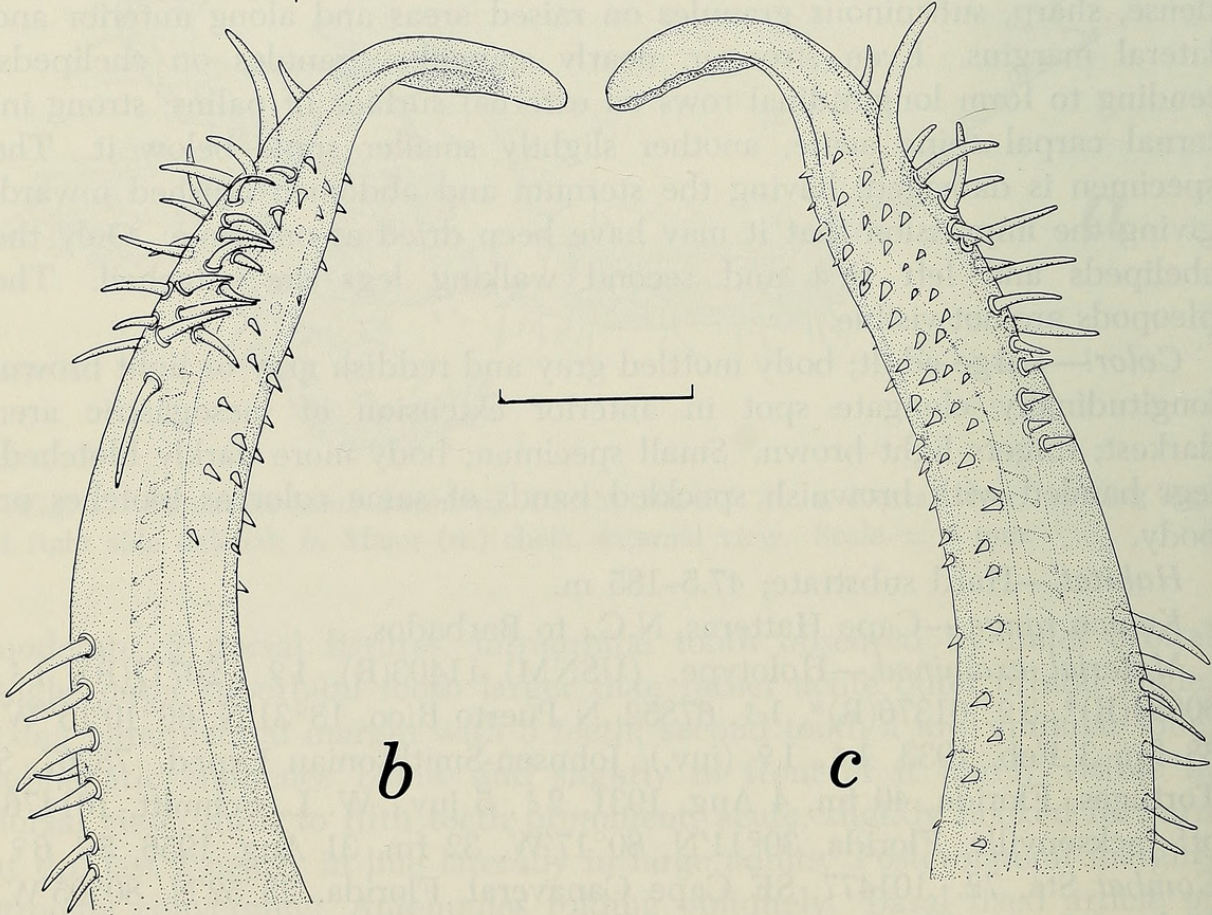
Habitat.—Hard substrate; 47.5–185 m.

Known range.—Cape Hatteras, N.C., to Barbados.

Material examined.—Holotype. (USNM) 11403(R), 1♀. 20717(R), 1♂. 60884(R)*, 3♀. 61376(R)*, 1♂. 67852, N Puerto Rico, 18°31'N, 66°10'15"W, 38 fm, 3 Feb. 1933, 1♂, 1♀ (juv.), Johnson-Smithsonian Exped. 78267, S Tortugas, Florida, 40 fm, 4 Aug. 1931, 2♂, 5 juv., W. L. Schmitt. 101476, off Jacksonville, Florida, 30°11'N, 80°17'W, 32 fm, 31 Aug. 1956, 5♂ 6♀, Combat Sta. 72. 101477, SE Cape Canaveral, Florida, 28°52'N, 80°05'W, 65 fm, 3 Sept. 1956, 6♂ (measured ♂, carapace length 15.1 mm, width 24.4



a



b

c

mm), 3♀, *Combat* Sta. 90. 170768, off Cape Canaveral, Florida, 28°17.5'N, 80°01.5'W, 41–34 fm, 25 Apr. 1960, 1♂, 1♀, *Silver Bay* Sta. 2010. 170769, Sapelo Is., Georgia, 11 mi SE sea buoy, 30°40'45"N, 80°06'07"W, 165 ft, 9 Dec. 1963, 1♂, M. Gray, Sta. 372. 170770, off Sapelo Is., Georgia, 30°48'47"N, 80°08'30"W, 143 ft, 9 Dec. 1963, 1♂, 1♀, M. Gray, Sta. 354.

(UNC-IMS) 1917, off Cape Hatteras, North Carolina, 34°57'N, 75°19'W, 90 fm, Mar. 1963, 1♀, M. Cerase-Vivas, Sta. H1S. 2292, off Cape Hatteras, North Carolina, 34°11'N, 76°10'W, 60 m, 4 May 1969, 1♂, *Eastward* Sta. 11943.

Pseudomadaeus agassizii (A. Milne Edwards)

Fig. 3

Leptodius agassizii A. Milne Edwards 1881:270, pl. 49, fig. 3.—Rathbun 1930:307, pl. 141, fig. 4–5.—Williams 1965:192, figs. 174, 183H.

Medaeus africanus: Monod 1956:309–310, figs. 381–382 (referred to as variety from east coast of North America).

Medaeus latifrons Chace 1942:83, pl. 25, figs. A–E.

Pseudomadaeus agassizii: Guinot 1968:726, figs. 25, 58 (new combination).—Felder 1973:67, pl. 9, fig. 11.

Male first pleopod.—Basically similar to that of *P. distinctus* but much more complex; terminating in thin, tubelike, laterally split process bent ventrally at almost a right angle to shaft and covered externally with an exceedingly fine pubescence; dorsal (sternal) surface with subterminal tuft of scattered, plumed setae followed by tract of elongate, pointed spinules; ventral (abdominal) surface with tract of crowded, shorter, blunt spinules at base of tubular terminal process. Spinules scattered along shaft preceding each of these groups increase in length distally.

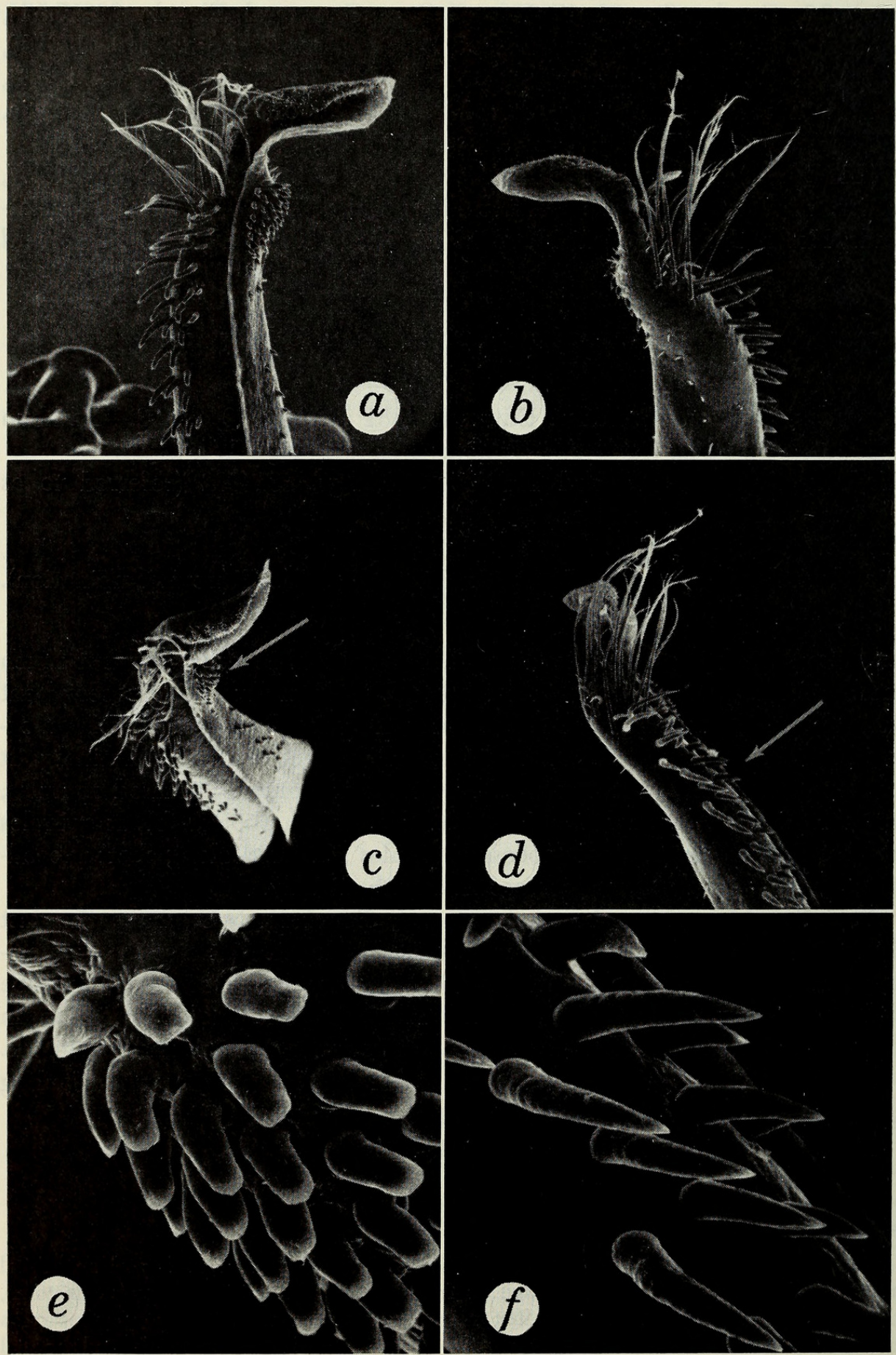
Variation.—Small specimens from near Beaufort, N.C., have the last 3 anterolateral teeth on the carapace well developed, but a series of specimens from Pensacola, Fla., in the USNM show that these spines may be reduced to 2 in larger individuals. There is considerable variation in depth of sculpturing dorsally on the anterior carapace and chelipeds.

Habitat.—Primarily from rock and other hard substrates with fouling growth of sponges, bryozoans, etc., but also on sand; 7.3–82 m.

Type-locality.—Florida reefs, 21.9–32.9 m.

←

Fig. 2. *Pseudomadaeus distinctus*, USNM 101477 ♂. *a*, Part of frontal suborbital and mouth field region showing edge of front, antennules, antennae, eyes, epistome, third maxillipeds, lacinia of right first maxilliped in situ with overlying mouthparts turned aside, and outline of right mandible; *b*, Tip of right first pleopod, mesial view; *c*, Same, lateral view. Scales: *a* = 5 mm; *b*, *c* = .25 mm.



Known range.—Cape Hatteras, N.C., to southern Texas. The species is not known to occur in the Virgin Islands as previously reported (Williams, 1965). That record was based on specimens of *Cataleptodius* (= *Leptodius*) *floridanus* (Gibbes) in the USNM collection mistakenly identified as *L. agassizii*.

Material examined.—(MCZ) 8108, off Contoy, 12–18 fm, syntype male (carapace length 8.9 mm, width 13.8 mm), W. Stimpson, *Bache*. (USNM) 18008(R), 4♂, 2♀. 8851(R), 3♂, 3♀, 5 juv. 37858(R), 6♂, 17♀ (3 ov.), 28 juv. 51081(R), 1♂, 2♀. 53749(R), 2♂, 3♀ (1 ov.). 76082, Lake Worth Inlet, Florida, 1♂, 1 juv., 26 May 1936, T. B. Christiansen. 150089, Texas, 26°49'N, 97°19'W, 7.5 fm reef, 7 June 1970, 4♂, 1♀, 5 juv., D. Felder. 170771, off Sapelo Is., Georgia, 31°26'30"N, 80°48'30"W, 71–59 ft, 8 Apr. 1966, 2♂, 3♀ (ov.), M. Gray, Sta. 393.

Pseudomedeus africanus (Monod, 1956)

Fig. 4a

Medaeus africanus Monod 1956:306, fig. 380.—Guinot and Ribero 1962: 58, figs. 25a, b.

Pseudomedeus africanus: Guinot 1968:726, fig. 57 (new combination).

Male first pleopod.—Terminating in thin, tubelike spout more or less split open laterally, not abruptly bent ventrally at right angle to shaft as in *P. agassizii* but curved more gradually proximal to base of membranous tip; tract of long, plumed setae dorsally on curved part as well as proximal to it; tract of scattered, short spinules on ventral surface proximal to tip and a tract of scattered, longer spinules on dorsal surface.

Type-locality.—"Prob. env. de Dakar."

Known range.—Dakar to Angola; 20–200 m.

Material examined.—(USNM) 123222, Gulf of Guinea, Dahomey Coast, west Africa, 55 m. 170335, off Gabon, west Africa, 02°32'S, 09°05'E, 101 m, 5 Sept. 1963, 1♂, *Geronimo* Cruise 2, Sta. 211.

Gaudichaudia gaudichaudii (H. Milne Edwards)

Xantho gaudichaudii H. Milne Edwards 1834:396.

Gaudichaudia gaudichaudii: Rathbun 1930:278, pls. 126, 127.—Garth 1957:52.—Guinot 1968:714, figs. 39–41, 43, 44.

Male first pleopod.—Terminating in membranous, tubelike, laterally split tip bent at nearly right angle to shaft; lacking plumose setae but with tracts

←

Fig. 3. *Pseudomedeus agassizii*, USNM 53749, ♂ left first pleopod. a, Mesial view, distal part; b, Lateral view, distal part; c, Oblique view from distal end along mesial side; d, Dorsal (sternal) view, distal part; e, Spines indicated by arrow in c; f, Spines indicated by arrow in d. a–d, × ca. 60; e, × ca. 400; f, × ca. 300.

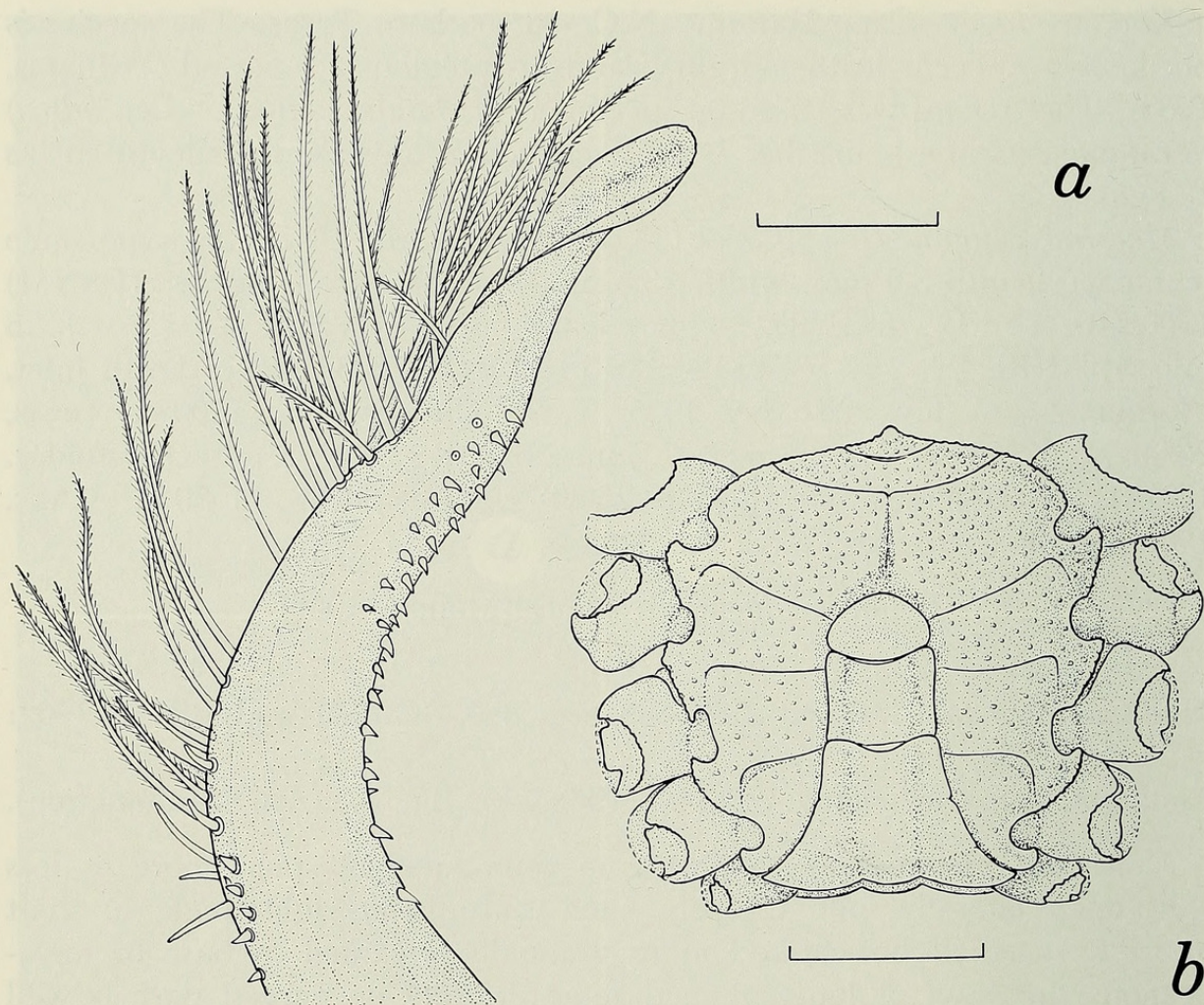


Fig. 4. *a*, *Pseudomedaeus africanus*, USNM 170335 ♂, distal part of first pleopod, mesial view; *b*, *Pseudomedaeus distinctus*, USNM 101477 ♂, sternum and abdomen. Scales: *a* = .25 mm; *b* = 5 mm.

of subterminal spines, short spines on ventral (abdominal) surface, longer ones dorsally (sternal surface).

Type-locality.—Chile.

Known range.—Bay of Sechura, Peru, to Port Otway [Puerto Barroso], Chile; Juan Fernandez Islands; 0–40 m.

Material examined.—(USNM) 60739(R), 1♂. 98304, Arica, Chile, Mar. 1955, 1♂.

Discussion

Pseudomedaeus distinctus obviously has presented a problem in generic placement; in fact, Rathbun (1898) included it only “doubtfully” in her genus *Lophopanopeus*. It is easy to see how small, sharply granular specimens such as the holotype could be mistaken for *Micropanope*. It is noteworthy that the dorsal aspect, sharply granular at this size, resembles that

of other *Pseudomedeus* species, but the carapace becomes relatively broader and smoother with age. The frontal margins of *P. distinctus* and *P. africanus* are much alike, but that of *P. agassizii* has a narrower median notch and less advanced inner and outer angles. *P. distinctus* has a pair of acute internal carpal spines on the chelipeds whereas *P. agassizii* has single or paired lobes or lobiform spines; *P. africanus* has chelipeds with tubercles more spiniform than in *P. distinctus*, and acute internal carpal spines. In *P. distinctus* the male abdominal fused segments 3–5 have much more convergent lateral margins and the telson is less triangular than in the other two species. The carapace of *P. distinctus* is also similar to that in species of *Paraxanthodes* Guinot (1968, Figs. 59–60), but chelipeds of the latter, as well as granules and granular tubercles of the palm and granular rugae of the carpus are less raised than in *Pseudomedeus*.

Shape of the male first pleopod provides one of the most apparent distinctions between *P. distinctus* and similar species with which it has been or logically could be grouped. For convenience in comparing it we can set up three categories of male first pleopods: 1) pleopods of rather similar simple structure; 2) pleopods of basically similar but much more complex structure; 3) pleopods clearly different but representative of genera in which it was formerly included.

1) The male first pleopod of *P. distinctus*, described above, is relatively simple. Nearly as simple (as shown by Guinot, 1968, Fig. 51a, b) is the first pleopod of male *Paraxanthodes* which is relatively straight, ends in a simple thin lobe and slender process lying side by side, and bears two distal patches of small spinules which arise proximally on the shaft as single rows or narrow tracts.

2) *Pseudomedeus agassizii* has male first pleopods basically similar to those of *P. distinctus*, but much more complex. *P. africanus*, the type-species of the genus, also has male first pleopods of the latter general type. At moderate magnification the pleopods of the three *Pseudomedeus* species seem similar, but at higher magnification the setation, spination, and terminal curvature and opening are clearly different.

Specialized in another way at this level of complexity is the male first pleopod of *Gaudichaudia* (as shown by Guinot, 1968, Figs. 43, 44) which lacks plumose setae, but has tracts of spines subterminally, short spines on the ventral surface, longer ones dorsally, and, at least in *G. gaudichaudii*, ends in a tubelike, laterally split membranous tip bent at nearly a right angle to the shaft. The dorsal aspect of members of the genus, however, is quite different from that of *Pseudomedeus*.

3) In contrast, members of the restricted genus *Lophopanopeus* Rathbun (Menzies, 1948) have male first pleopods with complex tip subdivided into a spinulose projection, narrow truncate hood, mesial spinulose lobe and other accessory spines and spinules, a general facies more or less

characteristic of several other panopeine genera grouped in the subfamily Panopeinae by Guinot (1967:349; 1969:249; 1971:1066) (*Panopeus* H. Milne Edwards, *Eurypanopeus* A. Milne Edwards, *Eurytium* Stimpson, *Hexapanopeus* Rathbun, *Neopanope* A. Milne Edwards, and *Rhithropanopeus* Rathbun). Finally, species of *Micropanope* Dana, sensu stricto (Guinot, 1967, Figs. 4a-c) have short male first pleopods with a thick tip folded at nearly a right angle to the shaft and a few small spines scattered along the shaft proximal to the tip.

Guinot thinks that probably the best systematic arrangement of the Xanthidae is based on the sexual apparatus. Male pleopod structure is unquestionably an aid in determining specific identity of these crabs, but we still do not know how much variation occurs at the generic level. Each case must be weighed individually. In the present case, distinction based on pleopod characters alone could easily split *Pseudomedeus* into three monotypic genera. I am reluctant to take this course, for it is possible that as more material becomes available, perhaps including additional species, interpretation of generic limits can be more reliably accomplished.

Acknowledgments

I thank H. W. Levi, Museum of Comparative Zoology, Harvard University, for the loan of type-material, and J. S. Garth, Allan Hancock Foundation, University of Southern California, R. B. Manning, Smithsonian Institution, and B. B. Collette, NMFS Systematics Laboratory, for critical review of the manuscript. The drawings were done by Maria Diéguez and the SEM photographs were made with the help of W. R. Brown.

Literature Cited

- Cerame-Vivas, M. J., and I. E. Gray. 1966. The distributional pattern of benthic invertebrates of the continental shelf off North Carolina. *Ecology* 47(2):260-270.
- Chace, F. A., Jr. 1942. Six new species of decapod and stomatopod Crustacea from the Gulf of Mexico. *Proceedings of the New England Zoological Club* 19: 79-92, pls. 23-28.
- Felder, D. L. 1973. An annotated key to crabs and lobsters (Decapoda, Reptantia) from coastal waters of the northwestern Gulf of Mexico. Center of Wetland Resources, Louisiana State University, Baton Rouge, Sea Grant Publication No. LSU-SG-73-02, 103 pp.
- Garth, J. S. 1957. Reports of the Lund University Chile Expedition 1948-49. 29. The Crustacea Decapoda Brachyura of Chile. *Lunds Universitets Årsskrift. N.F. Avd. 2*, 53(7):128 pp., pls. 1-4.
- Guinot, D. 1967. Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyours. II. Les anciens genres *Micropanope* Stimp-

- son et *Medaeus* Dana. Bulletin du Muséum National d'Histoire Naturelle, Paris, ser. 2, 39(2):345-374.
- . 1968. Recherches IV. Observations sur quelques genres de Xanthidae. Ibid. 39(4) [for 1967]:695-727.
- . 1969. Recherches VII. Les Goneplacidae. Ibid. 41(1):241-265, pl. 1.
- . 1971. Recherches VIII. Synthèse et bibliographie. Ibid. 42(5) [for 1970]:1063-1090.
- Guinot, D., and A. Ribeiro. 1962. Sur une collection de Crustacés Brachyours des îles du Cap-Vert et de l'Angola. Memórias de Junta de Investigações do Ultramar, Lisboa, ser. 2, 40:89 pp., 4 pls.
- Menzies, R. J. 1948. A revision of the brachyuran genus *Lophopanopeus*. Allan Hancock Foundation Publications, Occasional Paper No. 4:45 pp.
- Milne Edwards, A. 1880a. Reports on the results of dredging in the Caribbean Sea, 1877, '78, '79, by the United States Coast Survey Steamer "Blake," VIII.—Études préliminaires sur les Crustacés. Bulletin of the Museum of Comparative Zoology, Harvard College 8(1):1-68.
- . 1873-1881. Étude sur les Xiphosures et les Crustacés de la Région Mexicaine. In Mission Scientifique au Mexique et dans l'Amérique Centrale, Pt. 5:(1880b) pp. 265-312, pls. 49-54; (1881) pp. 313-368.
- Milne Edwards, H. 1834. Histoire naturelle des Crustacés, comprenant l'anatomie, la physiologie et, la classification de ces animaux. Vol. 1:xxv + 468 pp.
- Monod, Th. 1956. Hippidea et Brachyura ouest-africains. Mémoires de l'Institut Français d'Afrique Noire, No. 45:674 pp.
- Rathbun, M. J. 1898. The Brachyura of the biological expedition to the Florida Keys and the Bahamas in 1893. Bulletin from the Laboratories of Natural History of the University of Iowa 4(3):250-294.
- . 1930. The Cancroid crabs of America of the families Euryalidae, Portunidae, Atelecyclidae, Cancridae and Xanthidae. United States National Museum Bulletin 152:609 pp.

Systematics Laboratory, National Marine Fisheries Service, U.S. National Museum, Washington, D.C. 20560.



Williams, Austin B. 1978. "Transfer To Pseudomedaes Of The Xanthid Crab Micropanope-Distinctus." *Proceedings of the Biological Society of Washington* 91, 546–557.

View This Item Online: <https://www.biodiversitylibrary.org/item/107593>

Permalink: <https://www.biodiversitylibrary.org/partpdf/45683>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Biological Society of Washington

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.