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A new crab of the genus *Nanoplax* from the Gulf of Mexico, and assignment of *Micropanope pusilla* to a new genus (Crustacea, Brachyura, Pseudorhombilidae)

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Abstract

Nanoplax thomai **n. sp.** is described from the Gulf of Mexico, representing the second species of the genus. The description is based upon a number of specimens previously misidentified as *Micropanope truncatifrons* Rathbun, 1898, including one so represented in recent molecular phylogenetic analyses. As restricted, *Micropanope truncatifrons* remains known with certainty from only the limited type series, which does not include a mature male, and sequence quality tissues are not available for molecular phylogenetic analyses. Its generic placement remains questionable following morphological study of its type materials and comparisons to specimens representing other present and former members of *Micropanope* Stimpson, 1871. Those comparisons underscore that morphological and molecular distinctions warrant assignment of *Micropanope pusilla* A. Milne-Edwards, 1880 to a new genus, herein designated as *Pseudopanopeus* **n. gen**.

Key words: Pseudorhombilidae, Gulf of Mexico, *Nanoplax*, new species, generic revision

Introduction

The original description of *Micropanope truncatifrons* Rathbun, 1898 was based on three specimens collected by the United States Fishery Commission Steamer *Albatross* over a period of a few days in 1885, all being from deep outer continental shelf waters. These included the mature female holotype and a small immature male from off Havana, Cuba, along with a second female taken from Arrowsmith Bank off Yucatan. Assignment of additional materials to this species has, to date, depended upon applying a few somewhat subjective morphological characters based on the type series (Rathbun 1930). As the single juvenile male of the type series lacks developed gonopods and a mature pleon for use in comparisons, these commonly diagnostic morphological characters cannot be considered. Also, given the need to conserve present type specimens and their preservation history, no tissues were taken from the types for possible sequencing and inclusion in molecular phylogenetic analyses undertaken by Thoma *et al.* (2014). Rather, tissues representing *M. truncatifrons* in that study were taken from one of multiple specimens collected from Gulf of Mexico waters off Louisiana, and they were at that time mistakenly identified as *M. truncatifrons*.

Recent re-examination of both the type series of *M. truncatifrons* and specimens now regarded to have been misidentified as that species have included their comparison to representatives of other species removed from the genus *Micropanope* Stimpson, 1871 by Guinot (1967, 1971), as well as those of species she left in the genus pending further studies. On the basis of these morphological studies, the Louisiana species is concluded to be a previously unrecognized member of the heretofore monotypic genus *Nanoplax* Guinot, 1967, a generic assignment that is also supported by its molecular phylogenetic placement as reported by Thoma *et al.* (2014), albeit therein misidentified as "*Micropanope truncatifrons*".

Among available regional pseudorhombilid collections, no additional specimens can, for the present, be definitively assigned to *M. truncatifrons*. Thus, the form of its male gonopods, mature male pleonal coverage of posterior thoracic sternites, and molecular genetic relationship to otherwise similar taxa remain unknown. Its questioned treatment in the genus *Micropanope* cannot for now be addressed, much as noted by other investigators (Guinot 1971; Ng *et al.* 2008). On the other hand, both the male gonopod structure (Garth 1978; Lemaitre 1984) and molecular genetic affinities (Thoma *et al.* 2014) for *Micropanope pusilla* A. Milne-Edwards, 1880, are now known. In

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accord with a restricted membership of *Micropanope* proposed in the morphological studies of Guinot (1967, 1971), acknowledged by subsequent workers (Williams 1978; Lemaitre 1984), and recently underpinned by molecular phylogenetics (Thoma *et al.* 2014), *M. pusilla* is herein recognized to represent a separate lineage warranting assignment to a new monotypic genus. A re-diagnosis of the type species is presented along with an updated synonymy.

Materials and methods

Materials examined included primarily holdings from the University of Louisiana at Lafayette Zoological Collection, Lafayette, LA (ULLZ) and National Museum of Natural History, Smithsonian Institution, Washington D.C. (USNM). As the lengthy process of transferring the University of Louisiana's Lafayette Zoological (ULLZ) collections to the Smithsonian Institution's National Museum of Natural History, Washington (USNM) is currently underway, both catalog numbers are used (all will be permanently cross-referenced). In addition, type materials of *Micropanope pusilla* were examined at the Harvard Museum of Comparative Zoology, Cambridge, Massachusetts (MCZ). Measurements were determined with a calibrated ocular micrometer or dial calipers. Specimen size (to nearest 0.1 mm) is reported as carapace width (cw), measured at the widest point including anterolateral teeth. Ovigerous females (ov) were noted; embryonated egg size was measured as the greatest dimension to the nearest 0.01 mm, and reported as a range for 15 embryonated eggs taken *ad libitum* from three different alcohol-preserved females. Where shown, collection depths are indicated in meters (m). Digital color photographs of fresh and preserved specimens were made with subjects immobilized below the water surface of a shallow tray lined with black felt for framing of the exposure. Line illustrations were prepared on a Wild M5 dissecting microscope equipped with a camera lucida, after staining the specimen with chlorazole black E when necessary. GenBank accession numbers, previously published by Thoma *et al*. (2014), are included at the end of the species diagnoses with the addition of the equivalent USNM catalog numbers for the archived source specimens of extracted tissues.

Taxonomy

Superfamily Xanthoidea MacLeay, 1838

Family Pseudorhombilidae Alcock, 1900

Nanoplax Guinot, 1967

Nanoplax Guinot 1967: 362; 1971: 1076; Martin & Abele 1986: 194; Hendrickx 1998: 642: (key); Ng *et al.* 2008: 192.
Type species. *Panopeus xanthiformis* A. Milne-Edwards, 1880; reassigned as *Micropanope xanthiformis* (A. Milne-Edwards, 1880) by Rathbun (1930) prior to diagnosis of *Nanoplax* by Guinot (1967: 362–363).

Emended diagnosis. Carapace wider than long, hexagonal, distinctly areolated, anterolateral border slightly convex, bearing 5 teeth; first anterolateral tooth (outer orbital angle) small; second lobiform, separated from first by shallow depression; third strongly triangular, acute tip directed anteriorly, fourth strongly triangular, spiniform tip directed anterolaterally; fifth small, acutely spiniform (sometimes obsolescent in young). Front advanced, slightly deflected, weakly convex to subtruncate lobes separated from the orbital edge by furrow. Orbits, eyestalks slightly elongate. Antennal flagellum long, first article separated from anterior edge of pterygostomium by exposed narrow plate. Mouthframe widening anteriorly, median notch marking strong median endostomal suture of buccal plate, well-defined endostomal ridge to either side of median suture. Maxilliped 3 merus anterolateral corner produced, protruding, exopodite relatively short, broad, heavy. Cheliped strongly developed, somewhat elongate, carpus quadrangular in outline, inner corner bispinose, fingers of chelae elongate. Ambulatory legs long and narrow, upper margins of meri armed by small spines. Thoracic sternum wide, sternopleonal cavity of male fourth sternite forming distinct submedian pockets accommodating distal ends of first gonopods beneath flexed pleon. Mature male pleon relatively short, second pleonite of flexed pleon not spanning full width of sternum, small part of eighth sternite mesial to condyle of fifth pereopod coxa exposed, third pleonite completely covering sternum. Mature male first gonopod trunk flattened, twisted along length, broad proximal flange extended posterolaterally over male coxal

gonopore and papilla, terminal lips creating wide apical vestibule or semi-enclosed funnel directed somewhat distally or hooked to direct proximally, patch of large subterminal spines directed proximally. Mature female gonopore (= vulva) broadly crescentic to ear-shaped, spanning at least two-thirds of sixth thoracic sternite length.

Nanoplax thomai n. sp.

(Figs 1A–H; 2A–I; 3A–F)

Micropanope truncatifrons, Thoma *et al*., 2014: 88, table 1, 95, 100. [Not *Micropanope truncatifrons* Rathbun, 1898].

Type materials. Male holotype, cw 11.6 mm (ULLZ 5794 = USNM 1542142) northwestern Gulf of Mexico, Ewing Bank, 28˚ 06.30' N, 91˚ 02.11' W, 57–71 m, 1 August 2002.

Paratypes: *Northeastern Gulf of Mexico.* 1 female, cw 5.9 mm (ULLZ 13191 = USNM 1546792) off Alabama, muddy shell of bank slope, 29˚ 15.512' N; 88˚ 20.269' W, 85 m, 3 December 2010. *Northwestern Gulf of Mexico.* 1 female, cw 7.4 mm (ULLZ 10610 = USNM 1545268) off Louisiana, muddy shell hash bank, 28˚ 05.11' N, 9˚ 58.61' W, 54–55 m, 1 July 2001; 1 male, cw 10.1 mm (ULLZ 4645 = USNM 1540470) off Louisiana, deep bank rubble, 28˚ 06.03' N, 91˚ 01.77' W, 57 m, 27 May 2000; 1 male, cw 10.1 mm (ULLZ 15179 = USNM 1548208) off Louisiana, deep bank rubble, 28˚ 05.62' N, 91˚ 01.84' W, 56–58 m, 19 October 2013; 2 males, cw 7.9, 10.4 mm (ULLZ 4646 = USNM 1540471) off Louisiana, rubble of deep bank, 28˚ 05.99' N, 91˚ 02.29' W, 57–59 m, 27 May 2000; 1 male, cw 8.1 mm, 1 ov female, cw 8.7 mm (ULLZ 6754 = USNM 1541951) off Louisiana, 27˚ 55.72' N, 92˚ 22.58' W, 55–150 m, 22 June 2005; 1 male, cw 6.4 mm (ULLZ 13841 = USNM 1547306) off Louisiana, deep bank, 28˚ 05.95' N, 91˚ 1.683' W, 54–56 m, 29 August 2011; 1 male, cw 11.8 mm (ULLZ 11904 = USNM 1545979) off Louisiana, 27˚ 55.02' N, 92˚ 23.08' W, 71–58 m, 22 June 2005; 1 male, cw 9.9 mm, 1 female, cw 5.3 mm (ULLZ 10641 = USNM 1545291) off Louisiana, rubble of deep bank, 28˚ 03.606' N, 92˚ 27.665' W, 62 m, 30 June 2001; 1 male, cw 11.6 mm, 1 female, cw 8.8 mm (ULLZ 10946 = USNM 1545382) off Louisiana, hard bank, 27˚ 48.28' N, 92˚ 03.96' W, 64–66 m, 22 August 2008; 1 male, cw 9.1 mm, 1 female, cw 16.4 mm (ULLZ 7528 = USNM 1543091) off Louisiana, hard bank rubble, 28˚ 05.95' N, 91˚ 01.34' W, 68.5 m, 4 June 2005; 1 ov female, cw 10.4 mm (ULLZ 8133 = USNM 1543391) off Louisiana, deep bank rubble, 28˚ 05.57' N, 91˚ 01.27' W, 56–58 m, 4 June 2005; 1 male, cw 7.4 mm, 3 females (1 ov), cw 6.7–12.9 mm (ULLZ 7359 = USNM 1541680) off Louisiana, deep bank rubble, 28˚ 6.12' N, 91˚ 2.45' W, 62–112 m, 4 June 2005; 1 juvenile male, cw 6.1 mm, female, cw 12.7 mm (ULLZ 13195 = USNM 1546796) off Louisiana, deep bank rubble, 28˚ 05.67' N, 91˚ 01.31' W, 56–62 m, 4 December 2010; 4 males, cw 4.7–6.0 mm, 4 females, cw 4.7–7.4 mm (ULLZ 12282 = USNM 1546309) off Louisiana, deep bank rubble, 28˚ 05.67' N, 91˚ 01.31' W, 57–60 m, 1 July 2001; 1 male, cw 9.7 mm (ULLZ 10985 = USNM 1545402) off Louisiana, deep bank rubble, 27˚ 58.977' N, 91˚ 39.426' W, 66–71 m, 21 August 2008; 1 male, cw 12.0 mm (ULLZ 11900 = USNM 1545976) off Louisiana, deep bank rubble, 27˚ 58.95' N, 91˚ 39.38' W, 66–79 m, 21 August 2008; 1 female, cw 7.6 mm (ULLZ 17500 = USNM 1604120) off Louisiana, deep bank rubble, 27˚ 58.15' N, 91˚ 36.66' W, 54 m, 19 May 2019; 1 male, cw 6.7 mm (ULLZ 18311 = USNM 1604121) off Louisiana, 27˚ 55.19' N, 92˚ 22.61' W, 62–77 m, 19 May 2019; 1 male, cw 10.4 mm, 1 ovi female, cw 10.1 mm (ULLZ 4706 = USNM 1540506) off Louisiana, deep bank, 27˚ 48.88' N, 93˚ 03.10' W, 55–65 m, 25 May 2000.

Diagnosis. Carapace fronto-orbital width less than three-fourths maximum width of carapace (including lateral extent of anterolateral teeth), front wider than orbit; dorsal surface slightly convex, distinct areolations separated by smooth furrows, dorsal surface otherwise with uniform coarse granulation broken by a few transverse ridges and enlarged granules; short epigastric ridge oblique, hepatic ridge longer, weakly arched, transverse epibranchial ridge well developed, broadly arched; anterolateral margin usually with 5 well-defined teeth, first (= outer orbital angle) small, angular, well-separated from lobiform subangular to rounded second; third tooth strongly developed, lateral margin arched, sharply angular to spiniform tip directed anteriorly; fourth tooth and much smaller fifth sharply angular to spiniform, tips directed anterolaterally (fifth sometimes obsolescent in young); subhepatic tubercle below margin usually formed by one or more enlarged, raised, rounded or spiniform granules. Eyestalk slightly elongate, heavy, not narrowed terminally, ending in globular, rounded cornea, corneal diameter equal to or exceeding greatest width of eyestalk shaft. Chelipeds distinctly heterochelous in most specimens, dorsally covered by acute to subacute granules, especially on ridges and article margins, often densest on minor cheliped, variably extended onto at least proximal upper half of palm external surface, becoming weaker distally and ventrally; propodus upper surface with longitudinal furrow of palm positioned between inner superior crest of enlarged granules and outer crest of slightly

smaller granules; carpus with depressed furrow distolaterally, superior surface with cover of regularly spaced coarse acute to subacute large granules or short spines, inner corner with two strong spines, distal the larger, major chela with dactylus opposable margin bearing enlarged, basal tooth. Ambulatory pereopod merus with superior margin armed by defined row of well separated short but erect (often weakly hooked) spinules. Male first gonopod (G1) with patch of minute subterminal spinules, and another of enlarged subterminal spines directed proximally, apex hooked, directing opening of terminal infundibulum laterally to posterolaterally in young to strongly proximally in mature. Female gonopore (= vulva) large, occupying most of subpleonal length of sixth thoracic sternite. Applicable GenBank sequence accession numbers from Thoma *et al.* (2014) are as follow for paratype ULLZ 7359 = USNM 1541680: (12S) GU144406; (16S) GU144434; (18S) KF682934; (COI) KF682809; (ENO) KF682661; (H3) GU144490.

Description. Carapace (Fig. 1A) weakly convex, distinctly wider than long, dorsal regions well defined by shallow grooves, raised surfaces granulate, granules dense and largest in hepatic region and anterior of frontal region, forming weakly defined rows; frontal margin bilobed, lined by dense row of granules, median fissure distinctly V-shaped, lobes subtruncate to very broadly convex, lateral tooth subangular to lobiform, terminated laterally in deep antennal sinus offset ventrally from supraorbital margin; supraorbital margin granulate, forming distinct tooth mesially above antennal sinus, median and lateral fissures shallow, obscure, marked by distinct breaks in marginal granulation. Anterolateral teeth well developed, first (outer orbital) acutely angular, separated by shallow sinus from lobiform second; third and fourth broadly triangular, some granules of margins often enlarged to form small ancillary teeth, tips corneous, tip of slightly larger third curved to direct anteriorly, tip of fourth less curved, directed anterolaterally; fifth tooth distinct, much smaller than preceding, variably developed, acute to subacute. Pterygostomial and subhepatic regions (Fig. 1B, C) coarsely granulate, distinct but variable subhepatic tubercle evident as raised area below margin, usually surmounted or formed by one or more enlarged subacute to spiniform granules; pterygostomial ridge slightly raised, granulate. Branchiostegite ventrolateral margin, below anterolateral teeth, weakly concave above coxa of each ambulatory leg.

Eyestalk slightly elongate, anterior crest coarsely granulate, raised to form granulate tubercle distally. Antenna with long flagellum, distalmost fused basal article distally produced to form granulate prominence, first article of base separated from anterior edge of pterygostomium by exposed narrow plate (Fig. 1C).

Third maxilliped (Figs 1B–D) protopod elongate, subcuneate, narrowing to rounded tip laterally, anterior surface deeply grooved to receive ventral edge of carapace, antero-internal surface with two unequal projections on anterior margin, proximal to tight bundle of lamellae forming small podobranch gill positioned above pair of much longer, lamellate, arthrobranch gills. Epipod thin, strap-like, distally fringed with long simple setae. Basis subtriangular, suture with ischium obscurely fused; ischium broadly subrectangular, proximal portion deflected laterally, external surface mostly smooth, mesial margin with fringe of short to medium length simple setae; merus subquadrate, anterolateral corner produced laterally, protruding, lateral margin weakly concave, distal margin truncate, distomesial corner obliquely excavate to accommodate carpus, external surface with scattered granules, coarsest in lateral half and near distomesial margins, depression with very fine microgranulation filling much of mesial half proximal to articulation with carpus, internal surface excavate to accept endopod of second maxilliped, excavation distally with fringe of short setae, raised setose ridge and prominent setose boss near mesial margin proximal to articulation with carpus, mesial margin lined by closely set granules and sparse fringe of medium length setae; carpus appearing subcylindrical externally, subovate internally, internal surface with distal submarginal field and distal fringe of elongate stiff setae overlying propodus; propodus cylindrical, internal surface with several transverse submarginal rows of elongate, stiff, distally directed setae; dactylus subcylindrical, tapering distally, length about 1.3 times that of propodus, flexor margin with few tufts of short, fine setae, tip bearing dense tuft of long stiff setae exceeding length of dactylus. Exopod subrectangular, comparatively short, broad, heavy, internal edge of mesial margin produced to form strong subtriangular projection in distal third, projection fringed with short setae, external surface mesial margin minutely crenulate, lateral margin with sparse minute setae, small tuft of plumose setae distally at articulation of flagellum, flagellum multi-articulate, bearing numerous long, distally directed setae.

Chelipeds (first pereopods) (Figs 1A, B, E–H) unequal, sparsely setose, dense fields of subacute granules covering much of superior and extensor surfaces, some forming variably defined lines or rows on superior surface of carpus and propodus; ischium with line of slightly hooked acute to subacute spines or teeth along inner margin; merus superolateral margins armed with large, broad, acute to subacute spines or teeth, tips slightly hooked to point distally, enlarged granules near inner margins and distally on inferior margin; carpus densely covered by coarse, acute to subacute granules, supero-external surface marked by distinct groove parallel to distal margin, superior sur-

face with granules enlarged along internal margin proximal and distal to pair of strong acute spines arming internal angle, tips of both spines corneous, weakly hooked to point distally, distalmost of two spines the larger, positioned slightly above the smaller proximal spine on internal margin, both spines armed with acute to subacute granules on their shoulders.

Major chela propodus coarsely granulate proximally along superior surfaces, weak evidence of superior longitudinal furrow, several granules enlarged along inner superior margin, upper and lower surfaces of palm otherwise appearing smooth to microgranulate; fixed finger of major chelae short, stout, inferior margin sinuous, apex distinctly curved upwards, opposable margin bearing three to four prominent subtriangular teeth with several smaller rounded teeth between, row of teeth set between grooves to internal and external sides; dactylus arched, slightly longer than fixed finger, opposable margin with strong, lobiform, enlarged basal tooth proximally, three somewhat shouldered subtriangular teeth extending from there distally, decreasing in size, subacute tip strongly curved to cross to internal side of fixed finger tip when flexed.

Minor cheliped propodus similar to that of major, including having several enlarged granules among others along the upper flexor margin, though with stronger definition of superior longitudinal furrow; fixed finger of minor chela distinctly longer and more slender than that of major, slender cutting edge on opposable margin bearing 5 or 6 subacute triangular teeth; dactylus of minor chela less arched than that of major, longer than fixed finger, opposable margin lacking enlarged basal lobiform tooth, cutting edge dentition much weaker than in major chela, 2 or 3 broad, low, broadly shouldered subtriangular teeth proximally, several smaller triangular teeth distally, subacute tip crossing to internal side of fixed finger tip when flexed.

Ambulatory pereopods 2–5 (= ambulatory legs) long and narrow, similar in form (Fig. 1 A–B); pereopods 2–4 subequal in size; pereopod 5 smaller, though with relatively broader, more flattened and spatulate propodus; merus length about four times width at widest point, extensor (superior) margin bearing single longitudinal row of irregular small acute teeth or spinules and a few setae, distal extensor margin ending in subacute tooth beyond subdistal notch, flexor margin granulate with several simple setae, longest proximal; carpus strongly bent in proximal third, extensor margin with scattered long and short setae along ridge surmounted by low granules, ridge roughly parallel to second ridge on superoposterior surface, shallow sulcus between ridges most developed in distal three-quarters; propodus extensor margin bearing weakly defined row of enlarged subacute granules, long and short plumose setae along extensor and flexor margins, long setae dominating extensor margin, dense short setae dominating flexor; dactylar-propodal locking mechanism not developed; dactylus narrowly elongate, flattened, weakly arched over most of length, tapering distally, flexor and extensor margins densely lined with short plumose setae forming pubescence intermixed with few longer setae, corneous tip weakly falciform, lacking subterminal, calcareous, raptorial tooth.

Thoracic sternum of male (Figs 1B; 2A–C) wide, length from acute anterior apex to suture between fourth and fifth thoracic sternites (measured at edge of pleon) 0.60–0.62 times greatest width of fourth sternite (including episternites), pleonal depression in fourth sternite forming pair of distinct submedian pockets fitting distal ends of first gonopods below flexed pleon; fifth thoracic sternite with large press button to each side of pleonal depression; fourth and fifth episternites angular, terminally rounded posteriorly, sixth and seventh episternites broadly rounded posteriorly, eighth thoracic sternite exposed as small subtriangular area between lateral margin of flexed second pleonite and condyle of fifth pereopod coxa.

Pleon of male (Figs 1B; 2A, E, F) with third through fifth pleonites fused, internal surfaces with submedian tracts of very fine elongate setae, tracts converging beneath telson; first pleonite widest at articulation with carapace, narrowing to articulation with second pleonite; second pleonite narrowest distally, widest proximally near articulation with first pleonite; third pleonite widest; fused third through fifth pleonites widest at lateral flange of third, narrowing distally, width at articulation with sixth pleonite about half that at articulation with second pleonite, sutures between fused pleonites evident near slight indentations on lateral margins; sixth pleonite rectangular, slightly broadened distally near articulation with telson to accept press-button internally; telson terminally rounded, widest in proximal third.

Pleon of female with first pleonite narrowing distally, margins weakly convex, widest where transverse ridge abuts carapace, second pleonite slightly widening distally, margins weakly concave; third with convex margins, widening distally, lengths of third through sixth pleonites slightly increasing incrementally, telson exceeding length of sixth; fourth pleonite widest, widths of fourth through sixth pleonites decreasing, all with convex lateral margins, sixth slightly wider than telson greatest width, telson subtriangular, terminally rounded, length about three-fourths width.

Mature male first gonopod (G1) (Fig. 2B, F–H) trunk flattened, somewhat twisted along length, sinuous, broad proximal flange extended posterolaterally over male coxal gonopore and papilla, distally with apex hooked posterolaterally (minimally so in juveniles), directing opening of terminal infundibulum strongly proximally in mature male (in juveniles, anterolaterally or laterally to posterolaterally), patch of minute subterminal spinules and another of enlarged subterminal spines on sternal side directed proximally. Male second gonopod (G2) (Fig. 2I) slightly more than one-third length of first gonopod, terminating in simple spiniform tip. Female mature gonopore (= vulva) (Fig. 2D) large, centered on and spanning over two-thirds of subpleonal length of sixth sternite, broadly crescentic to ovoid, raised lip forming anterolateral edge.

Color. Dorsal carapace coloration primarily reddish orange of varied intensity over off-white background, color darkest anteriorly and on raised areas, sometimes with almost complete coverage of reddish to reddish orange pigmentation (Fig. 3A–F); cheliped proximal articles and palm reddish orange dorsally, fading ventrally, fingers intense deep red to reddish brown; ambulatory pereopod meri with two dorsally evident bands of reddish orange separated by off white, distal articles primarily reddish orange except for off white margins near joints. Embryonated eggs rose red to reddish maroon.

Habitat. Abundant on offshore reefs and deep banks, especially in small cavities and interstices of eroded hard substrates, including rhodoliths and molluscan shells, as well as among sponges, bryozoans, corals, encrusting algae, and other epibiota of fouling communities. Confirmed depth records range from 54–155 m.

Size. The maximum carapace width was 16.4 mm for a large female among available collections. The largest male in these collections had a carapace width of 12.0 mm. Juveniles of neither sex could be definitively identified by structural morphology alone at less than 5.5 mm carapace width, though scarlet pigmentation below the posterior edge of the carapace clearly marked some as small as cw 4.7 mm. Embryonated eggs (most showing eyespots) in sampled clutches of alcohol preserved ovigerous females ranged from 0.39 to 0.46 mm in greatest dimension.

Distribution. Known from middle to outer continental shelf waters of the northeastern to northwestern Gulf of Mexico, Alabama to western Louisiana.

Etymology. The species is named for Brent P. Thoma in recognition of his substantial contributions to understanding of xanthoid crab phylogenetic relationships and in gratitude for the many ways in which he has facilitated the present author's work over the last decade.

Remarks. *Nanoplax thomai* **n. sp.** and *Micropanope truncatifrons* are similar in general habitus, which led to their previous confusion. While the latter species was named for its truncate carapace front, its immature male paratype (USNM 8530, cw 3.6 mm, the only known male) has slightly convex frontal lobes, not unlike those in many specimens of *N. thomai* **n. sp.** Furthermore, the frontal lobes in *N. thomai* **n. sp.** are sometimes rather truncate, with the lateral corners of the front in some specimens simply angular and in others developed as a very slightly elevated tooth. With no mature males of *M. truncatifrons* available for comparisons, neither gonopod characters nor those based upon the relative widths of the male first through third pleonites could be used to support separation of the species. However, gonopores of the apparently mature female holotype of *M. truncatifrons* (USNM 9497, cw 10.4 mm) do not bear close resemblance to those of *Nanoplax* spp., instead being smaller, more narrowly ovoid, and more obliquely oriented. Centered within the anterior three-fifths of the sixth thoracic sternite, its linear cross-section occupies less than two-thirds of the sternite length, it is not notably ear-shaped or crescentic in shape, and there is no obvious development of a raised marginal lip.

The materials thought to represent *M. truncatifrons* in molecular phylogenetic analyses by Thoma *et al.* (2014), clearly did not group with *Micropanope sculptipes* Stimpson, 1871 and *M. lobifrons* A. Milne-Edwards, 1880, the only two species that are known to definitively represent *Micropanope* s.s. (Guinot 1967, 1971). This was not unexpected given the long-questioned generic assignment of *M. truncatifrons* (see also Ng *et al.* 2008; Felder *et al.* 2009), even if the species had been correctly identified in that analysis. However, distinction of the sequenced specimen (= *N. thomai* **n. sp.**) from *M. truncatifrons* became clear in recent synoptic comparisons to types of the latter (USNM 9497, 9530, 20718), which confirmed that a subhepatic tubercle was indeed lacking in all three specimens of *M. truncatifrons*, as had been indicated in a brief diagnosis offered by Rathbun (1930: 433). While previously discounted as a definitive character because of its variable development, a subhepatic tubercle of some form was found in all the misidentified specimens of the species, though it was sometimes manifest as little more than a collection of enlarged granules or teeth. In addition, while the type series for *M. truncatifrons* was collected from 238–355 m depths, almost all of the misidentified specimens came from 55–80 m depths, with the maximum known bathymetric record reaching to no more than 155 m.

The gene-sequenced specimen misidentified as "*Micropanope truncatifrons*–ULLZ 7359" (Thoma *et al.* 2014: fig. 1; herein = USNM 1541680) was shown in phylogenetic analyses to share a clade with *Nanoplax xanthiformis*. Morphological characters now also support this relationship, underpinning assignment of the new species to the formerly monotypic genus, *Nanoplax.* Among these are shared features in carapace anterolateral dentition (Fig. 1A–C; A. Milne-Edwards 1873–1881: pl. 53 fig. 4a; Williams 1965: fig. 176; Hendrickx 1995: fig. 2B), shape of the third maxilliped merus (Fig.1B–D; A. Milne-Edwards 1873–1881: pl. 53 fig. 4a), shape of the male first gonopod (Fig. 2B, F–H, J, K; Guinot 1967: fig. 16; Martin & Abele 1986: fig. 3M, 194; Hendrickx 1995: fig. 3E, F), and features of the male pleon related to the fifth pereopod coxa and relative exposure of the eighth thoracic sternite (Fig. 2A–C, J); Hendrickx 1995: fig. 1B). In addition, the pleonal depression of the fourth sternite of mature males (beneath the pleonal telson when flexed) is in both species well-marked by deepened pockets to either side of the median line, apparently to accommodate distal ends of the first gonopods when the pleon is tightly flexed (Fig. 2B, J). While depression of the sternum was mentioned in the Guinot (1967) diagnosis of *Nanoplax*, this feature has not been previously illustrated, and it varies in development among present and former members of *Micropanope*. Initially, comparison of the first gonopods in the two species suggested striking differences in their terminal development, though close comparison revealed much in common. In both species of *Nanoplax*, the first gonopod trunk is broadly flattened and similarly twisted along its length, originating from a broad base articulated to the basis itself, which forms a subtriangular posterolaterally directed flange. This flange fully covers the male gonopore and papilla on the proximal extreme of the fifth pereopod coxa (Fig. 2A–C, J). Male first gonopods of both species have broadly open terminal vestibules or infundibula, distal to a patch of long, somewhat curved, spines that are directed proximally, these being present in addition to some microspinulation. However, an obvious difference in the first gonopods of mature males is found in the direction toward which the terminal opening faces and the degree to which it is enclosed by surrounding lips. In mature males of *Nanoplax xanthiformis*, the opening is typically vestibular, loosely framed by the surrounding lips ("flange" of Hendrickx 1998), and directed distomesially, with a patch of elongate proximally directed setae immediately proximal to the opening, these being evident in view on the pleonal surface of the first gonopod when the pleon is lifted. In mature males of *Nanoplax thomai* **n. sp.**, the opening is more fully enclosed by overlapping lips to create a tubular funnel that flares terminally, with the entire apex of the first gonopod being hooked to direct the opening proximally (though less hooked and ranging from an anterolaterally to proximolaterally directed opening in immature males), with a somewhat smaller patch of elongate proximally directed setae immediately proximal to the hooked apex, these being largely concealed on the sternal side of the first gonopod when the pleon is lifted. Key characters articulated by Hendrickx (1998: 642) for recognition of the genus *Nanoplax* need only to encompass the alternative direction of the male first gonopod terminal opening in order to accommodate the second species.

For most specimens of both sexes, the carpus of the major and minor cheliped in *N. thomai* **n. sp** bears a pair of conspicuous spines on its inner angle, these being distinctly more acute and elongate than others that may trail ventrally or proximally from them. Both are readily evident in dorsal view, even though the larger of the two is set distally and slightly above the smaller. By contrast, in *N. xanthiformis* only one enlarged spine is readily evident on the internal angle of the carpus in dorsal view of the cheliped, though sometimes there is a second spine or tubercle set ventroproximally to it, usually only slightly larger than those around it. While not absolute, this character appears to separate most mature specimens.

In all presently known examples, fresh specimens of *Nanoplax thomai* **n. sp.** can be readily separated from *N. xanthiformis* (as well as from all other present and former members of *Micropanope*) by unique, striking, scarlet red patches marking dorsolateral extremes of seventh and eighth sternites, just above the coxae of fourth and fifth pereopods (Fig. 3B–D). However, these are not evident dorsally without lifting or pushing forward the posterior edge of carapace. Of unknown function, nothing comparable in this anatomical location has been found in fresh specimens of *N. xanthiformis* or any other regionally sympatric pseudorhombilid. However, a very similar scarlet coloration can be seen on the third maxilliped propodite and epipod of *N. xanthiformis* and *Micropanope lobifrons* when the ventral edge of the anterior carapace is lifted above the coxae of the first pereopods in fresh specimens. This intense pigmentation is reminiscent of similar red to reddish-maroon coloration found consistently or occasionally on the internal surface of the third maxilliped ischium in many species of offshore pseudorhombilids, including but not limited to fresh specimens of *Nanoplax xanthiformis*, *Micropanope sculptipes*, *Panoplax depressa* Stimpson, 1871, *Milnepanopeus lobipes* (A. Milne-Edwards, 1880), *Euphrosynoplax campechiensis* Vázquez-Bader & Gracia, 1991, and *E. clausa* Guinot, 1969.

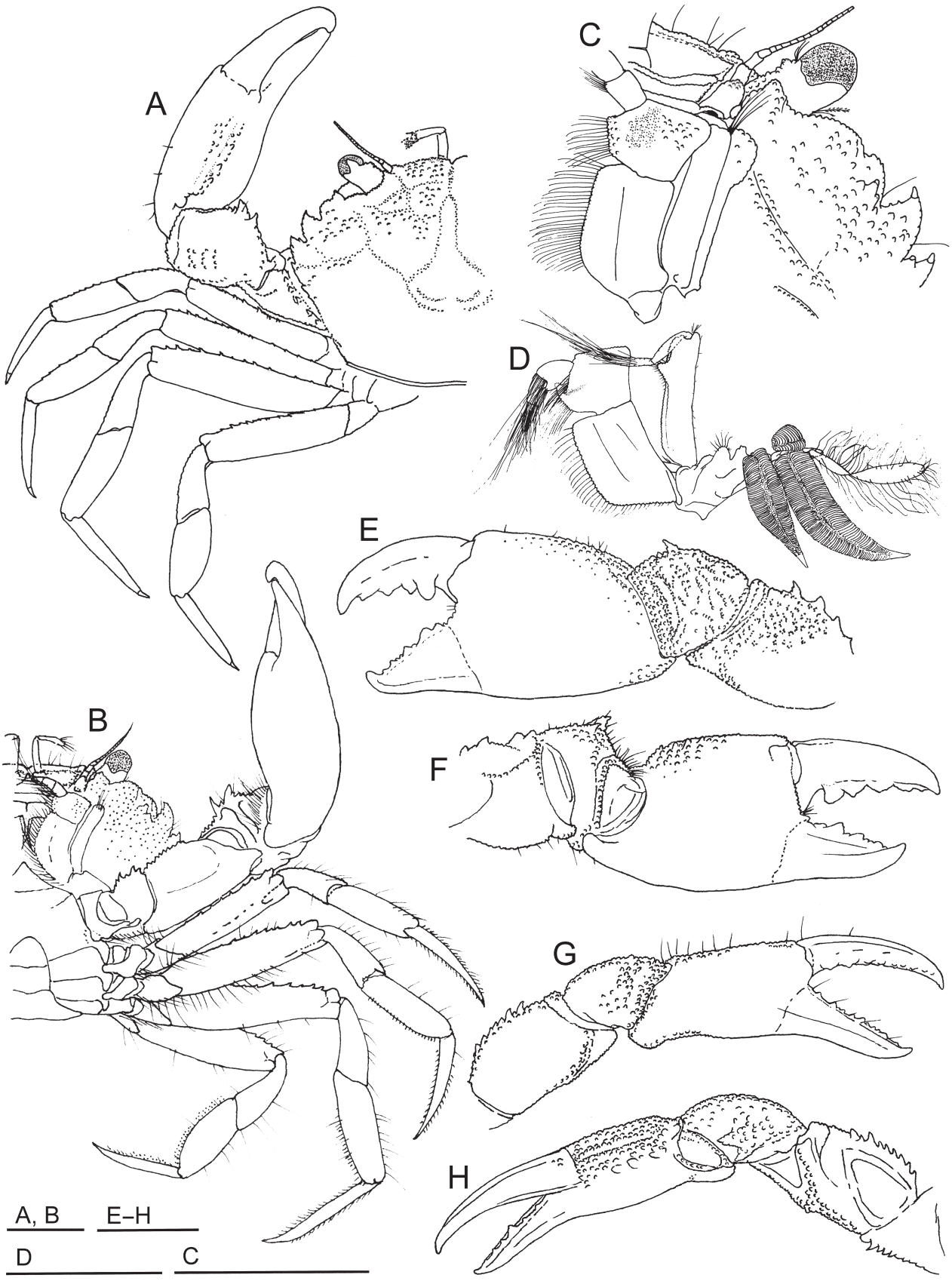

FIGURE. 1. *Nanoplax thomai* **n. sp.**, male holotype, cw 11.6 mm (ULLZ 5794 = USNM 1542142) northwestern Gulf of Mexico. A, left side of body, dorsal surfaces; B, left side of body, ventral surfaces; C, left side, anterolateral quadrant, ventral surfaces; D, right third maxilliped, internal surface; E, major (left) cheliped, external surface; F, major (left) cheliped, internal surface; G, minor (right) cheliped, ventro-external surface; H, minor (right) cheliped, dorso-internal surface. Scale bars = 3 mm.

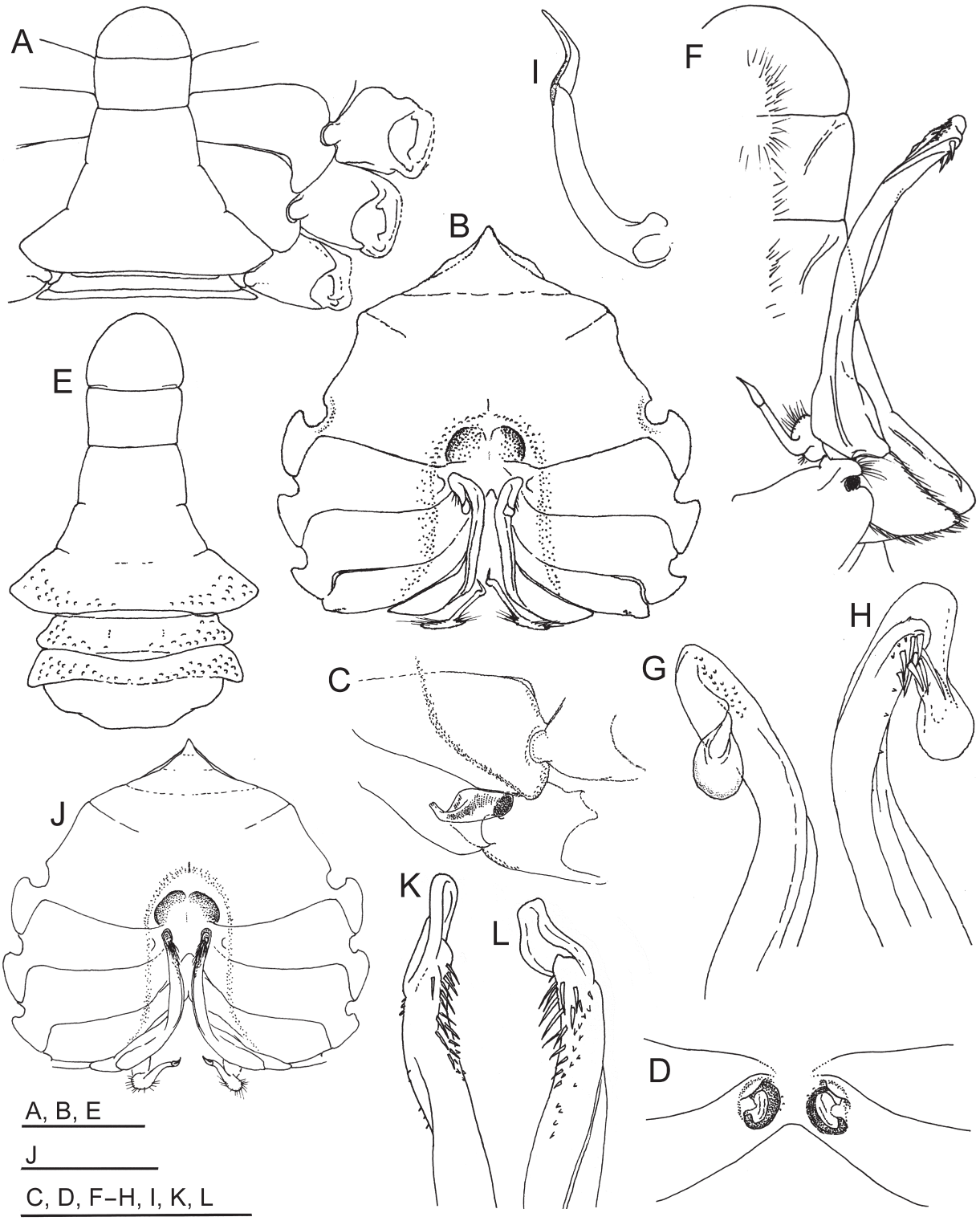

FIGURE 2. *Nanoplax thomai* **n. sp.**, A–C, E–I = male holotype, cw 11.6 mm (ULLZ 5794 = USNM 1542142) northwestern Gulf of Mexico; D, female paratype, cw 8.8 mm (ULLZ 10946 = USNM 1545382) northwestern Gulf of Mexico. *Nanoplax xanthiformis*, J–L = male, cw 9.1 mm (ULLZ 17499 = USNM 1604271) northwestern Gulf of Mexico. A, male pleon, sternum, and pereopod coxae, posteroventral; B, male sternum and gonopods, pleon removed, ventral; C, male left posterior sternites, coxae, gonopore, and genital papilla, pleon and gonopods removed, ventral; D, fifth and sixth sternites, pleon extended to show female gonopores, ventral; E, male pleon, detached, ventral; F, male pleon and gonopods, internal (sternal) surface; G, male right first gonopod tip, pleonal surface; H, male right first gonopod tip, sternal surface; I, male right second gonopod, pleonal surface; J, male sternum and gonopods, pleon removed, ventral; K, male left first gonopod tip, mesial surface; L, male left first gonopod tip, pleonal surface. Scale bars A, B, D–F, J = 2 mm; C = 3 mm; G–I, K, L = 1 mm.

Previous records for *Nanoplax thomai* **n. sp.** may include more than are listed in the short synonymy above, though this remains uncertain. Distributional records for *Micropanope truncatifrons* compiled by Felder *et al.* (2009), therein listed under the now abandoned combination *Nanocassiope truncatifrons* (Rathbun, 1898), included Rathbun's original records of *Micropanope truncatifrons* in addition to later records of several specimens reported as this species by Soto (1986: 35). Unfortunately, the latter specimens, all of which were indicated to be females, cannot be located, and it is uncertain whether they might in part represent *Nanoplax thomai* **n. sp.** Notably, one of those was from a depth of only 103 m on Cay Sal Bank, Bahamas, and thus within the known bathymetric range for *N. thomai* **n. sp.**

FIGURE 3. *Nanoplax thomai* **n. sp.**, A, female paratype, cw 16.4 mm (ULLZ 7528 = USNM 1543091) northwestern Gulf of Mexico; B, ov female paratype, cw 12.9 mm (ULLZ 7359 = USNM 1541680) northwestern Gulf of Mexico; C, female paratype, cw 12.7 mm (ULLZ 13195 = USNM 1546796) northwestern Gulf of Mexico; D, E, male holotype, cw 11.6 mm (ULLZ 5794 = USNM 1542142) northwestern Gulf of Mexico; F, male paratype, cw 9.7 mm (ULLZ 10985 = USNM 1545402) northwestern Gulf of Mexico.

Pseudopanopeus n. gen.

Type species. *Micropanope pusilla* A. Milne-Edwards, 1880, by present designation.

Generic diagnosis. Carapace fronto-orbital width distinctly less than width of carapace (between lateral extremes of

anterolateral teeth), dorsal surface slightly convex, areolations evident, dorsal granulation coarsest across front; anterolateral margin with three prominent triangular anterolateral teeth (counting as one the outer orbital plus strongly coalesced obsolescent second tooth), positional fifth anterolateral tooth dimunitive to obsolescent; submarginal tubercle lacking from subhepatic region. Eyestalk short, not narrowed terminally. Chelipeds heterochelous in most specimens, dorsal surfaces smooth to granulate, unarmed; propodus upper surface elevated, depressed weakly (if at all) between low ridge of inner border and slightly developed outer border; carpus dorsal surface irregular, deeply depressed distolateral furrow, inner corner typically with at least one moderately enlarged acute tooth, distalmost usually largest if two or more present, major chela dactylus opposable margin with enlarged basal tooth. Ambulatory pereopod with merus superior margin nearly smooth, at most minutely denticulate. Male third through fifth pleonites fused, second pleonite spanning almost full width of sternum, eighth sternite narrowly exposed between lateral margin and condyle of fifth pereopod coxa, third pleonite spanning full width of sternum. Male first gonopod (G1) (Fig. 4A–C) subterminal spination including enlarged, proximally directed, enlarged spine (usually one, sometimes two), distal to which narrow shaft terminates in weakly curved, distally directed, microspinulous finger of similar length. Female gonopore (= vulva) an elongate, oblique oval, occupying anterior half of sixth sternite.

Etymology. The prefix "pseudo", for false, is paired with the suffix "panopeus", derived from the type genus of Panopeidae Ortmann, 1893. As the gender is masculine, its combination with the type species name becomes *Pseudopanopeus pusillus* (A. Milne-Edwards, 1880). While resembling panopeids in general habitus and long grouped among members of that family, this genus is one of several such that instead fall among Pseudorhombilidae in the phylogenetic analyses of Thoma *et al*. (2014).

Pseudopanopeus pusillus (A. Milne-Edwards, 1880) n. comb.

(Fig. 4A–F; 5A–D)

Micropanope pusilla A. Milne-Edwards 1880: 327, pl. 54, figs. 4–4b; Rathbun 1930: 427, 431, 434, 435, 585, pl. 179 (figs. 7, 8); 1933: 66; Wass 1955: 137 (key), 157; Powers 1977: 98–99; Garth 1978: 326; Lemaitre 1984: 438, 440, 441, 443, fig. 7A–I, fig. 8A–C; Abele & Kim 1986: 58, 609 (key, as "pusilus" [sic]), 624, 625 (text figures a–c); Melo 1996: 363, 365 (with text figure); Ng *et al*. 2008: 203; Felder *et al*. 2009: 1085; Thoma *et al*. 2014 : 95, table 1, fig. 1; Poupin 2018: 218, 219, fig. 246.

Glyptoplax pusilla, Rathbun 1899: 628; 1901: 33; A. Milne-Edwards & Bouvier 1923: 328.

Material examined. *Atlantic coast of Florida.* 1 male, damaged (ULLZ 9023 = USNM 1536349) off Fort Pierce Inlet, 27˚ 29.01' N, 80˚ 10.93' W, 15 m, 9 September 2003. *Northeastern Gulf of Mexico.* 2 males, 1 female (fragmentary syntypes, MCZ 2984), west Florida shelf, Bache Expedition, 17 m, 1872–1874; 1 male, cw 3.6 mm (ULLZ 7587 = USNM 1536341) northwest Florida shelf, 28˚ 55.12' N, 85˚ 09.62' W, 54 m, 3 July 2006; 2 males, cw 4.1, 5.2 mm (ULLZ 2388 = USNM 1536336) west of Sanibel Island, Florida, 26˚ 25.5' N, 83˚ 23.7' W, 53 m, 30 July 1980; 3 males, cw 2.7, 3.6, 4.1 mm, 1 female, cw 3.2 mm (ULLZ 1929 = USNM 1536334) west of Sanibel Island, Florida, 26˚ 24.5' N, 83˚ 22.5' W, 53 m, 31 July 1980; 2 males, cw 3.8, 4.7 mm, 2 females, cw 3.6, 3.8 mm (ULLZ 1940 = USNM 1536335) west of Sanibel Island, Florida, 26˚ 26.5' N, 83˚ 01.8' W, 40 m, 31 July 1980; 1 male, cw 5.7 mm (ULLZ 8058 = USNM 1536348) west Florida shelf, 27˚ 37.41' N, 84˚ 01.99' W, 60 m, 6 July 2006; 1 male, cw 4.4 mm (ULLZ 8134 = USNM 1536346) west Florida shelf, 27˚ 37.41' N, 84˚ 01.99' W, 60 m, 6 July 2006; 1 male, cw 5.9 mm (ULLZ 7178 = USNM 1536345) west Florida shelf, 28˚ 37.26' N, 84˚ 28.38' W, 45 m, 4 July 2006; 1 male, cw 3.7 mm, 1 ov female, cw 3.5 mm (ULLZ 8139 = USNM 1536349) northwest Florida shelf, 29˚ 17.48' N, 85˚ 38.79' W, 56–58 m, 8 July 2006; 3 males, cw 5.2, 5.4, 5.6, 5.2 mm (ULLZ 14362 = USNM 1536353) northwest Florida shelf, 29˚ 49.62' N, 86˚ 08.83' W, 42–44 m, 8 June 2012; 6 males, cw 5.0–6.4 mm, 4 females, cw 3.1–5.1 mm (ULLZ 14349 = USNM 1536354) northwest Florida shelf, 29˚ 49.62' N, 86˚ 08.83' W, 42–44 m, 8 June 2012; 1 male, cw 5.0 mm, 1 ovi female, cw 4.0 mm (ULLZ 14360 = USNM 1536352) northwest Florida shelf, 30˚ 01.00' N, 86˚ 36.54' W, 55–57 m, 7 June 2012; 1 female, cw 5.3 mm (ULLZ 2386 = USNM 1536342) in muricid gastropod shell, northwest Florida shelf, 30˚ 02' N, 86˚ 20' W, 25 m, 5 April 1973. *Southwestern Gulf of Mexico.* 1 male, cw 4.5 mm (ULLZ 6803 = USNM 1536338) Campeche Bank, rubble, 21˚ 36.44' N; 91˚ 04.66' W, 20–30 m, 15 June 2005; 1 male, cw 3.9 mm (ULLZ 7539 = USNM 1536343) Campeche Bank, 22˚ 15.88' N, 90˚ 35.64' W, 42–43 m, 6 June 2005; 1 female, cw 4.0 mm (ULLZ 7335 = USNM 1536337) Campeche Bank, 22˚ 05.05' N, 90˚ 43.23' W, 51 m, 7 June 2005; 1 male, cw 6.1 mm, 2 female, cw 4.5, 4.3 mm (ULLZ 12313 = USNM 1536351) Campeche

Bank, calcareous rubble, 21° 34.18' N, 91° 04.71' W, 33 m, 12 June 2005; 1 male, cw 5.0 mm (ULLZ 6776 = USNM 1536339) Campeche Bank, 22° 14.04' N, 90° 41.63' W, 37–43 m, 18 June 2005; 1 ov female, cw 3.9 mm (ULLZ 7558 = USNM 1536340) Campeche Bank, 21° 15.29' N, 90° 36.15' W, 47 m, 12 June 2005. *Southeastern Gulf of Mexico.* 1 male, cw 3.8 mm (ULLZ 16618 = USNM 1536355) off Dry Tortugas, 24° 45.72' N, 83° 35.31' W, 67–68 m, 10 September 2014; 1 male, cw 3.8 mm (ULLZ 8735 = USNM 1536350) off Dry Tortugas, 24° 43.19' N, 83° 13.88' W, 61–62 m, 3 June 2004.

Rediagnosis. Carapace fronto-orbital width less than ¾ maximum width of carapace (between lateral extremes of anterolateral teeth), front wider than orbit; dorsal surface slightly convex, areolations distinct, separated by smooth furrows, dorsal surface otherwise with uniform fine granulation except where coarser across front; anterolateral margin with three prominent triangular anterolateral teeth (counting as one the outer orbital plus strongly coalesced obsolescent second tooth), fourth (posteriormost) anterolateral tooth dimunitive or obsolescent; larger two teeth sometimes directed anteriorly into acute tips; lacking subhepatic tubercle below margin. Eyestalk short, heavy, not narrowed terminally, ending in globular, rounded cornea, corneal diameter equal to or exceeding greatest width of eyestalk shaft. Chelipeds slightly heterochelous in most specimens, dorsal surfaces finely granulate; propodus upper surface elevated, broadly inflated, depressed weakly (if at all) between low ridge of inner border and slightly developed outer border; carpus dorsal surface irregular, with deeply depressed distolateral furrow, inner corner usually with at least one moderately enlarged acute tooth, distalmost usually largest if two or more present, major chela dactylus opposable margin bearing enlarged basal tooth. Ambulatory pereopod with merus superior margin texture nearly smooth, finely granulate to minutely denticulate, small denticles very low if present. Male third through fifth pleonites fused (Fig. 4E), second pleonite spanning almost full width of sternum when flexed, narrow tract of eighth sternite exposed between lateral margin and condyle of fifth pereopod coxa, third pleonite spanning full width of sternum. Male first gonopod (first pleopod) (Fig. 4A–C) subterminal spination including enlarged, proximally directed, articulated, very enlarged, elongate spine (usually one, sometimes two; length near 1/5 length of first gonopod trunk), distal to which shaft terminates in weakly flexed, narrow, distally directed, microspinulous finger of similar length. Male second gonopod (G2) (Fig. 4D) about two-thirds length of first, terminating in spiniform tip, 3 or 4 minute subterminal spinules at base of tip. Female gonopore (= vulva) (Fig. 4F) forming elongate oval, positioned obliquely to occupy anterior half of sixth sternite. Applicable GenBank sequence accession numbers from Thoma *et al.* (2014) are as follow for ULLZ 6776 = USNM 1536339: (12S) KF683050; (16S) KF682991; (18S) KF682887; (COI) KF682795; (ENO) KF682634; (H3) KF682556.

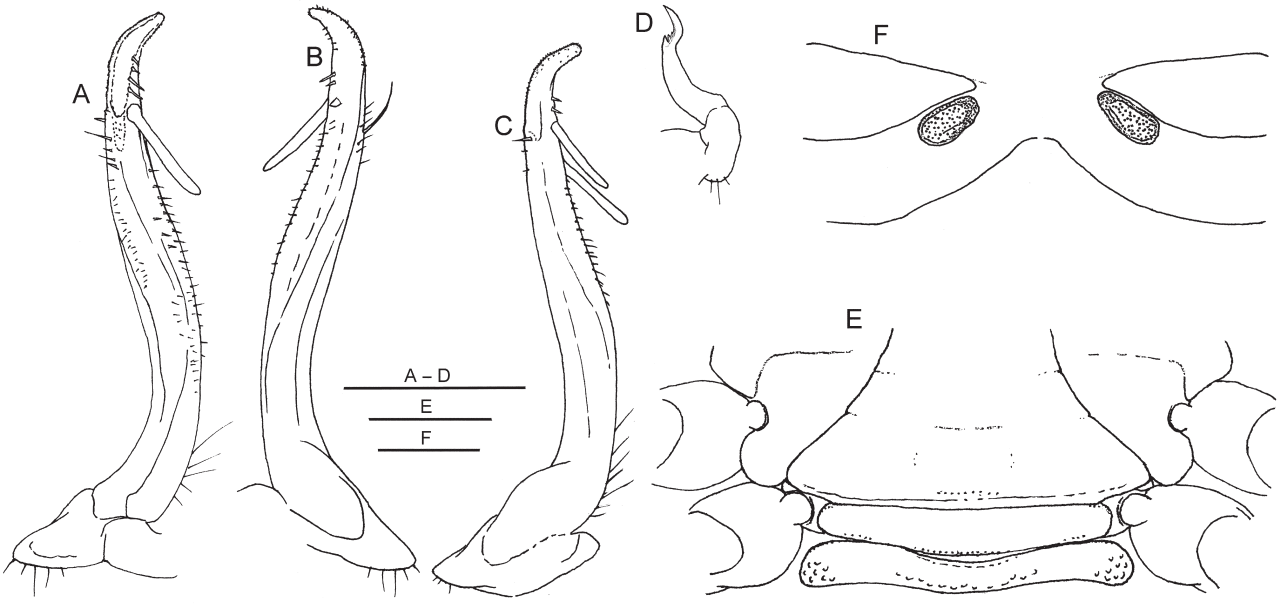

FIGURE 4. *Pseudopanopeus pusillus* **n. comb.** A–E, male, cw 3.8 mm (ULLZ 8735 = USNM 1536350); F, female, cw 4.3 mm (ULLZ 12313 = USNM 1536351). A, left first gonopod, sternal surface; B, same, pleonal surface; C, right first gonopod, pleonal surface; D, left second gonopod, pleonal surface; E, flexed proximal pleon, posterior pereopod coxae, and exposed sternites, posteroventral surfaces; F, fifth and sixth sternites, pleon extended to show female gonopores, ventral. Scale bars = 0.5 mm.

Remarks. In the course of revising the genus *Micropanope* and suggesting its restriction to *M. sculptipes* and *M. lobifrons*, Guinot (1967, 1971) did not provide a definitive alternate generic assignment for *M. truncatifrons* and *M. pusilla*. As noted at the outset of the present study, addressing this issue for *M. truncatifrons* is herein deferred for lack of gene-sequence quality tissues to use in molecular phylogenetic comparisons and absence of a mature male specimen to exemplify gonopods and pleonal structures. The same cannot be said for *Micropanope pusilla*, which was included in the analyses of Thoma *et al*. (2014: fig. 1) and shown there to be widely divergent from the two species of *Micropanope s.s*. While regarded to be a poorly known species when reported upon by Lemaitre (1984), extensive collections of this small brachyuran have now been accumulated from the Gulf of Mexico, as well as Caribbean waters extending to Brazil (Melo 1996; Felder *et al.* 2014; Poupin 2018). Access to a selection of these, as listed above, was essential to drafting of a diagnosis that applied broadly to the type species of the genus, building on the species diagnosis of Lemaitre (1984). Of particular relevance, morphological studies consulted for diagnosis of *Pseudopanopeus* **n. gen.** included the male voucher specimen (ULLZ 6776, herein = USNM 1536339) that had been sequenced for the phylogenetic analysis of Thoma *et al.* (2014), thus assuring that both sequence data and morphology correctly applied to an archived specimen of the new genus.

The characters applied by Rathbun (1930) in her identification key and in her diagnosis of *M. pusilla* were based upon a set of examined specimens that included three extant "cotypes" archived as two males and one female and cataloged under MCZ 2984. Recent reexamination of these fragmentary materials confirms that a relatively unarmed superior margin is found on the meri the ambulatory pereopods (especially pereopods three and four). This character usually separates the species (and thus the genus) from *Micropanope s.s.* as well as from most species formerly placed in that now restricted genus (members of *Batodaeus*, *Garthiope, Microcassiope*, *Nanoplax,* and *Scopolius*), whatever genus might eventually accommodate *M. truncatifrons*, and the recently described *Guinope*. In contrast to the unarmed walking leg meri in *Pseudopanopeus* **n. gen**., which at most bears a few enlarged dentiform granules, the others have those meri armed by short but erect (often weakly hooked) spinules or conspicuously enlarged teeth or tubercules.

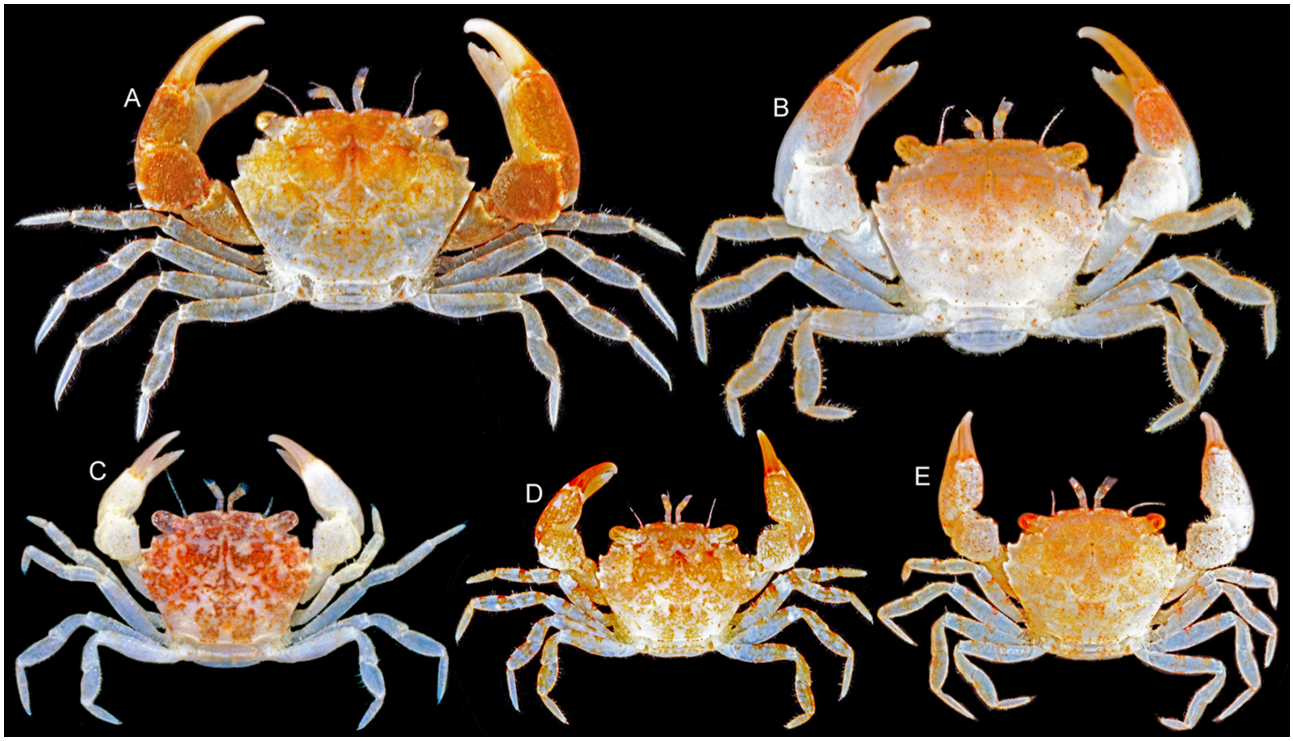

FIGURE 5. *Pseudopanopeus pusillus* **n. comb.** A, male, cw 5.7 mm (ULLZ 8058 = USNM 1536348) northeastern Gulf of Mexico; B, male, cw 5.6 mm (ULLZ 14362 = USNM 1536353) northeastern Gulf of Mexico; C, male, cw 5.2 mm (ULLZ 2388 = USNM 1536336) northeastern Gulf of Mexico; D, male, cw 5.2 mm (ULLZ 14362 = USNM 1536353) northeastern Gulf of Mexico; E, male, cw 5.0 mm (ULLZ 6776 = USNM 1536339) southwestern Gulf of Mexico.

As shown in the above cited line figures of A. Milne-Edwards (1880) and Lemaitre (1984) other features of the anterolateral teeth and chelipeds represent additional characters that collectively separate *Pseudopanopeus* **n. gen**.

from *Micropanope* s.s. and most species formerly placed in that now restricted genus. Owing to the obsolescent posteriormost (positionally fifth) anterolateral tooth and strong coalescence of the outer orbital tooth with an obsolescent second tooth, the anterolateral margin appears armed by only three prominent angular teeth (noting that one margin is obviously broken or misshapen on a possible syntype, MNHN-IU-2014-22611, in the Muséum national d'Histoire naturelle, Paris, as depicted in web accessible photographs at http://coldb.mnhn.fr/catalognumber/mnhn/iu/2014-22611). In present and former *Micropanope* spp., either the second or fifth teeth (if not both), while often small, are more strongly expressed than in *Pseudopanopeus* **n. gen.**

It should also be noted that the chelae in *Pseudopanopeus pusillus* **n. comb.** are strongly developed in mature specimens, especially males, being dorsally elevated or swollen to the point of resembling those of *Milnepanopeus* Thoma & Felder, 2012 or *Glyptoplax* Smith, 1870, the latter being a genus to which this species was at one point assigned (Rathbun 1899, 1901; A. Milne-Edwards & Bouvier 1923). However, mature males of *Pseudopanopeus pusill*us **n. comb.** can be easily separated from these species, other present and former *Micropanope* spp., or the recently described *Guinope tiara* Thoma & Felder, 2020, by the very unique sculpture and armor of the first gonopod (Fig. 4 **A**–C), herewith confirmed to match that of the fragile male syntypes (MCZ 2984). The shape of the first gonopod tip combined with the large, heavy, bluntly tipped, articulated, subterminal spine (sometimes double) is unlike any other first gonopod described for pseudorhombilid crabs. Garth (1978) commented on the utility of this character in his report of the species from Hogsty Reef, Bahamas, as did Lemaitre (1984: figs 7, 8), who provided line illustrations of the gonopods, carapace, sternum, pleon, and pereopods in his later report of the species from Cal Sal Bank, Bahamas. More recently, Poupin (2018) included a photograph of the first gonopod for a specimen from the Lesser Antilles.

The second gonopod (Fig. 4D) may also prove to be somewhat unique in *Pseudopanopeus pusillus* **n. comb**., at least in the degree to which subterminal microspination is developed at the base of the concave tip. To date, however, too few examples of this appendage are described at a level of detail that facilitates further comparisons. For mature females, the relatively narrow obliquely oriented ovoid gonopore (= vulva) (Fig. 4F) appears to distinguish the species from at least some other species of comparably sized pseudorhombilid crabs in which the pore is of more crescentic or circular shape or in which it spans a greater portion of the sixth sternite, but variations before and after embryonated egg deposition remain to be documented.

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