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A partial revision of the genus *Periclimenes* Costa, 1884 (Crustacea: Decapoda: Palaemonidae)

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Abstract

A partial revision of the pontoniine shrimp genus *Periclimenes* Costa, 1844, is proposed, with the resurrection of the genus *Harpilius* Dana, 1852, and the designation of a new genus *Kemponia*. Three species are now placed in the genus *Harpilius*. *Kemponia* is designated to include 24 species of an expanded "*Periclimenes grandis* species group". Both genera are primarily coral reef species, with *Harpilius* species obligatory associates of scleractinian corals. The species of *Kemponia* are predominantly free-living, some as micro-predators. A few species are associates of scleractinian corals.

Key words: Decapoda Caridea, Palaemonidae, Pontoniinae, *Harpilius* Dana, 1852, genus resurrected, *Kemponia* gen. nov., systematics, identification keys

Introduction

The palaemonid sub-family Pontoniinae presently includes some 450 species. The largest genus, *Periclimenes* Costa, 1844, has 175 species, far more than any other genus of the sub-family. The genus was established for a Mediterranean species, now known to associate with anemones. They are now known to occur throughout the warmer waters of the world and reach their greatest diversity on tropical coral reefs, particularly in the Indo-West Pacific region. Many of these species fall into natural species groups. One of the first to be noted was the "*Periclimenes grandis* species group" (Kemp, 1922). More recently, a small group was segregated in a new genus, *Paraclimenes* (Bruce, 1994). A further 6 species were placed in new genera *Exoclimenella* and *Periclimenella* by Duris and Bruce (1995). The present paper is a partial revision as other species groups are being dealt with by other hands. The present report separates a further 27 species. For three, the genus *Harpilius* Dana, 1852, is resurrected. For 24 species of an expanded version of the *P. grandis*-group, a new genus, *Kemponia*, is designated. The remaining species remain in the restricted genus *Periclimenes* Costa. The genus *Ancylocaris* Schenkel, 1902, is considered to be a synonym of *Periclimenes* Costa *senso restricto*. The genus *Anchistia* Dana, 1852, should be considered as *insertae sedis* or possibly a synonym of *Harpiliopsis* (see Bruce, 1989).

The genus *Harpilius* was accepted by Borradaile (1917) although he noted that "The limits of this genus are doubtful." He included two of the species (*H. lutescens* Dana and *H. consobrinus* De Man) now replaced in this genus, as well as *H. gerlachei* Nobili, 1906, the latter since transferred by Holthuis (1952) to the genus *Philarius*. Kemp (1922) interpreted the genus similarly, but considered Borradaile's genus *Harpiliopsis* to be a synonym of *Harpilius* Dana. He included three further species which Borradaile had included in the separate genus, *Harpiliopsis* Borradaile, 1917. Holthuis (1952) re-established the genus *Harpiliopsis* Borradaile, and reduced *Harpilius* Dana to a subgenus of *Periclimenes* Costa, as a synonym of the genus *Ancylocaris* Schenkel (1902). The revised subgenus was much expanded to include a total of 50 species. The separation of the two subgenera, *Periclimenes* and *Harpilius*, was based primarily on the presence of an accessory tooth on the ambulatory dactyls of *Periclimenes* and its absence in *Harpilius*. This arrangement has been adopted by many subsequent authors.

It is unfortunate that, of the 27 species under discussion, the type material of eight species (*Harpilius lutescens* Dana, 1852, *Periclimenes (Ancylocaris) akiensis* Kubo, 1936, *Anchistia americana* Kingsley, 1878, *Anchistia edwardsi* Paulson, 1875, *Anchistia elegans* Paulson, 1875, *Anchistia ensifrons* Dana, 1852, *Anchistia grandis* Stimpson, 1860, *Periclimenes ungujaensis* Bruce, 1969) is no longer extant or of unknown whereabouts. Several of the type specimens of Borradaile's species are also not in a good state (R. Preece, pers. com., 23 April 2004).

Abbreviations used:

AM Australian Museum, Sydney.
BMNH Natural History Museum, London.
NTM Northern Territory Museum, Darwin.
CL Postorbital carapace length.
QM Queensland Museum, Brisbane.
R. Rostral dentition.
RMNH Nationaal Natuurhistorisch Museum, Leiden.
SMF Senckenberg Museum, Frankfurt.
USNM National Museum of Natural History, Washington.
ZMA Zoology Museum, Amsterdam.
ZMC Zoology Museum, Cambridge.
ZRC Zoological Reference Collection, National University, Singapore.
ZSI Zoological Survey of India, Calcutta.

Taxonomy

Family Palaemonidae Rafinesque, 1815,

Sub-family Pontoniinae Kingsley, 1978

Genus *Harpilius* Dana, 1852

Harpilius Dana, 1852: 6; 17.

Diagnosis. Small to medium sized pontoniine shrimps of subcylindrical body shape. Carapace smooth, glabrous, with rostrum well developed, dorsally and ventrally dentate, without epigastric or supraorbital, spines, hepatic and antennal spines present, orbit obsolescent, inferior orbital angle distinct, without ventral flange. Abdomen smooth, glabrous, pleura rounded, posterolateral and posteroventral angles of sixth bluntly acute. Antennule with short stylocerite, statocyst with statolith; flagellum well developed, upper ramus with shorter flagellum multi-segmented. Antenna with basicerite with lateral tooth, scaphocerite well developed. Eye well developed, elongate, subcylindrical, cornea globular, ophthalmic somite without median process (= *béc ocellaire*). Mandible without palp; molar and incisor processes well developed. Maxillula with feebly bilobed palp. Maxilla normal, with simple palp, basal endite bilobed, coxal endite obsolete. First maxilliped with simple palp, basal and coxal endites feebly separate, broad, exopod with well developed flagellum, caridean lobe short, broad, epipod large, bilobed, distal lobe larger. Second maxilliped with normal endopod, dactylar segment narrow, exopod well developed, epipod small, subrectangular, without podobranch. Third maxilliped normal, ischiomerus distinct from basis, slender, exopod well developed, coxa with elongate lateral plate, generally with small or rudimentary arthrobranch. Thoracic sternites narrow, fourth with slender finger-like median process, posterior sternites without acute processes. First pereiopods slender, chela with fingers simple. Second pereiopods well developed, robust, elongate, generally subequal, similar; major chela fingers without molar process and fossa, merus with distoventral tooth, carpus without distal teeth. Ambulatory pereiopods robust, propods without spines, dactyls simple, hamate, without basal process. Uropod with protopodite distolaterally dentate; exopod with small tooth and mobile spine distolaterally. Telson with two pairs of dorsal spines, three pairs of posterior spines.

Type species. By monotypy, *Harpilius lutescens* Dana, 1852.

Etymology. "Name placed on the Official List of Generic Names in Zoology in Opinion 712, in 1964. Etymology (e): "the name of the genus is from αρπη, pruning hook, and alludes to the hooked form of the tarsus" (Dana, 1852, U.S. Explor. Exped., 13: 576); with tarsus the dactylus of the last three pereiopods is meant." (Holthuis, 1993). Gender: masculine.

Biology. Obligatory shallow water associates of scleractinian corals.

Systematic position. The genus *Harpilius* Dana. appears particularly closely related to two other pontoniine genera that are also obligatory scleractinian associates, *Vir* Holthuis, 1952, and *Philarius* Holthuis, 1952. Their general morphologies are very similar, and all have a well developed finger-like medial process on the fourth thoracic sternite. All species of these genera have simple hamate ambulatory dactyls. *Vir* is readily distinguished from *Harpilius* and *Philarius* by the presence of a palp on the mandibles. *Philarius* species are distinguished from both *Vir* and *Harpilius* species by the lack of an hepatic spine on the carapace. The mouthparts of *H. lutescens* have been illustrated by Dana (1855, *partim*), Kubo (1940a, as *Periclimenes (Ancylocaris) amamiensis*), Holthuis (1952, *partim*) and the sternal process and ambulatory dactyl of *H. lutescens* are illustrated by Bruce (1981a, fig. 1CD; 1992a, fig. 21B,D).

Key to the species of *Harpilius* Dana, 1852

1. Dactylar segment of second maxilliped forming long narrow strip along medial edge of propod; with postorbital ridge; R 7-8/2-3 ..... ***Harpilius lutescens* Dana**
- Dactylar segment of second maxilliped not forming long narrow strip along medial edge of propod..... 2
2. Rostrum less slender, straighter, well exceeding scaphocerite; R.8/1-2 .... ***Harpilius consobrinus* De Man**
- Rostrum more slender, distally up-curved, scarcely exceeding scaphocerite; R. 7-8/3-5 ..... ***Harpilius bayeri* (Holthuis)**

The species of the genus *Harpilius* Dana, 1852

***Harpilius bayeri* (Holthuis, 1981) comb. nov.**

Periclimenes (Harpilius) bayeri Holthuis, 1953: 56 (*nomen nudum*).
Periclimenes bayeri — Bruce, 1972: 403 (*nomen nudum*).
Periclimenes bayeri Holthuis, 1981: 792–796, fig. 3a–h. — Li, 2000: 160, fig. 197.

Type material. Holotype, USNM 95539; 3 paratypes USNM 95536–95538. 14 paratypes, RMNH D.16856.

Type locality. Ine Village, Arno Atoll, Marshall Islands. RMNH paratypes from Kapingamaringa Atoll.

Host. Pocillopora sp. (Holthuis, 1981).

Distribution. Known also from Kapingamaringa and Rongerik Atolls (Holthuis, 1981); Eniwetak Atoll, Marshall Islands, (Devaney & Bruce, 1987), and Cartier Reef, Western Australia (Bruce, 1992b).

Harpilius consobrinus De Man, 1902

Harpilius lutescens — De Man, 1888: 536, pl. 22a fig. 1.
Harpilius consobrinus De Man, 1902: 836–840, pl. 26, fig. 54. Borradaile, 1917: 380–381.
Periclimenes consobrinus — Bruce, 1972: 403, 409, 412 (key), fig. 1b. — Holthuis, 1981: 795–796, fig.3 I–l. — Chace and Bruce, 1993: 107. — Li, 2000: 170–171, fig. 211. — Li and Liu, 2004: 93.

Type material. 6 syntypes (2 ovig. E), SMF-8531.

Type locality. Ternate, Moluccan Islands, Indonesia.

Host. Associated with *Pocillopora* spp., including *Pocillopora damicornis* (Bruce, 1976a).

Distribution. Also known from Kenya, Tanganyika, Comoro Islands, Réunion, Thailand, Vietnam, China, Philippines, Western Australia, and Queensland.

Remarks. Originally described as a *Harpilius*, this species was placed in *Periclimenes* by Holthuis (1952) as a synonym of *P. lutescens.* It now reverts to its original name. A colour illustration is provided by Bruce (1975, p.26 fig. 16) and a figure of the ambulatory dactyl by Bruce (1976b: 54, fig. 14F). The identity of the "*Periclimenes consobrinus*" specimens reported from the Red Sea by Balss (1915) is discussed by Bruce (1992a): none are referable to *H. consobrinus* (De Man). Other specimens in the older literature may be under the name of *Periclimenes lutescens.*

Harpilius lutescens Dana, 1852

Harpilius lutescens Dana, 1852: 25
Harpilius consobrinus Balss, 1915: 27 (*partim*). — Bruce, 1992a: 72–74, fig. 21 A–G.
Harpilius depressus — Tattersall, 1921: 389–390, pl. 28 fig.7.
Harpilius ? lutescens — Kemp, 1922: 235–237, figs 72–73.
Periclimenes (Ancylocaris) amamiensis Kubo, 1940a: 44–46, figs. 11–12.
Periclimenes (Harpilius) lutescens — Holthuis, 1952: 88–91, fig. 35.
Periclimenes lutescens — Bruce, 1972: 411, fig. 1A; 1992: 72–73, fig. 21a–g. — Chace and Bruce, 1993: 117–118. — Li, 2000: 209–21 1, fig. 271.

Type material. No longer extant.

Type locality. Tongatapu Island, Tongan Islands.

Hosts. Generally associated with corals of the genus *Acropora* [Scleractinia]. Also reported from *Pocillopora damicornis* (De Grave, 2000).

Habitat. Shallow water coral reefs.

Bathymetric range. 2–6 m (Bruce, 1976); 3 m (Bruce, 1981a).

Distribution. Also known from Saudi Arabia, Kenya, Tanganyika, Comoro Islands, Réunion, Indonesia, Thailand, Vietnam, Philippines, Western Australia, and Queensland.

Remarks. The discrepancy between the line illustrations and the colour figure provided by Dana (1855, pl. 37 fig.4) is discussed by Chace and Bruce (1993). Dana does not indicate how many specimens were available to him. It is clear that he was dealing with more than one species. The colour pattern illustrated corresponds sufficiently closely to that of *Philarius imperialis* (Kubo, 1940b) for that species to be considered as also occurring in the Tongan Islands. This species is also an associate of *Acropora* species and may be found in association with *H. lutescens.* Its colouration is illustrated by Bruce (1977a, p. 73; 1986, p. 162 fig. 2) and Minemizu (2000, p. 73). *Harpilius lutescens* has been illustrated in colour by Bruce (1975, p.26; 1977a, p. 73) and Minemizu (2000, p. 46). Tattersall (1921, as *H. depressus*) also illustrated the ambulatory dactyl and clearly shows that his specimen was not *Harpiliopsis depresssa* (Stimpson). He was also the first author to comment on the presence of a median process on the fourth thoracic sternite in a pontoniine shrimp.

Genus *Kemponia* gen. nov.

Diagnosis. Small to medium sized pontoniine shrimps of subcylindrical body shape. Carapace smooth, glabrous, with rostrum well developed, dorsally and ventrally dentate, with or without epigastric or supraorbital, spines, hepatic and antennal spines present, orbit obsolete, inferior orbital angle distinct, anterolateral angle rounded. Abdomen smooth, glabrous, pleura rounded, posterolateral angle bluntly rounded or dentate. Antennule with short stylocerite, statocyst with statolith; flagella well developed, upper ramus with shorter flagellum multi-segmented. Antenna with basicerite with lateral tooth, scaphocerite well developed. Eye well developed, elongate, subcylindrical, cornea globular, ophthalmic somite without median process (= *béc ocellaire*). Mandible without palp; molar and incisor processes well developed. Maxillula with feebly bilobed palp. Maxilla normal, with simple palp, basal endite simple, coxal endite obsolete. First maxilliped with simple palp, basal and coxal endites feebly separate, broad, exopod with reduced flagellum, caridean lobe small, broad; epipod large, generally triangular**.** Second maxilliped with normal endopod, dactylar segment narrow, exopod well developed, epipod small, subrectangular, with rudimentary podobranch. Third maxilliped normal, ischiomerus not fused to basis, exopod well developed, generally with numerous plumose setae distally, coxa with rounded lateral plate, generally with small or rudimentary arthrobranch. Thoracic sternites narrow, fourth with slender finger-like median process, posterior sternites without acute processes. First pereiopods slender, chela with fingers simple. Second pereiopods well developed, frequently slender, elongate, generally equal or unequal, similar or dissimilar; major chela fingers without molar process and fossa. Ambulatory pereiopods slender, dactyls simple, without basal process. Uropod with protopodite distolaterally dentate; exopod with small tooth and mobile spine distolaterally. Telson with two pairs of dorsal spines, three pairs of posterior spines.

Type species. By present designation, *Anchistia grandis* Stimpson, 1860.

Etymology. Named in honour of Stanley Wells Kemp, F.R.S., (1882–1945), in recognition of his seminal 1922 study *Notes on Crustacea Decapoda in the Indian Museum. XV. Pontoniinae.* Combined with part of the name *Pontonia* Latreille, 1829. Gender: feminine.

Biology. Mainly free-living, shallow water species, occupying a wide variety of habitats. Some "commensal" species associated with scleractinian, antipatharian and gorgonian hosts (*Kemponia amymone, K. kororensis* and *K. nilandensis*). The only American species (*K. americanus*) has been reported in association with anemones and crinoids, but these associations may have been accidental as the species has been frequently captured under free-living circumstances.

Systematic position. *Kemponia* appears very closely related to *Palaemonella* Dana, 1852: type species *P. tenuipes* Dana, 1852, sharing with that genus the conspicuous median sternal process on the fourth thoracic sternite but differing in the absence of a mandibular palp. It is also close to *Periclimenes* Costa, 1844 *sensu restricto*; type species *P. amethysteus* Risso, 1826. The mandibular palp is also absent in the species of this genus which lacks the median sternal process on the fourth thoracic sternite. In *Periclimenes* the ambulatory dactyls are biunguiculate or more ornate, except for a few species in which the accessory tooth on the corpus has been secondarily lost. In all *Kemponia* species the dactylus is simple, generally long and slender and not short and strongly curved. The ambulatory propod is spinulate. In the closely related *Harpilius* species the propod is distally setose and devoid of spines and the dactylus short and strongly curved.

Key to the species of *Kemponia* gen. nov.

1. Merus of second pereiopod with distoventral tooth 2
- Merus of second pereiopod unarmed 15
2. Supraorbital spines present..... 3
- Supraorbital spines absent 11
3. Distal tooth of scaphocerite distinctly exceeding lamella 4
- Distal tooth of scaphocerite not, or scarcely, exceeding lamella; R. 1+6-8/1-3..... ..... *K. demani* (Kemp)
4. Rostrum shallow, ambulatory pereiopods long and slender, fifth exceeding scaphocerite 5
- Rostrum moderately deep, ambulatory pereiopods relatively stout, fifth not exceeding scaphocerite 8
5. Carpus of second pereiopod with conspicuous tooth on inner side 6
- Carpus of second pereiopod without conspicuous tooth on inner margin 7
6. Carpus of male second pereiopod subequal to or shorter than merus, carpus with distomedial tooth; R. 1+6-8/2-4..... ***K. andamanensis* (Kemp)**

- Carpus of male second pereiopod conspicuously longer than merus, carpus without distomedial tooth; R. 1+5-6/2 ..... ***K. suvadivensis*** **(Borradaile)**

7. Carpus of first pereiopod at least 1.75 times chela length; male second pereiopod with chela not more than 1.25 of carpal length; in females subequal to chela or slightly shorter; R.1+6-8/2-3 ..... ***K. agag*** **(Kemp)**
- First pereiopod carpus less than 1.5 of chela length; chela of second pereiopod more than 1.3 times carpus length in both sexes; R. 1+5-6/2-3. ***K. longirostris*** **(Borradaile)**

8. Distal margin of second pereiopod carpus with 1–2 acute teeth 9
- Distal margin of second pereiopod carpus without acute teeth; R. 7-8/3..... ..... ***K. ensifrons*** **(Dana)**

9. Carpus of second pereiopod with two acute distal teeth 10
- Carpus of second pereiopod with single distomedial tooth only; R. 1+5-9/2-5..... ..... ***K. grandis*** **(Stimpson)**

10. Ambulatory pereiopods with propods strongly spinulate; chela of second pereiopod (male only?) finely tuberculate; R. 1+5-7/2-3..... ***K. elegans*** **(Paulson)**
- Ambulatory pereiopods with propods with small distoventral spine only; chelae of second pereiopods not tuberculate; R. 1+ 6-7/3..... ***K. amymone*** **(De Man)**

11. Rostrum greatly exceeding scaphocerite 12
- Rostrum subequal to scaphocerite 13

12. Second pereiopods with ischium distoventrally unarmed, rostrum sinuous, upcurved, ambulatory propods segmented, non-spinulate; R.1-8-11/6-9 .... ***K. tenuipes*** **(Borradaile)**
- Second pereiopods with strong distoventral ischial tooth, rostrum straight, horizontal, ambulatory propods not segmented, spinulate; R.1+10/6..... ***K. lacertae*** **(Bruce)**

13. Second to fourth dorsal rostral teeth enlarged and grouped over orbital region; ambulatory propods with distoventral spines only; R. 1+6-7/3-4..... ***K. kororensis*** **(Bruce)**
- Dorsal rostral teeth evenly distributed, similar 14

14. Inferior orbital angle rounded; second pereiopod carpus with two strong distal teeth, dactylus with proximal lateral flange; R. 1+6/5-6 ..... ***K. platycheles*** **(Holthuis)**
- Inferior orbital angle acute; second pereiopod carpus without strong teeth; dactylus without lateral flange; R. 1+6-7/2 ..... ***K. darwiniensis*** **(Bruce)**

15. Supraorbital spines present..... 16
- Supraorbital spines lacking 19

16. Second pereiopod carpus much longer than palm; R. 1+6-9/2-3..... ..... ***K. anacanthus*** **(Bruce)**
- Second pereiopod carpus not longer than palm 17

17. Inferior orbital angle obsolete; R. 1+5/3 ..... ***K. paulsoni*** **(Bruce)**
- Inferior orbital angle distinct..... 18

18. Rostral lamina slender; second pereiopod carpus distinctly shorter than merus; R. 1+7-8/3-4 ..... ***K. nilandensis*** **(Borradaile)**

- Rostral lamina deep; second pereiopod carpus subequal to merus; R. 1+7/3 .... ***K. edwardsii*** **(Paulson)**

19. Robustly built species, with two teeth situated on carapace posterior orbital margin 20
- Slenderly built species, with one tooth situated on carapace posterior to orbital margin 21

20. Eyestalk with conspicuous dorsal tubercle; carpus of second pereiopod distinctly shorter than chela; R. 2+6-8/2-5..... ***K. seychellensis*** **(Borradaile)**
- Eyestalks without dorsal tubercles, carpus of second pereiopod about 0.8 of chela length; ambulatory dactyl about 0.25 of propod length; R. 2+5/3 .... ***K. ungujaensis*** **(Bruce)**

21. Two postorbital teeth present, first tooth epigastric; carpus and fingers of second pereiopod subequal to palm; ambulatory dactyl about 0.35 of propod length; R. 2+6-7/3–4 ..... ***K. akiensis*** **(Kubo)**
- One postorbital tooth only..... 23

22. Postorbital tooth epigastric; distolateral angle of basal antennular segment multidentate; second pereiopods weakly developed, chelae about 0.6 of carapace length, fingers without diastemal notches; R. 1+ 9-8/4-5..... ***K. johnsoni*** **(Bruce)**
- Postorbital tooth not epigastric; distolateral angle of basal antennular segment with distolateral tooth only; second pereiopods well developed, chelae about 0.9–1.1 of carapace length, fingers with distinct diastemal notches 22

23. Second pereiopod carpus about 0.5 of palm length; ambulatory dactyl about 0.5 of propod length; R. 1+6-9/2-3 ..... ***K. americanus*** **(Kingsley)**
- Second pereiopod carpus subequal or longer than palm length; ambulatory dactyl about 0.35 of propod length; R. 1+7-8/4-5 ..... ***K. calmani*** **(Tattersall)**

The species of *Kemponia* gen. nov.

Kemponia agag **(Kemp, 1922) comb. nov.**

Periclimenes (Ancylocaris) agag Kemp, 1922: 197–201, figs 47–50, pl. 7, fig. 9. — Gurney, 1938: 15,17.
Periclimenes (Harpilius) agag — Holthuis, 1952: 10. — Ledoyer, 1984: 25–28, fig. 10.
Periclimenes agag — Bruce, 1992a: 64–66, fig. 16. — Li, 2000: 150, fig. 181.

Type material. "Thirty five, including Types", ZSI C 374–6/1.

Type locality. Port Blair, Andaman Islands.

Habitat. "bottom of small corals and sponge-encrusted stones" (Kemp, 1922).

Bathymetric range. 7–33 m (Kemp, 1922); 1–17 m (Bruce, 1992).

Distribution. Also known from the Egyptian Red Sea, Queensland, Marshall Islands and New Caledonia.

Remarks. The Queensland specimens, from Lizard Island, were caught in baited traps.

***Kemponia akiensis* (Kubo. 1936) comb. nov.**

Periclimenes (Ancylocaris) akiensis Kubo, 1936: 47–50, pl.14.
Periclimenes akiensis — Bruce, 1987a: 1423, 1425. — Li, 2000: 150, fig. 182.

Type material. 3 ♂, 1 ovig. ♀, syntypes. Present whereabouts unknown (J. Okuno, pers. com., 25 February 2004).

Type locality. Simokamogari-mura, Aki Province, Japan.

Habitat. Weedy shallow water (Kubo, 1936).

Bathymetric range. No data, apparently shallow water.

Distribution. Known from the type locality and Amakusa (Kikuchi & Miyake, 1975) in Japan, and Singapore only.

Remarks. The male specimens had ventral abdominal hemiarthrinid bopyrid parasites (Kubo, 1936).

***Kemponia americanus* (Kingsley, 1878)**

Anchistia americana Kingsley, 1878: 65.
Periclimenes americanus — Rathbun, 1902: 20 (2); 121.
Periclimenes (Harpilius) americanus — Holthuis, 1951: 60–66, pl. 18a–j, pl. 19a–e (full synonymy).

Type material. Whereabouts of the type specimen unknown (Holthuis, 1951).

Type locality. Key West, Florida, U.S.A.

Habitat. Mainly shallow sandy or rocky bottoms; coral reefs; abundant in sea grass beds (Bauer, 1985). .

Bathymetric range. Shallow to 44 m; 73 m (Holthuis, 1951).

Larvae. First and fifth zoeal l stages described by Gurney (1936, 1943).

Distribution. East coast of United States, from North Carolina to Florida; Bermuda; West Indies; Colombia.

Remarks. Reported in association with anemones, *Bartholomea annulata* and *B. granulatum*, and crinoids, *Nemaster grandis*, as well as a range of habitats, in Colombian waters (Criales, 1984). Frequently captured under free-living circumstances.

***Kemponia amymone* (De Man, 1902) comb. nov.**

Periclimenes amymone De Man, 1902: 829–833, pl. 25 fig. 53. — Li, 2000: 155–156, fig. 190. — Jayachandran, 2001: 285–286, fig. 77.(descr.)
Type material. 2 syntypes (1 ovig. ♀), SMF-8526.

Hosts. Associated with a wide variety of branching corals, including *Acropora, Pocillopora, Stylophora, Seriatopora* (Patton, 1966; Bruce, 1972; Bruce and Coombes, 1995).

Habitat. Coral reefs.

Bathymetric range. Shallow water to 23–24 m (Bruce, 1991).

Distribution. Also known from the Nicobar Islands, Singapore, Vietnam, China, Indonesia, Papua New Guinea, Western Australia, Northern Territory, Queensland, Solomon Islands, Phillipines, and New Caledonia.

Remarks. One of the 3 known commensal species of the genus. Kemp (1922) noted that the ambulatory pereiopods of this species were particularly stout for a member of the "*grandis* species group" and were without spinules on the posterior border of the propod. The dactylus is also rather elongate-hamate in appearance. The species therefore resembles the genus *Harpilius* in some features. It confirms its placement in the "*grandis* species group" by the presence of a supraorbital spine and the distoventral angle of the ambulatory propod is actually provided with a small spine (Bruce, 1983, fig. 7C) as well as dense transverse rows of setae. Ledoyer (1984, fig 11) reports *Periclimenes (Harpilius)* cf. *amymone* from sea grass beds in New Caledonia. As his figure shows the typical distoventral propodal spine with dense distal setation of the fifth pereiopod confirms that it is referable to *Periclimenes amymone* De Man.

Kemponia anacanthus (Bruce, 1989) comb. nov.

Periclimenes anacanthus Bruce, 1989b: 105–114, figs. 1–5.
Periclimenes anacanthus — Li, 2000: 156, fig. 191.

Type material. Ovigerous ♀ holotype, NTM Cr.006317; ♂ allotype, NTM Cr.006317; 3♂, 6 ♀ (5 ovig.) paratypes, NTM Cr.006317. 1 ♀ paratype, RMNH Crust D.37303.

Type locality. North Stradbroke Island, Moreton Bay, Queensland, Australia.

Habitat. Zostera beds.

Bathymetric range. 0.1–5.0 m.

Distribution. Known from Western Australia, Northern Territory and Queensland, Australia only.

Remarks. Periclimenes sp. aff. *anacanthus* has been reported from Cape Flattery, Queensland, 5 m (Bruce, 2003).

Kemponia andamanensis Kemp, 1922) comb. nov.

Periclimenes (Ancylocaris) andamanensis Kemp, 1922: 204–209, figs. 54–57.
Periclimenaeus (Harpilius) andamanensis — Holthuis, 1952: 79.
Periclimenes andamanensis — Bruce, 1977c: 269. — Chace and Bruce, 1993: 103. — Li, 1996: 229–230, fig.7; 1997: 238; 2001: 81.
Type material. Syntypes ("many"), ZSI C 380-1/1.

Type locality. Ross Channel, Port Blair, Andaman Islands, India.

Habitat. In algae (Li, 1997).

Bathymetric range. Intertidal to 7–15 m (Li, 2001).

*Distribution***.** Known also from Madagascar, Andaman Islands, Indonesia, China, South China Sea, Japan, and Queensland.

Kemponia calmani (Tattersall, 1921) comb. nov.

Periclimenes calmani Tattersall, 1921: 385–386, pl. 27, fig. 11, pl. 28, figs. 4–15. — Gurney, 1927: 229, 264, figs 66–69. — Bruce, 1987a: 1415–1425, figs. 1–5. — Li, 2000: 165–166, fig. 204.
Periclimenes (Ancylocaris) calmani — Kemp, 1922: 176.

*Type material***.** Lectotype ♀, BMNH 1921.12.19.44; 3 ♀ paralectotypes BMNH 1921.12.19.45–47.

Type locality. Sudan, Red Sea coast, precise locality not designated.

Habitat. No data.

Bathymetric range. Shallow water.

Larvae. Zoeal Stages 1–5 (Gurney, 1927).

*Distribution***.** Known also from Egypt, Sudan, Malaya, Singapore, Indonesia, and eastern Mediterranean Sea (Monod, 1930; Duris, 1987).

*Remarks***.** One of the two pontoniine shrimps to have spread from the Red Sea to the Mediterranean Sea. The status of Johnson's specimens referred to this species, from Malaya and Singapore (Johnson, 1962), need to be re-assessed. Unfortunately it is unlikely that this material is still extant (P.K.L. Ng, pers. com.).

The Indonesian specimens described by Holthuis (1952), as *Periclimenes (Harpilius) ? calmani*, one from 120–400 m, seem unlikely to be conspecific with the shallow water species and are intermediate with *Periclimenes leptopus* Kemp, 1922. It is at present uncertain whether or not *P. leptopus*, a shallow water species, in the collection of the Zoological Survey of India, should be referred to the genus *Kemponia*.

Kemponia darwiniensis (Bruce, 1987) comb. nov.

Periclimenes darwiniensis Bruce, 1987c: 29–38, figs. 1–5. — Li, 2000: 174, fig. 217.

*Type material***.** Holotype ♂, NTM Cr.2547a.. Paratypes also in the NTM. Paratype, RMNH D.36322.

*Type locality***.** Weed Reef, 12°31.6'S 130°47.3'E, Darwin Harbour, Darwin, Northern Territory, Australia.

Habitat. Shallow coral reef or rocky pools.

Bathymetric range. Intertidal.

*Distribution***.** Not known outside the Northern Territory. Also reported from East Point, Darwin, (Bruce, 1988a).

***Kemponia demani* (Kemp, 1915) comb. nov.**

Periclimenes demani Kemp, 1915: 279–283, fig. 27, pl. 13, fig. 10. — Li, 2000: 175, fig. 219. — Bruce, 1982: 238–240, fig. 3.
Periclimenes (Ancylocaris) demani — Kemp, 1922, 219, fig. 64.
Periclimenes (Harpilius) demani — Holthuis, 1952 83–84.

*Type material***.** Syntypes, ZSI C 8981-4/10.

Type locality. Chilka Lake, Orissa, India.

Habitat. Reported from among weeds in brackish water (Kemp, 1915).

Bathymetric range. Shallow brackish waters (Kemp, 1915, 1922).

Distribution. Known from India, Burma, Hainan Island and Hong Kong only.

*Remarks***.** One of the few pontoniine shrimps known from brackish water.

***Kemponia edwardsi* (Paulson, 1875) comb. nov.**

Anchistia Edwardsi Paulson, 1875: 114, pl.17 fig. 2-2b. — Nobili, 1906: 53.
Periclimenes (Falciger) edwardsi — Borradaile, 1917: 371.
Periclimenes (Ancylocaris) edwardsi — Kemp, 1922: 172.
Periclimenes (Periclimenes) edwardsi — Holthuis, 1952: 11.
Periclimenes (Harpilius) cf. *edwardsi* — Ledoyer, 1968: 69–70, pl. 5 figs 1–9.
Periclimenes edwardsi — Li, 2000: 178. — Bruce, 2003: 120, fig. 3Q.

*Type material***.** No longer extant.

Type locality. Red Sea.

Habitat. No data.

Bathymetric range. Shallow water sea grass beds (Ledoyer, 1968).

Distribution. Red Sea and ? Madagascar, Tuléar (Ledoyer, 1968).

*Remarks***.** This poorly known species is discussed by Bruce (2003, as *P. edwardsii*). The material from Tuléar, Madagascar, described and illustrated by Ledoyer (1968) shows a number of differences and may not be conspecific: the second pereiopod carpus exceeds the palm length.

***Kemponia elegans* (Paulson, 1875) comb. nov.**

Anchistia elegans Paulson, 1875: 113, pl. 17, fig. 1.
Periclimenes (Falciger) elegans — Borradaile, 1917: 371.
Periclimenes (Ancylocaris) elegans — Kemp, 1922: 215–218, figs. 60–62.
Periclimenes (Harpilius) elegans — Holthuis, 1952: 81, fig.31.
Periclimenes elegans — Bruce, 1971: 7. — Li, 2000: 178–180, fig. 225.

Material examined. 1♂, 1♀, stn. A-03-7, 3.5 km N of Heikili Point, Maui, Hawaiian

Islands, 11 October 2003, 6–14 m, in *Halimeda incrassata*, coll. C. Pitmann and P. Fiene, AJB 3225, QM W 26904.

Type material. No longer extant.

Type locality. Red Sea.

Habitat. Coral reef habitats.

Bathymetric range. Mainly shallow water; to 38 and 53 m (Chace & Bruce, 1993).

Distribution. Also known from Egypt, Sa'udi Arabia, Koweit, Aden, Kenya, Zanzibar, Tanganyika, Madagascar, Seychelle Islands, Minikoi, Pakistan (?), India, Sri Lanka, Andaman Islands, Nicobar Islands, Singapore, Indonesia, China, Hong Kong, Ryukyu Islands, Japan, Philippines, Papua New Guinea, Western Australia, Northern Territory, Queensland, Hibernia Reef, Solomon Islands, Caroline Islands, Marshall Islands, Society Islands and Tuamotu Islands (?)

*Remarks***.** One of the commonest coral reef species. The present specimens recorded here present no special features and are included here as the species has not been previously recorded from the Hawaiian Islands. They have a rostral dentition of 1+7/3 (♂) and 1+6/3 (♀).

***Kemponia ensifrons* (Dana, 1852) comb. nov.**

Anchistia ensifrons Dana, 1852: 25.
Periclimenes (Falciger) ensifrons — Borradaile, 1917, 367, 370.
Periclimenes ensifrons — Borradaile, 1898: 382. — Nobili, 1899: 234: 1907: 359. — Kemp, 1915: 282; 1922: 209–210. — Bruce, 1971: 5; 1984: 145. — Devaney and Bruce, 1987: 230. — Chace and Bruce, 1993: 111. — Li, 1997: 238–239; 2000: 180; 2001: 82.
Periclimenes (Harpilius) ensifrons — Holthuis, 1952: 11.

Type material. No longer extant.

*Type locality***.** Balabac Strait, North Borneo.

*Habitat***.** Coral reefs.

*Bathymetric range***.** Intertidal to 35 m (De Grave, 2000).

Distribution. Egyptian Red Sea, Zanzibar, Comoro Islands, Seychelle Islands, Burma, China, Papua New Guinea, Marshall Islands, Tuamotu Islands.

Remarks. This species is very closely related and possibly synonymous with *K. grandis* (Stimpson). Most reports have been based on isolated specimens. A pair of recently studied specimens of *K. grandis* (from Sweers Island, South Wellesley Islands, Queensland, QM W 27141) showed the male, with a CL of 2.0 mm and R. 1+7/3, with typical second pereiopod chelae, as figured in Kemp (1922), and an associated ovigerous female, CL 2.4 mm, R. 1+ 6/4, with the second pereiopod carpus completely devoid of any acute tooth as described for *K. ensifrons*.

***Kemponia grandis* (Stimpson, 1860) comb. nov.**

Anchistia grandis Stimpson, 1860: 39.
Periclimenes grandis — Borradaile, 1898: 382. — Bruce, 1976a: 7, fig. 2. — Li, 2000: 186–187, fig. 235. — Jayachandran, 2001: 297–300, fig. 83 (description).
Periclimenes (Harpilius) grandis — Holthuis, 1952: 79–81.

Type material. Syntype, BMNH 61.44 (Evans, 1967: 402), other syntypes not extant.

Type locality. O-shima Island, Ryu-kyu Islands, Japan.

Habitat. Mainly found in coral reef habitats.

Bathymetric range. Shallow water, to 15 m (De Grave, 2000).

Larvae. First zoeal stage (Gurney, 1938); first to sixth zoeal stages, post-larva (Pillai, 1950).

Distribution. Also known from Egypt, Israel, Jibuti, Yemen, Kenya, Zanzibar, Tanganyika, Moçambique, Comoro Islands, Madagascar, Seychelle Islands, Sri Lanka, Burma, Malaya, Singapore, Indonesia, Vietnam, China, Japan, Papua New Guinea, Western Australia, Northern Territory, Queensland, Japan, Caroline Islands, Marshall Islands, Fijian Islands, Tuvalu and Tuamotu Islands.

Remarks. A detailed description of this species was provided by Kemp (1922), who did not illustrate the mouthparts. Holthuis (1952) noted that the mouthparts are typical for *Periclimenes*. The mouthparts were described in detail and illustrated by Bruce (1976a) Further information, including a tabular differentiation from *P. elegans* is provided by Jayachandran (2001).

***Kemponia johnsoni* (Bruce, 1987) comb. nov.**

Periclimenes calmani — Johnson, 1962: 59, 75; 1979: 33 (*partim*).
Periclimenes johnsoni Bruce, 1987c: 115–123, figs. 1–5. — Li, 2000: 199–200, fig. 254.

*Type material***.** Holotype ovig. ♀, 7 paratypes, ZRC 1986. J.G891–G909; 4 ovig. ♀, ZRC 1986. 27–34, J.G891–909. 1 ovig. ♀, paratye, NTM Cr.0040188.

Type locality. Pasir Laba, Singapore, 1°21'N, 103°38'E.

*Habitat***.** *Enhalus* beds.

Bathymetric range. Shallow water.

*Distribution***.** Known only from Singapore and Qinglan, Hainan Island.

***Kemponia kororensis* (Bruce, 1977) comb. nov.**

Periclimenes kororensis Bruce, 1977: 33–42, figs. 1–4. — Li, 2000: 201–202, fig. 258.

*Type material***.** Ovigerous ♀ holotype, USNM 168474.

Type locality. Koror, Palau Islands, Caroline Islands.

Host. *Heliofungia actiniformis* (Quoy and Gaimard, 1833) [Scleractinia].

Bathymetric range. To 15 m (Masuda, 1999).

Distribution. Also known from Malaysia, Indonesia, Japan, Philippine Islands, Papua New Guinea, Queensland, and Marshall Islands.

Remarks. One of the three known commensal species of the genus. Strictly associated with *Heliofungia*.

Kemponia lacertae (Bruce, 1992) comb. nov.

Periclimenes lacertae Bruce, 1992a: 46–53, figs. 1–6. — Li, 2000: 203, fig. 260.

Type material. Holotype ♂, AM P39299.

Type locality. Stn Qld-197, Chinaman's Ridge, Mrs Watson's Bay, Lizard Island, Queensland, Australia.

Habitat. No data.

Bathymetric range. 22 m.

Distribution. Known from type locality only.

Remarks. The specimen was caught by trap.

Kemponia longirostris (Borradaile, 1915) comb. nov.

Palaemonella longirostris Borradaile, 1915: 210; 1917: 359, pl. 53 fig. 5.
Periclimenes (Falciger) affinis Borradaile, 1915: 211: 1917: 372–373, pl. 54 fig. 7.
Periclimenes (Ancylocaris) proximus Kemp, 1922: 201–204, figs 51–53.
Periclimenes (Harpilius) longirostris — Holthuis, 1958: 3–6, fig. 1.
Periclimenes longirostris — Bruce, 1974: 191: 1981b: 195–196, figs 4, 18a, 18d. — Fransen, 1994: 125–126, figs 91–92, pl. 3D. — Li, 2000: 208–209, fig. 269.

Type material. Two syntypes. Larger specimen selected as lectotype by Holthuis (1958). ZMC I.9592.1 Smaller syntype, considered unidentifiable with certainty by Holthuis.

Type locality. Naifaro Island, Fadifollu Atoll, Maldive Islands.

Habitat. Coral reefs.

Bathymetric range. To 40 m (Fransen, 1994).

Distribution. Also known from Israel, Zanzibar, Seychelle Islands, Chagos Islands, Andaman Islands, Indonesia, Philippine Islands, Queensland, Papua New Guinea, and Marshall Islands,

Remarks. Some specimens recorded in association with Alcyonaria by Fransen (1994) but most reports suggest a free-living species.

Kemponia nilandensis (Borradaile, 1915) comb. nov.

Periclimenes (Falciger) nilandensis Borradaile, 1915: 211; 1917: 324, 372, pl. 54, fig. 13.
Periclimenes (Ancylocaris) nilandensis — Kemp, 1922: 172.
Periclimenes (Harpilius) nilandensis — Holthuis, 1952: 58–60, fig. 22.
Periclimenes nilandensis — Bruce, 1978a: 222–227, figs 8–9. — Li, 2000: 214–215, fig. 278.

Type material. Holotype, ZMC I.9594.4.

Type locality. South Nilandu Atoll, Maldive Islands.

Host. *Coelogorgonia palmosa* Milne-Edwards and Haime [Telestidae] (Bruce, 1976h). Generally reported from coral reef margins, but also trawl caught in deeper waters.

Bathymetric range. Reported from 117–133 m in the northern South China Sea (Bruce, 1979).

Distribution. Also known from Kenya, Zanzibar, Madagascar, Maldive Islands, Indonesia, South China Sea, Northern Territory, Queensland and New Caledonia.

*Remarks***.** One of the three species known to have commensal associations. Numerous specimens from Madagascar were also all found in association with unidentified antipatharian and gorgonian hosts (Bruce, 1978a)

Kemponia paulsoni (Bruce, 2003)

Periclimenes paulsoni Bruce, 2003: 119–120, fig. 3A–P.

*Type material***.** Holotype ♂, QM W 26557.

Type locality. Cape Flattery, Queensland, Australia.

Habitat. Only known specimen obtained from wharf pile scrapings.

Bathymetric range. 7 m.

*Distribution***.** Known from type locality only.

Kemponia platycheles (Holthuis, 1952) comb. nov.

Periclimenes (Harpilius) platycheles Holthuis, 1952: 85–87, fig. 3.
Periclimenes platycheles — Bruce, 1992a: 62–64, fig. 15. — Li, 2000: 226–227, fig. 299.

Type material. Ovigerous ♀ holotype, ZMA D.102825; 1 paratype, ZMA D.102826.

Type locality. Off Fau Island, Gebe Island, Indonesia, 31 m.

Habitat. No data.

Bathymetric range. To 57 m (Holthuis, 1952).

*Distribution***.** Known from Indonesia, Papua New Guinea**,** China, Japan, Queensland, and Caroline Islands.

*Remarks***.** Paratype specimen also from Atiationin, West Papua.

Kemponia seychellensis (Borradaile, 1915) comb. nov.

Periclimenes (Falciger) seychellensis Borradaile, 1915: 212; : 324, 375, pls. 54–55, fig. 14.
Periclimenes (Ancylocaris) seychellensis — Kemp, 1922: 176–178, figs 34–35, pl. 6 fig. 7.
Periclimenes (Harpilius) seychellensis — Holthuis, 1952: 66–67, fig. 25.
Periclimenes seychellensis — Bruce, 1971: 8. — Li, 2000: 235–236, fig. 313. — Jayachandran, 2001: 314–316, fig. 92.

Type material. Holotype, ZMC I.9594.5.

Type locality. Praslin, Seychelle Islands.

Habitat. Amongst sea grasses and algae, including off-shore floating *Sargassum*.

Bathymetric range. Shallow water.

Distribution. Also known from Kenya, Zanzibar, Tanganyika, Moçambique, Madagascar, Seychelle Islands, Pakistan, India, Andaman Islands, Singapore, Indonesia, China, Western Australia, Northern Territory, Queensland, Papua New Guinea, New Caledonia.

*Remarks***.** The only *Kemponia* species commonly found in floating *Sargassum***.**

Kemponia suvadivensis (Borradaile, 1915) comb. nov.

Periclimenes (Falciger) suvadivensis Borradaile, 1915: 212; 1917: 375, pl. 55, fig. 16.
Periclimenes (Ancylocaris) suvadivensis — Kemp, 1922: 209.
Periclimenes (Harpilius) suvadivensis — Holthuis, 1952: 12.
Periclimenes suvadivensis — Bruce, 1978a: 264–266, fig. 8. — Li, 2000: 239, fig. 317.

Type material. Two syntypes, ZMC I.9594.6.

Type locality. Suvadiva Atoll, Maldive Islands.

Habitat. Muddy pools (Bruce and Coombes, 1997).

Bathymetric range. Intertidal.

Distribution. Also reported from (?) Whirlpool Pass and Sunday Island, Western Australia (Davie and Short, 1995 , sp. aff. *suvadivensis*), and Channel Island, Darwin Harbour, Northern Territory (Bruce and Coombes, 1997).

Kemponia tenuipes (Borradaile, 1898) comb. nov.

Periclimenes tenuipes Borradaile, 1898: 384.
Periclimenes (Ancylocaris) tenuipes — Kemp, 1922: 220–224, pl. 8, fig. 11.
Periclimenes (Harpilius) tenuipes — Holthuis, 1952: 84–85.
Periclimenes tenuipes — Bruce, 1978b: 261–264, figs 6A, 7. — Li, 2000: 240–241, fig. 319.

*Type material***.** Holotype ♂, ZMC I.9594.7.

Type locality. Ralun, New Britain, Papua New Guinea.

Habitat. Coral reefs. Also common in intertidal pools (Bruce and Coombes, 1997).

Bathymetric range. Intertidal to 105–160 m (Bruce, 1996). The record from 100 m in De Grave (2000) is erroneus (? 10 m, De Grave, pers. com., 16-2-04).

*Distribution***.** Also known from Jordan, Kenya, Zanzibar, Madagascar, La Réunion, Seychelle Islands, Maldive Islands, Sri Lanka, Andaman Islands, Indonesia, China, Taiwan**,** Japan, Philippines, Papua New Guinea, Hibernia Reef, Timor Sea, Northern Territory, Queensland, New Caledonia, Caroline Islands, and Marshall Islands.

*Remarks***.** Kemp (1922) included *Periclimenes (Falciger) kolumadulensis* Borradaile, 1915, in the synonymy of *Periclimenes (Ancylocaris) tenuipes.* This was followed by Holthuis (1952) and Bruce (1978c: 264–264, fig.6AB) and other authors. Photographs in recent publications have shown that a morphologically similar species with a completely different colour pattern occurs in the central Pacific region, which suggests that the synonymization may have been premature. *Periclimenes kolumadulensis* (holotype, ZMC I.9594.3) has been reported only from the type locality, Kolumadulu Atoll, Maldive Islands (Debelius, 2001: 188, *Periclimenes* cf. *tenuipes*, Sulawesi, Indonesia) and its life colouration is unknown. In addition to the colouration, the morphology of the second pereiopods may distinguish the species. The fingers of the second pereiopod chelae of *P. kolumadulensis* (Bruce, 1978b, fig. 6BC) are markedly different from most specimens of *P. tenuipes* and have been previously attributed to normal growth variation but this may not be correct. Further fresh specimens with colour photos are necessary to clarify the situation. Most specimens of *K. tenuipes* appear to be collected under circumstances that suggest a free-living lifestyle. However, Read (1974) reported associations with anemones in Palau.

***Kemponia ungujaensis* (Bruce, 1969) comb. nov.**

Periclimenes ungujaensis Bruce, 1969: 275–276. — Bruce, 1976c: 481. — Chace and Bruce, 1993: 60. — Li, 2000: 244.

*Type material***.** Holotype ♂. Present whereabouts unknown.

Type locality. Unguja Ukuu, Unguja, Zanzibar.

Habitat. Amongst *Cymodocea* (Bruce, 1976h).

Bathymetric range. Less than 0.5 m.

*Distribution***.** Known from type locality and Mombasa, Kenya, only.

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