

PONTONIINE SHRIMPS (DECAPODA: CARIDEA:
PALAEMONIDAE) OF THE NORTHWEST ATLANTIC.
I. THE GENUS *NEOPONTONIDES* HOLTHUIS, 1951, WITH THE
DESCRIPTION OF *N. CHACEI*, NEW SPECIES, AND THE
ERECTION OF *PSEUDOPONTONIDES*, NEW GENUS,
TO RECEIVE *N. PRINCIPIS* CRIALES, 1980

Richard W. Heard

A B S T R A C T

Based on examination of specimens from the Florida Keys and from museum collections, the described species of the genus *Neopontonides* Holthuis are briefly reviewed and *N. chacei*, new species, is described from shallow waters of the Caribbean area. *Neopontonides chacei* has symmetrical second pereopods, which distinguish it from the other described species of the genus. It is a symbiont of the gorgonian *Pseudopterogorgia americana*. Two hippolytid shrimps, *Hippolyte nicholsoni* Chace and *Tozeuma* sp., also were found associated with *P. americana*. The association of the Pacific species *N. dentiger* Holthuis with a gorgonian host is confirmed and *Leptogorgia setacea* is reported as a gorgonian host for *N. beaufortensis* Borradaile. Illustrations and a key for separating *N. beaufortensis*, *N. chacei*, and *N. dentiger* are presented. Based on the absence of an exopodal flagellum on maxilliped 1, distinctive differences in armature of antenna 2, and other morphological and ecological criteria, *N. principis* Criales cannot be accommodated by *Neopontonides* and a new genus *Pseudopontonides* is erected to receive it. The new genus appears to be most closely related to *Pontonides* Borradaile. The taxonomic status of *Pontonides* and *Pseudopontonides* is briefly discussed. An artificial key to these two genera and their species, and to other related genera that lack exopodal flagella on their first maxillipeds, is presented.

Three species of the pontoniine shrimp genus *Neopontonides* Holthuis, 1951, have been described. The type-species, *N. beaufortensis* (Borradaile, 1920) is a northwestern Atlantic species reported from North Carolina southward through the Gulf of Mexico and the Caribbean Sea (Williams, 1984). It has been reported as a commensal or an associate of the gorgonians *Leptogorgia virgulata* (Lamarck) and *Eunicea tourneforti* Milne Edwards and Haime (see Patton, 1972; Criales, 1980). A Pacific species, *N. dentiger* Holthuis, 1951, is currently known from Ecuador to the Gulf of California, Mexico (Wicksten, 1983). The third species, *N. principis*-Criales, 1980, was described from Curaçao, Dutch West Indies, where it was found associated with the antipatharian *Stichopathes gracilis* (Gray). Tsar-eva (1980) listed "*Neopontonides* sp." from a coral reef off Australia, but she gave neither description nor illustrations of the species.

Neopontonides belongs to a group of pontoniine genera (*Anchistioides* Paulson, 1875; *Balssia* Kemp, 1922; *Coutierea* Holthuis, 1951; *Hamodactyloides* Fujino, 1973; *Hamodactylus* Holthuis, 1952; *Lipkebe* Chace, 1969; *Mesopontonia* Bruce, 1967; *Miopontonia* Bruce, 1985; *Paratypton* Balss, 1914; *Pontonides* Borradaile, 1917; *Pseudocoutierea* Holthuis, 1951; *Veleronia* Holthuis, 1951; *Veleroniopsis* Gore, 1981; *Waldola* Holthuis, 1951) which is characterized by lacking an exopodal flagellum on the third maxilliped. The diagnosis of the genus *Neopontonides* presented here is modified from Holthuis (1951).

Neopontonides Holthuis, 1951

Diagnosis.—Rostrum well developed, with or without dorsal teeth (ventral teeth never present); blade compressed, reaching beyond basal segment of antennular

peduncle; base expanded laterally, unarmed, partially covering eyestalks. Antennal spine present, all other carapace spines or tubercles absent. Basal segment of antennular peduncle with distolateral margin armed with single tooth. Second maxilla with entire endite. First maxilliped having prominent caridean lobe with well-developed flagellum. Second and third maxillipeds without exopods, epipods present. Third maxilliped lacking arthrobranch. Pleura of abdominal somites 1–4 rounded. Exopod of uropod with well-developed movable spine between distolateral tooth and blade.

Holthuis (1951) erected the genus *Neopontonides* for *Pontonides beaufortensis* and *N. dentiger*. The type-species, *N. beaufortensis*, was originally placed in the genus *Periclimenes* Costa, 1844, by Borradaile (1920), but the absence of exopods on the second and third maxillipeds led Kemp (1922) to refer this species to the genus *Pontonides* Borradaile, 1917. When establishing *Neopontonides*, Holthuis (1951) distinguished it from *Pontonides* by the presence of a well-developed flagellum on the caridean lobe of the first maxilliped, the presence of an inner lacinia on the second maxilla, and the rostrum being compressed to form a relatively long blade with or without teeth.

While in the Florida Keys collecting shrimps associated with shallow-water gorgonians, I discovered several specimens of an apparently undescribed species of *Neopontonides* associated with *Pseudopterogorgia americana* (Gmelin). Additional specimens from several localities in the Caribbean region were discovered in the collections of the National Museum of Natural History (USNM).

***Neopontonides chacei*, new species**

Figs. 1A, 2, 3, 4B–D

Synonymy.—*Neopontonides beaufortensis*: Chace, 1972: 25.

Material Examined.—Holotype, ovigerous ♀ (USNM Cat. No. 205544), paratype ♂ (USNM Cat. No. 205545), reef just south of Marigot Bay, St. Lucia Island, in 4–6 m, Smithsonian-Bredin Caribbean Expeditions (Stations 52–59), 14 April 1959.—3 ♀♀ (1 ovigerous), same data as types, USNM Cat. No. 135528.—2 ovigerous ♀♀, Black's Point, Falmouth, Antigua, British West Indies, on *Pseudopterogorgia americana* in 2 m, D. V. Nicholson coll., 24 May 1959, USNM Cat. No. 103518.—1 ovigerous ♀, Carrie Bow Cay, Belize, forereef zone in 3 m, J. Norris and K. Norris colls., April 1977.—6 ♂♂, 3 ♀♀ (1 ovigerous), Looe Key, Florida, patch reef on *P. americana* in 5–7 m, D. L. Felder coll., 22 June 1984, USNM Cat. No. 205546.—1 ♂, 1 ovigerous ♀, Looe Key, Florida, patch reef on "gorgonians," D. L. Felder and J. W. Goy colls., 6 October 1983, USNM Cat. No. 205547.—4 ♂♂, 8 ♀♀ (6 ovigerous), Bahia Honda Key, Florida, on *P. americana* in 1–2 m, R. W. Heard coll., 11 April 1977.

Diagnosis.—Rostrum with 0–4 teeth posteriorly on raised carina; chelae of second pereiopods symmetrical; merus of pereiopods 3–5 lacking well-developed tubercle or keel-like swelling on distal flexor margin.

Description.—Small shrimps; adults 8–12 mm total length, 2.5–3.5 mm carapace length. Rostrum slender, straight, reaching to or just past distal margin of basal segment of antennular peduncle; blade laterally compressed anteriorly, broadening posteriorly to form slightly convex shelf over base of eyestalks; median carina on broadened base usually unarmed, rarely with 1–4 closely spaced teeth, remainder of rostrum unarmed (Figs. 1A, 4B). Carapace subcylindrical, slightly more depressed than compressed, armed only with small sharp antennal spine. Pleura of abdominal somites 1–5 rounded, entire; abdominal somite 6 approximately twice length of somite 5. Telson (excluding terminal spines) 2.6–2.8 times longer than wide, subequal in length to abdominal somite 6; anterior pair of lateral spines small, placed just posterior to midlength, posterior pair located nearer posterior margin of telson than to anterior pair; intermediate pair of terminal spines slightly

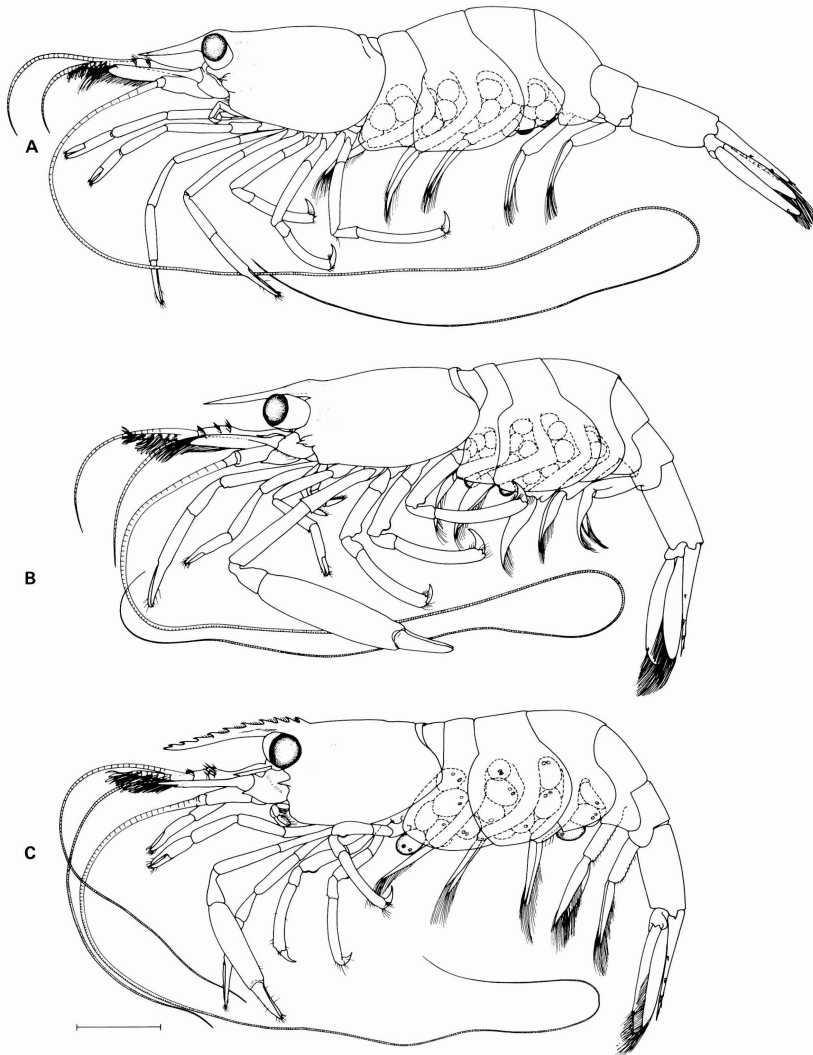


Fig. 1. Lateral views of: A, *Neopontonides chacei*, new species (holotype); B, *N. beaufortensis* from Beaufort, North Carolina; C, *N. dentiger* from Pacific coast of Panama. Scale = 1 mm.

less than twice as long as submedial pair and with length greater than distance between posterior margin of telson and posterior pair of lateral spines (Fig. 3K). Eyes well developed, stalk as wide as cornea (Fig. 4B). Antennular peduncle with acute stylocerite; strong distolateral spine of basal segment reaching to distal margin of peduncle segment 2 (Fig. 4A); peduncle segment 2 broader than long, shorter than segment 3; upper antennular flagellum with 2 rami fused for 2 or 3 articles, free part of shorter branch consisting of 4 articles. Antennal scale (scaphocerite) distinctly overreaching antennular peduncle, more than 2.6 times longer than wide, antennal peduncle extending well past midlength of scale (Fig. 4B); antennal flagellum much longer than total body length. Mouth parts as figured (Fig. 2). Mandible lacking palp, incisor process ending in 4 distinct teeth, molar

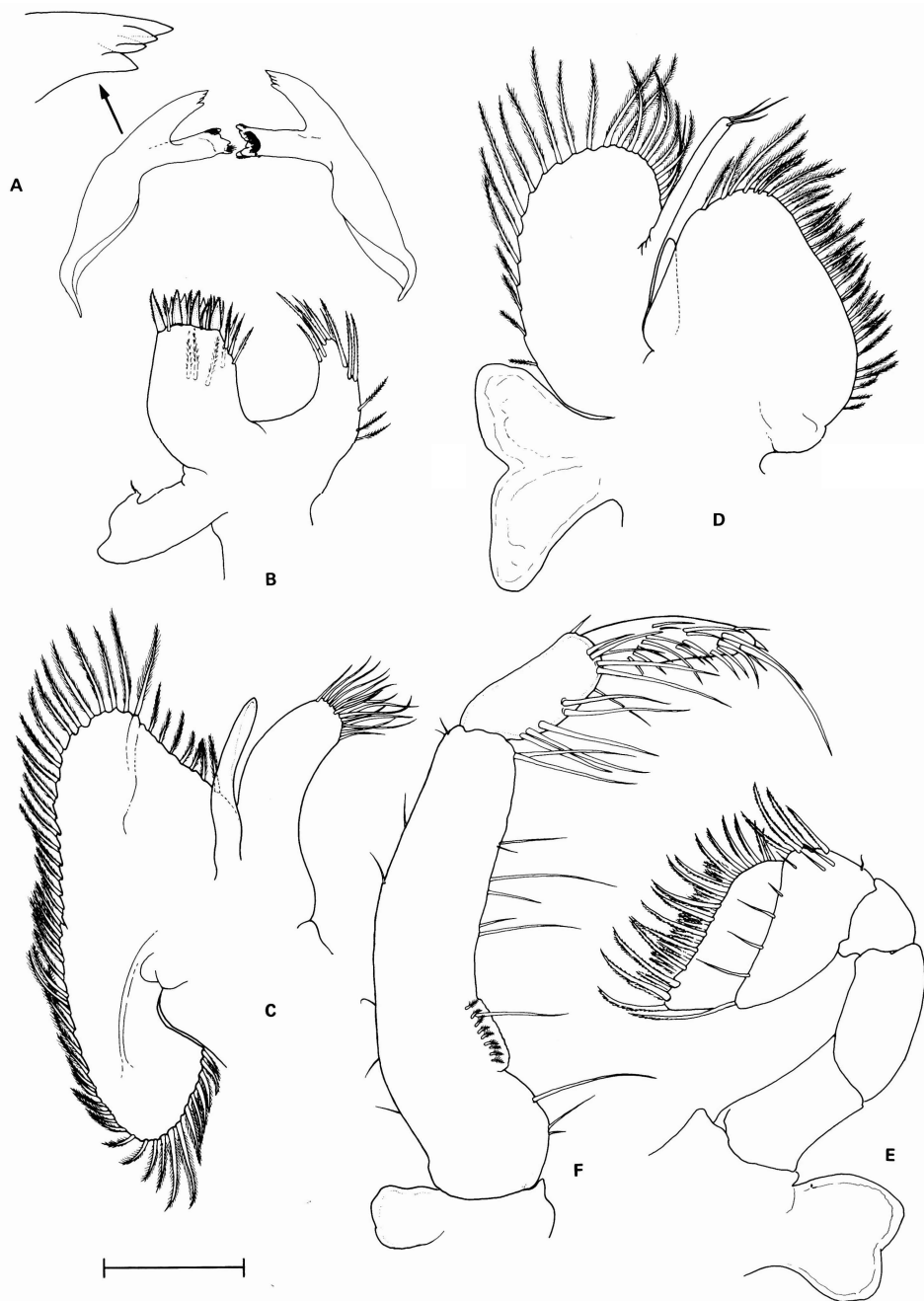


Fig. 2. *Neopontonides chacei* (ovigerous female from St. Lucia Island): A, mandibles; B, maxilla 1; C, maxilla 2; D, maxilliped 1; E, maxilliped 2; F, maxilliped 3. Scale = 0.2 mm for A and 0.1 mm for B-F.

process dentate. Maxilla 1 (Fig. 2D) with upper endite (lacinia) bearing 6 spines and 12–14 setae. Maxilla 2 (Fig. 2C) with entire endite. Maxilliped 1 (Fig. 2D) having well-developed caridean lobe with exopodal flagellum (lash) bearing 3 or 4 terminal setae; bilobed epipod present. Maxilliped 2 (Fig. 2E) lacking exopod; weakly bilobed epipod present. Maxilliped 3 (Fig. 2F) with ischiomerus fused to basis; lacking exopod and arthrobranch; small unlobed epipod present. Pleuro-branches present at bases of all pereopods. First pereopods extending well past antennal scale; fingers slender, as long as palm, tips with brush of setae and specialized spines; merus slightly longer than carpus, carpus slightly longer than propodus. Second pereopods (Fig. 3F) delicate, symmetrical, extending well beyond first pereopods; fingers slightly shorter than palm, tips with cluster of setae; carpus approximately one-half length of propodus; ischium and merus nearly equal in length. Pereopods 3–5 similar in size and proportion of segments; lacking distinct spines; dactyls simple, not inflated; propodus distinctly longer than merus and more than 3 times longer than carpus. Propodus of pereopod 5 with distal flexor margin with row of 5–7 fine-toothed comb setae, no strong spine seta on flexor margin just proximal to row of comb setae (Fig. 3I). Merus of pereopods 3–5 lacking distinct tubercle or keel-like process subdistally on flexor margin. Endopod of male pleopod 2 with appendix interna longer than appendix masculina; appendix masculina with 2 large terminal, 2 subterminal, and 4 (becoming smaller proximad) spines along inner margin (Fig. 4D). Exopod of uropod with strong movable spine between distolateral tooth and blade; movable spine longer than distolateral tooth (Fig. 3J).

Types.—Holotype: ovigerous female (USNM Cat. No. 205544), carapace length 3.0 mm. Paratype: adult male (USNM Cat. No. 205545), carapace length 2.7 mm.

Type Locality.—Marigot Bay, St. Lucia (Caribbean Sea).

Color.—Body transparent with small patches of reddish-orange on or adjacent to bases of thoracic appendages in living specimens.

Habitat.—Found associated with the shallow-water gorgonian *Pseudopterogorgia americana* in depths of 1–10 m.

Distribution.—Tropical waters of the Caribbean Sea from the Florida Keys southward to Carrie Bow Cay, Belize.

Etymology.—This species is named for Fenner A. Chace, Jr., in recognition of his many contributions to the study of decapod Crustacea.

Remarks.—*Neopontonides chacei* is distinguished from all other described species of the genus by having symmetrical second pereopods with narrow delicate chelae. It appears to be most closely related to *N. beaufortensis*, but it can be further distinguished from that species by having pereopods 3–5 more slender and lacking a well-developed tubercle or keel-like process on the distal flexor margin of the merus. Additional differences between the two species include the shape of the rostrum and eyelobe, and the setation and spination of pleopods 1 and 2 and the propodus of pereopod 5.

In my collections from Bahia Honda Key, two other shrimp symbionts occurred with *N. chacei* on *P. americana*. *Hippolyte nicholsoni* Chace, 1972, was quite common and it also was found on several other species of gorgonians in the same collecting area. A second member of the family Hippolytidae, *Tozeuma* sp. (= *T. carolinense* of Voss, 1956), like *N. chacei*, was found associated only with *P.*

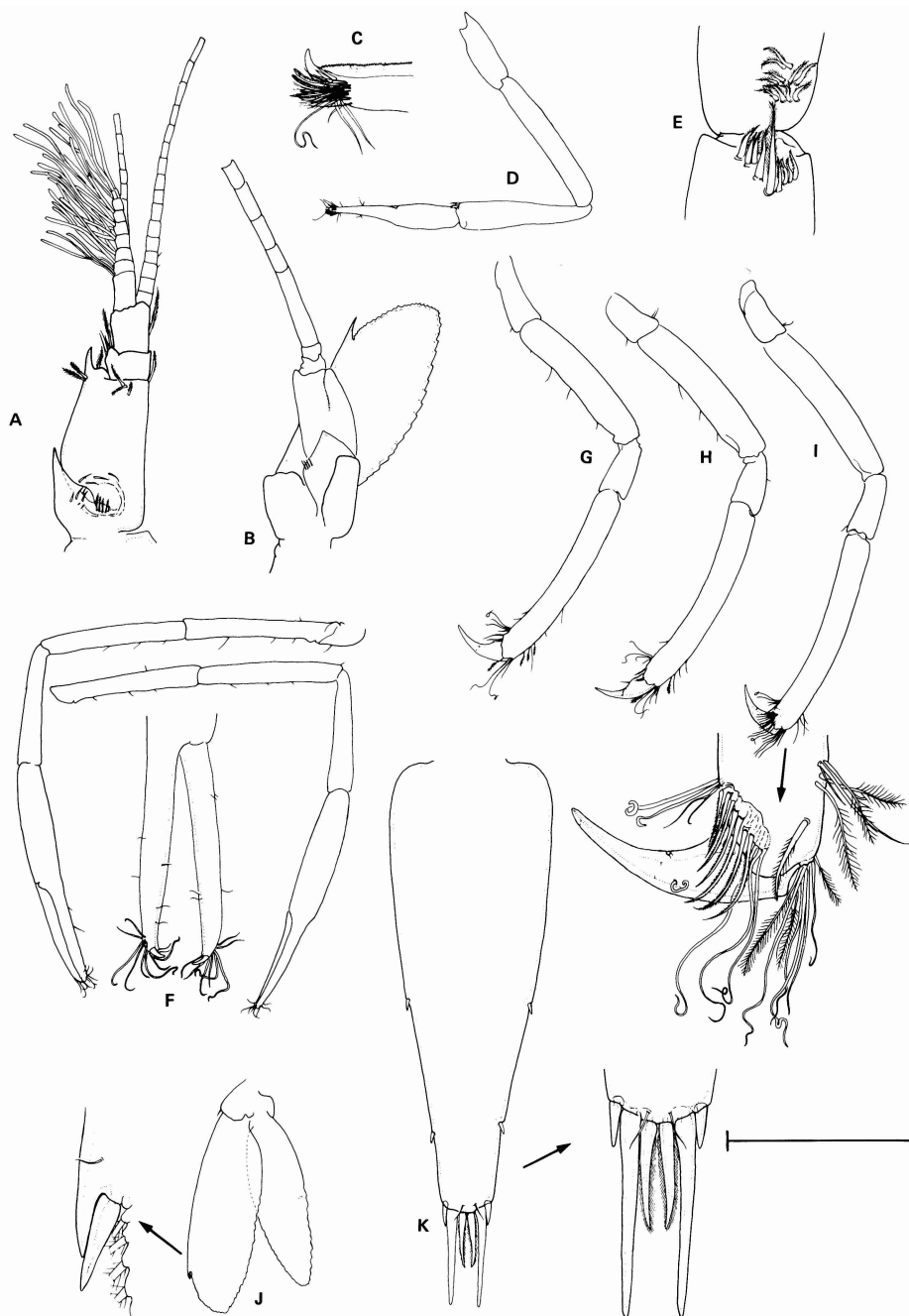


Fig. 3. *Neopontonides chacei*, new species (same specimen used in Fig. 2): A, antennule, dorsal aspect; B, antenna, ventral aspect; C, pereopod 1, tip of dactyl; D, pereopod 1; E, pereopod 1, cleaning setae at articulation of carpus and propodus; F, pereopods 2 (ventral aspect) with enlargement of fingers of right chela (lateral aspect); G, H, I, pereopods 3-5 with enlargement of distal part of pereopod 5; J, left uropod with enlargement of lateral tooth and movable spine of exopod; K, telson. Scale = 0.25 mm for C, E; 0.5 mm for K; 1.0 mm for A, B, D, F; 2.0 mm for J.

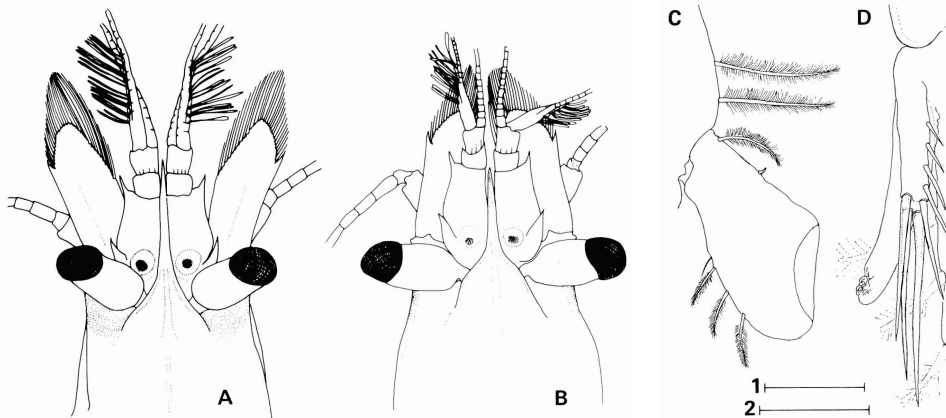


Fig. 4. *Neopontonides beaufortensis* (ovigerous female from Beaufort, North Carolina); A, dorsal view of anterior aspect. *Neopontonides chacei*, new species (same specimen used in Figs. 2, 3); B, dorsal view of anterior aspect. *N. chacei* (male from St. Lucia): C, pleopod 1, endopod; D, pleopod 2, appendix interna and appendix masculina. Scale 1 = 0.2 mm for C; 0.1 mm for D. Scale 2 = 1.0 mm for A, B.

americana. More extensive collecting in the Caribbean area may reveal additional hosts for *N. chacei* and *Tozeuma* sp.

Neopontonides beaufortensis (Borradaile, 1920)

Figs. 1B, 4A

Synonymy.—*Periclimenes beaufortensis* Borradaile, 1920: 132.—*Pontonides beaufortensis*: Kemp, 1922: 266–267.—Calman, 1939: 215.—*Neopontonides beaufortensis*: Holthuis, 1951: 190; 1952: 18.—Dawson, 1963: 156.—Williams, 1965: 49; 1984: 80.—Patton, 1963: 522; 1967: 1235; 1972: 427.—Bruce, 1970: 543.—Young, 1978: 173.—Felder and Chaney, 1979: 11.—Criales, 1980: 68.

Material Examined.—1 ♂, 3 ovigerous ♀♀, Beaufort, North Carolina (Piver's Island Bridge), on *Leptogorgia virgulata*, C. E. Cutress coll., 4 October 1959; USNM Cat. No. 104875.—9 ovigerous ♀♀, Beaufort, North Carolina, on *L. virgulata*, I. E. Gray coll., July 1953; USNM Cat. No. 95739.—2 ovigerous ♀♀, Halfmoon Creek, Chatham County, Georgia, on *Leptogorgia setacea*, R. W. Heard and G. W. Williamson colls., 22 August 1971; Savannah Science Museum (SSM) Cat. No. I-14.—2 ♂♂, 3 ovigerous ♀♀, Rommerly Marsh Creek, Georgia, on *L. setacea*, R. W. Heard and W. B. Sikora colls., 16 December 1971; SSM Cat. No. I-189.—1 ♂, Joe's Cut, Wassaw Sound, Chatham County, Georgia, G. Williamson coll., 16 May 1970; SSM Cat. No. I-1982.

Reported Distribution.—North Carolina (Borradaile, 1920; Holthuis, 1951; Patton, 1972); South Carolina (Young, 1978); Georgia (present report); Florida (Holthuis, 1951); Louisiana (Dawson, 1963); Dutch West Indies (Criales, 1980); Panama (Holthuis, 1951).

Remarks.—All specimens of *N. beaufortensis* previously reported from the Florida Keys southward into the Caribbean area should be reexamined and compared with *N. chacei*. There also remains the possibility that additional undescribed species may occur in the tropical northwestern Atlantic. I have examined a few specimens collected on gorgonians (*Muricea* sp. and *Plexaurella* sp.) by Darryl Felder from the Florida Keys that are similar in most aspects to *N. beaufortensis*, but in some characters (i.e., development of major chela, spination of appendix masculina) they appear to be distinct. These forms may represent new taxa or they may be ecophenotypic variants of *N. beaufortensis*. A larger series of specimens is needed to determine their taxonomic status.

From the coastal waters of Georgia I have collected *N. beaufortensis* from

Leptogorgia setacea (Pallas). As with *L. virgulata*, which previously was the only known host for *N. beaufortensis* in North American waters, *L. setacea* can occur in turbid, mesohaline bays and sounds (Bayer, 1961). Williams (1984) summarized the earlier literature on the biology and distribution of *N. beaufortensis*.

Neopontonides dentiger Holthuis, 1951

Fig. 1C

Synonymy.—*Neopontonides dentiger* Holthuis, 1951: 193.—Wicksten, 1983: 20.

Material Examined.—5 ♂♂, 7 ♀♀ (5 ovigerous), Seal Beach, Fort Hobbe, Canal Zone, Panama, on gorgonians, R. W. Bayer, F. M. Bayer, and R. H. Chesher colls., 1 January 1964; USNM Cat. No. 111067.

Distribution.—Ecuador (Holthuis, 1951), Panama (present report), Gulf of California, Mexico (Wicksten, 1983).

Remarks.—The series of specimens examined was collected from intertidal rock pools on gorgonians, most probably *Lophogorgia alba* Duchassaing and Michelotti, which was common at this collecting site (F. M. Bayer, personal communication). This is the first confirmed record of gorgonians serving as hosts for *N. dentiger*.

Neopontonides dentiger is the only species described from the Pacific. Tsareva's (1980) record of "*Neopontonides* sp." from Australian waters is questionable and needs confirmation. A. J. Bruce (personal communication) indicated that Tsareva's material might be *Miopontonia yongei* Bruce, 1985, which was described from the same general area. As yet he has been unable to examine Tsareva's specimens to confirm this possibility.

Neopontonides dentiger, *N. beaufortensis*, and *N. chacei* appear to form a closely related, natural group. The following key, modified from Holthuis (1951), may be used to separate the adult specimens of these three species.

KEY TO ADULTS OF THREE SPECIES OF *NEOPONTONIDES*

1. Pereiopods 2 symmetrical; pereiopods 3–5 lacking distinct keel-like process on distal flexor margin of merus *N. chacei*
- Pereiopods 2 distinctly asymmetrical; pereiopods 3–5 with distinct keel-like process on distal flexor margin of merus 2
2. Upper margin of rostrum with 0–5 teeth; dactyl of major chela of pereiopod 2 with 2 teeth on cutting edge *N. beaufortensis*
- Upper margin of rostrum with 9 or more teeth; dactyl of major chela of pereiopod 2 with 1 tooth on cutting edge *N. dentiger*

TAXONOMIC STATUS OF *NEOPONTONIDES PRINCIPIS*

Criales (1980) described *Neopontonides principis*, a species found associated with antipatharians in the Dutch West Indies. Examination of the holotype in the Rijksmuseum van Natuurlijke Historie (RMNH), Leiden, and additional specimens in the collections of the USNM and the Marine Environmental Sciences Consortium Museum (MESCC), Dauphin Island, Alabama, indicated that this species did not belong in the genus *Neopontonides*, but appeared to represent a new genus most closely resembling *Pontonides* Borradaile, 1917. The published descriptions of the type-species of *Pontonides*, *P. maldivensis* (Borradaile, 1915), are vague and incomplete making establishment of generic characters to separate *N. principis* from *Pontonides* sensu stricto difficult. Bruce (1985) thought that *N. principis* might represent a distinct genus. Recently he informed me (A. J. Bruce, personal communication) that he had examined specimens of *P. maldivensis*, including

the type material, and was convinced that *N. principis* could not be accommodated in *Pontonides*. Based on his and my own observations, a new genus is established here to receive *N. principis*.

***Pseudopontonides*, new genus**

Diagnosis.—Body subcylindrical, wider than deep. Rostrum well developed, broadened posteriorly, forming hood over eyestalks; rostral blade without teeth, narrow, acute. Basal segment of antennule armed distolaterally with 2 teeth, inner margin bearing single medial tooth. Carapace with antennal spine only. Pterygostomial notch well developed. Maxilla 2 with endite entire. Maxilliped 1 exopodal flagellum absent. Maxillipeds 2 and 3 with epipods, lacking exopods. Maxilliped 3 often with vestigial arthrobranch. Pleura of abdominal somites 1–4 rounded posteriorly. Small movable spine present on exopod of uropod between distolateral tooth and blade.

Type-species.—*Neopontonides principis* Criales, 1980.

Remarks.—*Pseudopontonides* is distinguished from *Neopontonides* by (1) the absence of an exopodal flagellum on the caridean lobe of the first maxilliped, (2) the presence of a vestigial arthrobranch on maxilliped 3, (3) a well-developed rostral hood, which extends anteriorly to cover partially the statocysts, (4) a reduced movable spine on the exopod of the uropod, (5) the armature of the antennular peduncle, (6) the presence of a well-developed pterygostomial notch, and (7) short flagella on the antennule and antenna. There is also a difference in host preference. *Pseudopontonides principis* is associated with antipatharians, whereas species of *Neopontonides* are associated with gorgonians. The hosts for the species currently assigned to *Pontonides* are antipatharians (see Table 1), except for a record from a scleractinian coral (Fujino and Miyake, 1969) and a gorgonian (Bruce, personal communication).

Criales (1980) used three characters (first maxilla bearing an inner lacinia; structure of the endites of the second maxilla; and the absence of arthrobranches on the third maxilliped) to refer *P. principis* to the genus *Neopontonides*. The first two characters can be accommodated also by some of the species currently assigned to the genus *Pontonides*. In regard to the third character, a vestigial arthrobranch is present on the third maxillipeds of the specimens of *P. principis* that I have examined from Bonaire and Puerto Rico.

Pseudopontonides appears to be closely related to *Pontonides*, but the two genera are distinct. The type-species of *Pseudopontonides*, *P. principis*, and *Pontonides*, *P. maldivensis*, are both characterized by having: (1) vestigial arthrobranches on their third maxillipeds, (2) the lateral margins of their rostrums unarmed, and (3) the posterior margins of abdominal somites 3 and 4 rounded. However, *Pseudopontonides principis* can be distinguished from *P. maldivensis* by two characters of generic significance. The rostrum of *P. maldivensis* has convex lateral margins tapering anteriorly to form an acute tip. In contrast, the rostrum of *P. principis* is expanded to form a well-developed supraorbital hood that is abruptly constricted anteriorly to form a narrow and relatively long rostral blade. *Pseudopontonides* is distinguished from *P. maldivensis* and the other described species of *Pontonides* by its well-developed pterygostomial notch, a character it shares with several other American genera of the subfamily Pontoniinae (see Bruce, 1985).

Since the only two descriptions (Borradaile, 1915, 1917) of the type-species are short and incomplete, the genus *Pontonides* as accepted by Ridder and Holthuis (1979) presently accommodates a small but morphologically diverse group of

Table 1. Reported hosts for the pontoniine shrimp genera *Pontonides* and *Pseudopontonides*.

Species	Locality	Host	Reference
<i>Pontonides maldivensis</i>	Maldiv Islands	Unknown	Borradaile (1915, 1917)
<i>P. sp.</i> (cf. <i>maldivensis</i>)	Hawaii	<i>Cirripathes</i> sp.	Castro (1971)
<i>P. unciger</i> sensu stricto	Red Sea, Kenya	"gorgonians"	Bruce (personal communication)
<i>P. sp.</i> aff. <i>unciger</i> of Bruce (1983)	Australia	<i>Cirripathes anguina</i>	Bruce (1983)
<i>P. unciger</i> of Bruce (1978)	Madagascar	"antipatharian"	Bruce (1978)
<i>P. unciger</i> of Holthuis (1952)	Japan	<i>Dendrophyllia ijamai</i>	Fujino and Miyake (1969)
<i>P. unciger</i> of Davis and Cohen (1968)	Borneo	<i>Cirripathes</i> sp.	Davis and Cohen (1968)
<i>P. unciger</i> of Monod (1979)	Iles Marquises	"Antipathaire"	Monod (1979)
<i>P. sympathes</i>	Galapagos	<i>Antipathes galapagensis</i>	Ridder and Holthuis (1979)
<i>P. sp.</i>	Hawaii	<i>Antipathes grandis</i>	Grigg (1964)
<i>Pseudopontonides principis</i>	Caribbean	<i>Stichopathes gracilis</i>	Criales (1980)
	Caribbean	<i>Virgularia</i> sp.	present report
	Northern Gulf of Mexico	<i>Stichopathes</i> spp. collected with antipatharians	present report

species. Excluding *P. maldivensis*, the other nominal species of *Pontonides* may represent one, or possibly two, distinct genera. The members of the “*unciger* complex,” which may include several new species (see Table 1), are characterized by the acute posterior margins of abdominal somites 3 and 4 and by the armed anterolateral margins of the rostral hood. *Pontonides sympathes* Ridder and Holthuis, 1979, although superficially resembling members of the “*unciger* complex,” differs from all other described species of *Pontonides* by having a well-developed flagellum on the caridean lobe of the first maxilliped.

At present the systematic relationship between the genera *Pontonides* and *Pseudopontonides* is uncertain, but should be better understood when *Pontonides maldivensis* is redescribed and critically compared with *P. principis*. The following artificial key separates *Pseudopontonides principis*, the species currently assigned to *Pontonides*, and other related pontoniine species and genera lacking an exopodal flagellum on the first maxilliped.

KEY TO SELECTED PONTONIINE SPECIES

1. Maxilliped 1 with distinct flagellum on caridean lobe *Pontonides sympathes*
- Maxilliped lacking distinct flagellum on caridean lobe 2
2. Hepatic spine present 3
- Hepatic spine absent 4
3. Rostrum forming well-developed supraorbital hood with lateral margins armed with tooth ...
..... *Courtierea agassizii*
- Rostrum not forming well-developed supraorbital hood, lateral margins not armed with tooth
..... *Miopontonia yongei*
4. Endite of maxilla 2 distinctly cleft *Pseudocoutierea* spp.
- Endite of maxilla 2 entire or weakly cleft 5
5. Ocular orbit with carina of posterior margin notched *Veleronia* spp.
- Ocular orbit with carina of posterior margin entire 6
6. Lateral margins of rostrum armed with tooth; pleural margins of abdominal somites 3 and 4
acute posteriorly 7
- Lateral margins of rostrum unarmed; pleural margins of abdominal somites 3 and 4 rounded
posteriorly 8
7. Eyestalks lacking dorsal tubercle; ischium of maxillipeds 2 and 3 armed laterally with flattened,
elongate setae *Pontonides unciger*
- Eyestalks with dorsal tubercle; ischium of maxillipeds 2 and 3 lacking flattened, elongate setae
..... *Pontonides unciger* of Holthuis (1952), Fujino and Miyake (1969)
8. Rostrum subtriangular with lateral margins convex tapering anteriorly to form acute tip
..... *Pontonides maldivensis*
- Rostrum with base expanded into subquadrate hood becoming abruptly constricted anteriorly
to form well-developed narrow blade *Pseudopontonides principis*

Pseudopontonides principis (Crales, 1980), new combination

Fig. 5A–F

Synonymy.—*Neopontonides* sp.: Dawson, 1963: 156.—*Neopontonides principis* Crales, 1980: 68.—Bruce, 1985: 177.

Material Examined.—1 ovigerous ♀ (holotype), Awa di Oostpunt, Curaçao, on *Stichopathes gracilis* at depth of 18 m, M. M. Crales coll., 3 July 1977, RMNH No. Crust. D32017.—1 ovigerous ♀, Bonaire, on *Virgularia* sp. at depth of 15 m, R. V. Harrison coll., May 1976, USNM Cat. No. 205548.—1 ovigerous ♀, Little Bonaire, on *Virgularia* sp. at depth of 17 m, R. V. Harrison coll., 9 May 1976, USNM Cat. No. 205549.—3 ♀♀ (1 ovigerous), Carl's Hill area, Little Bonaire, on *Virgularia* sp. at depth of 17 m, R. V. Harrison coll., 17 February 1976, USNM Cat. No. 205550.—1 ♂, 1 ovigerous ♀, south of La Parguera, Puerto Rico, on *Stichopathes* spp. at depth of 30 m, Carlos Goenaga coll., November 1975.—1 ♀, Gulf of Mexico, 29°26'N, 87°35'W, associated with unidentified antipatharians at depth of 73 m, MV *Oregon* Station 1635, 9 January 1957, USMN Cat. No. 205551.—1 ovigerous ♀, Gulf of Mexico, 29°27'N, 87°31'W, associated with unidentified antipatharians at depth of 65 m, S. B. Collard coll., 18 April 1985, MESC Cat. No. 6179-10493.

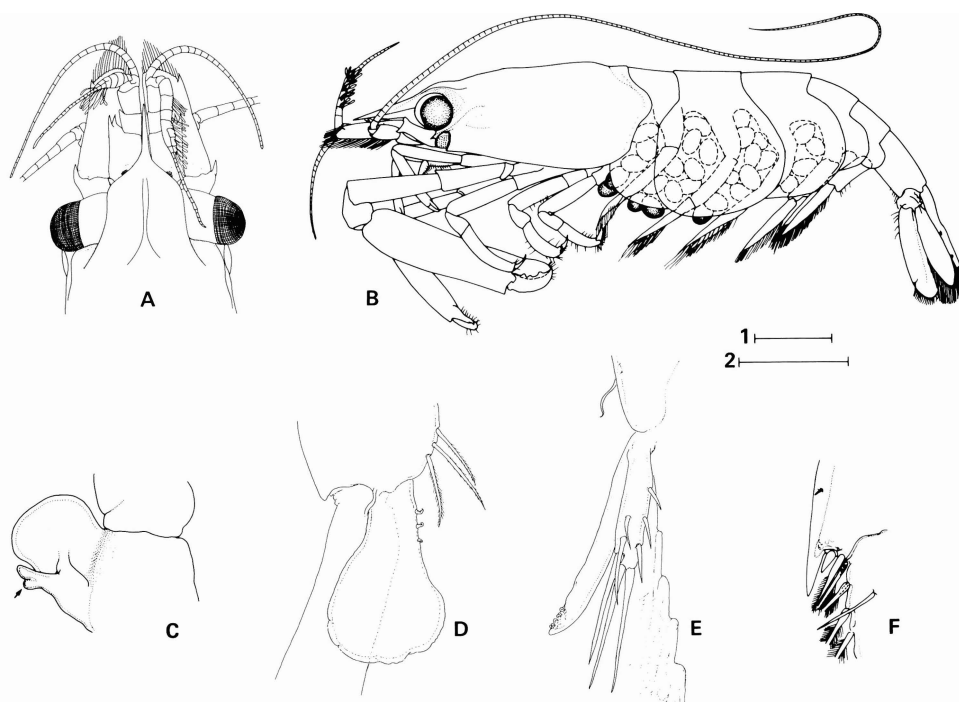


Fig. 5. *Pseudopontonides principis* (Crales). A (holotype), dorsal view of anterior aspect; B, entire animal, lateral view; C (from ovigerous female from Bonaire), maxilliped 3, vestigial arthrobranch (arrow) and epipod; D, male pleopod 1, endopod; E, male pleopod 2, appendix interna and appendix masculina; F (from ovigerous female from Bonaire), lateral tooth and small movable spine on exopod of uropod. Scale 1 = 1.0 mm for A; 0.2 mm for C, D; 0.1 mm for E, F. Scale 2 = 2 mm for B.

Remarks.—Examination of the holotype in the RMNH and additional specimens from Bonaire, Puerto Rico, and the northern Gulf of Mexico reveal several discrepancies, or possible discrepancies, in Crales' (1980) description of the species. In the text there are apparent typographical errors in the description of the first and second maxillae (p. 77). The first maxilla is described as the "second maxilla" and the second maxilla is described as simply the "maxilla."

In the tabular comparison with *N. beaufortensis* (Crales, 1980: 80) *P. principis* was further characterized as lacking a movable spine between the posterolateral tooth and blade of the uropodal exopod. However, this spine, although much smaller than those found on species of *Neopontonides*, is present on the holotype of *P. principis* and all other specimens (see Fig. 5F) that I examined during this study.

Small vestigial arthrobranches are present on the third maxillipeds of all specimens of *P. principis* that I examined from Bonaire and Puerto Rico. The arthrobranches consisted of only a small single or bilobed appendix near the base of the epipod (Fig. 4C). I did not remove or disturb the third maxillipeds of the type material in the RMNH. Since the arthrobranches are very inconspicuous and may be easily broken off during dissection, their presence on the type material may have been overlooked.

The spination of the appendix interna and appendix masculina of the male second pleopod seems unclear in Crales' fig. 29d. I was unable to examine a male

from the type series, but have illustrated the appendix interna and appendix masculina from the second pleopod of an adult male from Puerto Rico (Fig. 5E).

ACKNOWLEDGEMENTS

I thank F. A. Chace, Jr. for calling my attention to the specimens of *Pseudopontonides principis* in the collections of the USNM and for his help and encouragement over the past 15 years. L. B. Holthuis graciously allowed me access to his collections and extensive library and extended me many courtesies during my stay in Leiden during March 1983. I am grateful to M. R. Dardeau, D. L. Felder, and B. Kensley for allowing me access to data and specimens under their control. The illustrations were inked by L. Laird (Figs. 1; 4A, B; 5A–C, F) and I. Stone (Figs. 2, 3). I thank C. S. Heard and K. C. Stuck for help in preparing the manuscript and M. R. Dardeau and R. M. Overstreet for their helpful comments on it. A. J. Bruce kindly read the manuscript and shared his unpublished information on the genus *Pontonides*.

LITERATURE CITED

- Bayer, F. M. 1961. The shallow-water Octocorallia of the West Indian Region.—Studies on the Fauna of Curaçao and Other Caribbean Islands 12: 1–373.
- Borradaile, L. A. 1915. Notes on Carides.—Annals and Magazine of Natural History (8)15: 205–213.
- . 1917. On the Pontoniinae. The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner.—Transactions of the Linnean Society of London, Zoology (2)17: 323–396.
- . 1920. On a new commensal prawn.—Annals and Magazine of Natural History (9)5: 132–133.
- Bruce, A. J. 1970. Report on some commensal pontoniinid shrimps (Crustacea: Palaemonidae) associated with an Indo-Pacific gorgonian host (Coelenterata: Gorgonacea).—Journal of Zoology 160: 537–544.
- . 1978. A report on a collection of pontoniine shrimps from Madagascar and adjacent seas.—Zoological Journal of the Linnean Society 62: 205–290.
- . 1983. The pontoniine shrimp fauna of Australia.—Memoirs of the Australian Museum 18: 195–218.
- . 1985. Notes on some Indo-Pacific Pontoniinae, XLII. *Miopontonia yongei* gen. nov., sp. nov., from the Australian North West Shelf (Decapoda, Caridea).—Crustaceana 48: 167–178.
- Calman, W. T. 1939. Crustacea: Caridea.—John Murray Expedition 1933–34, Scientific Reports 6: 183–224.
- Castro, P. 1971. The natantian shrimps (Crustacea, Decapoda) associated with invertebrates in Hawaii.—Pacific Science 25: 395–403.
- Chace, F. A., Jr. 1972. The shrimps of the Smithsonian-Bredin Caribbean Expeditions with a summary of the West Indian shallow-water species (Crustacea: Decapoda: Natantia).—Smithsonian Contributions to Zoology 98: 1–179.
- Criales, M. M. 1980. Commensal caridean shrimps of Octocorallia and Antipatharia in Curaçao and Bonaire with description of a new species of *Neopontonides*.—Studies on the Fauna of Curaçao and other Caribbean Islands 61: 68–85.
- Davis, W. P., and D. M. Cohen. 1968. A gobiid fish and a palaemonid shrimp living on an antipatharian sea whip in the tropical Pacific.—Bulletin of Marine Science 18: 749–761.
- Dawson, C. E. 1963. Notes on *Stenopus scutellatus* Rankin and *Neopontonides beaufortensis* (Borradaile) from the northern Gulf of Mexico.—Crustaceana 5: 155–157.
- Felder, D. L., and A. H. Chaney. 1979. Decapod crustacean fauna of Seven and One-Half Fathom Reef, Texas: species composition, abundance, and species diversity.—Contributions in Marine Science 22: 1–29.
- Fujino, T., and S. Miyake. 1969. Sexual dimorphism and variation in the second pereopods of *Pontonides unciger* Calman (Crustacea, Decapoda, Palaemonidae).—OHMU, Occasional Papers of Zoological Laboratory, Kyushu University 2: 87–92.
- Grigg, R. W. 1964. A contribution to the biology of the black coral, *Antipathes grandis*, in Hawaii.—M.S. Thesis, University of Hawaii, Honolulu.
- Holthuis, L. B. 1951. A general revision of the Palaemonidae (Crustacea, Decapoda, Natantia) of the Americas. I. The subfamilies Euryrhynchinae and Pontoniinae.—Occasional Papers, Allan Hancock Foundation Publications 11: 1–332.
- . 1952. The Decapoda of the Siboga Expedition. Part XI. The Palaemonidae collected by the Siboga and Snellius Expeditions with remarks on other species. II. Subfamily Pontoniinae.—Siboga Expedition Monograph 39a: 1–252.

- Kemp, S. 1922. Notes on Crustacea Decapoda in the Indian Museum. XV. Pontoniinae.—Records of the Indian Museum 24: 113–288.
- Monod, T. 1979. Crustacés associés à une Antipathaire des Îles Marquises.—Cahiers de l'Indo-Pacifique 1: 11–23.
- Patton, W. K. 1963. Animal associates of the gorgonian coral *Leptogorgia virgulata* at Beaufort, N.C.—American Zoologist 3: 522.
- . 1967. Commensal Crustacea.—In: Proceedings of the Symposium on Crustacea held at Ernakulam, 1965. Symposium series, Marine Biological Society of India. Part III, pp. 1228–1243.
- . 1972. Studies on the animal symbionts of the gorgonian coral, *Leptogorgia virgulata* (Lamarck).—Bulletin of Marine Science 22: 419–431.
- Ridder, C. D., and L. B. Holthuis. 1979. *Pontonides sympathes*, a new species of commensal shrimp (Crustacea, Decapoda, Pontoniinae) from Antipatharia in the Galapagos Islands.—Zoologische Mededelingen 54: 101–110.
- Tsareva, L. A. 1980. On species composition and ecology of decapods of the Scott Reefs.—In: B. V. Preobrazhensky and E. V. Krasnov, eds., Biology of coral reefs. Morphology, systematics, ecology. Pp. 113–130. Izdatelstvo "Nauka," Moscow, USSR. [In Russian.]
- Voss, G. L. 1956. Protective coloration and habitat of the shrimp *Tozeuma carolinensis* Kingsley (Caridea: Hippolytidae).—Bulletin of Marine Science of the Gulf and Caribbean 6: 359–363.
- Wicksten, M. K. 1983. A monograph on the shallow water caridean shrimps of the Gulf of California, Mexico.—Allan Hancock Foundation Monographs in Marine Biology 13: 1–59.
- Williams, A. B. 1965. Marine decapod crustaceans of the Carolinas.—Fishery Bulletin, United States 65: i–xi, 1–298.
- . 1984. Shrimps, lobsters, and crabs of the Atlantic coast of the eastern United States, Maine to Florida.—Smithsonian Institution Press, Washington. Pp. i–xviii, 1–550.
- Young, A. M. 1978. Superorder Eucarida, order Decapoda.—In: R. G. Zingmark, ed., An annotated checklist of the biota of the coastal zone of South Carolina. Pp. 171–185. University of South Carolina Press, Columbia.

RECEIVED: 6 December 1985.

ACCEPTED: 5 March 1986.

Address: Invertebrate Zoology Section, Gulf Coast Research Laboratory, Ocean Springs, Mississippi 39564.