Arthropoda Selecta 13 (4): 199–218

Pontoniine shrimps associated with cnidarians: new records and list of species from coastal waters of Viet Nam

Креветки-понтониины ассоциированные с кишечнополостными: новые находки и список видов из прибрежных вод Вьетнама

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KEY WORDS: fauna, shrimps, Pontoniinae, Viet Nam, symbionts, cnidarian-associated.
КЛЮЧЕВЫЕ СЛОВА: фауна, креветки, Pontoniinae, Вьетнам, симбионты, кишечнополостные.

ABSTRACT. In the paper, the descriptions of 10 species of cnidarian-associated pontoniine shrimps, new for the fauna of Viet Nam, are given. *Coralliocaris nudirostris* and *Philarius lifuensis* are apparently associated with acroporid corals, and *Harpiliopsis spinigera* is associated with pocilloporid corals. *Palaemonella rotumama* are found on both acroporid and pocilloporid corals. Three species of the genus *Periclimenes*, *P. elegans*, *P. ornatus* and *P. magnificus*, are associated with the anemones: the first species with Heteractis crispa and *Actinodendron* sp, the second with *Heteractis crispa* and the third with burrowing *Macrodactyla* sp. and *Cerianthus* sp. Three *Periclimenaeus* species (*P. hecate, P. rhodope* and *P. quadridentatus*) were also collected from corals, but it is considered that they are symbionts of the sponges and tunicates attached to coral colonies. Consequently, the fauna of Viet Nam is updated to 20 species of pontoniine shrimps associated with scleractinian corals and 5 species with sea anemones. A review of the known data on the associations of pontoniine shrimps with Cnidaria in Viet Nam is also presented.

РЕЗЮМЕ. В работе приводится описание 10 видов креветок-понтониин, новых для фауны Вьетнама, ассоциированных с представителями кишечнополостных. Креветки *Coralliocaris nudirostris* и *Philarius lifuensis* ассоциированы с кораллами-акропоридами, *Harpiliopsis spinigera* — с кораллами-поциллопоридами. *Palaemonella rotumama* обнаружены в ассоциации с акропоридными и поциллопоридными кораллами. Три вида из рода *Periclimenes*: *P. ornatus, P. elegans* и *P. magnificus*, описаны вассоциации с анемонами: первые вид с актинией *Heteractis crispa* и актинодендроном *Actinodendron* sp., второй с актинией *Heteractis crispa* и третий вид с зарывающейся актинией *Macrodactyla* sp. и цериантусом *Cerianthus* sp. В сборах с колоний кораллов обнаружено также три вида креветок из рода *Periclimenaeus* (*P. hecate, P. rhodope* и *P. quadridentatus*), которые предположительно не являются симбионтами кишечнополостных, а рассматриваются как симбионты губок и туникат, прикрепляющихся к колониям кораллов. Таким образом, с учетом наших находок, фауна Вьетнама насчитывается 18 видов креветок-понтониин, облигатно ассоциированных с кораллами и 5 видов – с анемонами. Представлен обзор данных по понтониинам ассоциированным с кишечнопоплостными во Вьетнаме.

Introduction

Symbiotic crustaceans associated with cnidarians are widespread in the World Ocean, being especially numerous in shallow-water tropical seas [Bruce, 1976b; Castro, 1976; Vader, 1972, 1983]. Among cnidarian symbionts, caridean shrimps belonging to the family Palaemonidae (subfamily Pontoniinae) are dominant [Garth, 1974; Bruce, 1976b; Patton, 1976, 1994]. The amount of cnidarian symbionts in other caridean families (e.g. Hippolytidae and Alpheidae) are significantly lower [Patton, 1963; Bruce, 1972d; Garth, 1974; Knowlton & Keller, 1983, 1985; Goh & Chou, 1994; Goh et al., 1999; Spotte & Bubucis, 1996] and are particularly scare among Pandalidae and Rhynchocinetidae [Bruce, 1972c, 1976b, 1983b; Howard, 1982; Stevens & Anderson, 2000]. In this associations all cnidarian taxa may be involved as hosts, excluding Ctenophores and hydroid medusas [Bruce, 1969a, 1972c, 1973, 1976a, 1977a; Criales, 1980; Patton, 1963; Spotte & Bubucis, 1996; Spotte et al, 1991, 1994; Goh & Chou, 1994; Goh et al, 1999; Williams & Williams, 1982; Zibrowius, 1984].

The fauna of symbiotic pontoniine shrimps in the coastal waters of Viet Nam is probably similar to that of the adjacent regions such as Singapore, Hong-Kong, Philippines and the south islands of Japan [Bruce, 1993] but it is poorly known. The first data on symbiotic pontoniine shrimps from Viet Nam were published at the beginning of the last century [Kemp, 1922]. More recently, an annotated list of symbiotic shrimps [Bruce, 1993] and some data on the ecology of shrimps associated with bivalves [Britayev & Fakhrutdinov, 1994] have been published. These last papers were based on the collections of T.A. Britayev in the vicinity of Nhatrang city. However, the current list of cnidarian-associated pontoniine shrimps in Viet Nam including 15 species can not be considered as complete.

This paper provides a list of symbiotic pontoniine shrimps associated with cnidarians in the Bay of Nhatrang (south central Viet Nam), as well as descriptions of ten species new for the Vietnamese fauna.

Fig. 1. Study area of the South China Sea. Circles indicate sampling localities (stations).
Рис. 1. Изучаемый район в Южно-Китайском море. Кружками отмечены точки сборов (станции).

Material and Methods

A total of 49 colonies of scleractinian corals with their symbionts were collected in Viet Nam, the Bay of Nhatrang (Fig. 1), in 1985, 1987, 1989, 1990 and 2002 (11, 2, 9, 15 and 12 colonies, respectively). The samples were collected by SCUBA diving and wrapped in gauze each colony separately. Once in the laboratory the colonies were measured (length, width and height), photographed and, after removing of large symbionts, broken to extract cryptic species. More than 900 specimens of symbionts were extracted from the corals. Among them, about 400 specimens of crabs, 350 shrimps, 20 anomurans and about 150 specimens from other taxa. The 35 coral colonies were identified as *Acropora* sp., 9 as *Pocillopora* sp., 2 as *Seriatopora* sp. and 3 as *Stylophora pistillata*. The actinians (*Cerianthus* sp., *Actinodendron* sp., *Heteractis crispa*, *H. aurora, H. magnifica, Stichodactyla haddoni, S. mertensii* and *Entacmaea quadricolor*) were observed in situ, photographed and the symbiont specimens were caught with scoop-net and kept in plastic bags. The crustaceans were fixed in 4% buffered sea water formol solution for 2-3 days and then preserved in 70% ethanol. Shrimps were identified under a light microscope MBS-10 and drawn with the help of a camera lucida. All specimens are deposited in the collection of the Laboratory of Ecology and Morphology of Marine Invertebrates, A.N. Severtzov Institute of Ecology and Evolution RAS.

Systematic account

Family Palaemonidae Rafinesque, 1815
Subfamily Pontoniinae Rafinesque, 1815

Coralliocaris nudirostris (Heller, 1861)
Fig. 2a–n.

Oedipus nudirostris Heller, 1861: 27, pl. 3, fig. 25.

Coralliocaris tahitoei Boone, 1935: 180, fig. 12, pl. 49 [type locality: PoineVenus reef, Tahiti]

Coralliocaris nudirostris Borradaile, 1917: 382, 384. Bruce, 1972b: 262, fig. 2.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay; Tam Is., st. 25, depth 2-4 m, 28.02.1987: 4♂♂, 4 ovig.♀♀ on *Acropora* sp. T.A.Brytayev coll.

DESCRIPTION. Body depressed (Fig. 2a–c). Carapace (Fig. 2b, c) smooth, with antennal spine only. Rostrum (Fig. 2d, e) unarmed, reaching distal edge of penultimate segment of antennular peduncle in males (Fig. 2e) and distal edge of basal segment in females, slightly sloping down in large ovigerous females; lamina weak. Basal segment of antennular peduncle (Fig. 2h, i) as broad as long, with a well-developed disto-lateral lobe bearing distal spine; distal outer angle of the lobe with one small distal spine protruding forward up to the level of proximal edge of distal segment of antennular peduncle in females and with well-developed distal spine in males, reaching the middle of distal segment; distal inner angle of the basal segment (Fig. 2 h) with one small spine in males. Endopod of 3rd maxilliped (Fig. 2j, k, l) robust, flattened and broad in both sex; ischio-meral and basal segments completely fused; antepenultimate segment with distinct depression on dorso-laleral inner surface extending over the segment; penultimate segment with distinct setal basket on the disto-dorsal surface (although the basket is slightly thiner than in Coralliocaris superba), with inner edge straight in females (Fig. 2l) and convex in males (Fig. 2j); distal segment with some parallel rows of small setae terminating with long distal setae. Second pereiopod equal, chelae with a row of long setae along the inner edge of immovable finger (Fig. 2m); dactylus simple, with extensor margin sinuous, without lateral carina; apexes of movable and immovable fingers terminating with long setae.

REMARKS. *Coralliocaris nudirostris* clearly differs from the other species of the genus from Nhatrang Bay, *C. superba* (Dana), *C. graminea* (Dana), *C. venusta* Kemp, in the following features: rostrum unarmed and short, not overreaching penultimate segment of antennules and dactylus of 2nd pereiopod normal, with extensor margin smoothly sinuous.

Coralliocaris nudirostris most clearly resembles *C. brevirostris* Borradaile, 1898, which has similar unarmed rostrum and smoothly sinuous extensor margin of dactylus of 2nd pereipod, but this species has not yet been indicated in Viet Nam. Both species differ in the form both of the basal antennular segment and the disto-lateral lobe of this segment. The latter is weak, without distal tooth, and the form of the segment is much wider than long in *C. brevirostris*. Besides, the rostrum is longer and overreaches the basal segment of the antennules in *C. nudirostris* (rostrum just reaching the distal edge of the antennular peduncle in ovigerous females).

HOST. All Nhatrang specimens were collected from colonies of *Acropora* sp. The species has always been reported in association with scleractinian corals of the genus *Acropora* [Bruce, 1977a, 1998].

DISTRIBUTION. Tam Island, Nhatrang Bay, Viet Nam. Also known from the Indian Ocean: Red Sea, coasts of Kenya, Tanzania and Zanzibar, La Reunion, Seychelles Islands, Mauritius, Maldives Islands, and from the Pacific Ocean: Japan, Marshall and Society Islands, Kiribati (Gilbert Islands), Tahiti.

Harpiliopsis spinigera (Ortmann, 1890)
Fig. 3a–j.

Anchistia spinigera Ortmann, 1890: 511, pl.36, fig.23 [type locality: Samoa].

Harpilius depressus var. *gracilis* Kemp, 1922: 234, fig. 71 [type locality: Andaman Islands].

Harpiliopsis depressus var. *spinigerus*. — Holthuis, 1952: 184.

Harpiliopsis spinigerus. — Bruce, 1976c: 127; 1977a: 9.

Harpiliopsis spinigera. — Bruce, 1977b: 72 [color illustration]. — Chace & Bruce, 1993: 82–83.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay; Tre Is.: st.8, depth 2-4 m, 20.03.1990: 1♀ on *Pocillopora eydouxi*; Tam Is.: st.23, depth 2–2,5 m, 07.11.1985: 3 ♂♂, 2 ovig. ♀♀ on unidentified pocilloporid colony; st.23, depth 1-2,5 m, 03.12.1985: 1 ♂ and 1 ovig.♀ on *Pocillopora* sp; st. 24, 08.11.1985: 4 juv. on *Seriatopora* sp. All specimens collected by T.A. Brytayev.

DESCRIPTION. Body depressed. Carapace bearing antennal and hepatic spines, the former considerably more dorsal that the latter. Rostrum (Fig. 3a–c) lancet-like, with ventral edge stretched ventrally in the middle; rostral formula being 0+6/3 in males and 0+6/4–5 in females, with distal dorsal and ventral teeth weak (Fig. 3d, e, f) and proximal dorsal tooth at the level of the antennal spine. Endopod of 3rd maxilleped (Fig. 3g) with elongated segments; antepenultimate segment about 4.5–5 times as long as wide. Second pereiopod with merus 3 times as long as wide, bearing distal spine on extensor margin, carpus and ischium with distal spines on flexor margins, chelae of the pereiopod (Fig. 3c) 4.5–5 times as long as wide (2–3 times in juveniles); dactylus (Fig. 3h, i) with cutting edge concave, armed with 2 teeth; fixed finger with cutting edge convex, armed with 2 teeth situated nearly to the articulation. Third pereiopod with dactylus triangular in cross-section, curved, with well-defined ventro-lateral lamina and dorso-lateral projection, with apical spine. Telson (Fig. 3j) with posterior pair of dorso-lateral spines situated slightly distal to the middle between anterior pair and posterior edge.

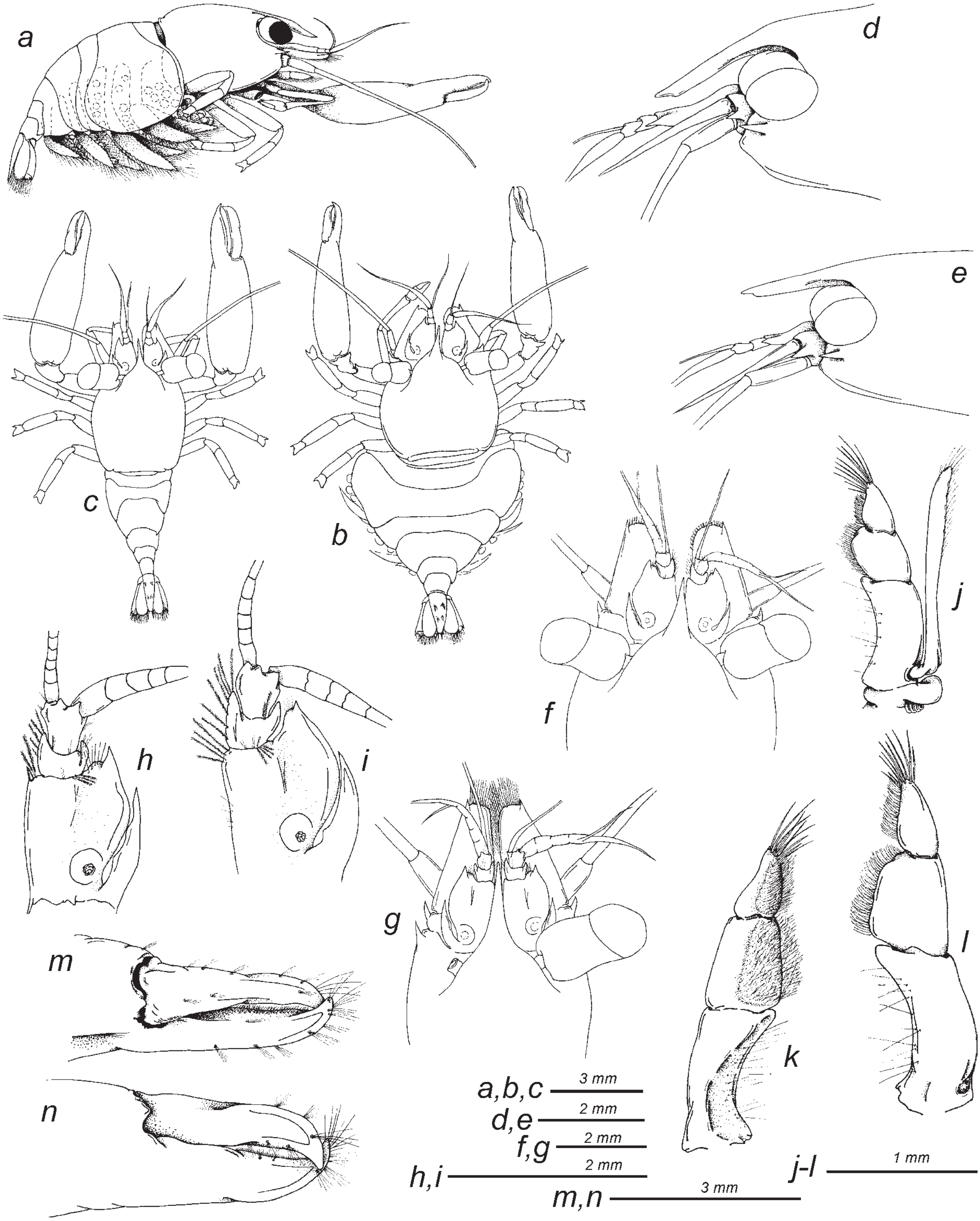

Fig. 2. *Coralliocaris nudirostris*, ovigerous ♀ (a, b, d, f, i, j-l) and mature ♂ (c, d, e, g, h, m, n): a — general view, lateral; b, c — same, dorsal; d, e — front of carapace, lateral view; f, g — same, dorsal view; h, i — antennula; j — third maxilleped; k, l — endopod of third maxilleped; m, n — dactylus of second pereiopod.

Рис. 2. *Coralliocaris nudirostris*, половозрелая ♀ (a, b, d, f, i, j-l) и половозрелый ♂ (c, d, e, g, h, m, n): a — общий вид, сбоку; b, c — тоже, дорсально; d, e — передняя часть карапакса, вид сбоку; f, g — тоже, дорсально; h, i — антеннула; j — третья максиллепеда; k, l — эндопод третьих максиллепед; m, n — дактилус вторых переопод.

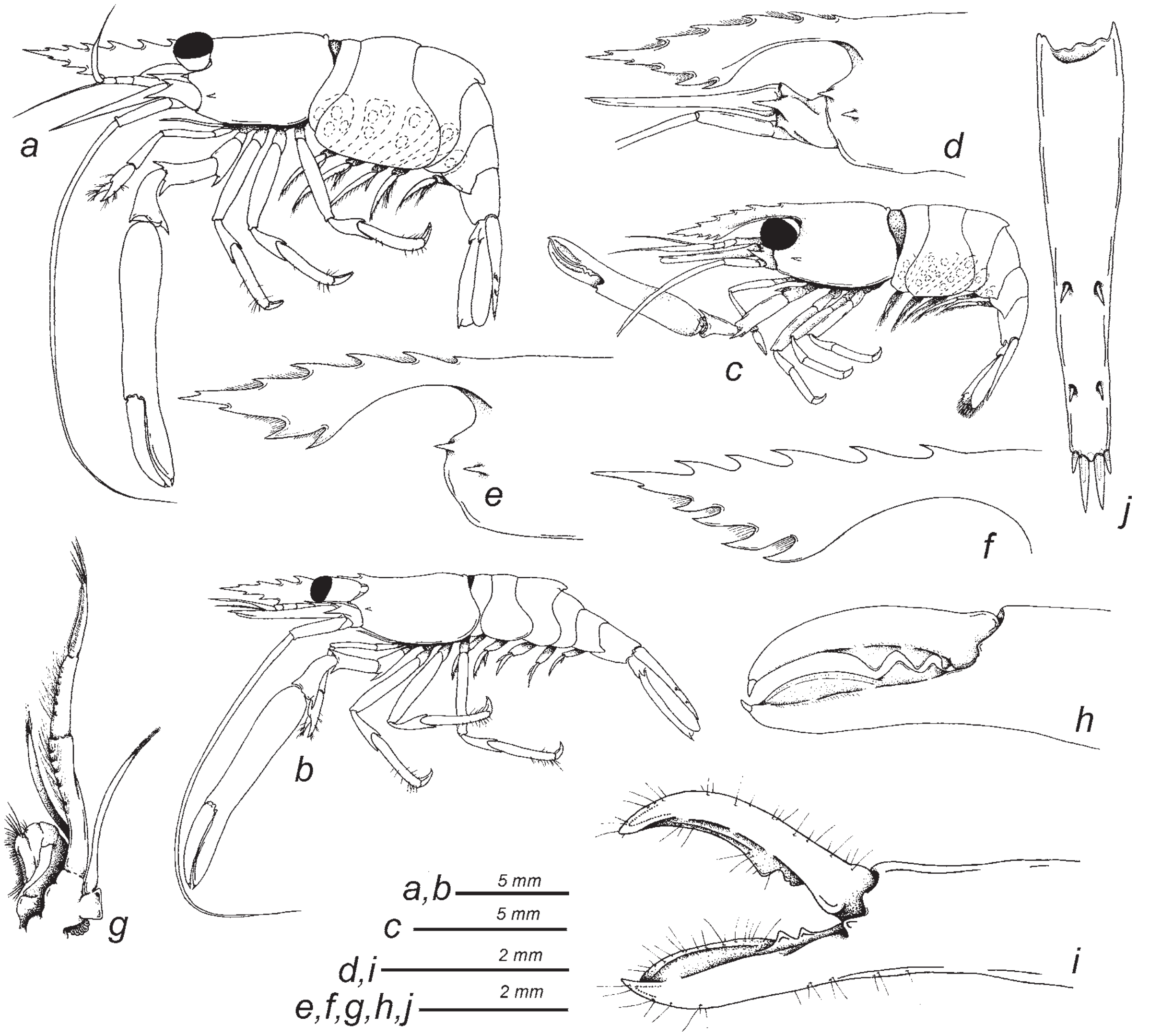

Fig. 3. *Harpiliopsis spinigera,* ovigerous ♀ (a, f, g, h, j), juvenile ♀ (b, e) and c, d, i — mature ♂ (c, d, i): a, b, c — general view, lateral; d, e — front of carapace, lateral view; f — rostrum; g — second and third maxillepeds; h, i — dactylus of second pereiopod; j — telson.

Рис. 3. *Harpiliopsis spinigera*, половозрелая ♀ (a, f, g, h, j), ювенильная ♀ (b, e) и половозрелый ♂ (c, d, i): a, b, c — общий вид, сбоку; d, e — передняя часть карапакса, вид сбоку; f — рострум; g — вторая и третья максиллепеда; h, i — дактилус вторых переопод; j — тельсон.

REMARKS. All examined specimens are morphologically distinguished from *Harpiliopsis depressa* (Stimpson, 1860) by a lower number of teeth on fixed finger and shorter antepenultimate segment of 3rd maxilleped and position of posterior pair of dorso-lateral spines on telson. They also differ from *Harpiliopsis beaupresi* (Audouin, 1826) by having the antennal, hepatic spines and basicerite on the same level as well as by shorter segments of the endopod of the 3rd maxilleped and by amount of teeth on the movable and immovable fingers.

HOST. The Nhatrang specimens were collected from colonies of *Pocillopora eydouxi* Milne-Edwards & Haime, *Pocillopora* sp., *Seriatopora* sp. and Pocilloporidae gen sp. The species has been mainly reported in association with pocilloporid corals *Pocillopora* spp. and *Stylophora* spp. [Bruce, 1977a].

DISRIBUTION. Tre and Tam Islands, Nhatrang Bay, Viet Nam. Also known from the Indian Ocean: coasts of Kenya, Zanzibar, Comoro Islands, La Reunion, Seychelles, Maldives and Andaman Islands, and from the Pacific Ocean: Indonesia, Philippines, Great Barrier Reef, Marshall and Fijian Islands, Samoa, Panama and Colombia.

Palaemonella rotumana (Borradaile, 1898)
Fig. 4a–g.

Periclimenes rotumana Borradaile, 1898: 383 [type locality: Rotuma, Fuji Islands]

Palaemonella vestigialis Kemp, 1922: 123, fig. 1,2, pl. 3: fig. 2 [type locality: Port Blair, Andaman Islands]. — Holthuis, 1952: 24, Figs 2a–b, 3.

Palaemonella rotumana. — Bruce, 1970: 276, Fig. 2.

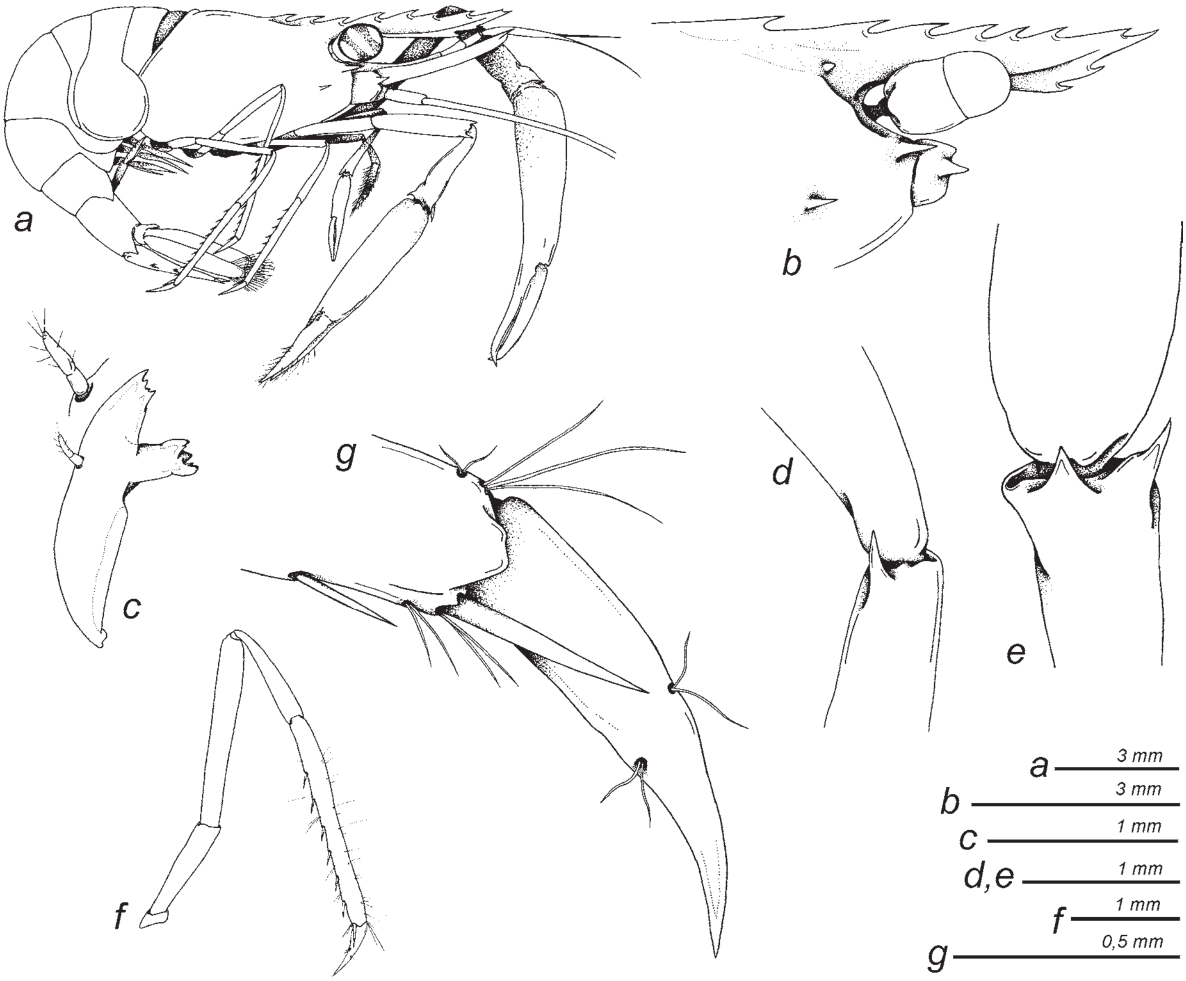

Fig. 4. *Palaemonella rotumana*, mature ♂: a — general view, lateral; b — rostrum and front of carapace, lateral view; c — mandibula; d — carpo-meral articulation of second pereiopod; e — mero-propodal articulation of second pereiopod; f — third pereiopod; g — dactylus of third pereiopod.

Рис. 4. *Palaemonella rotumana*, половозрелый ♂: a — общий вид, сбоку; b — рострум и передняя часть карапакса, вид сбоку; c — мандибула; d — карпо-меральное сочленение вторых переопод; e — меро-проподальное сочленение вторых переопод; f — третьи переоподы; g — дактилус третьих переопод.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay; Tam Is.: st.23, 08.11.1985: 1♂ 1 ovig.♀ on *Seriatopora* sp.; 1♂, 1 ovig. ♀ on *Acropora* sp; st. 24, 25.03.2002: 1♂, 1 ovig.♀ on Porites aff. cylindrical. All specimens collected by T.A. Britayev.

DESCRIPTION. Carapace smooth, with antennal and hepatic spines, with supraorbital tubercle in ovigerous females only. Rostrum (Fig. 4b) overreaching the antennal peduncle, with well-developed dorsal and ventral lamina; rosral formula 2+5–6/2 in males and 1+6/2 in females. Mandibula (Fig. 4c) with 2-segmented palp bearing apical setae. Second pereiopod slightly differ in size in males and equal in females; ischium unarmed, carpus (Fig. 4e) with 2 marginal teeth; merus (Fig. 4d) with large distal teeth on lateral edge of flexor margin. Third pereiopod (Fig. 4f) with propodus 3.5–4 times as long as dactylus; disto-ventral propodal spine long, about ½ of the dactylus length; flexor margin of dactylus (Fig. 4g) slightly sinuous.

REMARKS. The examined specimens agree with the description of the species and are clearly distinguishable from the other species of the genus. The most closer species, *Palaemonella pottsi* (Borradaile, 1915), differ in having shorter disto-ventral propodal spines and curved, more robust dactylus of 3rd pereiopod. Besides, *P. pottsi* shows clearly district ecological preferences, being commonly reported as crinoid-associated [Bruce, 1970].

HOST. All Nhatrang specimens were collected from colonies of the scleractinian corals *Acropora* sp, *Seriatopora* sp. and *Porites* aff. *cylindrical*. The species has been commonly reported from different scleractinian coral heads as well as free-living in a wide variety of habitats from coral reef to muddy bays and extending from shore pools to 70 m in depth [Bruce, 1970].

DISTRIBUTION. Tam Is, Nhatrang Bay, Viet Nam. This one of the most common pontoniine shrimps, also very abundant in the Indo-West Pacific: from the Red Sea and Mozambique to Hawaii. In the South China Sea, has been reported from Singapore, Hong Kong and trawls near the Macclesfield Bank. This species has also recently extended

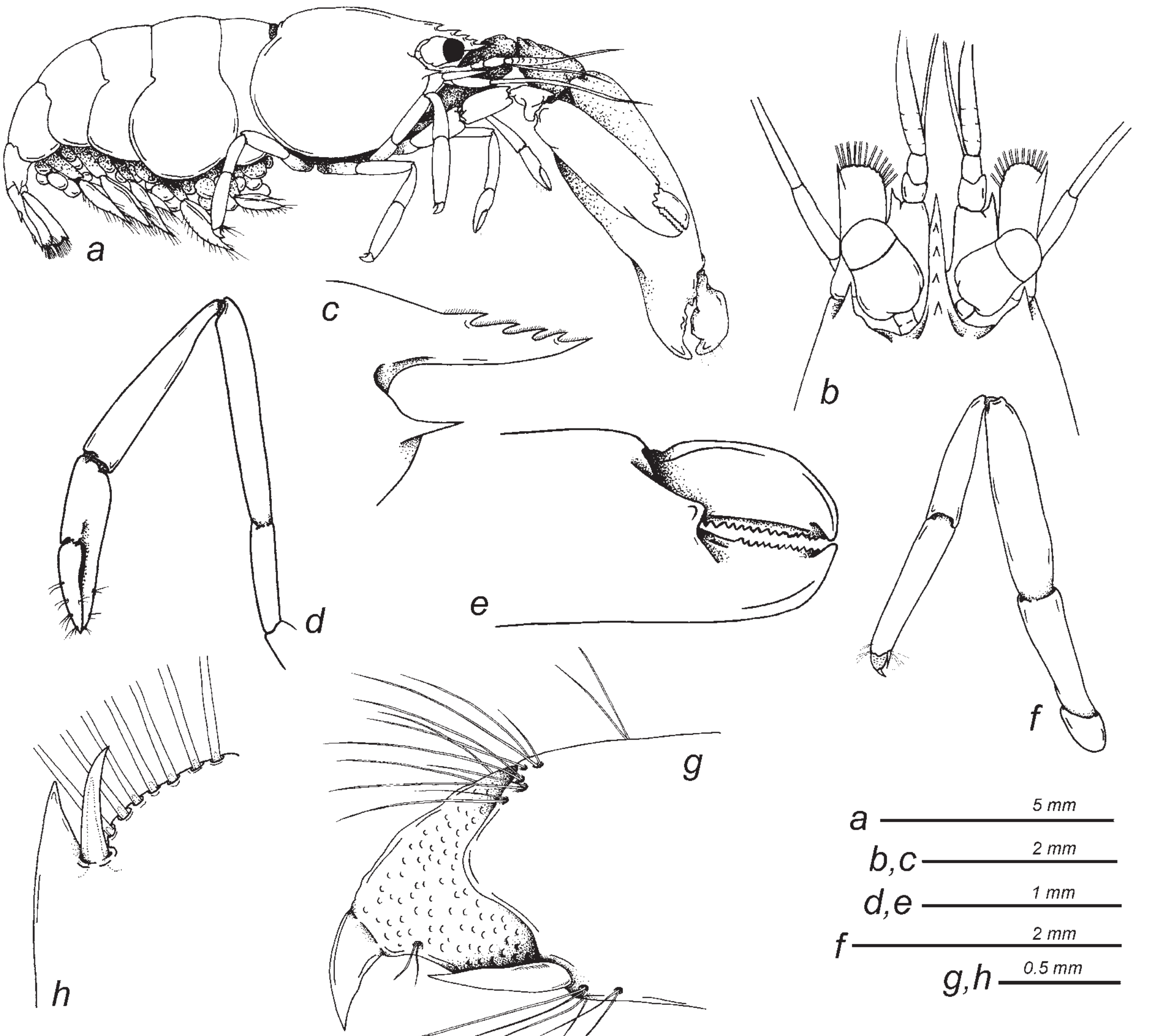

Fig. 5. *Periclimenaeus hecate*, ovigerous ♀: a — general view, lateral; b — front of carapace, dorsal view; c — rostrum; d — first pereiopod; e — chela of minor of second pereiopod; f — third pereiopod; g — dactylus of third pereiopod; h — disto-lateral angle of uropod.

Рис. 5. *Periclimenaeus hecate*, половозрелая ♀: a — общий вид, сбоку; b — передняя часть карапакса, дорсально; c — рострум; d — первая переопода; e — клешня малой второй переоподы; f — третья переопода; g — дактилус третьих переопод; h — дисто-латеральный угол уропод.

its distribution range into the eastern Mediterranean via the Suez Canal [Bruce, 1970].

Periclimenaeus hecate (Nobili, 1904)
Fig. 5 a–h.

Coralliocaris hecate Nobili, 1904: 232 [type locality: Djibouti].

Periclimenaeus hecate. — Bruce, 1974a: 1574, Figs 11, 12, 13E; 1976a: 22, Figs 8–11. — Chace & Bruce, 1993: 92.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay, Tam Is., st. 23, 08.11.1985: 1 ovig.♀ on *Seriatopora* sp. T.A. Britayev coll.

DESCRIPTION. Carapace (Fig. 5a, b) smooth, with antennal spine only. Rostrum (Fig. 5c) triangle-shaped, slightly overreaching proximal segment of antennal peduncle, with 4 dorsal teeth, without ventral ones. First pereiopod (Fig. 5d) with chelae simple and segments unarmed. Second pereiopod differ in shape and size, major chelae 1.5 times as bigger as the minor one (Fig. 5a), smooth, cylindrical, slightly narrowing distally, with stout process on dactylus opposing to fossa on fixed finger; minor chelae smooth and cylindrical, with cutting edge of fingers straight bearing numerous small teeth and large ones on apexes (Fig. 5e). Third pereiopod (Fig. 5f) stout, simple, with robust segments; propodus with one terminal ventral spine; dactylus (Fig. 5g) simple, without accessory spines. Disto-lateral angle of exopod of uropod (Fig. 5h) slightly curved inside.

REMARKS. Bruce [1974a] indicated that “the minor second pereiopod is small, less then half the length of the major

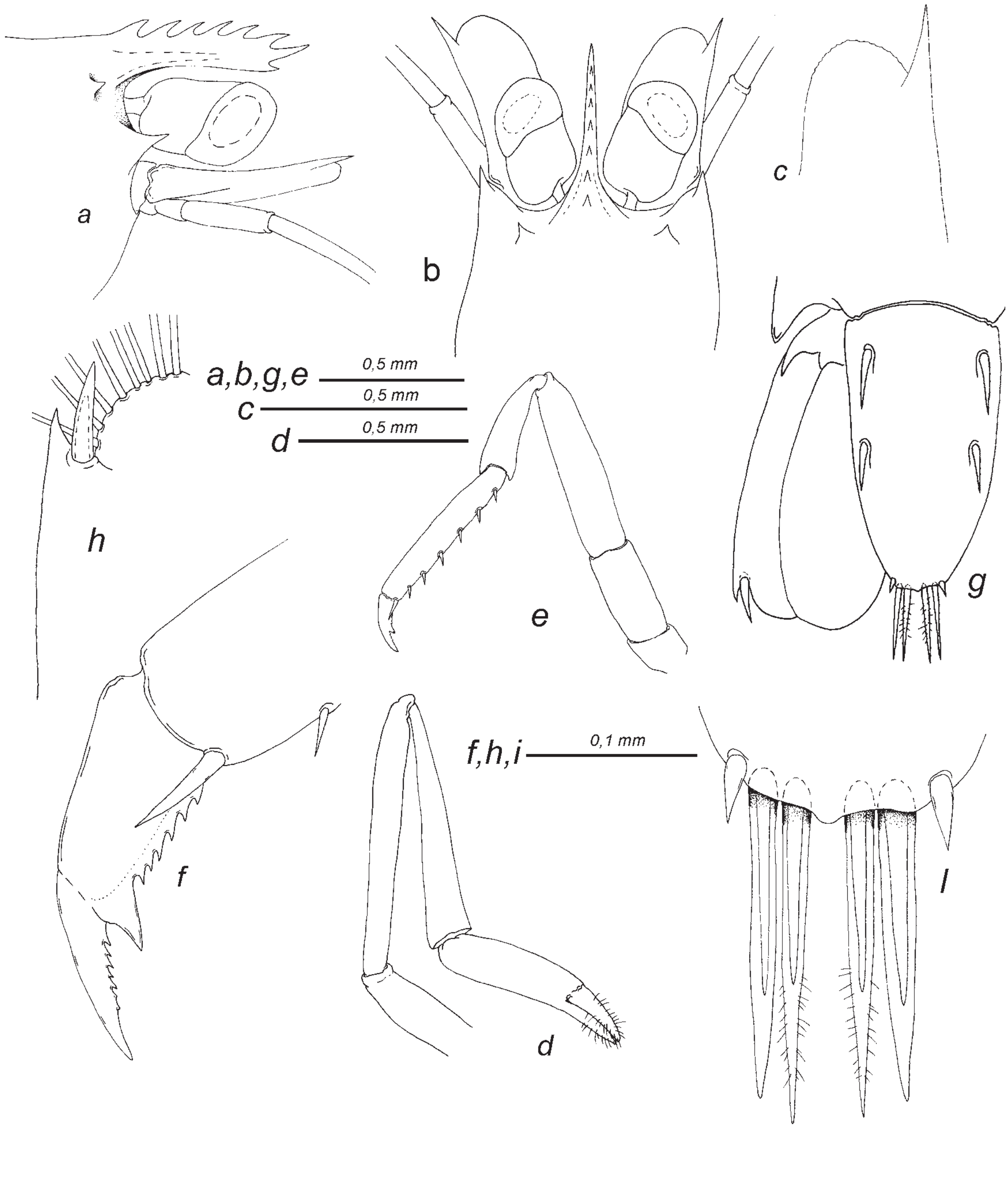

Fig. 6. *Periclimenaeus rhodope*, ovigerous ♀: a — front of carapace, lateral view; b — same, dorsal view; c — distal part of scaphocerite; d — first pereiopod; e — third pereiopod; f — dactylus of third pereiopod; g — uropods and telson; h — distolateral angle of uropod; i — distal edge of telson.

Рис. 6. *Periclimenaeus rhodope*, половозрелая ♀: a — передняя часть карапакса, вид сбоку; b — тоже, дорсальный вид; c — дистальная часть скафоцерита; d — первая переопода; e — третья переопода; f — дактилус третьих переопод; g — уроподы и тельсон; h — дисто-латерльный угол уропод; i — дистальный край тельсона.

chelae in male". In the examined female specimen, the length of minor chelae is about 2/3 as long as the major and we proposed that the different lengths are connected to sexual dimorphism.

HOST. The single Nhatrang specimen was collected from a colony of *Seriatopora* sp. The species has been mainly reported in association with ascidians from genera *Diplosoma* and *Didemnum* [Bruce, 1976a, 2002; Chace & Bruce, 1993]. The occurrence of this species on *Seriatopora* sp. has been previously reported and may be explained by the presence of the ascidian host attached to the base or branches of the coral colony [Bruce, 1976a], the shrimps being separated from the host during the collecting. However, no ascidians or special remarks on their occurrence were printed out for the Nhatrang collection.

DISTRIBUTION. Tam Is, Nhatrang Bay, Viet Nam. Also recorded from the Indian Ocean: Red Sea, coasts of Kenya, Comoro Islands, Seychelles Islands, La Reunion, Maldives Islands, and from the Pacific Ocean: Indonesia, South China Sea (Nansha Islands), Western Australia and Queensland.

Periclimenaeus rhodope (Nobili, 1904)
Fig. 6a–l.

Coralliocaris (*Onycocaris*) *rhodope* Nobili, 1904: 233.
Periclimenaeus rhodope. — Bruce, 1974a: 1158-1562, Figs 1, 2, 7a–b.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay; Tam Is., st.23, 28.11.1985: 1 ovig.♀ on *Seriatopora* sp. T.A. Britayev coll.

DESCRIPTION. Carapace (Fig. 6a, b) smooth, with supraorbital and antennal spines. Rostrum reaching the distal segment of antennula, but not overreaching it distal margin; rostral formula — 7/1. Distal spine of scaphocerite (Fig. 6c) overreaching the distal margin of blade. First pereiopod (Fig. 6d) with merus and carpus subequal; fingers slender, with simple cutting edges and small pointed hooked tips. Second pereiopod are absent. Third pereiopod (Fig. 6e) stout, simple, with robust segments; carpus unarmed; propodus with a series of ventral spine; dactylus (Fig. 6f) distinctly biunguiculate, with minute denticles along the ventral margin of unguis and corpus proximal to the accessory spine. Disto-lateral angle of exopod of uropod (Fig. 6h) protruding into straight strong spine.

HOST. The Nhatrang specimen was collected from a colony of *Seriatopora* sp. The species also known as associated to sponges of the genus *Haliclona* [Bruce, 1981].

DISTRIBUTION. Tam Is., Nhatrang Bay, Viet Nam. Previously known only from western Indian Ocean: coasts of Djibouti, Somalia, Kenya, Tanzania and Zanzibar, and from the Great Barrier Reef: Heron Island.

Periclimenaeus stylirostris Bruce, 1969
Figs 7a–j, 8a–d.

Periclimenaeus stylirostris Bruce, 1969b:167–168; 1972a: 68–75, Figs 2-6. — Bruce & Coombes, 1995: 120-123, Figs 8, 9. — Li, 2000: 138, Fig. 169.
Periclimenaeus sp. — Lowry and Springthorpe, 1992: 129.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay, Tam Is. depth 4-6 m. 1985, number of st. and data absent: 1 ovig. ♀, 1 non-ovig. ♀ and 1 ♂ on *Acropora* sp. T.A. Britayev coll.

DESCRIPTION. Carapace (Fig. 7a) smooth, without supraorbital spine or tubercle, antennal spine well-developed, acute, reaching to the level of eye's cornea. Rostrum (Fig. 7b, c) well-developed, not thin or slender, with six well-developed dorsal teeth, without ventral teeth. Sixth abdominal segment with posterior angles protruding into long spine (Fig. 8d, e). Telson with two pairs of well developed dorsal submarginal spines equal to 1/8 of telson length, with three pairs of terminal spines. Scaphocerite (Fig. 7d) overreaching tip of the rostrum, spine short, slightly larger in males than in females, exceeded by lamella (Fig. 7e, f). Chela of first pereiopod with simple tapering dactylus equal to the palm length. Second pereiopod smooth; major pereiopod with carpus (Fig. 7h) bearing lobular process distodorsally; chela (Fig. 7g) with palm slightly compressed, subcylindrical; dactylus flattened, about 1/3 as palm length, with a rounded disto-lateral margin terminating in a stout, bluntly hooked tip, without clear demarcation of district molar process; minor pereiopod with chela (Fig. 7i) about 1/3 of length of major one in females and 1/2 in males; dactylus (Fig. 7j) compressed, laminar, hemispherical, with cutting edge convex, entire, with distal curved tooth; fixed finger also compressed with a longitudinal groove for cutting edge of dactylus, the tip bearing two small teeth. Third pereiopod with propodus 6–7 times as long as wide, bearing three small ventral spines and a pair of disto-venral long spines (Fig. 8 a), nearly equal to the length of dactylus; dactylus (Fig. 8c) biunguiculate, short and stout, about 1/6–1/7 of propodal length, with curved unguis and accessory spine equal in length and about ½ of dactulus length. Propodus of 4th and 5th pereiopod bearing only two ventral spines (Fig. 8b). Uropod with disto-lateral angle protruded into straight spine overreaching level of the middle of disto-lateral spine (Fig. 8d). Endopod exceeding the exopod and extending to the level of posterior margin of telson.

REMARKS. The examined specimens are clearly identical with Bruce's [1972a] male specimen of P. stylirostris, that it is the reason why only the ovigerous female is fully described here. In holotype of P. stylirostris rostrum is more thin and slender, but it can be considered as a individual variation [Bruce, 1972].

HOST. The Nhatrang specimens were collected from a colony of *Acropora* sp. Probably, these shrimps inhabit an encrusting sponges [Bruce, 2002].

DISTRIBUTION. Tam Is., Nhatrang Bay, Viet Nam. Known from the Indian Ocean: coasts of Kenya, La Reunion, and from the Pacific Ocean: South China Sea (Cape St. Mary, Hong Kong), Marianna Islands, Northern Territory (Trepang Bay), Queensland, Coral Sea (Elizabeth Reef), New Caledonia, Fijian Islands.

Periclimenaeus sp. 1
Fig. 9a–c.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay; Tam is, st. 23, 3.12.1985: 1 ovig♀ on unidenth coral. T.A. Britayev coll.

DESCRIPTION. The specimen is hardly damaged, the large chela of the 2nd pereiopod and all pairs of ambulatory pereiopod being absent. Carapace smooth, with supraorbital and antennal spines. Rostrum reaching the middle of distal segment of antennular peduncle; rostral formula 6/1, all teeth well developed. Disto-lateral spine of scaphocerite (Fig. 9c) overreaching the distal margin of blade. First pereiopod (Fig. 9d) with merus and carpus subequal; dactylus simple, slender, with small pointed hooked tips, about 1/4 of palm length. Minor chela of second pereiopod with granular palm; carpus and merus smooth. Disto-lateral angle of exopod of uropod (Fig. 9h) protruded into spine.

REMARKS. The morphological features of the specimen may correspond to *Periclimenaeus* aff. *rhodope*, but it is impossible to fully identify the species without the examination of the ambulatory pereiopods.

Periclimenaeus sp. 2
Fig. 9d–h.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay; Tam Is., st.23, 08.11.1985: 1 ovig. ♀ and 1 ♂ on *Seriatopora* sp. T.A. Britayev coll.

DESCRIPTION. Specimen lacking the large chela of second pereiopod and all pairs of ambulatory pereiopods. Carapace smooth, with supraorbital and antennal spines. Rostrum reaching the distal margin of basal segment of antennular peduncle, triangular; rostral formula 4/0, all teeth well developed. Disto-lateral spine of scaphocerite (Fig. 9c) overreaching the distal margin of blade. First pereiopod (Fig. 9d) with merus and carpus subequal; dactylus simple, slender, about 1/3

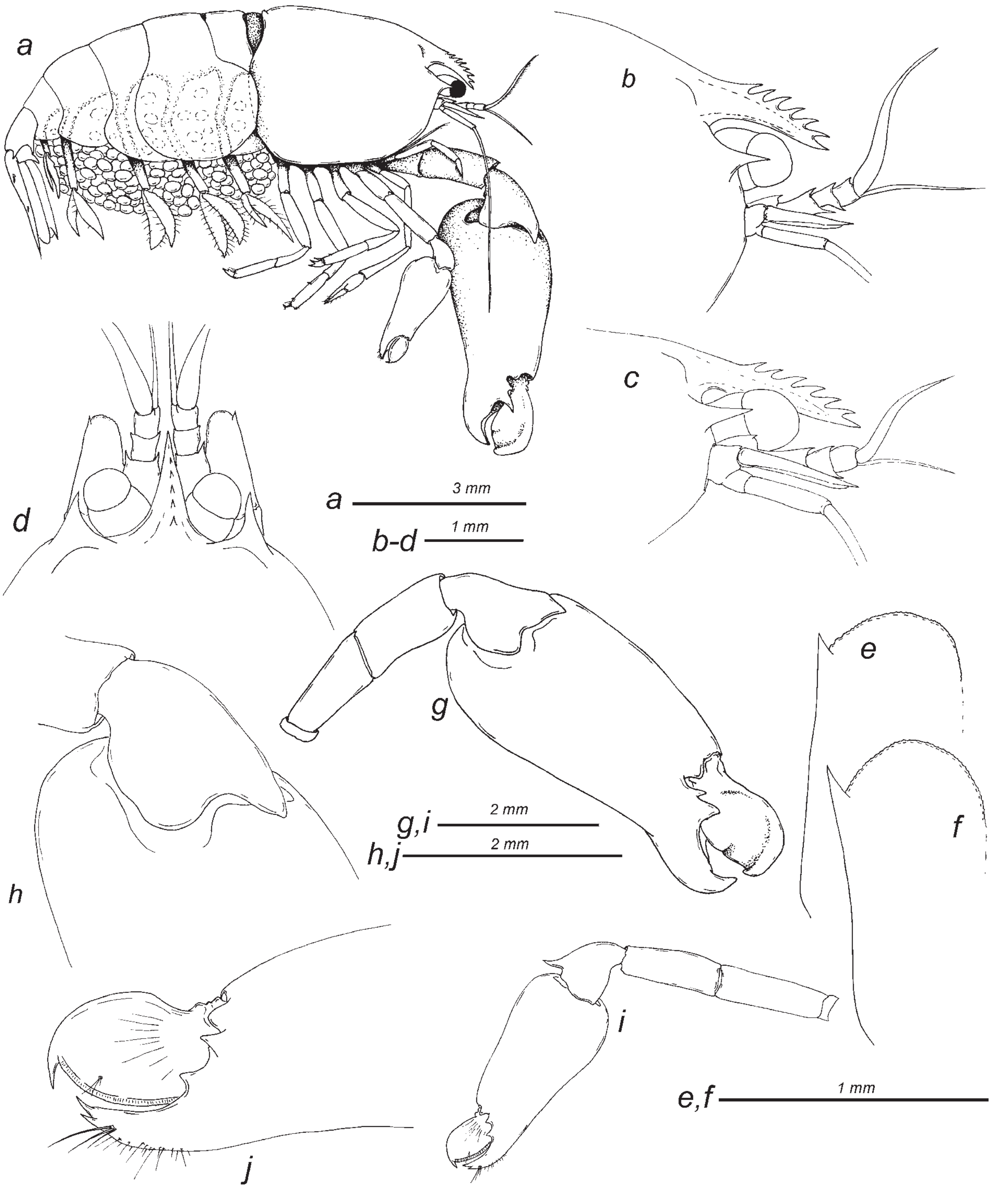

Fig. 7. *Periclimenaeus stylirostris*, ovigerous ♀ (a, b, d, g-j) and mature ♂ (c, f): a — general view, lateral; b, c — front of carapace, lateral view; d — same, dorsal view; e, f — scaphocerite; g — major second pereiopod; h — carpus of major second pereiopod; i — minor second pereiopod; j — dactylus of minor second pereiopod.

Рис. 7. *Periclimenaeus stylirostris*, половозрелая ♀ (a, b, d, g-j) и половозрелый ♂ (c, f): a — общий вид, сбоку; b, c — передняя часть карапакса, вид сбоку; d — тоже, дорсальный вид; e, f — скафоцерит; g — большая вторая переопода; h — карпус большой второй переоподы; i — малая вторая переопода; j — дактилус малой второй переоподы.

of palm length. Major chela of second pereiopod with numerous setae on ventro-lateral parts of palm; carpus and merus smooth. Telson with 2 pair of well-developed dorsal submarginal spines, and 3 pairs of marginal spines. Disto-lateral angle of exopod of uropod (Fig. 9h) protruded into spine, reaching the middle of disto-lateral spine.

REMARKS. The damage of the specimen does not allow identify the species, but the finding of a representative of the genus *Periclimenaeus* on coral colony is enough interesting to justify the inclusion of a short description in this paper.

Periclimenes elegans (Paulson, 1875) (Fig. 10)

Anch[*istia*] *elegans* Paulson, 1875: 113, pl. 17: Fig. 1 [type locality: Red Sea].

Periclimenes (*Falciger*) *dubius* Borradaile, 1915: 211 [type locality: Minicoy, Laccadive Islands].

Periclimenes (*Ancylocaris*) *elegans*. — Kemp, 1922: 215, figs. 60–62.

Periclimenes (*Harpilius*) *elegans*. — Holthuis, 1952: 81, fig. 31.

Periclimenes elegans. — Bruce, 1983a: 884. — Chace & Bruce, 1993: 110–111.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay; Tre Is.: st. 9, depth 9 m, actinia № 2, 05.05.2003: 1 ovig.♀, 4♂♂ (two of them bearing bopyrids on abdomens) under *Heteractis* aff. *crispa*; depth 11 m, 05.05.2003: 2 ovig ♀♀ on sand under *Actinodendron* sp. All specimens are collected by O.V. Savinkin.

DESCRIPTION. Rostrum (Fig.10b–d) extending the antennal scale, directed antero-dorsal in anterior ½; rostral formula 1+6–7/3; posterior-most tooth scarcely isolated from the remainder of the dorsal series, situated on the level of the hepatic spine. Carapace (Fig.10e) smooth, with supraorbital spine, hepatic spine arising directly posterior to antennal one. Fourth thoratic sternite with slender median process. Fourth abdominal somite without distrinct dorsal crest (Fig. 10a). First pereiopod overreaching the antennal scale. Second pereiopod similar in size and shape; merus (Fig. 10h) armed with distal tooth on flexor margin; carpus is slightly longer than palm of chelae, with 2 distal spines; dactylus slightly longer than ½ of palm. Third pereiopod (Fig. 10k) with propodus having 5-6 pairs of small spines, dactylus simple (Fig. 10l), with flexor margin concave, not biunguiculate. Fifth pereiopod non-reaching the distal end of the antennal scale. Uropod (Fig. 10m) overreaching the extended telson.

HOST. Nhatrang specimens were collected on the sand under the actinian *Heteractis* aff. *crispa* and *Actinodendron* sp. Possibly, they found only a protection under the actinians. The species have been recorded as free-living [Chace & Bruce, 1993].

DISTRIBUTION. Tre Is., Nhatrang Bay, Viet Nam. Also recorded from the Indian Ocean: Red Sea, coasts of Africa and Laccadive Islands, and from the Pacific Ocean: Hong Kong, Philippines, Great Barrier Reef and Marshall Islands.

Periclimenes magnificus Bruce, 1979 Fig. 11 a–d.

Periclimenes magnificus Bruce, 1979a: 195, fig. 1–5, pl. 1: fig. A-C [type locality: Wisari Reef, Capricon Island, Queensland; 26–29 meters]. — Fransen, 1989: 143, Figs 4b, c, 5e–8, 6i-m, 7i-p. — Chace & Bruce, 1993: 118.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay, st. 30, muddy sand, 05.05.2002: 1 ♀ on *Ceriantus* sp; 1 ♂ on *Macrodactyla* sp. T.A. Britayev coll.

DESCRIPTION. Rostrum (Fig. 11b) not overreaching the antennal scale, sickle-like, with well-developed dorsal

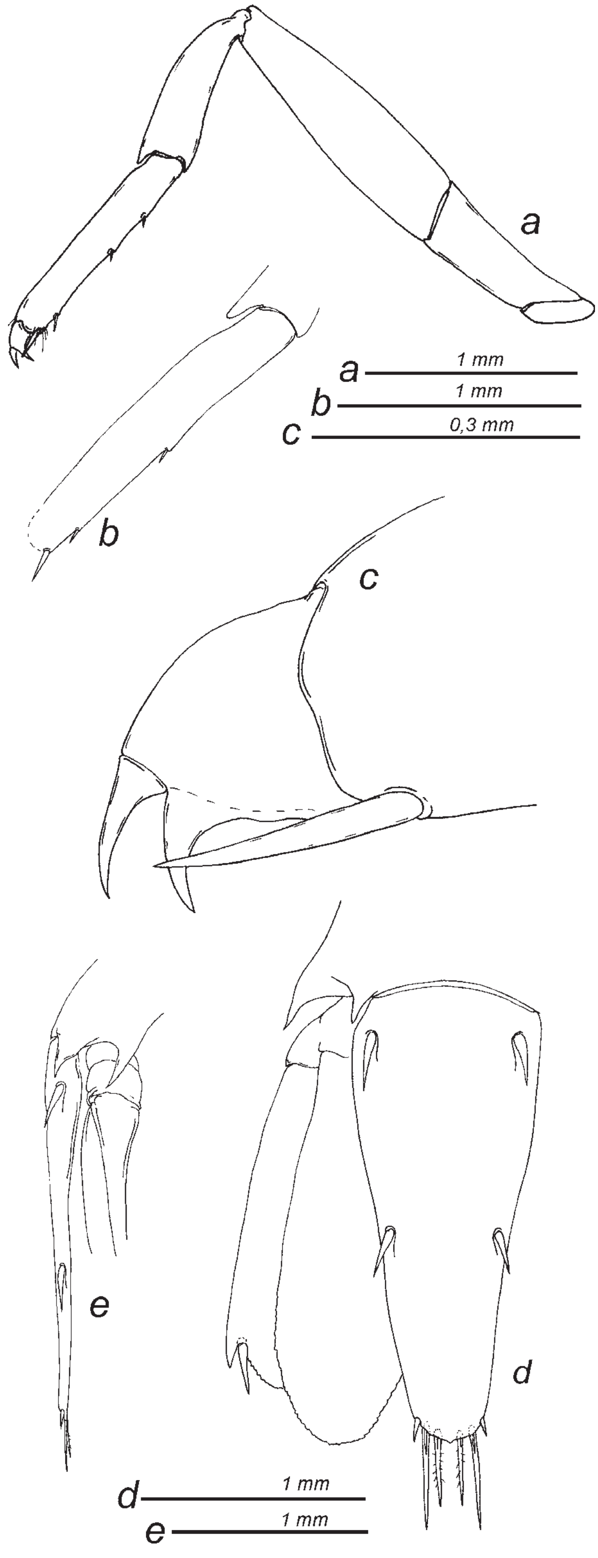

Fig. 8. *Periclimenaeus stylirostris*, ovigerous ♀: a — third pereiopod; b — propodus of forth pereiopod; c — dactylus of forth pereiopod; d — telson and uropods; e — same, lateral view.

Рис. 8. *Periclimenaeus stylirostris*, половозрелая ♀: a — третья переопода; b — проподус четвертой переоподы; c — дактилус четвертой переоподы; d — тельсон и уроподы; e — тоже, вид с боку.

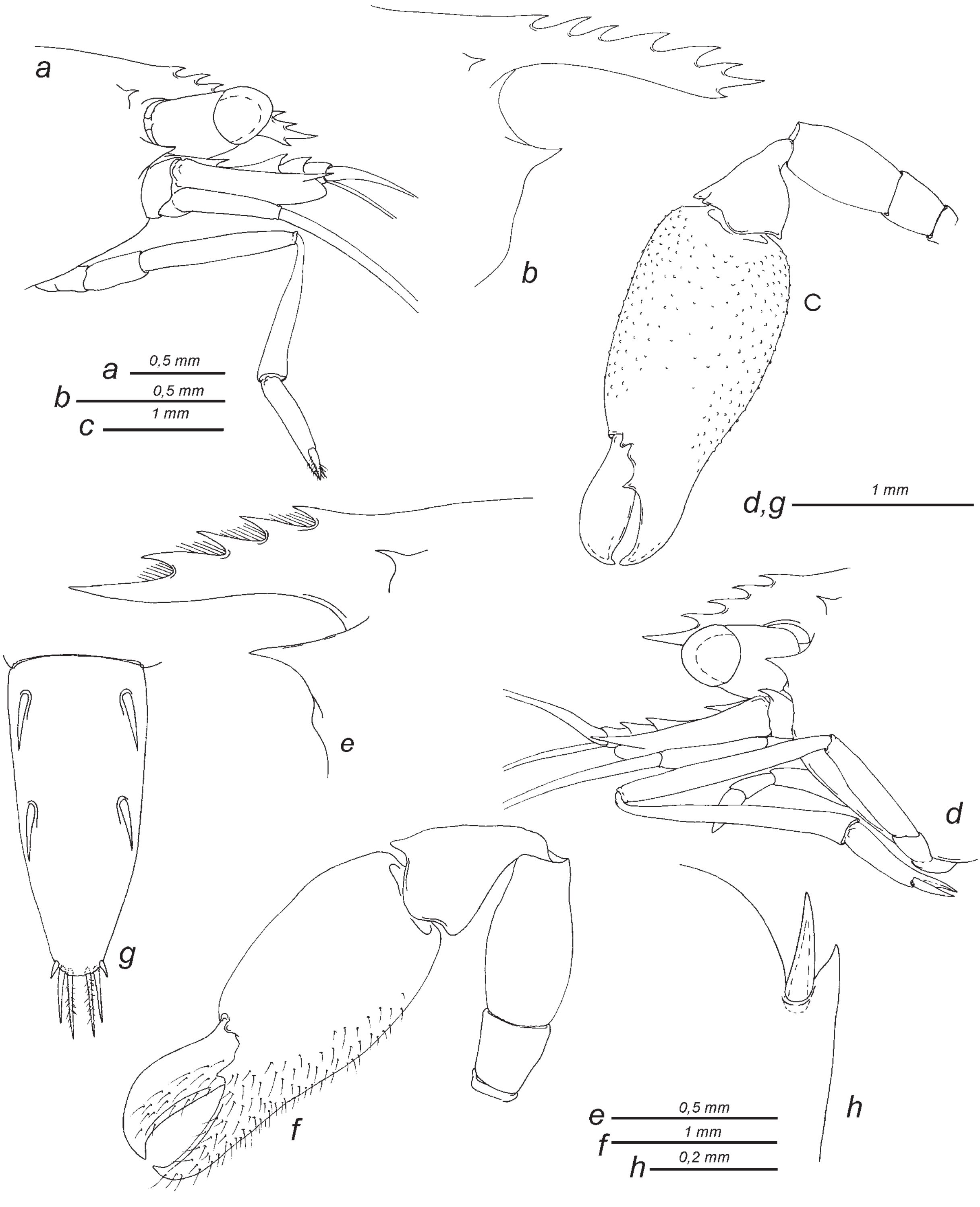

Fig. 9. *Periclimenaeus* sp. 1, mature ♀ (a–c) and *Periclimenaeus* sp. 2, mature ♂ (d–h): a — front of carapace,lateral view; b — rostrum; c — major second pereiopod; d — front of carapace, lateral view; e — rostrum; f — major second pereiopod; g — telson; h — disto-lateral angle of uropod.

Рис. 9. *Periclimenaeus* sp. 1, половозрелая ♀ (a–c) и *Periclimenaeus* sp. 2, половозрелый ♂ (d–h): a — передняя часть карапакса, вид сбоку; b — рострум; c — большая вторая переопода; d — передняя часть карапакса, вид сбоку; e — рострум; f — большая вторая переопода; g — тельсон; h — дисто-латеральный угол уропод.

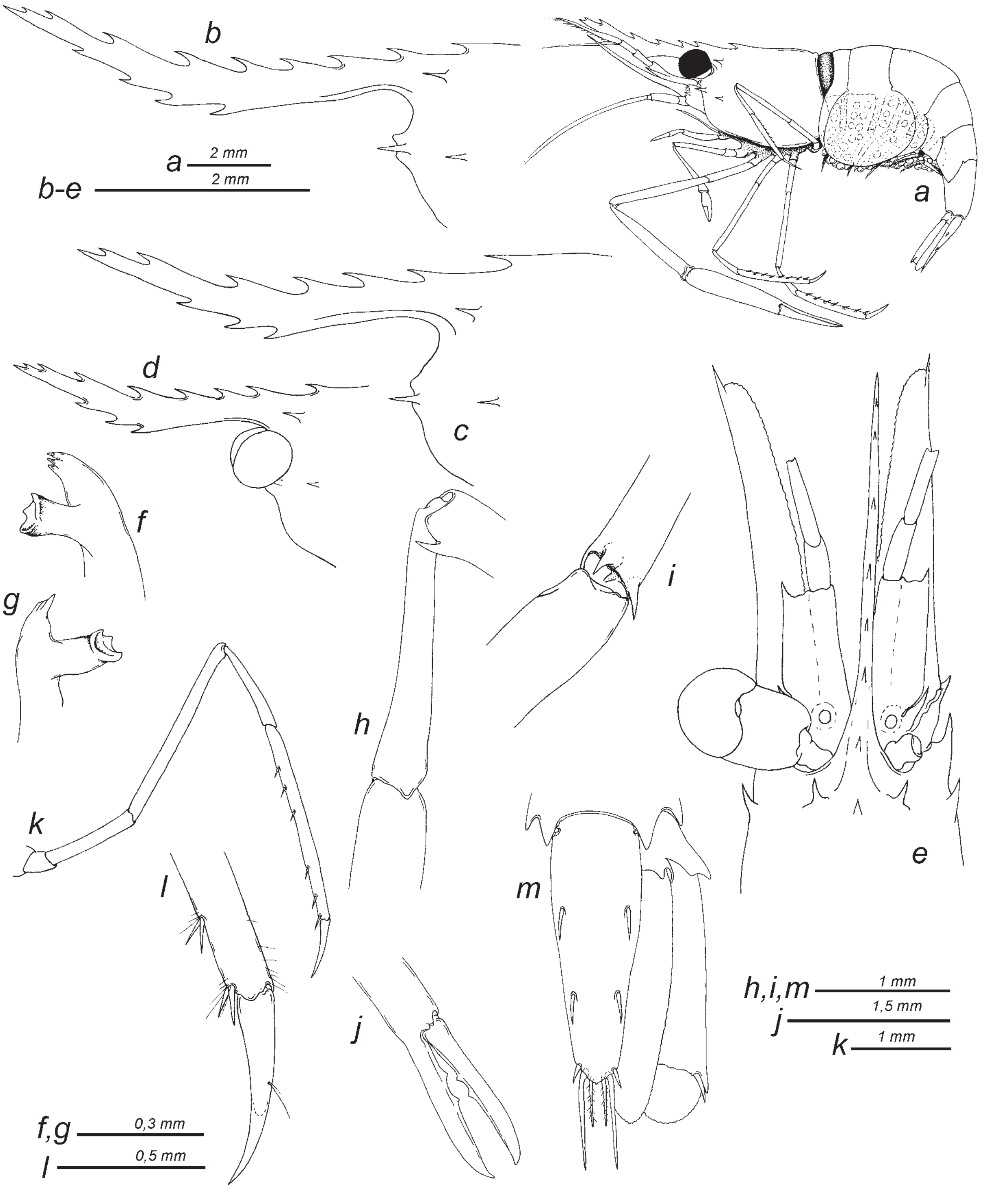

Fig. 10. *Periclimenes elegans*, ovigerous ♀ (a, c, e, f, g, m), juvenile ♂ (d) and mature ♂ (b, h-j): a — general view, lateral; b-d — rostrum; e — front of carapace, dorsal view; f, g — mandibule; h — carpo-meral articulation of second pereiopod; i — carpo-propodal articulation of second pereiopod; j — dactylus of second pereiopod; k — third pereiopod; l — dactylus of third pereiopod; m — telson and uropods.

Рис. 10. *Periclimenes elegans*, половозрелая ♀ (a, c, e, f, g, m), ювенильный ♂ (d) и половозрелый ♂ (b, h-j): a — общий вид, сбоку; b-d — рострум; e — передняя часть карапакса, дорсальный вид; f, g — мандибула; h — карпо-меральное сочленение вторых переопод; i — карпо-проподальное сочленение вторых переопод; j — дактилус вторых переопод; k — третья переопода; l — дактилус третьих переопод; m — тельсон и уроподы.

and lateral lamina; rostral formula 1+8/1, distal dorsal and ventral spines weak, last tooth in rostral series situated at the level of the hepatic spine. Carapace smooth, with antennal and hepatic spine, the last being larger. Forth abdominal somite with district dorsal crest (Fig. 11a); 6th abdominal somite elongated, about 2-2.5 times as long as wide. First pereiopod large and similar. Second pereiopod similar in size and shape; palm of the chelae about 1.5 –2 times as long as carpus; fixed finger with depression on the inner dorsal surface; dactylus simple. Third pereiopod (Fig. 11c) with propodus having several spines only in the distal ¼; dactylus (Fig. 11d) biunguiculate.

REMARKS. All Nhatrang specimens agree with Bruce's [1979a] description, and are clearly distinguishable from the other species of the genus, *P. brevicarpalis* (Schenkel, 1902), *P. holthuisi* Bruce, 1969 and *P. ornatus* Bruce, 1969 (see below), symbiotic with actinians inhabiting Nhatrang Bay.

HOST. The Nhatrang specimens were collected from the burrowing anemones *Macrodactyla* sp. and *Cerianthus* sp. The species has also been reported in association with the anemones *Dophleinia armata*, *Megalactis* sp, the scleractinian *Catalaphylla jardinei* and the alcyonarian *Lobophyton* sp. at 3–29 m in depth [Bruce, 1979a; Bruce & Svoboda, 1983; Chace & Bruce, 1993].

DISTRIBUTION. Tam Is., Nhatrang Bay, Viet Nam. Also known from the Indian Ocean: Andamand Sea, and from the Pacific Ocean: Indonesia, South China Sea, Philippines, southern Japan and Great Barrier Reef.

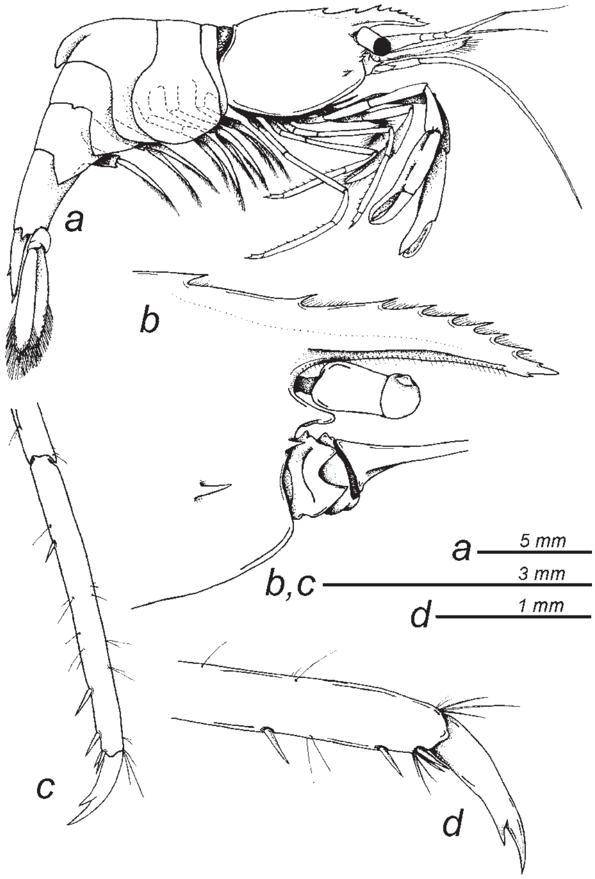

Fig. 11. *Periclimenes magnificus*, mature ♀. a — general view, lateral; b — rostrum and front of carapace; c — distal segments of third pereiopod; d — dactylus of third pereiopod.

Рис. 11. *Periclimenes magnificus*, половозрелая ♀. a — общий вид, сбоку; b — рострум и передняя часть карапакса; c — дистальные сегменты третьих переопод; d — дактилус третьих переопод.

DISTRIBUTION. Tre Is, Nhatrang Bay, Viet Nam. Also known from the western Indian Ocean: Red Sea and coasts of Kenya, and from the Pacific Ocean: Indonesia, Hong Kong, southern Japan, Great Barrier Reef, Norfolk and Marshall Islands.

Periclimenes ornatus Bruce, 1969
Fig. 12a–k.

Periclimenes ornatus Bruce, 1969b: 266 [type locality: Lung Ha Wong, Hong Kong]; 1982a: 252, Figs 11, 12. — Fransen, 1989: 136, fig. 3a–i. — Chace & Bruce, 1993: 119

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay, Tre Is., st. 9, depth 9, actinia № 1, 05.05.2003: 1 ovig.♀ and 1♂ on *Heteractis* aff. *crispa.* O.V. Savinkin coll.

DESCRIPTION. Hardly damaged female lacking of rostrum. Rostrum (Fig. 12b,c) of male reaching the distal margin of the distal segment of the antennal scale, directed horizontal; rostral formula 1+7/1, posterior-most tooth non isolated from the remainder on dorsal series, situated slightly posterior to level of hepatic spine. Carapace smooth, without supraorbital or postorbital spine, hepatic spine arising posterior and slightly ventrally to the level of antennal spine. Forth thoratic sternite with elongated transverse ridge with a deep median notch (Fig. 12i). Forth abdominal somite without district dorsal crest (Fig. 12a). Intermediate segment of antennule (Fig. 12d,e) with developed disto-lateral lobes and more marginal setae in females and simple in males. First pereiopod with fingers (Fig. 12f-h) about ¾ of palm, subspatulate. Second pair of pereiopods similar in size and shape; merus unarmed on flexor margin; carpus is about 1/3 as long as palm of the chelae, without distal spine; fingers slightly longer than ½ of palm. Third pereiopod (Fig. 12j) with propodus having 1-2 small ventral spines and a pair of disto-ventral spines in anterior part; dactylus simple (Fig. 12k), with flexor margin concave, not biunguiculate. Uropod slightly overreaching the extended telson.

HOST. The Nhatrang specimens were collected from the actinian *Heteractis* aff. *crispa*. The species has also been recorded in association with actinians *Heteractis magnifica*, *Entacmaea* spp, *Radianthus malu*, *Gyrostoma* sp, *Parasicyonis actinostroides*, *P. maxima* and *Cryptodendrum adhesivum* [Bruce, 1979a, Suzuki & Hayashi, 1977].

Philarius lifuensis (Borradaile, 1898)
Fig. 13a-m.

Periclimenes lifuensis Borradaile, 1898: 384, 397, 405–406, pl. 36, Figs 1a–c.

Periclimenes (*Falciger*) *lifuensis*. — Borradaile, 1917: 366, 371.

Periclimenes (*Ancylocaris*) *lifuensis*. — Kemp, 1922: 171, 220.

Philarius lifuensis. — Bruce, 1967: 568-570; Bruce, 1972a: 405, 413; Bruce, 1982b: 158–173, Figs 1–7.

MATERIAL. South China Sea, Viet Nam, Nhatrang Bay; Tam Is., st.23, 05.12.1985: 1 ovig.♀ and 1♂ on *Acropora* sp. T.A. Brytayev coll.

DESCRIPTION. Body slightly depressed (Fig. 13a,b). Rostrum (fig.12c–f) overreaching anteriorly the extended eyes, compressed laterally, with lateral carina expanded into supraocular eave; rostral formula 2+6/1. Carapace with dorsal profile slightly convex, with 2 teeth of dorsal series continuing onto gastric region, with supraorbital and large antennal spines. Pleuron of fifth somite acute. Forth thoratic

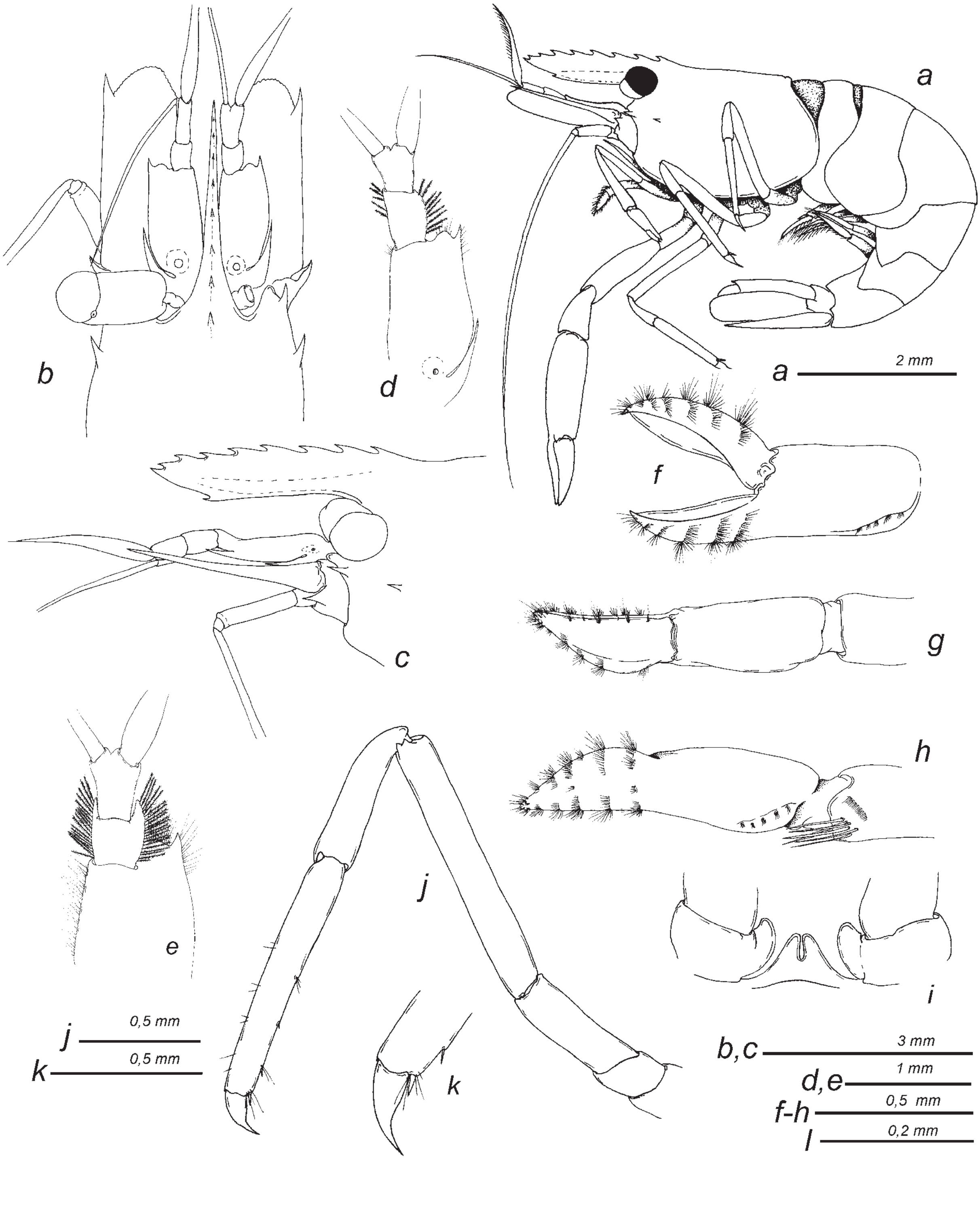

Fig. 12. *Periclimenes ornatus*, mature ♂ (a-d, f-k) and ovigerous ♀ (e): a — general view, lateral; b — front of carapace, dorsal view; c — same, lateral view; d — antennule; e — distal antennular segments; f-h — chela of first pereiopod; i — third sternite; j — third pereiopod; k — dactylus of third pereiopod.

Рис. 12. *Periclimenes ornatus*, половозрелый ♂ (a-d, f-k) и половозрелая ♀ (e): a — общий вид, сбоку; b — передняя часть карапакса, дорсально; c — тоже, вид сбоку; d — антеннула; e — дистальные антеннулярные сегменты; f-h — клешня первых переопод; i — третий стернит; j — третья переопода; k — дактилус третьих переопод.

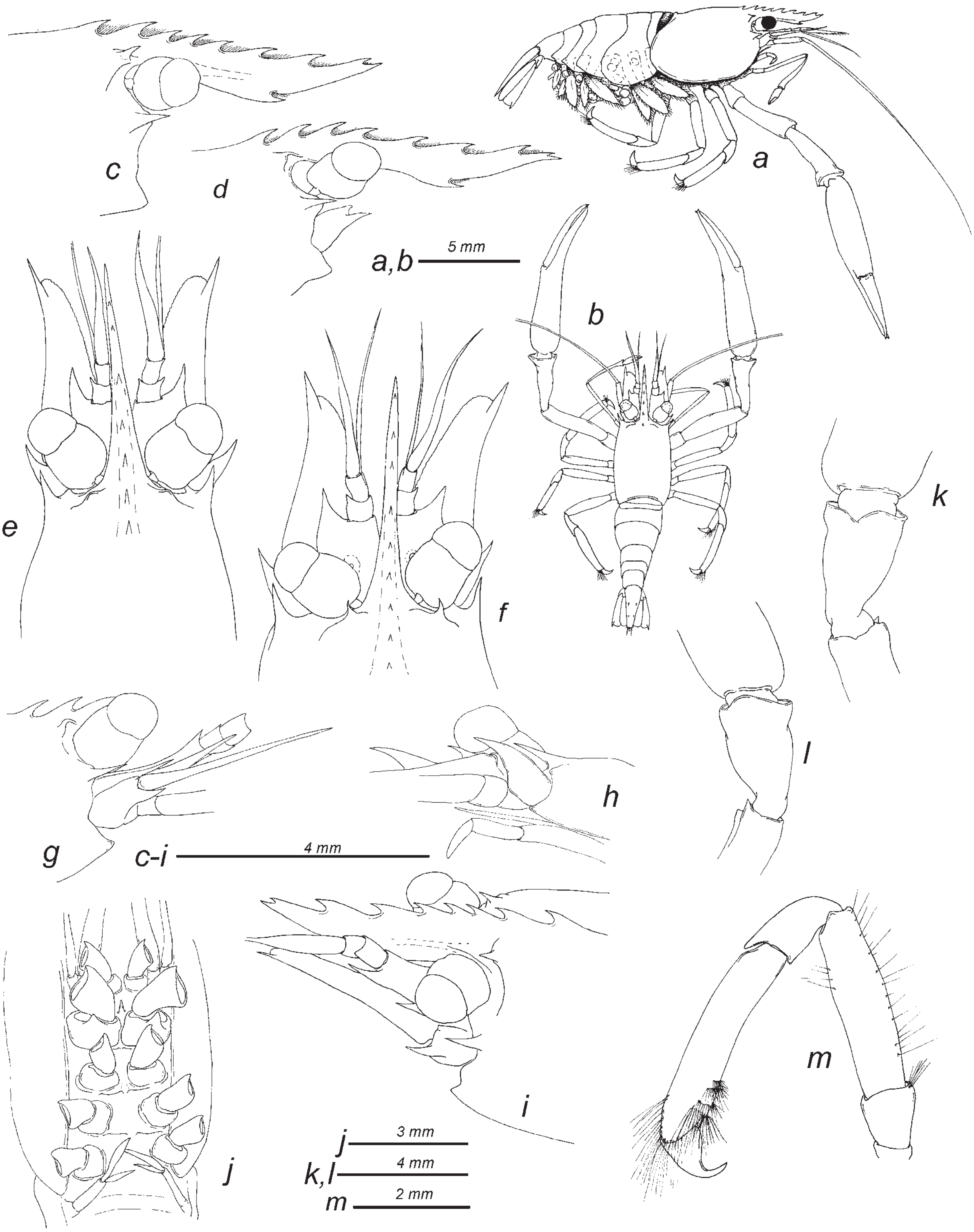

Fig. 13. *Philarius lifuensis*, ovigerous ♀ (a, c, f, i) and mature ♂ (b, d, e, g, h, j, k-m): a, b — general view, lateral; c, d — front of carapace, lateral view; e, f — front of carapace, dorsal view; g, h — basal segment of antenna; i — front of carapace, latero-dorsal view; j — basal segments of walking legs and sternites; k, l — carpus of second pereiopod; m — third pereiopod.

Рис. 13. *Philarius lifuensis*, половозрелая ♀ (a, c, f, i) и половозрелый ♂ (b, d, e, g, h, j, k-m): a, b — общий вид, сбоку; c, d — передняя часть карапакса, вид сбоку; e, f — передняя часть карапакса, дорсальный вид; g, h — базальные сегменты антенн; i — передняя часть карапакса, латеро-дорсальный вид; j — базальные сегменты ходильных ног и стерниты; k, l — карпус вторых переопод; m — третья переопода.

sternite with short stout median process (Fig. 12j). Antenna (Fig. 12g–i) with a robust basicerite and a very large and acute disto-lateral spine. Second pereiopod similar; merus with angular disto-ventral tooth and rounded disto-dorsal lobe; carpus (Fig. 12k, l) with stout tooth medially and rounded lobe laterally; fingers not provided with socket or plunger closure. Dactylus of 3rd pereiopod (Fig. 12m) curved, simple, not bearing hoof-shaped protuberance.

HOST. The Nhatrang specimen was collected from a colony of *Acropora* sp. On the same colony, two males of *Philarius imperialis* (Kubo, 1940) also were found.

DISTRIBUTION. Tam Is., Nhatrang Bay, Viet Nam. Also known from the Great Barrier Reef: Heron and Erskine Islands, and New Caledonia: Lifu, Loyalty Islands.

Discussion

The list of pontoniine shrimps associated with cnidarians in the coastal waters of Viet Nam has been updated from 15 to 22 species (Table 1). Most species are widespread in the Indo-West Pacific and, apparently, have not been reported from Viet Nam due to the scarce and accidental studies of cnidarian-associates carried out in the region. Conversely, two species (i.e. *Periclimenaeus rhodope* and *Philarius lifuensis*) were previously known only from a few places in Indian and Pacific Oceans so that their recordings in Viet Nam are particularly interesting.

Finally, we would like to underline the finding of the symbiotic shrimp of genus *Periclimenaeus* on colonies of both acroporid and pocilloporid corals. Representatives of this genus has only been known as symbionts of sponges and tunicates frequently attached to coral colonies [Bruce, 2002, pers. observ.]. Therefore their occurrence on coral colonies may be considered as accidental, probably resulting of avoidance from their real hosts that were attached to the coral colonies troubled during the sample collecting and processing.

ACKNOWLEDGEMENTS. This research has been carried out under the support of the Russian-Vietnamese Tropical Center. The authors wish to thank to the directors of Coastal Department of Tropical Center, Dr. V. K. Nezdoliy and Dr. Yu. N. Sbitkin, for their assistance in accomplishment of investigations, Dr. Yu. Yu. Dgebuadze, Dr. S. P. Musatov, Dr. M. V. Pereladov, O. V. Savinkin, N. P. U. Vu, N. T. H. Than, N. V. Tuan and C. V. Bang, who helped with material collecting. The authors are also very grateful to Dr. Alexander Bruce and Dr. Sammy De Grave who helped with the identifications and patiently supported our correspondence and to Dr. Daniel Martin, who kindly reviewed the manuscript.

Table 1. Review of data on associations of pontoniine shrimps with Cnidaria in Vietnam.
Таблица 1. Обзор данных по ассоциациям креветок-понтониин с Cnidaria во Вьетнаме.
NB — Nhatrang Bay, bold indicated the species firstly indicated in Viet Nam in this paper.

Symbiont species	Host species	Locality in Viet Nam	References
Coralliocaris graminea (Dana, 1852)	Madreporian coral	Pulo Con Dua (Polo Condore)	Kemp, 1922
	Acropora sp.	NB, Tam Is.	Our data
Coralliocaris nudirostris (Heller, 1861)	*Acropora* sp.	NB, Tam Is.	Our data
Coralliocaris superba (Dana, 1852)	*Acropora* sp.	NB, Tam Is, Mung and Tre Is	Bruce, 1993; our data
Coralliocaris venusta Kemp, 1922	*Acropora* sp.	NB, Tam Is.	Bruce, 1993; our data
Coralliocaris viridis Bruce, 1974	*Acropora* sp.	NB, Tre Is.,	Bruce, 1993; our data
Harpiliopsis beaupressi (Audouin, 1826)	*Pocillopora* sp.	NB, Tam and Tre Is.	Our data
	Pocillopora eydouxi	NB, Tam Is.	Our data
	Pocillopora verrucosa	NB, Mung Is.	Bruce, 1993
	Seriaotopora sp.	NB, Tam Is.	Our data
Harpiliopsis spinigera (Ortmann, 1890)	*Pocillopora eydouxi*	NB, Tre Is.	Our data
	Pociilopora sp.	NB, Tam Is.	Our data
	Seriatopora sp.	NB, Tam Is.	Our data
Jocaste japonica (Ortmann, 1890)	*Acropora* sp.	NB, Tre and Mung Is.	Bruce, 1993; our data
	Pocillipora verrucosa	NB, Tre Is.	Bruce, 1993
Jocaste lucina (Nobili, 1901)	*Acropora* sp.	NB, Tam and Tre Is.	Bruce, 1993
	Acropora tenuipes	NB, Tam Is.	Our data
	Pocillopora sp.	Cam Rahn Bay, Cape Hoi	Bruce, 1993
	Pocillopora eydouxi	NB, Tre Is.	Our data

Table 1 (continuing).
Таблица 1 (продолжение).

Symbiont species	Host species	Locality in Viet Nam	References
Palaemonella rotumana (Borradaile, 1898)	*Acropora* sp.	NB, Tam Is.	Our data
	Seriatopora sp.	NB, Tam Is.	Our data
	Porites cylindrica	NB, Tam Is.	Our data
Periclimenella spinifera (De Man, 1902)	Not recorded	NB, Tam and Tre Is.	Bruce, 1993
	Acropora sp.	NB, Tam and Tre Is	Our data
	Pocillopora sp.	NB, Tam and Tre Is	Our data
	Seriatopora sp.,	NB, Tam Is.	Our data
Periclimenes amymone De Man, 1902	*Acropora* sp.	NB, Tam and Tre Is.	Bruce, 1993; our data
	Acropora gemmifera	NB, Tre Is	Bruce, 1993
	Pocillopora sp.	NB, Tam Is.	Our data
	Pocillopora verrucosa	NB, Mung Is.	Bruce, 1993
	Seriatopora sp.	NB, Tam Is.	Our data
Periclimenes brevicarpalis (Schenkel, 1902)	anemone *Discosoma* sp.	Pulo Con Dua (Polo Condore)	Kemp, 1922
	Coral unidenth.*	Lo Bay	Bruce, 1993
	Sea anemone unidenth.	Cam Ranh Bay, Cape Hoi	Bruce, 1993
	Heteractis crispa	NB, Tre Is.	Our data
	Stichodactyla haddoni	NB, Tre and Tam Is.	Our data
Periclimenes consobrinus (De Man, 1902)	*Pocillopora verrucosa*	NB, Tre Is.	Bruce, 1993
Periclimenes elegans (Paulson, 1875)	*Heteracis* aff. *crispa*	NB, Tre Is	Our data
	Actinodendron sp.	NB, Tre Is.	Our data
Periclimenes holthuisi Bruce, 1969	*Stichodactyla mertensii*	NB, Tre Is.	Bruce, 1993
	Stichodactyla haddoni	NB, Tre and Tam	Our data
Periclimenes lutescens (Dana, 1852)	*Acropora* sp.	NB, Tre and Tam Is.	Bruce, 1993; our data
	Acropora gemmifera	NB, Tre Is.	Bruce, 1993
	Acropora tenuipes	NB, Tam Is.	Our data
Periclimenes magnificus Bruce, 1979	*Cerianthus* sp.	NB, Tre Is.	Our data
	Macrodactyla sp.	NB, Tre Is.	Our data
Periclimenes ornatus Bruce, 1969	*Heteractis* aff. *crispa*	NB, Tre Is.	Our data
Philarius gerlachei (Nobili, 1905)	*Acropora* sp.	NB, Tre Is.	Bruce, 1993
	Acropora sp.	NB, Tam Is.	Our data
Philarius imperialis (Kubo, 1940)	*Acropora* sp.	NB, Tre Is.	Bruce, 1993; our data
	Acropora tenuipes	NB, Tam Is.	Our data
	Pocillopora verrucosa	NB, Tre Is.	Bruce, 1993
Philarius lifuensis (Borradaile, 1898)	*Acropora* sp.	NB, Tam Is.	Our data

* Possibly was a mistake in host identification.
* Возможно была ошибка при определении хозяина.

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