

אוניברסיטת חר-אביב
הספריה למדעי-החיים

Papers from Dr. Th. Mortensen's Pacific
Expedition 1914-1916

LXXIX

Janet Haig

Porcellanid Crabs
from Eastern and Western America

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LXXIX

PORCELLANID CRABS
 FROM EASTERN AND WESTERN AMERICA*

By JANET HAIG

(Allan Hancock Foundation, University of Southern California, Los Angeles)

Introduction

THIS report is the first of a series dealing with crabs of the family Porcellanidae (Crustacea Anomura) in the collections of the Zoological Museum, Copenhagen. The present paper treats the species from the east and west American coasts. Most of the material was collected by Dr. TH. MORTENSEN, in the Danish West Indies (now Virgin Islands) in 1906 and on the Pacific coast of Panama in 1915-16; also included in the report are small amounts of material from several other sources. There are 42 species represented, out of approximately 100 known from the Americas.

The porcellanids of the western North Atlantic were recently reviewed (HAIG, 1956), with keys and all known references to each species. Still more recently, the Porcellanidae of the eastern Pacific were revised (HAIG, 1960), with descriptions and illustrations of all species known from that area, as well as with a complete list of references. For this reason, it is possible to include a minimum of taxonomic discussion and references in the present report; under each species is given a reference to one or the other of the papers mentioned above, to which the reader can refer for pertinent information.

The collection is kept at the Zoological Museum of the University of Copenhagen.

*) Allan Hancock Foundation Contribution No. 244.

Zoogeographical Remarks.

american porcellanid fauna contains a tropical west Atlantic—east component, with roughly 70 percent of the total number of American species and with several identical or very closely related species on both sides of the continents; a north-temperate east Pacific component; and a south-temperate east Pacific component. In the western Atlantic several species ranging northward to the vicinity of Cape Hatteras, two extending as far north as Cape Cod; the southern extent of the tropical region is as yet undetermined, but probably lies at some point in the northernmost part of Brazil. The northern boundary of the eastern tropical region is at the head of the Gulf of California, Mexico; the southern boundary is at approximately the Ecuador—Peru border. The temperate region is from the Queen Charlotte Islands, British Columbia (there is a single Alaskan record) southward to near the tip of the California peninsula, where there is a small amount of intermingling with tropical species whose ranges extend around Cape San Lucas. The boundaries of the south-temperate region are at the Ecuador—Peru border to the north and the Strait of Magellan to the south. There are 15 genera in the American porcellanid fauna, of which 10 are tropical, 2 south-temperate) and the remaining 5 have representatives in the eastern Atlantic and in the Indo-Pacific. Out of approximately 100 species known from the Americas, all but one, *Petrolisthes* (IBBES), are endemic to that area.

Acknowledgements.

I express my thanks to TORBEN WOLFF of the Zoological Museum, Copenhagen, who placed this collection at my disposal and answered my questions concerning it. I am indebted to ISABELLA GORDON of the Museum (Natural History) and to FENNER A. CHACE, Jr., of the American Museum, for information; and to HENRIQUE RODRIGUES of the Instituto Oceanográfico, University of São Paulo, Brazil, for his help to include a Brazilian specimen in the description of the new species. Thanks are also due to the administration of the Allan Hancock Foundation for the use of laboratory space.

Account of the Species.

Genus *Orthochela* Glassell, 1936.

is an endemic west American genus, with a single known

Orthochela pumila Glassell.

Orthochela pumila, Haig, 1960, p. 14, pl. 18, fig. 1.

Material: Taboga Island (Panama). Rocky shore; washed from gorgonids. Jan. 10, 1916. TH. MORTENSEN. About 100 specimens.

Taboga Island. From fan coral, 4-5 fathoms. Feb. 8, 1916. TH. MORTENSEN. 58 specimens.

Taboguilla Island (Panama). From gorgonids, about 3 fathoms. Nov. 27, 1915. TH. MORTENSEN. 154 specimens.

Remarks: Crabs of this species are obligatory commensals on fan corals. They range throughout the entire tropical eastern Pacific region, from northern Gulf of California to Ecuador.

Genus *Parapetrolisthes*, n. g.

Type species: *Petrolisthes tortugensis* Glassell, 1945.

Diagnosis: Carapace transversely striate, with frontal, epibranchial, and mesobranchial spinules. Eyes large, retractile. Basal segment of antenna very short, not produced forward to meet anterior margin of carapace; movable segments with free access to orbit. Basal segment of antennule large, broad, its anterior margin armed with broad teeth or spines visible in dorsal view. Chelipeds long and slender, unequal in size, with strongly spined anterior and posterior margins. Fingers deeply grooved along cutting edges, spooned and truncate at tips; cutting edge of dactyl of larger chela with compressed, truncate teeth. Walking legs long and slender; dactylus ending in a simple claw, with small movable accessory spinules on posterior margin. Telson of abdomen with seven plates.

Remarks: The form described by GLASSELL (1945, p. 228, text-fig. 2) as *Petrolisthes tortugensis* differs sharply, in the structure of the fingers of the chelipeds, from other known porcellanids referred to genus *Petrolisthes*. In order to emphasize its distinctiveness and in the interest of taxonomic clarity, a new genus to accomodate it is hereby proposed. When the entire *Petrolisthes*-complex can be revised on a worldwide basis, it may prove feasible to group the species into a number of subgenera, among which *Parapetrolisthes* would perhaps be included.

GLASSELL (1945) noted that his species bears some resemblance to those placed in *Petrocheles* MIERS. However, the two species belonging to that genus differ from *Parapetrolisthes tortugensis* in a number of characters, including the structure of the fingers.



Fig. 1. *Parapetrolisthes tortugensis* (Glassell). Basal segment of right antennule.

Parapetrolisthes tortugensis (Glassell), n. comb. Fig. 1.

Petrolisthes tortugensis, Haig, 1956, p. 22.

Material: All the following localities are in the Virgin Islands:

Off Currents Hole, east of St. Thomas. 14 fathoms. Mar. 16, 1906. TH. MORTENSEN. 1 ♂, 1 ♀ ovig.

Off west end of Thatch Cay, northeast of St. Thomas. 14–16 fathoms. Mar. 12, 1906. TH. MORTENSEN. 1 ♀ ovig.

Off Whistling Island, St. John. About 16 fathoms. Mar. 17, 1906. TH. MORTENSEN. 2 ♂♂, 1 ♀ ovig.

Off Ram Head, St. John. About 18 fathoms. Dec. 21, 1906. TH. MORTENSEN. 2 ♂♂, 1 ♀.

Between Jost van Dyke and Loango. 16 fathoms. Mar. 13, 1906. TH. MORTENSEN. 1 ♀ ovig.

Between east end of St. John and Tortola Island. About 22 fathoms. Mar. 9, 1906. TH. MORTENSEN. 5 ♂♂, 2 ♀♀ (1 ovig.).

Remarks: This species was previously known from only two localities: in and around Dry Tortugas, Florida, and off Isla La Tortuga, Venezuela. The bathymetric range is low water to 22 fathoms.

Genus *Petrolisthes* Stimpson, 1858.

This is a genus of worldwide distribution and with a very large number of species. There are 44 New World species currently recognized, 16 of which are represented in the Copenhagen Museum collections.

Petrolisthes agassizii Faxon.

Petrolisthes agassizii, Haig, 1960, p. 32, pl. 20, fig. 4.

Material: Melones Island (Panama). 3–5 fathoms. Dec. 15, 1915. TH. MORTENSEN. 1 ♂.

Taboguilla Island (Panama). 3 fathoms. Sand. Nov. 29, 1915. TH. MORTENSEN. 2 ♀♀ (1 ovig.).

Taboguilla Island. About 5 fathoms. Sand and shell. December, 1915. TH. MORTENSEN. 1 ♂.

Remarks: This species is known from Mazatlán at the southern end of the Gulf of California, Mexico, south to Bahía Utría, Colombia.

Petrolisthes edwardsii (Saussure).

Petrolisthes edwardsii, Haig, 1960, p. 33, pl. 21.

Material: Taboga Island (Panama). Shore, low water. October, 1915. TH. MORTENSEN. 1 ♂, 2 ♀♀ (1 ovig.).

Taboga Island. Rocky shore. Nov. 21, 1915. TH. MORTENSEN. 1 ♂.

Taboga Island. From coral. Dec. 11, 1915. TH. MORTENSEN. 1 ♂.

Contadora Island, Perlas Islands (Panama). 10 fathoms. Stones, Lithothamnion. Jan. 28, 1916. TH. MORTENSEN. 1 juv.

Southwest of the south point of Isla del Rey, Perlas Islands. 10–15 fathoms. Sand and shell. Jan. 26, 1916. TH. MORTENSEN. 1 ♀ ovig.

Southwest of the south point of Isla del Rey. 15 fathoms. Muddy sand. Jan. 27, 1916. TH. MORTENSEN. 1 ♂, 1 ♀ (both juv.).

Remarks: Occurs throughout the tropical eastern Pacific, including the Galapagos Islands. It has been found intertidally and to depths of about 20 fathoms.

Petrolisthes galathinus (Bosc).

Petrolisthes galathinus, Haig, 1956, p. 22; 1960, p. 36, pl. 19, fig. 4.

Material: St. Thomas (Virgin Islands). June 10, 1911. H. BLEGVAD. 1 ♂.

Water Island, St. Thomas. Dec. 3, 1910. H. BLEGVAD. 1 ♀.

St. Thomas. 3 ♂♂, 2 ♀♀ (1 ovig.).

Between Marie Bluff (St. John) and Great St. James (Virgin Islands). 14 fathoms. Mar. 10, 1906. TH. MORTENSEN. 1 ♂ (juv.).

The sound between St. John and Great St. James. 16 fathoms. Mar. 16, 1906. TH. MORTENSEN. 2 ♂♂ (1 juv.).

St. John. PROSCH. 2 ♀♀ (1 ovig.), plus 1 fragmented specimen.

Coral Bay, St. John. January, 1896. CHR. LEVINSSEN. 1 ♂, 1 juv.

Coral Bay. Mar. 10, 1906. TH. MORTENSEN. 3 ♂♂.

St. Croix (Virgin Islands). KR. ØRSTED. 1 ♂, 2 ♀♀ ovig.

Christianssted Harbor, St. Croix. Coral reef. Jan. 11, 1906. TH. MORTENSEN. 1 ♀.

Christianssted Harbor. Mar. 3, 1906. TH. MORTENSEN. 1 ♀ ovig.

Long Reef, south side of St. Croix. Feb. 14, 1906. TH. MORTENSEN. 1 ♂, 1 ♀.

Probably St. Croix. 1892. K. LEVINSSEN. 1 juv.

- "Danish West Indies." Dec. 15, 1911. C. MENG. 4 ♂♂, 1 ♀ ovig.
 Tobago Island (British West Indies). Coral reef. April, 1916. TH. MORTENSEN. 2 ♂♂.
 Harbor of Bahia (now Salvador), Brazil. 1863. ANDREA. 1 ♀ ovig.
 Venado Beach (Pacific Panama). Under stones at low tide. Jan. 7, 1916. TH. MORTENSEN. 1 ♂.

Remarks: This species has been extensively collected in the western Atlantic, where it occurs from off Cape Hatteras, North Carolina, south to Rio de Janeiro and Ilha Trindade, Brazil, intertidally and in depths to 27 fathoms. It is also known from the vicinity of Panama City on the Pacific American coast, and from one locality each in Costa Rica and Ecuador.

Petrolisthes glasselli Haig.

Petrolisthes glasselli, Haig, 1960, p. 39, pl. 20, fig. 2.

Material: Taboga Island (Panama). From coral. November-December, 1915. TH. MORTENSEN. 1 ♂, 2 ♀♀ ovig.

Taboga Island. From coral. Dec. 11, 1915. TH. MORTENSEN. 1 ♀, 1 juv.

Remarks: This species ranges throughout most of the tropical eastern Pacific, from the southern end of the Gulf of California, Mexico, southward to Colombia. It also occurs in the Galapagos Islands. It has been collected in the littoral and to a depth of 4 fathoms, and is nearly always associated with corals.

Petrolisthes polymitus Glassell.

Petrolisthes polymitus, Haig, 1960, p. 41, pl. 22, fig. 1.

Material: Taboga Island (Panama). From coral. Dec. 11, 1915. TH. MORTENSEN. 1 ♂, 1 ♀ ovig.

Remarks: Ranges throughout the tropical eastern Pacific, from the Gulf of California, Mexico, southward to Ecuador and the Galapagos Islands. It has been taken intertidally and in depths to 4 fathoms.

Petrolisthes marginatus Stimpson.

Petrolisthes marginatus, Haig, 1956, p. 26. (Not Pacific records.)

Material: St. Thomas (Virgin Islands). 1 ♂, 1 ♀.

"Danish West Indies." Dec. 15, 1911. C. MENG. 4 ♂♂, 2 ♀♀ (1 ovig.).

Remarks: BOSCHMA (1931, p. 374) reported a specimen of this species collected by Dr. MORTENSEN at Tobago Island, British West Indies, in

April, 1916, and parasitized with a rhizocephalan, *Lernaeodiscus porcellanae* Müller. This specimen was not included in the material sent to me for identification.

Porcellanids from the eastern Pacific reported as *Petrolisthes marginatus* belong to a separate species (see below). *P. marginatus*, therefore, is restricted to the western Atlantic, and is known only from the following Caribbean localities: Puerto Rico; Barbados; Curaçao; and Tobago Island. It is now reported for the first time from the Virgin Islands.

Petrolisthes, sp.

Petrolisthes marginatus, Haig, 1960, p. 47, pl. 20, fig. 1. Not *P. marginatus* Stimpson.

Material: Taboga Island (Panama). Shore, low water. October, 1915. TH. MORTENSEN. 2 ♂♂.

Taboga Island. From coral. November-December, 1915. TH. MORTENSEN. 6 ♂♂, 14 ♀♀ (12 ovig.).

Taboga Island. From coral. Dec. 11, 1915. TH. MORTENSEN. 24 ♂♂, 30 ♀♀ (28 ovig.), 1 juv.

Taboga Island. 4-5 fathoms. Sand, stones. Feb. 8, 1916. TH. MORTENSEN. 1 ♀ ovig.

Taboguilla Island (Panama). From gorgonids, about 3 fathoms. Nov. 27, 1915. TH. MORTENSEN. 1 ♂.

Southwest of the south point of Isla del Rey, Perlas Islands (Panama). 10-15 fathoms. Sand and shell. Jan. 26, 1916. TH. MORTENSEN. 1 ♀ ovig.

Remarks: Pacific American porcellanids formerly referred to *Petrolisthes marginatus* Stimpson will be described as a new species in a forthcoming paper by F. A. CHACE, Jr.

Petrolisthes amoenus (Guérin).

Petrolisthes amoenus, Haig, 1956, p. 25. Chace, 1956, p. 152.

Material: 2 kilometers south of Sandy Point, St. Croix (Virgin Islands). 5 fathoms. Feb. 2, 1906. TH. MORTENSEN. 1 ♀ ovig.

"Danish West Indies." Dec. 15, 1911. C. MENG. 1 ♀ ovig.

Tobago Island (British West Indies). Coral reef. April, 1916. TH. MORTENSEN. 1 ♂, 4 ♀♀ (2 ovig.).

Remarks: This species has been reported from Cuba, Puerto Rico, Barbados, Curaçao, Bonaire, Gran Roque (Venezuela), and Tobago Island; the above records are the first from the Virgin Islands. *Petrolisthes serratus*

Henderson is a synonym. Under the latter name the species has been reported from Brazil, as far south as the state of Bahia. The bathymetric range is shore to 20 fathoms.

Petrolisthes armatus (Gibbes).

Petrolisthes armatus, Haig, 1956, p. 19; 1960, p. 50, pl. 19, fig. 2.

Material: Bermudas. 1858. 2 ♂♂.

St. Thomas (Virgin Islands). 3 ♂♂.

St. Thomas. 1877. EGGERS. 2 ♂♂.

Cotinguiba (Brazil). HYGOM. 1 ♀.

Rio de Janeiro (Brazil). 1863. WARMING. 1 ♂.

Sepetiba (Brazil). BØVING-PETERSEN. 1 ♂, 2 ♀♀.

Panama (Pacific side). Tidal zone. Sept. 11, 1938. P. HEEGAARD. 1 ♀ ovig.

Isla del Rey, Perlas Islands (Panama). High tide, sandy beach. Jan. 5, 1934. "MONSUNEN". 3 ♂♂.

Remarks: This is the most widely distributed New World porcellanid. It is found throughout the tropical regions of western and eastern America and the west coast of Africa, and is the only porcellanid known from the Bermudas and Ascension Island in the Atlantic Ocean.

? *Petrolisthes armatus*.

Material: Havana, Cuba. 1860. HYGOM. 72 juv.

Remarks: These specimens are very small and it is impossible to make a positive identification; however, in certain features they agree with *P. armatus*.

Petrolisthes politus (Gray).

Petrolisthes politus, Haig, 1956, p. 21; 1960, p. 56.

Material: St. Thomas (Virgin Islands). 1 ♂, 2 ♀♀.

St. John (Virgin Islands). Rocky shore. Apr. 1, 1906. TH. MORTENSEN. 2 ♀♀ ovig.

Long Point, south side of St. Croix (Virgin Islands). Under stones. Feb. 12, 1906. TH. MORTENSEN. 2 ♂♂, 1 ♀ ovig.

Long Point Bay. Stones. Aug. 12, 1906. TH. MORTENSEN. 1 ♀.

"Danish West Indies." Dec. 15, 1911. C. MENG. 1 ♂.

Remarks: This species is known from the Florida Keys, the Gulf of Mexico, and a number of localities in the Caribbean Sea. It is commonly found intertidally, but was once reported from a depth of 110 fathoms.

Petrolisthes eriomerus Stimpson.

Petrolisthes eriomerus, Haig, 1960, p. 74, pl. 26, fig. 4.

Material: Dodds Narrows, Nanaimo (British Columbia). Shore at low tide. June 28, 1915. TH. MORTENSEN. 7 ♂♂, 3 ♀♀ ovig.

Departure Bay, Nanaimo. Shore at low tide. June 3, 1915. TH. MORTENSEN. 1 ♀ ovig.

Remarks: An eastern Pacific north-temperate species, known from the Queen Charlotte Islands, British Columbia, south to La Jolla, California. The bathymetric range is shore to 47 fathoms.

Petrolisthes tridentatus Stimpson.

Petrolisthes tridentatus, Haig, 1956, p. 18; 1960, p. 81, pl. 25, fig. 4.

Material: St. Thomas (Virgin Islands). 1 ♀.

St. John (Virgin Islands). Feb. 1, 1892. MEINERTZ. 1 ♀ ovig.

St. Croix (Virgin Islands). ØRSTED. 1 ♀ ovig.

Without data. 1 ♂, 2 ♀♀.

Remarks: This species occurs on both sides of the American continents. In the Atlantic it has been reported from a number of localities throughout the Caribbean area; in the Pacific it is known from Costa Rica to Ecuador.

Petrolisthes quadratus Benedict.

Petrolisthes quadratus, Haig, 1956, p. 18; 1960, p. 87.

Material: Loango, northwest of St. John (Virgin Islands). From algae along shore. Mar. 17, 1906. TH. MORTENSEN. 1 ♂, 1 ♀ ovig.

Loango. From rockpool. Mar. 18, 1906. TH. MORTENSEN. 1 ♂.

Long Point, south side of St. Croix (Virgin Islands). On and under stones. Feb. 12, 1906. TH. MORTENSEN. 2 ♂♂, 1 ♀ (juv.).

Remarks: Known only from a few Caribbean localities. The above records are the first from the Virgin Islands.

Petrolisthes cabrilloi Glassell.

Petrolisthes cabrilloi, Haig, 1960, p. 88, pl. 26, fig. 3.

Material: San Pedro (California). Shore, among algae. Sept. 22, 1915. TH. MORTENSEN. 1 ♂.

La Jolla (California). Shore. Aug. 25, 1915. TH. MORTENSEN. 4 ♂♂, 3 ♀♀, 7 juv.

Bird Rock, La Jolla. Rocky shore. Aug. 27, 1915. TH. MORTENSEN. 1 juv.

Remarks: This is one of the commoner porcellanids in the warmer portion of the eastern Pacific north-temperate region. The known range is Morro Bay, California, south to Bahía de la Magdalena, Baja California, Mexico.

Petrolisthes granulosus (Guérin).

Petrolisthes granulosus, Haig, 1960, p. 94, pl. 28, fig. 1.

Material: Valparaiso, Chile. 1 ♂.

Remarks: The known range of this species is Paita, Peru, south to Bahía de San Vicente, Chile. It is a common member of the eastern Pacific south-temperate fauna.

Petrolisthes jugosus Streets.

Pisosoma jugosum, Haig, 1956, p. 16.

Petrolisthes jugosus, Haig, 1960, p. 122.

Material: Harbor, St. Thomas (Virgin Islands). 1864. 1 ♀ ovig., 1 juv. St. Thomas. December, 1895. CHR. LOEFTING. 1 ♀.

St. Thomas, coral reef at entrance to harbor. Dec. 21, 1910. H. BLEGVAD. 3 ♂♂.

St. Thomas. 18 ♂♂, 12 ♀♀ (10 ovig.).

Long Point, south side of St. Croix (Virgin Islands). On and under stones. Feb. 12, 1906. TH. MORTENSEN. 1 ♀ ovig.

Long Reef, south side of St. Croix. Feb. 14, 1906. TH. MORTENSEN. 3 ♂♂, 3 ♀♀ (2 ovig.).

"Danish West Indies." Dec. 15, 1911. C. MENG. 11 ♂♂, 8 ♀♀ ovig.

Tobago Island (British West Indies). Coral reef. April, 1916. TH. MORTENSEN. 1 ♂, 1 ♀ ovig.

Remarks: This species is known from a number of localities in the Caribbean area.

? *Petrolisthes jugosus*.

Material: Without locality. June 15, 1942. LIEBMANN. 2 ♂♂.

Remarks: These two specimens are very likely *Petrolisthes jugosus*. The latter species, however, is separable by very minor characters from its eastern Pacific congener, *P. hians* Nobili; without knowing where the specimens were collected I hesitate to assign them positively to the Caribbean form.

Genus *Neopisosoma* Haig, 1960.

Three west American and two east American species are included in this genus. The two eastern forms are represented in the present collection.

Neopisosoma curacaoense (Schmitt).

Pisosoma curacaoense, Haig, 1956, p. 15.

Neopisosoma curacaoense, Haig, 1960, p. 126.

Material: St. Thomas (Virgin Islands). 5 ♂♂, 3 ♀♀ (2 ovig.).

Long Point Bay, St. Croix (Virgin Islands). Under stones. Aug. 12, 1906.

TH. MORTENSEN. 1 ♂, 1 ♀ ovig.

"Danish West Indies." Dec. 15, 1911. C. MENG. 1 ♀ ovig.

Remarks: Apparently restricted to the Caribbean area. The above records are the first from the Virgin Islands; the species was previously reported from Puerto Rico, Curaçao, Bonaire, Aruba, and Isla La Tortuga.

Neopisosoma angustifrons (Benedict).

Pisosoma angustifrons, Haig, 1956, p. 15.

Neopisosoma angustifrons, Haig, 1960, p. 131.

Material: Loango, northwest of St. John (Virgin Islands). Rockpool. Mar. 18, 1906. TH. MORTENSEN. 1 juv.

"Danish West Indies." Dec. 15, 1911. C. MENG. 4 ♂♂, 6 ♀♀ (5 ovig.).

Remarks: This species is restricted to the Caribbean, and was previously reported from Guadeloupe, Curaçao, Bonaire, Trinidad, Isla La Tortuga, and Isla Cubagua. It is now recorded from the Virgin Islands.

Genus *Pachycheles* Stimpson, 1858.

This genus is of worldwide distribution. It is represented in the eastern and western Americas by about two dozen species, nine of which are included in the Copenhagen Museum collections.

Pachycheles serratus (Benedict).

Pachycheles serratus, Haig, 1956, p. 8; 1960, p. 140.

Material: St. Thomas (Virgin Islands). December, 1895. CHR. LOEF-
TING. 1 ♂.

St. Thomas. 3 ♂♂, 2 ♀♀ ovig.

Remarks: *Pachycheles serratus* was previously known only from three Caribbean localities: Puerto Rico; St. Thomas, Virgin Islands; and Bahía Caledonia, Panama.

Pachycheles ackleianus A. Milne Edwards.

Pachycheles ackleianus, Haig, 1956, p. 13; 1960, p. 143.

Material: Between east end of St. John and Tortola Island (Virgin Islands). About 22 fathoms. Mar. 9, 1906. TH. MORTENSEN. 1 ♀ ovig.

"West Indies." SUENSON. 4 ♂♂, 3 ♀♀ (2 ovig.).

Remarks: This species is widely distributed in the Gulf of Mexico and Caribbean Sea, and has been reported to a depth of 37 fathoms.

Pachycheles riisei (Stimpson).

Pachycheles riisei, Haig, 1956, p. 12.

Material: "Danish West Indies." Dec. 15, 1911. C. MENG. 1 ♂.

Tobago Island (British West Indies). Coral reef. April, 1916. TH. MORTENSEN. 1 ♀ ovig.

Remarks: Ranges from Key West, Florida, through the Caribbean area and south to Alagoas and Ilha Trindade, Brazil.

Pachycheles pilosus (H. Milne Edwards).

Pachycheles pilosus, Haig, 1956, p. 11; 1960, p. 154.

Material: St. Thomas (Virgin Islands). 1 ♂, 2 ♀♀ ovig.

"Danish West Indies." Dec. 15, 1911. C. MENG. 14 ♂♂, 11 ♀♀.

Tobago Island (British West Indies). Coral reef. April, 1916. TH. MORTENSEN. 2 ♂♂.

Without data. 1 ♂.

Remarks: *Pachycheles pilosus* occurs as far north as Charleston, South Carolina, and is distributed throughout the Caribbean area. It has been taken intertidally and to a depth of 4 fathoms.

Pachycheles panamensis Faxon.

Pachycheles panamensis, Haig, 1960, p. 155, pl. 33, fig. 1.

Material: Puntarenas (Costa Rica). ØRSTED. 1 ♂, 1 ♀ ovig.

Venado Beach (Panama). Under stones at low tide. Jan. 7, 1916. TH. MORTENSEN. 1 ♂.

Remarks: Distributed throughout the tropical eastern Pacific region, from the Gulf of California, Mexico, to southern Ecuador. An intertidal species, occasionally taken in depths to 4 fathoms.

Pachycheles monilifer (Dana).

Pachycheles monilifer, Haig, 1956, p. 13; 1960, p. 160, pl. 33, fig. 4.

Material: St. Thomas (Virgin Islands). 1860. 19 ♂♂, 15 ♀♀ (11 ovig.).

St. Thomas. December, 1895. CHR. LOEFTING. 1 ♀.

St. Thomas. 1 ♂, 5 ♀♀ (3 ovig.), 1 juv.

Loango, northwest of St. John (Virgin Islands). Rockpool. Mar. 18, 1906.

TH. MORTENSEN. 1 ♂, 1 ♀.

Remarks: The range of this species is Florida to Brazil, from shore to 18 fathoms; there is a doubtful record from Ecuador in the eastern Pacific. The material listed above is the first to be reported from the Virgin Islands.

Pachycheles pubescens Holmes.

Pachycheles pubescens, Haig, 1960, p. 162, pl. 34, fig. 3.

Material: Redondo, California. 30 fathoms. Sandy mud. Sept. 25, 1915.

TH. MORTENSEN. 1 juv.

Remarks: *Pachycheles pubescens* is distributed throughout most of the eastern Pacific north-temperate region, from northern British Columbia south to Baja California, Mexico. It occurs intertidally in the northern part of its range, and in depths to 30 fathoms in the southern part.

Pachycheles rudis Stimpson.

Pachycheles rudis, Haig, 1960, p. 170, pl. 34, fig. 1.

Material: Bird Rock, La Jolla, California. Rocky shore. Aug. 27, 1915.

TH. MORTENSEN. 4 ♂♂, 5 ♀♀ ovig.

Remarks: This species occurs abundantly throughout the eastern Pacific north-temperate region; it is known from Kodiak, Alaska, south to Bahía de la Magdalena, Baja California, Mexico. It is a littoral form but has occasionally been taken in depths to 16 fathoms.

Pachycheles holosericus Schmitt.

Pachycheles holosericus, Haig, 1960, p. 173, pl. 34, fig. 2.

Material: La Jolla, California. Shore. Aug. 25, 1915. TH. MORTENSEN.

1 ♂, 4 ♀♀.

Bird Rock, La Jolla. Rocky shore. Aug. 27, 1915. TH. MORTENSEN. 1 ♂.

Remarks: *Pachycheles holosericus* is restricted to the warmer portion of the eastern Pacific north-temperate region; its known range is Santa Barbara, California, to Bahía de la Magdalena, Baja California, Mexico.

Genus *Clastotoechus* Haig, 1960.

This genus contains three species, one from the eastern Pacific and two from the western Atlantic. One of the latter is represented in the present collection.

Clastotoechus vanderhorsti (Schmitt).

Petrolisthes vanderhorsti, Haig, 1956, p. 27.

Clastotoechus vanderhorsti, Haig, 1960, p. 178.

Material: St. Thomas (Virgin Islands). 1 ♀.

Long Point Bay, St. Croix (Virgin Islands). Under stones. Aug. 12, 1906. TH. MORTENSEN. 1 ♂.

"Danish West Indies." Dec. 15, 1911. C. MENG. 2 ♂♂, 1 ♀ ovig.

Remarks: Previously known only from the southern portion of the Caribbean Sea, from the islands of Curaçao, Bonaire, and Cubagua. The range of the species is now extended northward to the Virgin Islands.

Genus *Allopetrolisthes* Haig, 1960.

This genus contains three eastern Pacific south-temperate species, only one of which is represented in the Copenhagen Museum collections.

Allopetrolisthes spinifrons (H. Milne Edwards).

Allopetrolisthes spinifrons, Haig, 1960, p. 185, pl. 35, fig. 3.

Material: Cobija, "Bolivia" (now Chile). "GALATHEA" 1845-47 Expedition. 1 ♀.

Valparaiso, Chile. March, 1841. S. KRÖYER. 1 ♀ ovig.

Remarks: This species is distributed from San Lorenzo, Peru, south to San Vicente, Chile, in the littoral and to 12 fathoms.

Genus *Minyocerus* Stimpson, 1858.

This genus contains two species, one from the western Atlantic and one from the eastern Pacific. They are obligatory commensals with echinoderms, particularly sea stars of genus *Luidia*.

Minyocerus angustus (Dana).

Minyocerus angustus, Haig, 1956, p. 30; 1960, p. 196. Holthuis, 1959, p. 161.

Material: Cotinguiba (Cuntinguiba), Brazil. HYGOM. 1 ♀ ovig.

Remarks: This species is reported from the southern Caribbean Sea; Suriname; and Brazil south to Desterro (Florianopolis). It has been found associated with *Luidia clathrata* (Say).

Minyocerus kirki Glassell.

Minyocerus kirki, Haig, 1960, p. 193, pl. 37, fig. 1.

Material: Realejo, Nicaragua. ØRSTED. 1 ♂, 2 ♀♀ (1 ovig.).

Remarks: Known from the northern part of the Gulf of California, Mexico, and from Golfo de Fonseca (El Salvador and Nicaragua). The above record is a slight extension of range southward. It has been found associated with *Luidia columbia* (Gray), *L. phragma* H. L. Clark, *L. foliolata* Grube, and at least one species of serpent star.

Genus *Porcellana* Lamarck, 1801.

Four species are represented in the present collection, one from eastern and three from western America.

Porcellana paguriconviva Glassell.

Porcellana paguriconviva, Haig, 1960, p. 203, pl. 38, fig. 1.

Material: Taboga Island (Panama). 4–5 fathoms. Sand, stones. Feb. 8, 1916. TH. MORTENSEN. 1 ♀.

Taboguilla Island (Panama). About 3 fathoms. From gorgonids. Nov. 27, 1915. TH. MORTENSEN. 3 ♂♂.

Taboguilla Island. 3 fathoms. Sand. Nov. 29, 1915. TH. MORTENSEN. 1 ♂.

Remarks: *Porcellana paguriconviva* has been known in the tropical eastern Pacific from the Gulf of California, Mexico, south to Costa Rica. The material collected by Dr. MORTENSEN extends the known range to Panama. The vertical range is 0–50 fathoms. The species is sometimes found associated with hermit crabs.

Porcellana hancocki Glassell.

Porcellana hancocki, Haig, 1960, p. 198, pl. 38, fig. 3.

Material: South of San José Island, Pearl Islands, Panama. 35 fathoms. Mud and shell. Jan. 24, 1916. TH. MORTENSEN. 1 ♂.

Remarks: This species was previously known only from three localities in the Gulf of California, Mexico; on the basis of the specimen listed above the range is now extended southward to Panama. *Porcellana hancocki* has been collected in 25–40 fathoms.

Porcellana sayana (Leach).

Porcellana sayana, Haig, 1956, p. 31; 1960, p. 202. Holthuis, 1959, p. 161.

Material: St. Thomas (Virgin Islands). RIISE. 1 ♀.

St. Thomas. 1 ♀ ovig.

North of Thatch Cay (northeast of St. Thomas). 16–20 fathoms. Apr. 15, 1906. TH. MORTENSEN. 1 ♂.

Off west end of Thatch Cay. 14–16 fathoms. Mar. 12, 1906. TH. MORTENSEN. 1 ♂.

North of Loango, northwest of St. John (Virgin Islands). 15–18 fathoms. December, 1905. TH. MORTENSEN. 3 ♂♂, 1 ♀, 2 juv.

Off Cruz Bay, St. John. About 15 fathoms. Mar. 9, 1906. TH. MORTENSEN. 1 ♂, 3 ♀♀.

Off Frederikssted, St. Croix (Virgin Islands). 5–10 fathoms. Sand. Jan. 22, 1906. TH. MORTENSEN. 2 ♀♀.

Frederikssted. Jan. 25, 1906. TH. MORTENSEN. 2 ♂♂.

"Danish West Indies." Dec. 15, 1911. C. MENG. 1 ♂.

Between Tobago and Jost van Dyke (British West Indies). 20 fathoms. Mar. 13, 1906. TH. MORTENSEN. 2 ♂♂, 1 juv.

"West Indies." BROSCHE. 1 ♂.

"West Indies." SUENSON. 2 ♀♀ ovig.

Harbor of Bahia (now Salvador), Brazil. Aug. 25, 1863. ANDREA. 1 ♂.

Without locality. FORCHHAMMER. 1 ♂, 3 ♀♀ (2 ovig.).

Without data. 1 ♂.

Remarks: *Porcellana sayana* occurs as far north as Cape Hatteras, North Carolina, and is distributed throughout the Gulf of Mexico and Caribbean. HOLTHUIS (1959) reported it from off Suriname. The specimen collected by ANDREA, listed above, is the first to be reported from Brazil, but I have seen others. *Porcellana frontalis* Heller is almost certainly a synonym of *P. sayana*; if examination of the type specimen proves this to be true, the species extends at least as far south as the state of São Paulo in Brazil. The bathymetric range is from shallow water to about 50 fathoms, with one doubtful record of 390 fathoms. Crabs of this species are frequently found associated with pagurids.

Porcellana cancrisocialis Glassell.

Porcellana cancrisocialis, Haig, 1960, p. 200, pl. 38, fig. 2.

Material: Taboga Island (Panama). 4-5 fathoms. Sand, stones. Feb. 8, 1916. TH. MORTENSEN. 3 ♂♂, 7 ♀♀ ovig., 2 juv.

Taboguilla Island (Panama). 2-5 fathoms. Shell, sand. Nov. 22, 1915. TH. MORTENSEN. 1 ♀ ovig.

Taboguilla Island. From gorgonids, about 3 fathoms. Nov. 27, 1915. TH. MORTENSEN. 3 ♂♂, 3 ♀♀.

Taboguilla Island. 3 fathoms. Sand. Nov. 29, 1915. TH. MORTENSEN. 2 ♀♀ ovig.

Taboguilla Island. About 5 fathoms. Sand and shell. December, 1915. TH. MORTENSEN. 1 ♀ ovig.

Isla San José, Perlas Islands (Panama). 25 fathoms. Mud. Jan. 27, 1916. TH. MORTENSEN. 2 ♂♂, 3 ♀♀ (1 ovig.).

South of Isla San José. 26 fathoms. Mud, sand. Jan. 26, 1916. TH. MORTENSEN. 1 ♂.

Southwest of the south point of Isla del Rey, Perlas Islands. 15 fathoms. Muddy sand. Jan. 27, 1916. TH. MORTENSEN. 2 ♂♂, 2 ♀♀ ovig.

Remarks: This species is distributed throughout the tropical eastern Pacific region, intertidally and in depths to 54 fathoms. It has been found associated with hermit crabs.

Genus *Pisidia* Leach, 1820.

This genus, as presently understood (see HAIG, 1960, p. 207), is represented in the Americas by the following eastern Pacific species.

Pisidia magdalenensis (Glassell).

Pisidia magdalenensis, Haig, 1960, p. 209, pl. 38, fig. 4.

Material: Realejo (Nicaragua). ØRSTED. 1 ♀ ovig.

Puntarenas (Costa Rica). ØRSTED. 2 ♀♀ ovig.

Melones Island (Panama). 3-5 fathoms. Dec. 15, 1915. TH. MORTENSEN. 1 ♂.

Taboga Island (Panama). 5 fathoms. Mud. Nov. 16, 1915. TH. MORTENSEN. 1 ♂, 2 ♀♀ ovig.

Taboga Island. About 10 fathoms. Mud. Dec. 10, 1915. TH. MORTENSEN. 1 ♀ ovig.

Taboga Island. From coral. Dec. 11, 1915. TH. MORTENSEN. 3 ♂♂.

Taboga Island. Washed from sponge, 3 fathoms. Jan. 18, 1916. TH. MORTENSEN. 58 specimens.

Taboga Island. 4-5 fathoms. Sand, stones. Feb. 8, 1916. TH. MORTENSEN. 137 specimens.

Taboguilla Island (Panama). 2-5 fathoms. Shell, sand. Nov. 22, 1915. TH. MORTENSEN. 28 ♂♂, 19 ♀♀ (16 ovig.), 2 juv.

Taboguilla Island. 10 fathoms. Sand, shell. Nov. 23, 1915. TH. MORTENSEN. 10 ♂♂, 8 ♀♀ (6 ovig.).

Taboguilla Island. 3 fathoms. Sand, shell. Nov. 27, 1915. TH. MORTENSEN. 8 ♂♂, 6 ♀♀ ovig., 2 juv.

Taboguilla Island. From gorgonids, 3 fathoms. Nov. 27, 1915. TH. MORTENSEN. 5 ♂♂, 8 ♀♀ (5 ovig.).

Taboguilla Island. 3 fathoms. Sand. Nov. 29, 1915. TH. MORTENSEN. 179 specimens.

Taboguilla Island. About 5 fathoms. Sand and shell. December, 1915. TH. MORTENSEN. 34 ♂♂, 14 ♀♀ (11 ovig.), 2 juv.

Contadora Island, Perlas Islands (Panama). 8-10 fathoms. Stones, sand, Lithothamnion. Jan. 28, 1916. TH. MORTENSEN. About 100 specimens.

Southwest of the south point of Isla del Rey, Perlas Islands. 15 fathoms. Muddy sand. Jan. 27, 1916. TH. MORTENSEN. 1 ♂.

Remarks: *Pisidia magdalenensis* occurs throughout the tropical eastern Pacific, with the apparent exception of the Gulf of California, where it has not been collected. The bathymetric range is shore to 25 fathoms.

Genus *Megalobrachium* Stimpson, 1858.

This is a New World endemic genus, containing eleven known species, one of which is described herein.

Megalobrachium poeyi (Guérin).

Megalobrachium poeyi, Haig, 1956, p. 33; 1960, p. 214, pl. 39, fig. 1.

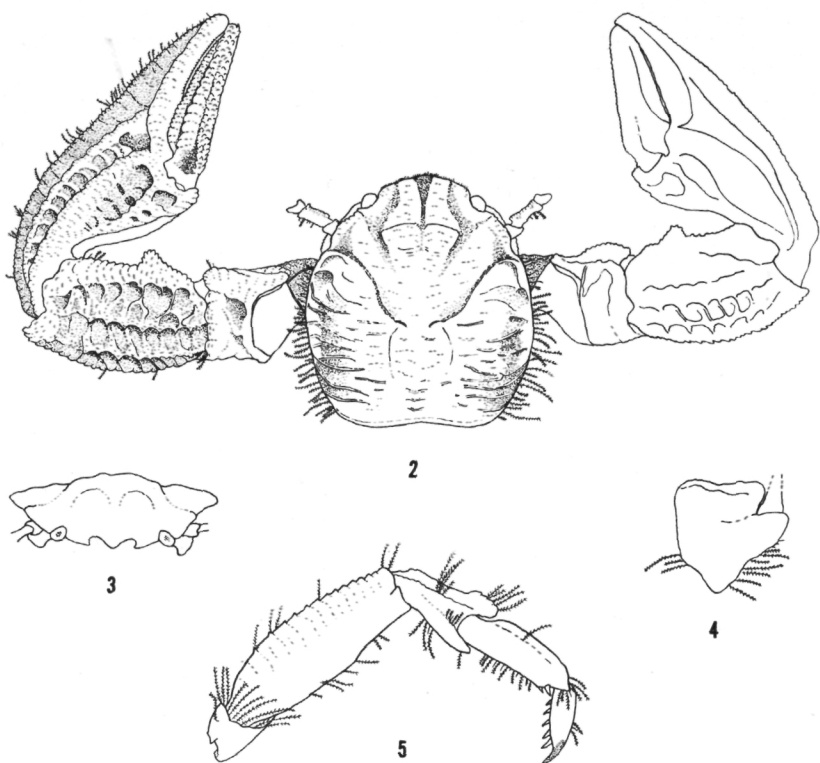
Material: St. Thomas (Virgin Islands). December, 1895. CHR. LOEF-
TING. 1 ♂ (juv.).

St. Thomas. 1 ♂, 1 ♀.

Tobago Island (British West Indies). April, 1916. Coral reef. TH. MOR-
TENSEN. 4 ♀♀.

Taboga Island (Pacific Panama). Shore, low water. October, 1915.
TH. MORTENSEN. 1 ♂, 1 ♀.

Taboga Island. Sandy shore. Feb. 3, 1916. TH. MORTENSEN. 1 ♂, 1 ♀.
Without data. 1 ♂, 6 ♀♀ (3 ovig.).



Figs. 2-5. *Megalobrachium mortenseni*, male holotype. Fig. 2, dorsal view, $\times 9.25$. Fig. 3, frontal view of carapace, $\times 8.75$. Fig. 4, basal segment of right antennule, $\times 32$. Fig. 5, right second walking leg, $\times 15$.

Remarks: This is one of the few species that are known to occur on both sides of the American continents. In the Atlantic, *Megalobrachium poeyi* is distributed throughout the Caribbean area; in the Pacific, it is known only from Costa Rica and Panama.

Megalobrachium mortenseni, n. sp. Figs. 2-5.

Holotype: West of Congo Cay (northwest of St. John), Virgin Islands. 14 fathoms. Mar. 15, 1906. TH. MORTENSEN. 1 ♂.

The following specimens are paratypes:

West of Thatch Island (north of St. John). 14-16 fathoms. Mar. 12, 1906. TH. MORTENSEN. 1 ♀.

"West Indies." 1866. KREBS. 1 ♂, 2 ♀♀ (1 ovig.).

Harbor of Bahia (now Salvador), Brazil. 1863. ANDREA. 1 ♂.

Arrecife da Lixa, Bahia, Brazil. February, 1957. L. PINNI NETO. 1 ♂.

Diagnosis: Carapace heavily eroded, with strong transverse ridges across lateral and posterior areas and large shallow pits along lateral margins; front with three teeth separated by broad U- or V-shaped notches; anterior margin of carpus with a narrow, strongly projecting lobe on proximal third, dorsal surface with longitudinal rows of pits; manus with longitudinal rows of pits; telson with seven plates.

Description: Carapace slightly broader than long, broadest at post-branchial level; lateral margins very slightly rounded. Surface heavily eroded, uneven; grooves marking the various regions deep, distinct; gastric regions elevated. Surface covered with high, distinct transverse ridges, most pronounced on posterior areas, giving carapace an eroded appearance; along anterolateral margins the depressions between these ridges taking the form of large, shallow, rounded pits. Metabranial regions smooth, without ridges. Surface bare or with traces of pubescence. Front strongly projecting beyond eyes, rounded or faintly trilobate in dorsal view; distinctly tridentate in frontal view, lateral lobes broad, truncate, and separated by broad U- or V-shaped notches from median lobe; latter triangular, rounded at tip, and somewhat narrower and more projecting than lateral lobes. Front rugose rather than eroded, its surface lightly pubescent; anterior margin with a fringe of short hairs.

First and second movable segments of antenna roughly granular; third more or less smooth; flagellum with minute hairs visible only under magnification. Surface of outer maxillipeds uneven, somewhat eroded.

Entire dorsal surface of chelipeds covered with small, coarse granules; ventral surface lightly to strongly rugose; margins crenulate, often appearing denticulate. Merus with a low, granular lobe on anterior margin; dorsal surface eroded. Carpus about 1.5 times as long as wide; proximal third of anterior margin occupied by a strongly projecting, narrow, granular lobe, its tip triangular or rounded; dorsal surface with four irregular longitudinal rows of large, deep pits, the two anterior rows separated from the two posterior rows by a high, broad, median longitudinal ridge; surface and margins with a few scattered plumose hairs. Manus broad, flattened; with three longitudinal crests on dorsal surface and a fourth along outer margin, these crests defined by broad grooves containing rows of pits similar to those of carpus; outer margin with a fringe of short plumose hairs. Fingers pitted and grooved, meeting for entire length in both chelipeds; inner margin of fingers lightly pubescent, with a row of small, close-set granules.

Walking legs slender, granular, and with scattered plumose hairs.

Anterior margin of merus, carpus, and propodus with a sharp crest. Carpus with two crests on dorsal surface.

Telson of abdomen seven-plated.

Measurements: Male holotype: length of carapace 3.9 mm, greatest width 3.6 mm. Paratypes: males, 3.0 to 5.5 mm in length; non-ovigerous females, 3.2 and 3.4 mm; ovigerous female, 4.9 mm.

Remarks: This species is very closely related to *Megalobrachium erosum* (Glassell), which occurs in the Gulf of California on the west coast of Mexico. *M. erosum* has an erosion pattern on the carapace and chelipeds very similar to that of the present species. It differs in the shape of the front, the lobes of which are much more deeply cut. In addition, the carpal lobe is broader at the base, more triangular, and less projecting than in *M. mortenseni*; and the walking legs have a very high, sharp crest on the anterior margin.

Genus *Ulloaia* Glassell, 1938.

Ulloaia is an endemic west American genus, containing a single species.

Ulloaia perpusillia Glassell.

Ulloaia perpusillia, Haig, 1960, p. 230, pl. 37, fig. 2; text-fig. 11.

Material: Taboga Island (Panama). Washed from sponge, 3 fathoms. Jan. 18, 1916. TH. MORTENSEN. 1 ♀.

Contadora Island, Perlas Islands (Panama). 8-10 fathoms. Stones, sand. Jan. 28, 1916. TH. MORTENSEN. 1 juv.

Remarks: Previously our entire knowledge of this peculiar little porcellanid has been based on three specimens from two localities: Punta Peñasco, Gulf of California, Mexico, and Puntarenas, Costa Rica. The collecting activities of Dr. MORTENSEN now provide two additional specimens; probably accidentally, for both were found while sorting a mass of other material. As I have already suggested (HAIG, 1960, p. 232), the species has probably been often overlooked and may not be so rare as it appears. The geographic range is extended southward to Panama, and the bathymetric range from 8 to 10 fathoms.

The female specimen from Taboga Island measures only 2.1 mm in standard length, but is fully mature; the previously known female was 2.9 mm in length. The characters noted for earlier specimens are also present in this individual, except that in the Taboga Island specimen the front is less deflexed and partially visible in dorsal view. In the juvenile specimen from Contadora Island, which is only 1.4 mm in length, the

front is much less sharply deflexed and the rostral process is fully visible in dorsal view. Because of the extremely small size of the specimen, other details were almost impossible to make out.

Genus *Polyonyx* Stimpson, 1858.

The genus *Polyonyx*, with more than 20 species, is represented by one species in the western Atlantic and by three in the eastern Pacific. One of the latter is included in the Copenhagen Museum collections.

Polyonyx nitidus Lockington.

Polyonyx nitidus, Haig, 1960, p. 239, text-fig. 12(2).

Material: Taboga Island (Panama). Sand beach, low water. Lives symbiotically in tubes with large *Chaetopterus*, usually two in each tube. Feb. 7, 1916. TH. MORTENSEN. 4 ♂♂, 4 ♀♀ ovig.

Taboguilla Island (Panama). About 5 fathoms. Sand and shell. December, 1915. TH. MORTENSEN. 1 ♀ ovig.

Remarks: *Polyonyx nitidus* was previously known only from the Gulf of California, Mexico; its range is now extended to Panama. It is also reported as a commensal for the first time. This, however, was to be expected, for its closest relatives are known to inhabit *Chaetopterus* tubes. The bathymetric range for the species is low water to 21 fathoms.

The largest specimen on record was the type (sex not specified), which was reported to be 7 mm in length and 10 mm in breadth. The largest male collected by Dr. MORTENSEN measures 6.9×9.6 mm; the largest ovigerous female, 8.1×12.4 mm.

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BIANCO LUNO A/S, KBL