

THREE NEW SPECIES OF PORCELLANID CRABS  
(CRUSTACEA, DECAPODA, PORCELLANIDAE)  
FROM THE BAY OF PANAMA AND  
ADJACENT CARIBBEAN WATERS<sup>1</sup>

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ABSTRACT

Three new species of porcellanid crabs are described from material collected in Panama. *Pachycheles susanae*, n. sp., occurs intertidally among coralline rubble on fossil reefs on the Caribbean coast. *Petrolisthes lindae*, n. sp., occurs intertidally within and on the fringe of red mangrove swamps at the Pacific mouth of the Panama Canal. *Megalobrachium pacificum*, n. sp., previously considered to be conspecific with the Atlantic *M. poeyi*, is shown to be a distinct species. It occurs on the Pacific coast in open rocky areas under stones on a clay-mud substrate in the intertidal zone.

INTRODUCTION

A large series of porcellanid crabs was collected by one of us over a 2-year period during a survey of the decapod crustaceans of Panama (Abele, 1972). A preliminary examination of this material revealed the presence of two new and previously uncollected species. A third species, the individuals of which previously had been considered to be identical on both coasts of Panama, was found actually to consist of two species. Since much additional study is required on this large porcellanid collection, we deemed it advisable to report on the new taxa described herein at this time. The remaining species will be more thoroughly considered in a later report, presently undergoing preparation.

The abbreviation *cl* refers to carapace length; *cb* to carapace breadth; AHF to the Allan Hancock Foundation, University of Southern California, Los Angeles, California; CM to the Copenhagen Museum, Copenhagen, Denmark; UMML to the museum of the Rosenstiel School of Marine and Atmospheric Science, Miami, Florida; and USNM to the National Museum of Natural History, Smithsonian Institution, Washington, D. C.

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Illustrations were prepared with the aid of a Wild M-5 stereomicroscope with camera lucida attachment. Measurements were made with dial calipers and correlated on illustrations with the aid of a Wild slide micrometer.

The specific names *susanae* and *lindae* are in honor of our wives, Mrs. Susan Gore and Mrs. Linda Abele, respectively. In this way we can acknowledge their help, patience, and understanding during the years we were graduate students. Only the wives of graduate students can truly appreciate such tribulations. The specific name *pacificum* was chosen to differentiate this species from its Atlantic counterpart.

#### ACKNOWLEDGMENTS

We wish to extend our thanks, jointly, to the following people: Drs. Ira Rubinoff, Jeffery Graham, and Peter Glynn of the Smithsonian Tropical Research Institute; Miss Janet Haig of the Allan Hancock Foundation; Dr. Raymond B. Manning and Mr. Henry Roberts of the National Museum of Natural History; and Dr. Torben Wolff of the Copenhagen Museum. The University of Panama and the Smithsonian Tropical Research Institute provided facilities during the fieldwork in Panama.

#### ***Pachycheles susanae*, n. sp.**

Figs. 1; 3,B

*Material Examined*.—**HOLOTYPE**: female, *cl* 3.2 mm, *cb* 3.5 mm (USNM 141317); Republic of Panama, Caribbean Coast, Galeta Island, in coralline rubble adjacent to Smithsonian Tropical Research Institute Laboratory, intertidal zone, 5 October 1970, L. G. Abele.

**PARATYPES**: 2 females, *cl* 2.2 mm, *cb* 2.4 mm, *cl* 2.6 mm, *cb* 2.8 mm; 3 males, *cl* 2.3 mm, *cb* 2.4 mm to *cl* 2.4 mm, *cb* 2.6 mm (USNM 141318); data as for holotype.

*Diagnosis*.—Carapace without hairs dorsally; median lobe of frontal region minutely dentate; dorsal surface of carpus of large cheliped with two wide, longitudinal grooves dividing three long, low, smoothly rounded crests; anterior margin with three broad, strongly projecting, blunt teeth; manus with crests similar to those on carpus; upper surface of walking legs thickly covered with plumose hairs; telson 7-plated in males and females; pleopods absent in males.

*Description*.—Carapace about 1.1 times as wide as long, suborbicular, somewhat inflated, convex from front to gastric region, becoming more flattened behind; appearing smooth and shining, but under magnification very lightly punctate overall; shallowly plicate from epibranchial region to posterolateral region, less so on frontal region, entirely devoid of hair except for very few, small, scattered setae; front developed, somewhat

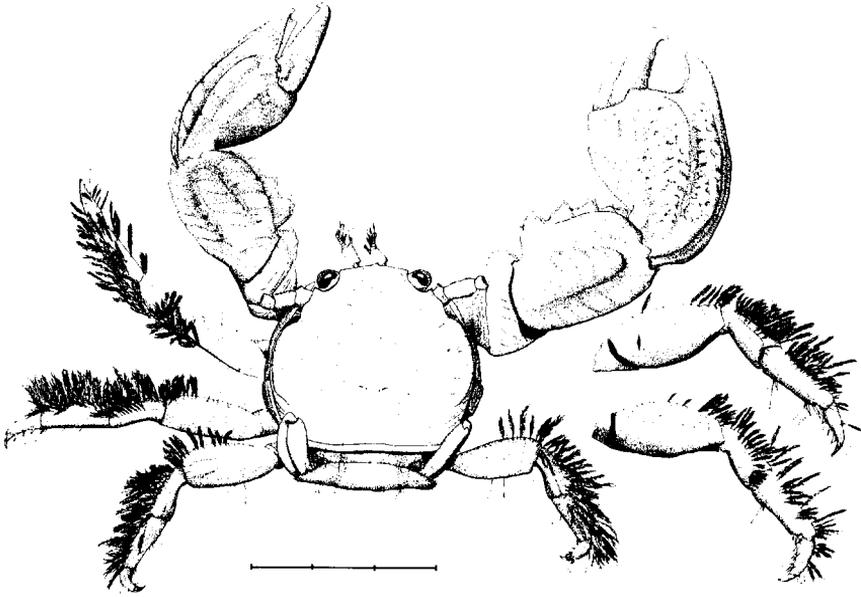


FIGURE 1. *Pachycheles susanae* Gore & Abele, n. sp.: holotype female; walking legs detached from specimen. (Scale = 3 mm.)

rounded, slightly deflexed, appearing faintly trilobate in dorsal view; lateral lobes broad, transverse to slightly oblique, rounded on ends; median lobe narrow, produced, slightly longer than lateral lobes when viewed frontally, with several very small irregular teeth at tip. Outer orbital angle deflexed, produced into bluntly rounded tooth. Epibranchial region rounded, well developed, with thin but distinct rim which extends anteriorly to outer orbital angle, and posteriorly along lateral margins of carapace to about midbranchial level, thereupon curving toward, but not meeting, midline of carapace in a distinct plication.

Sidewalls of carapace consisting of one large piece extending to about level of second walking leg, followed by single irregular smaller piece posteriorly.

First movable segment of antenna with distinctly granular tubercle on anterior margin; second nearly smooth; third completely so. Flagellum appearing naked, but under high magnification minute hairs seen.

Merus of chelipeds very lightly rugose; a broad, strongly projecting, bluntly rounded, subtriangular lobe on anterior margin, appearing slightly granular on leading edge. Carpus with three large and usually one small, strongly projecting, triangular, widely serrate, blunt teeth on anterior

margin, decreasing in size toward manus. Dorsal surface with three long, low, gently rounded crests defined by two wide shallow grooves which meet and form a "U" near distal margin; anterior crest widest, lowest, almost completely smooth, nearly obsolescent; median and posterior crests appear as if formed of long, broadly rounded, coalesced, oblique rugae, with crest forming posterior margin having somewhat plaited appearance. Posterior distal angle developed into thick, blunt tooth. Upper surface of manus with four crests, three of which appear more developed than those of carpus. First crest low, wide, nearly obsolete, extending to base of dactyl; second higher, more developed, originating almost at articulation of carpus, extending to base of pollex; third highest, joined to second proximally, more strongly rounded, extending onto pollex and merging with same; fourth separate from previous two, most steeply rounded, extending along outer margin of manus and pollex. Movable fingers of each cheliped with short, shallow furrow on outer side; fingers widely gaping in major cheliped; meeting for entire length in minor cheliped; latter with deep U-shaped sulcus at tip of pollex into which fits distinctly hooked tip of dactyl.

Merus of walking legs with scattered plumose and nonplumose hairs on dorsal surface, becoming thicker near articulation with carpus; dorsal and anterior margins of carpus, propodus, and dactylus so thickly covered with plumose hairs that form of leg is nearly obscured.

Telson consisting of seven plates in males and females; males lack pleopods.

*Variations.*—The only noteworthy variation appeared on the carpal and manal grooves and crests of the paratypes. In the two small females, these grooves and crests were ill-defined, being very low, gently rounded, or almost obsolescent on the carpus, but retaining their identity on the manus. In the three males, also smaller than the holotype, the cheliped grooves and crests were better defined, especially on the manus. The crests on the carpus took the form of transverse rounded ridges in irregular, rounded, longitudinal rows, and the posteriormost crest appeared as oblique, coalesced rugae.

Two very young specimens (*cl* 2.0 mm, *cb* 2.0 mm) collected with the type-series, which appear to belong to this species, have a single pair of pleopods present on the second abdominal somite and scattered long setae on the anterior half of the carapace. However, all of the appendages are missing, and, as a result, we do not include them here as part of the paratype series. It may be that young males of this species do possess pleopods but later lose them as they mature. Examination of megalopae and very young crabs of known parentage of this species should resolve this question.

*Measurements.*—Males ranged from *cl* 2.3 mm, *cb* 2.4 mm to *cl* 2.4 mm, *cb* 2.6 mm; females from *cl* 2.2 mm, *cb* 2.4 mm to *cl* 3.2 mm, *cb* 3.5 mm.

*Color.*—Completely faded in alcohol, now a creamy white. Tips of the chelae white.

*Ecology.*—All specimens were collected from coralline rubble on a fossil coral reef in the intertidal zone.

*Relationships.*—*Pachycheles susanae* is yet another member of a small group of *Pachycheles* species in which the telson is seven-plated and the males lack pleopods. In the Atlantic, these species include *P. sahariensis* Monod, 1933, *P. greeleyi* (Rathbun, 1900), and *P. cristobalensis* Gore, 1970, none of which appears to be closely related to the new species. Interestingly, *P. susanae* appears to be most closely related to *Pachycheles vicarius* Nobili, 1901, an eastern Pacific species known from El Salvador to Ecuador (Haig, 1960). In *P. vicarius*, the telson has seven plates in the males, and is incompletely seven-plated or has five plates in females. However, the males of *P. vicarius*, unlike those of the new species, possess pleopods. *P. vicarius* also differs in other features. Although the longitudinal crests on the carpus and manus of the chelipeds appear superficially to be similar in both species, in *P. vicarius* there are four, not three, crests and these are higher and much more distinct than those of *P. susanae*. In addition, the third carpal crest in *P. vicarius* is often broken into several large, irregular tubercles, the teeth on the anterior carpal margin are more inflated, and the crests on the manus are more defined. The following lesser features may also be used to separate *P. vicarius* from *P. susanae*: in the former the outer orbital angle is a distinct tooth and not bluntly rounded, the separated portion of the carapace sidewall has a slightly different aspect, the antennal tubercle is not as developed, the meral lobe is smoother and without distinct granulation, the carpal teeth are not widely serrate, and the median frontal lobe is without minute teeth. Although the crests and tuberclelike projections in some specimens of *P. vicarius* which were examined appeared more rounded or worn, thus approaching *P. susanae*, the general aspect of *P. vicarius* was that of a more heavily and deeply sculptured species.

*Remarks.*—Specimens of *P. susanae* were sent to Miss Janet Haig for examination. She confirmed our identification as a new species and also pointed out that *P. susanae* differs from all other *Pachycheles* species which possess seven-plated telsons and lack pleopods in the males by having longitudinal crests and grooves on the carpus and manus. The new species, like many others in the genus, appears to be a small species.

This, and the fact that it was collected intertidally from a tropical area in Central America, serves to reinforce the suggestion that additional careful collections in such areas may yield more porcellanid species.

*Range*.—Presently known only from the type-locality on the Caribbean coast of Panama, Galeta Island.

***Petrolisthes lindae*, n. sp.**

Figs. 2; 3,D,G

*Material Examined*.—HOLOTYPE: male, *cl* 8.0 mm, *cb* 7.8 mm (USNM 141320); Republic of Panama, Panama Province, Pacific coast; intertidal zone adjacent to mangroves (*Rhizophora mangle* L.); off Balboa Blvd. near Punta Paitilla; 7 December 1968; L. G. Abele.

PARATYPES: 1 ovigerous female, *cl* 5.8 mm, *cb* 5.6 mm; 4 males, *cl* 7.9 to 9 mm (USNM 141321); Republic of Panama, Panama Province, Pacific coast; intertidal zone adjacent to red mangroves under Inter-american Bridge on west side of Panama Canal; 16 April 1969; L. G. Abele.

OTHER MATERIAL: 12 males, *cl* 5.6 to 7.6 mm; 7 ovigerous females, *cl* 5.0 to 6.8 mm; 2 nonovigerous females, *cl* 3.2 to 4.0 mm; Republic of Panama, Panama Province, Pacific coast; intertidal zone in red mangroves; Diablo boat ramp on east side of Panama Canal; 3 July 1969; L. G. Abele; USNM; AHF.

*Diagnosis*.—Carapace slightly longer than wide, distinctly and transversely granulate, appearing eroded and etched under magnification; outer orbital angle broadly rounded, epibranchial spine vestigial or lacking but a distinct notch present; carpus of cheliped 2.5 times as long as wide, anterior margin with one tooth and an elongate lobe; walking-leg meri with one or no spines anteriorly, those of legs 1 and 2 spined at posterodistal angle.

*Description*.—Carapace naked dorsally, flattened, little inflated, slightly longer than wide, slightly wider posteriorly than anteriorly; lateral margins subparallel, curving gently laterally from epibranchial angle. Front produced, broadly rounded, weakly trilobate, inner orbital angle not developed, no supraocular spine; front merging via obtuse angle into orbital region; orbits oblique, outer orbital angle little produced, declivate. Hepatic region laterally expanded, convex to epibranchial angle, "shoulders" developed; epibranchial angle without a spine or with a vestigial remnant at most, but with a distinct notch. Frontal and branchial regions with numerous, short, low, transverse rows of single and united granules; a distinct transverse granulate ridge at gastric region; branchial regions distinctly roughened laterally and appearing rugose along posterolateral margin; this region and remainder of carapace with very low, eroded and

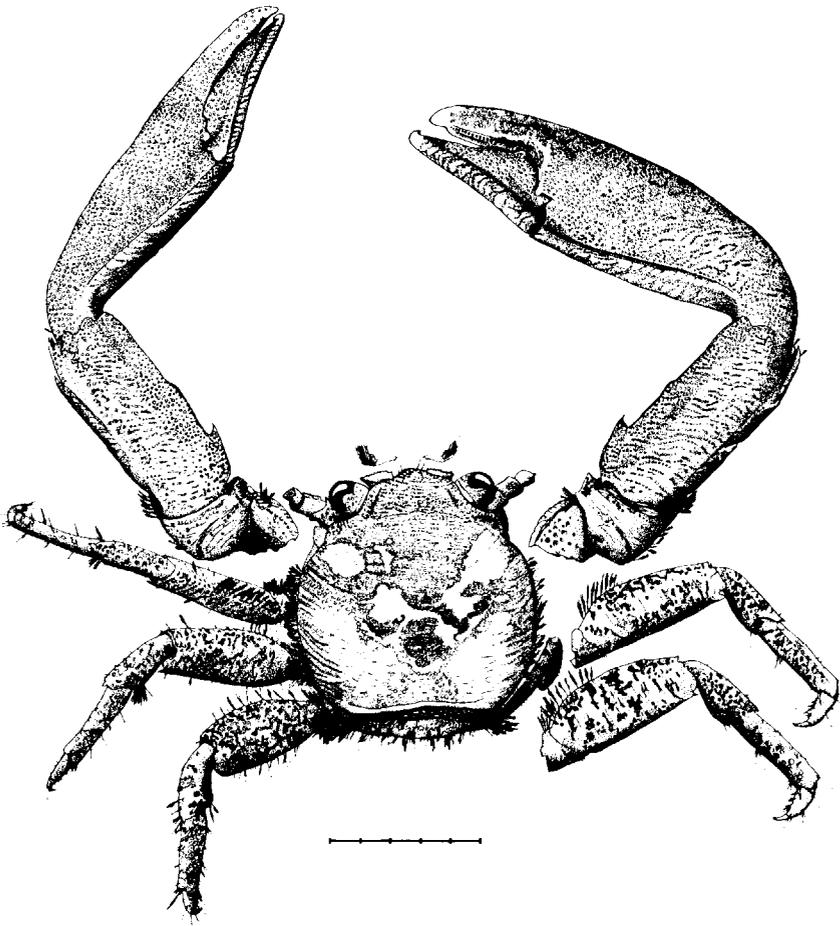


FIGURE 2. *Petrolisthes lindae* Gore & Abele, n. sp.: holotype male; right fourth pereiopod missing. (Scale = 5 mm.)

depressed granules arranged in short, transverse rows which appear as small craters or pits, both isolated and connected. Epimeral area heavily pubescent.

First movable antennal segment with strongly produced, rounded, lamellar lobe armed with one large spine and several large granules; second segment proximally with a small granular lobe; third smooth but produced distally into sharp angle. All segments more-or-less eroded or shallowly pitted. Flagellum lightly setose, but naked to unaided eye.

Third maxillipeds with transverse rows of low granules; merus with strongly produced mesial lobe usually armed with spine.

Chelipeds subequal, depressed, elongate, and finely but distinctly granulate, granules appearing more rounded and less eroded than those of carapace; dorsal surface of merus with strong spine-tipped lobe mesially, a sharp spine distolaterally, another medioventrally. Carpus length 2.5 times width; anterior margin armed proximally with one tooth followed by a low, elongate lobe reaching to about midlength of segment, but often nearly or entirely obsolete in some specimens; posterior margin with a distinct ridge formed of flattened and coalesced rugae, this terminating in a large spine, followed immediately thereafter by a pair of acute spines at posterodistal angle; length of manus greater than 3 times width, appearing nearly smooth to naked eye, but more definitely granular under magnification; granulation similar to that of carpus and consisting of irregular connected and disconnected rows of rounded beads oriented more or less transversely across the hand; a distinct, somewhat flattened ridge runs along dorsal margin and is continued on movable finger; dactyl slightly longer than  $\frac{1}{3}$  length of hand and  $\frac{1}{2}$  length of palm; fingers incompletely spooned mesially, edges with pectinate row of granules; a distinct tuft of pubescence inside proximal half of both fingers; tips of latter hooked; outer margin of manus distinctly granulate to finely serrate.

Walking legs slender, long, covered overall with eroded low granules and craters as on carapace; spines on anterior margins and posterodistal angles of meri, progressing distally as follows: 0 - 1, 1; 1 + 1; 1 + 0; all segments of walking legs with setae, those on proximal portion of meri clubbed or plumose tufts. Carpus of walking legs 1, 2, 3, with anterodistal spinule.

*Variations.*—The major feature of variation on all specimens examined was the granulation of the carapace and chelipeds. In many, but not all specimens, the transverse granulation was prominent and the eroded, pitted nature of the carapace distinctly noticeable. These specimens were invariably brick red or with a decidedly pinkish tinge in alcohol. However, in some other specimens, the carapace and chelipeds were smooth (not eroded or pitted) or very lightly rugose, appearing somewhat like those of *P. robsonae* or *P. nobilii*. These specimens were never red, but appeared yellowish white in alcohol.

One lot of material containing 23 specimens had three small specimens that bore close resemblance to *P. robsonae*, with which the new species is sympatric. They differed from larger specimens of *P. lindae* in the following characters: the anterior margin of the carpus of the cheliped is armed with two spines, the anterior margin of the palm has a fringe of setae and an interrupted row of spinules, and the meri of the walking legs are

armed with two spines on the anterior margin; all these features characterize *P. robsonae*. However, these small specimens differ from paratypic specimens of *P. robsonae* of the same size, and resemble large specimens of *P. lindae* as follows: the outer orbital angle is broadly rounded rather than acute or subacute, the frontal region is less produced, the posterodorsal ridge of the carpus is much weaker, and the carapace and appendages are much less rugose (compare Fig. 3,C,D).

*Measurements.*—Males ranged from *cl* 7.2 mm, *cb* 7.0 mm to *cl* 9.0 mm, *cb* 8.8 mm; ovigerous females from *cl* 5.0 mm, *cb* 4.6 mm to *cl* 6.8 mm, *cb* 6.7 mm; nonovigerous females from *cl* 3.2 mm, *cb* 3.1 mm to *cl* 4.0 mm, *cb* 3.4 mm.

*Color.*—As noted above, either brick red or yellowish white in alcohol, the former more characteristic of holotype and paratypic series; eroded portions appearing yellowish white, as does pubescence; several large granules near tips of outer surface of fingers pearly white.

*Ecology.*—All of the specimens were collected intertidally within or on the fringe of red mangrove swamps (*Rhizophora mangle* L.). A single juvenile specimen, probably referable to this species, was collected from the fresh water of the upper Pedro Miguel Locks of the Panama Canal. Ovigerous females were taken during April and July.

*Relationships.*—*Petrolisthes lindae* belongs to a rather large group of species which bear a superficial resemblance to *Petrolisthes armatus* (Gibbes, 1850). In the eastern Pacific, the new species is similar to *P. robsonae* Glassell, 1945, *P. nobilii* Haig, 1960, and *P. zacae* Haig, 1968, while in the western Atlantic it is similar to *P. politus* (Gray, 1831). In the Indo-Pacific, the new species is similar to several species, including *P. leptocheles* (Heller, 1861), *P. tenkatei* de Man, 1893, *P. teres* Melin, 1939, and *P. kranjiensis* Johnson, 1970. However, *P. lindae* differs from each of these above species by one or more characters given in the diagnosis.

In the eastern Pacific, *P. lindae* is sympatric with two very similar species, *P. nobilii* and *P. robsonae*. However, *P. robsonae* differs from *P. lindae* in having an epibranchial spine, two spines on the anterior margin of the carpus of the cheliped, and the outer margin of the hand either strongly serrate or with a distinct row of spinules. The new species lacks all of these features. In *P. nobilii*, although the epibranchial spine is vestigial or lacking and there is a distinct notch at the epibranchial angle, the carapace itself is distinctly triangular, not subcircular as in *P. lindae*. In *P. nobilii*, the carpus of the chelipeds has three low, widely spaced teeth, and the anterior margin of the meri of the walking legs are armed with

from 3 to 8 spines, never one or none as in *P. lindae*. In addition, there is a narrow line of pubescence on the ventral surface of the anterior margin of the manus in *P. nobilii* which the new species lacks.

*Petrolisthes politus* is the western Atlantic analog of *P. nobilii* and thus differs from *P. lindae* in most of the characters just mentioned, although *P. politus* also lacks the ventral pubescence on the margin of the manus.

*Remarks.*—The new species has many of the characters by which *P. nobilii* and *P. robsonae* are distinguished. It also appears to be intermediate in many of these features. That is, *P. lindae* has just one carpal spine and a lobe instead of two or three spines; a vestigial or absent epibranchial spine, never distinct; carapace granulation similar to, but not exactly identical with, any one species; the cheliped length is a little too long for one species but close to another.

The closeness of *P. lindae* to *P. nobilii* and *P. robsonae*, both of which are close to *P. armatus*, is disconcerting, and we cannot dispel the feeling that perhaps hybridization has occurred with the result being *P. lindae*. All of the above species are sympatric, and *P. armatus* is a notoriously variable species throughout its range. Whether or not hybridization has occurred is, of course, conjectural at this point and further work is needed. However, the series of *P. lindae* before us appears to exhibit constant features which are sufficiently distinct, in our opinion, to warrant establishment of the species.

*Range.*—The species is known from the type-locality and the immediate vicinity around the Pacific mouth of the Panama Canal.

### **Megalobrachium pacificum**, n. sp.

Fig. 3,F

*Megalobrachium poeyi*: Boone, 1931: 150, text-fig. 5 (not *M. poeyi* [Guérin]).

*Megalobrachium poeyi*: Haig, 1956: 34 (in part; reference to Pacific material); 1960: 213, 214, 339, 340, pl. 16 fig. 4, pl. 39 fig. 1; 1962: 188 (in part; reference to Pacific material); 1968: 57, 60, 71 (not *M. poeyi* [Guérin]).

*Megalobrachium poeyi*: Gore, 1971: 404 ff. (in part; reference to Pacific material), figs. 3, 5, 7, 9, 11a,b,d,e (not *M. poeyi* [Guérin]).

*Previous Records.*—PANAMA: Bahia Honda, ZACA (Haig, 1968); Panama City?, Agassiz, HASSLER (Haig, 1960); San Francisco, Elinor D. Robson (Haig, 1960); Isla Taboguilla, W. G. Van Name (Boone, 1931); Isla Taboga, Th. Mortensen (Haig, 1962); Punta Paitilla, L. G. Abele, J. B. Graham (Gore, 1971). COSTA RICA: Cedro Island, Gulf of Nicoya, ZACA (Haig, 1968); Bahia de Salinas, VELERO III (Haig, 1956, 1960).

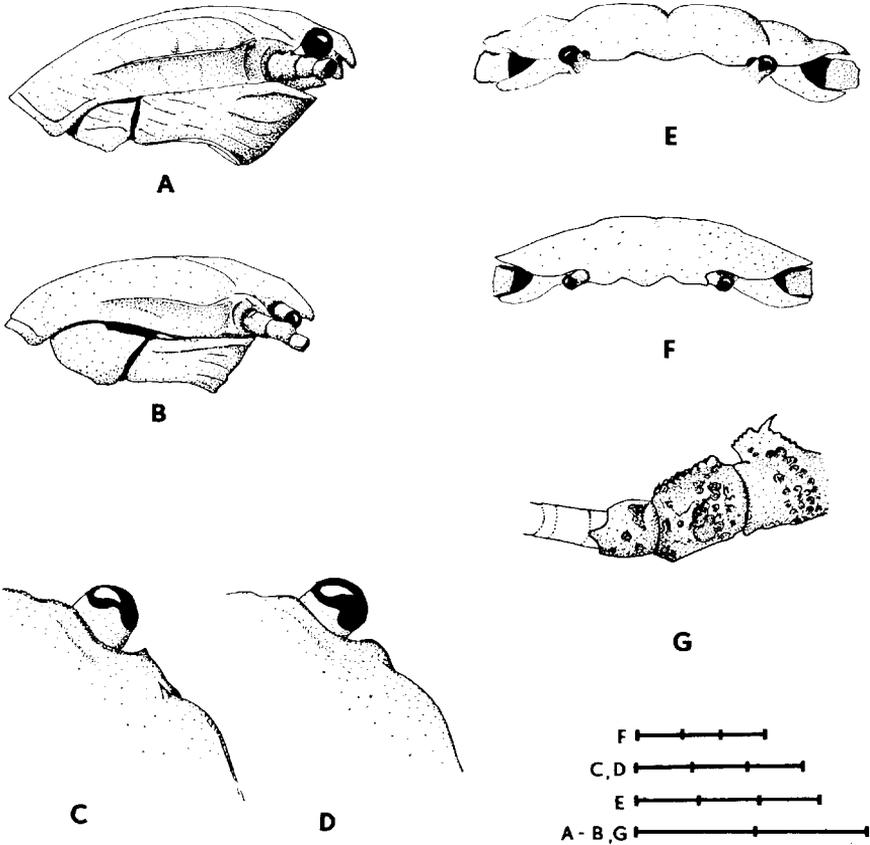


FIGURE 3. Comparison of morphological features in six species of Porcellanidae: A, *Pachycheles vicarius*, lateral view; B, *Pachycheles susanae*, lateral view; C, *Petrolisthes robsonae*, epibranchial angle; D, *Petrolisthes lindae*, epibranchial angle; E, *Megalobrachium poeyi*, frontal view; F, *Megalobrachium pacificum*, frontal view; G, *Petrolisthes lindae*, antennal segments. (Scale divisions = 1 mm.)

*Material Examined.*—HOLOTYPE: female, *cl* 9.6 mm, *cb* 10.6 mm USNM 141322); Republic of Panama, Panama Province, Punta Paitilla, 20 m out from sandy beach near shipyard on mud-clay bottom in open rocky intertidal zone; 31 December 1968; L. G. Abele, J. B. Graham.

PARATYPES: 1 male, *cl* 8.0 mm, *cb* 8.6 mm; 1 female, *cl* 8.2 mm, *cb* 9.0 mm; same locality and data as for holotype; UMML 32.4185.

OTHER MATERIAL: 1 male, 1 female; Panama, Bay of Panama, Isla Taboga; Th. Mortensen; October, 1915; CM.—1 male, 1 female; Panama,

Bay of Panama, Isla Taboga; 3 February 1916; CM.—1 male, 1 female; Costa Rica, Salinas Bay; VELERO III; 10 February 1935; AHF.—1 male, 1 female; Costa Rica, Playa Blanca; Oren F. Lackay; 17 July 1963; AHF.

*Diagnosis.*—Carapace roughly granular, protogastric regions low, indistinct, posterolateral regions plicate to rugose; lateral margins rounded; surface sparsely covered with long plumose and nonplumose hairs; front with three shallow lobes. Carpus of chelipeds in adults unarmed on anterior margin, length slightly more than 1.5 times width; longitudinal crests present; manus with longitudinal crests, outer margin with thick fringe of hairs. Telson with seven plates.

*Description.*—The general features of this species have been dealt with in detail by Haig (1960) under the name *Megalobrachium poeyi* (Guérin, 1855). The differences between *M. poeyi* and *M. pacificum* are given below.

*Measurements.*—Males ranged from *cl* 6.0 mm, *cb* 6.7 mm to *cl* 8.0 mm, *cb* 8.6 mm; ovigerous female, *cl* 9.6 mm, *cb* 10.6 mm; nonovigerous females, *cl* 6.6 mm, *cb* 7.9 mm to *cl* 8.2 mm, *cb* 9.0 mm.

*Color.*—The following notes were made on the live ovigerous holotypic specimen which yielded larvae described previously by Gore (1971). Carapace a rich reddish purple with a triangular white area on the postero-medial portion of the carapace. Regions of the carapace delimited by white lines. Chelae are dark purple interspersed with white on the carpus and manus. Walking legs are mottled with red-violet and white. Tan or yellowish to dark brown hair thickly covers legs, chelae, and epimera of carapace. Flagellae of antennae alternately banded with purple and transparent. Underside of chelae, walking legs and body white with blushes of purple.

*Ecology.*—Collected intertidally in an open rocky area, under stones on a clay-mud bottom. Ovigerous females collected in late December are included in the series examined.

*Relationships.*—*Megalobrachium pacificum* is most closely related to *M. poeyi* and was previously considered to be conspecific with it. *Megalobrachium pacificum* differs from *M. poeyi* in the following characters: (1) the protogastric regions of *M. pacificum* are indistinct and are not higher than the frontal and hepatic regions, while in *M. poeyi* these regions are distinct and clearly elevated above the frontal and hepatic regions (compare parts E and F of Fig. 3); (2) the granules of the chelipeds and the carapace of *M. pacificum* are smaller and less distinct than those of *M.*

*poeyi*; (3) the walking legs of the new species are more robust than those of *M. poeyi*, these differences being especially apparent in the propodi, which in *M. pacificum* are 2 to 2.3 times longer than wide, while in *M. poeyi* they are 2.8 to 3 times longer than wide; (4) there are distinct and constant differences between the larvae of the two species, as noted previously by Gore (1971).

*Remarks.*—The Atlantic and Pacific populations of the two species had been previously considered conspecific as *M. poeyi* (see Haig, 1960: 215). Gore (1971), on the basis of differences in the larvae of Atlantic and Pacific adults of *M. poeyi*, suggested that the populations might be at least subspecifically distinct but preferred not to recognize them as such at that time.

During the present study, we were able to examine 11 of the 18 known Pacific specimens and 36 Atlantic specimens, including a syntypic series from St. Thomas in the Antilles (see Abele & Gore, 1973). It soon became apparent that specimens from the Pacific population, although very similar to *M. poeyi*, could nevertheless be distinguished from that species by the series of features noted above. It was also apparent that one reason for previous confusion was the lack of an adequately detailed description for the Atlantic specimens. Guérin (1855) mentioned few features in his key and provided a simple figure (as *Porcellana poeyi*). Stimpson (1858), while defining the genus *Megalobrachium* and denoting *M. granuliferum* (= *M. poeyi*) as the type-species, did not describe this species until 1859 and still did not provide an illustration. Boone (1931) was apparently the first to equate Pacific specimens with the Atlantic species *M. poeyi* and she also provided a good photograph of the species. Haig (1960) gave a much expanded and detailed description of the Pacific specimens and considered both Atlantic and Pacific populations conspecific. The situation might have remained as such were it not for evidence provided by the larvae of the two populations and the chance to examine a syntypic series of *M. granuliferum* from the Copenhagen Museum. Data from these two sources, in conjunction with examination of other Pacific and Atlantic specimens, convinced us that *M. poeyi* and *M. pacificum* are specifically distinct.

As might be deduced from the foregoing discussion, we consider the Panamanian isthmus sufficient barrier in maintaining geographical and reproductive isolation between the two species. We follow the precedent established by Haig (1960) and others in maintaining the Pacific and Atlantic populations as species, rather than as subspecies. At some future date, however, our definition as to what constitutes a geographically isolating barrier may have to be revised, especially in those trans-Panamanian forms found in the vicinity of the Panama Canal.

*Range*.—Pacific coast, from Bahia de Salinas, Costa Rica, to Bahia Honda, Panama.

## SUMARIO

TRES ESPECIES NUEVAS DE CANGREJOS PORCELÁNIDOS  
(CRUSTACEA, DECAPODA, PORCELLANIDAE) PROCEDENTES  
DE LA BAHÍA DE PANAMÁ Y AGUAS ADYACENTES DEL CARIBE

Se describen tres especies nuevas de cangrejos porcelánidos procedentes de material colectado en Panamá. *Pachycheles susanae*, n. sp., ocurre litoralmente entre pedazos de corales en arrecifes fósiles en la costa del Caribe. *Petrolisthes lindae*, n. sp., se presenta litoralmente dentro y en el borde de pantanos de mangle rojo en la boca del Pacífico del Canal de Panamá. *Megalobrachium pacificum*, n. sp., previamente considerada conespecífica con la especie atlántica *M. poeyi*, se demuestra que es una especie distinta. Se presenta en la costa del Pacífico en áreas rocosas abiertas, debajo de las piedras, en un substrato de arcilla-fango en la zona litoral.

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